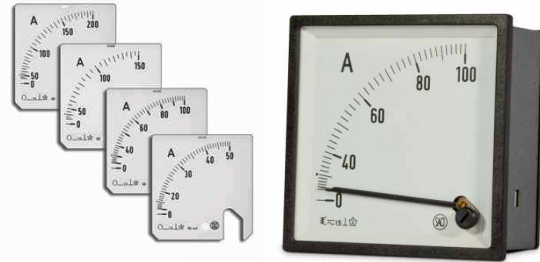


MOVING IRON

Voltage and alternating current. True effective value.

AMMETERS (INTERCHANGEABLE SCALE)

- Measuring range: x/1 A, x/5 A
- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 15..100 Hz
- Burden: 0,4 VA



Model		EC5VR	EC5V	EC4V	EC3V
Dimensions	mm	45x52,5 DIN RAIL	48x48	72x72	96x96
Approx. weight	kg.	0,15	0,14	0,20	0,25
CT OPERATED AMMETERS (INTERCHANGEABLE SCALE)					
Module	In	X/5A or X/1A			
Standards scales	In	10; 15; 20; 25; 30; 40; 50; 60 or 75 A and multiples			
Module	2xIn	2X/5A or 2X/1A			
Standards scales	2xIn	10..20; 15..30; 20..40; 25..50; 30..60; 40..80; 50..100; 60..120 or 75..150 A and multiples			
Module	5xIn	5X/5A or 5X/1A			
Standards scales	5xIn	10..50; 15..75; 20..100; 25..125; 30..150; 40..200; 50..250; 60..300 or 75..375 A and multiples			

DIRECT INPUT AMMETERS

- 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.	0,25	0,09	0,20	0,25	0,50	0,14	0,18	0,25
DIRECT INPUT AMMETERS									
MEASURING RANGE	In	1; 1,5; 2; 2,5; 3; 4; 5; 6; 10; 15; 20; 25; 30; 40; 50; 60; 75 or 100 A							
	2xIn	1..2; 1,5..3; 2..4; 2,5..5; 3..6; 4..8; 5..10; 6..12; 10..20; 15..30							
		20..40; 25..50; 30..60; 40..80; 50..100; 60..120; 75..150 or 100..200 A							
	5xIn	1..5; 1,5..7,5; 2..10; 2,5..7,5; 3..15; 4..20; 5..25; 6..30; 10..50; 15..75							
		20..100; 25..125; 30..150; 40..200; 50..250; 60..300; 75..375 or 100..500 A							

* Maximum measuring range: 40 A, 40..80 A, 40..200 A
 ** Maximum measuring range: 50 A, 50..100 A, 50..250 A



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

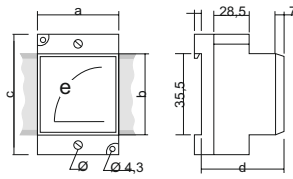


Model		EC5VR*	EC5V	EC4V	EC3V	EC2V	ECb7	ECb3	ECb8
Dimensions	mm	45x52,5 DIN	48x48	72x72	96x96	144x144	80x64	105x80	130x100
Approx. weight	kg.	0,25	0,09	0,20	0,25	0,50	0,14	0,18	0,25
DIRECT INPUT VOLTMETERS									
Measuring range	Vn	6; 10; 15; 25; 30; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 V							

* IP20 protection

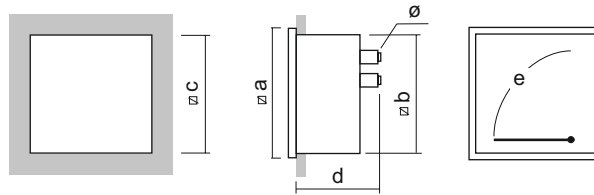


Dimensions (mm)



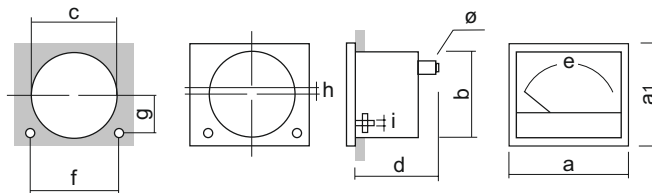
Model	Ranges	a	b	c	d	e	ø
EC5VR	A - mA - V	52,5	45	75	60	38	M.6

Dimensions (mm)



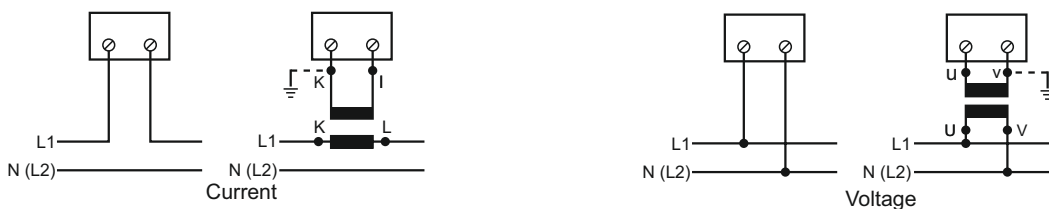
Models	Ranges	∇a	∇b	∇c	d	e	ø
EC5V	>15..40 A	48	44,5	45+0,6	62	38	M.6
	The rest				59		M.4
EC4V	>15..100 A	72	66,5	68+0,7	68	65	M.6
	The rest				60		M.4
EC3V	>15..100 A	96	89	92+0,8	61	100	M.6
	The rest				59		M.4
EC2V	>15..100 A	144	135	138+1	61	140	M.6
	The rest				59		M.4

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+0,6	63	57	63	12,5	1,5	M.3	M.6
	The rest				55						M.4
ECb3	>15..<50 A	105x80	66	67+0,7	63	75	81	13	4,5	M.3	M.6
	The rest				55						M.4
ECb8	>15..<50 A	130x100	66	67+0,8	63	100	100	13	13	M.4	M.6
	The rest				55						M.4

Conection diagrams



AMMETERS WITH SWITCH

(INTERCHANGEABLE SCALE)
4-POSITION SWITCH (0, L1, L2, L3)

- Measuring range: x/1 A , x/5 A
- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 15..100 Hz
- Burden: 0,4 VA



Models		EC4V4	EC3V4
Dimensions	mm	72x72	96x96
Approx. weight	kg.	0,25	0,50

AMMETERS WITH SWITCH (INTERCHANGEABLE SCALE)

Module	In	X/5A or X/1A
Standards scales		10; 15; 20; 25; 30; 40; 50; 60 or 75 A and multiples
Module	2xIn	2X/5A or 2X/1A
Standards scales		10..20; 15..30; 20..40; 25..50 30..60; 40..80; 50..100; 60..120 or 75..150 A and multiples
Module	5xIn	5X/5A or 5X/1A
Standards scales		10..50; 15..75; 20..100; 25..125; 30..150; 40..200; 50..250; 60..300 or 75..375 A and multiples

VOLTMETERS WITH SWITCH

3-POSITION SWITCH (L12, L23, L31)
6-POSITION SWITCH (L1, L2, L3, L12, L23, L31)

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



Models		EC4V3	EC3V3	EC4V6	EC3V6	EC4V7	EC3V7
Dimensions	mm	72x72	96x96	72x72	96x96	72x72	96x96
Approx. weight	kg.	0,25	0,50	0,25	0,50	0,25	0,50
Switch		3 positions		6 positions		6 positions + sequence meter	

CT OPERATED VOLTMETERS

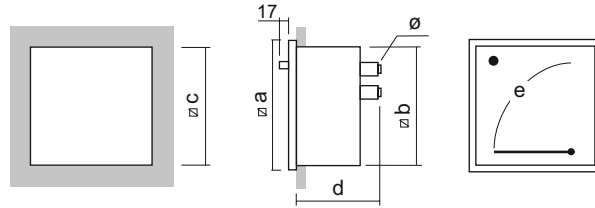
Module	Vn	1,2 x/100V or 1,2x/110V
Standard scales		1,2 times the primary of the voltage transformer

DIRECT VOLTMETERS

Measuring range	Vn	150, 200, 250, 300, 400, 500 and 600 V
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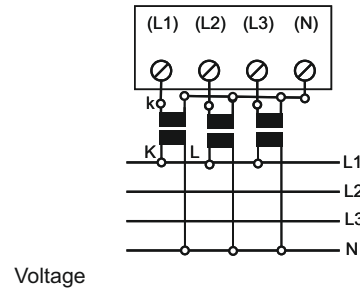
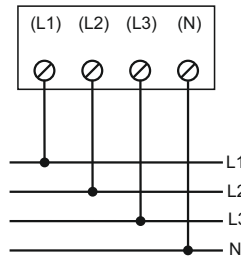
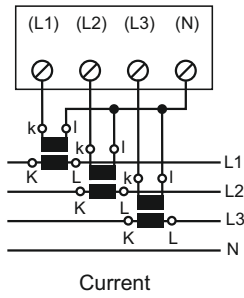


Dimensions (mm)



Models	Ranges	∅a	∅b	∅c	d	e	ø
EC4V3 EC4V6 EC4V7	V	72	66,5	68 ^{+0,7}	68	65	M.4
EC3V3 EC3V6 EC3V7	V	96	89	92 ^{+0,8}	67	100	M.4
EC4V4	A	72	66,5	68 ^{+0,7}	68	65	M.4
EC3V4	A	96	89	92 ^{+0,8}	67	100	M.4

Connection diagrams



MOVING COIL WITH CONVERTER

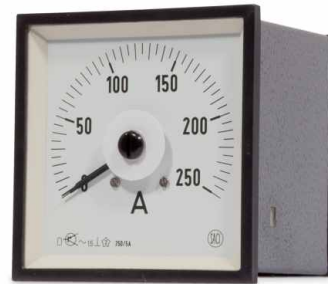
Voltage and current measuring on alternating current circuits.

