AUTOMATION INTERFACES

GENERAL CATALOGUE

100% Made & Designed in Italy

DATA ACQUISITION
AND AUTOMATION SYSTEMS

INDUSTRIAL COMMUNICATION
AND TELECONTROL

POWER MONITORING
AND ELECTRICAL MEASUREMENT

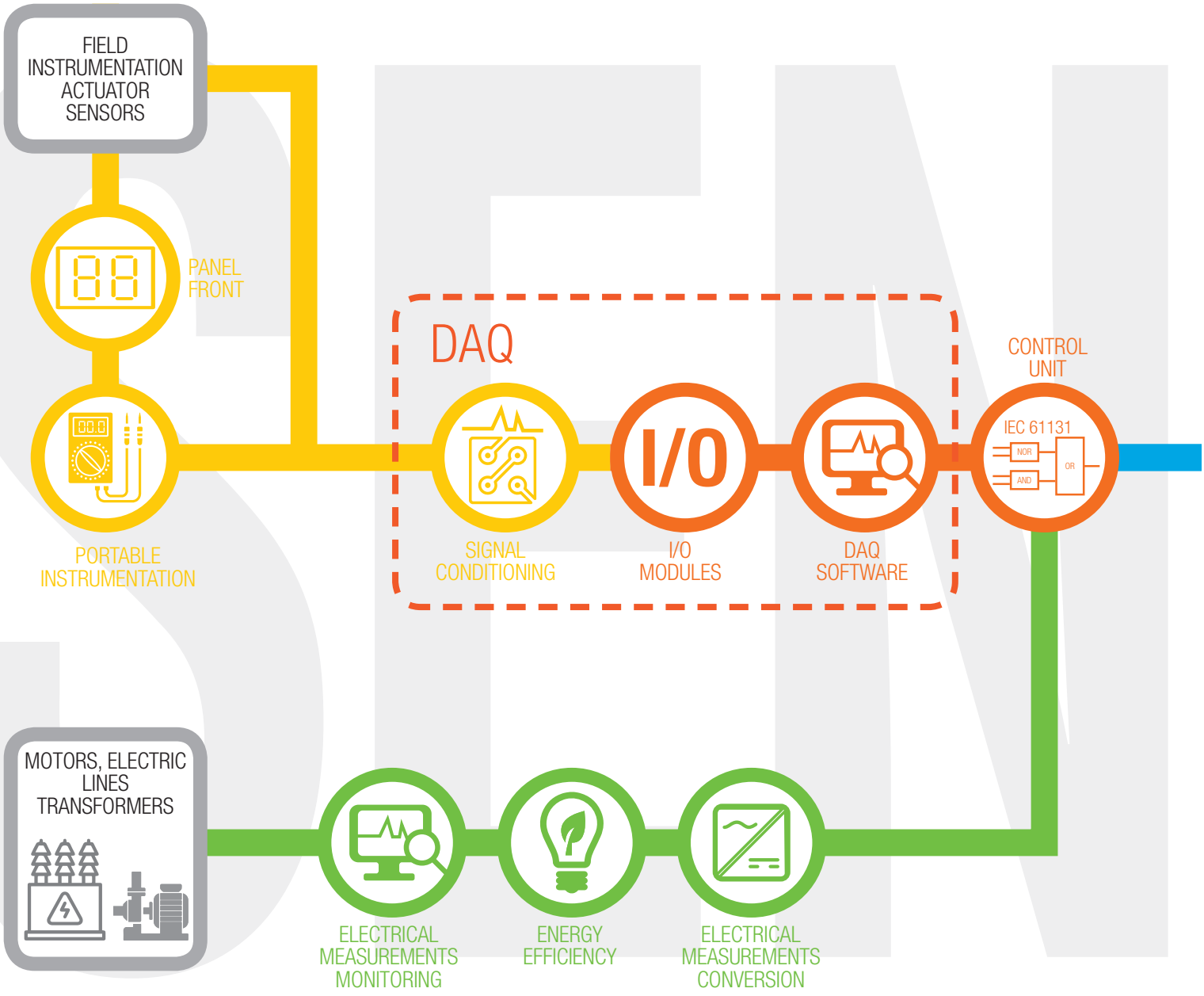
MEASUREMENT AND CONTROL PANEL
INSTRUMENTATION

SENECA

www.seneca.it

MISSION: WE HANDLE THE SIGNAL FROM THE SENSOR TO INDUSTRY 4.0

One of the leading companies in Europe to design and produce galvanic isolators and signal conditioners, SENECA offers a comprehensive catalogue of high-performance and cost-effective products and systems with which it is possible to feed, isolate, convert, capture, display and transmit safely by cable, bus or radio most industrial signals, in other words, to ensure the integrity of the data processing cycle. In the 4.0 age, an increasing number of manufacturing companies, builders of machines, utilities, chemical and process industries must be able to rely on decentralised devices and control systems to monitor the progress of machines and systems. In this scenario the intent of SENECA is to ensure the real-time knowledge of the data available in order to offer the customer new information and concrete economic opportunities. This is the essence of the innovation process called Industry 4.0, in which the functions of data collection and interconnection are fundamental.

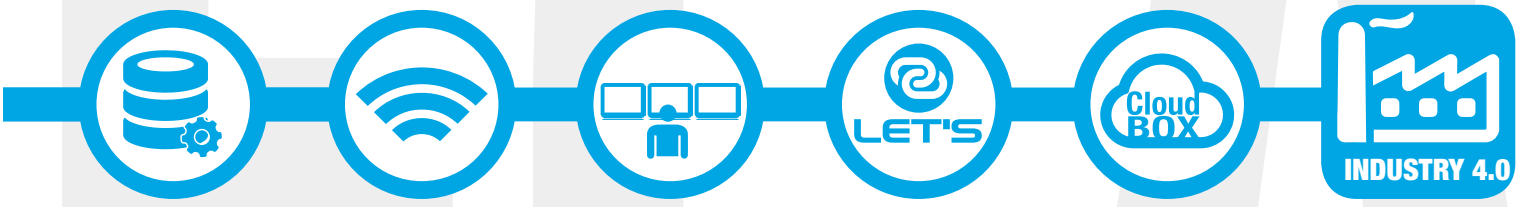


DATA ACQUISITION AND AUTOMATION SYSTEMS

INDUSTRIAL COMMUNICATION AND TELECONTROL

POWER MONITORING AND ELECTRICAL MEASUREMENT

MEASUREMENT AND CONTROL PANEL INSTRUMENTATION



SMART DATALOGGER

RADIO MODEM

RTU / REMOTE CONTROL

VPN/IOT REMOTE ASSISTANCE

IOT/CLOUD SOLUTIONS

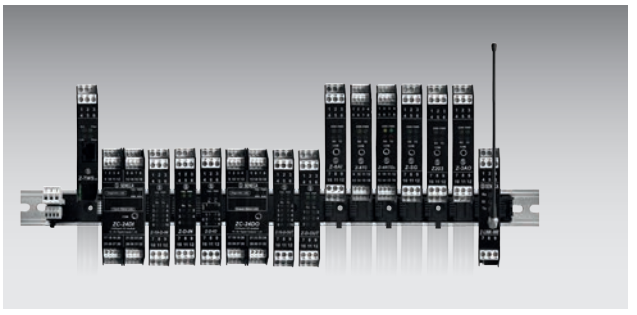
SENECA

MADE IN ITALY
WITH HIGH TECHNOLOGY

100% Made & Designed in Italy

Company

Present for approximately 30 years in the industrial automation sector, SENECA has achieved a prominent position in the Italian electronic instrumentation market making innovation, reliability and qualified support its strengths.
SENECA constantly innovates processes and products with targeted investments in latest-generation machinery and in qualified personnel.



Product Lines

The product lines, designed and produced entirely in the SENECA plants, are compatible and consistent with the most common technological standards.
SENECA sets out to consolidate and expand its offer of excellence through a wide range of products, in particular with automation technologies aimed at data acquisition, remote control, supervision and energy saving.

Business Unit

Thanks to the synergy of two business units (Interfaces for Automation, Systems & Services) organised according to quality criteria, SENECA offers a complete range of automation solutions: from the single component to the turnkey system.

Partnership

SENECA collaborates with the main process industries, with high automation SMEs, with the big energy and industry players as well as with various Universities and Research Companies.
SENECA has developed a concrete and effective business model, aiming to solve actual problems of the client, believing first and foremost in the technologies it offers to the market

WE TAKE
CARE OF
YOUR SIGNAL

Mission

SENECA manufactures multi-sector devices that galvanically power, condition and separate sensors and actuators, so that, after being connected to the control unit, no device can be damaged.
SENECA products provide standard signals via cable, bus and wireless to most industrial control systems.

Markets

Electrical and process automation: oil & gas, refineries, chemical and petrochemical plants, steel mills, rolling mills, foundries, paper mills, sugar mills, pharmaceutical industries, cement factories, metalworking, shipbuilding.
Distribution of electronic components, civil installations, domotics, remote control and remote assistance. Solutions for the manufacturing sector, utilities and building automation.

FACTS AND FIGURES

First Italian manufacturer of interfaces for automation

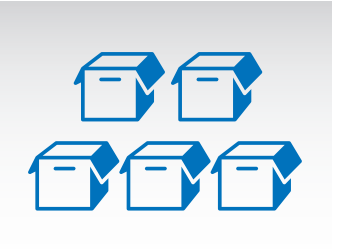
Average growth rate over the last 5 years 14%

ISO 9001 quality certification since 1997

2 Synergistic Business Units

International product and process certifications

Global sales network with approximately 70 partners



150,000 pieces sold on average every year

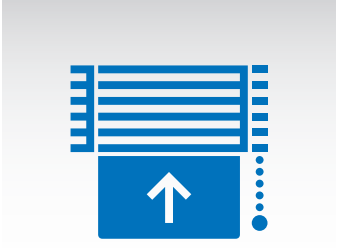
Pick&Place latest generation 50,000 comp./hour

4 product lines +600 Item codes

Average time for order completion 48 h

Over 2,500 active clients

Multichannel Technical support within 48 h



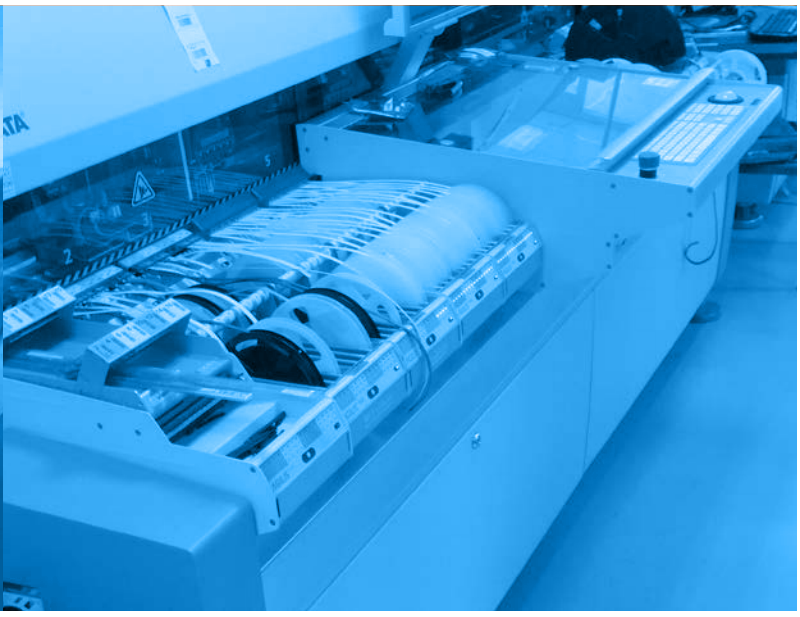
Automatic warehouses with over 90,000 items ready for delivery

average MTBF > 1 million hours

High-tech plant of over 5,000 sq.m

Custom warranty up to 60 months

DESIGN, PRODUCTION, LOGISTICS, ALL UNDER THE ONE ROOF



DESIGN

- Integrated management of all the phases of product development
- Use of the best modelling, simulation, industrialisation and prototyping software
- Adoption of the most advanced microelectronic technologies (FPGA, PSOC, CPLD, ASIC, DSP, MEMS, LVDS, VHDL)
- Hardware / Software engineering
- Rapid prototyping
- Metrological and electromagnetic compatibility testing

PRODUCTION

- SMT (Surface Mounting Technology) lines for the latest generation Pick & Place machines 50,000 components/hour
- AOI (Automated optical inspection) and ATE (Automatic Test Equipment) systems
- Burn-in test on the entire production
- Lean Production for rapid changes in production cycles
- Production process fully compliant with the WEEE, ROHS and REACH eco-compatible directives

WAREHOUSING

- Prompt delivery of over 70,000 items
- Safe and high-density storage in 12-meter high towers
- Equivalent storage capacity of 1,000 sq.m
- Connection in real time with ERP
- Complete product traceability

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1

DATA ACQUISITION AND AUTOMATION SYSTEMS

DATA ACQUISITION AND AUTOMATION SYSTEMS

The SENECA product line for Data Acquisition and Automation Systems includes RTU/TCP-IP ModBUS I/O, CANopen, Profinet IO, HMI with Led, Oled and IIoT technology, IEC 61131 logic controllers and for Energy Management IEC 60870-5-101, IEC 60870-5-104, IEC 61850 process controllers and flow computers. The SENECA I/O systems are modular and open automation platforms for single-signal management to thousands of I/Os. They include the widest variety of I/O modules: digital inputs, high-speed counters, digital relay outputs and MOSFETs, analog channels (mA, V, Ohm, mV), strain gauges, resistance thermometers, thermocouples, power grid measurements. The SENECA systems are designed to facilitate system integrators, design and engineering firms, instrumentation builders, electrical installers, qualified installers.

1.1 Z-PC LINE I/O MODULES (Modbus, Ethernet)

1.2 R LINE I/O MODULES (Modbus, Ethernet, Profinet IO)

1.3 MULTIFUNCTION CONTEROLLERS IEC 61131

1.4 PROCESS CONTROL

1.5 HMI OLED

1.6 OPERATOR PANELS HMI

1.7 HMI IIoT

1.8 SOFTWARE DAQ

1.9 SOFTWARE AND ACCESSORIES

I/O MODULES Z-PC LINE (ModBUS, Ethernet, CANopen)

1

1.1

Z-PC Line

DATA ACQUISITION SYSTEMS, DISTRIBUTED AUTOMATION AND REMOTE CONTROL

Z-PC Line is a modular automation system for management of the single signal to thousands of I/Os. The Z-PC Line includes the widest variety of I/O modules: digital inputs, high-speed counters, digital relay outputs and mosfets, analog channels (mA, V, Ohm, mV), strain gauges, resistance thermometers, thermocouples, electrical signals, galvanically isolated and with ModBUS, CANopen, Ethernet, M-BUS communication protocols. The I/O modules support RS485 serial communication with RTU ModBUS protocol, up to 64 nodes without repeater and speeds up to 115 kbps. The wiring of the power supply and of the serial connection is facilitated by means of a bus that can be housed in the IEC EN 60715 rail. Maximum data concentration is also guaranteed.

For example, with only 1 module, up to 24 digital and 8 analog signals can be acquired. Modular DIN rail bus support is available in 1, 2, 4, 8 slot formats. The modules are of a Hot-Swap type that is "hot" replaceable, without interrupting the power supply and communication. Completing the system is a wide range of interfaces and network interconnections to expand the configuration. Thanks to its flexibility and modularity, the Z-PC Line is a distributed system for multi-sector applications: data acquisition, building automation, remote control, energy consumption monitoring, production control, naval automation, laboratory tests and tests, environmental analyses, water treatment etc.

MULTIFUNCTION CONTROL UNIT

I/O MODULES

- SoftPLC IEC 61131
- OPENING SCADA / OPC / WEB CLIENT
- I/O MANAGEMENT On-board integrated External up to 1,000 I/O
- Reed, PNP, NPN, Proximity, Contact — DIGITAL INPUTS
- INTEGRATED CONTROL FUNCTIONS
- ModBUS CANopen Ethernet M-BUS — PROTOCOLS SUPPORTED
- IEC 61850 IEC 60870-5-101/104 ENERGY PROTOCOLS
- ARCHIVING DISPLAY
- ADVANCED ALARMS
- SPST relay or Mosfet — DIGITAL OUTPUTS
- power OUT IN — ISOLATION MULTI-WAY 1.5 kVac
- COUNTERS 32 bit @10kHz
- INTEGRATION WITH THIRD PARTY DEVICES
- SPECIAL APPLICATIONS AND LIBRARIES
- OPC UA — DATA INTERCHANGE WITH OPC UA STANDARD
- -20..+70°C — HIGH OPERATING TEMPERATURE RANGE
- REMOVABLE TERMINALS 2.5 mm²
- Micro USB jack 3,5mm RS232 — FRONT COMMUNICATION PORT

GENERAL CHARACTERISTICS

EXTENDED RANGE

UNIVERSAL APPLICATIONS

FLEXIBLE CONFIGURATION
(EASY SETUP, Z-NET4, DIP switch)

TOOLS AND SERVICES FOR SYSTEM INTEGRATOR

DATA ACQUISITION TOOL
(Data Recorder, OPC UA, Driver NI LabVIEW, Librerie ModBUS Visual Studio)

VAC/DC power supply SWITCHING ON THE SAME HARDWARE

TRANSDUCERS POWER SUPPLY

BUS SYSTEM
(power supply, communication) with DIN rail

COMMUNICATION INTERFACES

HOT SWAPPING
Hot insertion / extraction of modules

DAQ SOFTWARE DATA RECORDER

ANALOG INPUTS

GATEWAY / ROUTER 3G+ / 4G / GPS / GLONASS

SERIAL / USB CONVERTERS

INDUSTRIAL MODEMS

RESOLUTION UP TO 16 bit

UL AND CE CERTIFICATIONS

LOAD CELL INPUTS

CONVERTERS FOR FIBRE OPTICS

RADIOMODEM 169 / 869 MHz

IT PROTOCOLS

INPUTS FROM TEMPERATURE SENSORS

ELECTRIC MEASUREMENTS

PID REGULATION

REMOTE CONTROL/ REMOTE ASSISTANCE SOLUTIONS

VPN SUPPORT

IOT/ CLOUD Solutions

MODBUS DIGITAL I/O MODULES

	Z-D-IN	Z-D-OUT	Z-10-D-IN	Z-10-D-OUT
Modbus	 5-CH digital inputs / RTU ModBUS RS485	 5-CH digital outputs / RTU ModBUS RS485	 10-CH digital inputs / RTU ModBUS RS485	 10-CH digital outputs / RTU ModBUS RS485
GENERAL DATA				
Power supply	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac / 50-60 Hz
Max power consumption	2.5 W	2.5 W	3.5 W	2.5 W
Isolation	30-way Vac 1,500	30-way Vac 1,500	30-way Vac 1,500	30-way Vac 1,500
Transducers power supply	Yes, 17Vdc/20mA, max 5 sensors	-	Yes, 17Vdc/40mA, max 10 sensors	-
Status indicators	Power supply Error Data Transmission Data Receipt Input Status	Power supply Error Data Transmission Data Receipt Output Status	Power supply Error Data Transmission Data Receipt Input Status	Power supply Error Data Transmission Data Receipt Input Status Diagnostics
Protection degree	IP20	IP20	IP20	IP20
Operating temperature	-10..+65°C	-20..+65°C	-20..+65°C	-10..+65°C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Weight	140 g approx.	140 g approx.	140 g approx.	140 g approx.
Case	Nylon 6 30% glass fibre self-extinguishing class V0	Nylon 6 30% glass fibre self-extinguishing class V0	Nylon 6 30% glass fibre self-extinguishing class V0	Nylon 6 30% glass fibre self-extinguishing class V0
Connections	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar, USB Micro	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar, USB Micro	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar, USB Micro	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar, USB Micro
Installation	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277
Programming	Z-NET4 (system software) EASY SETUP 2 (plug&play software) DIP switch	Z-NET4 (system software) EASY SETUP 2 (plug&play software) DIP switch	Z-NET4 (system software) EASY SETUP 2 (plug&play software) DIP switch	Z-NET4 (system software) EASY SETUP 2 (plug&play software) DIP switch
Data Memory	EEPROM for configuration parameters, retention time 10 years, FeRAM for counter saving	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years, FeRAM for counter saving	EEPROM for configuration parameters, retention time 10 years
COMMUNICATION				
Interfaces	RS485 2 wires	RS485 2 wires	RS485 2 wires	RS485 2 wires
Speed	Up to 115.20 bps	Up to 115.20 bps	Up to 115.20 bps	Up to 115.20 bps
Protocols	slave RTU ModBUS	slave RTU ModBUS	slave RTU ModBUS	slave RTU ModBUS
Communication time	< 10 ms (@ 38400 bps)	< 10 ms (@ 38400 bps)	< 10 ms (@ 38400 bps)	< 10 ms (@ 38400 bps)
Max distance	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m
Connectivity	Max 32 nodes	Max 32 nodes	Max 32 nodes	Max 32 nodes
INPUT / OUTPUT DATA				
Number of Channels	5 inputs	5 outputs	10 inputs	10 outputs
Type	No. 5 Reed opto-isolated inputs, Proximity, PNP, NPN, clean contact etc. Nr.5 counters @16 bit, max frequency 100 Hz; settable; No. 1 counter @32 bit, max frequency 10 kHz Debounce filter 5..250 ms Overflow indication of each totaliser	No. 5 SPST relay outputs (NO with common) Max relay capacity 5A 250 Vac with resistive load; 2A with inductive load Total current mx 12 A on the common terminal Set relay safety status at start-up in case of communication failure Safety time adjustable from 0.5 to 25 ms	No. 10 digital inputs with 16 V self-supplied common negative protected by 600 W/ms TVS transients suppressors No. 10 inputs with 32 bit totaliser with maximum frequency 2.5 kHz Frequency measurement, period, Ton and Toff for all inputs Ability to set the totalisers for counting forward or backwards Indication of the overflow of each totaliser	Nr.10 MOSFET outputs protected against short circuit with common negative, supplied from 6 to 40 Vdc, flow rate 0.5 A, resisitive or inductive load Settable safety time 33 ms..2184 s Load power supply voltage measurement Diagnostic signalling on the front for each channel: ON/OFF /Overload/Open circuit Programmable fail-safe function (status of the outputs in case of serial communication fail)
STANDARD				
Certifications	EC	EC	UL-UR CSA, EC	UL-UR CSA, EC

The technical data and the diagrams in this document are indicative and not binding.

MODBUS ANALOG I/O MODULES

	Z-DAQ-PID	Z-4AI	Z-8AI	Z-3AO
Modbus	 Universal I/O module with PID regulation / RTU ModBUS RS485	 4-CH voltage inputs - current / RTU ModBUS RS485	 8-CH voltage inputs - current / RTU ModBUS RS485	 3 -CH / current outputs / current / RTU ModBUS RS485
GENERAL DATA				
Power supply	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac
Max power consumption	2 W	3.5 W	3.5 W	3.2 W
Isolation	1.5 kVac (3-way)	1.5 kVac (3-way)	1.5 kVac (3-way)	1.5 kVac (3-way)
Transducers power supply	Yes, 17Vdc/25mA, max 1 channel	Yes, 20Vdc/40mA, max 4 channels	Yes, 13Vdc/90+90mA, max 8 channels	-
Status indicators	Power supply Error Data Transmission Data Receipt	Power supply Error Data Transmission Data Receipt	Power supply Error Data Transmission Data Receipt	Power supply Error Data Transmission Data Receipt
Protection degree	IP20	IP20	IP20	IP20
Operating temperature	-10..+65 °C	-10..+65 °C	-20..+65°C	-20..+65°C
Dimension	17.5x100x112 mm	17.5x100x112 mm	17.5x100x112 mm	17.5x100x112 mm
Weight	140 g approx.	140 g approx.	140 g approx.	140 g approx.
Case	Preloaded nylon 30% glass fibre self-extinguishing class V0	Preloaded nylon 30% glass fibre self-extinguishing class V0	Preloaded nylon 30% glass fibre self-extinguishing class V0	Preloaded nylon 30% glass fibre self-extinguishing class V0
Connections	Screw removable terminals for 2.5 mm^2 conductors	Screw removable terminals for 2.5 mm^2 conductors Front USB Micro Port (RS232/COM)	Screw removable terminals for 2.5 mm^2 conductors Front USB Micro Port (RS232/COM)	Screw removable terminals for 2.5 mm2 conductors Front USB Micro Port (RS232/COM)
Installation	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277
Programming	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch
Data Memory	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years
COMMUNICATION				
Interfaces	RS485 2 wires RS232 (stereo jack 3.5 mm)	RS485 2 wires RS232 (stereo jack 3.5 mm)	RS485 2 wires RS232 (stereo jack 3.5 mm)	RS485 2 wires RS232 (stereo jack 3.5 mm)
Speed	Up to 115,200 bps	Up to 115,200 bps	Up to 115,200 bps	Up to 115,200 bps
Protocols	MosBUS RTU slave	MosBUS RTU slave	MosBUS RTU slave	MosBUS RTU slave
Communication time	< 10 ms (@38,400 bps)	< 10 ms (@38,400 bps)	< 10 ms (@38,400 bps)	< 10 ms (@38,400 bps)
Max distance	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m
Connectivity	Max 32 nodes	Max 32 nodes	Max 32 nodes	Max 32 nodes
INPUT / OUTPUT DATA				
Number of Channels	1 input, 1 output	4 inputs	8 inputs	3 outputs (active)
Type	INPUT Millivolt: configurable from -10 to + 80 mV Voltage: configurable from 0 to 10 V Current configurable from 0 to 20 mA Potentiometer: 1 kΩ.. 100 kΩ Thermocouple J,K,E,T,N,B,R,S RTD: Pt100, Pt500, Pt1000, Ni100 OUTPUT Configurable voltage from 0-10 V Active / passive configurable current from 0-20 mA	VOLTAGE Bipolar with F.S.programmable at ±2 Vdc and ± 10 Vdc; impedance input > 100 kOhm CURRENT Bipolar with F.S.programmable at ± 20 mA with internal shunt 50 Ohm selectable via DIPswitch; available power supply: 90+90mA @13 Vdc.	Bipolar inputs programmable in voltage (± 2.5 Vdc, ±10 Vdc, impedance> 100 kΩ) or in current (±20 mA)	Voltage (±10 V, 0/2..10 V, controllable impedance > 600 ΩW) or in current (0/4..20 mA, controllable impedance < 600 Ω) internal shunt 50Ω
Resolution	14 bit + sign	16 bit	16 bit	13 bit
Accuracy class	0.1%	0.1%	0.1%	0.1%
Stability	0.01%/°C	0.01%/°C	0.01%/°C	0.01%/°C
STANDARD				
Certifications	EC	EC	UL-UR CSA, EC	UL-UR CSA, EC

The technical data and the diagrams in this document are indicative and not binding.

MODBUS TEMPERATURE I/O MODULES

	Z-4RTD2	Z-4TC	Z-8TC-1	Z-8TC-LAB	Z-8NTC
					
	4-CH thermoresistance inputs / RTU ModBUS RS485	4-CH thermocouple inputs / RTU ModBUS RS485	8-CH thermocouple inputs and mV / RTU ModBUS RS485	8-CH inputs from thermocouples and mV / RS485 RTU ModBUS with terminals interchangeable	8-CH thermoresistance inputs NTC / RTU ModBUS RS485
GENERAL DATA					
Power supply	10..40 Vdc, 19..28 Vac 50..60 Hz	10..40 Vdc, 19..28 Vac 50..60 Hz	10..40 Vdc, 19..28 Vac 50..60 Hz, bus powered	10..40 Vdc, 19..28 Vac 50..60 Hz, bus powered	10..40 Vdc, 19..28 Vac 50..60 Hz
Max power consumption	0.7 W	1 W	0.6 W	0.6 W	TBD
Isolation	3-way Vac 1,500	3-way Vac 1,500	6-way Vac 1,500	6-way Vac 1,500	30-way Vac 1,500
Transducers power supply	-	-	-	-	-
Status indicators	Power supply Error Data transmission Data receipt	Power supply Error Data transmission Data receipt	Power supply Error Communication RS485	Power supply Error Communication RS485	Power supply Error Data transmission Data receipt
Protection degree	IP20	IP20	IP20	IP20	IP20
Operating temperature	-20..+70 °C	-25..+65°C	-25..+65°C	-25..+65°C	-20..+70 °C
Dimension	17.5x100x112 mm	17.5x100x112 mm	17.5x100x112 mm	17.5x100x112 mm	17.5x100x112 mm
Weight	140 g approx.	140 g approx.	140 g approx.	140 g approx.	140 g approx.
Case	Nylon 6 preloaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 preloaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 preloaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 preloaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 preloaded 30% glass fibre, class V0 self-extinguishing
Connections	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar Front USB Micro Port (RS232 / COM)	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar Front USB Micro Port (RS232 / COM)	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar Front USB Micro Port (RS232 / COM)	2-way removable screw terminals, 3.5 mm pitch, for cable max. 1.5 mm^2 interchangeable IDC10 rear connector for DIN bar Front USB Micro Port (RS232 / COM)	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar Front USB Micro Port (RS232 / COM)
Installation	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277
Programming	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch	System software (Z-NET4) EASY SETUP 2 (plug&play software) DIP switch
Data Memory	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years
COMMUNICATION					
Interfaces	Nr.1 RS485 2 wires	Nr.1 RS485 2 wires	Nr.1 RS485 2 wires	Nr.1 RS485 2 wires	Nr.1 RS485 2 wires; Nr.1 Micro USB
Speed	Up to 115,200 bps	Up to 115,200 bps	Up to 115,200 bps	Up to 115,200 bps	Up to 115,200 bps
Protocols	slave RTU ModBUS	slave RTU ModBUS	slave RTU ModBUS	slave RTU ModBUS	slave RTU ModBUS
Communication time	45..179 ms	< 20 ms (@38,400 bps)	45..179 ms	45..179 ms	< 10 ms (@38,400 ms)
Max distance	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m
Connectivity	Max 32 nodes	Max 32 nodes	Max 32 nodes	Max 32 nodes	Max 32 nodes
INPUT / OUTPUT DATA					
Number of Channels	4 inputs	4 inputs	8 inputs	8 inputs	8 inputs
Type	RTD with 4 terminals (ohmeter with 2,3,4 wires) Pt100: -200..+650°C (f.s. 330 Ω) Pt500: -200..+750°C (f.s 1.800 Ω) Pt1000: -200..+210°C (f.s. 1,800 Ω) Ni100: -60..+250°C (f.s. 330 Ω)	Bipolar voltage ±160 mVdc, impudence 10 MΩ Thermocouple J, K, R, S, T. B, E, N	Thermocouple J, K, R, S, T. B, E, N (EN60584-1, ITS-90) Range between -210 and + 1820°C Span mV: -10.1..81.4 mV	Thermocouple J, K, R, S, T. B, E, N (EN60584-1, ITS-90) Range between -210 and + 1820°C Span mV: -10.1..81.4 mV	Generic NTC, user definable curve. Nominal values 1kΩ, 10kΩ, 50kΩ @ 25°C; Resistance from 100 Ohm to 10 kOhm; from 1 kOhm to 100 KOhm; from 5 kOhm to 500 kOhm.
Resolution	(11/13 bit on input range)	16 bit	Settable at 14/15 bit	16 bit	16 bit
Accuracy class	0.1%	0.1%	0.1%	0.1%	0.5%
Thermal drift	25 ppm/K	0.01%/°C c.d.m.	< 100 ppm/K	< 100 ppm/K	< 100 ppm/K
STANDARD					
Certifications	EC, UL-UR	EC	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

MODBUS MIXED I/O MODULES

	Z-SG	Z-SG2	Z-D-IO	Z-5DI-2DO	Z-4DI-2AI-2DO
					
	Converter module for load cell / RS485 RTU ModBUS	Converter module for load cell / RS485 RTU ModBUS with advanced functions	Mixed 6-CH inputs, 2 digital outputs, RS485 MOdBUS RTU	Mixed 5-CH digital inputs, 2 digital outputs, RTU ModBUS RS485	Mixed 4-CH digital inputs, 2 analog inputs 2 digital outputs / RTU ModBUS RS485
GENERAL DATA					
Power supply	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac
Max power consumption	2 W	2 W	2.5 W	3.5 W	4 W
Isolation	30-way Vac 1,500	30-way Vac 1,500	1,500 Vac vs inputs 3,750 Vac vs outputs	1,500 Vac vs inputs 3,000 Vac vs outputs	1,500 Vac
Transducers power supply	Yes, 5Vdc/60mA, max 1 sensor	Yes, 5Vdc/60mA, max 1 sensor	-	-	Yes, 12V/(20)40mA, max 8 sensors
Protection degree	IP20	IP20	IP20	IP20	IP20
Operating temperature	-10..+65 °C	-10..+65 °C	-10..+60 °C	-20..+60 °C	-25..+70 °C
Dimension	17.5x100x112 mm	17.5x100x112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Weight	140 g approx.	140 g approx.	200 g approx.	140 g approx.	170 g approx.
Case	Nylon 6 preloaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 preloaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 30% glass fibre self-extinguishing class V0	Nylon 6 30% glass fibre self-extinguishing class V0	Glass loaded PA6 black plastic
Connections	Screw removable terminals for conductors up to 2.5 mm^2 Rear connector IDC10 for DIN bar Front USB Micro Port (RS232 / COM)	Screw removable terminals for conductors up to 2.5 mm^2 Rear connector IDC10 for DIN bar Front USB Micro Port (RS232 / COM)	Screw removable terminals for 2.5 mm^2 conductors	Screw removable terminals for 2.5 mm^2 conductors Front USB Micro Port (RS232 / COM) USB Micro (programming)	Screw removable terminals for 2.5 mm^2 conductors IDC10 rear connector for DIN bar
Installation	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277	Guide 35 mm DIN 46277
Programming	System software (Z-NET4) Plug&play configurator (EASY SETUP 2) DIP switch	Plug&play configurator (EASY SETUP 2) DIP switch (baud rate and address only)	System software (Z-NET4) Plug&play configurator (EASY SETUP 2) DIP switch Logic IEC 1131-2 type 1 for motors control, valves, alarm	Plug&play configurator (EASY SETUP 2) DIP switch	System software (Z-NET4) Plug&play configurator (EASY SETUP 2) DIP switch
Basic functions	Cell calibration with software and sample weight; stable weighing via DO/Modbus register; tare remote writing; strain gauge powered by the instrument; ratiometric measurement	Cell calibration with software and sample weight; stable weighing via DO/Modbus register; tare remote writing; strain gauge powered by the instrument; ratiometric measurement	-	-	-
Advanced functions	-	Settable resolution, sampling frequency, alarm threshold; measurement stabilisable by noise filter; piece counter"; min/max net weight values; tare reset	-	-	-
Data memory	EEPROM for configuration parameters, retention time 40 years	EEPROM for configuration parameters, retention time 40 years	EEPROM for configuration parameters, retention time 10 years	EEPROM for configuration parameters, retention time 10 years, N° 5 32-bit registers, N° 5 bit overflow, FeRAM for saving of counters	Flash 512 kB, FeRAM 64 kB (counters)
COMMUNICATION					
RS485	Nr. 1 RS485 2 wires, up to 115,200 bps, slave RTU ModBUS, communication time <10 ms (@ 38,400 ms), max distance 1,200 m, max RS485	-	Nr.1 RS485 2 wires, up to 115.200 bps, slave RTU ModBUS, communication time < 10 ms (@38.400 bps), max distance 1,200, max 32 nodes	Nr.1 RS485 2 wires, up to 115.200 bps, slave RTU ModBUS, communication time < 10 ms (@38.400 bps), max distance 1,200, max 64 nodes without repeater	Nr.1 RS485 2 wires, up to 115.200 bps, slave RTU ModBUS, communication time from 1 to 300 ms, max distance 1,200, max 32 nodes
USB				Nr.1 USB Micro	Nr. 1 USB 2.0 mini
INPUT / OUTPUT DATA					
Number of channels	1 AI 1DI/DO, 1 AO	1 AI 1DI/DO, 1 AO	6 DI, 2 DO	5 DI, 2 DO	4 DI, 2 AI, 2 DO
Type	Nr. 1 AI for reading (and powering) up to 4 (350 Ω) or 8 (1.000 Ω) load cells (4/6 wires) 1 DI/1DO tare calibration or weight threshold (sensitivity from 1 to 64 mV/V) Nr. 1 AO (mA, V) for retransmission of the net weight	Nr. 1 AI for reading (and powering) up to 4 (350 Ω) or 8 (1.000 Ω) load cells (4/6 wires) 1 DI/1DO tare calibration or weight threshold (sensitivity from 1 to 64 mV/V) Nr. 1 AO (mA, V) for retransmission of the net weight	Nr. 6 DI with common type Reedm Proximity, PNP, NPN, contact etc .; internal/external input power supply; min pulse width 20 ms Nr. 2 DO SPST relay with common, capacity 5A 250Vac, NO/NC contact	Nr. 5 DI Reed, Proximity, PNP, NPN, contact etc. Nr. 5 counters @32 bit, max freq. 5 kHz Nr. 2 DO SPST relay with common, fail-safe, range 2A 250Vac, NO/NC contact Freq. period measurement Ton/Toff on all inputs	Nr. 4 DI Reed, Proximity, PNP, NPN, contact etc. Nr. 4 counters @32 bit, max freq. 5 kHz Nr. 2 DO SPST relay with common, capacity 2A 250Vac, NO/NC contact Nr. 2 configurable AI (mA/V), accuracy 0.1%, resolution 16bit
STANDARD					
Certifications	EC	EC	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

MODBUS RTU / MODBUS TCP-IP I/O MODULES

	ZE-4DI-2AI-2DO	ZE-2AI
Modbus ETHERNET	 Mixed 4-CH digital inputs, 2 analog inputs, 2 digital outputs, RTU / TCP-IP ModBUS ModBUS	 2-CH voltage inputs - current / RS485 / Ethernet (TCP-IP ModBUS)
GENERAL DATA		
Power supply	11.40 Vdc; 19..28 Vac	10..40 Vdc / 19..28 Vac
Isolation	1,500 Vac	1.5 kVac
Protection degree	IP20	IP20
Operating temperature	-25..+70 °C	-25..+70 °C
Dimension	35x100x112 mm	17.5x100x112 mm
Weight	170 g approx.	140 g approx.
Connections	Screw removable terminals for 2.5 mm2 conductors IDC10 rear connector for DIN bar USB mini	Screw removable terminals for 2.5 mm2 conductors IDC10 rear connector for DIN bar USB mini
Installation	For rail 35 mm DIN 46277	For rail 35 mm DIN 46277
Programming	EASY SETUP 2 (plug&play software) DIP switch (speed, address) Web Server	EASY SETUP 2 (plug&play software) DIP switch (speed, address) Web Server
Special functions	LAN TCP ModBUS Server	LAN TCP ModBUS Server
Data Memory	Flash 512 kB, FeRAM 64 kB (counters)	Flash 512 kB, FeRAM 64 kB (counters)
COMMUNICATION		
Interfaces	Nr. 1 Ethernet 10/100 Mbps Nr.2 RS485 Nr. 1 USB 2.0 mini	Nr.1 Ethernet 10/100 Mbps Nr. 2 RS485 Nr.1 USB 2.0 mini
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)
Protocols	MosBUS RTU, TCP-IP ModBUS, http	MosBUS RTU, TCP-IP ModBUS, http
INPUT DATA		
Number of Channels	6	2 inputs
Type	N°2 Analog Inputs 0-20 mA / 0-30 V (1-300 ms) No. 4 PNP / NPN Digital Inputs (also configurable as totalisers or counters @32 bit max 5 kHz); 16-bit resolution, 0.1% f.s.	N°2 Analog Inputs 0-20 mA / 0-30 V; resolution 16 bit (1-300 ms) sampling 0.1% f.s.
OUTPUT DATA		
Number of Channels	2	-
Type	Relay NA / NC max 5A	-
STANDARD		
Certifications	EC	EC

I/O ETHERNET

The Z-PC Line mixed I/O modules for high performance analog and digital signals support the TCP-IP ModBUS and RTU ModBUS communication protocols on the bus/terminal and an extended range for voltage input up to 30 V. These modules can use a 16-bit ADC converter with configurable acquisition speed from 5 to 300 ms. They also offer complete web server configurability compatible with browsers that support Html5.
The R Line I/O modules are designed for flexible wiring requirements, reduced installation space, high I/O density applications and integrated Ethernet networking.
In fact, they can be connected in daisy chain Ethernet mode with fault-bypass to ensure the Ethernet connection even in the event of a module failure in the chain and ensure the "ModBUS Passthrough" function, thanks to which the module can divert requests from Modbus TCP-IP acting, in fact, like a gateway.

MODBUS / CANOPEN DIGITAL I/O MODULES

	ZC-24DI	ZC-24DO	ZC-16DI-8DO
			
	24-CH digital inputs ModBUS/CANopen	24-CH digital outputs ModBUS/CANopen	16-CH digital inputs, 8 digital outputs ModBUS/ CANopen
GENERAL DATA			
Power supply	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac
Max power consumption	2.5 W	2.5 W	2.5 W
Isolation	1.5 kVac (3-way)	1.5 kVac (3-way)	1.5 kVac (3-way)
Transducers power supply	Yes, 16V/70mA, max 24 sensors	-	Yes, 16V/70mA, max 16+8 sensors
Status indicators	Power supply Input Status Industrial	Power supply Output Status Industrial	Power supply Inputs / Outputs Status Industrial
Protection degree	IP20	IP20	IP20
Operating temperature	-20..+65 °C	-20..+65 °C	-10..+65 °C
Dimension	35 x 100 x 112 mm	35 x 100 x 112 mm	35 x 100 x 112 mm
Weight	170 g	170 g	170 g
Case	Nylon 6 loaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 loaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 loaded 30% glass fibre, class V0 self-extinguishing
Connections	Detachable 4-way screw terminals, 3.5 mm pitch IDC10 rear connector for DIN bar USB Micro	Detachable 4-way screw terminals, 3.5 mm pitch IDC10 rear connector for DIN bar USB Micro	Detachable 4-way screw terminals, 3.5 mm pitch IDC10 rear connector for DIN bar USB Micro
Installation	For rail 35 mm DIN 46277	For rail 35 mm DIN 46277	For rail 35 mm DIN 46277
Programming	DIP switch, Z-NET4, EASY SETUP 2, EDS, Codesys (IEC 61131)	DIP switch, Z-NET4, EASY SETUP 2, EDS, Codesys (IEC 61131)	DIP switch, Z-NET4, EASY SETUP 2, EDS, Codesys (IEC 61131)
Certifications	EC	EC	EC
COMMUNICATION			
Interfaces	RS485, RS232	RS485, RS232	RS485, RS232
Speed	1 Mbps (CANopen); 115.200 bps (ModBUS)	1 Mbps (CANopen); 115.200 bps (ModBUS)	1 Mbps (CANopen); 115.200 bps (ModBUS)
Protocols	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01); RTU ModBUS (via RS485)	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01); RTU ModBUS (via RS485)	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01); RTU ModBUS (via RS485)
Communication time	2.5 ms	1.2 ms	1.2..2.5 ms
Special Functions	CANopen/ModBUS protocol switching	CANopen/ModBUS protocol switching	CANopen/ModBUS protocol switching
INPUT / OUTPUT DATA			
Number of Channels	24 inputs (with 16 Vdc self-powered common negative)	24 outputs	16 inputs, 8 outputs
Type	No. 24 digital inputs with EN 61131-2 polarity type 2, synq (pnp); No. 8 counters @ 32 bit, max freq. 10 kHz; Configuration increment, reset, preset; Overflow indication; Vmax=30V; min pulse duration 250µs; on/off delay <3ms; TPDO < 1ms	Nr.24 Mosfet outputs (open source with common negative); supply voltage 5..30 Vc; Imax = 0.5A (from terminals) / 25 mA (from connectors); on/of delay <1ms; RPDO < 1.25 ms	Nr.16 digital inputs with EN 61131-2 polarity type 2, synq (pnp); Nr.8 counters @ 32 bit, max freq. 10 kHz; Configuration increment, reset, preset; Overflow indication; Vmax=30V; min pulse duration 250µs; on/off delay < 3ms; TPDO < 1ms Nr.8 Mosfet outputs (open source with common negative); supply voltage 5..30 Vc; Imax=0.5A (from terminals) / 25 mA (from connectors); on/of delay < 1ms; RPDO <1.25 ms

I/O CANopen

CANopen Z-PC Line is a distributed I/O system actually based on IEC 61131 programming that does not require the use of couplers, controllers or repeaters for each communication line. All modules have a CAN communication interface with speeds of up to 1 Mbps and are therefore ideal for acquiring and controlling system signals on systems and machines where the distance between the signals plays a fundamental role.
The CANopen Z-PC Line modules can be integrated with third-party master/network configurators and controllers, even on existing machines and installations. The advantage of not needing an end-of-line coupler significantly reduces the cost factor for small to medium installations. The Z-PC CANopen line is a truly distributed I/O system based on IEC 61131 programming that does not require the use of couplers, controllers or repeaters for each communication line.

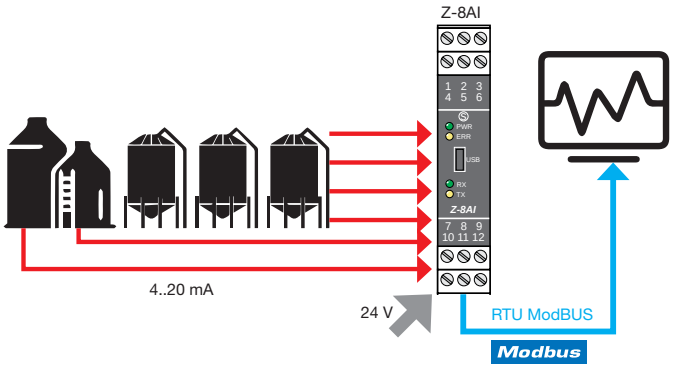
CANOPEN ANALOG I/O MODULES

CANopen	ZC-8AI	ZC-3AO	ZC-4RTD	ZC-8TC	ZC-SG
	 8-CH analog input CANopen (mA, V)	 3-CH analog outputs (mA, V) CANopen	 4-CH inputs from CANopen thermo resistance	 8-CH inputs from CANopen thermocouple	 1-CH input for CANopen load cell
GENERAL DATA					
Power supply	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac (strain gauge powered from the instrument)
Max power consumption	5 W	2.5 W	1 W	1 W	2 W
Isolation	1.5 kVac (6 ways)	1.5 kVac (5 ways)	1.5 kVac (6 ways)	1.5 kVac (6 ways)	1.5 kVac (3 ways)
Inputs Protection	Against ESD up to 4 kV	Against ESD up to 4 kV	Against ESD up to 4 kV	Against ESD up to 4 kV	Against ESD up to 4 kV
Transducers power supply	Yes, 16V/22mA, max 8 sensors	-	-	-	Yes, 5Vdc, max 8 sensors
Status indicators	Power supply Industrial Inputs Error	Power supply Industrial Outputs Error	Power supply Industrial Inputs Error	Power supply Industrial Inputs Error	Power supply Industrial Inputs Error
Protection degree	IP20	IP20	IP20	IP20	IP20
Operating temperature	-10..+65 °C	-10..+65 °C	-10..+65 °C	-10..+65 °C	-10..+65 °C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Weight	170 g	170 g	170 g	170 g	170 g
Case	Nylon 6 loaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 loaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 loaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 loaded 30% glass fibre, class V0 self-extinguishing	Nylon 6 loaded 30% glass fibre, class V0 self-extinguishing
Connections	Detachable 4-way screw terminals, 3.5 mm pitch IDC10 rear connector for DIN bar 3.5 mm stereo headphone jack for RS232 (COM)	Detachable 4-way screw terminals, 3.5 mm pitch IDC10 rear connector for DIN bar 3.5 mm stereo headphone jack for RS232 (COM)	Detachable 4-way screw terminals, 3.5 mm pitch IDC10 rear connector for DIN bar 3.5 mm stereo headphone jack for RS232 (COM)	Detachable 4-way screw terminals, 3.5 mm pitch IDC10 rear connector for DIN bar 3.5 mm stereo headphone jack for RS232 (COM)	Detachable 4-way screw terminals, 3.5 mm pitch IDC10 rear connector for DIN bar 3.5 mm stereo headphone jack for RS232 (COM)
Installation	For rail 35 mm DIN 46277	For rail 35 mm DIN 46277	For rail 35 mm DIN 46277	For rail 35 mm DIN 46277	For rail 35 mm DIN 46277
Programming	DIP switch, Z-NET4, EASY SETUP 2, EDS, Codesys (IEC 61131)	DIP switch, Z-NET4, EASY SETUP 2, EDS, Codesys (IEC 61131)	DIP switch, Z-NET4, EASY SETUP 2, EDS, Codesys (IEC 61131)	DIP switch, Z-NET4, EASY SETUP 2, EDS, Codesys (IEC 61131)	DIP switch, Z-NET4, EASY SETUP 2, EDS, Codesys (IEC 61131)
Certifications	EC	EC	EC	EC	EC
COMMUNICATION					
Interfaces	RS485, RS232	RS485, RS232	RS485, RS232	RS485, RS232	RS485, RS232
Speed	1Mbps (CANopen)	1Mbps (CANopen)	1Mbps (CANopen)	1Mbps (CANopen)	1Mbps (CANopen)
Protocols	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01); RTU ModBUS (via RS485)	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01); RTU ModBUS (via RS485)	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01); RTU ModBUS (via RS485)	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01); RTU ModBUS (via RS485)	CAN bus standard (2.0A, 2.0B); CANopen (profile CiA 401 v.2.01); RTU ModBUS (via RS485)
Communication time	< 28 ms	< 7 ms	< 28 ms	< 28 ms	< 7 ms
INPUT / OUTPUT DATA					
Number of Channels	8 outputs (torque isolators)	3 outputs	4 isolated RTD inputs, 2, 3, 4 wire measurement	8 inputs (thermocouple or mV measurement)	1 analog input, 1 digital input/1 digital output
Type	Voltage (0-10 V); current (0-20 mA)	Voltage (± 10 V); Current (0-20, 4-20 mA)	PT100 (EN 60751/A2-ITS90), -200..+650 °C PT500 (EN 60751/A2-ITS90), -200..+750 °C PT1000 (EN 60751/A2-ITS90), -200..+210 °C Ni100 (EN 60751/A2-ITS90), -60..+250 °C	Thermocouple: J,K,E,N,S,R,B,T; EN - 60584-1 (ITS-90) Span mV: -10.1 mV..+81.4 mV Input impudence: 10 MΩ	ANALOGICAL INPUT Differential measurement with 4 / 6 wires (±5 mV..±320 mV) Load cells (strain gauge) Power voltage 5 Vdc; impudence min 87 equivalent; sensitivity from ±1mV/V to ±64 mV/V DIGITAL INPUT Calibration tare and span (max 30 V) 1 opto-isolated digital output for stable or threshold weighing (max current 50 mA, max voltage 30 V)
Resolution	15 bit	14 bit	14 bit	15 bit	24 bit
Accuracy class	0.05%	0.01%	0.05%	0.1%	0.01%
Thermal drift	<100 ppm/°C	<100 ppm/°C	<50 ppm/°C	<100 ppm/°C	<25 ppm/°C

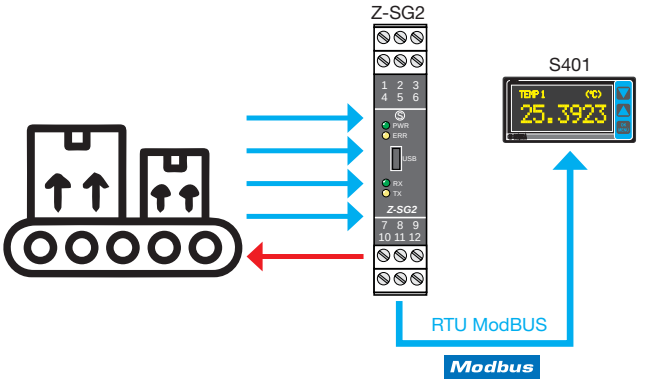
The technical data and the diagrams in this document are indicative and not binding.

I/O MODULES - APPLICATION DIAGRAMS

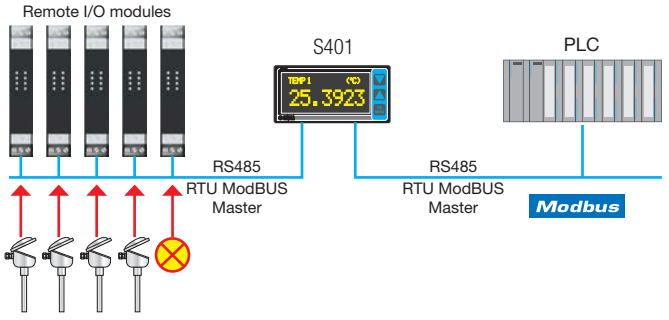
ACQUISITION OF PROCESS MEASUREMENTS AND RETRANSMISSION VIA RTU MODBUS



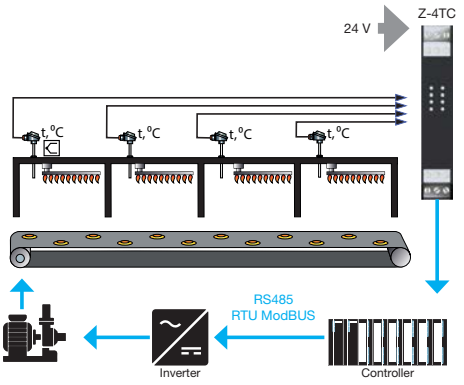
MODBUS ACQUISITION AND DISPLAY FOR WEIGHING SYSTEMS



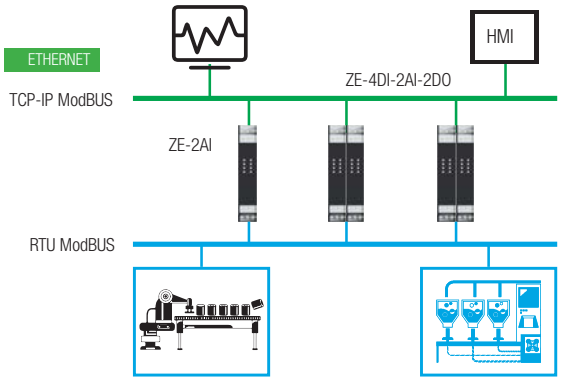
LOCAL CONTROL VIA PLC AND REMOTE I/O



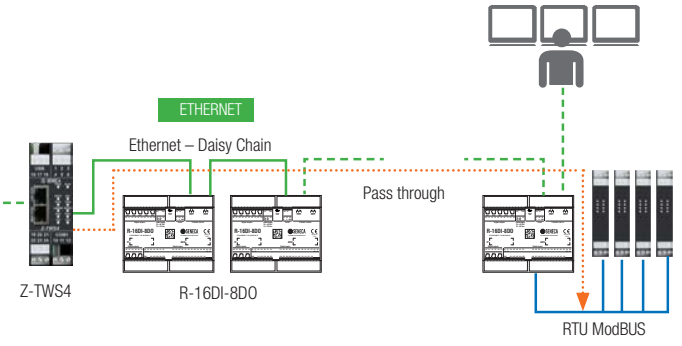
ACQUISITION AND TRANSMISSION OF TEMPERATURES TO A CLOSED CHAIN CONTROL SYSTEM



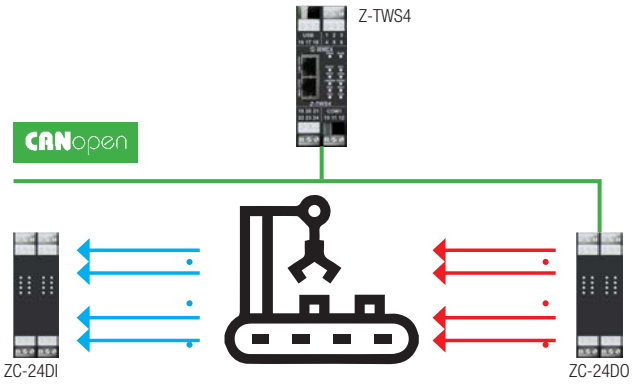
DATA ACQUISITION ON ETHERNET



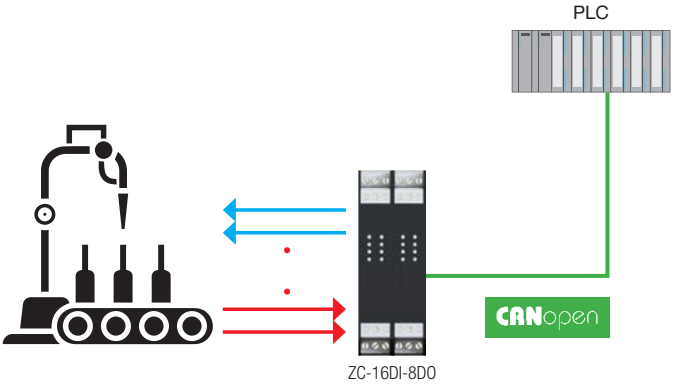
ETHERNET DAISY CHAIN AND MODBUS PASS-THROUGH CONNECTION



PROGRAMMABLE MANIPULATION SYSTEM



AUTOMATIC BOTTLING SYSTEM



I/O MODULES
R LINE
(ModBUS, Ethernet, IO Profinet)

1

1.2

R LINE

The R Line I/O modules are tools designed for flexible wiring requirements, reduced installation spaces, high I/O density applications with integrated ModBUS/Ethernet/Profinet IO communication. The configuration can be performed through dedicated software, web server with HTML5 support and DIP-switch.

The Profinet IO versions provide for configuration using CODESYS softPLC software and Siemens TiA Portal / Simatic / Step7 design environment. Able to power external sensors and equipped with isolation between inputs, outputs and other low voltage circuits equal to 1,500 Vac, the R Line modules can be connected in daisy chain mode with fault-bypass to ensure the Ethernet connection even in the case of failure of a module in the chain.

GENERAL

HIGHLIGHTS

- FLEXIBLE AND SPACE-SAVING APPLICATIONS
- HIGH I/O DENSITY
- INTEGRATED NETWORKING
- DAISY CHAIN
- FAULT-BYPASS
- INDUSTRIAL STRENGTH

MODBUS / ETHERNET MODULES

- DOUBLE PROTOCOL
- CONFIGURATION VIA WEB SERVER
- HW INTEGRATION
- RETENTIVE COUNTERS 6 KHZ, 32 BIT
- FAULT-BYPASS MIRRORING-P2P
- MODBUS PASS-THROUGH

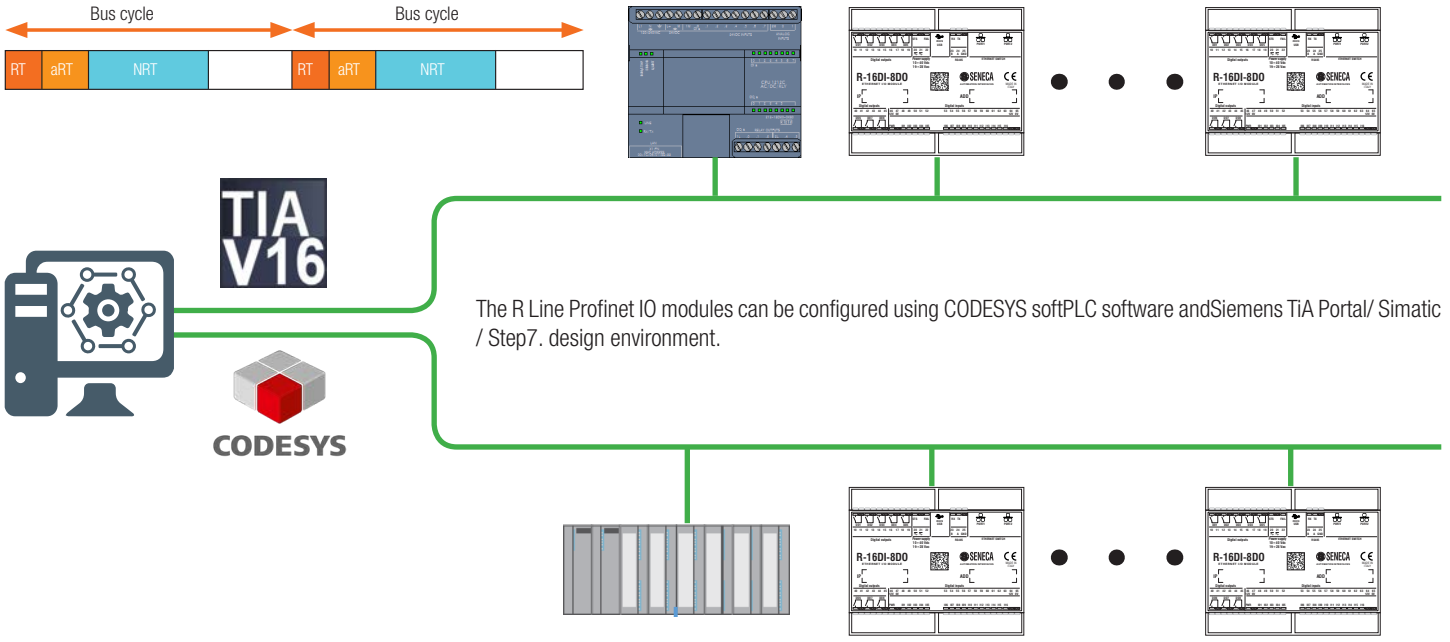
IO PROFINET MODULES

- IO PROFINET REAL-TIME CLASS1
- CONFIGURATION VIA TIA PORTAL
- CONFIGURATION VIA CODESYS
- REDUCED SCAN TIME
- MACHINE AUTOMATION
- DECENTRED PERIPHERY

IO PROFINET MODULES

RT Class 1

The R Line modules support Profinet IO Class 1 (RT), variant in which the various devices are not synchronised and each operate swith its own cycle time. At the beginning, the transmission of cyclical RT data takes place, followed by acyclical RT data, such as alarms. At the end, a portion of bandwidth is reserved for non-real-time communication that can coexist on the same physical network (for example based on TCP/IP). In class 1 the aim is to achieve isochrony in software mode, relying on Ethernet priorities, with Profinet packets defined as priority 6 and managed by standard switches.

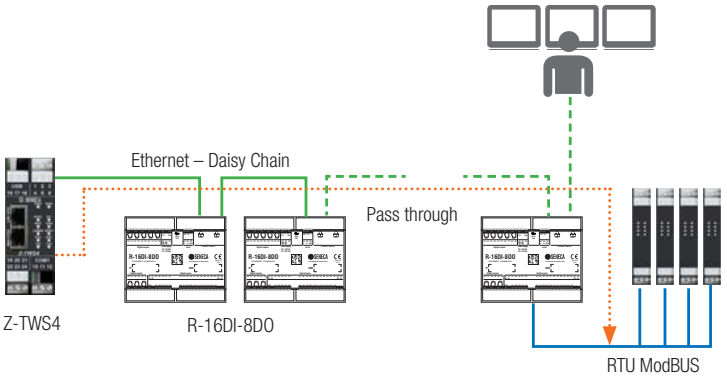


The R Line Profinet IO modules can be configured using CODESYS softPLC software andSiemens TiA Portal/ Simatic / Step7. design environment.

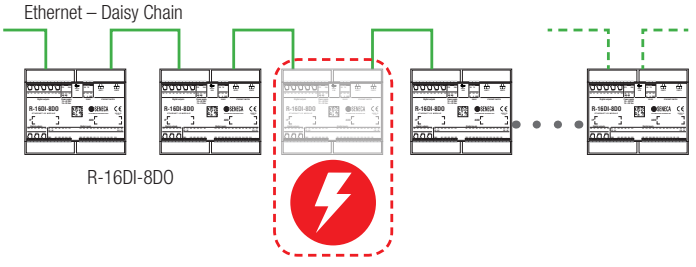
EXAMPLES OF CONNECTION AND ARCHITECTURE

MODBUS / ETHERNET MODULES

ETHERNET DAISY CHAIN, MODBUS PASS-THROUGH



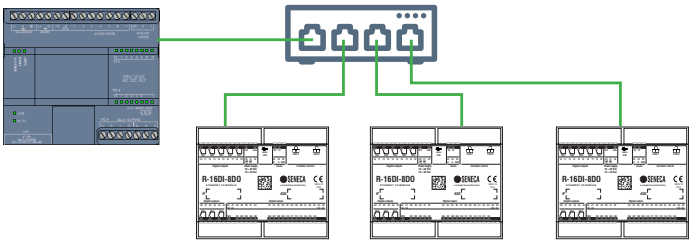
FAULT BY-PASS



Ethernet connection and data transmission active even in the event of failure or power failure of a module in the chain.
In this way the availability and continuity of the service are guaranteed.

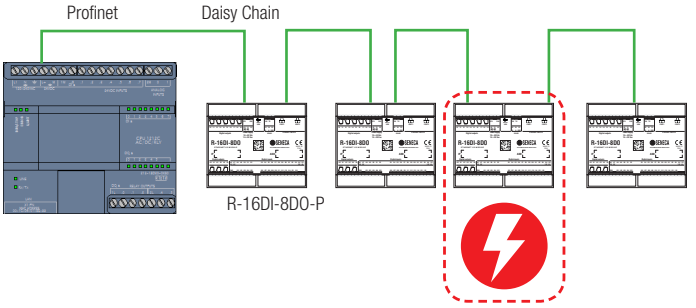
IO PROFINET MODULES

EXAMPLE OF STAR ARCHITECTURE (WITH SWITCH)



By connecting the communication nodes to a switch with multiple PROFINET ports, a network topology with a star structure is automatically created, thanks to which the entire network continues to function if a single device fails.

EXAMPLE OF DAISY CHAIN ARCHITECTURE WITH LAN FAULT BY-PASS



Ethernet connection and data transmission active even in the event of failure or power failure of a module in the chain.
In this way the availability and continuity of the service are guaranteed.

DIGITAL I/O MODULES

	R-16DI-8DO	R-16DI-8DO-P	R-32DIDO	R-32DIDO-P
	Modbus ETHERNET 	PROFINET 	Modbus ETHERNET COMING SOON 	PROFINET 
	16-CH digital inputs / 8 digital relay outputs Modbus TCP-IP / Modbus RTU	16-CH digital inputs / 8 digital relay outputs Profinet IO	32-CH digital inputs / outputs Modbus TCP-IP / Modbus RTU	32-CH digital inputs / outputs Modbus Profinet IO
GENERAL DATA				
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Auxiliary voltage output	12 Vdc / 40 mA	12 Vdc / 40 mA	-	-
Max consumption	3 W	3 W	3 W	3 W
Max isolation	1.5 kVac (3 points)	1.5 kVac (3 points)	1.5 kVac (3 points)	1.5 kVac (3 points)
Status indicators	Power supply Inputs / Outputs Status STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply Inputs / Outputs Status STS (IP / DHCP address) IO Profinet Communication	Power supply Inputs / Outputs Status STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply Inputs / Outputs Status STS (IP / DHCP address) IO Profinet Communication
Protection degree	IP20	IP20	IP20	IP20
Operating temperature	-25..+65°C	-25..+65°C	-25..+65°C	-25..+65°C
Dimension (lxhxd)	106 x 90 x 32 mm	106 x 90 x 32 mm	106 x 90 x 32 mm	106 x 90 x 32 mm
Weight	170 g	170 g	170 g	170 g
Case	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black
Connections	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector
Installation	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted
Programming	EASY SETUP 2 configurator Integrated Web Server	CoDeSys TIA Portal	EASY SETUP 2 configurator Integrated Web Server	CoDeSys TIA Portal
Special functions	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure)	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure)
Data Memory	Memory (FeRAM) for counters backup	-	Memory (FeRAM) for counters backup	-
COMMUNICATION				
Interfaces	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	-	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	-
Protocols	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet
Cable for Ethernet communication between devices	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded
ModBUS communication	Up to 128 nodes without repeater and max speed 115 kbps	-	Up to 128 nodes without repeater and max speed 115 kbps	-
INPUT DATA				
Number of Channels	16 Digital	16 Digital	-	-
Type and Range	PNP with internal / external power supply, NPN with internal power supply; Off / On threshold: <8V; >9V	PNP with internal / external power supply, NPN with internal power supply; Off / On threshold: <8V; >9V	-	-
Max. frequency	5 kHz, 32-bit retentive counters	-	50 Hz, 32-bit retentive counters	-
Current consumption	2.25 mA	2.25 mA	-	-
Conformity	IEC 6113-2 Type 1 & 3	IEC 6113-2 Type 1 & 3	-	-
OUTPUT DATA				
Number of Channels	8 Digital, isolated from each other	8 Digital, isolated from each other, individually configurable	-	-
Type	SPST dry contact relay	SPST dry contact relay	-	-
Voltage / Current mx	30 V ac-dc / 1 A	30 V ac-dc / 1 A	-	-
Response time	20 ms (P2P)	20 ms (P2P)	-	-
Duration of contacts	$5*10^6$ mech. op. / 105 op. with load	$5*10^6$ mech. op. / 105 op. with load	-	-
INPUT / OUTPUT DATA				
Number of Channels	-	-	32 digital inputs/outputs	32 digital inputs/outputs
Type and Range	-	-	ON/OFF Inputs: > 9 V; < 4 V; Vmax: 24 V MOSFET, PNP outputs; max voltage / current: 0.2 A / 24 V	ON/OFF Inputs: > 9 V; < 4 V; Vmax: 24 V MOSFET, PNP outputs; max voltage / current: 0.2 A / 24 V
STANDARD				
Certifications	EC	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

ANALOG MODULES

	R-8RTD-8DIDO	R-8RTD-8DIDO-P	R-SG	R-SG-P
	Modbus ETHERNET COMING SOON 	PROFINET COMING SOON 	Modbus ETHERNET COMING SOON 	PROFINET COMING SOON 
	8-CH thermoresistance inputs + 8 digital inputs/outputs Modbus TCP-IP/ Modbus RTU	8-CH input thermoresistance + 8 digital inputs/outputs IO Profinet	Strain gauge converter module Modbus TCP-IP / Modbus RTU	Strain gauge converter module IO Profinet
GENERAL DATA				
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Max consumption	3 W	3 W	TBD	TBD
Max isolation	1.5 kVac (3 points)	1.5 kVac (3 points)	-	-
Status indicators	Power supply STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply STS (IP / DHCP address) IO Profinet Communication	Power supply Inputs / Outputs Status STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply Inputs / Outputs Status STS (IP / DHCP address) IO Profinet Communication
Protection degree	IP20	IP20	IP20	IP20
Operating temperature	-25..+65°C	-25..+65°C	-25..+65°C	-25..+65°C
Dimension (lxhxd)	106 x 90 x 32 mm	106 x 90 x 32 mm	110 x 52 x 32 mm	110 x 52 x 32 mm
Weight	170 g	170 g	80 g	80 g
Case	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black
Connections	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector
Installation	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted
Programming	EASY SETUP 2 configurator Integrated Web Server	CoDeSys TIA Portal	EASY SETUP2 configurator Integrated Web Server	CoDeSys TIA Portal
Special functions	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure)	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool Tare or weight threshold calibration	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Tare or weight threshold calibration
Data Memory	Memory (FeRAM) for counters backup	-	Memory (FeRAM) for counters backup	-
COMMUNICATION				
Interfaces	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	-	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	IO Profinet
Protocols	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet
Cable for Ethernet communication between devices	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded
ModBUS communication	Up to 128 nodes without repeater and max speed 115 kbps	-	Up to 128 nodes without repeater and max speed 115 kbps	-
INPUT DATA				
Number of Channels	8 Analog	8 Analog	1 Analog	1 Analog
Type and Range	RTD (Pt100, Pt500, P1000, Ni100)	RTD (Pt100, Pt500, P1000, Ni100)	Reading and powering up to 4 (350 Ω) or 8 (1,000 Ω) strain gauge load cells, 4 or 6 wire connection, 87 Ω equivalent impedance, sensitivity from to 64 mV / V	Reading and powering up to 4 (350 Ω) or 8 (1,000 Ω) strain gauge load cells, 4 or 6 wire connection, 87 Ω equivalent impedance, sensitivity from to 64 mV / V
Resolution	24 bit ADC	24 bit ADC	24 bit ADC	24 bit ADC
Accuracy	-	-	0.01%	0.01%
Thermal drift	-	-	25 ppm/K	25 ppm/K
INPUT / OUTPUT DATA				
Number of Channels	8 digital inputs/outputs, individually configurable	8 digital inputs/outputs, individually configurable	2 digital inputs/outputs	2 digital inputs/outputs
Type and Range	Inputs: voltage: Threshold ON: > 9 V; Threshold OFF: < 4 V; Vmax: 24 V Outputs MOSFET, PNP; max voltage / current: 0.2 A / 24 V	Inputs: voltage: Threshold ON: > 9 V; Threshold OFF: < 4 V; Vmax: 24 V; Outputs MOSFET, PNP; max voltage / current: 0.2 A / 24 V	Tare or weight threshold calibration	Tare or weight threshold calibration
STANDARD				
Certifications	EC	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

MIXED MODULES

	R-8AI-8DID0	R-8AI-8DID0-P
	Modbus ETHERNET COMING SOON 	PROFINET COMING SOON 
	8-CH analog inputs, 8 digital inputs/outputs Modbus TCP-IP / Modbus RTU	8-CH analog inputs / 8 digital inputs / outputs Profinet IO
GENERAL DATA		
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Auxiliary voltage output	12 Vdc / 40 mA	12 Vdc / 40 mA
Max consumption	3 W	3 W
Max isolation	1.5 kVac	1.5 kVac
Status indicators	Power supply Inputs / Outputs Status STS (IP / DHCP address) RX / TX (Data reception / transmission on RS485) Ethernet TRF / LNK (Packet transit / Ethernet connection)	Power supply Inputs / Outputs Status STS (IP / DHCP address) IO Profinet Communication
Protection degree	IP20	IP20
Operating temperature	-25..+65°C	-25..+65°C
Dimension (lxhxd)	106 x 90 x 32 mm	106 x 90 x 32 mm
Weight	170 g	170 g
Case	Self-extinguishing PC / ABS material UL94-V0, black	Self-extinguishing PC / ABS material UL94-V0, black
Connections	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector	3.5 mm pitch terminals, Micro USB connector and double RJ45 connector
Installation	On DIN EN 60715 rail, wall / panel mounted	On DIN EN 60715 rail, wall / panel mounted
Programming	EASY SETUP 2 configurator Web Server built-in, DIP-switch	CoDeSys TIA Portal, DIP-switch
Special functions	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure) Max 32 Peer to Peer Rules (I/O Mirror) - Without the need for Master Counters with frequency, TON, TOFF, Period measurement Modbus Passthrough (TCP-IP to RS485) Identification and configuration of IP, MAC, Firmware via SDD tool	Double Ethernet Daisy Chain connection LAN fault bypass (active connection between the two Ethernet ports of the device in case of power failure)
Data Memory	Memory (FeRAM) for counters backup	-
COMMUNICATION		
Interfaces	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45 No.1 RS485 port on M23-M24-M25 terminals No.1 Micro USB (programming)	No.2 Ethernet ports (with LAN fault-bypass function) 100 baseT on RJ45
Speed	Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)	-
Protocols	ModBUS RTU, TCP-IP ModBUS, http	IO Profinet
Cable for Ethernet communication between devices	CAT5 or CAT5e unshielded	CAT5 or CAT5e unshielded
ModBUS communication	Up to 128 nodes without repeater and max speed 115 kbps	-
INPUT DATA		
Number of Channels	8 Analog	8 Analog
Type and Range	Voltage: -30 V ÷ -30 V; -120m V ÷ +120 mV Current: -24 mA ÷ +24 mA Thermocouple: J, K, T, E, N, R, S, B, L Heat resistance: Pt100: -200°C ÷ 200°C (1 channel only for cold coupling comp.)	Voltage: -30 V ÷ -30 V; -120m V ÷ +120 mV Current: -24 mA ÷ +24 mA Thermocouple: J, K, T, E, N, R, S, B, L Heat resistance: Pt100: -200°C ÷ 200°C (1 channel only for cold coupling comp.)
Max. frequency	50 Hz, 32-bit retentive counters	-
Resolution	24 bit ADC	24 bit ADC
INPUT / OUTPUT DATA		
Number of Channels	8 digital inputs/outputs, individually configurable	8 digital inputs/outputs, individually configurable
Type and Range	Inputs: voltage: Threshold ON: > 9 V; Threshold OFF: < 4 V; Vmax: 24 V; Impedance: 9 kΩ MOSFET, PNP outputs; max voltage / current: 0.2 A / 24 V	Inputs: voltage: Threshold ON: > 9 V; Threshold OFF: < 4 V; Vmax: 24 V; Impedance: 9 kΩ MOSFET, PNP outputs; max voltage / current: 0.2 A / 24 V
STANDARD		
Certifications	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

MULTIFUNCTION CONTROLLERS IEC 61131-3

1

1.3

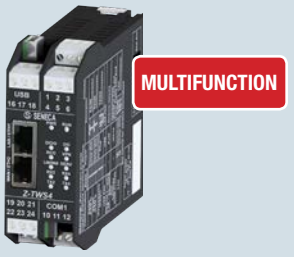
THE RANGE

The SENECA multifunction controllers (Z-TWS11, Z-TWS4, Z-PASS2-S, S6001-RTU) are modern modular / all-in-one devices with high connectivity. They combine PLC tasks based on the Straton IEC 61131-3 softLPLC platform with web server functionality, datalogger , remote control, remote assistance and energy management (in compliance with the IEC 60870-101/104, IEC 61850 protocols). The controllers can be used with different architectures and configurations depending on the complexity of the system and on the required hardware requirements.

Z-TWS11

Modular automation solution capable of managing 100 tags for universal applications.
With its high connectivity thanks to the FTP client, SMTP client, http, TCP ModBUS, ModBUS RTU protocols, the controller also has 2 analog inputs at 16 bit configurable in voltage or current and can create automation systems that can be expanded with ModBUS / Ethernet I/O modules of the Z-PC Lines.

Z-TWS4



Z-TWS4 is an advanced control system with 4 built-in I/O, 1 CAN port, 4 serial ports, 2 USB ports, double Ethernet port. Designed for system automations (Straton - Soft PLC IEC 61131-3) and Energy Management applications (thanks to the IEC 60870-5- 101, IEC 60870-5-104, IEC 61850 protocols), Z-TWS4 is also a Linux CPU -based designed for data acquisition and control applications.

Z-PASS2-S

Z-PASS2-S is a high performance controller with 6 integrated digital I/O able to combine PLC functions with routing and remote access functions.
It is in fact based on Straton soft-PLC with integrated web server, VPN and 4G LTE modem / router with GPS / Glonass functions.
Z-PASS2-S can support Point-To-Point Remote Assistance or Single LAN Remote Control connections.

S6001-RTU

S6001-RTU is a compact all-in-one unit with 31 I/O channels and 1 4G LTE modem on board. Thanks to the extended connectivity (4G / LTE, Ethernet, ModBUS RTU / TCP, Serial) it can be expanded and interfaced with other systems and allows communications to and from central units and remote monitoring of the systems. S6001-RTU can also be used as a stand-alone system controller.

MULTIFUNCTIONALITY

- Multipurpose Controllers (SoftPLC, remote controllers, gateway, datalogger)
- Soft PLC IEC 61131-3
- Technological function libraries ready to use
- Universal application areas
- Datalogger Functionality
- Advanced Alarm System
- Industrial strength
- SCADA opening and DAQ systems
- Advanced technical support

CONNECTIVITY

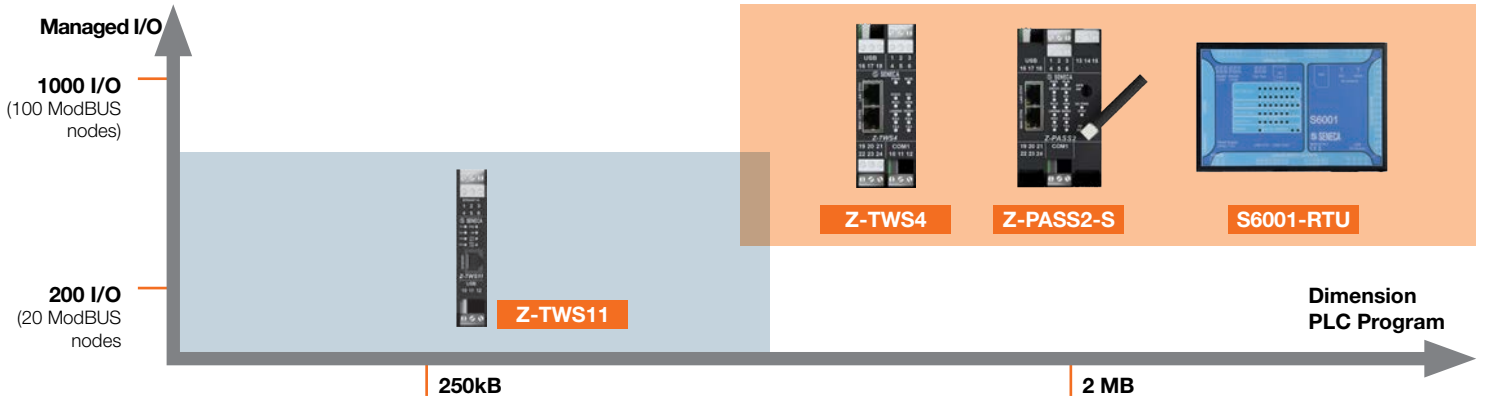
- Fieldbus (ModBUS RTU/CTP-IP, M-BUS, S7 Protocol)
- IEC 61850 IEC 60870-5-101/104 Energy Protocols
- IT Protocols (HTTP/HTTPS, FTP/FTPS, SMTP, SNMP)
- Data interchange with standard OPC UA/DA
- IIoT Protocols (MQTT, http post)
- Cloud platforms support

INTEGRATION

- Integration with HMI
- Integration with communication interfaces
- Integration with radio modules
- Integration with IO modules (on board and outdoors up to 1,000 points)
- Integration with energy meter
- Integration with electro-pneumatic of third parties

SELECTION GUIDE

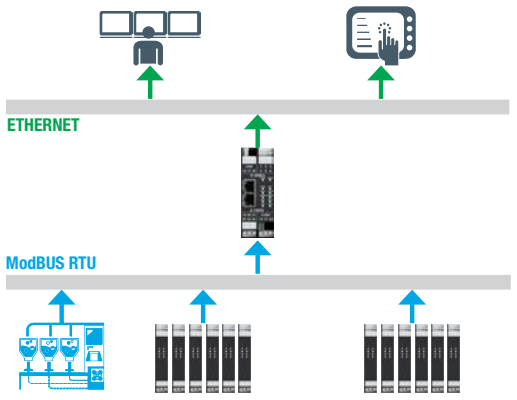
	Z-TWS11	Z-TWS4	2-S	S6001-RTU
SoftPLC	X	X	X	X
Energy Controller		X	X	X
Datalogger	X	X	X	X
Gateway	X	X	X	X
LAN Router	-	X	X	X
4G/LTE/GPS Router	-	-	X	X
Remote assistance unit		X (with external modem/router)	X	X
Remote control unit		X (with external modem/router)	X	X
LAN/WAN Switch			X	X



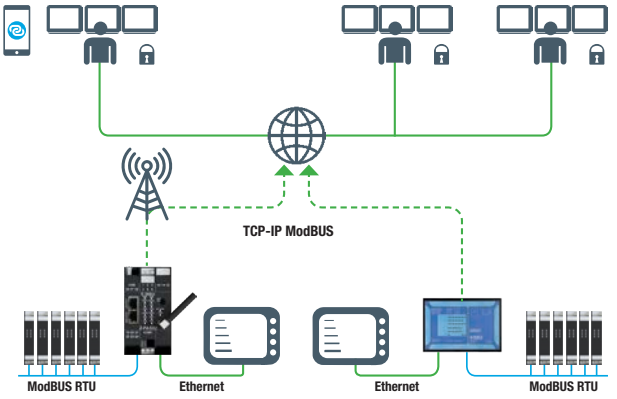
	Z-TWS11	Z-TWS4	Z-PASS2-S	S6001-RTU
HARDWARE / INTERFACES				
Fast Ethernet Ports	1	2	2	1
Serial Ports	2	3	3	3
USB Ports	1	1	1	1
Built-in I/O	2 AI	1 DI, 2 DO, 1 DI/DO	2 DI, 2 DO, 1 DI/DO	15+2DI, 4AI, 8DO, 3AO
Modem Router	-	-	4G/LTE	4G/LTE
PROGRAMMING AND SOFTWARE				
Configuration Environment	Z-NET4	Z-NET4	Z-NET4	Z-NET4
PLC Programming	IEC 61131-3, Straton	IEC 61131-3, Straton	IEC 61131-3, Straton	IEC 61131-3, Straton
Remote Control Libraries	-	Yes	Yes	Yes
Max N° Variables / Tags	200	1000	1000	1000
Program dimension	250kB	2048kB	2048kB	2048kB
Diagnostics	-	Web Server	Web Server	Web Server
Data Recording and Display	Data Recorder, Trend Viewer, Web Factory	Data Recorder, Trend Viewer, Web Factory	Data Recorder, Trend Viewer, Web Factory	Data Recorder, Trend Viewer, Web Factory
CONNECTIVITY				
IT Protocols	HTTP, FTP, SMTP, SNMP, SAMBA	FTP / SFTP Server HTTP / HTTPS Server SMTP / SMTPS Client / SNMP / SAMBA	FTP / SFTP Server HTTP / HTTPS Server SMTP / SMTPS Client / SNMP / SAMBA	FTP / SFTP Server HTTP / HTTPS Server SMTP / SMTPS Client / SNMP / SAMBA
Safety Protocols	-	Open VPN, SSL/TLS	Open VPN, SSL/TLS	Open VPN, SSL/TLS
Fieldbus	ModBUS RTU, TCP-IP ModBUS	ModBUS RTU, TCP-IP ModBUS, S7 Protocol, M-BUS (with Z-MBUS accessory)	ModBUS RTU, TCP-IP ModBUS, S7 Protocol, M-BUS (with Z-MBUS accessory)	ModBUS RTU, TCP-IP ModBUS, S7 Protocol
IoT Protocols	-	OPC UA/DA Client / Server, MQTT	OPC UA/DA Client / Server, MQTT	OPC UA/DA Client / Server, MQTT
Energy Protocols	-	IEC 60870-101 Slave IEC 60870-104 Master / Slave IEC 61850 Client / Server	IEC 60870-101 Slave IEC 60870-104 Master / Slave IEC 61850 Client / Server	IEC 60870-101 Slave IEC 60870-104 Master / Slave IEC 61850 Client / Server
Cloud Support	-	Yes	Yes	Yes
VPN support	-	Yes	Yes	Yes

APPLICATION DIAGRAMS

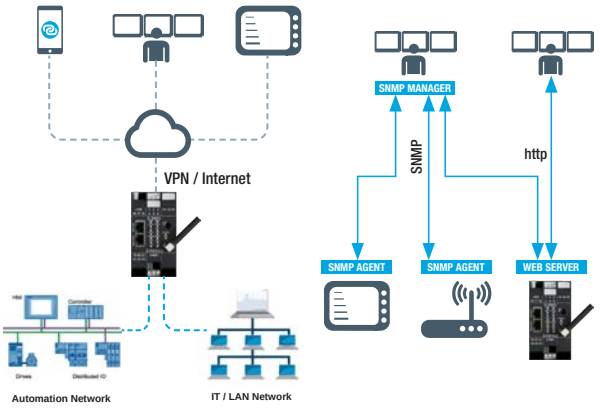
DISTRIBUTED AUTOMATION



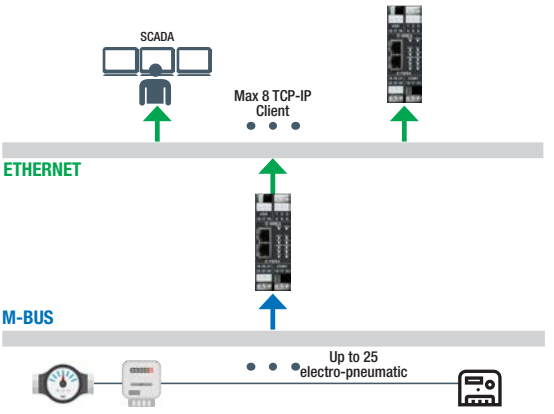
REMOTE CONTROL / REMOTE ASSISTANCE



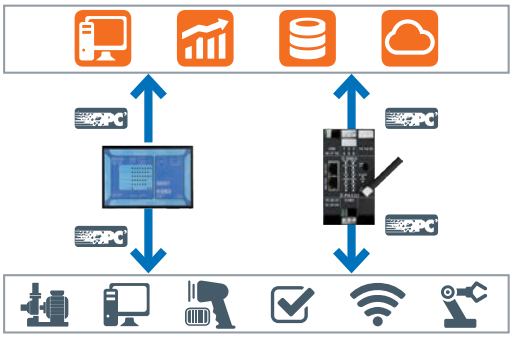
NETWORKING



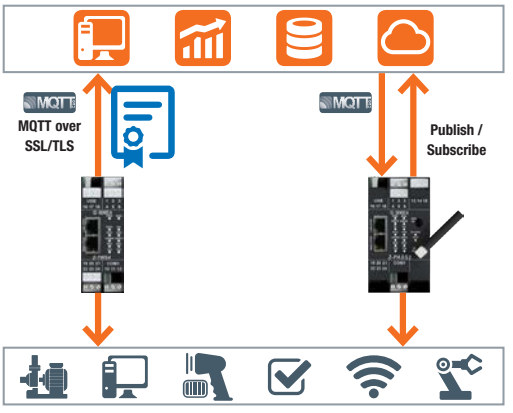
SMART METERING



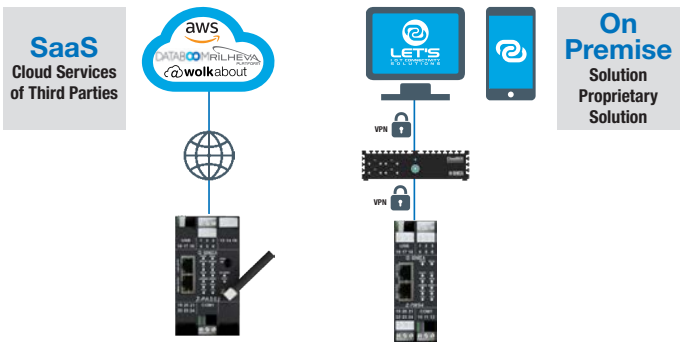
CONTROL WITH OPC UA/DA



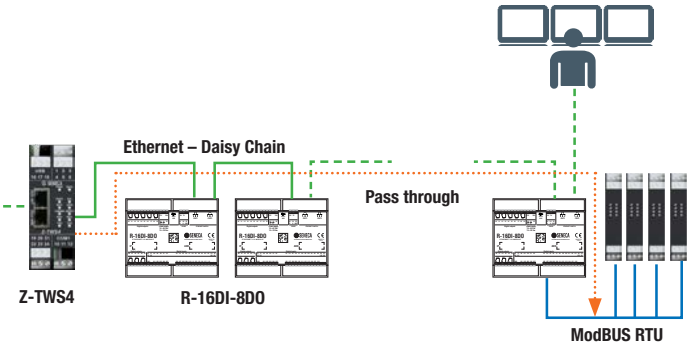
CONTROL WITH MQTT



CLOUD INTEGRATION



PASS THROUGH MODBUS



PROCESS CONTROL

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1.4

Control and calculation unit for process automation

In many process automation applications, precise measurement, control and safety requirements must be met. Added to this are rapid changes in demand, market fluctuations, technological innovations and requests for greater production flexibility. Modern automation systems must therefore be supported by dedicated regulation units capable of shortening the design, construction and commissioning times of systems.
SENECA offers modular solutions that can be integrated into:

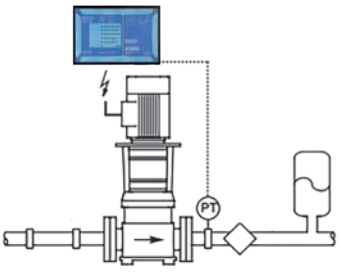
- **New systems**
- **Old systems**
- **System extensions**
- **Optimisation**
- **Revamping**

S6001 PUMP CONTROLLER

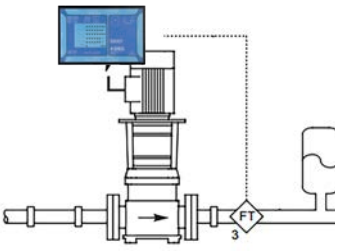
RTU WITH BUILT-IN I/O, 4G / LTE MODEM AND CONTROL OF PUMPS / PRESSURE BOOSTER SETS, HMI 7''

S6001 Pump Controller is a controller for pumping systems and pressurisation units capable of managing from 2 to 6 pumps (with possible ZD-IO expansion I/O modules), with constant flow, level and pressure regulation and user exchange via inverter. The S6001 Pump Controller is used to receive commands via SMS (on/off, auto/man) from pumping stations and to calculate the estimated flow rate based on the characteristic curve of the motorised users. It is also used to send information on the operating and alarm status following SMS commands. The basic configuration and management of alarms, trends and historical data takes place easily via the 7" ergonomic and intuitive HMI touchscreen interface.

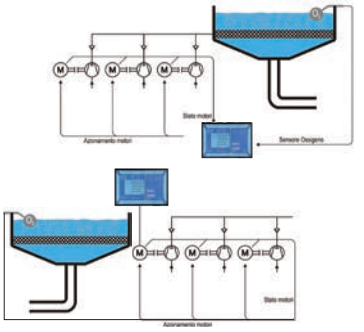
REGULATION MODE



Pump regulation configuration based on pressure measurement



Pump regulation configuration based on flow measurement



Pump regulation configuration based on level measurement

Z-FLOW COMPUTER

UNIT FOR CALCULATING AND COMPENSATING THE FLOW RATE OF VAPOURS, LIQUIDS AND GASES

Z-FLOWCOMPUTER is an ideal calculator to calculate and compensate for the flow rate of vapours, liquids and gases. In particular, it performs mass and energy calculations for water/steam and flow compensation and volume correction for gases. The system is equipped with 1 PNP digital input, 2 voltage/current analog inputs, 1 universal analog input, 2 relay digital outputs, 1 voltage/current analog output, 1 slot for micro SD card up to 32 GB. Z-FLOWCOMPUTER is supplied with a 4.3" touchscreen HMI with which it communicates via the Ethernet port. The versatility of this flow computer, guaranteed by the various signal inputs, allows it to be used in applications as a flow compensator or in the calculation for energy efficiency for the issue of white certificates. For water and steam the calculation standard used is the IAPWS IF-97. For gases, the calculation standards used are AGA8 and SGERG 88, which can be selected through configuration.

CALCULATION STANDARD

STEAM/WATER

Compressibility is calculated using the IAPWS IF-97 international standard

REAL GASES

Compressibility is calculated using the Redlich-Kwong (RK) or Redlich-Kwong-Soave (RKS) equations on the most common gases in the industrial field and of which all properties and information are known.

IDEAL GASES

It corrects for changes in temperature and pressure where compressibility calculation is not required.

NATURAL GASES

The compressibility of natural gases is calculated using international standards: AGA8-92DC (ISO 12213-2); SGERG88 (ISO 12213-3); AGA8 GROSS METHOD 1 e METHOD 2.

S6001 PUMP CONTROLLER

PUMP CONTROLLER WITH BUILT-IN I/O, 3G+/4G LTE MODEM, HMI 7'7"

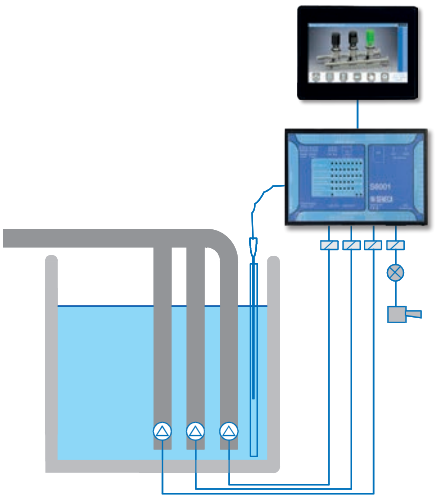
GENERAL DATA	
Power supply	24 Vac /dc
Consumption	10 VA max, 6 VA (typical)
Removable terminal section	0.2..2.5 mm2 (AWG 24-12)
Isolation	1,500 Vac
LED status indicators	Power supply Serial Communication Ethernet Communication GSM-UMTS signal level Digital I/O Status
Protection degree	IP20
Operational Temperature	-10..+65°C
Dimension	190x105x60 mm
Weight	1250 g
Case	Painted aluminium
Connections	Removable terminals, max conductor size 2.5 mm^2
Installation	DIN Rail 35 mm (IEC EN 60715)
COMMUNICATION	
Ethernet	Nr 1 port 10/100 Ethernet 10/100Tx (RJ45)
RS485	No.2 Port RS485 from 110 bps to 115 kbps
RS232	No.1 RS232 D9M port
USB	Nr 1. USB host port A max current 300 mA
Modem / Router	3G modem (model S6001-PC) GSM/GPRS/EDGE Quad-band: GSM 850 GSM 900 DCS 1800, PCS 1900 UMTS/HSPA+ Dual-Band: WCDMA 2100/900 2100/850, 1900/850 Modem 4G LTE (model S6001-PC-4GWW) LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/ B19/B20/B25/ B26/B28 - LTE-TDD: B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B6/B8/B19 - GSM: B2/B3/B5/B GPS / GLONASS / BeiDou(compass) / Galileo / QZSS
SIM cards supported	Mini SIM with push slot
Protocols supported	RTU/TCP ModBUS (Slave), https, ftp, sftp, smtp, ppp, snmp, Open VPN
LET'S Remote Access	Yes
INPUT DATA	
Channels	No. 15 optoisolated PNP digital inputs (max voltage 24 Vdc) No.2 digital inputs for conductive fluid level control, adjustable sensitivity No.4 analog inputs 0..20 mA @ 12bit, accuracy ±0.3% f.s., impedance 50 Ohm
OUTPUT DATA	
Channels	No. 8 SPDT relay outputs 5A - 250 Vac Nr 1 Analog Output 0..10 V, @ 12bit, accuracy ±0.3% f.s., min impedance 1kOhm Nr 1 Analog Output 0..20 mA, @ 12bit, accuracy ±0.3% f.s., max impedance 500 Ohm No.1 12V/50mA output for alarms
PROCESSOR / MEMORY	
CPU	ARM 32 bit
Flash Memory (data)	1 GB
RAM / FeRAM	64 MB / 8 kB
SD Micro Slot	Yes for SD card up to 32 GB
CONFIGURATION	
PLC programming	-
System configuration	HMI app: pressure / flow / level adjustment (floats and/or probe) from 2 to 6 pumps
Web server	Yes
Datalogger	Yes
STANDARD	
Certifications	EC
HMI	
Display	TFT Colour/LED 7", resistive touchscreen, 800x400
Memories	30 MB Flash / 512 MB DDR
Communication	No.1 RS232, No.1 Ethernet 10/100 Mbps, No.1 USB host 2.0
Hardware clock	Battery-backed clock / calendar (<100 ppm)
Rated Voltage / Current	18-32 Vdc / 0,3 A
Settings	Management of pumps, alarms, reports, trends, setpoints

The technical data and the diagrams in this document are indicative and not binding.

HMI TECHNICAL DATA

DISPLAY	
Display	TFT Colour/LED
Screen technology	Resistive
Colours	6k
Resolution	800x480
Diagonal	7"
Dimming	Yes
LED backlight duration	20,000 hours or more
Front plate	10 years with an air temperature of 25°C
UV resistance	Indoor applications, after 300 accelerated ageing tests for humidity some yellowing and brittleness may appear
GENERAL DATA	
User memory	30 MB Flash
RAM	512 MB DDR
Serial Port	RS232
Ethernet Port	10/100 Mbps
USB port	V2.0 host interface max 500 mA
Hardware clock	Battery-backed clock / calendar
Time zone	Automatic
Clock accuracy	<100 ppm
Voltage	18-32 Vdc
Nominal current	0.3 A

APPLICATION EXAMPLE



ORDER CODE

Code	Description
S6001-PC	Pump controller with built-in I/O, 4G LTE modem, 7" HMI
S6001-PC-4GWW	Pump controller with built-in I/O, 4G LTE modem, 7" HMI
ACCESSORIES	
EC-RJ45-RJ45-C	Crossed Ethernet cable (RJ45 / RJ45) 1.5 MT
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45) 1.5
A-GSM	External antenna GSM dual band swing cable 3.2 m
A-GSM-DIR-5M	Compact directional antenna GSM-DECT-UMTS SMA-M, 5 m cable
A-GSM-OMNIDIR	Omnidirectional GSM-UMTS-WIFI antenna, 5.1 dB, SMA-M. 5 m cable
A-GSM-OMNIDIR-10	Omnidirectional GSM-UMTS-WIFI antenna, 5.1 dB, SMA-M. cable 10 m
A-GSM-QUAD-N	GSM SMA-M quadband external antenna, cable 4 m
MSD	Micro SD memory card with adapter
Z-D-IO	Control module 6 digital inputs, 2 digital outputs/ ModBUS RTU RS485

Z-FLOWCOMPUTER

FLOW COMPUTER MULTIFUNCTION

TECHNICAL DATA

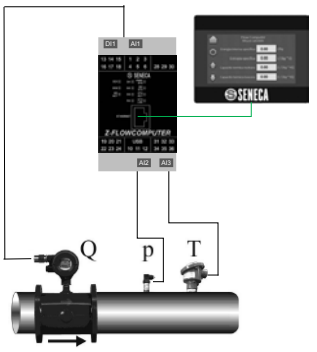
GENERAL DATA	
Power supply	11..40 Vdc; 19..28 Vac
Consumption	Max 4 W
Isolation	1,500 Vac
Status indicators	Power supply Serial communication Link and Ethernet transmission SD Card Digital I/O Status
Calculation standard	IAPWS IF-97 AGA8 GROSS METHOD 2 AGA8-92DC (ISO 12213-2), SGERG88 (ISO 12213-3) Redlich-Kwong (RK) Formula Redlich-Kwong-Soave (RKS) Formula Law of ideal gases
Protection degree	IP20
Operational Temperature	-10..+55°C
Dimension	52.5 x 100 x 112 mm
Case	Nylon 6 preloaded 30% fibre glass, self-extinguishing class V0
Connections	Detachable 3-way terminals, 5 mm pitch
Installation	DIN Rail 35 mm (IEC EN 60175)
COMMUNICATION	
Ethernet	No.1 port 10/100 Ethernet 10/100Tx (RJ45)
Serial	No.1 port RS485 baud rate 115k on terminals
USB	No.1 Micro USB port on side connector
Protocols supported	ModBUS RTU, TCP-IP ModBUS, http, ftp
INPUT DATA	
Channels	No.1 PNP digital input, (max voltage 30Vdc) No.2 analog inputs 0..20 mA / 0..30 Vdc @16bit No.1 universal input V / mA / RTD
OUTPUT DATA	
Channels	No.2 SPDT relay outputs max 2A 250 Vac No.1 analogic output V – mA @14 bit
PROCESSOR / MEMORY	
CPU	ARM 32 bit
Flash Memory (data)	1MB+2MB
RAM	256kB
FeRAM	256 byte
Slot Micro SD (ext. Memory)	Yes, max 32 GB
HMI (ONLY FOR Z-FLOWCOMPUTER MODEL)	
Power supply	24 vdc
Display	4,3", 480x272, ARM 600 MHz, TFT 16 million colours
RAM	128 MB
Communication	N.1 USB host 2.0 N.1 Ethernet
Dimension	128x102x32 mm
CONFIGURATION	
Software	EASY FLOW COMPUTER
Webserver	-
Datalogger	Yes
STANDARD	
Certifications	EC

MEASUREMENT APPLICATIONS

MASS AND STEAM CALCULATION

Water

Vapour

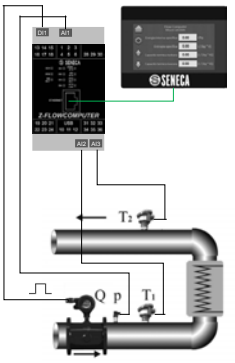


The purpose of this application is to measure the quantity of heat and of the mass of fluid flowing through the pipeline. The measuring of flow, temperature measurement and pressure are required for measurement on superheated steam. For measuring on saturated steam, flow and pressure or temperature measurements are sufficient (only one of the two). For measurement on water only the flow and temperature are required.

