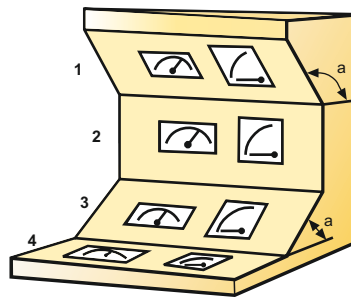


GENERAL FEATURES

Standards	EN60051, VDE 0410, BS-89, EN50081, EN50082, EN61010
Certifications	ISO 9001-2008 DET NORSKE VERITAS, BUREAU VERITAS GERMANISCHER LLOYD (relay)
Casings	IEC 61554 72x72, 96x96, 144x144, 80x64, 105x80, 130x100 MODULAR (for DIN rail)
Scales	Full scale value, DIN 43701 Scale division, DIN 43802
Pointers	DIN 43802

1	$a > 90^\circ$
2	\perp
3	$a < 90^\circ$
4	\square



Overloads	1.2 Vn continuous, 2 Vn 5 s 1.5 In continuous, 5 In 30 s, 10 In 5 s, 40 In 1 s
Vibration resistance	VDE 0410, Section 27: 2.5 g, ± 0.25 mm, 50 Hz
Shock resistance	VDE 0410, Section 28: 15 g
Operating temperature	-25°C..+40°C
Reference temperature	+10°C..+30°C (for accuracy class)
Test voltage	2kV, 50 Hz, 1 min.
Tropicalization	DIN 40040 (on request)
Protection	IP52, (IP54, IP65 on request) casings IP00, (IP20 on request) terminals

MOVING COIL

Voltage and current measuring on direct current circuits.

AMMETERS (INTERCHANGEABLE SCALE)

Via resistors (Shunt)

- Scale: 90°
- Accuracy: 1,5 %
- Measuring range: 60 mV, 150 mV
- Burden: 60 - 150 Ω



Model		CC5VR	CC5V	CC4V	CC3V
Dimensions	mm	45x52,5 DIN	48x48	72x72	96x96
Approx. weight	kg.	0,10	0,09	0,21	0,28
AMMETERS (INTERCHANGEABLE SCALE)					
Module	Vn	X/60mV or X/150mV			
Scales	In	1, 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 30; 40; 50; 60; 80 or 100A and multiples			

IP20 protection

AMMETERS (μA, mA and A) VOLTMETERS (mV, and V)

- Scale: 90°
- Accuracy: 1,5 %

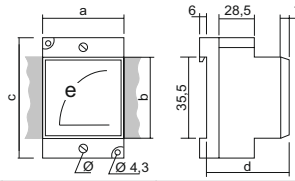


Model		CC5VR*	CC5V	CC4V	CC3V	CC2V	CCb7	CCb3	CCb8
Dimensions	mm	45x52,5 DIN	48x48	72x72	96x96	144x144	80x64	105x80	130x100
Approx. weight	kg.	0,25	0,09	0,21	0,28	0,50	0,15	0,19	0,25
AMMETERS (μA)									
MEASURING RANGE	In	40; 50; 60; 100; 150; 250; 300; 400; 500 ó 600 μA							
		AMMETERS (mA)							
		1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 mA							
	AMMETERS (A)								
	4-20 mA								
	1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40 or 50 A								
Vn	VOLTMETERS (mV)								
	10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 mV								
	VOLTMETERS (V)**								
1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 V									

* Maximum measuring 40 A

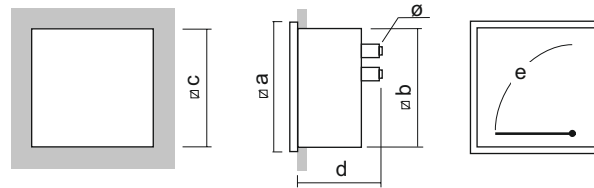
** >600- <1000 V, resistor box 1.2.1. (page 42) / $1000-2000$ V, resistor box - 3.3.1 / $>2000-4000$ V, resistor box -3.3.2 (page 42)

Dimensions (mm)



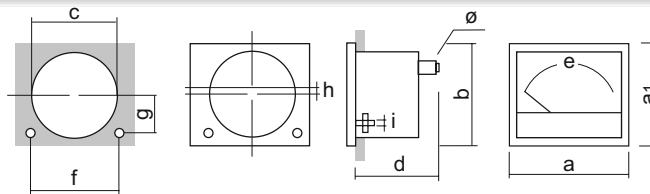
Models	Ranges	a	b	c	d	e	ø
CC5VR	µA; mA; A; V	52,5	45	75	60	38	M.6

Dimensions (mm)



