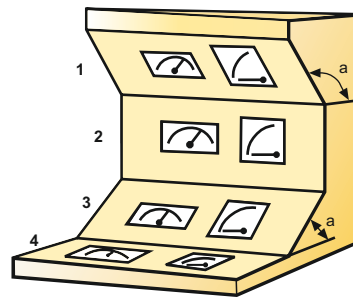


## GENERAL FEATURES

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

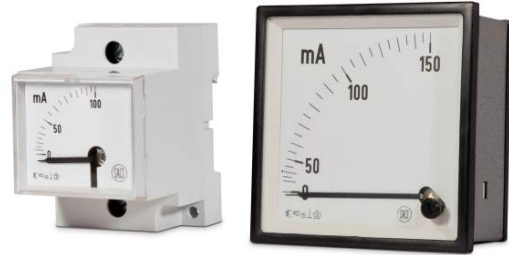
1	$a > 90^\circ$
2	$\perp$
3	$a < 90^\circ$
4	$\square$



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

## AMMETERS (mA)

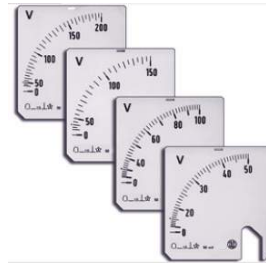
- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 15..100 Hz
- Burden: 0,3..1 VA



Model		EC5VR	EC5V	EC4V	EC3V	EC2V	ECb7	ECb3	ECb8
Dimensions	mm	45x52,5 DIN	48x48	72x72	96x96	144x144	80x64	105x80	130x100
Approx. weight	kg.	0,15	0,14	0,20	0,25	0,50	0,14	0,18	0,25
AMMETERS (mA)									
MEASURING RANGE	In	100; 150; 200; 250; 300; 400; 500 or 600 mA							
	2xIn	100..200; 150..300; 200..400; 250..500; 300..600; 400..800; 500..1000 or 600..1200 mA							
	5xIn	100..500; 150..750; 200..1000; 250..1250; 300..1500; 400..2000; 500..2500 or 600..3000 mA							

## VOLTMETERS (INTERCHANGEABLE SCALE)

- Measuring range: 100V, 110V
- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 45..65 Hz
- Burden: 1,5..3 VA



Model		EC5VR	EC5V	EC4V	EC3V
Dimensions	mm	45x52,5 DIN	48x48	72x72	96x96
Approx. weight	Kg.	0,15	0,14	0,20	0,25
VT OPERATED VOLTMETERS (INTERCHANGEABLE SCALE)					
Module		1,2 x/100V or 1,2x/110V			
Scales	Vn	1,2 Vn			

## DIRECT INPUT VOLTMETERS

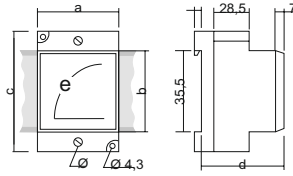
- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 45..65 Hz
- Burden: 1,5..3 VA



Model		EC5VR*	EC5V	EC4V	EC3V	EC2V	ECb7	ECb3	ECb8
Dimensions	mm	45x52,5 DIN	48x48	72x72	96x96	144x144	80x64	105x80	130x100
Approx. weight	kg.	0,25	0,09	0,20	0,25	0,50	0,14	0,18	0,25
DIRECT INPUT VOLTMETERS									
Measuring range	Vn	6; 10; 15; 25; 30; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 V							

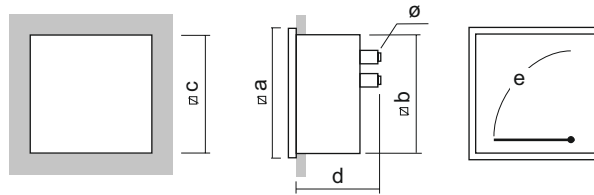
\* IP20 protection

Dimensions (mm)