True RMS

AMMETERS

VOLTMETERS

- Scale: 240°
- Accuracy: 1,5 %
- Frequency: 20..100 Hz
- Burden: 2,5 VA



Model		EC5CE*	EC4CE*	EC3CE	EC2CE
Dimensions	mm	48x48	72x72	96x96	144x144
Approx. weight	kg.	0,84	0,84	0,87	1,55
CT OPERATED AMMETERS					
Module	In	X/5A or X/1A			
Standards scales		10; 15; 20; 25; 30; 40; 50; 60 or 75 A and multiples			
Module	2xIn	2X/5A or 2X/1A			
Standards scales		10..20; 15..30; 20..40; 25..50 30..60; 40..80; 50..100; 60..120 or 75..150 A and multiples			
Module	5xIn	5X/5A or 5X/1A			
Standards scales		10..50; 15..75; 20..100; 25..125; 30..150; 40..200; 50..250; 60..300 or 75..375 A and multiples			
DIRECT INPUT AMMETERS					
Measuring range	In	1; 1,5; 2,5; 4; 5; 6 or 10 A			
	2xIn	1..2; 1,5..3; 2,5..5; 4..8; 5..10; 6..12 or 10..20 A			
	5xIn	1..5; 1,5..7,5; 2,5..12,5; 4..20; 5..25; 6..30 or 10..50 A			
VT OPERATED VOLTMETERS					
Measuring range		1,2 x/100V or 1,2x/110V			
Standards scales	Vn	1,2 times the primary of the voltage transformer			
DIRECT INPUT VOLTMETERS					
Measuring range	Vn	50; 60; 100; 150; 250; 300; 400; 500 or 600 V			

* With additional module: MBRMS model

Connection diagrams

Current



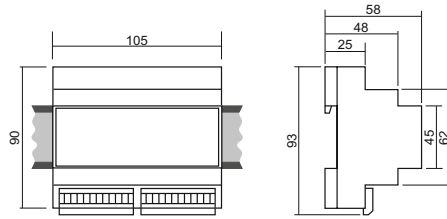
Connection diagrams

Voltage



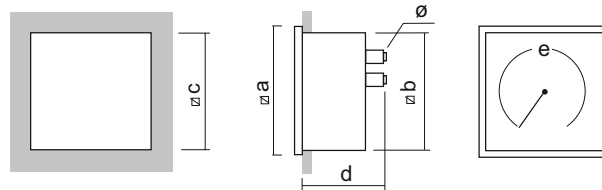
Dimensions (mm)

Din rail MBRMS additional module



Weight = 0,240
Plug-in connectors

Dimensions (mm)



Models	Ranges	$\varnothing a$	$\varnothing b$	$\varnothing c$	d	e	\varnothing
EC5CE	A - V	48	44,5	45+0,6	83	72	M.4
EC4CE	A - V	72	66,5	68+0,7	88	101	M.4
EC3CE	A - V	96	89	92+0,8	74	140	M.4
EC2CE	A - V	144	135	138+1	88	220	M.4



MOVING COIL WITH RECTIFIER

Voltage and alternating current measuring (average value of the signal)

AMMETERS (μA , mA and A) VOLTMETERS

- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 50 or 60 Hz



Models		CC5VR	CC5VG	CC4VG	CC3VG	CC2VG	CCb7G	CCb3G	CCb8G
Dimensions	mm	45x52,5 DIN	48x48	72x72	96x96	144x144	80x64	105x80	130x100
Approx. weight	kg.	0,15	0,14	0,20	0,28	0,50	0,15	0,19	0,25
AMMETERS (μA, mA and A)									
MEASURING RANGE	In	40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 μA							
		1; 1,5; 2; 2,5; 3; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 mA							
		1; 1,5; 2; 2,5; 3; 4 or 5 A							
VT OPERATED VOLTMETERS									
Measuring range	Vn	1,2 x/100V or 1,2 x/110V							
Standards scales		1,2 times the primary of the voltage transformer							
DIRECT INPUT VOLTMETERS									
Measuring range	Vn	6; 10; 15; 25; 30; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 V							

AMMETERS (μA , mA and A) VOLTMETERS

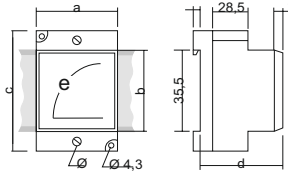
- Scale: 240°
- Accuracy: 1,5 %
- Frequency: 50 or 60 Hz



Model		CC5CG	CC4CG	CC3CG	CC2CG
Dimensions	mm	48x48	72x72	96x96	144x144
Approx. weight	kg.	0,20	0,32	0,38	0,68
DIRECT INPUT AMMETER (μA, mA y A)					
MEASURING RANGE	In	150; 200; 300; 400; 500 or 600 μA			
	In	1; 1,5; 2; 2,5; 3; 4; 5; 6; 10; 15; 20; 25; 30; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 mA			
	In	1; 1,5; 2; 2,5; 3; 4; 5; 10 or 15 A			
	2xIn	1..2; 1,5..3; 2..4; 2,5..5; 3..6; 4..8; 5..10; 10..20 or 15..30 A			
	5xIn	1..5; 1,5..7,5; 2..10; 2,5..12,5; 3..15; 4..20; 5..25; 10..50 or 15..75 A			
CT OPERATED AMMETERS					
Module	In	X/5A or X/1A			
Standards scales		10; 15; 20; 25; 30; 40; 50; 60 or 75 A and multiples			
Module	2xIn	2X/5A or 2X/1A			
Standards scales		10..20; 15..30; 20..40; 25..50 30..60; 40..80; 50..100; 60..120 or 75..150 A and multiples			
Module	3xIn	5X/5A or 5X/1A			
Standards scales		10..50; 15..75; 20..100; 25..125; 30..150; 40..200; 50..250; 60..300 or 75..375 A and multiples			
VT OPERATED VOLTMETERS					
Measuring range	Vn	1,2 x/100V ó 1,2 x/110V			
Standards scales		1,2 times the primary of the voltage transformer			
DIRECT INPUT VOLTMETERS					
Measuring range	Vn	6; 10; 15; 25; 30; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 V			

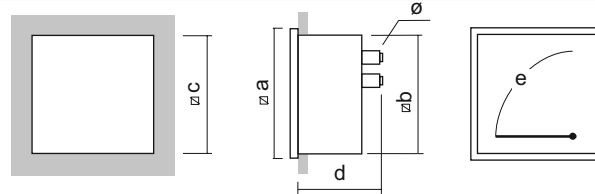


Dimensions (mm)



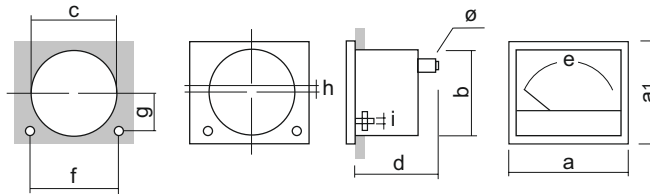
Models	Ranges	a	b	c	d	e	Ø
CC5VRG	µA; mA; A; V	52,5	45	75	60	38	M.6

Dimensions (mm)



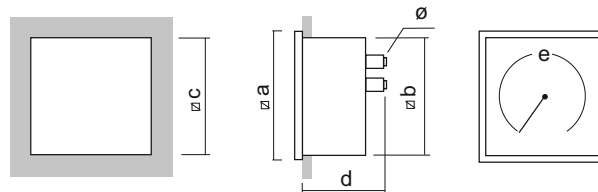
Models	Ranges	∇a	∇b	∇c	d	e	Ø
CC5VG	µA; mA; A; V	48	44,5	45 ^{+0,6}	63	38	M.4
CC4VG	µA; mA; A; V	72	66,5	68 ^{+0,7}	64	65	M.4
CC3VG	µA; mA; A; V	96	89	92 ^{+0,8}	63	100	M.4
CC2VG	µA; mA; A; V	144	135	138 ⁺¹	63	140	M.4

Dimensions (mm)



Models	Ranges	a x a1	Ø b	Ø c	d	e	f	g	h	i	Ø
CCb7G	µA; mA; A; V	80x64	57,6	58,6 ^{+0,6}	59	57	63	12,5	1,5	M.3	M.4
CCb3G	µA; mA; A; V	105x80	66	67 ^{+0,7}	59	75	81	13	4,5	M.3	M.4
CCb8G	µA; mA; A; V	130x100	66	67 ^{+0,8}	59	100	100	13	13	M.4	M.4

Dimensions (mm)



Models	Ranges	∇a	∇b	∇c	d	e	Ø
CC5CG	µA; mA; A; V	48	44,5	45 ^{+0,6}	87	72	M.4
CC4CG	µA; mA; A; V	72	66,5	68 ^{+0,7}	92	101	M.4
CC3CG	..5 A The rest	96	89	92 ^{+0,8}	92	140	M.4
CC2CG	µA; mA; A; V	144	135	138 ⁺¹	92	220	M.4

Connection diagrams



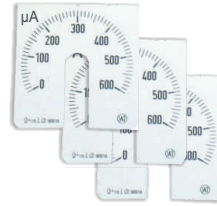
MOVING COIL WITH RECTIFIER

Voltage and alternating current measuring (sinusoidal waveforms)

AMMETERS (μA , mA and A) VOLTMETERS

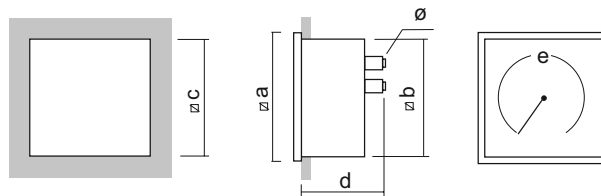
(INTERCHANGEABLE SCALE)

- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 50 or 60 Hz



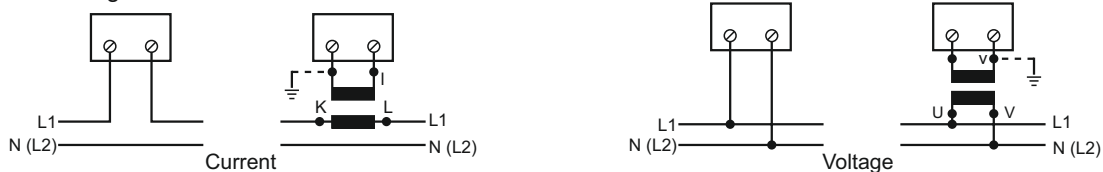
Model		CC3CGS
Dimensions	mm	96x96
Approx. weight	kg.	0,38
AMMETERS (μA, mA)		
MEASURING RANGE	In	150; 200; 300; 400; 500 or 600 μA
	In	1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 mA
AMMETERS (A)		
MEASURING RANGE	In	1; 1,5; 2; 2,5; 3; 4; 5; 10 or 15 A
	2xIn	1..2; 1,5..3; 2..4; 2,5..5; 3..6; 4..8; 5..10; 10..20 or 15..30 A
	5xIn	1..5; 1,5..7,5; 2..10; 2,5..12,5; 3..15; 4..20; 5..25; 10..50 or 15..75 A
VT OPERATED VOLTMETERS		
Measuring range	Vn	X/100V or X/110V
Standard scales		1,2 times the primary of the voltage transformer
DIRECT INPUT VOLTMETERS		
Measuring range	Vn	6; 10; 15; 25; 40; 60; 100; 150; 250; 300; 400; 500 or 600 V

Dimensions (mm)



Models	Ranges	a	b	c	d	e	ø
CC3CGS	μA ; mA; A; V	96	89	92	63	160	M.4

Connection diagrams



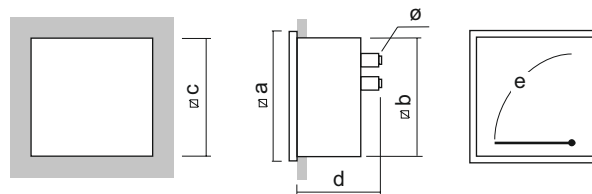
RATED VALUE VOLTMETERS

- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 50 or 60 Hz
- Burden: 2 mA



Models		CC4VGN	CC3VGN	CC2VGN
Dimensions	mm	72x72	96x96	144x144
Approx. weight	kg.	0,17	0,25	0,48
VOLTMETERS				
Measuring range		100; 110; 230 or 400 V		
Standards scales	Vn	90..110 V or $\pm 10\%$ X/100 V		
		100..120 V or $\pm 10\%$ X/110 V		
		210..250 V		
		380..420 V		

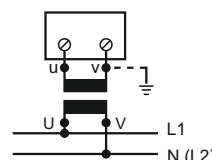
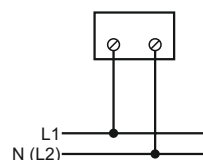
Dimensions (mm)



Models	Ranges	∇a	∇b	∇c	d	e	ø
CC4VGN	V	72	66,5	68 ^{+0,7}	64	38	M.4
CC3VGN	V	96	89	92 ^{+0,8}	63	65	M.4
CC2VGN	V	144	135	138 ⁺¹	63	100	M.4

Connection diagrams

Voltage



ELAPSED TIME METER

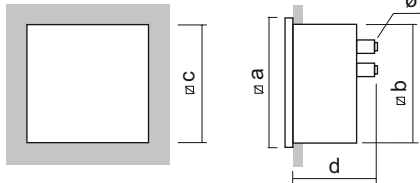
Operating time control of machines and equipment.

- Meter: mechanical, 7 digits (99999.99)
- Voltage (Vn): 110, 230, 400 V
- Burden: 10 mA
- Voltage range: $\pm 10\%$ Vn
- Frequency: 50 or 60 Hz



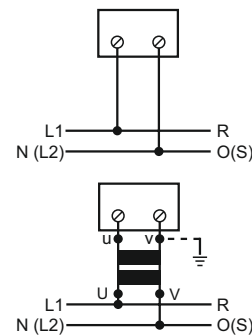
Models		HC5	HC4	HC3
Dimensions	mm	48x48	72x72	96x96
Approx. weight	kg.	0,06	0,14	0,175

Dimensions (mm)



Models	Ranges	∅a	∅b	∅c	d	ø
HC5	110÷400	48	44,5	45,2 ^{+0,6}	34	M.3
HC4	110÷400	72	66,5	68 ^{+0,7}	60	M.3
HC3	110÷400	96	89	92 ^{+0,8}	60	M.3

Connection diagrams



PHASE SEQUENCE INDICATORS

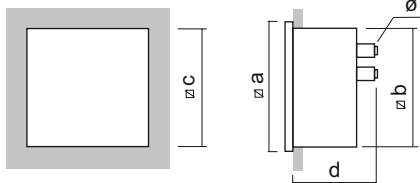
Phase sequence detection on a three-phase system.

- Voltage: (Vn): 100..600 V
- Burden: 1,2 VA
- Frequency: 50 or 60 Hz



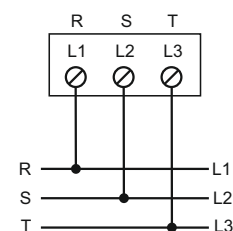
Models		IRC4E	IRC3E
Dimensions	mm	72x72	96x96
Approx. weight	kg.	0,20	0,26

Dimensions (mm)



Models	Ranges	∅a	∅b	∅c	d	ø
IRC4E	100÷600 V	72	66,5	68 ^{+0,7}	79	M.4
IRC3E	100÷600 V	96	89	92 ^{+0,8}	78	M.4

Connection diagrams



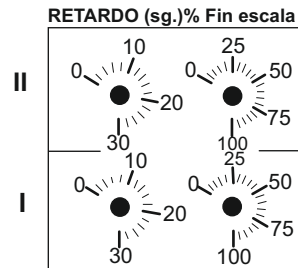
INSTRUMENTS WITH CONTACTS

- 2 contacts and 2 control LEDs.
- Rear adjustment.
- 2 channels.
- 2 potentiometers per channel.

MODELS

- ..A/1 - 1 Min. and 1 Max. contact
- ..A/2 - 2 Max. or Min contacts

- Setting: 0 - 100% of full scale value or $\pm 100\%$ (bidirectional)
- Delay time: 0-30 s. $\pm 10\%$
- Repeatability: $\pm 1\%$ of full scale value
- Output relays: 2 (Max. 400 V, 1 A, 200 VA AC.)
- Mechanical life: 107 operations
- Control unit cover: Lockable
- Auxiliary power supply: 110, 230, 400 V AC.
Burden, 3 VA.



Technical specifications same as pointer instruments.

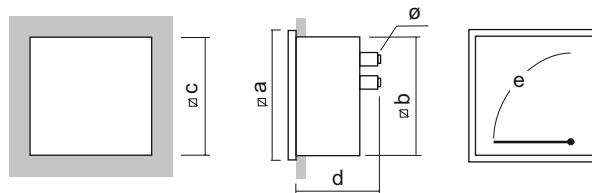
- MOVING IRON (mA y A)
- MOVING COIL (mV, V, μA , mA and A)
- MOVING COIL WITH RECTIFIER (mV, V, mA and A)
- FREQUENCY METERS (Hz)
- MEASURERS FOR CONVERTERS (mA and V)

- Scale: 90°
- Accuracy: 1,5 %
- Frequency: 50 or 60 Hz



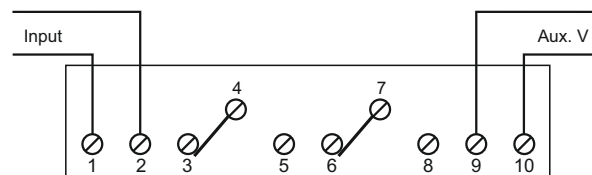
Models		..A/1	..A/2
Contacts		1 Min. - 1 Max.	2 Max.-
Dimensions	mm	96x96	96x96
Approx. weight	kg.	0,55	0,55

Dimensions (mm)



Models	Ranges	∅a	∅b	∅c	d	e	ø
C3V-A/1	-	96	89	92	98	100	M.4
C3V-A/2	-	96	89	92	98	100	M.4

Connection diagrams



With voltage on 9-10; 4-5 and 7-8 closed.
With alarm, 3-4 and 6-7 closed.



