

LOW VOLTAGE CURRENT TRANSFORMERS

ISSUE 1

|



LOW VOLTAGE CURRENT TRANSFORMERS

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1. INTRODUCTION

Dear customer,

We would like to introduce you to a new product, namely Current Transformers. Our knowledge and long-time experience but also collaboration with scientific centres make it possible for us to manufacture low voltage current transformers according to our proprietary design documentation giving us the opportunity to offer a top quality product to our customers.

For customised transformers our offer includes full technical support in order to match their parameters precisely to our customers' requirements.

1. 1. GENERAL INFORMATION

Current transformer is a device (a transformer) that transforms direct current at constant ratio over the entire operating range of the transformer. A typical application is measurement of high currents (of several hundred or several thousand amperes) using ammeters suitable for measuring currents of approximately 5 A (typical) or 1 A. Current flowing through primary winding is transformed at constant ratio into current flowing in secondary winding, which then can be measured using typical measuring devices. An additional benefit of galvanic separation between primary winding and secondary winding results in measuring devices and other equipment connected to the secondary side having different potential to devices and equipment connected to primary side.



2. TECHNICAL GUIDE

2.1. DESIGN

In terms of design transformers can be classified as pass-through transformer (transformers without primary winding) and primary winding transformers.

The winding in a pass-through transformer is a cable or bus bar passing through transformer window. If a transformer features a primary winding such winding is integrated with the transformer and the transformer itself features two pairs of terminals.

For currents of approximately 200-300 A and more the pass through design usually features smaller dimensions, weight and is more reliable.

Power rating of the transformer expressed in VA and transformer class will depend on the following factors:

- ampere-turn of the primary side (in other words the product of primary side current and the number of windings on the primary side);
- core cross-section and dimensions;
- core material;
- frequency (typically 50 Hz or 60 Hz).

The lower the ampere-turns of the primary side the larger cross-section and/or the better material of the core is necessary for certain class and power of transformer. The larger transformer power the larger core cross-section is needed. The transformer core should always be as small as possible.

2.2. TRANSFORMER ERROR

A transform will always use part of the energy to magnetise the core hence the actual transformer ratio (the ratio between the primary and secondary current) will always be different than the rated transformer ratio, which cause a certain error. That error is not constant and depends on transformer load and current. If a transformer conforms to EN 61869-2 than that standard specifies the definitions of typical classes and permissible errors.

2.3. APPLICATION OF TRANSFORMERS

From the application point of view transformers can be split into two groups:

- measuring transformers;
- protection or protective transformers.

The measuring transformers feature very low permissible errors (much lower than 1%) - or in other words these transformers are very accurate for their operating range but on the other hand they become saturated relatively quickly.

The protection or protective transformers feature higher permissible errors but provide wide operating range in which the measurement error still remains at acceptable level.

2.4. PROTECTIVE TRANSFORMERS

Protective transformers are manufactured according to EN 61869-2 within the following accuracy classes: 0.1. 0.2S. 0.2. 0.5S. 0.5. 1. 3.

The table below lists permissible errors for each accuracy class of a transformer:

Accuracy class	Percentage current (transmission) error at percentage values of rated current, provided below, + or –				Radial error at percentage values of rated current, provided below, + or –							
					minutes				centiradians			
	5	20	100	120	5	20	100	120	5	20	100	120
0.1	0.4	0.2	0.1	0.1	15	8	5	5	0.45	0.24	0.15	0.15
0.2	0.75	0.35	0.2	0.2	30	15	10	10	0.9	0.45	0.3	0.3
0.5	1.5	0.75	0.5	0.5	90	45	30	30	2.7	1.35	0.9	0.9
1	3.0	1.5	1.0	1.0	180	90	60	60	5.4	2.7	1.8	1.8

Accuracy class	Percentage current (transmission) error at percentage values of rated current, provided below, + or –					Radial error at percentage values of rated current, provided below, + or –									
						minutes					centiradians				
	1	5	20	100	120	1	5	20	100	120	1	5	20	100	120
0.2 S	0.75	0.35	0.2	0.2	0.2	30	15	10	10	10	0.9	0.45	0.3	0.3	0.3
0.5 S	1.5	0.75	0.5	0.5	0.5	90	45	30	30	30	2.7	1.35	0.9	0.9	0.9

NOTE: This table is only valid for transformer with rated secondary current of 5 A.

According to the standard the assumed power coefficient for transformer load is 0.8 with permissible transformer load of 1 for loads exceeding 5 VA. Typical lowest power should not be below 1 VA. Other feature of a measuring transformer is the FS factor (or Instrument Security Factor) which determines the current multiple at which the transformer becomes saturated and the output current drops. If that factor is equal to 5 it indicates that the transformer input current will increase to fivefold of the rated output current as a maximum. Typical values of FS factor are 5 and 10. For accurate transformers (classes 0.1, 0.2S, 0.2) typical FS factor is 10, to reduce that factor to 5 usually takes transformer cores made of more expensive materials (nickel-iron cores). For other transformer classes, starting from approximately 2000A primary side current, typical FS factor is 10, for lower currents: 5.