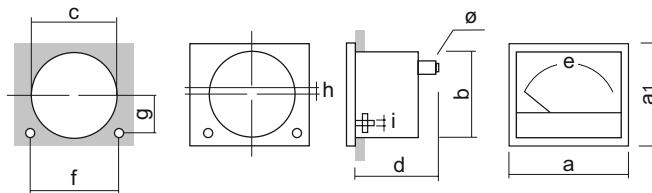
Model	Ranges	a	b	c	d	e	Ø
EC5VR	A - mA - V	52,5	45	75	60	38	M.6

Dimensions (mm)



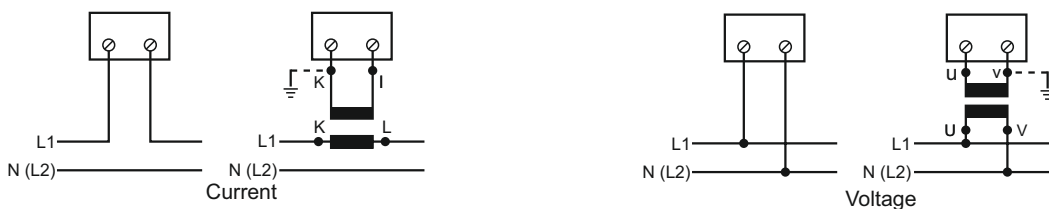
Models	Ranges	∇a	∇b	∇c	d	e	Ø
EC5V	>15..40 A	48	44,5	45 <sup>+0,6</sup>	62	38	M.6
	The rest				59		M.4
EC4V	>15..100 A	72	66,5	68 <sup>+0,7</sup>	68	65	M.6
	The rest				60		M.4
EC3V	>15..100 A	96	89	92 <sup>+0,8</sup>	61	100	M.6
	The rest				59		M.4
EC2V	>15..100 A	144	135	138 <sup>+1</sup>	61	140	M.6
	The rest				59		M.4

Dimensions (mm)



Models	Ranges	a x a1	Ø b	Ø c	d	e	f	g	h	i	Ø
ECb7	>15..50 A	80x64	57,6	58,6 <sup>+0,6</sup>	63	57	63	12,5	1,5	M.3	M.6
	The rest				55						M.4
ECb3	>15..<50 A	105x80	66	67 <sup>+0,7</sup>	63	75	81	13	4,5	M.3	M.6
	The rest				55						M.4
ECb8	>15..<50 A	130x100	66	67 <sup>+0,8</sup>	63	100	100	13	13	M.4	M.6
	The rest				55						M.4

Conection diagrams






## 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
<b>POINTERS</b>												
Knife pointer + fine divisions	---	●	●	●	---	---	---	---	---	---	---	---
Knife pointer + fine divisions + mirror	---	●	●	●	---	●	---	---	---	---	---	---
Red pointer, set externally		●				●		---				
<b>SCALE</b>												
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												
<b>PROTECTION</b>												
Naval series or tropicalized		●				●		●		●		
Protection IP43		●				●		---		●		
Housing protection IP54		●				---		---		●		
Terminal cover (protection IP20)	●	●	●	---		---		---	●	---	---	---
Movil equipment and critical damping		●				●		---		●		
Frontal protection (IP65)	---	●	●	---		---		---	---	●	●	---
<b>MISCELLANEOUS</b>												
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)	---	●	●	---		---		---		---		
<b>MOVIN IRON METERS</b>												
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		●				●		●		---		
<b>MOVING COIL AND MOVING COIL RECTIFIED METERS</b>												
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
<b>INDUCTION WATTMETERS AND VARMETERS</b>									
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%		●			●			●	
<b>ELECTRONIC WATTMETERS AND VARMETERS</b>									
Calibrated to 400 Hz		●			●			●	
Current 1 A		●			●			●	
Accuracy 1%		●			●			●	
<b>INDUCTION POWER FACTOR METERS</b>									
Non standard voltage (single phase)		●			●			●	
Non standard voltage (three phase)		●			●			●	
Current 1A		●			●			●	
<b>ELECTRONIC POWER FACTOR METERS</b>									
Non standard voltage		●			●			●	
Scale 0-1-0 (single phase), 0,1-1-0,1 (three phase)		●			●			●	
Current 1A		●			●			●	