



Highest voltage for equipment	[kV]	3,6 up to 12
Power frequency test voltage, 1 min.	[kV]	10 up to 42
Lighting impulse test voltage	[kV]	40 up to 95
Rated primary current	[A]	10 - 3200
Rated short-time thermal current	[kA]	2 up to 100...1s
Burdens, classes	[VA/cl]	5-30 / 0.2-5 / 5P ; 10P (acc. to other param. - lth)
Reconnectable (primary till 400-800 A)		primary. or secondary

Description

The TPU 4x.xx transformers are cast in epoxy resin and designed for insulation voltages up to 12 kV. The 3,6 kV and 7,2 kV versions have the same dimensions as the 12 kV.

For certain types of panels there is a need for extra long creepage distance on the transformers. For this purpose you can order current transformers with „ribs on the top”.

The transformers are manufactured in conformity with dimensions stated hereunder. The TPU4x.xx transformers are designed as single-turn or multi-turn versions, with one transformer ratio or with double ratio having the possibility to be reconnectable on the primary or on the secondary side.

The number of secondary windings (from 1 to 6 – max. 12 secondary terminals - 2 rows), depends on the combination of the technical parameters (such as the accuracy class, burden, short-circuit current, overcurrent factor...) and the transformer dimensions size.

When agreed between the manufacturer and the customer the TPU transformers can be provided with the voltage indication system. For this purpose, however, it is necessary to know in what insulation level the transformers shall be operated.

The secondary windings are used for measurement or protection purposes, or for special use (testing winding, „X” or „PL” classes windings). One terminal of each secondary winding used and one terminal of short-circuited and not used winding have to be earth during the transformer operation. The secondary windings are lead out into a cast-type secondary terminal box with plastic cover. The terminal cover is sealable. The terminals are provided with M5 screws for the termination and with throughgoing holes for direct earthing (first row of secondary terminals)

The transformer can be mounted in any position. The transformer body is fixed by using four screws. Earth clamp M8 is on the transformer base plate.

Technical data

Rated primary voltages are 3.6 kV; 7.2 kV; 12 kV

Rated primary currents are 10;15;20;25;30;40;50;60;75;100;150;200;300;400;500;600;750;1000;1250;1500; 2000;2500; 3000 and 3200 A;

primary reconnectable modification max till 400-800 A.

Other primary currents can also be agreed upon with the customer.

Rated secondary currents...5 A; 1 A , others on request (possibility to combine different values in one transformer)

Accuracy classes: 0,2, 0,2S, 0,5, 0,5S, 1, 3, 5 5P10, 5P15, 5P20, 10P10, 10P15, 10P20, others on request.

Rated frequency ... 50 Hz or 60 Hz, others on request

The transformers are designed and manufactured in conformity with the following standards and recommendations: IEC, VDE, ANSI, BS, GOST and CSN, others on request.

Cantilever strength: 5 kN

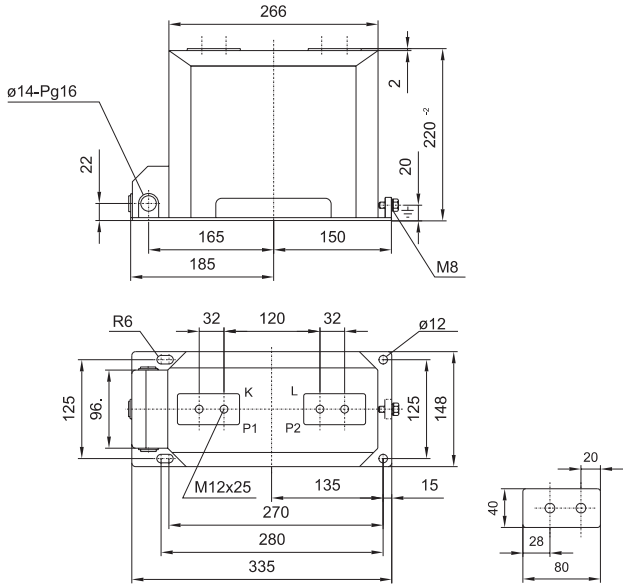
Permissible torques for screw connections

M5	max /Nm/ ...3,5	min /Nm/...2,8
M8	max /Nm/ ...20	min /Nm/...16
M12	max /Nm/ ...70	min /Nm/...56

Dimensions

TPU 40.11
TPU 43.11

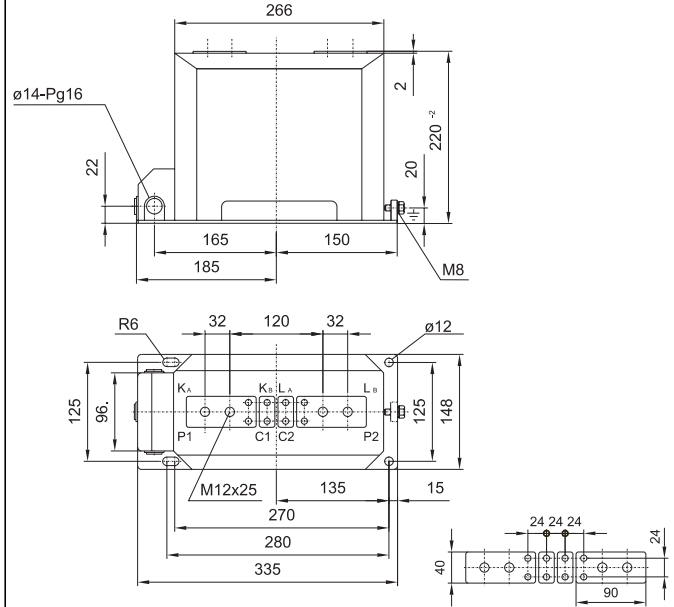
Weight: 20-24 kg



drawing N:	polarity
44614000	P1 to sec. term.
44614010	P2 to sec. term.