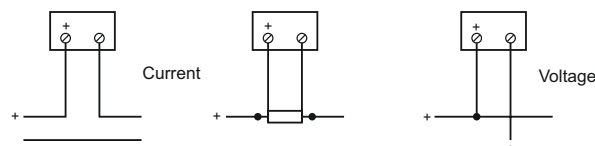
Models	Ranges	∇a	∇b	∇c	d	e	ø
CC5V	x/60..x/150 mV	48	44,5	45+0,6	59	38	M.4
CC4V	x/60..x/150 mV	72	66,5	68+0,7	60	65	M.4
CC3V	x/60..x/150 mV	96	89	92+0,8	59	100	M.4
CC5V	>4..15 A	48	44,5	45+0,6	63	38	M.4
	>15..50 A				62		M.6
CC4V	>4..15 A	72	66,5	68+0,7	63	65	M.4
	>15..50 A				68		M.6
	The rest				60		M.4
CC3V	>4..15 A	96	89	92+0,8	63	100	M.4
	>15..50 A				68		M.6
	The rest				59		M.4
CC2V	>4..15 A	144	135	138+1	63	140	M.4
	>15..50 A				68		M.6
	The rest				59		M.4
CC4VP	x/60..x/150 mV	72	66,5	68+0,7	58	65	M.4
CC3VP	x/60..x/150 mV	96	90	92+0,8	58	100	M.4

Dimensions (mm)



Models	Ranges	axa1	b	c	d	e	f	g	h	i	ø
CCb7	<4...15A	80x64	57,6	58,6+0,6	63	59	63	12,5	1,5	M.3	M.4
	>15..50 A					57					M.6
	The rest					55					M.4
CCb3	<4...15A	105x80	66	67+0,7	63	59	81	13	4,5	M.3	M.4
	>15...<50 A					75					M.6
	The rest					55					M.4
CCb8	<4...15A	130x100	66	67+0,8	63	59	100	13	13	M.4	M.4
	>15...<50 A				63	100					M.6
	The rest				55	100					M.4

Connection diagrams



RESISTOR BOXES

Connection to measuring elements.



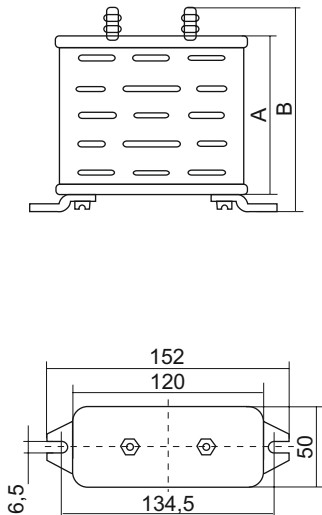
- Accuracy: 0,5 %

Models		1.2.1	1.3.1	1.4.1	1.4.2	1.5.1	1.6.1	1.6.2
Terminals		2	3	4	4	5	6	6
Approx. weight	kg.	0,23	0,23	0,24	0,31	0,50	0,25	0,40

Models		2.2.1	2.3.1	2.4.1	2.4.2	2.5.2	2.6.1	2.6.2	2.6.3	2.7.1	2.8.1	2.8.2
Terminals		2	3	4	4	5	6	6	6	7	8	8
Approx. weight	kg.	0,31	0,31	0,31	0,31	0,32	0,32	0,55	0,74	0,40	0,60	0,77

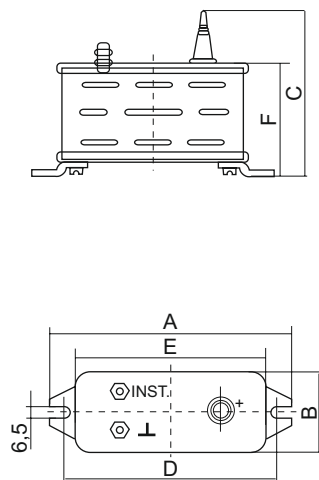
Models		3.3.1	3.3.2	4.2.1	4.3.1	4.4.1	4.5.1	4.6.1	4.8.1
Terminals		3	3	2	3	4	5	6	8
Approx. weight	Kg.	0,27	0,70	0,90	0,90	0,95	1,00	1,00	1,00

Dimensions (mm)



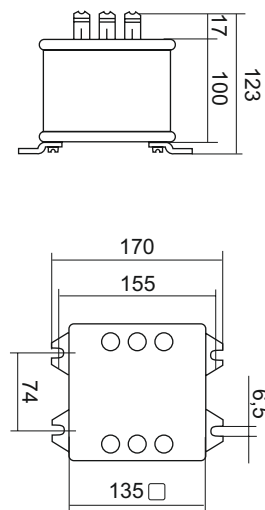
Models	1..1	2..1
A	64	99
B	86	121

Dimensions (mm)



Models	3.3.1	3.3.2
A	155	270
B	50	100
C	101	148
D	135	235
E	120	220
F	69	102

Dimensions (mm)



