

M.7

Measurement Transformers and Shunts



serie MC-1

Single-phase Efficient current transformers M7-7

serie MC-3

Three-phase Efficient current transformers M7-8

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Narrow-profile current transformer M7-9

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Top-performance current transformer M7-12

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Large-scale current transformer M7-14

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Small Split-core Current transformers M7-19

TA 210

High-accuracy wound primary current transformer M7-19

TM 45

Wound primary current transformer M7-20

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Entrance bar current transformer M7-21

TC 020 / TC 420

Narrow-profile current transformer with a built-in converter, with an output of 0...20 mA / 4...20 mA M7-22

TP 420

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Measurement Transformers and Shunts

The concern to measure the installation's consumption or any electrical parameter during the energy management procedures has arisen with the need to transform high currents into small currents that can be measured by electronic units.

CIRCUTOR offers a solution with a vast range of transformers with different features that can cater for the main market needs.



Definition

CIRCUTOR's current transformers have the following features:

- 1. Insulation and separation of circuits and measurement devices from the voltage lines.
- 2. Prevention of alterations generated by the transmission of high currents.
- 3. Reduction of short-circuit currents to admissible values in measurement devices.
- 4. Obtaining currents that are proportional to those measured, so that they can be transmitted to the appropriate devices.

- Measurement margin of the current being measured (maximum and minimum current) Overload (range and time).
- Network voltage (low, medium or high voltage)
- Short-circuit current
- Grid frequency
- 3. Know the features of the associated instrument (accuracy, nominal current, consumption, etc.)
- 4. Know the distance between the transformer and instrument, as well as the section of the cable used for the connection.

Line losses (P_L) are expressed as the power losses caused by heating during the transmission of current through the circuit cabling resistance (R_L) of the secondary transformer, i.e., the resistance of the cable between the transformer and the unit.

$$P_L = R_L \cdot I^2$$

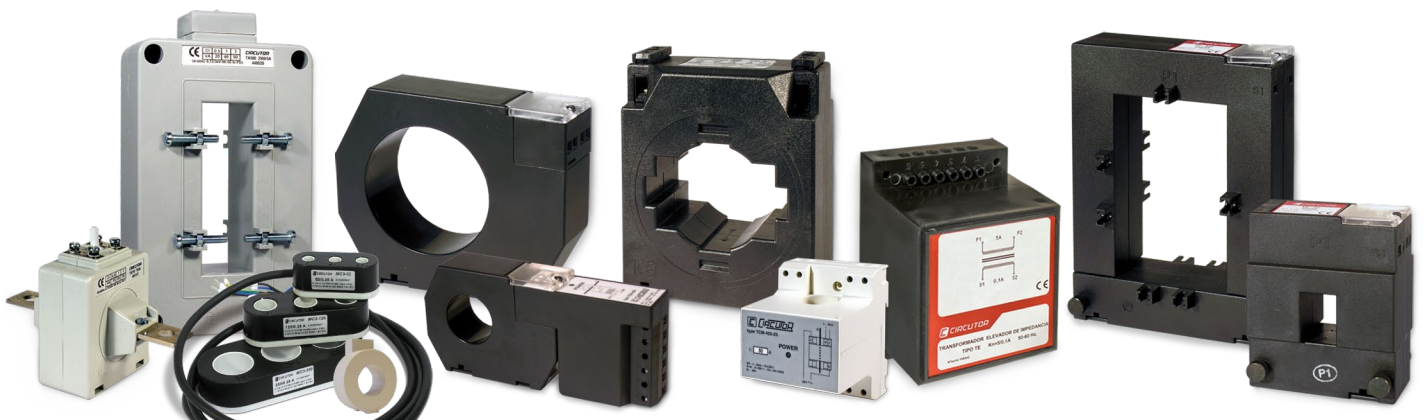
Where: R_L is inversely proportional to the diameter's square and is proportional to the cabling length (one way+return).

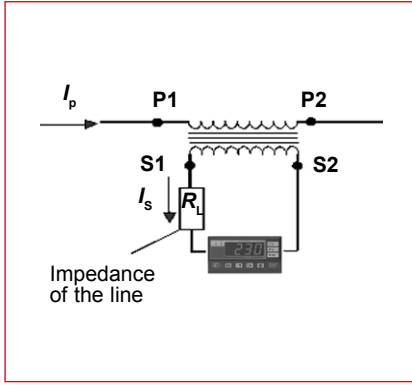
Selecting a transformer

1. Know the features of the work environment or operating conditions (indoor, outdoor, maximum operating temperature, etc.)
- 2. Know the features of the line where it will be installed: Cable or busbar dimensions

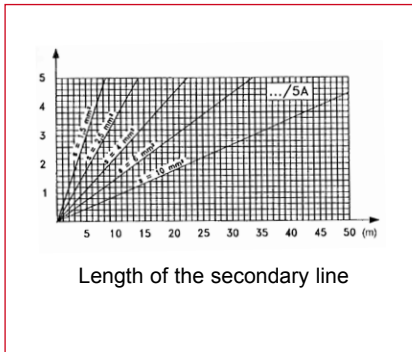
Transformer power

Power is a very important parameter that must be taken into account. In a transformer, the primary current must induce the necessary power in the secondary current in order to transmit it to the measurement unit. Induced power must be equal to or more than the line losses plus the power consumed by the measurement equipment, in order to ensure that it can operate correctly.





Connection diagram



Graph with the secondary line losses

Example: Power losses between a transformer and measurement equipment (line distance = 10 m).

- In a secondary transformer 5 A (.../5):
 - Cable length
 $L_{\text{cable}} = 2 \cdot l = 2 \cdot 10 = 20 \text{ m}$ (one way + return)
 - Cable section
 $S_{\text{cable}} = 1 \text{ mm}^2$
 - Resistance of the line
 $R_{\text{line}} = \rho \cdot L / s = 0.0172 \cdot 20 / 1 = 0.35 \Omega$
 $\rho = 0.0172 \Omega \cdot \text{mm}^2 / \text{m}$
 - Line losses
 $P_{\text{line}} = R_{\text{line}} \cdot I^2 = 0.35 \cdot 5^2 = 8.62 \text{ V} \cdot \text{A}$
- In a secondary transformer 1 A (.../1):
 $P_{\text{line}} = 0.35 \cdot 1^2 = 0.35 \text{ V} \cdot \text{A}$ (25 times greater)

Standard consumption of CIRCUTOR's equipment

Units	Standard consumption
Moving iron instruments	0.3...15 V·A
Moving coil instruments	0.5 V·A
Analogue watt-meters	0.2...2.5 V·A
Maximum demand indicators	2.5...5.0 V·A
Digital instruments	0.5...1.0 V·A
Energy meters	1.0...1.5 V·A
Recording instruments	2.0...5.0 V·A

Transformer accuracy

CIRCUTOR's transformers have been designed and manufactured in compliance with the IEC 44-1 Standard, which

establishes the range between 25 and 100% of the nominal power, where the accuracy.

Type	± % Error for % I_n				Offset ± for % I_n							
					Minutes				Centiradians			
	5	20	100	120	5	20	100	120	5	20	100	120
0,1	0,40	0,20	0,10	0,10	15	8	5	5	0,45	0,24	0,15	0,15
0,2	0,75	0,35	0,20	0,20	30	15	10	10	0,90	0,45	0,30	0,30
0,5	1,50	0,75	0,50	0,50	90	45	30	30	2,70	1,35	0,90	0,90
1,0	3,00	1,50	1,00	1,00	180	90	60	60	5,40	2,70	1,80	1,80

Type	± % Error for % I_n					Offset ± for % I_n									
						Minutes					Centiradians				
	1	5	20	100	120	1	5	20	100	120	1	5	20	100	120
0.2S	0,75	0,35	0,20	0,20	0,20	30	15	10	10	10	0,90	0,45	0,30	0,30	0,30
0.5S	1,50	0,75	0,50	0,50	0,50	90	45	30	30	30	2,70	1,35	0,90	0,90	0,90

Accuracy class	± % Error for % I_n	
	50% I_n	120% I_n
3	3	3
5	5	5
No phase error		

Transformer saturation

A transformer will become saturated when its primary current or load are above the nominal values.

The linearity of the current transformation between the primary and secondary decreases, so that the error can be quite high. The saturation of the transformer is inversely proportional to the load. (See Fig.1)

In the case of current transformers, they are saturated by overloads in order to make sure that the equipment is not damaged from the secondary. The F_s parameter (Safety Factor) shows the number of primary current transmissions the transformer is capable of transferring to the measurement equipment before it is saturated.

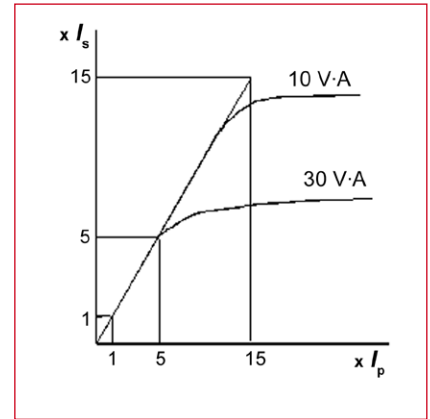


Fig.1, Graph I_p / I_s

Applications

Converting a high nominal current to a lower current so that it can be measured by the unit.

Here are some examples of applications that use **CIRCUTOR's** transformers:

- Applications with **TC + CVMk2** transformers:

The busbar or cable can be disconnected to insert the transformer.

- Applications with **TP + CVM Mini** transformers:

The busbar or cable can not be disconnected to insert the transformer.

- Applications with **shunts + MK-DC**:

To measure electrical parameters in a DC installation.

