



LOW VOLTAGE CURRENT TRANSFORMERS SW-SERIES

TECHNICAL INFORMATION

1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

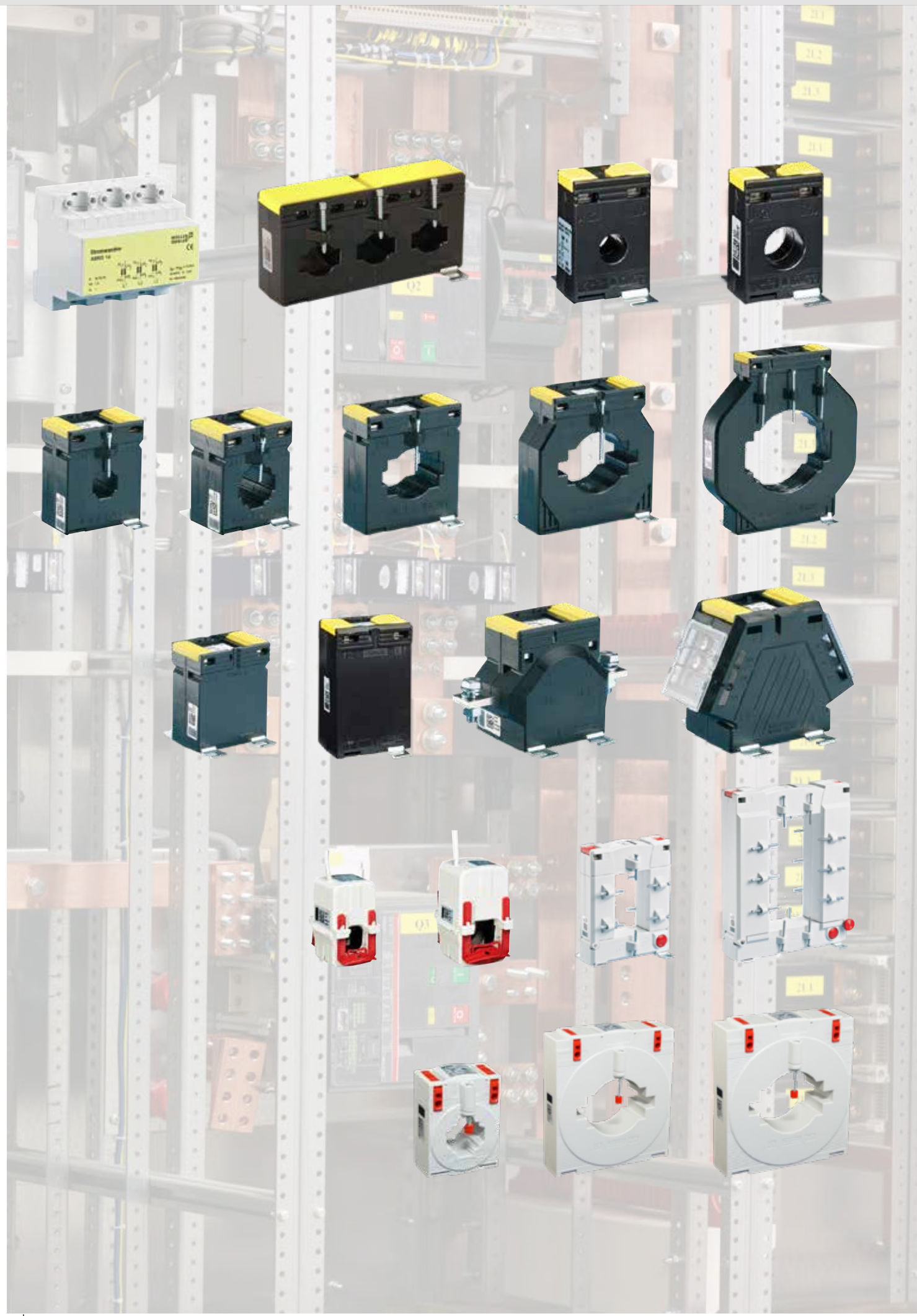
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General description current transformers



Application

Current transformers mainly are used where it is impossible or difficult to measure currents directly. They are special configurations of transformers which transform the primary current into a (mostly) lower secondary current and which separate (galvanically) both currents.

By means of the physical principal of saturation of the core material additional a protection of the secondary circuit from high currents produced in the event of system fault is enable.

The accuracy and safety of the connected devices is directly dependent on the quality of the current transformer used.



Special notes

Rated burden, secondary currents

In the case of current transformers, the rated burden that is made available at the secondary terminals is specified in VA. The selection of the rated burden is determined by the consumption of the connected measuring device and its feed line. In particular with secondary currents of 5 A and a long measuring line, considerable losses occur (see pages 7 and 8). In this case, current transformers with a secondary current of 1 A are preferable.

„Site-winding“ current transformer

With plug-in current transformers, the smaller the CT ratio, the lower the rated burden in VA. By passing through the primary conductor several times, a smaller CT ratio can be achieved with the rated burden (VA) unchanged. Example: CT with a ratio of 50/5 A at 1.5 VA rated burden - after threading the primary conductor 5 times, a CT with a ratio of 10/5 A at 1.5 VA rated burden results. In comparison to wound primary current transformers, this measure enables cost savings to be achieved.

Grounding of secondary terminals

According to VDE 0141, paragraph 5.3.4, current and voltage transformers should be grounded starting from measuring voltages of ≥ 3.6 kV. In case of low voltages (up to a measuring voltage of ≤ 1.2 kV), no grounding is necessary unless the transformer housing has large accessible metal surfaces.

Caution: Current transformers may conduct voltages which are dangerous to touch at the „open“ secondary terminals. Therefore, operating the transformers „open“ should be avoided under all circumstances.



Technical terms

Primary nominal current	Value of the primary current which characterizes the CT and for which it is dimensioned.
Secondary nominal current	Value of the secondary current which characterizes the CT and for which it is dimensioned.
Rated transformation ratio	Ratio of the primary current and secondary current. The ratio of a current transformer is indicated on the label as an unabridged fraction.
Rated burden	The burden is the impedance of the exterior secondary circuit including wires. The rated burden is decisive in determining the error limits of the current transformer. Usual the burden is expressed as its volt-ampere rating.
Load	Impedance of the secondary circuit, expressed in ohms with indication of the power factor.
Nominal burden	Value of the burden on which the accuracy information of the CT is based.
Nominal rated frequency	Value of the frequency on which the rating of the CT is based.
Accuracy class	Information for a current transformer that its measurement deviations under prescribed conditions are within defined limits.
Phase displacement (δ)	Phase displacement is the angle of the phase shift between the secondary and primary current. It is specified in angle minutes and positively calculated if the secondary size goes after the primary one.
Current error	The current error is the deviation of the nominal transmission multiplied by the secondary from that of the primary current. The current error is calculated positively, in the actual value of the secondary current exceeds the nominal value.

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$$F_i[\%] = \frac{(K_n I_s - I_p) \times 100}{I_p}$$

- F_i = Current error in %
- K_n = Current transformer ratio
- I_s = Actual secondary current, if I_p is under measurement conditions
- I_p = Actual primary current

Total measurement error	The total measurement error is the momentary value of the ratio of the r.m.s. difference from the secondary current multiplied with the transmission to the primary current, referred to the r.m.s. primary current.
Rated limit instrument primary current I_{pl}	is the primary current attached to the excess current limiting factor. In case of CTs for measuring it is defined that the total error is equal to or greater 10% of the secondary current which should appear according to the transmission
Instrument security factor FS	expresses the physical attribute of a CT to go into saturation
Rated continuous thermal current I_{cth}	is the primary continuous current which the CT will operate with, if it is connected to the rated burden without its temperature exceeding specified values.
Rated short time thermal current I_{th}	is the r.m.s. value of the primary current which the CT can withstand for 1 second with short-circuited secondary winding without incurring damage
Rated dynamic current I_{dyn}	is the peak value of the first amplitude of the primary current whose mechanical and electromagnetic impact is resisted by the transformer with short-circuited secondary winding.



Technical data

General data	Standards	DIN EN 60044-1, DIN 42 600, IEC 185, DIN EN 61 010 part 1
	Max. operating voltage	0,72 kV, Types CSW and XCSW 1,2 kV
	Test voltage	3 kV, Types CSW and XCSW 6 kV
	Rated frequency	50 / 60 Hz, 16 2/3 and 400 Hz on request
	Instrument security factor	FS5 up to 1500 A, FS10 from 1600 A and above
	Rated cont. thermal current I_{cth}	1,0 x IN, Types CSW and XCSW 1,2 x IN
	Rated short time thermal current I_{th}	60 x IN (1 s), max. 100 kA
	Rated dynamic current I_{dyn}	40 x IN (1 s), max. 100 kA at wound primary and summary CTs
	Rated dynamic current I_{dyn}	2,5 x I_{th}
	Operating temperature	-5 °C to +50 °C
	Storage temperature	-25 °C to +70 °C
	Insulation class	E
	Housing	Polycarbonate black or grey, acc. to UL 94 V 0, self extinguishing
	Connection	Combi-screws M5 x 10 on the secondary terminals

Marking of terminals for current transformers

The terminals for current transformers have standardized markings. These are in detail:

- For the primary terminals: **K - P1** and **L - P2**, the direction of energy is always from K-P1 to L-P2!
- For the secondary terminals: **k - s1** und **l - s2** (in lower case)

In case of summary CTs with several input circuits, the usual terminal markings „K“ and „L“ are preceded by the capital letters „A“, „B“, „C“ ... This serves to clearly differentiate the input circuits.

In case of input circuits with different main transformers, the main transformer with the highest transformation ratio is connected to the terminals „AK - AL“ and then in descending order to terminal „BK - BL“ etc.

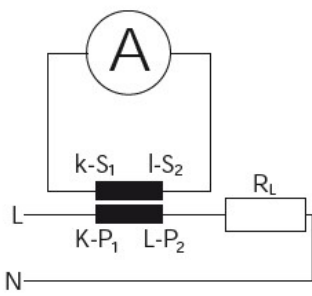
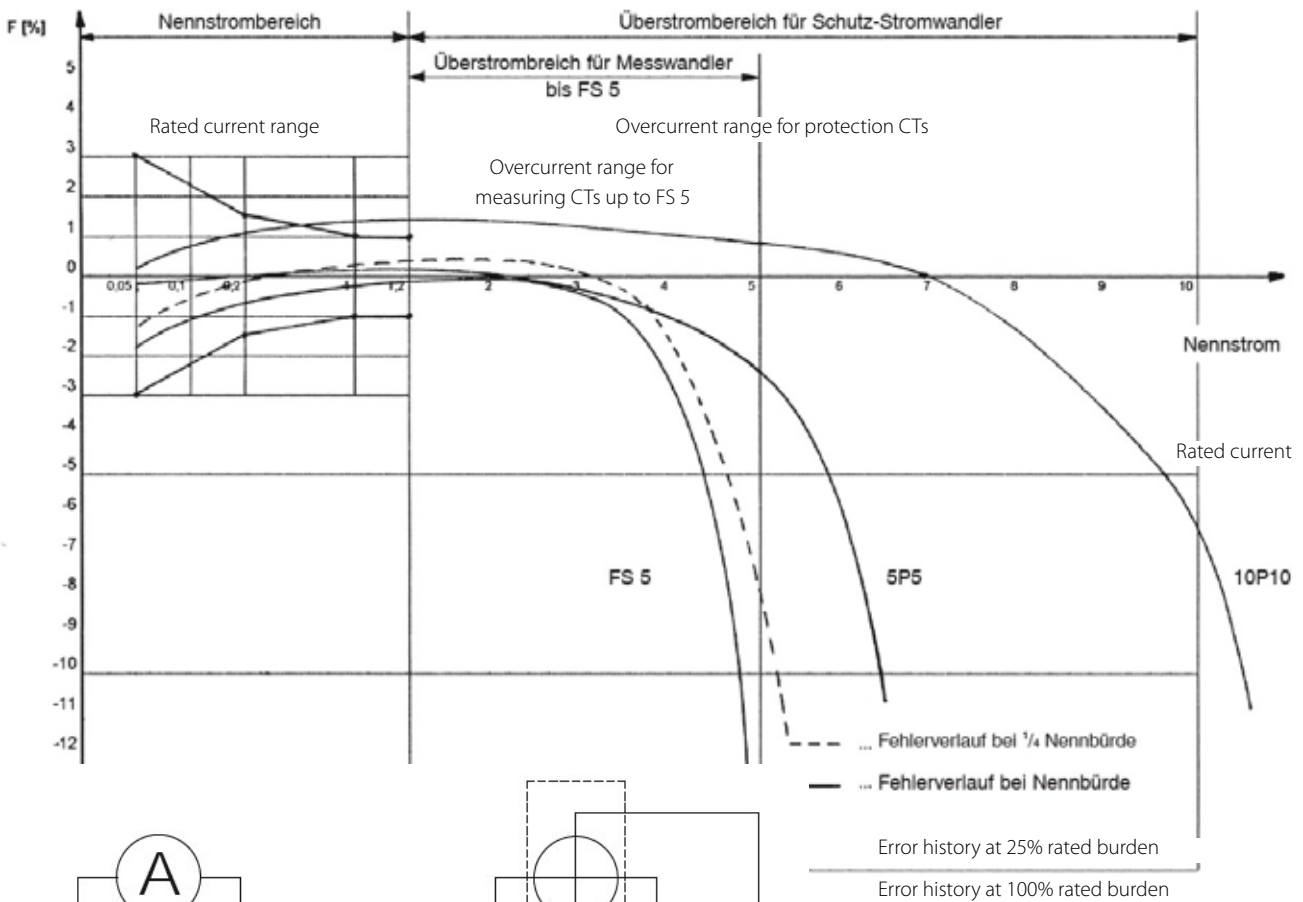
The correct connection assignment can also be found on the rating plate.

Error limits for current transformers

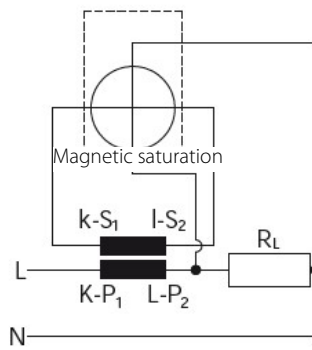
class 0,2 to 3, acc. to IEC 61869/2, version 09/2012

Klassengenauigkeit	Stromfehler $\pm \Delta$, bei					Fehlwinkel $\pm \Delta$, bei				
	$1,2 I_n$	$0,2 I_n$	$0,1 I_n$	$0,05 I_n$	$0,01 I_n$	$1,2 I_n$	$0,2 I_n$	$0,1 I_n$	$0,05 I_n$	$0,01 I_n$
	$1,0 I_n$	%	%	%	%	min	min	min	min	min
0,2	0,2	0,35		0,75		10	15		30	
0,2s	0,2	0,2		0,35	0,75	10	10		15	30
0,5	0,5	0,75		1,5		30	45		90	
0,5s	0,5	0,5		0,75	1,5	30	30		45	90
1	1	1,5		3		60	90		180	
3	3*									

* bei $0,5 I_n$ und thermischem Nenn-Dauerstrom



Measuring connection



Single phase energy meter connection

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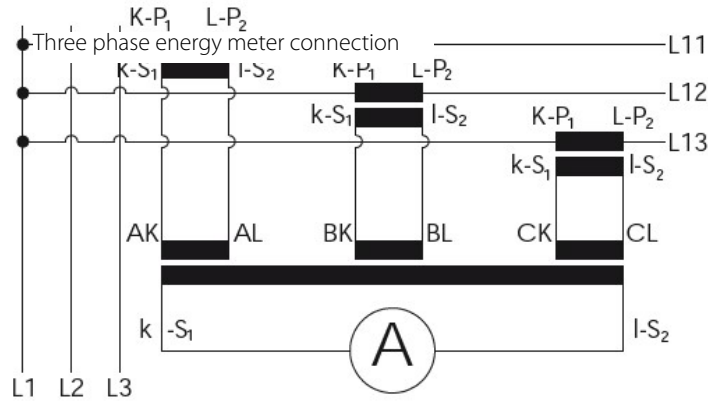
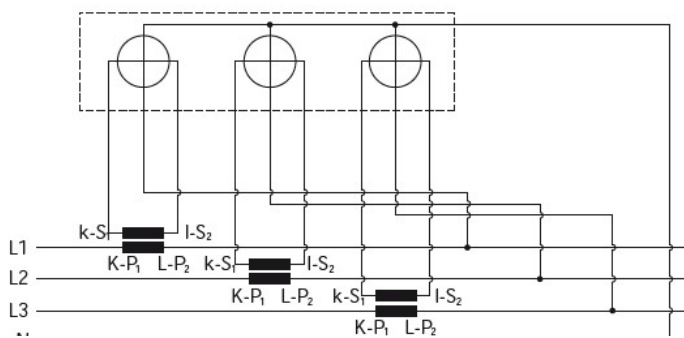
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relays

Summenwandler-Schaltung

- high measurement accuracy in the nominal current range
- protectiv function in the overcurrent range

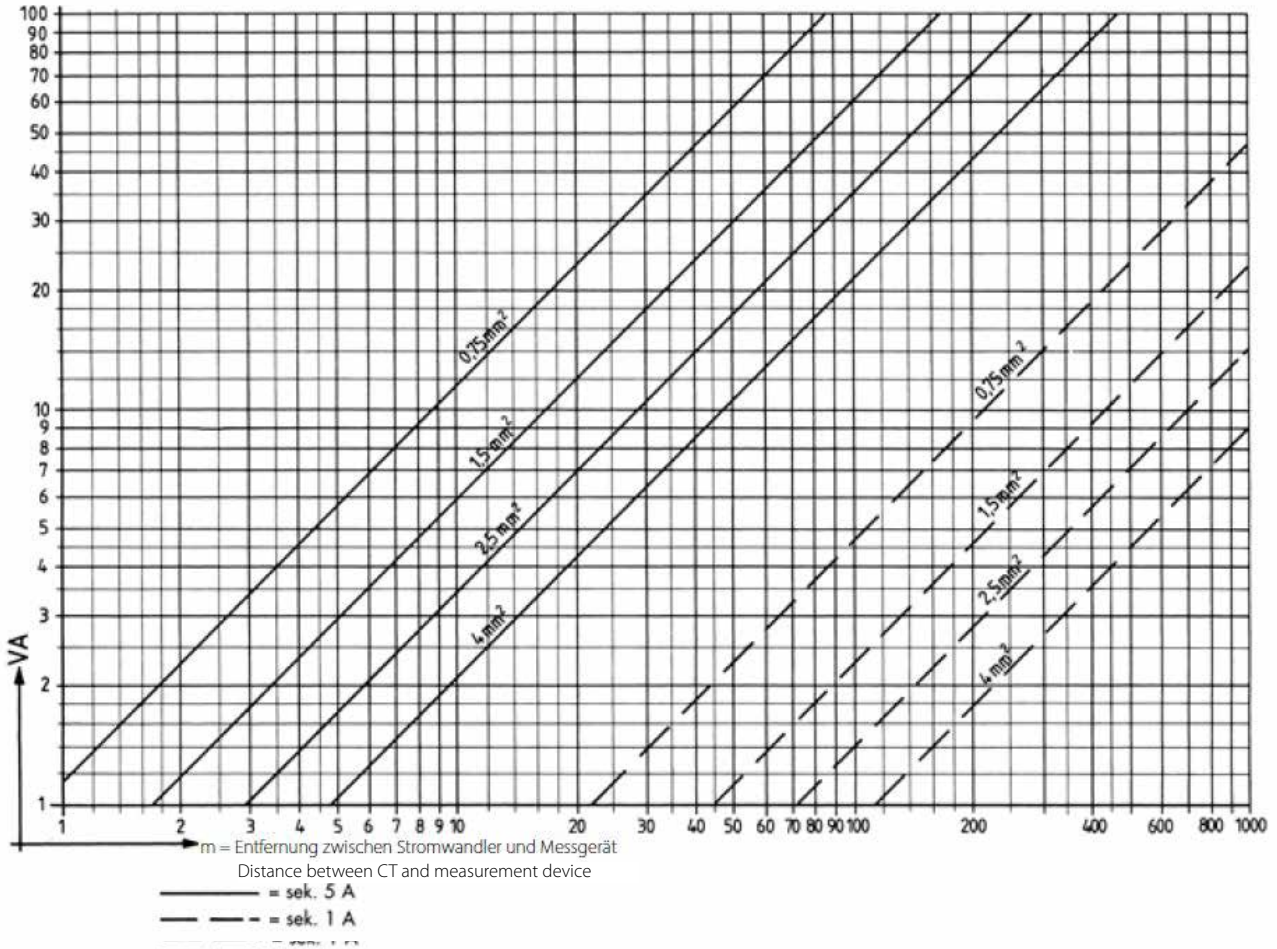
Connection of summary CTs

In order to meet these requirements, it is necessary that the range of services (the nominal apparent power) of the current transformer is adapted as close as possible to the actual power requirement of the measuring arrangement. To determine the actual power requirement, in addition to the internal power requirement of the connected measuring devices, the line losses of the measuring lines connected to the secondary circuit of the converter must also be taken into account.