TPU 40.12
TPU 43.12

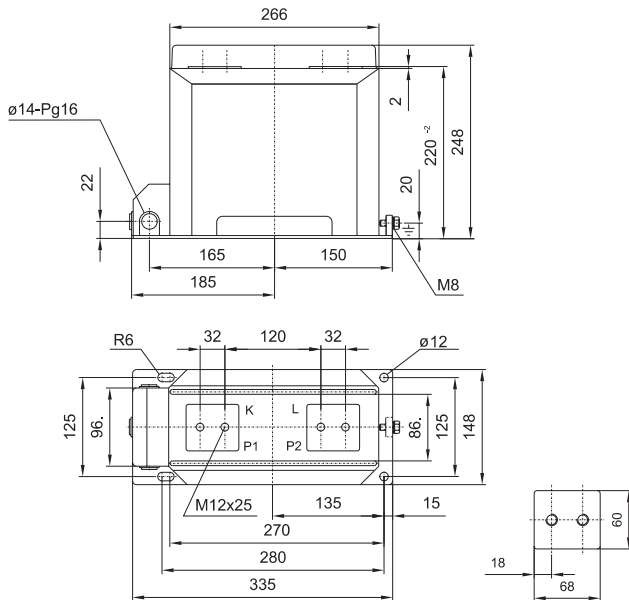
Weight: 20-24 kg



drawing N:	polarity
44614020	P1 to sec. term.
44614030	P2 to sec. term.

TPU 40.13
TPU 43.13

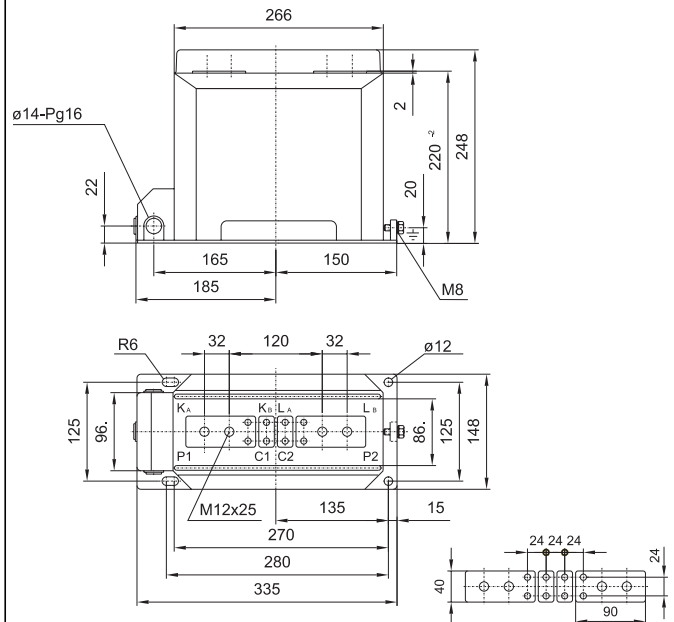
Weight: 20-24 kg



drawing N:	polarity
44614040	P1 to sec. term.
44614050	P2 to sec. term.

TPU 40.14
TPU 43.14

Weight: 20-24 kg

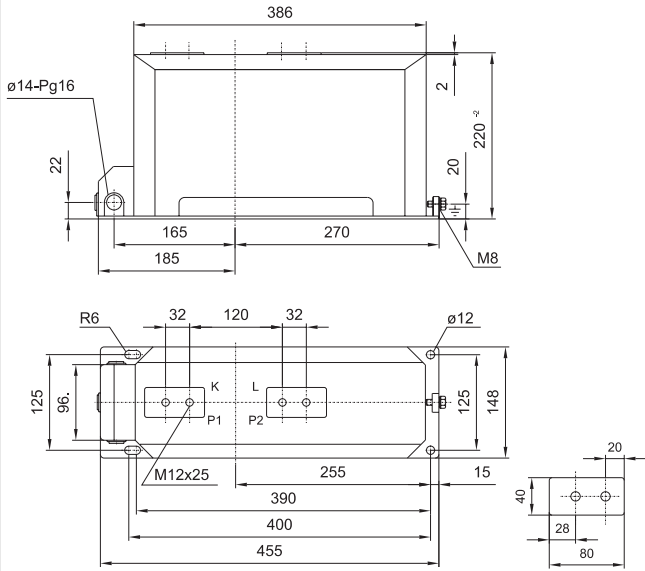


drawing N:	polarity
44614060	P1 to sec. term.
44614070	P2 to sec. term.

Dimensions

TPU 40.21
TPU 43.21

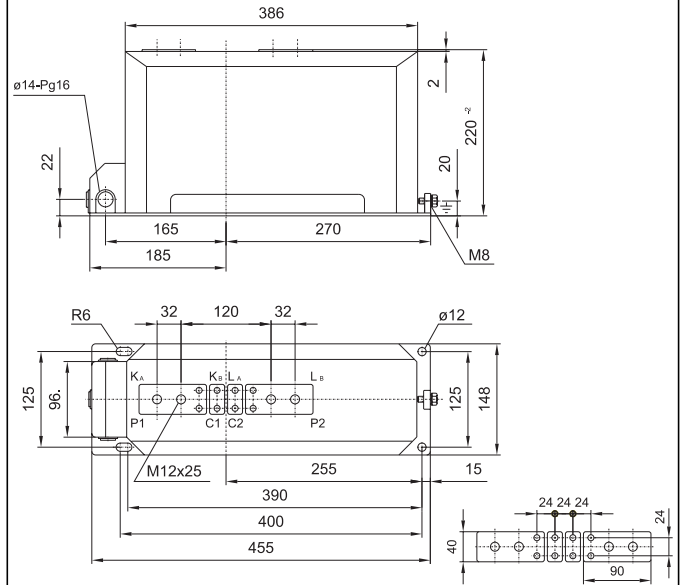
Weight: 32-35 kg



drawing N:	polarity
44614080	P1 to sec. term.
44614090	P2 to sec. term.

TPU 40.22
TPU 43.22

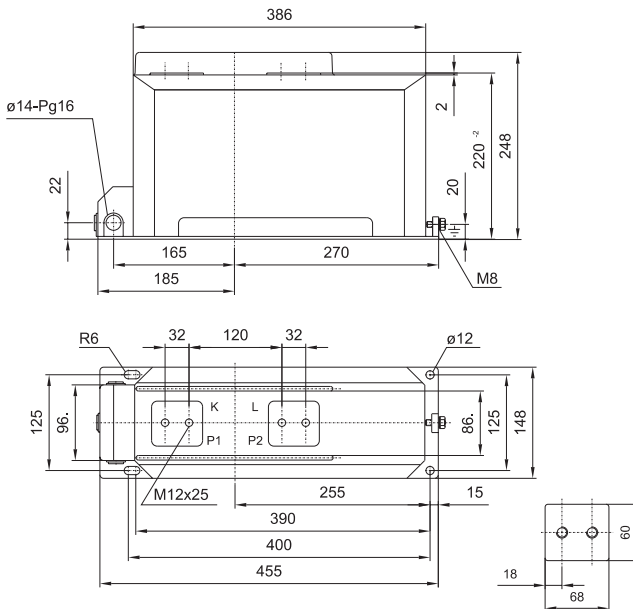
Weight: 32-35 kg



drawing N:	polarity
44614100	P1 to sec. term.
44614110	P2 to sec. term.