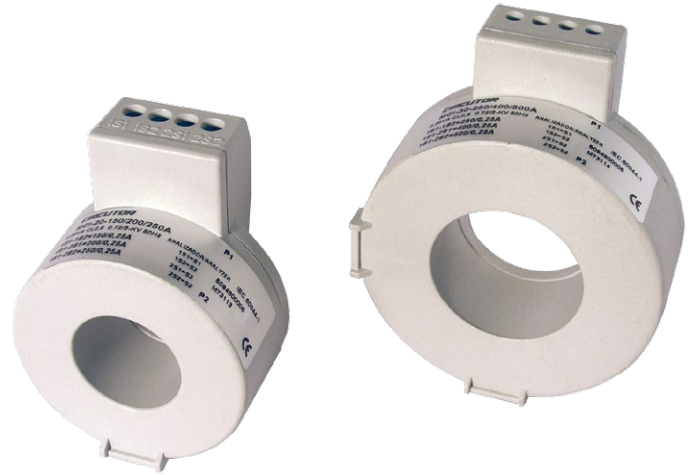
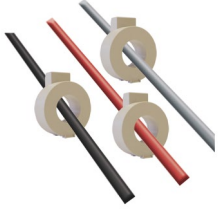
SELECTING A MEASUREMENT TRANSFORMER
Product selection table

		Measurement	Wound primary	Bar entrance	Split core	With converter	Page
MC1		150 ... 1500 Aac		•			7
MC3		63 ... 250Aac		•			8
TC		40 ... 4000 Aac		•			9
TCH		100 ... 4000 Aac		•			12
TA		750 ... 5000 Aac		•			14
TP		100 ... 5000 Aac			•		17
TA 210		5 ... 400 Aac	•				18
TM 45		5 ... 50 Aac	•				19
TW 25		100 ... 300 Aac		•			21
TC 020		50 ... 1500 Aac		•		0...20 mA	21
TC 420		5 ... 1500 Aac		•		4...20 mA	21
TP 420		5 ... 4000 Aac			•	4...20 mA	23
TI 420		2.5 ... 1500 Aac		•		4...20 mA	26
TGB 420		2.5 ... 1500 Aac		•		4...20 mA	26
TCM 420		2.5 ... 300 Aac		•		4...20 mA	27
SHUNTS		1 ... 15000 Adc					28

Current transformers

serie MC-1

Single-phase Efficient current transformers



Description

- Transformer range from 150 to 1,500 A
- Secondary 250 mA
- Three ranges in the same transformer.
- Compatible with the MC product range from CIRCUTOR.

Application

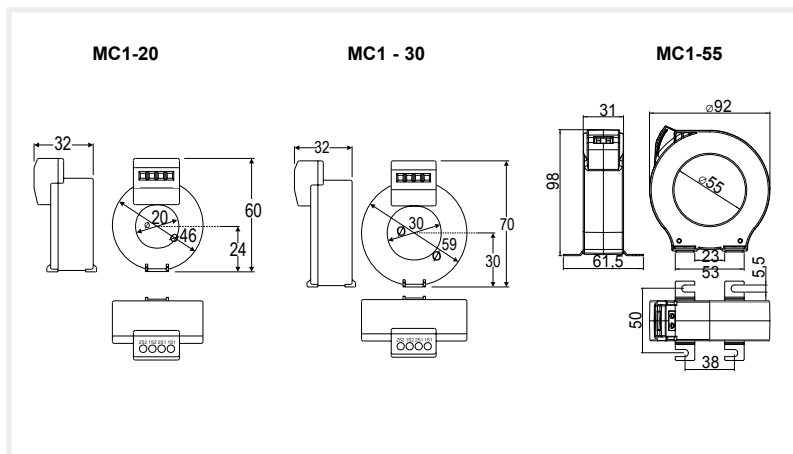
In installations that allow the power supply to be stopped to install transformers.

Very useful to install in places where the exact nominal current range is not known. Each transformer has 3 ratio ranges by changing a connection cable and the chosen ratio in the measuring device.

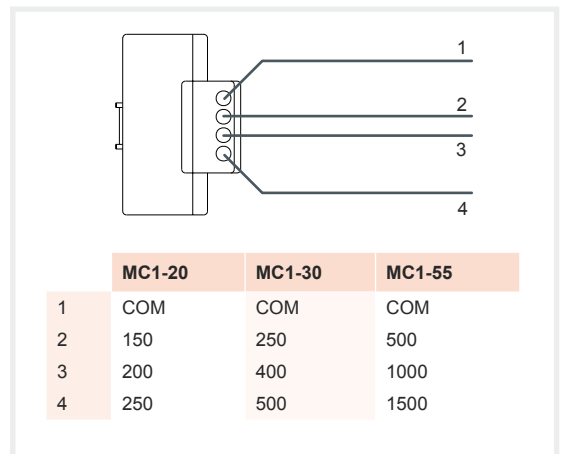
Features

Frequency	50 / 60 Hz
Isolation voltage	3 kV _{ac}
Thermal short-circuit current, I_{th}	60 I_n
Dynamic current, I_{dyn}	2,5 I_{th}
Highest current in the material	0,72 kV _{ac}
Thermal class	B (130 °C)
Type of encapsulation	VO self-extinguishing plastic
Safety factor	F_s 5
Secondary sealable terminals	yes
Secondary terminals	IP 20
Fixing on DIN rail	MC1-20 and MC1-30
Standard	IEC 60044-1

Dimensions



Connection



References

MC1 single-phase Efficient Transformers

A máx.	Ranges	Class 0,5 Power	Measurement	Internal diameter	Type	Code
250	150/200/250	0,25 VA	1 phase	20 mm	MC1-20-150/200/250	M73113
500	250/400/500	0,25 VA	1 phase	30 mm	MC1-30-250/400/500	M73114
1500	500/1000/1500	0,25 VA	1 phase	55 mm	MC1-55-500/1000/1500	M73115

Current transformers

serie MC-3

Three-phase Efficient current transformers

Description

Current transformers specially designed to be installed above a switch

- Transformer range from 63 to 250 A
- Secondary 250 mA
- Compatible with the **MC** product range from **CIRCUTOR**.

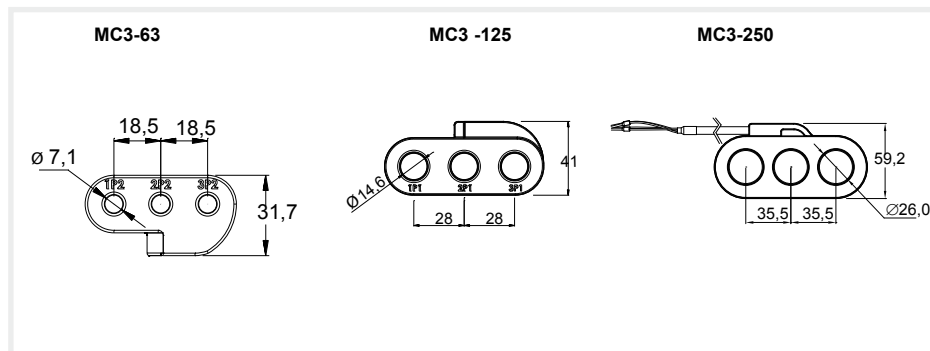
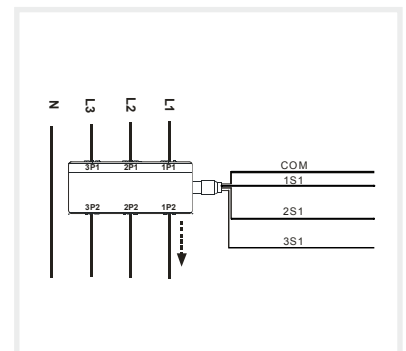
Application

Installation in confined spaces, utilizing the space above the circuit breakers and earth leakage protection

In installations that allow the power supply to be shut down for the installation of transformers.

Features

Frequs	50 / 60 Hz
Isolation voltage	3 kVac
Thermal short-circuit current, I_{th}	60 I_n
Dynamic current, I_{dyn}	2,5 I_{th}
Highest current in the material	0,72 kVac
Clase	0,5
Thermal class	B (130 °C)
Type of encapsulation	VO self-extinguishing plastic
Safety factor	F_s 5
Secondary sealable terminals	yes
Secondary terminals	IP 20
Standard	
IEC 60044-1	

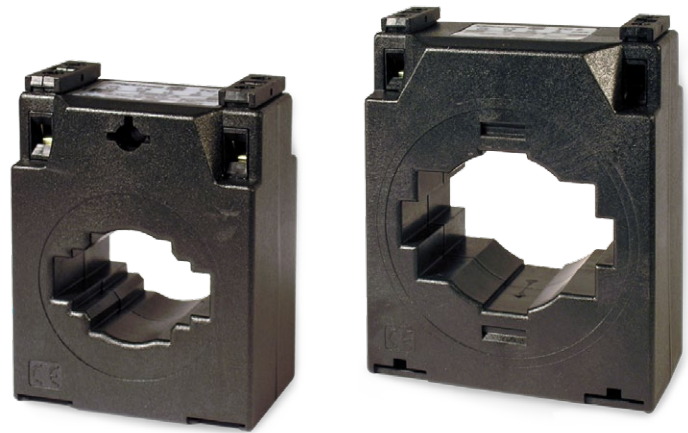
Dimensions

Connections

References
MC3 three-phase Efficient Transformers,

A max.	Class 0,5 Power	Measurement	Internal diameter	Type	Code
63	0,1 VA	3 phases	7,1 mm	MC3-63	M73121
125	0,1 VA	3 phases	14,6 mm	MC3-125	M73122
250	0,1 VA	3 phases	26 mm	MC3-250	M73123

Current transformers

TC series

Narrow-profile current transformer



Description

- Type: bar entrance
- Types: from 40 to 4000 A
- Internal diameter: from 20.3 to 63 mm, depending on the type
- Busbar dimensions: from 25 x 5 mm to 30 x 100 mm
- Transformer certificate sheet is attached
- DIN rail fixing accessory (Types **TC5** and **TC6**)
- Secondary coding types .../5 A (on demand .../1 A. TC12 not available)

Application

Converting a high nominal current to a lower current so that it can be measured by the unit.

In installations where the electrical supply can be interrupted to install transformers.

Features

Frequency	50 / 60 Hz
Isolation voltage	3 kV ac
Thermal short-circuit current, I_{th}	$60 I_n$
Dynamic current, I_{dyn}	$2.5 I_{th}$
Highest current in the material	0.72 kV ac
Thermal class	B (130 °C)
Working temperature	-5 ... 40 °C
Type of encapsulation	VO self-extinguishing plastic
Safety factor	F_s 5
Secondary sealable terminals	Yes
Secondary terminals	IP 20
Fixing on DIN rail	TC5 and TC6
Standards	
IEC 44-1, BS2627	

Current transformers
TC series

Narrow-profile current transformer


References

Type	TC 4				TC 5				TC 5,2				TC 6,2				TC 6				
Busbar (mm)	30 x 10 20 x 10 25 x 5				25 x 5				20 x 12 25 x 10 30 x 10				30 x 10				40 x 10				
A	V-A	Class			Code	Class			Code	Class			Code	Class			Code	Class			Code
		0,5	1	3		0,5	1	3		0,5	1	3		0,5	1	3		0,5	1	3	
40/5					-	-	1,5	M70311													
50/5	-	-	1	M703D5	-	-	3	M70312													
60/5	-	-	1,25	M703D6	-	1,25	3,5	M70313													
75/5	-	-	1,25	M703D7	-	2	3,5	M70314													
100/5	-	2	3	M703D8	1,5	2,5	3,75	M70315	-	1	1,5	M70321	1,75	3,75	7,5	M70341					
125/5	-	2,5	2,75	M703D9	1,75	3,5	5	M70316	-	1,5	2	M70322	3,75	7,5	10	M70342					
150/5	1,5	2,5	4	M703DA	2,5	3,5	5	M70317	1	2	2,5	M70323	5	7,5	10	M70343	1	5	7,5	M70331	
200/5	2,5	5	6	M703DB	3,75	5	5	M70318	2,5	3	3,5	M70324	7,5	10	10	M70344	3,5	5	7,5	M70332	
250/5					5	7,5	7,5	M70319	3,5	3,75	5	M70325	7,5	10	15	M70345	5	7,5	10	M70333	
300/5									3,5	3,75	5	M70326	10	10	15	M70346	5	7,5	10	M70334	
400/5									3,5	5	7,5	M70327	10	10	15	M70347	5	7,5	10	M70335	
500/5									5	7,5	10	M70328	15	15	20	M70348	7,5	10	15	M70336	
600/5									5	7,5	10	M70329	15	20	25	M70349	7,5	10	15	M70337	
750/5																	10	15	20	M70338	
800/5																	10	15	20	M70339	