Internal power requirement of typical measuring devices

Moving iron current meter 100 mm	0,700	-	1,50 VA
Moving coil current meter with rectifier	0,001	-	0,25 VA
Multiple current meter	0,005	-	5,00 VA
Current recorder	0,300	-	9,00 VA
Bimetall current meter	2,500	-	3,00 VA
Power meter	0,200	-	5,00 VA
Power recorder	3,000	-	12,00 VA
Power factor meter	2,000	-	6,00 VA
Power facotr recorder	9,000	-	16,00 VA
Energy meter	0,400	-	1,00 VA
N-Relay			14,00 VA
Overcurrent relay	0,200	-	6,00 VA
Overcurrent time relay	3,000	-	6,00 VA
Directional relay			10,00 VA
Bimetall relay	7,000	-	11,00 VA
Distance relay	1,000	-	30,00 VA
Differential relay	0,200	-	2,00 VA
Current transformer trip switch	5,000	-	150,00 VA
Regulator	5,000	-	180,00 VA

Auxiliary diagram for determining the power loss (secondary line)



Outside dimensions of cables and wires

Depending on the manufacturer, the diameters can differ from the information!

Cross section	Type NYM..	Type NY..	Type H07V-K
1 x 1,5 mm ²	5,2 mm	-	3,4 mm
1 x 2,5 mm ²	6,0 mm	-	4,1 mm
1 x 4 mm ²	6,7 mm	-	4,8 mm
1 x 6 mm ²	7,2 mm	-	5,3 mm
1 x 10 mm ²	8,6 mm	-	6,8 mm
1 x 16 mm ²	9,6 mm	-	8,1 mm
1 x 25 mm ²	12,5 mm	13,0 mm	10,2 mm
1 x 35 mm ²	-	14,0 mm	11,7 mm
1 x 50 mm ²	-	15,0 mm	13,9 mm
1 x 70 mm ²	-	17,0 mm	16,0 mm
1 x 95 mm ²	-	-	18,2 mm
1 x 120 mm ²	-	21,0 mm	20,2 mm
1 x 150 mm ²	-	-	22,5 mm
1 x 185 mm ²	-	25,0 mm	24,9 mm
1 x 240 mm ²	-	-	28,4 mm

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Three-phase CT sets

for round conductors Ø 13,5 mm / busbars 20 x 5 / 30 x 10 mm

ASRD 14 ASRD 205.37 / ARSD 310.37



Type ASRD 14

Width	105 mm
Depth	54 mm
Busbar size	-- mm
Round cond.	Ø 13,5 mm

Accessories incl. --

Weight approx. 300 g

Type ASRD 205.37

Width	115 mm
Depth	37 mm
Busbar size	20 x 5 mm
Round cond.	Ø 18 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 600 g

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Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
3 x 50	1	X	X	-	-	-	-	-	-
3 x 60	1,25	X	X	-	-	-	-	-	-
3 x 75	1,5	X	X	-	-	-	-	-	-
3 x 80	1,5	X	X	-	-	-	-	-	-
3 x 100	1	-	-	-	-	X	X	-	-
	2,5	X	X	-	-	-	-	-	-
3 x 125	2,5	X	X	X	X	-	-	-	-
3 x 150	1,25	-	-	-	-	X	X	-	-
	2,5	X	X	X	X	-	-	-	-
	3,75	X	X	-	-	-	-	-	-
3 x 160	1,5	-	-	-	-	X	X	-	-
3 x 200	1,5	-	-	-	-	X	X	-	-
3 x 250	2,5	-	-	-	-	X	X	-	-

Accessories: see page 37



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Type ASRD 310.37

Width	150 mm
Depth	37 mm
Busbar size	30 x 10 mm
Round cond.	Ø 22 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 600 g



Types and variants

Primary current in A	VA	class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
3 x 250	2,5	X	X	-	-
3 x 300	3,75	X	X	-	-
3 x 400	5	X	X	-	-
3 x 500	5	X	X	-	-
3 x 600	5	X	X	-	-

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Tube unit current transformers

for round conductors up to 14 / 21 mm

RSW 14 / RSW 21



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Types and variants

Type RSW 14

Width	45 mm
Depth	30 mm
Busbar size	--
Round cond.	Ø 14 mm
Accessories incl.	foot fastening brackets busbar fixing material secondary terminal cover
Weight	approx. 200 g

suitable for integrated installation in Slimline switchable fuse rails size XR00

Type RSW 21

Width	45 mm
Depth	30 mm
Busbar size	-- mm
Round cond.	Ø 21 mm
Accessories incl.	foot fastening brackets busbar fixing material secondary terminal cover
Weight	approx. 200 g

suitable for integrated installation in Slimline switchable fuse rails size XR00/1

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
40	1	X	X	-	-	-	-	-	-
50	1	X	X	-	-	X	X	-	-
	1,5	X	X	-	-	-	-	-	-
60	1	-	-	-	-	X	X	-	-
	1,25	-	-	-	-	X	X	-	-
	1,5	X	X	-	-	-	-	-	-
75	1,25	-	-	-	-	X	X	-	-
	1,5	X	X	-	-	X	X	-	-
80	1,25	-	-	-	-	X	X	-	-
	1,5	-	-	-	-	X	X	-	-
100	1,5	-	-	-	-	X	X	X	X
	2,5	X	X	-	-	X	X	-	-
125	1,5	-	-	-	-	X	X	X	X
	2,5	X	X	-	-	X	X	-	-
150	1,5	-	-	-	-	X	X	X	X
	2,5	X	X	-	-	X	X	X	X
	3,75	-	-	-	-	X	X	-	-
200	1,5	-	-	-	-	X	X	X	X
	2,5	-	-	-	-	X	X	X	X
	3,75	-	-	-	-	X	X	-	-
250	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	-	-
300	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	-	-

Accessories: see page 37



Plug-in current transformers

for busbars 20 x 10 mm

SW-S 2010 / SW 2010

Type SW-S 2010

Width	60 mm
Depth	30 / 48 mm
Busbar size	20 x 10 mm
Round cond.	Ø 19,2 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 450 g
Special design in class 0,25 and calibrated CTs on request.

Type SW 2010

Width	70 mm
Depth	40 / 58 mm
Busbar size	20 x 10 mm
Round cond.	Ø 20 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 500 g



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Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
40	1,5	-	-	-	-	X	X	-	-
50	1	X	X	-	-	-	-	-	-
	1,5	-	-	-	-	X	X	X	X
	2,5	-	-	-	-	-	X	-	-
60	1	X	X	-	-	-	-	-	-
	1,5	X	X	-	-	X	X	X	X
	2,5	-	-	-	-	X	X	-	-
75	1,5	X	X	-	-	-	-	-	-
	2,5	X	X	-	-	X	X	X	X
	3,75	-	-	-	-	X	X	-	-
80	1,5	X	X	-	-	-	-	-	-
	2,5	X	X	-	-	X	X	X	X
	3,75	-	-	-	-	X	X	-	-
100	1,5	X	X	X	X	-	-	-	-
	2,5	X	X	X	X	X	X	X	X
	5	-	-	-	-	X	X	-	-
125	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	X	X
150	2,5	X	X	X	X	X	X	X	X
	5	X	X	-	-	X	X	X	X
200	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	X	X	X	X
	10	X	X	-	-	X	X	-	-
250	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
300	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
400	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
500	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X

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Plug-in current transformers

for busbars PL 30 x 10 mm

SW-S 3010 / SW 3010

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Type SW-S 3010

Width	60 mm
Depth	30 / 48 mm
Busbar size	30 x 10 mm
Round cond.	Ø 26 mm
Accessories incl.	foot fastening brackets busbar fixing material secondary terminal cover

Weight approx. 300 g
Special design in class 0,25 and calibrated CTs on request.

Type SW 3010

Width	60 mm
Depth	40 / 58 mm
Busbar size	30 x 10 mm
Round cond.	Ø 28 mm
Accessories incl.	foot fastening brackets busbar fixing material secondary terminal cover

Weight approx. 350 g
Special design in class 0,25 and calibrated CTs on request.

Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
50	1	X	X	-	-	-	-	-	-
	1,25	-	-	-	-	X	X	-	-
	1,5	-	-	-	-	X	-	-	-
60	1	X	X	-	-	-	-	-	-
	1,25	-	-	-	-	X	X	-	-
	1,5	-	-	-	-	X	X	-	-
75	1	X	X	-	-	-	-	-	-
	1,5	X	X	-	-	X	X	-	-
	2,5	X	X	-	-	X	X	-	-
80	1,5	X	X	-	-	X	X	-	-
	2,5	X	X	-	-	X	X	-	-
	3,75	-	-	-	-	X	X	-	-
100	1,5	X	X	X	X	-	-	X	X
	2,5	X	X	X	X	X	X	X	X
	3,75	-	-	-	-	X	X	-	-
150	1,5	X	X	X	X	-	-	-	-
	2,5	X	X	X	X	X	X	X	X
	5	-	-	-	-	X	X	X	-
200	2,5	X	X	X	X	X	X	X	X
	5	X	X	X	-	X	X	-	X
	7,5	-	-	-	-	X	X	-	-
250	2,5	X	X	X	X	X	X	X	X
	5	X	X	X	X	X	X	X	X
	10	-	-	-	-	X	X	-	-
300	2,5	X	X	X	X	X	X	X	X
	5	X	X	X	X	X	X	X	X
	10	-	-	-	-	X	X	X	X
400	2,5	X	X	X	X	X	X	X	X
	5	X	X	-	X	X	X	X	X
	10	X	X	-	-	X	X	X	X
500	2,5	X	X	X	X	X	X	X	X
	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
600	5	X	X	X	X	X	X	X	X
	10	X	X	-	X	X	X	X	X
	15	X	X	-	-	X	X	X	X
750	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	-	-	X	X	X	X

Accessories: see page 37



Plug-in current transformers

for busbars 30 x 10 mm

SW-L 3010 / SW-K 3010



Dimensions
page 41

Type SW-L 3010

Width	60 mm
Depth	50 / 68 mm
Busbar size	30 x 10 mm
Round cond.	Ø 28 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 400 g
Special design as calibrated CTs on request.

Type SW-K 3010

Width	50 mm
Depth	50 / 68 mm
Busbar size	30 x 10 mm
Round cond.	Ø 28 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 400 g



Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
40	1	X	X	-	-	-	-	-	-
50	1,5	X	X	-	-	-	-	-	-
60	1	-	-	-	-	X	X	-	-
	1,5	X	X	-	-	-	-	-	-
	2,5	X	X	-	-	-	-	-	-
75	1,25	-	-	-	-	X	X	-	-
	1,5	X	X	X	X	-	-	-	-
	2,5	X	X	X	X	-	-	-	-
80	1,25	-	-	-	-	X	X	-	-
	1,5	X	X	X	X	-	-	-	-
	2,5	X	X	X	X	-	-	-	-
100	1,5	-	-	X	X	X	X	-	-
	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
125	1,5	-	-	-	-	X	X	-	X
	2,5	-	-	-	-	X	X	-	-
150	2,5	-	-	X	X	X	X	-	-
	5	X	X	X	X	-	-	-	-
200	2,5	-	-	X	X	X	X	X	X
	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
250	2,5	-	-	-	-	X	X	X	X
	5	X	X	X	X	-	X	-	-
	10	X	X	X	X	-	-	-	-
300	2,5	-	-	-	-	X	X	X	X
	5	X	X	X	X	X	X	-	-
	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-
400	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	-	-	-	-
	15	X	X	-	X	-	-	-	-
500	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-
600	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-
750	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-

Accessories: see page 37



Plug-in current transformers

for busbars PL 40 x 10 / 40 x 12 mm

SW-S 4010 / SW 4010

Type SW-S 4010

Width	60 mm
Depth	30 / 48 mm
Busbar size	40 x 12 / 32 x 18 mm
Round cond.	Ø 26 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 300 g

Type SW 4010

Width	70 mm
Depth	40 / 58 mm
Busbar size	40x10 / 2x30x5 mm
Round cond.	Ø 32 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 370 g
Special design in class 0,25 and calibrated CTs on request.

Dimensions
page 42

Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
50	1,5	-	-	-	-	X	X	-	-
60	1,5	-	-	-	-	X	X	-	-
75	1,5	-	-	-	-	X	X	-	-
80	2,5	-	-	-	-	X	X	-	-
100	1,5	X	X	-	-	X	X	X	X
	2,5	-	-	-	-	X	X	X	X
150	1,5	X	X	-	-	X	X	X	X
	2,5	X	X	-	-	X	X	X	X
	5	-	-	-	-	X	X	X	X
200	2,5	X	X	-	-	X	X	X	X
	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	-	-
250	2,5	X	X	-	-	X	X	X	X
	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	-	-
300	2,5	X	X	-	-	X	X	X	X
	5	X	X	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
400	2,5	X	-	-	-	X	X	X	X
	5	X	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
500	5	X	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
600	5	X	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	-	-
750	5	X	-	-	-	X	X	X	X
	10	X	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	-	X
800	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	-	-
1000	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X

Accessories: see page 37



Plug-in current transformers

for busbars PL 40 x 10 mm

SW-L 4010

Type SW-L 4010

Width	70 mm
Depth	50 / 68 mm
Busbar size	40x10 / 2x30x5 mm
Round cond.	Ø 32 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 450 g
Special design as calibrated CTs on request.



Dimensions
page 42



Types and variants

Primary current in A	VA	class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
60	1,5	X	X	-	-
75	1,5	X	X	-	-
	2,5	X	X	-	-
80	1,5	X	X	-	-
	2,5	X	X	-	-
100	2,5	X	X	-	-
	3,75	X	X	-	-
150	5	X	X	-	-
	7,5	X	X	-	-
200	5	X	X	X	X
	10	X	X	-	-
250	10	X	X	X	X
	15	X	X	-	-
300	10	X	X	X	X
	15	X	X	-	-
400	10	X	X	X	X
	15	X	X	X	X
500	10	X	X	X	X
	15	X	X	X	X
600	10	X	X	X	X
	15	X	X	X	X
750	10	X	X	X	X
	15	X	X	X	X
800	10	X	X	X	X
	15	X	X	-	-
1000	10	X	X	X	X
	15	X	X	-	-

Accessories: see page 37

1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

9 Shunts

10 Test apparatus



Plug-in current transformers

for busbars 50 x 12 / 2 x 50 x 10 / 60 x 10 mm

SW-S 5010 / SW 5010

Type SW-S 5010

Width	85 mm
Depth	40 / 58 mm
Busbar size	50x12 / 2x40x10 mm
Round cond.	Ø 44 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 450 g
Special design in class 0,25 and calibrated CTs on request.

Type SW 5010

Width	85 mm
Depth	40 / 58 mm
Busbar size	60x10/30x40/2x50x10 mm
Round cond.	Ø 44 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 450 g

Dimensions
page 43

Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
100	1,5	X	X	-	-	-	-	-	-
150	1,5	X	X	X	X	-	-	-	-
	2,5	X	X	X	X	-	-	-	-
200	2,5	X	X	X	X	X	X	-	-
	5	X	X	X	X	-	-	-	-
250	2,5	-	-	-	-	X	X	-	-
	5	X	X	X	X	X	X	-	-
	10	X	X	-	-	-	-	-	-
300	2,5	-	-	X	X	X	X	X	X
	5	X	X	X	X	X	X	-	-
	10	X	X	-	-	-	-	-	-
400	2,5	-	-	X	X	X	X	X	X
	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	-	-
500	5	-	-	X	X	X	X	X	X
	10	X	X	X	X	X	X	-	-
	15	X	X	X	-	X	X	-	-
600	5	-	-	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
750	5	-	-	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
800	5	-	-	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
1000	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	-	-	-	-	X	X	-	-
1200	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	-	-	X	X	-	-
1250	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	-	-	-	-	-	-

Accessories: see page 37



Plug-in current transformers

for busbars PL 60 x 13 / 60 x 30 mm

SW 6010 / SW 6030



Dimensions
page 43/44

Type SW 6010

Width	95 mm
Depth	40 / 58 mm
Busbar size	63x10 / 2x50x10 mm
Round cond.	Ø 44 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 450 g
Special design in class 0,25 and calibrated CTs on request.

Type SW 6030

Width	95 mm
Depth	40 / 58 mm
Busbar size	60x30 / 50x40 mm
Round cond.	Ø 44 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 450 g



Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
200	1,5	X	X	X	X	-	-	-	-
	2,5	X	X	X	X	-	-	-	-
250	2,5	X	X	X	X	-	-	-	-
	5	X	X	-	-	-	-	-	-
300	1,5	-	-	-	-	X	X	X	X
	2,5	X	X	X	X	X	X	X	X
	5	X	X	X	X	-	-	-	-
400	2,5	X	X	X	X	X	X	X	X
	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	-	-	-	-
500	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	-	-
	15	X	X	-	-	-	-	-	-
600	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
750	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
800	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
1000	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
1200	5	-	-	-	-	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	-	-	-	-
1250	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	-	-	-	-
1500	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	-	-	-	-
1600	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	-	-	-	-

Accessories: see page 37



Plug-in current transformers

for busbars PL 80 x 10 / 100 x 10 mm

SW 8010 / SW 10010



Dimensions
page 44/45

Type SW 8010

Width	120 mm
Depth	40 / 58 mm
Busbar size	80x10/60x30/2x60x10 mm
Round cond.	Ø 55 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 500 g
Special design in class 0,25 and calibrated CTs on request.