TPU 40.23
TPU 43.23

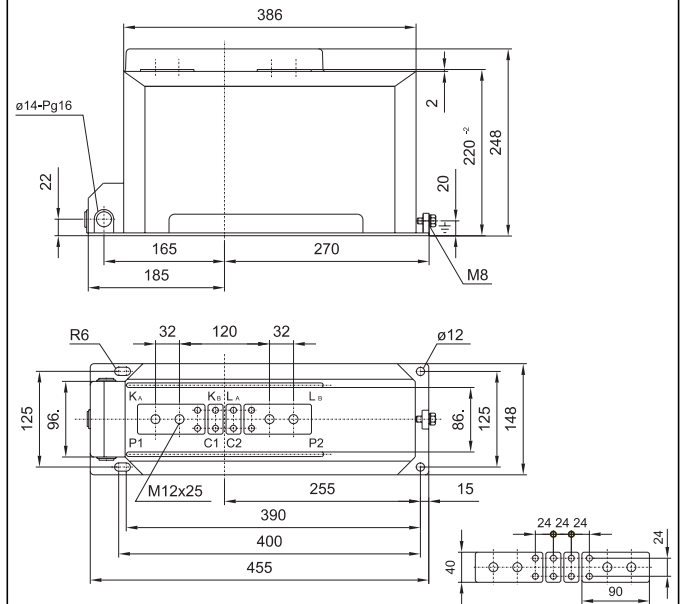
Weight: 32-35 kg



drawing N:	polarity
44614120	P1 to sec. term.
44614130	P2 to sec. term.

TPU 40.24
TPU 43.24

Weight: 32-35 kg

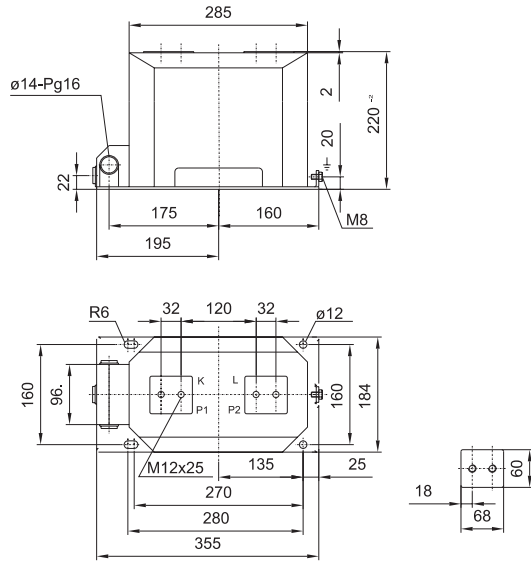


drawing N:	polarity
44614140	P1 to sec. term.
44614150	P2 to sec. term.

Dimensions

TPU 40.31
TPU 43.31

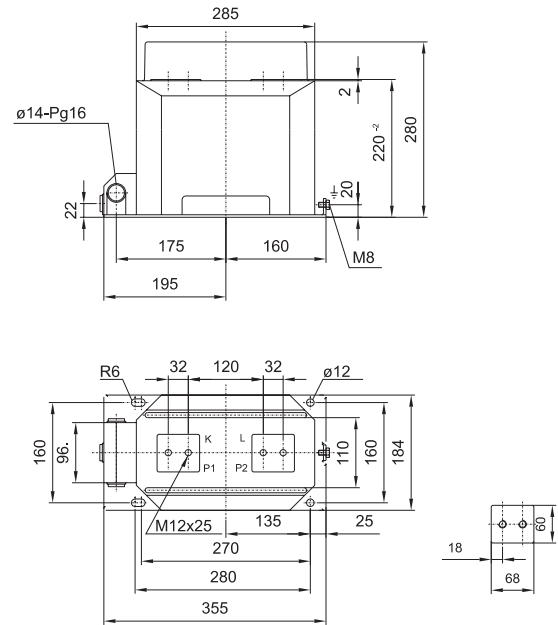
Weight: 23-27 kg



drawing N:	polarity
44614160	P1 to sec. term.
44614170	P2 to sec. term.

TPU 40.33
TPU 43.33

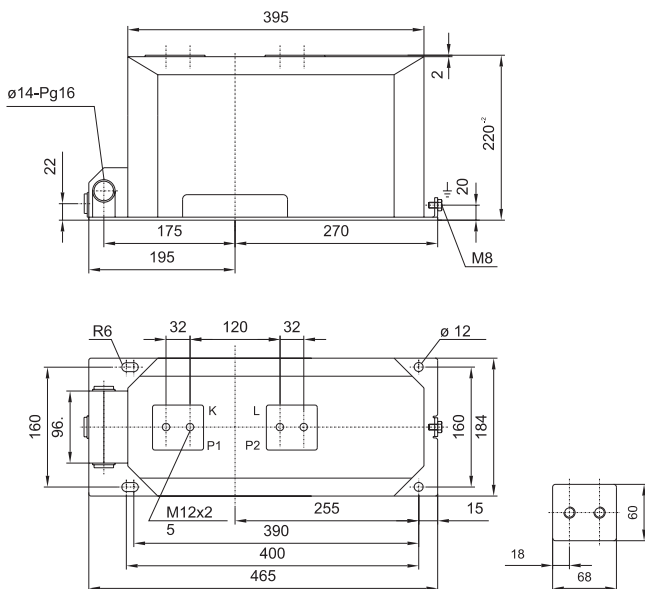
Weight: 23-27 kg



drawing N:	polarity
44614180	P1 to sec. term.
44614190	P2 to sec. term.