Type	TC 8				TC 8.3				TC 10				TC 12							
Busbar (mm)	60 x 12				40 x 10				50 x 50 60 x 30 80 x 30				3 x 100 x 10							
A	V-A	Class			Code	Class			Code	Class			Code	Class			Code			
		0,5	1	3		0,5	1	3		0,5	1	3		0,5	1	3				
100/5						5	5	5	M703BA											
150/5						5	7,5	10	M703BC											
200/5	1	2,5	5	M7036C	15	20	25	M703B2	1	2,5	5	M7037F								
250/5						10	15	20	M703B1											
300/5	2,5	5	7,5	M7036B	15	20	25	M703B3	2,5	5	7,5	M7037D								
400/5	5	7,5	10	M70361	15	20	25	M703B4	2,5	5	7,5	M7037G								
500/5	7,5	10	15	M70362	15	20	25	M703B5	5	7,5	10	M7037B								
600/5	10	15	20	M70363	15	20	25	M703B6	7,5	10	15	M7037C								
750/5	15	20	25	M70364	20	25	30	M703B7												
800/5	15	20	30	M70365	25	30	35	M703B8	7,5	10	15	M70372	10	15	20	M7038B				
1 000/5	15	20	30	M70366	25	30	35	M703B9	10	15	20	M70373	10	15	20	M70381				
1 200/5	15	20	30	M70367					10	15	20	M70374	10	15	20	M70382				
1 250/5				M7036A					10	15	20	M7037E	10	15	20	M7038D				
1 500/5	15	20	30	M70368					15	20	25	M70375	15	20	30	M70383				
1 600/5	15	20	30	M70369					15	20	25	M70376	15	20	30	M70384				
2 000/5									15	20	25	M70377	15	20	30	M70385				
2 500/5									15	20	30	M70378	20	30	40	M70386				
3 000/5									15	20	30	M70379	30	40	60	M70387				
3 200/5																	30	40	60	M7038C
4 000/5																	35	40	60	M70388

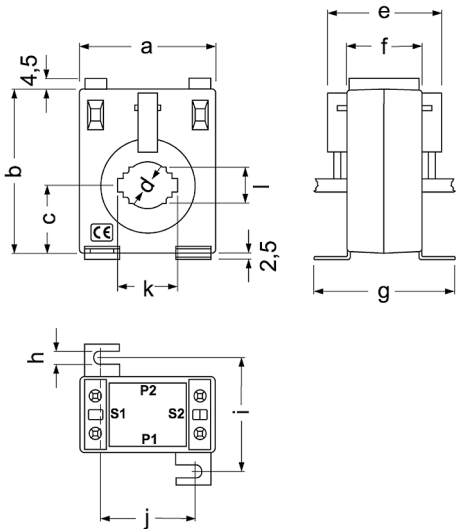
Current transformers

TC series

Narrow-profile current transformer

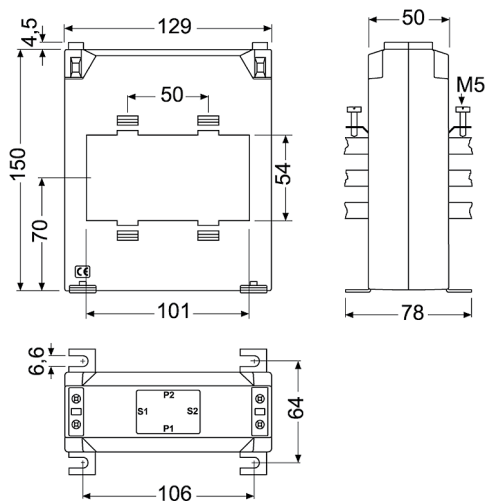


Dimensions



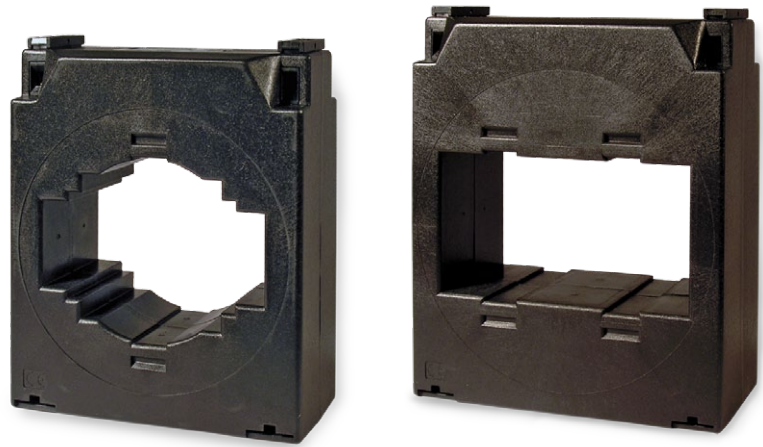
dimensions (mm)	TC 4	TC 5 TCH 5	TC 5.2 TCH 5.2	TC 6.2 TCH 6.2	TC 6 TCH 6	TC 8 TCH 8	TC 10 TCH 10
a	46	58	58	64	64	84,5	108
b	70	70	70	80,5	80,5	102	130
c	29	29	29	34	34	46	61
d	21	20,3	22	26	28,5	44	63
e	43,5	45	45	60,5	60,5	69	---
f	30	32	32	44	44	50	50
g	56	59	59	71	71	78	78
h	5,5	5,6	5,6	5,6	5,6	6,6	6,6
i	45,5	48	48	60	60	64	64
j	31,6	39	39	46	46	62	86
k	30,5	25,6	30,6	30,6	40,6	60,6	80,6
l	30,5	15,6	15,6	30,6	25,2	30,6	50,8

TC 12 series



Current transformers

TCH

Top-performance current transformer

Description

- Narrow-profile
- Types: from 100 to 4000 A
- Internal diameter: from 26 to 63 mm, depending on the type
- Busbar dimensions: from 30 x 10 mm to 30 x 100 mm
- Transformer certificate sheet is attached

Application

Converting a high nominal current to a lower current so that it can be measured by the unit.

In installations where the electrical supply can be interrupted to install transformers and a high accuracy is required.

Features

Frequency	50 / 60 Hz
Isolation voltage	3 kVac
Thermal short-circuit current, I_{th}	$60 I_n$
Dynamic current, I_{dyn}	$2.5 I_{th}$
Highest current in the material	0.72 kVac
Thermal class	B 130 °C
Working temperature	-5 ... 40 °C
Type of encapsulation	VO self-extinguishing plastic
Safety factor	FS 5/10
Secondary sealable terminals	Yes


References

Type	TCH 6.2				TCH 6			
Busbar (mm)	30 x 10				40 x 10			
Dimensions (mm)								
	81				81			
	64				64			
	44				44			
V-A	Class			Code	Class			Code
	0.2S	0,2	0.5S		0.2S	0,2	0.5S	
50/5		0,5		M7044B				
60/5		0,5		M7044C				
100/5	1	1,5	2,5	M70441				
125/5	1	1,5	2,5	M70441				
150/5	2,5	3,5	3,5	M70443	1	1,25	1,5	M70431
200/5	3,5	5	5	M70444	1,25	1,5	2	M70432
250/5	5	5	5	M70445	1,5	1,75	2,25	M70433
300/5	5	5	5	M70446	1,75	2	2,5	M70434
400/5	7,5	7,5	7,5	M70447	1	5	5	M70435
500/5					5	7,5	7,5	M70436
600/5					5	7,5	7,5	M70437
750/5					7,5	10	10	M70438
800/5					7,5	10	10	M70439

Current transformers

TCH series

Top-performance current transformer



References

Type	TCH 8	TCH 10	TCH 12									
Busbar (mm)	60 x 12	50 x 50 60 x 30 80 x 30	3 x 100 x 10									
Dimensions (mm)												
	102 84,5 50	130 108 50	150 129 50									
V-A	Class			Code	Class			Code	Class			Code
	0.2S	0,2	0.5S		0.2S	0,2	0.5S		0.2S	0,2	0.5S	
A												
600/5	5	10	10	M70463								
750/5	7,5	10	10	M70464								
800/5	7,5	10	10	M70465								
1 000/5	10	15	15	M70466	7,5	10	10	M70473				
1 200/5	10	15	15	M70467	10	10	10	M70474	10	15	15	M70483
1 250/5	10	15	15	M7046A	10	10	10	M7047C	10	15	15	M7048C
1 500/5	10	15	15	M70468	10	10	15	M70475	10	15	15	M70483
1 600/5	10	15	15	M70469	10	10	15	M70476	10	15	15	M70484
2 000/5					10	10	15	M70477	10	15	15	M70485
2 500/5					10	10	15	M70478	15	20	20	M70486
3 000/5					10	10	15	M70479	20	25	25	M70487
4 000/5									25	30	30	M70488

Dimensions

dimensions (mm)	TC 5 TCH 5	TC 5.2 TCH 5.2	TC 6.2 TCH 6.2	TC 6 TCH 6	TC 8 TCH 8	TC 10 TCH 10
a	58	58	64	64	84,5	108
b	70	70	80,5	80,5	102	130
c	29	29	34	34	46	61
d	20,3	22	26	28,5	44	63
e	45	45	60,5	66,5	69	---
f	32	32	44	44	50	50
g	59	59	71	71,2	78	78
h	5,6	5,6	5,6	5,6	6,6	6,6
i	48	48	60	60	64	64
j	39	39	46	46	62	86
k	25,6	30,6	20,6	40,6	60,6	80,6
l	15,6	15,6	30,6	25,2	30,6	50,8

TCH 12 series

Current transformers

TA

Large-scale current transformer

Description

- Types: from 750 to 5000 A
- Busbar dimensions: from 20 x 100 mm to 60 x 125 mm
- Transformer certificate sheet is attached

Application

Converting a high nominal current to a lower current so that it can be measured by the unit.

In installations where the electrical supply can be interrupted to install transformers.