Type SW 10010

Width	130 mm
Depth	40 / 58 mm
Busbar size	100x10/2x80x10 mm
Round cond.	Ø 70 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 500 g



Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
400	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
	10	X	X	-	-	-	-	-	-
500	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	-	-
600	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	-	-
750	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	-	-	-	-
800	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
1000	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
1200	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
	30	-	-	-	-	X	X	-	-
1250	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
	30	-	-	-	-	X	X	-	-
1500	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	-	-	X	X	-	-
1600	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	-	-	X	X	-	-
2000	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	-	-	X	X	X	X

Accessories: see page 37



Plug-in current transformers

for busbars PL 100 x 55 / 2 x 100 x 10 mm

SW 10055 / SW 20010



Dimensions
45/46

Type SW 10055

Width	129 mm
Depth	60 / 78 mm
Busbar size	100 x 55 mm
Round cond.	Ø 55 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 1000 g
Special design in class 0,25 and calibrated CTs on request.

Type SW 20010

Width	172 mm
Depth	30 / 48 mm
Busbar size	2x100x10 / 3x80x10 mm
Round cond.	Ø 85 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 750 g



Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
600	5	X	X	X	X	-	-	-	-
	10	X	X	-	-	-	-	-	-
750	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	-	-
800	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	-	-	-	-	X	X	-	-
1000	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
1200	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
1250	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
1500	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	-	-
1600	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	-	-
2000	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X
2500	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X
3000	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X

Accessories: see page 37

- 1 Measuring transducers
- 2 Mains and limit monitoring
- 3 Energy meters
- 4 Panel meters digital
- 5 Panel meters analog
- 6 Meas. instruments for top hat rail mounting
- 7 Universal measuring instruments
- 8.1 Current transformers SW-series
- 9 Shunts
- 10 Test apparatus



Plug-in current transformers

for busbars PL 123 x 30 / 128 x 38 mm

SW 12330 / SW 12838



Dimensions
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Type SW 12330

Width	172 mm
Depth	30 / 48 mm
Busbar size	123x30 / 3x100x10 mm
Round cond.	Ø 100 mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 800 g
Special design in class 0,25 and calibrated CTs on request.

Type SW 12838

Width	100 mm
Depth	40 / 58 mm
Busbar size	128 x 38 mm
Round cond.	-- mm

Accessories incl. foot fastening brackets
busbar fixing material
secondary terminal cover

Weight approx. 900 g



Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
400	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	-	-
500	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	-	-
600	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	-	-
750	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	-	-
800	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	-	-
1000	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
1200	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
1250	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	-	-
1500	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	X	X	X	X
	30	-	-	-	-	X	X	-	-
1600	10	X	-	-	-	-	-	-	-
	15	X	-	-	-	-	-	-	-
1800	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-
2000	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	-	-	-	-
2500	15	X	X	X	X	X	X	X	X
	30	X	X	X	X	-	-	-	-
3000	15	X	X	X	X	-	-	-	-
	30	X	X	X	X	-	-	-	-

Accessories: see page 37



Wound primary CT

for direct connection

WSWK / WSWK-N



Dimensions page 48



Types and variants

Type WSWK

Width	70 mm
Depth	40 / 45 mm
Busbar size	-- mm
Round cond.	-- mm
Accessories incl.	foot fastening brackets secondary terminal cover
Weight	approx. 440 g

Type WSWK-N

Width	70 mm
Depth	50 / 55 mm
Busbar size	-- mm
Round cond.	-- mm
Accessories incl.	foot fastening brackets secondary terminal cover
Weight	approx. 500 g

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
1	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
2,5	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
5	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
10	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
15	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
20	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
25	2,5	X	X	X	X	-	-	-	-
	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
30	2,5	X	X	X	X	X	X	X	X
	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
40	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
50	2,5	-	-	-	-	X	X	X	X
	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X

Accessories: see page 37



Wound primary CTs

for direct connection

WSWS



Dimensions
page 48

Type WSWS

Width	70 mm (with busbar 136 mm)
Depth	60 mm
Busbar size	-- mm
Round cond.	-- mm

Accessories incl. foot fastening brackets
secondary terminal cover
terminal screws busbar

Weight approx. 580 g



Types and variants

Primary current in A	VA	class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
25	5	X	X	X	X
	10	X	X	X	X
	15	-	X	-	-
30	5	X	X	X	X
	10	X	X	X	X
	15	X	X	-	-
40	5	X	X	X	X
	10	X	X	X	X
	15	X	X	-	-
50	5	X	X	X	X
	10	X	X	X	X
	15	X	X	-	-
60	5	X	X	X	X
	10	X	X	X	X
	15	X	X	-	-
75	5	X	X	X	X
	10	X	X	X	X
	15	X	X	-	-
80	5	X	X	X	X
	10	X	X	X	X
	15	X	X	-	-
100	5	X	X	X	X
	10	X	X	X	X
	15	X	X	-	-

Accessories: see page 37

1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

9 Shunts

10 Test apparatus

General description summary current transformers



Application

Summary current transformers are suitable for the summation of several synchronized alternating currents with similar phases but with differing load phase shifts. It is also possible to have the summation of currents with varied nominal voltages of similar phase positions. These measurements cannot be used for tariff applications, as the existing voltage differences are recorded as errors.

With the counter connection of the main transformer to the summation current transformer, it is possible to receive secondary currents which are proportional to the differences of the primary input currents. The built-in technical know-how enables the summary current transformers to add secondary currents of varying nominal transmissions from the main transformer.

Connection of main transformers with similar transmission ratios

It is irrelevant for the main transformers with similar nominal transmission ratios, to which primary circuit of the summary current transformer the connection is made.

Connection of main transformers with different transmission ratios

With main transformers of different nominal transmission ratios, care must be taken to adhere to the assigned connection to the terminals of the summary current transformers. Is the current flow in the main transformer interrupted, the secondary circuit of the main transformer must neither be short-circuited nor be connected to the summary current transformer, or to the main transformer.

Summary current transformers with unallocated primary circuits must remain open for a later connection to an additional main transformer. The secondary output current of the summary current transformer is in this instance lower than the secondary nominal current of the summary current transformer by a quantity equal to the ratio of the primary nominal current of this "missing" main transformer and the sum of all the primary nominal currents of the main transformer.

A measuring device with a measuring range equal to the secondary nominal current of the total current transformer can be used to display the „total current“.

The ratio of the primary current of a main transformer to the sum of the primary currents of all main current transformers the ratio must not exceed 1:8.



Calculation and interpretation of summary current transformers

Example:

Actual situation:	3 transmission ratios	1000/5 A 800/5 A <u>600/5 A</u> 2400/5 A
Burden:	1 current meter 1 power recorder	
Locking for:	Summary CT and the VA power of the individual main transformers	
Required active performance of the summary current transformer:	Current meter Power recorder Measurement line loss Consumption summary CT Interim result	1,5 VA 7,0 VA 1,5 VA <u>4,0 VA</u> 14,00 VA

The individual transformer must provide its VA share from this 14.0 VA corresponding to its ratio to the "total transmission". Consideration must also be given to the respective power loss between the main transformer and the summary transformer plus other possible losses.

1. Main transformer 1000/5 A	<u>1000</u> 2400 x 14,0 = 5,83 VA + additional possible losses
2. Main transformer 800/5 A	<u>800</u> 2400 x 14,0 = 4,67 VA + additional possible losses
3. Main transformer 600/5 A	<u>600</u> 2400 x 14,0 = 3,50 VA + additional possible losses

The VA values of the main transformers are to be rounded up to the corresponding VA values in our charts.



Summary current transformers

for 2 to 8 primary circuits

SSW 2 to SSW 8

Type SSW 2 to 3

Width	127 mm
Depth	57 mm
No. of inputs	2 or 3

Accessories incl. foot fastening brackets
secondary terminal cover
primary terminal cover

Weight approx. 550 g
If different main circuit inputs are use, these must be specified when ordering!

Type SSW 4 bis 8

Wandlerbreite	156 mm
Wandlertiefe	65 mm
Primärkreise	4; 5; 6; 7; 8

Zubehör inkl. Fußbefestigungswinkel
Sekundärklemmen-abdeckung
Primärklemmen-abdeckung

Gewicht ca. 750 g
Bei unterschiedlichen Hauptwandler-Übersetzungen müssen diese bei Bestellung unbedingt angegeben werden!



Dimensions page 49



Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
2 x 1	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-
2 x 5	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-
3 x 1	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-
3 x 5	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	-	-	-	-
	15	X	X	X	X	-	-	-	-
4 x 1	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
4 x 5	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
5 x 1	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
5 x 5	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
6 x 1	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
	30	-	-	-	-	X	X	-	-
6 x 5	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
	30	-	-	-	-	X	X	-	-
7 x 1	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
	30	-	-	-	-	X	X	-	-
7 x 5	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
	30	-	-	-	-	X	X	-	-
8 x 1	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	-
	30	-	-	-	-	X	X	-	-
8 x 5	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
	30	-	-	-	-	X	X	-	-

Accessories: see page 37



Split core current transformers

for round conductors up to 18,5 / 32,5 mm

SWU 18 / SWU 32



Dimensions page 50



Types and variants

Type SWU 18

Width	41,6 mm
Depth	55 / 68 mm
Busbar size	--
Round cond.	Ø 18,5 mm
Accessories incl.	fixing brackets connection cable 2x0,75 ² , length 2,5 m
Weight	approx. 150 g

Type SWU 32

Width	59,2 mm
Depth	75 / 90 mm
Busbar size	--
Round cond.	Ø 32,5 mm
Accessories incl.	fixing brackets connection cable 2x0,75 ² , length 2,5 m
Weight	approx. 220 g

Primary current in A	VA	class 3		class 1		class 3		class 1	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
50	1	-	X	-	-	-	-	-	-
75	1	-	X	-	-	-	-	-	-
100	1,25	-	X	-	-	-	-	-	-
	1,5	-	-	-	-	X	-	-	-
	2,5	-	-	-	-	-	X	-	-
125	1,5	-	X	-	-	-	-	-	-
	2,5	-	-	-	-	X	-	-	-
	3	-	-	-	-	-	X	-	-
150	2	-	X	-	-	-	-	-	-
	3	-	-	-	-	X	X	-	-
200	1	-	-	-	X	-	-	-	-
	3	-	X	-	-	X	-	-	-
	5	-	-	-	-	-	X	-	-
250	1,5	-	-	-	X	-	-	-	-
	3	-	-	-	-	X	-	-	-
	4	-	X	-	-	-	-	-	-
	5	-	-	-	-	-	X	-	-
300	2,5	-	-	-	-	-	-	X	-
	5	-	-	-	-	-	-	-	X
400	5	-	-	-	-	-	-	X	X
500	5	-	-	-	-	-	-	X	X
600	5	-	-	-	-	-	-	X	X



Split core current transformers

for busbars 20 x 30 / 50 x 80 mm

SWU 2030 / SWU 5080

Type SWU 2030

Width	93 mm
Depth	34 / 58 mm
Busbar size	20 x 30 mm
Round cond.	Ø 20 mm
Accessories incl.	foot fastening brackets busbar fixing material secondary terminal cover
Weight	approx. 850 g

Type SWU 5080

Width	125 mm
Depth	34 / 58 mm
Busbar size	50 x 80 mm
Round cond.	Ø 50 mm
Accessories incl.	foot fastening brackets busbar fixing material secondary terminal cover
Weight	approx. 1080 g



Dimensions page 51



Types and variants

Primary current in A	VA	class 3		class 1		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
100	1,25	X	X	-	-	-	-	-	-
150	1,5	X	X	-	-	-	-	-	-
200	2,5	X	X	-	-	-	-	-	-
250	1,5	-	-	X	X	X	X	-	-
300	2,5	-	-	-	-	X	X	-	-
400	3,75	-	-	X	X	-	-	-	-
400	1	-	-	-	-	-	-	X	X
	2,5	-	-	-	-	X	X	-	-
	5	X	X	-	-	-	-	-	-
500	2,5	-	-	-	-	-	-	X	X
	5	-	-	-	-	X	X	-	-
600	2,5	-	-	-	-	-	-	X	X
	5	-	-	-	-	X	X	-	-
750	2,5	-	-	-	-	-	-	X	X
	5	-	-	-	-	X	X	-	-
800	2,5	-	-	-	-	-	-	X	X
	7,5	-	-	-	-	X	X	-	-
1000	5	-	-	-	-	-	-	X	X
	10	-	-	-	-	X	X	-	-

1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

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Split core current transformers

for busbars PL 80 x 120 / 80 x 160 mm

SWU 80120 / SWU 80160



Dimensions page 52



Type SWU 80120

Width	155 mm
Depth	34 / 58 mm
Busbar size	80 x 120 mm
Round cond.	Ø 80 mm
Accessories incl.	foot fastening brackets busbar fixing material secondary terminal cover
Weight	approx. 1320 g

Type SWU 80160

Width	195 mm
Depth	34 / 58 mm
Busbar size	80 x 160 mm
Round cond.	Ø 80 mm
Accessories incl.	foot fastening brackets busbar fixing material secondary terminal cover
Weight	approx. 1350 g

Types and variants

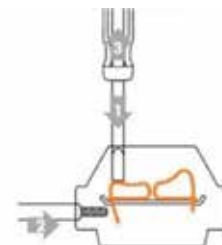
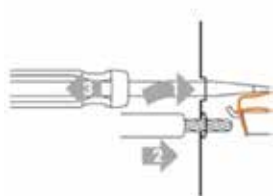
Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
250	1,5	X	X	-	-	-	-	-	-
300	2,5	X	X	-	-	-	-	-	-
400	2,5	X	X	-	-	-	-	-	-
500	2,5	-	-	X	X	-	-	-	-
	5	X	X	-	-	-	-	-	-
600	2,5	-	-	X	X	-	-	-	-
	5	X	X	-	-	-	-	-	-
750	2,5	-	-	X	X	-	-	-	-
	5	X	X	-	-	-	-	-	-
800	2,5	-	-	X	X	-	-	-	-
	7,5	X	X	-	-	-	-	-	-
1000	5	-	-	X	X	-	-	-	-
	10	X	X	-	-	X	X	X	X
	15	-	-	-	-	X	X	-	-
1200	5	-	-	X	X	-	-	-	-
	10	X	X	-	-	X	X	X	X
	15	-	-	-	-	X	X	-	-
1250	7,5	-	-	X	X	-	-	-	-
	15	X	X	-	-	-	-	-	-
1500	7,5	-	-	X	X	-	-	-	-
	10	-	-	-	-	X	X	X	X
	15	X	X	-	-	X	X	X	X
1600	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
2000	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
2500	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X
3000	15	-	-	-	-	X	X	X	X
	30	-	-	-	-	X	X	-	-
4000	15	-	-	-	-	X	X	X	X
	30	-	-	-	-	X	X	X	X
5000	15	-	-	-	-	X	X	X	X
	30	-	-	-	-	X	X	X	X

Current transformers for industrial use with screwless connection technology „Cage Clamp“



Application

The current transformer series are characterized by their screwless connection technology with spring-loaded terminals „Cage Clamp“. This innovative connection technology enables the secondary lines to be connected directly to the secondary terminals both from the front and from above. Both solid and flexible cables up to a cross-section of 4 mm² can be connected directly without wire end sleeves. **The current transformers of the CSW type are UL-certified.**



With the „Quick-Fix“ quick fastenings, the current transformers can also be fixed to the primary cables or rails using screwless clamping technology.



Available series

The current transformers with screwless connection technology are available in the following series:

Type CSW	Standard plug-in current transformers For busbars 30 x 10 up to 100 x 10 mm Accuracy class 0,5 - 1 - (3)
Type ECTB	Standard plug-in current transformers with MID approval Extension of the type CSW For busbars 30 x 10 up to 100 x 10 mm Accuracy class 0,2S - 0,2 - 0,5S - 0,5 You can find detailed technical documents at www.mueller-ziegler.de
Type XCSW	Current transformers for power quality applications up to 20 kHz (description see page 31) High precision harmonic measurement up to 20 kHz For busbars 30 x 10 up to 100 x 10 mm Accuracy class 0,2S - 0,2 - 0,5S - 0,5 - 1 You can find detailed technical documents at www.mueller-ziegler.de

Technical data

General data	Standards	DIN EN 60044-1, DIN 42 600, IEC 185, DIN EN 61 010 part 1
	Max. operating voltage	1,2 kV, use in 690 V networks possible
	Test voltage	6 kV
	Rated frequency	50 / 60 Hz, XCSW up to 20 kHz
	Rated cont. thermal current I _{cth}	1,2 x I _N
	Rated dynamic current I _{dyn}	2,5 x I _{th}
	Connection	spring loaded terminals up to 4 mm ²
	UL-certified	Certification no. 20100426-E336996

Current transformers for power quality applications *up to 20 kHz* with screwless connection technology „Cage Clamp“ Type XCSW



Application / Description

New measuring requirements for inductive current transformers in the area of low voltage and changes in the generation and consumer structure require new ways of current measurement and transmission through current transformers. The current transformers of the XCSW series for power quality applications up to 20 kHz meet these requirements.

Over the last few years, the proportion of renewable energy has grown massively. Wind, biomass, photovoltaic and hydroelectric plants now make up approximately 30% of the energy mix. Unlike in conventional nuclear or coal-fired power stations, where all synchronous generators are used to produce electricity, here inverters or frequency converters are used. As such, it is not always possible to achieve a clean sine wave.

The distortions are caused by the switching semiconductor elements in the inverter. Harmonics generated in this way are whole multiples of the first harmonic and can extend far into the single-digit kilohertz range. The total harmonic distortion (THD) factor¹ specifies the undesirable distortion ratio of the 50 Hz sinusoidal oscillation and regularly reaches between 10 and 30%.

In addition to the harmonics produced by inverters on the generator side, there have also been changes on the consumer side in recent years. Non-linear consumers such as LED or energy-saving lamps are pushing linear ones, like traditional incandescent bulbs, out of our daily lives almost completely. Plug-in power supply units for mobile phones and laptops are no longer made from small transformers either, but from semiconductor circuits known as switched-mode power supplies. It would not be possible to create such small, light power supply units any other way. But these benefits are set against one big disadvantage: the current is drawn from the public grid not as a sinusoidal waveform, but in pulses. The figure below illustrates this:

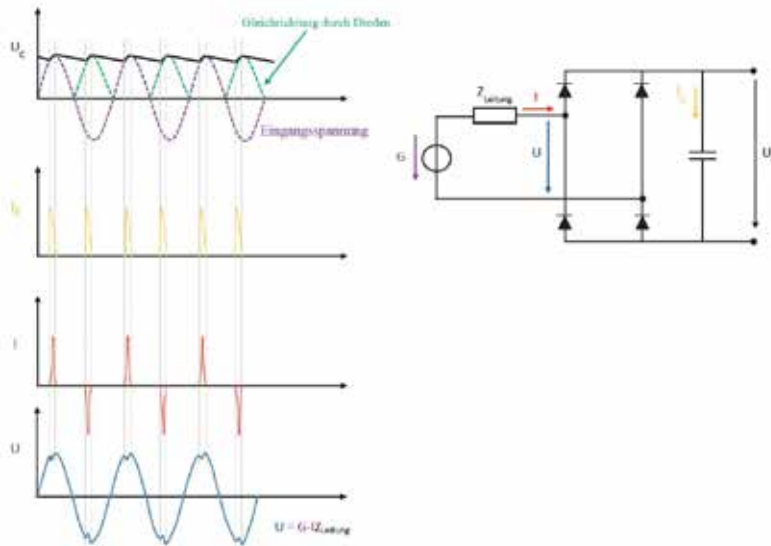


Figure: Bridge rectifier with pulsed current draw

The filter capacitor shown in the diagram not only smooths the required output voltage, it is also recharged in pulses by the rectifier diodes. These steep current peaks generate reactive power on the one hand, and harmonics on the other.