TPU 40.41
TPU 43.41

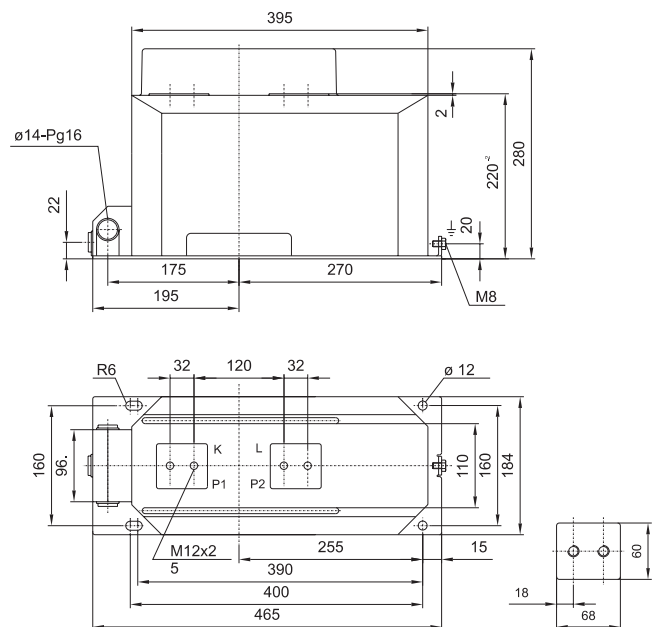
Weight: 35-38 kg



drawing N:	polarity
44614200	P1 to sec. term.
44614210	P2 to sec. term.

TPU 40.43
TPU 43.43

Weight: 35-38 kg

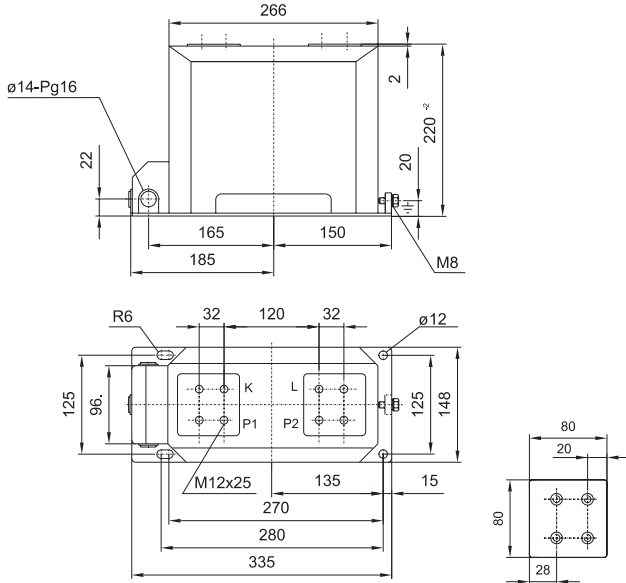


drawing N:	polarity
44614220	P1 to sec. term.
44614230	P2 to sec. term.

Dimensions

TPU 44.11
TPU 45.11
TPU 46.11
TPU 47.11
TPU 48.11

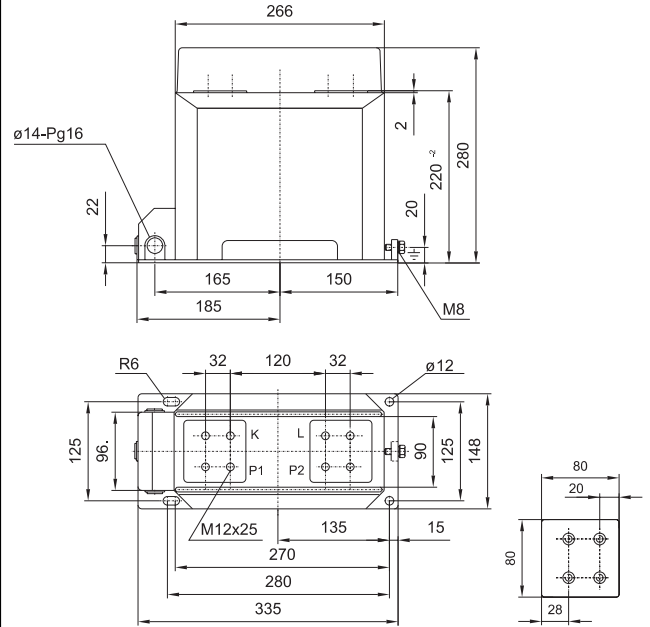
Weight: 25-28 kg



drawing N:	polarity
44614240	P1 to sec. term.
44614250	P2 to sec. term.

TPU 44.13
TPU 45.13
TPU 46.13
TPU 47.13
TPU 48.13

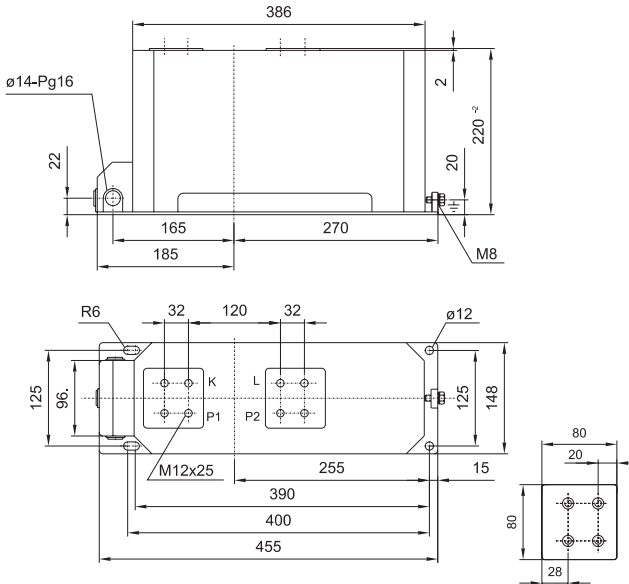
Weight: 25-28 kg



drawing N:	polarity
44614260	P1 to sec. term.
44614270	P2 to sec. term.