STEAM-WATER THERMAL DIFFERENTIAL

Water

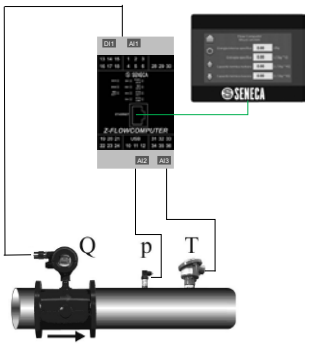
Vapour



This application aims to measure the power and energy exchanged with another system. Z-FLOWCOMPUTER calculates the power in transit in the delivery pipe and in the return pipe and makes the difference; the result is the exchanged thermal power.

NATURAL / REAL GAS VOLUME CORRECTOR

Gas



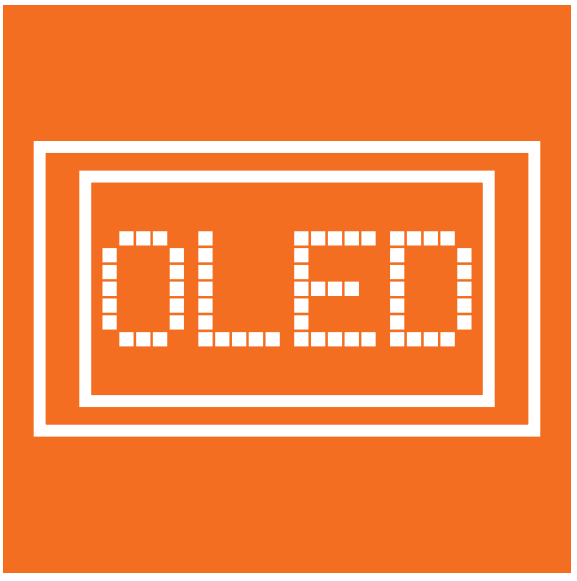
The purpose of this application is to offset the flow rate and the volume correction of a gas with reference to the base conditions of temperature (Tb) and pressure (Pb), starting from measurement at the working conditions Q, P and T. To create the offsets the standard calculation algorithms referred to in the table below are used.

ORDER CODE

Code	Description
Z-FLOWCOMPUTER	Flow computer to calculate the flow rate of water, vapours and gases with integrated 4.3'' HMI
Z-FLOWCOMPUTER-B	Flow computer for Z-FLOWCOMPUTER-B to calculate the flow rate of water, vapours and gases
ACCESSORIES	
MSD	Micro SD memory card with adapter
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45) 1.5
CS-DB9F-CLAMP	RS485 serial cable (DB9F / terminals) 1.5 MT
CU-A-MICROB	Cable plug USB-A Micro USB-B 5 P
SOFTWARE	
EASY FLOW COMPUTER	Z-FLOWCOMPUTER management software downloadable from www.seneca.it

The technical data and the diagrams in this document are indicative and not binding.

HMI
OLED



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1.5

S401

OLED INDICATOR WITH MODBUS INTERFACE

TECHNICAL DATA

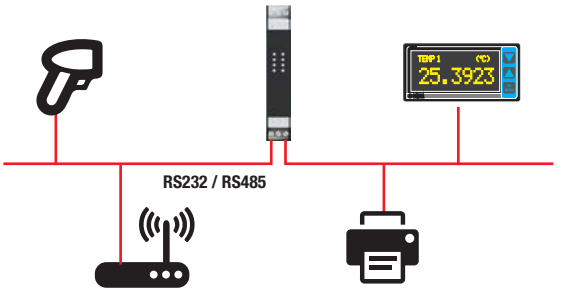
GENERAL DATA	
Power supply	10-40 Vdc / 19-28 Vac
Max consumption	1 W
Isolation	1,500 Vac
Communication interfaces	2 x ModBUS RTU RS485 Master / Slave Speed 1.200..115.200 bps
Memories	RAM: 256 byte XRAM: 4kB Flash: 32kB
DISPLAY AND MEASUREMENT	
Display	OLED 2,7", 128 x 64 pixel
Front keys	3 navigation keys
Display	Up to 20 measurements (max 3 per page) freely programmable
Serial communication	Address, parity, baud rate, delayed response, transmission delay, receipt timeout
Data archiving	RAM, table 20x4 byte
THERMO-MECHANICAL DATA	
Operating temperature	-10..+60°C
Front protection	IP65
Dimension (w x h x d)	96x48x40 mm
SETTINGS, REGULATIONS	
Software	Max 20 freely selectable interrogations, data management (EASY S401)
Settings	Communication parameters, language, contrast, brightness, scale, measurement unit offset
Certifications	EC

ORDER CODE

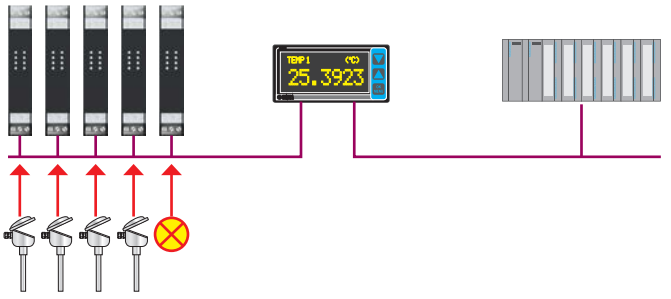
Code	Description
S401-L	Indicator with OLED display and ModBUS interface

APPLICATION EXAMPLES

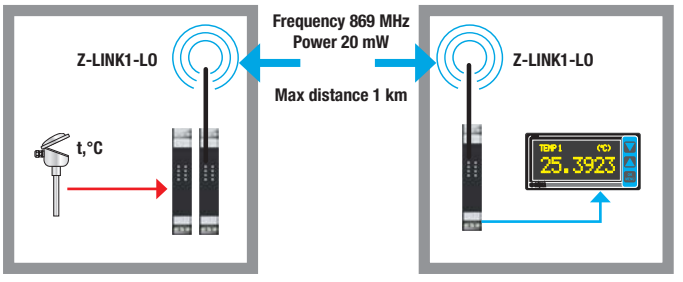
SERIAL CONNECTION



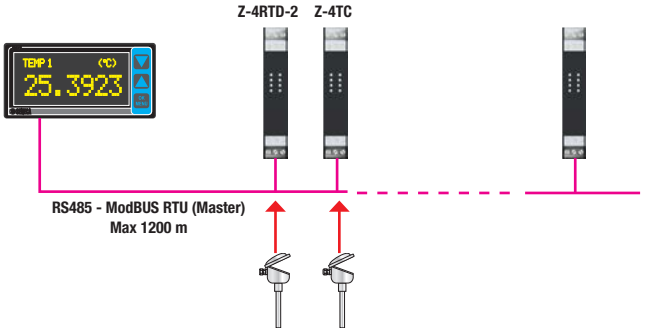
PLC LOCAL CONTROL



SIGNAL RETRANSMISSION



TEMPERATURE ACQUISITION



The technical data and the diagrams in this document are indicative and not binding.

OPERATOR PANELS
HMI
VISUAL

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1.6

VISUAL OPERATOR PANELS HMI

The **VISUAL** touchscreen operator panels are suitable to meet every application need, from small automations to the control of complex industrial processes.
With 4.3", 7", 9.7", 10.1", 15' display and widescreen format they allow more information to be displayed compared to a traditional display, ensuring at the same time the containment of external dimensions.
The operator panels can be freely oriented horizontally or vertically, depending on the requirements of the application. The displays are TFT up to 16 million colours with LED backlight and high resolution.
The **VISUAL** terminals are designed to be installed in the harshest environmental conditions thanks to the front panel with IP65/66 protection rating.
The **VISUAL** range can be customised through the EASY BUILDER PRO design environment with a powerful editor and a simple and intuitive user interface. Through Ethernet, USB, RS232, RS485 communication interfaces, with the support of the RTU / TCP-IP ModBUS protocols, the terminals can be combined with the most widely-used industrial controllers and with other supervision and automation systems.

TECHNICAL DATA

	VISUAL1E	VISUAL2E	VISUAL3	VISUAL4
				
	Touchscreen HMI terminal 4.3'' colour widescreen, Ethernet interface	7" touchscreen HMI terminal colour widescreen, interface Ethernet	4.3" HMI touchscreen colour widescreen, Ethernet interface	7" HMI touchscreen Terminal colour widescreen, Ethernet interface
DISPLAY				
Sample	4.3" TFT LCD	7" TFT LCD	4,3 " TFT LCD	7" TFT LCD
Resolution	480x272	800x480	480x272	800x480
Format	16:9	16:9	16:9	16:9
Brightness	500 cd/m2	350 cd/m2	500 cd/m2	350 cd/m2
Contrast	500:1	500:1	500:1	500:1
Backlight	LED > 30,000 hours	LED > 30,000 hours	LED, > 30,000 hours	LED, > 30,000 hours
Colours	65536	65536	16 million	16 million
Touchscreen	4 wires, resistive	4 wires, resistive	4 wires, resistive	4 wires, resistive
Accuracy	±2%	±2%	±2%	±2%
CONNECTIONS				
USB 2.0	1	1	1	1
Ethernet 10/100	1	1	1	1
Ethernet 10/100/1000	-	-	-	-
COM1	RS232	RS232	RS232	RS232
COM2	RS485	RS485	RS485	RS485
COM3	-	-	-	-
GENERAL DATA				
Flash	128 MB	128 MB	128 MB	128 MB
RAM	128 MB	128 MB	128 MB	128 MB
Processor	Cortex A8 600MHz	Cortex A8 600MHz	32 bit RISC Cortex A8 600 MHz	32 bit RISC Cortex A8 600 MHz
RTC	Integrated	Integrated	Integrated	Integrated
Power supply	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Consumption	400mA @ 24 Vdc	500mA @ 24 Vdc	300mA @ 24 Vdc	350mA @ 24 Vdc
Case	Plastic	Plastic	Plastic	Plastic
Dimension	128 x102 x 32 mm	200.4 x146.5 x 34 mm	128 x102 x 32 mm	200.4 x146.5 x 34 mm
Hole dimension	119x93 mm	192x138 mm	-	-
Weight	250 g	520 g	250 g	600 g
Operating temperature	0..50°C	0..50°C	0..50°C	0..50°C
Protection degree	NEMA4 / IP65	NEMA4 / IP65	NEMA4 / IP65	NEMA4 / IP65
Certification	EC	EC	EC	EC, UL508 Type 4X
CONFIGURATION AND PROGRAMMING				
Programming tool	EASY BUILDER PRO	EASY BUILDER PRO	EASY BUILDER PRO	EASY BUILDER PRO
Remote access	-	-	-	-
CABLES				
CS-DB9F-TIP-V	x	x	x	-
CS-DB9M-TIP-V	-	-	-	x
CE-RJ45-RJ45-R	x	x	x	x

The technical data and the diagrams in this document are indicative and not binding.

High resolution TFT display up to 16 million colours, LED back-lit

Processors RISC 400 MHz CORTEX A8 /600 / 800 MHz / 1 GHz

Flash Memory 128 / 256 MB / 512 MB Recipes memory 256kB

Communication RS232 / RS485 and Ethernet with support for ModBUS RTU and TCP-IP ModBUS protocols

Certifications EC and UL

Industrial strength with degree of protection NEMA4/ IP65 /IP66 front

Programming tool Windows with evolved editing functionality

Touchscreen 4-wire resistive

TECHNICAL DATA

	VISUAL4T	VISUAL5-PC	VISUAL5-WB	VISUAL6	VISUAL7N
					
	7" HMI touchscreen Terminal colour widescreen, Ethernet interface, aluminium case	7" HMI touchscreen Terminal 16:9, 64k colours, TFT LCD, Ethernet interface, version replica HMI / Web Server, CHROMIUM function	7" HMI touchscreen Terminal 16:9, 64k colours, TFT LCD, Ethernet interface, version spare part S6001-PC	7" touchscreen HMI terminal colour widescreen, double Ethernet interface	7" HMI touchscreen terminal colour widescreen, Ethernet interface
DISPLAY					
Sample	7" TFT LCD	7" TFT	7" TFT	7" TFT LCD	10.1" TFT LCD
Resolution	800x480	800X480	800X480	800x480	1024x600
Format	16:9	16.9	16.9	16:9	16:9
Brightness	350 cd/m2	200 cd/m2	200 cd/m2	400 cd/m2	350 cd/m2
Contrast	500:1	N.A.	N.A.	800:1	500:1
Backlight	LED, > 30,000 hours	LED, > 20,000 hours	LED, > 20,000 hours	LED, > 30,000 hours	LED > 20,000 hours
Colours	16 million	65535	65535	16.7 million	262k
Touchscreen	4 wires, resistive	4 wires, resistive	4 wires, resistive	4 wires, resistive	4 wires, resistive
Accuracy	±2%	N.A.	N.A.	±2%	±2%
CONNECTIONS					
USB 2.0	1	-	-	1	-
Ethernet 10/100	1	1	1	-	1
Ethernet 10/100/1000	-	-	-	2	-
COM1	RS232	RS232/RS485/RS422 configurable	RS232/RS485/RS422 configurable	RS232	RS232 (isolated)
COM2	RS485	-	-	RS485	RS485 (isolated)
COM3	-	-	-	RS232/RS485	RS485 (isolated)
GENERAL DATA					
Flash	256 MB	4 GB	4 GB	128 MB	128 MB
RAM	256 MB	512 MB	512 MB	128 MB	128 MB
Processor	32 bit RISC Cortex A8 600 MHz	ARM Cortex A8 1 Ghz	ARM Cortex A8 1 Ghz	32 bit RISC Cortex A8 600 MHz	32 bits RISC Cortex-A8 600MHz
RTC	Integrated	integrated	integrated	Integrated	Integrated
Power supply	24 Vdc	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Consumption	350mA @ 24 Vdc	300 mA at 24 Vdc	300 mA at 24 Vdc	600 mA @24Vdc	650mA @ 24 Vdc
Case	Aluminium	Plastic	Plastic	Plastic	Plastic
Dimension	200.3 x 146.3 x 34 mm	187X147 X29 mm	187X147 X29 mm	200.3 x 146.3 x 34 mm	271 x 213 x 40
Hole dimension	192 x 138 mm			192 x 138 mm	260 x 202 mm
Weight	900 g	600 g	600 g	600 g	1300 g
Operating temperature	-20..50°C	0..50°C	0..50°C	0..50°C	0..50°C
Protection degree	NEMA4 / IP65	Front IP66 REAR IP20	Front IP66 REAR IP20	NEMA4 / IP65	NEMA4 / IP65
Certification	EC	EC UL	EC UL	EC, UL, Atex Zone 2	EC
CONFIGURATION AND PROGRAMMING					
Programming tool	EASY BUILDER PRO	-	Web Server	EASY BUILDER PRO	EASY BUILDER PRO
Remote access	-	-	-	EASY ACCESS	
CABLES					
CS-DB9F-TIP-V	-	-	-	-	-
CS-DB9M-TIP-V	x	-	-	x	x
CE-RJ45-RJ45-R	x	-	-	x	x

The technical data and the diagrams in this document are indicative and not binding.

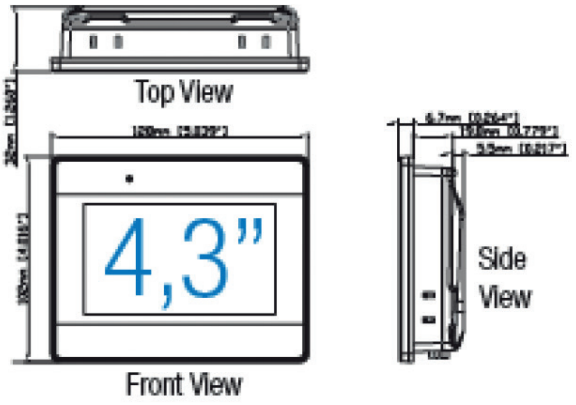
TECHNICAL DATA

	VISUAL8	VISUAL9	VISUAL10	VISUAL11	VISUAL12
					
	Terminal HMI touchscreen 10.1" colour widescreen, Ethernet interface	Terminal HMI touchscreen 10.1" HD, colour widescreen, Ethernet interface	Terminal HMI touchscreen 10.1" HD, colour widescreen, Ethernet interface, WiFi	Terminal HMI touchscreen 9.7" colour widescreen, double Ethernet interface,	Terminal HMI touchscreen 15" colour widescreen, double Ethernet interface, aluminium case
DISPLAY					
Sample	10.1" TFT LCD	10.1" TFT LCD	9.7" TFT LCD	9.7" TFT LCD	15" TFT LCD
Resolution	1024x600	1024x600	1024x768	1024x768	1024x768
Format	16:9	16:9	4:3	4:3	4:3
Brightness	350 cd/m2	350 cd/m2	350 cd/m2	300 cd/m2	4000 cd/m2
Contrast	500:1	500:1	500:1	500:1	700:1
Backlight	LED, > 50,000 hours	LED, > 50,000 hours	LED > 30,000 hours	LED > 30,000 hours	LED, > 50,000 hours
Colours	16.7 million	16.7 million	262k	262k	16.2 million
Touchscreen	4 wires, resistive	4 wires, resistive	4 wires, resistive	4 wires, resistive	4 wires, resistive
Accuracy	±2%	±2%	±2%	±2%	±2%
CONNECTIONS					
USB 2.0	1	1	1	1	2
Ethernet 10/100	1	1 + WiFI IEEE 802.11 b/g/bl	1	-	1
Ethernet 10/100/1000	-	-	-	2	-
COM1	RS232	RS232	RS232	RS232 (isolated)	RS485 (isolated)
COM2	RS485	RS485	RS485	RS485 (isolated)	
COM3	-	-	-	-	-
GENERAL DATA					
Flash	128 MB	128 MB	512 MB	512 MB	256 MB
RAM	128 MB	128 MB	256 MB	256 MB	256 MB
Processor	32 bits RISC Cortex-A8 600MHz	32 bits RISC Cortex-A8 600MHz	32 bits RISC Cortex A8 1GHz	32 bits RISC Cortex-A8 1GHz	Cortex A8 32Bit RISC 1GHz
RTC	Integrated	Integrated	Integrated	Integrated	Integrated
Power supply	24 Vdc	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Consumption	650mA @ 24 Vdc	650mA @ 24 Vdc	500mA @ 24 Vdc	650mA @ 24 Vdc	1000mA @ 24 Vdc
Case	Plastic	Plastic	Plastic	Plastic	Aluminium
Dimension	271 x 213 x 36.4	271 x 213 x 36.4	260.6 x 203.1 x 36.5	260.6 x 203.1 x 36.5	366 x 293 x 57
Hole dimension	260 x 202 mm	260 x 202 mm	250 x 192 mm	250 x 192 mm	352 x 279 mm
Weight	1000 g	1000 g	850 g	850 g	2750 g
Operating temperature	0..50°C	0..50°C	0..50°C	0..50°C	0..50°C
Protection degree	NEMA4 / IP65	NEMA4 / IP65	NEMA4 / IP65	NEMA4 / IP65	NEMA4 / IP65
Certification	EC/UL	EC	EC	EC	EC
CONFIGURATION AND PROGRAMMING					
Programming tool	EASY BUILDER PRO	EASY BUILDER PRO	EASY BUILDER PRO	EASY BUILDER PRO	EASY BUILDER PRO
Remote access	-	EASY ACCESS	-	EASY ACCESS	-
CABLES					
CS-DB9F-TIP-V	-	-	-	-	-
CS-DB9M-TIP-V	x	x	x	x	x
CE-RJ45-RJ45-R	x	x	x	x	x

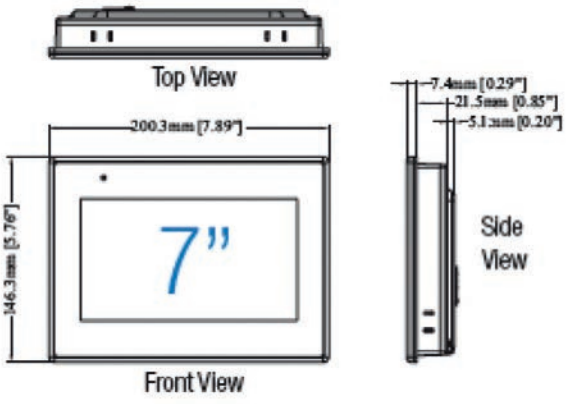
The technical data and the diagrams in this document are indicative and not binding.

DIMENSIONS

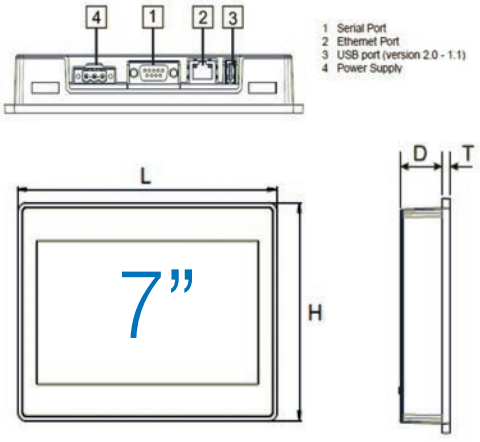
VISUAL1E, VISUAL3



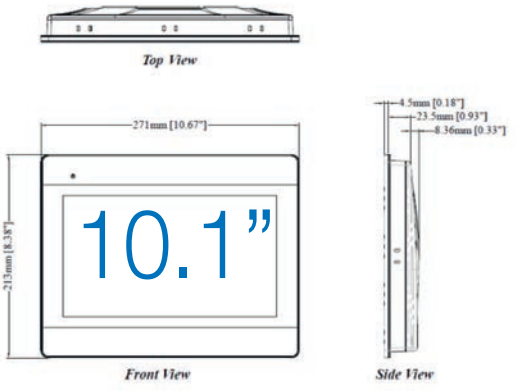
VISUAL2E, VISUAL4, VISUAL4T, VISUAL6



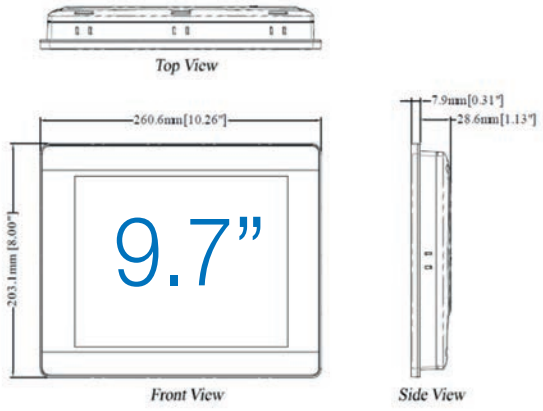
VISUAL5-PC, VISUAL5-WB



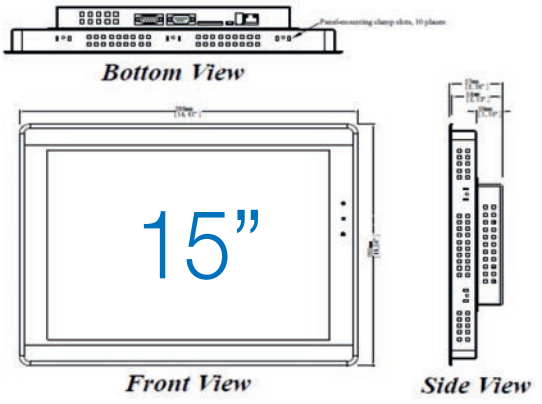
VISUAL7, VISUAL8, VISUAL9



VISUAL10, VISUAL11



VISUAL12



VISUAL OPERATOR PANELS HMI

EASY BUILDER PRO

HMI PROGRAMMING ENVIRONMENT

- Integrated windows development environment, toolbars, dialogue windows, menu bars, drag & drop drawing objects
- Multi-purpose objects for dynamic use to support user screens (graphics, buttons, alarm history, etc.)
- Support for multilingual display
- More than 250 drivers are available to ensure easy connection to PLCs, temperature controllers, bar code readers, etc.

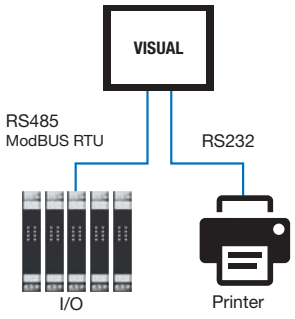
EASY ACCESS

REMOTE ASSISTANCE TOOL

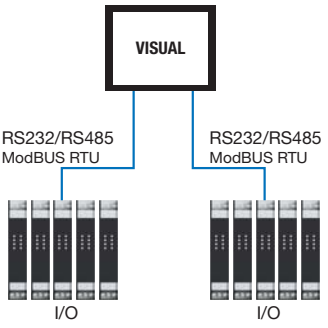
- Remote assistance system activated on HMI VISUAL with Ethernet port
- Remote access to the operator panel and, in passthrough mode, to PLCs and devices connected to it (in serial or Ethernet mode) without any network configuration
- SSL secured VPN connection for the secure exchange of data and information with minimal bandwidth usage

EXAMPLES OF CONNECTION

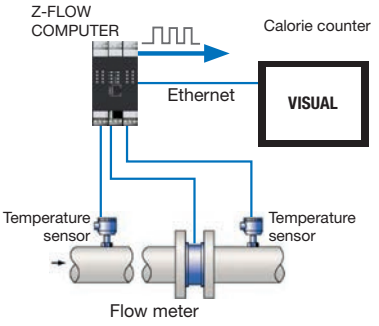
SERIAL



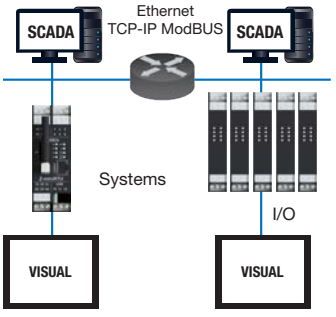
DISTRIBUTED SERIAL NETWORK



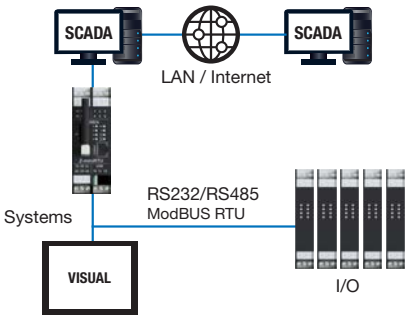
HMI FOR FLOW COMPUTER



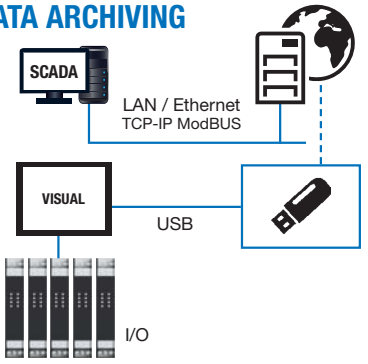
ETHERNET



REMOTE CONTROL



DATA ARCHIVING



ORDER CODE

Code	Description	Code	Description
VISUAL1E	Terminal HMI touchscreen 4.3" colour widescreen, Ethernet interface	VISUAL6	Terminal HMI touchscreen 7" colour widescreen, double Ethernet interface
VISUAL2E	Terminal HMI touchscreen 7" colour widescreen, Ethernet interface	VISUAL7N	Terminal HMI touchscreen 10.1" colour widescreen, Ethernet interface
VISUAL3	Terminal HMI touchscreen 4.3" colour widescreen, Ethernet interface	VISUAL8	Terminal HMI touchscreen 10.1" HD, colour widescreen, Ethernet interface
VISUAL4	Terminal HMI touchscreen 7" colour widescreen, Ethernet interface	VISUAL9	Terminal HMI touchscreen 10.1" HD, colour widescreen, Ethernet interface, WiFi
VISUAL4T	Terminal HMI touchscreen 7" HD, colour widescreen, Ethernet interface, aluminium case	VISUAL10	Terminal HMI touchscreen 9.7" colour widescreen, Ethernet interface
VISUAL5-PC	7" HMI touchscreen Terminal 16:9, 64k colours, TFT LCD, Ethernet interface, version spare part S6001-PC	VISUAL11	Terminal HMI touchscreen 9.7", colour widescreen, double Ethernet interface,
VISUAL5-WB	7" HMI touchscreen Terminal 16:9, 64k colours, TFT LCD, Ethernet interface, version replica HMI / Web Server, CHROMIUM function	VISUAL12	Terminal HMI touchscreen 15" colour widescreen, Ethernet interface, aluminium case

ACCESSORIES and SOFTWARE

CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
CS-DB9F-TIP-V	Serial cable RS485 (DB9F / tips)
CS-DB9M-TIP-V	Serial cable RS485 (DB9M / tips)
EB PRO	Programming environment
EASY ACCESS	Remote assistance tool

HMI
IIoT

1.7

A "SURPRISE" IN THE HMI

INTEGRATED SOLUTION

SURPRISE Smart Display is a latest generation 7" touch operator terminal with powerful 800 MHz ARM microprocessor, double fast Ethernet port, 802.11 b/g/bl wi-fi module, interfaces and sniffer function for serial lines. It is a multipurpose device with IIoT gateway, datalogger, Wi-Fi router, microcontroller with built-in I/O, remote assistance and remote control unit on LET'S platform.

HTTP POST

In the IIoT environment, communication can also take place via the http post protocol, where in the REST (REpresentational Status Transfer) architecture the data is configured with the JSON (JavaScript Object Notation) format. Basically http post can be used to send log samples and alarms (events), manage the data logger and server settings in advanced mode (tags, updates, ftp configurations)

CLOUD SUPPORT

SSD can connect industrial machines and systems, and thousands of I/O in the field, to third-party Cloud platforms (i.e. AWS, Databoom, Rilheva) via the http/Mqtt protocols. An alternative provided by SENECA is the CLOUD BOX server, an "on premise" solution, also available in the Virtual Machine / VmWare version, where the data is stored on a centralised database.

DUAL ETHERNET INTERFACE (LAN / WAN)

SSD can manage and separate different connections thanks to 2 Ethernet ports (1 WAN and 1 LAN). This allows wired and wireless connections to coexist, as well as resolving IP conflicts when installing new machines and systems. It also facilitates access to devices via isolated network segments.

IF-THEN-ELSE LOGIC

SSD allows the implementation of logic rules that affect integrated or external I/O (acquired or written in shared memory). The control logics that can be set (e.g. continuous or event-based writing, sending of alarms, data processing, etc.) provide for a maximum number of 2,000 rules.

WI-FI

SSD is equipped with an 802.11 b/g/n 2.4 GHz Wi-Fi module with router functionality or redundant network drive. It can also be selected in Station mode (connected to an existing Wi-Fi access point) or in Access Point mode (to which other devices can connect).

MQTT

SSD opens up to the IoT world thanks to the support of the MQTT (Message Queue Telemetry Transport) protocol, ideal for real-time data transmission and M2M connections. The parameterisation of the MQTT Client takes place via the Web Server. To ensure secure connections (SSL/TLS) it is possible to use digital certificates.

OPC UA

OPC UA is a cross communication standard based on the Client / Server principle via an independent platform. SSD operates as an OPC UA Server and can be used in automation and data management applications with OPC UA clients from other manufacturers, in compliance with major security protocols such as SSL/LS and X.509.

NAT 1:1 AND STATIC ROUTER

The 1:1 NAT and Static Router functions allow direct communication between the corporate WAN network and the automation LAN network (which by default are independent and not communicating with each other). They also allow for the diversion of outgoing traffic from the SSD to a particular host or subnet.

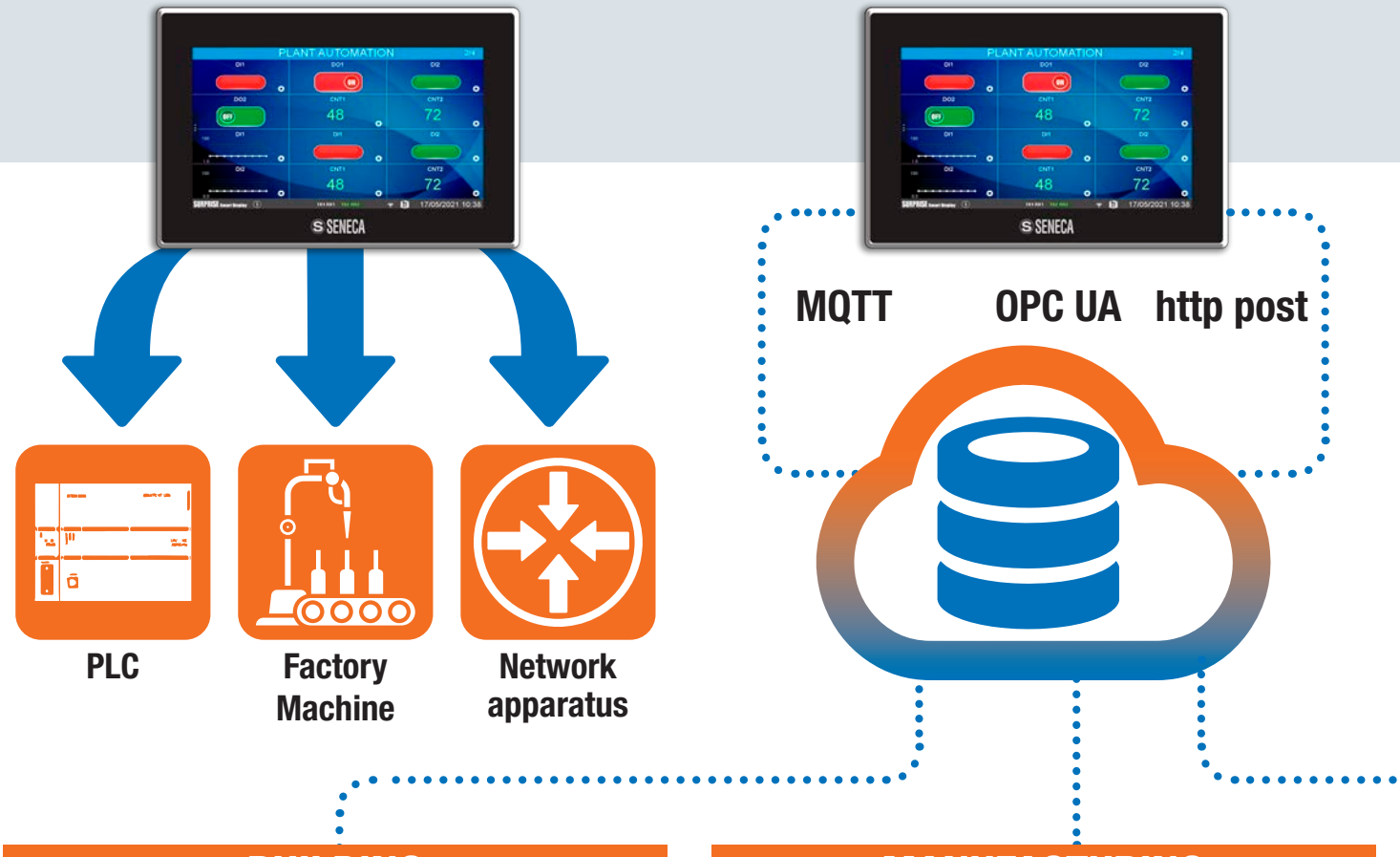
VPN REMOTE ACCESS

SSD is also a Client of the remote access platform for LET'S machines and systems. Through the VPN BOX Server it is possible to implement Point-to-Point and On-Demand (P2P) connections to the field or create virtual networks, for "Always ON" connections for the supervision, management and monitoring of remote systems (Single LAN).

EASY INSTALLATION

SSD can be mounted on the wall using the external holes of the fastening accessory (supplied already assembled with the instrument) inside a box for masonry walls according to the 503 format. Ease of installation in this mode allows for easy box-to-SSD wiring, coupling, and side-by-side.

THE HMI ALL-IN-ONE SOLUTION WITHOUT PROGRAMMING FOR YOUR IIOT PROJECT



BUILDING

MANUFACTURING

	Functions	Basic Version	Option -L (Logic)	Option -V (VPN)	Option -I (IoT)
1	Widget-based HMI 7” touchscreen	X			
2	Remote Display	X			
3	Display On Display	X			
4	ModBUS Gateway (serial Ethernet, shared memory, transparent)	X			
5	IoT / Cloud Gateway (with MQTT and http post support)				X
6	Datalogger	X			
7	Alarm management unit	X			
8	LAN / WAN separator	X			
9	WiFi Router / Access Point	X			
10	Serial Sniffer	X			
11	Microcontroller with built-in I/O		X		
12	Remote assistance and remote control VPN module			X	

7” TOUCHSCREEN | LET'S | Wi Fi | OPC UA | MQTT | OPENVPN™

Devices ModBUS

SCADA / MES

ENERGY

HARDWARE
- 24Vac/dc power supply
- Flash Memory 2 / 4 GB
- No.2 DI/DO
- IP64 front protection degree
- Operating temperature -20..+55°C

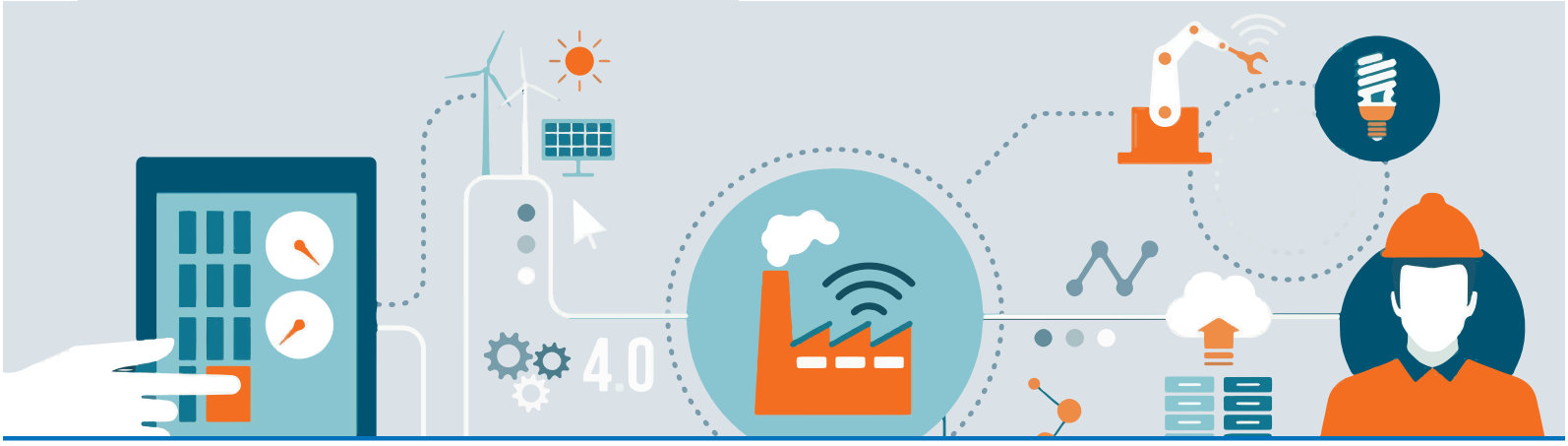
DISPLAY
- 7” TFT display, 16M colours
- Capacitive multitouch
- Resolution 800x480 pixels
- Standard widget view
- Display on Display
- Remote display

STANDARD COMMUNICATION
- No.2 Fast Ethernet ports
- No.2 serial ports
- No.2 USB ports
- ModBUS RTU
- TCP-IP ModBUS
- Max 32 client TCP-IP, 2000 tag, 128 ModBUS slave nodes
- Max 244 slave nodes (128 on single serial without repeater)

CONFIGURATION
- Integrated Web Server
- Widget library
- VPN management software
- Network management software (SDD, SESC)
- DIP switch factory reset
- Firmware update via web or pen usb (Fat32)

IIOT PROTOCOLS
- MQTT
- OPC UA
- http post, https
- FTP / SFTP
- Cloud Support
- OpenVPN / SSL

CYBERSECURITY
- Data Encryption: Blowfish — Blowfish (128bit) in CBC mode
- Data Authentication: SHA1 — HMAC using Secure Hash Algorithm (160bit)
- Certification authority provided by VPN BOX
- Handshake Encryption: TLSv1/SSLv3 RSA- 2048 — 2048bit Ephemeral Diffie-Helman (DH)
- Service Channel: TLSv1/SSLv3 2048bit certificate

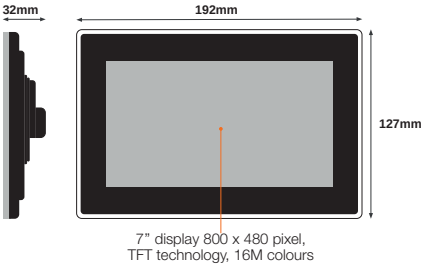


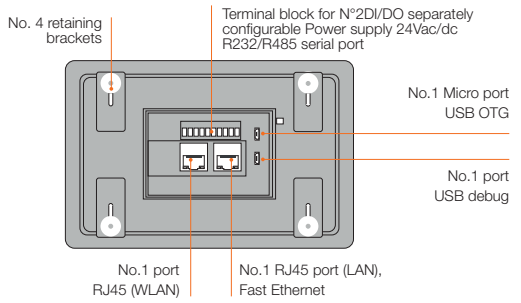
HMI 7” TOUCHSCREEN WITH GATEWAY, DATA LOGGER, REMOTE ASSISTANCE AND BUILT-IN I/O FUNCTIONS

TECHNICAL DATA

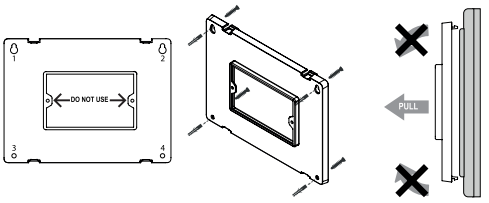
HMI DATA	
Screen	7” LCD TFT backlit, anti-scratch glass
Resolution	800 x 480 pixel
Format	16/9
Brightness	350 cd/m2
Colours	16 M
Capacitive	Touchscreen
Duration	30,000 h (backlight level 5)
Vision angles	70° / 50° / 70° / 70° (Top, Bottom, Left, Right)
Display Functionality	Display standard widget-based Remote display (on PC and device with any O.S.) Display on Display (display emulation)
GENERAL DATA	
Power supply	24 Vdc/ac +/- 10%
Consumption	AC: Max. 16 VA, 10 W; DC: Max. 9 W
Status indicators	Link and Ethernet traffic
Connections	No.1 Removable terminal 3.5 mm pitch 10 ways
Protection degree	IP64 (on the front with membrane)
Operating temperature	-20..+55°C
Dimension (lxhxd)	192 x 127 x 32 mm
Panel drilling dimensions (lxh)	157x102 mm
Weight	420 g approx.
Case	ABS, black
Installation	By means of fixing brackets or wall support
COMMUNICATION	
Ethernet Ports	No.2 Fast Ethernet ports 10/100Tx on rear RJ45
Serial Ports	No.1 switchable RS232 / 485 serial port max 115k No.1 RS485 port, max baud rate 115kbps
USB Ports	No.1 Micro USB OTG port No.1 Micro USB serial port for debug software
Wi-Fi module	Wi-Fi 802.11 b/g/n, band 2.4 ÷ 2.4835 GHz
Protocols	Server/Client TCP-IP ModBUS, Master/Slave ModBUS RTU, Server/Client FTP/SFTP, server HTTP/HTTPS, OpenVPN, SSL, MQTT, OPC UA, http post
Operating mode	ModBUS Gateway (Ethernet - Serial, shared memory, transparent gateway, serial tunnelling), IoT/Cloud-based gateway, datalogger, alarm management unit, serial sniffer, wi-fi router, network redundant unit, remote assistance/remote control VPN module , microcontroller, LAN/WAN separator
I/O	
configurable DI/DO	No.2 digital channels (PNP inputs with internal power supply)
PROCESSING & MEMORY	
Processor	ARM 800 MHz
Flash Memory (data)	2 / 4 GB
RAM	512 GB
SD Micro Card	no
SAFETY	
Data Encryption	Blowfish — Blowfish (128bit) in CBC mode
Data Authentication	SHA1 — HMAC using Secure Hash Algorithm (160bit)
Handshake Encryption	TLSv1/SSLv3 RSA-2048 — 2048bit Ephemeral Diffie-Helman (DH)
Service Channel	TLSv1/SSLv3 2048bit certificate
Web server authentication	Yes
Safety protocols	OpenVPN, SSL
SETTINGS & SOFTWARE	
DIP switch	Factory reset
Web server	Yes, status information, setups, alarms, charts, widgets
VPN management software	VPN BOX Manager, OpenVPN, VPN Client Communicator
SDD (Seneca Discovery Device)	Yes
SESC (Seneca Ethernet to Serial Connection)	Yes
Firmware Update	From web page or USB key (FAT32)
REGULATIONS	
Marking / Certifications	EC

LAYOUT AND OVERALL DIMENSIONS





WALL MOUNTING WITH 503 FLUSH-MOUNTED BOXES



ORDER CODE

Code	Description
MULTIFUNCTION HMI	
SSD-0-0-0-0	Advanced touchscreen HMI with built-in I/O
SSD-0-L-0-0	Advanced touchscreen HMI with built-in logic and I/O
SSD-0-0-V-0	Advanced touchscreen HMI with VPN and built-in I/O
SSD-0-0-0-I	Advanced touchscreen HMI with IIoT and built-in I/O
SSD-0-L-V-0	Advanced touchscreen HMI with logic, VPN and built-in I/O
SSD-0-L-0-I	Advanced touchscreen HMI with IIoT, logic and built-in I/O
SSD-0-0-V-I	Advanced touchscreen HMI with IIoT, VPN and built-in I/O
SSD-0-L-V-I	Advanced touchscreen HMI with IIoT, VPN and built-in I/O
UPGRADE	
SSD-UPG-L	SSD - "logica" functions upgrade
SSD-UPG-V	SSD - "VPN" functions upgrade
SSD-UPG-I	SSD - "IIoT" functions upgrade
SSD-UPG-L-V	SSD - "VPN" and "logica" functions upgrade
SSD-UPG-L-I	SSD - "logica" and "IIoT" functions upgrade
SSD-UPG-V-I	SSD - "VPN" and "IIoT" functions upgrade
SSD-UPG-L-V-I	SSD - "logica, "VPN" and "IIoT" functions upgrade
VPN SERVER	
VPN BOX	Codes and features available at www.seneca.it/linee-di-prodotto/comunicazione-industriale-e-telecontrollo/lets-connectivity-solutions/modulo-server-di-connettivita/vpn-box
IOT/CLOUD SOLUTION	
CLOUD BOX	Codes and features available at www.seneca.it/linee-di-prodotto/comunicazione-industriale-e-telecontrollo/soluzioni-iot-scada-cloud/cloud-box
TOOL SOFTWARE	
SDD	SENECA Discovery Device, IP scanner
SESC	SENECA Ethernet to Serial Connection
ACCESSORIES	
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
CU-A-MICRO-OTG	Adapter cable Micro USB OTG – USB Female A type
MSD	Micro SD memory card with adapter

The technical data and the diagrams in this document are indicative and not binding.

SOFTWARE
DAQ

1

1.8

DAQ SOFTWARE

MODBUS DATA ACQUISITION AND REGISTRATION SOFTWARE

2-channel licence downloadable free of charge from www.seneca.it/data-recorder

THE BENEFITS

- Plug&play solution for data acquisition and real-time measurement
- Creation of the DAQ system in 3 steps
- Archiving and exporting of data in standard format
- Full use of PC computing power
- Use without specialist training
- Environment suitable for both industrial and educational laboratories
- Flexible and multi-format historical data and trend display
- Alarm management functions, reports and integrated mathematical elaborations

INSTRUMENTS / OPTIONS

Minimum Requirements
Windows 7 and later (32 or 64 bit) with .Net Framework 4.52 and later

Data acquisition and measurements via SENECA Z-PC Line remote I/O system

Windows & OPC tested

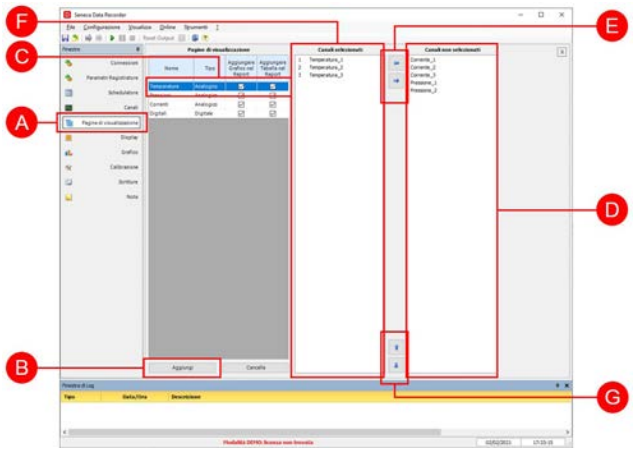
Portable ready to use measuring kits

TECHNICAL DATA

Max no. of devices connected simultaneously	TCP ModBUS: according to the application ModBUS RTU: Over 40 with SENECA I/O modules Third party ModBUS devices: Up to 32 before amplifying the RS485 signal
No. of I/O systems that can be recorded simultaneously	Based on the application
Max no. of channels that can be recorded	From a minimum of two channels to unlimited channels depending on the licence size
Sampling time for the recording of acquired data	From a minimum of 1s to a maximum of 24h
No. of pages that can be managed simultaneously	64
Max display per page	48
Max number of pens per graphic	8
Max.number of writeable channels (analog+digital)	20
Max no. of alarms that can be associated with each channel	4 thresholds (high high alarm, high alarm, low alarm, low low alarm) in display and storage on database 1 alarm threshold for writing on an output channel
Manual recording	Start and stop button
Automatic registration	Three different scheduling methods: At fixed times and days Continuous and periodic with start time and duration that can be set Start and stop on digital input status or on event
Data export	CSV, UA/DA SERVER OPC, SQLITE (database format)
Mathematics functions	Arithmetic operators (+, -, *, /, ^) Boolean operators (AND, OR, XOR, NOT) Analog functions [Sin(), Cos(), Tan(), Sqrt(), exp(), ln(), log(), int(), sgn()] Equations of status to calculate the thermodynamic properties of fluids (saturation temperature, saturation pressure, enthalpy, etc.)
Calibration	On different groups of channels associated with thermocouples or resistance thermometers through linear interpolation - From 1 to 5 points per channel
Interface languages	Italian and English
Supported Operating Systems	Windows 7 and later versions Net Framework 4.52 and later versions; Windows Server 2003 and later

PROJECT CONFIGURATION

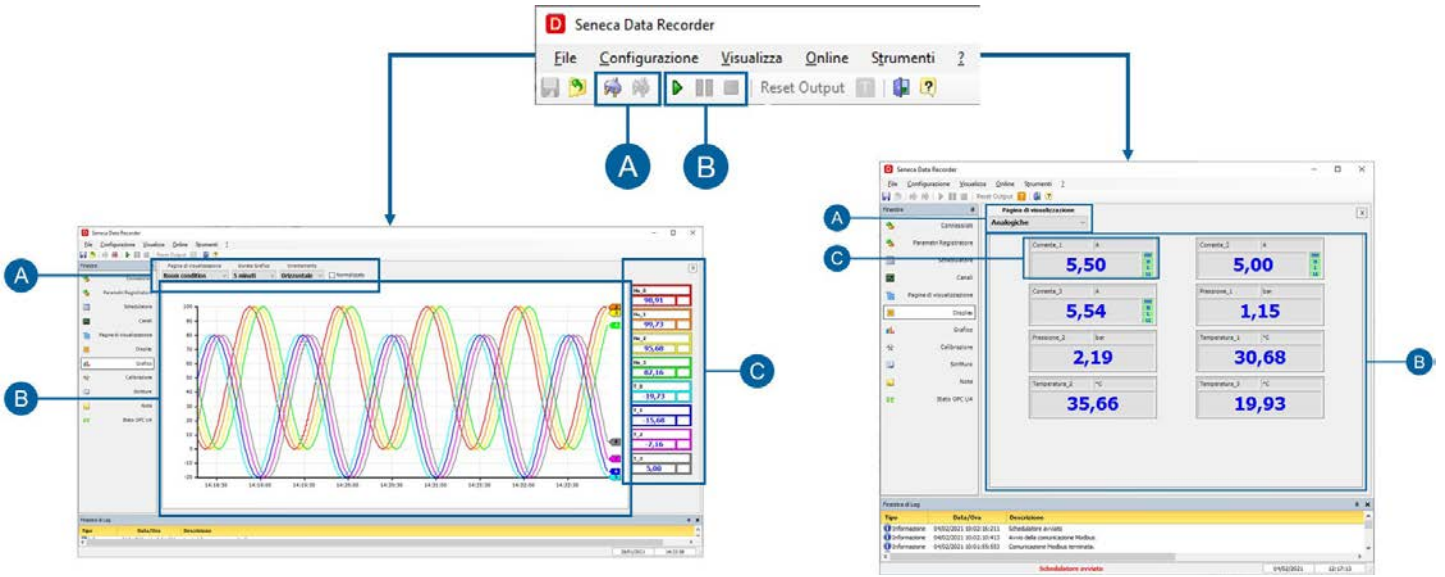
1 - SETTING OF DISPLAY PAGES



- Creation of instant data display pages
- Association pages - channels
- Insertion of up to 48 channels that can be viewed simultaneously (display)
- Insertion of up to 8 channels that can be viewed simultaneously (graphic)
- Display independent of whether the software is recording data in a database

(A) Select the Display Pages
(B) To add a customised display page press «Add»
(C) Enter the page name and select whether "Analog" or "Digital" channels will be displayed
(D) Select the channels to be inserted in the page
(E) Using the arrows it is possible to add or remove channels from the display.
(F) Channels displayed. The first 8 channels will be displayed on the Graphic page, while the first 8 channels will be displayed on the Display page up to 48 channels will be displayed.
(G) With these arrows it is possible to move the channels to be viewed on the graph.

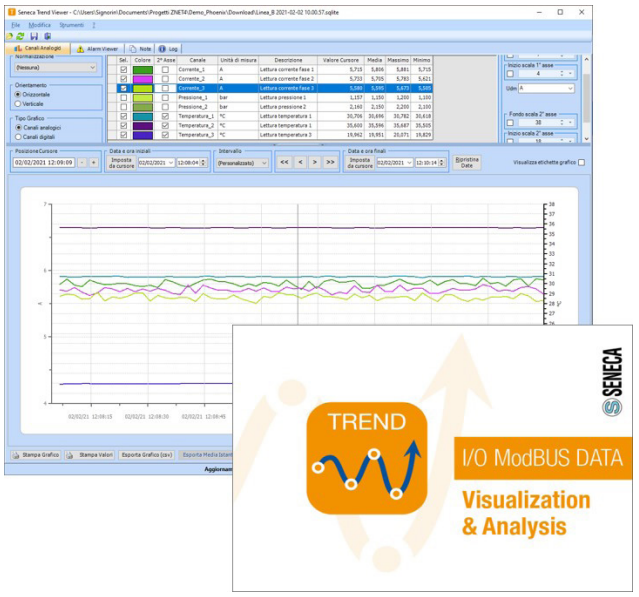
2 - START RECORDING



Data acquisition from 2 to unlimited channels (minimum 1 second sampling period)
MIN, MAX and AVERAGE recording for each channel in the sampling period
Simultaneous channel acquisition from different RTU/TCP ModBUS nodes
Display of real-time measurement values
Display in nib or display mode
Alarm display

Start / stop / pause recording commands
Selection of scroll, range, channel groups
Automatic report generation
Scheduling of recordings
Thermocouple calibration
Independent multi-user recording sessions

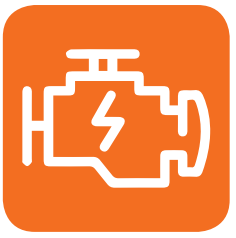
3 - TREND VIEWER

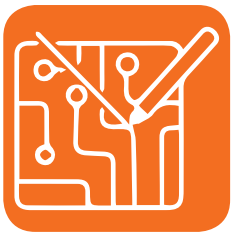


- Archiving and access to historical data
- Real-time display with active Data Recorder
- Display, filter (on channels and times) and printing of historical data recorded by the Data Recorder
- Max 20 customisable pages
- Minimum display period 1 second (from DR)
- Customisable time scale and precise selection of the measurement instant
- Printing and export of data in Excel format (.csv)
- Instant Average
- Graph displayed
- Complete database
- SQLite database management
- Double vertical axis with customisable scale
- Customisable reports (graph and table)
- Historical archive consultation (data log, events and alarms) with a dedicated viewing tool
- Independent display for groups of different signals

AREAS OF USE


TEST ROOMS


ENGINE ROOMS


ELECTRONICS WORKSHOPS


EDUCATIONAL WORKSHOPS


TEST BENCHES


CLIMATIC CHAMBERS


INDUSTRIAL OVENS


METROLOGICAL OFFICES


TECHNICAL DEPARTMENTS

CONFIGURATIONS

Code		Description	
Basic Package	**DR-**	Data acquisition and display software for I/O modules and RTU/TCP-IP Modbus devices with alarm management functions, mathematical elaborations, reports	
Channels	**-02**	Acquisition and management of 2 recordable channels (video tracks) - downloadable free of charge from https://www.seneca.it/richiedi-data-recorder/	
	-04	Acquisition and management of 4 recordable channels (video tracks)	
	-08	Acquisition and management of 8 recordable channels (video tracks)	
	-16	Acquisition and management of 16 recordable channels (video tracks)	
	-32	Acquisition and management of 32 recordable channels (video tracks)	
	-64	Acquisition and management of 64 recordable channels (video tracks)	
	-UN	Acquisition and management of unlimited recordable channels (video tracks)	
Options		-PLUS	Multi-client plus package
		-UPGRADE	Data Recorder licence upgrade service

ORDER CODE

Code	Description
I/O MODULES	
R-16DI-8DO	Ethernet 16-CH digital inputs / 8 digital relay outputs Modbus TCP-IP / Modbus RTU
Z-10-D-IN	10-CH digital inputs / RS485 ModBUS RTU
Z-10-D-OUT	10-CH digital outputs / RS485 ModBUS RTU
Z-4DI-2AI-2DO	Mixed 4-CH digital inputs, 2 analog inputs, 2 digital outputs, RS485 ModBUS RTU
Z-3AO	3-CH analog outputs / RS485 - ModBUS RTU
Z-4AI	4-CH analog inputs V-I / RS485 ModBUS RTU
Z-4RTD2	4-CH resistance thermometer inputs / RS485 - ModBUS RTU
Z-4TC	4-CH thermocouple analog inputs - / RS485 ModBUS RTU
Z-5DI-2DO	5-CH digital inputs, 2 digital outputs, RS485 - ModBUS RTU
Z-8AI	8-CH single ended or 4 differential analog inputs / RS485 - ModBUS RTU
Z-8NTC	8-CH thermoresistance inputs NTC / RS485 - ModBUS RTU
Z-8TC-1	8-CH thermocouple inputs / RS485 - ModBUS RTU
Z-8TC-LAB	8-CH thermocouple inputs / RS485 - ModBUS RTU, Micro USB port with interchangeable terminals
Z-DAQ-PID	Universal I/O module with PID regulation / RS485 - ModBUS RTU
Z-D-IN	5 CH digital inputs / RS485 - ModBUS RTU module
Z-D-IO	Control module 6 digital inputs, 2 digital outputs/ ModBUS RTU RS485
Z-D-OUT	5-CH relay outputs / RS485 - ModBUS RTU
ZE-2AI	2-CH analogue inputs, ModBUS RTU / TCP-IP ModBUS
ZE-4DI-2AI-2DO	Mixed 2-CH analog inputs, 2 digital outputs, 4 digital inputs, ModBUS RTU / TCP-IP ModBUS
Z-SG	Strain gauge converter module / RS485 ModBUS RTU
Z-SG2	Advanced strain gauge converter module / RS485 - ModBUS RTU
NETWORK ANALYSER	
S203RC-D	Three-phase network analyser, 600 Vac / 1000 Arms, Rogowski, analog and pulse outputs, LCD display, Micro USB app
S203T	Three-phase mains analyser, 600 Vac / 100 mA, class 0.2, analog output, accuracy AT
S203TA	Three-phase network analyser, 600 Vac / 5 Arms, class 0.2, analogue output, standard AT
S203TA-D	Three-phase network analyser, 600 Vac / 5 Arms, analog and pulse outputs, standard AT, LCD display, Micro app
S604B-6-MOD	BASE network analyser x TA1/5A-RS485 Modbus,1MB log. mem.
S604B-6-ETH	BASE network analyser x TA1/5A-Ethernet,1MB log. mem.

ORDER CODE

Code	Description
NETWORK ANALYSER	
S604B-80-MOD	BASE network analyser 80A-RS485 Modbus,1MB log. mem.
S604B-80-ETH	BASE network analyser 80A-Ethernet,1MB log. mem.
S604E-6-MOD	Energy PLUS Network Analyser x TA1/5A-RS485 Modbus,8MB log. Harmonics
S604E-6-ETH	Energy PLUS Network Analyser x TA1/5A-Ethernet,8MB Harmonics
S604E-80-ETH	Energy PLUS Network Analyser 80A-Ethernet,8MB log. Harmonics
S604E-80-MOD	Energy PLUS 80A-RS485 Network Analyser Modbus,8MB log. Harmonics
S711B6MOD	Network Analyser LCD 96x96 BASIC for TA1/5A-RS485 Modbus,1MB log. mem.,1 DI 2 DO
S711E6MOD	Network Analyser LCD 96x96 Energy PLUS x TA1/5A-RS485 Modbus,8MB log.,1 DI 2 DO, Harmonics
S711E6MODA0	Network Analyser LCD 96x96 Energy PLUS x TA1/5A-RS485 Modbus,8MB log.,1 DI 2 DO 1A0, Harmonics
S711E6ETH	Network Analyser LCD 96x96 Energy PLUS x TA1/5A-Ethernet,8MB log, 1 DI 2 DO, Harmonics
COMMUNICATION INTERFACES	
EASY-USB	Converter USB - UART TTL with CD and programming software
R-KEY-LT	Compact ModBUS industrial gateway
RM169-1	169 MHZ radiomodem with RS232 / RS485 interface compliant with RED 2014/53/EU directive
RTURADIO-169	Rtu Radio 169MHZ 0.5W, 4DI, 2 DO, 1 counter,2 AO,2 AI,1 RS485, BNC-F connector
S107P	RS232 - RS485/422 serial converter, portable version
S107USB	Serial converter USB/RS485 portable
S117P1	Configuration kit K121, K120RTD, K111, T120, T121 - Serial converter RS232-TTL-RS485/USB portable
Z107	RS232 - RS485/422 serial converter for rear panel, 24 Vac/dc
Z-AIR-1	Radiomodem 868MHz 0.5W with integrated omnidirectional antenna, 1 RS485, RED directive, 5 m cable, IP65 stainless steel bracket
Z-KEY-0	Industrial Gateway - Serial Device Server
Z-KEY-MBUS	Gateway - RTU / TCP-IP ↔M-BUS ModBUS protocol converter
Z-KEY-WIFI	2-port ModBUS RTU industrial gateway / serial device server with integrated Wi-Fi
Z-LINK1-LO	869 Mhz radio modem with RS232 / RS485 interface with LoRa technology
Z-LINK1-NM	869 Mhz radio modem with RS232/RS485 interface
Z-MBUS	M-BUS ↔RS232-RS485 interface adapter
Z-MODEM	GSM - GPRS Quadband industrial Modem
Z-MODEM-3G	3G industrial modem with USB micro interface

SOFTWARE AND ACCESSORIES

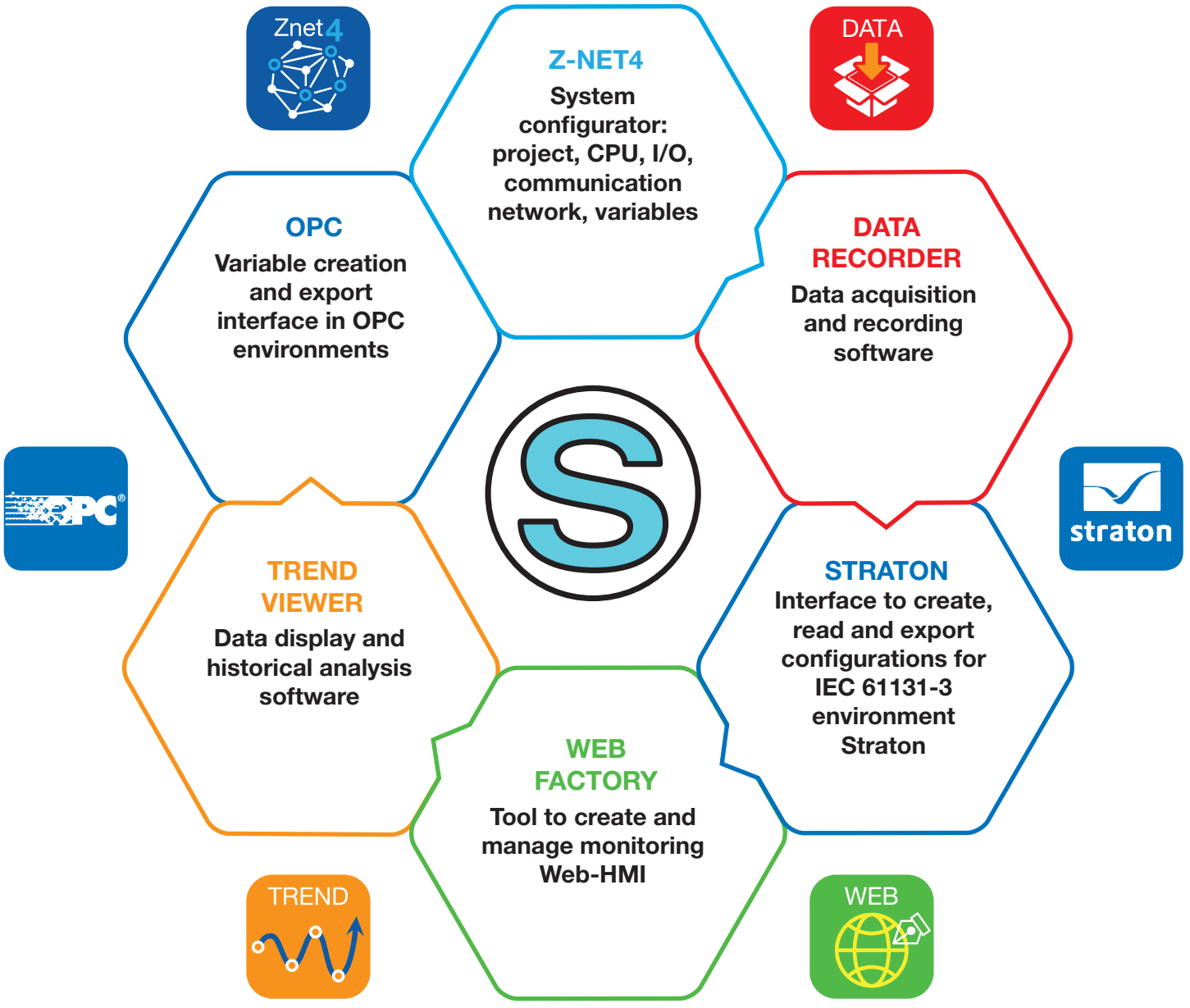
1

1.9

MANAGEMENT SOFTWARE

SENECA PACKAGE

The SENECA Package suite includes the IEC 61131-3, ZNET4 configuration environment, with which integrated applications are installed for the complete management of an automation project. Data export interfaces to the Straton and OPC programming environment are also available.

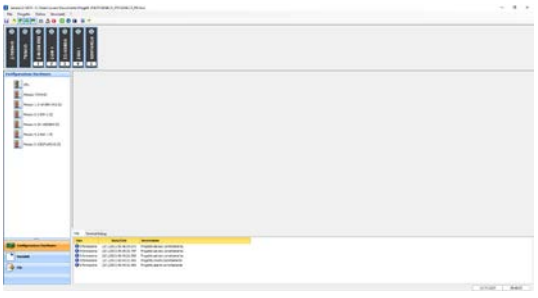


Z-NET4

ENGINEERING AND CONFIGURATION

Z-NET4 is a graphical programming environment used to configure Modbus slave modules and to carry out data acquisition, automation and remote control projects managed by SENECA controllers and RTUs operating on IEC 61131-3 platforms. Through Z-NET4 it is possible to automatically generate the controller configuration files, modify them when required, download the configuration to the CPU and configure the I/O modules connected to it. Z-NET4 also allows viewing of the values assumed by the modules and I /O variables in real time, automatically and transparently configuring management of the variables managed by the controllers.

MANAGEMENT PROJECTS

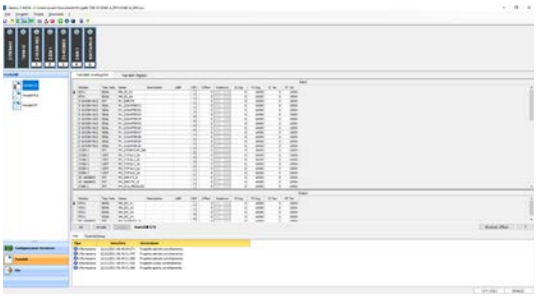


A ZNET4/Straton automation project is based on configuration files generated by ZNET4 which include: I/O module variables, user defined PLC variables, Master ModBUS RTU tasks for the reading/writing of I/O variables, the definition of PLC variables accessible via Server TCP ModBUS and/or Slave ModBUS RTU.

CONFIGURATION HARDWARE

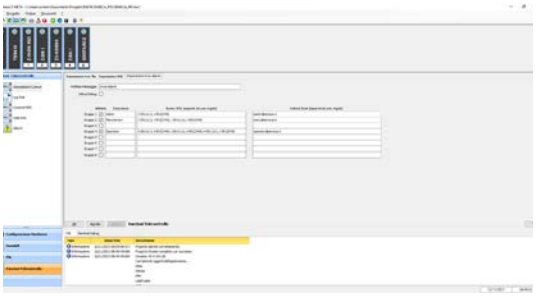
Through Z-NET4 it is possible to define the type of controller used and configure its functional characteristics: serial ports, ModBUS parameters, modem communication parameters, etc. After configuring the CPU, through communication via Ethernet, it is possible to configure the I/O modules or other connected devices.

MANAGEMENT VARIABLES



Z-NET4 is used to declare the I/O variables in the field, the ModBUS variables and the PLC variables to then use them in the integrated applications (Web Factory, Trend Viewer) and to export them to the Stratron environment or via OPC technology. In Z-NET4 the data acquisition and recording parameters are set for the "Data Recorder" integrated DAQ ModBUS application.

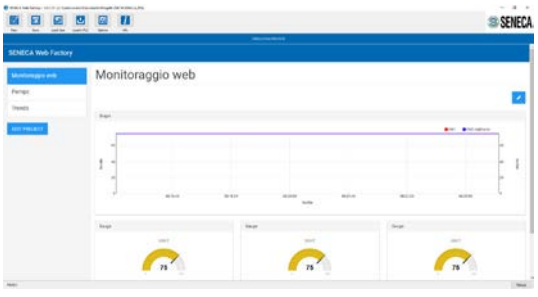
TECHNOLOGICAL FUNCTION LIBRARIES



Additional functions are offered in the ZNET4/Straton automation projects such as:

- Management of alarm events from digital signals or thresholds on analog values
- The sending of notifications via SMS and/or Email
- Alarm and data log with the possibility of local storage on microSD card, sending via FTP or Email
- Variable datalogging management with periodic log or trigger variable operation

PAGES FACTORY



Web Factory is a licence-free, intuitive tool with a responsive interface that is used to develop web pages starting from ZNET4 projects and to load them into the SENECA CPUs. These pages can contain numeric values, text fields, LED or gauge type visual indicators, and real-time graphics. These pages allow interaction with the variables declared in the Z-NET4 project by means of graphic buttons.

TREND VIEWER

Trend Viewer is a tool related to the Data Recorder data acquisition system that is used to view and process the data acquired by the recording sessions. It allows consultation of the databases in real time or of complete sessions, the displaying of historical data, the export of data as well as personalisation of the display pages.

STRATON

IEC 61131-3 PROGRAMMING

Evolution of the IEC 1131 published in 1992, the IEC 61131 standard represents the most successful effort to standardise industrial control technologies, bringing them back to an international standardisation system. The third part of the standard, IEC61131-3, deals with the programming languages used in industrial controllers. The standard defines textual programming languages (instruction list, structured text) and graphics (ladder diagram, function block diagram, sequential functional diagram). According to the IEC 61131-3 standard, PLC programs consist of a certain number of software elements, implemented in the various languages.

IDE

SENECA Straton Package
is a platform-independent SoftPLC suite of software required for the use of SENECA's Straton CPUs such as ZTWS11, Z-TWS4, Z-PASS2-S and S6001-RTU. This suite is intended to facilitate the user in installing all the necessary software packages through a single installer.

PACKAGE

SENECA Straton IDE
(Integrated Development Environment) is available in demo version or with 256, 512 and unlimited tags.
It acts as a design, programming and test interface with support for the languages of the IEC 61131-3 standard (ST, IL, FBD, SFC, LD). It includes I/O and fieldbus configuration tools, language conversion, data export and data exchange and remote control libraries.

STRATON IDE ACTIVATION KEY

- **Interface: USB 1.1, USB 3.0/2.0 compatible and certified**
- **Data retention: 10 years at 25°C**
- **Data duration: > 500,000 write cycles**
- **Power supply: 5 V max.**
- **Energy consumption: 25 mA max. (typical 5 mA/190 µA configured/not configured)**
- **Temperature: 0 ... 55 ° C, non-condensing**
- **MTBF (Mean Time Between Failures): 28 Mio. hours @ 25°C according to the SN29500-1 standard**
- **Lifespan: 10 years typically**
- **Dimension: 54 mm x 16 mm x 8 mm**
- **Weight: 6 g**

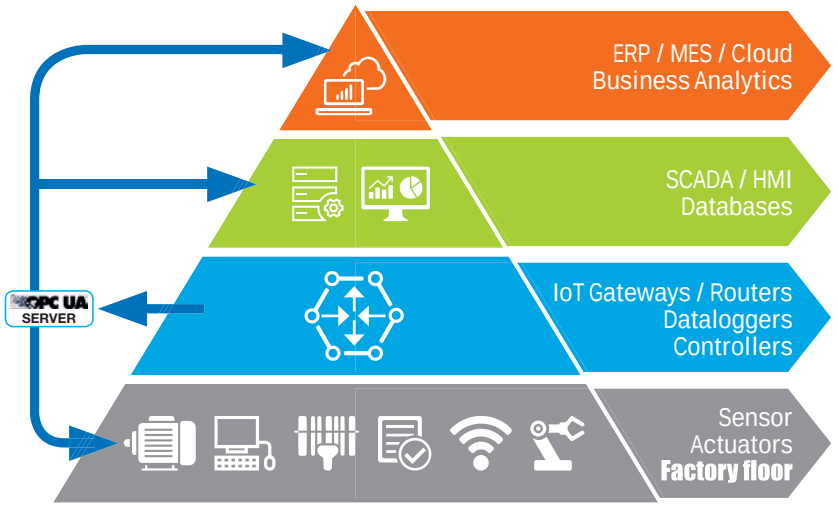
RoHS compliant
WEEE-Reg-No:
DE 90465365

ORDER CODE

Code	Description
SSP	SENECA Straton Package - CPU Seneca Installer suite (supplied)
STRATON-256-UPD	STRATON IDE 256 Tags UPGRADE from V8 to V9
STRATON-512-UPD	STRATON IDE 512 Tags UPGRADE from V8 to V9
STRATON-UN-UPD	STRATON IDE Unlimited Tags UPGRADE from V8 to V9
STRATON-870-850	Activation licence IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server
STRATON-870M	Activation licence IEC 60870-5-101/104 Master
STRATON-870S	Activation licence IEC 60870-5-101/104 Slave
STRATON-870S-850	Activation licence IEC 60870-5-101/104 Slave + IEC 61850 Client / Server
STRATON-D-USB	Straton activation key for IEC 61131 controllers
STRATON-FULL01	Activation licence IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server + SNMP extension
STRATON-IDE256	Straton development environment 256 tag with USB activation key
STRATON-IDE512	Straton development environment 512 tag with USB activation key
STRATON-IDEUN	Straton development environment unlimited tags with USB activation key
STRATON-SNMP	Straton SNMP agent driver extension
STRATON-UPGRADE1	Straton upgrade from 256 to 512 tags
STRATON-UPGRADE2	Straton upgrade from 512 to unlimited tags
STRATON-UPGRADE3	Straton upgrade from 256 to unlimited tags
STRATON-WB	Straton workbench IEC 61131 free editor (supplied)

OPC SERVER

OPC UA



OPC UA (Open Platform Communications Unified Architecture) is an open communication protocol for industrial automation, which facilitates the exchange between machines, systems and factory systems. In other words, it is a standard for transversal communications based on the client-server principle through an independent platform that supports multiple security mechanisms.
By implementing Client / Server OPC UA in Z-TWS4-S, Z-PASS2-S, S6001-RTU controllers and OPC UA Server in Z-PASS1 and Z-PASS2 gateways/routers, SENECA devices can be used in automation applications with client / server OPC UAs from other manufacturers and software houses. The OPC UA data model gives users access to all parameterisation functions, diagnostic information,
operations and support for open communication conceived by the IoT / Industry 4.0 standards.

OPC DA

OPC Data Access (DA) is a group of standards that provides specifications for real-time data communication from data acquisition devices such as display PLCs and human-machine interfaces (SCADA/HMI). With the standard OPC DA interface, experience in manufacturer specific protocols is not required. This allows for a significant reduction in the development, commissioning and maintenance workload. The specification focuses on continuous data communication. The OPC DA specification is based on Microsoft COM technology and defines a C/C++ interface.

INTEGRATION WITH THIRD PARTY DEVICES AND SOFTWARE

REMOTE ACCESS TO MACHINES AND SYSTEMS

IEC 61131-3 DEDICATED FUNCTION BLOCKS

EASY CONFIGURATION VIA WEB SERVER

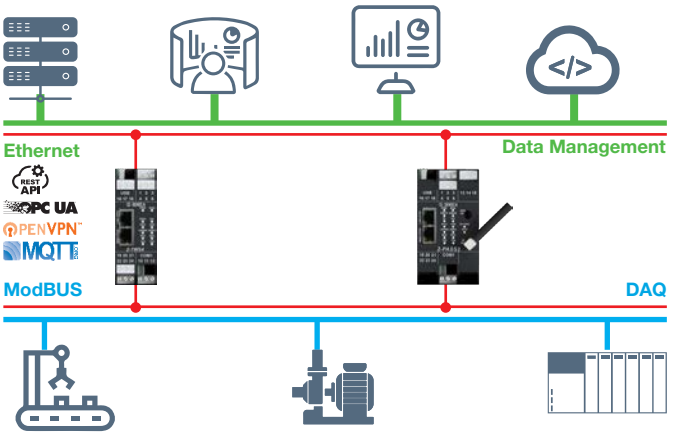
CLIENT / SERVER ARCHITECTURE

ACCESS TO DATA IN READING / WRITING

MONITORING AND DIAGNOSTICS

IOT INDUSTRY 4.0 READY

EASY ACCESS TO DATA, HIGH PERFORMANCE



- **Quick and practical access to data inside controllers, gateways, data loggers**
- **Intuitive graphical interface with online name search**
- **Integration with "Industry 4.0", IoT, Cloud, Big Data, ERP, Asset Management and Business Intelligence platforms**

ORDER CODE

Code	Description
OPC-DA-SERVER	Communication and data exchange software OPC Server WITH unlimited I/O tags (hardware licence)
OPC-UA-SERVER	Communication and data exchange software OPC Server UA I/O unlimited tags (hardware licence)

Z-PC-DIN

COMMUNICATION BUS REAR SUPPORT / POWER SUPPLY FOR Z-PC LINE MODULES

Category	Code	Width	Z-PC-IN system: power supply+bus for communication with IDC10 interface			Obligatory for Z-PC Line	Connection mode
			Z-PC DINAL2 17.5	Z-PC DINAL1 35	Z-PC DINAL2 52.5		
Digital I/O Modules ModBUS	Z-D-IN	17.5 mm	x			No	A
	Z-D-OUT	17.5 mm	x			No	A
	Z-10-D-IN	17.5 mm	x			Yes	C
	Z-10-D-OUT	17.5 mm	x			Yes	C
	Z-D-IO	17.5 mm	x			Yes	C
	Z-8NTC	17.5 mm	x			Yes	C
Digital I/O Modules ModBUS/CANopen	ZC-24DI	35 mm		x		Yes	C
	ZC-24DO	35 mm		x		Yes	C
	ZC-16DI-8DO	35 mm		x		Yes	C
Analog I/O modules I/O modules	Z-DAQ-PID	17.5 mm	x			Yes, only for RS485 ModBUS communication	B
	Z-4AI	17.5 mm	x			No	A
	Z-8AI	17.5 mm	x			Yes	C
	Z-3AO	17.5 mm	x			No	A
	Z-4RTD2	17.5 mm	x			Yes	C
	Z-4TC	17.5 mm	x			No	A
	Z-8TC / Z-8TC-LAB	17.5 mm	x			Yes	C
	Z-5DI-2DO	17.5 mm	x			Yes	C
	Z-SG	17.5 mm	x			Yes, only for RS485 ModBUS communication	B
Mixed I/O modules ModBUS / Ethernet	ZE-2AI	17.5 mm	x			No	A
	ZE-4DI-2AI-2DO	35 mm		x		No	A
	Z-4DI-2AI-2DO	35 mm		x		No	A
Analog I/O modules CANopen	ZC-8AI	17.5 mm	x			Yes	C
	ZC-3AO	17.5 mm	x			Yes	C
	ZC-4RTD	17.5 mm	x			Yes	C
	ZC-8TC	17.5 mm	x			Yes	C
	ZC-SG	17.5 mm	x			Yes	C
Analog I/O modules CANopen	Z203-1	17.5 mm	x			Yes, only for RS485 ModBUS communication	B
	Z204-1	35 mm		x		No	A
Controllers	Z-TWS4	35 mm		x		No	A
	Z-TWS11	17.5 mm		x		Yes, with 2 serial ports enabled	D
	Z-PASS2-S	52.5 mm			x	No	E
	Z-MINIRTU	35 mm		x		Yes, with 2 serial ports enabled	D
	Z-FLOWCOMPUTER	52.5 mm				No	A
Datalogger	Z-LTE	35 mm		x		Yes, with 2 serial ports enabled	D
	Z-GPRS3	35 mm		x		Yes, with 2 serial ports enabled	D
	Z-LOGGER3	35 mm		x		Yes, with 2 serial ports enabled	D
Networking	Z-KEY	17.5 mm	x			Yes, with 2 serial ports enabled	D
	Z-PASS1	35 mm		x		No	A
	Z-PASS2	52.5 mm			x	No	E
	Z-MODEM	35 mm		x		No	A
	Z-MODEM-3G	17.5 mm	x			Yes	C

EASY SETUP 2

EASY SETUP 2

Configuration software

Programmable models:
S401, Z-4AI, Z-SG, Z-8NTC, Z-5DI-20, Z-8AI, Z-10-D-IN, Z-10-D-OUT, Z-SG2, Z-8TC, Z-4RTD2, Z-10-D-IN, Z-DAQ-PID, Z-3AO, Z-4TC, Z-D-IN, Z-D-IO, Z-D-OUT, Z-4DI-2AI-2DO, ZC-SG, ZC-4RTD, ZC-8TC, ZC-8AI, ZC-3AO, ZC-24DI, ZC-24DO, ZC-16DIDO, ZE-2AI, ZE-4DI-2AI-2DO
Minimum hardware requirements:
CPU 1GHz, 256 MB free in HD, graphic board resolution 1024x769 pixel
Free download from www.seneca.it

- Automatic connection to the module
- Setting of operation and communication parameters
- Parameter monitoring
- Automatic configuration of modules
- Testing and replication of the configuration

EASY SETUP APP

Configuration app for Android terminal

Programmable models:
Z-SG
Android version: 4.0 or later
Compatible terminals: Android Smartphone/Tablet with OTG function
Download: Google Play Store

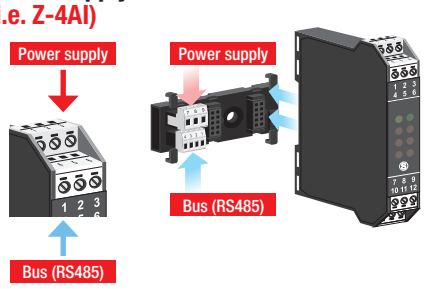
Mobile Phone with USB OTG support
Google play

- Automatic connection to the module
- Setting of operation and communication parameters
- Parameter monitoring
- Automatic configuration of modules
- Testing and replication of the configuration

CONNECTION MODE

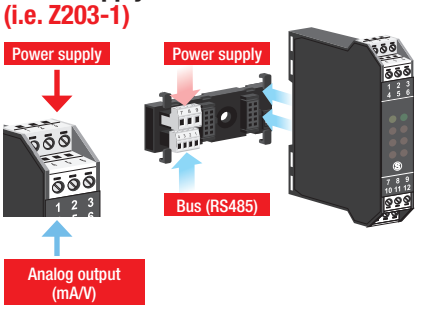
A BUS (RS485): TERMINALS OR IDC10

Power supply: TERMINALS OR IDC10
(i.e. Z-4AI)



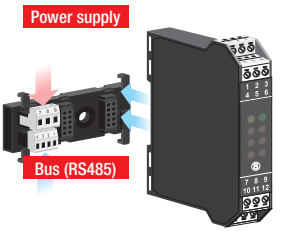
B BUS (RS485): ONLY IDC10

Power supply: Terminals or IDC10
(i.e. Z203-1)



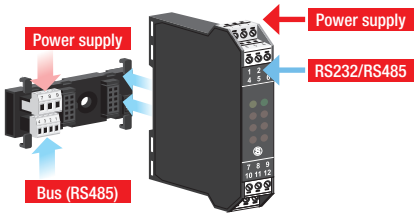
C BUS (RS485): ONLY IDC10

Power supply: IDC10
(i.e. Z-8TC)



D BUS (RS485): IDC10 ONLY WITH NO. 2 SERIAL PORTS ENABLED

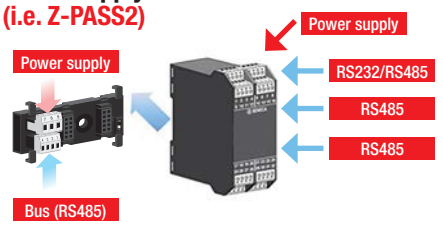
Power supply: Terminals or IDC10
(I.E. Z-KEY)



Independent serial ports
No.1 RS232/RS485 port (terminals)
No.1 RS485 port (bus/IDC10)

E BUS (RS485): IDC10 ALTERNATIVE TO 1 OF THE 3 SERIAL PORTS ENABLED

Power supply: Terminals or IDC10
(i.e. Z-PASS2)



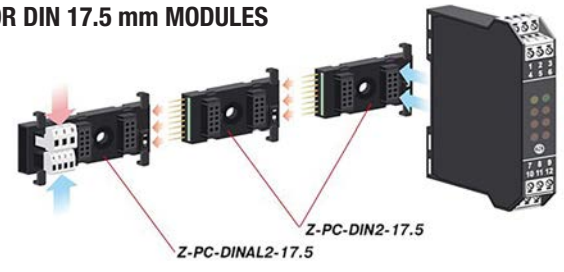
Independent serial ports
No.1 RS232/RS48t port (terminals)
No.1 RS485 port (terminals)
No.1 RS485 port (bus/IDC10)

MODELS Z-PC-DIN

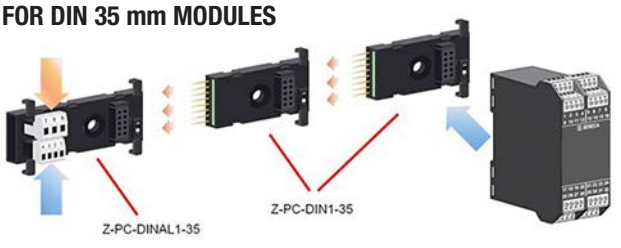
	DESCRIPTION	SLOT	STEP	TERMINAL POWER SUPPLY / BUS	HOT SWAPPING	DIN RAIL INSTALLATION
	**Z-PC-DINAL1-35** DIN rail rapid installation support – head +1 slot P=35mm	1	35 mm	Yes	Yes	Yes
	**Z-PC-DINAL2-17.5** DIN rail rapid installation support – head +2 slot P=17.5mm	2	17.5 mm	Yes	Yes	Yes
	**Z-PC DINAL2-52.5** DIN rail rapid installation support – head +1 slot 52,5 mm + 1slot 17,5 mm	2	52.5 mm	Yes	Yes	Yes
	**Z-PC-DIN1-35** DIN rail rapid installation support – 1 slot P=35mm	1	35 mm	-	Yes	Yes
	**Z-PC-DIN2-17.5** DIN rail rapid installation support – 1 slot P=17.5mm	2	17.5 mm	-	Yes	Yes
	**Z-PC-DIN4-35** DIN rail rapid installation support – 4 slot P=35mm	4	35 mm	-	Yes	Yes
	**Z-PC-DIN8-17.5** DIN rail rapid installation support – 8 slot P=17.5mm	8	17.5 mm	-	Yes	Yes

EXAMPLE OF CONNECTION

FOR DIN 17.5 mm MODULES



FOR DIN 35 mm MODULES



ORDER CODES

Code	Description
CABLES	
CE-RJ45-RJ45-C	Crossed Ethernet cable (RJ45 / RJ45) 1.5 MT
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45) 1.5
CS-DB9F-CFV10	RS232 connection cable (DB9F-CFV10)
CS-DB9F-CLAMP	RS485 serial cable (DB9F / terminals) 1.5 MT
CS-DB9F-DB9F	RS232 serial cable (DB9F / DB9F)
CS-DB9F-TIP	K107B RS232 communication cable (DB9F - tips)
CS-DB9F-TIP-V	RS485 serial cable (DB9F / leads) 1.5 MT for HMI VISUAL1/2/3
CS-DB9M-DB9F	RS232 straight serial cable for programming (DB9M / DB9F)
CS-DB9M-DB9M	RS232 serial cable (DB9M / DB9M)
CS-DB9M-MEF-1012	Serial communication cable Z-KEY (DB9M / MEF 10-12) 1.5 MT
CS-DB9M-MEF-PH	Serial communication cable (DB9M / MEF PH) 3 wires 1.5 MT
CS-DB9M-MICROB	Serial communication cable (DB9M / Micro USB) for Z-TWS5
CS-DB9M-TIP	Serial cable RS485 for radiomodem (DB9M / Tips)
CS-DB9M-TIP-V	Serial cable RS485 (DB9M / tips) for HMI VISUAL4
CS-JACK-DB9F	Programming serial cable (Jack / DB9F)
CS-RJ10-DB25M-1	Modem communication cable (RJ10 / DB25M)
CS-RJ10-DB25M-2	Modem and HMI communication cable (RJ10 / DB25M)
CS-RJ10-DB9F	Serial cable RS232 serial cable (RJ10 / DB9F)
CS-RJ10-DB9M	Modem serial cable (RJ10 / DB9M)
CS-RJ10-TIP	Serial communication cable (RJ10/ 4 Tips) 1.5 m
CS-TIP-MEF-PH	Serial communication cable (Tips / 4-way female connector)
CS-TIP-MICROB	Serial communication cable (Tips / Micro USB) - Z-TWS5
CS-TPW-TIP	Serial cable RS485 Tp-wire (Tp-wire / Tips)
CS-TPW-TPW	Cable Tp-Wire (Tp-wire / Tp-wire)
CU-A-MICROB	Cable plug USB-A Micro USB-B 5 P (KIT-USB, MY2, Z109REGBP)
CU-A-MINIB-1	Cable plug USB-A Mini USB-B 5 P, 1 meter, S203RC-D, Z109REGBP, Z113-1)
CU-A-MINIB-2	Cable plug USB-A min USB-B 5 P, 2 metres, S203RC-D
CU-A-MICRO-OTG	Adapter cable Micro USB OTG – USB Female A type
MEMORIES	
MSD	Micro SD memory card with adapter
ADAPTERS	
FD01	PULSECAP, photodetector to count pulses from electronic counter, max freq 10 Hz
S20ADP-CM-S	Sinusoidal pulse adapter card in NPN square wave
SG-EQ4	Equalisation card with up to 4 load cells
SG-EQ4-BOXPG7	Card + equalisation box with up to 4 load cells
Z-8R-10A	Interface board 8 relays 24 Vdc, capacity 250 Vac - 10 A (accessory Z-10-D-OUT)
BUS SYSTEM	
Z-PC-DIN1-35	Support for rapid installation on DIN guide 1 slot pitch 35 mm
Z-PC-DIN2-17.5	Support for rapid installation on DIN guide 2 slot pitch 17.5 mm
Z-PC-DIN4-35	Support for rapid installation on DIN guide 4 slot pitch 35 mm
Z-PC-DIN8-17.5	Support for rapid installation on DIN guide 8 slot pitch 17.5 mm
Z-PC-DINAL1-35	Support for rapid installation on DIN rail head + 1 slot pitch 35 mm
Z-PC-DINAL2-17.5	Support for rapid installation on DIN guide head + 2 slot pitch 17.5 mm
Z-PC-DINAL2-52.5	Support for rapid installation on DIN guide head
POWER SUPPLY UNITS	
Z-POWER-115-15VA	Transformer with DIN guide 19 Vac, 115 / 15 VA with thermofuse
Z-POWER-230-15VA	Transformer with DIN guide 19 Vac, 230 / 15 VA with thermofuse
Z-POWER-230-25VA	Transformer with DIN guide 19 Vac, 230 / 25 VA with thermofuse
Z-SUPPLY	Power supply switching monophase 24V @ 1.5 A

2

INDUSTRIAL COMMUNICATION AND TELECONTROL

INDUSTRIAL COMMUNICATION AND TELECONTROL

The Industrial Communication and Telecontrol line includes industrial smart dataloggers and gateways, VPN routers, UHF / VHF radio devices, serial and fibre optic communication interfaces, remote control units, remote alarms and remote assistance. The Seneca industrial communication products support the main http, ftp, SMTP, TCP-IP network protocols, as well as the 3G+,4G LTE, IIoT (Cloud, http post, OPC UA, MQTT) and web server technologies. The SENECA communication devices allow extension of the networks to be increased and allow the passage of process data between different levels of the IT and industrial communication architecture. SENECA solutions for networking and remote control ensure openness, scalability and maximum connectivity in the transmission of data to and from supervisory centres.

2.1 REMOTE ALARM AND DATALOGGER UNITS

2.2 SMART DATALOGGER

2.3 RTU FOR REMOTE CONTROL APPLICATIONS

2.4 INDUSTRIAL GATEWAYS

2.5 IOT / VPN REMOTE CONTROL REMOTE ASSISTANCE PLATFORM

LET'S
IOT CONNECTIVITY SOLUTIONS

2.6 IOT / SCADA / CLOUD SOLUTIONS

Cloud BOX

2.7 SERIAL/USB CONVERTERS

2.8 CONVERTERS FOR FIBRE OPTICS

2.9 RADIO MODULES

2.10 RADIO MEASURING SYSTEMS

REMOTE ALARM AND DATALOGGER UNITS

2

2.1

OVERVIEW

The SENECA remote alarm and data collections devices are designed to remotely control, monitor and implement small automations for homes, buildings, systems and production machines through simple commands sent with SMS messages. With any mobile phone or smartphone, it is possible to control the switching on and off of a technical system, to activate a contact and to receive an anomaly or an alarm. These professional and universal devices are easily programmable and are based on a GSM/GPRS module that acts as a telephone communicator capable of intelligently managing calls, commands, directories and data archiving.

THE RANGE

B-ALARM

MY2B
MYALARM3 BASE

MY2G
MYALARM2 GPS

MY2S
MYALARM2 SECURITY

MYALARM3 CLOUD

VERSATILITY AND MULTIFUNCTIONALITY

- Remote control of unattended sites
- Flexible configuration
- Automatic sending of commands, data, alarms with push / SMS notifications
- Built-in Modem and I/O
- Integrated temperature sensor
- Alarm signals and management in real time
- On-off and timed commands, for gates motors, pumps, lights etc.
- Temperature threshold contacts opening/closing (HVAC Systems)
- Rechargeable Li-Ion battery
- Optional GPS module

SCENARIOS AND POSSIBLE APPLICATIONS

- CONTROL OF BOILERS
- ANTI-FLOOD SYSTEM
- IRRIGATION SYSTEM
- CONTROL OF CONSUMPTION AND CONTINUITY OF THE ELECTRICITY GRID
- SECOND HOUSES MONITORING
- ACCESS CONTROL
- CONTROL OF SWIMMING POOLS
- ROOM AUTOMATIONS
- CONTROL OF LIGHTS
- CONTROL OF AUTOMATIC GATES
- HVAC SYSTEMS MONITORING
- ALARMS MANAGEMENT

APPLICATIONS

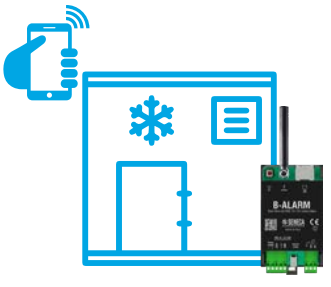
	B-ALARM	MYALARM2 MY2B	MYALARM2 MY2S	MYALARM2 MY2G	MYALARM3 CLOUD
DOMOTICS & BUILDING					
Universal remote control (gates, boilers, HVAC systems etc.)	x	x	x	x	x
Smart thermostat	x	x	x	x	x
Lighting control and lighting systems	x	x	x	x	x
Access and attendance control	x	x	x	x	x
Anti-flooding system	x	x	x	x	x
Astronomical twilight switch		x	x	x	x
ENERGY MONITORING					
Mains voltage control and power failure management	x	x	x	x	x
AUTOMATION AND REMOTE CONTROL					
Remote alarm and remote control of systems	x	x	x	x	x
Water network alarm management	x	x	x	x	
Photovoltaic system production control (from photodiode)	x	x	x	x	
Optical fibre continuity check	x	x	x	x	
System measurements control (temperature, flow rate, level, etc.)		x	x	x	
Water leaks control		x	x	x	
Pump and motor control (logics and operating hours)		x	x	x	x
Automatic irrigation system		x	x	x	x
Events datalogger and recorder		x	x	x	
Cold chain monitoring		x	x	x	
SAFETY					
Telephone dialler			x	x	
Commands with DTMF tones			x	x	
Automatic sending of commands and alarm push notifications					x
GEOLOCALISATION					
Geolocation of machinery, vehicles, boats				x	(x opt.)
Virtual fence control				x	(x opt.)
iOS / Android MOBILE APPS					
Custom applications via widgets					x

AUTOMATIC BARRIER CONTROL

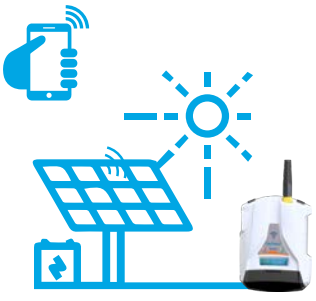
CONTROL OF BOILERS AND HVAC SYSTEMS

CONTROL OF WATER CONSUMPTION AND LEAKS

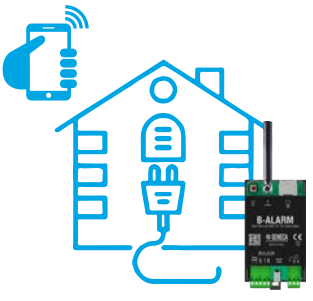
MONITORING COLD ROOMS



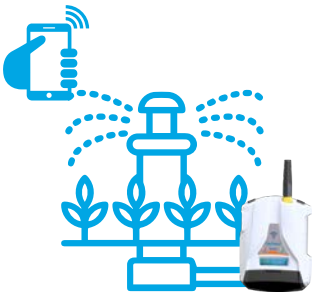
SOLAR PANELS CONTROL



NETWORK VOLTAGE CONTROL



AUTOMATIC IRRIGATION SYSTEMS



TRACKING OF VEHICLES AND FLEETS

SCHEDULING

B-ALARM

SET SETUP (BASIC CONFIGURATION)
I/O management, acquisition time, log (MYALARM2 only), commands, alarms, SIM, GSM communication, audio files (MYALARM2 only), administration functions (password, credit, message redirection, etc.)

SMS COMMANDS OR RINGS

MYALARM2

EASY MYALARM2
I/O management, acquisition time, log (MYALARM2 only), commands, alarms, SIM, GSM communication, audio files (MYALARM2 only), administration functions (password, credit, message redirection, etc.)

LOG FACTORY
History file display and archiving

SMS SENECA
Android / iOS APP for the sending and customisation of SMS controls

SENECA TEMP
Android APP for thermostat temperature and function management

SMS COMMANDS OR RINGS

MYALARM3 CLOUD

MYALARM3 CLOUD
Free mobile application available on Apple or Play store.
This powerful app in 10 languages allows advanced yet simple system configuration. It integrates tutorials, manuals and online help.

MYALARM3 CLOUD (SERVICE)
The MyAlarm3 Cloud Kit includes a 12-month fee from the date of first activation. For information and service renewal costs, please visit: www.seneca.it/myalarm3cloud https://cloud.seneca.it

B-ALARM
Basic Alarm Unit

B-ALARM is a GSM device designed for the remote alarm management of homes, buildings, systems and production machines through simple commands sent with messages in SMS format. With any smartphone it is possible to control the switching on and off of the boiler, activate a contact, etc. The device is equipped internally with a GSM module which behaves like any telephone terminal on a cellular network. The unit is used to operate with zero-cost commands via ring as well as with fast commands with numeric code and timed commands. It also has 1 digital input and 1 SPDT output relay with 3 A / 250 Vac capacity. B-ALARM uses a command directory of 5 users and a SIM phone book extended to up to 250 users.