Grid operators are primarily interested in the economic effects of harmonics. When it comes to harmonic currents, the most important phenomena are as follows:

- Overloading of neutral conductors
- Overheating of transformers
- False tripping of circuit breakers / miniature circuit breakers
- Overstressing of power-factor correction capacitors
- Skin effects

The versions and dimensions of type XCSW are identical to type CSW. Detailed technical information, functional description and selection tables for the type XCSW current transformers can be found as PDF files for download on our website



Plug-in current transformers

for busbars 30 x 10 / 40 x 10 mm

CSW 31 / CSW 41



Dimensions
page 53



Types and variants

Type CSW 31

Width	60 mm
Depth	35 / 52 mm
Busbar size	30x10 / 25x12 mm
Round cond.	Ø 25,7 mm
Accessories incl.	foot fastening brackets busbar fixing material
Weight	approx. 250 g

Special design as calibrated CTs on request.

Type CSW 41

Width	70 mm
Depth	35 / 52 mm
Busbar size	40x10 / 30x15 mm
Round cond.	Ø 31,8 mm
Accessories incl.	foot fastening brackets busbar fixing material
Weight	approx. 280 g

Special design as calibrated CTs on request.

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
60	1,25	X	X	-	-	-	-	-	-
75	2,5	X	X	-	-	-	-	-	-
80	2,5	X	X	-	-	-	-	-	-
100	2,5	X	X	-	-	-	-	-	-
125	1,5	-	-	X	X	-	-	-	-
150	2,5	X	X	-	-	X	X	-	-
	5	-	-	X	X	-	-	-	-
200	1,5	-	-	-	-	-	-	X	X
	2,5	-	-	X	X	-	-	-	-
250	5	X	X	-	-	X	X	-	-
	2,5	-	-	-	-	-	-	X	X
300	5	X	X	X	X	X	X	-	-
	2,5	-	-	-	-	-	-	X	X
400	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	-	-	-	-
500	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	-	-
600	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
750	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	-
800	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
1000	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X

Accessories: see page 309



Plug-in current transformers

for busbars 50 x 12 / 63 x 10 mm

CSW 51 / CSW 61

Type CSW 51

Width	85 mm
Depth	35 / 52 mm
Busbar size	50x12 / 40x30 mm
Round cond.	Ø 43,7 mm

Accessories incl. foot fastening brackets
busbar fixing material

Weight approx. 380 g
Special design as calibrated CTs on request.

Type CSW 61

Width	95 mm
Depth	35 / 52 mm
Busbar size	63x10 / 50x30 mm
Round cond.	Ø 43,7 mm

Accessories incl. foot fastening brackets
busbar fixing material

Weight approx. 420 g
Special design as calibrated CTs on request.



Dimensions
page 54



Types and variants

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
100	1,25	X	X	-	-	-	-	-	-
125	2,5	X	X	-	-	-	-	-	-
150	2,5	X	X	-	-	-	-	-	-
200	1,5	-	-	X	X	-	-	-	-
	2,5	-	-	-	-	X	X	X	X
	5	X	X	-	-	-	-	-	-
250	2,5	-	-	X	X	-	-	X	X
	5	X	X	-	-	X	X	-	-
300	2,5	-	-	X	X	-	-	-	-
	5	X	X	-	-	X	X	X	X
400	5	X	X	X	X	X	X	X	X
	10	X	X	-	-	-	-	-	-
500	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	-	-	-	-
600	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	-	-	-	-
750	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
800	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
1000	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
1200	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
1250	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
1500	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X
1600	5	-	-	-	-	X	X	X	X
	10	-	-	-	-	X	X	X	X

Accessories: see page 309

1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

9 Shunts

10 Test apparatus



Plug-in current transformers

for busbars 80 x 10 / 100 x 10 mm

CSW 81 / CSW 101



Dimensions page 55



Types and variants

Type CSW 81

Width	120 mm
Depth	35 / 52 mm
Busbar size	80x10 / 60x30 mm
Round cond.	Ø 54,7 mm

Accessories incl. foot fastening brackets
busbar fixing material

Weight approx. 480 g
Special design as calibrated CTs on request.

Type CSW 101

Width	130 mm
Depth	35 / 52 mm
Busbar size	100x10 / 80x30 mm
Round cond.	Ø 70 mm

Accessories incl. foot fastening brackets
busbar fixing material

Weight approx. 550 g
Special design as calibrated CTs on request.

Primary current in A	VA	class 1		class 0,5		class 1		class 0,5	
		net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A	net € sec. 5 A	net € sec. 1 A
400	2,5	-	-	X	X	-	-	X	X
	5	X	X	-	-	X	X	-	-
500	2,5	-	-	X	X	-	-	-	-
	5	X	X	-	-	X	X	X	X
600	5	X	X	X	X	-	-	X	X
	10	-	-	-	-	X	X	-	-
750	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
800	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
1000	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
1200	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
1250	5	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X
1500	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	-	-	-	-	X	X	X	X
1600	5	X	X	X	X	-	-	-	-
	10	X	X	X	X	X	X	X	X
	15	-	-	-	-	X	X	X	X
2000	10	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X
2500	10	-	-	-	-	X	X	X	X
	15	-	-	-	-	X	X	X	X

Accessories: see page 309

Accessories for current transformers

1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

9 Shunts

10 Test apparatus

Snap-on mounting base

for mounting on top hat rail 35 mm (DIN EN 60715)



Variants

Version	for CT type	
A	SW 2010, SW-S 3010, SW-S 4010	X
B	SW 3010	X
C	SW-L 3010, SW-L 4010, WSWK-N	X
D	SW-S 2010, SW 4010, WSWK	X
E	RSW 14, RSW 21	X
L	ASRD 205.37, ASRD 310.37	X

Sealed shutters

for sealing the secondary terminals after connection



Variants

Version	for CT type	
A	SW 2010, SW-S 3010, SW-S 4010, SW 20010, SW 12330	X
B	SW-S 2010, SW 3010, SW-L 3010, SW 4010, SW-L 4010, WSWK, WSWK-N, WSWs, SSW	X
C	SW-S 5010, SW 5010, SW 6010, SW 6030, SW 8010, SW 10010, SW 10055, SW 12838	X
G	CSW 31, CSW 41	X
H	CSW 51	X
J	CSW 61, CSW 81, CSW 101	X

Quick fix fastenings

for mounting CT type CSW on the busbars



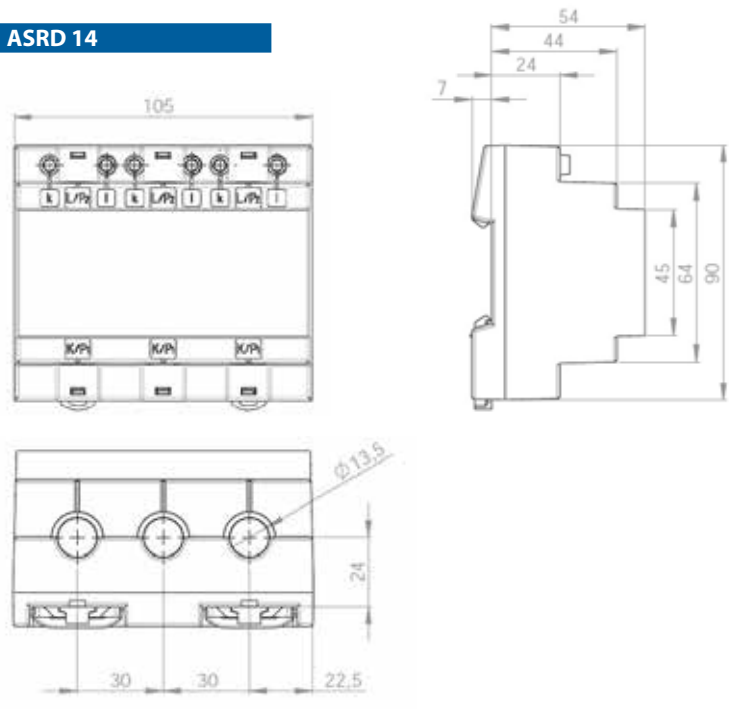
Variants

Version	Application	
A	Standard for 85°C continuous temperature	X
B	Heat stabilized for up to 130°C	X

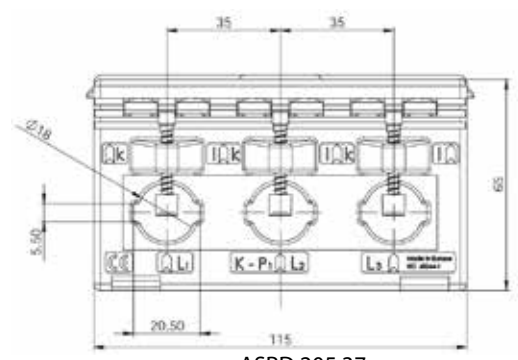


Dimensional drawings three-phase current transformer sets

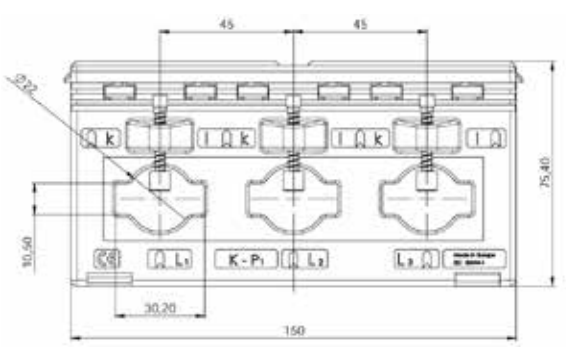
ASRD 14



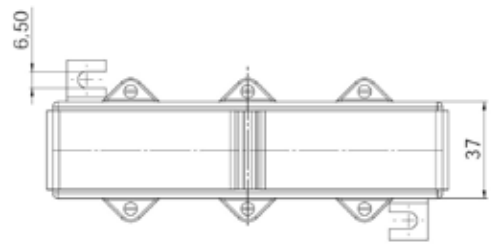
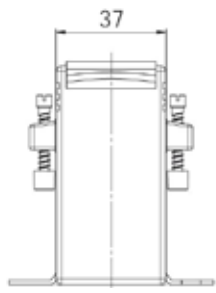
ASRD 205.37 / 310.37