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 %



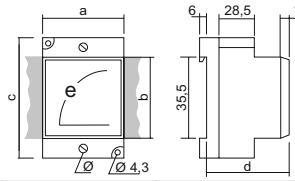
Model		CC5VR*	CC5V	CC4V	CC3V	CC2V	CCb7	CCb3	CCb8
Dimensions	mm	45x52,5 DIN	48x48	72x72	96x96	144x144	80x64	105x80	130x100
Approx. weight	kg.	0,25	0,09	0,21	0,28	0,50	0,15	0,19	0,25
AMMETERS (μA)									
MEASURING RANGE	In	40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 μA							
		AMMETERS (mA)				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

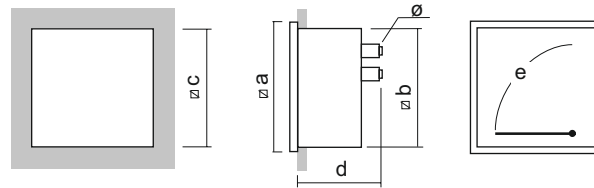


Dimensions (mm)



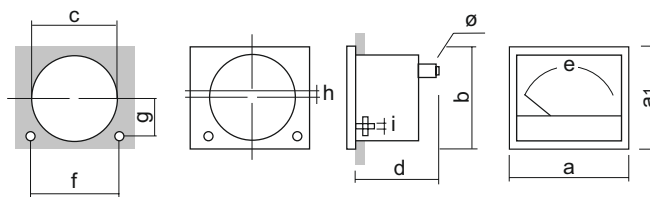
Models	Ranges	a	b	c	d	e	ø
CC5VR	μA; mA; A; V	52,5	45	75	60	38	M.6

Dimensions (mm)



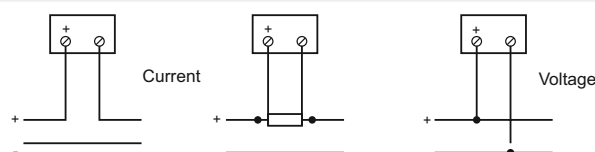
Models	Ranges	∇a	∇b	∇c	d	e	ø
CC5V	x/60..x/150 mV	48	44,5	45+0,6	59	38	M.4
CC4V	x/60..x/150 mV	72	66,5	68+0,7	60	65	M.4
CC3V	x/60..x/150 mV	96	89	92+0,8	59	100	M.4
CC5V	>4..15 A	48	44,5	45+0,6	63	38	M.4
	>15..50 A				62		M.6
CC4V	>4..15 A	72	66,5	68+0,7	63	65	M.4
	>15..50 A				68		M.6
	The rest				60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

Dimensions (mm)



Models	Ranges	axa1	b	c	d	e	f	g	h	i	ø
CCb7	>15..50 A	<4...15A 80x64	57,6	58,6+0,6	63	59	63	12,5	1,5	M.3	M.4
	<4...15A					57					M.6
	The rest					55					M.4
CCb3	>15..<50 A	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



MOVING COIL

Voltage and current measuring on direct current circuits.

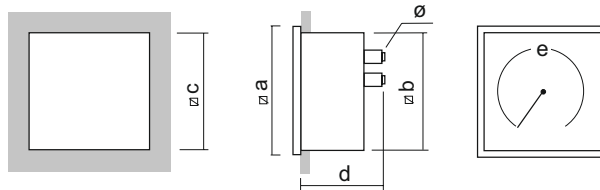
AMMETERS (μA , mA and A) VOLTMETERS (mV and V)

- Scale: 240°
- Accuracy: 1,5 %



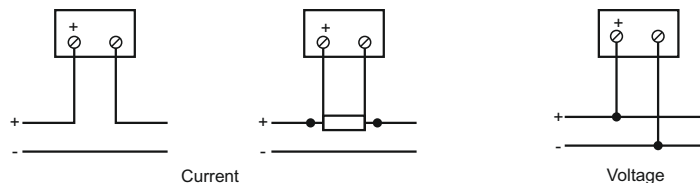
Models		CC5C	CC4C	CC3C	CC2C
Dimensions	mm	48x48	72x72	96x96	144x144
Approx. weight	kg.	0,20	0,32	0,38	0,68
AMMETERS (μA, mA and A)					
MEASURING RANGE	In	150; 200; 300; 400; 500 or 600 μA			
		1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500; 600 mA or 4-20 mA			
		1; 1,5; 2,5; 4; 5; 6; 10; 15 A			
	VOLTMETERS (mV and V)				
MEASURING RANGE	Vn	60; 100; 150; 250; 300; 400; 500 or 600 mV			
		1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 V			

Dimensions (mm)



Models	Ranges	∇a	∇b	∇c	d	e	\varnothing
CC5C	>4..15 A	48	44,5	45 $^{+0,6}$	87	72	M,4
	The rest				83		M,4
CC4C	>4..15 A	72	66,5	68 $^{+0,7}$	92	101	M,4
	The rest				88		M,4
	>4..15 A				78		M,4
CC3C	>4..20 mA	96	89	92 $^{+0,8}$	92	140	M,4
	The rest				74		M,4
CC2C	>4..15 A	144	135	138 $^{+1}$	92	220	M,4
	The rest				88		M 4

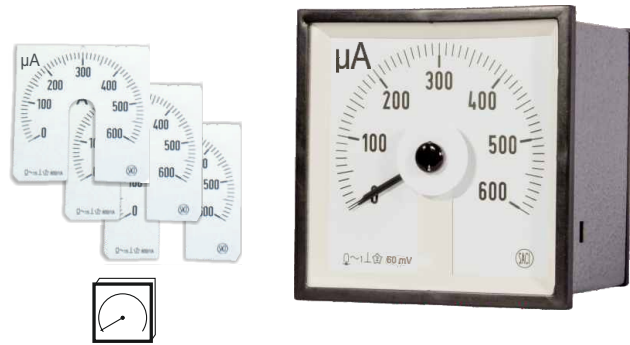
Connection diagrams



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

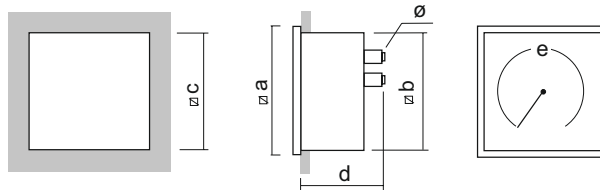
(INTERCHANGEABLE SCALE)

- Scale: 240°
- Accuracy: 1,5 %



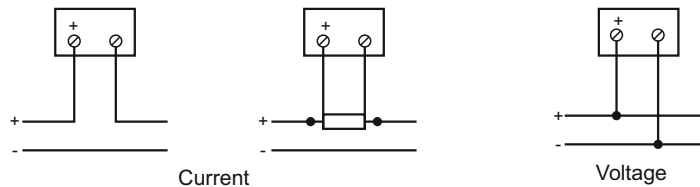
Model		CC3CS
Dimensions	mm	96x96
approx. weight	kg.	0,38
AMMETERS (μA, mA, A)		
MEASURING RANGE	In	150; 200; 300; 400; 500 or 600 μA
		1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500; 600 mA or 4-20 mA
		1; 1,5; 2,5; 4; 5; 6; 10; 15 A
AMMETERS (INTERCHANGEABLE SCALE)		
MEASURING RANGE	Vn	X/60mV or X/150mV
	In	1, 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 30; 40; 50; 60; 80 or 100A and multiples
VOLTMETERS (mV and V)		
MEASURING RANGE	Vn	60; 100; 150; 250; 300; 400; 500 or 600 mV
		1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 40; 50; 60; 100; 150; 250; 300; 400; 500 or 600 V

Dimensions (mm)



Models	Ranges	a	b	c	d	e	ø
CC3CS	μA ; mA; A; V	96	89	92	63	160	M.4

Connection diagrams



NON-ELECTRIC UNIT INDICATORS

Parameter measurements from transducers or converters, calibrated according to their function curves.



DIRECT CURRENT

- Scale: 90 or 240°
- Accuracy: 1,5 %



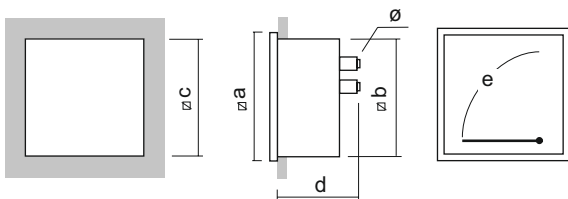
Models		CC5V	CC4V	CC3V
Dimensions	mm	48x48	72x72	96x96
Approx. weight	kg.	0,10	0,21	0,28
VOLTMETERS				
Measuring range	Vn	0-1; 0-5 or 0-10 V		1-5 or 2-10 V
MILLIAMMETERS				
Measuring range	In	0-1; 0-5; 0-10 or 0-20 mA		4-20 mA



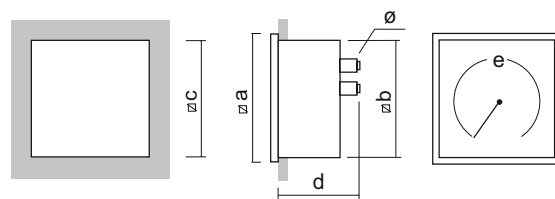
Model		CC5C	CC4C	CC3C
Dimensions	mm	48x48	72x72	96x96
Approx. weight	kg.	0,20	0,32	0,38
VOLTMETERS				
Measuring range	Vn	0-1; 0-5 or 0-10 V		1-5 or 2-10 V
MILLIAMMETERS				
Measuring range	In	0-1; 0-5; 0-10 or 0-20 mA		4-20 mA

May be manufactured in several models and direct current ranges with or without zero suppressed. Other features as corresponding models.

Dimensions (mm)



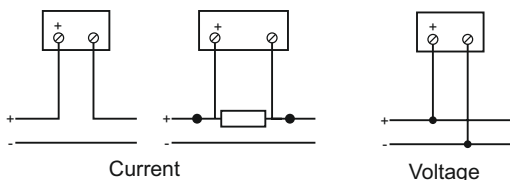
Dimensions (mm)



Models	Ranges	∇a	∇b	∇c	d	e	ø
CC5V	V - mA	48	44,5	45 ^{+0,6}	59	38	M.4
CC4V	V - mA	72	66,5	68 ^{+0,7}	60	65	M.4
CC3V	V - mA	96	89	92 ^{+0,8}	59	100	M.4

Models	Ranges	∇a	∇b	∇c	d	e	ø
CC5C	V - mA	48	44,5	45 ^{+0,6}	83	72	M.4
CC4C	V - mA	72	66,5	68 ^{+0,7}	88	101	M.4
CC3C	V - mA 4 - 20 mA	96	89	92 ^{+0,8}	74 92	140	M.4

Connection diagrams



Examples of units

- mA - A - kA - N - mV - V - kV - kN - Hz
- °φ - °C - °F - W - kW - MW - VA
- var - kvar - Mvar - kVA - kW - MW - Ω
- rpm - % - min⁻¹ - m - l/h - pH - m³/h
- mbar - bar - mm - m³/min - Kg - Kgcm - Kg/cm²
- mm/sec - mmHg - mmH₂O - dB - kPa - MPa



SHUNTS

High value current connection on direct current circuits.