Typical application of measuring transformers is accurate measurement of current.

2.5. PROTECTIVE TRANSFORMERS.

Protective transformers are manufactured in classes 5P- or 10P-. The table below lists permissible errors for each accuracy class of a transformer:

Accuracy class	Current error at rated primary current	Radial error at rated primary current		Total error at limit rated current
		minutes	centiradians	
5 P	± 1	± 60	± 1.8	5
10 P	± 3	—	—	10

The number following letter P indicates the ALF factor (Accuracy Limit Factor) which determines the rated current multiple at which the error of 5P class transformer is lower than 5% and the error of 10P class transformer is lower than 10%.

Protective transformers provide information to relay protections on currents occurring during regular operation and emergency operation.

Protective transformer may secure proper transformation of signal under significant overcurrent and in emergencies (short circuits).

2.6. TECHNICAL SPECIFICATION

Typically transformers are manufactured in accordance with: EN 61869-2 (61869-1), which superseded EN 60044-1. If agreed in advance, transformers can also be manufactured in accordance with other standards.

Certain parameters, namely: transformer primary and secondary current, class, power are specified by the client, the other typical parameters are:

Operating temperature: $-25\text{ }^{\circ}\text{C}$ $+55\text{ }^{\circ}\text{C}$

Highest insulation voltage: 720V

Insulation test voltage: 3kV/1minute (4kV / 1 second)

Frequency: 50 Hz

Long-term operation current $1.2 \times I_N$

Thermal current I_{Th} : $60 \times I_N$

Dynamic current: I_{dyn} : $2.5 \times I_{Th}$

Insulation class: from B to F

Housing made of materials featuring UL-94-V0 flammability rating

2.7. LEGALISATION

For comprehensive customer service we operate our own measuring laboratory that provides calibration and verification services for transformers.

At request our devices may also obtain calibration certificates from an external certification unit.

Conformity with standards:

EN 61869-1

EN 61869-2

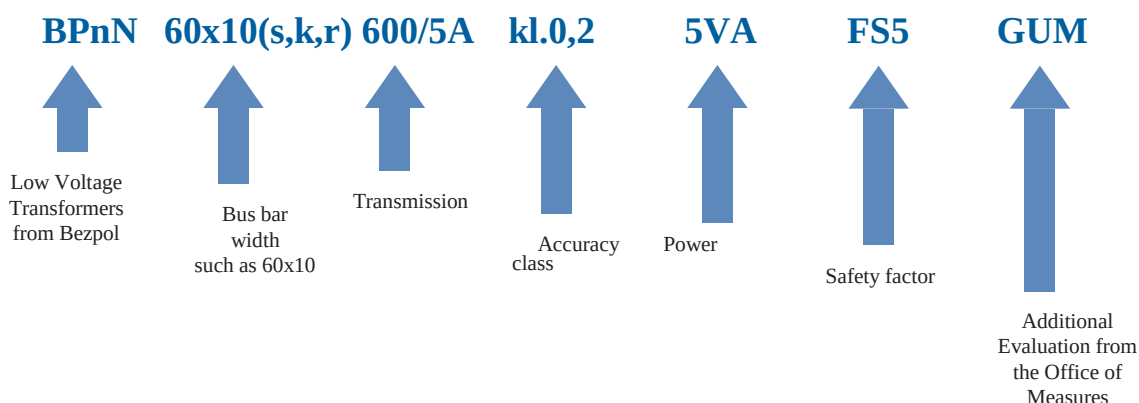
2.8. PLACING ORDERS

To order a transformer please:

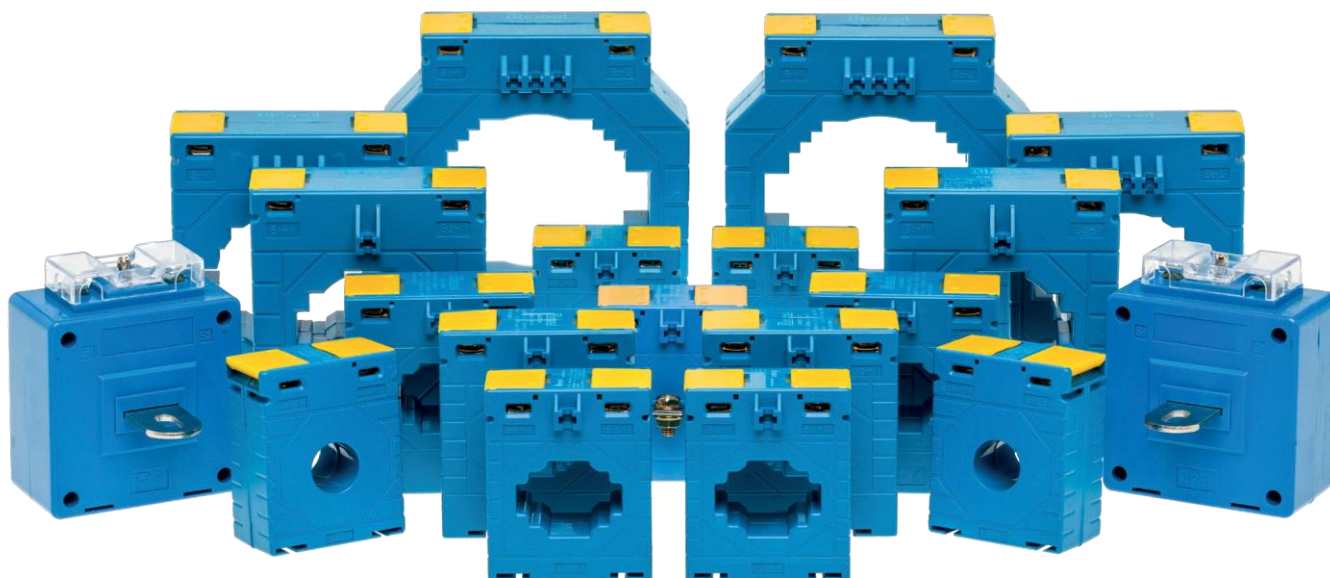
Provide its catalogue number, *or*

Provide its type, primary current, secondary current, load, class, FS factor or ALF factor, frequency, *or*

Minimum dimensions of bus bar/cable opening, maximum external dimensions of the transformer required, primary current, secondary current, load, class, FS factor or ALF factor, frequency, application.



3. LOW VOLTAGE MEASURING TRANSFORMERS TYPE BPnN (s,k,r)



TYPE		BPnN									
		20	30x10	30x10	40x10	40x10	60x10	80x10	100x30	13x02	25x03
dimensions (mm)	width	65	65	80	65	80	101	110	145	65	87
	depth	36	36	40	36	40	40	40	40	36	48
	height	78.5	78.5	87	78.5	87	118	126	155	78.5	102.5
Bus bar (mm)		–	31x11.5 26x21 21x26	31x11.5 26x21 21x26	41x11 31x21	41x11 31x21	60.5x12.5 50.5x31	81.5x12.5 61.5x31.5 51.5x51.5	101x31.5 81x51.5 71x61.5 61x71.5 51x81.5	13x02	25x03
Cable (mm)		Ø 20	Ø 30	Ø 30	Ø 30	Ø 30	Ø 50	Ø 66	Ø 86,5	–	–

3.1. LOW VOLTAGE TRANSFORMERS TYPE BPnN (k,r) 20



Application:

Transformer designed for installation on fi 20 cable in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

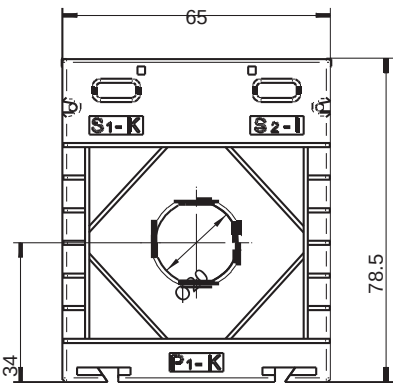
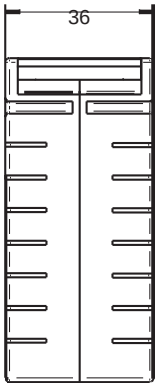
Housing:

- Operating temperature: -25 °C +55 °C
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP20

Installation:

Set of accessories included in the scope of delivery:

- Mounting feet
- Mounting adapter for DIN bus bar



Basic technical specifications:

Selection of transformer:

Secondary current 5 A; 1 A FS5					
Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current	POWER [VA]				
100					1.5
150			1.5	1.5 - 2.5	1.5 - 2.5
200		1.5	2.5	2.5	2.5 - 5
250		1.5	2.5	2.5	2.5 - 5
300		1.5	2.5	2.5	2.5 - 5
400	2.5	5	5	5	5
500	5	5	5	5	5
600	5	5	5	5	5
bus bar dimension					
cable dimension	Ø 20				

Ordering example:

Low voltage current transformer, type BPnN20 (k,r) 200/5A; 1.5VA; 0.2s; FS5

Note: Safety factor is determined individually.

3.2. LOW VOLTAGE TRANSFORMERS TYPE BPnN (k,r) 30x10



Application:

Transformer designed for installation on bus bar or cable in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

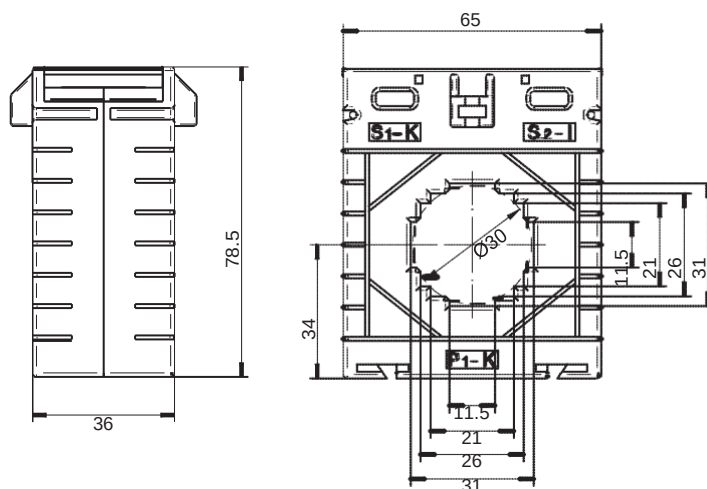
Housing:

- Operating temperature: $-25\text{ }^{\circ}\text{C}$ $+55\text{ }^{\circ}\text{C}$
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP 20

Installation:

Set of accessories included in the scope of delivery:

- Mounting screws
- Nuts for mounting screws
- Mounting screw clamp
- Mounting feet
- Mounting adapter for DIN bus bar



Basic technical specifications:

Selection of transformer:

Secondary current 5 A; 1 A
FS5

Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
POWER [VA]					
Primary current					
100					1.5
150			1.5	1.5 - 2.5	1.5 - 2.5
200		1.5	2.5	2.5	2.5 - 5
250		1.5	2.5	2.5	2.5 - 5
300		2.5	2.5	2.5	2.5 - 5
400	2.5	5	5	5	5
500	5	5	5	5	5
600	5	5	5	5	5
bus bar dimension	31 x 11.5; 26 x 21; 21 x				
cable dimension	Ø 30				

Ordering example:

Low voltage current transformer, type BPnN30x10 (s,k,r) 200/5A; 1.5VA; 0.2; FS5

Note: Safety factor is determined individually.

3.3. LOW VOLTAGE TRANSFORMERS TYPE BPnN (s,k,r) 30x10



Application:

Transformer designed for installation on bus bar or cable in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

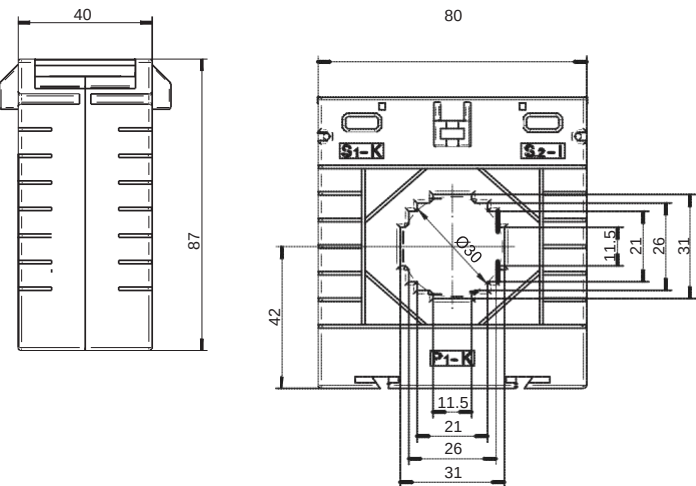
Housing:

- Operating temperature: $-25\text{ }^{\circ}\text{C}$ $+55\text{ }^{\circ}\text{C}$
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP20

Installation:

Set of accessories included in the scope of delivery:

- Mounting screws
- Nuts for mounting screws
- Mounting screw clamp
- Mounting feet
- Mounting adapter for DIN bus bar



Basic technical specifications:

Selection of transformer:

Secondary current 5 A; 1 A
FS5

Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current					
100					2.5 - 5
150				2.5	2.5
200		2.5	2.5 - 5	2.5 - 5	2.5 - 5
250		2.5 - 5	5	5	10
300		2.5 - 5	2.5 - 5	5-10	5-10
400	2.5 - 5	5	10	10	10
500	5	5	5 -	10	10
600	5	5	5 -	10	10
bus bar dimension			31 x 11.5; 26 x 21; 21 x		
cable dimension			Ø 30		

Ordering example:

Low voltage current transformer, type BPnN30x10 (s,k,r) 200/5A; 1.5VA; 0.2; FS5

Note: Safety factor is determined individually.

3.4. LOW VOLTAGE TRANSFORMERS TYPE BPnN (s,k,r) 40x10



Application:

Transformer designed for installation on bus bar or cable in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

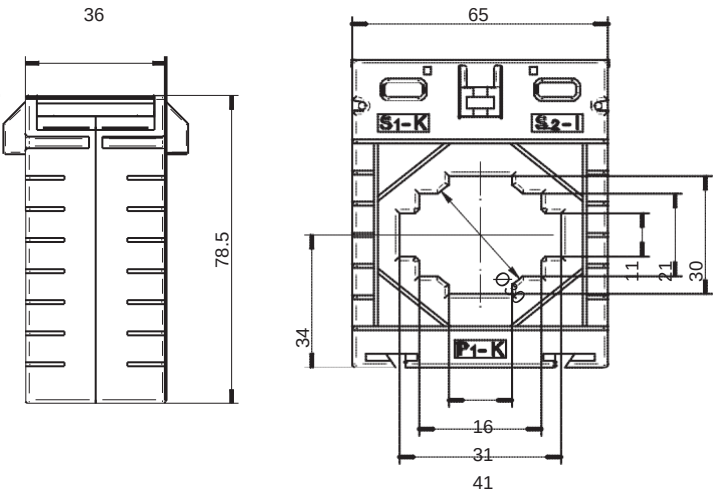
Housing:

- Operating temperature: -25 °C +55 °C
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP20

Installation:

Set of accessories included in the scope of delivery:

- Nuts for mounting screws
- Mounting screw clamp
- Mounting feet
- Mounting adapter for DIN bus bar



Basic technical specifications:

Selection of transformer:

Secondary current 5 A; 1 A FS5					
Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current	POWER [VA]				
100					1.5
150			1.5	1.5 - 2.5	1.5 - 2.5
200		1.5	2.5	2.5	2.5 - 5
250		1.5	2.5	2.5	2.5 - 5
300		2.5	2.5	2.5	2.5 - 5
400	2.5	5	5	5	5
500	5	5	5	5	5
600	5	5	5	5	5
bus bar dimension	41 x 11; 31 x 21				
cable dimension	Ø 30				

Ordering example:

Low voltage current transformer, type BPnN40x10 (s,k,r) 200/5A; 1.5VA; 0.2; FS5

Note: Safety factor is determined individually.

3.5. LOW VOLTAGE TRANSFORMERS TYPE BPnN (s,k,r) 40x10



Application:

Transformer designed for installation on bus bar or cable in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

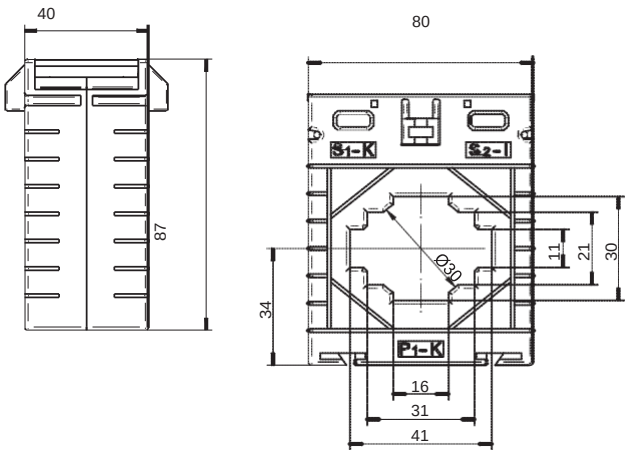
Housing:

- Operating temperature: -25 °C +55 °C
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP 20

Installation:

Set of accessories included in the scope of delivery:

- Mounting screws
- Nuts for mounting screws
- Mounting screw clamp
- Mounting feet
- Mounting adapter for DIN bus bar



Basic technical specifications:

Selection of transformer:

Secondary current 5 A; 1 A FS5					
Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current			POWER [VA]		
150				2.5	2.5
200			2.5	2.5	2.5
250		1.5	2.5	2.5	2.5
300		2.5	2.5 - 5	2.5 - 5	2.5 - 5
400	2.5 - 5	2.5 - 5	5	5	5 -
500	5	5	10	10	10
600	5	5	5	5	10
bus bar dimension	41 x 11; 31 x 21				
cable dimension	Ø 30				

Ordering example:

Low voltage current transformer, type BPnN40x10 (s,k,r) 300/5A; 2.5VA; 0.2; FS5

Note: Safety factor is determined individually.

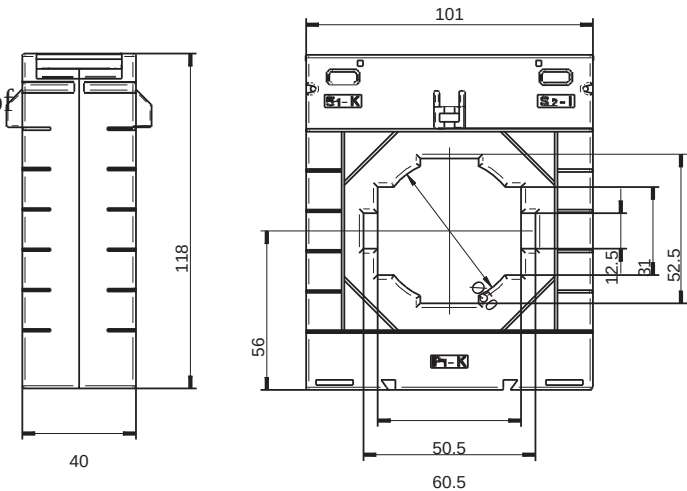
3.6. LOW VOLTAGE TRANSFORMERS TYPE BPnN (s,k,r) 60x10



Application:
Transformer designed for installation on bus bar or cable in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

- Housing:**
- Operating temperature: -25 °C +55 °C
 - small overall dimensions
 - Insulation class: from B to F
 - Housing made of materials featuring UL-94-V0 flammability rating
 - Marking: laser engraver
 - IP20