HIGHLIGHTS

ALARM INSTANT MESSAGING

MULTILINGUAL SUPPORT UNICODE

BUILT-IN MODEM AND I/O

SMS / RING COMMANDS AT NO COST

ADDRESS BOOK FOR UP TO 250 USERS PER APPLICATION

RECHARGEABLE LI-ON BATTERY

COMPATIBLE WITH ALL TYPES OF STANDARD VOICE/DATA SIMS

E-TIMER COUNTER MANAGEMENT

Power off button

SMA antenna connector

No.1 Slot push pull
for mini SIM card

Mounting on wall or on DIN rail - (IEC EN 60715)

Status LED

GSM quad band
850 / 900 / 1800 /1900 MHz

10..28 Vdc power supply
600 mAh NiMh rechargeable spare battery, autonomy max 1 h

No.1 digital relay output
SPDT 2A – 250V

No.1 Reed digital input
Reed, contact, NPN / PNP 2 wires, FD01 5Hz

USB Micro
for upgrade and configuration

MYALARM2
A concentrate of technologies

MyALARM2 BASE (MY2B) is a GSM/GPRS device designed to remotely control homes, buildings, systems and production machines through simple commands sent with messages in SMS format. The device is also able to send alarms, SMS/emails in case of anomalies on inputs, power failure, temperature thresholds exceeded. It also ensures the recording of all variables on MicroSD and the sending of log files via email or ftp. MyALARM2 SECURITY AUDIO (MY2S) can also send voice calls and receive commands via DTMF tones, including the silencing of alarms. The MyALARM2 GPS (MY2G) version integrates a number of geolocation functions and allows the setting of alarms on virtual fence and speed.

RAPID SELECTION

	MYALARM2 - MY2B	MYALARM2 - MY2S	MYALARM2 - MY2G
SD supplied	No	Yes	Yes
Integrated NTC sensor	Yes, External optional	Yes, External optional	Yes, External optional
I/O	4DI, 2AI, 2DO (optional)	4DI, 2AI, 2DO (optional)	4DI, 2AI, 2DO (optional)
Integrated GPS	No	No	Yes
Datalogger	Yes	Yes	Yes
Pre-set scenarios	Yes	Yes	Yes
DTMF Commands / Voice alarms	No	Yes	Yes
Email management	Yes	Yes	Yes
List	20 SMS contacts, 20 email contacts, 1000 ring command contacts	20 SMS contacts, 20 email contacts, 1000 ring command contacts	20 SMS contacts, 20 email contacts, 1000 ring command contacts

GSM/GPRS Communication
Integrated GSM/GPRS Quadband 850/900/1800/1900 MHz modem, communication via SMS, email, Ftp

Power button

Quick programming mini USB interface

GPS module (My2G version)
22 channel receiver, -165 dBm, fix time 32s, accuracy up to 2.5m

LCD display
128 x 32 pixel LCD display for I/O status display, totalisers / counters, GSM, date

Data acquisition
#4 Digital Inputs: Max Freq. 30 Hz @ 32 bit [10 timer, 4 counters, 4 totalisers, 4 hour counters]
#2 Analog Inputs: Range (0-20 mA, 0-30 V), 16 bit resolution
#2 Digital Outputs: SPST 3 A Relay (opt.)

Compact dimensions
MyALARM2: 80 x 105 x 30 mm
IP66 case (MY2-KITIP66): 130 x 180 x 75 mm

"SCROLL DISPLAY" button

Data/Voice SIM port

Integrated and expandable memory
SD Slot for micro SD and microSDHC up to 32GB
Integrated Flash Memory

Rechargeable spare battery
(Li-On, 1.000 mAh, max autonomy 8 h)

12 V Power Supply

NTC sensor
wired on terminal

MYALARM3 CLOUD
The Cloud at your fingertips

MyAlarm3 Cloud is a system consisting of a smart GSM/GPRS control unit and a mobile app for the remote control of homes, systems, machinery and unattended installations. MyAlarm3 Cloud is a compact and reliable all-in-one system for residential or industrial applications, in particular for the automatic sending of data and alarms from unattended sites. The app offers the main functions useful for monitoring through immediate consultation and practical use both from a web browser and from mobile devices, allowing alarm management (in case of power failure, variation of digital contacts, exceeding of analogue and temperature input thresholds), timed, impulsive and on/off commands (lights, motors, gates, pumps, overhead doors, contacts for HVAC systems and twilight contacts), GPS (position notifications, virtual fence alarm).

SYSTEM CONFIGURATION

1. CONTROL UNIT

Monitoring unit GSM/GPRS including 4 digital inputs, 2 analog inputs, 2 digital outputs, LCD display, temperature sensor, input for external NTC sensor, battery, GPS module (optional).

2. ANDROID/iOS APP

Free mobile application MyALARM3 Cloud available on Apple or Play store. This powerful app in 10 languages allows advanced yet simple system configuration. It integrates tutorials, manuals and online help.

3. CLOUD SERVICE

The MyAlarm3 Cloud Kit includes a fee that lasts for 12 months from the date of first activation. For information and costs of renewal of the service, please visit:
www.seneca.it/myalarm3cloud
https://cloud.seneca.it

Radio module
for connection with wireless sensors (Optional)

Power button

Quick programming mini USB interface

LCD Display:
128 x 32 Dots
(display of statuses/ I/O, battery level, GSM)

Built-in I/O terminals
- 4 digital inputs REED Contact, PNP, Pulscap, relay (max frequency
- 2 analog inputs Current 0..20 mA, 0..30 V; 16 bit resolution; Accuracy 0.1% f.s.
- 2 digital outputs Relay SPST 3 A / 250 Vac (Optional)

IP66 external case
(Optional)

GSM/GPRS antenna and modem
integrated quad bands

"Scroll display" button

Internal GPS module
(Optional)

Voice/data SIM slot

SD Memory card

Li-Io rechargeable battery,
3,7 V -1100 mAh, autonomy up to 5 h

12 V Power Supply

Power cable
on 230V socket

NTC temperature probe 5 cm

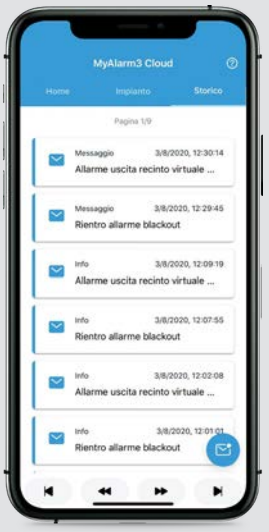
MYALARM3 CLOUD
The most powerful and easiest app for system monitoring

ADVANCED CONFIGURATION

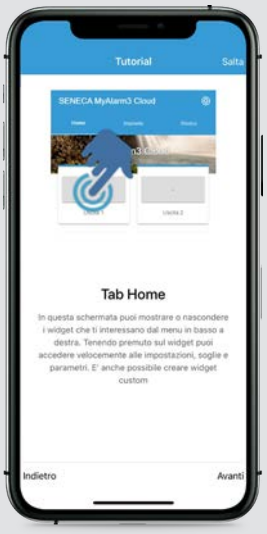
MANAGEMENT OF ALARMS AND COMMANDS

GEOLOCALISATION

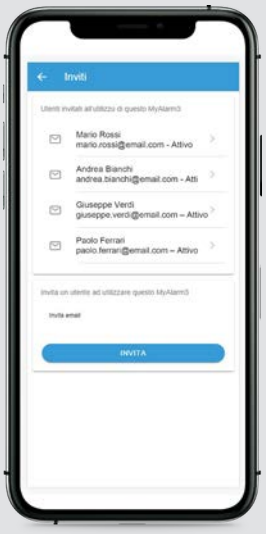
ALARMS AND EVENTS HISTORY



TUTORIALS AND ONLINE SUPPORT



MANAGEMENT OF DEVICES AND INVITATIONS



CALENDAR AND SCHEDULING

THERMOSTAT FUNCTION

TECHNICAL DATA

	B-ALARM	MYALARM2 - MY2B	MYALARM2 - MY2G	MYALARM2 - MY2S	MYALARM3 CLOUD
					
	1DI / 1DO remote alarm unit with basic functions	**Datalogger unit and GSM/ GPRS remote alarm, basic version**	**Datalogger unit and GSM/ GPRS remote alarm, GPS locator**	**Datalogger and remote alarm Unit Security Audio version**	**GSM/GPRS device for remote alarm and remote control**
GENERAL DATA					
Power supply	10-30 Vdc	6-15 Vdc	6-15 Vdc	6-15 Vdc	6-15 Vdc
Consumption	Typical 1.2 W, maximum 2 W	3.5 W (max)	3.5 W (max)	3.5 W (max)	3.5 W (max)
Protection degree	IP20	IP20	IP20	IP20	LED status indicators
Rechargeable battery	Ni-MH rechargeable battery, autonomy up to 100 minutes	Li-ION (1,100 mAh), autonomy up to 8 hours (without auxiliary relay)	Li-ION (1,100 mAh), autonomy up to 8 hours (without auxiliary relay)	Li-ION (1,100 mAh), autonomy up to 8 hours (without auxiliary relay)	Li-ION 3.7 V (1.100 mAh), autonomy up to 5 hours
SD support	-	Push-Push for SD card and SD HC card / max 32GB	Push-Push for SD card and SD HC card / max 32GB	Push-Push for SD card and SD HC card / max 32GB	Push-Push for SD card and SD HC card / max 32GB
Slot SIM	Push-Push for mini SIM (15 x 25 mm)	Push-Push for mini SIM (15 x 25 mm)	Push-Push for mini SIM (15 x 25 mm)	Push-Push for mini SIM (15 x 25 mm)	Push-Push for mini SIM (15 x 25 mm)
SIM supported		SIM mini	SIM mini	SIM mini	SIM mini
Temperature probe		Internal NTC thermistor (standard), optional external	Internal NTC thermistor (standard), optional external	Internal NTC thermistor (standard), optional external	Internal NTC thermistor (standard), optional external
Protocols	SMS	FTP client, SMTP client, SMTPS with SSL client	FTP client, SMTP client, SMTPS with SSL client	FTP client, SMTP client, SMTPS with SSL client	SMS, FTP client, SMTP client, SMTPS with SSL client
Display	No	LCD 128x32 Dots with visible area 39 mm x 8.6 mm Display scroll button	LCD 128x32 Dots with visible area 39 mm x 8.6 mm Display scroll button	LCD 128x32 Dots with visible area 39 mm x 8.6 mm Display scroll button	LCD 128x32 Dots with visible area 39 mm x 8.6 mm Display scroll button
GSM	Quad band (850 / 900 / 1800 / 1900 MHz)	Quad band 850 / 900 / 1800 / 1900 MHz	Quad band 850 / 900 / 1800 / 1900 MHz	Quad band 850 / 900 / 1800 / 1900 MHz	Quad band 850 / 900 / 1800 / 1900 MHz
GPS	-	-	22-channel receiver Sensitivity -165 dBm Typical fix time 32 s Accuracy Up to 2.5m	-	22-channel receiver Sensitivity -165 dBm Typical fix time 32 s Accuracy Up to 2.5m
Dimension	114 x 54 x 32 mm	80 x 105 x 30 mm	80 x 105 x 30 mm	80 x 105 x 30 mm	80 x 105 x 30 mm
Weight		150 g	150 g	150 g	150 g
Operating temperature	-10..+55°C	0..45°C (recommended) -20..+55°C (with power supply) -20..+45°C (in discharge)	0..45°C (recommended) -20 .. 55 ° C (with power supply) -20..+45°C (in discharge)	0..45°C (recommended) -20..+55°C (with power supply) -20..+45°C (in discharge)	0..45°C (recommended) -20..+55°C (with power supply) -20..+45°C (in discharge)
Material	ABS polycarbonate	ABS polycarbonate	ABS polycarbonate	ABS polycarbonate	ABS polycarbonate
Installation	DIN Rail or wall	DIN Rail or wall	DIN Rail or wall	DIN Rail or wall	DIN Rail or wall
FUNCTIONS AND SETTINGS					
Datalogger	-	Yes	Yes	Yes	-
Basic configuration	Software (EASY SETUP)	Software (EASY MYALARM2)	Software (EASY MYALARM2)	Software (EASY MYALARM2)	Web or Mobile App (MyALARM3 CLOUD)
Management app	-	SENECA Temp	SENECA Temp	SENECA Temp	MyALARM3 Cloud
Cloud Service	-	-	-	-	12 months free from activation
Scenario / widget management	-	Advanced automations, alarms on inputs, data loggers, leak control. control of solar panels, control of swimming pools, control of automatic gates, timed automations, hour counter, boiler control, power failure control	Advanced automations, alarms on inputs, data loggers, leak control. control of solar panels, control of swimming pools, control of automatic gates, timed automations, hour counter, boiler control, power failure control	Advanced automations, alarms on inputs, data loggers, leak control. control of solar panels, control of swimming pools, control of automatic gates, timed automations, hour counter, boiler control, power failure control	Electrical network, temperature, GSM / GPRS network, GPS, alarms present, uptime, I/O management MAX/MIN analog threshold, counter threshold, digital input/output, GPS fence, power failure, sunrise and sunset, MIN/MAX temperature, command of your choice
Alarms management	Commands / SMS Alarms / Call	Commands / SMS Alarms / Call	Commands / SMS Alarms / Call	SMS commands / alarms / ring, DTMF commands, voice alarms	Blackout, digital, impulsive, timed, twilight contacts, counters, min/ max analog thresholds, motorised user control, virtual GPS fence
Email management	No	Yes	Yes	Yes	-
History					Log of alarms, events, calendar
List	5 users (1 administrator), 250 contacts	1000 users (1 administrator), 250 contacts	1000 users (1 administrator), 250 contacts	1000 users (1 administrator), 250 contacts	-
Fast / timed commands	Yes	Yes	Yes	Yes	
Management of counters and timers	4 counters	4 counters, 10 timers	4 counters, 10 timers	4 counters, 10 timers	4 counters
DIGITAL INPUTS					
Channels	1	4	4	4	4
Type	Contact, voltage 6-24 V	Reed, Contact, PNP, Pulscap	Reed, Contact, PNP, Pulscap	Reed, Contact, PNP, Pulscap	REED Contact, PNP, Pulscap, relay
Max. frequency	-	30 Hz	30 Hz	30 Hz	30 Hz
ANALOG INPUTS					
Channels	-	2	2	2	2
Type	-	Current 0..20 mA (max impedance 60 Ω); voltage 0..30 V (max impedance 100 kΩ)	Current 0..20 mA (max impedance 60 Ω); voltage 0..30 V (max impedance 100 kΩ)	Current 0..20 mA (max impedance 60 Ω); voltage 0..30 V (max impedance 100 kΩ)	Current 0..20 mA (max impedance 60 Ω); voltage 0..30 V (max impedance 100 kΩ)
Resolution	-	16 bit	16 bit	16 bit	16 bit
Accuracy	-	0.1% f.s.	0.1% f.s.	0.1% f.s.	0.1% f.s.
DIGITAL OUTPUTS					
Channels	1	2 (optional)	2 (optional)	2 (optional)	2
Type	Relay SPDT 3 A / 250 Vac	Relay SPST 3 A / 250 Vac	Relay SPST 3 A / 250 Vac	Relay SPST 3 A / 250 Vac	Relay SPST 3 A / 250 Vac
STANDARD					
Certification	EC	EC	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

SALES CONFIGURATION

B-ALARM

- Power supply 10..28Vdc
- NiMh 600 mAh spare battery
- N° 1 Reed digital input, contact, NPN / PNP 2 wires, FD01 5Hz
- No.1 digital relay output SPDT 2A - 250V
- No.1 USB micro port
- No.1 modem GSM quad band

ORDER CODE

Codes	Description
B-ALARM	Basic Alarm Unit, 1DI, 1DO, SMS, backup battery

MYALARM2

- 12 V Power Supply
- Li-On battery, 1,000 mAh, max 8 h autonomy
- No.4 Digital Inputs: Max Freq. 30 Hz @ 32 bit [10 timers, 4 counters, 4 totalisers, 4 hour counters]
- No.2 Analog Inputs: Range (0-20 mA, 0-30 V), resolution 16 bits
- No.2 Digital Outputs: SPST 3 A Relay (opt.)
- No.1 USB micro port
- N ° 1 quad band GSM modem, optional GPS

ORDER CODE

Versions / Options	Codes	Description
Base unit	MY2B	MYALARM2 BASE / DATALOGGER
	MY2S	MYALARM2 SECURITY AUDIO
	MY2G	MYALARM2 GPS
SPST Relay Card	-0	None
	-R	Present
Prepared for other connections	-0	None
Connection system	-C	Connectors
	-M	Terminals
Colours	-B	Blue
	-G	Grey
IP66 housing (option)	-4X	IP66 enclosure, electrically insulated, with openable front door

MYALARM3 CLOUD

- 12 V Power Supply
- 1100 mAh rechargeable battery, autonomy up to 5h
- No.4 digital inputs REED Contact, PNP, Pulscap, relay
- No.2 analog inputs Current 0..20 mA, 0..30 V;
- 16 bit resolution; Accuracy 0.1% f.s.
- No.2 digital outputs Relay SPST 3 A / 250 Vac (opt.)
- Modem Quad Band

ORDER CODE

Versions / Options	Codes	Description
Base unit	MY3CLOUD	Cloud based GSM/GPRS remote alarm unit
SPST relay card	-0	Relay board absent
	-R	Relay board present
Preparation for other functions	-0	Not active
GPS module	-0	GPS module absent
	-G	GPS module present
Colours	-G	Grey colour

ACCESSORIES

Code	Description
A-GPS	External GPS antenna with magnetic base and MMCX connection
A-GSM	Multiband external antenna with 3 m cable and male SMA connection
A-GSM-DIR-5M	Compact GSM-UMTS directional antenna
A-GSM-OMNiDIR	Omnidirectional GSM-UMTS-WIFI antenna
A-GSM-OMNiDIR-10	Omnidirectional GSM-UMTS-WIFI antenna with 10m cable length
ALIM-MY2	Replacement power supply unit
BATT-MY2	Replacement battery
CU-A-MICRO-B	Cable plug USB-A Micro USB-B 5 P
MSD	MicroSD Card with SD adapter
MY2-KITIP66	IP66 ABS kit for quick installation in the field
NTC-150	External NTC probe 1.5 m

ADVANCED DATALOGGERS

OVERVIEW

The advanced MYALARM SEAL, Z-GPRS3, Z-LOGGER3, Z-LTE dataloggers represent a solution capable of responding to the growing needs of data collection, real-time analysis and integration with the IT systems present in the automation and monitoring of the system, in line with the new productivity and communication models of Industry 4.0 and the Internet of Things. Designed to perform remote alarm, remote measurement and datalogging functions, these devices are available with integrated UPS, built-in I/O channels, dedicated programming and visualization software, serial and Ethernet communication support, MQTT protocol and in most 2G/3G+/4G modem models with GNSS/GPS/GLONASS receiver. Optionally, dataloggers can be combined with Cloud BOX, an IoT / Cloud solution proposed by SENECA that allows the centralising data, the managing of remote connections and the creation of multi-user customisable supervision pages.

	THE MODELS		MYALARM SEAL	Z-LOGGER3	Z-GPRS3	Z-LTE
						
Hardware	Power supply		Vdc Integrated UPS	Vac/dc Integrated UPS	Vac/dc Integrated UPS	Vac/dc Integrated UPS
	Modem		**2G**	-	**2G**	**4G** **World Wide**
	Memories		8M Flash + Micro SD max 32 GB	8M Flash + Micro SD max 32 GB	8M Flash + Micro SD max 32 GB	8M Flash + Micro SD max 32 GB
	GPS / GNSS / GLONASS		☑(*)	-	-	☑
	Built-in / expandable I/O	I/O	4DI, 2AI, (2DO optional) Non-expandable	4DI, 2AI, 2DO Expandable on ModBUS network	4DI, 2AI, 2DO Expandable on ModBUS network	4DI, 2AI, 2DO Expandable on ModBUS network
	Communication interfaces		#1 Micro USB	#1 Ethernet 10/100 #1 RS232/RS485 #1 RS485 #1 Micro USB	#1 Ethernet 10/100 #1 RS232/RS485 #1 RS485 #1 Micro USB	#1 Ethernet 10/100 #1 RS232/RS485 #1 RS485 #1 Micro USB
	Integrated NTC sensor	NTC	☑	-	-	-
	SIM Support, Public IP, APN, DynDNS	SIM	☑(**)	☑	☑	☑
Data / Alarms Management	Synchronous / asynchronous / triggered datalogging	LOG	☑	☑	☑	☑
	Redundant Data Log		☑	☑	☑	☑
	Alarms / email management		SMS / APP / send ftp files / DTMF / Voice alarms	Sending of FTP files	SMS / APP / send ftp files / DTMF / Voice alarms	SMS / APP / send ftp files / DTMF / Voice alarms
	Voice Alarms / DTMF Commands		☑	-	☑	☑
Communication / IoT	Standard protocols Ftp, Smtp, http, ModBUS TCP, ModBUS RTU	Modbus ETHERNET	☑(**)	☑	☑	☑
	IoT Protocols (http post, MQTT) Cloud BOX support	Cloud BOX	☑	☑	☑	☑
	Transparent gateway RTU ↔TCP/IP ModBUS		-	☑	☑	☑

(*) Available in versions with GPS - (**) excluding DynDNS - (***) excluding RTU / TCP ModBUS

PROGRAMMING

SENECA's advanced data loggers ensure open and flexible programming thanks to a dedicated environment for the development of control logic (SEAL), an integrated Web Server, an app for direct management of commands via SMS, a tool for importing and displaying data (Log Factory). The HMI interface of the "Cloud BOX" system completes the possibility of managing data through web pages that can be customised with widgets. They can also be integrated with Scada, Cloud systems, databases and third-party web portals already available on systems or arranged by end users.

SEAL
LOGICAL-MATHEMATICAL SYSTEM AND FUNCTIONS CONFIGURATION

CLOUD BOX
REMOTE CONNECTIONS MANAGEMENT MICRO SCADA, DATA HISTORICISER

WEB SERVER
MONITORING AND SETTING PARAMETERS

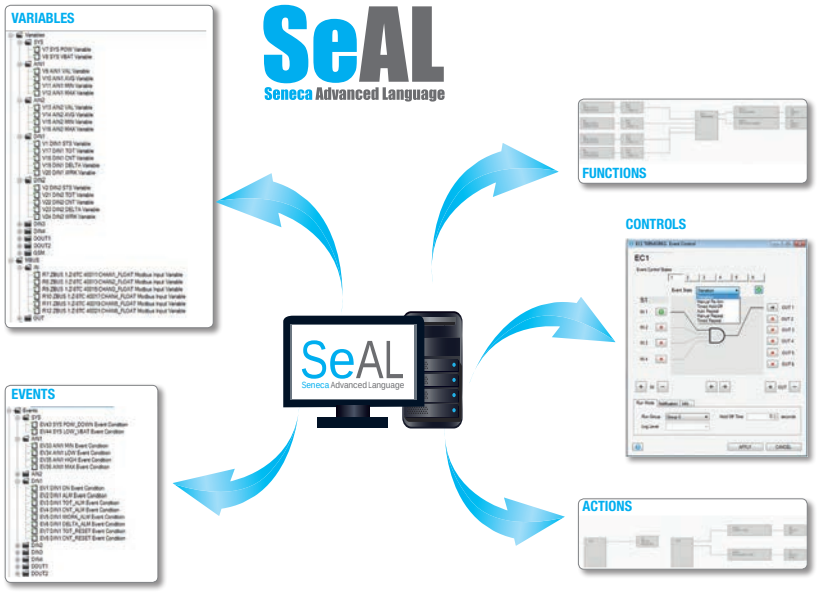
LOG FACTORY
ARCHIVING AND DISPLAY HISTORIC FILES

SMS SENECA
ANDROID APP / IOS FOR THE SENDING AND PERSONALISATION OF SMS COMMANDS

THIRD PARTIES SYSTEMS
SCADA, CLOUD, DATABASE SYSTEMS AND WEB PORTALS OF THIRD PARTIES

	MYALARM SEAL	Z-LOGGER3	Z-GPRS3	Z-LTE
SEAL	x	x	x	x
CLOUD BOX (sw application)	x	x	x	x
WEB SERVER	–	x	x	x
LOG FACTORY	x	x	x	x
SENECA SMS (mobile app)	x	–	x	x

SEAL, BLOCK PROGRAMMING ENVIRONMENT



SEAL is a software designed for the advanced management of automation and remote communication projects.
SEAL is used to intuitively manage variables, commands, automations, alarms, thresholds, reports, communication networks with the possibility of remote configuration and updating via SIM or Ethernet.
The key functions managed by SEAL include the control of alarms and events associated with the I/O channels, operations on bits, comparators, triggers and timings.
SEAL offers the possibility to set function blocks, command blocks on thresholds and to completely manage the ModBUS variables of the devices to be programmed.

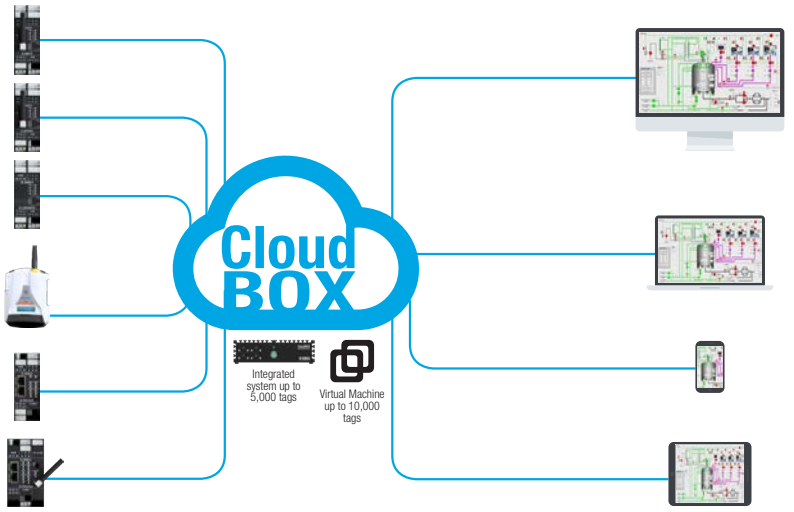
CLOUD BOX - INDUSTRIAL IOT BOX WITH MICRO SCADA FUNCTIONS

The Cloud - IoT solution for centralising data, managing remote connections, creating multi-user customisable supervision pages.

DEVICES SUPPORTED

SMART DATALOGGER

IOT GATEWAYS ROUTERS



HIGHLIGHTS

HARDWARE
Compact fanless pc

VIRTUAL MACHINE
VmWare integrated version with third-party servers

SUPERVISION
Creation of responsive web pages with dashboards, synoptics and integrated widgets for the supervision of devices in the field

TAG MANAGEMENT
Threshold management up to 10,000 tags (virtual machine) or 5,000 tags (physical server) Max 10,000 tags

DATA ARCHIVING
Centralised data storage alarms of connected devices max data retention time up to 10 years, min sampling time 1 min

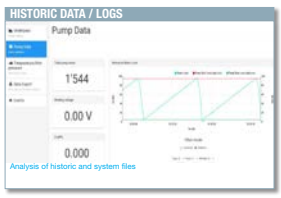
DATA/ALARMS HISTORY
Display of time series data, events, alarms on web pages

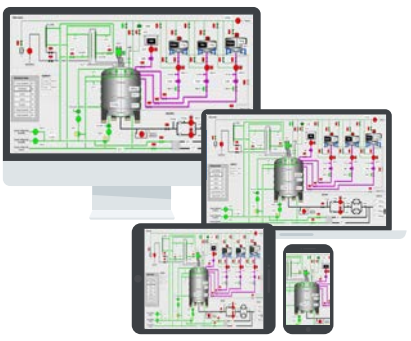
SENDING OF COMMANDS
Sending of commands to connected devices bypassing of any SIM blocks and firewalls (compatibility with any data/M2M SIM)

DATA EXPORT AND RECOVERY
Backup, automatic data recovery system and export in csv format

HMI / SCADA FUNCTIONS

Cloud BOX provides numerous widgets (input status, charts, bars, etc.), i.e. components that represent the status of connected devices. Starting from these widgets, responsive web pages (for PCs, tablets, smartphones) of the dashboard type (e.g. historical data, commands, events management, trend management) or supervisory synoptics can be created.



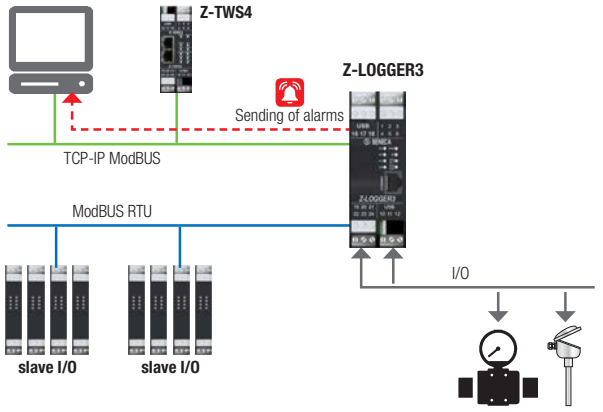


TECHNICAL DATA

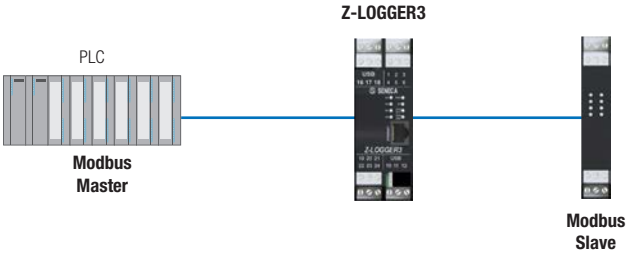
Operating temperature	0..40°C
Dimension (lxhxd)	185x48x165 mm
Conformity	EC, FCC, RoHS, ErP Ready
Case	Compact / fanless
Installation	On wall or on DIN rail
Processor	Intel Celeron J1900 2.0 GHz Quad-Core
SSD	64GB mSATA
Controller LAN	Intel 211 AT Gigabit LAN
Interfaces	No.4 USB ports, No.2 RJ45 ports
Monitoring instruments	Dashboard, synoptics, widgets
Real-time display	Yes
Analysis of historic data, alarm and event log	Yes
Sampling time	Min 1 minute
Data export	CSV
Data retention time	Max 10 years
Total number of Tags	Max 5,000 (10,000 in Virtual Machine version)
Connection protocols	http, https, Ftp

APPLICATION DIAGRAMS

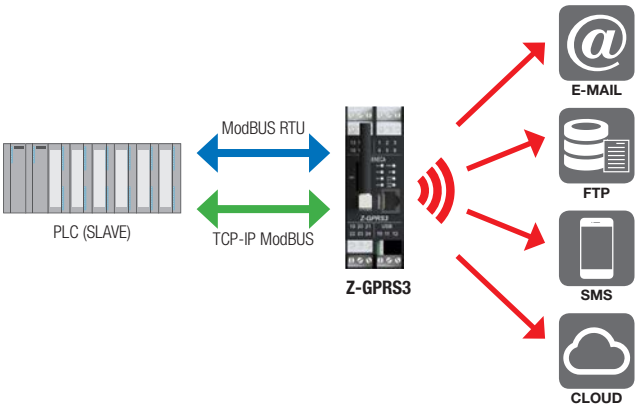
DATA ACQUISITION AND RETRANSMISSION



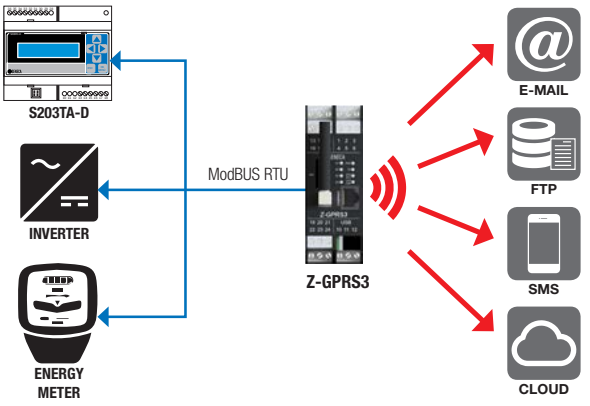
MASTER / SLAVE SIMULTANEOUS OPERATION



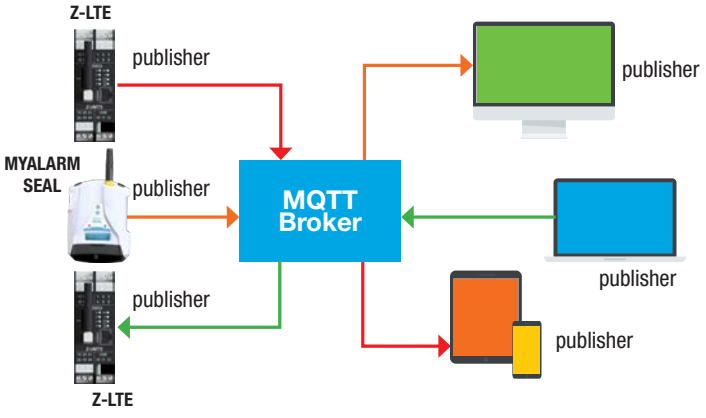
PLC REMOTE MANAGEMENT



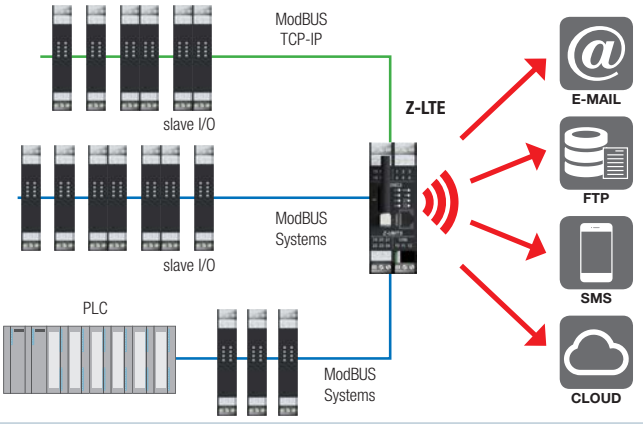
ENERGY MEASUREMENT SUPERVISION AND CONTROL



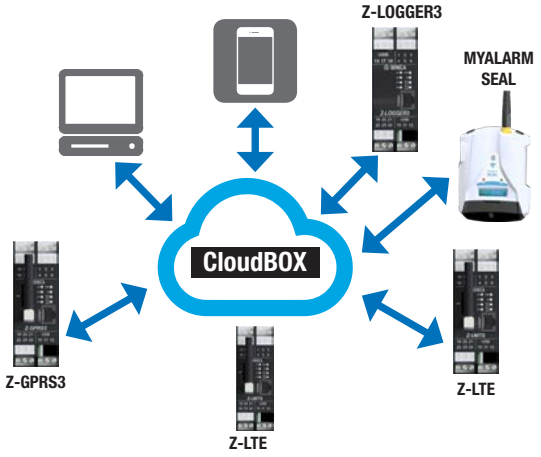
MQTT ARCHITECTURE



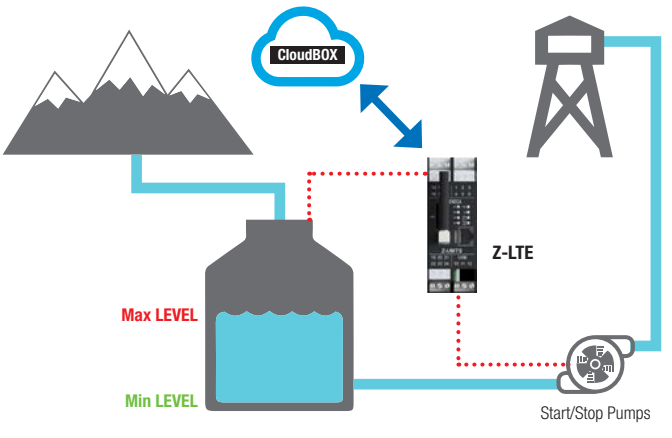
DATA LOGGING AND DATA RETRANSMISSION



REMOTE MONITORING IoT



PUMPS REMOTE MONITORING



TECHNICAL DATA

	MYALARM SEAL	Z-LOGGER3	Z-GPRS3	Z-LTE
				
	Datalogger with monitoring functions, programmable logic control, Cloud support	**Datalogger with built-in I/O and alarm management functions**	**GSM/GPRS data logger with built-in I/O, remote control and voice alarm functions**	**4G / LTE WW datalogger with built-in I/O, remote control and voice alarm functions**
GENERAL DATA				
Power supply	6..15 Vdc	11..40 Vdc/ 19..28 Vac	11..40 Vdc/ 19..28 Vac	19..40 Vdc/ 19..28 Vac
Transducers power supply	No	Yes	Yes	Yes
Integrated UPS / Rechargeable battery	3.7 V - 1.000 mAh LiOn backup battery	Yes (autonomy max 60 minutes)	Yes (autonomy max 60 minutes)	Yes (autonomy max 60 minutes)
Connections	Pitch spring terminals 3.5 mm	3-way screw terminals (5 mm pitch for cable up to 2.5 mm2	3-way screw terminals (5 mm pitch for cable up to 2.5 mm2	3-way screw terminals (5 mm pitch for cable up to 2.5 mm2
Voice Alarms and DTMF Commands	Yes	No	Yes	Yes
Isolation	-	1,500 Vac	1,500 Vac	1,500 Vac
Protection degree	IP20	IP20	IP20	IP20
SIM	Slot SIM push-push for mini SIM 15x25 mm	-	-	-
Display	128x32 dot LCD with 39x8.6 mm visible area	-	-	-
Operational Temperature	-20..+55°C (0..45°C recommended)	-10..+50°C	0..+50°C	-25..+50°C
Integrated temperature sensor	NTC thermistor	-	-	-
Weight	150 g	250 g	280 g	280 g
Dimension (bxhxp)	80x105x30 mm	100 x 112 x 35 mm	100 x 112 x 35 mm	100 x 112 x 35 mm
Installation	DIN Rail or wall	DIN Rail 35 mm IEC EN60715	DIN Rail 35 mm IEC EN60715	DIN Rail 35 mm IEC EN60715
Case	ABS polycarbonate	PBT, black	PBT, black	PBT, black
I/O CHANNELS				
Digital Inputs	No.4 Reed channels, contact, PNP, Pulscap (photodiode) 30 Hz	N° 4 channels PNP, NPN (counters @ 32bit up to 30 Hz)	N° 4 channels PNP, NPN (counters @ 32bit up to 30 Hz)	N° 4 channels PNP, NPN, max freq.30 Hz (4 counters/totalisers @32bit)
Analog Inputs	No.2 channels, voltage range (0..30 Vdc); current (0..20 mA); accuracy 0.1% f.s.	N°2 channels, range 0..20 mA, 0..30 V, 16 bit	N°2 channels, range 0..20 mA, 0..30 V, 16 bit	N°2 channels, range 0..20 mA, 0..30 V, 16 bit
Digital Outputs	See options	N°2 SPDT relay channels max 2 A 250 Vac	N°2 SPDT relay channels max 2 A 250 Vac	N°2 SPDT relay channels max 2 A 250 Vac
ModBUS I/O Expandability	No	Yes	Yes	Yes
COMMUNICATION				
Communication ports:	No.1 Micro USB B Host	No.1 Ethernet 10/100 M (RJ45), No.1 RS232/RS485 switchable (terminal), No.1 RS485 ModBUS, No.1 Micro USB B Host prog. Local	No.1 Ethernet 10/100 M (RJ45), No.1 RS232/RS485 switchable (terminal), No.1 RS485 ModBUS, No.1 Micro USB B Host prog. Local	No.1 Ethernet 10/100 M (RJ45), No.1 RS232/RS485 switchable (terminal), No.1 RS485 ModBUS, No.1 Micro USB B Host prog. Local
Protocols	http post, MQTT	Ftp, Smtp, http, ModBUS TCP, ModBUS RTU, HTTP post, MQTT	Ftp, Smtp, http, ModBUS TCP, ModBUS RTU, HTTP post, MQTT, Https, SMTP with SSL/TLS	FTP client,SMTP client, http rest (SSL), MQTT (SSL), ModBUS TCP Client/Server, ModBUS RTU Master / Slave, Https, SMTP with SSL/TLS, MQTT with SSL/TLS
Modem / GPS / Radio	GSM/GPRS Quad band (850 / 900 / 1800 / 1900 MHz)	-	2G - GSM/GPRS Quad Band 850/900/ 1800/1900 MHz	· Multiband M2M/IoT, 4G / LTE World Wide · LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/ B13/B18/ B19/B20/B25/B26/B28 · LTE-TDD: B38/B39/B40/ B41 · WCDMA: B1/B2/B4/B5/B6/B8/B19 · GSM: B2/B3/B5/B · GPS / GLONASS / BeiDou (compass) / Galileo / QZSS
Transparent Gateway	-	Yes	Yes	Yes
PROCESSING, MEMORY				
Flash (serial)	8 MB	8 MB	8 MB	8 MB
Expandable memory	Micro SD supplied, push-push Micro SD slot for SD and SDHC cards up to 32 GB	Micro SD card supplied (up to 4GB) expandable up to 32 GB (dedicated slot)	Micro SD card supplied (up to 4GB) expandable up to 32 GB (dedicated slot)	MicroSD card supplied (up to 4 GB) expandable up to 32 GB (Micro SD or MicroSDHC)
Datalogger	Measurements, alarms, events, logging on Micro SD card and on Flash	Measurements, alarms, events, logging on Micro SD card and on Flash	Measurements, alarms, events, logging on Micro SD card and on Flash	Measurements, alarms, events, logging on Micro SD card and on Flash
Synchronous datalogger	Minimum sampling time 1 minute	Minimum sampling time 1 minute	Minimum sampling time 1 minute	Minimum sampling time 1 minute
Asynchronous datalogger	Up to 8 trigger events with max input frequency 1 Hz	Up to 8 trigger events with max input frequency 1 Hz	Up to 8 trigger events with max input frequency 1 Hz	Up to 8 trigger events with max input frequency 1 Hz
PROGRAMMING				
Programming environment	SEAL (SENECA Advanced Language)	SEAL (SENECA Advanced Language)	SEAL (SENECA Advanced Language)	SEAL (SENECA Advanced Language)
No. max logic blocks (SEAL)	32	32	32	32
N° max variables manag. for dev.	91	100	100	100
Web Server	-	Yes, on Ethernet	Yes, on Ethernet, Private SIM APN, public SIM IP	Yes integrated or on SD Card, on Ethernet, Private SIM APN, Public IP SIM, DDNS
Mobile app	SMS SENECA	SMS SENECA	SMS SENECA	SMS SENECA
Character encoding	UTF8/UNICODE support	UTF8/UNICODE support	UTF8/UNICODE support	UTF8/UNICODE support
Firmware update	SD Card, USB port, external Ftp	Ftp / Web Server	Ftp / Web Server	Ftp / Web Server
IoT / Cloud support	http post, MQTT, CloudBOX compatibility	http post, MQTT, CloudBOX compatibility	http post, MQTT, CloudBOX compatibility	http post, MQTT, CloudBOX compatibility
Advanced mathematical functions	Yes	Yes	Yes	Yes
STANDARD				
Certification	EC	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

RTU FOR REMOTE CONTROL APPLICATIONS

RTU FOR REMOTE CONTROL APPLICATIONS

OVERVIEW

The SENECA remote control equipment is a perfect combination between the world of remote control and automation. The RTU range includes solutions for small systems, all-in-one solutions that concentrate I/O, control logic and communication system, devices for special applications (unattended sites, pumping stations, energy management). The use of compatible platforms and the most popular technological standards offers the user the opportunity to improve the efficiency and quality of investments in their applications. SENECA RTUs can be integrated with SENECA hardware (I/O modules, HMI, communication interfaces) and with those of third parties as well as with the LET'S remote assistance platform. They also provide flexible programming tools and dedicated libraries for remote monitoring.

HIGHLIGHTS

WIDE RTU RANGE FOR MULTISECTORAL APPLICATIONS

REMOTE CONTROL SYSTEMS H24

ADVANCED ALARMS

REDUCTION OF OPERATING COSTS

ENERGY MONITORING

DATE STORAGE

OPENING VERSO SCADA / OPC

COMMANDS AND NOTIFICATION VIA EMAIL/SMS/APP

SOFT PLC IEC 61131 - STRATON

VPN / SSL SUPPORT

LET'S VPN/IOT PLATFORM (remote assistance/ remote control)

BUILT-IN I/O

INTEGRATION WITH THIRD-PARTY DEVICES AND COMMUNICATION EQUIPMENT

INTEGRATED MODEMS / ROUTERS 2G / 3G+ / 4G

SERIAL INTERFACES / MODBUS / ETHERNET

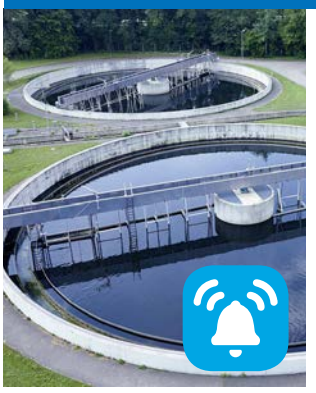
SPECIAL APPLICATIONS (PUMP CONTROLLER, LOW POWER)

KEY FUNCTIONS

DATA ACQUISITION

- Acquisition and exchange of data from sensors, actuators, counters, analysers, thresholds
- Distributed I/O system
- Range of modules with density from 5 to 24 points
- 3-way galvanic isolation
- ModBUS RTU, ModBUS TCP-IP, CANopen, M - BUS, Profinet IO protocols
- Self-diagnosis management and safety status
- Hot swapping

ALARMS INTEGRATED MANAGEMENT



- Early warning in case of fault
- Event actions towards external actuators
- Transmission of alarms to maintenance personnel via SMS
- Receiving and sending of commands via SMS, email or app
- Consultation and verification of alarms, events and statuses and of the system

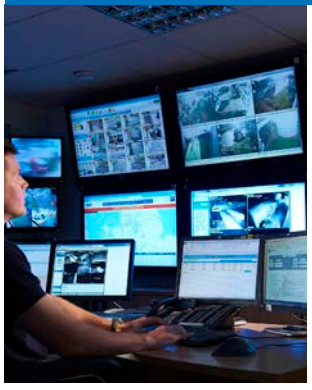
MULTISTANDARD COMMUNICATION

- Modem / Router 2G/3G+/4G/
- Fast Ethernet, serial, USB ports
- Point-point, point-multipoint connections
- Management of «Always ON» and «ON Demand» connections
- ModBUS RTU, TCPIP, ASCII support
- ModBUS RTU, ModBUS TCP-IP, CANopen, M - BUS, Profinet IO protocols
- Data log transfer via ftp, smtp (email), pre-set time threshold

PROGRAMMING AND LIBRARIES

- Control logic based on SoftPLC Straton IEC 61131
- Sending of email/SMS
- Creation, storage and display of data logs
- Management of alarms and signals
- Automatic management of motorised users
- Counting of operating hours
- Management of counters and totalisations
- Capacities calculation

OPC / SCADA



- Opening to SCADA with OPC UA / OPC DA technology
- Field integration and supervision with ModBUS RTU or TCP/IP protocol
- Integrated Web Factory display environment
- Front End of real-time communication between field and Scada

VPN /IoT PLATFORMS

- Controllers that can be integrated into the remote access platform, LET'S
- Support of VPN and SSL technologies.
- Centralised supervision
- Predictive maintenance and diagnostics
- Remote software update
- Access to data and installations in “Single LAN” and “Point-to-Point” modes
- MQTT, http post

CONTROL OF PUMPS AND PRESSURISATION GROUPS

- Sending of commands via SMS
- Calculation of the capacity
- Configuration via HMI 7” touch-screen
- Regulation, start, stop and acceleration
- Elimination of water hammer
- Extension of pump life
- Adjustment of pressures, levels, flow rates

ENERGY SECTOR APPLICATIONS

- RTU for electricity transmission and distribution systems
- Availability of the IEC 61850 protocol for local communication between equipment in medium and high voltage electrical systems
- Availability IEC 60870 (101 and 104) for communication in the distributed networks of transport and distribution of electricity.

RTU FOR REMOTE CONTROL APPLICATIONS

	SYSTEMS LOW POWER	RTU NRT REMOTE ALARM		
	RTU-LP	**B-ALARM**	**MYALARM2**	**MYALARM3 CLOUD**
				
	low power RTU, 4DI, 2AI, 2DO, GSM external antenna	**1DI / 1DO remote alarm unit with basic functions**	**Remote alarm unit and GSM/ GPRS datalogger**	**Cloud Based remote alarm and monitoring unit**
HARDWARE / INTERFACES				
Power supply	8..30 Vdc, rechargeable battery Li-On, max autonomy 2 years	10..30 Vdc, Ni-MH rechargeable battery, autonomy up to 100 minutes	6..15 Vdc, Li-ION battery (1.100 mAh), autonomy up to 8 hours (without auxiliary relay)	6..15 Vdc, 3.7 V Li-ION battery (1.100 mAh), autonomy up to 5 hours
Built-in I/O	4DI, 2AI, 2DO	1DI, 1 DO	4DI, 2AI, 2DO (opt.)	4DI, 2AI, 2DO
Flash	-	-	512 kB+2MB (log)	1M + 8M
Micro SD Card	-	-	Up to 32 GB	-
Modem / Router	2G	Quad band (850 / 900 / 1800 / 1900 MHz)	Quad band (850 / 900 / 1800 / 1900 MHz)	Quad band (850 / 900 / 1800 / 1900 MHz)
Serial Ports	1	-	-	-
PROGRAMMING				
Configuration Environment	EASY RTU-LP	EASY SETUP 2	EASY MYALARM2	Web or Mobile App (MyALARM3 CLOUD)
Integrated libraries / functions	Sending of data log, status email/sms, commands and alarms	Commands / SMS Alarms / Call	Automation scenarios, commands, alarms	Automation scenarios, commands, alarms, GPS
Max n° Variables / Tags	8	2	8	-
Data display	-	-	With LCD display, Log Factory	With LCD display and App
CONNECTIVITY				
Fieldbus	ModBUS RTU			
IT Protocols	Ftp client, SMS	SMS	FTP client, SMTP client, SMTPS with SSL client	SMS, FTP client, SMTP client, SMTPS con client SSL
IIoT Protocols	-	-	-	MQTT, HTTPS
FUNCTIONS				
Datalogger	x	-	x	-
Remote assistance unit / remote control	x	-	-	-
Remote alarm	-	x	x	x

The technical data and the diagrams in this document are indicative and not binding.

	SYSTEMS COMPACT WITH DATALOGGING / SEAL			RTU PUMP CONTROLLER
	MYALARM SEAL	**Z-GPRS3**	**Z-LTE**	**S6001-PC**
				
	GSM / GPRS datalogger with built-in I/O and programmable SEAL logic	**GSM/GPRS data logger with built-in I/O, remote control and voice alarm functions**	**4G / LTE WW datalogger with built-in I/O, remote control and voice alarm functions**	**IEC 61131 + 7" HMI pump controller, 3G/4G router, VPN, 31 I/O**
HARDWARE / INTERFACES				
Power supply	6..15 Vdc	11.40 Vdc / 19..28 Vac	11.40 Vdc / 19..28 Vac	24 Vac/dc
Built-in I/O	4DI, 2AI, 2DO opt.	4DI, 2AI, 2DO	4DI, 2AI, 2DO	15DI+2DI, 8DO, 4AI, 2AO
Flash	8 MB	8 MB	8 MB	1 GB
Micro SD Card	Up to 32 GB	Up to 32 GB	Up to 32 GB	Up to 32 GB
Modem / Router	2G	2G	4G WW	3G+/4G
Ethernet Ports	-	1	1	1
Serial Ports	-	2	2	1
USB Ports	1	1	1	1
PROGRAMMING				
Configuration Environment	SEAL	SEAL	SEAL	HMI application
Max n° Variables / Tags	91	100	100	1,000
CONNECTIVITY				
Fieldbus	-	-	-	RTU/TCP-IP ModBUS (Slave)
IT Protocols				http, ftp, smtp, ppp
IIoT Protocols	http post, MQTT	http post, MQTT	http post, MQTT	MQTT, HTTPS
VPN support	-	-	-	Yes, OpenVPN
FUNCTIONS				
Datalogger	x	x	x	-
Gateway	-	x	x	-
Remote alarm	x	x	x	-

RTU IEC 61131-3

	BASE	ADVANCED / LET'S		ALL IN ONE
	Z-TWS11	Z-TWS4	Z-PASS2-S	S6001-RTU
				
	Entry level controller IEC 61131, 2AI	**Multifunction controller IEC 61131, 2DI, 2DO, 2DI/DO**	**Multifunctional VPN controller 4G IEC 61131, 2DI, 2DO, 2DI/DO**	**all-in-one RTU IEC 61131, 3G /4G, VPN, 31 I/O**
HARDWARE / INTERFACES				
Power supply	10..40 Vdc / 19..28 Vac	10..40 Vdc / 19..28 Vac	11..40 Vdc / 19..28 Vac	24 Vac/dc
Built-in I/O	2AI	1DI, 2DO, 1 DIDO	2DI, 2DO, 2DI/DO	15DI+2DI, 8DO, 4AI, 3AO
Flash	-	-	1 GB	1 GB
Micro SD Card	-	-	Up to 32 GB	Up to 32 GB
Modem / Router	-	-	3G+ / 4G / GPS / GNSS	3G+/4G
Ethernet Ports	1	2	2	1
Serial Ports	2	3	3	3
USB Ports	1	1	1	1
PROGRAMMING				
Configuration Environment	Z-NET4	Z-NET4	Z-NET4	Z-NET4
PLC programming	Straton IEC 61131-1	Straton IEC 61131-1	Straton IEC 61131-1	Straton IEC 61131-1
Integrated libraries / functions	-	Sending of data log, status email/sms, commands and alarms	Sending of data log, status email/sms, commands and alarms	Sending of data log, status email/sms, commands and alarms
Max n° Variables / Tags	200	1000	1000	1000
Program dimension	250kB	2048kB	2048kB	2048kB
PLC variable memory			4 MB	4 MB
Diagnostics		Web Server	Web Server	Web Server
Data recording	Datalogger, Trend Viewer	Datalogger, Trend Viewer	Datalogger, Trend Viewer	Datalogger, Trend Viewer
Data display	Web Factory	Web Factory	Web Factory	Web Factory
CONNECTIVITY				
Fieldbus	ModBUS RTU/TCP-IP	ModBUS RTU/TCP-IP, S7 Protocol, M-BUS	ModBUS RTU/TCP-IP, S7 Protocol, M-BUS	ModBUS RTU/TCP-IP, S7 Protocol, M-BUS
IT Protocols	http, Ftp, Smtp, Snmp, Samba	Ftp/SFtp Server, http/Https Server, Smtp/ Smtps Client, Snmp, Samba	Ftp/SFtp Server, http/Https Server, Smtp/ Smtps Client, Snmp, Samba	Ftp/SFtp Server, http/Https Server, Smtp/ Smtps Client, Snmp, Samba
Energy Protocols	-	-	-	-
IIoT Protocols	-	OPC UA/DA Client/Server, MQTT	OPC UA/DA Client/Server, MQTT	OPC UA/DA Client/Server, MQTT
Safety Protocols	-	OPEN VPN, SSL/TSL	OPEN VPN, SSL/TSL	OPEN VPN, SSL/TSL
VPN support	-	Yes, OpenVPN	Yes, OpenVPN	Yes, OpenVPN
Cloud Support	-	Yes Cloud BOX and Third Parties	Yes Cloud BOX and Third Parties	Yes Cloud BOX and Third Parties
FUNCTIONS				
Soft PLC	x	x	x	x
Energy Controller	-	x	x	x
Datalogger	x	x	x	x
Gateway	x	x	x	x
LAN Router	-	x	x	x
4G / LTE Router	-	-	x	x
Remote assistance unit/ remote control	x (with external modem / router)	x (with external modem / router)	x	x
LAN/WAN Switch	-	-	x	x

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RTU IEC 61131-3

	ENERGY / IEC 61850 / 60870			
	Z-TWS4-E	**Z-PASS2-S-E**	**S6001-RTU-E**	**MYALARM2 IEC**
				
	Multifunction controller with IEC 60870-101/104, IEC 61850 Energy protocols	**Multifunction controller with 4G LTE/Ethernet modem/router, energy protocols**	**All-In-One RTU with built-in I/O 3G+/4G LTE modem, energy protocols**	**IEC 0-16 load remote disconnection unit**
HARDWARE / INTERFACES				
Power supply	10..40 Vdc / 19..28 Vac	11..40 Vdc / 19..28 Vac	24 Vac/dc	5..15 Vdc
Built-in I/O	1DI, 2DO, 1 DIDO	2DI, 2DO, 2DI/DO	15DI+2DI, 8DO, 4AI, 3AO	4DI, 2DO
Flash	-	1 GB	1 GB	
Micro SD Card	-	Up to 32 GB	Up to 32 GB	Up to 32 GB
Modem / Router	-	3G+ / 4G / GPS / GNSS	3G+	GSM Quad band
Ethernet Ports	2	2	1	-
Serial Ports	3	3	3	-
USB Ports	1	1	1	1
PROGRAMMING				
Configuration Environment	Z-NET4	Z-NET4	Z-NET4	EASY IEC
PLC programming	Straton IEC 61131-1	Straton IEC 61131-1	Straton IEC 61131-1	-
Integrated libraries / functions	Sending of data log, status email/sms, commands and alarms	Sending of data log, status email/sms, commands and alarms	Sending of data log, status email/sms, commands and alarms	-
Max n° Variables / Tags	1000	1000	1000	-
Program dimension	2048kB	2048kB	2048kB	-
PLC variable memory	-	4 MB	4 MB	-
Diagnostics	Web Server	Web Server	Web Server	-
Data recording	Datalogger, Trend Viewer	Datalogger, Trend Viewer	Datalogger, Trend Viewer	-
Data display	Web Factory	Web Factory	Web Factory	With LED Display
CONNECTIVITY				
Fieldbus	ModBUS RTU/TCP-IP, S7 Protocol, M-BUS	ModBUS RTU/TCP-IP, S7 Protocol, M-BUS	ModBUS RTU/TCP-IP, S7 Protocol, M-BUS	-
IT Protocols	Ftp/SFtp Server, http/Https Server, Smtp/ Smtps Client, Snmp, Samba	Ftp/SFtp Server, http/Https Server, Smtp/ Smtps Client, Snmp, Samba	Ftp/SFtp Server, http/Https Server, Smtp/ Smtps Client, Snmp, Samba	-
Energy Protocols	IEC 60870-5-101, IEC 60870-5-104, IEC 61850	IEC 60870-5-101, IEC 60870-5-104, IEC 61850	IEC 60870-5-101, IEC 60870-5-104, IEC 61850	-
IIoT Protocols	OPC UA/DA Client/Server, MQTT	OPC UA/DA Client/Server, MQTT	OPC UA/DA Client/Server, MQTT	-
Safety Protocols	OPEN VPN, SSL/TSL	OPEN VPN, SSL/TSL	OPEN VPN, SSL/TSL	-
VPN support	Yes, OpenVPN	Yes, OpenVPN	Yes, OpenVPN	-
Cloud Support	Yes Cloud BOX and Third Parties	Yes Cloud BOX and Third Parties	Yes Cloud BOX and Third Parties	-
FUNCTIONS				
Soft PLC	x	x	x	-
Energy Controller	x	x	x	x
Datalogger	x	x	x	-
Gateway	x	x	x	-
LAN Router	x	x	x	-
4G / LTE Router	-	x	x	-
Remote assistance unit / remote control	x (with external modem / router)	x	x	x
LAN/WAN Switch	-	x	x	-

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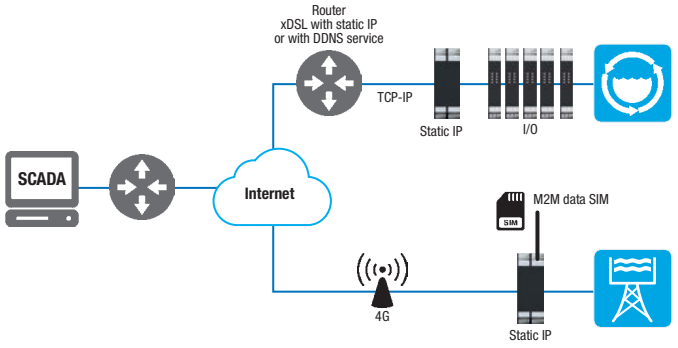
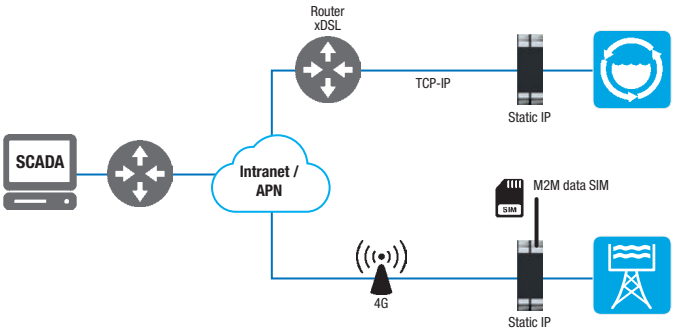
REMOTE CONTROL ARCHITECTURES

REMOTE CONTROL VIA WEB



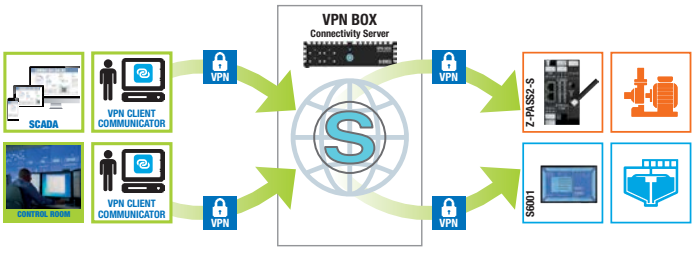
Remote monitoring via the Internet offers remote viewing services, alarm notification, remote system management, collection supervision and data analysis, use of the Internet, the 4G standard and the DDNS technology.

PRIVATE INTRANET / APN REMOTE CONTROL



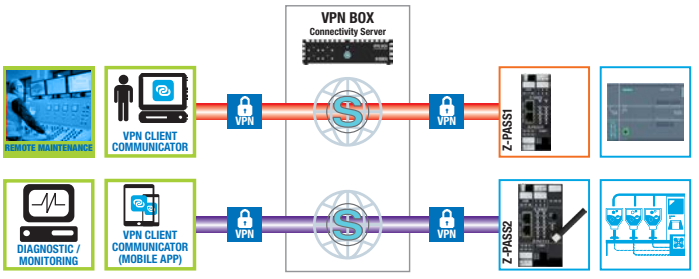
Intranet / APN remote control systems require an Intranet with private APN (static IP addresses on peripheral SIMs).

REMOTE CONTROL ALWAYS ON



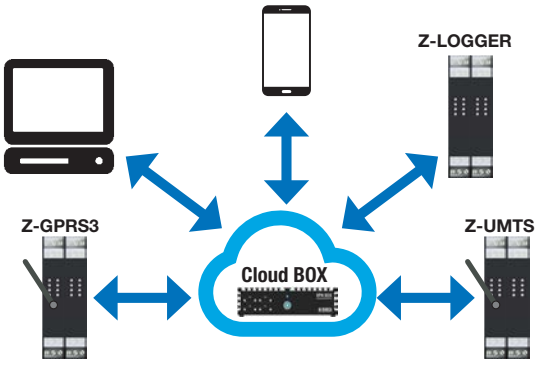
In Single LAN Remote Control mode (always on connection) a static and public IP is assigned to the VPN BOX server. Communication is simultaneous and always active between all remote sites and the different subnets that are part of the overall system.

ON DEMAND REMOTE ASSISTANCE



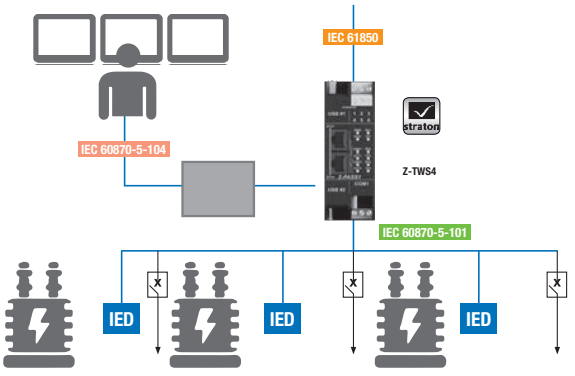
The Point-to-Point Remote Assistance mode (on demand communication) establishes a point-to-point connection between supervision and the machine. Ideal for remote maintenance and diagnostics applications.

MONITORING IOT / CLOUD



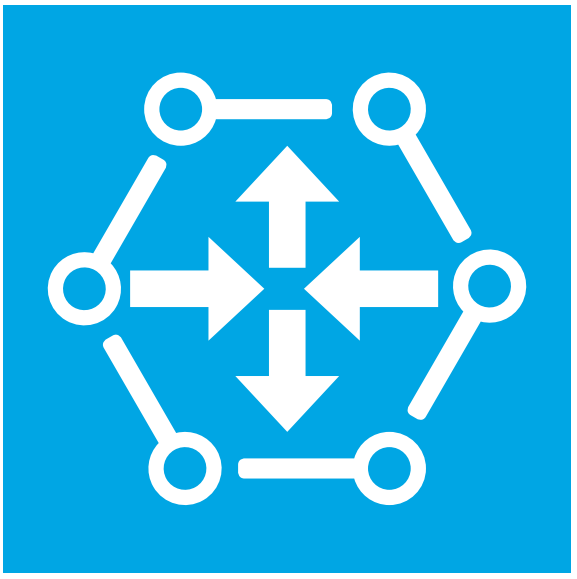
The Cloud - IoT solution proposed by SENECA centralises data, manages remote connections and creates customisable multi-user supervision pages.

ENERGY SECTOR MONITORING



The SENECA controllers for Energy Management applications can act as IEC 61850 Servers, as a ModBUS-RTU conversion system - TCP ModBUS, as equipment for the creation of virtual networks via the Internet and point-to-point tunnels.

INDUSTRIAL GATEWAYS



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2.4

The SENECA gateways connect new and legacy systems and promote a secure and seamless flow of data between peripheral devices and centralised servers. Gateways establish two-way communication between field and supervision, as well as offering processing and data storage capabilities to provide services with secure VPN connections and to manage real-time devices in the field. The new SENECA range of industrial routers/gateways includes devices able to increase the extension of networks and allow the passage of process data between different levels of the IT and industrial communication architecture.

THE RANGE

The wide range of SENECA includes multifunctional products for wired and wireless infrastructures for various vertical applications. Industrial modems, IIoT and VPN gateway / router, gateway router / wireless sensor hub, serial and Ethernet converters.
Regarding the conversion of protocols, a wide range of industrial gateways is available able to support RTU, TCP-IP, ASCII Modbus. M-BUS, WiFi, IO Profinet with advanced programming and diagnostic functions.

CONNECTIVITY

- **Modem Router 4G LTE**
- **Ethernet 100 Mbps on RJ45**
- **Wireless WiFi IEEE802.11b/g/n**
- **Automatic VPN for remote control and remote assistance**
- **Routing: NAT, IP and port forwarding**
- **Advanced routing**
- **Pass Through ModBUS**
- **GPS**

CONFIGURATION

- **Web Server**
- **Dedicated software**
- **Excel template for variable tag management**

DATA TRANSMISSION

- **Via Serial / Fieldbus: ModBUS, M-BUS**
- **Remote Access PPP, HTTP, SMTP, FTP, VPN, SSL**
- **Ethernet: ModBUS TCP-IP, Profinet IO**
- **Wireless: 3G+, 4G LTE, Wi-FI**

APPLICATIONS

- **Integration with IT, OT, IIoT systems**
- **Remote maintenance of machines and systems**
- **Building automation**
- **Water environment and treatment**
- **Traffic and transportation**
- **Energy**
- **Surveillance and security**
- **Oil&Gas**

TECHNICAL DATA

	MODBUS / ETHERNET			M-BUS	
	R-KEY-LT	Z-KEY-0	Z-KEY-2ETH	R-KEY-MBUS	Z-KEY-MBUS
					
	1-Port RTU/ASCII ModBUS Industrial Gateway	**2-Port ModBUS RTU Industrial Gateway / Serial Device Server**	**2-Port ModBUS RTU Industrial Gateway / Serial Device Server / 2xEthernet**	**1-port ModBUS RTU / TCP-IP ↔ M-BUS industrial gateway / protocol converter**	**2-port ModBUS RTU / TCP-IP ↔ M-BUS industrial gateway / protocol converter**
GENERAL DATA					
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	11..40 Vdc; 19..28 Vac, 50–60 Hz
Consumption	Max 1 W	2 W @ 24 Vac (typical)	2 W @ 24 Vac (typical)	Max 1 W	3.5W (typical), 6.5W (max)
Isolation	1.5 kVac	-	-	1,500 Vac	3-way Vac 1,500
SD Micro Card	-	Max 32 GB	Max 32 GB	-	Max 32 GB
Protection degree	IP20	IP20	IP20	IP20	IP20
Operating temperature	-20..+70°C	-20°C..+50°C	-20°C..+50°C	-20..+70°C	-20°C..+50°C
Connections	Removable 7-way screw terminal, 5 mm pitch Removable 2-way screw terminal, 5 mm pitch RJ45 bottom connector for Ethernet	Removable 3-way screw terminals, 5 mm pitch IDC10 rear connector for DIN 46277 bar RJ45 front connector Side Micro USB Slot for SD card micro	Removable 3-way screw terminals, 5 mm pitch IDC10 rear connector for DIN 46277 bar RJ45 front connector (x2) Side Micro USB Slot for SD card micro	Screw terminals, 7-way removable screw, 5 mm pitch Screw terminals, 2-way removable screw, 5 mm pitch Ethernet connector	Removable 3-way screw terminals, 5 mm pitch IDC10 rear connector for DIN 46277 bar RJ45 front connector Front USB micro Slot for SD card micro
Dimension (lxhxd)	32 x 53 x 90 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	53.3 x 90 x 32.2 mm	100 x 35 x 112 mm
Weight	80 g	170 g	170 g	80 g	210 g
Case	UL94-V0 self-extinguishing PC/ABS in RAL 7035 Grey	Nylon 6 com 30& glass fibre, self-extinguishing class V0	Nylon 6 com 30& glass fibre, self-extinguishing class V0	PC / ABS self-extinguishing UL94-V0	PA6 black plastic loaded glass, black
Installation	For DIN rail (IEC EN 60715)	For DIN rail (IEC EN 60715)	For DIN rail (IEC EN 60715)	On DIN IEC EN 60715 rail or on the wall	For 35 mm rail IEC EN 60715
COMMUNICATION					
Ethernet Ports	Nr 1 Fast Ethernet port 100 Tx, RJ45 frontal Up to 8 TCP-IP Clients / Up to 10 TCP/IP Server	Nr 1 Fast Ethernet port 100 Tx, RJ45 frontal Up to 8 TCP-IP Clients / Up to 10 TCP/IP Server	Nr 1 Fast Ethernet port 100 Tx, RJ45 frontal Up to 8 TCP-IP Clients / Up to 10 TCP/IP Server	Nr 1 Fast Ethernet port 100 Tx, RJ45 frontal Up to 8 TCP-IP Clients	Nr 1 Fast Ethernet port 100 Tx, RJ45 frontal Up to 8 clients (TCP-IP
Serial Ports	No.1 RS232 or RS485 serial port, baud rate max 115k on connector	No.1 serial port on terminals, switchable RS232 / RS485, max baud rate 115k on connector No.1 RS485 port on IDC10 connector for bus, max baud rate 115k	No.1 serial port on terminals, switchable RS232 / RS485, max baud rate 115k on connector No.1 RS485 port on IDC10 connector for bus, max baud rate 115k	No.1 RS232 or RS485 serial port, baud rate max 115k on connector	No.1 serial port on terminals, switchable RS232 / RS485, max baud rate 115k on connector No.1 RS485 port on IDC10 connector for bus, max baud rate 115k
USB Ports	-	No.1 Micro USB port on side connector	No.1 Micro USB port on side connector	-	No.1 Micro USB port on side connector
M-BUS ports	-	-	-	No.1 M-BUS port, max no. slave nodes 25, baud rate from 300 to 38,400 bps	No.1 M-BUS port, max no. slave nodes 25, baud rate from 300 to 38,400 bps
IT / industrial protocols	ModBUS TCP-IP, ModBUS RTU, Modbus ASCII	ModBUS TCP-IP, ModBUS RTU	ModBUS TCP-IP, ModBUS RTU ModBUS ASCII	ModBUS TCP-IP server, Modbus RTU slave, Meter Bus (M-BUS) Master	ModBUS TCP-IP server, Modbus RTU slave, Meter Bus (M-BUS) Master
Operating mode	RTU/ASCII↔TCP-IP ModBUS Gateway, Traffic monitor	RTU↔TCP-IP Gateway ModBUS, Modbus Gateway shared memory (via TCP-IP), Serial Device Server	RTU/ASCII↔TCP-IP ModBUS Gateway, Modbus Gateway shared memory (via TCP-IP), Serial Device Server	ModBUS RTU/TCP-IP↔M-BUS Gateway	ModBUS RTU/TCP-IP↔M-BUS Gateway
Connectivity	Max 8 Client Modbus TCP-IP (Server Mode), max 10 Server Modbus TCP-IP (Client Mode), 128 RTU/ASCII ModBUS Slave nodes	Max 8 Client Modbus TCP-IP (Server Mode), Max 10 Server Modbus TCP (Client Mode), 500 variables (tags), 128 RTU MobBUS slave nodes	Max 8 Client Modbus TCP-IP (Server Mode), Max 10 Server Modbus TCP (Client Mode), 500 variables (tags), 128 RTU MobBUS slave nodes,	Max 8 Modbus TCP-IP Clients (Server Mode), 500 variables (tags) max 25 MBUS devices	Max 8 TCP-IP Clients (Server Mode), 500 variables (tags) max 25 M-BUS devices
ADVANCED SETTINGS & FUNCTIONS					
Programming	EASY SETUP2, Web Server, DIP Switch	EASY SETUP2, Web Server, DIP Switch	EASY SETUP2, Web Server, DIP Switch	EASY SETUP2, Web Server, DIP Switch	EASY SETUP2, Web Server, DIP Switch
Management tool	SDD (Seneca Discovery Device)	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection)	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection)	SDD (Seneca Discovery Device)	SDD (Seneca Discovery Device)
IoT supports and third party platforms	-	Cloud BOX	Cloud BOX	-	-
REGULATIONS					
Marking / Certifications	EC	EC	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

TECHNICAL DATA

IO PROFINET

	R-KEY-P	Z-KEY-P	Z-KEY-2ETH-P
			
	Compact IO Profinet industrial gateway	**Gateway - Profinet IO → RTU / TCP-IP ModBUS protocol converter**	**Gateway - protocol converter IO Profinet→ RTU / TCP-IP ModBUS / 2 x Ethernet**
GENERAL DATA			
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Consumption	Max 1 W	2 W @ 24 Vac (typical)	2 W @ 24 Vac (typical)
Isolation	1,500 Vac	-	-
SD Micro Card	-	Max 32 GB	Max 32 GB
Protection degree	IP20	IP20	IP20
Operating temperature	-20..+70°C	-20°C..+50°C	-20°C..+50°C
Connections	Screw terminals, 7-way removable screw, 5 mm pitch Screw terminals, 2-way removable screw, 5 mm pitch Ethernet connector	Removable 3-way screw terminals, 5 mm pitch IDC10 rear connector for DIN 46277 bar RJ45 front connector Side Micro USB Slot for SD card micro	Removable 3-way screw terminals, 5 mm pitch IDC10 rear connector for DIN 46277 bar RJ45 front connector (x2) Side Micro USB Slot for SD card micro
Dimension (lxhxd)	32 x 53 x 90 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Weight	80 g	170 g	170 g
Case	UL94-V0 self-extinguishing PC/ABS in RAL 7035 Grey	Nylon 6 com 30& glass fibre, self-extinguishing class V0	Nylon 6 com 30& glass fibre, self-extinguishing class V0
Installation	For DIN rail (IEC EN 60715)	For DIN rail (IEC EN 60715)	For DIN rail (IEC EN 60715)
COMMUNICATION			
Ethernet Ports	Nr 1 Fast Ethernet port 100 Tx, RJ45 frontal Up to 8 TCP-IP Clients / Up to 10 TCP / IP Servers	Nr 1 Fast Ethernet port 100 Tx, RJ45 frontal Up to 8 TCP-IP Clients / Up to 10 TCP / IP Servers	Nr 2 Fast Ethernet ports 100 Tx, RJ45 frontal
Serial Ports	No.1 serial port RS232 / RS485 switchable , max baud rate 115k on connector	No.1 serial port RS232 / RS485 switchable , max baud rate 115k on connector No.1 RS485 port, max baud rate 115k on connector IDC10 for bus and terminals	No.1 serial port RS232 / RS485 switchable , max baud rate 115k on connector No.1 RS485 port, max baud rate 115k on connector IDC10 for bus and terminals
USB Ports		No.1 Micro USB port on side connector	No.1 Micro USB port on side connector
IT / industrial protocols	ModBUS TCP-IP, ModBUS RTU, Modbus ASCII	ModBUS TCP-IP, ModBUS RTU, Profinet IO	ModBUS TCP-IP, ModBUS RTU, Profinet IO
Operating mode	RTU/ASCII↔TCP-IP Gateway ModBUS, Serial Sniffer	IO Profinet ↔ RTU/TCP-IP Gateway ModBUS	IO Profinet ↔ RTU/TCP-IP Gateway ModBUS
Connectivity	Max 10 TCP-IP Server (Client Mode), 500 variable clients (tags), 128 MobBUS RTU/ASCII slave nodes	Max 10 TCP-IP Server (Client Mode), 500 variable clients (tags), 128 MobBUS RTU/ASCII slave nodes	Max 10 TCP-IP Server (Client Mode), 500 variable clients (tags), 128 MobBUS RTU/ASCII slave nodes
ADVANCED SETTINGS & FUNCTIONS			
Programming	CODESYS, TiA Portal, DIP-switch	CODESYS, TiA Portal, DIP-switch	CODESYS, TiA Portal, DIP-switch
Management tool	-	SDD (Seneca Discovery Device)	-
If-Then-Else Logic	-	-	-
IoT supports and third party platforms	-	TiA Portal / Step7, GSDML	-
REGULATIONS			
Marking / Certifications	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

TECHNICAL DATA

	WI-FI		
	R-PASS-W	**Z-KEY-WIFI**	**SSD**
			
	Compact Gateway / Router IIoT VPN, WiFi	**2-Port ModBUS RTU Industrial Gateway / Serial Device Server with WiFi**	**IIoT Multifunctional HMI gateway**
GENERAL DATA			
Power supply	10..40 Vdc; 19..28 Vac	11..40 Vdc; 19..28 Vac, 50–60 Hz	24 Vac/dc
Consumption	3 W	Typical: 2 W @ 24Vdc, Max: 3 W @ 24 Vac	AC: Max. 16 VA, 10 W; DC: Max. 9 W
Isolation	3-way Vac 1,500	3-way Vac 1,500	-
SD Micro Card	Min 4GB	Max 32 GB	-
Flash Memory (data)	-	-	2 / 4 GB
Protection degree	IP20	IP20	IP64 (on the front with membrane)
Operating temperature	-20..+65°C	-20°C..+70°C	-20..+60°C
Connections	Terminals pitch 3.5 mm USB Micro Connector RJ45 connector (x4)	Removable 3-way screw terminals, 5 mm pitch IDC10 rear connector for DIN 46277 bar RJ45 front connector Connector for SMA antenna Front USB micro Slot for SD card micro	No.1 Removable terminal 3.5 mm pitch 10 ways 2 USB connectors 2 RJ45 Ethernet connectors
Built-in I/O	4DI, 4DO, 2AI (V,I)	-	No.2 DI/DO
HMI	-	-	7" LCD TFT backlit, 800x480 pixel, format 16:9. 16M colours, capacitive touchscreen
Dimension (lxhxd)	106 x 90 x 32 mm	102.5 x 35 x 111 mm	192 x 127 x 32 mm (157x102mm panel cutout)
Weight	170 g	220 g	420 g
Case	Self-extinguishing PC / ABS material UL94-V0, black	PA6 black plastic loaded glass, black	ABS, black
Installation	On DIN EN 60715 rail, wall / panel mounted	For 35 mm rail IEC EN 60715	By means of fixing brackets or wall support
COMMUNICATION			
Ethernet Ports	No.2 Fast Ethernet ports 10/100Tx (3 LAN, 1 WAN) with RJ45 front connector Nr 1 Fast Ethernet 100 Tx port, Front RJ45	Nr 1 Fast Ethernet 100 Tx port, Front RJ45	No.2 Fast Ethernet 10 / 100Tx ports with RJ45 front connector
Serial Ports	No.1 RS232 serial port or RS485 (terminals), baud rate max 115k No.1 RS485 port on terminals. max baud rate 115k	No.1 switchable serial port RS232 / RS485 (terminals), max baud rate 115k No.1 RS485 port on IDC10 connector for bus, max baud rate 115k	No.1 switchable RS232 / 485 serial port max 115k No.1 RS485 port, max baud rate 115kbps
USB Ports	No.1 host full USB port	No.1 Micro USB port on front connector	No.1 OTG USB port No.1 USB serial port for debug software
Modem	Optional R-COMM module	-	
IT / industrial protocols	Server/Client TCP-IP ModBUS, Master/Slave ModBUS RTU, Client FTP/FTPs, Server FTP/sFTP,	Client/Server TCP-IP ModBUS, Master/Slave RTU/ASCII ModBUS, Server HTTP	Server/Client TCP-IP ModBUS, ModBUS RTU Master/Slave, Server/Client FTP/SFTP, server HTTP/HTTPS
IoT Protocols	server HTTP/HTTPS, SMTP		-
Safety protocols	MQTT, OPC UA Server , http post	http post	OpenVPN, SSL
Wireless	Wi-FI Module, IEEE 801.11 b/g/n; WEP / WPA / WPA2 security	Wi-FI Module, IEEE 801.11 b/g/n; WEP / WPA / WPA2 security	Wi-Fi 802.11 b/g/n, band 2.4 ÷ 2.4835 GHz
Operating mode	ModBUS Gateway (Ethernet - Serial, shared memory, transparent gateway), IoT/Cloud-based gateway, datalogger, alarm management unit, serial sniffer, wi-fi router, network redundant unit, remote assistance/remote control VPN module, microcontroller, LAN/WAN separator	RTU/ASCII↔TCP-IP ModBUS Gateway, Modbus Gateway shared memory , Serial Device Server, WIFI Access Point / Station, Traffic Monitor	ModBUS Gateway (Ethernet - Serial, shared memory, transparent gateway, serial tunnelling), IoT/Cloud-based gateway, datalogger, alarm management unit, serial sniffer, wi-fi router, network redundant unit, remote assistance/ remote control VPN module , microcontroller, LAN/WAN separator
Connectivity	Max 32 Modbus TCP-IP clients (Server Mode), 2000 variable clients (tags), 128 MobBUS RTU / ASCII slave nodes, Max 25 Server Modbus TCP (Client mode)	Max 8 Modbus TCP-IP Clients (Server Mode), max 10 Modbus TCPIP Servers (Client Mode), 500 variables (tags), 128 MobBUS RTU / ASCII slave nodes	Max 32 TCP-IP clients (Server Mode), 2000 variable clients (tags), 128 MobBUS RTU / ASCII slave nodes, 1/496 Client VPN, NAT 1: 1, Static Router
ADVANCED SETTINGS & FUNCTIONS			
Programming	EASY SETUP 2,Web Server	DIP-switch, Web Server	Web Server, GUI interface
VPN management software	VPN BOX Manager, OpenVPN, VPN Client Communicator		VPN BOX Manager, OpenVPN, VPN Client Communicator
Management tool	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection)	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection), EASY S-KEY	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection)
If-Then-Else Logic	Yes (opt.)		Yes (opt.)
IoT supports and third party platforms	Cloud BOX, LET'S, MQTT, OPC UA Server	Cloud BOX	Cloud BOX, LET'S, MQTT, OPC UA
REGULATIONS			
Marking / Certifications	EC	EC	EC

The technical data and the diagrams in this document are indicative and not binding.

TECHNICAL DATA

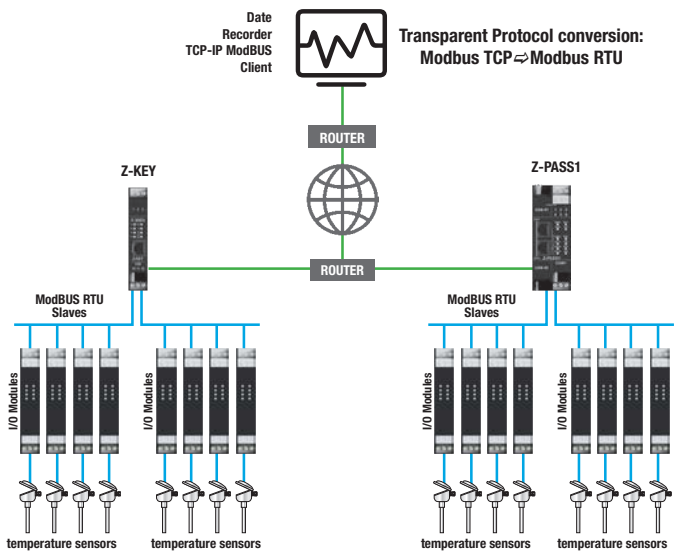
IIoT

	R-PASS-0	Z-PASS1	Z-PASS2	SSD
				
	VPN compact Gateway / Router IIoT	**VPN Industrial Gateway - Serial Device Server, 1 DI, 2DO, integrated 1DI/1DO**	**Industrial gateway with VPN support, Serial Device Server, 4G/LTE WW Router, GPS and built-in I/O**	**Multifunction HMI IIoT gateway**
GENERAL DATA				
Power supply	10..40 Vdc; 19..28 Vac	11..40 Vdc; 19..28 Vac	19..40 Vdc; 19..28 Vac	24 Vac/dc
Consumption	3 W	Typical 3 W @ 24Vac, Max 4 W	Typical 4 W @ 24Vac, Max 6 W	AC: Max. 16 VA, 10 W; DC: Max. 9 W
Isolation	3-way Vac 1,500	1,500 Vac	1,500 Vac	
SD Micro Card		Max 32 GB	Max 32 GB	
Flash Memory (data)	Min 4GB	1 GB	1 GB	Min 4GB
SIM supported	-	-	SIM mini	-
Protection degree	IP20	IP20	IP20	IP64 (on the front with membrane)
Operating temperature	-20..+65°C	-20..+65°C	-20..+65°C	-20..+60°C
Connections	Terminals pitch 3.5 mm USB Micro Connector RJ45 connector (x4)	5 removable 3-way terminals, 5.08 mm pitch for cable up to 2.5 mm2 1 IDC10 Rear 1 removable 4-pole connector 1 micro SD card slot 2 RJ45 Ethernet connectors 1 USB connector	6 removable 3-way terminals, 5.08 mm pitch for cable up to 2.5 mm2 1 IDC10 Rear, 1 4-pole connector 1 micro-SD card slot 1 mini-SIM slot 1 USB connector 1 SMA connector for GPS antenna 1 SMA for 4G antenna1 SMA per antenna 4G 2 RJ45 Ethernet connectors	No.1 Removable terminal 3.5 mm pitch 10 ways 2 USB connectors 2 RJ45 Ethernet connectors
Built-in I/O	4DI, 4DO, 2AI (V,I)	No.2 DI (1 for VPN, 1 for general use); No.1 DO (for VPN); No.1 DI/DO configurable	No.2 DI (1 for VPN, 1 for general use); No.2 DO (for VPN); No.2 DI/DO configurable	No.2 DI/DO
HMI	-	-	-	7" LCD TFT backlit, 800x480 pixel, format 16:9. 16M colours, capacitive touchscreen
Dimension (lxhxd)	106 x 90 x 32 mm	100 x 35 x 112 mm	100 x 52.5 x 112 mm	192 x 127 x 32 mm (157x102mm panel cutout)
Weight	170 g	220 g	280 g	420 g
Case	Self-extinguishing PC / ABS material UL94-V0, black	PA6 glass fibre reinforced, black	PA6 glass fibre reinforced, black	ABS, black
Installation	On DIN EN 60715 rail, wall / panel mounted	For 35 mm DIN rail IEC EN 60715	For 35 mm DIN rail IEC EN 60715	By means of fixing brackets or wall support
COMMUNICATION				
Ethernet Ports	No.4 Fast Ethernet 10 / 100Tx ports (3 LAN, 1 WAN) with RJ45 front connector	No.2 Fast Ethernet 10 / 100Tx ports with RJ45 front connector	No.2 Fast Ethernet 10 / 100Tx ports with RJ45 front connector	No.2 Fast Ethernet 10 / 100Tx ports with RJ45 front connector
Serial Ports	No.1 RS232 or RS485 port on terminals, max baud rate 115k No.1 RS485 port on terminals, max baud rate 115kbps	No.1 RS232 / RS485 port switchable via software, on 4-pole connector, max baud rate 115k No.1 RS485 port on IDC10 connector for bus and terminals, max baud rate 115kbps No.1 RS485s port on terminals, max baud rate 115kbps	No.1 RS232 / RS485 port switchable via software, on 4-pole connector, max baud rate 115k No.1 RS485 port on IDC10 connector for bus and terminals, max baud rate 115kbps No.1 RS485s port on terminals, max baud rate 115kbps	No.1 switchable RS232 / 485 serial port max 115k No.1 RS485 port, max baud rate 115kbps
USB Ports	No.1 host full USB port	No.1 USB host port on side connector type A	No.1 USB host port on side connector type A	No.1 OTG USB port No.1 USB serial port for debug software
Modem	Optional R-COMM module	-	4G/LTE Model (Europe, Africa, Middle East, Korea, Thailand, India); 4G LTE BAND 6-Band with GPS & GLONASS module	-
IT / industrial protocols	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/FTPs Client, FTP/sFTP Server, HTTP/HTTPS server, SMTP	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/FTPs Client, FTP/sFTP Server, HTTP/HTTPS server, SMTP	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/FTPs Client, FTP/sFTP Server, HTTP/HTTPS server, SMTP	ModBUS TCP-IP Server/Client, ModBUS RTU Master/Slave, FTP/FTPs Client, FTP/sFTP Server, HTTP/HTTPS server, SMTP
IIoT Protocols	MQTT, OPC UA Server, http post	MQTT, OPC UA Server, http post	MQTT, OPC UA Server, http post	MQTT, OPC UA Server, http post
Safety protocols	OpenVPN, SSL, TLS	OpenVPN, SSL, TLS	OpenVPN, SSL, TLS	OpenVPN, SSL
Wireless				Wi-Fi 802.11 b/g/n, band 2.4 ÷ 2.4835 GHz
Operating mode	ModBUS Gateway (Ethernet - Serial, shared memory, transparent gateway, serial tunnelling), IoT/Cloud-based gateway, datalogger, alarm management unit, serial sniffer, wi-fi router, network redundant unit, remote assistance/remote control VPN module , microcontroller, LAN/WAN separator	RTU/ASCII ↔TCP-IP Gateway ModBUS, Gateway Modbus shared memory (via TCP-IP), Serial Device Server, datalogger, remote alarm unit, remote assistance/remote control VPN unit, microcontroller	RTU/ASCII ↔TCP-IP Gateway ModBUS, Gateway Modbus shared memory (via TCP-IP), Serial Device Server, 4G LTE/LAN Router, LAN / WAN switch, datalogger, remote alarm unit, remote assistance/remote control VPN unit, microcontroller	ModBUS Gateway (Ethernet - Serial, shared memory, transparent gateway, serial tunnelling), IoT/Cloud-based gateway, datalogger, alarm management unit, serial sniffer, wi-fi router, network redundant unit, remote assistance/remote control VPN module , microcontroller, LAN/WAN separator
Connectivity	Max 32 Client Modbus TCP-IP (Server Mode), Max 25 Server Modbus TCP-IP, 2000 variables (tags), 128 slave nodes MobBUS RTU (for serial)	Max 32 Client Modbus TCP-IP (Server Mode), Max 25 Server Modbus TCP-IP, 2000 variables (tags), 128 slave nodes MobBUS RTU (for serial)	Max 32 Client Modbus TCP-IP (Server Mode), Max 25 Server Modbus TCP-IP, 2000 variables (tags), 128 slave nodes MobBUS RTU (for serial)	Max 32 Client Modbus TCP-IP (Server Mode), Max 25 Server Modbus TCP-IP, 2000 variables (tags), 128 slave nodes MobBUS RTU (for serial)
ADVANCED SETTINGS & FUNCTIONS				
Programming	Web Server	Web Server	Web Server	Web Server, GUI interface
VPN management software	VPN BOX Manager, OpenVPN, VPN Client Communicator	VPN BOX Manager, OpenVPN, VPN Client Communicator (PC software and mobile App)	VPN BOX Manager, OpenVPN, VPN Client Communicator (PC software and mobile App)	VPN BOX Manager, OpenVPN, VPN Client Communicator
Management tool	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection)	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection), network management and IO SMS	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection), network management and IO SMS	SDD (Seneca Discovery Device), SESC (Seneca Ethernet to Serial Connection)
If-Then-Else Logic	Yes	Yes	Yes	Yes (opt.)
IoT supports and third party platforms	Cloud BOX, LET'S, MQTT, OPC UA Server	Cloud BOX, LET'S, MQTT, OPC UA Server	Cloud BOX, LET'S, MQTT, OPC UA Server	Cloud BOX, LET'S, MQTT, OPC UA Server
REGULATIONS				
Marking / Certifications	EC	EC	EC	EC

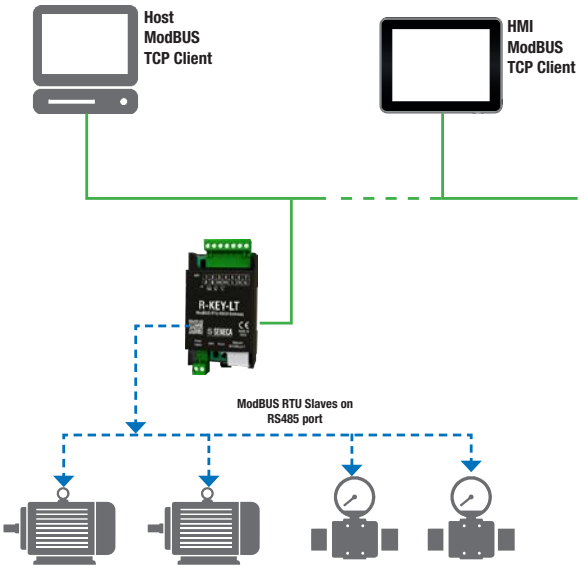
The technical data and the diagrams in this document are indicative and not binding.