- Accuracy: 0,5% Operating t.: -20..+60 °C
- Overloads: 1.2 In continuously
 10 In 5 s (10..500 A)
 5 In 5 s (600..2000 A)
 2 In 5 s (2500..4000 A)



DIN 43703 standard



Models		Form 1		Form 2		Form 3	
Voltage drop	mV	60 mV	150 mV	60 mV	150 mV	60 mV	150 mV
MEASURING RANGE	In	1; 1,5; 2,5; 4; 5; 6; 10; 15; 20; 25; 30; 40; 50; 60; 80; 100 or 150		200; 250; 300; 400; 500; 600; 750; 800; 1000; 1200; 1500; 2000 or 2500		200; 250; 300; 400; 500; 600; 750; 800 or 1000	
		3000 or 4000		1200; 1500; 2000 ó 2500			

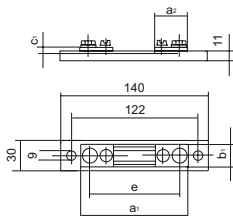
Aproximate weight (Kg).

In	1	1,5	2,5	4	5	6	10	15	20	25	30	40	50	60	80	100	150	200
60 mV	0,140	0,140	0,140	0,140	0,140	0,140	0,140	0,140	0,140	0,140	0,120	0,120	0,125	0,125	0,125	0,125	0,130	0,535
150 mV	0,140	0,140	0,140	0,140	0,140	0,140	0,140	0,140	0,140	0,140	0,160	0,170	0,175	0,180	0,190	0,210	0,240	0,750
In	250	300	400	500	600	750	800	1000	1200	1500	2000	2500	3000	4000	-	-	-	-
60 mV	0,540	0,815	0,820	0,830	0,840	1,420	1,420	1,440	1,970	1,990	2,870	2,990	4,220	4,300	-	-	-	-
150 mV	0,790	1,130	1,200	1,250	1,310	2,350	2,390	2,510	3,670	3,860	5,220	5,530	-	-	-	-	-	-

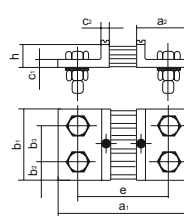
Voltage drop mV	Rated current A	Exec. according to figure	a1	a2	b1	b2	b3	c1	c	eh	Current splice				Voltage splice	
											Nº. of screws	Hexagonal screw DIN 933-5-8	Washer DIN 125-Sc	Nut DIN 934-5		
60	1; 1,5; 2,5; 4; 5*; 6; 10; 15; 20*; 25	1	100	33	20	-	-	8	-	80	-	2 x 1	M.8x16	8,4	-	2 M.5x8 cylinder-head screw DIN 84-4.8 and 2 ø 5.3 washers DIN 433-St.
	30*; 40; 50; 60; 80*; 100; 150	1	100	33	20	-	-	8	-	80	-	2 x 1	M.8x16	8,4	-	
	200*; 250	2	145	55	30	15	-	10	10	105	30	2 x 1	M.12x40	13	M.12	
	300*; 400; 500*; 600				40	20	-	-	-	-	-	-	-	2 x 1	M.16x45	
	750*; 800*; 1000	2	165	65	60	30	-	10	10	115	30	2 x 1	M.20x50	21	M.20	
	1200*; 1500				90	21	48	-	-	-	-	-	-	2 x 2	M.16x45	
	2000*; 2500	2	165	65	120	30	60	10	10	115	30	2 x 2	M.20x50	21	M.20	
3000*; 4000	15															
150	1; 1,5; 2,5; 4; 5*; 6; 10; 15; 20*; 25	1	100	33	20	-	-	8	-	80	-	2 x 1	M.8x16	8,4	-	
	30*; 40; 50; 60; 80*; 100; 150	1	225	33	25	-	-	8	-	205	-	2 x 1	M.8x16	8,4	-	
	200*; 250	2	270	55	30	15	-	-	-	-	230	2 x 1	M.12x40	13	M.12	
	300*; 400; 500*; 600				40	20	-	-	-	-	-					
	750*; 800*	2	275	85	42,5	-	-	10	10	-	240	2 x 2	M.20x60	21	M.20	
	1000*				21	43	-	-	-	-	-					
	1200*; 1500	3	290	65	90	21	48	15	10	240	60	2 x 2	M.16x60	17	M.16	
2000*; 2500	120				30	60	-	-	-	-	-					-

* Non-DIN ranges, but of standard production.

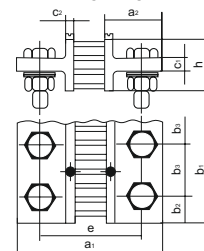
Form 1



Form 2



Form 3



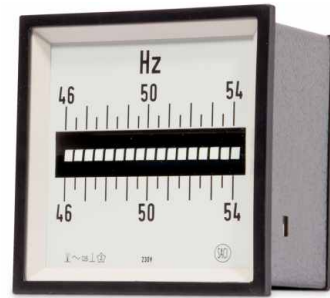
FREQUENCY METERS

System frequency measuring.

REED FREQUENCY METERS

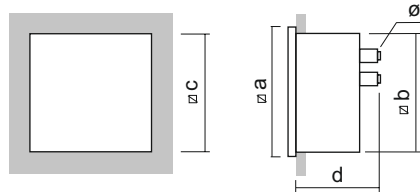
- Voltage range: $\pm 15\% V_n$
- Voltage: (V_n): 100, 110
230, 400, 440 V

- Accuracy: 0,5 %
- Burden: 1,2..2,2 VA
- FC3VI, FC2VI:
2x (1,2..2,2 VA)



Model		FC5V	FC4V	FC3V	FC2V	FC3VI	FC2VI
Dimensions	mm	48x48	72x72	96x96	144x144	96x96	144x144
Approx. weight	kg.	0,23	0,39	0,47	0,88	0,84	1,50
REED FREQUENCY METERS							
Reed		7	13	13	17	21	2x17
Scales	Hz	48,5..51,5 58,5..61,5	47..53 57..63	47..53 57..63	46..54 56..64	45..55 55..65	46..64 45..65

Dimensions (mm)



Models	Ranges	∅a	∅b	∅c	d	ø
FC5V	100+440	48	44,5	45 ^{+0,6}	59	M.4
FC4V	100+440	72	66,5	68 ^{+0,7}	75	M.4
FC3V	100+440	96	89	92 ^{+0,8}	74	M.4
FC2V	100+440	144	135	138 ⁺¹	88	M.4
FC3VI	100+440	96	89	92 ^{+0,8}	124	M.4
FC2VI	100+440	144	135	138 ⁺¹	88	M.4

Conection diagrams



POINTER FREQUENCY METERS

- Voltage range: $\pm 15\% V_n$ - Accuracy: 0,5 %
- Voltage (V_n): 100, 110, 230, 400, 440 V - Burden: 10 mA



SCALE 90°



Models		FC5VR	FC5A	FC4A	FC3A	FC2A	FC5ARI	FC5AI	FC4AI	FC3AI	FC2AI
Dimensions	mm	45x52,5	48x48	72x72	96x96	144x144	45x52,5	48x48	72x72	96x96	144x144
Approx. weight	kg.	0,20	0,20	0,21	0,28	0,50	0,20	0,20	0,21	0,28	0,50
POINTER FREQUENCY METERS 90°											
Scales	Hz	45..55; 48..52; 55..65; 58..62 or 380..420 Hz					45..65 Hz				

SCALE 240°

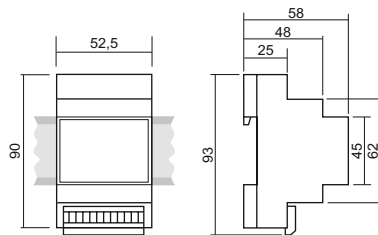


Models		FC5C	FC4C	FC3C	FC2C	FC5CI*	FC4CI	FC3CI	FC2CI
Dimensions	mm	48x48	72x72	96x96	144x144	48x48	72x72	96x96	144x144
Approx. weight	kg.	0,25	0,46	0,55	1,05	0,25	0,46	0,55	1,05
POINTER FREQUENCY METERS 240°									
Scales	Hz	45..55; 48..52; 55..65; 58..62 or 380..420 Hz				45..65 Hz			

* With additional module: MBF model

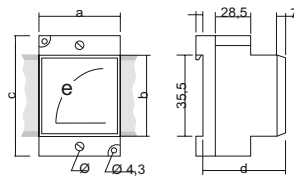
Dimensions (mm)

DIN rail MBFmodule



Weight= 0,120
Plug-in connectors

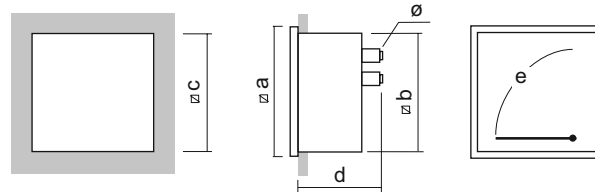
Dimensions (mm)



Models	Ranges	a	b	c	d	e	ø
FC5AR	100+230	52,5	45	75	60	38	M.6
FC5ARI	100+230	52,5	45	75	60	38	M.6

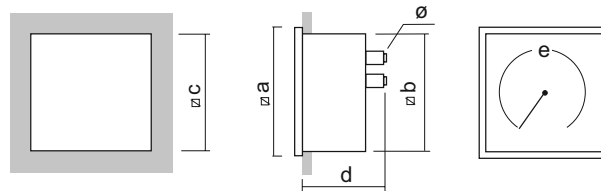


Dimensions (mm)