Features

Frequency	50 / 60 Hz
Isolation voltage	3 kVac
Thermal short-circuit current, I_{th}	$60 I_n$
Dynamic current, I_{dyn}	$2.5 I_{th}$
Highest current in the material	0.72 kVac
Thermal class	105 °C
Type of encapsulation	VO self-extinguishing plastic
Safety factor	<5
Secondary sealable terminals	Yes
Standards	
IEC 44-1, UNE 21 088-1, UL 94, VDE 0414	

Current transformers

TA series

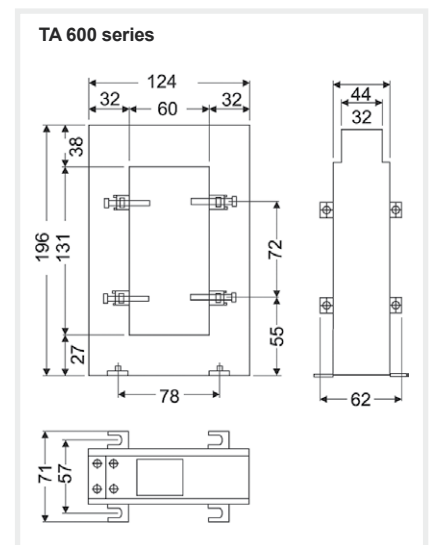
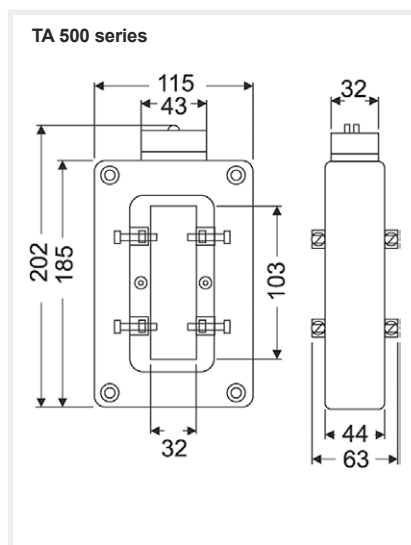
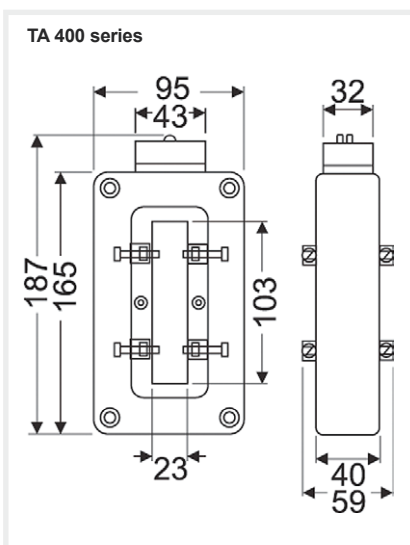
Large-scale current transformer

References



Type	TA 400				TA 500				TA 600				
Busbar (mm)	100 x 20 mm				100 x 30 mm				125 x 60 mm				
Dimensions (mm)													
	a	165				185				196			
	b	95				115				124			
	c	59				63				62			
A	V-A	Class			Code	Class			Code	Class			Code
		0,5	1	3		0,5	1	3		0,5	1	3	
	750/5	15	20	30	[*] M70594								
	800/5	15	20	30	[*] M70595								
	1 000/5	15	20	30	[*] M70596				15	20	30	[*] M705B1	
	1 200/5	15	20	30	[*] M70597								
	1 500/5	15	30	40	[*] M70598	15	30	40	[*] M705A4	15	20	30	[*] M705B3
	2 000/5	20	40	50	[*] M70599	20	40	50	[*] M705A6	15	20	30	[*] M705B5
	2 500/5					20	40	50	[*] M705A7	20	30	40	[*] M705B6
	3 000/5					20	45	60	[*] M705A8	30	40	60	[*] M705B7
	4 000/5					35	50	70	[*] M705A9	35	50	70	[*] M705B8
	5 000/5									40	60	80	[*] M705B9

Dimensions



Current transformers

TP

Split-core current transformer
Description

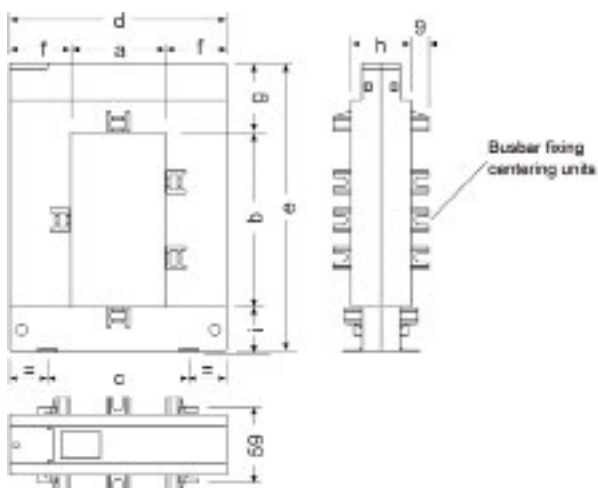
- The most important features of these transformers are that they are "disassemblable". In other words, the whole installation does not have to be disassembled.
- Types: from 100 to 5000 A
- Busbar dimensions: from 20 x 30 mm to 80 x 160 mm
- Transformer certificate sheet is attached

Application

Converting a high nominal current to a lower current so that it can be measured by the unit. They have a split core and can be installed with no need to interrupt the installation's power supply.


Features

Frequency	50 / 60 Hz
Isolation voltage	3 kV ac
Thermal short-circuit current, I_{th}	$60 I_n$
Dynamic current, I_{dyn}	$2.5 I_{th}$
Highest current in the material	0.72 kV ac
Thermal class	B (120 °C)
Working temperature	-5 ... 40 °C
Transformer ratio	Depending on the type (.../5 or .../1 A)
Type of encapsulation	Self-extinguishing VO plastic (UL 94VO)
Secondary sealable terminals	Yes
Standards	
IEC 44-1, UNE 21 088-1, UL 94, VDE 0414	

Dimensions


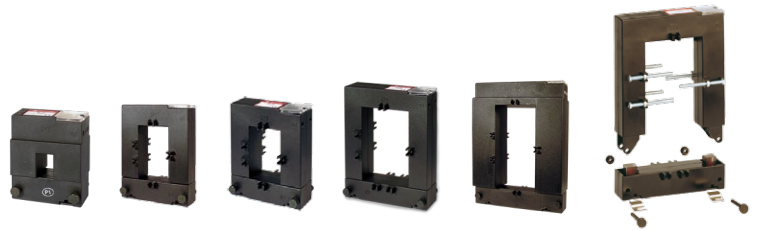
dimensions (mm)	TP-23	TP-58	TP-88	TP-812	TP-816
a	20	50	80	80	80
b	30	80	80	120	160
c	51	78	108	108	120
d	89	114	144	144	184
e	110	145	145	185	245
f	34	32	32	32	52
g	47	32	32	32	47
h	40	32	32	32	52
i	32	32	32	32	38

Note: All types have fixing centering units, except for TP-23

Current transformers

TP series

Split-core current transformer



References

Type	TP -23				TP -58				TP -88			
Busbar (mm)	20 x 30 mm				50 x 80 mm				80 x 80 mm			
Dimensions (mm)												
	a	110			145			145				
	b	89			114			144				
	c	58			50			50				
A \ V-A	Class			Code	Class			Code	Class			Code
	0,5	1	3		0,5	1	3		0,5	1	3	
100/5	-	-	1,5	[*] M70111								
150/5	-	-	2	[*] M70112								
200/5	-	1,5	2,5	[*] M70113								
250/5	-	2	4	[*] M70114	1	2	4	[*] M70121	-	2	4	[*] M70131
300/5	1,5	4	6	[*] M70115	1,5	3	6	[*] M70122	1,5	3	6	[*] M70132
400/5	2,5	6	10	[*] M70116	1,5	3	10	[*] M70123	1,5	3	10	[*] M70133
500/5					2,5	5	15	[*] M70124	2,5	5	15	[*] M70134
600/5					2,5	5	17,5	[*] M70125	2,5	5	17,5	[*] M70135
700/5					2,5	-	-	[c] M7012C				
750/5					3	6	18	[*] M70126	3	6	18	[*] M70136
800/5					3	7	18	[*] M70127	3	7	18	[*] M70137
1 000/5					5	10	20	[*] M70128	5	10	20	[*] M70138

Type	TP -812				TP -816			
Busbar (mm)	80 x 120 mm				80 x 160 mm			
Dimensions (mm)								
	a	185			245			
	b	144			184			
	c	50			70			
A \ V-A	Class			Code	Class			Code
	0,5	1	3		0,5	1	3	
500/5	-	4	12	[*] M70141				
600/5	-	5	14	[*] M70142				
750/5	2,5	6	17	[*] M70143				
800/5	3	7	18	[*] M70144				
1 000/5	5	9	20	[*] M70145	10	15	20	[*] M70151
1 200/5	6	11	24	[*] M70146				
1 250/5	7	15	28	[*] M70147	8	-	-	[c] M7015A
1 500/5	8	17	30	[*] M70148	15	20	25	[*] M70152
1 600/5	8	-	-	[c] M70149	8	-	-	[c] M7015B
2 000/5					15	20	25	[*] M70153
2 500/5	10	17	25	[*] M7014A	15	20	25	[*] M70154
3 000/5					20	25	30	[*] M70155
4 000/5					20	25	30	[*] M70156
5 000/5					20	25	30	[*] M70157

Current transformers

STP

Split-core current transformer
Description

Split-core current transformers of small dimensions helps to save time to electrical installators during the mounting process. This type of current transformer helps to measure in panels where there is not enough space to place an standard CT. Moreover, thanks to its split-core it's possible to measure current without disconnecting the power supply.

Primary ranges goes from 100 A up to 300 A with a maximum diametre of 23 mm.

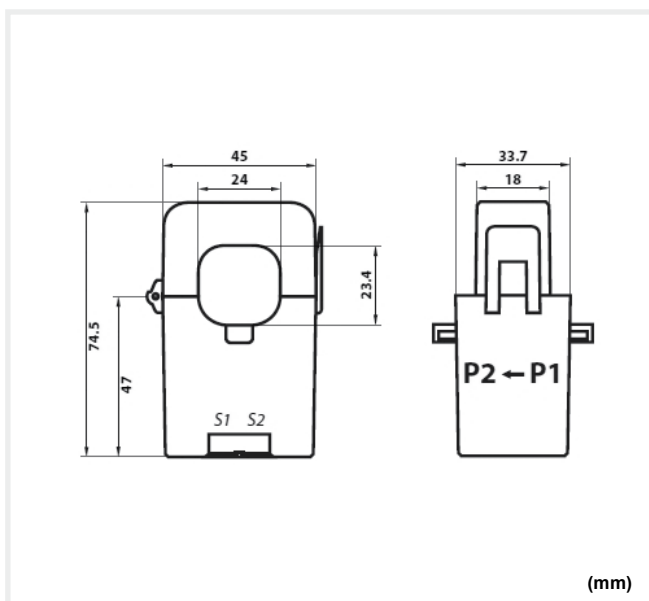
Application

When it's necessary to make a temporary measure in an electrical facility, it's very important to save time during installation process. **STP** current transformers allows to mesure energy being used with **CIRCUTOR** power analyzers or energy meters without power supply disconnection.