APPLICATION DIAGRAMS

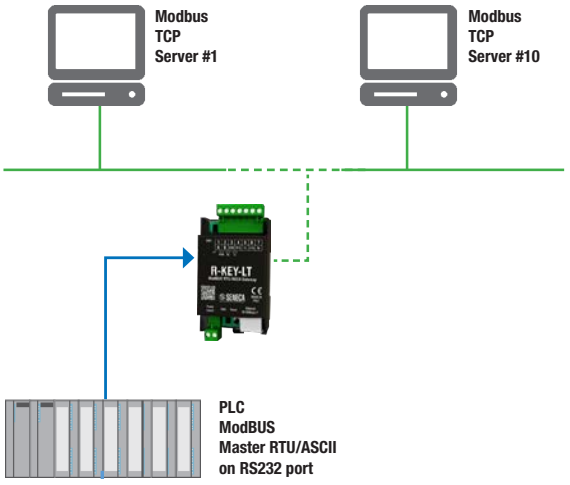
MODBUS GATEWAY - ETHERNET TO SERIAL



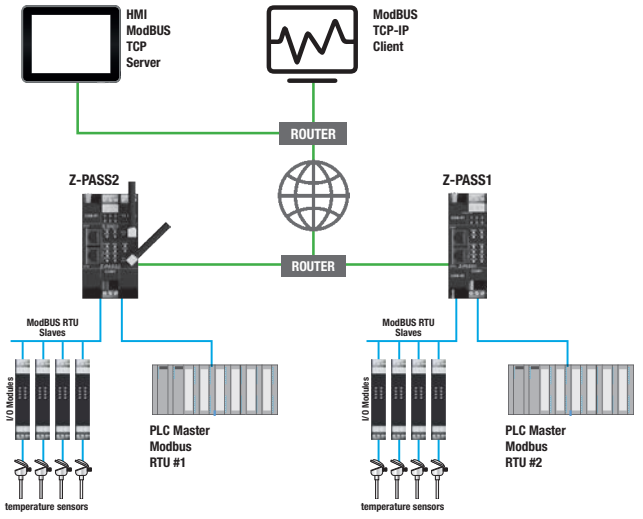
MODBUS GATEWAY - ETHERNET TO SERIAL



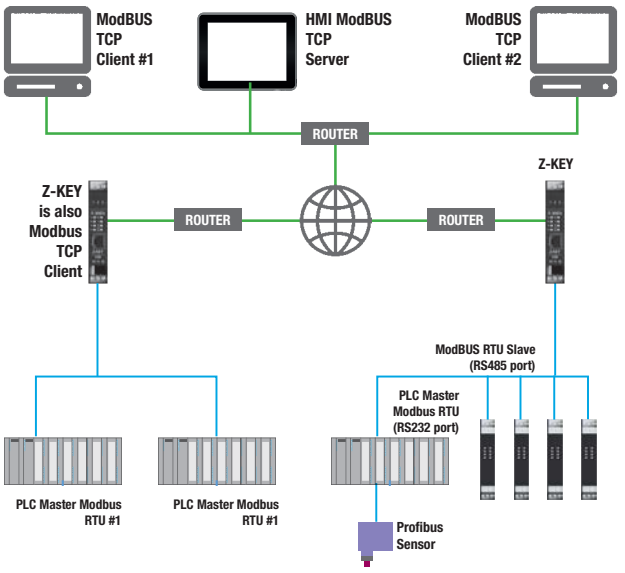
MODBUS GATEWAY - SERIAL TO ETHERNET



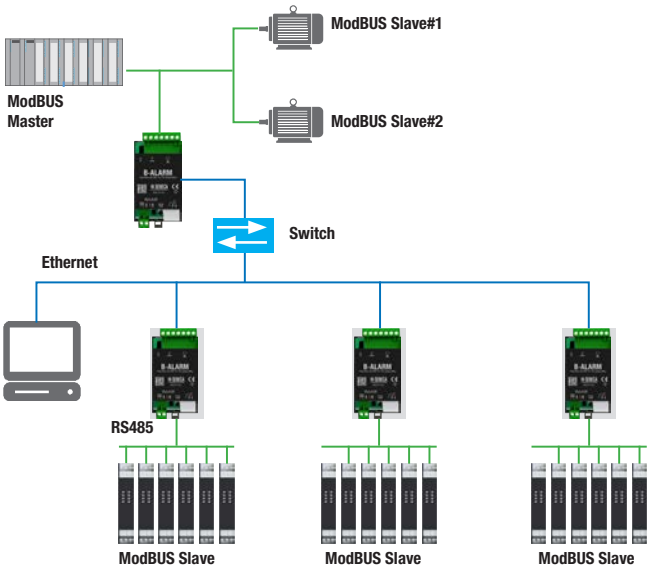
MODBUS GATEWAY - SHARED MEMORY



MODBUS GATEWAY - SHARED MEMORY

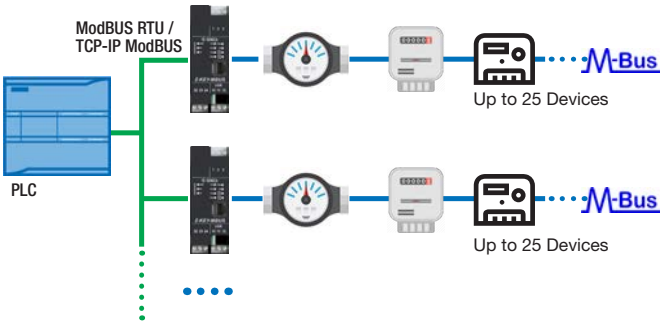


EXTENDED SERIAL OVER ETHERNET

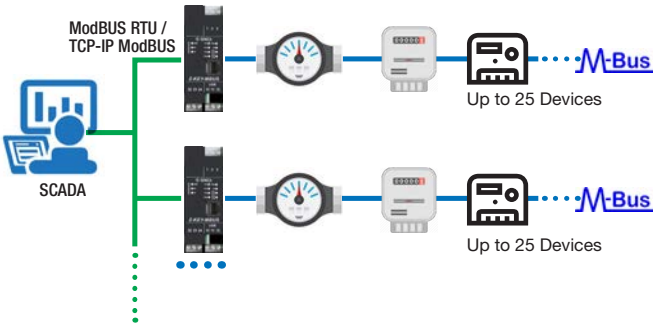


APPLICATION DIAGRAMS

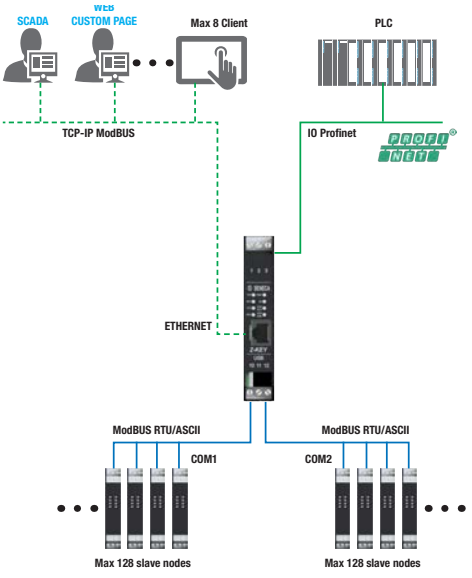
M-BUS GATEWAY - PLC CONNECTION



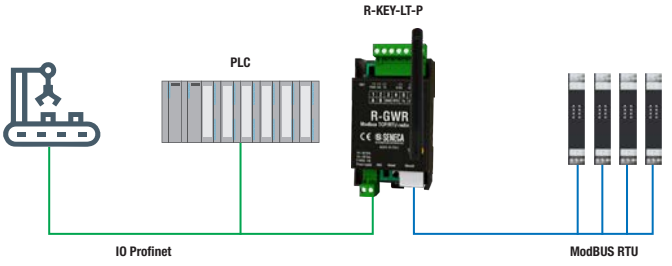
M-BUS GATEWAY - SCADA CONNECTION



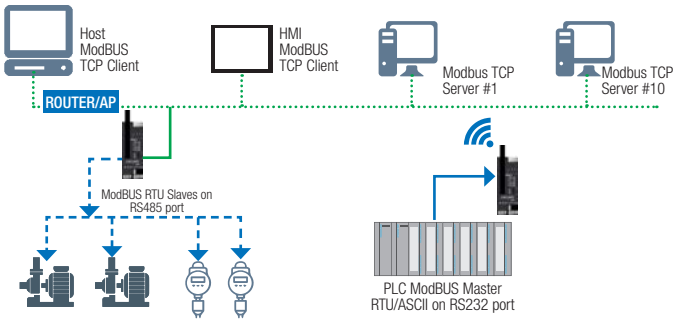
Z-KEY-P



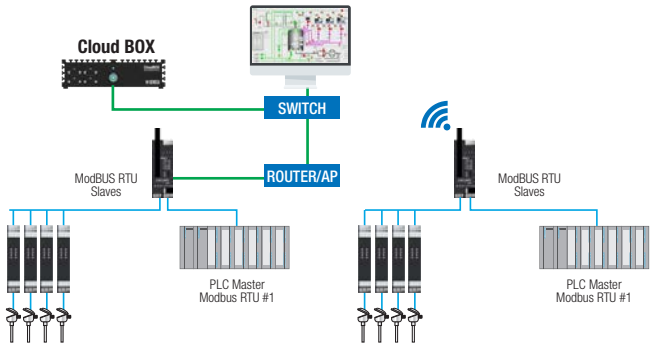
R-KEY-LT-P



Z-KEY-WIFI - MODBUS GATEWAY

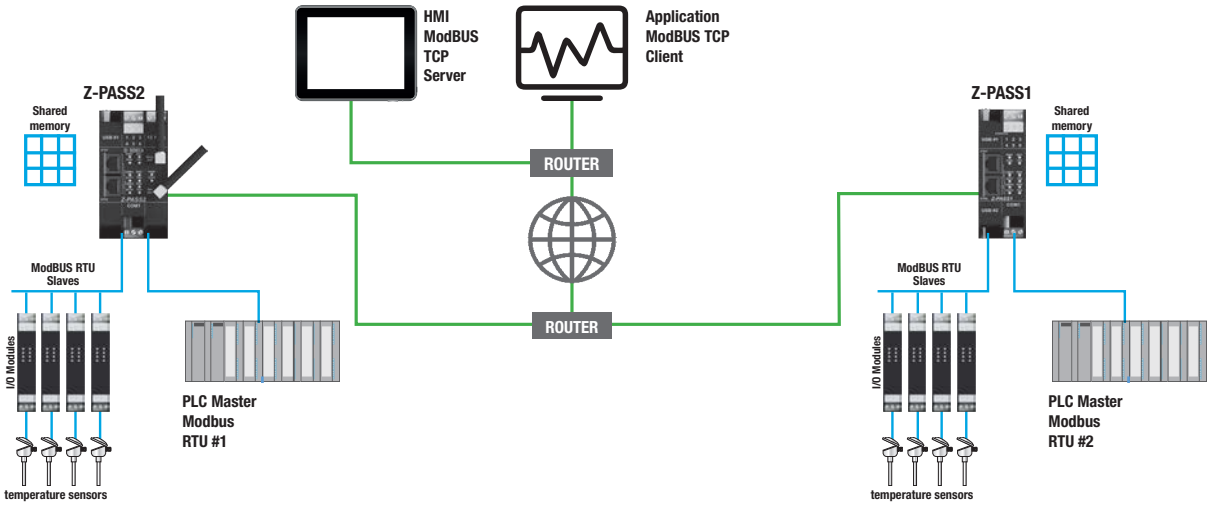


Z-KEY-WIFI - MODBUS GATEWAY SHARED MEMORY

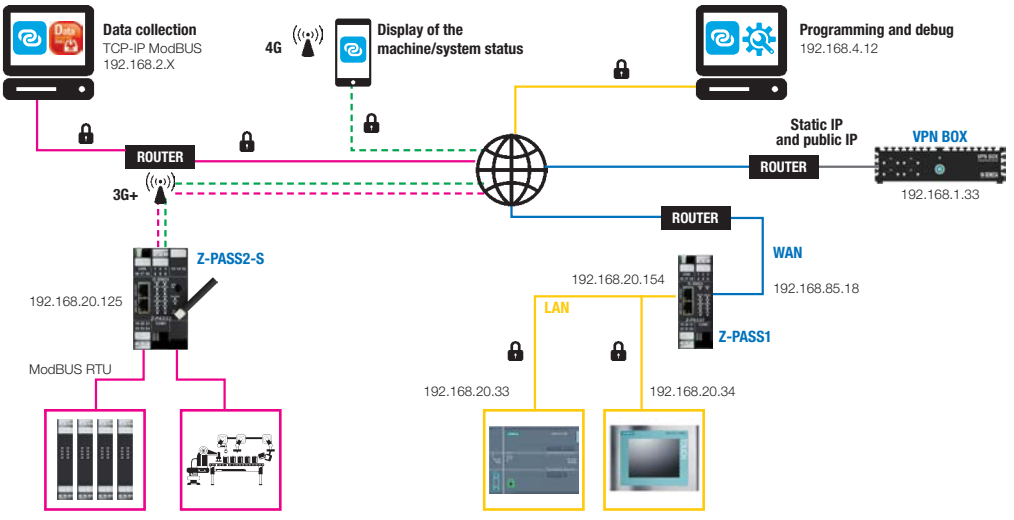


APPLICATION DIAGRAMS

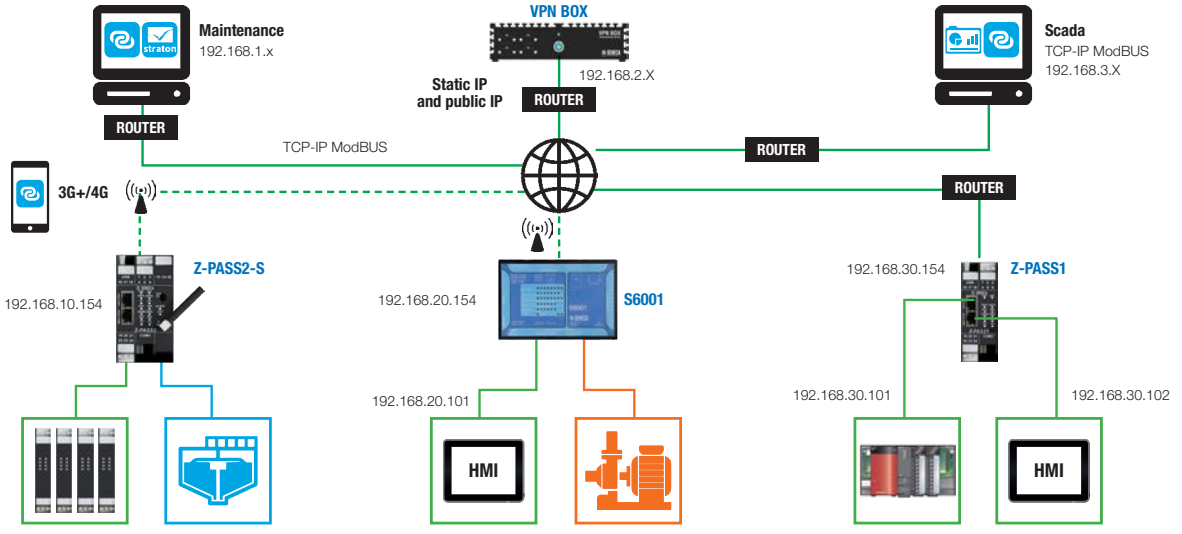
GATEWAY MODBUS «SHARED MEMORY»



REMOTE ASSISTANCE UNIT / POINT-TO-POINT / VPN



REMOTE CONTROL UNIT / SINGLE LAN / VPN



GATEWAY - CONFIGURATION TOOL

WEB SERVER
- Device and network parameter configuration
- Firmware update
- Saving of Configuration
- Access through authentication
- Custom Web Server pages saved on SD card
- Datalogging on SD card

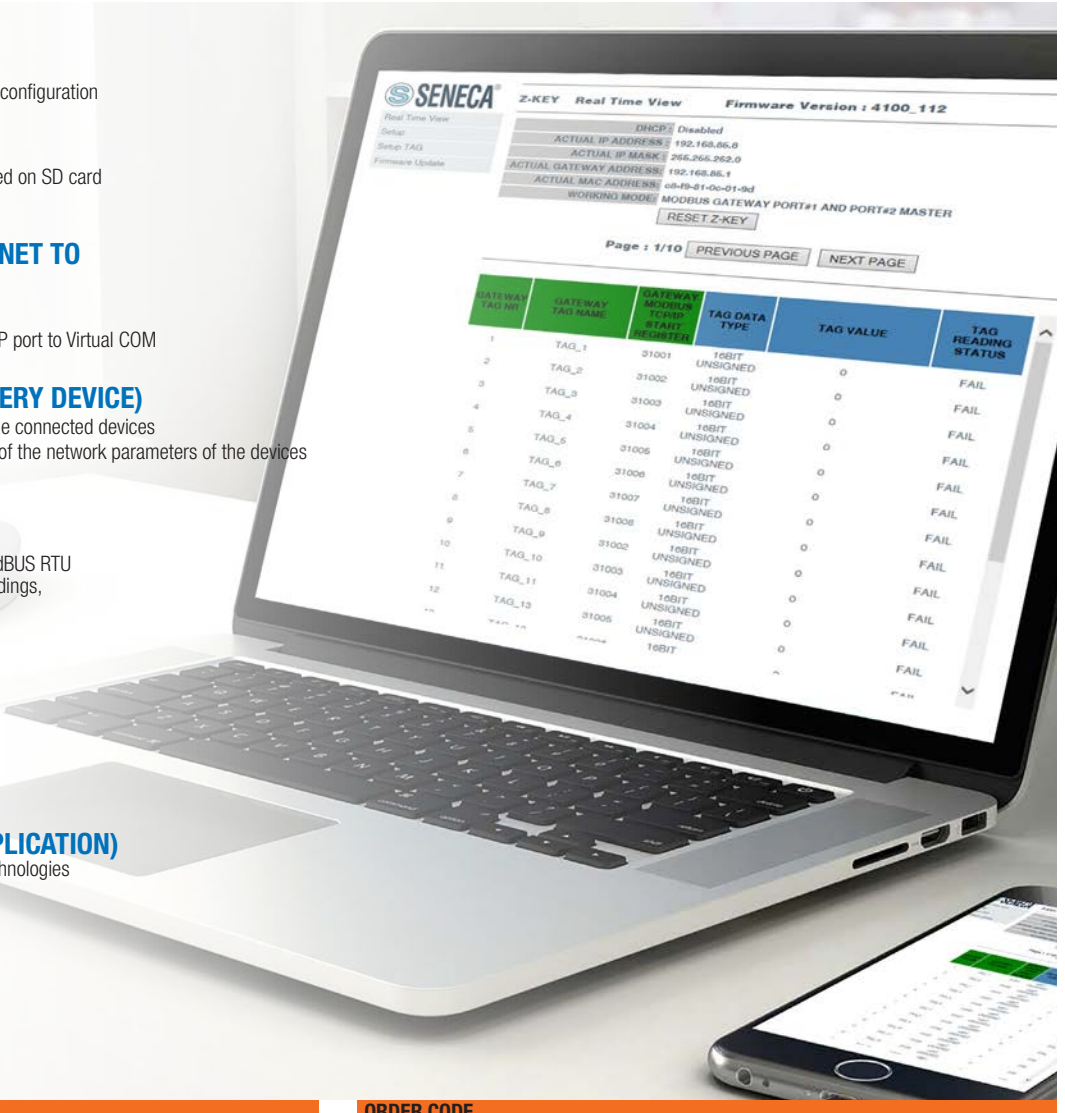
SESC (SENECA ETHERNET TO SERIAL CONNECTION)
- Management interface
- Assigning of IP address and TCP port to Virtual COM

SDD (SENECA DISCOVERY DEVICE)
- Automatic identification of all the connected devices
- Management and modification of the network parameters of the devices

EXCEL TEMPLATES
- Immediate configuration of ModBUS RTU and TCP-IP variable tags, recordings, addresses, serial ports
- File export

VPN TOOL
- P2P / Single LAN connections
- Access with credentials
- Client authentication
- OpenVPN client configuration

CLOUD BOX (WEB APPLICATION)
- HMI with HTML5 and CSS3 technologies
- Synoptic pages
- Historical data / Log files
- Data / Trends Export
- Events / Alarms



ORDER CODE

Code	Description
ROUTER / GATEWAY	
R-KEY-LT	1-Port RTU/ASCII ModBUS Industrial Gateway
Z-KEY	-Port ModBUS RTU
Z-KEY-MBUS	Industrial gateway - M-BUS protocol converter ↔ MdBUS RTU / TCP-IP
Z-PASS1-IO	VPN Industrial Gateway - Serial Device Server, 1DI, 2DO, integrated 1DI/DO
Z-PASS2-S	VPN Industrial Gateway - Serial Device Server, 2DI, 2DO, 2DI/DO, modem pentaband 3G+/ Ethernet Router, GPS
Z-PASS2-IO-4G-EU	VPN Industrial Gateway - Serial Device Server, 2DI, 2DO, integrated 2DI/DO, modem 4G-Eu/ Ethernet Router, GPS
SERVER VPN	
VPN BOX	LET'S - Server VPN optimised for connections Point-to-Point / Single LAN
VPN BOX VM	LET'S - Virtual Machine Server VPN optimised for connections Point-to-Point / Single LAN
VPN BOX-D	LET'S - Test service on VPN BOX SENECA valid for 30 days max 2 devices
VPN BOX VM-D	LET'S - Virtual Machine Server VPN optimised for connections Point-to-Point / Single LAN max 2 devices (DEMO version)
VPN BOX MANAGER	LET'S - VPN BOX configuration software and VPN network management
VPN CC	LET'S - VPN Client Communicator, Remote Access Management Software
TOOL SOFTWARE	
SDD	SENECA Discovery Device, IP scanner for Z-KEY, Z-PASS1, Z-PASS2
SESC	SENECA Ethernet to Serial Connection for Z-KEY, Z-PASS1, Z-PASS2
TEMP-TAG-Z-PASS	Excel template tag management gateway mode - Z-PASS-1/2/2S
TEMP-TAG-Z-KEY	Gateway mode tag management Excel Template - Z-PASS-1/2/2S
TEMP-WEB-Z-KEY	Z-KEY web page template

ORDER CODE

Code	Description
ACCESSORIES	
A-GSM	External antenna GSM dual band swing cable 3.2 m
A-GSM-QUAD-N	GSM SMA-M quadband external antenna, cable 4 m
A-GPS-SMA	Antenna GPS with SMA coupling
CS-TIP-MEF-PH	Serial communication cable (Tips / 4-way female connector) for Z-TWS4, Z-PASS1/2
CS-DB9M-MEF-PH	Serial communication cable (DB9M connector / 4 way female connector) 3 wires 1.5 m
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
MSD	Micro SD memory card with adapter
Z-PC-DIN1-35	Support for rapid installation on DIN guide 1 slot pitch 35 mm
Z-PC-DIN4-35	Support for rapid installation on DIN guide 4 slot pitch 35 mm
Z-PC-DINAL1-35	Support for rapid installation on DIN guide head + 1 slot pitch 35 mm
Z-PC-DINAL2-52.5	Support for rapid installation on DIN guide head + 2 slot pitch 52.5 mm

REMOTE ASSISTANCE AND REMOTE CONTROL PLATFORM IOT / VPN

IOT / VPN REMOTE ASSISTANCE / REMOTE CONTROL PLATFORM

LET'S
IOT CONNECTIVITY SOLUTIONS

• PREDICTIVE MAINTENANCE AND DIAGNOSTICS
• REMOTE ASSISTANCE AND REMOTE CONTROL
• REMOTE SOFTWARE UPDATE
• ACCESS TO DATA AND INSTALLATIONS IN "SINGLE LAN" AND "POINT-TO-POINT" MODES

LET'S is the SENECA VPN - IoT platform that reduces maintenance costs for automation and management of machines and systems, offering an integrated connectivity service on 3 levels: remote access to data, programmable control, network monitoring. Based on the VPN BOX Server module, LET'S allows "Always ON" connections (Remote control / Single LAN mode) for systems supervision or «ON Demand» connections (Remote service / Point-to-Point mode) to third-party machines and devices and for services maintenance or data collection. Communication from a PC or mobile device is via desktop software or VPN Client Communicator APP. The industrial VPN - IoT gateways of the LET'S platform extend the serial networks over Ethernet as well as supporting complex architectures and safety critical applications. The Z-PASS2, model, with integrated 4G LTE modem, also functions as a router, DynDNS Server and a redundant communication device. SSD (Surprise Smart Display) is a multipurpose device that includes gateway, datalogger, alarm management, Wi-Fi router, logic and remote assistance/remote control functions also in the Cloud. One of the main innovations of the platform is the integration of the remote access functions with those of programmable automation thanks to the SENECA controllers on the basis of IEC 61131.

HIGHLIGHTS

MULTIFUNCTION DEVICES CPU, RTU, DATALOGGER, GATEWAY/ROUTER

BUILT-IN CONFIGURABLE I/O

INTEGRATION WITH PLC AND THIRD-PARTY DEVICES, R/W "S7PROTOCOL"

SOFTPLC STRATON AND LOGIC BUILT-IN IF-THEN-ELSE

DOUBLE VPN NETWORK MANAGEMENT MODE (SINGLE LAN / P2P)

SERVER IN HOUSE (HW/SW/VIRTUAL MACHINE)

VPN BASED ON STANDARD OPENVPN

MOBILE APP FOR VPN CLIENT CONNECTIVITY

DATALOGGING

ADVANCED ALARMS

SUPPORT MODBUS RTU, TCP-IP

SUPPORT OPC UA

CONNECTIVITY 4G LTE

SUPPORT OF ALL TYPES OF SIM

RAPID CONFIGURATION VIA WEB SERVER

IOT SUPPORT (MQTT, HTTP POST) AND CLOUD PLATFORMS

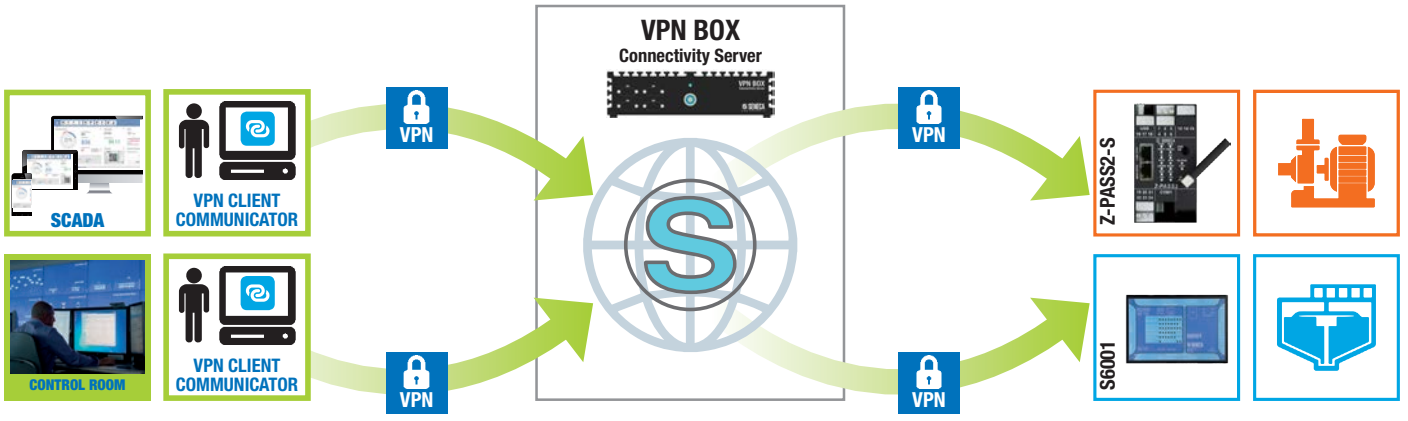
SINGLE LAN / REMOTE CONTROL CONNECTION

In Remote control / Single LAN mode (always on connection) VPN BOX functions as a network server to which a static and public IP is assigned.
The communication is simultaneous and always active between all the remote sites and the server, as well as with the different subnets that are part of the overall system. This type of connection is ideal for real-time monitoring and for the implementation of supervisory systems.

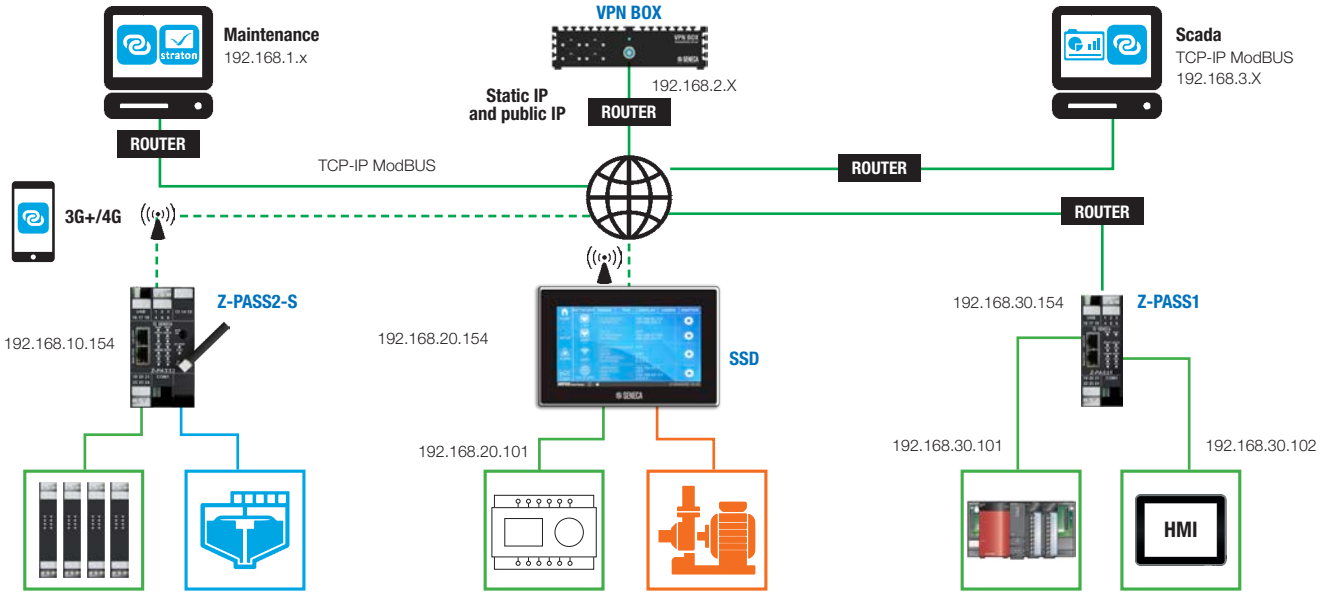
Typical applications	Monitoring, maintenance, supervision, data acquisition, local automation, alarms
Type of connection	Always ON . Contemporary and always active on all remote sites. Connection between different networks (e.g. 192.168.30.x, 192.168.40.x…) via VPN
Communication between VPN subnets	Yes, systems visible/accessible to all VPN clients
Subnet access	Via local addresses
Multi-user management	No
Network configurations	Differentiated in different sites
SIM supported	All
Benefits	• Remote and simultaneous access on different systems • Possibility to consult the devices as if you were in the field (local) • Integration of heterogeneous networks

LOGIC MODEL

«ALWAYS ON» CONNECTION



EXAMPLE OF ARCHITECTURE



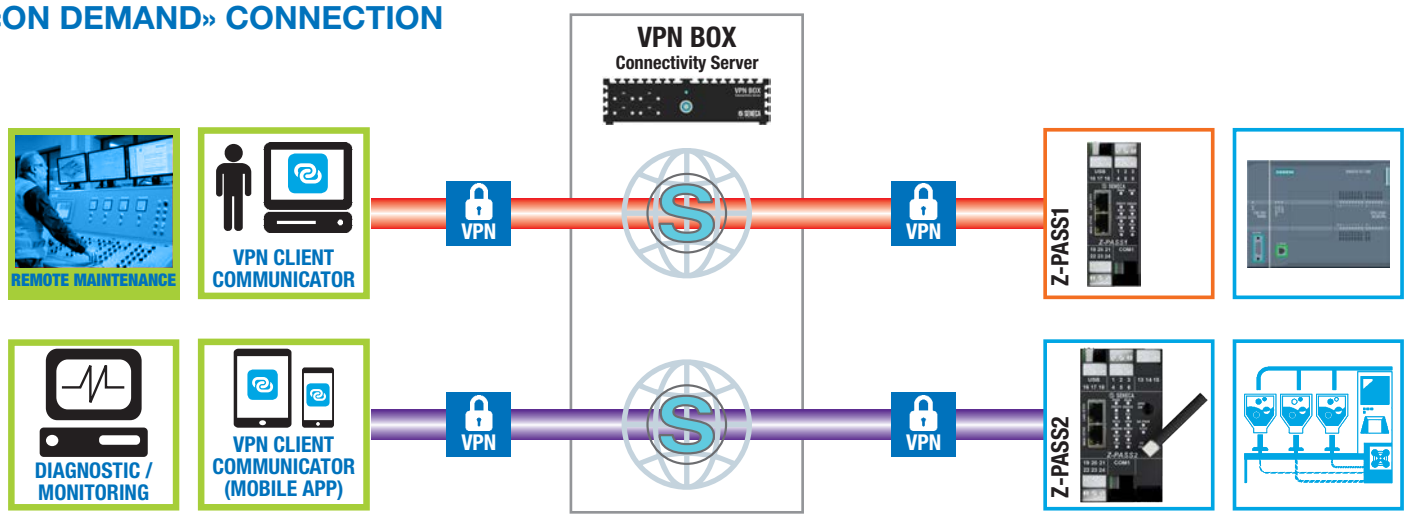
POINT TO POINT CONNECTION / REMOTE ASSISTANCE

In the Remote service / Point-To-Point mode (connection on demand) VPN BOX works as a concentrator and establishes communication between PC (or mobile device) and machine / system.
It also requires the assignment of a static and public IP or possibly of a DynDNS address.
Ideal for remote maintenance and diagnostics applications. This type of connection allows the coexistence of multiple types of users.

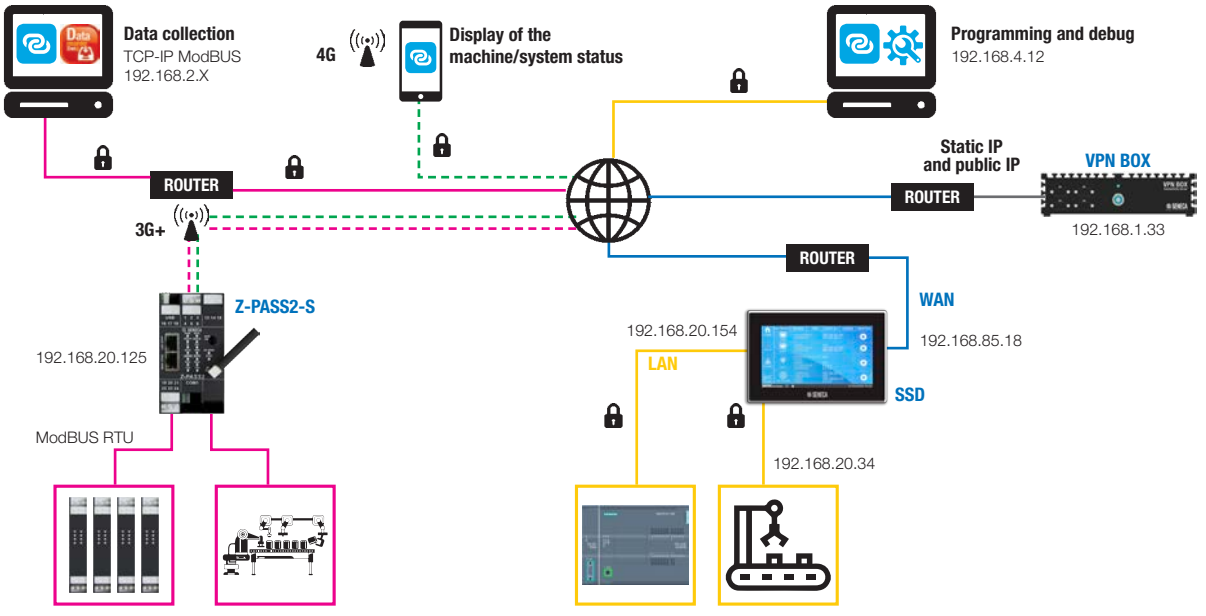
Typical applications	Maintenance, diagnostics, Systems start-up, customer support in real time
Type of connection	ON Demand. P2P Pc user connection / Mobile device and device / machine. On request and not contemporary for different sites.
Communication between VPN subnets	No
Subnet access	Via local addresses
Multi-user management	YES
Network configurations	Equal at the different sites (e.g. 192.168.20.x).
SIM supported	All
Benefits	• Reduction of logistics and maintenance costs • Remote machine control • User Profiling

LOGIC MODEL

«ON DEMAND» CONNECTION



EXAMPLE OF ARCHITECTURE



THE PLATFORM

CONNECTIVITY MODULE - VPN SERVER

VPN BOX

Versions
- Hardware - Industrial PC Box
- Software - Virtual Machine VMware

Connections management
- Dual operating mode Point to Point (P2P) for On Demand connections (unlimited nodes) and Single LAN for Always ON connections (max 496 nodes)
- Remote connection management from PC (VPN Client Communicator) or from mobile device (APP VPN CC)

System Configuration
- Server installable on the customer's network with the assignment of a static and public IP
- Server configuration through dedicated software Seneca device registration and authentication on VPN BOX through automatic certificate exchange procedure

Safety
- Encryption: BF-CBC 128
- TLS cipher: TLSv1/SSLv3 DHE-RSAAES256-SHA with RSA 1024 bit
- HMAC authentication algorithm SHA1 160 bit

GATEWAY / ROUTER VPN CLIENT

R-PASS

SSD

Z-PASS1

Z-PASS2

BASIC FUNCTIONALITY	R-PASS-0	R-PASS-W	SSD	Z-PASS1	Z-PASS2
Integrated HMI	x	x	x	-	-
ModBUS Gateway (from Modbus TCP to Modbus RTU)	x	x	x	x	x
ModBUS Gateway Shared memory (via TCP-IP)	x	x	x	x	x
Client VPN BOX or OpenVPN	x	x	x	x	x
Datalogger with data transmission via Ftp/email/https	x	x	x	x	x
4G LTE Modem/ Router (DHCP Server, Firewall, DynDNS) with firewall and GPS	-	-	-	-	x
Remote / Virtual COM Port	-	-	-	x	x
Built-in I/O	8	8	2	4	6
CONNECTIVITY					
IT Protocols (FTP server, SFTP server, HTTP server, HTTPS server, OpenVPN)	x	x	x	x	x
Serial Tunnel Point-To-Point (TCP-UDP) / Point-To-Multi-Point (UDP)	x	x	x	x	x
ModBUS calls optimisation	x	x	x	x	x
Network Redundancy	-	-	-	-	x
Wi-Fi	-	x	x	-	-
LAN/WAN Ethernet	x	x	x	x	x
Ethernet, SWITCH	x	x	x	x	x
MANAGEMENT					
Basic Authentication web page security	x	x	x	x	x
Firmware/configuration update via USB or web server	x	x	x	x	x
Remote connection block	x	x	x	x	x
SMS for network configuration and Modbus IO/TAG management	-	-	-	x	x
ADVANCED FUNCTIONS					
Advanced alarms and serial diagnostics	x	x	x	x	x
If-Then-Else Logic	x	x	x	x	x
IIoT Support (MQTT, OPC UA Server, CLOUD BOX)	x	x	x	x	x

VPN CLIENT CONTROLLERS

Z-TWS4

Z-PASS2-S

S6001-PC

S6001-RTU

FUNCTIONS	Z-TWS4	Z-PASS2-S	S6001-RTU	S6001-PC
Modem / Router	-	3G+/4G	3G+/4G	3G+
Ethernet Ports	2	2	1	1
Serial Ports	3	3	3	3
USB Ports	1	1	1	1
Fieldbus	ModBUS RTU/TCP-IP, CAN, M-BUS	ModBUS RTU/TCP-IP, M-BUS	ModBUS RTU/TCP-IP, M-BUS	ModBUS RTU/TCP-IP, M-BUS
Network protocols	http Ftp, smtp, snmp	http. Ftp, smtp, ppp, snmp	http. Ftp, smtp, ppp, snmp	http. Ftp, smtp, ppp, snmp
Energy protocols (opt.)	IEC 60870-101/104, IEC 61850	IEC 60870-101/104, IEC 61850	IEC 60870-101/104, IEC 61850	IEC 60870-101/104, IEC 61850
OpenVPN, VPN Box Support, VPN Single LAN / P2P	x	x	x	x
Support OPC UA, MQTT, http post, Cloud	x	x	x	-
Built-in I/O	1DI, 2DO, 1 DI/DO	2DI, 2DO, 2DI/DO	17DI, 8DO, 4AI, 2AO	17DI, 8DO, 4AI, 2AO
Management software	Straton, Z-NET4	Straton, Z-NET4	Straton, Z-NET4	HMI
Straton Libraries	x	x	x	x

PROGRAMMING TOOL

Available on the App Store

GET IT ON Google Play

WEBSERVER
- Network, gateway, router configuration
- VPN Client Configuration
- RTC Configuration
- Firmware update

- **OPENVPN (PC and Mobile App)**
- Open VPN client flexible configuration
- Client authentication
- TUN, TAP interfaces support

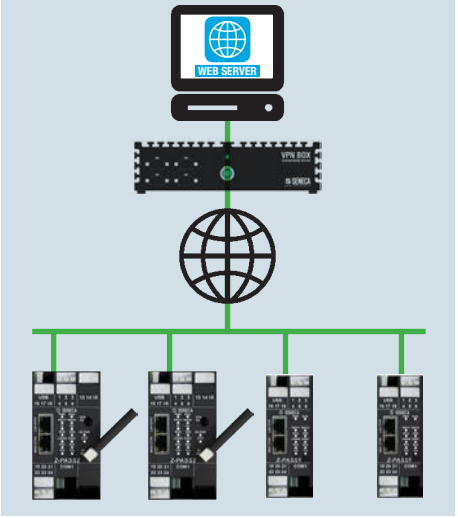
VPN CLIENT COMMUNICATOR (App PC and Mobile)
- P2P / SINGLE LAN connections
- Access with credentials
- Certified automatic installation

STRATON
- IEC 61131 SoftPLC automation logic
- R/W functions from Siemens PLC with S7 Protocol

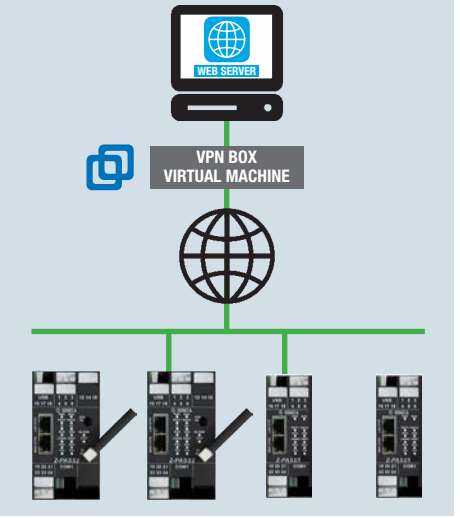
IOT / VPN REMOTE ASSISTANCE / REMOTE CONTROL PLATFORM

VPN SOLUTIONS

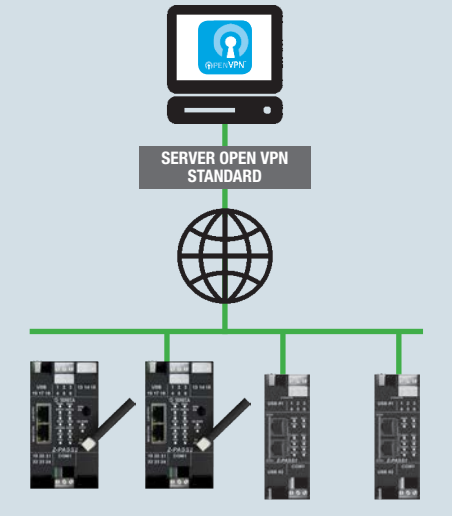
SOLUTION SENECA VPN BOX



SOLUTION SENECA VPN BOX / VIRTUAL MACHINE

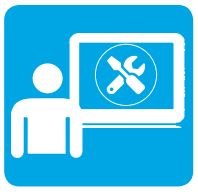


SOLUTION WITH SERVER OPEN VPN PHYSICAL/VM



APPLICATION SECTORS

REMOTE MAINTENANCE OF MACHINES AND SYSTEMS



BUILDING AUTOMATION

ENVIRONMENT / WATER TREATMENT

INTEGRATION WITH IT SYSTEMS

TRAFFIC & TRANSPORTATION

ENERGY

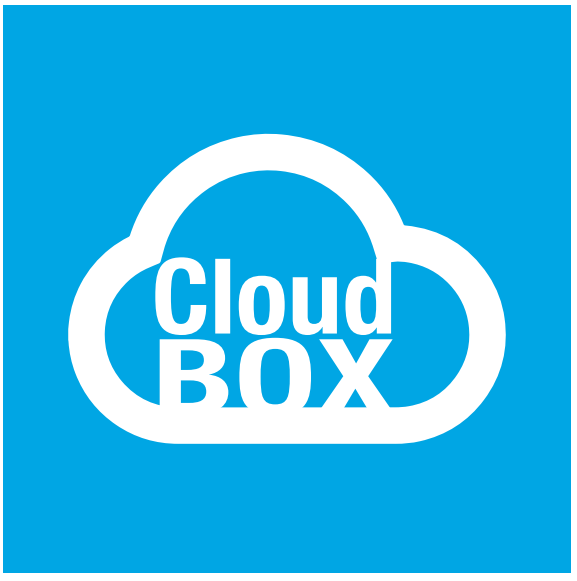
SURVEILLANCE & SECURITY

OIL & GAS

ORDER CODE	
Code	Description
GATEWAY / ROUTER	
SSD-0-0-0-0	Advanced touchscreen HMI with built-in I/O
SSD-0-L-0-0	Advanced touchscreen HMI with built-in logic and I/O
SSD-0-0-V-0	Advanced touchscreen HMI with VPN and built-in I/O
SSD-0-0-0-I	Advanced touchscreen HMI with IIoT and built-in I/O
SSD-0-L-V-0	Advanced touchscreen HMI with logic, VPN and built-in I/O
VPN CC	LET'S - VPN Client Communicator, Remote Access Management software
SSD-0-0-V-I	Advanced touchscreen HMI with IIoT, VPN and built-in I/O
SSD-0-L-V-I	Advanced touchscreen HMI with IIoT, VPN and built-in I/O
Z-PASS1-IO	VPN Industrial Gateway - Serial Device Server, 1DI, 2DO, built-in 1DI/DO
Z-PASS2-4GWW	Gateway / Router 4G worldwide, VPN, serial device server, GPS and built-in I/Os
Z-PASS2-S-4GWW	4G worldwide remote controller, VPN, serial device server, GPS and built-in I/Os
SERVER VPN	
VPN-BOX	LET'S - Server VPN optimised for connections Point-to-Point / Single LAN
VPN BOX VM	LET'S - Virtual Machine Server VPN optimised for connections Point-to-Point / Single LAN
VPN BOX-D	LET'S - Service on test on VPN BOX Point-to-Point valid for 30 days max 2 device
VPN BOX VM-D	LET'S - Virtual Machine Server VPN optimised for connections Point-to-Point / Single LAN max 2 device
VPN BOX MANAGER	LET'S - VPN BOX configuration software and VPN network management
VPN CC	LET'S - VPN Client Communicator, Remote Access Management software
Z-PASS2-S-4GWW	4G worldwide remote controller, VPN, serial device server, GPS and built-in I/Os

ORDER CODE	
Code	Description
VPN CONTROLLERS	
S6001-PC-4GWW	Pump controller with built-in I/O, 4G WW LTE, Straton e HMI 7" programming system
S6001-RTU-4GWW	All-in-one RTU with built-in I/O, 4G WW LTE modem and Straton programming system
S6001-RTU-E-4GWW	All-in-one RTU with built-in I/O, 4G WW LTE modem and Straton programming system, Energy protocols
Z-PASS2-S-E-4GWW	Remote 4G Energy Controller worldwide, VPN, serial device server, GPS and built-in I/Os.
Z-TWS4-S-IO	IEC 61131 multifunction controller, built-in I/O, Straton workbench, OEM version
Z-TWS4-E-IO	IEC 61131 multifunction controller, built-in I/O, Straton workbench, OEM version, energy protocol
MANAGEMENT TOOL	
SDD	SENECA Discovery Device
SESC	SENECA Ethernet to Serial Connection
SSP	SENECA Straton Package - CPU Seneca Installer suite (supplied)
STRATON-256-UPD	STRATON IDE 256 Tags UPGRADE from V8 to V9
STRATON-512-UPD	STRATON IDE 512 Tags UPGRADE from V8 to V9
STRATON-UN-UPD	STRATON IDE Unlimited Tags UPGRADE from V8 to V9
STRATON-870-850	Activation licence IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server
STRATON-870M	Activation licence IEC 60870-5-101/104 Master
STRATON-870S	Activation licence IEC 60870-5-101/104 Slave
STRATON-870S-850	Activation licence IEC 60870-5-101/104 Slave + IEC 61850 Client / Server
STRATON-D-USB	Straton activation key for IEC 61131 controllers
STRATON-FULL01	Activation licence IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server + SNMP extension
STRATON-IDE256	Straton development environment 256 tag with USB activation key
STRATON-IDE512	Straton development environment 512 tag with USB activation key
STRATON-IDEUN	Straton development environment unlimited tags with USB activation key
STRATON-SNMP	Straton extension SNMP agent driver
Z-NET4	Z-PC Line I/O Systems and Controller Configurator, including Web Editor development environment, Trend Viewer, Data Recorder

IOT Solutions
SUPPORT



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2.6

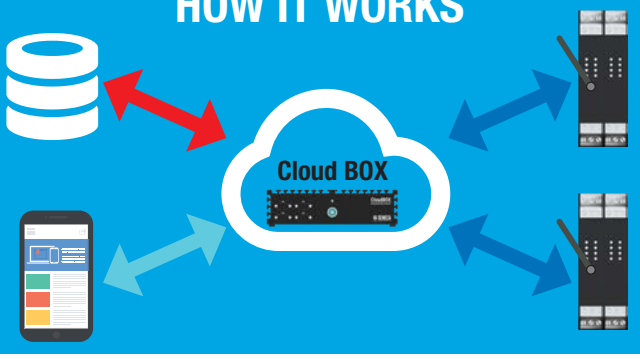
CLOUD BOX - INDUSTRIAL IOT BOX WITH SUPERVISORY WEB APPLICATION

What is it?

The Cloud - IoT solution for centralising data, managing remote connections, creating multi-user customisable supervision pages.

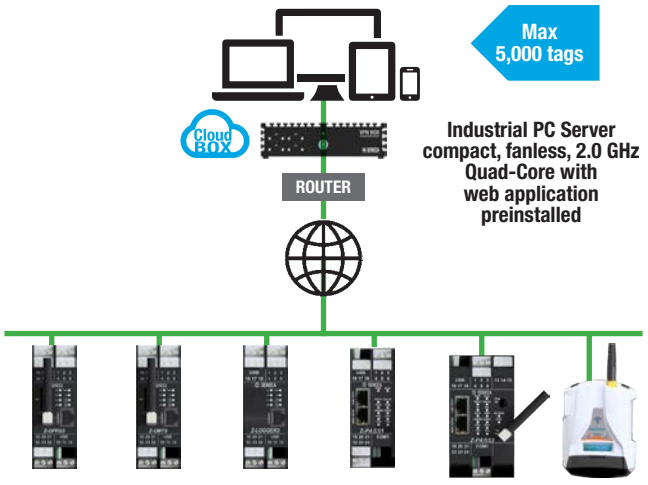
- Sending commands to datalogger
- Saving data received from devices in the field on a centralised database
- Access to Cloud BOX through customisable web pages
- Also available integrated inversion or Virtual Machine/VmWare with third party servers

HOW IT WORKS



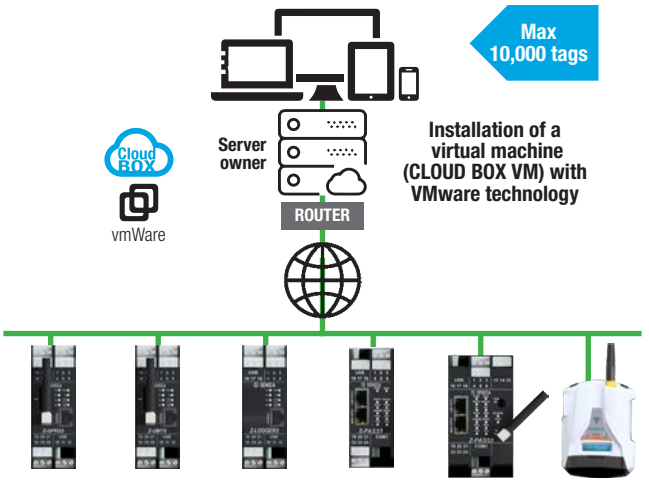
ARCHITECTURES

INTEGRATED SYSTEM



Compatible devices: Z-GPRS3, Z-LTE, Z-LOGGER3, Z-PASS1, Z-PASS2, MYALARM SEAL

VIRTUAL MACHINE



Compatible devices: Z-GPRS3, Z-LTE, Z-LOGGER3, Z-PASS1, Z-PASS2, MYALARM SEAL

HIGHLIGHTS

HARDWARE
Compact fanless pc

WEB APPLICATION
Intuitive interface with HTML5 and CSS3 technologies

COMPATIBLE PRODUCTS
Can be used in combination with Z-GPRS3, Z-LTE, Z-LOGGER3, Z-PASS1, Z-PASS2, MYALARM SEAL

TAG MANAGEMENT
Threshold management up to 10,000 tags (virtual machine) or 5,000 tags (physical server)
Max 10,000 tags

USER ACCESS
Flexible and secure multi-user / multi-device access

SUPERVISION
Creation of responsive web pages with dashboards, synoptics and integrated widgets for the supervision of devices in the field

DATA ARCHIVING
Centralised data storage alarms of connected devices max data retention time up to 10 years, min sampling time 1 min

DATA/ALARMS HISTORY
Display of time series data, events, alarms on web pages

SENDING OF COMMANDS
Sending of commands to connected devices bypassing of any SIM blocks and firewalls (compatibility with any data/M2M SIM)

REMOTE CONNECTION
Communication management with datalogger via 2G/3G+/4G / Ethernet with HTTP, HTTPS, FTP protocols

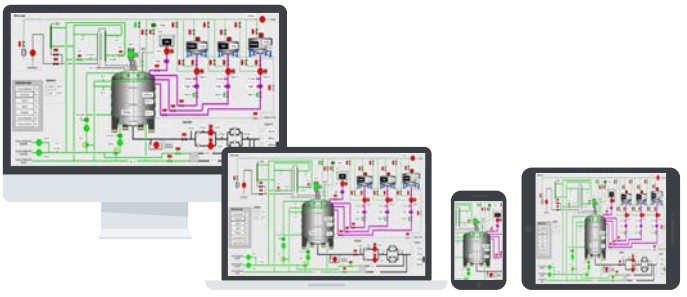
DATA EXPORT AND RECOVERY
Backup, automatic data recovery system and export in csv format

SENDING OF EMAIL OR TELEGRAM MESSAGE
Sending of alarm email or telegram message to a user directory

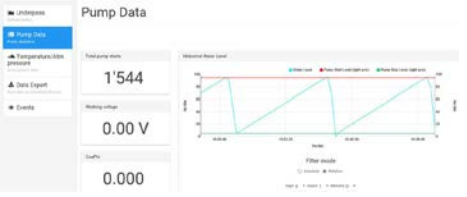
WEB APPLICATION

SYNOPTIC MANAGEMENT

Through Cloud BOX it is easy to import background images and insert animated widgets to build intuitive synoptic pages of the systems directly from the web

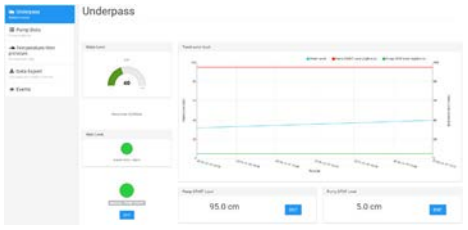


HISTORIC DATA / LOGS



Analysis of historic and system files

COMMANDS / STATUS



Sending of commands to devices and remote status display.

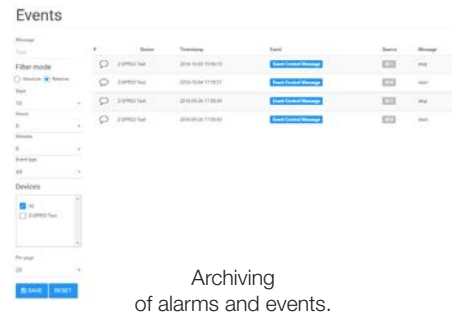
GRAPHIC DISPLAY

Rapid simultaneous graphic display

DATA TRENDS / EXPORT

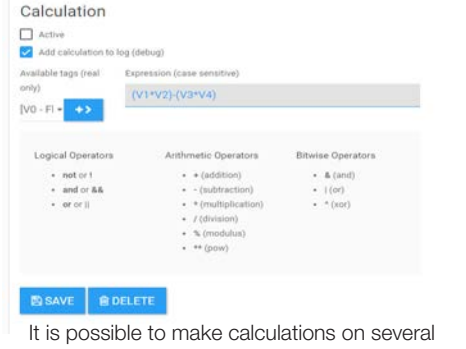
The collected data can be viewed via historical trends and be exported on csv or excel files.

EVENTS / ALARMS



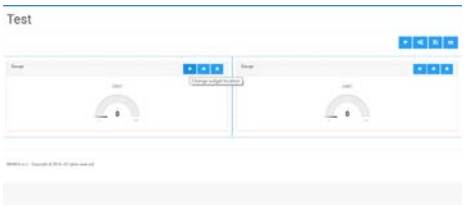
Archiving of alarms and events.

CALCULATED TAGS



It is possible to make calculations on several tags/variables of the same device.

EDIT PAGES ONLINE



It is possible to modify and update the layout of the graphic pages directly from the web.

TECHNICAL DATA

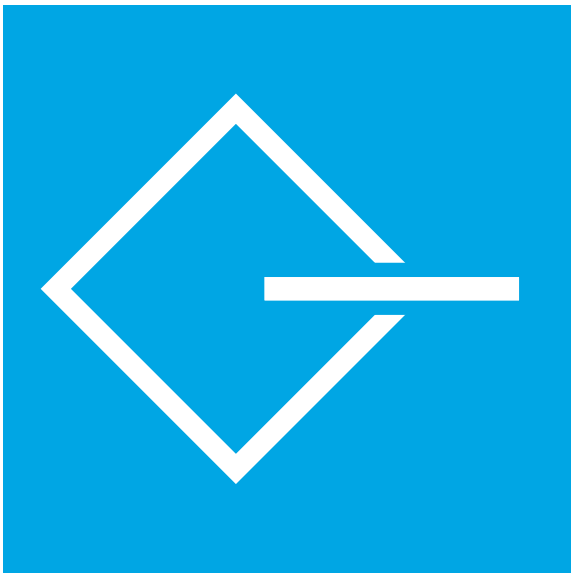
	CLOUD BOX	CLOUD BOX VM
		
	Industrial IoT Box	CLOUD BOX Virtual Machine
PHYSICAL SERVER		
GENERAL DATA		
Power supply	12VDC power supply (Power supply unit included)	-
Operating temperature	0°C – +40°C	-
Storage temperature	-20°C – +85°C	-
Dimension (D x W x H)	165 x 185 x 48 mm	-
Factory IP address	Configured in DHCP	-
CPU Case / Cooling	Compact / Fanless	-
Conformity	EC, FCC, RoHS, ErP Ready	-
Installation	Wall installation and Din guide installation	-
HARDWARE DATA		
Processor	Intel Celeron J1900 2.0 GHz Quad-Core	-
RAM	4 GB DD3L-1333	-
Hard disk	64GB mSATA SSD	-
LAN Controller	Gigabit LAN	-
INTERFACES		
USB	No.	-
LAN	No.2 RJ45 (1 available)	-
Screen	VGA, HDMI	-
SOFTWARE APPLIANCE		
ACCESSES, TAGS, DEVICES		
Compatible SENECA products	Z-GPRS3, Z-LTE, Z-LOGGER3, Z-PASS1, Z-PASS2, MYALARM SEAL, Z-KEY	Z-GPRS3, Z-UMTS, Z-LOGGER3, Z-PASS1, Z-PASS2, MYALARM SEAL, Z-KEY
User accesses management	Access to multiple areas and multiple groups, logo customisation	Access to multiple areas and multiple groups, logo customisation
Device operation time monitoring	Yes	Yes
Total number of tags (thresholds)	Max 5000	Max 1,000 / 5,000 / 10,000
SUPERVISION		
Dashboard	Yes	Yes
Synoptics	Yes	Yes
Widget	Yes	Yes
Responsivity	Yes	Yes
MANAGEMENT OF DATA, ALARMS, EVENTS		
Real-time telemetric display	Yes	Yes
Historic data analysis	Yes	Yes
Analysis of alarm and event log	Yes	Yes
Data retention	Local storage on DB	Local storage on DB
Max data retention time time	Selectable up to 10 years	Selectable up to 10 years
Data export	CSV	CSV
CONTROLS		
Sending of commands to the connected SENECA devices	Yes	Yes
Sending of alarm emails or telegram to users' directory	Yes	Yes
SW / OS/ VIRTUAL MACHINE		
Related softwares	SeAL, Log Factory, SDD (Seneca Discovery Device)	SeAL, Log Factory, SDD (Seneca Discovery Device)
Virtual Machine VMWare	No	Yes, necessary
Compatible browser	Google Chrome	Google Chrome
Compatible media	Desktop, Tablet, Smartphone, Smart TV	Desktop, Tablet, Smartphone, Smart TV
Compatible operating systems	Windows, Android, iOS, web browser	Windows, Android, iOS, web browser
CONNECTIONS		
Server Configuration	Yes	Yes
Static and Public IP	Yes, recommended	Yes, recommended
Connection protocols	HTTP, HTTPS, FTP	HTTP, HTTPS, FTP
API for integrations with other systems	Yes	Yes

ORDER CODE

Code	Description	Code	Description
CLOUD BOX	Micro Scada / Industrial IoT Box, max 5,000 tags	CLOUD BOX VM-10K	Virtual Server Licence for data collection from RTU SeAL max 10,000 tags
CLOUD BOX VM-D	Virtual server for data collection from RTU SeAL, max 1 device demo / 150 tags	CLOUD BOX VM-UP1	Virtual Server licence upgrade for data collection from 1,000 to 5,000 tags
CLOUD BOX VM-1K	Virtual Server Licence for data collection from RTU SeAL max 1,000 tags	CLOUD BOX VM-UP2	Virtual Server licence upgrade for data collection from 5,000 to 10,000 tags
CLOUD BOX VM-5K	Virtual Server Licence for data collection from RTU SeAL max 5,000 tags	CLOUD BOX VM-UP3	Virtual Server licence upgrade for data collection from 1,000 to 10,000 tags

The technical data and the diagrams in this document are indicative and not binding.

SERIAL/USB CONVERTERS



SERIAL CONVERTERS

	K107A	K107B	S107P
			
	Serial repeater converter optoisolated RS485 / RS485	**Serial repeater converter optoisolated RS232 / RS485**	**RS232 - RS485/422 serial converter, portable**
GENERAL DATA			
Power supply	19,2..30 Vdc; 22 mA (24 Vdc)	19,2..30 Vdc; 22 mA (24 Vdc)	9..12 Vdc (power supply unit 220 Vac supplied)
Max consumption	0.5 W	0.5 W	1 W
Isolation	1,500 Vac (3-way)	1,500 Vac (3-way)	1,000 Vac (RS232//RS485, power.//RS485)
Status indicators	Data presence Reversed connection Power supply	Data presence Reversed connection Power supply	Power supply RTS signal status Data transmission Data receipt
Protection degree	IP20	IP20	IP20
Operating temperature	-20..+65°C	-20..+65°C	0..+55°C
Dimension	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	100.5 x 50 x 24 mm
Weight	45 g	45 g	90 g
Case	PBT, black	PBT, black	ABS white self-extinguishing
Connections	Spring terminals	Spring terminals	-
Installation	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
COMMUNICATION, PROCESSING			
Interfaces	RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	RS232B, protection up to 30 Vdc RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	RS232 DB9 RS485, 5-pole terminal board
Operating modes	-	-	2-wire Half Duplex, 4-wire Full Duplex, point-to-point or multidrop
Change of direction	Automatic timed	Automatic timed	Automatic timed, controlled by RTS RS232
Speed	Up to 250 kbps	Up to 250 kbps	Up to 115,200 bps
Protocol	slave ModBUS RTU	slave ModBUS RTU	slave ModBUS RTU
Distance	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m
CONFIGURATIONS, REGULATIONS			
Programming	DIP switch	DIP switch	DIP switch (speed, communication, change of direction)
Standard	UL-UR, EC	UL-UR, EC	EC

	Z107	Z-4AI-D	Z-4TC-D
			
	RS232 - RS485/422 serial converter from panel	**A/D converter for 4 analog signals**	**A/D converter for 4 thermocouples**
GENERAL DATA			
Power supply	19..40 Vdc, 19..28 Vac	9..30 (option) - 19..40 Vdc 19..28 Vac (50..60 Hz)	9..30 (option) - 19..40 Vdc 19..28 Vac (50..60 Hz)
Max consumption	2.5 W	2.5 W	2 W
Status indicators	Power supply RST signal status Data transmission Data receipt	Power supply RST signal status Data transmission Data receipt	Power supply RST signal status Data transmission Data receipt
Protection degree	IP20	IP20	IP20
Operating temperature	0..+55°C	0..+50°C	0..+50°C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Weight	200 g	200 g	200 g
Case	Nylon 6 preloaded 30% glass fibre – self-extinguishing class V0	Nylon 6 preloaded 30% glass fibre – self-extinguishing class V0	Nylon 6 preloaded 30% glass fibre – self-extinguishing class V0
Connections	Screw removable terminals for 2.5 mm^2 conductors	Screw removable terminals for 2.5 mm2 conductors	Screw removable terminals for 2.5 mm^2 conductors
Installation	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
COMMUNICATION, PROCESSING			
Interfaces	RS232 on RJ45 connector on the front RS485/RS422, extractable terminals, screw connection	RS232 (configuration)	RS232 (configuration)
Inlet	-	VOLTAGE (V) - 2..10 V f.s. 16,000 point resolution - Impedance: 100 KΩ CURRENT (mA) ± 20 mA (bipolar) 16,000 point resolution - Impedance: 100 Ω	VOLTAGE ± 80 mV Impedance 10 MΩ THERMOCOUPLE Type J, K, R, S, T, E; B, N
Output	-	4 digital channels from/to control unit (1 can be set as clock or reset input)	4 digital channels from/to control unit (1 can be set as clock or reset input)
CONFIGURATIONS, REGULATIONS			
Programming	DIP switch (speed, communication, change of direction)	IEC 61131 PLC libraries DIP switch (filter time, input time, scales, serial interface) Z-PROG (PC software)	IEC 61131 PLC libraries DIP switch (filter time, input time, scales, serial interface) Z-PROG (PC software)
Standard	EC	UL-UR, EC	UL-UR, EC

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USB CONVERTERS

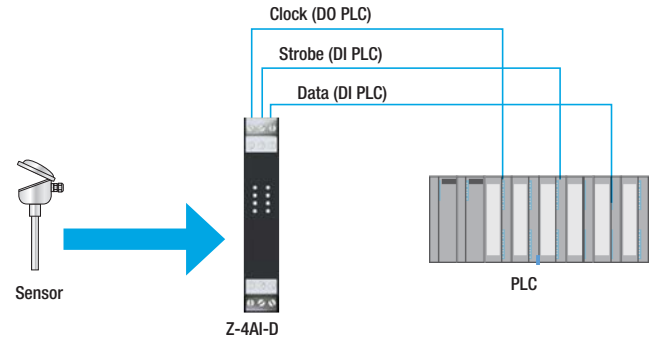
	K107USB	S117P1	S107USB
			
	Opto-isolated serial converter RS485 / USB (panel vers.)	**Asynchronous serial converter RS232/USB, TTL/USB, RS485/USB**	**Opto-isolated serial converter RS485 / USB (portable vers.)**
GENERAL DATA			
Power supply	Via USB port of the PC	Via USB port of the PC	Via USB port of the PC
Max consumption	0.5 W	0.35 W	0.5 W
Isolation	1,500 Vac	1,500 Vac	1,500 Vac
Status indicators	Data presence, Inverter connection Power supply	Power Supply, Data Transmission Data receipt	Power Supply, Data Transmission Data receipt
Protection degree	IP20	IP20	IP20
THERMOMECHANICAL CHARACTERISTICS			
Operating temperature	-20..+65°C	-20..+65°C	0..+55°C
Dimension	6.2 x 93.1 x 102.5 mm	90 x 50 x 25 mm	40 x 48 x 20.17 mm
Weight	45 g	50 g	ABS
Case	PBT, black	ABS	ABS
Connections	Spring terminals	DB9 (RS232 connector) RJ10 (TTL connector)	5-pole terminal block
Installation	DIN Rail 35 mm (IEC/EN 60715)	-	-
COMMUNICATION, PROCESSING			
Interfaces	RS485, 31 nodes, spring terminal USB 1.0 and 2.0 standard interface, connectors USB A and MINI USB B, connection multiple on the same PC	RS232 USB 1.0, 1.1 and 2.0	RS485, termination and speed (from 1,200 bps to 250 kbps) settable Standard USB 1.0 and 2.0 interface, USB A and MINI USB B connectors, multiple connection on the same PC
Change of direction	Automatic timed	Automatic timed	Automatic timed
Speed	Up to 250 kbps	From 300 bps to 250 kbps	Up to 250 kbps
Protocol	slave ModBUS RTU	-	slave ModBUS RTU
Distance	Up to 1,200 m	-	Up to 1,200 m
CONFIGURATIONS, REGULATIONS			
Programming	Cd with driver, USB connection cable	Windows support driver CD; Mac OS-X; Linux	Cd with driver, USB connection cable
Certification	EC	EC	EC

	Z-MBUS	USB-ISO	EASY-USB
			
	RS232 Serial Adapter ↔ M-BUS	**USB galvanic isolator**	**USB - UART TTL CONVERTER**
GENERAL DATA			
Power supply	11..40 Vdc; 19..28 Vac	5V - 1A	With PC 5 V @ 100 mA
Max consumption	0.5 W	-	0.35 W
Isolation	1,500 Vac	2,500 Vac	-
Status indicators	Supply Transmission / data receiving on M-BUS port	Power supply	-
Protection degree	IP20	IP20	IP20
THERMOMECHANICAL CHARACTERISTICS			
Operating temperature	-20..+70°C	0..+50°C	-10..+65°C
Dimension	100 x 17.5 x 112 mm	43 x 50 x 20 mm	84 x21 x 17 mm
Weight	140 g	25 g	-
Case	PA6 black plastic loaded glass, black	ABS, black	PVC, transparent
Connections	3-way screw terminals, 5 mm pitch for cable up to 2.5 mm2 IDC10 rear connector	-	USB
Installation	3-way screw terminals, 5 mm pitch for cable up to 2.5 mm2 IDC10 rear connector	-	-
COMMUNICATION, PROCESSING			
Interfaces	No.1 RS232 port on terminals M7-M8-M9 No.1 Micro USB port on front connector No.1 M-BUS port (max 25 slave nodes)	No.1 USB port (to MSC or other devices) No.1 Mini USB port (to PC)	Serial UART TTL, RJ11 connector USB, standard type A connector, USB compatibility 1.0, 1.1, 2.0
Speed	From 300 bps to 250 kbps	Up to 250 kbps	From 300 bps to 250 kbps
Distance	3,000 m (M-BUS)	12 Mbps	-
CONFIGURATIONS, REGULATIONS			
Programming	Web Server, SDD	Cd with driver, USB connection cable	Cd with driver, TTL connection cable
Certification	EC	EC	EC

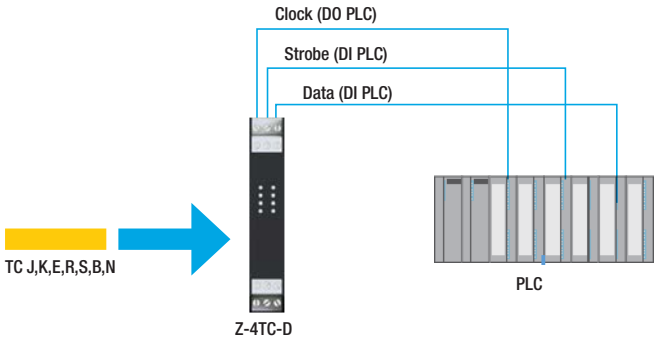
The technical data and the diagrams in this document are indicative and not binding.

APPLICATION DIAGRAMS

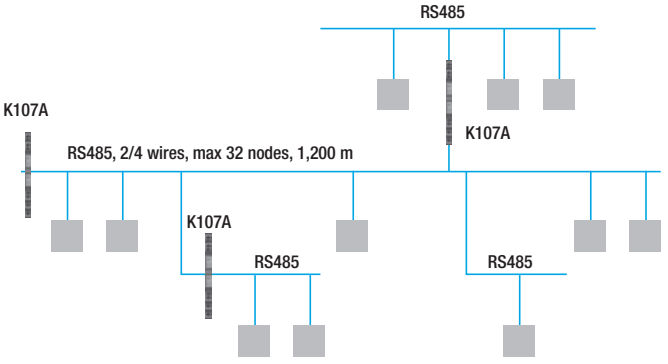
A/D conversion for mA/V input signals



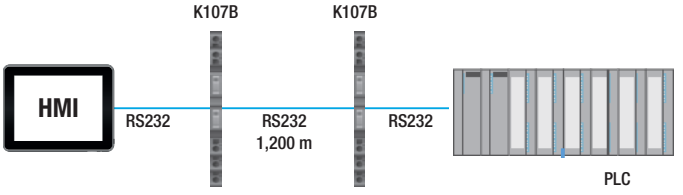
A/D conversion for thermocouples



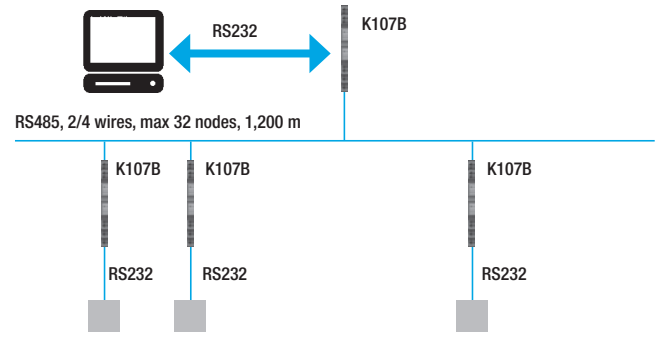
Connection of several RS485 serial lines (ModBUS) with electrical isolation



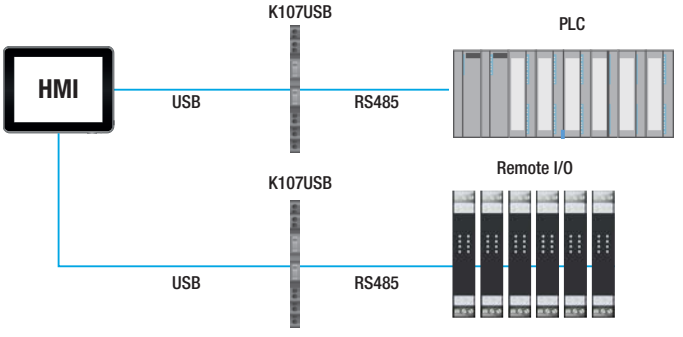
Remote transmission RS232 / RS485 bidirectional with electrical isolation



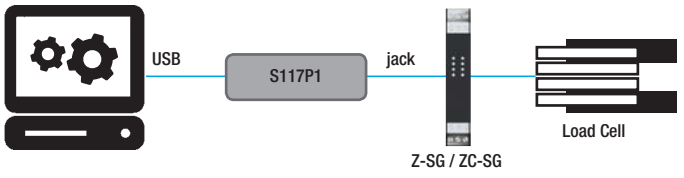
Bidirectional RS232 / RS485 remote transmission with electrical isolation up to 32 nodes



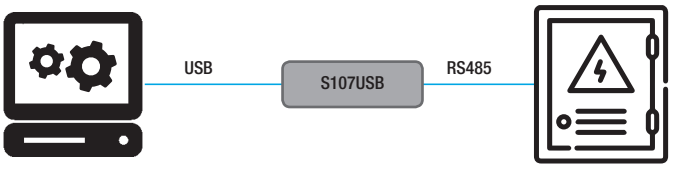
Multiple connection and data transmission with USB / RS485 electrical isolation



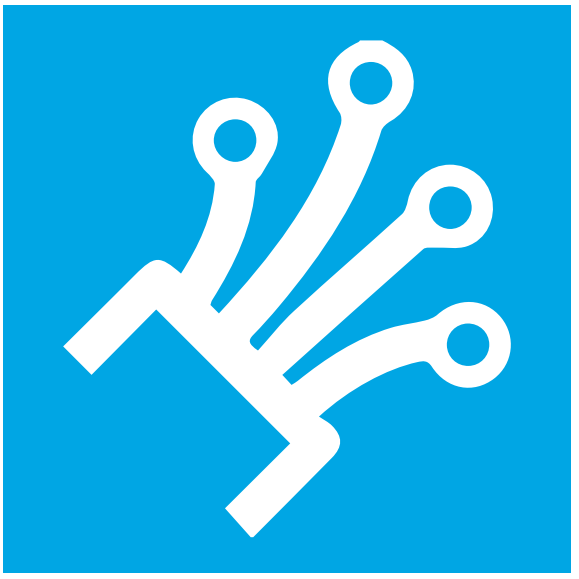
Connection for configuration strain gauge module



On-board diagnostics



CONVERTERS FOR FIBRE OPTICS



CONVERTERS FOR FIBRE OPTICS

The SENECA S232, S485, SETH and SCAN fibre optic converters also offer the possibility of extending any type of network/bus (LAN/Ethernet, CAN or serial) on the optical fibre at the same time.
They also guarantee high levels of safety and reliability. The modules make it possible to use both mono-modal and multi-modal fibre, ensuring solid, reliable and extremely high-speed communication. The application of optical fibre includes industrial and civil environments, energy production plants and telecommunication and control systems.

HIGHLIGHTS

COMMUNICATION SPEED COMMUNICATION

NOT NECESSARY PHYSICAL SEPARATION OF THE POWER DATA LINES

ABSOLUTE PROTECTION FROM ELECTRICAL DISCHARGES

EASIER AND MORE IMMEDIATE NETWORK DIAGNOSTICS

DATA TRANSMISSION IN REAL TIME

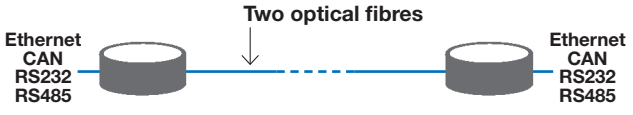
DURABLE COMMUNICATION MEANS

EXTENSION OF DISTANCES

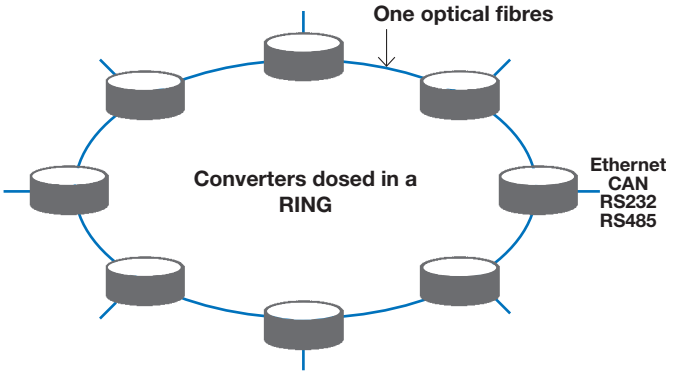
TOTAL IMMUNITY FROM NOISE

TYPE OF CONNECTION

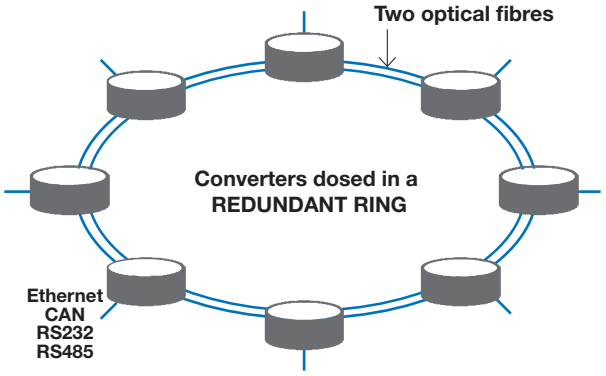
1. POINT TO POINT (LINKED DIRECTLY)



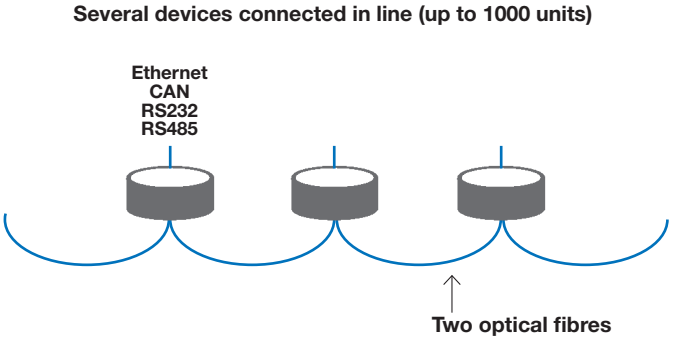
2. RING (SINGLE LOOP)



3. REDUNDANT RING (DOUBLE LOOP)

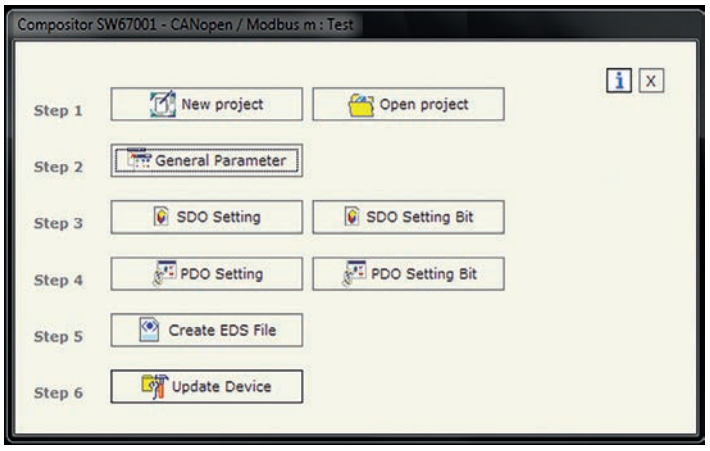


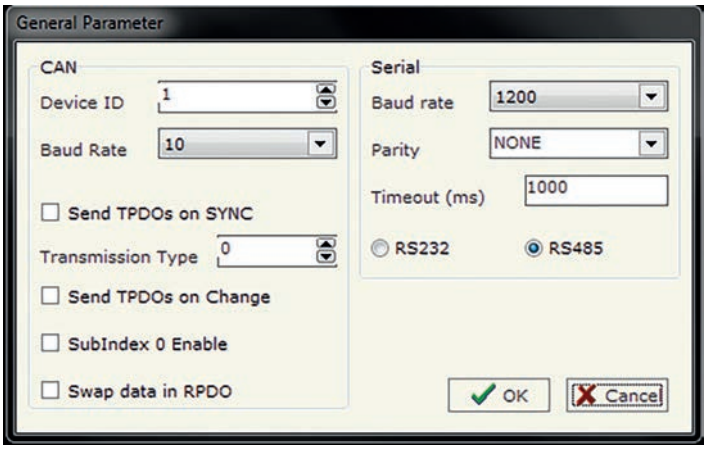
4. MULTI-DROP (IN-LINE)



	SERIAL CONVERTERS		BUS CONVERTERS	
	S232-FO	**S485-FO**	**SETH-FO**	**SCAN-FO**
				
	Single / double loop single-mode / multimode RS232 converter	**RS485 converter in single-mode / multimode single / double loop fibre**	**Single-mode / multimode single / double loop fibre-optic converter**	**CAN converter in single-mode / multimode single / double loop fibre**
GENERAL DATA				
Power supply	12..35 Vdc; 8..24 Vac	12..35 Vdc; 8..24 Vac	12..35 Vdc; 8..24 Vac	12..35 Vdc; 8..24 Vac
Max consumption @24V	4 W	4 W	4 W	4 W
Isolation	4 kV 3-way	4 kV 3-way	4 kV 3-way	4 kV 3-way
Status indicators	Fibre optic communication, serial communication, device status	Fibre optic communication, serial communication, device status	Fibre optic communication, Ethernet communication, device status	Fibre optic communication, CAN communication, device status
Operating temperature	-40..+85°C	-40..+85°C	-40..+85°C	-40..+85°C
Dimension (lxhxd)	71 x 95 x 60 mm	71 x 95 x 60 mm	71 x 95 x 60 mm	71 x 95 x 60 mm
Weight	200 g	200 g	200 g	200 g
Case	PVC, white	PVC, white	PVC, white	PVC, white
Installation	DIN Rail 46277	DIN Rail 46277	DIN Rail 46277	DIN Rail 46277
Programming	Software COMPOSITOR (S232-FO-MONO) DIP Switch (S232-FO-MULTI)	Software COMPOSITOR (S485-FO-MONO) DIP Switch (S485-FO-MULTI)	Software COMPOSITOR	Software COMPOSITOR
Integrated self-diagnostics	Yes	Yes	Yes	Yes
Conformity	EC	EC	EC	EC
COMMUNICATION				
Communication ports:	No.1 opto-isolated RS232	No.1 RS485 opto-isolated	No.1 RJ45 Ethernet port 100 Mbps, cable cat.7E	No.1 CAN port
Type	Single Loop (S232-SL- …) Double Loop (S232-DL-…)	Single Loop (S485-SL- …) Double Loop (S485-DL- …)	Single Loop (SETH-SL- …) Double Loop (SETH-DL- …)	Single Loop (SCAN-SL-…) Double Loop (SCAN-DL- …)
Max no. of converters in series	1,000	1,000	1,000	1,000
Max no. of independent networks	6	6	6	6
Fibre optics and connectors	Single-mode, LC/LC connectors (S232-FO-MONO) Multi-mode (62,5/125 or 50/125 µm), ST/ST connectors (S232-FO-MULTI)	Single-mode, LC/LC connectors (S485-FO-MONO) Multi-mode (62,5/125 or 50/125 µm), ST/ST connectors (S485-FO-MULTI)	Single-mode, LC/LC connectors (SETH-FO-MONO) Multi-mode, LC connectors (SETH-FO-MULTI)	Single-mode, LC/LC connectors (SCAN-FO-MONO) Multi-mode, LC connectors (SCAN-FO-MULTI)
Coverage	10 km (S232-FO-MONO) 2 km (S232-FO-MULTI)	10 km (S232-FO-MONO) 2 km (S232-FO-MULTI)	10 km (SETH-FO-MONO) 500 m (SETH-FO-MULTI)	10 km (SCAN-FO-MONO) 500 m (SCAN-FO-MULTI)
Interface and protocols	ModBUS RTU, transparent to communication protocols	ModBUS RTU, transparent to communication protocols	Ethernet, TCP-IP ModBUS, transparent to communication protocols	CAN (CAN 2.0, CANopen), transparent to communication protocols
Speed	From 1,200 to 115,200 bps	From 1,200 to 115,200 bps	10 / 100 MHz	From 5 kHz to 1 MHz

CONFIGURATION SOFTWARE





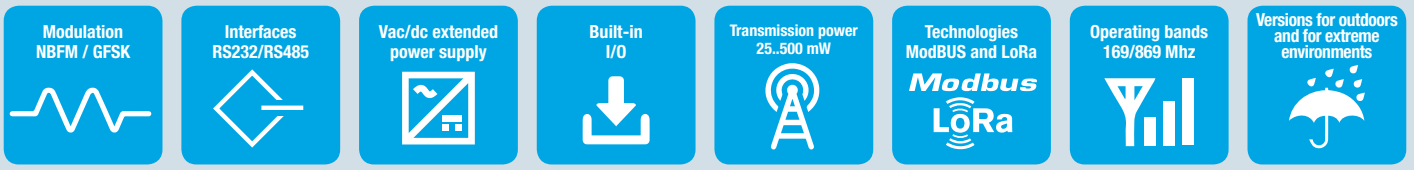
Through the **COMPOSITOR** software freely downloadable from www.seneca.it it is possible to carry out configuration of the projects and of the network parameters, to identify the devices on the network and the respective connections in addition to performing diagnostics and monitoring. The diagnostics networks logs can be read directly and easily from SCADA and management software.

ORDER CODE	
SERIAL CONVERTERS	
S232-FO-MONO-SL	Single loop single-mode fibre RS232 converter
S232-FO-MONO-DL	Double loop single-mode fibre RS232 converter
S485-FO-MONO-SL	Single loop single-mode fibre RS485 converter
S485-FO-MONO-DL	RS485 converter in single-loop double-mode fibre
S232-FO-MULTI-SL	Multi-drop fibre optic converter ↔ RS232 single loop
S232-FO-MULTI-DL	Multi-drop fibre optic converter ↔ RS232 double loop
S485-FO-MULTI-SL	Multi-drop fibre optic converter ↔ RS485 double loop
S485-FO-MULTI-DL	Multi-drop fibre optic converter ↔ RS485 single loop
ETHERNET CONVERTERS	
SETH-FO-MONO-SL	Single loop single-mode fibre Ethernet converter
SETH-FO-MONO-DL	Double loop single-mode fibre Ethernet converter
SETH-FO-MULTI-SL	Single loop multi-mode fibre Ethernet converter
SETH-FO-MULTI-DL	Double loop multi-mode fibre Ethernet converter
CAN CONVERTERS	
SCAN-FO-MONO-SL	Single loop multi-mode fibre CAN converter
SCAN-FO-MONO-DL	Double loop multi-mode fibre CAN converter
SCAN-FO-MULTI-SL	Single loop multi-mode fibre CAN converter
SCAN-FO-MULTI-DL	Double loop multi-mode fibre CAN converter
CABLES	
CU-A-MINIB-1	Cable plug USB-A Mini USB-B 5 P, 1 meter
CU-A-MINIB-2	Cable plug USB-A min USB-B 5 P, 2 metres
CE-RJ45-RJ45-C	Crossed Ethernet cable (RJ45 / RJ45)
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45)
SOFTWARE	
COMPOSITOR	Configuration and test tool for fibre optic converters
FO TEST	Automatic test environment for fibre optic converters

RADIO MODULES

RADIO MODULES

With its experience in interface technology, the SENECA proposal for radio and radiomodem modules is one of the key elements of automation and communication systems, in particular in the transport of signals from a few meters to tens of kilometres. The use of UHF / VHF devices allows the reaching of distances of multiple km with maximum reliability.
It also allows remote control functions, remote interrogations and diagnostics of devices in the field through point-to-point and multipoint connections, broadcasting, signal repetition.
The Radio devices comply with the essential requirements of the RED Directive (Radio Equipment Directive) 2014/53/EU and can be freely marketed within the European Union.



Glossary

AGILITY
A system that combines multiple radio communication technologies with security systems, alarm management, remote control, web applications and smartphones.

BROADCASTING
Transmission of information from a transmitting system to a set of receiving systems not defined a priori, typically by a radio transmitter of great power and with a high number of receivers.
Broadcast transmission is unidirectional.
The information is sent from the transmitter to the receivers, without a return channel and without security that the same can be delivered.

DIGIPEATER (Digital repeater)
Use of the device for the receipt and retransmission of a signal typically at a higher power so that its propagation can be guaranteed even over long distances or to overcome obstacles without excessive attenuation / degradation of the signal.

GFSK (Gaussian Frequency Shift Keying)
Numerical frequency modulation technique or scheme, in which the modulating signal containing information shifts the frequency of the carrier in output from one to the other of two predetermined values.

LBT (Listen Before Talk)
Data transmission technique in which the initial monitoring on the radio channel is foreseen.
If this is occupied by another transmitter, it cannot be transmitted.
In the licensed bands, the radio station scheduler decides who to allocate the transmission resources to.

NBFM (Narrow Band Frequency Modulation)
Narrowband modulation able to reduce disturbances on the frequency of interest by reducing the receipt channel of the radio receiver and consequent limitation of the listening channel.

POINT-TO-MULTIPOINT
Connection mode in which a single network segment communicates with multiple stations serving a series of users (clients) from a central location.

POINT-TO-POINT
ISO/OSI model link level network protocol, commonly used to establish straight line connections between two nodes.

ORDER CODE

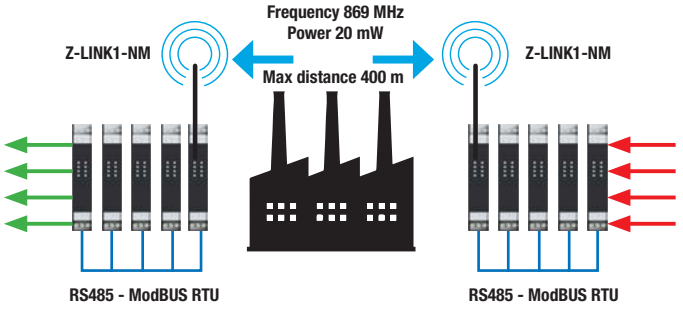
Code	Description
Z-LINK1	
ALIM-MY2	Optional power supply unit 230 V / 12 V
Z-LINK1-NM	869 Mhz radio modem with RS232/RS485 interface
Z-LINK1-LO	869 MHz radio modem with RS232 / RS485 interface and LoRa technology
CS-RJ10-DB9F	Serial cable RS232 serial cable (RJ10 / DB9F)
Z-PC-DIN2-17.5	Support for rapid installation on DIN guide 2 slot pitch 17.5 mm
Z-PC-DINAL2-17.5	Support for rapid installation on DIN guide head + 2 slot pitch 17.5 mm
A-DIR-10-869	Directive external antenna for 10 elements UHF 824-960 MHz
A-DIR-6-869	Directive external antenna for 6 elements UHF 824-960 MHz
ANT-LINK1-MG	SMA 4 dbi dual band magnetic outdoor antenna, 2.5 m cable
EASY SETUP	Configuration software
Z-AIR	
Z-AIR-1	Radiomodem 868-870 MHz with integrated antenna, IP65 protection degree, RED directive
S107USB	Serial converter USB/RS485 portable
Z-AIR-1-SETUP	Z-AIR radiomodem configuration software
RM169-1	
RM169-1	Radiomodem 169MHZ 0.2W, 1DI,1DO,1 RS485 BNC F connector, RED directive
RM169-1-169DV12	Radiomodem 169MHZ 0.2W, 1DI,1DO,1 RS485 + antenna dip. vert. lambda/2 (A-169DV12) and 5 m. cable RG58U
RM169-1-169YAGI	Radiomodem 169MHZ 0.2W, 1DI,1DO,1 RS485 + antenna Yagi 3 elements (A-169DVYAGI) and 10m. cable RG58U
RM169-1-169DV14	Radiomodem 169MHZ 0.2W, 1DI,1DO,1 RS485 + antenna stylus vert. lambda/4 (A-169DV14)
A-169DV12	Antenna 169MHz, vertical dipole lambda/2, BNC M, 5 m low loss cable, bracket
A-169DV14	Antenna 169MHz, vertical stylus lambda/4, BNC M, L=450 mm, without cable
A-169YAGI	Antenna 169MHz, Yagi with 3 elements, BNC M, 10 m low loss cable, bracket
RM169-SETUP	RM169 radiomodem configuration software
RTURADIO-169	
RTURADIO-169	Rtu Radio 169MHZ 0.5W, 4DI, 2 DO, 1 counter,2 AO,2 AI,1 RS485, BNC-F connector
RTURADIO-169DV14	Rtu Radio 169MHZ 0,5W, 4DI, 2 DO, 1 counter,2 AO,2 AI,1 RS485, connector BNC-F+front stylus vert. *l*4 (A-169DV14)
RTURADIO-169DV12	Rtu Radio 169MHZ 0,5W, 4DI, 2 DO, 1 counter,2 AO,2 AI,1 RS485, connector BNC-F+front dip. vert. *l*2 (A-169DV12)+ 5m cable
RTURADIO-169YAGI	Rtu Radio 169MHZ 0,5W, 4DI, 2 DO, 1 counter,2 AO,2 AI,1 RS485, connector BNC-F+front Yagi 3 elem. (A-169YAGI)+10 m cable
S117P1	Serial converter RS232-TTL-RS485/USB portable
RTURADIO-SETUP	RTURADIO radiomodem configuration software

RADIO MODULES

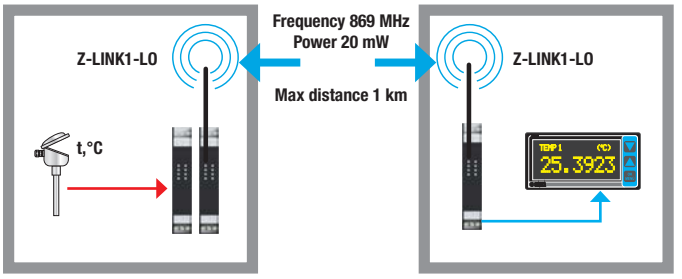
	Z-LINK1-LO / Z-LINK1-NM	Z-AIR-1	RM169-1	RTURADIO
				
	869 MHz radio modem with RS232/ RS485 interface	**Radiomodem simplex/half duplex, 868 - 870 MHz with integrated antenna, power supply 9-32 Vdc, RED directive compliant**	**Radiomodem 169 MHz, aluminium case, RS232/RS485 interface, RED directive compliant**	**169MHz radiomodem with built-in I/O 4DI, 2DO, 1 COUNT, RS485**
GENERAL DATA				
Power supply	10..40 Vdc; 19..28 Vac	9 – 32 Vdc	9 – 32 Vdc	9-32 Vdc with limited power source; 3.3-4.8 Vdc with battery power supply
External modules supply	-	-	-	Yes
Max consumption	1W @ 12 Vdc	30 mA (Rx) / 200 mA (Tx)@12Vdc	30 mA (Rx)/200 mA (Tx) @12Vdc	30 mA (Rx)/200 mA (Tx) @12VDC
Isolation	1,500 Vac	-	-	-
Hot swapping	Yes	No	No	No
Operating band	g3, annex 1 ERC 70-03 (869.4 MHz – 869.650 MHz)	868 – 870 MHz	169.400 – 169.475 Mhz	169.400 - 169.475 MHz
N° channels	-	1@CH50kHz; 3@CH25kHz	1@CH50kHz; 3@CH25kHz; 6@ CH12.5kHz	1@CH50kHz; 3@CH25kHz; 6@ CH12.5kHz
Channelling	-	25-50 kHz	12,5-25-50-kHz	12,5-25-50-kHz
Modulation	DSSS (Z-LINK1-LO), GFSK (Z-LINK1-NM)	9K00F1D (@ 25 kHz of channelling); 18K00F1D (@ 50 kHz of channelling)	9K00F1D or 18K0F1D (NBFM / GFSK)	9K00F1D or 18K0F1D (NBFM / GFSK)
Data speed (radio)	-	9.6 kbps (@ 25 kHz of analysis); 19,200bps (@ 50kHz of channelling)	4,800 bps (@ 12.5 kHz of channelling); 9.6 kbps (@ 25 kHz of channelling); 19.200bps (@ 50kHz of channelling)	4,800 bps (@ 12.5 kHz of channelling); 9.6 kbps (@ 25 kHz of channelling); 19.200bps (@ 50kHz of channelling)
Encryption	AES 128 bit	AES 128 bit	AES 128 bit	AES 128 bit
RTC	-	-	Integrated on board for custom applications	Integrated on board for custom applications
Antenna	ANT Mag (standard) SMA male , ANT-LINK1-MG (opt)	λ/2 integrated	λ/4 - λ/2 or 3 elements Yagi	Short vertical stylusλ1/2 / λ1/4 / Yagi with 3 elements
Dimension	17.5 x 100 x 112 mm	Ø 40 x L 320 mm	90 x 100 x 40 mm	140 x 110 x 50 mm
Operational Temperature	0..55°C	-30..+60°C	-30..60°C	-30..60°C
Weight	200 g	750 g	210 g	330 g
Container	PA6, black	Fibreglass	Aluminium	Aluminium
Protection degree	IP20	IP65 (suitable for outdoor installation)	IP20	IP20
Installation	DIN Rail 35 mm (IEC IEN 60715)	Wall mounting bracket stainless steel (included)	On plate/wall	On plate/wall
Built-in I/O	-	-	No.1 Digital Input, 5-24 Vdc or 3-20 Vac. Zinp. 2.2 kΩ (opto-isolated) No.1 Relay output, N.O. 24 Vac @ 0.5 A or 32 Vdc @ 1 A	No.4 Digital Inputs, PNP 0-12 Vdc + 1 Counter 10Hz No.2 Relay outputs, N.O. 28 Vac @ 0.5 A or 60 Vdc @ 1 A No.2 Analog Inputs (4-20 mA) No.2 Analog outputs (4-20 mA)
Paired sensors (Max 32)	-	-	-	-
Operating mode	Point-to-point, Point-to-multipoint, I/O repeater, Bridge	Point-to-point, Point-to-multipoint, broadcasting, digirepetear; support routing tables for addressing	Point-to-point, Point-to-multipoint, broadcasting, digirepetear; support routing tables for addressing	Point-to-point, point-to-multipoint, broadcasting, Modbus (master/slave), support routing tables for addressing
Programming	EASY SETUP, DIP-switch	Z-AIR-1 SETUP	RM169-1-SETUP	RTURADIO-SETUP
COMMUNICATION				
Interfaces	No.1 RS232, No.1 RS485	RS485	RS232 / RS485	RS485
Protocol	ModBUS RTU	Transparent to the protocol (max 1024 buffer bytes)	Transparent to the protocol (max 1024 buffer bytes)	Modbus
Data speed	1.200…115.200 bps	From 1.2 to 57.6 kbps	From 1.2 to 57.6 kbps	From 2,400 to 57,400 bps
Output power (transmitter)	40mW (Z-LINK1-LO), 20 mW (Z-LINK1-NM)	25/150/500 mW based on the operational sub-band	50-150-500 mW	50-150-500 mW
Frequency deviation	-	±1.8 kHz @12.5 kHz / ±3 kHz@25 kHz	±1.8 kHz@12.5 kHz; ±3.8kHz@25 kHz	±1.8 kHz@12.5 kHz; ±3.8kHz@25 kHz
Output power stability		±1.5 dB		
Receiver (type)		CLASS 2 - LBT and AGILITY	CLASS 2 - LBT and AGILITY	CLASS 1 - LBT and AGILITY
Receiver input sensitivity	-	BER <10-2 <-105dBm@50 kHz; <-107dBm@25 Khz	BER <10-2 <-105dBm@50 kHz; <-107dBm@25 KHz; <-110dBm@12.5 kHz	BER <10-2 <-105dBm@50 kHz; <-107dBm@25 KHz; <-110dBm@12.5 kHz
Coverage	Up to 1,000 m (Z-LIINK-1-LO) / 400 m (Z-LIUNK1-NM) in free field with BER <10-3 @ 9.6 kbaud (fixed conditions in free zone and with antenna 2 m above ground)	Up to 7 km in open field with directive antenna in a dominant position	Up to 10 km in open field with directive antenna	Up to 10 km in open field with directive antenna
STANDARD				
Approval	EC, ETSI	EC	EC	EC

APPLICATION DIAGRAMS

Z-LINK1-NM
CONVERSION AND RETRANSMISSION OF ANALOG SIGNALS

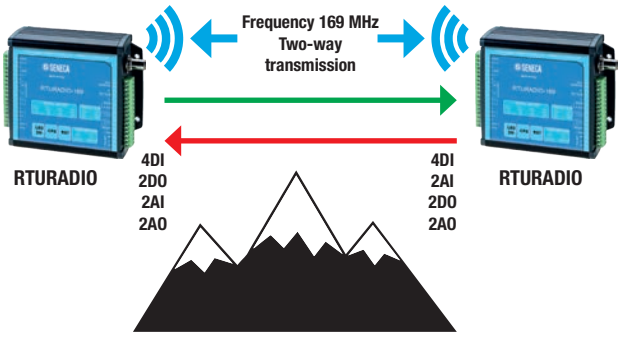


Z-LINK1-LO
«SHORT RANGE» SIGNAL REPETITION

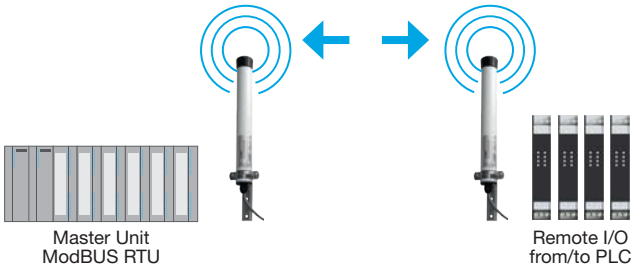


RM169-1 EXPANSION MODBUS I/O - POINT / MULTI-POINT

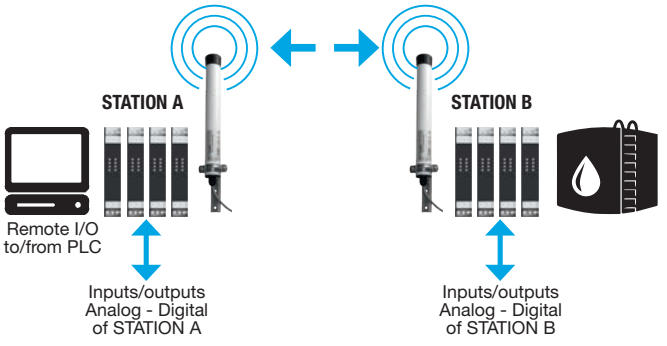
RTURADIO MIRRORING I/O - REPLICA REMOTELY OF SIGNALS



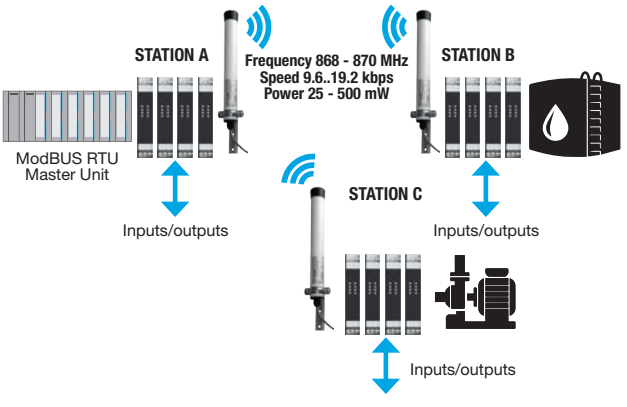
Z-AIR-1 DATA TRANSMISSION FROM MASTER CONTROLLER



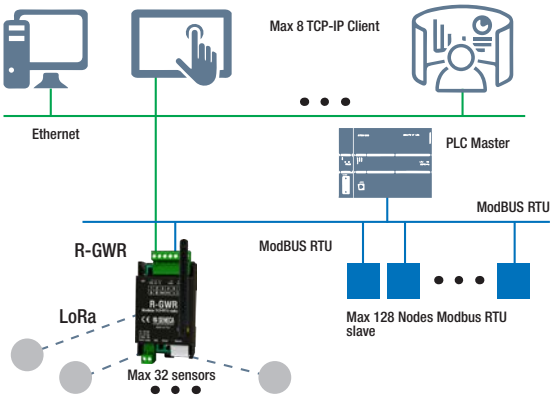
Z-AIR-1 POINT-TO-POINT DATA TRANSMISSION (E.G. I/O REPETITION)



Z-AIR-1 POINT-TO-MULTIPOINT DATA TRANSMISSION



R-GWR DISTRIBUTED SENSOR MONITORING



RADIO MEASURING SYSTEMS

2

2.10

R-GWR

RADIO HUB LORA FOR WIRELESS SENSORS

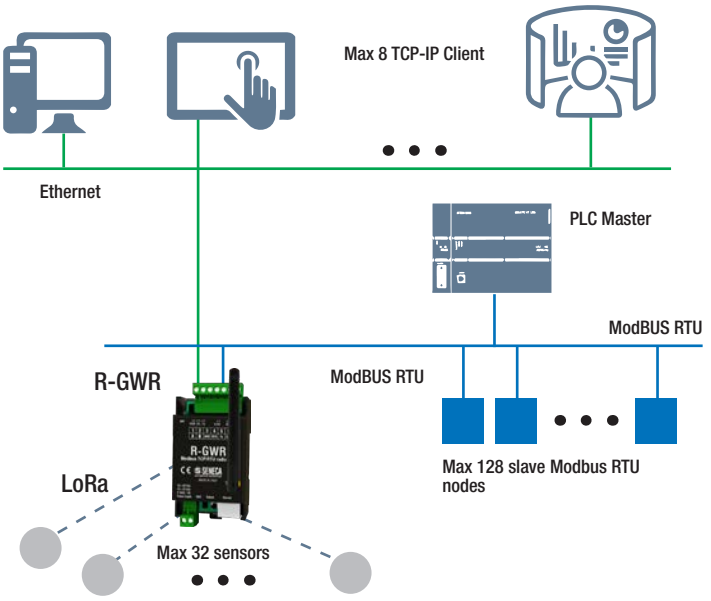
TECHNICAL DATA

GENERAL DATA	
Power supply	10..40 Vdc; 19..28 Vac
Consumption	Max 1 W
Status indicators	Power supply Rx-Tx serial communications Assigned sensors Sensors in error.
Protection degree	IP20
Operating temperature	-20..+70°C
Connections	Screw terminals, 7-way removable screw, 5 mm pitch Screw terminals, 2-way removable screw, 5 mm pitch Ethernet connector
Dimension (lxhxd)	53.3 x 90 x 32.2 mm
Weight	80 g
Case	PC / ABS self-extinguishing UL94-V0
Installation	On DIN IEC EN 60715 rail or on the wall
COMMUNICATION	
Ethernet Ports (ETH1, ETH2)	Nr 1 Fast Ethernet port 100 Tx, RJ45 frontal Up to 8 TCP-IP Clients / Up to 10 TCP / IP Servers
Serial Ports (COM1, COM2, COM4)	No.1 serial port RS232 / RS485 switchable , max baud rate 115k on connector
Protocols	ModBUS TCP-IP, ModBUS RTU
N° Max Client TCP-IP (Server Mode)	8
N° Max Slave Modbus RTU Nodes	128
WIRELESS	
Radio technology	LoRa
Minimum measuring range	30 seconds
Security	AES 128bit
Frequency	Frequency band: 865-865 MHz, Rated frequency: 863.110 MHz, 25 KHz bandwidth, Max power 14 DBm
Sensitivity	Up to -146 dBm
Power	+ 14 dBm
Max n° sensors that can be coupled	32
ADVANCED SETTINGS & FUNCTIONS	
DIP switch	Yes
Web server	Yes
SDD (Seneca Discovery Device)	Yes
Firmware Update	Web Server
Advanced diagnostics	Yes
REGULATIONS	
Marking / Certifications	EC

ORDER CODES

Code	Description
R-GWR	ModBUS Gateway / Radio Hub for wireless sensors
SENSORS	
R-GWR-IP-1	Industrial sensor with digital / analog input
R-GWR-S-1	Home automation sensor with digital / analog and anti-flooding input
ACCESSORIES	
CE-RJ45-RJ45-R	Straight Ethernet cable (RJ45 / RJ45), 1.5 m
ALIM-MY2	Optional 230 V / 12 V power supply unit

APPLICATION DIAGRAM



COMBINABLE SENSORS

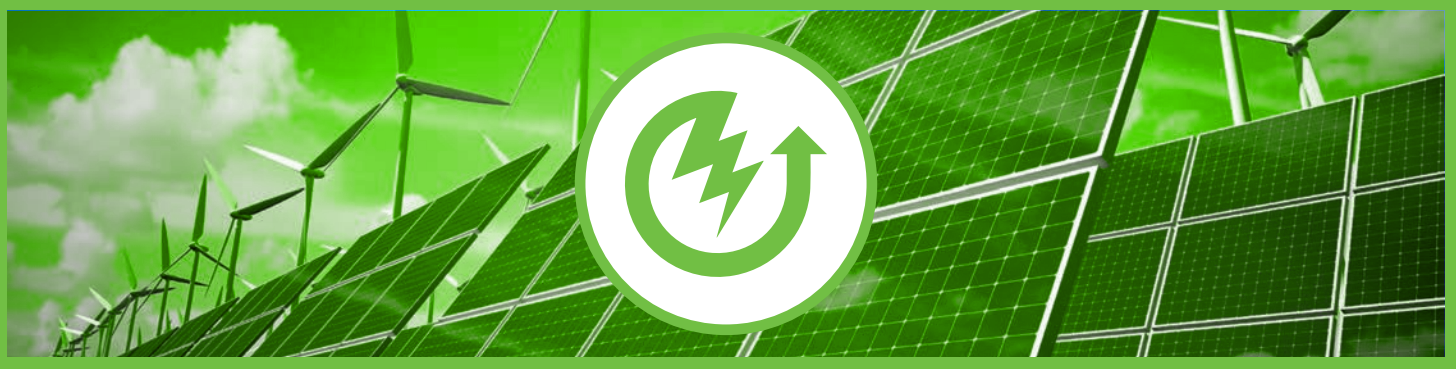
	R-GWR-IP-1	R-GWR-S-1
		
	Industrial sensor with digital / analog input	Home automation sensor with digital / analog and anti-flooding input
GENERAL DATA		
Power supply	3 V	3 V
Backup	Lithium, 1,650 mAh, maximum indicative duration 2 years	Lithium, 900 mAh, maximum indicative duration 1 year
Protection degree	LED status indicators	IP20
Status LED	Sending / Receiving of data to/ from R-GWR	Sending / Receiving of data to/ from R-GWR
Operating temp.	-25..+70°C	-25..+70°C
Temp. Storage	-40..+85°C	-40..+85°C
Humidity	10% ÷ 90% non-condensing	10% ÷ 90% non-condensing
Dimension (lxhxd)	80 x 60 x 45 mm	65 x 45 x 30 mm
Weight	150 g	45 g
Container	PC / ABS self-extinguishing material UL94-V0	PC / ABS self-extinguishing material UL94-V0
Connections	Screw terminals, 2-way removable screw, 3.5 mm pitch	Screw terminals, 2-way removable screw, 3.5 mm pitch Anti-flooding probe connector
Installation	On the wall by means of screws or double-sided tape	On the wall by means of screws or double-sided tape
Programming	Web Server Pairing button	Web Server Pairing button
RADIO COMMUNICATION		
Technology	LoRa	LoRa
Frequency band	863..865 MHz	863..865 MHz
Nominal frequency	863.11 MHz	863.11 MHz
Bandwidth	25 kHz	25 kHz
Sensitivity	Up to -146 dBm	Up to -146 dBm
Max RF power	+ 14 dBm	+ 14 dBm
Max n° sensors that can be coupled	32	32
INPUTS		
Integrated temperature / humidity sensor	Temperature reading: -25..70°C; Accuracy: 0.5°C between 5..60°C Moisture detection: 0..100%; Accuracy: 3% between 20 ÷ 80% of R.H.	Temperature reading: -25..70°C; Accuracy: 0.5°C between 5..60°C Moisture detection: 0..100%; Accuracy: 3% between 20 ÷ 80% of R.H.
Analog / Digital / Counter Input (IN0)	Configurable analog input (measurement range 0-30V; accuracy: ±0.15 V) or digital (clean contact) or counter @ 16bit, max frequency 1Hz	Configurable analog input (measurement range 0-30V; accuracy: ±0.15 V) or digital (clean contact) or counter @ 16bit, max frequency 1Hz
Digital Input (IN1)	-	Relay reed to control the opening of compartments and environments
Water Sensor Input (alternative to IN0 and IN1)	-	Level 1, Level 2, Anti-flooding probe (optional)
Digital Input (IN2)	-	Tamper contact (tamper) opening cap

The technical data and the diagrams in this document are indicative and not binding.