Models	Ranges	∅a	∅b	∅c	d	e	ø
FC5A	100÷440	48	44,5	45 ^{+0,6}	83	38	M.4
FC4A	100÷440	72	66,5	68 ^{+0,7}	64	65	M.4
FC3A	100÷440	96	89	92 ^{+0,8}	63	100	M.4
FC2A	100÷440	144	135	138 ⁺¹	63	140	M.4
FC5AI	100÷440	48	44,5	45 ^{+0,6}	83	38	M.4
FC4AI	100÷440	72	66,5	68 ^{+0,7}	64	65	M.4
FC3AI	100÷440	96	89	92 ^{+0,8}	63	100	M.4
FC2AI	100÷440	144	135	138 ⁺¹	63	140	M.4

Dimensions (mm)



Models	Ranges	∅a	∅b	∅c	d	e	ø
FC5C	100÷440	48	44,5	45 ^{+0,6}	83	72	M.4
FC4C	100÷440	72	66,5	68 ^{+0,7}	92	101	M.4
FC3C	100÷440	96	89	92 ^{+0,8}	128	140	M.4
FC2C	100÷440	144	135	138 ⁺¹	92	220	M.4
FC5CI	100÷440	48	44,5	45 ^{+0,6}	83	72	M.4
FC4CI	100÷440	72	66,5	68 ^{+0,7}	92	101	M.4
FC3CI	100÷440	96	89	92 ^{+0,8}	128	140	M.4
FC2CI	100÷440	144	135	138 ⁺¹	92	220	M.4

Connection diagrams



WATTMETERS (ELECTRONIC)

System active power measuring.

Alternating current

- Frequency: 50 or 60 Hz
- Voltage range: $\pm 15\%$ Vn
- Voltage: (Vn): 100, 110
230, 400, 440 V
- Current range: 20-120%
- Current input: (In): 5A, 1A
- Accuracy: 1,5 %
- Burden: 3..12 mA (Voltage circuits)
- Burden: 1..3,5 VA (Current circuits)



		90° SCALE		90° SCALE			
Dimensions	mm	45x52,5 <small>CARRIL DIN</small>		48x48	72x72	96x96	144x144
A.C SINGLE PHASE - BALANCE THREE-PHASE							
Approx. weight	kg.	0,55		0,55	0,55	0,84	0,84
A.C. Single-phase		WC5VRE*		WC5VE*	WC4VE*	WC3VE	WC2VE
3-phase, 3 or 4 wire		WC5VRIE*		WC5VIE*	WC4VIE*	WC3VIE	WC2VIE
UNBALANCE THREE-PHASE							
Approx. weight	kg.	1,00		1,00	1,00	1,55	1,55
3-phase, 3 wire		WC5VRIIE*		WC5VIIE*	WC4VIIE*	WC3VIIE	WC2VIIE
3-phase, 4 wire		WC5VR3E*		WC5V3E*	WC4V3E*	WC3V3E	WC2V3E



		240 ° SCALE			
Dimensions	mm	48x48	72x72	96x96	144x144
A.C SINGLE PHASE - BALANCE THREE-PHASE					
Approx. weight	kg.	0,55		0,84	0,84
A.C. Single-phase		WC5CE*		WC4CE*	WC3CE
3-phase, 3 or 4 wire		WC5CIE*		WC4CIE*	WC3CIE
UNBALANCE THREE-PHASE					
Approx. weight	kg.	1,00		1,55	1,55
3-phase, 3 wire		WC5CIIE*		WC4CIIE*	WC3CIIE
3-phase, 4 wire		WC5C3E*		WC4C3E*	WC3C3E

* With additional module: MBW.. Models

INTERCHANGEABLE SCALE (90° scale only), for models: WC5V..., WC5VR..., WC4V... and WC3V...

For 3 or 4 wire, balanced or unbalanced three-phase systems, the instruments and scales are:

Instruments	110 V, 5 A	230 V, 5 A	400 V, 5 A	440 V, 5 A
Calibration	1000 W	2000 W	3000 W	3000 W
Transformator	Scales			
10/5 A	0-2 kW	0-4 kW	0-6 kW	0-6 kW
15/5 A	0-3 kW	0-6 kW	0-9 kW	0-9 kW
20/5 A	0-4 kW	0-8 kW	0-12 kW	0-12 kW
25/5 A	0-5 kW	0-10 kW	0-15 kW	0-15 kW
30/5 A	0-6 kW	0-12 kW	0-18 kW	0-18 kW

Instruments	110 V, 5 A	230 V, 5 A	400 V, 5 A	440 V, 5 A
Calibration	1000 W	2000 W	3000 W	3000 W
Transformator	Scales			
40/5 A	0-8 kW	0-15 kW	0-24 kW	0-24 kW
50/5 A	0-10 kW	0-20 kW	0-30 kW	0-30 kW
60/5 A	0-12 kW	0-24 kW	0-36 kW	0-36 kW
75/5 A	0-15 kW	0-30 kW	0-45 kW	0-45 kW
Multiples	Multiples	Multiples	Multiples	Multiples

Dimensions and connection diagrams, available on page AN-35-36.



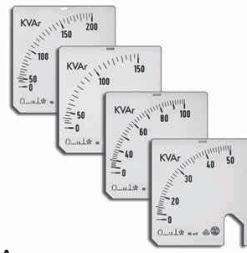
VARMETERS (ELECTRONIC)

System's reactive power measuring.

Alternating current

- Frequency: 50 or 60 Hz
- Voltage range: $\pm 15\%$ Vn
- Voltage: (Vn): 100, 110
230, 400, 440 V
- Current range: 20-120%
- Current input: (In): 5A, 1A

- Accuracy: 1,5 %
- Burden: 3..12 mA (Voltage circuits)
- Burden: 1..3,5 VA (Current circuits)



		90° SCALE		90° SCALE			
Dimensions	mm	45x52,5 DIN RAIL	48x48	72x72	96x96	144x144	
AC. SINGLE-PHASE - BALANCED THREE-PHASE							
Approx. weight	Kg.	0,55	0,55	0,55	0,84	0,84	
AC. Single-phas		WC5VRrE*	WC5VrE*	WC4VrE*	WC3VrE	WC2VrE	
Three-phase, 3 or 4 wire		WC5VRIrE*	WC5VIrE*	WC4VIrE*	WC3VIrE	WC2VIrE	
UNBALANCED THREE-PHASE							
Approx. weight	Kg.	1,00	1,00	1,00	1,55	1,55	
Three-phase, 3 wire		WC5VRllrE*	WC5VllrE*	WC4VllrE*	WC3VllrE	WC2VllrE	
Three-phase, 4 wire		WC5VR3rE*	WC5V3rE*	WC4V3rE*	WC3V3rE	WC2V3rE	



		240° SCALE			
Dimensions	mm	48x48	72x72	96x96	144x144
AC. SINGLE-PHASE - BALANCED THREE-PHASE					
Approx. weight	kg.	0,55	0,55	0,84	0,84
AC. Single-phas		WC5CrE*	WC4CrE*	WC3CrE	WC2CrE
Three-phase, 3 or 4 wire		WC5CIrE*	WC4CIrE*	WC3CIrE	WC2CIrE
		UNBALANCED THREE-PHASE		UNBALANCED THREE-PHASE	
Approx. weight	kg.	1,00	1,00	1,55	1,55
Three-phase, 3 wire		WC5CllrE*	WC4CllrE*	WC3CllrE	WC2CllrE
Three-phase, 4 wire		WC5C3rE*	WC4C3rE*	WC3C3rE	WC2C3rE

* With additional module: MBW... Models

INTERCHANGEABLE SCALE (90° scale only), for models: WC5V...rE, WC5VR...rE, WC4V...rE y WC3V...rE
For 3 or 4 wire, balanced or unbalanced three-phase systems, the instruments and scales are:

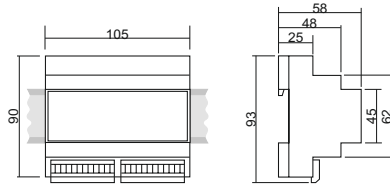
Instruments	110 V, 5 A	230 V, 5 A	400 V, 5 A	440 V, 5 A	Instruments	110 V, 5 A	230 V, 5 A	400 V, 5 A	440 V, 5 A
Calibration	500 Var	1000 Var	1500 Var	1500 Var	Calibration	500 Var	1000 Var	1500 Var	1500 Var
Transformer	Scales				Transformer	Scales			
10/5 A	0-1 Kvar	0-2 Kvar	0-3 Kvar	0-3 Kvar	40/5 A	0-4 Kvar	0-7,5 Kvar	0-12 Kvar	0-12 Kvar
15/5 A	0-1,5 Kvar	0-3 Kvar	0-4,5 Kvar	0-4,5 Kvar	50/5 A	0-5 Kvar	0-10 Kvar	0-15 Kvar	0-15 Kvar
20/5 A	0-2 Kvar	0-4 Kvar	0-6 Kvar	0-6 Kvar	60/5 A	0-6 Kvar	0-12 Kvar	0-18 Kvar	0-18 Kvar
25/5 A	0-2,5 Kvar	0-5 Kvar	0-7,5 Kvar	0-7,5 Kvar	75/5 A	0-7,5 Kvar	0-15 Kvar	0-22,5 Kvar	0-22,5 Kvar
30/5 A	0-3 Kvar	0-6 Kvar	0-9 Kvar	0-9 Kvar	Multiples	Multiples	Multiples	Multiples	Multiples

Dimensions and connection diagrams, available on page AN-35-36.