Split-core allows to measure in small size panels and helps to provide a solution with less space.


Features
Main features

Primary current (depending on the model)	100-125-150-200-250-300 A
Secondary current	/1 A
I_{min}	$0,01 \times I_n$
Frecuency	50 / 60 Hz
Isolation voltage	0,72 kV
Highest voltage for the case	3 kV 1 minute
Admisible overload	1.2 times $\times I_n$
Working temperature	-20 °C ... +55 °C
SF	2,5
Protection level	Bipolar 6.5 V_p
Type of encapsulation	CAT III 600 V_{AC}
Output terminals	2 x M3 with terminal cover

Standards
IEC-60044-1, IEC-61010-1
Dimensions

References

Type	A	Class	V-A	internal (mm)	Code
STP-30	100/1	3	1	23,4 x 24	M73303001
	125/1	3	1	23,4 x 24	M73304001
	150/1	3	1	23,4 x 24	M73305001
	200/1	1	0,5	23,4 x 24	M73306001
	250/1	1	1	23,4 x 24	M73307001
	300/1	1	1,5	23,4 x 24	M73308001

Current transformers

TA 210

High-accuracy wound primary current transformer



Description

- Types: from 5 to 400 A
- Wound primary

Application

Converting a high nominal current to a lower current so that it can be measured by the unit.

In installations where the nominal current is not too high or where the current requested from the secondary power transformer does not exceed 10 V·A.

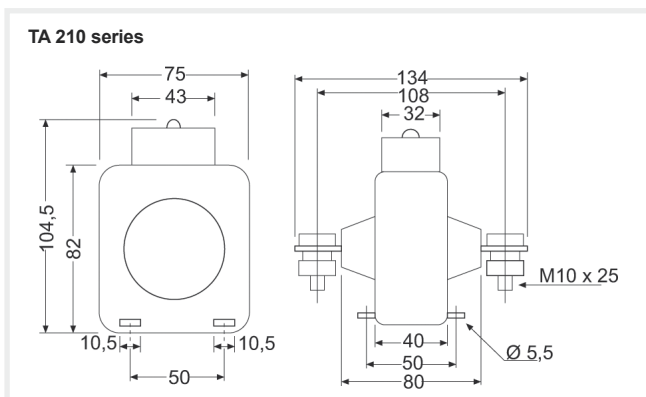
Features

Frequency	50 / 60 Hz
Isolation voltage	3 kV ac
Thermal short-circuit current, I_{th}	$60 I_n$
Dynamic current, I_{dyn}	$2.5 I_{th}$
Highest current in the material	0.72 kV ac
Thermal class	A 105 °C
Type of encapsulation	VO self-extinguishing plastic
Safety factor	$F_s < 5$
Secondary sealable terminals	Yes


Standards

IEC 44-1, UNE 21 088-1, UL 94, VDE 0414

Dimensions



References

Type	TA 210 (*1)				
	Wound Primary				
Dimensions (mm)					
		a	b	c	
		104.5	75	134	
A	V·A	Class			Code
		0,5	1	3	
5/5	15	20	30	[*] M70541	
10/5	15	20	30	[*] M70542	
15/5	15	20	30	[*] M70543	
20/5	15	20	30	[*] M70544	
25/5	15	20	30	[*] M70545	
30/5	15	20	30	[*] M70546	
40/5	15	20	30	[*] M70547	
50/5	15	20	30	[*] M70548	
60/5	15	20	30	[*] M70549	
75/5	15	20	30	[*] M7054A	
100/5	15	20	30	[*] M7054B	
125/5	15	20	30	[*] M7054C	
150/5	15	20	30	[*] M7054D	
200/5	15	20	30	[*] M7054E	
250/5	15	20	30	[*] M7054F	
300/5	15	20	30	[*] M7054G	
400/5	15	20	30	[*] M7054H	

(*1) Sealable terminal cover and anchoring base included

Current transformers

TM 45

Wound primary current transformer

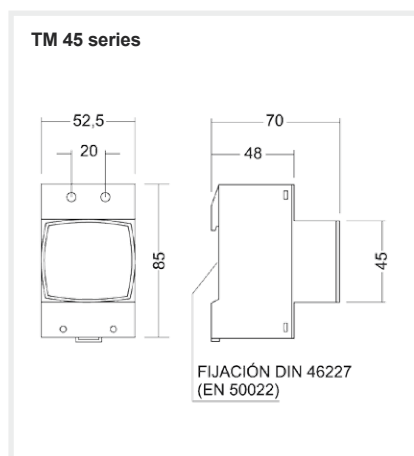

Description

- Types: from 1 to 40 A
- Wound primary
- Assembly on DIN rail
- Transformer certificate sheet is attached

Application


Converting a high nominal current to a lower current so that it can be measured by the unit.

In installations where the nominal current is not too high or a transformer has to be installed on the DIN rail.

Dimensions

Features

Frequency	50 / 60 Hz
Isolation voltage	3 kVac
Thermal short-circuit current, I_{th}	$60 I_n$
Dynamic current, I_{dyn}	$2.5 I_{th}$
Highest current in the material	0.72 kVac
Thermal class	A (105 °C)
Type of encapsulation	VO self-extinguishing plastic
Safety factor	$F_s < 5$
Secondary sealable terminals	Yes
Standards	
IEC 44-1, UNE 21 088-1, UL 94, VDE 0414	

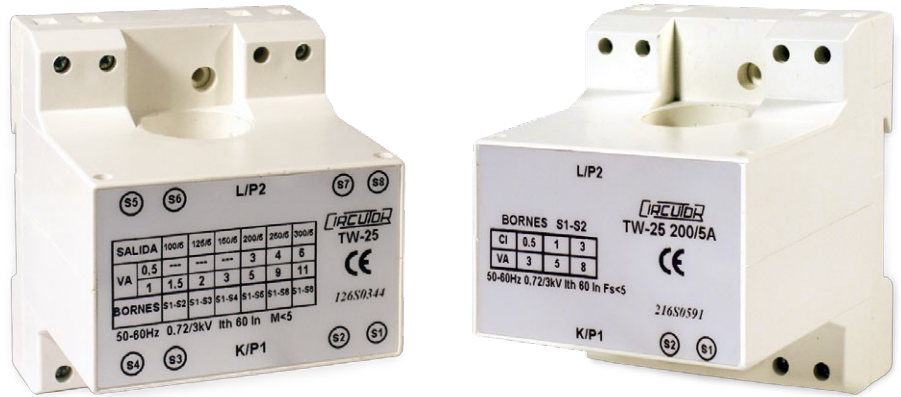
References

Type	TM 45			
	Wound Primary			
Dimensions (mm)				
		a	b	c
		85	52,5	70
V-A	Class			Code
	0,5	1	3	
A				
5/5	2,5	5	7	[*] M70601
10/5	2,5	5	7	[*] M70602
15/5	2,5	5	7	[*] M70603
20/5	2,5	5	7	[*] M70604
25/5	2,5	5	7	[*] M70605
30/5	2,5	5	7	[*] M70606
40/5	2,5	5	7	[*] M70607
50/5	2,5	5	7	[*] M70608

Current transformers

TW 25

Entrance bar current transformer



Description

- Types: from 100 to 300 A
- Entrance bar
- Assembly for DIN rail

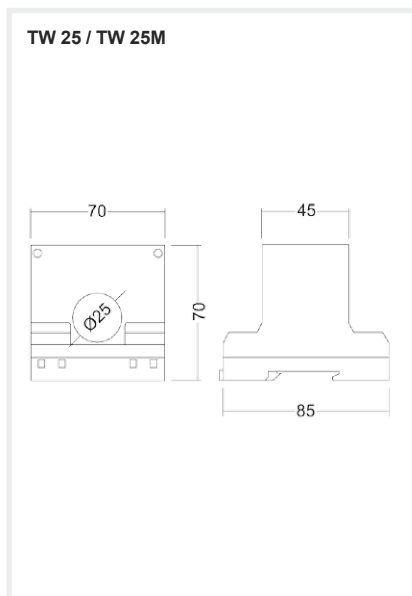
Application

Converting a high nominal current to a lower current so that it can be measured by the unit. In installations where the nominal current is not too high or a transformer has to be installed on the DIN rail.

Features

Frequency	50 / 60 Hz
Isolation voltage	3 kVac
Thermal short-circuit current, I_{th}	$60 I_n$
Dynamic current, I_{dyn}	$2.5 I_{th}$
Highest current in the material	0.72 kVac
Thermal class	A (105 °C)
Type of encapsulation	VO self-extinguishing plastic
Safety factor	$F_s < 5$
Secondary sealable terminals	Yes
Standards	IEC 44-1, UNE 21 088-1, UL 94, VDE 0414

Dimensions



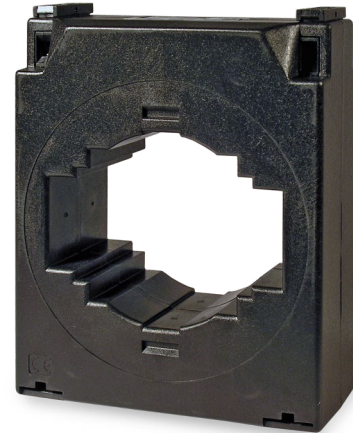
References

Type	TW 25 / TW 25M			
inner Ø (mm)	Bar entrance 25			
Dimensions (mm)				
	a	85		
	b	70		
	b	70		
	c	70		
V·A	Class			Code
	0,5	1	3	
A	0,5	1	3	
100/5	-	1,5	3	[*] M70611
125/5	-	2	4	[*] M70612
150/5	-	3	5	[*] M70613
200/5	3	5	8	[*] M70614
250/5	4	9	11	[*] M70615
300/5	6	11	13	[*] M70616
100 / 125 / 150 / 200 / 250 / 300	Identical to TW 25			[*] M70621

Current transformers with converter

TC 020 / TC 420

Narrow-profile current transformer with a built-in converter, with an output of 0...20 mA / 4...20 mA



Description

TC 020 Series

- Self-powered: does not need an auxiliary power supply.
- Primary current: from 50 to 1500 A ac, depending on the type
- Secondary current: 0..20 mA
- Internal diameter: from 28 to 44 mm, depending on the type
- Busbar dimensions: from 40 x 10 mm to 60 x 12 mm