3

POWER MONITORING AND ELECTRICAL MEASUREMENT

POWER MONITORING AND ELECTRICAL MEASUREMENT



The SENECA Power Monitoring and Electrical Measurement systems include consumption monitoring systems such as multifunction Modbus network analysers with web server, harmonic analysis and Rogowski sensors and energy counters with Modbus/Ethernet/M-bus protocols also available with MID certification. There are also a complete series of AC/DC current transformers with a patented magnetic or hall effect magnetic measuring principle and the traditional multistandard switch converters for electrical quantities (Vrms, Irms, Watt, VAR, frequency, Energy, etc.) with Modbus or analog output. The reliability and wide range of this instrumentation allows the achievement of fundamental objectives of cable reduction, energy-saving, revamping and retrofitting of existing installations and energy efficiency with maximum ease of use.

3.1 NETWORK ANALYSER 203 LINE

3.2 NETWORK ANALYSER S604 / S711 LINE

3.3 ROGOWSKI SENSORS

3.4 ENERGY COUNTERS S500 LINE

3.5 T201 LINE CURRENT TRANSDUCERS

3.6 ELECTRICAL MEASUREMENT CONVERTERS

3.7 CONTROLLERS FOR ENERGY MANAGEMENT

NETWORK ANALYSER
203 LINE

3

3.1

S203 Line

MODBUS NETWORK ANALYSERS WITH ANALOG OUTPUT

The network analysers are specifically designed to detect the characteristics of the power supply in the single-phase or three-phase networks and utilities. They allow the analysis of energy and power and thus controlling of the power supply quality. At the same time in many versions they are also used to continuously record the progress of the alternating quantities available.
The measurement and event reporting functions provide a basis of information useful for controlling the correct functioning of a machine, maximising energy efficiency.

HIGHLIGHTS

600 Vac

INPUT VOLTAGE

The S203 Line analysers support voltage inputs with a maximum range of up to 600 Vac (50-60 Hz)

100 mA
5 Arms
4,000 A

CURRENT INPUT

The S203 Line analysers manage current inputs up to 5 Arms, S203TA-D), 4,000 A (S203RC-D).

MEASURED VALUES

The S203 Line analysers provide the single-phase and three-phase values of the main electrical quantities via the analogue mA/V output: effective voltage, effective current, active power, reactive power, apparent, frequency, power factor, energy (bidirectional). The configurable analogue output also allows the analyser to be used as a measuring transducer.

ENERGY COUNTING

The S203TA-D and S203RC-D models are equipped with pulsed digital output and retentive memory for energy metering.

Modbus

COMMUNICATION

Equipped with a mini-USB (S203TA-D and S203RC-D) and RS485 programming port, all models support the ModBUS RTU protocol up to a maximum of 32 nodes and 115,200 bps without the use of amplifiers or repeaters.

PROGRAMMING

All models can be configured using the free EASY SETUP2 software and with an easily accessible front USB port connection.
Versions without display are also programmable by DIP-switch.

LCD

DISPLAY

The S203 Line includes models with high brightness LCD display front (2 lines x 16 characters) backlit

CONNECTIONS

Depending on the versions, the main types of insertion possible are: single-phase, Aron three-phase, 4-wire three-phase. The analysers can be connected to commercial ATs with secondary max 5A, accuracy transformers with f.s. from 15 to 100 A, Rogowski sensors max 4,000 A.

ISOLATION CONFIGURATION

The versions with display are configurable through the Android EASY SET-UP APP downloadable from Play Store

4,000 Vac

APP

The analysers have protection against ESD discharges up to 4 kV, insulation between power input and other circuits up to 4,000 Vac and insulation between communication (or analog output) and power supply of 1500 Vac.

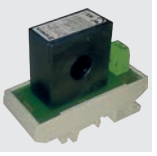
TECHNICAL DATA

	S203TA-D	S203RC-D
		
	Three-phase network analyser, 600 Vac / 5 Arms, analog and impulsive outputs, standard AT LCD display	**Three-phase network analyser, 600 Vac for Rogowski transducers, analog and pulse outputs, LCD display**
GENERAL DATA		
Power supply	10..40 Vdc; 19..28 Vac (50-60 Hz)	10..40 Vdc; 19..28 Vac (50-60 Hz)
Max consumption	2.5 W	2.5 W
Isolation	4 kV Vac (from/to power circuits) 1.500 Vac (other circuits)	4 kV Vac (from/to power circuits) 1.500 Vac (other circuits)
Status indicators	Power supply, Fail, RS485 communication	Power supply, Fail, RS485 communication
Installation Category	350 V CAT II	350 V CAT II
Display	Front LCD 2 lines x 16 alphanumeric characters backlit	Front LCD 2 lines x 16 alphanumeric characters backlit
Retransmission error	0.1% (maximum field)	0.1% (maximum field)
Passing band	7 kHz	7 kHz
Accuracy class	0.2% (voltmeter, ammeter, wattmeter)	0.5% (voltmeter, ammeter, wattmeter)
Insertion type	Single-phase, Aron three-phase, 4-wire three-phase	Single-phase, Aron three-phase, 4-wire three-phase
Connections	Commercial AT with secondary max 5A, typical accuracy 0.5%	Rogowski Transducers with max output 100 mV RMS
Protection degree	IP20	IP20
Installation	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
Connections	Screw terminals, 5.08 mm pitch	Screw terminals, 5.08 mm pitch
Operating temperature	-10..+65°C	-10..+65°C
Dimension	105 x 89 x 60 mm	105 x 89 x 60 mm
Weight	200 g	200 g
Case	UL V0 plastic	UL V0 plastic
COMMUNICATION		
Interfaces	No.1 RS485 port, no.1 USB port	No.1 RS485 port, no.1 USB port
Speed	1 reading every 25 ms	1 reading every 25 ms
Protocol	ModBUS RTU	ModBUS RTU
Distance	Up to 1,200 m	Up to 1,200 m
Connectivity	Max 32 nodes	Max 32 nodes
I/O		
Channels	1 input, 2 outputs	1 input, 2 outputs
Input type	VOLTAGE Up to 600 Vac (50-60 Hz); CURRENT Up to 5 Arms	VOLTAGE up to 600 Vac (50-60 Hz), CURRENT from Rogowski transducers with max output 100 mV RMS
Output Type	VOLTAGE 0..5, 0..10 Vdc min load resistance 2 kΩ, CURRENT 0..20, 4..20 mA, max load resistance 500 Ω DIGITAL IMPULSIVE for metres of energy produced/absorbed, flow 50 mA	VOLTAGE 0..5, 0..10 Vdc, min load resistance 2 kΩ CURRENT 0..20, 4..20 mA, max load resistance 500 Ω DIGITAL IMPULSIVE for metres of energy produced/absorbed, flow 50 mA
PROGRAMMING		
Configurations	Front keys DIP switch Software (EASY SETUP / Z-NET4) AppAndroid (EASY SETUP APP)	Front keys DIP switch Software (EASY SETUP / Z-NET4) AppAndroid (EASY SETUP APP)
STANDARD		
Certifications	EC	EC

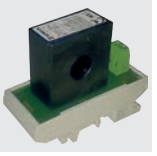
The technical data and the diagrams in this document are indicative and not binding.

ACCESSORIES

CURRENT TRANSFORMERS



TA25
Accuracy amperometric transformer (f.s. 25 A)
Cod. TA25



TA15
Accuracy amperometric transformer (f.s. 15 A)
Cod. TA15

TA100
High accuracy current transformer (f.s.100A)
Cod. TA100

ROGOWSKI SENSORS FOR S203RC-D

RC-V250-100
First generation Rogowski sensor, output 100 mV/kA, 50-60 Hz, Ø 115 mm

RC-V400-050
First generation Rogowski sensor, output 50 mV/kA, 50-60 Hz, Ø 115 mm

RC-V400-100
First generation Rogowski sensor, output 100 mV/kA, 50-60 Hz, Ø 115 mm

RC-V500-100
First generation Rogowski sensor, output 100 mV/kA, 50-60 Hz, Ø 147 mm

RC150
Second generation, high performance Rogowski sensor, max error <1%, Ø 8 mm, 100 mV / 1k

SOFTWARE

Z-NET4

- Input / output settings
- Communication parameters
- Variable addressing
- Setting of counters and retransmitted output
- AT/TV parameters
- Energy accounting
- Test

- **Free download from www.seneca.it**
- **Available for S203T, S203TA, S203TA-D**

EASY SETUP • EASY SETUP APP

- Communication parameters
- Modbus parameters
- Reading, writing, testing
- Setting of measured and retransmitted variable values

Mobile Phone with USB OTG support
Google play

- **Free download from www.seneca.it of from Google Play**
- **Available for S203T, S203TA, S203TA-D, S203RC-D**

The technical data and the diagrams in this document are indicative and not binding.

R203

THREE-PHASE, DUAL ETHERNET NETWORK ANALYSER WITH UNIVERSAL INPUT

The R203 three-phase network analyser accepts current measurement inputs for AT with current/voltage output, VT and Rogowski sensors (with voltage output up to 333 mV), with single-phase, three-phase 3/4 wire insertion types and with support for ModBUS RTU, ModBUS TCP-IP, Peer-To-Peer protocols. Like most of the “space saving” R line products, the R203 has 2 Ethernet ports that can also be used for daisy chain connections with automatic bypass protection. The analyser supplies an output signal in voltage (0..10Vdc), current (0/4..20mA). R203 also offers the measuring and recording of harmonics in voltage / current up to the 55th order with calculation of the THD (total harmonic distortion). The instrument also works as a Web Server and datalogger for reading of the main parameters and downloading from data and events.

HIGHLIGHTS

UNIVERSAL ANALOG INPUTS

R203 is a three-phase network analyser capable of accepting universal signals at input with scales settable up to 600 Vac (voltage), 5A (AT with current output), 333 mV (AT with voltage output or Rogowski sensors)

CURRENT INPUT

R203 offers the measuring and recording of harmonics in voltage and current up to the 55th order with calculation of the THD (total harmonic distortion).

PROGRAMMING

The instrument ensures a accuracy of 0.2% for AT/Voltage current measurements and 0.5% for active/reactive powers and Rogowski currents.

ACCURACY

From Web Server (or dedicated software integrated in the instrument it is possible to make basic and advanced settings; diagnostics; I/O configuration, measurements, communication, data and ModBUS registers

FORM FACTOR

With a depth of only 32 mm, installers can create applications with limited installation conditions. Thanks to the space-saving design of the R line, terminals can be inserted and extracted quickly and can also exploit applications in the building, home automation and residential sectors.

MEASURED VALUES

R203 returns single-phase and three-phase values of the main electrical quantities: voltage, current, power and active, reactive, apparent energy, frequency, period, power factor, harmonics up to 55° and THD. The configurable analogue output also allows the analyser to be used as a measuring transducer.

DATALOGGER ENERGY

R203 is equipped with a pulse digital output and retentive memory for the metering of active, reactive and apparent energy.
On both digital inputs there is a filter and a 32-bit incremental counter with backup on FeRAM once per second.

COUNTING

R203 operates as a data logger (up to 30 variables per tag and approximately 55,296 samples that can be stored in the internal flash) and event data logger with recording of up to 32,768 samples with relative time tag.
It is also possible to send log files in csv format to an FTP server.

DUAL ETHERNET / DAISY CHAIN

Thanks to the 2 Ethernet switch ports, a chain connection to the next Ethernet device (daisy chain) can be made, avoiding expensive industrial switches and simplifying wiring

SPECIAL FUNCTIONS

R203 enables the operation of an internal switch even if the device is faulty or not powered for up to 4 days (LAN function with bypass in case of failure). It is also possible to copy inputs to remote outputs without the aid of a master device (peer-to-peer function). Another advanced function is the “ModBUS Passthrough”, thanks to which the module can divert the requests coming from Modbus TCP-IP to RS485, behaving, in fact, as a gateway.

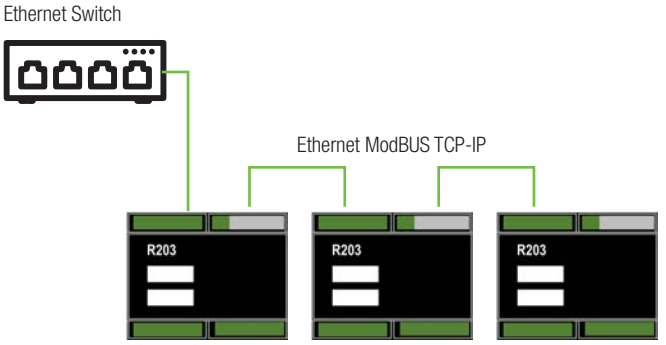
TECHNICAL DATA

R203

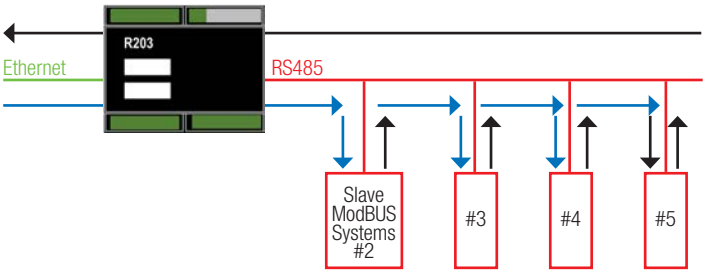
Three-phase network analyser, dual Ethernet with universal input

GENERAL DATA	
Power supply	90-264 Vac (50-60 Hz)
Max consumption	2.8 W, 5.4 VA
Isolation	4 kVac (from / to power circuits) 1,500 Vac (other circuits)
Status indicators	Power supply, DI/DO, RS485 communication, Data logger, status, wiring error, Ethernet port
Installation category	600 V CAT III
Insertion Type / Connection mode	Single-phase, three-phase 3-wire, three-phase 4-wire, AT, AT with mV output, Rogowski transducers
Front degree of protection	IP20
Accuracy	0.2% (AT Current / Voltage); 0.5% (Active/reactive power, Rogowski current)
Installation	DIN rail 35mm IEC EN60715, wall or panel via screws
Connections	Screw terminals
Operating temperature	-25..+55°C
Storage temperature	-30..+ 85°C
Humidity	30% ÷ 90% non-condensing
Dimension	90 x 107 x 32 mm
Weight	170 g
Case	Self-extinguishing PC/ABS UL94-V0, black
MEASUREMENT AND CALCULATION TIMES	
Sampling times	8,000 sps (for voltage / current channels)
RMS values settling time	580..700 ms
Harmonic update times	30s
PROGRAMMING	
Web Server	Connection diagnostics, device configuration, alarms and I/O configuration, data logger, USB connection, special functions (MOdBUS Pass Through), firmware update
DATALOGGER	
Data datalogger	Max 30 variables per tag and approximately 55,296 samples that can be stored in the internal flash; samp. time between 1s and 24h
Event datalogger	Recording of up to 32,768 samples with relative time tag, threshold, time window, date/time
COMMUNICATION	
SERIAL	
Interfaces	N°1 RS485 port
Protocol	Slave ModBUS RTU
Distance	Up to 1,200 m
Speed	1.200..115.200 baud
Connectivity	Max 128 Seneca device nodes
ETHERNET	
Ports	No.2 100 Mbps Ethernet ports
Connections	Daisy Chain
Protocols	ModBUS TCP-IP, Seneca P2P I/O Mirror with broadcast (UDP based)
USB	
Ports	N°1 USB programming Micro port
I/O	
Channels	2 digital inputs / outputs, 1 analog output
Measuring Input	VOLTAGE up to 600 Vac, freq. 45 ÷ 65 Hz CURRENT: AT 1 ÷ 5 A full scale; voltage (mV) for ATs with voltage output or Rogowski: up to 333 mV f.s.
Rogowski analog input	VOLTAGE: up to 600 Vac, frequency 45..65 Hz ROGOWSKI (supplied by SENECA): 100 ↔ 1000 A @ 50 Hz (sinusoidal); 120 mV ↔ at 1000 A @ 60 Hz (sinusoidal); Max measurable current: 3 kA @ 50 Hz; 2.5 kA @ 60 Hz
Analog Output	VOLTAGE 0..10 Vdc, min load resistance 2kΩ CURRENT 0..20, 4..20 mA, max load resistance 500Ω Transmission error: 0.1% of the maximum range Thermal drift 100 ppm/K
Digital Inputs	No.2 digital inputs that can be activated with voltage from 12 to 24V
Digital Outputs	No.2 digital outputs, capacity Imax = 50 mA Vmax = 28V
STANDARD	
Certifications / Markings	EC

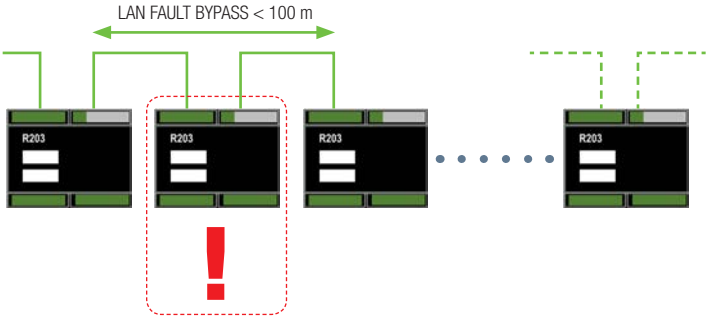
DAISY CHAIN CONNECTION



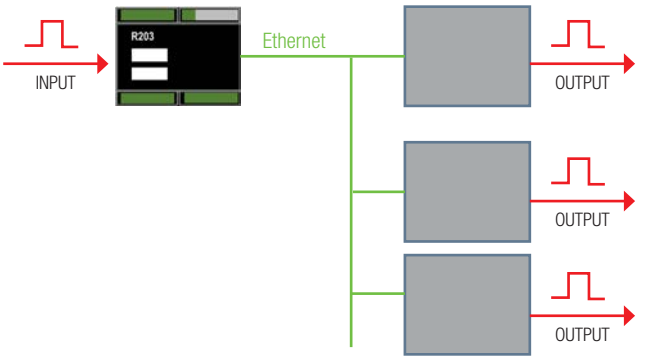
PASS THROUGH MODBUS



FAULT BYPASS CONNECTION



I/O COPY WITH PEER-TO-PEER FUNCTION



The technical data and the diagrams in this document are indicative and not binding.

T203PM

SINGLE-PHASE NETWORK ANALYSERS WITH DIRECT MEASUREMENT OF CURRENT AND ENERGY

T203PM is a series of single-phase AC/DC TRMS network analysers, ModBUS interface, analog and digital output, inputs with 3 current measurement ranges: 100, 300 or 600 ac/dc depending on the version (T203PM100-MU, T203PM300-MU, T203PM600-MU) and for the voltage 290 Vac, 1000 Vdc. The instruments perform the direct measurement of current and energy without resorting to external ATs. The T203PM measures voltage values, AC/DC current, active / reactive / apparent power, power factor, frequency, harmonic distortion (THD), retransmitting them on the analog output in 0-10V voltage. The T203PM analysers are particularly robust as they can use a wide operating temperature range, -25 .. 65 C, insulation up to 3 kVac (on bare conductors), safety class CAT. III 600V (bare conductor) and 1kV (insulated conductor).

HIGHLIGHTS

DIRECT MEASUREMENT WITHOUT AT OF CURRENT AND ENERGY

The following measurements are made available without the aid of external ATs: TRMS AC voltage and current, DC voltage, bipolar DC current, instantaneous power, active, reactive, apparent energy, power factor, THD, mains frequency.

ANALOG VOLTAGE OUTPUT

The analog output can replicate one of the input measurements with 1% accauracy (0.2% for voltage) at 23 C and response time (10-90%) of 100 ms

HARMONIC ANALYSIS

The 1.3kHz input measurement band guarantees the measurement of voltage and currents with harmonic components up to the twenty-first (at the mains frequency of 60 Hz).

DIGITAL OUTPUT

The digital output is used to signal alarms that can occur for a given measurement associated with it.

MODBUS RTU INTERFACE

The ModBUS RTU (Slave) protocol supported both through the RS485 communication port up to 115,200 bps and through the USB port for programming operations.

USB MICRO PORT

The front Micro USB port allows a simple connection for configuring of the device via software.
Through this, it is also possible to update the firmware.

CONFIGURATION VIA EASY SETUP2

The T203PMs can be configured using free EASY SETUP2 software and an easily accessible front USB port connection.

ENERGY METER

The analysers have 64-bit integer counters whose energy values (active, reactive, apparent) are saved on F-RAM memory.

TECHNICAL DATA

	T203PM100-MU	T203PM300-MU	T203PM600-MU
			
	TRMS single-phase AC / DC network analyser, inputs up to 100 Vac/dc, ModBUS, analog and digital output	**TRMS single-phase AC / DC network analyser, inputs up to 300 Vac/dc, ModBUS, analog and digital output**	**TRMS single-phase AC / DC network analyser, inputs up to 600 Vac/dc, ModBUS, analog and digital output**
GENERAL DATA			
Power supply	11.5 – 28 Vdc	11.5 – 28 Vdc	11.5 – 28 Vdc
Max consumption	Typical: < 70 mA @ 24 Vdc	Typical: < 70 mA @ 24 Vdc	Typical: < 70 mA @ 24 Vdc
Isolation	3 kVac (on bare conductors)	3 kVac (on bare conductors)	3 kVac (on bare conductors)
Status indicators	Power supply, USB communication, digital output	Power supply, USB communication, digital output	Power supply, USB communication, digital output
Installation / surge category	CAT. III 600V (bare conductor) CAT. III 1kV (insulated conductor)	CAT. III 600V (bare conductor) CAT. III 1kV (insulated conductor)	CAT. III 600V (bare conductor) CAT. III 1kV (insulated conductor)
Front degree of protection	IP20	IP20	IP20
Accuracy class	1% of full scale at 50/60 Hz, 23°C	1% of full scale at 50/60 Hz, 23°C	1% of full scale at 50/60 Hz, 23°C
Programming	Software EASY SETUP 2	Software EASY SETUP 2	Software EASY SETUP 2
Installation	35mm DIN rail IEC EN60715, wall mounted by means of anchors, suspended by means of clamps	35mm DIN rail IEC EN60715, wall mounted by means of anchors, suspended by means of clamps	35mm DIN rail IEC EN60715, wall mounted by means of anchors, suspended by means of clamps
Connections	Removable 6-way screw terminals, 5 mm pitch for cables up to 2.5 mm^2 Micro USB for programming and fw update	Removable 6-way screw terminals, 5 mm pitch for cables up to 2.5 mm^2 Micro USB for programming and fw update	Removable 6-way screw terminals, 5 mm pitch for cables up to 2.5 mm^2 Micro USB for programming and fw update
Operating temperature	-25..+70°C	-25..+70°C	-25..+70°C
Dimension	95 x 75 x 35 mm	95 x 75 x 35 mm	95 x 75 x 35 mm
Weight	150 g	150 g	150 g
Case	PA6, black	PA6, black	PA6, black
MEASUREMENT AND CALCULATION TIMES			
Sampling time	47,000 sps	47,000 sps	47,000 sps
RMS values settling time	500..1000 ms	500..1000 ms	500..1000 ms
MEASURED PARAMETERS			
Instant values	Voltage, AC.DC Current, Active / Reactive / Apparent Power, Power Factor, Frequency, THD	Voltage, AC.DC Current, Active / Reactive / Apparent Power, Power Factor, Frequency, THD	Voltage, AC.DC Current, Active / Reactive / Apparent Power, Power Factor, Frequency, THD
Med / max / min values	Voltage, AC.DC Current, Active / Reactive / Apparent Power, Power Factor, Frequency, THD	Voltage, AC.DC Current, Active / Reactive / Apparent Power, Power Factor, Frequency, THD	Voltage, AC.DC Current, Active / Reactive / Apparent Power, Power Factor, Frequency, THD
Harmonics	Up to the 21st	Up to the 21st	Up to the 21st
ACCURACY			
Accuracy class	1% of full scale at 50/60 Hz, 23°C	1% of full scale at 50/60 Hz, 23°C	1% of full scale at 50/60 Hz, 23°C
COMMUNICATION			
SERIAL			
Interfaces	N°1 RS485 port	N°1 RS485 port	N°1 RS485 port
Protocol	ModBUS RTU	ModBUS RTU	ModBUS RTU
Distance	Up to 1,200 m	Up to 1,200 m	Up to 1,200 m
Connectivity	Max 32 nodes	Max 32 nodes	Max 32 nodes
USB			
Ports	N°1 USB programming Micro port	N°1 USB programming Micro port	N°1 USB programming Micro port
MEASUREMENT INPUT			
Voltage	Up to 0 – 100A o 0 – 90Vac (AC/DC TRMS); ±100A or 0 – 1000Vdc (TRMS DC Bipolar) Crest factor: 100A = 1.7 / 300A = 1.9 / 600A = 1.9 Passing band: 1.4 kHz Overload: 3 x IN continuous	Up to 0 – 300A or 0 – 290Vac (AC/DC TRMS); ±300A or 0 – 1000Vdc (TRMS DC Bipolar) Crest factor: 100A = 1.7 / 300A = 1.9 / 600A = 1.9 Passing band: 1.4 kHz Overload: 3 x IN continuous	Up to 0 – 600A or 0 – 590Vac (AC/DC TRMS); ±600A or 0 – 1000Vdc (TRMS DC Bipolar) Crest factor: 100A = 1.7 / 300A = 1.9 / 600A = 1.9 Passing band: 1.4 kHz Overload: 3 x IN continuous
BUILT-IN I/OS			
Channels	1DO, 1 AO	1DO, 1 AO	1DO, 1 AO
Digital outputs	ACTIVE 0 - Vcc, maximum load 50mA	ACTIVE 0 - Vcc, maximum load 50mA	ACTIVE 0 - Vcc, maximum load 50mA
Analog output	VOLTAGE: 0..10 Vdc, minimum load 2kΩ. Reverse polarity protection and surge protection Resolution: 13.5 f.s.AC Error for EMI: < 1 % Temperature Coeffic.: < 200 ppm/°C Measurement hysteresis: 0.2% f.s. Response speed: < 200 ms	VOLTAGE: 0..10 Vdc, minimum load 2kΩ. Reverse polarity protection and surge protection Resolution: 13.5 f.s.AC Error for EMI: < 1 % Temperature: Coeffic.: < 200 ppm/°C Measurement hysteresis: 0.2% f.s. Response speed: < 200 ms	VOLTAGE: 0..10 Vdc, minimum load 2kΩ. Reverse polarity protection and surge protection Resolution: 13.5 f.s.AC Error for EMI: < 1 % Temperature: Coeffic.: < 200 ppm/°C Measurement hysteresis: 0.2% f.s. Response speed: < 200 ms
STANDARD			
Certifications / Markings	EC	EC	EC

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ORDER CODE

Code	Description
R203 Line	
R203	Three-phase network analyser with Ethernet port and universal inputs
R203-ROG-025	Three-phase network analyser kit, dual Ethernet, universal input and rogowski L25 Ø12 sensor set, 100mV/1KA-50Hz, 3mt
R203-ROG-040	Three-phase network analyser kit, dual Ethernet, universal input and rogowski L40 Ø12 sensor set, 100mV/1KA-50Hz, 3mt
R203-ROG-060	Three-phase network analyser kit, dual Ethernet, universal input and rogowski L60 Ø12 sensor set, 100mV/1KA-50Hz, 3mt
R203-TA50	Network analyser kit, 2xETH, univ. inp., 3xTA 50/5A, cl.0,5/1, D23mm
S203 LINE	
S203RC-D	Three-phase network analyser, 600 Vac / 1000 Arms, Rogowski, analog and pulse outputs, LCD display, Micro USB app
S203TA-D	Three-phase network analyser, 600 Vac / 5 Arms, analog and pulse outputs, standard AT, LCD display, Micro app
T203PM LINE	
T203PM100-MU	TRMS single-phase AC / DC network analyser, inputs up to 100 Vac/dc, ModBUS, analog and digital output
T203PM300-MU	TRMS single-phase AC / DC network analyser, inputs up to 300 Vac/dc, ModBUS, analog and digital output
T203PM600-MU	TRMS single-phase AC / DC network analyser, inputs up to 600 Vac/dc, ModBUS, analog and digital output
ACCESSORIES	
RC-V250-100	Rogowski transducer, output 100 mV/kA, 50-60 Hz, Ø 65 mm
RC-V400-050	Rogowski transducer, output 50 mV/kA, 50-60 Hz, Ø 115 mm
RC-V400-100	Rogowski transducer, output 100 mV/kA, 50-60 Hz, Ø 115 mm
RC-V500-100	Rogowski transducer, output 100 mV/kA, 50-60 Hz, Ø 147 mm
RC150-025-100-3M	Rogowski Sensor L=25cm Øint.8cm,100mV/1KA-50Hz,cable L=3m.
RC150-025-100-5M	Rogowski Sensor L=25cm Ø.int.8cm 100mV/1KA-50Hz,cable L=5mt
RC150-025-100-10	Rogowski Sensor L=25cm D.int.8cm 100mV/1KA-50Hz,cable L=10mt
RC150-035-100-3M	Rogowski Sensor L=35cm Øint.11cm,100mV/1KA-50Hz,cable L=3m.
RC150-040-100-3M	Rogowski Sensor L=40cm Øint.12cm,100mV/1KA-50Hz,cable L=3m.
RC150-040-100-5M	Rogowski Sensor L=40cm Ø.int.12cm 100mV/1KA-50Hz,cable L=5mt
RC150-040-100-10	Rogowski Sensor L=40cm D.int.12cm 100mV/1KA-50Hz,cable L=10mt
RC150-060-100-3M	Rogowski Sensor L=60cm Øint.19cm,100mV/1KA-50Hz,cable L=3m.
RC150-060-100-5M	Rogowski Sensor L=60cm Øint.19cm,100mV/1KA-50Hz,cable L=5m.
RC150-060-100-10	Rogowski Sensor L=60cm Øint.19cm,100mV/1KA-50Hz,cable L=10m.
RC150-090-100-3M	Rogowski Sensor L=90cm Øint.28cm,100mV/1KA-50Hz,cable L=3m
RC150-090-100-5M	Rogowski Sensor L=90cm Øint.28cm,100mV/1KA-50Hz,cable L=5m
RC150-090-100-10	Rogowski Sensor L=90cm Øint.28cm,100mV/1KA-50Hz,cable L=10mt.
RC150-120-100-3M	Rogowski Sensor L=120cm Øint.38cm,100mV/1KA-50Hz,cable L=3m.
RC150-180-100-3M	Rogowski Sensor L=180cm Øint.57cm,100mV/1KA-50Hz,cable L=3m.
RC150-RIC-KIT30	Rogowski coil Kit Spare Part RC150 L= 30cm Ø int. 9.5 cm, 100mV/1KA-50Hz,cable L=3mt.
RC150-RIC-KIT45	Rogowski coil Kit Spare Part RC150 L= 45cm Ø int. 14 cm, 100mV/1KA-50Hz,cable L=3mt.
RC150-RIC-KIT70	Rogowski coil Kit Spare Part RC150 L= 70cm Ø int. 22 cm, 100mV/1KA-50Hz,cable L=3mt.
RC190-030-333-3M	Rogowski sensor L-coil = 30cm, Øint. 9cm, 333mV/1KA-50Hz, L-cable=3mt
RC190-035-333-3M	Rogowski sensor L-coil = 35cm, Øint. 9cm, 333mV/1KA-50Hz, L-cable=3mt
RC190-060-333-3M	Rogowski sensor L-coil = 60cm, Øint. 9cm, 333mV/1KA-50Hz, L-cable=3mt
RC190-090-333-3M	Rogowski sensor L-coil = 90cm, Øint. 9cm, 333mV/1KA-50Hz, L-cable=3mt
TA100	Accuracy amperometric transformer for S203T, f.s.100 A, class 0.1% (1/10000)
TA15	Accuracy amperometric transformer for S203T, f.s.15 A, class 0.1% (1/10000)
TA25	Accuracy amperometric transformer for S203T, f.s.25 A, class 0.1% (1/10000)

NETWORK ANALYSER
S604 / S711 LINE

S604 / S711 Line

PANEL AND BUILT-IN MULTIFUNCTION NETWORK ANALYSERS

The S604 and S711 Line multifunction network analysers are innovative tools for measuring and storing electrical parameters. They are particularly suitable when a device for analysis and consumption control is needed, with an excellent price/performance ratio. In the versions with the Rogowski current transducers offer an extremely easy connection and can be used in applications with high currents, linear measurements, retrofitting, energy audits, etc. The instruments can communicate through the RS485 serial port with ModBUS RTU/ASCII protocol or through the LAN port with ModBUS TCP-IP protocol. The ENERGY POWER PACK software is also provided for configuration of the instrument. A Web server interface is also available for management of the instrument from any PC connected to the LAN/Internet network.

HIGHLIGHTS

POWER SUPPLY

- From 3x230/400 V to 3x240/415 V 4-wire three-phase
- From 3x400 V to 3x415 V 3-wire three-phase
- 230 V to 240 V single-phase

INSERTION

- Self-powered models
- Models with auxiliary power supply
- Extended power supply 85 ... 265 VAC / 110 VDC ±15%

DIGITAL I/O

- No.1/2 outputs for alarms/pulses
- No.1 input for the calculation of average values (DMD)

DATA ARCHIVING

- Recording average values of active and reactive powers
- Up to 24 parameters selectable from instantaneous variables for recording MIN/MED/MAX values
- Up to 8 MB of memory for data recording

TYPICAL APPLICATIONS

- Energy monitoring and control systems
- Monitoring of the load of individual machines
- Control of power tips
- Control panels, generators, motor control, etc.
- Remote consumption detection and cost calculation

PROGRAMMING

Possibility to remotely manage the instrument through ENERGY POWER PACK software or via Web server interface

COMMUNICATION

Models are available with MODBUS RTU/ASCII communication via RS485 port or in MODBUS TCP via LAN port

ENERGY MEASUREMENTS AND ACCOUNTING

- Total counters
- Separate inductive/capacitive counters
- Bidirectional measurement on four quadrants for all energies and powers
- Measurement of all the main parameters necessary for an effective consumption analysis

THD & HARMONICS

THD values of voltage and current THD Values of voltage and current + harmonics up to 15°

INPUTS

- Standard AT versions of 1 or 5 A, for direct insertion up to 80 A or for Rogowski coils

PANEL MULTI-FUNCTION NETWORK ANALYSERS

	S604B	S604E	S604E-ROG
			
	Three-phase network analysers for AT 1/5 A inputs, direct 80 A, BASIC version	**Three-phase network analysers for AT 1/5 A inputs, direct 80 A, ENERGY PLUS version**	**Three-phase network analysers, vers. ENERGY PLUS Rogowski sensor triad**
GENERAL DATA			
Power supply	180..285 Vac line-neutral, Cat III (self-powered models) 85..265 Vac, Aux, Cat II (models with auxiliary power supply)	85..265 Vac, Aux, Cat II (models with auxiliary power supply)	85..265 Vac, Aux, Cat II (models with auxiliary power supply)
Max consumption	3.5 VA - 1 W for single phase (self-powered models) 1.6 VA - 1 W (models with auxiliary power supply, RS485 interface) 4.5 VA - 1.6 W (models with auxiliary power supply, Ethernet interface)	1.6 VA - 1 W (models with auxiliary power supply, RS485 interface) 4.5 VA - 1.6 W (models with auxiliary power supply, Ethernet interface)	1.6 VA - 1 W (models with auxiliary power supply, RS485 interface) 4.5 VA - 1.6 W (models with auxiliary power supply, Ethernet interface)
Display	LCD, backlit, 43x29 mm, 3 lines, 4 digits+symbols	LCD, backlit, 43x29 mm, 3 lines, 4 digits+symbols	LCD, backlit, 43x29 mm, 3 lines, 4 digits+symbols
Function keys	3 front keys, 1 protected key	3 front keys, 1 protected key	3 front keys, 1 protected key
Operating temperature	-25..+55°C	-25..+55°C	-25..+55°C
Sinusoidal vibration amplitude	50 Hz ± 0.075 mm	50 Hz ± 0.075 mm	50 Hz ± 0.075 mm
Memory (instruments with communication port)	1 MB	8 MB	8 MB
Recordings	Average values for active and reactive powers	Min/med/max values for all selectable powers	Min/med/max values for all selectable powers
THD & Harmonics	Voltage and current THD values	Voltage and current THD values Harmonic values of voltage and current up to the 15th	Voltage and current THD values Harmonic values of voltage and current up to the 15th
Apparent Energy Counters	Total or separate counters (inductive / capacitive)	Total or separate counters (inductive / capacitive)	Total or separate counters (inductive / capacitive)
Connection modes	Single-phase Three phase, 4 wires, 3 currents Three phase, 4 wires, 2 currents (aux models)	Single-phase Three phase, 4 wires, 3 currents Three phase, 4 wires, 2 currents (aux models)	Single-phase Three phase, 4 wires, 3 currents Three phase, 4 wires, 2 currents (aux models)
Front degree of protection	IP51	IP51	IP51
Terminals degree of protection	IP20	IP20	IP20
Dimension	72x90x65 mm	72x90x65 mm	72x90x65 mm
Weight	436 g	436 g	436 g
ACCURACY			
Voltage	±0.2% reading 10% FS...FS (FS=full scale value)	±0.2% reading 10% FS...FS (FS=full scale value)	±0.2% reading 10% FS...FS (FS=full scale value)
Current	±0.4% reading in 5% FS...FS	±0.4% reading in 5% FS...FS	±0.4% reading in 5% FS...FS
Power	±0.5% reading ±0.1% FS (PF=1)	±0.5% reading ±0.1% FS (PF=1)	±0.5% reading ±0.1% FS (PF=1)
Frequency	±0.1% reading ±1 digit in the range 45...65 Hz	±0.1% reading ±1 digit in the range 45...65 Hz	±0.1% reading ±1 digit in the range 45...65 Hz
Active Energy	Class 1 according to IEC/EN 62053-21	Class 1 according to IEC/EN 62053-21	Class 1 according to IEC/EN 62053-21
Reactive Energy	Class 2 according to IEC/EN 62053-23	Class 2 according to IEC/EN 62053-23	Class 2 according to IEC/EN 62053-23
COMMUNICATION			
Serial Port*	RS485 optoisolated, 300..57,600 bps (optional)	RS485 optoisolated, 300..57.600 bps	RS485 optoisolated, 300..57.600 bps
Ethernet Port*	10/100 Mbps, RJ45 connector (optional)	10/100 Mbps, RJ45 connector	10/100 Mbps, RJ45 connector
Protocols supported	ModBUS RTU/ASCII (RS485); http, Ntp, Dhcp, ModBUS TCP-IP (Ethernet)	ModBUS RTU/ASCII (RS485); http, Ntp, Dhcp, ModBUS TCP-IP (Ethernet)	ModBUS RTU/ASCII (RS485); http, Ntp, Dhcp, ModBUS TCP-IP (Ethernet
I/O			
Voltage input	3x180/310..3x285/495 Vacm Cat III, 300 V (self-powered models) 3x10/17…3x285/495 Vac, Cat III 300 V (models with auxiliary power supply)	3x180/310..3x285/495 Vacm Cat III, 300 V (self-powered models) 3x10/17…3x285/495 Vac, Cat III 300 V (models with auxiliary power supply)	3x180/310..3x285/495 Vacm Cat III, 300 V (self-powered models) 3x10/17…3x285/495 Vac, Cat III 300 V (models with auxiliary power supply)
Current input	6A (1/5A models with AT); 80 A (models with 80 A insertion)	6A (1/5A models with AT); 80 A (models with 80 A insertion)	3 selectable scales: 500 / 4.000 / 20.000 A via Rogowski Sensors
Digital Inputs	No.1 opto-isolated active channel (models without communication port), range of average values DMD 80..276 Vac/dc	-	-
Digital output	Nr 1 (models RS485) / 2 (models without communication port) opto-isolated passive channels, IEC / EN 62053-31	Nr 1 (models RS485) / 2 (models without communication port) opto-isolated passive channels, IEC / EN 62053-31	Nr 1 (models RS485) / 2 (models without communication port) opto-isolated passive channels, IEC / EN 62053-31
PROGRAMMING			
Configuration systems	Front keys Energy Power Pack software (ModBUS/Ethernet models) Webserver (Ethernet models)	Front keys Energy Power Pack software (ModBUS/Ethernet models) Webserver (Ethernet models)	Front keys Energy Power Pack software (ModBUS/Ethernet models) Webserver (Ethernet models)
STANDARD			
Certifications	EC	EC	EC
Directives	2006/95/EC, 2004/108/EC	2006/95/EC, 2004/108/EC	2006/95/EC, 2004/108/EC

*** Alternatively**

The technical data and the diagrams in this document are indicative and not binding.

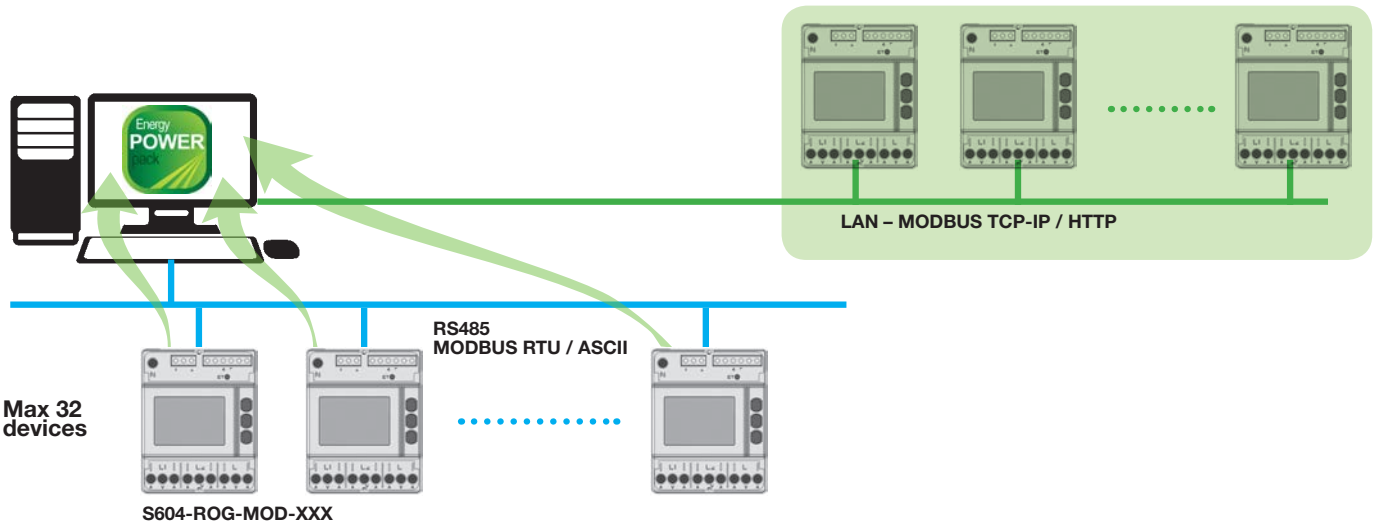
PANEL MULTI-FUNCTION NETWORK ANALYSERS

	S711B	S711E	S711EROG
			
	96x96 LCD three-phase network analyser BASIC version	**96x96 LCD three-phase network analyser, ENERGY Plus version**	**96x96 three-phase LCD network analyser, ENERGY PLUS version, with three Rogowski sensors**
GENERAL DATA			
Power supply	230 Vac ±15%, 50-60 Hz (versions with RS485 port)	230 Vac ±15%, 50-60 Hz (versions with RS485 port) 85..265 Vac (versions with Ethernet port)	230 Vac ±15%, 50-60 Hz (versions with RS485 port) 85..265 Vac (versions with Ethernet port)
Display	LCD, backlit 78x61 mm, 3 lines,4 figures + symbols	LCD, backlit 78x61 mm, 3 lines,4 figures + symbols	LCD, backlit 78x61 mm, 3 lines,4 figures + symbols
Function keys	4 front keys	4 front keys	4 front keys
Operating temperature	-25..+55°C	-25..+55°C	-25..+55°C
Sinusoidal vibration amplitude	50 Hz ± 0.075 mm	50 Hz ± 0.075 mm	50 Hz ± 0.075 mm
96x96 LCD three-phase network analyser BASIC version	96x96 LCD three-phase network analyser, ENERGY Plus version	96x96 three-phase LCD network analyser, ENERGY PLUS version, with three Rogowski sensors	96x96 three-phase LCD network analyser, ENERGY PLUS version, with three Rogowski sensors
Memory (instruments with communication port)	1 MB	8 MB	8 MB
Recordings	Average values for active and reactive powers	Min/med/max values for instantaneous variables Energy counters	Min/med/max variable instantaneous values Energy counters
THD & Harmonics	Voltage and current THD values	Voltage and current THD values Harmonic values of voltage and current up to the 15th	Voltage and current THD values Harmonic values of voltage and current up to the 15th
Apparent Energy Counters	Total or separate counters (inductive / capacitive)	Total or separate counters (inductive / capacitive)	Total or separate counters (inductive / capacitive)
Connection modes	Three phase, 4 wires, 3 currents Three phase, 3 wires, 2 currents Single-phase	Three phase, 4 wires, 3 currents Three phase, 3 wires, 2 currents Single-phase	Three phase, 4 wires, 3 currents Three phase, 3 wires, 2 currents Single-phase
Front degree of protection	IP51	IP51	IP51
Terminals degree of protection	IP20	IP20	IP20
Thread diameter for measurement terminals	2,5 mm^2 / 14 AWG	1.5.. 6 mm^2 (models with AT)	1.5.. 6 mm^2 (models with AT)
Wire diameter for I/O/power supply/COM terminals	1.5.mm^2 / 16 AWG	1.5.. 35 mm^2 (models with 80A insertion)	1.5.. 35 mm^2 (models with 80A insertion)
Dimension	96x96x39 mm	96x96x39 mm	96x96x39 mm
Weight	310 g	436 g	436 g
ACCURACY			
Voltage	±0.2% reading 10% FS...FS (FS=full scale value)	±0.2% reading 10% FS...FS (FS=full scale value)	±0.2% reading 10% FS...FS (FS=full scale value)
Current	±0.4% reading in 5% FS...FS	±0.4% reading in 5% FS...FS	±0.4% reading in 5% FS...FS
Power	±0.5% reading ±0.1% FS (PF=1)	±0.5% reading ±0.1% FS (PF=1)	±0.5% reading ±0.1% FS (PF=1)
Frequency	±0.1% reading ±1 digit in the range 45...65 Hz	±0.1% reading ±1 digit in the range 45...65 Hz	±0.1% reading ±1 digit in the range 45...65 Hz
Active Energy	Class 1 according to IEC/EN 62053-21	Class 1 according to IEC/EN 62053-21	Class 1 according to IEC/EN 62053-21
Reactive Energy	Class 2 according to IEC/EN 62053-23	Class 2 according to IEC/EN 62053-23	Class 2 according to IEC/EN 62053-23
COMMUNICATION			
Serial Port	RS485 for ModBUS RTU / ASCII communication	RS485 for ModBUS RTU / ASCII communication (ModBUS models)	RS485 for ModBUS RTU / ASCII communication (ModBUS models)
Ethernet Port	-	Ethernet 10/100 Mbps for http, TCP-IP ModBUS communication (Ethernet models)	Ethernet 10/100 Mbps for http, TCP-IP ModBUS communication (Ethernet models)
Protocols supported	ModBUS RTU/ASCII (RS485)	ModBUS RTU/ASCII (RS485); http, Ntp, Dhcp, ModBUS TCP-IP (Ethernet)	ModBUS RTU/ASCII (RS485); http, Ntp, Dhcp, ModBUS TCP-IP (Ethernet)
MEASUREMENT INPUT			
Voltage input	Max measurable voltage: 600 Vac max L-L 20/35 VCA (*rep. TV, in case of TV use) Input impudence: ›1.3 MOhm Frequency: 45 -65 Hz	Max measurable voltage: 600 Vac max L-L 20/35 VCA (*rep. TV, in case of TV use) Input impudence: ›1.3 MOhm Frequency: 45 -65 Hz	Max measurable voltage: 600 Vac max L-L 20/35 VCA (*rep. TV, in case of TV use) Input impudence: ›1.3 MOhm Frequency: 45 -65 Hz
Current input	Input from AT Max value: 7 A Start-up current (Ist): 2 mA AT Load: max 0.15 VA for phase Min value for the FFT calculation: 100 mA * AT ratio	Input from AT Max value: 7 A Start-up current (Ist): 2 mA AT Load: max 0.15 VA for phase Min value for the FFT calculation: 100 mA * AT ratio	3 selectable scales: 500 / 4.000 / 20.000 A via Rogowski Sensors
I/O			
Digital Inputs	Nr1 channel for synchronisation calculation of mean values (DMD), opto-isolated range 80..265 Vac/dc	Nr1 channel for synchronisation calculation of mean values (DMD), opto-isolated range 80..265 Vac/dc	No.1 opto-isolated active channel (models without communication port), range of average values DMD 80..276 Vac/dc
Digital output	No.2 channels for alarm / pulse emission events, passive optocoupled NPN/PNP, maximum value 27 VDC - 27 mA, pulse duration 50 ± 2 ms, maximum reaction time at output 1 s	No.2 channels for alarm / pulse emission events, passive optocoupled NPN/PNP, maximum value 27 VDC - 27 mA, pulse duration 50 ± 2 ms, maximum reaction time at output 1 s	No.2 channels for alarm / pulse emission events, passive optocoupled NPN/PNP, maximum value 27 VDC - 27 mA, pulse duration 50 ± 2 ms, maximum reaction time at output 1 s
Analog output	-	Nr 1 active opto-isolated channel 0/4..20 mAcc, max load 500 W (model S711E6MODAO)	Nr 1 active opto-isolated channel 0/4..20 mAcc, max load 500 W (model S711EROGMOD30AO
PROGRAMMING			
Configuration systems	Front keys Energy Power Pack software (ModBUS/Ethernet models)	Front keys Energy Power Pack software (ModBUS/Ethernet models) Webserver (Ethernet models)	Front keys Energy Power Pack software (ModBUS/Ethernet models) Webserver (Ethernet models)
STANDARD			
Certifications	EC	EC	EC
Directives	2006/95/EC, 2004/108/EC	2006/95/EC, 2004/108/EC	2006/95/EC, 2004/108/EC
ADDITIONAL EQUIPMENT			
Rogowski Sensors	-	-	Nr 3 Rogoski reels RC150 of 30, 45 or 70 cm (inner diam 10/14/22 cm), 3 m cable

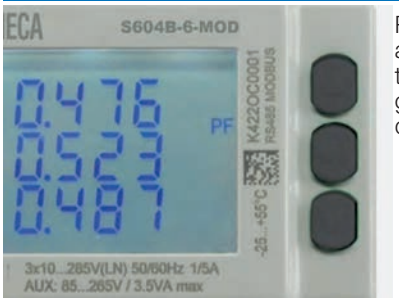
The technical data and the diagrams in this document are indicative and not binding.

PROGRAMMING SYSTEMS

MODBUS / ETHERNET CONNECTIONS



FRONT KEYS



Readings, settings and recordings are available via front keys with the possibility of managing up to 7 groups of pages on the instrument display.

The ENERGY POWER PACK package is a program compatible with all models of the S604 network analyser. It communicates via Modbus RTU and TCP ModBUS protocol and performs multiple management of devices, up to a maximum of 32. ENERGY POWER PACK ensures the reading and display of all measurements, provides a complete parameter set-up, downloads and converts recordings and manages the remote connection.

For versions with an integrated Ethernet port or with an external communication module, a Web Server accessible via a browser is available. With this system it is possible to view all the values available in the module and to associate a recording with file exportable in csv format.

ORDER CODE

Code	Description
S604B-6-MOD	BASE network analyser x TA1/5A-RS485 Modbus,1MB log. mem.
S604B-6-ETH	BASE network analyser x TA1/5A-Ethernet,1MB log. mem.
S604B-80-MOD	BASE network analyser 80A-RS485 Modbus,1MB log. mem.
S604B-80-ETH	BASE network analyser 80A-Ethernet,1MB log. mem.
S604B-ROG-MOD-30	BASE network analyser RS485 Modbus,1MB mem. Log.+3 Rogowski RC150 L= 30cm Øint. 9.5 cm
S604B-ROG-MOD-45	BASE network analyser RS485 Modbus,1MB mem. Log.+3 Rogowski RC150 L= 45cm Øint. 14 cm
S604B-ROG-MOD-70	BASE network analyser RS485 Modbus,1MB mem. Log.+3 Rogowski RC150 L= 70cm Øint. 22 cm
S604E-6-MOD	Energy PLUS Network Analyser x TA1/5A-RS485 Modbus,8MB log. Harmonics
S604E-6-ETH	Energy PLUS Network Analyser x TA1/5A-Ethernet,8MB Harmonics
S604E-80-ETH	Energy PLUS Network Analyser 80A-Ethernet,8MB log. Harmonics
S604E-ROG-MOD-30	Energy PLUS Network Analyser RS485 Modbus,8MB log.Arm.+3 Rogowski RC150 L= 30cm Øint.9,5cm
S604E-ROG-MOD-45	Network Analyser Kit Energy PLUS RS485 Modbus,8MB log.Arm.+3 Rogowski RC150 L= 45cm Øint.14cm
S604E-ROG-MOD-70	Energy PLUS Network Analyser RS485 Modbus,8MB log.Arm.+3 Rogowski RC150 L= 70cm Øint.22cm
S604E-ROG-ETH-30	Energy PLUS Network Analyser Ethernet,8MB log.Arm.+ 3 Rogowski RC150 L= 30 cm Øint. 9.5 cm
S604E-ROG-ETH-45	Energy PLUS Network Analyser Ethernet,8MB log.Arm.+ 3 Rogowski RC150 L= 45 cm Øint. 14 cm
S604E-ROG-ETH-70	Energy PLUS Network Analyser Ethernet,8MB log.Arm.+ 3 Rogowski RC150 L= 70 cm Øint. 22 cm
S711B6MOD	Basic Analyser TA1/5A RS485 1MB 1 DI/ 1 DO LCD
S711E6MOD	Energy Plus Analyser TA1/5A RS485 8MB DI/DO LCD
S711E6MODAO	Energy Plus Analyser TA1/5A RS485 8MB DI/DO 1AO LCD
S711E6ETH	Energy Plus Analyser TA1/5A ETHERNET 8MB DI/DO LCD
S711EROGMOD30	Energy Plus Analyser RS485 8MB+3ROG L30Ø10CM DI/DO LCD
S711EROGMOD45	Energy Plus Analyser RS485 8MB+3ROG L45Ø14CM DI/DO LCD
S711EROGMOD70	Energy Plus Analyser RS485 8MB+3ROG L70Ø22CM DI/DO LCD
S711EROGMOD30AO	Energy Plus Analyser 485 8MB+3ROG L30Ø10CM DI/DO/AO LCD
S711EROGMOD45AO	Energy Plus Analyser 485 8MB+3ROG L45Ø14CM DI/DO/AO LCD
S711EROGMOD70AO	Energy Plus Analyser 485 8MB+3ROG L70Ø22CM DI/DO/AO LCD
S711EROGETH30	Energy Plus ETH analyser. 8MB 3ROG L30Ø10CM DI/DO LCD
S711EROGETH45	Energy Plus ETH analyser. 8MB+3ROG L45Ø14CM DI/DO LCD
S711EROGETH70	Energy Plus ETH analyser. 8MB+3ROG L70Ø22CM DI/DO LCD

Code	Description
SOFTWARE	
E-POWER PACK	S604 Line multifunction network analyser management software
E-MODBUS PACK	500 Line energy counters management software with Modbus / Ethernet communication
E-M-BUS PACK	500 Line energy counters management software with M-BUS communication
ACCESSORIES	
RC150-025-100-3M	Rogowski Sensor L=25cm Øint.8cm,100mV/1KA-50Hz,cable L=3m.
RC150-035-100-3M	Rogowski Sensor L=35cm Øint.11cm,100mV/1KA-50Hz,cable L=3m.
RC150-040-100-3M	Rogowski Sensor L=40cm Øint.12cm,100mV/1KA-50Hz,cable L=3m.
RC150-060-100-3M	Rogowski Sensor L=60cm Øint.19cm,100mV/1KA-50Hz,cable L=3m.
RC150-090-100-3M	Rogowski Sensor L=90cm Øint.28cm,100mV/1KA-50Hz,cable L=3m
RC150-120-100-3M	Rogowski Sensor L=120cm Øint.38cm,100mV/1KA-50Hz,cable L=3m.
RC150-180-100-3M	Rogowski Sensor L=180cm Øint.57cm,100mV/1KA-50Hz,cable L=3m.
RC150-RIC-KIT30	Rogowski coil Kit Spare Part RC150 L= 30cm Ø int. 9.5 cm, 100mV/1KA-50Hz,cable L=3mt.
RC150-RIC-KIT45	Rogowski coil Kit Spare Part RC150 L= 45cm Ø int. 14 cm, 100mV/1KA-50Hz,cable L=3mt.
RC150-RIC-KIT70	Rogowski coil Kit Spare Part RC150 L= 70cm Ø int. 22 cm, 100mV/1KA-50Hz,cable L=3mt.
RC190-030-333-3M	Rogowski Sensor L=30cm Øint.9.5cm,333mV/1KA-50H,cable L=3m.

S604 / S711 LINE

Measuring parameters

Instant values		Base	Energy Plus
VOLTAGE	VL1-N - VL2-N - VL3-N - VL1-L2 - VL2-L3 - VL3-L1 - VΣ [V]	●	● MAM
CURRENT (+/-)	IL1 - IL2 - IL3 - IN - IΣ [A]	●	● MAM
ACTIVE POWER (+/-)	PL1 - PL2 - PL3 - PΣ [W] AVG	● AVG	● MAM
REACTIVE POWER (+/-)	QL1 - QL2 - QL3 - QΣ [var] AVG	● AVG	● MAM
APPARENT POWER (+/-)	SL1 - SL2 - SL3 - SΣ [VA]	●	● MAM
POWER FACTOR (ind&cap)	PFL1 - PFL2 - PFL3 - PFΣ	●	● MAM
DPF (+/-)	DPFL1 - DPFL2 - DPFL3 MAM		● MAM
TANGENT Ø (+/-)	TANØL1 - TANØL2 - TANØL3 - TANØΣ	●	● MAM
VOLTAGE THD	THDVL1 - THDVL2 - THDVL3 - THDVL1-L2 - THDVL2-L3 - THDVL3-L1 [V]	●	● MAM
CURRENT THD	THDAL1 - THDAL2 - THDAL3 - THDAN [A]	●	● MAM
FREQUENCY	f [Hz]	●	● MAM
ORDER OF PHASES	Ph	●	●
AVERAGE VALUES (DMD)			
AVERAGE CURRENT (abs)	IL1DMD - IL2DMD - IL3DMD - INDMD - IΣDMD [A]		●
AVERAGE ACTIVE POWER (imp&exp)	PL1DMD - PL2DMD - PL3DMD - PΣDMD [W]	●	●
BALANCE OF THE AVERAGE VALUES OF THE SYSTEM ACTIVE POWER (+/-)	PΣDMDBAL [W]		●
AVERAGE REACTIVE POWER (imp&exp)	QL1DMD - QL2DMD - QL3DMD - QΣDMD [var]	●	●
BALANCE OF THE AVERAGE VALUES OF THE SYSTEM REACTIVE POWER (+/-)	QΣDMDBAL [var]		●
AVERAGE APPARENT POWER (imp&exp)	SL1DMD - SL2DMD - SL3DMD - SΣDMD [VA]		●
BALANCE OF THE AVERAGE VALUES OF THE SYSTEM APPARENT POWER (+/-)	SΣDMDBAL [VA]		●
AVERAGE POWER FACTOR (ind&cap)	PFL1DMD - PFL2DMD - PFL3DMD - PFΣDMD		●
MAXIMUM VALUES			
MAXIMUM VOLTAGE	VL1-NMAX - VL2-NMAX - VL3-NMAX - VL1-L2MAX - VL2-L3MAX - VL3-L1MAX - VΣMAX [V]	●	●
MAXIMUM CURRENT (abs)	IL1MAX - IL2MAX - IL3MAX - INMAX - IΣMAX [A]	●	●
MAXIMUM ACTIVE POWER (imp&exp)	PL1MAX - PL2MAX - PL3MAX - PΣMAX [W]		●
MAXIMUM REACTIVE POWER (imp&exp)	QL1MAX - QL2MAX - QL3MAX - QΣMAX [var]		●
MAXIMUM APPARENT POWER (imp&exp)	SL1MAX - SL2MAX - SL3MAX - SΣMAX [VA]		●
MAXIMUM POWER FACTOR (ind&cap)	PFL1MAX - PFL2MAX - PFL3MAX - PFΣMAX		●
MAXIMUM Ø TANGENT (imp&exp)	TANØL1MAX - TANØL2MAX - TANØL3MAX - TANØΣMAX		●
MAXIMUM VOLTAGE THD	THDVL1MAX - THDVL2MAX - THDVL3MAX - THDVL1-L2MAX - THDVL2-L3MAX - THDVL3-L1MAX [V]		●
MAXIMUM CURRENT THD	THDAL1MAX - THDAL2MAX - THDAL3MAX - THDANMAX [A]		●
MAXIMUM AVERAGE CURRENT (DMD)	IL1MAXDMD - IL2MAXDMD - IL3MAXDMD - IΣMAXDMD [A]		●
MAXIMUM AVERAGE ACTIVE POWER (DMD) (imp&exp)	PL1MAXDMD - PL2MAXDMD - PL3MAXDMD - PΣMAXDMD [W]	●	●
MAXIMUM AVERAGE REACTIVE POWER (DMD) (imp&exp)	QL1MAXDMD - QL2MAXDMD - QL3MAXDMD - QΣMAXDMD [var]	●	●
MAXIMUM AVERAGE APPARENT POWER (DMD) (imp&exp)	SL1MAXDMD - SL2MAXDMD - SL3MAXDMD - SΣMAXDMD [VA]		●
MINIMUM VALUES			
MINIMUM ACTIVE POWER	PΣMIN [W]	●	●
MINIMUM REACTIVE POWER	QΣMIN [var]	●	●
MINIMUM APPARENT POWER	SΣMIN [VA]	●	●
COUNTERS			
ACTIVE ENERGY (imp & exp)	kWhL1 - kWhL2 - kWhL3 - kWhΣ [Wh]	●	● EC
BALANCE OF SYSTEM ACTIVE ENERGY	kWhΣBAL [Wh]	●	● EC
REACTIVE ENERGY (imp&exp) (ind&cap)	kvarhL1 - kvarhL2 - kvarhL3 - kvarhΣ [varh]	●	● EC
BALANCE OF SYSTEM REACTIVE ENERGY (ind&cap)	kvarhΣBAL [varh]	●	● EC
APPARENT ENERGY (imp&exp) (ind&cap on request)	kVAhL1 - kVAhL2 - kVAhL3 - kVAhΣ [VAh]	●	● EC
BALANCE OF SYSTEM APPARENT ENERGY (ind&cap on request)	kVAhΣBAL [VAh]	●	● EC
INSTALLATION COUNTER	HRCNTi [h]		●
MEASURING COUNTER	HRCNTm [h]		●
HARMONIC ANALYSIS UP TO THE 15TH			
VOLTAGE HARMONICS	VL1-N - VL2-N - VL3-N - VL1-L2 - VL2-L3 - VL3-L1 [V]		● MAM
CURRENT HARMONICS	IL1 - IL2 - IL3 - IN [A]		● MAM

KEY
● = Standard
AVG = Parameters for recording average (fixed) values
MAM = Parameters for recording MIN/MED/MAX values (up to 24 programmable parameters)
EC = Parameters for recording energy meters (fixed)
imp&exp = Separate values for imported and exported
abs = Absolute value
ind&cap = Separate values for inductive and capacitive
DMDBAL = Difference between positive mean value and negative mean value: [DMD+] - [DMD-]
BAL = Difference between the imported value and the exported value: [imp] - [exp]

ROGOWSKI SENSORS

3

3.3

RC150 / RC190

A flexible coil without a toroid-shaped magnetic core is placed around the current conductor. The variable magnetic field produced by the current induces a voltage in the coil.

The output voltage is proportional to the rate of variation of the current and, after an integrating circuit, is proportional to the actual value of the current (as for an amperometric transformer). The length of the reel varies from 25 to 300 cm for a reduced cord diameter up to about 8 mm..

TECHNOLOGY

HIGHLIGHTS

- Coupling point insensitive both to the position of the internal conductor and to the currents of external conductors
- Coil and cable shielded against electromagnetic noise

ENGINEERING

- Reel diameter reduced by up to approximately 8 mm
- High flexibility

CALIBRATION

- Better than 1% accuracy even close to the reel closing point
- Calibration point easily accessible for recalibration

OPTIMAL CLOSURE

- Safe closure even in the presence of vibrations and/or tractions
- Stable closure that ensures measurement repeatability

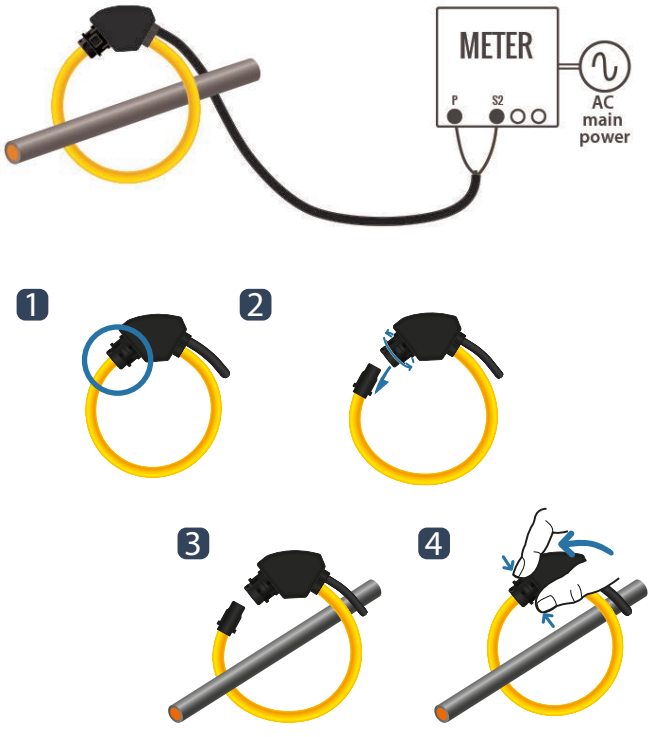
INSTALLATION

- Applications with difficult access
- Non-intrusiveness in the measuring circuit

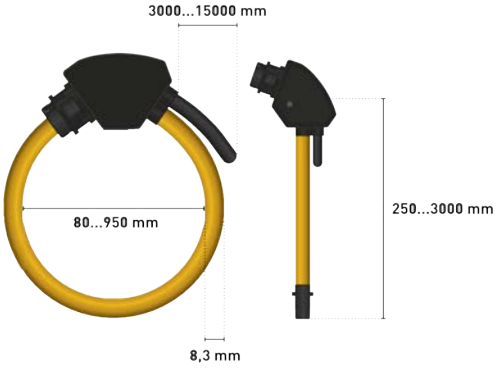
TYPICAL APPLICATIONS

- High current measurement
- Harmonic supervision, transients, machinery load, power and consumption
- Laboratory measuring instruments
- Control of welding machines

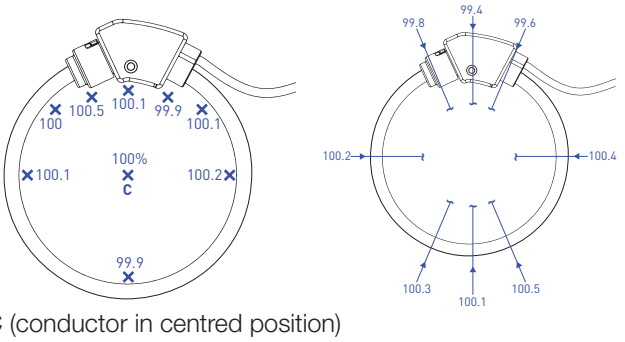
INSTALLATION PHASES



DIMENSIONS



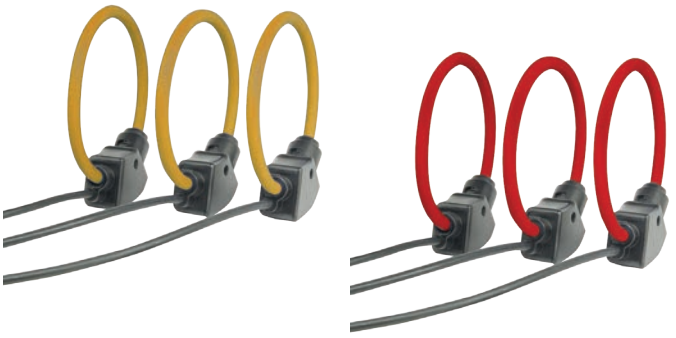
ACCURACY RANGE



C (conductor in centred position)

HIGH EFFICIENCY ROGOWSKI FLEXIBLE TRANSDUCERS

RC150 / RC190

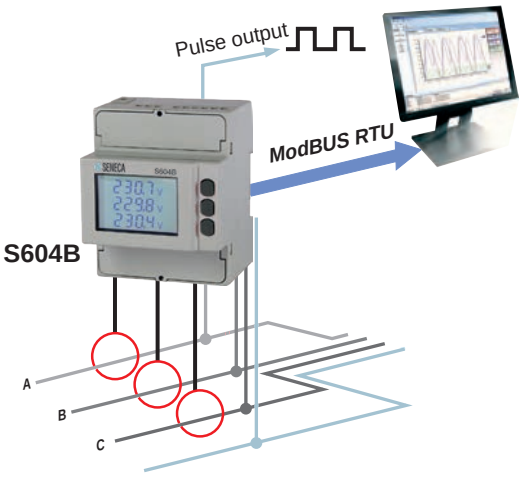


Suitable for measuring currents from mA to hundreds of kA, the RC150 and RC190 line ensure high linearity, wide dynamic range and are very useful with large or irregularly shaped conductors. Lightness and flexibility make them optimal even in locations with reduced access.
The transducers do not present dangers for open secondaries and cannot be damaged by large overloads. The absence of a magnetic core gives this range a very wide frequency response. All these factors makes them particularly suitable for the measurement of harmonic or transient content.
The bayonet lock equipped with electronics ensures linear detection at any distance between the conductor and transducer, even if not perpendicular to each other.

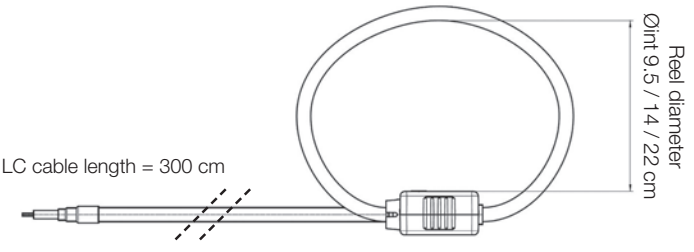
TECHNICAL SPECIFICATIONS

GENERAL DATA	
Reel length	From 25 to 180 cm (for the RC150 versions) From 30 to 180 cm (for the RC190 versions)
Reel diameter	From 8 ±0,2 mm to 57cm (RC150) From 12 ±0,2 mm to 57cm (RC190)
Cable length	3 m
Bayonet	Closure
IP67	Protection degree
Material	UL94-V0 Thermoplastic
Operational Temperature	-30..+80°C
Weight	from 150 to 500 g
ELECTRICAL SPECIFICATIONS	
Output level (RMS)	100 mV / 1 kA @50 Hz (standard) (RC150) 333 mV / 1 kA @50 Hz (standard) (RC190)
Transducer resistance	70..900 Ω (RC150) 300..2.000 Ω (RC190)
Accuracy	Better than ±1% of reading (with a conductor diameter of 15 mm) across the entire diameter of the coil
Frequency	from approx. 40 Hz to 20 kHz
Work voltage	1.000 Vrms CAT III, 600 Vrms CAT IV, contamination degree 2
Voltage test	7.400 Vrms / 1 min
STANDARD	
Certification	EC

APPLICATION EXAMPLE



KIT / SPARE PARTS AND ACCESSORIES



S604E-ROG and S711EROG are supplied in KITS combined with 3 Rogowski coils available with 3 different circumferences (30, 45, 70 cm).

Kit / Coil length	Order coil	Øint (inner diameter)	Length cable
30 cm	S604B-ROG-MOD-30 S604E-ROG-MOD-30 S604E-ROG-ETH-30	9.5 cm	300 cm
45 cm	S604B-ROG-MOD-45 S604E-ROG-MOD-45 S604E-ROG-ETH-45	14 cm	300 cm
70 cm	S604B-ROG-MOD-70 S604E-ROG-MOD-70 S604E-ROG-ETH-70	22 cm	300 cm

ORDER CODE

Code	Description
RC150-025-100-300	Rogowski translator with coil length 25cm, output 100mV/kA 50-60Hz, length. Cable 3 m
RC150-035-100-300	Rogowski translator with coil length 35cm, output 100mV/kA 50-60Hz, length. Cable 3 m
RC150-040-100-300	Rogowski translator with coil length 40cm, output 100mV/kA 50-60Hz, length. Cable 3 m
RC150-060-100-300	Rogowski translator with coil length 60cm, output 100mV/kA 50-60Hz, length. Cable 3 m
RC150-090-100-300	Rogowski translator with coil length 90cm, output 100mV/kA 50-60Hz, length. Cable 3 m
RC150-120-100-300	Rogowski translator with coil length 120cm, output 100mV/kA 50-60Hz, length. Cable 3 m
RC150-180-100-300	Rogowski translator with coil length 180cm, output 100mV/kA 50-60Hz, length. Cable 3 m
RC190-030-333-300	Rogowski translator with coil length 30cm, output 333mV/kA 50-60Hz, length. Cable 3 m
RC190-035-333-300	Rogowski translator with coil length 35cm, output 333mV/kA 50-60Hz, length. Cable 3 m
RC190-060-333-300	Rogowski translator with coil length 60cm, output 333mV/kA 50-60Hz, length. Cable 3 m
RC190-090-333-300	Rogowski translator with coil length 90cm, output 333mV/kA 50-60Hz, length. Cable 3 m
RC190-120-333-300	Rogowski translator with coil length 120cm, output 333mV/kA 50-60Hz, length. Cable 3 m
RC190-180-333-300	Rogowski translator with coil length 180cm, output 333mV/kA 50-60Hz, length. Cable 3 m

The technical data and the diagrams in this document are indicative and not binding.

ENERGY METERS

3

3.4

S500 Line

ENERGY COUNTERS

The S500 Line energy counters in DIN format are used for energy measurement in industrial and civil environments. They are available with integrated, remote and MID certification. The totalisers and instantaneous powers are shown on the LCD display. For remote management the ENERGY MODBUS PACK tools are available for counters with ModBUS interface and ENERGY M-BUS PACK for counters with M-BUS interface as well as the Web Server for versions with Ethernet interface. The S500 counters are built in complete compliance with the EN 50470-1 standard. The accuracy of the active energy refers to the standard IEC/EN 62053-21 class 1. The accuracy of the reactive energy refers to the IEC/EN 62053-23 class 2.

HIGHLIGHTS

M-BUS COMMUNICATION

- Standard for remote reading of energy counters, sensors and actuators
- Simplified 2-wire bus connection
- High number of network nodes (max 250 per branch)

MID CERTIFICATION

- Tools suitable for tax use
- European Directive 2014/22/EC for measuring instruments
- Additional metrology marking

S0 OUTPUT / TARIFF INPUT

- Nr 1 input tariff
- Nr 2 S0 outputs for re-emission of energy pulses

COMMUNICATION PROTOCOLS

- External communication modules with lateral optical port or integrated in the module
- Support for ModBUS, Ethernet, M-BUS and Konnex protocols

ACCURACY

- Active Energy: class B, EN 50470-3
- Reactive Energy: class 2 IEC EN 62053-23

CONNECTIONS

- For 3/4-wire networks with balanced/ unbalanced load
- Current: direct connection or via AT
- Single-phase / Three-phase voltages

CONFIGURATION

- Via front keys
- Software ENERGY MODBUS PACK
- Software ENERGY M-BUS PACK
- Web Server

TYPICAL APPLICATIONS

- Energy totalisation for industrial machinery
- Remote consumption monitoring
- Energy distribution
- Energy and tax accounting

500 LINE

	S501-40	S502-80	S504C	S534
	 MID	 MID	 MID	 MID
	40A single-phase energy meter, 2 wires, 1 DIN, certif. MID	**80A single-phase energy meter, 2 wires, 2 DIN, certif. MID**	**6A/80A three-phase energy meter, 4 wires, 4 DIN, integrated communication, certif. MID**	**6A/80A three-phase energy meter, 3/4 wires, 4 DIN, certif. MID**
GENERAL DATA				
Power supply	Voltage derived from the measurement circuit	Voltage derived from the measurement circuit	Voltage derived from the measurement circuit	Voltage derived from the measurement circuit
Max consumption	1.5 VA - 1 W	7.5 VA - 0.5 W (for single phase)	7.5 VA - 0,5 W (for single phase) - M-BUS version 3.5 VA - 1 W (for single phase) -Modbus/Ethernet version	7.5 VA - 0.5 W (for single phase)
Accuracy	Active energy class 1 according to IEC/EN 62053-21 and class B according to EN 50470-3 (MID) Reactive energy class 2 according to IEC/EN 62053-23	Active energy class B according to EN 50470-3 Reactive energy class 2 according to IEC/EN 62053-23	Active energy class B according to EN 50470-3 Reactive energy class 2 according to IEC/EN 62053-23	Active energy class B according to EN 50470-3 Reactive energy class 2 according to IEC/EN 62053-23
Tariff input	-	Active opto-isolated Voltage range for tariff 2: 80..276 Vac/dc	Active opto-isolated Voltage range for tariff 2: 80..276 Vac/dc	Active opto-isolated Voltage range for tariff 2: 80..276 Vac/dc
Metrologic LED	Meter constant 5000 imp/kWh Pulse duration 4±0.1 ms	Meter constant 1000 imp/kWh	Meter constant 10000 imp/kWh Pulse duration 10±2 ms	Meter constant 10000 imp/kWh Pulse duration 10±2 ms
Meter reset	Optional	Optional		Optional
Operational Temperature	-25..+55°C	-25..+55°C	-25..+55°C	-25..+55°C
Protection degree	IP51 (front), IP20 (terminals)	IP51 (front), IP20 (terminals)	IP51 (front), IP20 (terminals)	IP51 (front), IP20 (terminals)
Dimension	18x90x64 mm	36x90x64 mm	72x90x64 mm	72x90x64 mm
VOLTAGE				
Nominal value	230 V, 50-60 Hz	230 V 50 Hz 240 V 50 Hz 230 V 50/60 Hz 230..240 V 50/60 Hz	3x230/400..3x240/415 V 50/60 Hz	3x230/400 V 50 Hz 3x240/415 V 50 Hz 3x230/400 V 50/60 Hz 3x230/400..3x240/415 V 50/60 Hz
CURRENT				
1st start-up current	20 mA	20 mA	2 mA (S504C-6) / 20 mA (S504C-80)	2 mA (S534-6) / 20 mA (S534-80)
Imin minimum current	250 mA	250 mA	10 mA (S504C-6) / 250 mA (S504C-80)	10 mA (S534-6) / 250 mA (S534-80)
Itr transition current	500 mA	500 mA	50 mA (S504C-6) / 500 mA (S504C-80)	50 mA (S534-6) / 500 mA (S534-80)
Iref reference current (Ib)	5 A	5 A	1 A (S504C-6) / 5 A (S504C-80)	1 A (S534-6) / 5 A (S534-80)
Imax maximum current	40 A	80 A	6 A (S504C-6) / 80 A (S504C-80)	6 A (S534-6) / 80 A (S534-80)
S0 OUTPUTS / ENERGY PULSE EMISSION				
Qty/Type	1 opto-isolated passive	2 opto-isolated passives	2 opto-isolated passives	2 opto-isolated passives
Maximum values	27 Vdc - 27 mA	250 Vac/dc - 100 mA	27 Vdc - 27 mA	250 Vac/dc - 100 mA
Pulse duration	100±0.5 ms	50±2 ms	50±2 ms	50±2 ms
Meter constant	1000 imp/kWh	-	-	-
COMMUNICATION				
Protocols supported	ModBUS, M-BUS, Ethernet	ModBUS, M-BUS, Ethernet, Konnex	ModBUS, M-BUS, Ethernet	ModBUS, M-BUS, Ethernet, Konnex
ModBUS communication	RS485 port, Modbus RTU/ASCII, 30..57600 bps	-	RS485 port, Modbus RTU/ASCII, 30..57600 bps	-
M-BUS Communication	EN 1434-3 wired port, M-BUS, 300..38400 bps	-	EN 1434-3 wired port, M-BUS, 300..38400 bps	-
Ethernet Communication	10/100BaseT, http, Ntp, Dhcp, Modbu TCP, 10/100 Mbps, data recording, web server	-	10/100BaseT, http, Ntp, Dhcp, Modbu TCP, 10/100 Mbps, data recording, web server	-
Type	Integrated / Via external interface	Via external interface	Integrated	Via external interface
CONFIGURATION				
Front keys	Yes	Yes	Yes	Yes
Software PC Windows	E-MODBUS-PACK, E-MBUS-PACK	E-MODBUS-PACK, E-MBUS-PACK	E-MODBUS-PACK, E-MBUS-PACK	E-MODBUS-PACK, E-MBUS-PACK
STANDARD				
Certifications	EC, MID	EC, MID	EC, MID	EC, MID

The technical data and the diagrams in this document are indicative and not binding.

S500 LINE - PROGRAMMING

FRONT KEYS

By using the front keys on all the models the following functions can be performed:

- **Scroll pages and groups**
- **Temporary display of secondary values**
- **Access / exit of programming pages**
- **Start / stop / reset partial counter**
- **Parameters setting**
- **Display test**

WEBSERVER

All S500 Line Ethernet meters with integrated or external COM have an accessible WEB SERVER available via protected connection.
The WEB SERVER makes available the values present in the module and defines a registration with file that can be exported to .csv.

ENERGY MODBUS PACK

Free download from www.seneca.it

Models with Modbus communication can be configured via the ENERGY MODBUS PACK software package downloadable from www.seneca.it.

- **Serial port setting**
- **Search / add counters on the network**
- **Configuration of the network parameters for a single counter**

ENERGY M-BUS PACK

Free download from www.seneca.it

Models with M-BUS communication can be configured via the ENERGY M-BUS PACK software package downloadable from www.seneca.it.

- **Serial port setting**
- **Search / add counters on the network**
- **Configuration of the network parameters for a single counter**

ORDER CODE

Code	Description
COUNTERS	
S501-40-0	Energy meter 40A single-phase 2-wire 1 DIN
S501-40-0-MID	Energy Meter 40A single-phase 2-wire 1 DIN, cert. MID
S501-40-MOD-MID	Energy Meter 40A single-phase 2-wire 1 DIN, RS485 Modbus, cert. MID
S501-40-MBU-MID	Energy Meter 40A single-phase 2-wire 1 DIN, M-Bus, cert. MID
S502-80-MOD	Energy Meter 80A single-phase 2-wire 2 DIN, RS485 Modbus
S502-80-MBU	Energy Meter 80A single-phase 2-wire 2 DIN, M-BUS
S502-80-ETH	Energy Meter 80A single-phase 2-wire 2 DIN, Ethernet
S502-80-MID	Energy Meter 80A single-phase 2-wire 2 DIN, certif. MID
S502-80-R	Energy Meter 80A single-phase 2-wire 2 DIN, reset all counters
S504C-6-MOD-MID	Energy Meter 1/5A single-phase 4-wire 4 DIN-RS485 Modbus, certif. MID
S504C-6-MBU-MID	Energy Meter 1/5A three-phase 3/4 wire 4 DIN-MBus, certif. MID
S504C-6-ETH-MID	Energy Meter 1/5A three-phase 4 wire 4 DIN-Ethernet, certif. MID
S504C-80-MOD-MID	Energy Meter 80A three-phase 4-wire 4 DIN-RS485 Modbus, certif. MID
S504C-80-MBU-MID	Energy Meter 80A three-phase 4 wire 4 DIN-MBus, certif. MID
S504C-80-ETH-MID	Energy Meter 80A three-phase 4 wire 4 DIN-Ethernet, certif. MID
S534-6-MID	Energy Meter 1/5A three-phase 3/4 wire 4 DIN, certif. MID
S534-80-MID	Energy Meter 80A three-phase 3/4 wire 4 DIN, certif. MID
ACCESSORIES	
S107USB	Serial converter USB/RS485 portable
S117P1	Configuration kit K121, K120RTD, K111, T120, T121 - Serial converter RS232-TTL-RS485/USB portable
S107MBU	USB - M-BUS Converter / adapter, portable version
S500-MOD	Optical communication interface - RS485 Modbus Rtu standard
S500-MBU	Optical communication interface - M-Bus
S500-ETH	Optical communication interface - LAN Modbus TCP-IP, web server
S500-KNX	Optical communication interface – KNX (Konnex)
SOFTWARE	
E-MODBUS PACK	500 Line energy meter management software with Modbus / Ethernet communication
E-M-BUS PACK	500 Line energy meter management software with M-BUS communication

S501 LINE

Measuring parameters	Symbol	UoM/Status	Display	COM Port
Instant values				
Voltage	V	V	●	●
Current	I	A	■	■
Power factor	PF		■	■
Active power	P	kW	■	■
Apparent power	S	kVA	■	■
Reactive power	Q	kvar	■	■
Frequency	f	Hz	●	●
Power direction	↔ display) +/- (port)		●	●
Stored Data				
Active energy		kWh	■	■
Apparent inductive and capacitive energy		kVAh	■	■
Inductive and capacitive reactive energy		kvarh	■ ◊	■
Resettable energy meters (NO MID)		kWh, kVAh, kvarh	■ ◊	■
Partial resettable energy meters		kWh, kVAh, kvarh	■ ◊	■
Other information				
Partial counters status	P	Started / Stopped	●	●
S0 output status	●	Active	●	

KEY

● = Present

■ = Bidirectional value

◊ = varh not available for MID S instrument

LINE S502

Measuring parameters	Symbol	UoM / Status	Display	COM port
Instant values				
Voltage	V	V		●
Current	I	A		■
Power factor	PF			■
Active power	P	kW	■	■
Apparent power	S	kVA	■	■
Reactive power	Q	kvar	■	■
Frequency	f	Hz		●
Power direction	↔		●	●
Stored Data				
Active energy		kWh	■	■
Apparent inductive and capacitive energy		kVAh	■ ◊	■ ◊
Inductive and capacitive reactive energy		kvarh	■	■
Energy meters T1 /T2 tariffs		kWh, kVAh, kvarh	■ ◊	■
Partial resettable energy meters		kWh, kVAh, kvarh	■ ◊	■
Energy balance		kWh, kVAh, kvarh	■ ◊	■
Other information				
Current tariff	T	1/2		●
Voltage above/below the limit	VOL, VUL	ON/OFF		●
Current above/below the limit	IOL, IUL	ON/OFF		●
Frequency above/below the limit	fOL, fUL	ON/OFF		●
Partial counters	PARA.	START/STOP	●	●
Status of the S0 outputs	1, 2	Active / Inactive	●	

KEY

● = Present

■ = Bidirectional value

◊ = varh not available for MID S instrument

S504C - S534 LINE

Measuring parameters	Symbol	UoM / Status	Display	COM port	3-wire system	4-wire system
Instant values						
Phase voltage	VL1-N - VL2-N - VL3-N	V		●		●
Line voltage	VL1-L2 - VL2-L3 - VL3-L1	V		●	●	●
System voltage	VΣ	V		●	●	●
Phase current	I1 - I2 - I3	A		■	●	●
Neutral current	IN	A		■		●
System current	I	A		■	●	●
Phase power factor	PFL1 - PFL2 - PFL3	-		●		●
System power factor	PFΣ	-		●	●	●
Phase apparent power	SL1 - SL2 - SL3	VA (kVA)	■	■		●
System apparent power	SΣ	VA (kVA)	■	■	●	●
Phase active power	PL1 - PL2 - PL3	W (kW)	■	■		●
System active power	PΣ	W (kW)	■	■	●	●
Phase reactive power	QL1 - QL2 - QL3	var (kvar)	■	■		●
System reactive power	QΣ	var (kvar)	■	■	●	●
Frequency	f	Hz		●	●	●
Order of phases	CW/CCW	-	●	●	●	●
Energy direction	↔	-	●	●	●	●
Stored Data						
Phase active energy	L1 - L2 - L3	Wh (kWh)	■	■		●
System active energy	Σ	Wh (kWh)	■	■	●	●
Phase inductive and capacitive reactive energy	L1 - L2 - L3	varh (kvarh)	■ ◊	■		●
System inductive and capacitive reactive energy	Σ	varh (kvarh)	■ ◊	■	●	●
Phase inductive and capacitive apparent energy	L1 - L2 - L3	VAh (kVAh)	■	■		●
System inductive and capacitive apparent energy	Σ	VAh (kVAh)	■	■	●	●
Phase active energy tariff 1/2	L1 - L2 - L3	Wh (kWh)	■	■		●
System active energy tariff 1/2	Σ	Wh (kWh)	■	■	●	●
Phase inductive and capacitive reactive energy tariff 1/2	L1 - L2 - L3	varh (kvarh)	■ ◊	■		●
System inductive and capacitive reactive energy tariff 1/2	Σ	varh (kvarh)	■ ◊	■	●	●
Phase inductive and capacitive apparent energy tariff 1/2	L1 - L2 - L3	VAh (kVAh)	■	■		●
System inductive and capacitive apparent energy tariff 1/2	Σ	VAh (kVAh)	■	■	●	●
Partial resettable energy meters	Σ	Wh, varh, VAh (kWh, kvarh, kVAh)	■ ◊	■	●	●
Energy balance	Σ	Wh, varh, VAh (kWh, kvarh, kVAh)	■ ◊	■	●	●
Other information						
Current tariff	T	1/2		●		
Secondary values	SEC	ON/OFF	●	●		
AT Report	AT	Set value	●	●		
Voltage above/below the limit	VOL, VUL	ON/OFF		●		
Current above/below the limit	IOL, IUL	ON/OFF		●		
Frequency out of range	fOUT	ON/OFF		●		
Partial counters	PARA.	START/STOP	●	●		
Status of the S0 outputs	1, 2	Active	●			

KEY
● = Present
■ = Bidirectional value
◊ = varh not available for MID S instrument

CURRENT TRANSDUCERS

3

3.5

AC/DC current transducers

T201 Line AC/DC Current Transducers are devices that convert the measured current value (up to 600A) into a standardised 4..20mA or 0..10V industrial signal. Most **T201 Line** models are UL certified and are characterised by low power consumption, comfortable measurement scales that can be set by means of DIP-switches and a high accuracy guaranteed by the absence of thermal drift. 15 models with different measurement principles are available: rectified medium, magnetic balancing (with patented technology), Hall effect or TRMS with bipolar input range. A number of models are equipped with an RS485 interface with the support of the ModBUS RTU protocol.

HIGHLIGHTS

INPUT

Wide range current input selectable via DIP switch up to 300 A, mono or bi-polar scales

OUTPUT

- No.1 Analog output 4-20 mA (2 wires) / (0-10 V)
- No.1 PNP active alarm digital output, 40 mA max (alternative to the analog channel)

CONFIGURATION

- DIP switch (address, baud rate, type of measurement, measurement scales)
- Software - Communication and measurement parameters, filters, tests, data logs
- Data archiving and exporting

COMMUNICATION INTERFACES

RS485 / USB / MODBUS RTU

MEASUREMENT OPTIONS

- Magnetic induction (patented technology)
- Hall Effect
- AC/DC TRMS
- Bipolar

ACCURACY CLASS

0.2..0.5%

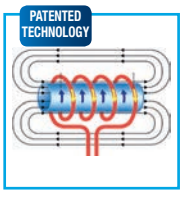
POWER SUPPLY AND CONSUMPTIONS

- Power supply on measurement loop / auxiliary power supply
- Consumption < 21 mA

CERTIFICATIONS

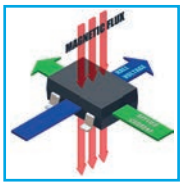
- EC, UL
- Patented measured technology

MEASUREMENT PRINCIPALS



MAGNETIC INDUCTION

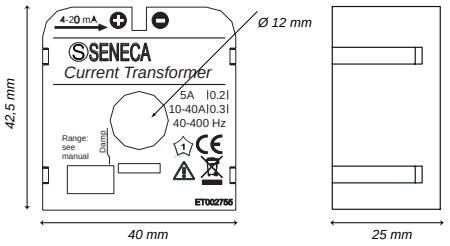
The transducers that take advantage of magnetic induction measurement technology (international patent SENECA No. PD2009A000005) are long-lasting devices thanks to the measurement principle that avoids thermal drifts and which exploits the generation of a current induced at the output of the transducer, through variation of a magnetic field. Their direct use is possible without external shunts, also for pulsed currents.



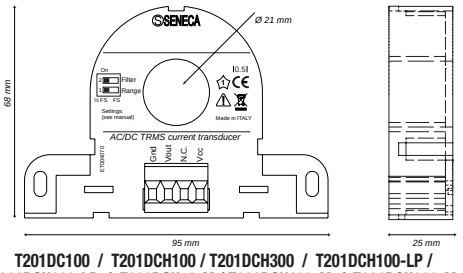
HALL EFFECT

In Hall Effect measuring transducers, when a magnetic field is applied perpendicular to a conductor, a voltage transversal to the direction of current flow is generated. Hall effect transducers are used as an alternative to shunts when high voltages and galvanic isolation are involved.