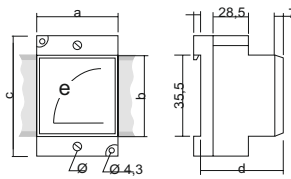
Dimensions (mm)

DIN rail MBW and MBWr modules



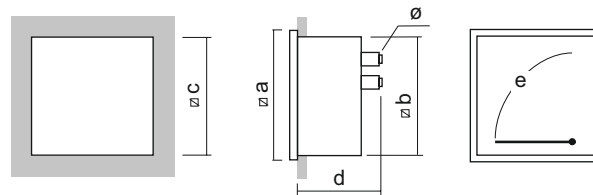
Weight= 0,24
Plug.in connectors

Dimensions (mm)



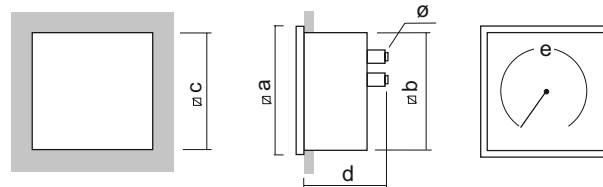
Active power model	Reactive power model	Range	a	b	c	d	e	ø
WC5VR..E	WC5VR..rE	../5 ../1	52,5	45	75	60	38	M.6

Dimensions (mm)



Active power model	Reactive power model	Range	∅a	∅b	∅c	d	e	ø
WC5V..E	WC5V..rE	../5 ../1	48	44,5	45 ^{+0,6}	59	38	M,4
WC4V..E	WC4V..rE	../5 ../1	72	66,5	68 ^{+0,7}	60	65	M,4
WC3V..E	WC3V..rE	../5 ../1	96	89	92 ^{+0,8}	75	100	M,4
WC2V..E	WC2V..rE	../5 ../1	144	135	138 ⁺¹	87	140	M,4

Dimensions (mm)

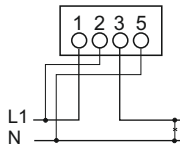


Active power model	Reactive power model	Range	∅a	∅b	∅c	d	e	ø
WC5C..E	WC5C..rE	../5 ../1	48	44,5	45 ^{+0,6}	83	72	M,4
WC4C..E	WC4C..rE	../5 ../1	72	66,5	68 ^{+0,7}	88	101	M,4
WC3C..E	WC3C..rE	../5 ../1	96	89	92 ^{+0,8}	124	140	M,4
WC2C..E	WC2C..rE	../5 ../1	144	135	138 ⁺¹	134	220	M,4

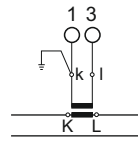


Connection diagrams

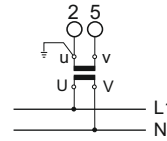
Single-phase, Active and Reactive Power



Connection: Direct input



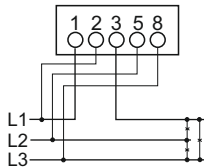
Current Transf.



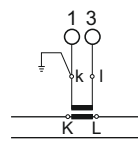
Voltage Transf.

Connection diagrams

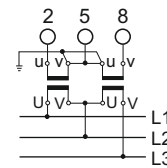
Balanced three-phase, Active and Reactive Power



Connection: Direct input



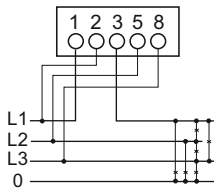
Current Transf.



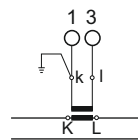
Voltage Transf.

Connection diagrams

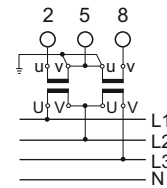
4 wire balanced three-phase, Active and Reactive Power



Connection: Direct input



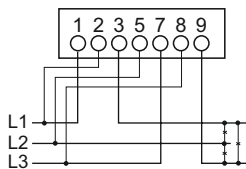
Current Transf.



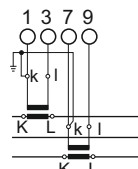
Voltage Transf.

Connection diagrams

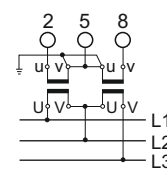
3 wire unbalanced three-phase, Active and Reactive Power



Connection: Direct input



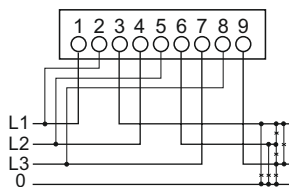
Current Transf.



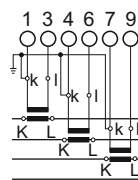
Voltage Transf.

Connection diagrams

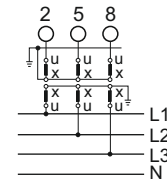
3 wire unbalanced three-phase, Active and Reactive Power



Connection: Direct input



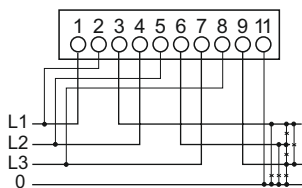
Current Transf.



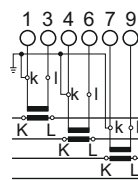
Voltage Transf.

Connection diagrams

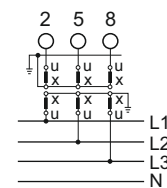
4 wire unbalanced three-phase, Active and Reactive Power



Connection: Direct input



Current Transf.



Voltage Transf.



WATTMETERS (INDUCTION) VARMETERS (INDUCTION)

System active/reactive power measuring

Alternating current

- Scale: 90°
- Frequency: 50, 60 Hz
- Voltage range: $\pm 15\%$ Vn
- Voltage: (Vn): 100, 110
230, 400, 440 V
- Current input: (In): 5A, 1A
- Current range: 20-120%
- Accuracy: 1,5 %
- Burden: 3..12 mA
(Voltage circuits)
- Burden: 1..3,5 VA
(Current circuits)

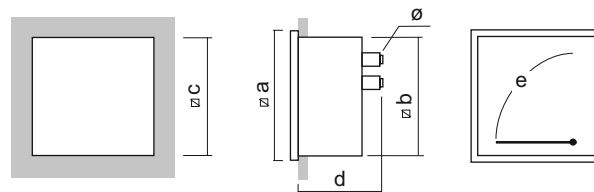


		WATTMETERS		VARMETERS	
Dimensions	mm	96x96	144x144	96x96	144x144
AC. SINGLE-PHASE - BALANCED THREE-PHASE					
Approx. weight	kg.	0,55	0,84	0,55	0,84
AC Single-phase		WC3V	WC2V	WC3Vr	WC2Vr
3-phase, 3 or 4 wire		WC3VI	WC2VI	WC3Vlr	WC2Vlr
UNBALANCED THREE-PHASE					
Approx. weight	kg.	1,00	1,55	1,00	1,55
3-phase, 3 wire		WC3VII	WC2VII	WC3VIIr	WC2VIIr
3-phase, 4 wire		WC3VIIIn	WC2VIIIn	WC3VIIInr	WC2VIIInr

- Full scale value: 0,6..1,2 P_a
 $P_a = V_n \cdot I_n$ (Single-phase, Alternating current)
 $P_a = V_n \cdot I_n \cdot 3$ (Three-phase)

If not indicated otherwise, full scale value will be P_a rounded

Dimensions (mm)



Active power model	Reactive power model	Range	∅a	∅b	∅c	d	e	ø
WC3V	WC3Vr	..1/5 ..1	96	89	92 ^{+0,8}	88	100	M.4
WC3VI	WC3Vlr					88		
WC3VII	WC3VIIr					135		
WC3VIIIn	WC3VIIInr					135		
WC2V	WC2Vr	..1/5 ..1	144	135	138 ⁺¹	88	140	M.4
WC2VI	WC2Vlr					88		
WC2VII	WC2VIIr					135		
WC2VIIIn	WC2VIIInr					135		

Connection diagrams available on page AN-36



PHASE METERS (ELECTRONIC)

System's power factor measuring.

Alternating current

- Scale: CAP 0,5 - 1 - 0,5 IND
- Frequency: 50 or 60 Hz
- Voltage range: $\pm 15\%$ Vn
- Voltage: (Vn): 100, 110
230, 400, 440 V
- Current range: 20-120%
- Current input: (In): 5A, 1A
- Accuracy: 1,5 % of 90 electrical degrees
- Burden: 6,5 mA
(Voltage circuits)
- Burden: 1 VA
(Current circuits)



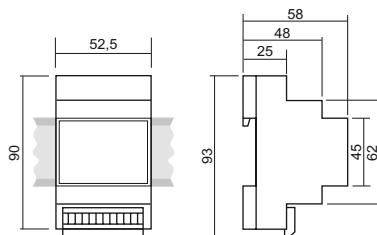
		90° SCALE		90° SCALE		
Dimensions	mm	45x52,5 DIN RAIL	48x48	72x72	96x96	144x144
AC SINGLE PHASE - BALANCED THREE PHASE						
Approx. weight	kg.	0,48	0,48	0,48	0,73	0,73
AC. Single-phase		SC5VRE*	SC5VE*	SC4VE*	SC3VE	SC2VE
3-phase, 3 wire		SC5VRIE*	SC5VIE*	SC4VIE*	SC3VIE	SC2VIE



240° SCALE						
Dimensions	mm	48x48	72x72	96x96	144x144	
AC SINGLE-PHASE - BALANCED THREE PHASE						
Approx. weight	kg.	0,48	0,48	0,73	0,73	
AC. Single-phase		SC5CE*	SC4CE*	SC3CE	SC2CE	
3-phase, 3 wire		SC5CIE*	SC4CIE*	SC3CIE	SC2CIE	