TC 420 series

- Needs an output power supply of 7.5...36 V dc
- Primary current: from 5 to 1500 A ac, depending on the type
- Secondary current: 4..20 mA
- Internal diameter: from 20 to 44 mm, depending on the type
- Busbar dimensions: from 25 x 5 mm to 60 x 12 mm

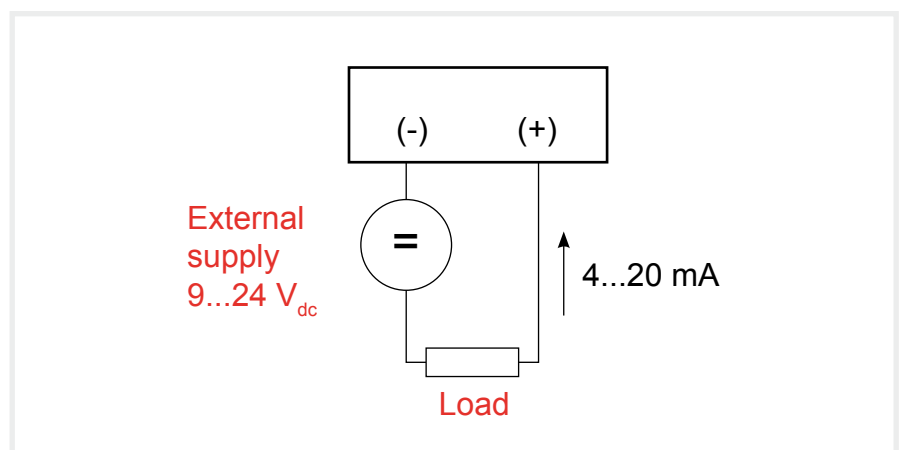
Application

Used in power lines to obtain a current proportional to the primary current rated at 0..20 mA / 4...20 mA in the secondary

Features

Frequency	50 / 60 Hz
Isolation voltage	3 kV ac
Thermal short-circuit current, I_{th}	$60 I_n$
Dynamic current, I_{dyn}	$2.5 I_{th}$
Highest current in the material	0.72 kV ac
Thermal class	B (130 °C)
Type of encapsulation	VO self-extinguishing plastic
Safety factor	$F_s < 5$
Secondary sealable terminals	Yes
Standards	
IEC 44-1, B5 2627	

Connection



Current transformers with converter

TC 020 / TC 420 series

Narrow-profile current transformer with a built-in converter, with an output of 0...20 mA / 4...20 mA

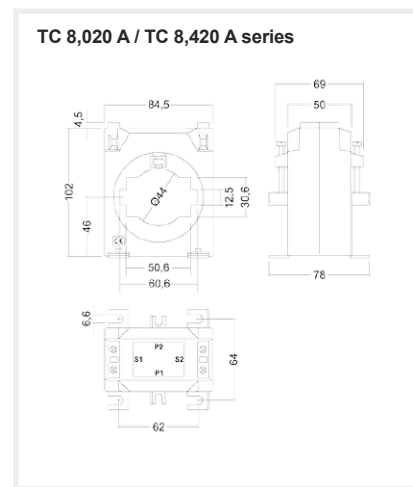
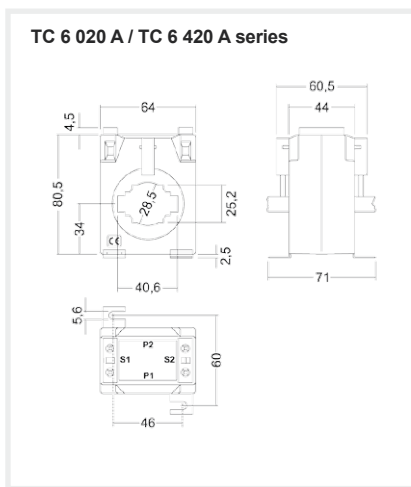
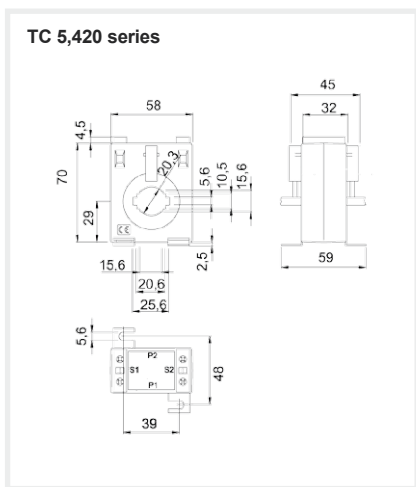


References

Type	TC 420			TC 020		
	TC 5,420	TC 6,420	TC 8,420	TC 6 020A	TC 8,020A	
inner Ø (mm)	20	28	44	28	44	
Busbar (mm)	25 x 5	40 x 10	60 x 12	40 x 10	60 x 12	
Dimensions (mm)						
	a	70	80,5	102	80,5	102
	b	58	64	84,5	64	84,5
	c	32	44	50	44	50
A	Output 4...20 mA, external power supply 7.5...36 Vdc			Output 0...20 mA		
	Code			Code		
5	[1] M72112					
10	[1] M72113					
20	[1] M72114					
50		[1] M72131		[1] M72031		
100		[1] M72132		[1] M72032		
200		[1] M72134		[1] M72034		
300		[1] M72136		[1] M72036		
500			[1] M72151		[1] M72051	
1 000			[1] M72152		[1] M72052	
1 500			[1] M72153		[1] M72053	

For greater currents, use: transformer + converter

Dimensions



Current transformers with converter

TP 420

Split-core current transformer with built-in converter

Description

- Needs a power supply output of 10 to 28 V dc
- Primary current: from 5 to 4000 A ac, depending on the type
- Secondary current 4...20 mA
- Internal diameter from 20 to 80 mm, depending on the type
- Busbar dimensions from 20 x 30 mm to 80 x 160 mm, depending on the type

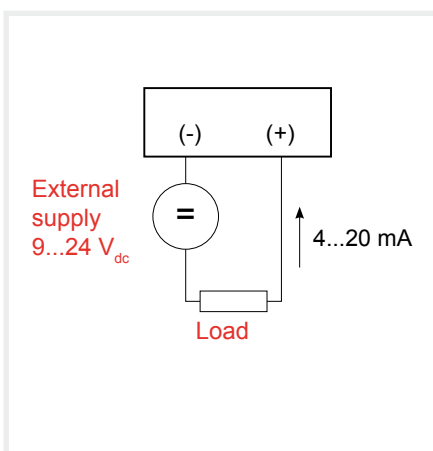
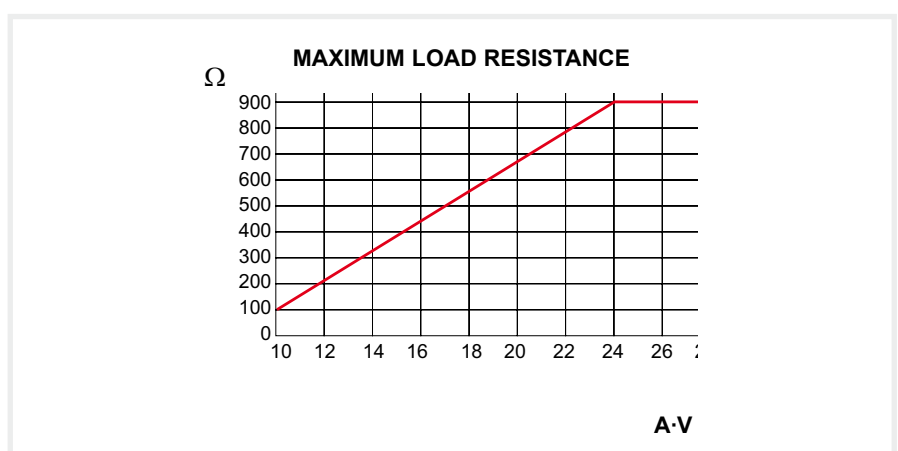

Application

Used in power lines to obtain a current proportional to the primary current rated at 4...20 mA in the secondary

Recommended in scenarios where the process signal must be proportional to the current of an automated system or PLC and the installation's power supply can not be interrupted to install a closed entrance bar transformer.

Features

Measurement circuit	
Frequency	50 / 60 Hz (linear)
Secondary current	4...20 mA dc
Accuracy class	±1.5% reading (between 5... 110 % I_n)
Overloads (at room temperature)	1.5 I_n permanent
Highest current in the material	0.72 kV ac
Operating temperature	-10°...+50 °C
Standards	
IEC 44-1, UNE 21 088-1, IEC 664, VDE 0110, VDE 0414, UL 94, IEC 1010-1, EN 61010-1	

Connection

Graph



Current transformers with converter

TP 420 series

Split-core current transformer with built-in converter

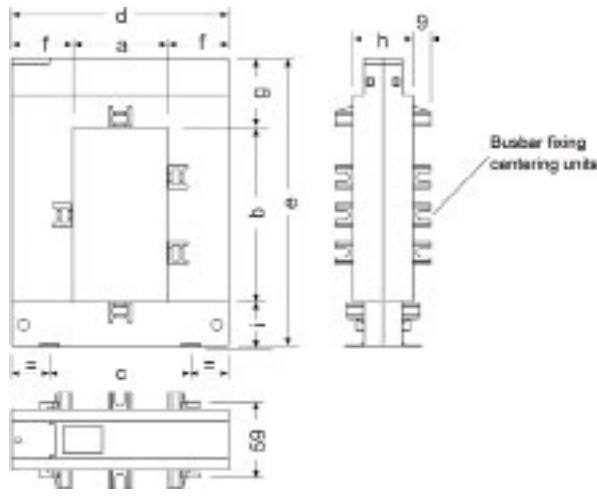


References

Type	TP-420 23	TP-420 58	TP-420 88	TP-420 812	TP-420 816	
inner Ø (mm) Busbar	20 x 30	50 x 80	80 x 80	80 x 120	80 x 160	
Dimensions (mm)						
	a b c	110 89 58	145 114 50	145 144 50	185 144 50	245 184 70
A	10...28 V dc power supply output 4...20 mA					
	Code	Code	Code	Code	Code	
5	[*] M70211					
10	[*] M70212					
20	[*] M70213					
50	[*] M70214					
100	[*] M70215	[*] M70221	[*] M70231			
200	[*] M70216					
250	[*] M70217	[*] M70222	[*] M70232	[2] M70241		
500	[*] M70218	[*] M70223	[2] M70233	[2] M70242	[2] M70251	
750		[*] M70224	[2] M70234	[2] M70243	[2] M70252	
1 000			[2] M70235	[2] M70244	[2] M70253	
1 500			[2] M70236	[2] M70245	[2] M70254	
2 000					[2] M70255	
3 000					[2] M70256	
4 000					[2] M70257	