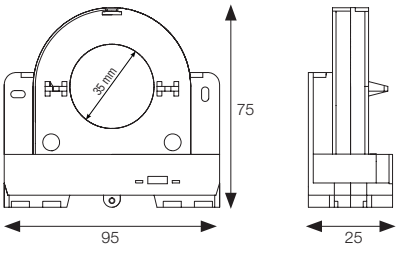
DIMENSIONS



T201 / T201DC / T201DCH / T201DCH-LP



T201DC100 / T201DCH100 / T201DCH300 / T201DCH100-LP / T201DCH300-LP / T201DCH50-M / T201DCH100-M / T201DCH300-M T201DCH50-MU / T201DCH100-MU / T201DCH300-MU



T201DCH600-MU

AC/DC CURRENT TRANSDUCERS WITH 4..20 mA OUTPUT

	T201	T201DC	T201DC100
		PATENTED TECHNOLOGY 	PATENTED TECHNOLOGY 
	Alternate current transformer 0..40 Aac, 8 input scales, output 4..20 mA loop powered	**Bipolar DC transducer 0..40 Adc, 8 input scales, 4..20 mA output, patented inductive measurement technology**	**Bipolar DC transducer 0..100 Adc, 8 input scales, 4..20 mA output, patented inductive measurement technology**
GENERAL DATA			
Power supply	Loop powered (5..28 Vdc)	Loop powered (6..100 V)	Loop powered (6..100 V)
Consumption	< 21 mA	< 21 mA	< 21 mA
Isolation and protections	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
Front LED	-	-	-
Surge category	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)
Measurement polarity	Positive (label site entry current)	Positive (label site entry current)	Positive (label site entry current)
Protection degree	IP20	IP20	IP20
Accuracy class	AC: 0.2% f.s.	DC: 0.2% f.s.	DC: 0.2% f.s.
Configuration	DIP switch	DIP switch	DIP switch
Data Log	-	-	-
Operating temperature	-20..+70°C	-20..+70°C	-20..+70°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10rH..90% non-condensing	10rH..90% non-condensing	10rH..90% non-condensing
Altitude	Up to 2,000 m above sea level	Up to 2,000 m above sea level	Up to 2,000 m above sea level
Connections	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2
Passing hole diameter	12.3 mm	12.3 mm	20.8 mm
Dimension (lxhxd)	41x44x26 mm	41x44x26 mm	95x68x26 mm
Installation	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories
Container	PA6, black	PA6, black	PA6, black
Weight	47 g	47 g	120 g
COMMUNICATION			
Communication port	-	-	-
Protocol	-	-	-
Speed	-	-	-
INPUT DATA			
Channels	1	1	1
Range	5, 10, 15, 20, 25, 30, 35, 40 A	Single pole 0..5, 0..10, 0..20.0.. 40 A Bipolar -5..5, -10..10, -5..20, -10..40 A	Single pole 0..10, 0..25, 0..50, 0..100 A Bipolar -10..10, -25..25, -10..50, -25..100 A
Type of Measurement	Adjusted average	Magnetic balancing	Magnetic balancing
Bipolar balancing	No	Yes	Yes
Hysteresis			
Overload	800 A	800 A	2000 A (impulsive)
Passing band	20..1,000 Hz	N/A	N/A
Crest factor	2	1.2	1.2
OUTPUT DATA			
Channels	1	1	1
Range	4..20 mA (2 wires)	4..20 mA (2 wires)	4..20 mA (2 wires)
Resolution	infinite	12 bit	12 bit
Max load	< 5000 Ohm @ 100 Vdc	-	-
Error for EMI	< 40µA	< 50µA	< 50µA
Thermal drift	< 150 ppm/K	< 150 ppm/K	< 150 ppm/K
Response time	100 ms (without filter) 2.5 s (with filter)	100 ms (without filter) 600 ms (with filter)	100 ms (without filter) 600 ms (with filter)
STANDARD			
Certifications	EC, UL-UR	EC, UL-UR, European patent	EC, UL-UR European patent

The technical data, diagrams and images are to be considered indicative and not binding

HALL EFFECT CURRENT TRANSDUCERS WITH 0..10 V OUTPUT

	T201DCH	T201DCH100	T201DCH300
	HALL EFFECT 	HALL EFFECT 	HALL EFFECT 
	Transducer with continuous or alternate current (± 50 A) with Hall TRMS effect with 0..10 V output	**Transducer with continuous or alternate current (± 100 A) with Hall TRMS effect with 0..10 V output**	**Transducer with continuous or alternate current (± 300 A) with Hall TRMS effect with 0..10 V output**
GENERAL DATA			
Power supply	10..28 Vdc	12..28 Vdc	12..28 Vdc
Consumption	< 25 mA	< 25 mA	< 25 mA
Isolation and protections	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
Front LED	-	-	-
Surge category	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)
Measurement polarity	Positive (label site entry current)	Positive (label site entry current)	Positive (label site entry current)
Protection degree	IP20	IP20	IP20
Accuracy class	0.5% f.s. (DC bipolar, AC TRMS)	0.5% f.s. (DC bipolar, AC TRMS)	0.5% f.s. (DC bipolar, AC TRMS)
Configuration	DIP switch	DIP switch	DIP switch
Operating temperature	-10..+70°C	-20..+70°C	-20..+70°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10rH..90% non-condensing	10rH..90% non-condensing	10rH..90% non-condensing
Altitude	Up to 2,000 m above sea level	Up to 2,000 m above sea level	Up to 2,000 m above sea level
Connections	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2
Passing hole diameter	12.3 mm	20.8 mm	20.8 mm
Dimension (lxhxd)	54 x 41 x 30 mm	95x68x26 mm	95x68x26 mm
Installation	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories
Container	PA6, black	PA6, black	PA6, black
Weight	47 g	120 g	120 g
COMMUNICATION			
Communication port	-	-	-
Protocol	-	-	-
Speed	-	-	-
INPUT DATA			
Channels	1	1	1
Range	0..25, 0..50 Aac/dc TRMS	0-50 A, 0-100 Aac/dc TRMS ±50 A, ±100 A Bipolar	0-150 A, 0-300 Aac/dc TRMS ±150 A, ±300 A Bipolar
Type of Measurement	AC/DC TRMS	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar balancing	No	Yes	Yes
Hysteresis	0.1% f.s.	0.1% f.s.	0.1% f.s.
Overload	300 A continuous; 2,000 A impulsive	300 A continuous; 2,000 A impulsive	500 A continuous; 2,000 A impulsive
Passing band	1 kHz	1 kHz	1 kHz
Crest factor	1.2	2	2
OUTPUT DATA			
Channels	1	1	1
Range	0..10 V	0..10 V	0..10 V
Resolution	12 bit	12 bit	12 bit
Max load	> 2 kOhm	> 2 kOhm	> 2 kOhm
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K
Response time	Fast filter 800 ms Slow filter 2 s	Fast filter 800 ms Slow filter 2 s	Fast filter 800 ms Slow filter 2 s
STANDARD			
Certifications	EC, UL-UR	EC, UL-UR	EC, UL-UR

HALL EFFECT CURRENT TRANSDUCERS WITH OUTPUT OF 4-20mA

	T201DCH50-LP	T201DCH100-LP	T201DCH300-LP
	HALL EFFECT 	HALL EFFECT 	HALL EFFECT 
	Transducer with continuous or alternate current (± 50 A) with Hall TRMS effect with output of 4..20 mA loop powered	**Transducer with continuous or alternate current (± 100 A) with Hall TRMS effect with output of 4..20 mA loop powered**	**Transducer with continuous or alternate current (± 300 A) with Hall TRMS effect with output of 4..20 mA loop powered**
GENERAL DATA			
Power supply	Loop powered (9..28 Vdc)	Loop powered (9..28 Vdc)	Loop powered (9..28 Vdc)
Consumption	< 22 mA	< 22 mA	< 22 mA
Isolation and protections	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
Front LED	-	-	-
Surge category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)
Measurement polarity	Positive (label site entry current)	Positive (label site entry current)	Positive (label site entry current)
Protection degree	IP20	IP20	IP20
Accuracy class	AC: 0.5% f.s,; DC: 1% f.s.	AC: 0.5% f.s,; DC: 1% f.s.	AC: 0.5% f.s,; DC: 1% f.s.
Configuration	DIP switch	DIP switch	DIP switch
Operating temperature	-20..+70°C	-20..+70°C	-20..+70°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10rH..90% non-condensing	10rH..90% non-condensing	10rH..90% non-condensing
Altitude	Up to 2,000 m above sea level	Up to 2,000 m above sea level	Up to 2,000 m above sea level
Connections	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2
Passing hole diameter	12.3 mm	20.8 mm	20.8 mm
Dimension (lxhxd)	41x44x26 mm	95x68x26 mm	95x68x26 mm
Installation	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories
Container	PA6, black	PA6, black	PA6, black
Weight	47 g	120 g	120 g
COMMUNICATION			
Communication port	-	-	-
Protocol	-	-	-
Speed	-	-	-
INPUT DATA			
Channels	1	1	1
Range	0..50 Aac/dc TRMS ±50 Adc bipolar	0-50 A, 0-100 Aac/dc TRMS ±50 A, ±100 A Bipolar	0-150 A, 0-300 Aac/dc TRMS ±150 A, ±300 A Bipolar
Type of Measurement	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar balancing	Yes	Yes	Yes
Hysteresis	0.3% f.s.	0.3% f.s.	0.3% f.s.
Overload	300 A uninterrupted 2,000 A (impulsive)	300 A continuous; 2,000 A impulsive	500 A uninterrupted 2,000 A (impulsive)
Passing band	1 kHz	1 kHz	1 kHz
Crest factor	1.3	1.3	1.3
OUTPUT DATA			
Channels	1	1	1
Range	4..20 mA nominal 3,6 mA fault indication 22 mA max indication	4..20 mA nominal 3,6 mA fault indication 22 mA max indication	4..20 mA nominal 3,6 mA fault indication 22 mA max indication
Resolution	12 bit	12 bit	12 bit
Max load	< 1,000 Ohm @ 28 Vdc	< 1,000 Ohm @ 28 Vdc	< 1,000 Ohm @ 28 Vdc
Error for EMI	< 1%	< 1%	< 1%
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K
Response time	Fast filter 500 ms Slow filter 1 s	Fast filter 500 ms Slow filter 1 s	Fast filter 500 ms Slow filter 1 s
STANDARD			
Certifications	EC, UL-UR	EC, UL-UR	EC, UL-UR

HALL EFFECT CURRENT TRANSDUCERS WITH 0..10 V OUTPUT / MODBUS

	T201DCH50-M	T201DCH100-M	T201DCH300-M
	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 
	Transducer of direct or alternating current (± 50 A) with Hall TRMS effect with 0..10 V output, ModBUS interface	**Transducer with continuous or alternate current (± 100 A) with Hall TRMS effect with output of 0..10 V, ModBUS interface**	**Transducer of direct or alternating current (± 300 A) with Hall TRMS effect with 0..10 V output, ModBUS interface**
GENERAL DATA			
Power supply	12..28 Vdc	12..28 Vdc	12..28 Vdc
Consumption	< 25 mA	< 25 mA	< 25 mA
Isolation and protections	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
Front LED	Power Supply / Communication RS485	Power Supply / Communication RS485	Power Supply / Communication RS485
Surge category	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor) 600 V CAT III (insulated conductor)
Measurement polarity	Positive (label site entry current)	Positive (label site entry current)	Positive (label site entry current)
Protection degree	IP20	IP20	IP20
Accuracy class	0.5% f.s. (DC bipolar, AC TRMS)	0.5% f.s. (DC bipolar, AC TRMS)	0.5% f.s. (DC bipolar, AC TRMS)
Configuration	DIP switch, Software (EASY SETUP)	DIP switch, Software (EASY SETUP)	DIP switch, Software (EASY SETUP)
Data Log	Yes	Yes	Yes
Operating temperature	-20..+70°C	-20..+70°C	-20..+70°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10rH..90% non-condensing	10rH..90% non-condensing	10rH..90% non-condensing
Altitude	Up to 2,000 m above sea level	Up to 2,000 m above sea level	Up to 2,000 m above sea level
Connections	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm2
Passing hole diameter	20.8 mm	20.8 mm	20.8 mm
Dimension (lxhxd)	95x68x26 mm	95x68x26 mm	95x68x26 mm
Installation	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories
Container	PA6, black	PA6, black	PA6, black
Weight	120 g	120 g	120 g
COMMUNICATION			
Communication port	RS485	RS485	RS485
Protocol	slave ModBUS RTU	slave ModBUS RTU	slave ModBUS RTU
Speed	1.200..115200 bps	1.200..115200 bps	1.200..115200 bps
INPUT DATA			
Channels	1	1	1
Range	0..25, 0..50 Aac/dc TRMS ±25 A, ±50 Adc Bipolar	0-50 A, 0-100 Aac/dc TRMS ±50 A, ±100 Adc Bipolar	0-150 A, 0-300 Aac/dc TRMS ±150 A, ±300 Adc Bipolar
Type of Measurement	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar balancing	Yes	Yes	Yes
Hysteresis	0.3% f.s.	0.3% f.s.	0.3% f.s.
Overload	300 A (uninterrupted) 2,000 A (impulsive)	500 A continuous; 2,000 A impulsive	800 A continuous; 2,000 A impulsive
Passing band	1 kHz	1 kHz	1 kHz
Crest factor	2	2	2
OUTPUT DATA			
Channels	1	1	1
Range	0..10 V	0..10 V	0..10 V
Resolution	13 bit (10,000 points)	13 bit (10,000 points)	13 bit (10,000 points)
Max load	> 2 kOhm	> 2 kOhm	> 2 kOhm
Error for EMI	<0.5%	<0.5%	<0.5%
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K
Response time	Fast filter 800 ms Slow filter 2 s	Fast filter 800 ms Slow filter 2 s	Fast filter 800 ms Slow filter 2 s
STANDARD			
Certifications	EC	EC	EC

The technical data, diagrams and images are to be considered indicative and not binding

HALL EFFECT CURRENT TRANSDUCERS WITH 0..10 V OUTPUT - ALARM / MODBUS - USB

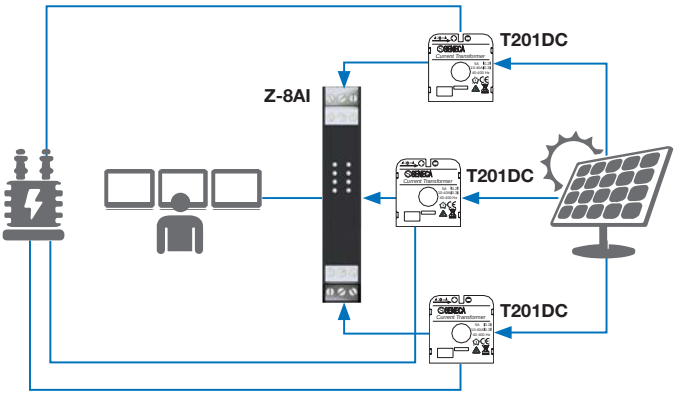
	T201DCH50-MU	T201DCH100-MU	T201DCH300-MU	T201DCH600-MU
	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 		
	Hall effect TRMS direct or alternating current transducer (± 50 Aac/dc) with analogue or alarm output, ModBUS and USB interface	**Hall effect TRMS direct or alternating current transducer (± 100 Aac/dc) with analog or alarm output, ModBUS and USB interface**	**Hall effect TRMS direct or alternating current transducer (± 300 Aac/dc) with analog or alarm output, interface ModBUS and USB**	**Hall effect TRMS direct or alternating current transducer (± 600 Aac/dc) with analog or alarm output, ModBUS and USB interface**
GENERAL DATA				
Power supply	11.5..28 Vdc	11.5..28 Vdc	11.5..28 Vdc	11.5..28 Vdc
Consumption	21 mA excluding load	21 mA excluding load	21 mA excluding load	21 mA excluding load
Isolation and protections	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
Front LED	Power supply / USB communication / Digital output	Power supply / USB communication / Digital output	Power supply / USB communication / Digital output	Power supply / USB communication / Digital output
Surge category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)
Measurement polarity	-	-		Positive (label site entry current)
Data configuration and exporting	DIP Switch, Software (EASY SETUP)	DIP Switch, Software (EASY SETUP)	DIP Switch, Software (EASY SETUP)	DIP Switch, Software (EASY SETUP)
Protection degree	IP20	IP20	IP20	IP20
Accuracy class	0.5% f.s. (DC bipolar, AC TRMS)	0.5% f.s. (DC bipolar, AC TRMS)	0.5% f.s. (DC bipolar, AC TRMS)	0.5% f.s. (DC bipolar, AC TRMS)
Operating temperature	-20..+70°C	-20..+70°C	-20..+70°C	-25..+70°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10% – 90% non condensing	10% – 90% non condensing	10% – 90% non condensing	10% – 90% non condensing
Altitude	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.
Connections	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm^2 Micro USB (programming)	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm^2 Micro USB (programming)	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm^2 Micro USB (programming)	Removable terminals (5 poles), 5 mm pitch for cables up to 2.5 mm^2 Micro USB (programming)
Passing hole diameter	20.8 mm	20.8 mm	20.8 mm	35 mm
Dimension (lxhxd)	95 x 68 x 26 mm	95 x 68 x 26 mm	95 x 68 x 26 mm	95 x 75 x 35 mm
Installation	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories	Free and on DIN Rail IEC EN 60715 (35 mm) via supplied accessories
Container	PA6, black	PA6, black	PA6, black	PA6, black
Weight	120 g	120 g	120 g	120 g
COMMUNICATION				
Communication port	RS485 / Micro USB	RS485 / Micro USB	RS485 / Micro USB	RS485 / Micro USB
Protocol	slave ModBUS RTU	slave ModBUS RTU	slave ModBUS RTU	slave ModBUS RTU
Speed	1.200..115.200 bps	1.200..115.200 bps	1.200..115.200 bps	1.200..115.200 bps
INPUT DATA				
Channels	1	1	1	1
Flow	0-25 / 50 Aac/dc TRMS; ±25 / ±50 Adc Bipolar	0-50 /100 Aac/dc TRMS; ±50 / ±100 Adc Bipolar	0-150 / 300 Aac/dc TRMS; ±150 / ±300 Adc Bipolar	0-300 /-600 Aac/dc TRMS; ±300 / ±600 Adc Bipolar
Type of Measurement	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar balancing	Yes	Yes	Yes	Yes
Overload	$3xI_{IN}$ continuous; 2,000 A (impulsive)	$3xI_{IN}$ continuous; 2,000 A (impulsive)	$3xI_{IN}$ continuous; 2,000 A (impulsive)	$3xI_{IN}$ continuous; 2,000 A (impulsive)
Passing band	1 kHz	1 kHz	1 kHz	1 kHz
Crest factor	2	2	2	2
OUTPUT DATA				
Analog channels	1	1	1	1
Range	0..10 V	0..10 V	0..10 V	0..10 V
Resolution	13 bit (10,000 points)	13 bit (10,000 points)	13 bit (10,000 points)	13 bit (10,000 points)
Min load	2 kOhm	2 kOhm	2 kOhm	2 kOhm
Error for EMI	<0.5%	<0.5%	<0.5%	<0.5%
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K
Hysteresis measuring	0.2% f.s.	0.2% f.s.	0.2% f.s.	0.2% f.s.
Response time	Fast filter 800 ms Slow filter 2 s	Fast filter 800 ms Slow filter 2 s	Fast filter 800 ms Slow filter 2 s	Fast filter 800 ms Slow filter 2 s
Digital channels	1	1	1	2
Function	Alarm (as an alternative to the analog channel)	Alarm (as an alternative to the analog channel)	Alarm (as an alternative to the analog channel)	Alarm (as an alternative to the analog channel)
Type	PNP active output, max load 50 mA	PNP active output, max load 50 mA	PNP active output, max load 50 mA	PNP active output, max load 50 mA
STANDARD				
Certifications	EC	EC	EC	EC

The technical data, diagrams and images are to be considered indicative and not binding

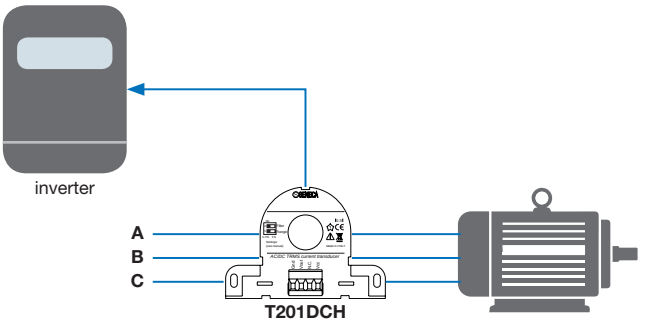
APPLICATION DIAGRAMS

CONTINUOUS CURRENT TRANSDUCER WITH DIRECT OUTPUT 4-20 mA

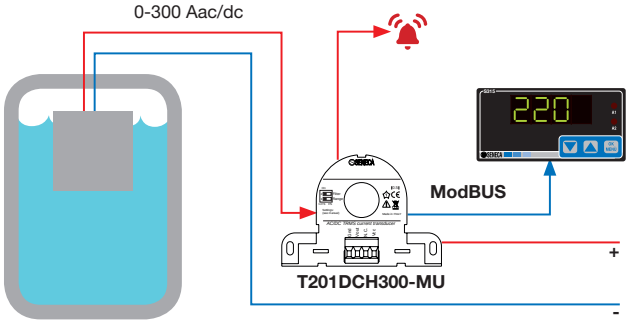
PATENTED TECHNOLOGY



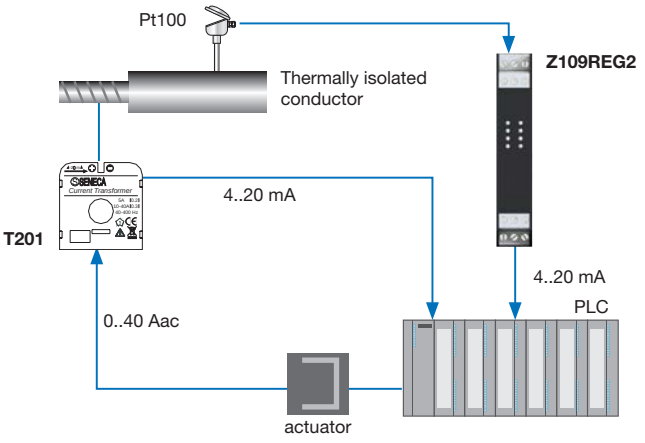
TRANSDUCER CURRENT IN OUTPUT FROM ELECTRIC MOTOR IN SIGNAL 0-10 V



METAL SURFACES GALVANIC TREATMENT



INDUCED CURRENT MEASUREMENT



ORDER CODE	
Code	**Description**
T201	AC current transformer 0..40 Aac, 8 input scales, 4..20 mA loop powered output
T201DC	Direct current transducer, measurement limit -10..40 Adc, output 4..20 mA, loop powered, patented measurement technology
T201DC100	Direct current transducer, measurement limit -25..100 Adc, output 4..20 mA, loop powered, patented measurement technology
T201DCH	Transducer of alternating or direct current (0..50 A) with Hall effect TRMS, output 0..10 V
T201DCH100	Transducer of alternating or direct current (± 100 A) with Hall effect, bipolar/TRMS, output 0..10 V
T201DCH300	Transducer of alternating or direct current (± 300 A) with Hall effect, bipolar/TRMS, output 0..10 V
T201DCH50-LP	Transducer of direct or alternating current (± 50 A) with Hall effect, bipolar/TRMS. output 4..20 mA loop powered
T201DCH100-LP	Transducer of direct or alternating current (± 100 A) with Hall effect, bipolar/TRMS, output 4..20 mA loop powered
T201DCH300-LP	Transducer of direct or alternating current (± 300 A) with Hall effect, bipolar/TRMS, output 4..20 mA loop powered
T201DCH50-M	Transducer of alternating or direct current (± 50 A) with Hall effect, bipolar/TRMS, output 0..10 V, ModBUS
T201DCH100-M	Transducer of alternating or direct current (± 100 A) with Hall effect, bipolar/TRMS, output 0..10 V, ModBUS
T201DCH300-M	Transducer of alternating or direct current (±300 A) with Hall effect, bipolar/TRMS, output 0..10 V, ModBUS
T201DCH50-MU	Hall effect transducer direct or alternating current (±50 A), bipolar/TRMS, 0..10V or alarm output, ModBUS / Micro USB port
T201DCH100-MU	Hall effect transducer direct or alternating current (±100 A), bipolar/TRMS, 0..10V or alarm output, ModBUS / Micro USB port
T201DCH300-MU	Hall effect transducer direct or alternating current (±300 A), bipolar/TRMS, 0..10V or alarm output, ModBUS / Micro USB port
T201DCH600-MU	Hall effect transducer direct or alternating current (±600 A), bipolar/TRMS, 0..10V or alarm output, ModBUS / Micro USB port
ACCESSORIES	
A-DIN-T201	Plastic DIN rail hook for T201 Line
S107USB	RS485/USB asynchronous serial converter, portable version (for ModBUS versions)
S117P1	Opto-isolated and asynchronous serial converter RS232/USB, TTL/USB, RS485/USB (for ModBUS versions)
SOFTWARE	
EASY SETUP	Configuration suite for programmable instruments (for ModBUS versions)

MODULAR CONVERTERS FOR ELECTRICAL MEASUREMENT

3

3.6

Modular converters for electrical measurement

The converters for electrical measurement measure the values of voltage and current (alternate and/or continuous) converting them into a standard signal in current or voltage at the output terminals, proportional to the value of the input.
The scale parameters of the inputs and outputs can be selected via software or DIP switches.
The modules ensure a high accuracy class (from 0.1 to 0.5%) and very high multiview galvanic isolation up to 4,000 Vac.
In addition to the presence of power or error, the modules equipped with the ModBUS interface also offer the RS485 LED indication on the front panel.

HIGHLIGHTS

WIDE MEASUREMENT RANGE FOR CURRENTS AND VOLTAGES

- Alternate
- Continuous
- TRMS

SIMPLIFIED CONNECTIONS

Screw terminals 2.5 mm²

FLEXIBLE CONFIGURATION

- DIP-switch
- Software

COMPLETE POWER OPTIONS

Vac/dc switching
Loop/Self powered

SMALL SIZE

17.5 / 35 mm

INTERNATIONAL LEGISLATION

EC, UL

HIGH ISOLATION

Up to 4,000 Vac

SIGNAL AND BUS INTERFACES

- Analog Output
- Modbus RTU RS485

HIGH ACCURACY CLASS

From 0.1 to 0,.5%

STATUS INDICATORS FOR CONTROL AND DIAGNOSTICS

CONVERTERS FOR ELECTRICAL MEASUREMENT

	Z201	Z201-H	Z202
			
	Alternate current converter 10..40 Vdc; 19..28 Vac	**Alternate current converter 85..265 Vac/dc**	**Alternate voltage converter 10..40 Vdc; 19..28 Vac**
GENERAL DATA			
Power supply	10..40 Vdc; 19..28 Vac	85..265 Vac/dc	10..40 Vdc; 19..28 Vac
Max consumption	< 2.5 W	< 2.5 W	< 1.5 W
Isolation	3.750 Vac (input/output/power supply) 1.500 Vac (output/power supply)	4.000 Vac (input/output/power supply)	3.750 Vac (input/output; input/power supply) 1.500 Vac (output/power supply)
Protection degree	IP20	IP20	IP20
LED status indicators	Power supply	Power supply	Power supply
Response time	< 200 ms	< 100 ms	< 30 ms
Interfaces			
Accuracy class	0.3%	0.3%	0.25%
Thermal Drift	<200 ppm/K	<200 ppm/K	<150 ppm/K
Configuration	DIP switch	DIP switch	DIP switch
Operating temperature	0..+55°C	-10..+65°C	0..+60°C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw removable terminals	Screw removable terminals	Screw removable terminals
Case	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre
Installation	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
Weight	200 g	200 g	200 g
Certifications	EC	EC	EC
INPUT DATA			
Channels	1	1	1
Type	ALTERNATE CURRENT 0..5 / 0..10 Aac	ALTERNATE CURRENT 0..5 / 0..10 Aac	ALTERNATE VOLTAGE 0..500 Vac (41 scales), inlet impudence 2.000 Ω/V Frequency 10 Hz..1 kHz
OUTPUT DATA			
Channels	1	1	1
Type	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω
ORDER CODES	**Z201**	**Z201-H**	**Z202**

The technical data and the diagrams in this document are indicative and not binding.

CONVERTERS FOR ELECTRICAL MEASUREMENT

	Z202-H	Z202-LP	Z203-2	Z204-1
				
	Alternate voltage converter, 85..265 Vac/dc	**Alternate voltage converter loop powered**	**Monophase network analyser**	**TRMS alternate and continuous voltage converter**
GENERAL DATA				
Power supply	85..265 Vac/dc	5..28 Vdc (from the loop)	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Max consumption	< 1.5 W	<1 mA	< 2.5 W	< 1 W
Isolation	3.750 Vac (input/output; input/power supply) 1.500 Vac (output/power supply)	4.000 Vac (input/output)	3,750 Vac (input/output/power supply)	4,000 Vac (input/output, input/power supply) 1.500 Vac (output/power supply)
Protection degree	IP20	IP20	IP20	IP20
LED status indicators	Power supply	Power supply	Power supply Error Communication RS485	Power supply Error Communication RS485
Response time	< 100 ms	< 100 ms	< 10 ms	For a step variation 1 s from 10 to 90 %
Interfaces	-	-	Front micro USB for programming (baud rate, address, parity, data/stop bit) RS485 (backplane), as an alternative to the analog output, speed up to 115.200 bps, ModBUS RTU protocol	RS232 (front connector for programming): baud rate, address, parity, data/stop bit RS485 (backplane), as an alternative to the analog output, speed up to 115.200 bps, ModBUS RTU protocol
Accuracy class	0.3%	0.3%	0.5%	0,5% input; 0.1% output
Thermal Drift	+150 ppm/K	+150 ppm/K	+150 ppm/K	+100 ppm/K
Configuration	DIP switch	DIP switch	DIP switch Software (EASY SETUP)	DIP switch Software (EASY SETUP)
Operating temperature	-10..+65°C	-20..+65°C	-10..+65°C	-20..+65°C
Dimension	17.5 x 100 x 112 mm	35 x 100 x 112 mm	17.5 x 100 x 112 mm	35 x 100 x 112 mm
Connections	Screw removable terminals	Screw removable terminals	Screw removable terminals	Screw removable terminals
Case	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre
Installation	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
Weight	200 g	200 g	200 g	200 g
Certifications	EC	EC	EC	EC
INPUT DATA				
Channels	1 (single phase load)	1	1 (single phase load)	1
Type	ALTERNATE VOLTAGE 0..500 Vac (41 scales), inlet impudence 2.000 Ω/V Frequency 10 Hz..1 kHz	ALTERNATE VOLTAGE 0..500 Vac CONTINUOUS VOLTAGE 0..540 Vdc, max voltage 710 Vpk Frequency DC / 20 Hz..20 kHz	ALTERNATE VOLTAGE Max capacity 500 Vac, frequency 50-60 Hz ALTERNATE CURRENT Nominal flow rate 5 A rms, max crest factor 3, max current 15 A, frequency 50 – 60 Hz	CONTINUOUS VOLTAGE: 0..1,200 Vdc; ALTERNATE VOLTAGE 0..850 Vac Input impudence: 800 kΩ Frequency: 30..300 Hz
OUTPUT DATA				
Channels	1	1	1 analogic, 1 digital	1
Type	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω	VOLTAGE 0-5, 0-10, 1-5, 2-10 V Analog retransmission Vrms, Irms, Watt, Var, frequency, cos φ, energy CURRENT 0-20, 4-20 mA DIGITAL TBD counter	CURRENT Range: 0..20 mA; max impudence: 500 Ω VOLTAGE Range: 0..10 V; min impudence: 1 k Ω
ORDER CODES	**Z202-H**	**Z202-LP**	**Z203-2**	**Z204-1**

The technical data and the diagrams in this document are indicative and not binding.

S201RC-LP

LOOP-POWERED CONVERTER FOR ROGOWSKI SENSORS

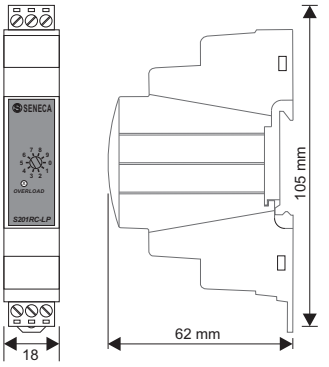
TECHNICAL DATA

GENERAL DATA	
Power supply	From outlook loop 4..20 mA
Max consumption	< 0.6 W
Protection degree	IP20
LED status indicators	Off scale alarm
Response time	0.5 / 1 s
Accuracy class	0.5 % of the f.s. (@ 40..120 MHz)
Thermal Drift	<200 ppm/°C
Configuration	Choice of f.s. and filter
Operating temperature	-25 … 70°C
Storage temperature	-40… 85°C
Humidity	10 - 90 % non-condensing
Altitude	Up to 2000 m above sea level
Dimension (bxhxp)	18x105x62 mm including terminals
Connections	Removable connectors 5mm pitch for cables up to 2.5 mm^2
Case	Self-extinguishing PC-ABS material, grey
Installation	DIN Rail 35 mm (IEC/EN 60715)
Certifications	EC
INPUT DATA	
Channels	1
Type	ROGOWSKI SENSORS 100 mV/kA (330 mV/kA) Measurement type: TRMS Scales 250, 500, 1000, 2000, 4000 A (50-60 Hz) Passing band: 3 kHz Overload: 10 kA (1 Vrms) Protection: Surge and polarity reversal Damper filter FAST = 0.5 s, SLOW = 1 s
OUTPUT DATA	
Channels	1
Type	CURRENT Power supply / Output 4..20 mA Maximum output: 22 mA Power supply voltage: 9-28 Vdc Maximum load: 600 Ohm

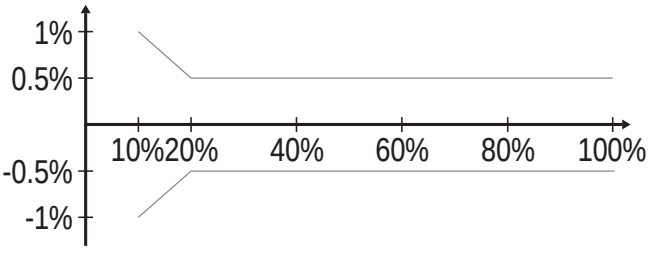
ORDER CODE

Code	Description
S201RC-LP	Loop-powered converter for Rogowski sensors
RC150-025-100-3M	Rogowski Sensor L=25cm Øint.8cm,100mV/1kA-50Hz,cable L=3m.
RC150-035-100-3M	Rogowski Sensor L=35cm Øint.11cm,100mV/1kA-50Hz,cable L=3m.
RC150-040-100-3M	Rogowski Sensor L=40cm Øint.12cm,100mV/1kA-50Hz,cable L=3m.
RC150-060-100-3M	Rogowski Sensor L=60cm Øint.19cm,100mV/1kA-50Hz,cable L=3m.
RC150-090-100-3M	Rogowski Sensor L=90cm Øint.28cm,100mV/1kA-50Hz,cable L=3m
RC150-120-100-3M	Rogowski Sensor L=120cm Øint.38cm,100mV/1kA-50Hz,cable L=3m.
RC150-180-100-3M	Rogowski Sensor L=180cm Øint.57cm,100mV/1kA-50Hz,cable L=3m.
RC150-RIC-KIT30	Rogowski coil Kit Spare Part RC150 L= 30cm Ø int. 9.5 cm, 100mV/1kA-50Hz,cable L=3mt.
RC150-RIC-KIT45	Rogowski coil Kit Spare Part RC150 L= 45cm Ø int. 14 cm, 100mV/1kA-50Hz,cable L=3mt.
RC150-RIC-KIT70	Rogowski coil Kit Spare Part RC150 L= 70cm Ø int. 22 cm, 100mV/1kA-50Hz,cable L=3mt.
RC150-CAVEX-ROG1	Extension over 3 counters. standard of the Rogowski coil connection cable L.1
RC150-CAVEX-ROG2	Extension over 3 counters. standard of the Rogowski coil connection cable L.12
RC150-CAVEX-ROG3	Extension over 3 counters. standard of the Rogowski coil connection cable L.3
RC190-030-333-3M	Rogowski Sensor L=30cm Øint.9.5cm,333mV/1kA-50H,cable L=3m.

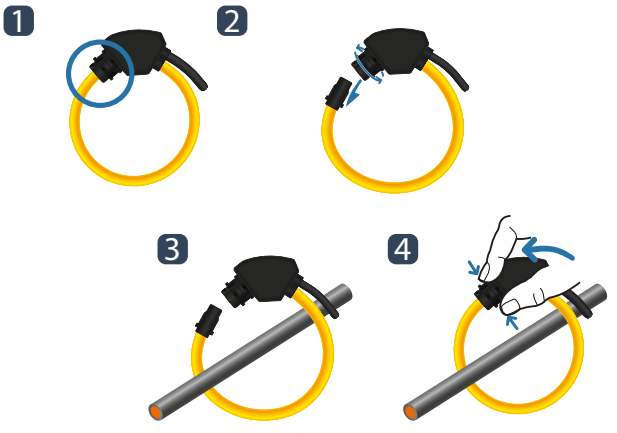
DIMENSIONS



ERRORS



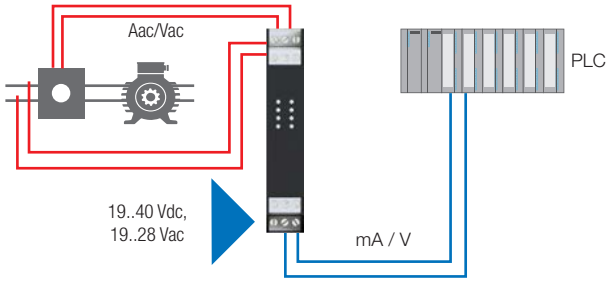
ROGOWSKI SENSOR INSTALLATION EXAMPLE



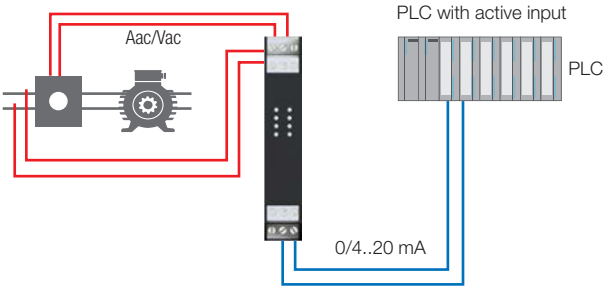
The technical data and the diagrams in this document are indicative and not binding.

APPLICATION EXAMPLES

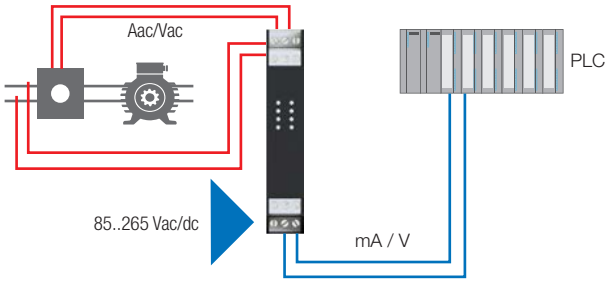
Z201



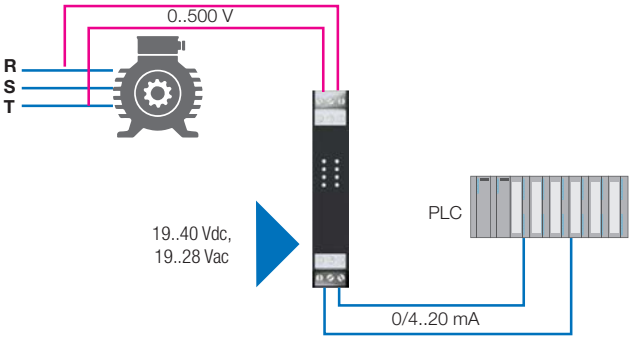
Z201-LP



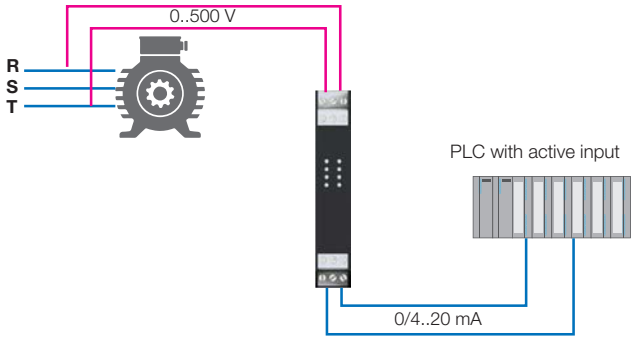
Z201-H



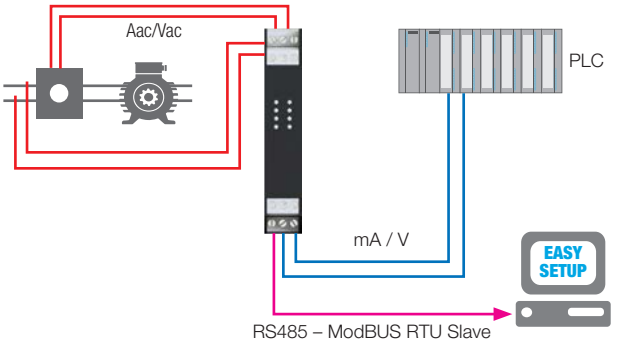
Z202



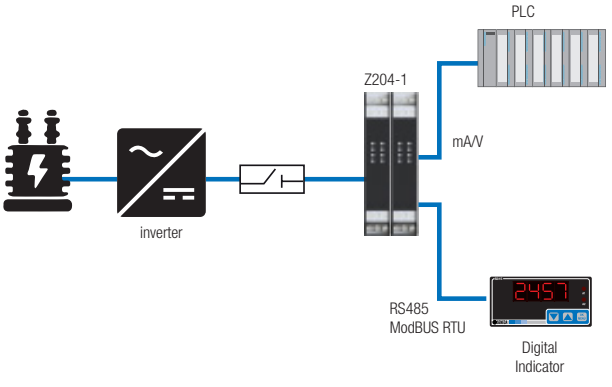
Z202-LP



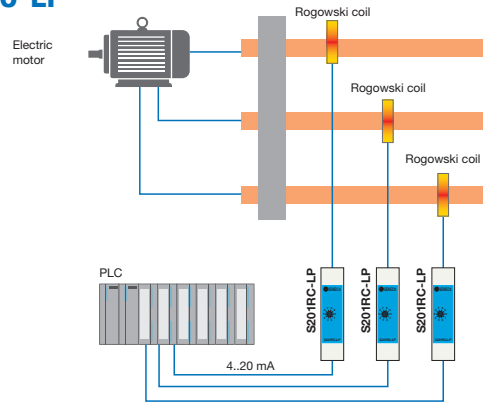
Z203-2



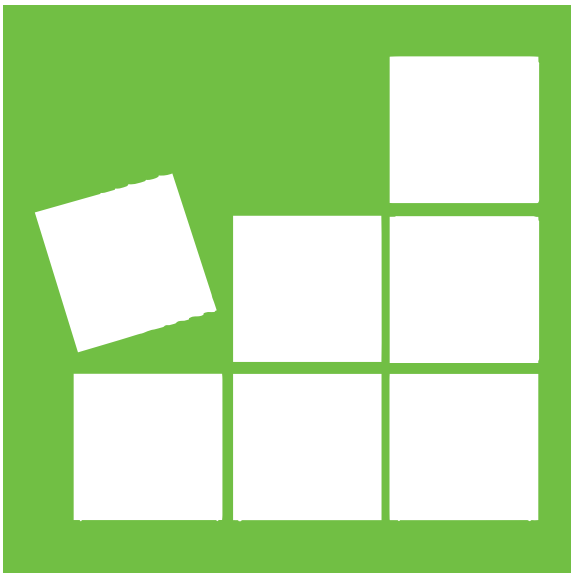
Z204



S201RC-LP



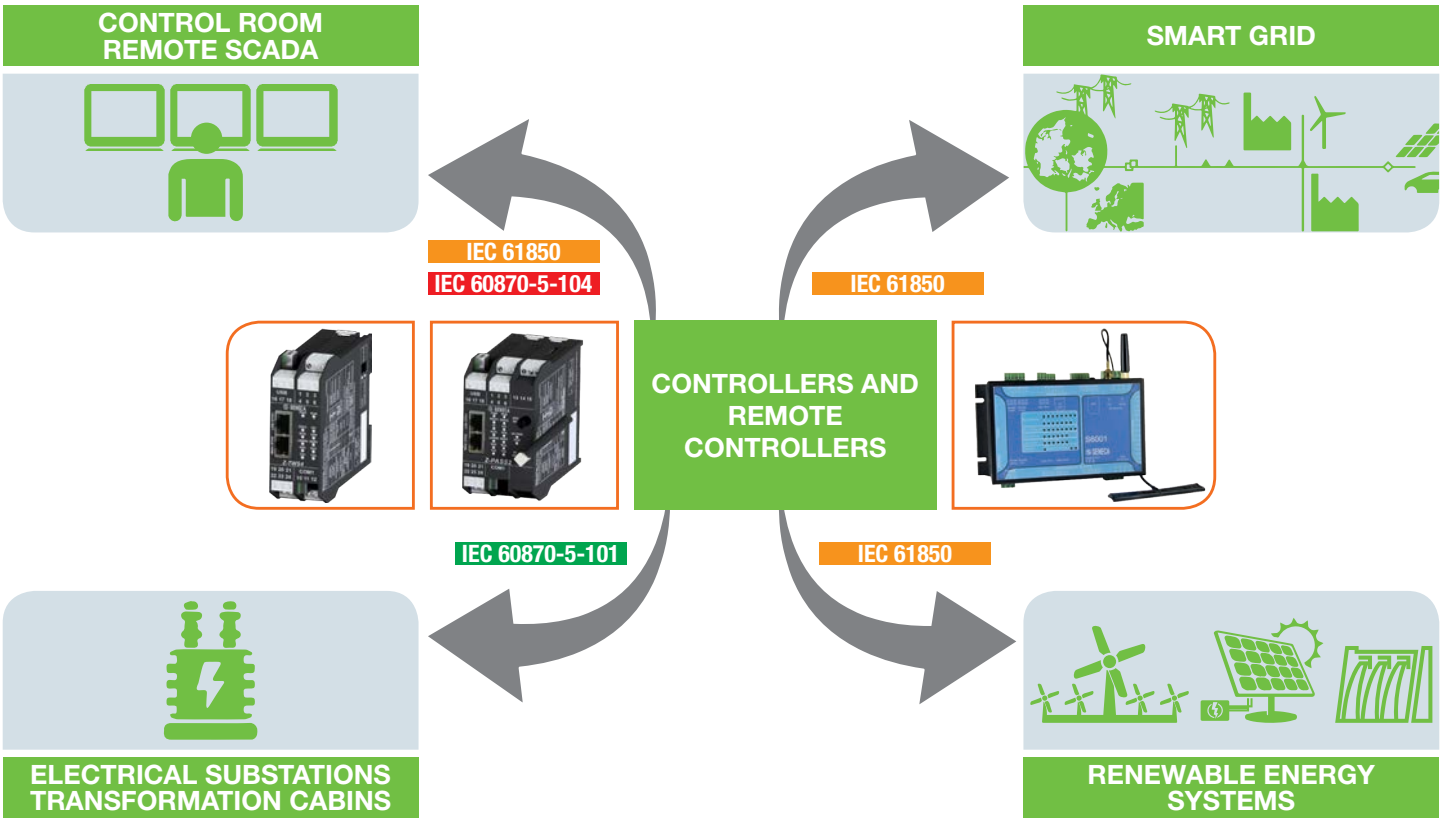
ENERGY CONTROLLERS



3

3.7

CONTROL AND COMMUNICATION FOR ELECTRICAL NETWORKS



ENERGY CONTROLLERS AND REMOTE CONTROLLERS

For Energy Management applications SENECA offers different types of controllers, Z-TWS4-E, Z-PASS2-S-E, S6001-RTU-E with the support of the IEC 60870-101/104 and IEC 61850 communication protocols. These units can be used as redundant controllers for system automation, management of the energy produced, management of renewable energy systems (biomass, photovoltaic, wind power, etc.), development of smart grids etc. They can also be configured as web servers and TCP-IP nodes and can be integrated with the SCADA, EMS and Web supervisory platforms.

IEC 60870

IEC 60870 - REMOTE CONTROL

In the field of electrical engineering and automation of power plants, the international standard IEC 60870 allows interoperability between equipment from different manufacturers and is divided into six parts that define general information, operating conditions, electrical interfaces, performance requirements and standard transmission protocols. The stack (data type) used in Straton supports in particular:

- IEC 60870-5-101 (serial communication)
- IEC 60870-5-104 Slave (communication via TCP/IP).

IEC 61850

IEC 61850 & GOOSE - ELECTRICAL NETWORKS

The IEC 61850 standard has been designed to send messages between sender and recipient in an optimal manner, making communication as direct as possible to avoid losses in performance and functionality. The SENECA stack for the IEC 61850 server protocol includes the source, configurator, compiler and runtime. The abstract data model defined in the IEC 61850 can be "mapped" on a different number of protocols as in the case of GOOSE (Generic Object Oriented Substation Events), a mechanism that allows the sending of any data grouped in a data set in a time less than a few milliseconds.

MULTIFUNCTION CONTROL UNIT WITH ENERGY PROTOCOLS

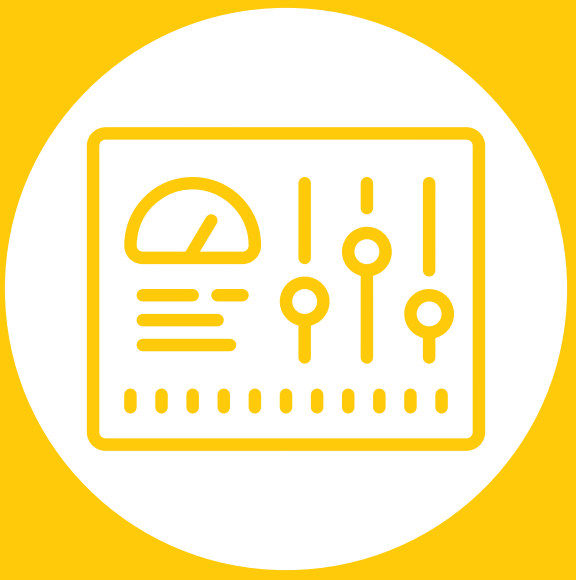
	Z-TWS4-E	Z-PASS2-S-E	S6001-RTU-E
	 Multifunction controller with Energy protocols	 Multifunction controller with 3G+/4G LTE/ Ethernet modem.router, energy protocols	 All-In-One RTU with built-in I/O 3G+/4G LTE modem, energy protocols
GENERAL DATA			
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Max consumption	6 W	6 W	6 W
Isolation	1,500 V	1,500 V	1,500 V
Status Indicators	Power Supply; Serial communication Ethernet; PLC status	Power Supply; Serial communication Ethernet; PLC status	Power Supply; Serial communication Ethernet; PLC status
Degree of contamination	2	2	2
Protection degree	IP20	IP20	IP20
Operational Temperature	-20..+55°C	-20..+55°C	-20..+50°C
Dimension	35x100x112 mm	52.5x100x112 mm	190x105x60 mm
Weight	250 g	450 g	600 g
Case	Nylon 6 with 30% glass fibre self-extinguishing class V0	Nylon 6 with 30% glass fibre self-extinguishing class V0	Nylon 6 with 30% glass fibre self-extinguishing class V0
Connections	Removable terminals with 5.08 mm pass screw IDC10 rear connector for DIN rail Removable 4 pin connector Nr 2 RJ45 connectors Nr 2 USB connectors (type A, micro USB)	Removable terminals with 5.08 mm pass screw IDC10 rear connector for DIN rail Removable 4 pin connector Nr 2 RJ45 connectors Nr 2 SMA antenna connectors (Main, Diversity)	Removable terminals, max conductor size 2.5 mm^2 Removable connectors DB9 connector Nr 1 RJ45 connector Nr 2 USB connectors (type A, mini USB) Nr 2 SMA antenna connectors (Main, Diversity) Plug in Micro SD card
Installation	DIN Rail 35 mm (IEC EN 60715)	DIN Rail 35 mm (IEC EN 60715)	DIN Rail 35 mm (IEC EN 60715)
COMMUNICATION			
Ethernet	Nr 2 Fast Ethernet ports 10/100 Mbps (RJ45)	Nr 2 Fast Ethernet ports 10/100 Mbps (RJ45)	Nr 2 Fast Ethernet ports 10/100 Mbps (RJ45)
Serial Ports	No.1 RS232 No.1 RS485 No.1 RS485 ModBUS	No.1 RS232 No.1 RS485 No.1 RS485 ModBUS	Nr 2 RS485 Nr 1 RS232
USB	Nr 1 USB host type A No.1 micro USB Virtual COM	Nr 1 USB host type A No.1 micro USB Virtual COM	Nr 1 USB host type A N1 1 mini USB type B
Modem / Router		3G+ / 4G LTE	4G LTE
Industrial protocols	TCP-IP ModBUS, ModBUS RTU, custom protocols	TCP-IP ModBUS, ModBUS RTU, custom protocols	TCP-IP ModBUS, ModBUS RTU, custom protocols
Network protocols	PPP, HTTP, FTP, SMTP, OpenVPN	PPP, HTTP, FTP, SMTP, OpenVPN	PPP, HTTP, FTP, SMTP, OpenVPN
Energy Protocols	IEC 60870-101/104, IEC 61850	IEC 60870-101/104, IEC 61850	IEC 60870-101/104, IEC 61850
Operating modes	-	-	ModbUS Bridge/Gateway*, Single LAN Remote Control, Serial Tunnelling, 3G+ / 4G LTE/ ETH Modem/Router, 3G+ / 4G LTE/ETH, VPN Redundancy, VPN, Point-to-point remote assistance (* programmable supports)
INPUT / OUTPUT DATA			
Channels / Type	No.1 DI VPN connection enabled No.1 DO VPN connection in progress No.1 DO for general use No.1 Configurable DI/DO	No.1 DI VPN connection enabled No.1 DO VPN connection in progress No.1 DI for general use No.1 DO for general use No.2 Configurable DI/DO	Nr 15 DI PNP, NPN (max voltage 24 Vdc) Nr 2 DI (level switches) Nr 4 DI 0..20 mA Nr 8 DO SDPT 5A - 250 Vac Nr 1 AO 0..10 V Nr 1 AO 0..20 mA
PROCESSOR / MEMORY			
Processor	ARM9 32-bit	ARM9 32-bit	ARM9 32-bit
Flash Memory (data)	1 GB	1 GB	1 GB
RAM / FeRAM	64 MB / 8 kB	64 MB / 8 kB	64 MB / 8 kB
SD Micro Slot	SD Card up to 32 GB	SD Card up to 32 GB	SD Card up to 32 GB
CONFIGURATION / STANDARDS			
System software	Z-NET4 / StratON / OPC Server	Z-NET4 / Straton / OPC Server	Z-NET4 / Straton / OPC Server
Web Editor	Yes, integrated	Yes, integrated	Yes, integrated
Web Configurator	Yes, integrated	Yes, integrated	Yes, integrated
Datalogger	Yes, integrated	Yes, integrated	Yes, integrated
PLC programming	IEC 61131 (Straton) dedicated libraries	IEC 61131 (Straton) dedicated libraries	IEC 61131 (Straton) dedicated libraries
Certifications	EC	EC	EC

ORDER CODE

Code	Description
CONTROLLERS	
S6001-RTU-E	All-in-one RTU with built-in I/O, 4G WW LTE modem and Straton programming system, Energy protocols
S6001-RTU-E-4GWW	Remote 4G Energy Controller worldwide, VPN, serial device server, GPS and built-in I/Os.
Z-PASS2-S-E-4GWW	3G Modem upgrade and replacement 4GLTE/EMEA c/o laboratory (Z-PASS2-SE)
Z-PASS2SE4GWWUPG	3G Modem upgrade and replacement 4GLTE/WW c/o laboratory (Z-PASS2-SE)
Z-TWS4-E-IO	IEC 61131 multifunction controller, built-in I/O, Straton workbench, OEM version, energy protocol
SOFTWARE	
OPC-DA-SERVER	Communication and data exchange software OPC Server WITH unlimited I/O tags (hardware licence)
OPC-UA-SERVER	Communication and data exchange software OPC Server UA I/O unlimited tags (hardware licence)
SSP	SENECA Straton Package - CPU Seneca Installer suite (supplied)
STRATON-256-UPD	STRATON IDE 256 Tags UPGRADE from V8 to V9
STRATON-512-UPD	STRATON IDE 512 Tags UPGRADE from V8 to V9
STRATON-UN-UPD	STRATON IDE Unlimited Tags UPGRADE from V8 to V9
STRATON-870-850	Activation licence IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server
STRATON-870M	Activation licence IEC 60870-5-101/104 Master
STRATON-870S	Activation licence IEC 60870-5-101/104 Slave
STRATON-870S-850	Activation licence IEC 60870-5-101/104 Slave + IEC 61850 Client / Server
STRATON-D-USB	Straton activation key for IEC 61131 controllers
STRATON-FULL01	Activation licence IEC 60870-5-101/104 Master / Slave + IEC 61850 Client / Server + SNMP extension
STRATON-IDE256	Straton development environment 256 tag with USB activation key
STRATON-IDE512	Straton development environment 512 tag with USB activation key
STRATON-IDEUN	Straton development environment unlimited tags with USB activation key
STRATON-SNMP	Straton SNMP agent driver extension
STRATON-UPGRADE1	Straton upgrade from 256 to 512 tags
STRATON-UPGRADE2	Straton upgrade from 512 to unlimited tags
STRATON-UPGRADE3	Straton upgrade from 256 to unlimited tags
STRATON-WB	Straton workbench IEC 61131 free editor (supplied)
USB-SW-KEY	USB key with software, libraries, platforms and development environments, manuals for multifunction controllers
USB-DR-OPC-KEY	USB key for Data Recorder and OPC Server licence activation (spare)
WEB FACTORY	HMI / Web Editor integrated in Z-NET4
Z-NET4	Configurator I/O systems and Z-PC Line controller
ANTENNAS	
A-GSM	External antenna GSM dual band swing cable 3.2 m
A-GSM-QUAD	Quadband GSM Antenna
A-GPS	External GPS antenna with MMCX magnetic base, 3 m cable
A-GPS-SMA	Antenna GPS with SMA coupling
A-GSM	External antenna GSM dual band swing cable 3.2 m
A-GSM-DIR-5M	Compact directional antenna GSM-DECT-UMTS SMA-M, 5 m cable
A-GSM-MG	SMA 4 dbi dual band magnetic outdoor antenna, 2.5 m cable
A-GSM-OMNIDIR	Omnidirectional GSM-UMTS-WIFI antenna, 5.1 dB, SMA-M. 5 m cable
A-GSM-OMNIDIR-10	Omnidirectional GSM-UMTS-WIFI antenna, 5.1 dB, SMA-M. cable 10 m
A-GSM-QUAD-N	Omnidirectional external antenna 4G/WI-FI, FME, 3 m cable
A-STIL	Stylus antenna GSM 90° SMA-M
A-STIL-D	SMA-M straight stylus GSM antenna

4

MEASUREMENT AND CONTROL PANEL INSTRUMENTATION



MEASUREMENT AND CONTROL PANEL INSTRUMENTATION

There are signal converters, digital indicators, totalisers, predeterminators, surge protections, stabilised power supplies, temperature and humidity probes, multifunction calibrators in the Measurement and Control Panel Instrumentation line. With a broad proposal dedicated to instrumentation for industrial monitoring, SENECA offers the most advanced optical, capacitive and inductive technologies for the normalisation of field signals including sensors and actuators, galvanic isolation, electrical protection, connection of measurement and control of electrical and environmental parameters. Signal conditioning products can also be used in universal applications in combination with other SENECA products. Their electrical and mechanical structure is such as to reduce wiring and maintenance activities to a minimum.

4.1 MULTISTANDARD ISOLATOR CONVERTERS

Z Line

4.2 COMPACT ISOLATOR CONVERTERS

K Line

4.3 HIGH ISOLATION CONVERTERS

S Line

4.4 TEMPERATURE TRANSMITTERS

4.5 PROTECTIONS AGAINST SURGES

S400 Line

4.6 LED DIGITAL INDICATORS

S Line

4.7 BATCH CONTROLLER

S20N1-S21N1 Line

4.8 PROFESSIONAL PORTABLE MEASUREMENT SYSTEMS

MY Line

4.9 MULTIFUNCTION CALIBRATORS

4.10 DATALOGGER SINGLE CHANNEL IP68

Z Line

MULTISTANDARD ISOLATOR CONVERTERS

4

4.1

Z-Line

Multistandard signal isolator converters with universal power supply

The modules of the **Z Line** are reliable signal conditioners, oriented towards ease of use and installation. Available in multiple power standards, they respond to the most common interface and conditioning needs. Most models are characterised by a 3-way galvanic separation equal to 1.5 kVac, reduced overall dimensions (standard width 17.5 mm), installation on DIN 42677 rail, extended temperature range, high accuracy and the possibility to power the sensors connected to them. **Z Line** is the ideal solution for conditioning analog industrial, electric signals, from temperature sensors, from load, serial, digital and impulsive cells.

UNIVERSAL POWER SUPPLY

Vac/dc switching; measurement loop power supply

REDUCED CONSUMPTION

Loop power supply of current in output (min 20 Vdc)

TRANSDUCERS POWER SUPPLY

< 2.5 W

HIGH ISOLATION MULTI-WAY

From 1.5 kVac to 4kVac

ACCURACY

Up to 0.1%

STANDARD SIGNALS

mA, mV, A, V, Ohms, RTD, TC, load cell, Reed, Pnp, Npn, Effect hall, photoelectric sens., imp.24V

STRENGTH

Operating temperature up to -20..+65%, RH 90%

RELIABILITY

MTBF>500,000 h

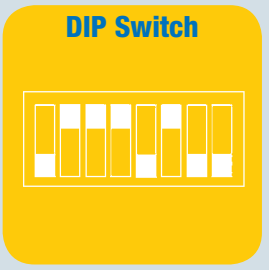
CERTIFICATIONS

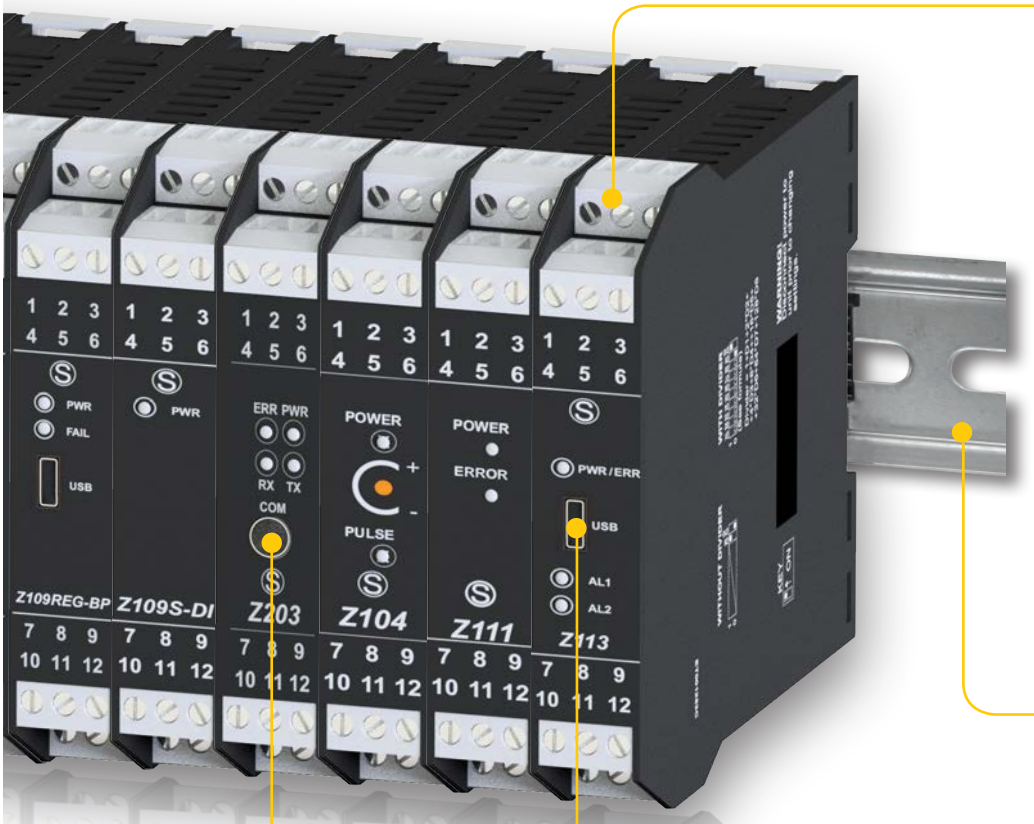
DIMENSIONS COMPACT

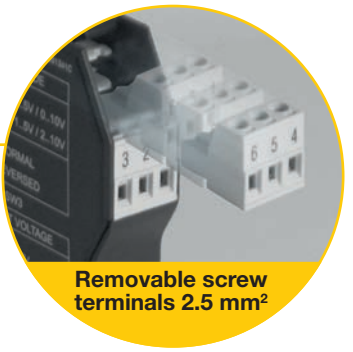
Width 17.5 mm

FLEXIBLE CONFIGURATION

The SENECA Z-Line converters offer 3 configuration modes.
Almost all the models allow configuration of the standard parameters by means of DIP switches accessible on the side of the instrument.
In addition, some models ensure expanded functionality that can be set using the "EASY SETUP" PC software.
Other models, equipped with Micro USB port on the front, are programmable via the App "EASY SETUP APP" for Android terminals.






Removable screw terminals 2.5 mm²


Installation on DIN rail 35 mm (IEC/EN 60175)


Front jack 3.5 mm RS232 (COM)


Communication port USB Micro

CONVERTERS FOR ANALOG SIGNALS

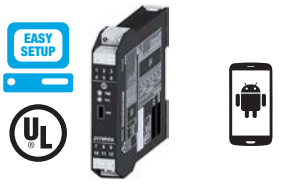
	Z109REG	Z109REG2-1	Z109REG2-H
			
	Universal converter with galvanic separation	**Universal converter with galvanic isolation, relay output, Micro USB 9..40 Vdc/19..28 Vac**	**Universal converter with galvanic isolation, micro USB, 85..265 Vac/dc**
GENERAL DATA			
Power supply	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	85..265 Vac/dc
Transducers power supply	Active input 2 wires (min 18 Vdc)	Active input 2 wires (min 20 Vdc)	Active input 2 wires (min 20 Vdc)
Max consumption	2.5 W	2.5 W (max) 1.6 W (24 Vdc, 20 mA)	2.5 W (max) 1.6 W (24 Vdc, 20 mA)
Isolation	1.500 Vac (3-way)	1.500 Vac (3-way)	1.500 Vac (input/output); 3.750 Vac (power supply//input-output
LED status indicators	Power supply Error	Power supply Error	Power supply Error
Response time	35 ms	35 ms (11 bit)..140 ms (16 bit)	35 ms (11 bit)..140 ms (16 bit)
Interfaces	Front jack 3.5 mm RS232 (COM)	USB Micro	Front jack 3.5 mm RS232 (COM)
Accuracy class	0.1%	0.1%	0.1%
Thermal Drift	0.01%/°K	0.01%/°K	0.01%/°K
Linearity	0.05% (V,I), 0.2% (RTD),1°C (TC)	0.05% / 0.4%	0.05% / 0.4%
Configuration	DIP switch Software (EASY SETUP)	DIP switch Software (EASY SETUP) App Android	DIP switch Software (EASY SETUP)
Operating temperature	-20..+60°C	-20..+60°C	-20..+60°C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Removable screw terminals 2.5 mm^2	Removable screw terminals 2.5 mm^2	Removable screw terminals 2.5 mm^2
Case	Nylon 6 with 30% glass fibre	Nylon 6 with 30% glass fibre	Nylon 6 with 30% glass fibre
Installation	DIN Rail 35 mm (IEC/EN 60175)	DIN Rail 35 mm (IEC/EN 60175)	DIN Rail 35 mm (IEC/EN 60175)
Weight	200 g	200 g	200 g
Certifications	EC	EC- UL-UR CSA	EC- UL-UR CSA
INPUT DATA			
Channels	1	1 analog, 1 strobe	1 analog, 1 strobe
Type	• VOLTAGE (mV, V) Bipolar 0..2, 0..5, 0..10 V • CURRENT (mA) Bipolar 0..20 mA • RTD Pt100 (-200..+600°C) • THERMOCOUPLE Type J, K, R, S, T, E, B, N • POTENTIOMETER: 0.5..15 kΩ	• VOLTAGE (mV, V) Bipolar from 75 mV to 20 V Resolution 15 bit + sign • CURRENT (mA) Bipolar up to 20 mA Resolution 1 µA • RTD Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84, NTC Measurement 3, 4 wires Scale: -200..600°C Resolution 0.1°C • THERMOCOUPLE Type J, K, R, S, T, E, B, N Resolution 2.5 µV • POTENTIOMETER: 500 Ω ..10 kΩ • REOSTATE: 500 Ω..25 kΩ • STROBE: Output relay alternative	• VOLTAGE (mV, V) Bipolar from 75 mV to 20 V Resolution 15 bit + sign • CURRENT (mA) Bipolar up to 20 mA Resolution 1 µA • RTD Pt100, Pt500, Pt1000, Ni100, KTY81, KTY84, NTC Measurement 3, 4 wires Scale: -200..600°C Resolution 0.1°C • THERMOCOUPLE Type J, K, R, S, T, E, B, N Resolution 2.5 µV • POTENTIOMETER: 500 Ω ..10 kΩ • REOSTATE: 500 Ω..25 kΩ • STROBE: Output relay alternative
OUTPUT DATA			
Channels	1	1 analog, 1 relay	1 analog, 1 relay
Type	• VOLTAGE (V) 4 scales: 0..2, 0..10 V • CURRENT (mA) 2 scales: 0..20, 4..20 mA	• VOLTAGE (V) 4 scales: 0/1..5V, 0/2..10V Min load resistance: 2 kΩ • CURRENT (mA) 2 scales: 0/4..20 mA Max load resistance: 600 Ω • RELAY Alternative to the NC / NA strobe input in the event of an alarm	• VOLTAGE (V) 4 scales: 0/1..5V, 0/2..10V Min load resistance: 2 kΩ • CURRENT (mA) 2 scales: 0/4..20 mA Max load resistance: 600 Ω • RELAY Alternative to the NC / NA strobe input in the event of an alarm
ORDER CODE			
Code	**Z109REG**	**Z109REG2-1**	**Z109REG2-H**

The technical data and the diagrams in this document are indicative and not binding.

Z109UI2-1	Z109REG-BP	Z109S-DI	Z109S
			
MA-V converter with galvanic separation, micro USB	**Universal converter with voltage / current bipolar output, micro USB**	**Galvanic separator for high isolation current loop**	**Galvanic separator for current loop**
GENERAL DATA			
10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac	9..40 Vdc; 19..28 Vac
Active input 2 wires (min 20 Vdc)	Active input 2 wires (17 Vdc)	Active input 2 wires (17 Vdc)	Active input 2 wires (17 Vdc)
2.5 W	2.5 W	2.5 W	2.5 W
1.500 Vac (3-way)	1.500 Vac (power supply / input)	3.500 Vac (3-way)	1.500 Vac (3-way)
Power supply	Power supply Error	Power supply	Power supply
35 ms (11 bit)..140 ms (16 bit)	35 ms (11 bit)..140 ms (16 bit)	< 200 us	< 60 ms
USB Micro	USB Micro	-	
0.1%	0.1%	0.2% or 10µA	0.2%
0.01%/°K	0.01%/°K	0.02%/°K	0.02% f.s. /°C
0.05 % (V,I), 0.01% (Vout)	-	-	0.05%
DIP switch Software (EASY SETUP) App (EASY SETUP) App Android	DIP switch Software (EASY SETUP) App Android	-	-
-20..+60°C	-20..+65°C	-20..+60°C	-20..+60°C
17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Removable screw terminals 2.5 mm^2	Removable screw terminals 2.5 mm^2	Removable screw terminals 2.5 mm^2	Removable screw terminals 2.5 mm^2
Nylon 6 with 30% glass fibre	Nylon 6 with 30% glass fibre	Nylon 6 with 30% glass fibre	Nylon 6 with 30% glass fibre
DIN Rail 35 mm (IEC/EN 60175)	DIN Rail 35 mm (IEC/EN 60175)	DIN Rail 35 mm (IEC/EN 60175)	DIN Rail 35 mm (IEC/EN 60175)
200 g	200 g	200 g	200 g
EC- UL-UR CSA	EC	EC	EC - UL
INPUT DATA			
1	1	1	1
• VOLTAGE (mV, V) Bipolar from 75 mV a to 20 V 9 scale Resolution 15 bit + sign • CURRENT (mA) Bipolar up to 20 mA Resolution 1 µA	• VOLTAGE Bipolar from 75 mV to 20 V • CURRENT Bipolar up to 20 mA • RTD Pt100, Pt500, Pt1000, Ni100, KTY81,KTY84, NTC Measurement 2.3, 4 wires • THERMOCOUPLE Type J, K, R, S, T, E, B, N • POTENTIOMETER: 500 Ω ..100 kΩ • REOSTATE: 500 Ω..25 kΩ	CURRENT 0…20 / 4..20 mA	CURRENT 2 scales: 0/4..20 mA
OUTPUT DATA			
1	1 (bipolar)	1	1
• VOLTAGE (V) 4 scales: 0/1..5V, 0/2..10V Min load resistance: 2 kΩ • CURRENT (mA) 2 scales: 0/4..20 mA Max load resistance: 600 Ω	Voltage from -10 to +10 Vdc, min load 1000 Ω Current from -20 to + 20 mA, max load 500 Ω	Current, 0/4..20 mA, max load 600 Ω	• CURRENT (mA) 2 scales: 0/4..20 mA Max load resistance: 600 Ω
Z109UI2-1	**Z109REG-BP**	**Z109S-DI**	**Z109S**

The technical data and the diagrams in this document are indicative and not binding.

CONVERTERS FOR ANALOG SIGNALS

	Z102	Z110S	Z110D	Z170REG-1
				
	Potentiometric converter	**Galvanic separator self-powered single-channel**	**Galvanic separator self-powered double channel**	**Universal converter with 2 galvanically separated analog outputs, micro USB**
GENERAL DATA				
Power supply	9..30 (opt.) - 19..40 Vdc 19..28 Vac	Self--powered from input loop	Self--powered from input loop	10..40 Vdc; 19..28 Vac
Transducers power supply	-	-	-	Yes max 25 mA, 17 Vdc
Max consumption	2.5 W	-	-	0.5..2 W
Isolation	1.500 Vac (3-way)	1,500 Vac	1,500 Vac	1.500 Vac (4-way)
Protection degree	IP20	IP20	IP20	IP20
LED status indicators	Power supply	-	-	Power supply Alarm
Response time	< 40 ms	< 100 ms	< 100 ms	< 25 ms
Interface	-	-	-	Micro USB (front)
Communication with PLC	-	-	-	-
Accuracy class	0.2%	0.1%	0.1%	0.1%
Thermal Drift	0.02% f.s. /°C	0.02% f.s. /°C	0.02% f.s. /°C	0.01% /K
Linearity	0.05%	0.1% f.s.	0.1% f.s.	<1% (input), 0.01% (output)
Configuration	DIP switch	-	-	DIP switch Software (EASY SETUP) App (EASY SETUP)
Operating temperature	0..+50°C	0..+50°C	0..+50°C	-20..+60°C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw removable terminals	Screw removable terminals	Screw removable terminals	Screw removable terminals
Case	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre
Installation	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
Weight	200 g	200 g	200 g	200 g
Certifications	EC	EC	EC	EC- UL-UR CSA
INPUT DATA				
Channels	1	1	2	1
Type	• REOSTATE 2 wires: 0..300 Ω (I=6 mA); 0..500 Ω (I=3.6 mA); 0..1 K Ω (I=1.8 mA) • POTENTIOMETER: 3 wires: Vref=1.8 Vcc, from 200 Ω to 1 M Ω	• CURRENT (mA) 4..20 mA	• CURRENT (mA) 4..20 mA	• VOLTAGE configurable scale 0..10 V • CURRENT configurable scale 0..20 mA (active / passive module) • POTENTIOMETER configurable scale 1 kΩ ..100 kΩ THERMOCOUPLE: J,K,R,S,T,B,E,N • THERMISTOR: Pt100, Pt500, Pt1000, Ni100 14 bit resolution Sampling period configurable from 5 to 20 ms.
OUTPUT DATA				
Channels	1	1	2	2
Type	• VOLTAGE (V) 4 scales: 0..5, 1..5, 0..10, 0..10 V Load impudence > 2.5 K Ω • CURRENT (mA) 2 scales: 0..20, 4..20 mA Loop impudence < 600 Ω	• CURRENT (mA) 4..20 mA	• CURRENT (mA) 4..20 mA	• VOLTAGE configurable scale 0..10 V • CURRENT configurable scale 0..20 mA (active / passive) 14 bit resolution
ORDER CODE				
Code	**Z102**	**Z110S**	**Z110D**	**Z170REG-1**

The technical data and the diagrams in this document are indicative and not binding.

CONVERTERS FOR ANALOG SIGNALS

A/D CONVERTERS

Z190	Z-SG	Z-4AI-D	Z-4TC-D
			
Signal subtracter adder with galvanic separation	**Converter for load cell**	**A/D converter for 4 analog signals**	**A/D converter for 4 thermocouples**
GENERAL DATA			
9..30 (opt.) - 19..40 Vdc 19..28 Vac	9..30 (opt.) - 19..40 Vdc 19..28 Vac	9..30 (option) - 19..40 Vdc 19..28 Vac (50..60 Hz)	9..30 (option) - 19..40 Vdc 19..28 Vac (50..60 Hz)
Active input 2 wires (min 20 vdc)	-	-	-
2.5 W	2 W	2.5 W	2 W
1.500 Vac (3-way)	1.500 Vac (3-way)	1,500 Vac (3-way)	1,500 Vac (3-way)
IP20	IP20	IP20	IP20
Power supply	Power supply Error Data Transmission Data Receipt	Power supply RST signal status Data transmission Data receipt	Power supply RST signal status Data transmission Data receipt
-	< 10 ms	-	-
-	Front jack 3.5 mm RS232 (COM) IDC10 ModBUS RTU RS485	Front jack 3.5 mm RS232 (COM)	Front jack 3.5 mm RS232 (COM)
-		Synchronous three-wire serial: CLOCK, DATA, STROBE, standard 24V pnp levels	Synchronous three-wire serial: CLOCK, DATA, STROBE, standard 24V pnp levels
0.2%	0.01%	-	-
0.02% f.s./°C	0.0025% f.s. /°C	-	-
0.05%	0.01%	-	-
DIP switch	DIP switch Software (EASY SETUP)	IEC 61131 PLC libraries DIP switch Z-PROG (PC software)	IEC 61131 PLC libraries DIP switch Z-PROG (PC software)
0..50°C	-20..+65°C	0..+55°C	0..+55°C
17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Screw removable terminals	Screw removable terminals	Screw removable terminals	Screw removable terminals
Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre
DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
200 g	200 g	200 g	200 g
EC	EC	EC, UL	EC, UL
INPUT DATA			
2	1 analogic, 1 digital	4	4
VOLTAGE (V) 4 scales: 0..1, 0..5, 0..10, 2..10 V Input impudence 500 kΩ CURRENT (mA) 2 scales: 0/4..20 mA Active connection: loop powered 20 Vdc not stabilised Passive connection: inlet impudence 100 Ω	• ANALOG Strain gauge load cell, 4 or 6-wire connection, min 87 Ω for 1..4 load cells (350 Ω) or 1..8 load cells (1,000 Ω); Sensitivity: 1..64 mV/V • DIGITAL Tare calibration	VOLTAGE (V) 2..10 V f.s 16,000 point resolution Impedance: 100 KΩ CURRENT (mA) ± 20 mA (bipolar) 16,000 point resolution Impedance: 100 Ω	VOLTAGE (mV) ± 80 mV Impedance 10 MΩ THERMOCOUPLE Type J, K, R, S, T, E; B, N
OUTPUT DATA			
1	1 analogic, 1 digital	-	-
VOLTAGE (V) 4 scales: 0..5, 0..10, 1..5, 2..10 V, min load resistance 2 kΩ CURRENT (mA) 2 scales: 0/4..20 mA Passive / active connection (max impedance loop 600 Ω)	CURRENT (mA) 0..20, 4..20 mA VOLTAGE (V) 0..10, 0..5 Vdc DIGITAL Weight threshold	-	-
Z190	**Z-SG**	**Z-4AI-D**	**Z-4TC-D**

The technical data and the diagrams in this document are indicative and not binding.

CONVERTERS FOR ELECTRICAL MEASUREMENT

	Z201	Z201-H	Z202
			
	Alternate current converter 10..40 Vdc; 19..28 Vac	**Alternate current converter 85..265 Vac/dc**	**Alternate voltage converter 10..40 Vdc; 19..28 Vac**
GENERAL DATA			
Power supply	10..40 Vdc; 19..28 Vac	85..265 Vac/dc	10..40 Vdc; 19..28 Vac
Max consumption	< 2.5 W	< 2.5 W	< 1.5 W
Isolation	3.750 Vac (input/output/power supply) 1.500 Vac (output/power supply)	4.000 Vac (input/output/power supply)	3.750 Vac (input/output; input/power supply) 1.500 Vac (output/power supply)
Protection degree	IP20	IP20	IP20
LED status indicators	Power supply	Power supply	Power supply
Response time	< 200 ms	< 100 ms	< 30 ms
Interfaces	-	-	-
Accuracy class	0.3%	0.3%	0.25%
Thermal Drift	<200 ppm/K	<200 ppm/K	<150 ppm/K
Configuration	DIP switch	DIP switch	DIP switch
Operating temperature	0..+55°C	-10..+65°C	0..+60°C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw removable terminals	Screw removable terminals	Screw removable terminals
Case	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre
Installation	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)	35 mm DIN rail (IEC/EN 60715)
Weight	200 g	200 g	200 g
Certifications	EC	EC	EC
INPUT DATA			
Channels	1	1	1
Type	ALTERNATE CURRENT 0..5 / 0..10 Aac	ALTERNATE CURRENT 0..5 / 0..10 Aac	ALTERNATIVE VOLTAGE 0..500 Vac (41 scales), inlet impudence 2.000 Ω/V Frequency 10 Hz..1 kHz
OUTPUT DATA			
Channels	1	1	1
Type	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω	CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω
ORDER CODE			
Code	**Z201**	**Z201-H**	**Z202**

The technical data and the diagrams in this document are indicative and not binding.

CONVERTERS FOR ELECTRICAL MEASUREMENT

Z202-H	Z202-LP	Z203-1	Z204-1
			
Alternate voltage converter, 85..265 Vac/dc	**Alternate voltage converter loop powered**	**Monophase network analyser**	**TRMS alternate and continuous voltage converter**
85..265 Vac/dc	5..28 Vdc (from the loop)	10..40 Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
< 1.5 W	<1 mA	< 2.5 W	< 1 W
3.750 Vac (input/output; input/power supply) 1.500 Vac (output/power supply)	4.000 Vac (input/output)	3,750 Vac (input/output/power supply)	4,000 Vac (input/output, input/power supply) 1.500 Vac (output/power supply)
IP20	IP20	IP20	IP20
Power supply	Power supply	Power supply Error Communication RS485	Power supply Error Communication RS485
< 100 ms	< 100 ms	< 10 ms	For a step variation 1 s from 10 to 90 %
-	-	RS232 (front connector for programming): baud rate, address, parity, data/stop bit RS485 (backplane), as an alternative to the analog output, speed up to 115.200 bps, ModBUS RTU protocol	RS232 (front connector for programming): baud rate, address, parity, data/stop bit RS485 (backplane), as an alternative to the analog output, speed up to 115.200 bps, ModBUS RTU protocol
0.3%	0.3%	0.5%	0,5% input; 0.1% output
+150 ppm/K	+150 ppm/K	+150 ppm/K	+100 ppm/K
DIP switch	DIP switch	DIP switch Software (EASY SETUP)	DIP switch Software (EASY SETUP)
-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C
17.5 x 100 x 112 mm	35 x 100 x 112 mm	17.5 x 100 x 112 mm	35 x 100 x 112 mm
Screw removable terminals	Screw removable terminals	Screw removable terminals	Screw removable terminals
Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre
DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
200 g	200 g	200 g	200 g
EC	EC	EC	EC
1 (single phase load)	1	1 (single phase load)	1
ALTERNATE VOLTAGE 0..500 Vac (41 scales), inlet impudence 2.000 Ω/V Frequency 10 Hz..1 kHz	ALTERNATE VOLTAGE 0..500 Vac CONTINUOUS VOLTAGE 0..540 Vdc, max voltage 710 Vpk Frequency DC / 20 Hz..20 kHz	ALTERNATE VOLTAGE Max capacity 500 Vac, frequency 50-60 Hz ALTERNATE CURRENT Nominal flow rate 5 A rms, max crest factor 3, max current 15 A, frequency 50 – 60 Hz	CONTINUOUS VOLTAGE: 0..1,200 Vdc; ALTERNATE VOLTAGE 0..850 Vac Input impudence: 800 kΩ Frequency: 30..300 Hz
1	1	1 analogic, 1 digital	1
CURRENT 0..20 / 4..20 mA, max load 600 Ω, active / passive connection VOLTAGE 0..5 / 0..10 / 1..5 / 2..10 Vdc, min load 2.500 Ω	CURRENT 4..20 mA, passive	VOLTAGE 0-5, 0-10, 1-5, 2-10 V Analog retransmission Vrms, Irms, Watt, Var, frequency, cosϕ, energy CURRENT 0-20, 4-20 mA DIGITAL TBD counter	CURRENT Range: 0..20 mA; max impudence: 500 Ω VOLTAGE Range: 0..10 V; min impudence: 1 k Ω
Z202-H	**Z202-LP**	**Z203-1**	**Z204-1**

The technical data and the diagrams in this document are indicative and not binding.

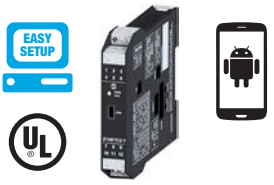
RELAY THRESHOLD CON CONVERTERS

	Z112A	Z112D	Z113S	Z113-1
				
	Power supply-amplifier for digital contacts, 1 relay output	**Power supply-amplifier for digital contacts, 2 relay outputs**	**Single adjustable alarm threshold**	**Double alarm threshold with universal analog input and relay output**
GENERAL DATA				
Power supply	19..40 (9..30 opt.) Vdc; 19..28 Vac	19..40 (9..30 opt.) Vdc; 19..28 Vac	19..40 (9..30 opt.) Vdc; 19..28 Vac	10..40 Vdc; 19..28 Vac
Transducers power supply	Yes, 2 wire active input (min 20 Vdc)	Yes, 2 wire active input (min 20 Vdc)	Yes, 2 wire active input (min 20 Vdc)	Yes, 2 wire active input
Max consumption	2.5 W	2.5 W	2.5 W	2.5 W
Isolation	1.500 Vac (power supply/input)c 4.000 Vac (input/power supply./outlet)	1,500 Vac	1.500 Vac (power supply/input) 4.000 Vac (input/power supply./outlet)	1.500 Vac (3-way)
Protection degree	IP20	IP20	IP20	IP20
LED status indicators	Power supply Attracted relay	Power supply Attracted relay	Power supply Exceeding of threshold	Power supply Alarm
Interfaces	-	-	-	Micro USB (front)
Thermal Drift	0.01%/°C	0.01%/°C	0.01%/°C	0.01%/°K
Linearity	0.05%	0.05%	0.05%	0.05%
Configuration	DIP switch Trimmer	DIP switch Trimmer	DIP switch Trimmer	DIP switch Software (EASY SETUP)
Operating temperature	0..+50°C	0..+50°C	0..+50°C	-20..+65°C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw removable terminals	Screw removable terminals	Screw removable terminals	Screw removable terminals
Case	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre
Installation	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
Weight	200 g	200 g	200 g	200 g
Certifications	EC	EC	EC	EC
INPUT DATA				
Channels	1	2	1	1
Type	impulse (mechanical contact, reed, npn, pnp, Namur, imp. 24 Vdc, photoelectric sensor, Hall effect sensor), freq. Max 400 Hz	Impulse (mechanical contact, reed, npn, pnp, Namur, imp. 24 Vdc, photoelectric sensor, Hall effect sensor), freq. Max 400 Hz	Voltage (V), 4 scales (0/1..5 Vdc, 0/2..10 Vdc); input impedance 500 kW Current (mA), 2 scales (0..20, 4..20 mA); active/passive connection; input impedance 100Ω	Voltage up to 10 V Bipolar current up to 20 mA Thermistors Pt100, Pt500, Pt1000, Ni100 Thermocouples type J,K,R,S,T,B,E,N Potentiometer up to 100 kΩ
OUTPUT DATA				
Channels	1	2	1	2
Type	SPDT 1A relay - 30Vdc / 5A - 250 Vac (resistive load)	SPST relay reed, max capacity 0.5A - 100 Vac/dc (10 VA resistive load)	SPDT 1A relay - 30Vdc / 5A - 250 Vac (resistive load)	SPST relay, 1 common contact, 2 NO contacts, capacity 250 Vac - 3 A
ORDER CODE				
Code	**Z112A**	**Z112D**	**Z113S**	**Z113-1**

The technical data and the diagrams in this document are indicative and not binding.

CONVERTERS FOR TEMPERATURE SENSORS

CONVERTERS FOR FREQUENCY SIGNALS

	Z109PT2-1	Z109TC2-1	Z104	Z111
				
	Thermoresistance isolator converter with Micro USB interface	**Thermocouple isolator converter with Micro USB interface**	**MA / V converter - frequency with galvanic separation**	**Frequency converter - mA / V with galvanic isolation**
GENERAL DATA				
Power supply	9..40 Vdc; 19..28 Vac	9..40 Vdc; 19..28 Vac	19..40 Vdc; 19..28 Vac	19..40 Vdc; 19..28 Vac
Transducers power supply	-	-	Yes, 20 Vdc, max 20 mA, 2 wires	-
Max consumption	2.5 W	2 W	2.5 W	2.5 W
Isolation	1.500 Vac (3-way)	1.500 Vac (3-way)	1.500 Vac (3-way)	1.500 Vac (3-way)
Protection degree	IP20	IP20	IP20	IP20
LED status indicators	Power supply Setting error Off scale	Power supply Error	Power supply Output (attracted relay)	Power supply Error
Response time	35..140 ms	35..140 ms	350 ms	250 ms
Interfaces	Micro USB (front)	Micro USB (front)	-	-
Accuracy class	0.1% (RTD) - 0.3% (output under voltage)	0.1% (TC) - 0.3% (output under voltage)	0.2%	0.3%
Thermal Drift	0.01%/°K	0.01%/°K	0.02% f.s./°C	0.01% f.s./°C
Configuration	DIP switch Software (EASY SETUP) APP Android	DIP switch Software (EASY SETUP) APP Android	DIP switch Trimmer (full scale)	DIP switch Trimmer (full scale)
Operating temperature	-20..+60°C	-20..+60°C	0..+50°C	0..+50°C
Dimension	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm	17.5 x 100 x 112 mm
Connections	Screw removable terminals	Screw removable terminals	Screw removable terminals	Screw removable terminals
Case	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre	Nylon 6 30% glass fibre
Installation	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)	DIN Rail 35 mm (IEC/EN 60715)
Weight	200 g	200 g	200 g	200 g
Certifications	EC	EC	EC	EC, UL-UR CSA
INPUT DATA				
Channels	1	1	1	1
Type	RTD Pt100, Pt500, Pt1000, Ni100 2, 3, 4-wire connection Excitation current 1mA Resolution 0.1°C	THERMOCOUPLE Type: J, K, R, S, T, E, B, N Resolution 5 µV Automatic interruption detection	VOLTAGE (V) 4 scales (0..1, 0..5, 0..10, 2..10 V); input impudence 1 MΩ CURRENT (mA) 2 scales (0/4..20 mA); active connection loop powered 15 Vdc not stabilised; passive connection input impedance 100 Ω	Pulse (mechanical contact, reed, npn, pnp, Namur, imp. 24 Vdc, photoelectric sensor, Hall effect sensor, TTL variable reluctance), freq. measurable from 1 mHz to 9.99 kHz
OUTPUT DATA				
Channels	1	1	1	1
Type	VOLTAGE (V) 4 scales: 0..5, 0..10, 1..5, 2..10 V Min. load impudence 2 kΩ Resolution: 2.5 µA / 1.25 mV CURRENT (mA) 2 scales: 0..20, 4..20 mA Max load impudence 600 Ω Resolution: 2.5 µA / 1.25 mV	VOLTAGE (V) 4 scales: 0..5, 1..5, 0..10, 2..10 V Min. load impudence 2.5 KΩ Resolution: 0.025%..0.032 % CURRENT (mA) Active / passive connection 2 scales: 0..20, 4..20 mA Max load impudence: 600 Ω Resolution: 0.025..0.032%	Pulse npn open collector, 30 Vcc, 300 mA; reed relay 30 Vac/dc, 100 mA, max frequency 10 kHz	VOLTAGE (V) 4 scales (0..5, 0..10, 0..5, 2..10 V); min load resistance 2.500Ω CURRENT (mA) 2 scales 0/4..20 mA, max load resistance 600 Ω
ORDER CODE				
Code	Z109PT2-1	Z109TC2-1	Z104	Z111

The technical data and the diagrams in this document are indicative and not binding.

SOFTWARE & ACCESSORIES

EASY SETUP 2
Configuration software

Programmable models:
Z109REG, Z109REG2-1, Z109UI-2, Z109REG-BP, Z170REG-1, Z-SG, Z203-1, Z204-1, Z113-1, Z109PT2-1, Z109TC2-1
Minimum hardware requirements:
CPU 1GHz, 256 MB free in HD, graphic board resolution 1024x769 pixel
Free download from www.seneca.it

- Automatic connection to the module
- Setting of operation and communication parameters
- Parameter monitoring
- Automatic configuration of modules
- Testing and replication of the configuration

EASY SETUP APP
Configuration app for Android terminal

Programmable models:
Z109REG2-1, Z109UI2-1, Z109REG-BP, Z170REG-1, Z109PT2-1, Z109TC2-1
Android version: 4.0 or later
Compatible terminals: Android Smartphone/Tablet with OTG function
Download: Google Play Store

Mobile Phone with USB OTG support
Google play

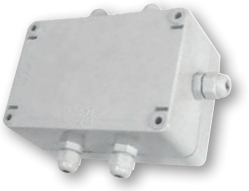
- Automatic connection to the module
- Setting of operation and communication parameters
- Parameter monitoring
- Automatic configuration of modules
- Testing and replication of the configuration

S117P1
SERIAL CONVERTER RS232↔USB, TTL↔USB, RS485↔USB

- Asynchronous serial conversion RS232, RS485, TTL
- Multiple connection possibility of multiple S117P1 units on the same PC
- USB 1.0, 1.1, 2.0 standard compatibility
- RS485 communication, max 32 nodes
- External modules power supply (100 mA, 12 Vdc)
- Supplied accessories: USB cable, TTL cable, driver CD

ORDER CODE	
Code	Description
S117P1	Asynchronous serial converter RS232↔USB, TTL↔USB, RS485↔USB

EQUALISATION AND CONNECTION SYSTEM FOR LOAD CELLS



ORDER CODE	
Code	Description
SG-EQ4	Equalisation board and connection up to 4 load cells in parallel
SG-EQ4-BOXPG7	Equalisation board and connection up to 4 parallel load cells + IP67 containment box complete with cable glands with 7 mm diameter and 2 hole covers

Z-POWER
19 Vac transformers for DIN rail mounting

- Primary voltage 230 (115) Vac ± 10%
- Housing in self-extinguishing thermoplastic material (class V-0)
- Protection with thermal fuse
- Dimension 3 DIN modules (15 VA), 5 DIN modules (25 VA)
- IP 40

ORDER CODE	
Code	Description
Z-POWER 230-15VA	Transformer 19 Vac, 230-15 VA
Z-POWER 230-25VA	Transformer 19 Vac, 230-25 VA
Z-POWER 115-15VA	Transformer 19 Vac, 115-15 VA

Z-SUPPLY
Power supply switching monophase 24V @ 1.5 A

- **Input:** 110..230 Vac @ 47-63 Hz 0,7 A; 110..315 Vdc, 0.7 A
- **Output:** 24 Vdc ± 2%
- **Redundancy I**n parallel with two Z-SUPPLY modules (only from IDC10 connector)
- **Output current:** 1.5 A
- **Output control:** "Power Good" output relay
- **Internal fuse:** 1.25A T-type (delayed)
- **Installation:** On DIN rail 46277
- **Isolation:** Up to 3KV in output and output voltage

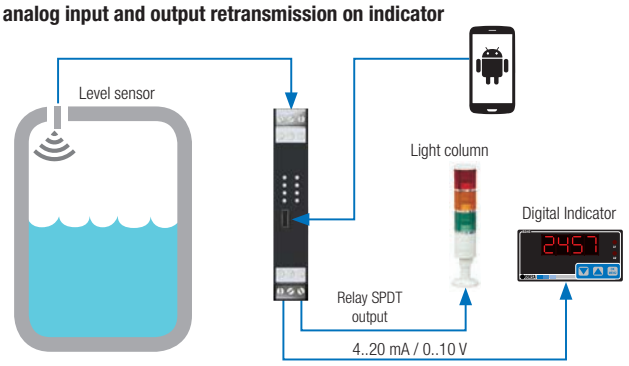
ORDER CODE	
Code	Description
Z-SUPPLY	Power supply switch monophase 24V @ 1.5 A

CABLES

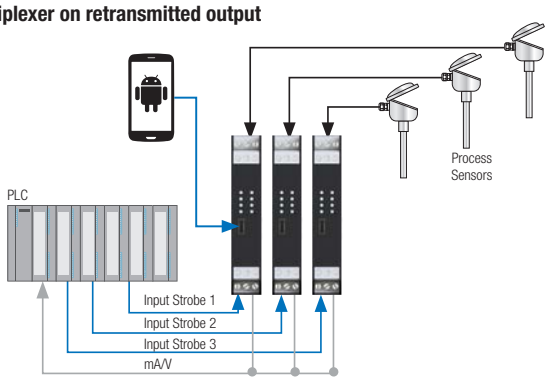
ORDER CODE	
Code	Description
CS-JACK-DB9F	Programming serial cable (Jack / DB9F)
CU-A-MICROB	Cable plug USB-A Micro USB-B 5 P
CU-A-MICRO-OTG	Adapter cable Micro USB OTG – USB Female A type

APPLICATION EXAMPLES

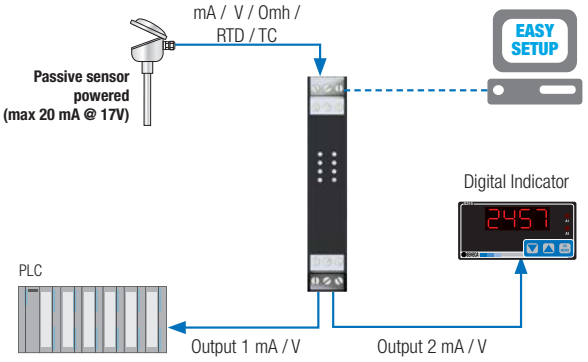
Z109REG2-1
Isolation and conversion with alarm threshold on analog input and output retransmission on indicator



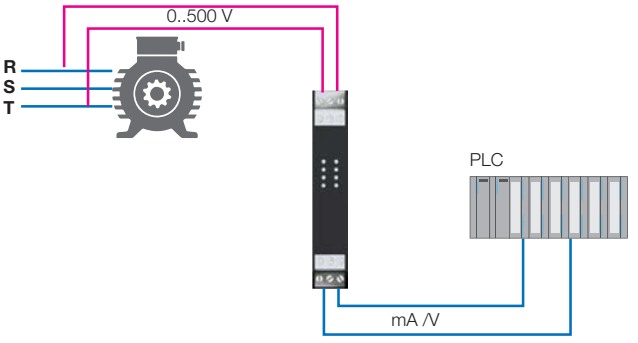
Z109REG2-1
Isolation and analog conversion with function of multiplexer on retransmitted output



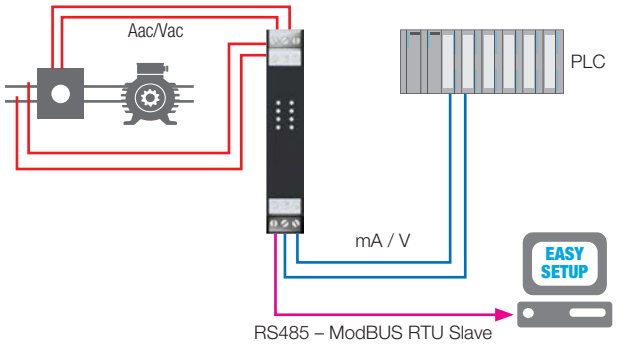
Z170REG-1
Duplication and retransmission of analog signal



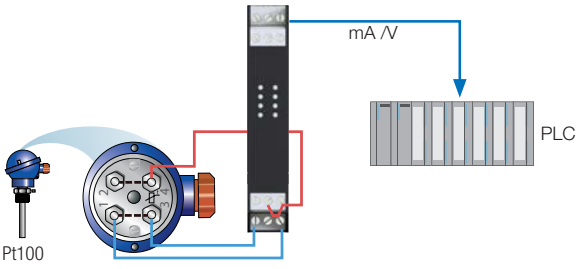
Z202
Conversion of the alternating voltage into a normalised mA/V signal



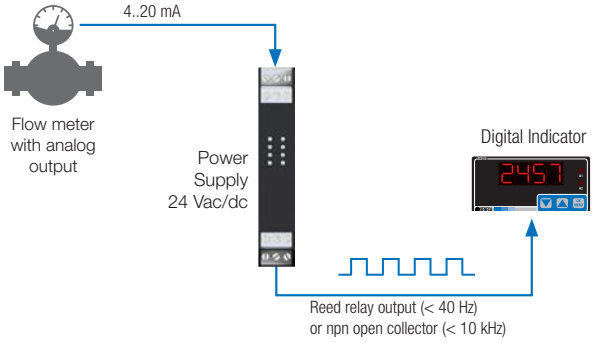
Z203-2
Single-phase network analyser with output signal retransmission



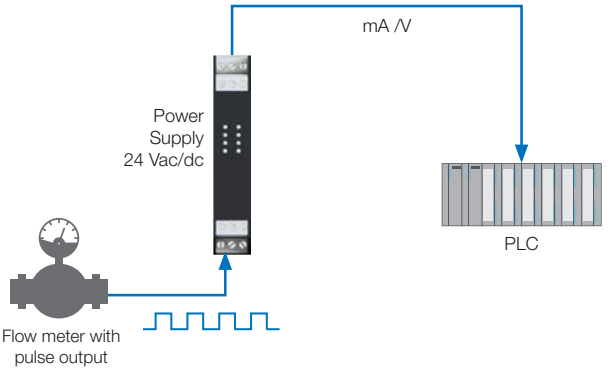
Z109PT2-1
Temperature conversion from Pt100 into a standard analog signal



Z104
Pulse count from flow meter with analog output



Z111
Instantaneous flow acquisition from meter with pulse output

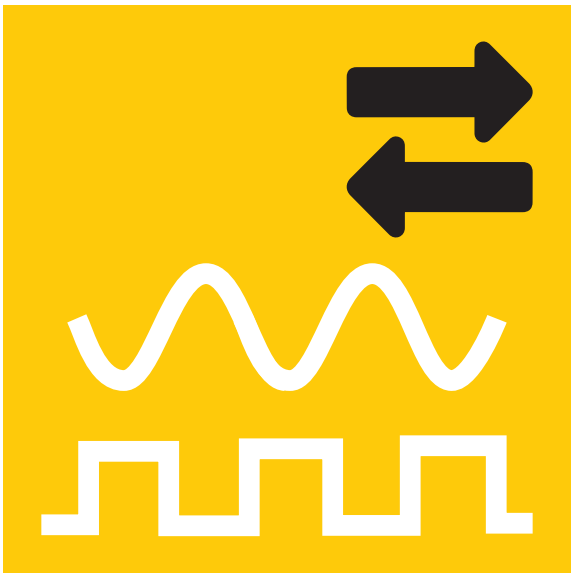


RAPID SELECTION

CODE INSTRUMENT	CONVERSION				POWER SUPPLY					OTHER CHARACTERISTICS	
	IN	OUT	No. INPUTS	No. OUTPUTS	19..40 Vdc (9..30 Vdc opt.); 19..28 Vac	10..40 Vdc; 19..28 Vac	85..265 Vac/dc	External / From measurement loop	POWER SUPPLY SENSORS / ACTIVE INPUT	MAX ISOLATION	ACCURACY CLASS
CONVERTERS FOR ANALOG SIGNALS											
Z102	Ohm	mA, V	1	1	x					1.5 kVac	0.2%
Z109REG	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100	mA, V	1	1	x				18 Vdc	1.5 kVac	0.2%
Z109REG2-1	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100, Pt500, Pt1000, Ni100, KTY81,KTY84, NTC, (Strobe)	mA, V, (SPST relay)	2	2		x			20 Vdc	1.5 kVac	0.1%
Z109REG2-H	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100, Pt500, Pt1000, Ni100, KTY81,KTY84, NTC, (Strobe)	mA, V, (SPST relay)	2	2			x		20 Vdc	1.5 kVac	0.1%
Z109REG-BP	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100, Pt500, Pt1000, Ni100, KTY81,KTY84, NTC	mA, V	1	1		x			17 Vdc	1.5 kVac	0.1%
Z109S	mA	mA	1	1	x				20 Vdc	1.5 kVac	0.2%
Z109S-DI	mA	mA	1	1		x			17 Vdc	3.5 kVac	0.2%
Z109UI2-1	mA, V, mV	mA, V	1	1		x				1.5 kVac	0.1%
Z110D	mA	mA	2	2				x		1.5 kVac	0.1%
Z110S	mA	mA	1	1				x		1.5 kVac	0.1%
Z170REG-1	mA, mV, V, Ohm, TC (J,K,R,S,T,B,E,N), Pt100, Ni100, Pt500, Pt1000, (Strobe)	mA, V, (SPST relay)	1	2		x				1.5 kVac	0.1%
Z190	mA, V	mA, V	2	1	x				20 Vdc	1.5 kVac	0.2%
Z-SG	mV, load cell	mA, V, RS485 ModBUS	1	1		x				1.5 kVac	0.01%
A/D CONVERTERS											
Z-4AI-D	mA, V	Serial / Signals 24V PNP (Clock, Data, Strobe)	4	3	x					1.5 kVac	0.1%
Z-4TC-D	TC, mV	Serial / Signals 24V PNP (Clock, Data, Strobe)	4	3	x					1.5 kVac	0.1%
ELECTRIC MEASUREMENT CONVERTERS											
Z201	Aac	mA, V	1	1	x					1.5 k Vac	0.3%
Z201-H	Aac	mA, V	1	1			x			4 kVac	0.3%
Z202	Vac	mA, V	1	1		x				3.75 k Vac	0.25%
Z202-H	Vac	mA, V	1	1			x			4 kVac	0.25%
Z202LP	Vac/dc	mA, V	1	1				x		4 kVac	0.25%
Z203-2	A, V	mA, V, RS485 ModBUS	1	1		x				3.75 kVac	0.5%
Z204-1	Vac/dc	mA, V, RS485 ModBUS	1	1		x				4 kVac	0.5%
CONVERTERS WITH RELAY THRESHOLDS											
Z112A	Contact, Reed, NPN, PNP, Namur, Photoelectric, Hall, Var. Reluctance, Imp. 24 V, TTL, Volumetric Meter	SPDT Relay	1	1	x				20 Vdc	1.5 kVac	
Z112D	Contact, Reed, NPN, PNP, Namur, Photoelectric, Hall, Var. Reluctance, Imp. 24 V, TTL, Volumetric Meter	SPST relay	2	2	x				20 Vdc	1.5 kVac	
Z113S	mA, V	SPDT Relay	1	1	x				20 Vdc	1.5 kVac	
Z113-1	mA, V, Ohm, RTD, TC	SPST relay	1	2		x				1.5 kVac	
TEMPERATURE SENSOR CONVERTERS											
Z109PT2-1	Pt100, Ni100, Pt500, Pt1000	mA, V	1	1		x				1.5 kVac	0.1%
Z109TC2-1	TC (J,K,R,S,T,B,E,N)	mA, V	1	1		x				1.5 kVac	0.2%
CONVERTERS FOR FREQUENCY SIGNALS											
Z104	mA, V	NPN Open Collector, Reed Relay	1	1	x				20 Vdc	1.5 kVac	0.2%
Z111	Contact, Reed, NPN, Namur, Photo-electric, Hall, Var. Reluctance, Imp. 24 V, TTL, Volumetric Meter	mA, V	1	1	x				20 Vdc	1.5 kVac	0.2%

K Line

COMPACT ISOLATOR CONVERTERS



4

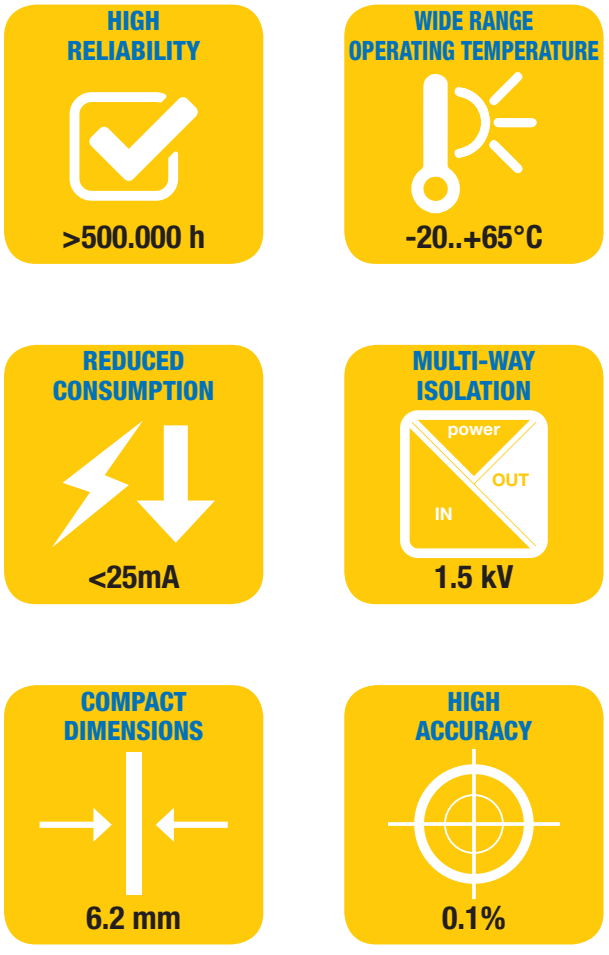
4.2

K Line

Signal Converters
Compact galvanic isolators

The SENECA **K Line** converter modules are characterised by 1.5 kVac 3-way isolation in digital technology, accuracy class 0.1%, supply range from 19.2 to 30 Vdc, compact dimensions (102.5 x 93.1 x 6.2) mm), reduced consumption, Mtbf of over 500,000 hours. Signal configuration is immediate with DIP switches or software. The supply technique is standard (on the spring clamp) or with a distributed system, based on an expandable connector (K-BUS) that can be snapped onto the 35 mm DIN guides according to the EN 60715 standard.