ASRD 205.37



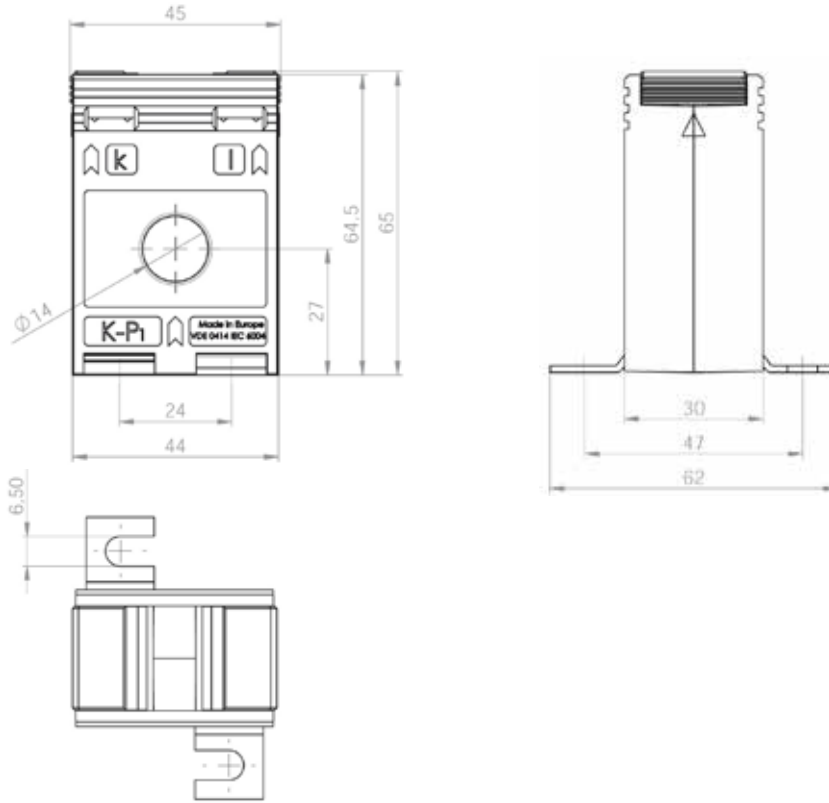
ASRD 310.37



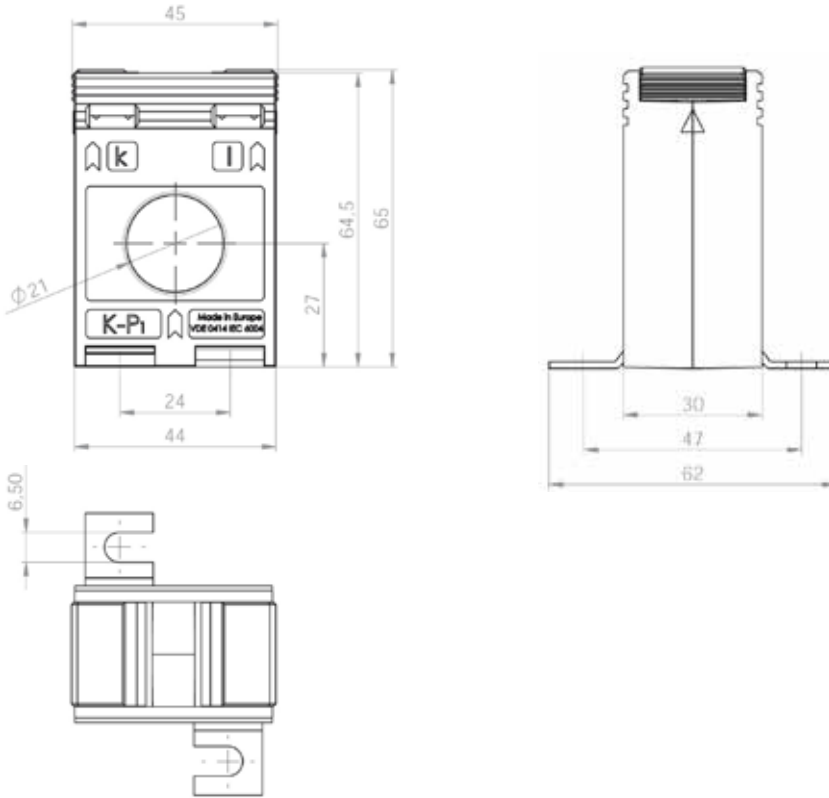


Dimensional drawings tube unit current transformers

RSW 14



RSW 21



1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

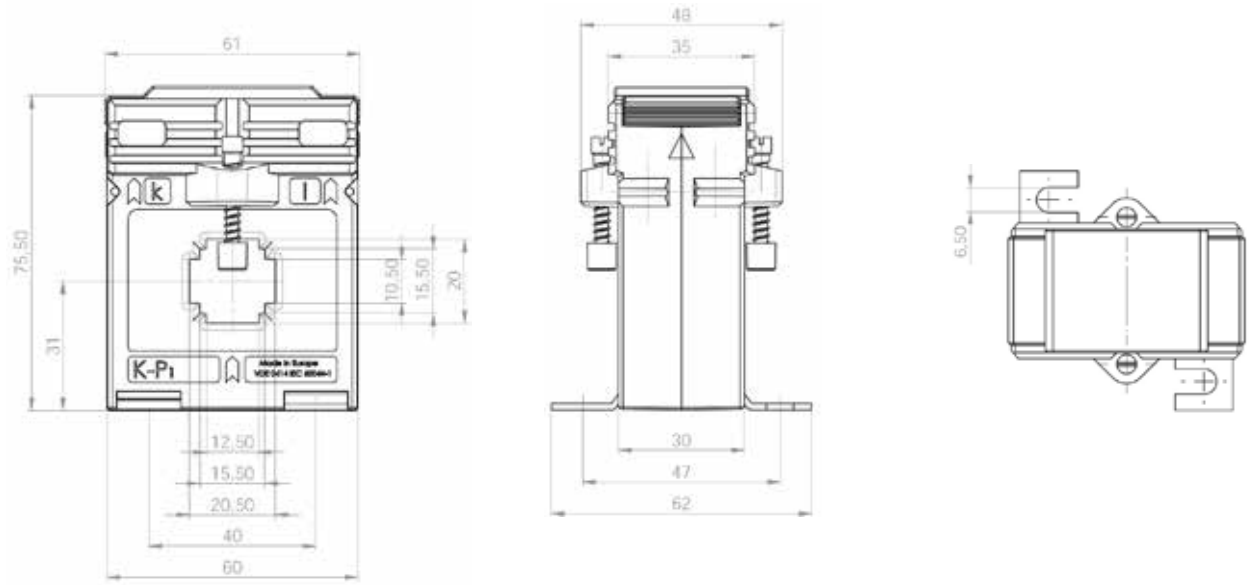
9 Shunts

10 Test apparatus

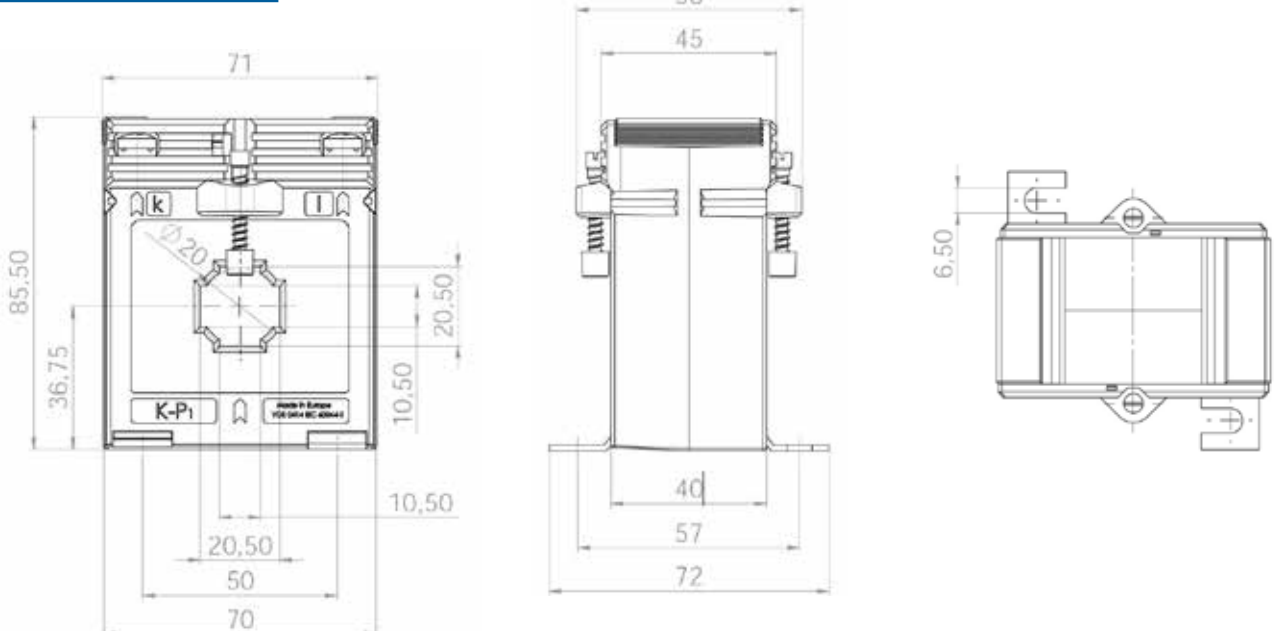


Dimensional drawings plug-in current transformers

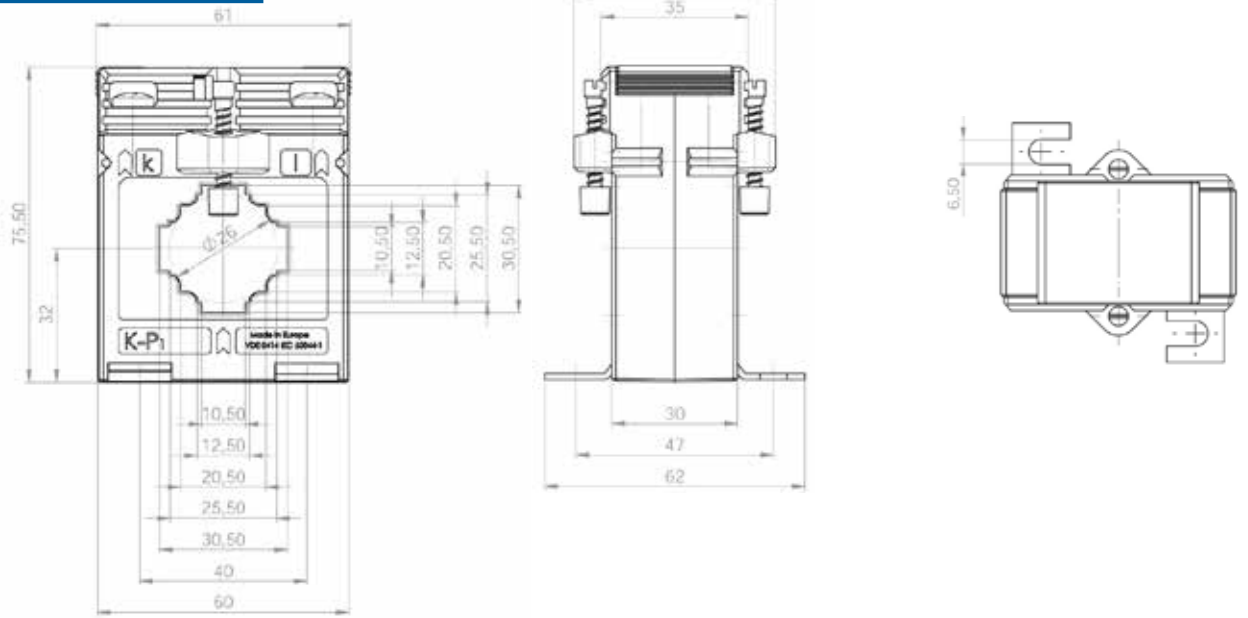
SW-S 2010



SW 2010



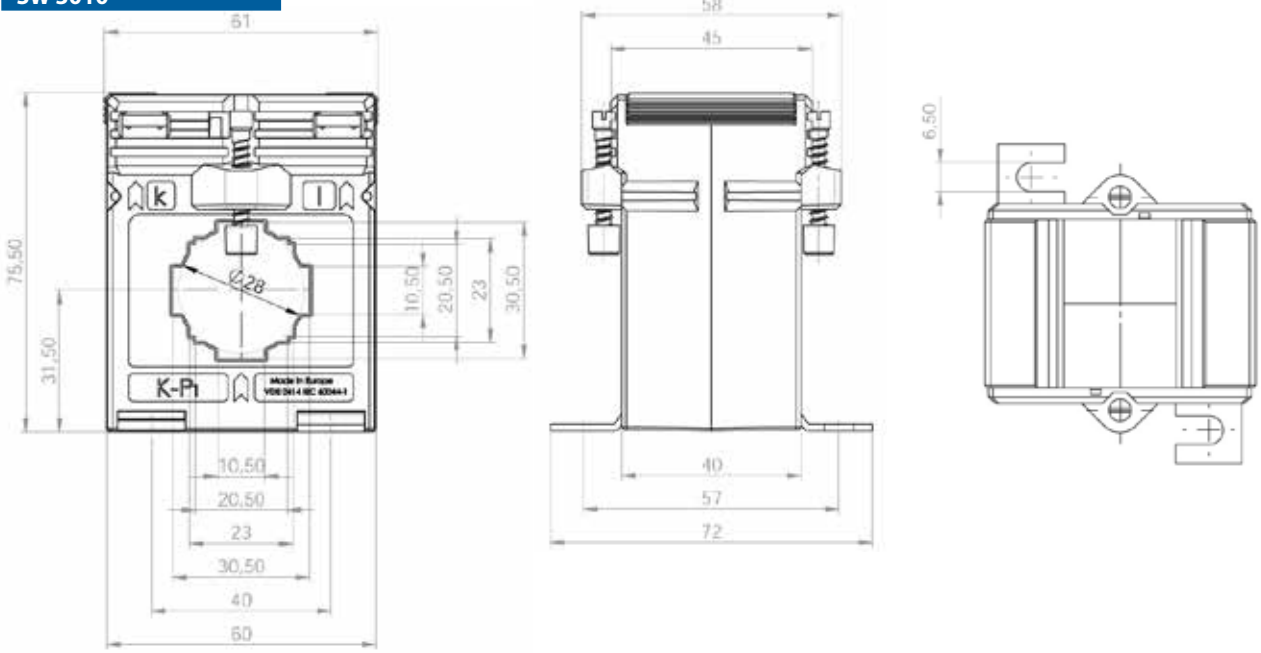
SW-S 3010



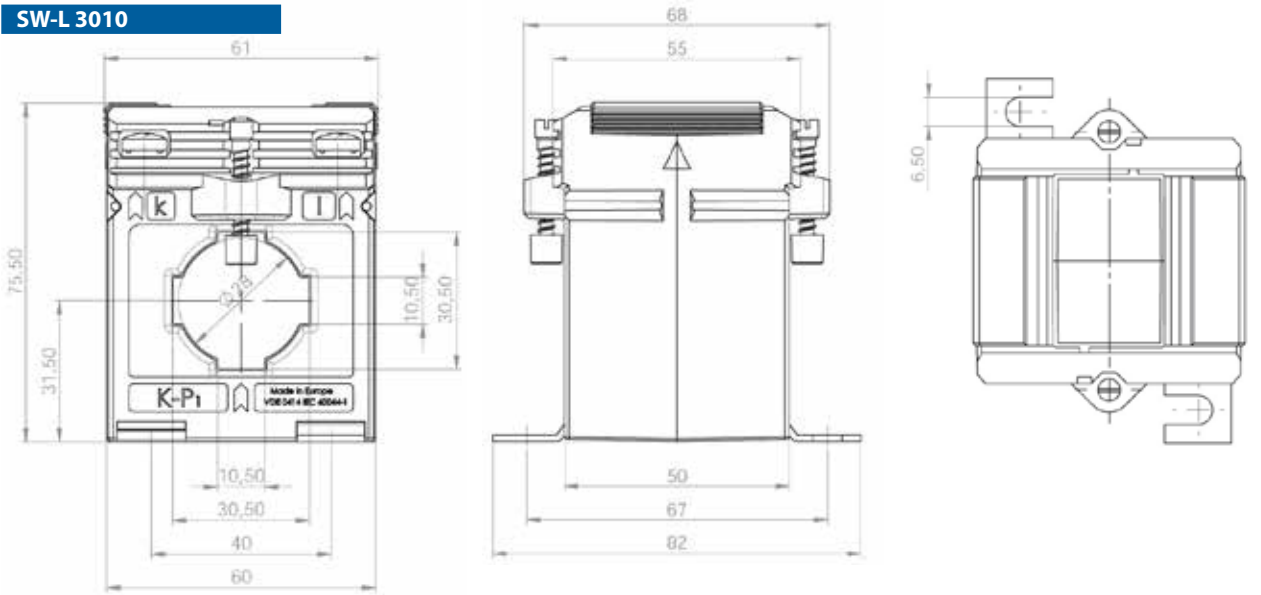


Dimensional drawings plug-in current transformers

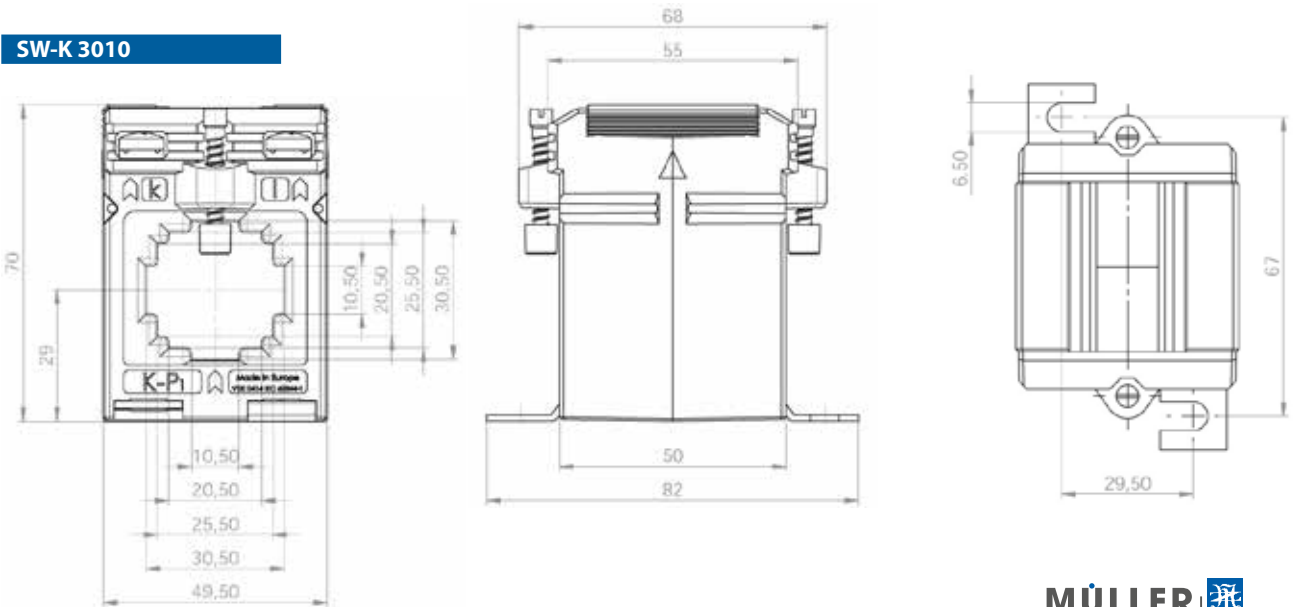
SW 3010



SW-L 3010



SW-K 3010



1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

Panel meters digital

4

Panel meters analog

5

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

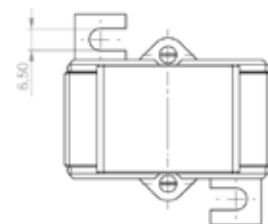
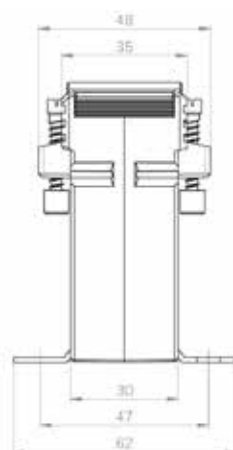
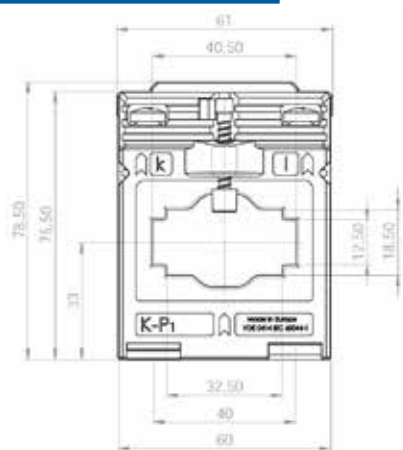
9 Shunts

10 Test apparatus

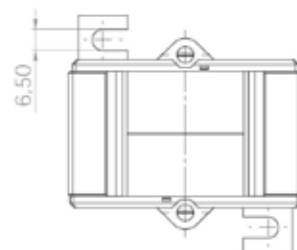
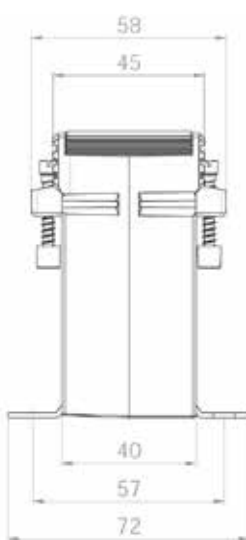
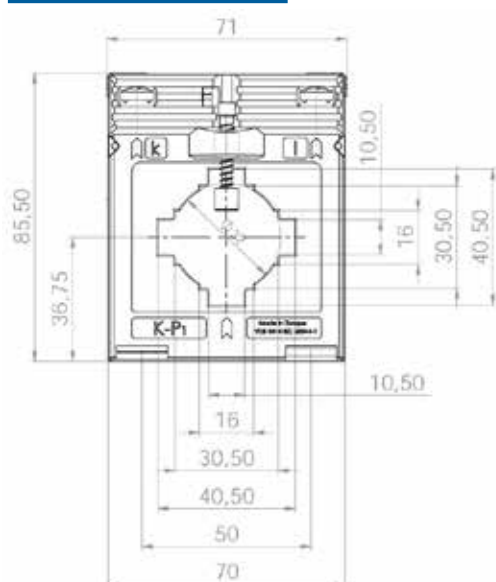


Dimensional drawings plug-in current transformers

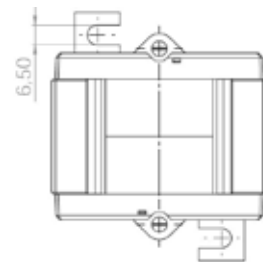
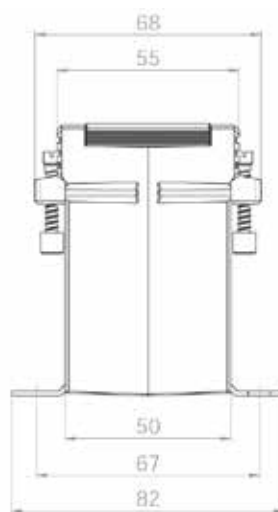
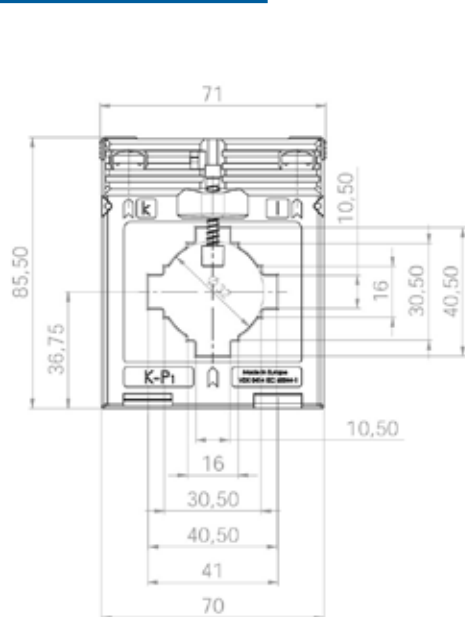
SW-S 4010



SW 4010



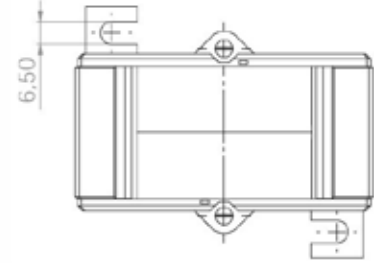
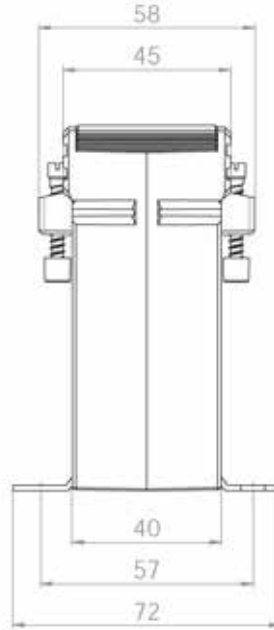
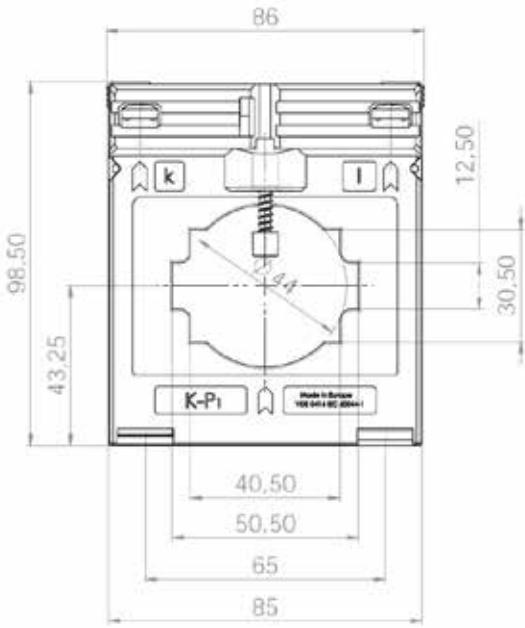
SW-L 4010