For greater currents, use: transformer + converter

Dimensions



dimensions (mm)	TP-23	TP-58	TP-88	TP-812	TP-816
a	20	50	80	80	80
b	30	80	80	120	160
c	51	78	108	108	120
d	89	114	144	144	184
e	110	145	145	185	245
f	34	32	32	32	52
g	47	32	32	32	47
h	40	32	32	32	52
i	32	32	32	32	38

Note: All types have fixing centering units, except for TP-23

Current transformers with converter

TI 420

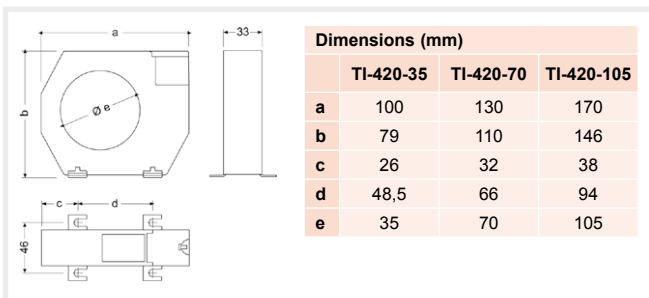
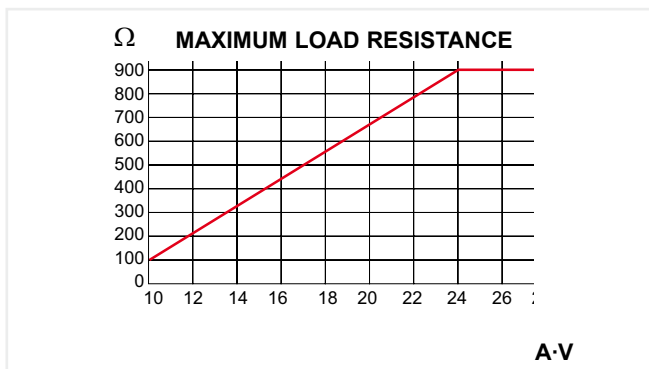
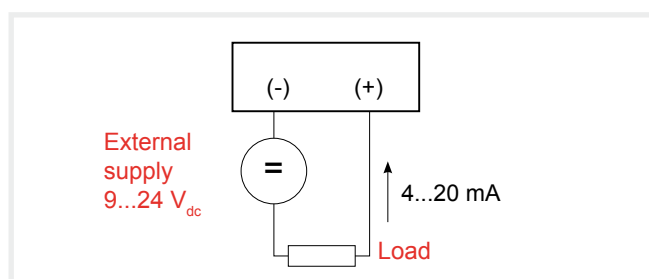
Large-scale current transformer with built-in converter


Description

- Needs an output power supply of 10...28 V dc
- Primary current: from 2.5 to 1500 A ac, depending on the type
- Secondary current: 4...20 mA
- Internal diameter: from 35 to 105 mm, depending on the type
- Busbar dimensions: from 35 to 105 mm, depending on the type

Application

Used in power lines to obtain a current proportional to the primary current rated at 4...20 mA in the secondary

Dimensions

Graph

Connection

Features

Measurement circuit	
Frequency	50 / 60 Hz (linear)
Secondary intensity	4...20 mA dc
Accuracy class	±1.5% reading (between 5... 110 % I _n)
Overloads (at room temperature)	1.5 I _n permanent
Highest current in the material	0.72 kV AC
Operating temperature	-10°...+50 °C
Standards	
IEC 44-1, UNE 21 088-1, IEC 664, VDE0110, VDE0414, UL 94, IEC 1010-1, EN 61010-1	

References

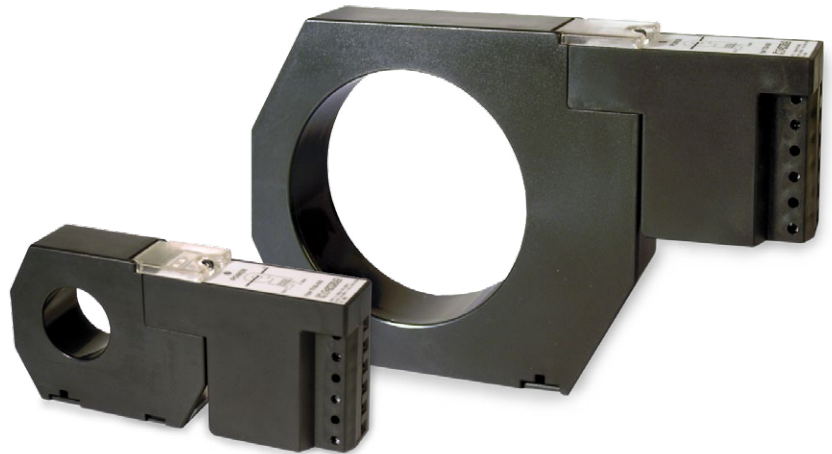
Type	TI-420 35	TI-420 70	TI-420 105	
inner Ø (mm)	35	70	105	
Busbar				
Dimensions (mm)				
	a	79	110	146
	b	100	130	170
	c	33	33	33
A	10...28 V dc power supply output 4...20 mA			
	Code	Code	Code	
2,5	[1] M70811			
5	[1] M70812			
10	[1] M70813			
20	[1] M70814			
50	[1] M70815			
100	[1] M70816	[1] M70821		
250	[1] M70817	[1] M70822	[1] M70831	
500		[1] M70823	[1] M70832	
750		[1] M70824	[1] M70833	
1 000			[1] M70834	
1 500			[1] M70835	

For greater currents, use: transformer + converter

Current transformers with converter

TCB 420

Large-scale current transformer with built-in converter



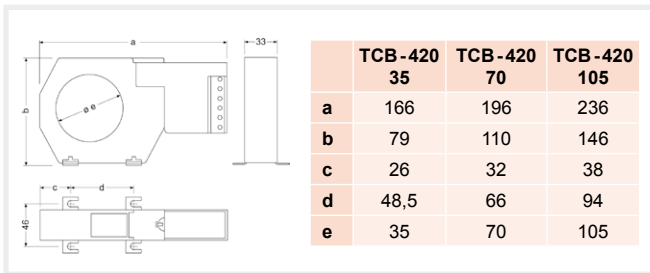
Description

- Built-in internal output power supply
- Needs an auxiliary power supply of 230 V ac
- Primary current: from 2.5 to 1500 A ac, depending on the type
- Secondary current: 4...20 mA
- Internal diameter / Busbar dimensions: from 35 to 105 mm

Application

Used in power lines to obtain a current proportional to the primary current rated at 4...20 mA in the secondary

Dimensions



Features

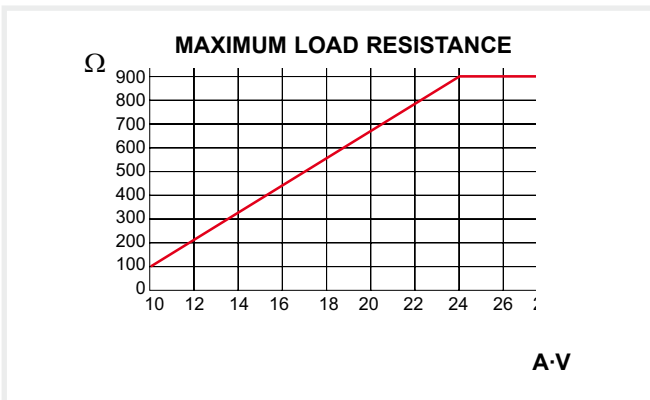
Frequency	50 / 60 Hz
Highest current in the material	0.72 kV ac
Overloads (at room temperature)	1.5 I _n permanent
Class	
Accuracy class	±1.5% I _n
Operating temperature	-10°...+50 °C
Standards	
IEC 44-1, UNE 21 088-1, IEC 664, VDE0110, VDE0414, UL 94, IEC 1010-1, EN 61010-1	

References

Type	TCB -420 35	TCB -420 70	TCB -420 105
inner Ø (mm) Busbar	35	70	105
Dimensions (mm)			
	a	b	c
	79	110	146
	166	196	236
	33	33	38
A	internal power supply output 4...20 mA (230 V ac auxiliary power supply)		
	Code	Code	Code
2,5	[*] M71011		
5	[*] M71012		
10	[*] M71013		
20	[*] M71014		
50	[*] M71015		
100	[*] M71016	[1] M71021	
250	[*] M71017	[*] M71022	[1] M71031
500		[*] M71023	[*] M71032
750		[*] M71024	[1] M71033
1 000			[1] M71034
1 500			[*] M71035

For higher currents, use: transformer + converter

Graph



Current transformers with converter

TCM 420

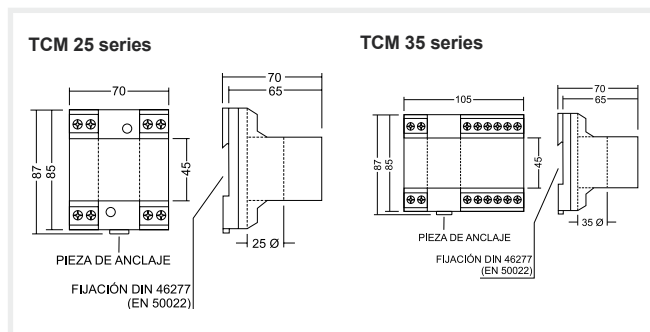
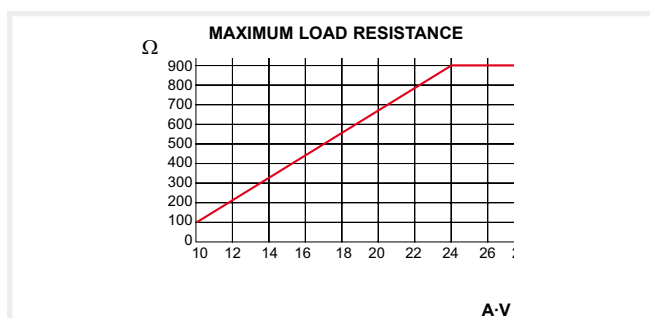
Current transformer for DIN rails with built-in converter


Description

- Built-in internal output power supply
- Needs an auxiliary power supply of 230 V ac
- Primary current: from 2.5 to 300 A ac, depending on the type
- Secondary current: 4...20 mA
- Internal diameter: from 25 to 35 mm, depending on the type
- Busbar dimensions: from 25 to 35 mm, depending on the type

Application

Used in power lines to obtain a current proportional to the primary current rated at 4...20 mA in the secondary

Dimensions

Graph

Features

Frequency	50 / 60 Hz
Highest current in the material	0.72 kV ac
Overloads (at room temperature)	1.5 I _n permanent
Accuracy class	±1.5% I _n
Operating temperature	-10°...+50 °C
Standards	
IEC 44-1, UNE 21 088-1, IEC 664, VDE0110, VDE0414, UL 94, IEC 1010-1, EN 61010-1	

References

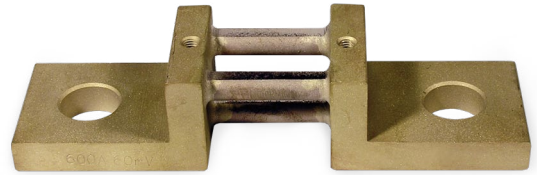
Type	TCM -420 25 (*)	TCM -420 35 (*)
inner Ø (mm) Busbar	25	35
Dimensions (mm)		
	a	87
	b	70
	c	70
A	internal power supply output 4...20 mA (230 V ac auxiliary power supply)	
	Code	Code
2,5	[*] M71041	
5	[*] M71042	
10	[*] M71043	
20	[*] M71044	
50	[*] M71045	
100	[*] M71046	[2] M71054
200	[*] M71047	[*] M71055
300		[2] M71056

For greater currents, use: transformer + converter

Shunts

SH

Shunt to measure DC in high amperages



Description

- Shunt for the measurement of DC, from 1 A dc to 15000 A dc, depending on the type
- Accuracy class: 0.5
- All types are supplied with 1.5 m long cables, with a section of 1.5 mm²
- The standard output voltage is .../60 mV, but there are other types of outputs on demand, see coding table.