TPU 44.21
TPU 45.21
TPU 46.21
TPU 47.21
TPU 48.21

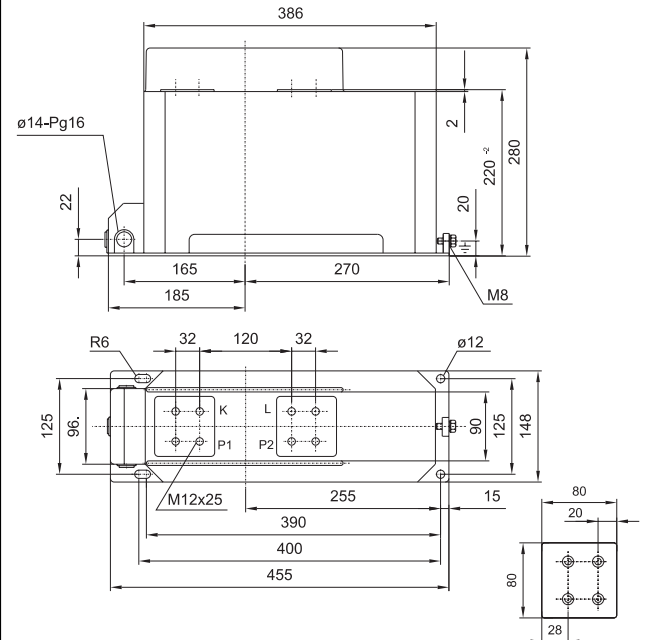
Weight: 40-45 kg



drawing N:	polarity
44614280	P1 to sec. term.
44614290	P2 to sec. term.

TPU 44.23
TPU 45.23
TPU 46.23
TPU 47.23
TPU 48.23

Weight: 40-45 kg

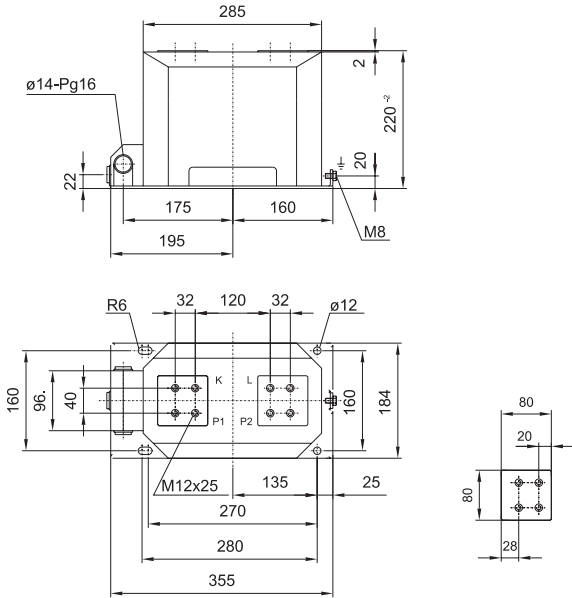


drawing N:	polarity
44614300	P1 to sec. term.
44614310	P2 to sec. term.

Dimensions

TPU 44.31
TPU 45.31
TPU 46.31
TPU 47.31
TPU 48.31

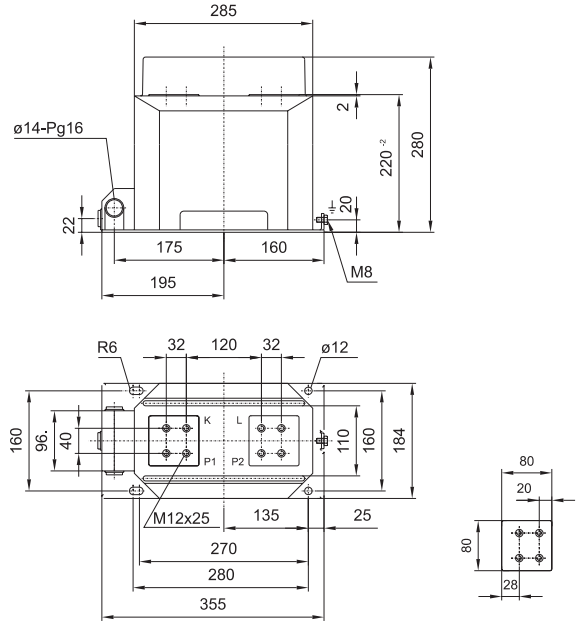
Weight: 28-31 kg



drawing N:	polarity
44614320	P1 to sec. term.
44614330	P2 to sec. term.

TPU 44.33
TPU 45.33
TPU 46.33
TPU 47.33
TPU 48.33

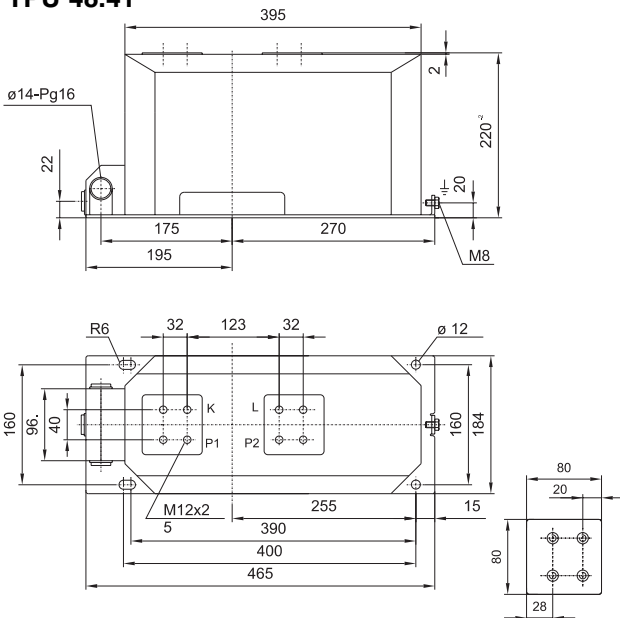
Weight: 28-31 kg



drawing N:	polarity
44614340	P1 to sec. term.
44614350	P2 to sec. term.