ROBUST INDUSTRIAL DESIGN



SPECIAL FUNCTIONS

- FILTER FOR THE STABILISATION OF READING.
- INPUT / OUTPUT SCALE INVERSION
- LINEARISATION FOR HORIZONTAL CYLINDER TANKS
- ROOT EXTRACTION

SETTINGS

- CONFIGURATION CONFIGURATION VIA DIP-SWITCH
  ON
  OFF
- PROGRAMMING VIA PC
  EASY SETUP

POWER SUPPLY

- POWER SUPPLY DISTRIBUTED / DIRECT ON TERMINAL
  19.2..30 Vdc
- EXPANDABLE POWER SUPPLY CONNECTOR

CERTIFICATIONS

- STANDARD INTERNATIONAL
  EC, UL, CSA
- ATEX CONFORMITY (K121)
  II 3G Ex nA IIC T4 Gc X (gas)
  II 3D Ex tc IIIC T135°C Dc X (dust)
  EN 60079-0:2012
  EN 60079-15:2010

	UNIVERSAL	ANALOG		
	K121	**K109UI**	**K109S**	**K109LV**
				
	Universal converter (mA, V, Ohm, RTD, TC) isolated loop powered	**V-I / V-I opto-isolated converter**	**opto-isolated converter V-I / V-I with active input (transducer power supply)**	**opto-isolated converter shunt / V-I**
GENERAL DATA				
Power supply	7..30 Vdc (with loop 4..20mA)	19.2.. 30 Vdc	19.2.. 30 Vdc	19.2.. 30 Vdc
Power supply on side terminals		Yes	Yes	Yes
Max current absorbed	24 mA	22 mA (24 Vdc)	23 mA (24 Vdc); 45 mA (with aux. power supply)	22 mA (24 Vdc)
Max power dissipated	<660 mW	500 mW	500 mW	500 mW
A/D conversion	16 bit	14 bit	14 bit	14 bit
Rejection	50 or 60 Hz (programmable))	50 or 60 Hz (programmable))	50 or 60 Hz (programmable))	50 or 60 Hz (programmable))
Configurability	Software (EASY SETUP)	DIP Switch	DIP Switch	DIP Switch
Filter	Additional for reading stabilisation	Additional for reading stabilisation	Additional for reading stabilisation	Additional for reading stabilisation
Dimension	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm
Isolation	1.5 kVac (2 ways)	1.5 kVac (3-ways)	1.5 kVac (3-ways)	1.5 kVac (3-ways)
Isolation technology	Digital / optocoupler	Digital / optocoupler	Digital / optocoupler	Digital / optocoupler
Processing	Calculation of floating point 32 bit	Calculation of floating point 32 bit	Calculation of floating point 32 bit	Calculation of floating point 32 bit
Colour	Black	Black	Black	Black
Case material	PBT	PBT	PBT	PBT
Weight	45 g	45 g	45 g	45 g
Operating temperature	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C
Connection	8 spring terminals	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS
Protection degree	IP 20	IP 20	IP 20	IP 20
Accuracy class	0.1%	0.1%	0.1%	0.1%
Thermal drift	< 120 ppm/K	< 120 ppm/K	< 120 ppm/K	< 120 ppm/K
LED	Anomaly, alarm	Anomaly, alarm	Anomaly, alarm	Anomaly, alarm
Special functions	Cold coupling offset Filter that can be inserted Output inversion	Root extraction Signal inversion Configurable scales Tank linearisation Programmable cut-off	Root extraction Signal inversion Tank linearisation Programmable cut-off Auxiliary power supply 17..20 V, max current 25 mA	Fault and programmable cut-off Filter that can be inserted
Approvals	EC, II 3G Ex nA IIC T4 Gc X, II 3D Ex tc IIIC T135°C Dc X	EC, UL-UR CSA	EC, UL-UR CSA	EC
INPUT DATA				
Channels	1	1	1	1
Type	THERMOCOUPLE J, K, R, S, T, E, B, N, L (EN 60584) RTD (Pt100, Pt500, Pt1000, Ni100, Ni120, NI1000, Cu50, Cu100) with 2, 3, 4 wire connection VOLTAGE (V): 30V, impedance 200 kΩ VOLTAGE (mV): 150 mV, impedance 10 MΩ CURRENT: 24 mA, impedance 40 Ω Potentiometer: 500..100 kΩ, impedance 10 MΩ Resistance 0..400 (1760) Ω	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5/ 0..15 / 0..30 V (can be reversed) Impedance: 110 kΩ - 325 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Impedance: 35 Ω	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Impedance: 110 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Impedance: 35 Ω	SHUNT Range: ±25, 50, 60, 75, 80, 100, 120, 150, 200, 250, 300, 400, 500, 1000, 2000 mV (from Dip switch)
OUTPUT DATA				
Channels	1	1	1	1
Type	Current 4-20 mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 /0..20 / 20..0 mA Max load resistance: 500 Ω Protection: 25 mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 /0..20 / 20..0 mA Max load resistance: 500 Ω Protection: 25 mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 / 1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 /0..20 / 20..0 mA Max load resistance: 500 Ω Protection: 25 mA
Auxiliary static relay	-	-	-	-
Response time (10-90%)	140..620 ms	< 40 ms (without filter) < 88 ms (with filter)	< 40 ms (without filter) < 88 ms (with filter)	< 25 ms (without filter) < 55 ms (with filter
Conversion D/A resolution				
ORDER CODE				
Code	K121	K109UI	K109S	K109LV

The technical data and the diagrams in this document are indicative and not binding.

TEMPERATURE

K109PT	K109PT-HPC	K109PT1000	K120RTD	K109TC
			 	
opto-isolated converter Pt100 / V-I	**opto-isolated converter Pt100 / V-I high accuracy**	**opto-isolated converter Pt1000 / V-I**	**Converter not isolated Pt100, Ni100 loop powered**	**TC opto-isolated converter / V-I with adjustable threshold**
19.2..30 Vdc	19.2..30 Vdc	19.2..30 Vdc	Loop powered (5..30 Vdc)	19.2..30 Vdc
Yes	Yes	Yes	-	Yes
21..25 mA (24 Vdc)	21..25 mA (24 Vdc)	21..25 mA (24 Vdc)	21..25 mA (24 Vdc)	21..25 mA (24 Vdc)
500 mW	500 mW	500 mW	500 mW	500 mW
14 bit	14 bit	14 bit	14 bit	14 bit
50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)
DIP Switch	DIP Switch	DIP Switch	DIP Switch, Software (EASY SETUP)	DIP Switch
Additional for reading stabilisation	Additional for reading stabilisation	Additional for reading stabilisation	Additional for reading stabilisation	Additional for reading stabilisation
6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm
1.5 kVac 3 ways (50 Hz, 1 min)	1.5 kVac 3 ways (50 Hz, 1 min)	1.5 kVac 3 ways (50 Hz, 1 min)	-	1.5 kVac 3 ways (50 Hz, 1 min)
Digital (optocoupler)	Digital (optocoupler)	Digital (optocoupler)	-	Digital (optocoupler)
Calculation of floating point 32 bit	Calculation of floating point 32 bit	Calculation of floating point 32 bit	Calculation of floating point 32 bit	Calculation of floating point 32 bit
Black	Black	Black	Black	Black
PBT	PBT	PBT	PBT	PBT
45 g	45 g	45 g	45 g	45 g
-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C
Spring and/or BUS	Spring and/or BUS	Spring and/or BUS	Spring	Spring and/or BUS
IP 20	IP 20	IP 20	IP 20	IP 20
0.1% (max range)	0.1% (max range)	0.1%	0.1%	0.1%
< 100 ppm/K	< 100 ppm/K	< 100 ppm/K	< 100 ppm/K	< 100 ppm/K
Anomaly, alarm	Anomaly, alarm	Anomaly, alarm	Anomaly, alarm	Anomaly, alarm Auxiliary output status
Fault and programmable cut-off Filter that can be inserted	Fault and programmable cut-off Filter that can be inserted	Fault and programmable cut-off Filter that can be inserted	Type / RTD connection / filter measurement range, error, inversion output and over-range	Fault and programmable cut-off Filter that can be inserted
EC, UL-UR CSA	EC	EC	EC	EC, UL-UR CSA
1	1	1	1	1
PT100 Standard IEC 751 / EN 60751 – ITS90 Range: -150..+650°C Minimum span: 50°C Current on transmitter 900 µA 2, 3, 4 wire connection Max cable resistance: 20 Ω	PT100 Standard IEC 751 / EN 60751 – ITS90 Range: -200..+160°C Minimum span: 20°C Current on transmitter 900 µA 2, 3, 4 wire connection Max cable resistance: 20 Ω	PT1000 Standard EN 60751/A2 – ITS90 Range: -200..+210°C Minimum span: 30°C Current on the transmitter < 350µA 2, 3, 4 wire connection Max cable resistance: 50 Ω	Pt100 (EN 60751/A2-ITS90) Range: -200..+650°C Minimum span: 20°C 2, 3, 4 wire connection Ni100 Range: -60..+250°C Minimum span: 20°C 2, 3, 4 wire connection	THERMOCOUPLE Type J,K,E,N,S,R,B,T (ITS90) Minimum span 100°C Impedance 10 MΩ Cold semiconductor coupling, ADC 13 bit, accuracy 0.15°C, update 10 s Max voltage ± 32V
1	1	1	1	1
VOLTAGE Range: 0..10 / 10..0 / 0..5 /1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Max load resistance: 500 Ω Protection: 25 mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 /1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Max load resistance: 500 Ω Protection: 25 m	VOLTAGE Range: 0..10 / 10..0 / 0..5 /1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Max load resistance: 500 Ω Protection: 25 mA	CURRENT Range: 4..20 / 20..4 (2 wires) Load resistance: 1 kΩ Resolution: 0.5 µA (15 bit+sign) Protection: 30 mA	VOLTAGE Range: 0..10 / 10..0 / 0..5 /1..5 V Minimum load resistance: 2 kΩ CURRENT Range: 4..20 / 20..4 / 0..20 / 20..0 mA Max load resistance: 500 Ω
-	-	-	-	Nominal voltage: 24 Vac/dc Current: 60 mA Surge protections: 50 V Settable hysteresis / alarm threshold
< 50 ms (without filter) < 200 ms (with filter)	< 50 ms (without filter) < 200 ms (with filter)	< 50 ms (without filter) < 200 ms (with filter)	< 220 ms (without filter) < 620 ms (with filter)	< 40 ms (without filter) < 88 ms (with filter)
1 mV, 2 µA	1 mV, 2 µA	1 mV, 2 µA	1 mV, 2 µA	1 mV, 2 µA
K109PT	K109PT-HPC	K109PT1000	K120RTD	K109TC

The technical data and the diagrams in this document are indicative and not binding.

COMPACT ISOLATOR CONVERTERS - K LINE

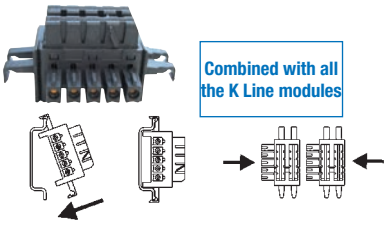
	FREQUENCY			SERIALS		
	K111	**K111D**	**K112**	**K107A**	**K107B**	**K107USB**
	 **Frequency threshold with two isolated outputs**	 **Frequency divider and repeater with two isolated outputs**	 **Isolated output double channel digital coupler**	 **Opto-isolated serial repeater converter RS485 / RS485**	 **Optoisolated serial converter RS232 / RS485**	 **Optoisolated serial converter RS485 / USB**
GENERAL DATA						
Power supply	19.2.. 30 Vdc	19.2..30 Vdc	19.2.. 30 Vdc	19.2..30 Vdc	19.2..30 Vdc	Via USB port
Power supply on side terminals	Yes	Yes	Yes	Yes	Yes	-
Hot swapping	Yes	Yes	Yes	Yes	Yes	Yes
Max current absorbed	< 25 mA	< 25 mA	< 25 mA	22 mA (24 Vdc)	22 mA (24 Vdc)	60 mA
Max power dissipated	500 mW	500 mW	500 mW	500 mW	500 mW	-
A/D conversion	14 bit	14 bit	14 bit	-	-	-
Rejection	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)	50 or 60 Hz (programmable)
Configurability	DIP Switch, Software (EASY SETUP)	DIP switch, Software (EASY SETUP)	DIP Switch	DIP Switch	DIP Switch	DIP Switch
Filter	Programmable	Programmable	-	-	-	-
Dimension	6.2 x 93.1 x 102.5 mm	6,2x93,1x102,5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm	6.2 x 93.1 x 102.5 mm
Isolation	1.5 kVac (3-ways)	1.5 kVac (3 ways)	1.5 kVac (3-ways)	1.5 kVac 3 ways (50 Hz, 1 min)	1.5 kVac 3 ways (50 Hz, 1 min)	1.5 kVac (USB / RS485)
Isolation technology	Digital / Optocoupler	Digital / Optocoupler	Digital / Optocoupler	Digital (optocoupler)	Digital (optocoupler)	Digital (optocoupler)
Processing	Calculation of floating point 32 bit	Calculation of floating point 32 bit	Calculation of floating point 32 bit	-	-	-
Colour	Black	Black	Black	Black	Black	Black
Case material	PBT	PBT	PBT	PBT	PBT	PBT
Weight	45 g	45 g	45 g	45 g	45 g	45 g
Operating temperature	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C	-20..+65°C
Connection	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS	Spring and/or BUS
Protection degree	IP 20	IP20	IP 20	IP20	IP20	IP20
LED	Presence of power supply, active thresholds, error	Outputs status	Presence of power supply, output status	Power supply Data presence Reversed connection	Power supply Data presence Reversed connection	Power supply Data presence Reversed connection
Industrial	-	-	-	Automatic handshake Baud rate: 1.200..115.200 bps	Automatic handshake Baud rate: 1.200..115.200 bps	Settable termination of the RS485 line Baudrate: 1.200..115.200 bps RS485 serial communication via ModBUS RTU, max 32 nodes
Special functions	Frequency divider Average measurement in a window of N pulses (N <= 256) Direct operation	Frequency divider Average measurement in a window of N pulses (N <= 256) Direct operation	-	-	-	Supported operating systems: Windows 98, 2000, XP, Vista, 7, 10, Linux 2.24.0 and later
Approvals	EC	EC	EC	EC, UL-UR CSA	EC, UL-UR CSA	EC, UL-UR CSA
INPUT DATA						
Channels	1	1	1	1	1	1
Type	Contact IEC 1131.2 (type 1) Namur (DIN 19234, EN 60947-5-6) NPN / PNP (12 or 22 V) with 2/3 wires Reed Photocell Max voltage: ±28 Vdc Frequency: Max 20 kHz, min 1 pulse every 116 minutes	Contact IEC 1131.2 (type 1) Namur (DIN 19234, EN 60947-5-6) NPN / PNP (12 or 22 V) with 2/3 wires Reed Photocell Max voltage: ±28 Vdc Frequency: Max 20 kHz, min 1 pulse every 116 minutes	Contact IEC 1131.2 (type 1) Namur (DIN 19234, EN 60947-5-6) NPN / PNP (12 or 22 V) with 2/3 wires Reed Photocell Max. frequency: 400 Hz	SERIAL RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	SERIAL RS232B, protection up to 30 Vdc	SERIAL USB standard 1.0 e 2.0, connectors USB A and MINI USB B
OUTPUT DATA						
Channels	2	2	2	1	1	1
Type	PNP independent channels up to 200 mA, protected against short circuit	PNP independent channels up to 200 mA, protected against short circuit	Independent PNP and NPN channels	SERIAL RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	SERIAL RS485 half duplex, 31 nodes, terminator, protection up to 30 Vdc	SERIAL RS485, 31 nodes, spring clamp, ModBUS protocol RTU Slave half duplex, max 1.200 m and 31 nodes
ORDER CODE						
Code	K111	K111D	K112	K107A	K107B	K107USB (complete with programming cable and CD ROM)

The technical data and the diagrams in this document are indicative and not binding.

ACCESSORIES & SOFTWARE

CONNECTOR

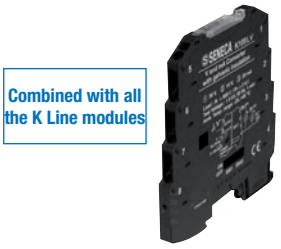
Expandable connector for rapid power supply (EN 60175)



ORDER CODE	
CONNECTOR	Expandable 2-way connector for fast power supply

K-SUPPLY

Redundant power supply with surge protection



ORDER CODE	
K-SUPPLY	Power supply module with electronic line protections

EASY SETUP / EASY LP

Complete collection of SENECA programmable instruments plug&play configurators

K111
K121
K120RTD

Free download from www.seneca.it

EASY USB USB - UART TTL CONVERTER

Power supply	Of PC 5V @ 100 mA
Protection degree	IP20
Serial UART TTL	RJ11 connector, baud rate from 300 bps to 250 Kbps
Serial USB	USB type A compatible standard 1.0, 1.1 and 2.0
Dimension	84 x 21 x 17 mm
Operating systems supported	Windows, Mac OS-X, Linux

ORDER CODE	
EASY-USB	USB - UART TTL CONVERTER

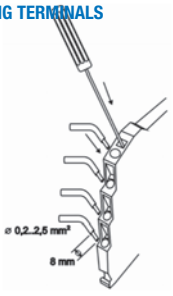
S117P1 Serial Converter RS232-USB, TTL-USB, RS485-USB

- Asynchronous serial conversion RS232, RS485, TTL
- Multiple connection possibility of multiple S117P1 units on the same PC
- USB 1.0, 1.1, 2.0 standard compatibility
- RS485 communication, max 32 nodes
- External modules power supply (100 mA, 12 Vdc)
- Supplied accessories: USB cable, TTL cable, driver CD + EASYLP (K120RTD, K121, T120 and T121 configuration software)

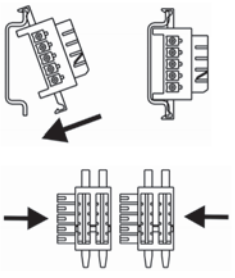
ORDER CODE	
S117P1	Asynchronous serial converter RS232 USB, TTL USB, RS485 USB complete with USB cable, TTL cable, Cd driver + EASYLP (K120RTD, K121, T120 and T121 configuration software)

CONNECTIONS AND INSTALLATION

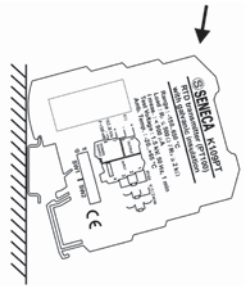
CONNECTION BASED ON SPRING TERMINALS



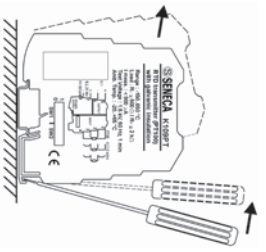
K-BUS CONNECTOR



INSERTION OF THE MODULE IN THE GUIDE



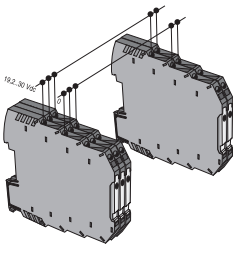
EXTRACTION OF THE MODULE FROM THE GUIDE



POWER SUPPLY TECHNOLOGIES

With the exception of the "loop powered" ones that do not have a bus power supply, the K Line signal conditioners offer 3 power options, one in traditional technology and two with the SMART SUPPLY distributed system. The direct power supply of the modules involves connecting of the source (24 Vdc) to the terminals of each instrument. The SMART SUPPLY system is based on the use of the K-BUS connector. Typically up to 16 modules, the bus power distribution takes place by supplying a single module, provided that the total consumption is less than 400 mA. K-SUPPLY, accessory equipped with surge protection and differential mode filter, powers batteries up to 75 modules, with total maximum current consumption of 1.6 A (approximately 21 mA per module), also equipped with 2 independent inputs which allow its use as a redundant power supply system, guaranteeing the presence of the power supply even if the source of one of the inputs fails.

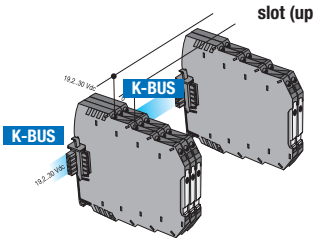
DIRECT POWER ON THE SPRING CLAMP



1

SMART SUPPLY SYSTEM

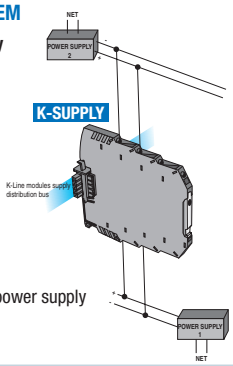
Distributed power supply with 2-K-BUS connector slot (up to 16 modules)



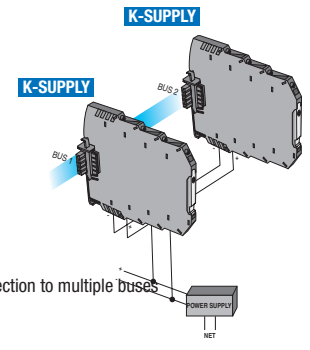
2

SMART SUPPLY SYSTEM

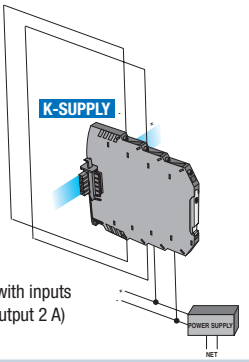
Distributed power supply via K-SUPPLY and K-BUS (up to 75 modules)



Redundant power supply



Connection to multiple buses

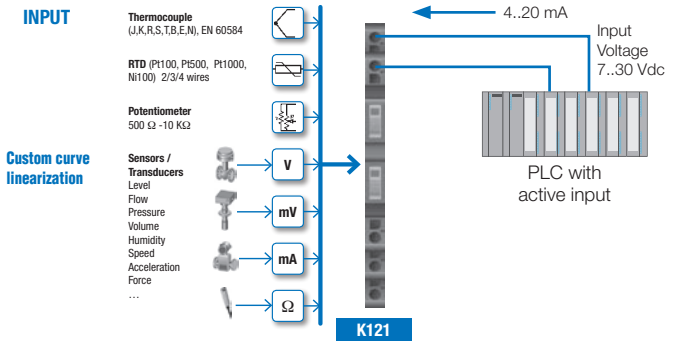


Connection with inputs in parallel (output 2 A)

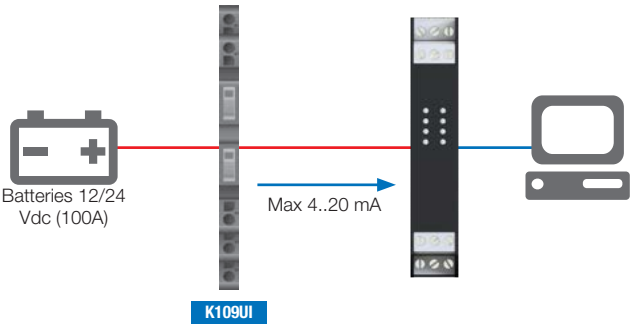
3

APPLICATION EXAMPLES

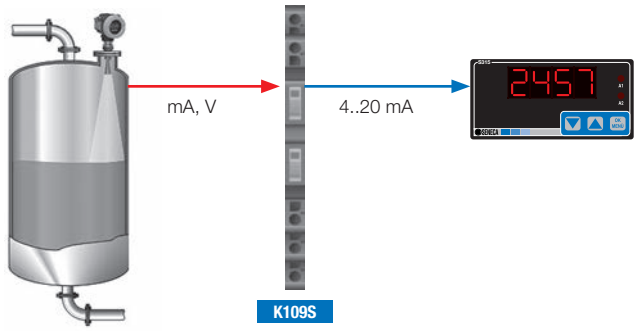
CONVERSION AND TRANSMISSION TO THE PLC OF A UNIVERSAL ANALOG SIGNAL



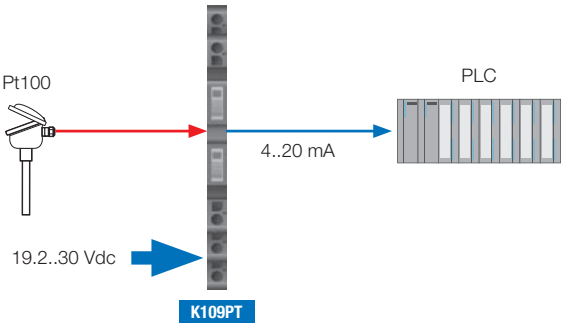
MONITORING OF THE BATTERY CHARGE VOLTAGE



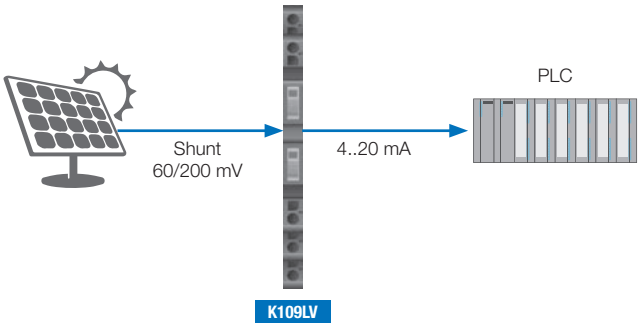
CONVERSION, ISOLATION AND SIGNAL RETRANSMISSION ANALOG FROM IN TECNICA 2 WIRE SENSOR



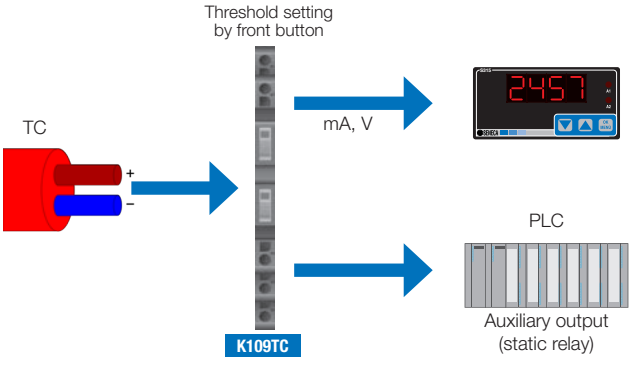
TEMPERATURE CONVERSION FROM PT100 INTO A STANDARD ANALOG SIGNAL



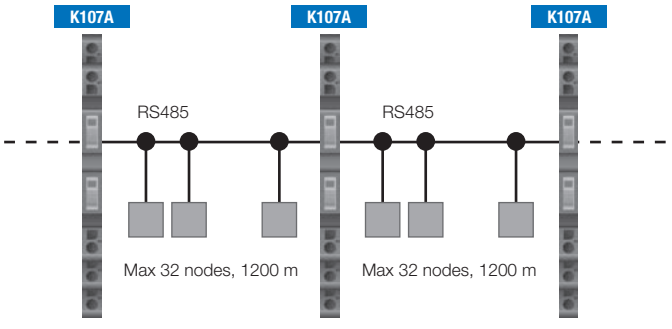
CONVERSION AND MEASUREMENT OF STRING CURRENT IN PHOTOVOLTAIC SYSTEMS



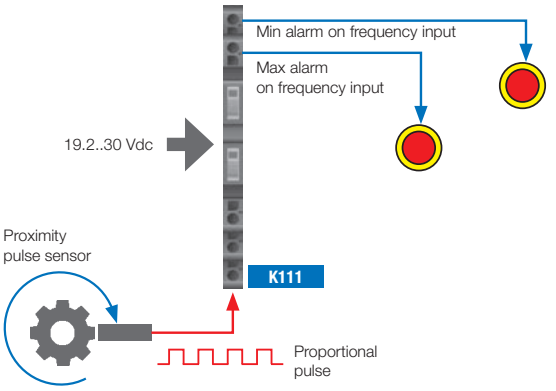
CONVERSION AND RETRANSMISSION OF THERMOCOUPLE TEMPERATURE VALUE



RS485 SERIAL REPETITION WITH GALVANIC ISOLATION

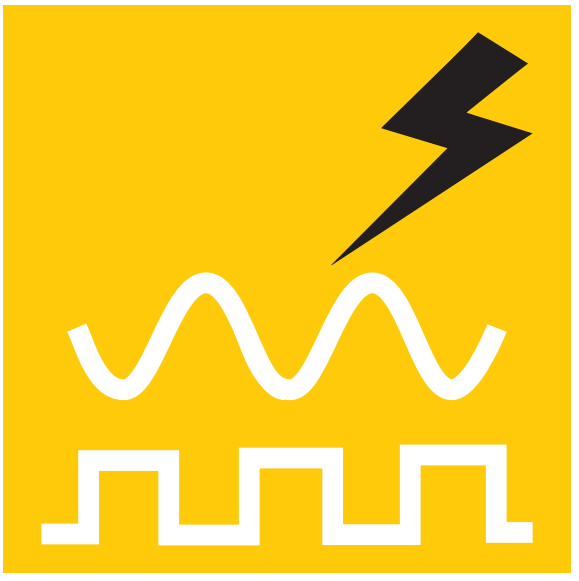


PULSE CONVERSION WITH ALARM THRESHOLD



S Line

CONVERTERS WITH HIGH ISOLATION



4

4.3

HIGH INSULATION CONVERTERS - S LINE

S LINE

S Line includes signal converters, galvanic isolators, high isolation industrial power supplies (up to 4.5 kVac) that manage analog quantities, Pt100, pulse signals converting them into output signals mA, V, pulses, SPDT/SPST relays. Designed for installation on 35 mm rail (DIN 46277) they can be powered in the 24 Vac/dc and 115/230 V ranges.

ANALOG CONVERTERS

	S109REG	S109S	S102*	S109PT*
	 V-I / V-I converter	 Galvanic separation for loop 4..20 mA	 Ohm / V-I converter	 Pt100 / V-I converter
ORDER CODE				
Model	S109REG-1-ST (115/230 Vac power supply) S109REG-1-X7 (with input for tacho generator)	S109S-1-ST (115/230 Vac power supply)	S102-1-ST (115/230 Vac power supply)	S109PT-1-ST (115/230 Vac power supply)
GENERAL DATA				
Power supply	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz
Sensor power supply	20 Vdc not stabilised	24 Vdc not stabilised	20 Vdc not stabilised	20 Vdc not stabilised
Max consumption	3.5 VA	1.5 VA	1.5 VA	3.5 VA
Isolation	4,500 Vac	4,500 Vac (power supply / input-output) 2,000 Vac (input/output)	4,500 Vac	4,500 Vac
Protection degree	IP20	IP20	IP20	IP20
Connections	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²
Accuracy	±0.25%	±0.25%	±0.25%	±0.25%
Operating temperature	-10..+60°C	-10..+60°C	0..+50°C	-10..+60°C
Dimension	70 x 95 x 72 mm	35 x 95 x 72 mm	52.5 x 95 x 72 mm	70 x 95 x 72 mm
Weight	300 g	200 g	300 g	400 g
Installation	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)
Certifications	EC	EC	EC	EC
INPUT DATA				
Number	1	1	1	1
Type	mA, V	mA	Ohm	2.3-wire Pt100
OUTPUT DATA				
Number	1	1	1	1
Type	mA, V	mA	mA, V	mA, V

ANALOG CONVERTERS / IMPULSIVE CONVERTERS

	S170	S2000	S104	S111
	 Signal duplicator	 Microprocessor calculation module	 V-I / frequency converter	 Frequency / V-I converter
ORDER CODE				
Model	S170-1-ST (115 / 230 Vac)	S2000-1-ST (115 / 230 Vac)	S104-1-ST (115 / 230 Vac)	S111-1-ST (115 / 230 Vac)
GENERAL DATA				
Power supply	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz	115 / 230 Vac ±10%, 50-60 Hz
Sensor power supply	20 Vdc not stabilised	20 Vdc not stabilised	20 Vdc not stabilised	20 Vdc not stabilised
Max consumption	3.5 VA	3.5 VA	1.5 VA	3.5 VA
Isolation	4,500 Vac (from / to power supply) 2,000 Vac (input / output)	4,500 Vac	4,500 Vac	4,500 Vac (from / to power supply) 2,000 Vac (input / output)
Protection degree	IP20	IP20	IP20	IP20
Connections	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²	Screw terminals for conductors up to 2.5 mm²
Accuracy	-	±0.1%	-	-
Operating temperature	-10..+60°C	-10..+60°C	0..+50°C	-10..+60°C
Dimension	70 x 95 x 72 mm	157.5 x 95 x 72 mm	52.5 x 95 x 72 mm	105 x 95 x 72 mm
Weight	300 g	500 g	300 g	450 g
Installation	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)
Certifications	EC	EC	EC	EC
INPUT DATA				
Number	1	1	1	1
Type	mA, V	2DI, 4AI	mA, V	Clean contact, reed, NPN 2/3 wires, PNP 24 Vdc, NAMUR sensors, photoelectric, 24 Vdc pulses, freq. Max 680 Hz
OUTPUT DATA				
Number	2	6	1	1
Type	mA, V	4DO, 2AO	NPN open collector	mA, V

The technical data and the diagrams in this document are indicative and not binding.

	CONTROL RELAY		INDUSTRIAL POWER SUPPLY UNITS
	S112	**S113**	**S50**
			
	On/off sensor amplifiers	**Alarm threshold**	**Power supply unit for current loop**
ORDER CODE			
Model	S112A-1-ST (115/230 Vac, 1 input, 1 relay output) S112D-1-ST (115/230 Vac, 2 inputs, 2 relay outputs) S112M-1-ST (115/230 Vac, 1 input, 5 relay outputs) S112M-1-ST (115/230 Vac, 1 input, 5 relay outputs) 112M-23-ST (24 Vac/dc, 1 input, 5 relay outputs)	S113S-1-ST (115/230 Vac, 1 relay output) S113T-1-ST (115/230 Vac, 3 relay outputs)	S50-1-ST (115 / 230 Vac) S50-3-ST (24 Vac)
GENERAL DATA			
Power supply	115 / 230 Vac ±10%, 50-60 Hz; 24 Vac/dc (S112M-23-ST)	115 / 230 Vac ±10%, 50-60 Hz	115/230 Vac ± 10%, 50/60 Hz
Sensor power supply	20 Vdc not stabilised	20 Vdc not stabilised	-
Max consumption	1.5 VA	1,5 VA (S113S); 3,5 VA (S113D, S113T)	1.5 VA
Isolation	4,500 Vac; 2,000 Vac (S112M input/output)	4,500 Vac	4,500 Vac
Protection degree	IP20	IP20	IP20
Connections	Screw terminals for conductors up to 2.5 mm^2	Screw terminals for conductors up to 2.5 mm^2	Screw terminals for conductors up to 2.5 mm^2
Operating temperature	-10..+60°C	-10..+60°C	-10..+60°C
Dimension	52,5 x 95 x 72 mm (S112A); 70 x 95 x 72 mm (S112D, S112M)	52,5 x 95 x 72 mm (S113S); 70 x 95 x 72 mm (S113D, S113T)	35 x 95 x 72 mm
Weight	250 G (S112A); 270 g (S112D); 280 g (S112M)	290 g (S113S); 280 g (S113D); 350 g (S113T)	150 g
Installation	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)
Certifications	EC	EC	EC
INPUT DATA			
Number	1, 2	1	-
Type	Clean contact, reed NPN 2/3 wires 12/24 Vdc, PNP 2/3 wires 24 Vdc, NAMUR sensors, photoelectric, hall effect, pulses 24 Vdc (freq, max 400 Hz)	mA, V	-
OUTPUT DATA			
Number	1, 2, 5	1, 2, 3	1
Type	S112A: 1 SPDT Relay S112D: 2 SPDT Relays S112M: 5 SPST Relay reeds	S113S: 1 SPDT Relays S113D: 2 SPDT Relays S113T: 3 iSPDT Relays	Stabilised 24 Vdc, 40 mA

	INDUSTRIAL POWER SUPPLY UNITS		
	S100S	**S200**	**S200REG**
			
	Dual power supply unit for current loop	**Dual stabilised power supply unit**	**Adjustable stabilised power supply unit**
ORDER CODE			
Model	S100-1-ST (115/ 230 Vac) S100-3-ST (24 Vac)	S200-1-ST (115 / 230 Vac)	S200REG-24 (from 22 to 26 Vdc, max current 350 mA)
GENERAL DATA			
Power supply	115/230 Vac ± 10%, 50/60 Hz	115 / 230 Vac ± 10% 50 / 60 Hz	115 / 230 Vac ± 10% 50 / 60 Hz
Max consumption	3.5 VA	7.5 VA	10 VA
Isolation	4,500 Vac	4,500 Vac	4,500 Vac
Protection degree	IP20	IP20	IP20
Connections	Screw terminals for conductors up to 2.5 mm^2	-	-
Operating temperature	-10..+60°C	- 10..+ 60°C	- 10..+ 60°C
Dimension	52.5 x 95 x 72 mm	70 x 95 x 105 mm	70 x 95 x 105 mm
Weight	300 g. circa	700 g approx.	700 g approx.
Installation	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)	Attachment on 35 mm rail (DIN 46277)
Certifications	EC	EC	EC
INPUT DATA			
Number	-	-	-
Type	-	-	-
OUTPUT DATA			
Number	2	-	-
Type	independent stabilised and galvanically isolated 24 Vdc 50 mA	+ 15 Vdc 350 mA - 15 Vdc 75 mA	S200REG-16 : 14 / 18 Vdc 500 mA S200REG-24 : 22 / 26 Vdc 350 mA

The technical data and the diagrams in this document are indicative and not binding.

S91 / S91-400

MULTI-PROTECTION RELAY FOR MOTORS

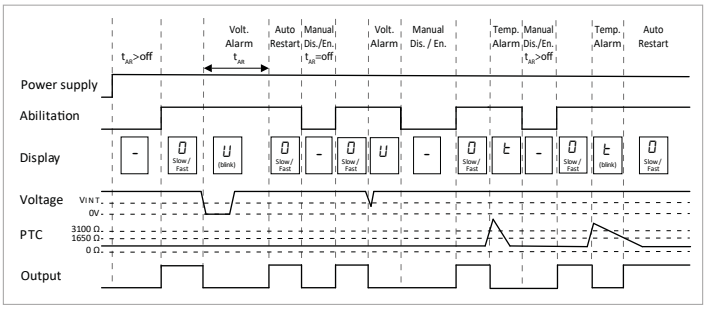
S91 and S91-400 are protection devices for electric motors that allow the detection of the incorrect phase sequence or the absence of a phase, of the excess of absorbed current, of no-load operation with measurement of the power factor. Equipped with rotary programming selectors and an alarm signalling display, the device is characterised by an input for PTC to protect the motor from overheating and by an enabling input for motor start-up. S91 operates in 3 operating modes: single-phase or three-phase, maximum current range 5 or 16 A, operation with or without PTC. The main applications concern the protection of single-phase or three-phase pumps for possible blockage of the rotor and for overtemperature as well as the detection of breakage of mechanical transmission devices (e.g. belts or chains) with protection against blocking of the transmission system.

TECHNICAL DATA

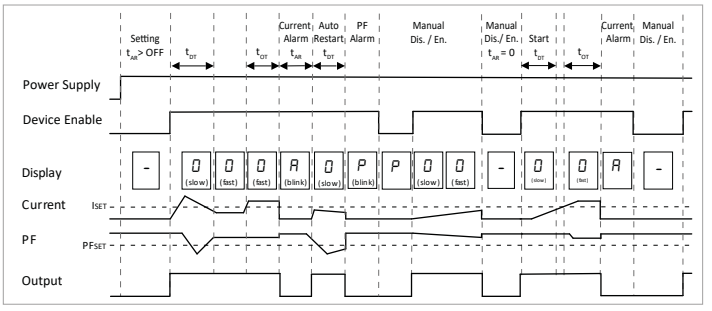
GENERAL DATA	
Power supply	195 ÷ 255 Vac (S91); 400 Vac ± 10 % (S91-400)
Consumption	1.5 W (max)
Withstand voltage	2.5 kV
Pulse withstand voltage	4 kV
Isolation nominal voltage	600 V (cat II); 300 V (cat III)
Protection degree	IP20
Operating temperature	-20 ÷ +65°C
Installation	DIN Rail 35 mm IEC EN60715
Weight	250 g
Dimension (lxhxd)	53.5 x 73 x 90 mm
Case	UL94 V0, colour ral7035
SIGNALS AND SETTINGS	
LED status indicator	Relay status
Front display	Device disabled; Inhibition time (slow rotation); Rotating motor (fast rotation); PTC sensor line shorted; PTC sensor line interrupted; No phase or minimum voltage alarm; Phase sequence alarm; Maximum current alarm; Minimum P.F. alarm; Temperature alarm
Front selector	Single-phase or three-phase measurement; maximum current range 5 or 16 A; operation with or without PTC
Front trimmer adjustment	Setting of autoreset time, inhibition time, minimum power factor, intervention time, max current
Motor activation / deactivation	Via enabling input with inhibition time setting
CURRENT MEASURING	
Insertion type	Direct or through current transformer
Nominal current	16 Aac
Current measurement limits	0.1 ÷ 16 Aac, measurement accuracy <5%
Input type	Shunt
Type of measurement	TRMS
Continuous thermal limit	16 Aac
Impulsive thermal limit	45 Aac for 1 s
Dynamic limit	200 Aac for 10 ms
Auto-consumption	1.3 W
Phase absence intervention	< 200 ms
VOLTAGE MEASURING	
EU nominal voltage	347 (L-N) / 600 (L-L) Vac Cat II; 277 (L-N) / 480 (L-L) Vac Cat III
Voltage measurement limits	60 ÷ 660 Vac, measurement accuracy <5%
Frequency limits	50 – 60 Hz ± 5%
Connection modes	L1-L2-L3 or L-N
No voltage intervention threshold	80 Vac (single-phase and three-phase)
Phase difference max - min	> 20% (only for three-phase)
MOTOR CONTROL INPUT	
Nominal voltage	195 ÷ 255 Vac (S91); 400 Vac ± 10 % (S91-400)
Operating limits	0.85 ÷ 1.1 of the rated voltage
Absorbed/dissipated power	0.17 W
Minimum command duration	≥40 ms
RELAY OUTPUT	
Type of output	SPDT
Work voltage	250 Vac
Work current	8 A
PTC MEASUREMENT	
Inlet	Not isolated from the mains, maximum cable length 30 m
Accuracy	1650 ÷ 3100 Ω; error <5%
Short circuit detection	<25 Ω±5 ↔
Open circuit detection	> 14 kΩ ± 0.2kΩ

OPERATING DIAGRAMS

VOLTAGE / PTC

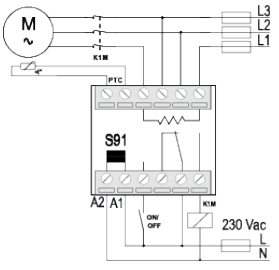


CURRENT / POWER FACTOR

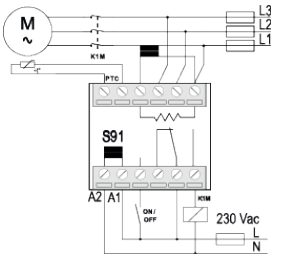


EXAMPLES OF CONNECTION

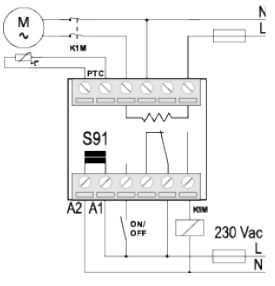
THREE-PHASE MOTOR WITH MEASUREMENT OF DIRECT CURRENT



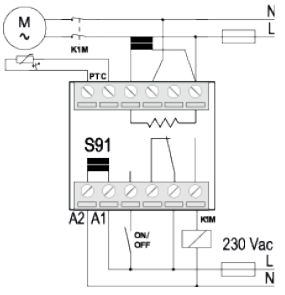
THREE-PHASE MOTOR WITH MEASUREMENT OF CURRENT WITH AMPEROMETRIC TRANSFORMER



SINGLE-PHASE MOTOR WITH MEASUREMENT OF DIRECT CURRENT



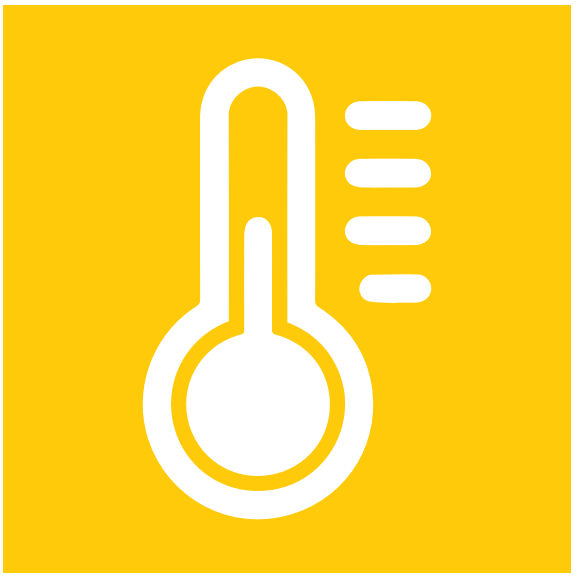
SINGLE-PHASE MOTOR WITH MEASUREMENT OF CURRENT WITH AMPEROMETRIC TRANSFORMER



ORDER CODE	
Code	**Description**
S91	Multi-protection relay for motors, 195 ÷ 255 Vac
S91-400	Multi-protection relay for motors, 400 Vac ± 10%

The technical data and the diagrams in this document are indicative and not binding.

TRANSMITTERS AND TEMPERATURE SENSORS



4

4.4

T120 / T121

The high-accuracy head-mount temperature transmitters T120 and T121 are designed for universal use on machines, systems, installations and in the process industry. They convert the incoming signals and retransmit them into a normalised current signal through a 4-20 milliAmpère loop. Input signals can come from 2, 3, 4 wire RTD sensors such as Pt100 (EN 60751) and Ni100 (DIN 43760). The T121 model also acquires Cu50, Cu100, Ni121 and Ni1000 thermocouples and signals from thermocouples types J, K, R, S, T, B, E, N, L (EN 60584), voltage and resistance. T120 and T121 are characterised by reduced dimensions and connections by means of spring terminals. All available operating parameters can be configured using the dedicated EASY SETUP / EASY LP software.

HIGHLIGHTS

OPERATING TEMPERATURE
-40..+85°C

RESOLUTION
Up to 16 bit

ACCURACY CLASS
0.1%

CONNECTION VIA SPRING TERMINALS
Up to 16 bit

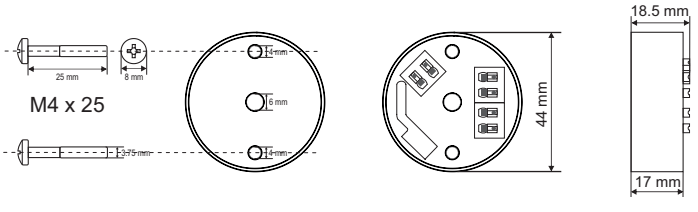
UNIVERSAL INPUT
RTD, TC, mV, Ω

OUTPUT / POWER LOOP
4..20 mA / 20..4 mA (2 wires); 5/7..30 Vdc

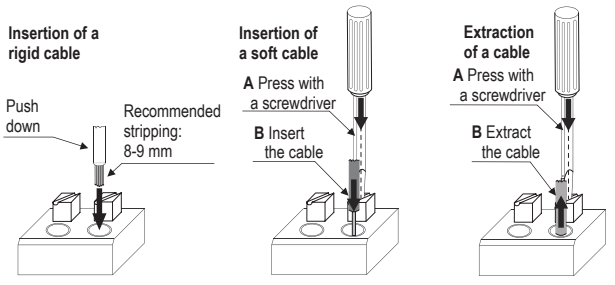
RAPID PROGRAMMING CONNECTOR

CALIBRATION CERTIFICATE
ON REQUEST

SIZES AND OVERALL DIMENSIONS



PUSH-WIRE TERMINAL CONNECTION



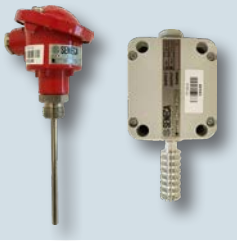
TECHNICAL DATA

	T120	T121
		
	2-wire loop powered transmitter for Pt100 and Ni100 probes	**Loop powered isolated universal temperature transmitter**
GENERAL DATA		
Power supply	5..30 Vdc (loop powered)	7..30 Vdc (loop powered)
Insulation and protections	-	1.5 kVac
Protection degree	IP20	IP20
Sampling period	100 ms (300 ms with 50/60 Hz rejection)	300 ms
Network freq. rejection	50 / 60 Hz settable	> 60 dB at 50 and 60 Hz
Response time	220 ms (620 ms with 50-60 Hz rejection)	< 620 ms
Accuracy Class	0.1%	0.1% (min 0.1°C for RTD and 1°C for TC)
Thermal Drift	< 100 ppm (30 ppm typical)	< 100 ppm (30 ppm typical)
Measurement conversion	16 bit	16 bit
Transmission error	Max between 0.1% of the measuring range or 0.1°C	Max between 0.1% of the measuring range or 0.1°C
Error for EMI	<0.5%	<0.5%
Operating temperature	-40..+85°C	-40..+85°C
Connections	6 spring terminals for 0.2 to 2.5 mm2 cable, recommended stripping 8 mm, 1 4-pin TTL serial programming connector	6 spring terminals for 0.2 to 2.5 mm2 cable, recommended stripping 8 mm, 1 4-pin TTL serial programming connector
Container	Nylon / Glass, black	Nylon / Glass, black
Dimension	Ø 43.7 x 20 mm	Ø 43.7 x 20 mm
Weight	35 g	35 g
INPUT DATA		
Number	1	1
Type	• Pt100 Standard: EN 60751/A2 (ITS-90) Measuring range: -200..+650°C Minimum span: 20°C 2, 3, 4-wire connection • Ni100 Measuring range: -60..+650°C Minimum span: 20°C 2, 3, 4-wire connection	• Cu50 (-180..+200°C, min span 20°C) • Cu100 (-180..+200°C, min span 20°C) • Ni100 (-60..+250°C, min span 20°C) • Ni120 (-80..+260°C, min span 20°C) • Pt100 (EN 60751/A2, -200..+650°C, min span 20°C) • Pt500 2,3,4 wires (-200..650°C, min span 20°C) • Pt1000 2,3,4 wires (-200..+200°C, min span 20°C) • TC J , K, R, S, T, B, E, N, L; input impedance 10 MΩ • Voltage: -150 .. + 150 mV; input impedance 10 MΩ • Potentiometer: 500 Ω..100 kΩ • Resistance 0..+400 (1.760) Ω
Resolution	Approximately 6 mΩ	Approximately 6 mΩ
OUTPUT DATA		
Number of channels	1	1
Type	CURRENT (mA) 4..20, 20..4 mA (2 wires)	CURRENT (mA) 4..20, 20..4 mA (2 wires)
Resolution	1µA (>14bit)	2µA (>13bit)
Current output protection	Approximately 30 mA	Approximately 30 mA
PROGRAMMING		
PC software EASY SETUP / EASY LP	Measurement start / full scale configuration, RTD type and connection, rejection, measurement filter, cable resistance, fault / over-range output	Measurement start / full scale configuration, RTD type and connection, rejection, measurement filter, cable resistance, fault / over-range output
STANDARD		
Certification	EC	EC

ORDER CODE	
Code	**Description**
T120	Looped 2 wire transmitter for Pt100 and Ni100 probes, standard
T120-C	Looped 2 wire transmitter for Pt100 and Ni100 probes, calibrated
T121	Loop powered standard isolated universal temperature transmitter
T121-C	Loop powered calibrated isolated universal temperature transmitter
SOFTWARE	
EASY LP	Plug&play collection configuration instruments loop powered (K120RTD, K121, T120, T121)
ACCESSORIES	
FLEX-DIN	DIN rail connection T120 / T121
EASY-USB	USB - UART TTL CONVERTER
S117P1	Optoisolated and asynchronous serial converter RS232/USB, TTL/USB, RS485/USB
PT100	
POZZ-100	Thermal well welded length 100 mm
POZZ-150	Thermal well welded length 150 mm
POZZ-200	Thermal well welded length 200 mm
POZZ-250	Thermal well welded length 250 mm
POZZ-300	Thermal well welded length 300 mm
POZZ-50	Thermal well welded length 50 mm

ORDER CODE	
Code	**Description**
PT100	
PT-150-3-M12	PT100 class B, d=3 mm, L= 150 mm, connector coupling M12
PT-250-2-M12	PT100 class B, d=2 mm, L= 250 mm, connector coupling M12
PT-150-3R-M12	PT100 class B, d = 3 mm, L = 150 mm, tapered terminal, M12 connector connection
PT100-100	Pt100 std Length 100 mm, 3 wires waterproof head conn. 1/2" G.M.
PT100-100-MA	Pt100 std Length 100 mm, 3 wires waterproof head conn. 1/2" G.M. output 4-20 mA
PT100-150	Pt100 std Length 150 mm, 3 wires waterproof head conn. 1/2" G.M.
PT100-150-MA	Pt100 std Length 150 mm, 3 wires waterproof head conn. 1/2" G.M. output 4-20 mA
PT100-200	Pt100 std Length 200 mm, 3 wires waterproof head conn. 1/2" G.M.
PT100-200-MA	Pt100 std Length 200 mm, 3 wires waterproof head conn. 1/2" G.M. output 4-20 mA
PT100-250	Pt100 std Length 250 mm, 3 wires waterproof head conn. 1/2" G.M.
PT100-250-MA	Pt100 std Length 250 mm, 3 wires waterproof head conn. 1/2" G.M. output 4-20 mA
PT100-300	Pt100 std Length 300 mm, 3 wires waterproof head conn. 1/2" G.M.
PT100-300-MA	Pt100 std Length 300 mm, 3 wires waterproof head conn. 1/2" G.M. output 4-20 mA
PT100-50	Pt100 std Length 50 mm, 3 wires waterproof head conn. 1/2" G.M.
PT100-50-MA	Pt100 std Length 50 mm, 3 wires waterproof head conn. 1/2" G.M. output 4-20 mA
PT100-A	Pt100 ambient
PT100-A-MA	Pt100 ambient with 4-20mA output
PT100-SOLAR	Pt100 single element sensor 3 Wires for photovoltaic modules
PT100-SOLAR-MA	Pt100 single element sensor 3 wires for photovoltaic modules, 4-20 mA output

The technical data and the diagrams in this document are indicative and not binding.



PT100
PLATINUM TEMPERATURE PROBES

TECHNICAL DATA

GENERAL DATA

Type of sensor	PT100
Execution	Standard, ambient, solar, with 4-20 mA analog output
Connection type	3 wires
Connection head	DIN B, sealed in painted die-cast aluminium
Insertion length	50, 100, 150, 200, 250, 300 mm
Threaded connection	1/2" G.M.
Standard	IEC / EN 60751, DIN 43760
Accuracy class	A (± 0.15°C o 1/10 DIN a 0°C) o B (± 0.3°C a 0°C)
Ceramic isolator	Internal for insulation of the connection wires from the protective sheath
Sheath material	AISI 316
Sheath diameter	Ø 6 - 8 mm (other values on request)
Electrical connection	M20x1.5
Protection degree	Minimum IP54

THERMOWELL

In particular conditions it is advisable to cover the sheath with an additional protection consisting of a thermometric well obtained from a pipe with threaded connection to the process.
With process connections with cylindrical thread.

PROGRAMMING

Configuration of the T120 and T121 transmitters fitted on the PT100 head can be performed via S11P1, USB - RS232 / TTL converter and EASY SETUP software. The module can be configured even if not powered by the 4..20 mA loop, drawing power through the programming connector.

ORDER CODES

Code	Description
STANDARD PROBE	
PT100-100	Pt100 L = 100 mm 3 wires waterproof head conn.1/2" GM
PT100-100-MA	Pt100 L = 100 mm 3 wires waterproof head conn.1/2" GM 4-20 mA
PT100-150	Pt100 L = 150 mm 3 wires waterproof head conn.1/2" GM
PT100-150-MA	Pt100 L = 150 mm 3 wires waterproof head conn.1/2" GM 4-20 mA
PT100-200	Pt100 L = 200 mm 3 wires waterproof head conn.1/2" GM
PT100-200-MA	Pt100 L = 200 mm 3 wires waterproof head conn.1/2" GM 4-20 mA
PT100-250	Pt100 L = 250 mm 3 wires waterproof head conn.1/2" GM
PT100-250-MA	Pt100 L = 250 mm 3 wires waterproof head conn.1/2" GM 4-20 mA
PT100-300	Pt100 L = 300 mm 3 wires waterproof head conn.1/2" GM
PT100-300-MA	Pt100 L = 300 mm 3 wires waterproof head conn.1/2" GM 4-20 mA
PT100-50	Pt100 L = 50 mm 3 wires waterproof head conn.1/2" GM
PT100-50-MA	Pt100 L = 50 mm 3 wires waterproof head conn.1/2" GM 4-20 mA
ROOM PROBES	
PT100-A	Standard IP66 air-ambient thermoresistance
PT100-A-MA	IP66 air-ambient thermoresistance 4-20 mA output
PHOTOVOLTAIC PROBES	
PT100-SOLAR	Solar PT100 with plate 25x25x3 mm, 3 m cable
PT100-SOLAR-MA	Photovoltaic modules temperature probe, 4-20mA output
THERMOWELLS	
POZZ-100	Stainless steel well with 1/2 "GM for PT100 L = 100mm
POZZ-150	Stainless steel well with 1/2 "GM for PT100 L = 150mm
POZZ-200	Stainless steel well with 1/2 "GM for PT100 L = 200mm
POZZ-250	Stainless steel well with 1/2 "GM for PT100 L = 250mm
POZZ-300	Stainless steel well with 1/2 "GM for PT100 L = 300mm
POZZ-50	Stainless steel well with 1/2 "GM for PT100 L = 50mm
TRANSMITTERS	
T120	Looped 2 wire transmitter for Pt100 and Ni100 probes, standard
T120-C	Looped 2 wire transmitter for Pt100 and Ni100 probes, calibrated
T121	Loop powered standard isolated universal temperature transmitter
T121-C	Loop powered calibrated isolated universal temperature transmitter
ACCESSORIES	
FLEX-DIN	DIN rail connection T120 / T121
S117P1	Optoisolated and asynchronous serial converter RS232/USB, TTL/USB, RS485/USB
SOFTWARE	
EASY SETUP	Configuration software for SENECA programmable instruments

S400 Line

PROTECTIONS AGAINST SURGES

4

4.5

S400 LINE

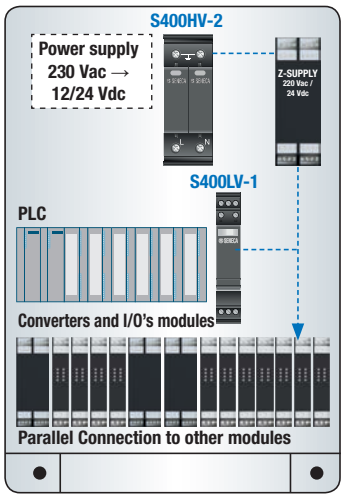
High efficiency Surge Protections

The SENECA **S400** surge protectors are designed to protect electrical systems and equipment against transient and impulsive surges caused by atmospheric phenomena and electrical manoeuvres. The S400 range includes:

- **Type 2 and 3 drainers for industrial power systems**
- **Protections for control, measurement and regulation systems that can be used in binary and analog circuits, such as pulses, 0..10 Vdc signals and 0/4..20 mA current loop**
- **Surge protection for IT and communication networks (Token Ring, ISDN, DS1, Ethernet, Power over Ethernet, RS232 / 422/485 etc.) with extremely high transmission speed and dispersion capacity.**

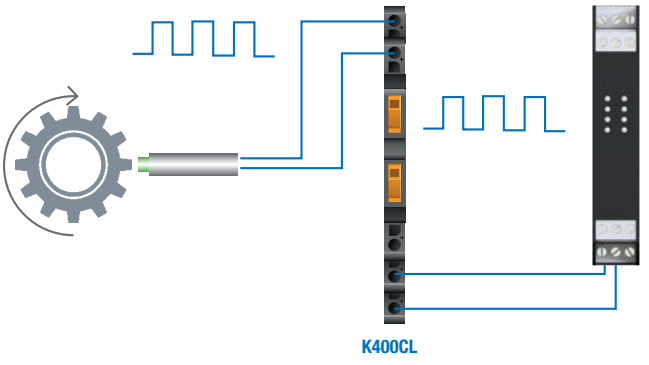
APPLICATION EXAMPLES

TYPE 2 AND TYPE 3 POWER PROTECTION AND ISOLATION

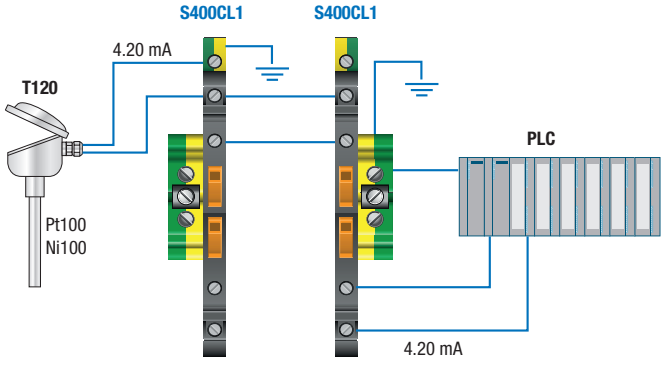


Automation panels, marshalling panels, PLC / DCS control panels and machine control, distribution panels, electrical panels, power centres, MCC panels

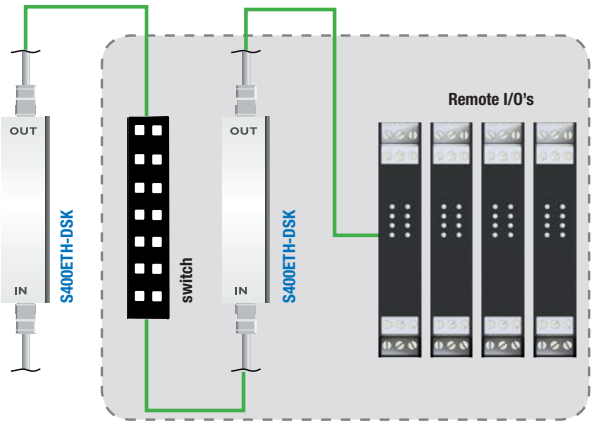
PROTECTION OF AN IMPULSIVE MEASURING DEVICE (REED, NAMUR, PNP, NPN, ECC HALL EFFECT)



PROTECTION OF AN ANALOG MEASURING DEVICE



IT SIGNALS PROTECTION



Ethernet connection with the switch located in the electrical panel locally

HIGH EFFICIENCY INTELLIGENT SURGE PROTECTIONS

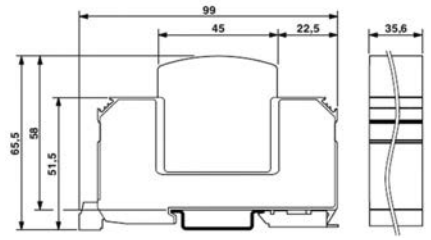
	FOR POWER SUPPLY SYSTEMS		FOR MEASUREMENT AND CONTROL DEVICES		FOR INFORMATION NETWORKS E TLC	
	S400HV-2	**S400LV-1**	**K400CL**	**S400CL-1**	**S400ETH-DSK**	**S400NET-1**
						
	230 Vac surge protection, type 2 with 3 conductors (L, N, PE)	**24 Vac / dc surge protection, with FM contact, 3-conductor type 3 (L, N, PE)**	**Surge protection for analog and logical signals, slim format. 6.2 mm**	**Surge protection for analog and logic signals with knife switch**	**Surge protection for Class.D/Cat.5 Ethernet networks (100 Mbps)/5e (1Gbps), PoE**	**Surge protection for Ethernet, serial and bus networks field, 5 wires**
ELECTRICAL PROTECTION DATA (L-N / N-PE / L-PEN)						
IEC/EN type test class	II / T2	III / T3	C1 / C2 / C3 / D1	B2 / C1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
UN nominal voltage	240 Vac	24 Vac/dc	24 Vdc		5 Vdc	12 Vdc
Max. permanent voltage UC	L-N 335 Vac / N-PE 260 Vac	34 Vac/dc	30 Vdc / 21 Vac	±5 Vdc (±57 Vdc / PoE+)	5,2 Vdc / 3,6 Vac	5,2 Vdc / 3,6 Vac
Nominal current dispersed In (8/20) µs	L-N 20 kA / L-PE 20 kA / N-PE 20 kA	1 kA	(wires-wire) 5 kA / (wire-earth) 5 kA	(wire-wire) 350 A / (wire-earth) 350 A	(wire-wire) 10 kA / (wire-earth) 10 kA	(wire-wire) 10 kA / (wire-earth) 10 kA
Max. Imax leak current (8/20) µs	L-N 40 kA / L-PE 40 kA / N-PE 40 kA	1 kA	-	-	(wire-wire) 10 kA / (wire-earth) 10 kA	(wire-wire) 10 kA / (wire-earth) 10 kA
Atmospheric test curr. I imp (10/350) µs for conductor	-	-	500 A	-	-	-
Nominal current In	-	-	300 mA (40°C)	≤1.5 A (25°C)	450 mA (45°C)	450 mA (45°C)
Cumulative current (8/20) µs	-	-	10 kA		20 kA	20 kA
Up protection degree	L-N ≤ 1,5 kV / L-PE ≤ 1,5 kV / N-PE ≤ 1,5 kV	L-N ≤ 180 V / L-PE ≤ 550 / N-PE ≤ 550	(wire-wire) ≤ 45 V / (wire-earth) ≤ 650 V	(wire-wire) ≤90 V (B2-1kV/25A) ≤ (wire-earth) 700 V (B2-1kV/25A)	(wire-wire) ≤ 45 V (C3-25A) / (wire-earth) ≤ 45 V (C3- 25A)	(wire-wire) ≤ 45 V (C3-25A) / (wire-earth) ≤ 45 V (C3- 25A)
5 kA residual voltage	L-N ≤ 1.2 kV / L-PE ≤ 1.2 kV / N-PE ≤ 150 V	-	-	-	-	-
Uoc combined pulse	-	2 kV	-	-	-	-
Intervention time tA	L-N ≤ 25 ns / N-PE ≤ 100 ns	L-N ≤ 25 ns / L-PE ≤ 100 ns / N-PE ≤ 100 ns	(wire-wire) ≤1 ns / (wire-earth) ≤100 ns	(wire-wire) ≤1 ns / (wire-earth) ≤100 ns	(wire-wire) ≤500 ns / (wire-earth) ≤500 ns	(wire-wire) ≤500 ns / (wire-earth) ≤500 ns
GENERAL DATA						
Back-up fuse according to IEC standard	125 A (gG) - 80 A (gG) through wiring	16 Aac - 10 Adc	315 mA	315 mA		500 mA
Resistance against short circuits (with back-up fuse) Ip	25 kA	-	-	-	-	-
Frequency limit fg (3dB) symmetrical in the 50 Ohm system	-	-	type 6 MHz	type 6 MHz	> 100 MHz	type 60 MHz
Resistance for conductor	-	-	3.3 Ohm	3.3 Ohm	-	2.2 Ohm
Output voltage limitation to 1 kV/µs wire-wire/earth-earth	-	-	-	-	(core-core) ≤ 35V / (core-ground) ≤ 700V	(core-core) ≤ 15V / (core-ground) ≤ 15 V
Data of rigid / flexible connection	1.5..35 mm² / 1.5..25 mm²	0.2..4 mm² / 0.2..2.5 mm²	0.14..2,5 mm² / 0.2..2.5 mm²	0.2..2,5 mm² / 0.2..2.5 mm²		0.2..4 mm² / 0.2..2.5 mm²
Dimension (lxhxd)	35.6 x 90 x 58 mm	17.7 x 90 x 65.5 mm	6.2 x 93 x 102.5 mm	6.2 x 94.8 x 69.1 mm	28 x 110 x 60 (76 with connection) mm	17.7 x 90 x 65.5 mm
Temperature range	-40°C.. +80°C	-40°C.. +80°C	-40°C.. +80°C	-40°C.. +80°C	-40°C.. +80°C	-40°C.. +80°C
Protection Degree	IP20	IP20	IP20	IP20	IP20	IP20
UL 94 standard combustibility class	V0	V0	V0	V0	V0	V0
Case material	PA 6.6	PA 6.6	PBT	PA 6.6	ABS	PA
Connection interface	Screw connection	Screw connection	Screw connection	Screw connection	RJ45	Screw connection (together with the base element)
Fieldbus supported	-	-	-	-	Token Ring, ISDN, DS1, Ethernet, Power over Ethernet	PROFIBUS DP, RS485, RS422, INTERBUS remote bus, CAN Bus, ModBUS RTU/ASCII/ TCP-IP
Approvals	EC, UL/cUL/cULus Recognised	EC GL, EAC	EC UL Listed	EC	EC UL Listed	EC UL Listed
FM CONTACT						
Data of rigid / flexible connection	-	0.2..4 mm² / 0.2..2.5 mm²	-	-	-	-
Max operating voltage	-	250 Vac / 30 Vdc	-	-	-	-
Max operating current	-	1.5 Aac (250 Vac) / 1 Adc (30 Vdc)	-	-	-	-

The technical data and the diagrams in this document are indicative and not binding.

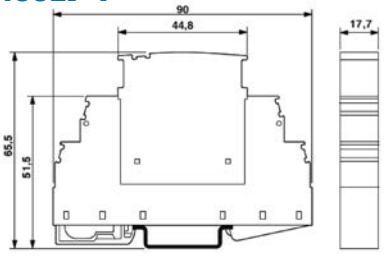
S400 LINE

DIMENSION

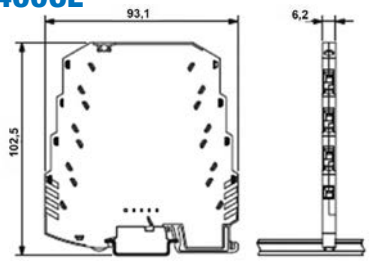
S400HV-2



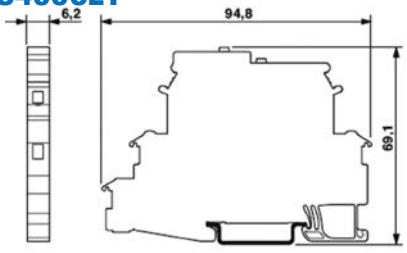
S400LV-1



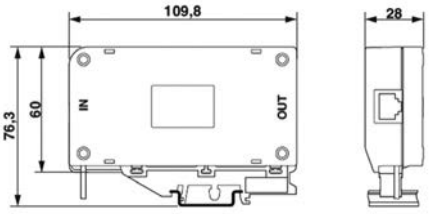
K400CL



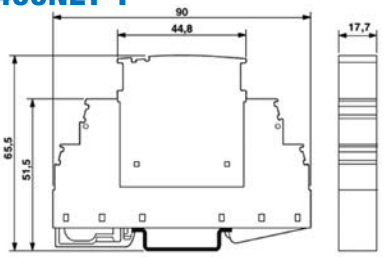
S400CL1



S400ETH-DSK



S400NET-1



ACCESSORIES

S400HV-2-RIC-SL

S400HV-2-RIC-SN

S400LV-1-RIC-SL

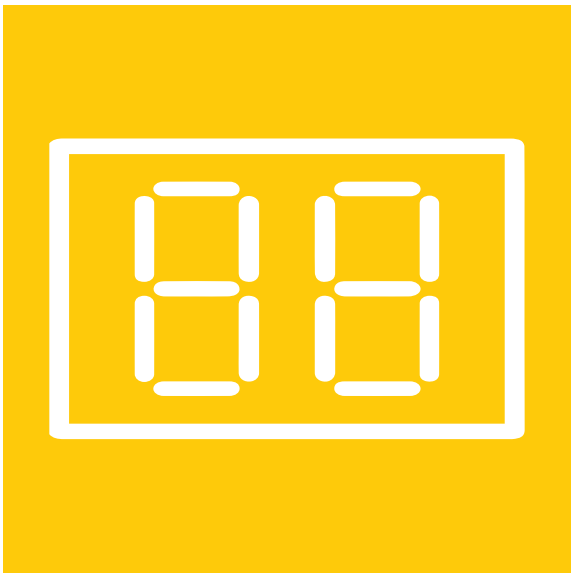
S400LV-1-RIC-SL

ORDER CODE

Code	Description
K400CL	Surge protection for analog and logical signals, slim format. 6.2 mm
K400CL-10	Kit 10 pcs K400CL
S400HV-2	Surge protection 230 Vac, type 2 with 3 conductors (L, N, PE)
S400HV-2-RIC-SL	1L-N/PE plug spare part for S400HV-2, no FM contact
S400HV-2-RIC-SN	N/PE plug spare part for S400HV2
S400LV-1	Surge protection 24VAac/dc with FM contact, 3-conductor type 3 (L, N, PE)
S400LV-1-RIC-SL	Spare part 24VAC/DC plug for S400LV-1, with FM contact
S400CL-1	Surge protection for analog and logic signals with knife switch
S400CL-1-15	Kit 15 pcs S400CL-1
S400CL-1-P5	Pack of 5 pieces wall closing for S400CL-1 module
S400NET-1	Surge protection for Ethernet, serial and fieldbus networks, 5 wires
S400NET-1-RIC-CL	Spare part plug for S400NET-1
S400ETH-DSK	Surge protection for Class.D/Cat.5 Ethernet networks (100 Mbps)/5e (1Gbps), PoE

S Line

DIGITAL INDICATORS



4

4.6

S Line

Digital indicators with high brightness and accuracy

S Line is a family of high-brightness, high-accuracy LED digital indicators for industrial applications. Equipped with scalable displays with 4, 6, 8, 4 + 7 digits, the S Line digital indicators manage universal analog and digital inputs and temperature sensors with output retransmission, with ModBUS interface and relay alarm activation via optional card. The available power ranges are 80-265 Vac, 10-40 Vdc, 19-28 Vac.
The indicators allow the multiple display of instantaneous, integrated and totalised increase or decrease values. In addition to using front buttons, programming is carried out using EASY SETUP 2 software.

Scalable display with high brightness (4, 6, 8, 4 + 7 digits)

UNIVERSAL INPUT

Analog, Digital, Temperatures (RTD, TC)

RETRANSMITTED OUTPUT

Analog or digital

OPTIONAL BOARD

ModBUS interface RS485, relay outputs SPDT, reset input

ACTIVATION OF ALARMS (RELAY)

Management on threshold or hysteresis

EXTENDED POWER SUPPLY

Range 80-265 Vac; 10-40 Vdc / 19-28 Vac loop powered (S315)

TRANSDUCERS POWER SUPPLY

SPECIAL FUNCTIONS

TOTALISER

S311A
S311D

Integrated values (S311A) and increase / decrease totalised (S311D)

GENERATOR

S311G

Signal generation mA/V in auto/man mode, bumpless filter

BATCH COUNTER

S311D

Batch count associated with threshold (alarm / action on totaliser)

Alarm LED

Front navigation and setting keys

Self-extinguishing recessed PPO container according to DIN 43700

ISOLATION

Class 0.1%
Conv. A/D 14-16 bit

ACCURACY

Output
Input

1,500 Vac

PROGRAMMING

EASY SETUP

Software PC - Windows EASY SETUP accessible via serial conv. (e.g.S107USB)

OPT. CASE IP66

S315

PROTECTED ACCESS

FILTER IN FREQUENCY

S311D

HIGH-BRIGHTNESS AND ACCURACY DIGITAL LED INDICATORS

	INDICATORS / TOTALISERS WITH UNIVERSAL ANALOGICAL INPUT				INDICATORS / GENERATORS WITH ANALOGICAL INPUT
	S311A-4	**S311A-6**	**S311A-8**	**S311A-11**	**S311G**
					
	4-digit Indicator / Totaliser with input universal analog	**6-digit Indicator / Totaliser with input universal analog**	**8-digit Indicator / Totaliser with input universal analog**	**11-digit Indicator / Totaliser with input universal analog**	**Indicator Generator with 4 digits with analog input**
GENERAL DATA					
Power supply	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)
Transducers power supply	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA
Max consumption	3 W	3 W	3 W	3 W	3 W
Isolation	1,500 Vac	1,500 Vac	1,500 Vac	1,500 Vac	1,500 Vac
Communication interfaces	slave ModBUS RTU (optional board)	slave ModBUS RTU (optional board)	slave ModBUS RTU (optional board)	slave ModBUS RTU (optional board)	slave ModBUS RTU (optional board)
Operating temperature	-10..+60°C	-10..+60°C	-10..+60°C	-10..+60°C	-10..+60°C
Front protection	IP65	IP65	IP65	IP65	IP65
Terminal blocks	A extraction, pitch 3.5 - 5.08 mm	A extraction, pitch 3.5 - 5.08 mm	A extraction, pitch 3.5 - 5.08 mm	A extraction, pitch 3.5 - 5.08 mm	A extraction, pitch 3.5 - 5.08 mm
Dimension	96x48x98 mm	96x48x98 mm	96x48x98 mm	96x48x98 mm	96x48x98 mm
Weight	200 g	200 g	200 g	200 g	200 g
Display	4-digit LED	6-digit LED	8-digit LED	4+7-digit LED	4-digit LED
Status indicators	2 alarm LEDs (can be activated on threshold)	2 alarm LEDs (can be activated on threshold)	2 alarm LEDs (can be activated on threshold)	2 alarm LEDs (can be activated on threshold)	2 Automatic / Manual LEDs
Front keys	3 navigation keys	3 navigation keys	3 navigation keys	3 navigation keys	3 navigation keys
Accuracy	0.1%	0.1%	0.1%	0.1%	0.1%
Programming	EASY SETUP Software, front keys	EASY SETUP Software, front keys	EASY SETUP Software, front keys	EASY SETUP Software, front keys	EASY SETUP Software, front keys
Special Functions	Integrator	Integrator	Integrator	Integrator	Auto/Man Mode, Signal Generator, bumpless filter
Certifications	EC	EC	EC	EC	EC
INPUT DATA					
Channels	1	1	1	1	1
Type and range	Voltage: 0-10 V Active / passive current: 0-20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751 / EN 60751 – ITS90) Thermocouple J,K,R,S,T,B,E,N	Voltage: 0-10 V Active / passive current: 0-20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751 / EN 60751 – ITS90) Thermocouple J,K,R,S,T,B,E,N	Voltage: 0-10 V Active / passive current: 0-20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751 / EN 60751 – ITS90) Thermocouple J,K,R,S,T,B,E,N	Voltage: 0-10 V Active / passive current: 0-20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751 / EN 60751 – ITS90) Thermocouple J,K,R,S,T,B,E,N	Voltage: 0-10 V Active / passive current: 0-20 mA Potentiometer: 1..100 kΩ
Frequency	-	-	-	-	-
Reset	Yes, with digital input and front keys	Yes, with digital input and front keys	Yes, with digital input and front keys	Yes, with digital input and front keys	-
OUTPUT DATA					
Channels	1	1	1	1	1
Type and range	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1 kΩ) 0-20 / 4-20 mA (max 500 Ω)
Relay outputs	N°2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional board	N°2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional board	N°2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional board	N°2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional board	-

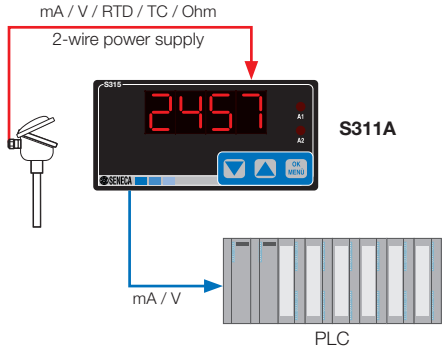
The technical data and the diagrams in this document are indicative and not binding.

INDICATORS / COMPACTS WITH ANALOGICAL INPUT			INDICATORS / TOTALISERS / BATCH COUNTERS COMBINABLE WITH DIGITAL INPUT			
S311AK	**S312A**	**S315**	**S311D-4**	**S311D-6**	**S311D-8**	**S311D-11**
						
4-digit indicator with analog mA/V input	**4-digit indicator with universal analog input, 4 relay outputs, ModBUS interface**	**4-digit indicator with 4-20 mA input, loop powered**	**Indicator / Totaliser / 4-digit Batch counter with digital / frequency input**	**Indicator / Totaliser / 6-digit Batch counter with digital / frequency input**	**Indicator / Totaliser / 8-digit Batch counter with digital / frequency input**	**Indicator / Totaliser / 11-digit Batch counter with digital / frequency input**
10-40 Vdc, 19-28 Vac	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)	From measurement loop (max 30 V)	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)	80-265 Vac (version H) 10-40 Vdc / 19-28 Vac (version L)
Max 16 V, 25 mA	Max 16 V, 25 mA	-	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA	Max 18 V, 25 mA
0.9 W	3 W	-	3 W	3 W	3 W	3 W
1,500 Vac	1,500 Vac	-	1,500 Vac	1,500 Vac	1,500 Vac	1,500 Vac
-	slave ModBUS RTU	-	slave ModBUS RTU (optional board)	slave ModBUS RTU (optional board)	slave ModBUS RTU (optional board)	slave ModBUS RTU (optional board)
-10..+65°C	-10..+65°C	-10..+65°C	-10..+60°C	-10..+60°C	-10..+60°C	-10..+60°C
IP65	IP65	IP65	IP65	IP65	IP65	IP65
With detachable screw, pitch 5.08 mm	With detachable screw, pitch 5.08 mm	With detachable screw, pitch 5.08 mm	A extraction, pitch 3.5 – 5.08 mm	A extraction, pitch 3.5 – 5.08 mm	A extraction, pitch 3.5 – 5.08 mm	A extraction, pitch 3.5 – 5.08 mm
96 x 48 x 40 mm	96x 48x 96 mm	96 x 48 x 40 mm	96x48x98 mm	96x48x98 mm	96x48x98 mm	96x48x98 mm
100 g	200 g	100 g	200 g	200 g	200 g	200 g
4-digit LED	4-digit LED	4-digit LED	4-digit LED	6-digit LED	8-digit LED	4+7-digit LED
-	Alarms	-	2 alarm LEDs (can be activated on threshold)	2 alarm LEDs (can be activated on threshold)	2 alarm LEDs (can be activated on threshold)	2 alarm LEDs (can be activated on threshold)
3 navigation keys	3 navigation keys	3 navigation keys	3 navigation keys	3 navigation keys	3 navigation keys	3 navigation keys
0.05%	0.05%	0.05%	0.1%	0.1%	0.1%	0.1%
Front keys	EASY SETUP Software, front keys	Front keys	EASY SETUP Software, front keys	EASY SETUP Software, front keys	EASY SETUP Software, front keys	EASY SETUP Software, front keys
-	-	-	Totalizer, Threshold alarm (batch)	Totalizer, Threshold alarm (batch)	Totalizer, Threshold alarm (batch)	Totalizer, Threshold alarm (batch)
EC	EC	EC	EC	EC	EC	EC
1	1	1	1	1	1	1
Voltage: 0-10 V Current: 0-20 mA	Voltage: 0..10 V Current: 0..20 mA Potentiometer: 1..100 kΩ Pt100 2,3,4 wires (IEC 751/EN 60751 – ITS90) Thermocouple J,K,R,S,T,B,E,N	Current 4..20 mA	Mechanical, Reed, Npn 2 and 3-wire contact, 3-wire Pnp with 24 Vdc power supply, Namur, Photoelectric, Variable Reluctance, 24V Pulse, TTL	Mechanical, Reed, Npn 2 and 3-wire contact, 3-wire Pnp with 24 Vdc power supply, Namur, Photoelectric, Variable Reluctance, 24V Pulse, TTL	Mechanical, Reed, Npn 2 and 3-wire contact, 3-wire Pnp with 24 Vdc power supply, Namur, Photoelectric, Variable Reluctance, 24V Pulse, TTL	Mechanical, Reed, Npn 2 and 3-wire contact, 3-wire Pnp with 24 Vdc power supply, Namur, Photoelectric, Variable Reluctance, 24V Pulse, TTL
-	-	-	0.00015 Hz .. 10 kHz	0.00015 Hz .. 10 kHz	0.00015 Hz .. 10 kHz	0.00015 Hz .. 10 kHz
-	-	-	Yes, with digital input and front keys	Yes, with digital input and front keys	Yes, with digital input and front keys	Yes, with digital input and front keys
	1 analog, 4 relays	-	1	1	1	1
-	0-10 V (min 1kΩ) 0-20 / 4-20 mA (max 500 Ω)	-	0-10 V (min 1kΩ) 0-20 / 4-20 mA (max 500 Ω)	0-10 V (min 1kΩ) 0-20 / 4-20 mA max 500 Ω)	0-10 V (min 1kΩ) 0-20 / 4-20 mA max 500 Ω)	0-10 V (min 1kΩ) 0-20 / 4-20 mA max 500 Ω)
-	Relay Capacity 5A - 250 Vac	-	N°2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional board	N°2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional board	N°2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional board	N°2 SPDT 220 Vac 5A (resistive), 2A (inductive) - optional board

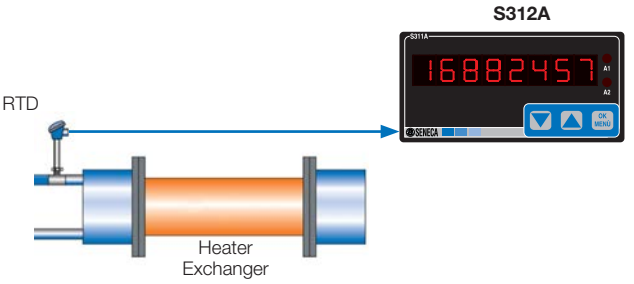
The technical data and the diagrams in this document are indicative and not binding.

APPLICATION EXAMPLES

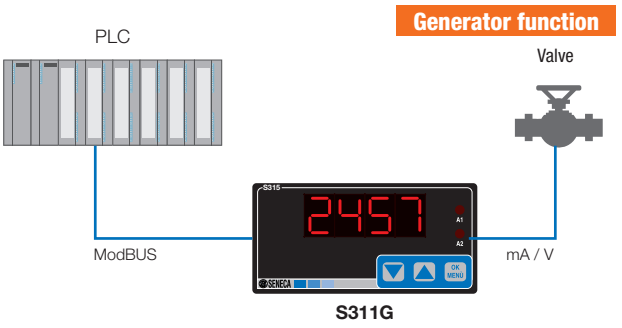
DISPLAY OF ANALOG AND RETRANSMISSION SIGNAL TO PLC



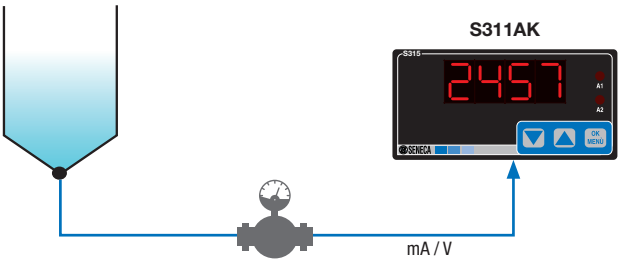
DATA DISPLAY FOR CALCULATION OF CONSUMPTIONS – HEAT EXCHANGER



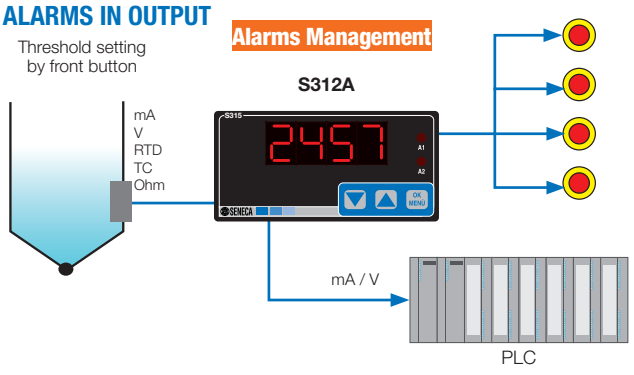
SIGNAL GENERATION IN AUTO/MAN MODE AND BUMPLESS FUNCTION



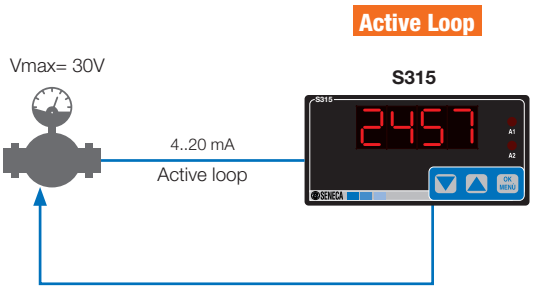
INSTANT DISPLAY ANALOG SIGNAL FROM SENSOR



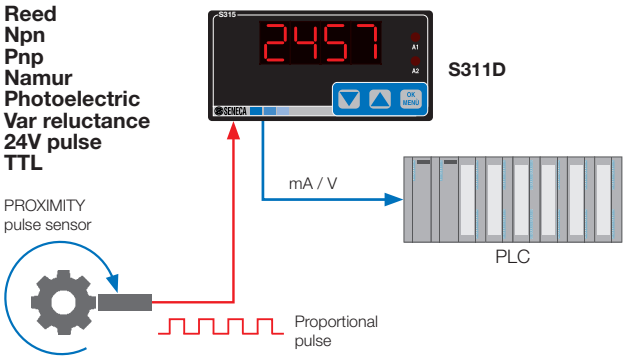
SIGNAL DISPLAY AND RETRANSMISSION WITH ALARMS IN OUTPUT



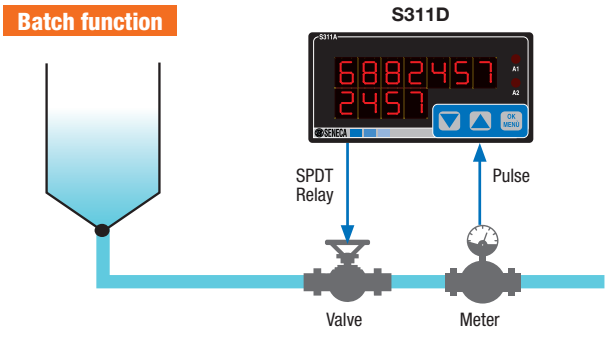
ANALOG SIGNAL DISPLAY FROM TRANSDUCER WITH ACTIVE LOOP



DISPLAY AND TOTALISATION OF IMPULSIVE SIGNAL



OUTPUT ACTIVATION WITH TOTALISER FUNCTION / BATCH COUNTER



ORDER CODES

MODULAR INDICATORS / TOTALISERS WITH UNIVERSAL ANALOG INPUT

Code		Description
Base model	S311A	Indicator / totaliser with universal analog input
Display	-4	4-digit LED
	-6	6-digit LED
	-8	8-digit LED
	-11	4+7-digit LED
Power supply	-L	10-40 Vdc / 19-28 Vac
	-H	80-265 Vac
Optional board	-0	Board no. 2 SPDT relay, ModBUS RTU interface, reset input

INDICATORS / GENERATORS WITH ANALOG INPUT

Code		Description
Base model	S311G	Indicator / signal generator with analog input
Display	-4	4-digit LED
Power supply	-L	10-40 Vdc / 19-28 Vac
	-H	80-265 Vac
Optional board	-0	ModBUS RTU

COMPACT INDICATORS / TOTALISERS WITH ANALOG INPUT

Code	Description
S311AK-4-L	4-digit indicator with analog mA/V input, 10-40 Vdc, 19-28 Vac
S311AK-4-L-IP66	4-digit indicator with analog mA/V input, 10-40 Vdc, 19-28 Vac, with IP66 case (130x80x60 mm)
S311AK-4-L-IP66D	4-digit indicator with analog mA/V input, 10-40 Vdc, 19-28 Vac, 2 instruments and double IP66 case
S312A-4-H-4R	Indicator with 4-digit display, universal analog input, 4 relay outputs, ModBUS interface, 85-265 Vac
S312A-4-L-4R	Indicator with 4-digit display, universal analog input, 4 relay outputs, ModBUS interface, 10-40 Vdc, 19-28 Vac
S315	4-digit loop powered indicator, 4-20 mA input
S315-IP66	4-digit powered loop indicator, 4-20 mA input with IP66 case (130x80x60 mm)
S315-IP66D	4-digit loop powered indicator, 4-20 mA input, 2 instruments and dual IP66 case

MODULAR BATCH INDICATORS / TOTALISERS / COUNTERS WITH DIGITAL INPUT

Code		Description
Base model	S311D	Indicator / totaliser / batch counter with digital / frequency input
Display	-4	4-digit LED
	-6	6-digit LED
	-8	8-digit LED
	-11	4+7-digit LED
Power supply	-L	10-40 Vdc / 19-28 Vac
	-H	80-265 Vac
Optional board	-0	Board no. 2 SPDT relay, ModBUS RTU interface, reset input

ACCESSORIES AND SOFTWARE

Code	Description
EASY SETUP	Configuration software for S311A, S311D, S312A models
S311OPZ	Option card 2 SPDT relay alarms, Modbus interface, reset input for S311A / S311D / S311G indicators (ModBUS only)
S311-T	Calibration service for indicators - S311 Line totalisers

HIGH BRIGHTNESS LED INDICATORS WITH ANALOG INPUT

	S200 / S201	S301 / S301 B	S310 / S320A
			
	3 ½ digit digital indicators	4-digit indicators with input universal analog and retransmitted output	3 ½ digit indicators with analog input (V, I) and SPDT relay alarms
GENERAL DATA			
Power supply	115 - 230 Vac ± 10% 50 - 60 Hz	115 - 230 Vac ± 10% 50 - 60 Hz	115 - 230 Vac ± 10% 50 - 60 Hz
Transducers power supply	+15 Vdc 350 mA e -15 Vdc 75 mA; 24 Vdc, 500 mA	-	-
Max consumption	11 VA	4 VA	3.5 VA
Rejection	40 dB	-	-
Communication interfaces	-	RS232 / RS485, 9.600 bbs, max 1.000 m and 31 tools	-
Memories	-	EEPROM, 10 years	-
DISPLAY AND MEASUREMENT			
Display	3 ½ digits LED red 14 mm	4 digits Bargraph 20 elements (50 mm) LED red 14 mm	3 ½ digits LED red 14 mm
Accuracy	0.3%	0.1% (voltage / current input, retransmitted output) 0.2% (thermo resistance, potentiometer)	0.3%
Stability	0.01%/°C	0.01%/°C	0.01%/°C
Linearity	-	From 0.01 to 0,5%	-
Cold coupling	-	1°C (20-40°C)	-
INPUT DATA			
Channels	1	1	1
Type and range	Current: 0 – 20, 4 - 20 mA Voltage: 0 – 5/ 1-5/ 0 –10/ 2 -10 Vdc	Voltage from 200 mV to 10 V (4 scales) Current up to 20 mA Potentiometer up to 15 kOhm Pt100 (-200..+650°C) TC J,K,R,S,T,B	Current 0-20, 4-20 mA Voltage 0-2/0,4-2/0-5/1-5 (0-10, 2-10 on request) Vdc Pt100 (optional) TC K,J (optional)
Frequency	-	3 readings a second	-
OUTPUT DATA (ANALOG)			
Channels	1	1	1
Type and range	Accuracy potentiometer setpoint (0/1-5 Vdc; 4-20mA active	Impressed current 0..20/4..20 mA Voltage 0..5 / 0..10 / 1..5 / 2..10 v	Active/passive opto-isolated retransmitted output 0..20 / 4..20 mA
Resolution		From 0.025% to 0.032%	
OUTPUT DATA (ALARMS)			
Contacts	-	3, 4	1, 2
Type	-	Relay SPDT 5A – 250 Vac Open collector 35 Vdc – 200 mA	Relay SPDT 5A – 250 Vac (resistive load)
THERMO-MECHANICAL DATA			
Operating temperature	-10..+60°C	-10..+55°C	0..50°C
Container	Self-extinguishing Noryl "V0" shockproof	Self-extinguishing Noryl "V0" shockproof	Self-extinguishing Noryl "V0" shockproof
Front protection	IP41	IP41	IP41
Terminal blocks	Removable	Removable	Removable
Dimension	96x96x117 mm	96x48x148 mm (S301); 96x96x148 mm (S301B)	96x48x148 mm (S310); 96x96x148 mm (S320A)
Weight	750 g	500 g (S301); 600 g (S301B)	500 g (S310); 600 g (S320A)
SETTINGS, REGULATIONS			
Software	-	Data request and writing	-
Front keys	-	Diagnostics and programming	-
Trimmer	Zero, display span (from -999 to 1.999)	-	Zero, display span (from -999 to 1,999); alarms
Jumpers / Shunt	Decimal point	-	Full scale, alarms, input type, decimal point, retransmitted output
Conformity	EC	EC	EC

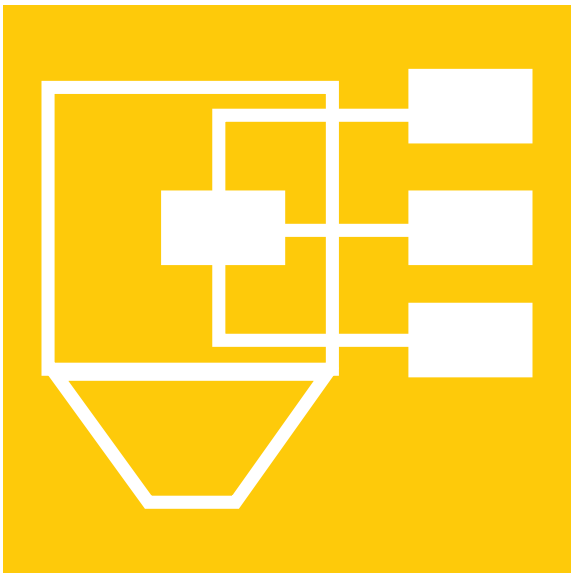
ORDER CODE	
Code	**Description**
S200-1-ST	Dual stabilised power supply, Power supply. 115 / 230 Vac
S200D-1-ST	3 ½ digit indicator with power supply, Power supply. 115 / 230 Vac
S201D-1-ST	3 ½ digit indicator with power supply, Power supply. 115 / 230 Vac, power supply 24 Vdc transducer
S201DP-1-ST	3 ½ digit indicator with power supply, Power supply. 115 / 230 Vac, power supply 24 Vdc transducer + setpoint
S301-1-R	4-digit indicator with µP universal input and retransmitted output, Power supply. 115 / 230 Vac
S301-1-R-AOC-S	4-digit indicator with µP universal input and retransmitted output, Power supply. 115 / 230 Vac, 4 open collector alarms, RS232/RS485
S301-1-R-AR-S	4-digit indicator with µP universal input and retransmitted output, Power supply. 115 / 230 Vac, 3 SPDT alarms, RS232/RS485
S301-23-R	4-digit indicator with µP universal input and retransmitted output, Power supply. 24 Vac/dc
S301-23-R-AOC-S	4-digit indicator with µP universal input and retransmitted output, Power supply. 24 Vac/dc, 4 open collector alarms, RS232/RS485
S301-23-R-AR-S	4-digit indicator with µP universal input and retransmitted output, Power supply. 24 Vac/dc, 3 SPDT alarms, RS232/RS485

ORDER CODE	
Code	**Description**
S301B-1-R	4-digit µP indicator with universal input bargraph and retransmitted output, Power supply. 115 / 230 Vac
S301B-1-R-AOC-S	4-digit µP indicator with universal input bargraph and retransmitted output, Power supply. 115 / 230 Vac, open collector alarms, RS232/RS485
S301B-1-R-AR-S	4-digit µP indicator with universal input bargraph and retransmitted output, Supply 115 / 230 Vac, 3 SPDT, RS232/RS485 alarms
S301B-23-R	4-digit µP indicator with universal input bargraph and retransmitted output, Power supply. 24 Vac/dc
S301B-23-R-AOC-S	4-digit µP indicator with universal input bargraph and retransmitted output, Supply 24 Vac/dc, 4 open collector alarms, RS232/RS485
S301B-23-R-AR-S	4-digit µP indicator with universal input bargraph and retransmitted output, Power supply. 24 Vac/dc, 3 SPDT alarms, RS232/RS485
S320A-1-ST	3 ½ digit indicator with V / I input and 2 relay alarms, dim. 96x96, Power supply. 115 / 230 Vac
S320A-1-ST-R	3 ½ digit indicator with V / I input and 2 relay alarms, dim. 96x96, Power supply 115 / 230 Vac, retransmitted output
S320A-23-ST	3 ½ digit indicator with V / I input and 2 relay alarms, dim. 96x96, Power supply. 24 Vac / dc
S320A-23-ST-R	3 ½ digit indicator with V / I input and 2 relay alarms, dim. 96x96, Power supply 24 Vac / dc, retransmitted output

The technical data and the diagrams in this document are indicative and not binding.