Models
4.5.1
4.6.1
4.8.1




SPECIALITIES

SPECIALITIES												
	Ø 48	Ø 72	Ø 96	Ø 144	80 x 64	105 x 80	130 x 100	MODULAR	Ø 48	Ø 72	Ø 96	Ø 144
POINTERS												
Knife pointer + fine divisions	---	●	●	●	---	---	---	---	---	---	---	---
Knife pointer + fine divisions + mirror	---	●	●	●	---	●	---	---	---	---	---	---
Red pointer, set externally		●				●		---				
SCALE												
Non standard scale (*)		●				●		●		●		
Antiparallax scale		---				---		---	---	●	●	---
Black scale, white div., figures and pointer	---	●	●	●		●		---		---		
Black scale, yellow div., figures and pointer	---	●	●	●		---		---	---	●	●	●
Double scale	---	●	●	●		●		---		●		
Double numbering	---	●	●	●		●		---	---	●	●	●
Red line		●				●		●		●		
Colour arc (until 20 mm)		●				●		●		●		
Add text (<10 letters)		●				●		●		●		
Non electrical unit measuring												
PROTECTION												
Naval series or tropicalized		●				●		●		●		
Protection IP43		●				●		---		●		
Housing protection IP54		●				---		---		●		
Terminal cover (protection IP20)	●	●	●	---		---		---	●	---	---	---
Movil equipment and critical damping		●				●		---		●		
Frontal protection (IP65)	---	●	●	---		---		---	---	●	●	---
MISCELLANEOUS												
Makrolon glass		●				●		---		●		
Antireflecting glass		●				●		---		●		
Lighting 12, 24 V (with white scale)	---	●	●	●	---	●	●	---	---	●	●	●
Indirect Lighting 12, 24 V (with black scale)	---	●	●	●	---	●	●	---	---	●	●	●
Non vertical working position		●				●		●		●		
Rubber gasket (Panel)	---	●	●	---		---		---		---		
MOVIN IRON METERS												
Non standard input (**)		●				●		●		---		
Calibrated for 150 or 400 Hz		●				●		●		---		
Calibrated in D.C.		●				●		●		---		
Accuracy 1%		●				●		●		---		
Insulation 3 kV		●				●		●		---		
750 to 1000V (with external box)		●				●		●		---		
Overload 200% (A, mA)		●				●		●		---		
Overload 500% (A, mA)		●				●		●		---		
Double range		●				●		●		---		
MOVING COIL AND MOVING COIL RECTIFIED METERS												
Non standard input (**)		●				●		●		●		
Insulation 3 kV		●				●		●		●		
Central zero		●				●		●		●		
Displaced zero		●				●		●		●		
Zero mechanically suppressed (max. 25%)		●				●		●		●		
Overload 200 or 500% (for Amm. A.C.)		●				●		●		●		
Non linear function scale (Ohm, db, etc.)		●				●		●		●		
Adjusted to specific internal resistance		●				●		●		●		
Accuracy		●				●		●		●		
600 up to 1000 V D.C.(with external box)		●				●		●		●		
>1.000+2.000V D.C.(with external box)		●				●		●		●		
>2.000+4.000V D.C (with external box)		●				●		●		●		
Full scale adjustable by potentiometer (±10%)	---	●	●	●	---	---	---	---	---	●	●	●
Double range		●				●		●		●		

(*) Scale: striped and numbered.

(**) Current or voltage required to move the needle at the end of the measurement zone.

SPECIALITIES

SPECIALITIES									
	∅ 48	∅ 72	∅ 96	∅ 144	MODULAR	∅ 48	∅ 72	∅ 96	∅ 144
INDUCTION WATTMETERS AND VARMETERS									
Central zero		●			●			●	
Displaced zero		●			●			●	
Non standard voltage		●			●			●	
Current 1 A		●			●			●	
Calibrated between 0,4 and 0,5 of appa. power		●			●			---	
Calibrated between 0,6 and 0,8 of appa. power		---			---			●	
Calibrated between 1,3 and 1,5 of appa. power		●			●			●	
Accuracy 1%		●			●			●	
ELECTRONIC WATTMETERS AND VARMETERS									
Calibrated to 400 Hz		●			●			●	
Current 1 A		●			●			●	
Accuracy 1%		●			●			●	
INDUCTION POWER FACTOR METERS									
Non standard voltage (single phase)		●			●			●	
Non standard voltage (three phase)		●			●			●	
Current 1A		●			●			●	
ELECTRONIC POWER FACTOR METERS									
Non standard voltage		●			●			●	
Scale 0-1-0 (single phase), 0,1-1-0,1 (three phase)		●			●			●	
Current 1A		●			●			●	