TPU 44.41
TPU 45.41
TPU 46.41
TPU 47.41
TPU 48.41

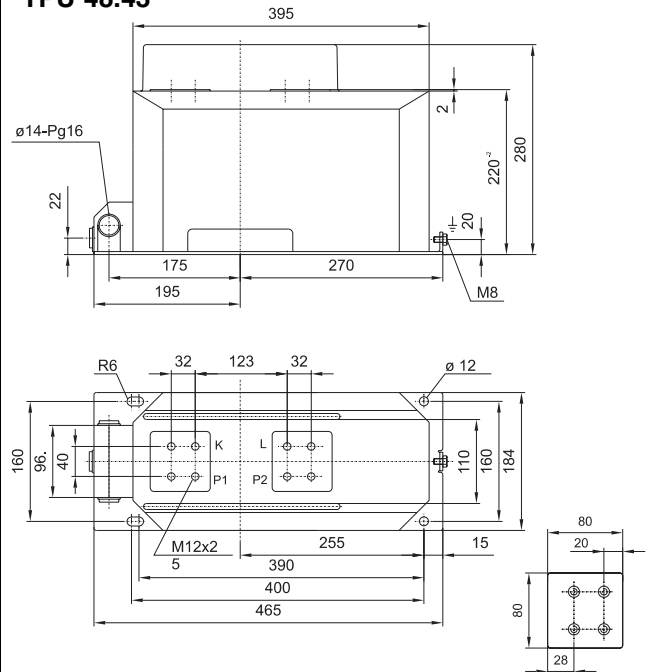
Weight: 43-48 kg



drawing N:	polarity
44614360	P1 to sec. term.
44614370	P2 to sec. term.

TPU 44.43
TPU 45.43
TPU 46.43
TPU 47.43
TPU 48.43

Weight: 43-48 kg

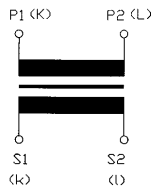


drawing N:	polarity
44614380	P1 to sec. term.
44614390	P2 to sec. term.

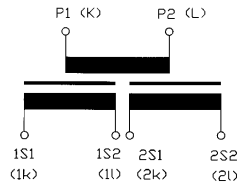
Code designation -TPU current transformers

TPU	X	X	.	X	X
	voltage	current		dimension	primary terminals
	4....up to 12 kV	0... to 600 A multiturn 3...to 1250 A singleturn 4...to 1500 A singleturn 5...to 2000 A singleturn 6...to 2500 A singleturn 7...to 3000 A singleturn 8...to 3200 A singleturn		1..short 148 mm, DIN 2..long 148 mm, DIN 3..short, wide .. 184 mm 4..long, wide ...184 mm	1..no pr.rec., no ribs /40x80mm, 80x80mm/ 2..prim. rec., no ribs /40x80mm, 80x80mm/ 3..no pr.rec., with ribs /60x68mm, 80x80mm/ 4..prim. rec., with ribs /40x80mm, 80x80mm/

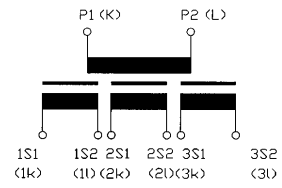
Marking of current transformer outlets - example



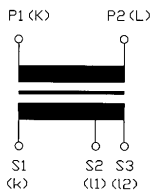
a)



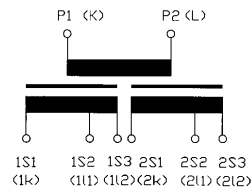
b)



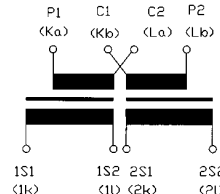
c)



d)



e)



f)

a) Single-core design

b) Double-core design

c) Three-core design

d) Single-core design,
reconnectable on the secondary side

e) Double-core design,
reconnectable on the secondary side

f) Double-core design,
reconnectable on the primary side

Standartized insulation levels of TPU 4x.xx transformers

3.6 / 21 / 45 kV
3.6 / 10 / 40 kV
7.2 / 27 / 60 kV
7.2 / 20 / 60 kV

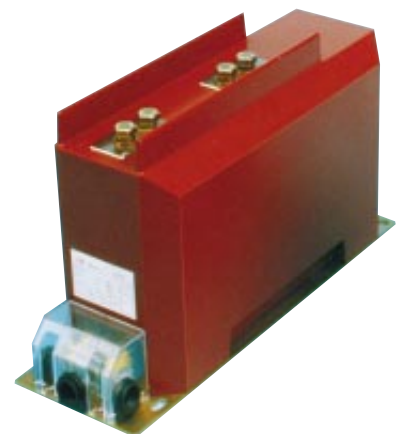
12 / 28 / 75 kV
12 / 35 / 75 kV
12 / 42 / 95 kV



Secondary terminal box
(3 secondaries and voltage indicator)



Secondary terminal box
(2 secondaries and grounding screw)



TPU transformer with ribs

Table 1

In (A)	100 x In (kA)	Category	125 x In (kA)	Category	150 x In (kA)	Category	200 x In (kA)	Category	250 x In (kA)	Category	300 x In (kA)	Category	400 x In (kA)	Category	500 x In (kA)	Category	600 x In (kA)	Category	800 x In (kA)	Category	1000 x In (kA)	Category
10	2	K	2	K	2	K	2	K	4	G	4	G	4	G	6,3	D	6,3	D	8	C	10	B
15	2	O	2	O	4	K	4	K	4	K	6,3	H	6,3	H	8	G	10	F	12,5	C	16	C
20	2	R	4	N	4	N	4	N	6,3	K	6,3	K	8	J	10	H	12,5	F	16	E	20	C
25	4	P	4	P	4	P	6,3	M	6,3	M	8	L	10	K	12,5	H	16	G	20	E	25	C
30	4	R	4	R	6,3	O	6,3	O	8	N	10	M	12,5	J	16	I	20	G	25	D	31,5	C
40	4	T	6,3	R	6,3	R	8	Q	10	N	12,5	M	16	L	20	J	25	G	31,5	E	40	C
50	6,3	T	6,3	T	8	S	10	Q	12,5	N	16	N	20	L	25	I	31,5	G	40	E	50	C
60	6,3	U	8	T	10	S	12,5	Q	16	O	20	N	25	K	31,5	I	40	G	50	D	63	B
75	8	V	10	T	12,5	S	16	R	20	P	25	M	31,5	K	40	I	50	F	63	C		
100	10	W	12,5	U	16	U	20	S	25	P	31,5	N	40	L	50	I	63	E				
150	16	W	20	U	25	T	31,5	R	40	M	50	M	63	I								
200	20	X	25	V	31,5	U	40	S	50	P	63	L										
250	25	W	31,5	V	40	U	50	R	63	N												
300	31,5	W	40	T	50	T	63	P														
400	40	X	50	V	63	S																
500	50	W	63	U																		
600	63	V																				