Application

Used in DC electrical lines to obtain a voltage signal that is proportional to the current through the shunt

Features

Voltage drop	.../60 mV or.../150 mV	
Accuracy class	0.5 from 0 to 120% I _n	
Overloads	Permanent	1.2 I _n
	During 5 s	10 I _n , when 10 A ≤ I _n ≤ 500 A 5 I _n , when 600 A ≤ I _n ≤ 2000 A 2 I _n , when 2500 A ≤ I _n
Operating temperature	-25...+60 °C	
Build features	Manganin rods Brass terminals	
Standards	DIN 43703, IEC 51, VDE 410, BS 89	

Dimensions

Voltage drop mV ₍₁₎	Scope A ₍₁₎	Fig.	a1	a2	b1	b2	b3	c1	c2	e	h	Weight (kg)	N.o current joints	Current joints			Voltage joints
														DIN 933 Hexagonal screw	DIN 125 Washer	DIN 934 Nut	
60	1-1, 5-2, 5-4-6-10-15-25	1	90	28	20	-	-	8	-	78	-	0,15	2 x 1	M5 x 12	5,3	-	Two M5 Screws x 8 DIN 84 and Two 5.3 DIN 433 washers
			100	33	20	-	-	8	-	80	-	0,13	2 x 1	M8 x 16	8,4	-	
	30-40-60-100-150	2	145	55	30	15	-	10	10	105	30	0,54	2 x 1	M12 x 40	13	M12	
					40	20	-	10	10	105	30	0,78	2 x 1	M16 x 45	17	M16	
					60	30	-	10	10	115	30	1,49	2 x 1	M20 x 50	21	M20	
					90	21	48	10	10	115	30	1,95	2 x 2	M16 x 45	17	M16	
1000 - 1200	2	165	65	120	30	60	10	10	115	30	3	2 x 2	M20 x 50	21	M20		
1500				2500	2 x 2	M20 x 50	21	M20									
150	1-1, 5-2, 5-4-6-10-15-25	1	90	25	20	-	-	8	-	78	-	0,18	2 x 1	M5 x 12	5,3	-	Two M5 Screws x 8 DIN 84 and Two 5.3 DIN 433 washers
			225	33	25	-	-	8	-	205	-	1,14	2 x 1	M8 x 16	8,4	-	
	40-60-100-150	2	270	55	30	15	-	10	10	230	50	0,80	2 x 1	M12 x 40	13	M12	
					40	20	-	10	10	230	50	1,38	2 x 1	M16 x 45	17	M16	
					290	65	70	35	-	10	10	240	60	2,55	2 x 1	M20 x 50	

(1) All shunts are supplied with connection cables that are 1.5m long and have a section of 1.5 mm² ∅.

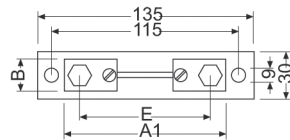
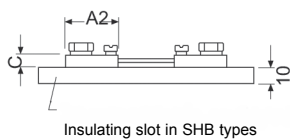


fig 1: from 1 to 150 A

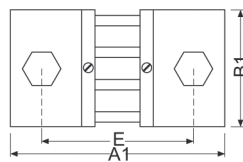
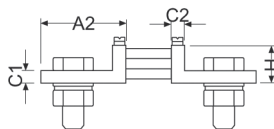


fig 2: from 200 to 1200 A

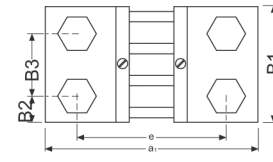
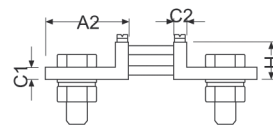


fig 3: from 1500 to 2500 A

Shunts
SH series

Shunt to measure DC in high amperages

References


Ratio	Type	Code	Type	Code	Type	Code
	SH		SHB		SHP	
1 A / 60 mV	-		SHB 1	M71221	-	
1.5 A / 60 mV	-		SHB 1.5	M71222	-	
2.5 A / 60 mV	-		SHB 2.5	M71223	-	
4 A / 60 mV	-		SHB 4	M71224	-	
5 A / 60 mV	-		SHB 5	M71225	-	
6 A / 60 mV	-		SHB 6	M71226	-	
10 A / 60 mV	-		SHB 10	M71227	-	
15 A / 60 mV	-		SHB 15	M71228	-	
25 A / 60 mV	-		SHB 25	M71229	-	
30 A / 60 mV	SH 30	M71231	SHB 30	M7122A	SHP 30	M71211
40 A / 60 mV	SH 40	M71232	SHB 40	M7122B	SHP 40	M71212
50 A / 60 mV	SH 50	M71233	SHB 50	M7122C	SHP 50	M71213
60 A / 60 mV	SH 60	M71234	SHB 60	M7122D	SHP 60	M71214
75 A / 60 mV	-		-		SHP 75	M71215
80 A / 60 mV	SH 80	M71235	SHB 80	M7122E	-	
100 A / 60 mV	SH 100	M71236	SHB 100	M7122F	SHP 100	M71216
150 A / 60 mV	SH 150	M71237				
200 A / 60 mV	SH 200	M71238				
250 A / 60 mV	SH 250	M71239				
300 A / 60 mV	SH 300	M7123A				
400 A / 60 mV	SH 400	M7123B				
500 A / 60 mV	SH 500	M7123C				
600 A / 60 mV	SH 600	M7123D				
750 A / 60 mV	SH 750	M7123E				
800 A / 60 mV	SH 800	M7123F				
1 000 A / 60 mV	SH 1 000	M7123G				
1 200 A / 60 mV	SH 1 200	M7123H				
1 500 A / 60 mV	SH 1 500	M7123J				
2 000 A / 60 mV	SH 2 000	M7123K				
2 500 A / 60 mV	SH 2 500	M7123L				
3 000 A / 60 mV	SH 3 000	M7123M				
4 000 A / 60 mV	SH 4 000	M7123N				
5 000 A / 60 mV	SH 5 000	M7123P				
6 000 A / 60 mV	SH 6 000	M7123Q				
7 500 A / 60 mV	SH 7 500	M7123R				
8 000 A / 60 mV	SH 8 000	M7123S				
10 000 A / 60 mV	SH 10 000	M7123T				
12 500 A / 60 mV	SH 12 500	M7123U				
15 000 A / 60 mV	SH 15 000	M7123V				
18 000 A / 60 mV	SH 18 000	M7123Z				
20 000 A / 60 mV	SH 20 000	M7123O				

Coding table

Shunts	M	7	X	X	X	X	0	0	X
	Code						Internal Code		↑
	Input						Standard .../60 mV		0
							.../50 mV		1
							.../100 mV		2
							.../150 mV		3
							.../200 mV		4
							.../300 mV		5
.../400 mV							6		

Voltage transformers

VT

Voltage transformers

**Description**

- Accuracy class 1
- Power 25 V·A

Application

Used in AC electricity lines to obtain a lower voltage in the secondary than in the primary, so that it can be measured by electronic equipment

References

V	Type	Code
230 / 110 V	VT2311	M72311
380 / 230 V	VT3823	M72352
400 / 110 V	VT4011	M72321
400 / 230 V	VT4023	M72322
440 / 110 V	VT4411	M72331
440 / 230 V	VT4423	M72332
480 / 110 V	VT4811	M72341
480 / 230 V	VT4823	M72342
700 / 230 V	VT7023	M72382

Transformers used to increase the impedance

TE series

Transformer used to increase the impedance

Description

- Accuracy class 1
- Power 15 V·A

Application

For applications where the measurement unit can not be installed near the measurement transformer and, as a consequence, the distance between both is longer. The problem lies in the fact that increasing the distance increases the number of losses caused by the overheating of the cable and in some cases the unit might not take readings accurately. With this unit at the transformer's output and another unit at the input of the measurement device we can increase the distance between both without so many power losses.



References

Current ratio	Type	Code
5 / 0.1 A	TE - 5 / 0.1	M70911

Current adding transformers

TSR Series

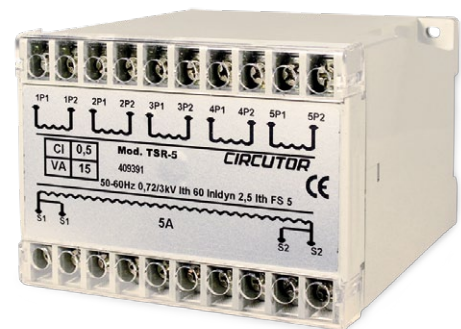
Current adding transformers, fixed on a DIN rail

Description

- Accuracy class 0.5
- Power 15 V·A
- The transformers added must have the same ratio
- No input must be without a connection
- Transformer certificate sheet is attached

Application

Used to add the current to various AC electrical lines to obtain a common output current that is proportional to the sum of all currents. The current of various lines can be measured in a single unit.



References

N.º of inputs	Type	Code
2 x 5 A	TSR-2	M70701
3 x 5 A	TSR-3	M70702
4 x 5 A	TSR-4	M70703
5 x 5 A	TSR-5	M70704

Relation between products and accessories

		PA-TC/WG	TET TP-58	TET TP-88/812	TET TP-816	PS-24	
Terminal cover		Accessory used to install the transformer on a DIN rail	Protector for TP transformers (outdoors)			Power supply unit	
		M79951	P19921	M79972	M79973	M79974	M60415
TA		-	•	-	-	-	-
TC		•	•	-	-	-	-
TCH		-	-	•	•	•	-
TP		•	•	-	-	-	-
TC 020		•	•	-	-	-	-
TC 420		•	•	-	-	-	•
T1 420		-	-	-	-	-	•
TP 420		-	-	•	•	•	•

M.7

Measurement Transformers and Shunts

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