S20N1-S21N1 Line

COUNTER CONTROLLER



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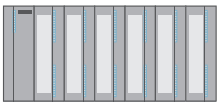
4.7

S20N1 / S21N1

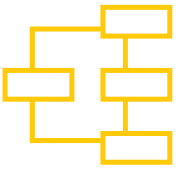
BATCH CONTROLLER WITH PULSE INPUT, LED DISPLAY AND MODBUS INTERFACE

The SENECA S20N1 and S21N1 batch controllers represent economical, simplified and safe solutions for process automation. Equipped with a 72x144 mm polycarbonate frontal membrane with 2 high-brightness red LED 5-digit numerical displays, 7 LEDs indicating the operating status and 6 front programming buttons, S20N1 and S21N1 acquire digital signals from contact, clean, contact reed, NPN transistor, namur sensor, hall effect sensor or photoelectric sensor.
The systems are designed to control measuring probes and operate valves or motors in order to manage the dosing, filling, sampling and regeneration of fluids in an automatic, timed and extremely precise form. The batch controllers S20N1 and S21N1 can be used as a stand-alone dosing unit or as an "auto-manual" station. In this second mode they act as local control units in order to correct, integrate or «manually» interrupt the dosages remotely controlled by the PLC. The flexibility and redundancy of the system, the ability to dose and develop recipes, and the energy efficiency of the controlled processes are thus improved.

STAND-ALONE OPERATION OR AUTO-MANUAL STATION COMBINED WITH PLC

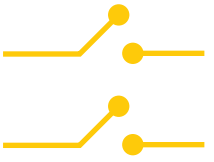


FLEXIBLE RECIPE MANAGEMENT



1 CONFIGURABLE IMPULSIVE INPUT (MAX MAX 2.2 kHz)

2 DIGITAL RELAY OUTPUTS SPDT (CAPACITY 5 A, 250 V, RESISTIVE LOAD)



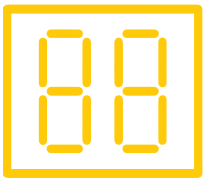
CONFIGURABLE SERIAL PORT RS485 MODBUS

RS485 ModBUS

RS232 SERIAL PORT ON CONNECTOR FOR IMPACT PRINTER

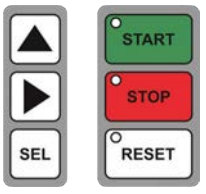
CONTROL BOARD S20N1KIT FOR BUTTONS AND EXTERNAL LIGHTS

2 5-DIGIT RED LED NUMERIC DISPLAYS, HIGH-BRIGHTNESS (SET+DOSAGE)



MICRO CONNECTOR USB FOR SW/FW UPDATE

6 FRONT PROGRAMMING BUTTONS



SPECIAL VERSIONS EX E IP65

SELF-POWERED BOARDS AMPLIFICATION INPUT

APPLICATION SECTORS

WATER TREATMENT

WASTE WATER

PRODUCTION OF WINE, BEER AND ALCOHOLIC

PAPER MILLS

FOOD & BEVERAGE

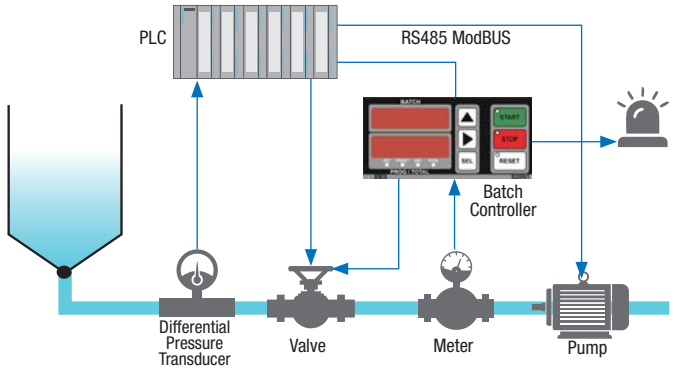
PHARMACEUTICAL AND BIOENGINEERING

OIL & GAS

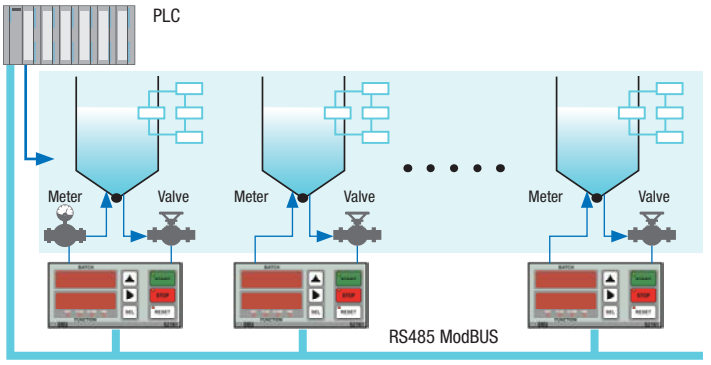
PRODUCTION OF SOLVENTS, THINNERS, PAINTS

APPLICATION EXAMPLES

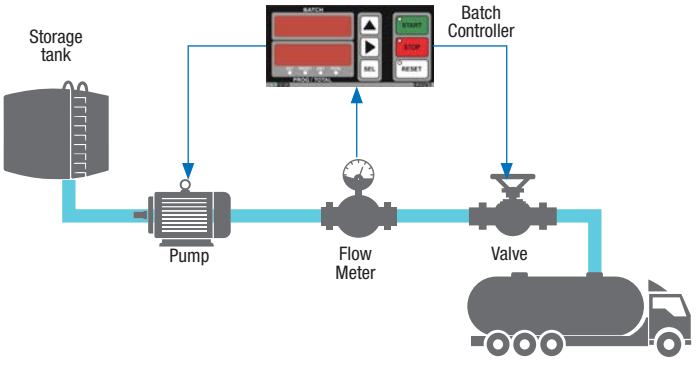
BATCH MANAGEMENT IN COMBINATION WITH PLC



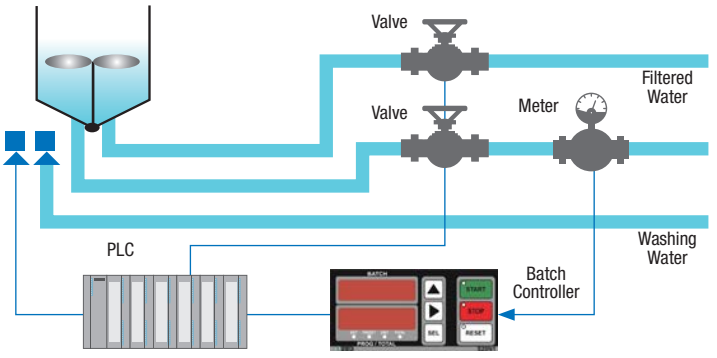
MULTI-RECIPES MANAGEMENT WITH REMOTE CONTROL (PLC) OR LOCAL (AUTO-MANUAL STATION) CONTROL



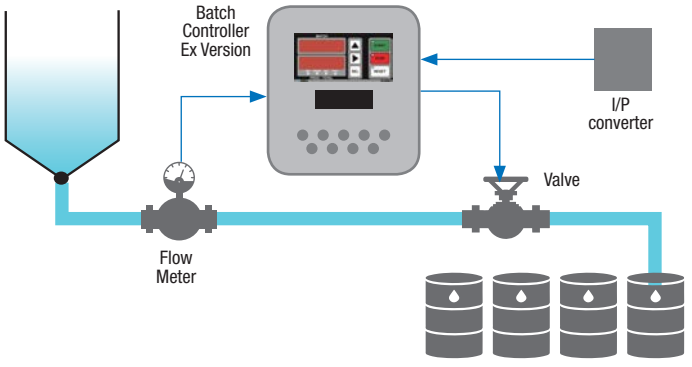
BATCH CONTROL FOR TANK TRUCK FILLING



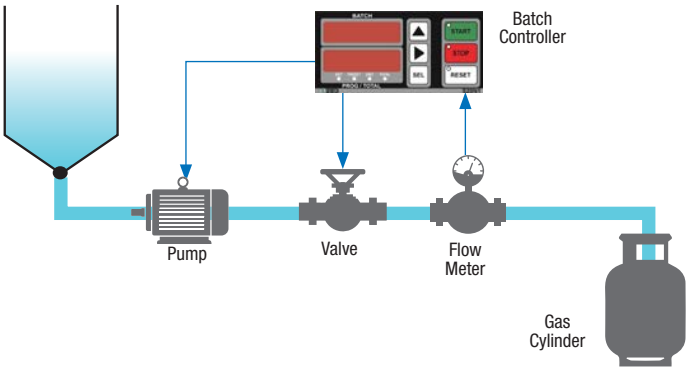
FILTER REGENERATION SYSTEM FOR THE WATER SUPPLY SECTOR



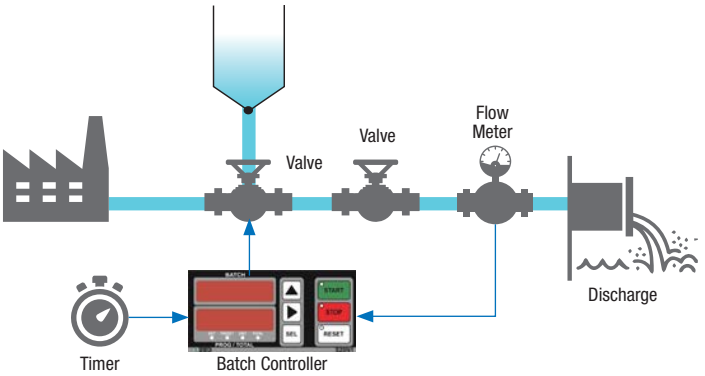
SYSTEM FOR DRUM FILLING IN A DANGEROUS ENVIRONMENT



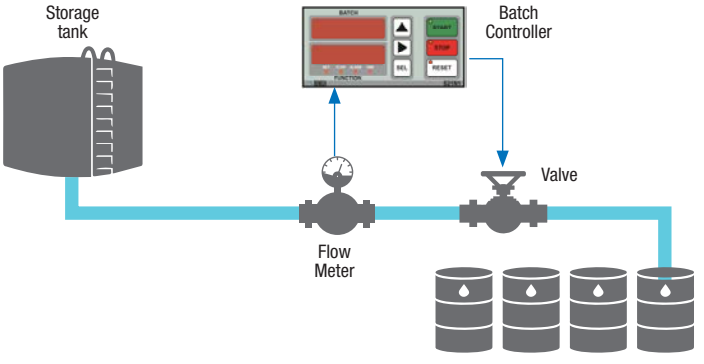
GAS REPLENISHMENT SYSTEM FOR THE OENOLOGICAL SECTOR



INDUSTRIAL DISCHARGE CONTROL SYSTEM



REPETITIVE DRUM FILLING SYSTEM WITH 2-SPEED VALVE CONTROL



TOTALISERS

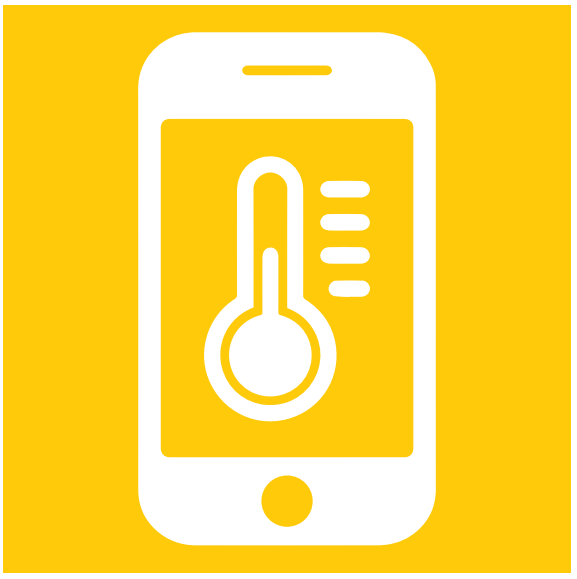
	S20N1	S21N1
		
	Base totaliser	Totaliser with clock
GENERAL DATA		
Power supply	115/230 Vac ± 50/60 Hz; 24 Vac/dc	115/230 Vac ± 50/60 Hz; 24 Vac/dc
Transducers power supply	12/24 Vdc, 30 mA (max)	12/24 Vdc, 30 mA (max)
Max consumption	10 VA	10 VA
Data archiving	EEPROM, data	EEPROM, data
Clock	-	Clock with autonomous battery, data memory, automatic correction of summer time
Interfaces	No.1 RS232 (printer command) No.1 RS485 / MosBUS (control and monitoring data) No.1 Micro USB (firmware update)	No.1 RS232 (printer command) No.1 RS485 / MosBUS (control and monitoring data) No.1 Micro USB (firmware update)
DISPLAY AND MEASUREMENT		
Display	2 numeric LED displays 5 digits	2 numeric LED displays 5 digits
Status indicators	Start, stop, reset	Start, stop, reset
INPUT DATA		
Number of channels	1 (isolated)	1 (isolated)
Type	From sensor reed, npn (2/3 wires), Namur, Hall effect, photoelectric	From sensor reed, npn (2/3 wires), Namur, Hall effect, photoelectric
Frequency	1,000 Hz, min. pulse duration 0.1 ms	1,000 Hz, min. pulse duration 0.1 ms
Control	3 inputs (start, stop, reset)	3 inputs (start, stop, reset)
OUTPUT DATA		
Number of channels	2	2
Type	SPDT relay, range 5 A 250 B (resistive load)	SPDT relay, range 5 A 250 B (resistive load)
THERMO-MECHANICAL DATA		
Operational Temperature	0..50°C	0..50°C
Container	Self-extinguishing Noryl V0	Self-extinguishing Noryl V0
Front Protection	Polycarbonate frontal membrane	Polycarbonate frontal membrane
Connections	Removable rear terminal blocks	Removable rear terminal blocks
Dimension (l x h x d)	144 x 72 x 130 mm	144 x 72 x 130 mm
Panel drilling dimensions	135 x 67 mm	135 x 67 mm
Weight	800 g	800 g
SETTINGS, REGULATIONS		
Programming / Dosage	Via front keys	Via front keys
Mode of operation	Stand-alone or Auto-Manual in conjunction with remote management from PLC (via RS485 - ModBUS)	Stand-alone or Auto-Manual in conjunction with remote management from PLC (via RS485 - ModBUS)
Max no. recipes	1	8
Conformity	EC	EC

ORDER CODE	
Code	**Description**
Batch Controller - Standard Versions	
S20N1-1-ST	Batch controller with pulse input, LED display and ModBUS interface, power supply 115 / 230 Vac
S20N1-23-ST	Batch controller with pulse input, LED display and ModBUS interface, power supply 24 Vac/dc
S21N1-1-ST	Batch controller with pulse input, LED display, ModBUS interface and self-powered clock, power supply 115 / 230 Vac
S21N1-23-ST	Batch controller with pulse input, LED display, ModBUS interface and self-powered clock, power supply 24 Vac/dc
Batch Controller - EX Versions	
S20N1EX-1-ST	Batch controller with pulse input, LED display and ModBUS interface in Eexd explosion-proof case, power supply 115 / 230 Vac
S20N1EX-23-ST	Batch controller with pulse input, LED display and ModBUS interface n Eexd explosion-proof case, power supply 24 Vac/dc
S21N1EX-1-ST	Batch controller with pulse input, LED display, ModBUS interface and self-powered clock in Eexd explosion proof housing, power supply 115 / 230 Vac
S21N1EX-23-ST	Batch controller with pulse input, LED display, ModBUS interface and self-powered clock in Eexd explosion proof housing, power supply 24 Vac/dc

ORDER CODE	
Code	**Description**
Batch Controller - Versions IP65	
S20N1IP65-1-ST	Batch controller with pulse input, LED display and ModBUS interface in case with IP65 protection rating, power supply 115 / 230 Vac
S20N1IP65-23-ST	Batch controller with pulse input, LED display and ModBUS interface in case with IP65 protection rating, power supply 24 Vac/dc
S21N1IP65-1-ST	Batch controller with pulse input, LED display, ModBUS interface and self-powered clock in housing with IP65 rating, power supply. 115 / 230 Vac
S21N1IP65-23-ST	Batch controller with pulse input, LED display, ModBUS interface and self-powered clock in housing with IP65 rating, power supply. 24 Vac/dc
Accessories	
FH190-24	24 column impact printer for S21N1, power supply 9-40 Vdc
S20ADP	Standard input amplification board
S20ADP-CM	Input amplification board in modular container
S20ADP-IP65	Input amplification board in a watertight container
S20N1-KIT-1-ST	Board for power supply keys, power supply 115 / 230 Vac
S20N1-KIT-23-ST	Board for power supply keys, power supply 24 Vac/dc

MY Line

PROFESSIONAL PORTABLE MEASURING SYSTEMS



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4.8

MY Line

PROFESSIONAL PORTABLE PROBES FOR TEMPERATURE AND HUMIDITY MEASUREMENTS

The **MY Line** is a range of portable transmitters able to transform mobile devices such as smartphones or tablets into Android data acquisition systems.
Easily configurable using a dedicated app, the MY Line allows the display of temperature values (RTD, TC) and humidity in analog or digital form, with sharing of the current measurement through SMS, e-mail and other data platforms.
The MY Line is the ideal candidate for professional, and industrial measurements in various contexts (machinery, climatic chambers, food storage and transportation, laboratories, HVAC systems) both for diagnostic purposes and for the monitoring of environmental parameters.

PIV - APP

Google play

HIGHLIGHTS

- IMMEDIATE DISPLAY OF SENSOR DATA ON SMARTPHONE OR TABLET
- FREE APP AVAILABLE FOR ANDROID DEVICES WITH MICRO USB OTG
- INSTANT MEASUREMENT AND SHARING VIA EMAIL, SMS, SOCIAL AND MESSAGING
- PROBES AVAILABLE TYPE RTD, THERMOCOUPLE, RELATIVE HUMIDITY AND TEMPERATURE
- ANALOG OR DIGITAL DISPLAY OF THE MEASUREMENT
- MANAGEMENT OF SEVERAL TRANSMITTERS WITH THE SAME APP
- RAPID SELECTION OF THE SCALES AND MEASUREMENT UNITS
- M121 CONNECTOR FOR RELIABLE AND PRECISE COUPLING WITH SENSITIVE ELEMENT

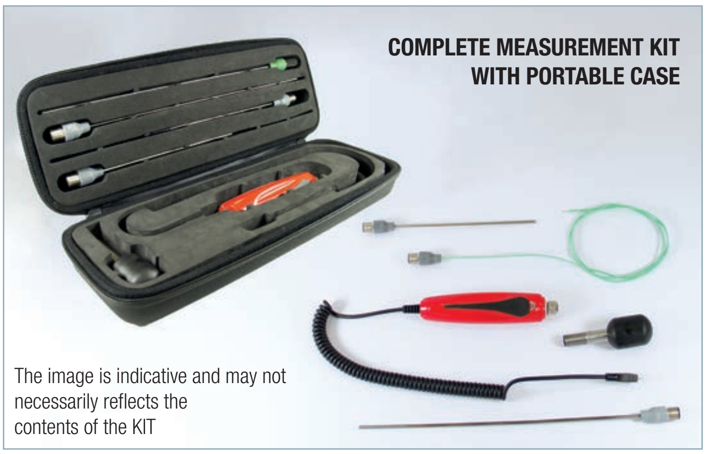
PT100 • MY-PT PROBES

	MY-PT-150-3	MY-PT-250-2	MY-PT-150-3R
			
	Portable probe PT100 class B, d=3 mm, L = 150 mm, rounded tip, M12M connector	**Portable probe PT100 class B, d=2 mm, L = 250 mm, rounded tip, M12M connector**	**Portable probe PT100 class B, d=3 mm, L = 150 mm, rounded tip, M12M connector**
GENERAL DATA			
Type of Measurement	Temperature	Temperature	Temperature
Power supply	Supplied from the USB port	Supplied from the USB port	Supplied from the USB port
Environmental conditions	-20..+50°C (grip)	-20..+50°C (grip)	-20..+50°C (grip)
Interface	USB Micro	USB Micro	USB Micro
Accuracy	Class B (sensor), conversion error (the highest of 1% measurement/ 0.5°C)	Class B (sensor), conversion error (the highest of 1% measurement/ 0.5°C)	Class B (sensor), conversion error (the highest of 1% measurement/ 0.5°C)
Measurement Field	-30..300°C	-30..300°C	-30..300°C
Response time	15 s	15 s	15 s
Probe connector	M12	M12	M12
Configuration system	Android App PIV APP via smartphone USB OTG	Android App PIV APP via smartphone USB OTG	Android App PIV APP via smartphone USB OTG
Functions / settings (via app)	Analog and digital display of the measurement Maximum and minimum session storage Reset of the measurement session with indication of the measurement time Scale modification in analog mode Changing the unit of measurement K,°C, °F, °R Recording of the current measurement with date, time, value and possibility to send it via share (on SMS, E-mail, Whatsapp)	Analog and digital display of the measurement Maximum and minimum session storage Reset of the measurement session with indication of the measurement time Scale modification in analog mode Changing the unit of measurement K,°C, °F, °R Recording of the current measurement with date, time, value and possibility to send it via share (on SMS, E-mail, Whatsapp)	Analog and digital display of the measurement Maximum and minimum session storage Reset of the measurement session with indication of the measurement time Scale modification in analog mode Changing the unit of measurement K,°C, °F, °R Recording of the current measurement with date, time, value and possibility to send it via share (on SMS, E-mail, Whatsapp)
Marking	EC	EC	EC
SENSOR			
Thermoelement	Pt100, accuracy according to IEC 751	Pt100, accuracy according to IEC 751	Pt100, accuracy according to IEC 751
Isolation	100 MΩ at 100 Vcc	100 MΩ at 100 Vcc	100 MΩ at 100 Vcc
Electrical connection	4-contact comolded nylon connector with M12x1 screw-on coupling (DIN-VDE0627) with metal thread	4-contact comolded nylon connector with M12x1 screw-on coupling (DIN-VDE0627) with metal thread	4-contact comolded nylon connector with M12x1 screw-on coupling (DIN-VDE0627) with metal thread
Protection Degree	IP67	IP67	IP67
Construction	High compact mineral insulation (MgO), sheath in AISI 316 stainless steel	High compact mineral insulation (MgO), sheath in AISI 316 stainless steel	High compact mineral insulation (MgO), sheath in AISI 316 stainless steel
Diameter	3 mm	2 mm	3 mm
Length	150 mm	250 mm	150 mm

ORDER CODE

MEASURING SYSTEM FOR PT100

Code	Description
TRANSMITTER	
MY-PT-150-3	Portable transmitter for PT100 with PT-150-3-M12 probe
MY-PT-250-2	Portable transmitter for PT100 with PT-250-2-M12 probe
MY-PT-150-3R	Portable transmitter for PT100 with PT-150-3R-M12 probe
ACCESSORIES / SPARE PARTS	
PT-150-3-M12	PT100 class B, d=3 mm, L= 150 mm, connector coupling M12
PT-250-2-M12	PT100 class B, d=2 mm, L= 250 mm, connector coupling M12
PT-150-3R-M12	PT100 class B, d = 3 mm, L = 150 mm, tapered terminal, M12 connector connection
COMPLETE MEASUREMENT KIT	
MY-PT-KIT	Portable transmitter for PT100 with PT-150-3-M12, PT-250-3-M12 and PT-150-3R-M12 probes



The technical data and the diagrams in this document are indicative and not binding.

THERMOCOUPLE PROBES TYPE K • MY-TC

HUM/TEMP. PROBES

	MY-TC-250-3	MY-TC-250-1.5	MY-TC-AC	MY-UT
				
	Portable thermocouple probe K, d=3 mm, L=250 mm, rounded tip, M12M connector	**Portable thermocouple probe K, d=1.5 mm, L=250 mm, rounded tip, M12M connector**	**K-type thermocouple portable probe with arch, M12M connector**	**Portable probe for temperature and relative humidity measurement, M12M connector**
GENERAL DATA				
Type of Measurement	Temperature	Temperature	Temperature	Temperature / Relative humidity
Power supply	Supplied from the USB port	Supplied from the USB port	Supplied from the USB port	Supplied from the USB port
Environmental conditions	-20..+50°C (grip)	-20..+50°C (grip)	-20..+50°C (grip)	-20..+50°C (grip)
Interface	USB Micro	USB Micro	USB Micro	USB Micro
Accuracy	Greater of 1% of the measurement / 2°C	Greater of 1% of the measurement / 2°C	Greater of 1% of the measurement / 2°C	±3% RH (20..80% RH) ±5% (<20%RH, >80%RH) ±0.5°C at 25°C 1.5°C between -10..+60°C
Measurement Field	0..1,150°C	0..1,150°C	0..1,150°C	-40..+120°C (Temp.) / 0..100% (RH)
Response time	15 s	15 s	15 s	10 s
Probe connector	M12	M12	M12	M12
Configuration system	App Android PIV APP via smartphone USB OTG	App Android PIV APP via smartphone USB OTG	App Android PIV APP via smartphone USB OTG	App Android PIV APP via smartphone USB OTG
Functions / settings (via app)	Analog and digital display of the measurement Maximum and minimum session storage Reset of the measurement session with indication of the measurement time Scale modification in analog mode Changing the unit of measurement K,°C, °F, °R Recording of the current measurement with date, time, value and possibility to send it via share (on SMS, E-mail, Whatsapp)	Analogue and digital display of the measurement Maximum and minimum session storage Reset of the measurement session with indication of the measurement time Scale modification in analogue mode Changing the unit of measurement K,°C, °F, °R Recording of the current measurement with date, time, value and possibility to send it via share (on SMS, E-mail, Whatsapp)	Analog and digital display of the measurement Maximum and minimum session storage Reset of the measurement session with indication of the measurement time Scale modification in analog mode Changing the unit of measurement K,°C, °F, °R Recording of the current measurement with date, time, value and possibility to send it via share (on SMS, E-mail, Whatsapp)	Analog and digital display of the measurement Maximum and minimum session storage Reset of the measurement session with indication of the measurement time Scale modification in analog mode Changing the unit of measurement K,°C, °F, °R Recording of the current measurement with date, time, value and possibility to send it via share (on SMS, E-mail, Whatsapp)
Marking	EC	EC	EC	EC
SENSOR				
Thermoelement	Single element K thermocouple according to IEC 584 class 2 (ASTM and 230)	Single element K thermocouple according to IEC 584 class 2 (ASTM and 230)	T/C K thermocouple with compact arch	Integrated capacitive temperature and relative humidity sensor
Isolation	100 MΩ at 500 Vcc	100 MΩ at 500 Vcc	100 MΩ at 500 Vcc	
Electrical connection	Male comolded nylon compensated connector with screw-on coupling M12x1 (DIN-VDE0627) with metal thread	Male comolded nylon compensated connector with screw-on coupling M12x1 (DIN-VDE0627) with metal thread	Male comolded nylon compensated connector with screw-on coupling M12x1 (DIN-VDE0627) with metal thread	Male comolded nylon connector with screw-on coupling M12x1 (DIN-VDE0627) with metal thread
Protection Degree	IP67	Protection degree		
Construction	With compact mineral insulation (MgO) with insulated hot joint, Inconel 600 sheath	With compact mineral insulation (MgO) with insulated hot joint, Inconel 600 sheath	With compact mineral insulation (MgO) with insulated hot joint	Steel AISI 316 S.S. (d=6 mm)
Diameter	3 mm	1.5 mm	12 mm	6 mm
Length	250 mm	250 mm	82 mm	120 mm
Additional equipment	K thermocouple, L=1000 mm, ANSI flat FEP wire, M12M connector	K thermocouple, L=1000 mm, ANSI flat FEP wire, M12M connector	K thermocouple, L=1000 mm, ANSI flat FEP wire, M12M connector	-

ORDER CODE

MEASUREMENT SYSTEM FOR TC-K

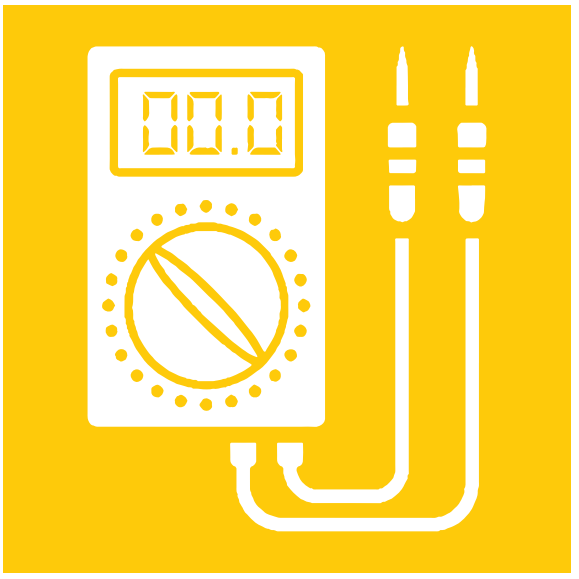
Code	Description
TRANSMITTER	
MY-TC-250-3	Portable thermocouple transmitter with TCK-250-3-M12 and TCK-W-1000-M12 probe
MY-TC-250-1.5	Portable thermocouple transmitter with TCK-250-1.5-M12 and TCK-W-1000-M12 probe
MY-TC-AC	Portable thermocouple transmitter with TCK-AC-M12 and TCK-W-1000-M12 probe
ACCESSORIES / SPARE PARTS	
TCK-250-3-M12	Thermocouple K, d=3 mm, L=250 mm, connector M12
TCK-250-1.5-M12	Thermocouple K, d=1.5 mm, L=100 mm, connector M12
TCK-W-1000-M12	K thermocouple, exposed joint, L=1000 mm, M12 connector coupling
TCK-AC-M12	K-type thermocouple with arch, M12 connector
COMPLETE MEASUREMENT KIT	
MY-TC-KIT	Portable transmitter for thermocouple with probes TCK-AC-M12, TCK-250-3-M12, TCK-250-1,5-M12 and TCK-W-1000-M12

MEASUREMENT SYSTEM FOR TEMPERATURE/HUMIDITY

Code	Description
TRANSMITTER	
MY-UT	Temperature/humidity portable transmitter with UT-M12 probe
ACCESSORIES/SPARE	
UT-M12	Temperature / relative humidity probe, M12 connector coupling
ISOLATION CONFIGURATION	
PIV-APP	Android app for viewing, scaling and sharing data. Working with USB OTG smartphone

The technical data and the diagrams in this document are indicative and not binding.

MULTIFUNCTION CALIBRATORS



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4.9

MULTIFUNCTION CALIBRATORS

Multifunction calibrators are devices used for calibration, simulation, verification and adjustment operations in installations and instrumentation. The calibrators deal with different quantities that must be attributed to normalised measurement signals: mA, mV, V, Ohm, Hz (frequency and pulses),°C or ºF. These instruments also have functions of generation, smoothing, linearisation or gradation of signals. Their main use lies in the verification of company instruments in order to control the quality of the measurement. Industrial calibration can be accompanied by particular adaptations and compensations. According to the various requirements, there are multifunction calibrators that allow the generation, simulation and simultaneous reading of multiple values or for single quantities (pressure, temperature, flow rate, sound, vibrations, voltage, current, resistance, pulses, frequency).

	TEST-4	MSC
		
Power supply	2 x AA NiMh batteries 2650 mAh	1 Lithium Polymer battery (LiPo) 3400 mAh
Autonomy	Autonomy 8 hours (minimum max load), 20 hours (average)	Autonomy 8 hours (minimum max load), 20 hours (average)
Accuracy	0.1% for each type of input/output	0.03% of base, 0.04% for current
Measuring instrument	Current, Voltage (V)	Current, Voltage (V, mV), Thermocouple, Thermoresistances, Load cell, Pulse, Frequency
Generator	Current, Voltage (V)	Current, Voltage (V, mV), Thermocouple, Thermoresistances, Load cell, Pulse, Frequency
Signal generation in Ramp mode	Current, Voltage (V)	Current, Voltage, TC, RTD, Load cell single/loop, max 9 segments, ramp min 1 second
Datalogger	-	Datalogger (up to 100,000 stored values, data export in csv format, real-time data display on mobile devices and PC)
Integration LabVIEW	-	Yes
Interface	High brightness OLED, 128 x 64 points	external PC / Smartphone / Tablet
Communication	-	Bluetooth Low Energy 4.1
Settings	Multiturn encoder key	Windows / Android / iOS App
Applications	Diagnostics, signal simulation and PLC calibration, sensors, recorders, valves and industrial devices	Diagnostics, signal simulation and PLC calibration, sensors, recorders, valves and industrial devices Maintenance and testing of process meters and industrial equipment Control and calibration of process instrumentation in the field, industry (laboratories, workshops and production), quality control

Test-4

GENERATOR, PORTABLE METER WITH RAMP FUNCTION FOR ANALOG SIGNALS

Test-4 is a valid support for calibration sessions, laboratory tests and for the simulation of analog measurements controlled by industrial devices (PLC, regulators, data acquisition systems, etc.). With a total accuracy of less than 0.1%, a resolution of 1 µA / 1 mV, Test-4 guarantees optimal calibration results. It allows the simulation of both voltage and current ramps (active or passive). Test-4 can be powered from a 220 Vac network through a dedicated power supply or with 2 NiMh batteries that ensure an average life of 20 hours.

TECHNICAL SPECIFICATIONS

GENERAL DATA	
Power supply	2 x AA batteries of 2650 mAh type Autonomy: 8 hours (minimum load max), 20 hours (average) From 220 Vac network through dedicated power supply/battery charger
Protection degree	IP 20
Operating temperature	0..50°C (recommended)
Humidity	30..90 % non-condensing
Dimension	140 x 75 x 33 mm
Weight	250 g
Isolation	Battery powered instrument, intrinsically isolated
Rejection	50-60 Hz
Freq. Sampling	10 Hz
Input / output signals	Voltage measurement/generation: 0..11 V Current measurement/generation: 0..21 mA Protection ± 30 V
Accuracy	0.1% for each type of input/output
Resolution	0.002 mA 0.001 V
OPERATING DATA	
Operation keys	The ESC key for functions ESC / ON/OFF device and restoring from screen saver after 7 minutes of inactivity The knob: to increase / decrease current value / voltage (exerting rotation); "weight" variation with value*10N, N=0, 1, 2, 3 (exerting pressure)
Languages available	Italian, English, German, French, Spanish
Contrast	15 levels
Screensaver	Vertical scroll display content after 7 minutes of non-use. Reset when the ESC / ON/OFF button is pressed
Function menu	General setup (selection of type of operation, type of signal, language, display contrast, encoder sensitivity) Generation (selection of voltage / current / passive current) Measurement (voltage / current selection) Generation of currents and voltages in ramp mode
Error warnings	Surge Voltage reading above 11 V Under voltage Reading voltage below -0.2 V Over current Current reading greater than 21 mA Under current Current reading lower than -0.1 mA Flashing value Generating voltage / current failed

CONNECTIONS	
Input / Output	Tips diameter 2 mm
Power supply	Battery charger socket, battery compartment on the back, under the protective rubber cover
USB Micro	For future implementations

EQUIPMENT

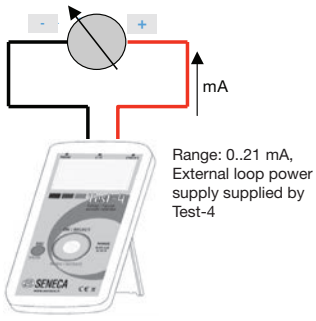
ORDER CODE

Code	Description
TEST-4	Signal generator, portable V-mA meter with ramp simulation
TEST-4-PK	Accuracy Kit (set of accuracy tips and crocodile clips) for Test-4
TEST-4-R	Accuracy tip set for Test-4
TEST-4-T	ISO 9001 calibration certificate for Test-4

CONNECTION DIAGRAMS

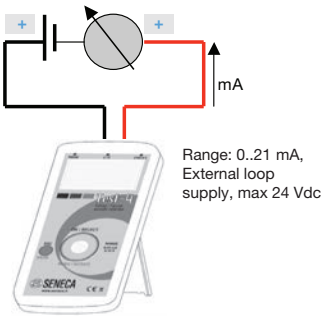
SIGNAL GENERATION

ACTIVE CURRENT



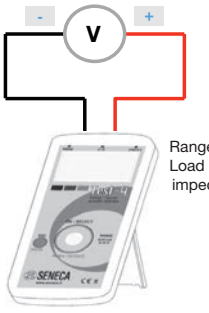
Range: 0..21 mA, External loop power supply supplied by Test-4

PASSIVE CURRENT



Range: 0..21 mA, External loop supply, max 24 Vdc

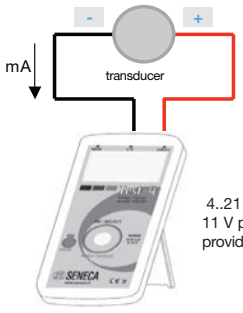
VOLTAGE



Range: 0..11 V Load impedence 1kΩ

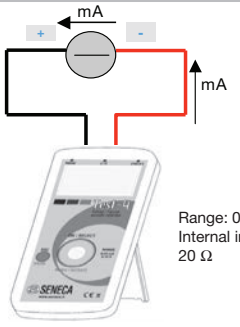
SIGNAL MEASUREMENT

ACTIVE CURRENT



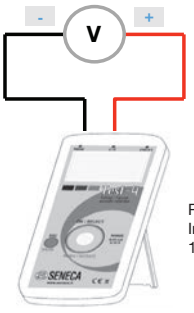
4..21 mA loop 11 V power supply provided by Test-4

PASSIVE CURRENT



Range: 0..21 mA Internal impedence 20 Ω

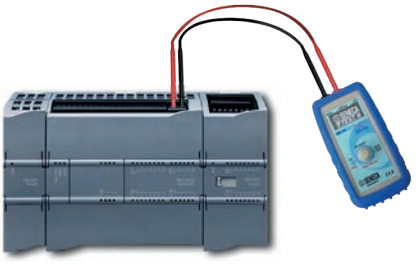
VOLTAGE



Range: 0..11 V Internal impedence 100 kΩ

APPLICATION EXAMPLE

SIMULATION OF SIGNALS FROM THE FIELD



PROCESS CALIBRATION FOR SENSORS, ACTUATORS, POSITIONERS, PLC, REGULATORS, ETC.

The technical data and the diagrams in this document are indicative and not binding.

MULTIFUNCTION UNIVERSAL CALIBRATOR

MSC (Multifunction Smart Calibrator) is a flexible and universal tool for maintenance, calibration, testing, diagnostics and inspection. With a accuracy class better than 0.05% for each type of input/output, MSC offers measurement and generation/simulation of signals: analog, digital, from temperature sensors and from load cells. The display of the data and the setting of the parameters takes place via
MSC application in Windows PC version with USB cable and in multilingual mobile version available for iOS and Android devices via Bluetooth 4.1 connection. MSC includes programmable functions of automatic ramp generation, datalogging with data export in .csv format, the possible use as an automatic testing system through LabVIEW libraries and the management of multiple calibrators via PC.
Equipped with a rechargeable lithium polymer battery, MSC is able to power external devices and sensors and can be used without power supply with an autonomy of up to 20 hours.
The instrument, with a storage capacity of up to 100,000 measurements, is suitable for professional and industrial use for PLC programmers, maintenance technicians, technical assistance companies, measurement laboratories, control and calibration of sensors and process instrumentation in the field, industry (laboratories, workshops and production), quality control.

AREAS OF USE

ON MACHINE ELECTRICAL PANELS

PROCESS SENSORS AND INSTRUMENTATION

LABORATORIES

PRODUCTION / QUALITY CONTROL

STATIONS AND TEST BENCHES / TEST ROOMS

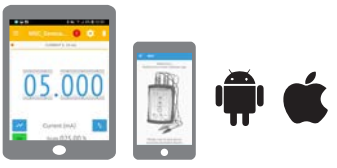
USER INSTRUCTIONS

PC DESKTOP / NOTEBOOK

- Complete calibrator management
- Multiple configurations
- Data log creation and export
- Firmware update
- Typical use for laboratories

SMARTPHONE AND TABLET

- Complete calibrator management
- Data log creation
- Tests, calibrations, tests on the machine or instruments in the field



LABVIEW LIBRARIES

- Integration with LabVIEW systems
- Use in automatic testing systems

FUNCTIONS

SIGNAL MEASURING DEVICE

GENERATOR / SIMULATOR

FUNCTION RAMPS
Single / Loop, max 9 segments

DATALOGGER
100,000 stored values csv data format

SIGNALS MANAGED

ANALOG SIGNALS
Current (mA)
Voltage (V, mV)

SIGNALS IN FREQUENCY / PULSES
Max 1,000 Hz

TEMPERATURE SENSORS
TC J,K,T,E,N,R,S,B,L - RTD 2,3,4 Wires

LOAD CELLS
Ohm - mV/V

10 REASONS TO CONNECT YOUR DEVICE TO THE MSC SMART CALIBRATOR

1 MULTIFUNCTION CALIBRATOR

- Signal Measuring Device
- Signal Generator / Simulator
- Single or loop ramp function
- Datalogger (up to 100,000 stored values, data export in csv format, real-time data display on mobile devices and PC)

2 UNIVERSAL SIGNAL MANAGEMENT

- Analog: V, mV, mA
- Thermocouples type J,K,T,E,N,R,S,B (IEC EN 60584-1)
- RTD (Pt100, Pt500, Pt1000, Ni100, Ni120, Cu50,
- Cu100 - IEC EN 60751-1)
- Load cells
- Pulse / frequency signals (0.1÷1.000 Hz)

3 WIRED AND WIRELESS MULTI-DEVICE USE

- Calibrator management via MSC PC software and USB connection also for multiple configurations
- Calibrator management via MSC mobile APP for iOS and Android with Bluetooth 4.1 connection
- Integration with LabVIEW systems

4 HIGH ACCURACY CLASS

- Better than 0.05% for each type of input / output

5 FLEXIBLE POWER SUPPLY

- Power supply from 230 Vac mains or from battery (up to 20 h of autonomy)
- Power supply for external devices and sensors @24 V

6 REMOTE CALIBRATION AND HARDWARE-INDEPENDENT

- Diagnostics, signal simulation and PLC calibration, sensors, recorders, valves and industrial devices of any make and type
- Connection to the calibrator via Bluetooth Low Energy 4.1 or Micro USB

7 COST REDUCTION OF MAINTENANCE AND TESTING

- Unique and universal instrument for the maintenance and testing of process meters and industrial equipment
- Multiple and PLC optimised configurations
- Reading, writing and immediate transmission of measurements, parameters and reports

8 FOR ALL INDUSTRIAL AND PROFESSIONAL USERS

- PLC programmers, industrial maintainers, technical assistance companies, measurement, control and calibration laboratories, industry (laboratories, workshops and production), quality control

9 DATA ALWAYS AVAILABLE ON PC...

- Application Multilingual Windows PC software for complete management of measurement and testing sessions
- Local trend display, graphs, data, events
- Real-time data sharing, creation and export of data logs
- Security, backup, controlled and secure access, automatic updates
- Multiple configurations

10 OR ON MOBILE DEVICE (SMARTPHONE, TABLET...)

- Multi-language app for iOS and Android mobile devices available on the App Store or Google Play
- Local trend display, graphs, data, events
- Real-time data sharing and creation of data logs
- Security, backup, controlled and secure access, automatic updates

TECHNICAL DATA

GENERAL DATA

Mains power supply	From 230 Vac mains via standard USB battery charger
Battery power supply	1 Lithium Polymer (LiPo) 3400 mAh batteries; autonomy 8 hours (minimum @ max load), 20 hours (max)
Protection degree	IP20
Operating temperature	-20..50°C (not charging), 0-45°C while charging
Storage temperature	0..35°C
Humidity	30..90 % non-condensing
Isolation	Battery powered instrument, intrinsically isolated No isolation from the USB port
Surge protection	230 Vac max without permanent damage
Rejection	50/60 Hz
Freq. Sampling	10 Hz
Operating Procedure	Meter, Generator, Ramps Datalogger
Dimension	88 x 147 x 25 mm
Weight	330 g
Equipment	Connection cables (4), mains battery charger
Factory calibration certificate	Supplied
Approval	EC

MEASURING ACCURACY

Accuracy	0.03% of base, 0.04% for current
Resolution	1 µA; 1 mV; 5 µV; 0,1°C; 0,1uV/V

GENERATION ACCURACY

Accuracy	0.03% of base, 0.04% for current
Resolution	1 µA; 1 mV; 5µV; 0,1°C; 0,02 Ohm; 0,1 uV/V;

INTERFACES AND SIGNALS

Buttons	On / Off / Pairing
LED	Power on indication LED Communication indication LED Error indication LED PAIRING BT indication LED Data logger on indication LED (future) Battery status indication LED
Buzzer	Buzzer for overload signalling and impossibility of simulating the request value.
Standard sockets	No.4 4mm sockets
Thermocouple connection	Mini plug (7.9mm) for thermocouple measurement and simulation
Power supply	USB Micro
USB Micro	For fw update or modbus communication (virtual com)
Wireless communication	Bluetooth Low Energy 4.1 towards Smart phone and Tablet Andriod or Ios

MEASURING FUNCTIONS

Current	0..24 mA active and passive; protection ± 28 V
Voltage (V)	0.0÷27 V
Voltage (mV)	-10mV÷+90mV
Thermocouple	Type K ,T, E, N, R, S, B, L
Thermo resistors (2,3,4 wires)	Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni120
Load cell	350 Ohm; -0.2÷+2.4mV/V
Pulse	Max count 1000 Hz
Frequency	0.1..1000 Hz

GENERATION FUNCTIONS

Current	0.1..24 mA active and passive; protection ± 28 V
Voltage (V)	0.1÷26 V
Voltage (mV)	-10mV÷+90mV
Thermocouple	Type J,K ,T, E, N, R,S, B, L
Thermo resistors (2 wires)	Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni120
Load cell	350 Ohm; -0.2..+2.4mV/V
Pulse	Min 0.5 ms (1..24V) number of pulses that can be set
Frequency	0.1..1000 Hz

DATALOGGER

Advanced	Yes
Sampling time	>500 ms

RAMP FUNCTION

Sign	Current/Voltage/TC/RTD/Load Cell
Functions	Single or with Loop
Type	Maximum 9 segments, ramp resolution 100ms, minimum ramp 1 second

MANAGEMENT APP

Languages available	APP in language
O.S / Store	IoS 10.3 or higher (App Store) / Android 4.0.3 or higher (Play Store)
Functions menu	General setup (selection of the type of operation, type of signal, language Measurement (voltage / current / passive current / thermo couples / thermo resistors / load cell / pulses selection; average-min-max value, counter reset, measurement pause; value sharing; scale change) Generation (voltage / current / passive current / thermo couples / thermo resistors / load cell / pulses selection; on-off; scale change)
Error signalling	Out of scale of measurement Generation overload signalling Low battery Internal malfunction

KEY

1. Socket for thermocouple measurement/ generation
2. Measuring/generation socket -EX
3. Measuring/generation socket -SN
4. Measuring/generation socket +SN
5. Measuring/generation socket +EX
6. On and off button
7. Bluetooth RESET button
8. Powering PWR LED
9. Successful connection Bind LED
10. Battery status indicator LED
11. Bluetooth/USB communication LED
12. Data recording LED
13. Error signalling LED
14. Micro USB connector for power/ communication
15. RESET button
16. Battery charge indicator LED

EQUIPMENT

1) Transportable case
2) MSC Calibrator (battery included)
3) Electrical socket
4) USB data and charging cable
5) User manual
6) Factory calibration certificate
7) Test cables
8) K thermocouple

MEASURING RANGE

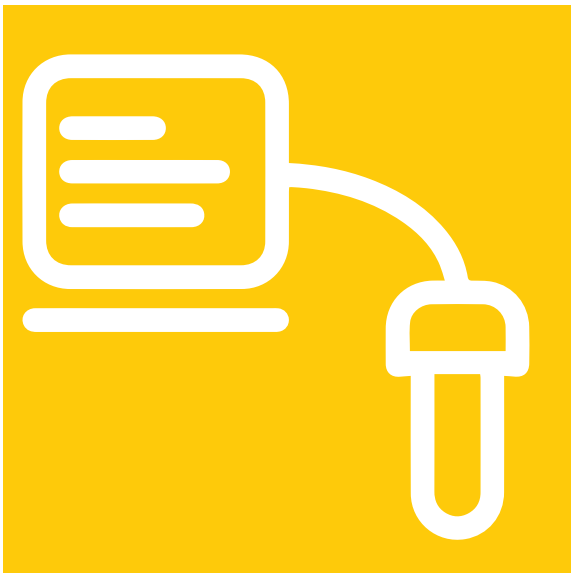
GRANDEZZA	U.M.	GENERAZIONE	MISURA
Voltage (hi range)	[dc V]	0..26 V	0..26 V
Voltage (low range)	[dc mV]	-10..+90 mV	-10..+90 mV
Active current	[dc mA]	0,1..+24 mA	0..+24 mA
Passive current	[dc mA]	0,1..+24 mA (3..29 V)	0..+24 mA
Pt100	[°C]	-200..+859°C	-200..+850°C
Pt500	[°C]	-200..+859°C	-200..+850°C
PT1000	[°C]	-200..+859°C	-200..+850°C
Cu50 / Cu100	[°C]	-180..+200°C	-180..+200°C
Ni100 / Ni120	[°C]	-80..+260°C	-60..+250°C
Thermocouple J	[°C]	-210..+1200°C	-210..+1200°C
Thermocouple K	[°C]	-270..+1372°C	-200..+1372°C
Thermocouple T	[°C]	-270..+400°C	-200..+400°C
Thermocouple E	[°C]	-270..+1000°C	-200..+1000°C
Thermocouple N	[°C]	-270..+1300°C	-200..+1300°C
Thermocouple R	[°C]	-50..+1768°C	-50..+1768°C
Thermocouple S	[°C]	-50..+1768°C	-50..+1768°C
Thermocouple B	[°C]	0..+1820°C	250..+1820°C
Thermocouple L	[°C]	-200..+800°C	-200..+800°C
Load Cell 350 Ohm	[mV/V]	-0,2..+2,4 mV/V	-0,2..+2,4 mV/V
Pulse / Frequency	[Hz]	0,1..1000 Hz (1..24 V)	0,1..1000 Hz (3..24 Vdc)

ORDER CODES

Code	Description
MSC	Multifunction Smart Calibrator - Signal Generator / Meter, app-based bluetooth calibrator
MSC TOOL	Free Windows application for fw update and data extraction in .csv format
ISO-USB	PC-USB isolator (accessory)
ALIM-MSC	1A / 5V power supply unit (spare)

The technical data and the diagrams in this document are indicative and not binding.

SINGLE CHANNEL DATALOGGER IP68



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4.10

IP68 SINGLE CHANNEL DATALOGGER

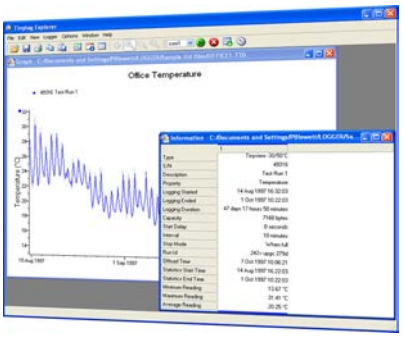
DL LINE

	DL-COUNT	DL-MA	DL-V	DL-MV
				
	IP68 data logger pulse input	**input IP68 datalogger current (mA)**	**input IP68 datalogger voltage (V)**	**input IP68 datalogger voltage (mV)**
RECORDING				
Reading capacity	64,000 reading cycles	64,000 reading cycles	64,000 reading cycles	64,000 reading cycles
Memory	Non-volatile	Non-volatile	Non-volatile	Non-volatile
Trigger start	Magnetic switch	Magnetic switch	Magnetic switch	Magnetic switch
Start delay	Relative / absolute (up to 45 days)	Relative / absolute (up to 45 days)	Relative / absolute (up to 45 days)	Relative / absolute (up to 45 days)
Stop option	Full memory After N readings Continuous cycle (overwriting of the oldest data)	Full memory After N readings Continuous cycle (overwriting of the oldest data)	Full memory After N readings Continuous cycle (overwriting of the oldest data)	Full memory After N readings Continuous cycle (overwriting of the oldest data)
Logging interval	From 1 s to 10 days	From 1 s to 10 days	From 1 s to 10 days	From 1 s to 10 days
Data download	Stopped or recording (minutes mode)	Stopped or recording (minutes mode)	Stopped or recording (minutes mode)	Stopped or recording (minutes mode)
Alarms	2 programmable	2 programmable	2 programmable	2 programmable
Inlet	From 0 to 255 pulses; max frequency 50 imp/second; counter divider from 1 to 255; digital input or voltage free contact; min pulse width 50 µS (@ 5V); automatic detection; Normally Open	From 0 to 20 mA DC; max current 50mA; impedance 10W; resolution 0.08mA; accuracy ±0.1mA, ±0.6% in reading	From 0 to 2.5V (max voltage 3.5V, max current ± 1µA, resolution 10mV, accuracy ±10mV, ±0.5% in reading) From 0 to 10 V (max voltage 14 V, impedance 400 kW, resolution 10 mV, accuracy ±40mV, ±1% in reading) From 0 to 25 V (max voltage 35 V, impedance 1 MW, resolution 100 mV, accuracy ±100mV, ±1% in reading)	From 0 to 200 mV DC; max voltage 500 mV; impedance 100 kW; resolution 0.8 mV; accuracy ±1 mV, ±0.5% in reading
GENERAL DATA				
Protection degree	IP68 water proof	IP68 water proof	IP68 water proof	IP68 water proof
Operational Temperature	-40..+85°C	-40..+85°C	-40..+85°C	-40..+85°C
Dimension	34x59x80 mm	34x59x80 mm	34x59x80 mm	34x59x80 mm
Weight	110 g	110 g	110 g	110 g
Internal battery	1/2 AA 3.6V Lithium, average duration 2 years	1/2 AA 3.6V Lithium, average duration 2 years	1/2 AA 3.6V Lithium, average duration 2 years	1/2 AA 3.6V Lithium, average duration 2 years
Equipment	USB Cable	USB Cable	USB Cable	USB Cable
PIN connections	A. Blue (common/0V); B. Red signal input)	A. Blue (common/0V); B. Red (signal input)	A. Red (reference); B. Green (not connected); C. White (Sense Line); D. Black (Common/0V); E. Yellow (input signal)	A. Blue (common/0V); B. Red (signal input)
Programming	SOFT-EDUC (basic), SOFT-OTLM (advanced)	SOFT-EDUC (basic), SOFT-OTLM (advanced)	SOFT-EDUC (basic), SOFT-OTLM (advanced)	SOFT-EDUC (basic), SOFT-OTLM (advanced)
Certifications	EC	EC	EC	EC

ORDER CODE

Code	Description
DL-COUNT	IP68 data logger pulse input
DL-MA	Current input IP68 datalogger (mA)
DL-MV	Voltage input IP68 datalogger (V)
DL-V	Voltage input IP68 datalogger (mV)
SOFT-EDUC	Re-educator (basic configurator)
SOFT-OTLM	Advanced management software

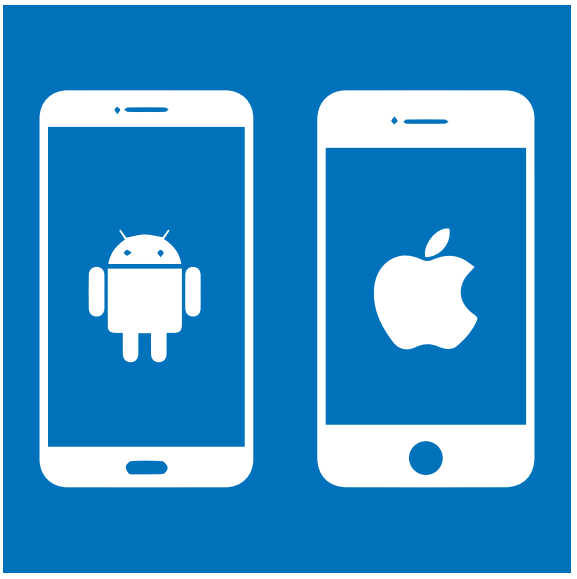
MANAGEMENT SOFTWARE



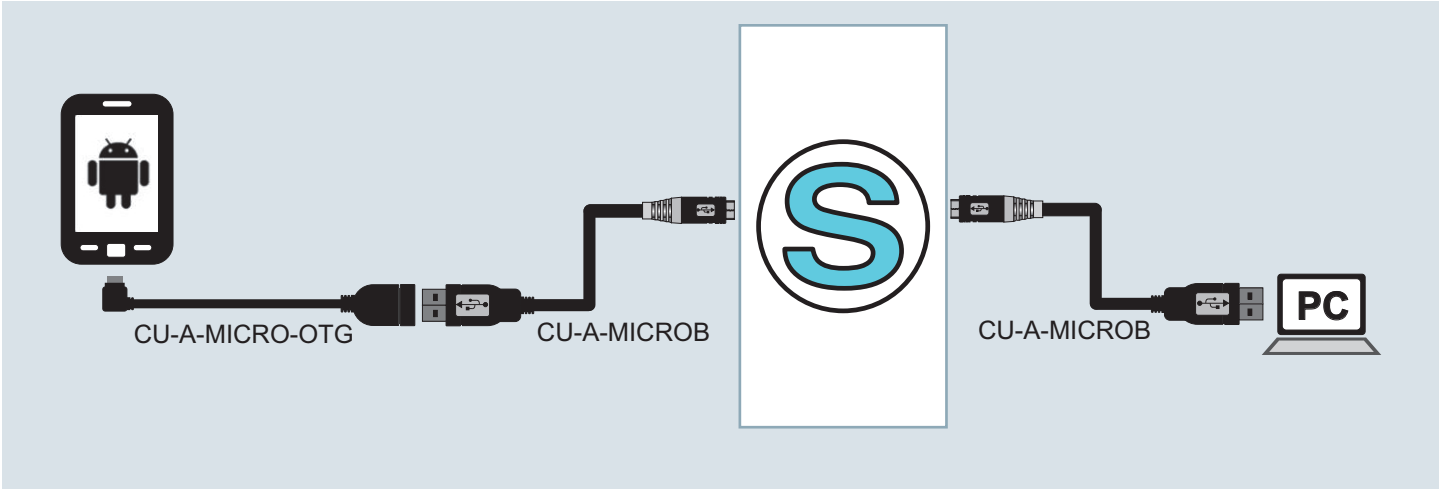
- **Configuration and programming of the data loggers**
- **Sampling interval setting, type of start and stop sampling, type and intervention values of the alarms, etc.**
- **Download of the recorded values and display of graphic or table form**
- **Data export to other spreadsheets in .xls, .xml, .txt, .csv formats**
- **Multitrack display on the same graph**
- **Humidity and dew point calibration**
- **Current value reading**
- **Multi-user licence**
- **Multi-language support**

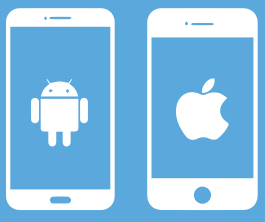
The technical data and the diagrams in this document are indicative and not binding.

SENECA APP FOR ANDROID / IOS TERMINALS



SENECA APP FOR ANDROID / IOS TERMINALS

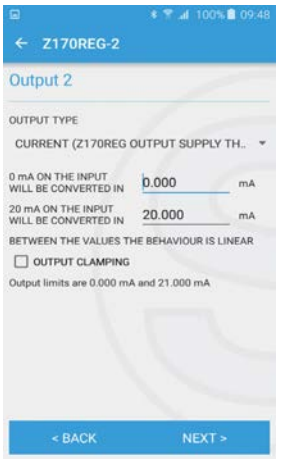


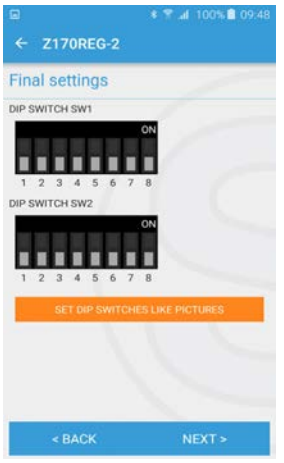


Mobile Phone with USB OTG support

Google play

- Direct access and settings via user friendly interface
- No programming skills required
- Upload/Download quick configuration and configuration replication
- Availability of operating manuals on smartphones
- Your smartphone becomes the best configurator



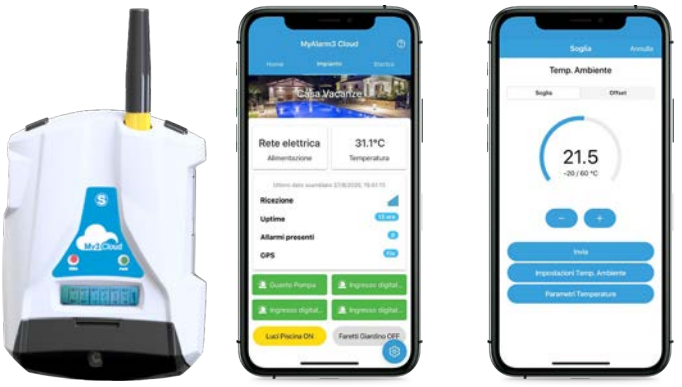


PROGRAMMABLE PRODUCTS	APP	PLAY STORE	APP STORE	OTG OBLIGATORY
MyAlarm3 Cloud	MyALARM3 Cloud	✔	✔	-
SENECA Easy Setup app	Z170REG-1, Z109REG2-1, Z1090REG-BP, Z109PT2-1, Z109UI2-1, Z109TC-1, Z-KEY, S203RC-D, S203TA-D	✔	-	✔
MSC	MSC	✔	✔	✔
SMS SENECA	B-ALARM, MYALARM2, MYALARM3 CLOUD, MY ALARM SEAL, Z-GPRS3, Z-LTE, Z-PASS1, Z-PASS2	✔	✔	-
VPN Client Communicator	VPN BOX	✔	-	-
PIV app by SENECA	My-PT, My-UT, My-TC	✔	-	✔
SENECA TEMP	MYALARM2, Z-GPRS3, Z-LTE	✔	-	-

INTERCONNECTED PRODUCTS "INDUSTRY 4.0 READY"

From the sensor to the Cloud

One of the leading companies in Europe to design and produce galvanic isolators and signal conditioners, Seneca today proposes a comprehensive catalogue of high-performance and cost-effective products and systems with which it is possible to feed, isolate, convert, capture, display and transmit safely by cable, bus or radio most industrial signals, in other words, to ensure the integrity of the data processing cycle.
A pioneer of high-tech Made in Italy, for over 30 years Seneca has met the fundamental needs of companies that must be able to use distributed control devices and systems to monitor the progress of machines and systems. The data collection, interconnection, remote control and display solutions proposed by Seneca strategically support the customer's business in the digital transformation and Industry 4.0 implementation process.



MyAlarm3 Cloud - Cloud based remote alarm and monitoring unit.

Smart Datalogger and remote alarm unit

Smart Datalogger and Seneca remote alarm units are used to meet the growing needs of data collection, real-time analysis, active monitoring and integration with the IT systems present in system automation and monitoring, with the support of IoT protocols (Mqtt, OPC UA, http post). They ensure support for serial communication,
Ethernet and also wireless in models equipped with 2G/3G+/4G-LTE modem with Gnss/GPS/Glonass receiver. In addition to third-party Cloud platforms, Seneca units can be combined with Cloud BOX, a proprietary 'on premise' solution
for the centralising of data, managing remote connections, creating multi-user supervision pages. The latest addition, MyAlarm3 Cloud, is an all-in-one unit based on a mobile app and Cloud service for residential, industrial and unattended site applications.
It can send data, alarms and remote commands on digital outputs as well as manage two timers with scheduling of up to 4 daily time bands.

Surprise Smart Display (SSD) - Multifunction HMI IIoT.

Remote assistance and VPN remote control

The flagship of Seneca's VPN/IIoT technology, LET'S is an integrated platform for machines and systems that reduces maintenance, automation and management costs. With the VPN BOX server module (also available in virtual version) at the centre of the architecture, LET'S operates in single LAN remote control mode (always on communication) or point-to-point remote assistance (on demand communication). The main innovation of LET'S consists of integrating the remote access functions with the IEC 61131-3 logic control functions. Ethernet gateways/routers support DynDNS service and redundant communication. Versions with 4G LTE modem and GPS receiver are also available.

A 'surprise' in HMI 4.0

The evolution of the HMI concept is one of the cornerstones of the Industry 4.0 paradigm. SURPRISE Smart Display (SSD) is a 7" IIoT touchscreen operator terminal with double fast Ethernet port (LAN/WAN), advanced routing functions, Wi-Fi 802.11 b/g/n, web server, I/O, serial and integrated usb, flexible display modes.
It is a multi-purpose device that can be configured without programming knowledge, with gateway, datalogger, remote alarm, router/Wi-Fi AP, serial sniffer, microcontroller, remote assistance and remote control functionality on the LET'S platform. Thanks to the simultaneous connection with multiple devices, SSD generates client/server HMI solutions with different access points to the plant or to the single machine, integrating supervisory and business management systems, SCADA, ERP and MES, through IIoT protocols such as Mqtt, OPC UA , http post. The main applications of the device include remote maintenance tasks, alarm management, data analysis, building automation, supervision of production activities and technological systems

Questions and answers

What characteristics must an item have in order to be defined as "interconnected"?

In order for an item, in line with the provisions of article 1, paragraph 11, of the 2017 Budget Law, to be defined as "interconnected" for the purpose of obtaining the benefit of the 150% hyper-depreciation, the following are necessary and sufficient: 1. exchanges information with internal systems (e.g.: management system, planning systems, product design and development systems, monitoring, even remotely, and control, other machines in the plant, etc.) and/or with external agents (e.g.: customers, suppliers, collaborative design and development partners, other manufacturing sites, supply chain, etc.) by means of a link based on documented, publicly available and internationally recognised specifications (examples: TCP-IP, HTTP, MQTT, etc.); 2. it is uniquely identified, in order to recognise the origin of the information, through the use of internationally recognised addressing standards (e.g.: IP address).

In more detail
www.mise.gov.it/index.php/it/incentivi/impresa/credito-d-imposta-beni-strumentali/domande-e-risposte

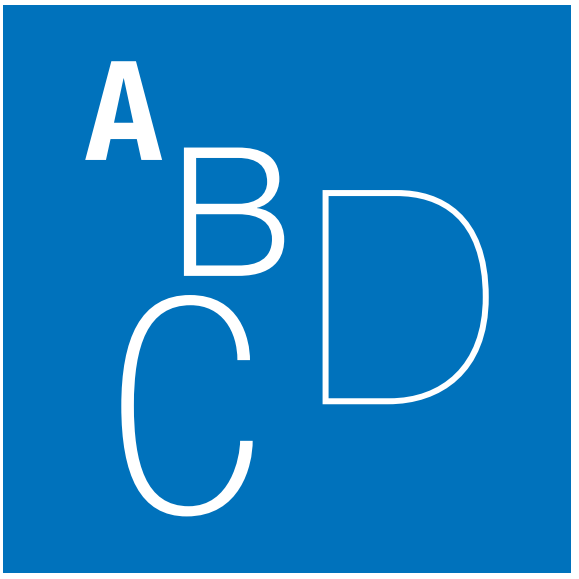
“INDUSTRY 4.0 READY” INTERCONNECTED PRODUCTS

INDUSTRY 4.0 STANDARD									
Code	TCP-IP	Industrial Ethernet	OPC UA	MQTT	http post	Web API, Cloud Support	FTP / HTTP / HTTPS / SMTP / SNMP	VPN / Remote Access Support	Wireless IoT Protocols (BLE, LoRa, Wi-Fi)
CLOUD BOX	x					x	x		
MSC									x
MY-SEAL-0-0-0-B				x	x	x	x		
MY-SEAL-R-0-0-B				x	x	x	x		
MY-SEAL-0-W-0-B				x	x	x	x		
MY-SEAL-0-0-G-B				x	x	x	x		
MY-SEAL-R-W-0-B				x	x	x	x		
MY-SEAL-R-0-G-B				x	x	x	x		
MY-SEAL-0-W-G-B				x	x	x	x		
MY-SEAL-R-W-G-B				x	x	x	x		
MY-SEAL-0-0-0-G				x	x	x	x		
MY-SEAL-R-0-0-G				x	x	x	x		
MY-SEAL-0-W-0-G				x	x	x	x		
MY-SEAL-0-0-G-G				x	x	x	x		
MY-SEAL-R-W-0-G				x	x	x	x		
MY-SEAL-R-0-G-G				x	x	x	x		
MY-SEAL-0-W-G-G				x	x	x	x		
MY-SEAL-R-W-G-G				x	x	x	x		
MY2B-0-0-M-B							x		
MY2B-0-0-M-G							x		
MY2-KITIP66							x		
MY2B-R-0-M-B							x		
MY2B-R-0-M-G							x		
MY2B-0-0-M-B-4X							x		
MY2B-0-0-M-G-4X							x		
MY2B-R-0-M-B-4X							x		
MY2B-R-0-M-G-4X							x		
MY2G-0-0-M-B							x		
MY2G-0-0-M-G							x		
MY2G-R-0-M-B							x		
MY2G-R-0-M-G							x		
MY2G-0-0-M-B-4X							x		
MY2G-0-0-M-G-4X							x		
MY2G-R-0-M-B-4X							x		
MY2G-R-0-M-G-4X							x		
MY2S-0-0-M-B							x		
MY2S-0-0-M-G							x		
MY2S-R-0-M-B							x		
MY2S-R-0-M-G							x		
MY2S-0-0-M-B-4X							x		
MY2S-0-0-M-G-4X							x		
MY2S-R-0-M-B-4X							x		
MY2S-R-0-M-G-4X							x		
MY3CLOUD-R-0-0-G						x			
MY3CLOUD-R-0-G-G						x			
R-6RTD	x								
R-6RTD-P		x							
R-8AI-8DIDO	x								
R-8AI-8DIDO-P		x							
R-16DI-8DO	x								
R-16DI-8DO-P		x							
R-32DIDO	x								
R-32DIDO-P		x							
R-COMM									
R-GWR	x								
R-GWR-IP-1	x								
R-GWR-S-1	x								
R-PASS	x		x	x	x	x	x	x	
R-SG	x								
R-SG-P		x							
R-KEY-LT	x								
R-KEY-MBUS	x								
R203	x								
RTU-LP-ST							x		
RTU-LP-ST1							x		
RTU-LP-ST2							x		
S500-ETH	x								
S500-KNX		x							
S501-40-0	x								
S502-80-ETH	x								
S504C-6-ETH-MID	x								

“INDUSTRY 4.0 READY” INTERCONNECTED PRODUCTS

INDUSTRY 4.0 STANDARD									
Code	TCP-IP	Industrial Ethernet	OPC UA	MQTT	http post	Web API, Cloud Support	FTP / HTTP / HTTPS / SMTP / SNMP	VPN / Remote Access Support	Wireless IoT Protocols (BLE, LoRa, Wi-Fi)
S504C-80-ETH-MID	x								
S604B-6-ETH	x								
S604E-6-ETH	x								
S604E-80-ETH	x								
S604E-ROG-ETH-30	x								
S604E-ROG-ETH-45	x								
S604EROGETH45-5	x								
S604EROGETH45-10	x								
S604E-ROG-ETH-70	x								
S6001-PC	x		x	x				x	
S6001-PC-4GWW	x		x	x				x	
S6001-RTU	x		x	x		x		x	
S6001-RTU-4GWW	x		x	x		x		x	
S6001-RTU-E	x		x	x	x	x	x	x	
S6001-RTU-E-4GWW	x		x	x	x	x	x	x	
S711E6ETH	x								
S711EROGETH30	x								
S711EROGETH45	x								
S711EROGETH70	x								
SSD-0-0-0-0	x		x	x	x	x	x	x	x
SSD-0-L-0-0	x		x	x	x	x	x	x	x
SSD-0-0-V-0	x		x	x	x	x	x	x	x
SSD-0-0-0-I	x		x	x	x	x	x	x	x
SSD-0-L-V-0	x		x	x	x	x	x	x	x
SSD-0-L-0-I	x		x	x	x	x	x	x	x
SSD-0-0-V-I	x		x	x	x	x	x	x	x
SSD-0-L-V-I	x		x	x	x	x	x	x	x
VISUAL1E	x								
VISUAL2E	x								
VISUAL3	x								
VISUAL3-FLOW	x								
VISUAL4	x								
VISUAL4T	x								
VISUAL5-PC	x								
VISUAL5-WB	x								
VISUAL6	x								
VISUAL7N	x								
VISUAL8	x								
VISUAL9	x								
VISUAL10	x								
VISUAL11	x								
VISUAL12	x								
VPN-BOX	x						x	x	
ZE-2AI	x								
ZE-4DI-2AI-2DO	x								
Z-FLOWCOMPUTER	x								
Z-FLOWCOMPUTER-B	x								
Z-GPRS3				x	x	x	x		
Z-KEY-0	x					x			
Z-KEY-MBUS	x								
Z-KEY-P		x							
Z-KEY-WIFI	x					x			
Z-LINK1-LO									x
Z-LOGGER3				x	x	x	x		
Z-LTE-WW				x	x	x	x		
Z-MINIRTU	x		x	x					
Z-MODEM-3G	x								
Z-MODEM-4GWW	x								
Z-PASS1-IO	x		x	x	x	x	x	x	
Z-PASS2-4GWW	x		x	x	x	x	x	x	
Z-PASS2-S-4GWW	x		x	x	x	x	x	x	
Z-PASS2-S-E-4GWW	x		x	x	x	x	x	x	
Z-TWS11	x						x		
Z-TWS4-S-IO	x		x	x		x	x	x	
Z-TWS4-E-IO	x		x	x	x	x	x	x	

ALPHABETICAL INDEX



ALPHABETICAL INDEX

ITEM CODE	DESCRIPTION	P.
A		
A-169DV12	169MHz antenna, dip. vertical lambda/2, BNC M, cable 5 mt	118
A-169DV14	Front 169MHz, stylus vert.lambda/4, BNC M, L=450 mm	118
A-169DV16	169MHz antenna, ¼ lambda, length 45 cm., BNC M	118
A-169YAGI	169MHz antenna, 3 elements Yagi, BNC M, 10 m cable	118
A-DIN-T201	Plastic coupling for DIN rail for T201 Line	156
A-GPS	External GPS antenna with MMCX magnetic base, 3 m cable	166
A-GPS-SMA	Antenna GPS with SMA coupling	166
A-GSM	External antenna GSM dual band swing cable 3.2 m	35, 74, 166
A-GSM-DIR-5M	Triband direc. antenna GSM-DECT-UMTS SMA-M, cable 5 mt	35, 74, 166
A-GSM-MG	SMA dual band magnetic outdoor antenna, 2.5 m cable	35, 74, 166
A-GSM-OMNIDIR	One-way Antenna GSM-UMTS-WIFI, 5.1 dB, SMA-M 5 m cable	35, 74, 166
A-GSM-OMNIDIR-10	One-way Antenna GSM-UMTS-WIFI, 5.1 dB, SMA-M 10 m cable	35, 74, 166
A-GSM-QUAD-N	Omnidirectional external antenna 4G/WI-FI, FME, 3 m cable	35, 74, 166
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A-STIL	Stylus antenna GSM 90° SMA-M	166
A-STIL-EA247	Antenna GSM SMA-M 90° - 824-960 / 1710-2170MHz	166
A-STIL-D	SMA-M straight stylus GSM antenna	166
B		
B-ALARM	Remote alarm 1DI / 1DO, basic functions	69
BATT-MY2	3.7V lithium battery - 1.200mAh for MYALARM2	74
BATT-S	Single pack of 3-cell 11.1 V - 14.5 Ah lithium batteries	84
BATT-2S	Double 3-cell lithium battery pack 11.1 V - 14.5 Ah	84
BOX-RTU-IP65	IP65 box with batteries installation support	84
C		
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CLOUD BOX VM-1K	Virtual Server Licence for data collection from RTU SeAL max 1,000 tags	105
CLOUD BOX VM-5K	Virtual Server Licence for data collection from RTU SeAL max 5,000 tags	105
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CLOUD BOX VM-UP1	Virtual Server licence upgrade for data collection from 1,000 to 5,000 tags	105
CLOUD BOX VM-UP2	Virtual Server licence upgrade for data collection from 5,000 to 10,000 tags	105
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CODESYS	Platform CODESYS IEC 61131 v.2.3 prog. Z-TWS5	24
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CS-DB9F-CFV10	RS232 connection cable (DB9F-CFV10) for M-RTU	62
CS-DB9F-CLAMP	Serial cable RS485 (DB9F / terminals) 1.5 MT - VISUAL/Z-FLOW	62
CS-DB9F-DB25M	Serial cable conn. S21N - Impact printer FH190-24	62
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CS-RJ10-DB9M	Modem serial cable (RJ10 / DB9M)	62
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CU-A-MINIB-2	Cable plug USB-A Mini USB-B 5 P, 2 mt	62
CU-A-MICRO-OTG	Adapter cable Micro USB OTG – USB Female A type	62
D		
DL-COUNT	IP 65 data logger pulse input	226
DL-MA	IP 65 mA input datalogger	226
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ITEM CODE	DESCRIPTION	P.
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DR-04-PLUS	4-channel data recorder + plus package (multi-client)	51
DR-08-PLUS	8-channel data recorder + plus package (multi-client)	51
DR-16-PLUS	16-channel data recorder + plus package (multi-client)	51
DR-32-PLUS	32-channel data recorder + plus package (multi-client)	51
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DR-UN-PLUS	Data Recorder unlimited channels + packet plus (multi-client)	51
DR-UPGRADE	Data Recorder upgrade package	51
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E		
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EASY LP	Plug & play configurator collection loop powered instruments	190
EASY MYALARM2	MYALARM2 configurator	70
EASY RTU LP	RTU-LP devices software configurator	84
EASY SETUP	SENECA programmable instrument configurator suite	180
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EASY SETUP APP	Complete iOS / Android Suite app EASY SETUP	180
EASY Z-KEY	IP Z-KEY address configuration tool	89
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E-POWER PACK	S604 / S711 Line network analysers management software	137
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E-M-BUS PACK	Management software S500 Line - M-BUS	146
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MY2G-0-0-M-B-4X	MyAlarm2, GPS version, SD card, terminals, IP66 Case	65
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MY3CLOUD-R-0-0-G	MyaAlarm3 Cloud support, relay, grey	65
MY3CLOUD-R-0-G-G	MyaAlarm3 Cloud support, relay, GPS, grey	65
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PT100-150-MA	Pt100 L = 150 mm 3 wires waterproof head conn.1/2" GM 4-20 mA	195
PT100-200	Pt100 L = 200 mm 3 wires waterproof head conn.1/2" GM	195
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PT100-300	Pt100 L = 300 mm 3 wires waterproof head conn.1/2" GM	195
PT100-300-MA	Pt100 L = 300 mm 3 wires waterproof head conn.1/2" GM 4-20 mA	195
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R-8RTD-8DIDO-P	8-CH input module from thermo resistors Profinet IO	23
R-8AI-8DIDO	8-CH analog inputs, 8 digital inputs/outputs Modbus TCP-IP / Modbus RTU	23
R-8AI-8DIDO-P	8-CH analog inputs / 8 digital inputs / outputs Profinet IO	23
R-16DI-8DO	16-CH digital inputs / 8 digital relay outputs Modbus TCP-IP / Modbus RTU	23
R-16DI-8DO-P	16-CH digital inputs / 8 digital relay outputs Profinet IO	23
R-32DIDO	32-CH digital inputs / outputs Modbus TCP-IP / Modbus RTU	23
R-32DIDO-P	32-CH digital inputs / outputs Profinet IO	23
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R-GWR-S-1	LoRa home automation sensor with analog/digital input and anti-flooding	121
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R-SG-P	IO Profinet strain gauge converter module	23
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R203-ROG-040	Network Analyser Kit, 2xETH, univ. input, 3xROG L40 Ø12, 100mV/1KA, 3mt	128
R203-ROG-060	Network Analyser Kit, 2xETH, univ. input, 3xROG L60 Ø12, 100mV/1KA, 3mt	128
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RC-V400-100	Rogowski sensor 100mV/kA - 50/60Hz cable 2mt	127
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RC150-025-100-10	Rogowski Sens. L=25cm D.int.8cm 100mV/1KA-50Hz cable 10mt	139
RC150-035-100-3M	Rogowski Sens. L=35cm D.int.11cm 100mV/1KA-50Hz cable 3mt	139
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RC150-040-100-5M	Rogowski Sens. L=40cm D.int.8cm 100mV/1KA-50Hz cable 5mt	139
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RC150-090-100-10	Rogowski Sens. L=90cm D.int.28cm 100mV/1KA-50Hz cable 10m	139
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RC150-RIC-KIT45	Spares KIT ROG RC150 L = 45cm D. 14cm 100mV/1KA cable 3mt	139
RC150-RIC-KIT70	Spares KIT ROG RC150 L = 70cm D. 22cm 100mV/1KA cable 3mt	139
RC190-030-333-3M	Rogowski sensor L-coil = 30cm, Øint. 9cm, 333mV/1KA-50Hz, L-cable=3mt	139
RC190-035-333-3M	Rogowski sensor L-coil = 35cm, Øint. 9cm, 333mV/1KA-50Hz, L-cable=3mt	139
RC190-060-333-3M	Rogowski sensor L-coil = 60cm, Øint. 9cm, 333mV/1KA-50Hz, L-cable=3mt	139
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RM169-1	Radiomodem 169MHZ, 1DI,1DO, RS485 connect. BNC F, RED	139
RM169-1-169DV12	Radiomodem 169MHZ, 1DI,1DO, RS485, ant. dip. lambda/2, RED	139
RM169-1-169YAGI	Radiomodem 169MHZ, 1DI,1DO, RS485 + ant. Yagi 3 el., dir. RED	139
RM169-1-169DV14	Radiomodem 169MHZ, 1DI,1DO, RS485, stylus ant. lambda/4, RED	139
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RTU-LP-ST1	Low power RTU, FTP version, 4DI, 2AI, 2DO, std batteries	81
RTU-LP-ST2	Low power RTU, FTP version, 4DI, 2AI, 2DO, double battery	81
RTURADIO-169	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2 AO, 2 AI, RS485	121
RTURADIO-169DV14	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2 AO, 2 AI, RS485	121
RTURADIO-169DV12	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2 AO, 2 AI, RS485	121
RTURADIO-169YAGI	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2 AO, 2 AI, RS485	121
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S100S-1-ST	Dual power supply unit for current loop, power supply 115 / 230 Vac	191
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S107USB	Serial converter USB/RS485 portable	109
S109PT-1-ST	Pt100 / V-I isolator converter power supply 115 / 230 Vac	191
S109REG-1-ST	Pt100 / V-I isolator converter power supply 115 / 230 Vac	191
S109REG-1-X7	V-I / V-I isolator converter input up to 200 Vdc	191
S109S-1-ST	Isolator for 4..20 mA loop, power supply 115 / 230 Vac	191
S111-1-ST	ISOLATED FREQUENCY / V-I CONVERTER - POWER SUPPLY 115/230 Vac	191
S112A-1-ST	AMPLIFIER FOR DIGITAL CONTACTS - POWER SUPPLY 115/230 Vac	191
S112D-1-ST	Power supply - on-off amplif., 2 relay outputs, 115/230 Vac	191
S112M-1-ST	Power supply - on-off amplif., 5 relay outputs, 115/230 Vac	191
S112M-23-ST	AMPLIF. FOR MULTIPLE DIGITAL CONTACTS - POWER SUPPLY 24 Vac/dc	191
S113S-1-ST	Alarm threshold 1 relay output - power supply 115/230 Vac	191
S113T-1-ST	ALARM THRESHOLD 3 RELAY OUTPUTS - POWER SUPPLY 115/230 Vac	191
S117P1	RS232-TTL-RS485/USB SERIAL CONVERTER	111
S170-1-ST	SIGNAL CONVERTER DUPLICATOR - POWER SUPPLY 115/230 Vac	191
S2000-1-ST	MICROPROCESSOR CALCULATION MODULE - POWER SUPPLY 115/230 Vac	191
S200-1-ST	DUAL STABILISED POWER SUPPLY - POWER SUPPLY 115/230 Vca	191
S200REG-24	Adjustable stabilised power supply unit, 22 .26 Vdc - Imax 350 mA	191
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S20ADP-CM	Input adapter card, modular container	211
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S20ADP-IP65	Input adapter card, modular container	211
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S20N1EX-23-ST	Basic batch controller in case Eexd, power supply 24 Vac / dc	211
S20N1IP65-1-ST	Basic batch controller in case IP65, power supply 115 / 230 Vac	211
S20N1IP65-23-ST	Basic batch controller in case IP65, power supply 24 Vac/dc	211
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S21N1-23-ST	PRE-DETERMINER WITH ADVANCED FUNCTIONS - POWER SUPPLY 24 Vac/Dc	211
S21N1EX-1-ST	Predet. with Eexd advanced funct., power supply 115 / 230 Vac	211
S21N1EX-23-ST	Predeterminer with advanced funct, Eexd, power supply 24 Vac/dc	211
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S232-FO-MULTI-DL	Multi-drop fibre optic converter ↔ RS232 double loop	113
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S301-1-R-AR-S	Ind. 4 digit return output 115/230 Vac 3 all. RS232/RS485	203
S301-23-R	Ind. 4 digit return output 24 Vac/dc	203
S301-23-R-AOC-S	Ind. 4 digit return output 24 Vac/dc 4 all. RS232/RS485	203
S301-23-R-AR-S	Ind. 4 digit return output 24 Vac/dc 3 all. SPDT RS232/RS485	203
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S301B-1-R-AOC-S	4 digit ind. 4 al.open coll. Bargraph retr. out.+serial	203
S301B-1-R-AR-S	Ind. 4 digit barg. retr. out. 115/230 Vac 3 all. RS232/RS485	203
S301B-23-R	Ind. 4 digit bargraph output retr. power supply 24 Vac/dc	203
S301B-23-R-AOC-S	Ind. 4 digit barg. retr. out. 24 Vac/dc, 4 all. RS232/RS485	203
S301B-23-R-AR-S	Ind. 4 digit barg. retr. out. 24 Vac/dc, 3 all. RS232/RS485	203
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S311A-11-H-O	Ind.tot. 11 digits, univ. input 80-265 Vac board opt.	203
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S311A-11-L-O	Ind.tot. 11 digits univ. input 10-40Vdc/19-28Vac opt. card	203
S311A-4-H	Ind.tot. 4 digits, univ. input 80-265 Vac	203
S311A-4-H-O	Ind.tot. 4 digits, univ. input 80-265 Vac, board opt.	203
S311A-4-L	Ind.tot. 4 digits univ. input 10-40 Vdc / 19-28 Vac	203
S311A-4-L-O	Ind.tot. 4 digits univ. input 10-40Vdc/19-28 Vac opt. card	203
S311A-6-H	Ind.tot. 6 digits, univ. input 80-265 Vac	203
S311A-6-H-O	Ind.tot. 6 digits, univ. input 80-265 Vac, opt. card	203
S311A-6-L	Ind.tot. 6 digits univ. input 10-40 Vdc / 19-28 Vac	203
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S311A-8-H	Ind.tot. 8 digits univ. input 80-265 Vac	203
S311A-8-H-O	Ind.tot. 8 digits univ. input 80-265 Vac, opt. card	203
S311A-8-L	Ind.tot. 8 digits univ. input 10-40 Vdc / 19-28 Vac	203

ITEM CODE	DESCRIPTION	P.
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S311AK-4-L-IP66	4-digit analog inp., 10-40 Vdc, 19-28 Vac, IP66	203
S311AK-4-L-IP66D	Ind. 4-digit analog inp., 10-40 Vdc, 19-28 Vac, IP66 (x2)	203
S311D-11-H	Ind.tot. Dig/freq inp., 80-265 Vac, 11 digits	203
S311D-11-H-O	Ind.tot. Dig/freq inp., 80-265 Vac, 11 digits, opt. board	203
S311D-11-L	Ind.tot. Dig/freq inp., 10-40 Vdc / 19-28 Vac, 11 digits	203
S311D-11-L-O	Ind.tot. dig/freq inp. 10-40 Vdc/19-28 Vac, 11 digits, opt. board	203
S311D-4-H	Ind.tot. Dig/freq inp., 80-265 Vac, display 4 digits	203
S311D-4-H-O	Ind.tot. Dig/freq inp. 80-265 Vac, display 4 digits, opt. board	203
S311D-4-L	Ind.tot. Dig/freq inp., 10-40 Vdc / 19-28 Vac, 4 digits	203
S311D-4-L-O	Ind.tot. Dig. inp. 10-40 Vdc / 19-28 Vac, 4 digits, opt. board	203
S311D-6-H	Ind.tot. Dig/freq inp., 80-265 Vac, display 6 digits	203
S311D-6-H-O	Ind.tot. Dig/freq inp., 80-265 Vac, 6 digits, opt. board	203
S311D-6-L	Ind.tot. Dig/freq inp., 10-40 Vdc / 19-28 Vac, 6 digits	203
S311D-6-L-O	Ind.tot. Dig/freq inp. 10-40 Vdc/19-28 Vac, 6 digits, opt. board	203
S311D-8-H	Ind.tot. Dig/freq inp., 80-265 Vac, 8 digits	203
S311D-8-H-O	Ind.tot. Dig/freq inp., 80-265 Vac, 8 digits, opt. board	203
S311D-8-L	Ind.tot. Dig/freq inp.., 10-40 Vdc / 19-28 Vac, 8 digits	203
S311D-8-L-O	Ind.tot. dig/freq inp. 10-40 Vdc/19-28 Vac, 8 digits. opt. board	203
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S400LV-1	Surge prot. 24V type 2, 3 cond. (L,N,PE) with FM contact	199
S400LV-1-RIC-SL	Spare plug 24Vac/dc for S400LV-1, contact FM III/T3	199
S400CL-1	SPD 21Vac/30Vdc C1/2/3/D1 for mA/V/digit. sign. with sect.	199
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S400CL-1-P5	5 pcs - End wall for closing module S400CL-1	199
S400NET-1	SURGE PROT. C1/2/3 D1,LINES BUS 5F, RS232/422/485, LAN	199
S400NET1-RIC	Spare plug for S400NET-1 C1/C2/C3/D1 5.2 VDC / 3,6 VAC	199
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S485-FO-MULTI-DL	Copper/fibre converter RS485 double loop	113
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S504C-80-MOD-MID	Energy meter 80A 3-phase 4-wire 4 DIN-RS485, MID	143
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S604E-6-ETH	Energy PLUS Analyser x TA1/5A-Ethernet,8MB Arm.	133
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S711EROGETH45	Energy Plus ETH analyser. 8MB+3ROG L45Ø14CM DI/DO LCD	133
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SETH-FO-MULTI-DL	Double loop multi-mode fibre Ethernet converter	113
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STRATON-UPGRADE2	Straton upgrade from 512 to unlimited tags	58
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T120	Looped 2 wire transmitter for Pt100 and Ni100	195
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T201DC100	Transf. DC 100 Adc, 8 scales, out 4-20 mA, D12mm	149
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T201DCH300	Transf. AC/DC Hall eff. 0-150/300A, out bip. 0-10Vdc TRMS	149
T201DCH50-LP	Transf. AC/DC (± 50 A), Hall effect, TRMS, out 4..20 mA	149
T201DCH100-LP	Transf. AC/DC (± 100 A) Hall effect TRMS out 4..20 mA	149
T201DCH300-LP	Transf. AC/DC (± 300 A) Hall effect TRMS out 4..20 mA	149
T201DCH50-M	Transf. AC/DC (± 50 A), Hall effect, TRMS, out 0..10V, Modbus	149
T201DCH100-M	Transf. AC/DC (± 100 A) Hall effect TRMS out 0..10V, Modbus	149
T201DCH300-M	Transf. AC/DC (± 300 A) Hall effect TRMS out 0..10V, Modbus	149
T201DCH50-MU	Transf. AC/DC (±50 A), TRMS, 0..10V, Pnp Alarm, Modbus, USB	149
T201DCH100-MU	Transf. AC/DC (±100 A), TRMS 0..10V, Pnp Alarm, Modbus, USB	149
T201DCH300-MU	Transf. AC/DC (±300 A), TRMS 0..10V, Pnp Alarm, Modbus, USB	149
T201DCH600-MU	Transf. AC/DC (±600 A), TRMS 0..10V, Pnp Alarm, Modbus, USB	149
T203PM100-MU	Single-phase AC/DC TRMS network analyser, 100 Vac/dc, ModBUS, 1AO, 1DO	130
T203PM300-MU	Single-phase AC/DC TRMS network analyser, 300 Vac/dc, ModBUS, 1AO, 1DO	130
T203PM600-MU	Single-phase AC/DC TRMS network analyser, 600 Vac/dc, ModBUS, 1AO, 1DO	130
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TA15	AT. for S203T, f.s.15 A, class 0,1% (1/10000)	125
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TCK-250-3-M12	Thermocouple K, d=3 mm, L=250 mm, connector M12	215
TCK-250-1.5-M12	Thermocouple K, d=1.5 mm, L=100 mm, connector M12	215
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TCK-AC-M12	K-type thermocouple with arch, M12 connector	215
TEMP-TAG-Z-KEY	Gateway mode tag management Excel Template - Z-KEY	89
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VISUAL2E	Terminal HMI touchscreen 7" colour widescreen, Ethernet interface	39
VISUAL3	4,3" HMI widescreen colours, Ethernet interface	39
VISUAL3-FLOW	4,3" HMI widescreen colours, Ethernet interface, spare Flow Computer	39
VISUAL4	7" HMI widescreen colours, Ethernet interface	39
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VISUAL5-PC	HMI touchscreen 7" 64k col. Eth., ver. spare S6001-PC	39
VISUAL5-WB	HMI touchscreen 7" 64k col. Eth., ver. rep. HMI / Web Server	39
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VISUAL12	HMI touchscreen 15" widescreen colours, Eth. aluminium case	**39**
VPN-BOX	Server VPN P2P / Single LAN	**99**
VPN BOX VM	Virtual Machine Server VPN P2P / Single LAN	**99**
VPN BOX-D	P2P VPN BOX test service valid up to 30 days / 2 devices	**99**
VPN BOX VM-D	Mach. Virt. Server VPN, P2P/Single LAN max 2 devices (demo)	**99**
VPN BOX MANAGER	VPN BOX configuration software and VPN network management	**99**
VPN CC	VPN Client Communicator, Remote Access Management software	**99**
VPN CC MOBILE	VPN Client Communicator - App for iOS and Android	**99**
W		
WEB FACTORY	HMI / Web Editor integrated in Z-NET4	**57**
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Z102	Potentiometric converter, 24 Vac/dc	**174**
Z104	V – I / frequency converter, 24 Vac/dc	**179**
Z107	RS232 - RS485/422 serial converter, 24 Vac/dc	**110**
Z109PT2-1	RTD isolator converter, config. from App/MicroUSB	**179**
Z109REG	Standard universal converter, 24 Vac/dc	**172**
Z109REG-BP	Universal converter with bipolar V / I output	**173**
Z109REG2-1	Univ. Conv. 10-40 Vdc, 19-28 Vac, prog. from App/microUSB	**172**
Z109REG2-H	Univ. conv. with extended range, 85-265 Vac/dc	**172**
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Z109S-DI	Galvanic separator for high isolation current loop	**173**
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Z-4AI-D	A/D converter with 4 analog inputs 24 Vac/dc	**175**
Z-4RTD2	4-CH resistance thermometer inputs / RS485 - ModBUS RTU	**16**
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Z-4TC-D	A/D converter 4 thermocouples, 24 Vac/dc	**175**
Z-5DI-2DO	5-CH DI 2 DO RS485 - ModBUS RTU	**17**
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Z-8TC-1	8-CH inputs TC / RS485 - ModBUS RTU, Micro USB port	**16**
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Z-FLOWCOMPUTER-B	Flow computer for liquids, gases and steam	**33**

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Z-GPRS3	Advanced GSM/GPRS datalogger, built-in I/O, voice al.	**75**
Z-KEY-0	Industrial Gateway - Serial Device Server	**89**
Z-KEY-2ETH	Industrial Gateway - Serial Device Server, 2xEthernet	**89**
Z-KEY-2ETH-P	Industrial Gateway - Serial Device Server, 2xProfinet IO	**89**
Z-KEY-ETH-IP	Industrial Gateway - Serial Device Server, Ethernet/IP	**89**
Z-KEY-MBUS	Gateway ModBUS RTU / TCP-IP ↔ M-BUS	**89**
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Z-KEY-WIFI	2-port ModBUS RTU industrial gateway / serial device server with integrated Wi-Fi	**89**
Z-LINK1-LO	M-BUS ↔ RS232-RS485 interface adapter	**117**
Z-LINK1-NM	Radiomodem 869 MHz, RS232/RS485	**117**
Z-LOGGER3	Advanced alarm management module, datalogger, web server	**75**
Z-LTE-WW	4G datalogger worldwide with built-in I/O, remote control functions and voice commands	**75**
Z-MBUS	M-BUS ↔ RS232-RS485 adapter	**109**
Z-MODEM-3G	3G industrial modem with USB micro interface	**117**
Z-NET4	Configurator I/O systems and Z-PC Line controller	**57**
Z-PASS1-IO	Industrial Gateway - Serial Device Server, built-in I/O	**89**
Z-PASS2-4GWW	Gateway / Router 4G worldwide, VPN, serial device server, GPS and built-in I/Os	**89**
Z-PASS2-4GEU-UPG	3G Modem upgrade and replacement → 4GLTE/EMEA c/o laboratory	**89**
Z-PASS2-4GWW-UPG	3G Modem upgrade and replacement → 4GLTE/WW c/o laboratory	**89**
Z-PASS2-S-4GWW	4G worldwide remote controller, VPN, serial device server, GPS and built-in I/Os	**86, 103**
Z-PASS2-S4GEUUPG	3G Modem upgrade and replacement → 4GLTE/EMEA c/o laboratory (Z-PASS2-S)	**86, 103**
Z-PASS2-S4GWWUPG	3G Modem upgrade and replacement → 4GLTE/WW c/o laboratory (Z-PASS2-S)	**86**
Z-PASS2-S-E-4GWW	Remote 4G Energy Controller worldwide, VPN, serial device server, GPS and built-in I/Os.	**87, 105**
Z-PASS2SE4GEUUPG	3G Modem upgrade and replacement → 4GLTE/EMEA c/o laboratory (Z-PASS2-SE)	**87, 105**
Z-PASS2SE4GWWUPG	3G Modem upgrade and replacement → 4GLTE/WW c/o laboratory (Z-PASS2-SE)	**87, 105**
Z-PC-DIN1-35	Quick installation support for DIN rail 1 slot P=35 mm	**60**
Z-PC-DIN2-17.5	Quick installation support for DIN rail 2 slot P=17.5 mm	**60**
Z-PC-DIN4-35	Quick installation support for DIN rail 4 slot P=35 mm	**60**
Z-PC-DIN8-17.5	Quick installation support for DIN rail 8 slot P=17.5 mm	**60**
Z-PC-DINAL1-35	Quick installation support for DIN rail head+1 slot P=35 mm	**60**
Z-PC-DINAL2-17.5	Quick installation support for DIN rail head+2 slot P=17.5 mm	**60**
Z-PC-DINAL2-52.5	Quick installation support for DIN rail head+3 slot P=17.5 mm	**60**
Z-POWER-115-15VA	Transformer DIN guide 19 Vac, 115 / 15 VA with thermofuse	**62**
Z-POWER-230-15VA	Transformer DIN guide 19 Vac, 230 / 15 VA with thermofuse	**62**
Z-POWER-230-25VA	Transformer DIN guide 19 Vac, 230 / 25 VA with thermofuse	**62**
Z-SG	Strain gauge converter module / RS485 ModBUS RTU	**17, 175**
Z-SG2	Advanced strain gauge converter module / RS485 - ModBUS RTU	**17**
Z-SUPPLY	Power supply switching monophase 24V @ 1.5 A	**29**
Z-TWS11	Multifunc. controller IEC 61131 Straton, built-in I/O	**29**
Z-TWS4-S-IO	Multifunc. controller I/O integrated IEC 61131 Straton, OEM	**29**
Z-TWS4-E-IO	Energ. Multifunc. controll. I/O int. IEC 61131, Straton, OEM	**29**

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