How to select transformer

A. Multiturn current transformers – from 10 A to 600 A

1. To select primary current In –table 1
2. To find Ithn according to In –table 1
3. To specify category (A,B,...Z)- table 1
4. To choose suitable measuring or protective parameters (burden, class, FS or limit factor...)-table 2
5. To select the height (H) of each core in the „category”column table 2
6. To calculate „Total height” for transformer and compare with the limits for short and long versions – see C.
7. To specify type of current transformer
8. If „total height” of transformer is more as limit (see C), you have to reduce some parameters or secondary windings

B. Singleturn current transformers – from 400 A to 3200 A

1. To select primary current In – table 3
2. To choose suitable measuring or protective parameters (burden, class, FS or limit factor...)- table 3
3. To select the height (H) of each core in the column (according to In) – table 3
4. To calculate „Total height” for transformer and compare with the limits for short and long versions – see C
5. To specify type of current transformer
6. If „total height” of transformer is more as limit (see C), you have to reduce some parameters or secondary windings

C. Possible combination of secondary windings (total H)

1 - „Short” size - sum of the core heights, at maximum.....

- 1 secondary winding... 100
- 2 secondary windings.. 80
- 3 secondary windings.. 60
- 4 secondary windings.. 40

2 - „Long” size - sum of the core heights, at maximum.....

- 1 secondary winding... 200
- 2 secondary windings..180
- 3 secondary windings..160
- 4 secondary windings..140

For models with voltage indication the core height for all the respective options should be reduced by 20 mm.

Table 3

TPU 41-48	Az	400 A	500 A	600 A	750 A	800 A	900 A	1000 A	1250 A	1500 A	2000 A	2500 A	3000 A	3200 A
	I _{lnn}	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	63 kA	63 kA	63 kA	80 kA	80 kA
Burden	Class													
2.5 VA	0.2 Fs5	10	10	10	10	10	10	10	10	10	10	10	10	10
	0.5 Fs5	10	10	10	10	10	10	10	10	10	10	10	10	10
	0.5 Fs10	10	10	10	10	10	10	10	10	10	10	10	10	10
	1 Fs5	10	10	10	10	10	10	10	10	10	10	10	10	10
	5 P 10	20	20	20	20	20	20	20	20	20	20	20	20	20
	5 P 15	30	30	30	30	30	30	30	30	20	20	30	30	30
	5 P 20	40	40	40	40	40	40	40	40	30	30	50	60	60
5 VA	0.2 Fs5	20	20	20	20	10	10	10	10	10	10	10	10	10
	0.5 Fs5	20	20	20	10	10	10	10	10	10	10	10	10	10
	0.5 Fs10	30	20	20	20	10	10	10	10	10	10	10	10	10
	1 Fs5	10	10	10	10	10	10	10	10	10	10	10	10	10
	5 P 10	40	40	30	30	30	30	30	30	20	20	20	20	20
	5 P 15	70	60	50	40	40	40	40	40	40	40	40	40	40
	5 P 20	100	90	70	60	50	50	50	50	50	50	60	60	60
10 VA	0.2 Fs5	20	20	20	20	10	10	10	10	10	10	10	10	10
	0.5 Fs5	20	20	20	10	10	10	10	10	10	10	10	10	10
	0.5 Fs10	30	20	20	20	10	10	10	10	10	10	10	10	10
	1 Fs5	20	10	10	10	10	10	10	10	10	10	10	10	10
	5 P 10	50	50	40	40	40	30	30	30	20	30	20	20	20
	5 P 15	80	70	60	50	50	40	40	40	40	50	50	50	40
	5 P 20	120	100	80	70	60	60	60	50	50	60	80	80	80
15 VA	0.2 Fs5	40	30	20	20	20	20	20	20	10	10	10	10	10
	0.5 Fs5	30	20	20	20	20	20	10	10	10	10	10	10	10
	0.5 Fs10	40	30	20	20	20	20	10	10	10	10	10	10	10
	1 Fs5	20	20	20	10	10	10	10	10	10	10	10	10	10
	5 P 10	80	70	60	50	50	40	40	40	30	40	40	40	30
	5 P 15	120	90	80	70	60	60	60	50	50	60	60	60	60
	5 P 20	160	140	120	100	100	100	100	90	80	120	120	120	120
20 VA	0.2 Fs5	50	40	30	30	20	20	20	20	10	10	10	10	10
	0.5 Fs5	40	30	30	20	20	10	10	10	10	10	10	10	10
	0.5 Fs10	50	40	30	20	20	20	10	10	10	10	10	10	10
	1 Fs5	30	20	20	20	10	10	10	10	10	10	10	10	10
	5 P 10	100	90	70	60	50	50	50	40	40	40	40	40	40
	5 P 15	140	120	100	80	80	70	70	60	60	80	80	70	70
	5 P 20	200	180	140	120	120	120	120	100	90	120	140	140	120
30 VA	0.2 Fs5	70	60	40	30	30	30	30	20	20	10	10	10	10
	0.5 Fs5	50	50	40	30	20	20	20	20	10	10	10	10	10
	0.5 Fs10	50	50	40	30	30	20	20	20	20	10	10	10	10
	1 Fs5	50	40	30	20	20	20	20	20	10	10	10	10	10
	5 P 10	160	120	100	80	80	70	60	60	50	60	60	50	50
	5 P 15	---	200	160	140	140	60	120	100	80	140	120	100	100
	5 P 20	---	---	---	180	160	100	160	160	120	---	200	180	180

