

**Overview**

- For the convenient recording of temperatures with great accuracy
- 4 inputs
- Most popular resistance temperature detectors can be used
- Can easily be retrofitted to existing installation

**Technical specifications**

Article number	<b>6ES7231-5PD32-0XB0</b> S7-1200, ANALOG INPUT SM 1231 RTD, 4 AI	<b>6ES7231-5PF32-0XB0</b> S7-1200, ANALOG INPUT SM 1231 RTD, 8 AI
<b>Product type designation</b>		
<b>Supply voltage</b>		
Rated value (DC)		
• 24 V DC	Yes	Yes
<b>Input current</b>		
Current consumption, typ.	40 mA	40 mA
from backplane bus 5 V DC, typ.	80 mA	80 mA
<b>Power losses</b>		
Power loss, typ.	1.5 W	1.5 W
<b>Analog inputs</b>		
Number of analog inputs	4; Resistance thermometer	8; Resistance thermometer
permissible input frequency for current input (destruction limit), max.	± 35 V	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit	Degrees Celsius/degrees Fahrenheit
<b>Input ranges</b>		
• Thermocouple	No	No
• Resistance thermometer	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000
• Resistance	Yes; 150 Ω, 300 Ω, 600 Ω	Yes; 150 Ω, 300 Ω, 600 Ω
<b>Input ranges (rated values), resistance thermometer</b>		
• Cu 10	Yes	Yes
• Input resistance (Cu 10)	10 Ω	10 Ω
• Ni 100	Yes	Yes
• Input resistance (Ni 100)	100 Ω	100 Ω
• Ni 1000	Yes	Yes
• Input resistance (Ni 1000)	1 000 Ω	1 000 Ω
• LG-Ni 1000	Yes	Yes
• Input resistance (LG-Ni 1000)	1 000 Ω	1 000 Ω
• Ni 120	Yes	Yes
• Input resistance (Ni 120)	120 Ω	120 Ω
• Ni 200	Yes	Yes
• Input resistance (Ni 200)	200 Ω	200 Ω
• Ni 500	Yes	Yes
• Input resistance (Ni 500)	500 Ω	500 Ω
• Pt 100	Yes	Yes
• Input resistance (Pt 100)	100 Ω	100 Ω
• Pt 1000	Yes	Yes
• Input resistance (Pt 1000)	1 000 Ω	1 000 Ω
• Pt 200	Yes	Yes
• Input resistance (Pt 200)	200 Ω	200 Ω
• Pt 500	Yes	Yes
• Input resistance (Pt 500)	500 Ω	500 Ω

**SIMATIC S7-1200 basic controller**

I/O modules

Analog modules

**SM 1231 RTD signal modules****Technical specifications (continued)**

Article number	<b>6ES7231-5PD32-0XB0</b> S7-1200, ANALOG INPUT SM 1231 RTD, 4 AI	<b>6ES7231-5PF32-0XB0</b> S7-1200, ANALOG INPUT SM 1231 RTD, 8 AI
<b>Input ranges (rated values), resistors</b>		
• 0 to 150 ohms	Yes	Yes
• 0 to 300 ohms	Yes	Yes
• 0 to 600 ohms	Yes	Yes
<b>Thermocouple (TC)</b>		
<b>Temperature compensation</b>		
- Parameterizable	No	No
<b>Analog outputs</b>		
Number of analog outputs	0	0
<b>Analog value creation</b>		
Measurement principle	integrating	integrating
<b>Integration and conversion time/ resolution per channel</b>		
• Resolution with overrange (bit including sign), max.	15 bit; + sign	15 bit; + sign
• Integration time, parameterizable	No	No
• Interference voltage suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz	85 dB at 50 / 60 / 400 Hz
<b>Errors/accuracies</b>		
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output area), (+/-)	0.05 %	0.05 %
<b>Interference voltage suppression for <math>f = n \times (f1 +/- 1 \%)</math>, f1 = interference frequency</b>		
• Common mode interference, min.	120 dB	120 dB
<b>Interrupts/diagnostics/ status information</b>		
<b>Alarms</b>		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
<b>Diagnostic messages</b>		
• Diagnostic functions	Yes; Can be read out	Yes; Can be read out
• Monitoring the supply voltage	Yes	Yes
• Wire break	Yes	Yes
<b>Diagnostics indication LED</b>		
• for status of the inputs	Yes	Yes
• for maintenance	Yes	Yes
<b>Degree and class of protection</b>		
Degree of protection to EN 60529		
• IP20	Yes	Yes
<b>Standards, approvals, certificates</b>		
CE mark	Yes	Yes
CSA approval	Yes	Yes
FM approval	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes
<b>Highest safety class achievable in safety mode</b>		
• SIL according to IEC 61508	none	none

**Technical specifications** (continued)

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<b>Ambient conditions</b>		
<b>Free fall</b>		
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
<b>Ambient temperature in operation</b>		
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing
• Min.	-20 °C	-20 °C
• max.	60 °C	60 °C
<b>Storage/transport temperature</b>		
• Min.	-40 °C	-40 °C
• max.	70 °C	70 °C
<b>Air pressure acc. to IEC 60068-2-13</b>		
• Operation, min.	795 hPa	795 hPa
• Operation, max.	1 080 hPa	1 080 hPa
• Storage/transport, min.	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa
<b>Relative humidity</b>		
• Permissible range (without condensation) at 25 °C	95 %	95 %
<b>Pollutant concentrations</b>		
- SO <sub>2</sub> at RH < 60% without condensation	SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60% condensation-free	SO <sub>2</sub> : < 0.5 ppm; H <sub>2</sub> S: < 0.1 ppm; RH < 60% condensation-free
<b>Connection method</b>		
required front connector	Yes	Yes
<b>Mechanics/material</b>		
Type of housing (front)		
• plastic	Yes	Yes
<b>Dimensions</b>		
Width	45 mm	70 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
<b>Weights</b>		
Weight, approx.	220 g	220 g

**Ordering data****Article No.****Article No.****SM 1231 RTD signal module**

4 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign

**6ES7231-5PD32-0XB0**

8 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign

**6ES7231-5PF32-0XB0****Accessories****Terminal block (spare part)**

for 8/16-channel analog signal modules; with 7 screws, gold-plated; 4 units

**6ES7292-1BG30-0XA0**

for 32-channel analog signal modules; with 11 screws, gold-plated; 4 units

**6ES7292-1BL30-0XA0****Extension cable for two-tier configuration**

for connecting digital/analog signal modules; length 2 m

**6ES7290-6AA30-0XA0****Front flap set (spare part)**

for 8/16-channel signal modules

**6ES7291-1BA30-0XA0**