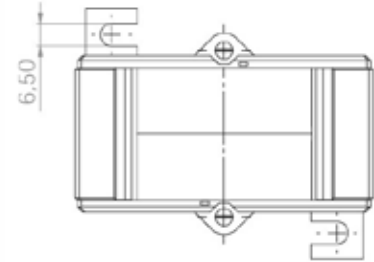
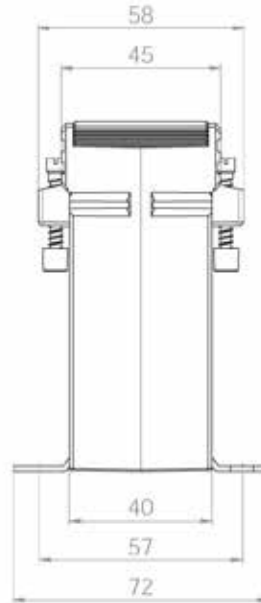
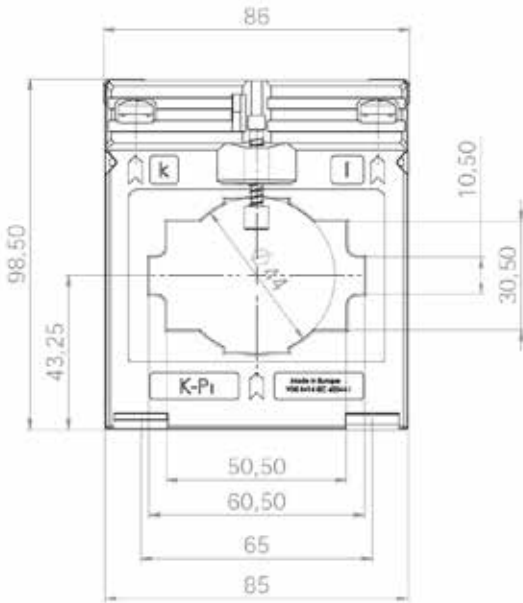


Dimensional drawings plug-in current transformers

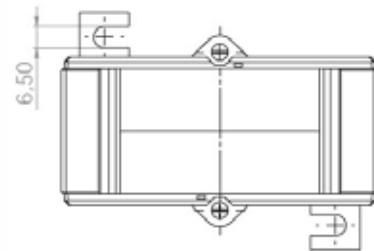
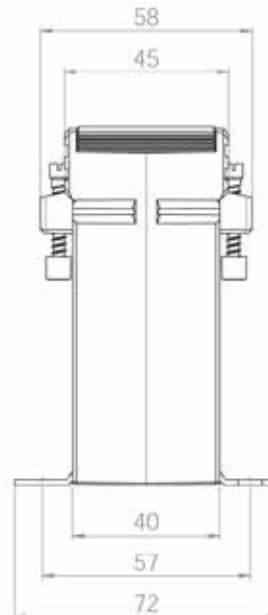
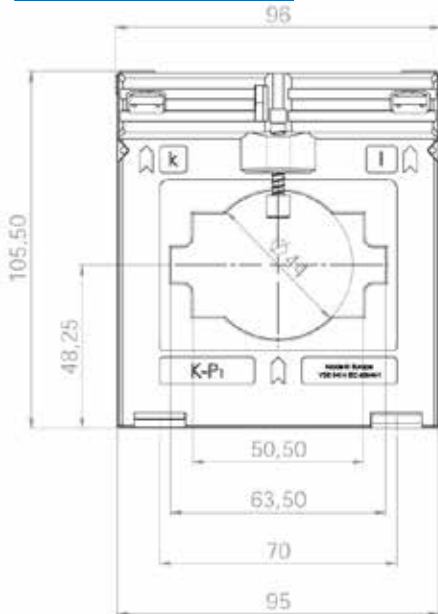
SW-S 5010



SW 5010



SW 6010



1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

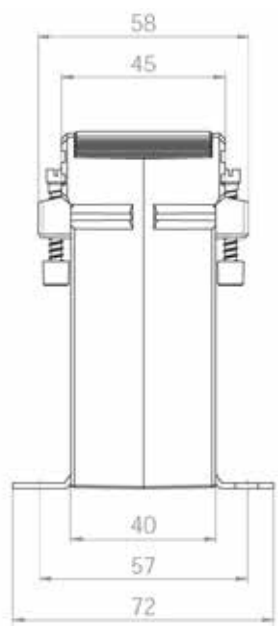
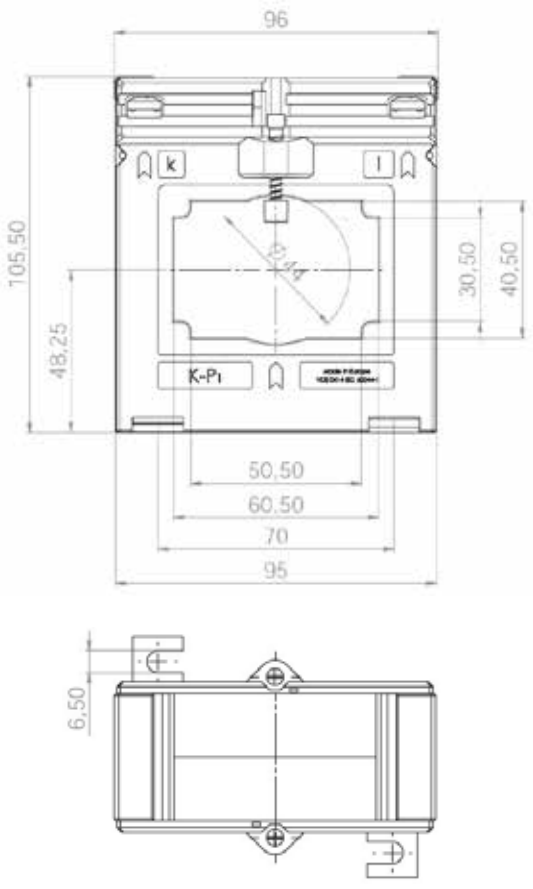
9 Shunts

10 Test apparatus

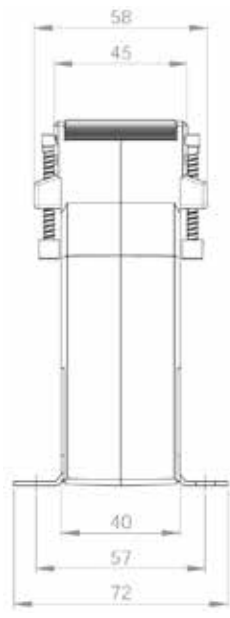
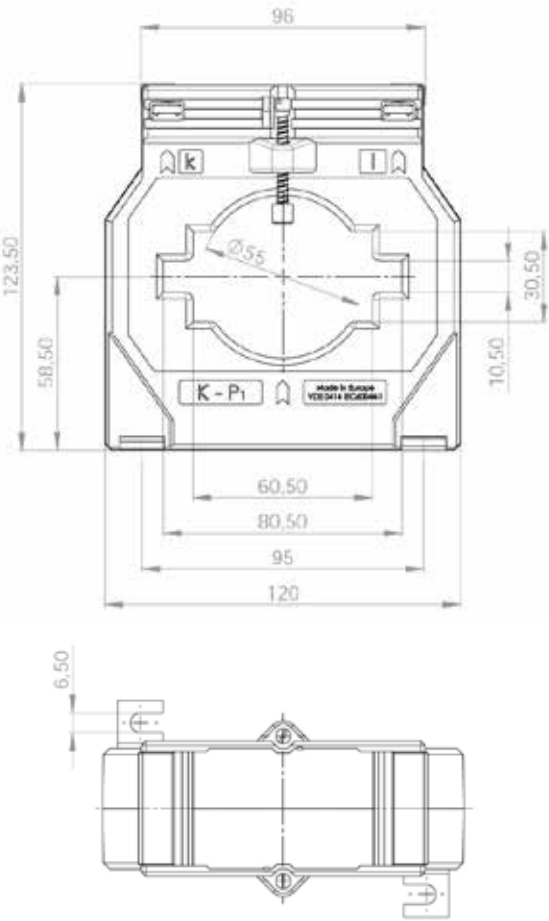


Dimensional drawings plug-in current transformers

SW 6030



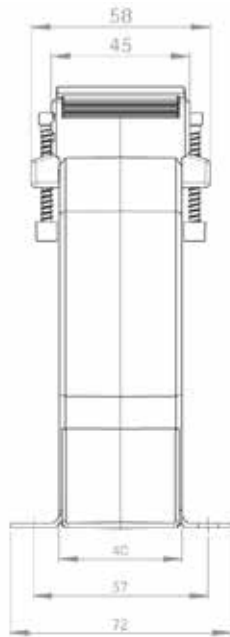
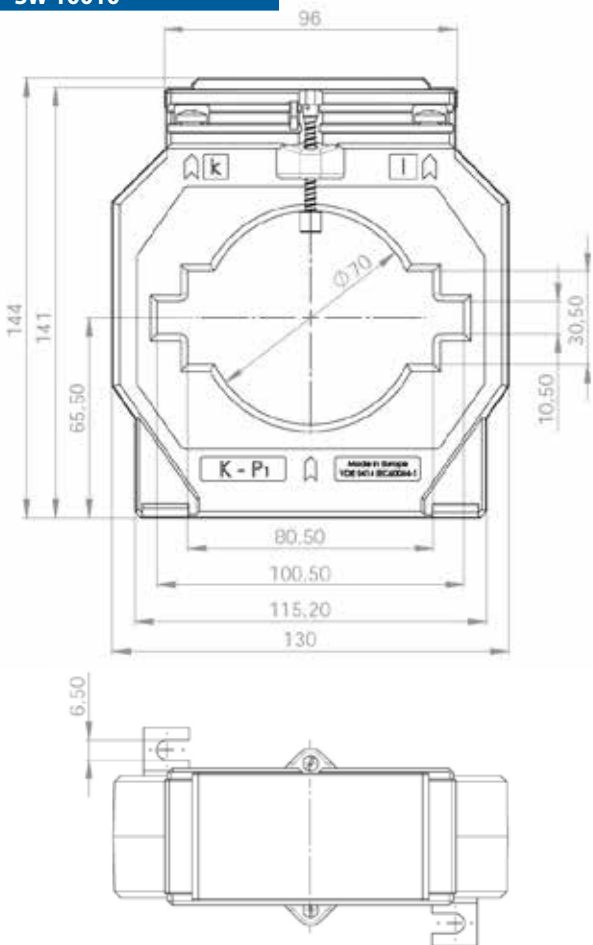
SW 8010



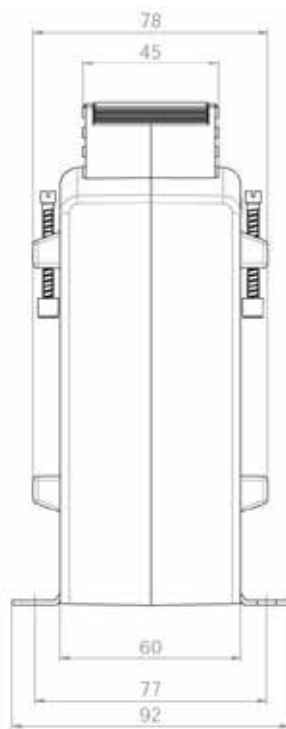
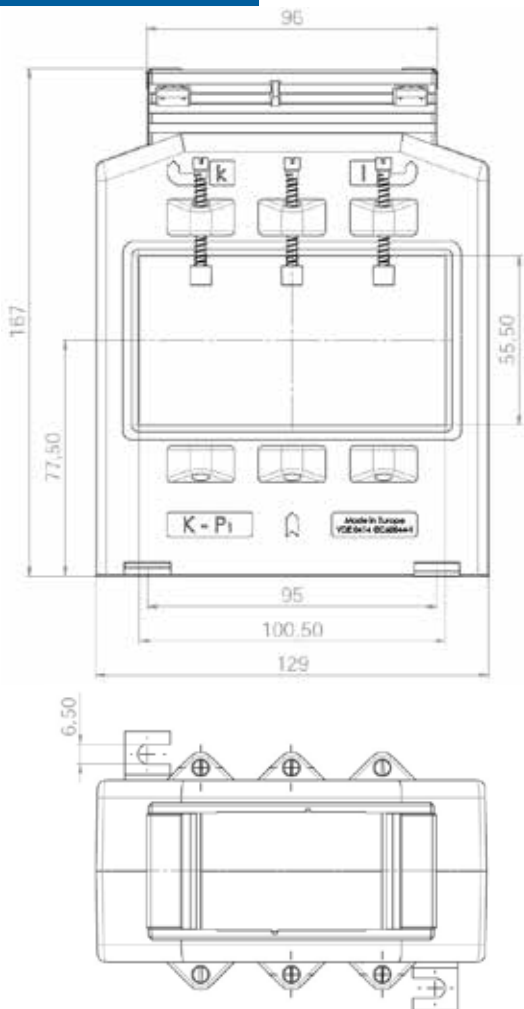


Dimensional drawings plug-in current transformers

SW 10010



SW 10055

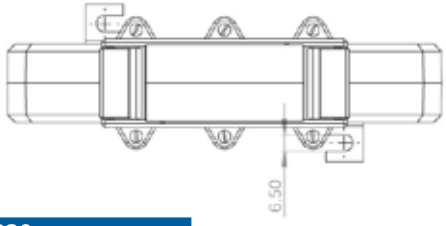
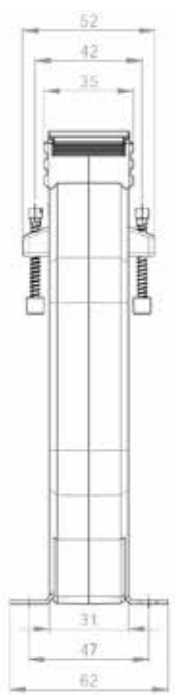
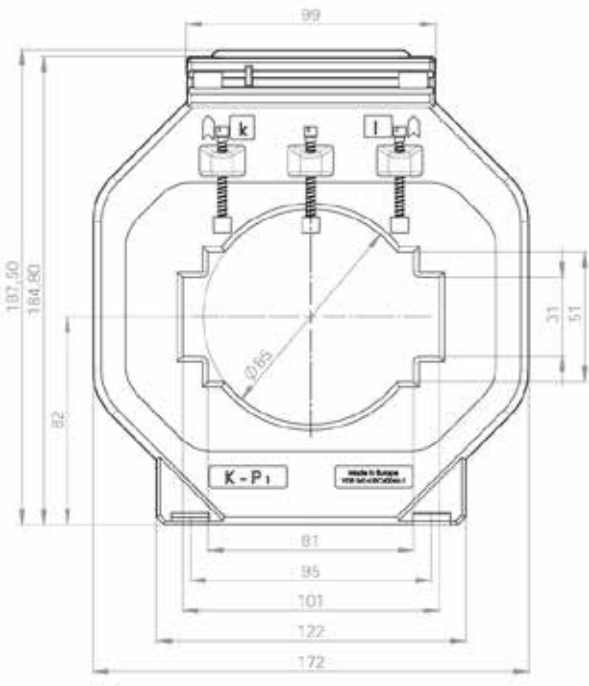


- 1 Measuring transducers
- 2 Mains and limit monitoring
- 3 Energy meters
- 4 Panel meters digital
- 5 Panel meters analog
- 6 Meas. instruments for top hat rail mounting
- 7 Universal measuring instruments
- 8.1 Current transformers SW-series
- 9 Shunts
- 10 Test apparatus

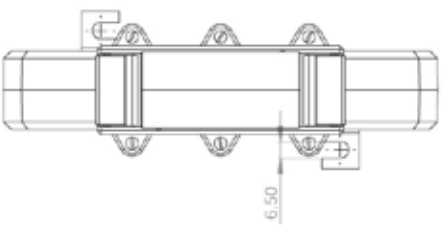
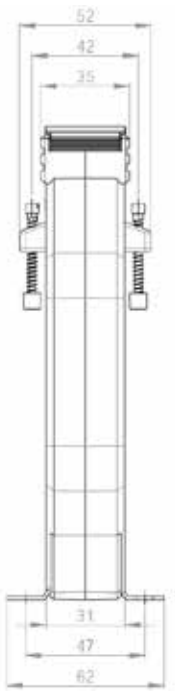
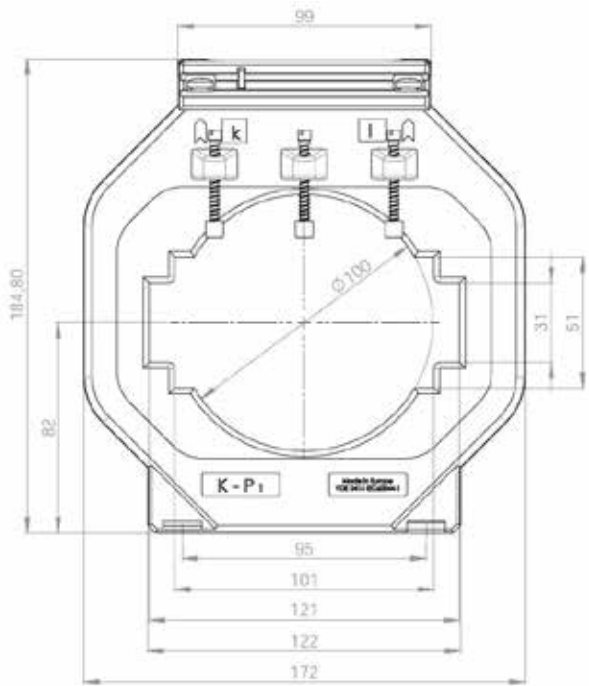


Dimensional drawings plug-in current transformers

SWU 20010



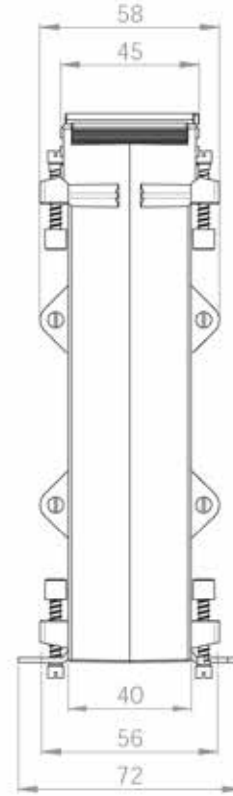
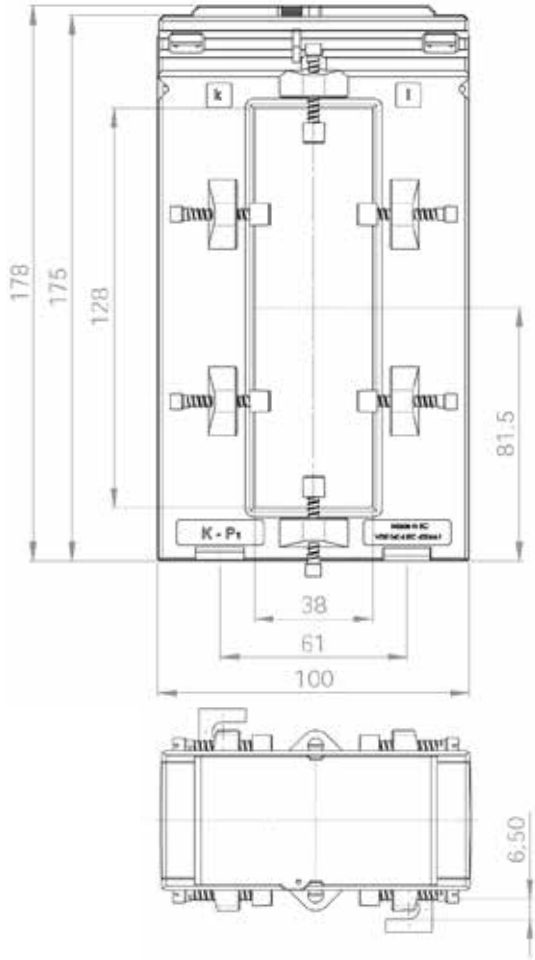
SW 12330