- Installation:**
Set of accessories included in the scope of delivery:
- Mounting screws
 - Nuts for mounting screws
 - Mounting screw clamp
 - Mounting feet
 - Mounting adapter for DIN bus bar



Basic technical specifications:
Selection of transformer:

Secondary current 5 A; 1 A FS5					
Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current	POWER [VA]				
300			2.5	5	5
400		2.5	2.5 - 5	2.5 - 5	5
500		5	5	5	5
600	2.5	2.5 - 5	2.5 - 5	2.5 - 5	2.5 - 5
700	5	5	5	5	5
750	5	5 - 10	5 -	5 - 10	5 -
800	10	10	10	10	10
1000	5 -	5 - 15	15 -	20	20
1200	15	15 - 20	20	20	20
bus bar dimension	60.5 x 12.5; 50.5 x				
cable dimension	Ø 50				

Ordering example:
Low voltage current transformer, type BPnN60x10 (s,k,r) 800/5A; 5VA; 0.2s; FS5
Note: Safety factor is determined individually.

3.7. LOW VOLTAGE TRANSFORMERS TYPE BPnN (s,k,r) 80x10



Application:

Transformer designed for installation on bus bar or cable in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

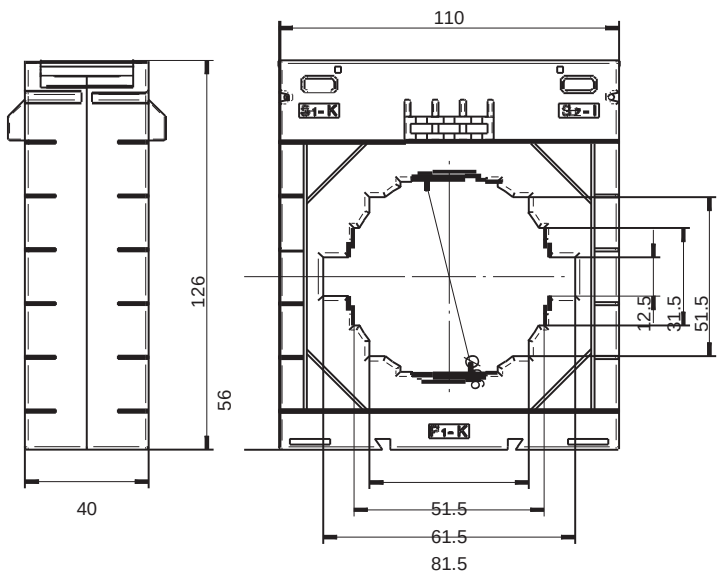
Housing:

- Operating temperature: $-25\text{ }^{\circ}\text{C}$ $+55\text{ }^{\circ}\text{C}$
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP20

Installation:

Set of accessories included in the scope of delivery:

- Nuts for mounting screws
- Mounting screws
- Mounting screw clamp
- Mounting feet
- Mounting adapter for DIN bus bar



Basic technical specifications:

Selection of transformer:

Secondary current 5 A; 1 A
FS5

Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current		POWER [VA]			
400				2.5	2.5
500		2.5	2.5	2.5 - 5	2.5 - 5
600		2.5 - 7.5	5	5 -	5 -
750	5	5 -	5 -	5 -	5 -
800	5 - 10	5 -	5 -	5 -	5 -
1000	5	5 -	5 -	5 -	5 -
1200	5 - 10	5 -	5 -	10	10
1250	5 - 10	5 -	5 -	5 -	20
1500	5 - 10	5 -	20	20	20
1600	5 - 15	5 -	20	20	20
2000	5 - 15	15 -	20	20	20
2500	15	15	15	15	15
bus bar dimension		81.5 x 12.5; 61.5 x 31.5; 51.5 x 51.5			
cable dimension		Ø 66			

Ordering example:

Low voltage current transformer, type BPnN80x10 (sk,r) 800/5A; 1.5VA; 0.2s; FS5

Note: Safety factor is determined individually.

3.8. LOW VOLTAGE TRANSFORMERS TYPE BPnN (s,k,r) 100x10



Application:

Transformer designed for installation on bus bar or cable in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

Housing:

- Operating temperature: $-25\text{ }^{\circ}\text{C}$ $+55\text{ }^{\circ}\text{C}$
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP20

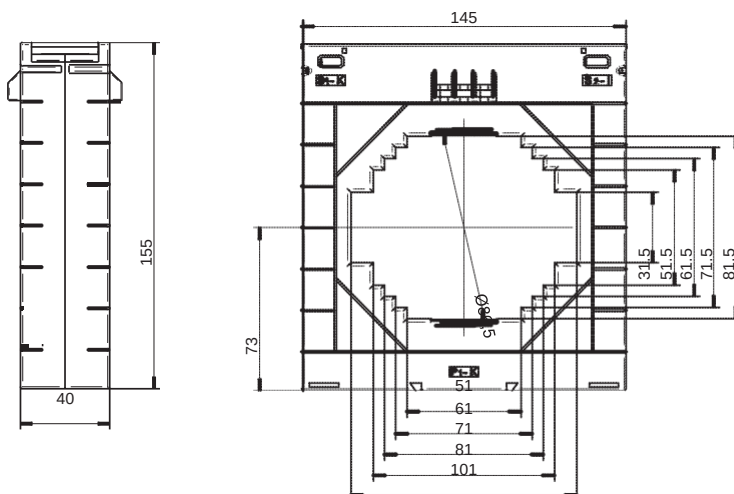
Installation:

Set of accessories included in the scope of delivery:

- Nuts for mounting screws
- Mounting screws
- Mounting screw clamp
- Mounting feet
- Mounting adapter for DIN bus bar

Basic technical specifications:

Selection of transformer:



Secondary current 5 A; 1 A
FS5

Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current		POWER [VA]			
500				2.5	2.5
600		2.5	5	5	5
750		5	5	5	5
800	5	5	10	15	20
1000	5 - 10	5 -	5 -	25	25
1200	5 - 10	5 -	5 -	5 -	5 -
1250	5 - 20	5 - 25	25	25	25
1500	5 - 20	5 - 25	25	30	30
1600	5 - 25	5 - 25	30	30	30
2000	10	10	30	30	30
2500	10	10	30	30	30
3000	5 - 20	10 - 20	30	30	30
4000	15	15	15 -	15 - 20	30
5000	15	15	15	15	15
bus bar dimension		101.5 x 31.5; 81 x 51.5; 71 x 61.5; 61 x 71.5; 51 x 81.5			
cable dimension		Ø 86.5			

Ordering example:

Low voltage current transformer, type BPnN13x02 (u,p) 75/5A; 1.5VA; 0.2; FS5

Note: Safety factor is determined individually.

3.9. LOW VOLTAGE TRANSFORMERS TYPE BPnN 13x02 (u,p)



Application:

Transformer designed for installation on bus bar or cable with eye tips in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

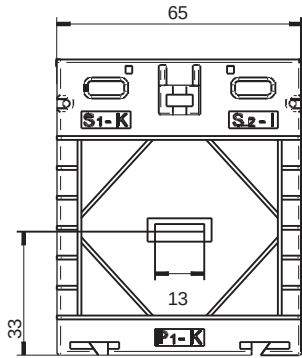
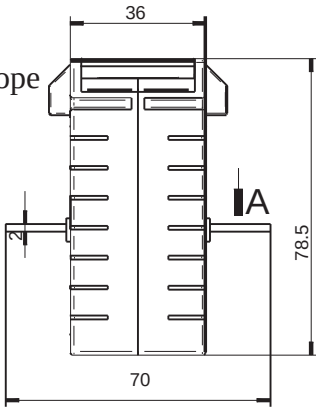
Housing:

- Operating temperature: -25 °C +55 °C
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP20

Installation:

Set of accessories included in the scope of delivery:

- Mounting feet
- Mounting adapter for DIN bus bar



2

Basic technical specifications:

Selection of transformer:

Secondary current 5 A; 1 A FS5					
Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current	POWER [VA]				
50			1.5	1.5	2.5
60			1.5	1.5	2.5
75		1.5	2.5	2.5	2.5
80	1.5	2.5	2.5 - 5	2.5 - 5	2.5 - 5
100	2.5	2.5 - 5	2.5	2.5 - 5	2.5 - 5
bus bar dimension	13 x				
cable dimension	Cable matching the parameters of primary current				

Ordering example:

Low voltage current transformer, type BPnN100x30 (s,k,r) 1000/5A; 5VA; 0.2s; FS5

Note: Safety factor is determined individually.

3.10. LOW VOLTAGE TRANSFORMERS TYPE BPnN (s,k,r) 25x03 (u,p)



Application:

Transformer designed for installation on bus bar or cable with eye tips in any indoor applications. With the use of appropriate current transformer the device helps measure large currents using measuring devices that feature lower measuring range.

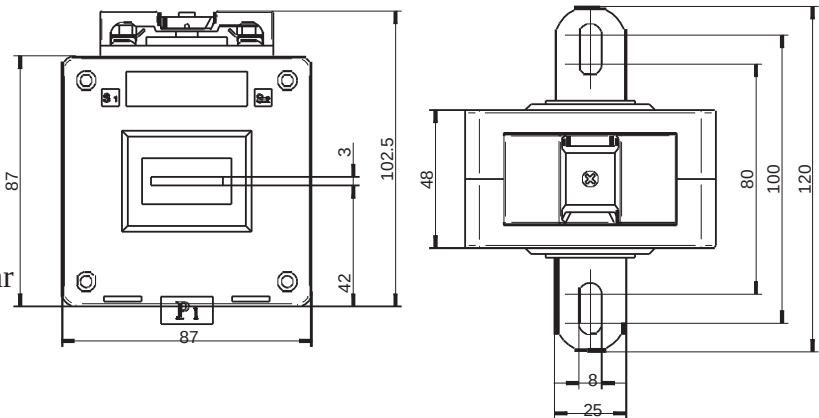
Housing:

- Operating temperature: -25 °C +55 °C
- small overall dimensions
- Insulation class: from B to F
- Housing made of materials featuring UL-94-V0 flammability rating
- Marking: laser engraver
- IP20

Installation:

Set of accessories included in the scope of delivery:

- Mounting feet
- Mounting adapter for DIN bus bar



Basic technical specifications:
Selection of transformer:

Secondary current 5 A; 1 A FS5					
Accuracy class	Class 0.2s	Class 0.2	Class 0.5s	Class 0.5	Class 1
Primary current	POWER [VA]				
50	2.5 - 5	5	5	5	5
60	2.5 - 5	5	5	5	5
75	2.5 - 5	5	5	5	5
80	2.5 - 5	5	5	5	5
100	2.5 - 5	5	5	5	5
150	2.5 - 5	5	5	5	5
200	2.5 - 5	5	5	5	5
250	5	5	5	5	5
bus bar dimension	25 x				
cable dimension	Cable matching the parameters of primary current				

Ordering example:

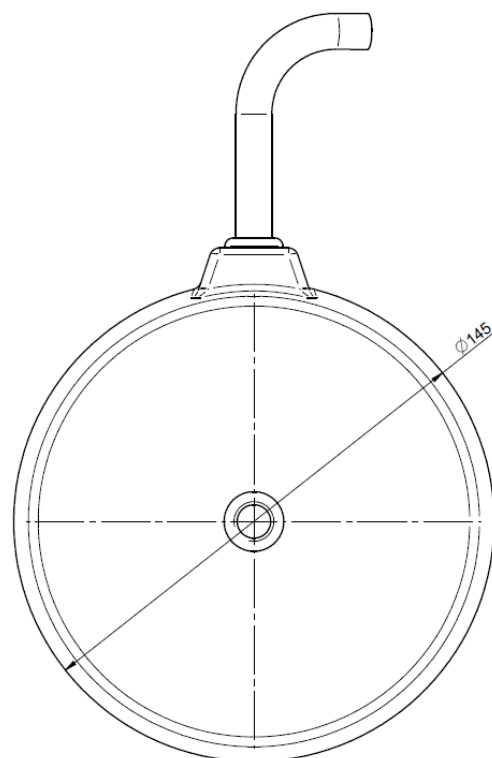
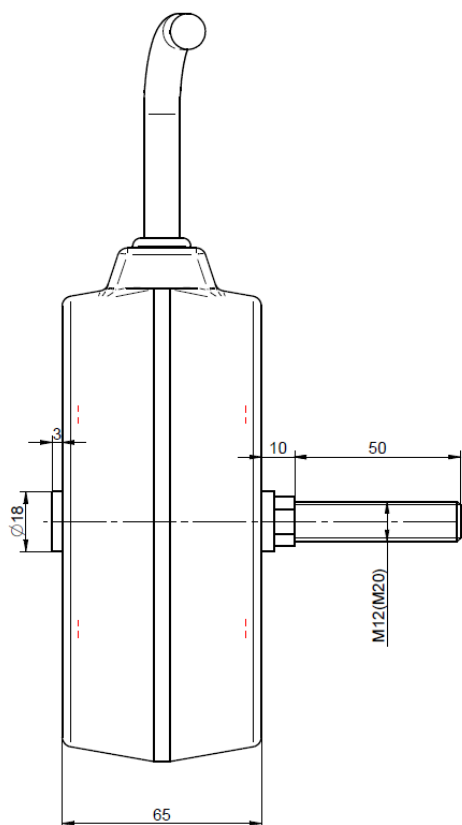
Low voltage current transformer, type BPnN 25x03 (u,p) 150/5A; 2.5VA; 0.2; FS5

Note: Safety factor is determined individually.

3.10. LOW VOLTAGE TRANSFORMERS - BPSN 200/3 EXTERNAL TRANSFORMER

Description:

- current transformer with M12 threaded outlet
- bus bars or cables can be connected to primary terminals of these transformers, the transformer is designed for use in transformer bushings
- transformers are designed for secondary currents of 5 A in accuracy class 0.2; 0.2s; 0.5; 0.5s; 1; 5P; 10P
- primary currents range between 200 A and 1000 A.
- transformer housing made of special plastic material designed for outdoor conditions
- preinstalled cables arranged on secondary side (cable cross-section will depend on the distance from measuring system)



4. TAILOR MADE TRANSFORMERS

In case of tailor made transformers Bezpól provides full scope of technical support to its customers to design and manufacture transformers ideally matching their requirements and needs. With our specialists and new, top quality production machinery we are ready to face any transformer challenges.

5. ACCESSORIES

The scope of delivery for each transformer includes a set of accessories for installation on any surface as well as clamps to ensure firm and reliable installation of transformer on a bus bar or cable.

Nuts for mounting screws



Mounting screws



Mounting screw clamp



Mounting feet



Mounting adapter for DIN bus bar