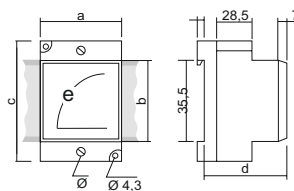
* With additional module: MBPF model

DIN rail MBPF module



Weight = 0,120
Plug-in connectors

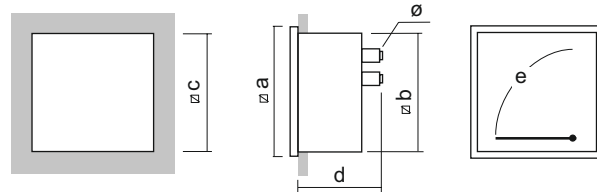
Dimensions (mm)



Models	Range	a	b	c	d	e	ø
SC5VRE	100+440	52,5	45	75	60	38	M.6
SC5VRIE	100+440	52,5	45	75	60	38	M.6

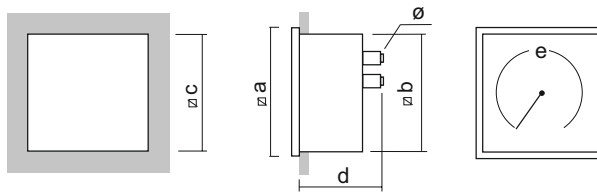


Dimensions (mm)



Models	Ranges	∅a	∅b	∅c	d	e	ø
SC5VE SC5VIE	100+440	48	44,5	45 ^{+0,6}	59	38	M.4
SC4VE SC4VIE	100+440	72	66,5	68 ^{+0,7}	60	65	M.4
SC3VE SC3VIE	100+440	96	89	92 ^{+0,8}	92	100	M.4
SC2VE SC2VIE	100+440	144	135	138 ⁺¹	92	140	M.4

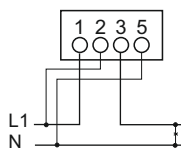
Dimensions (mm)



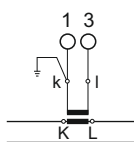
Models	Ranges	∅a	∅b	∅c	d	e	ø
SC5CE SC5CIE	100+440	48	44,5	45 ^{+0,6}	83	72	M.4
SC4CE SC4CIE	100+440	72	66,5	68 ^{+0,7}	88	101	M.4
SC3CE SC3CIE	100+440	96	89	92 ^{+0,8}	128	140	M.4
SC2CE SC2CIE	100+440	144	135	138 ⁺¹	92	220	M.4

Connection diagrams

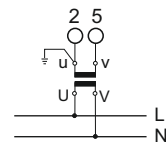
Single-phase



Direct input



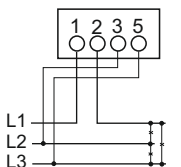
Current Transf.



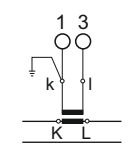
Transf. Voltage

Connection diagrams

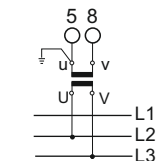
Balanced three-phase



Connection: Direct input



Current Transf.



Transf. Voltage



PHASE METERS (INDUCTION)

System's power factor measuring.

Alternating current

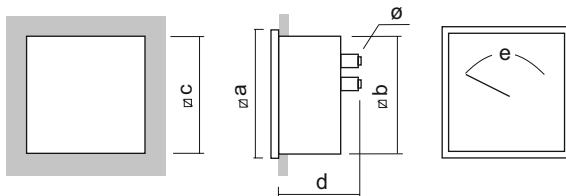
- Scale: CAP 0,5 - 1 - 0,5 IND or 0,8 - 1 0,2 IND (90°)
CAP 0,1 - 1 - 0,1 IND 4 quadrants (360°)
- Accuracy: 1,5 % of 90 electrical degrees
- Frequency: 50 or 60 Hz
- Voltage range: $\pm 15\%$ Vn
- Voltage: (Vn): 100, 110
230, 400, 440 V
- Current range: 20-120%
- Current input: (In): 5A, 1A
- Burden: 20..30 mA
(Voltage circuits)
- Burden: 1 VA
(Current circuits)



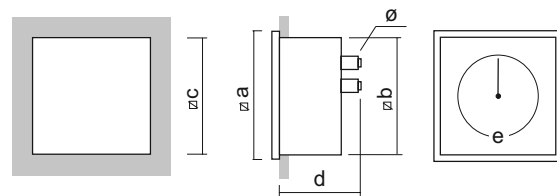
		SCALE 90°		SCALE 360°	
Dimensions	mm	96x96	144x144	96x96	144x144
AC. SINGLE-PHASE - BALANCED THREE-PHASE					
Approx. weight	kg.	1,07	1,57	1,10	1,60
A.C Single phase*		SC3V	SC2V	SC3C	SC2C
3-phase 3-4 wire**		SC3VI	SC2VI	SC3CI	SC2CI
UNBALANCED THREE-PHASE					
Approx. weight	kg.	1,40	2,35	1,43	2,38
3-Phase 3 wire**		SC3VII	SC2VII	SC3CII	SC2CII
3-Phase 4 wire***		SC3VIIIn	SC2VIIIn	SC3CIIIn	SC2CIIIn

* With additional resistor box (external): Model 4.5.1
 ** 400 V and 600 V with additional resistor box (external): Model 2.6.1
 *** 400 V and 600 V only with additional resistor box (external): Model 2.4.1

Dimensions (mm)



Dimensions (mm)



Models	Ranges	a	b	c	d	e	ø
SC3V	100÷440				135		
SC3VI	100÷440	96	89	92 ^{+0,8}	135	73	M.4
SC3VII	100÷440				165		
SC3VIIIn	100÷440				165		
SC2V	100÷440				135		
SC2VI	100÷440	144	135	138 ⁺¹	135	160	M.4
SC2VII	100÷440				165		
SC2VIIIn	100÷440				165		

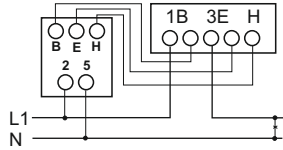
Models	Ranges	a	b	c	d	e	ø
SC3C	100÷440						
SC3CI	100÷440	96	89	92 ^{+0,8}	124	210	M.4
SC3CII	100÷440						
SC3CIIIn	100÷440						
SC2C	100÷440						
SC2CI	100÷440	144	135	138 ⁺¹	135	330	M.4
SC2CII	100÷440						
SC2CIIIn	100÷440						

Resistor boxes on page AN-42

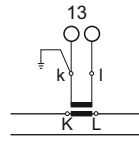


Connection diagrams

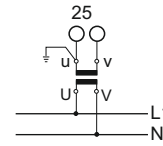
Single-phase



Connection: Direct input



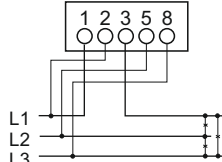
Current Transf.



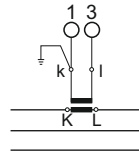
Transf. Voltage

Connection diagrams

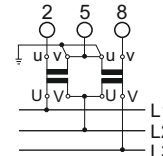
Balanced three-phase (100, 230 V)



Connection: Direct input



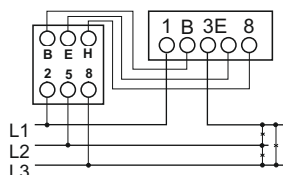
Current Transf.



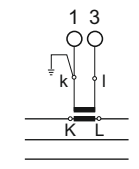
Transf. Voltage

Connection diagrams

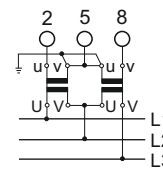
Balanced three-phase (400, 440 V)



Connection: Direct input



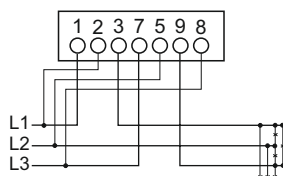
Current Transf.



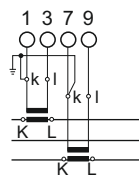
Transf. Voltage

Connection diagrams

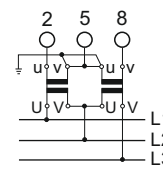
Unbalanced three-phase, 3 wire (110, 230 V)



Connection: Direct input



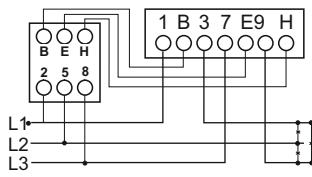
Current Transf.



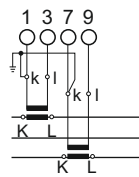
Transf. Voltage

Connection diagrams

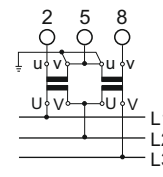
Unbalanced three-phase, 3 wire (400, 440 V)



Connection: Direct input



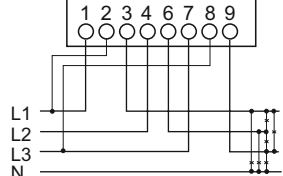
Current Transf.



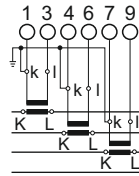
Transf. Voltage

Connection diagrams

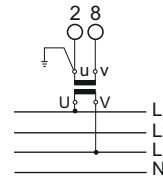
Unbalanced three-phase, 4 wire (100, 230 V)



Connection: Direct input



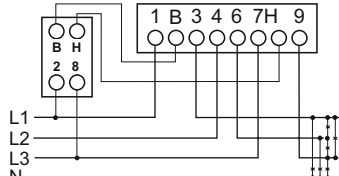
Current Transf.



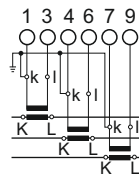
Transf. Voltage

Connection diagrams

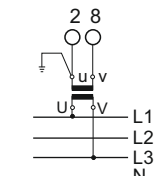
Unbalanced three-phase, 4 wire (400, 440 V)



Connection: Direct input



Current Transf.



Transf. Voltage