Dimensional drawings plug-in current transformers

SW 12838



1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

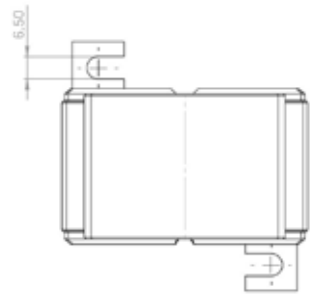
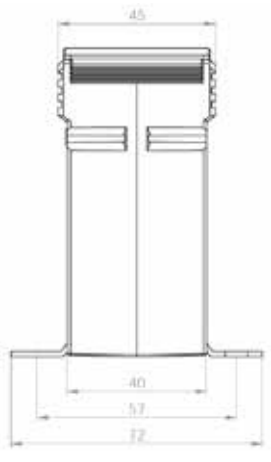
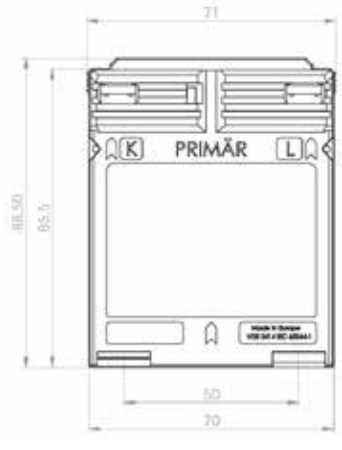
9 Shunts

10 Test apparatus

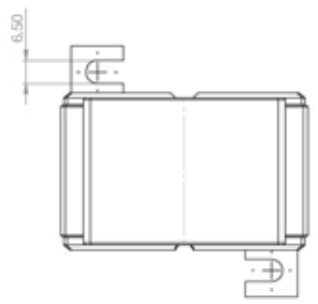
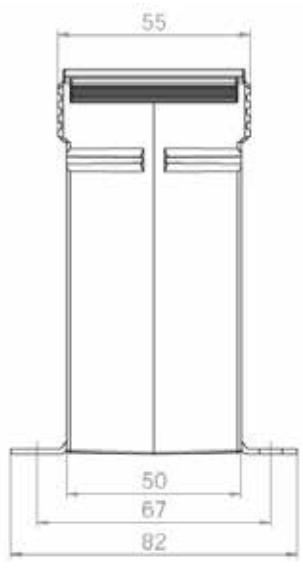
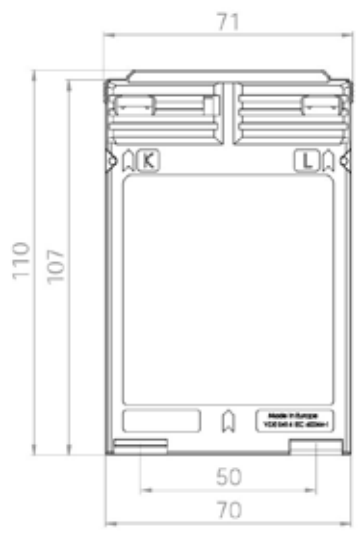


Dimensional drawings wound primary current transformers

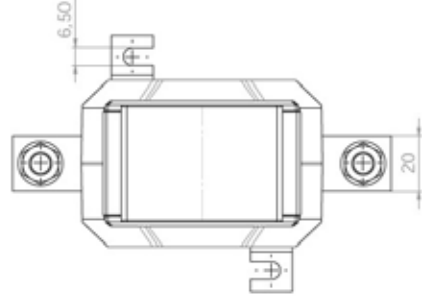
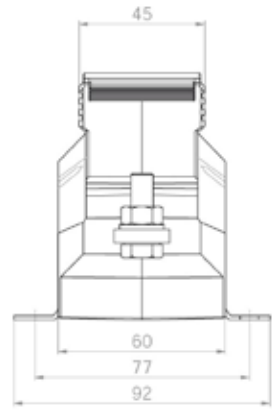
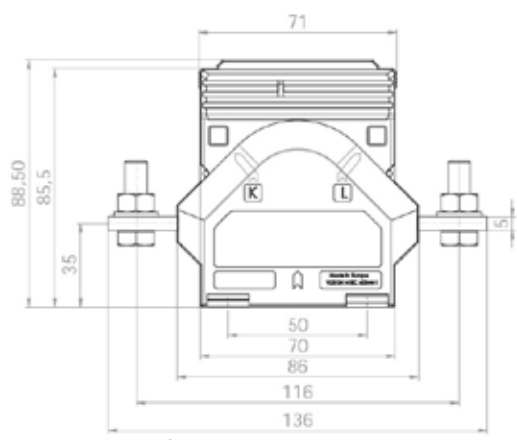
WSWK



WSWK-N



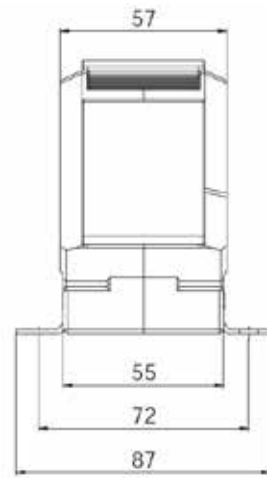
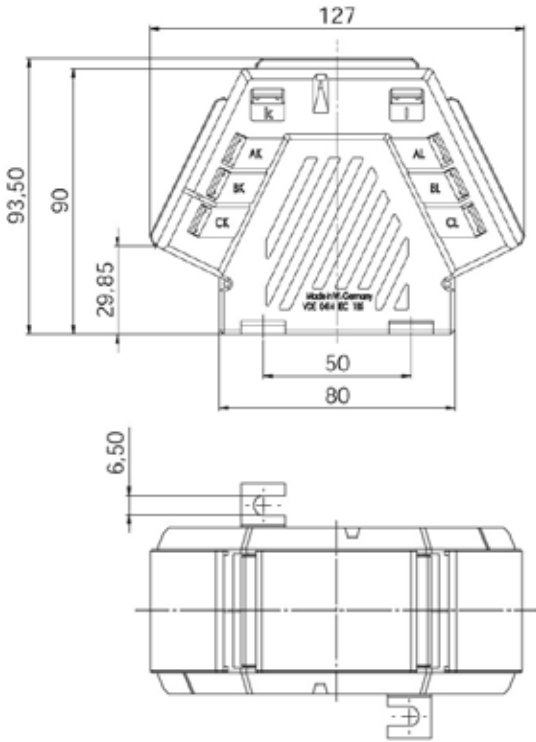
WSWS



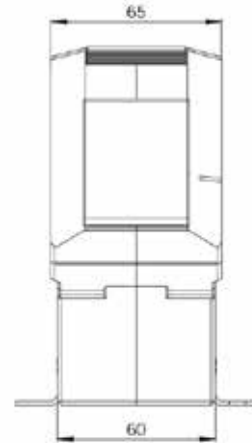
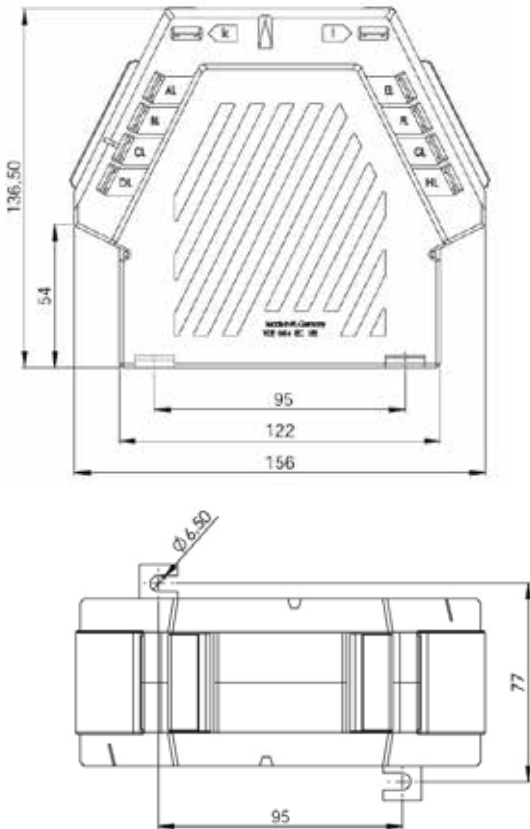


Dimensional drawings summary current transformers

SWS 2-3



SWS 4-8



1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

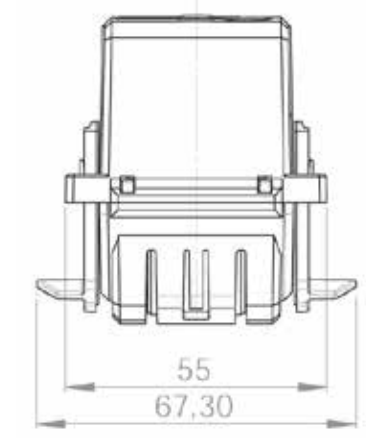
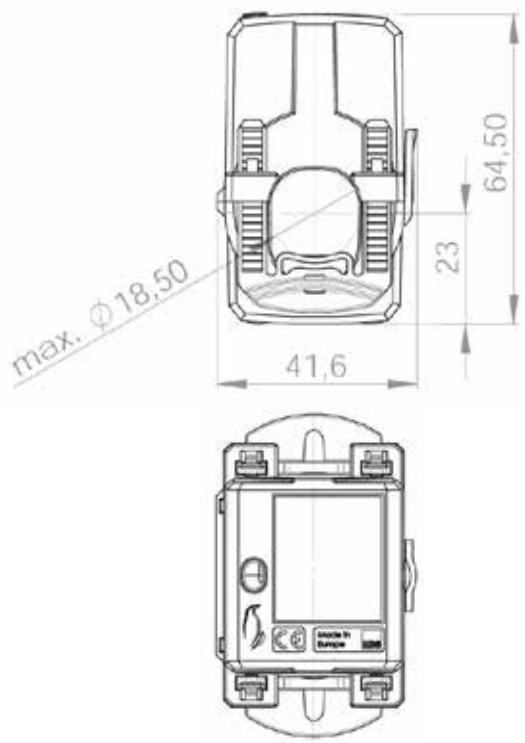
9 Shunts

10 Test apparatus

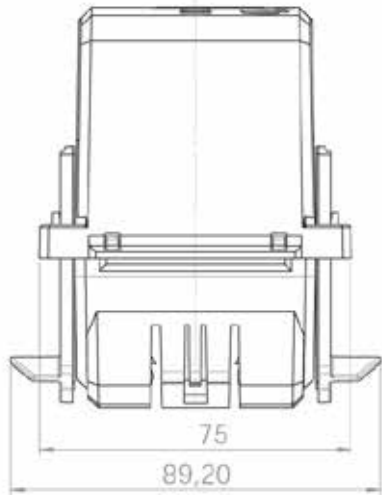
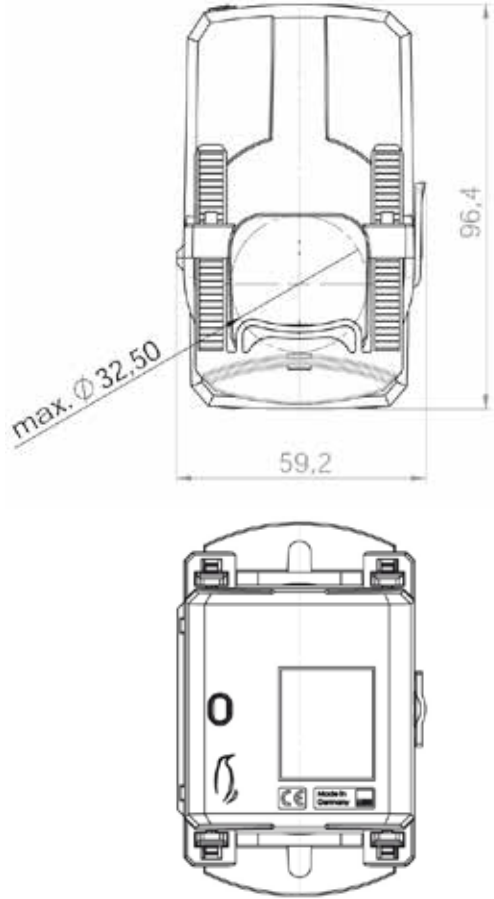