Standartized transformers

Type	I _{thn} /I _{dyn} [kA]	Ratio [A]	Burden [VA]	Class	FS/ALF
40,11	6,3/16	20//5	10	5P	15
40,21	6,3/16	20//5	20	5P	10
40,21	6,3/16	20//5/5	15/15	0,5/5P	FS5/10
40,21	12,5/31,5	20//5	10	5P	15
40,21	12,5/31,5	20//5/5	15/15	0,5/5P	FS5/5
40,21	16/40	20//5	10	5P	15
40,21	16/40	20//5/5	10/10	0,5/10P	FS5/10
40,11	6,3/16	30//5	15	5P	15
40,11	6,3/16	30//5	20	5P	10
40,21	6,3/16	30//5/5	15/15	0,5/5P	FS5/15
40,11	12,5/31,5	30//5	10	5P	15
40,21	12,5/31,5	30//5	20	5P	10
40,21	12,5/31,5	30//5/5	15/15	0,5/5P	FS5/10
40,21	25/63	30//5	10	5P	15
40,21	25/63	30//5	15	5P	10
40,21	25/63	30//5/5	10/10	0,5/5P	FS5/10
40,11	6,3/16	50//5	15	5P	15
40,11	6,3/16	50//5	30	5P	10
40,11	6,3/16	50//5/5	15/15	0,5/5P	FS5/10
40,11	16/40	50//5	10	5P	15
40,11	16/40	50//5	20	5P	10
40,21	16/40	50//5/5	15/15	0,5/5P	FS5/15
40,21	31,5/80	50//5	10	5P	15
40,21	31,5/80	50//5	20	5P	10
40,21	31,5/80	50//5/5	15/15	0,5/5P	FS5/10
40,11	16/40	100//5	15	5P	15
40,11	16/40	100//5/5	15/15	0,5/5P	FS5/15
40,21	31,5/80	100//5	15	5P	15
40,21	31,5/80	100//5/5	15/15	0,5/5P	FS5/10
40,11	31,5/63	200//5	15	5P	15
40,11	31,5/63	200//5	30	5P	15
40,11	31,5/63	200//5/5	15/15	0,5/5P	FS5/15
40,11	40/100	200//5	15	5P	15
40,11	40/100	200//5	30	5P	10
40,11	40/100	200//5/5	15/15	0,5/5P	FS5/10
40,11	31,5/80	300//5	15	5P	15
40,11	31,5/80	300//5	30	5P	10
40,11	31,5/80	300//5/5	15/15	0,5/5P	FS5/15
40,11	50/125	300//5	15	5P	15
40,11	50/125	300//5	30	5P	10
40,11	50/125	300//5/5	15/15	0,5/5P	FS5/15

Type	I _{thn} /I _{dyn} [kA]	Ratio [A]	Burden [VA]	Class	FS/ALF
40,11	40/100	400//5	30	5P	15
40,11	40/100	400//5/5	15/15	0,5/5P	FS5/15
40,11	50/125	400//5	15	5P	15
40,11	50/125	400//5/5	15/15	0,5/5P	FS5/15
40,11	50/125	500//5	30	5P	10
40,11	50/125	500//5/5	15/15	0,5/5P	FS5/15
40,11	50/125	600//5	30	5P	10
40,11	50/125	600//5/5	15/15	0,5/5P	FS5/15
41,11	50/125	400//5	10	5P	10
41,11	50/125	400//5/5	10/10	0,5/5P	FS5/10
42,11	50/125	600//5	20	5P	10
42,11	50/125	600//5/5	15/15	0,5/5P	FS5/10
43,11	50/125	750//5	15	5P	15
43,11	50/125	750//5	30	5P	10
43,11	50/125	750//5/5	15/15	0,5/5P	FS5/10
43,11	63/160	1000//5	10	5P	20
43,11	63/160	1000//5	20	5P	15
43,11	63/160	1000//5	30	5P	10
43,11	63/160	1000//5/5	15/15	0,5/5P	FS5/10
43,11	63/160	1250//5	15	5P	15
43,11	63/160	1250//5	30	5P	10
43,11	63/160	1250//5/5	15/15	0,5/5P	FS5/15
44,11	63/160	1500//5	15	5P	15
44,11	63/160	1500//5	30	5P	10
44,11	63/160	1500//5/5	15/15	0,5/5P	FS5/15
45,11	80/200	2000//5	15	5P	20
45,11	80/200	2000//5	30	5P	15
45,11	80/200	2000//5/5	15/15	0,5/5P	FS5/15
46,11	100/250	2500//5	15	5P	20
46,11	100/250	2500//5	30	5P	15
46,11	100/250	2500//5/5	30/30	0,5/5P	FS5/15
47,11	100/250	3000//5	15	5P	15
47,11	100/250	3000//5	30	5P	20
47,11	100/250	3000//5/5	30/30	0,5/5P	FS5/15
48,11	100/250	3200//5	15	5P	15
48,11	100/250	3200//5	30	5P	20
48,11	100/250	3200//5/5	30/30	0,5/5P	FS5/15

Customer	Date	
Address	Delivery required	
Country	Tel.	Fax.
Contact person	E-mail	

Current transformers

Project ref.:	Date	Inquiry No.:
		Offer No.:

Um:	<input type="text"/> kV	Insulation level (BIL):	<input type="text"/> kV/	<input type="text"/> kV/	<input type="text"/> kV
lth:	<input type="text"/> kA/1s				
	<input type="text"/> kA/3s				
freq.:	<input type="text"/> Hz	Routine test certificates	<input type="text"/>		
ldyn.:	<input type="text"/> kA	Additional name plate	<input type="text"/>		
		Magnetisation curves	<input type="text"/>		

Indoor	<input type="checkbox"/>	Remarks:
Outdoor	<input type="checkbox"/>	

Pos.:	ratio (A)	Pcs.:	Class	Burden (VA)	ext 100%	<input type="checkbox"/>	add. Requirement
core 1:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	ext 120%	<input type="checkbox"/>	
core 2:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	ext 150%	<input type="checkbox"/>	
core 3:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	ext 200%	<input type="checkbox"/>	
core 4:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	reconnectable	<input type="checkbox"/> Yes	
						<input type="checkbox"/> No	

Supplier's remarks	
Type	<input type="text"/>
Unit price	<input type="text"/>
Total price	<input type="text"/>
Comment	

Pos.:	ratio	Pcs	Class	Burden	ext 100%	<input type="checkbox"/>	add. Requirement
core 1:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	ext 120%	<input type="checkbox"/>	
core 2:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	ext 150%	<input type="checkbox"/>	
core 3:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	ext 200%	<input type="checkbox"/>	
core 4:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	reconnectable	<input type="checkbox"/> Yes	
						<input type="checkbox"/> No	

Supplier's remarks	
Type	<input type="text"/>
Unit price	<input type="text"/>
Total price	<input type="text"/>
Comment	



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ABB s.r.o.

Org. Unit EJF

Division of Instrument Transformers

Václavská 117

619 00 Brno, Czech Republic

E-mail: info.ejf@cz.abb.com

http://www.abb.cz/ejf

Tel.: +420 5 4715 2602

+420 5 4715 2604

Fax: +420 5 4715 2626