Dimensional drawings split core current transformers

SWU 18



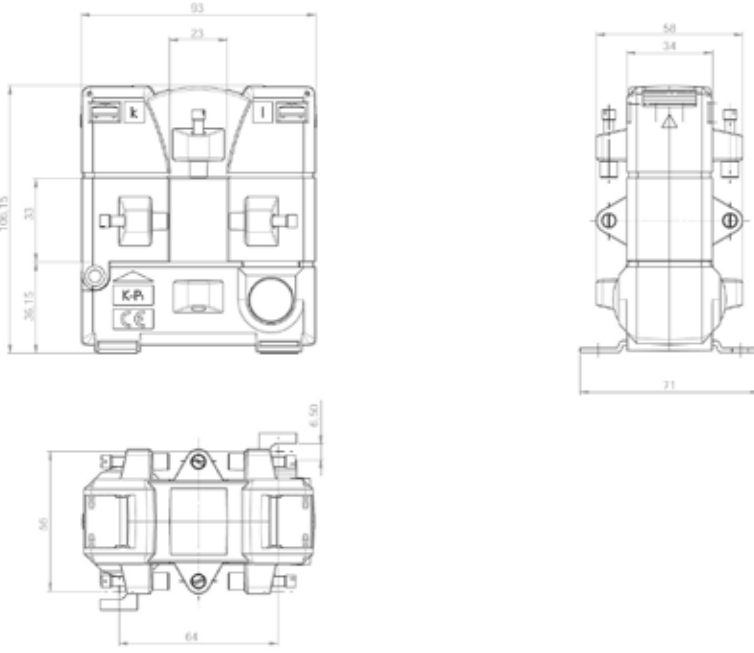
SWU 32



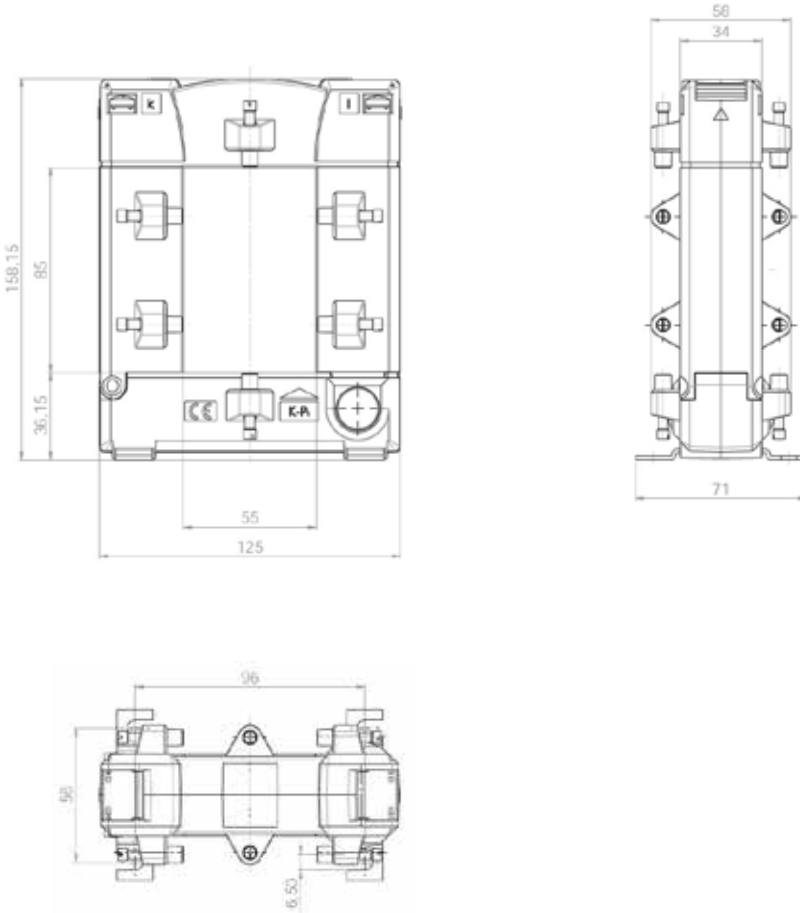


Dimensional drawings split core current transformers

SWU 2030



SWU 5080



1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

5 Panel meters analog

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

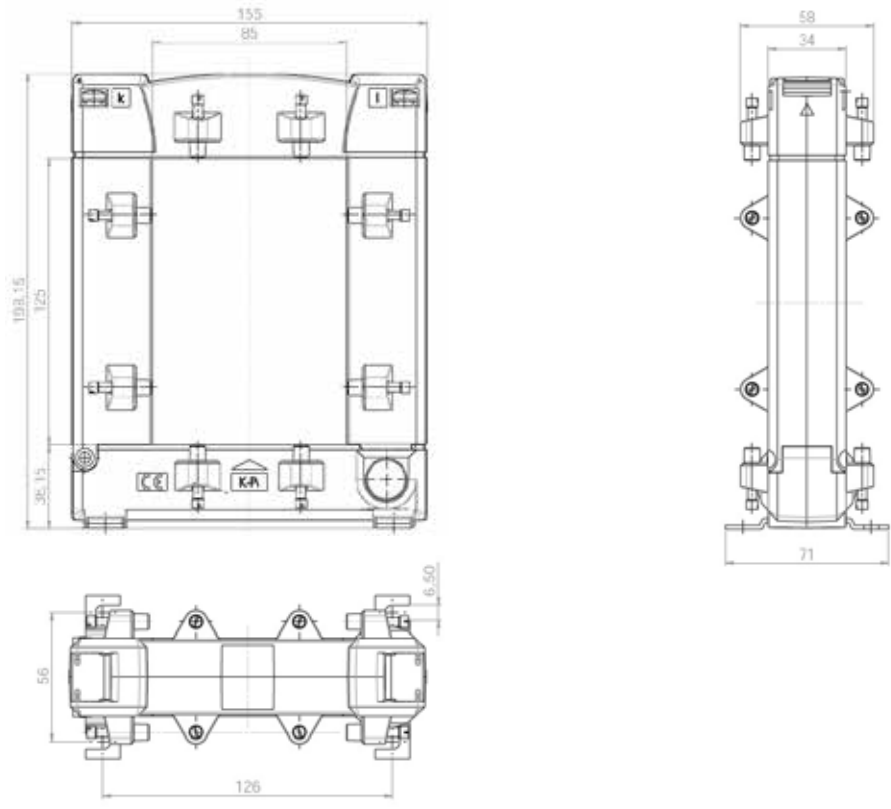
9 Shunts

10 Test apparatus

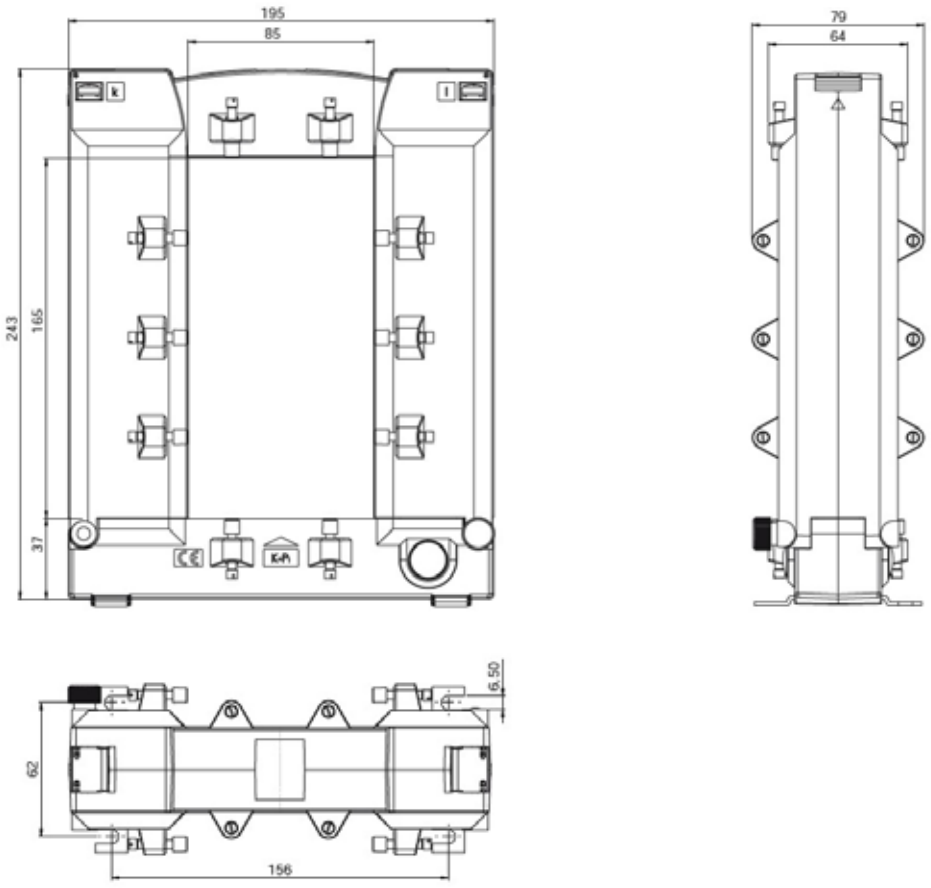


Dimensional drawings split core current transformers

SWU 80120



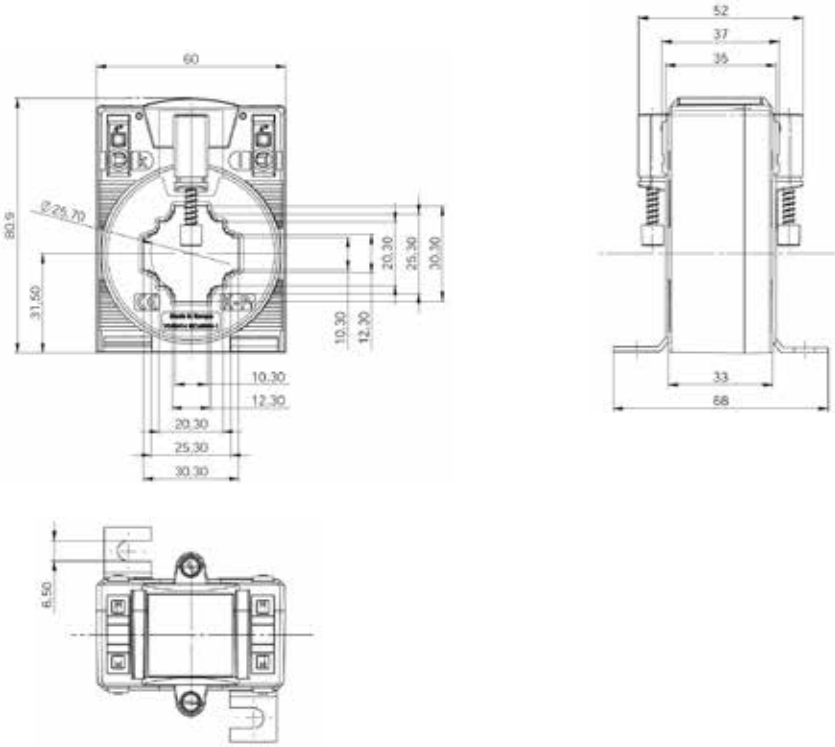
SWU 80160



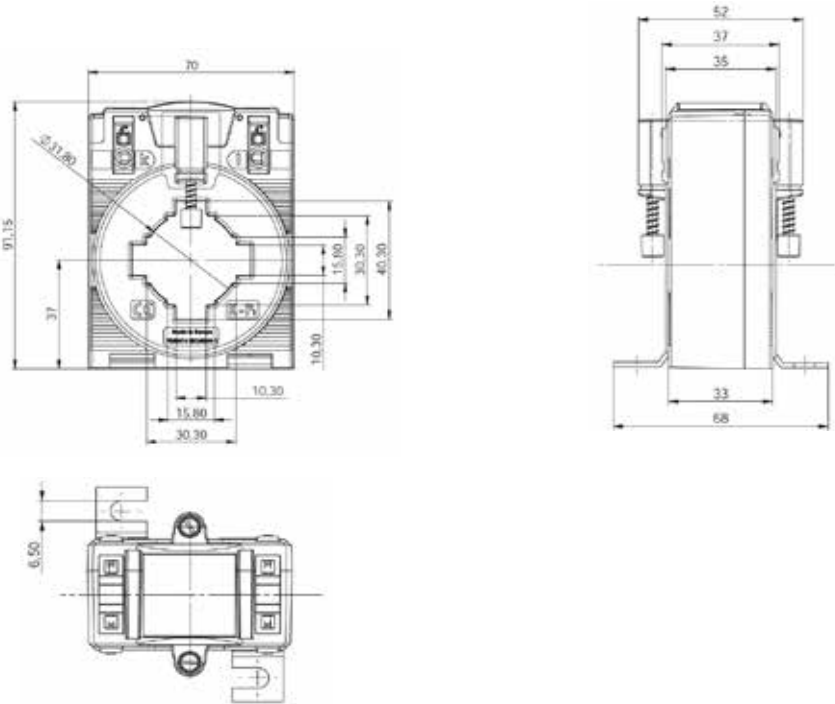


Dimensional drawings plug-in current transformers „Cage Clamp“ CSW

CSW 31



CSW 41



1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

Panel meters analog

5 Meas. instruments for top hat rail mounting

6 Meas. instruments for top hat rail mounting

7 Universal measuring instruments

8.1 Current transformers SW-series

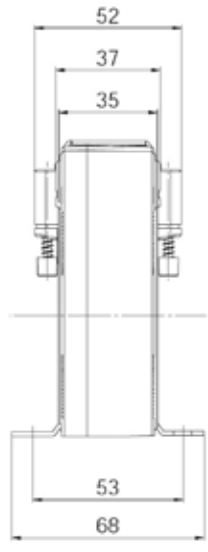
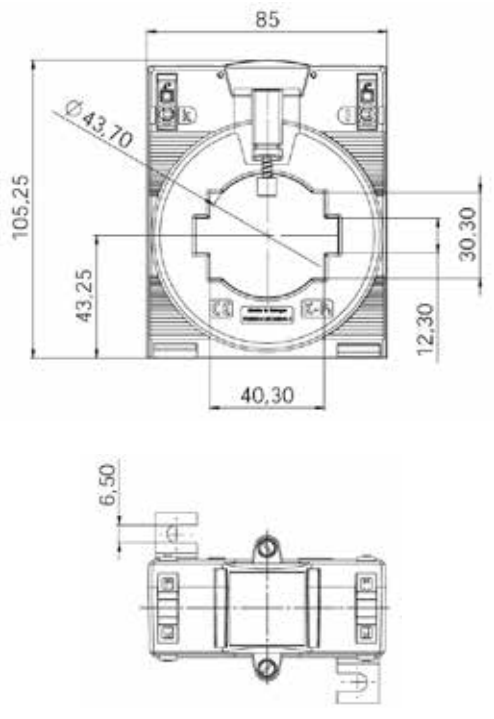
9 Shunts

10 Test apparatus

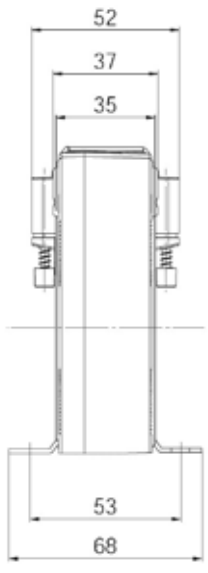
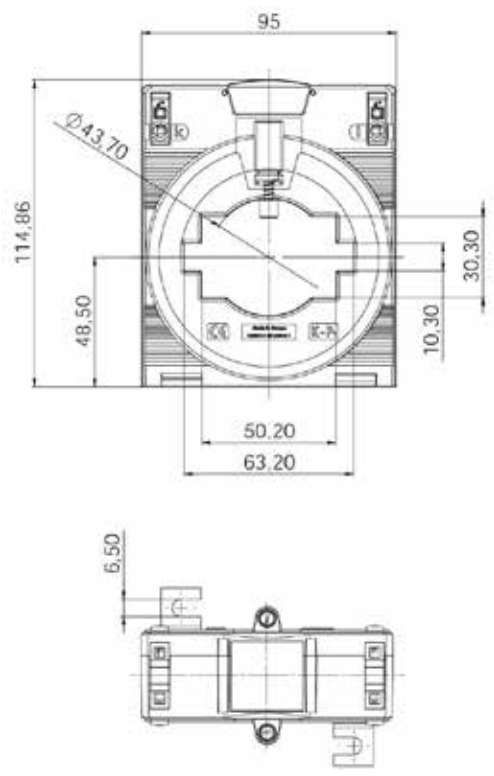


Dimensional drawings plug-in current transformers „Cage Clamp“ CSW

CSW 51



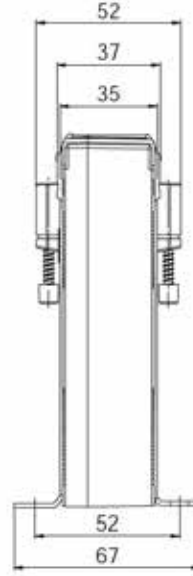
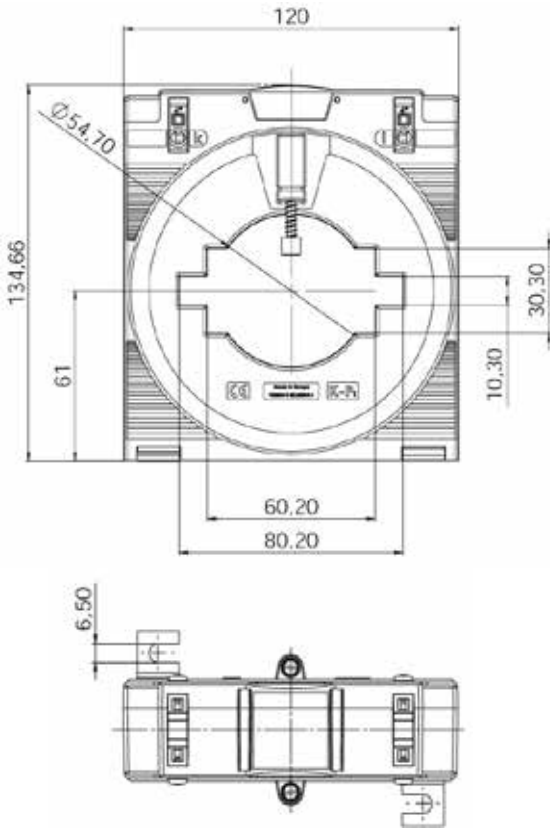
CSW 61



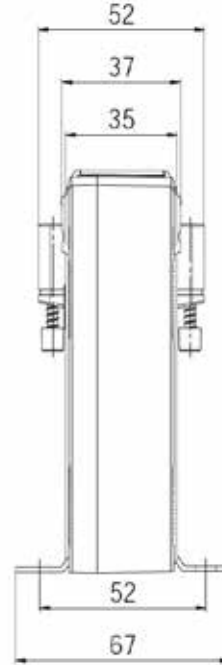
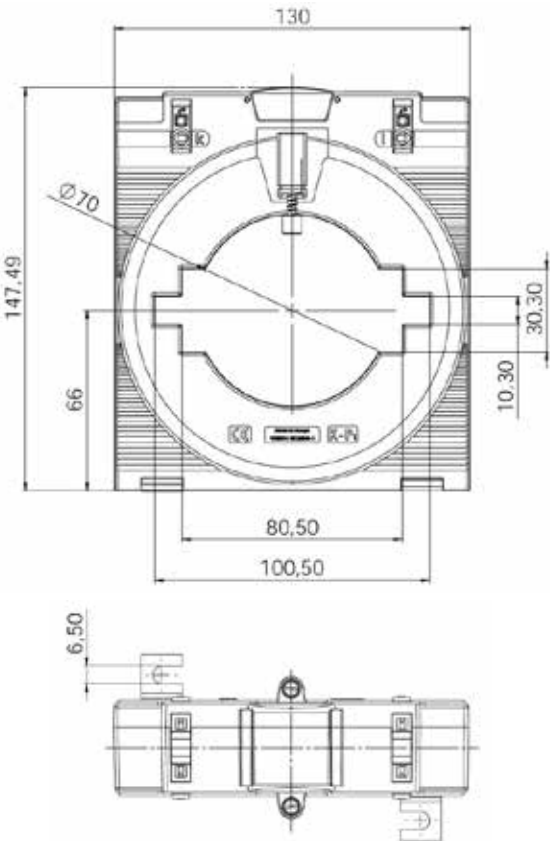


Dimensional drawings plug-in current transformers „Cage Clamp“ CSW

CSW 81



CSW 101



1 Measuring transducers

2 Mains and limit monitoring

3 Energy meters

4 Panel meters digital

Panel meters analog

5 Meas. instruments for top hat rail mounting

6 Universal measuring instruments

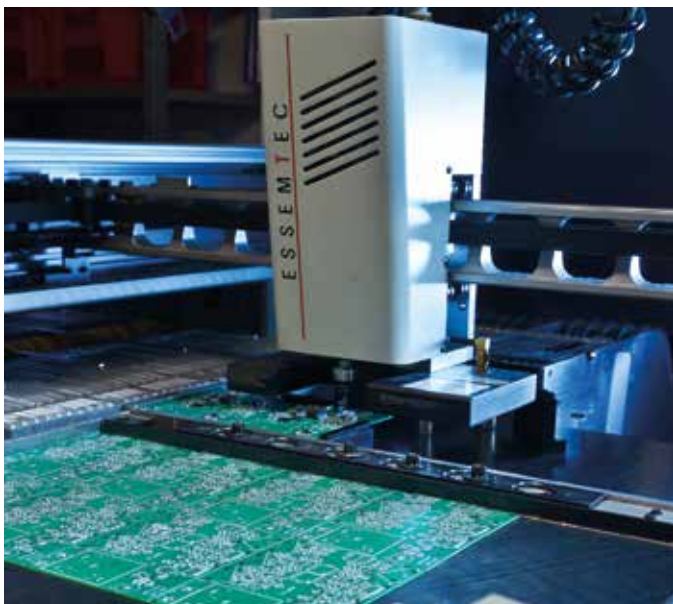
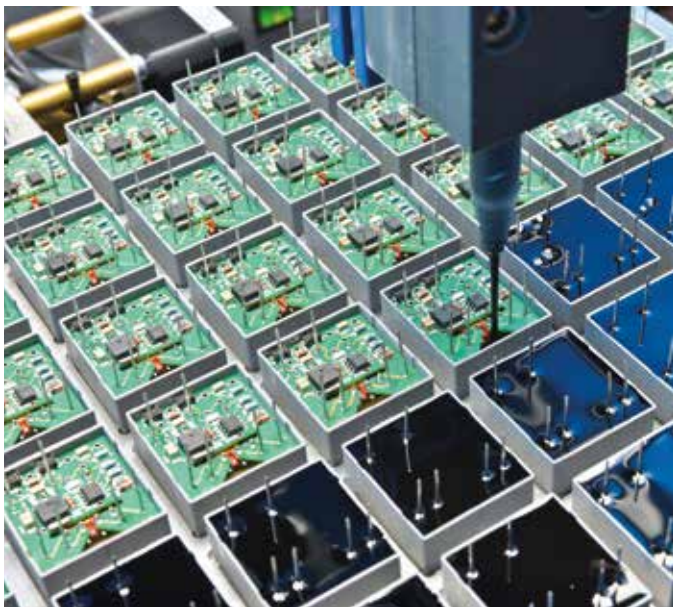
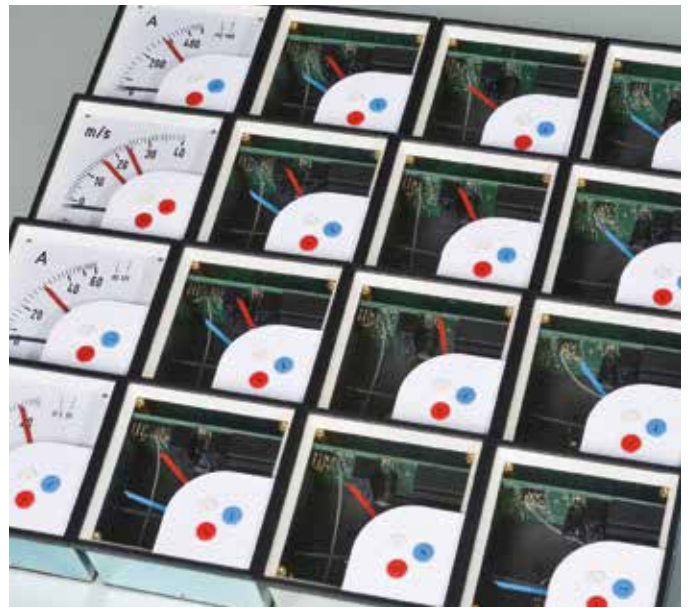
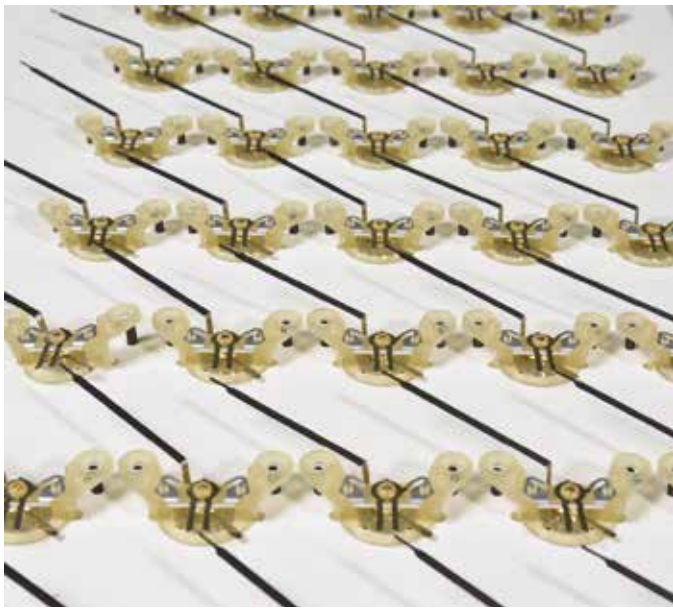
7 ring instruments

8.1 Current transformers SW-series

9 Shunts

10 Test apparatus

Precision and service are the measure of all things





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