DISTRIBUTION SOLUTIONS

IPZ

Bushing current transformers

Description
Current transformers, bushing, 1-phase, in resin insulation, are used for supplying measurement instruments and protection circuits of electric energy equipment with the highest permissible system voltages of 12 and 24 kV and frequency of 50 Hz. Range of rated primary currents between 200 and 2000 A.

Design and operating principle
Current transformers type IPZ are 1-phase low power transformers, that operate under conditions similar to short-circuit and transform primary current in a high potential circuit into low potential secondary current, while maintaining accuracy requirements. The basic design components are:

- primary terminals constituting the primary winding
- secondary winding
- magnetic cores

The entire transformer is coated with epoxy resin,which shapes the structure and constitutes the main insulation of the transformer.

Table of variants

Type	No. of cores	Rated primary current
IPZ 10 L2H	up to 3	200 - 800 A
IPZ 10 L4H	up to 3	1000 - 2000 A
IPZ 20 L2H	up to 3	200 - 800 A
IPZ 20 L4H	up to 3	1000 - 2000 A

Features
Transformers type IPZ 10, 20 are current transformers, bushing, equipped with:

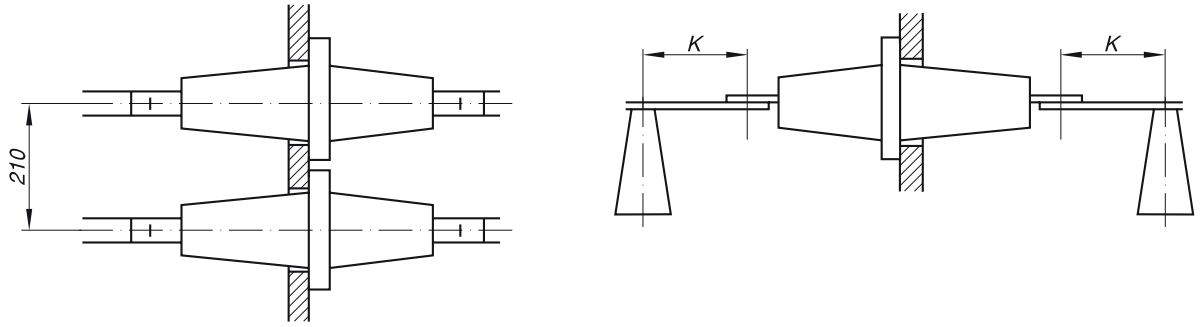
- flange for wall installation
- primary terminals with flat terminals for connecting buses

Compliance with standards
- IEC 185
- DIN/VDE 0414 Teil 1/01.94
- GOST 7746-89 (only IPZ 10)

Order example
Current transformer type IPZ 20 L2H 800/5/5 A
1 core: 15 VA cl. 0.5 FS10
2 core: 30 VA 5P10

Technical specifications

Type	Insulation levels			Rated frequency	Rated short-term current		Rated primary current	Rated short-time thermal current	Rated dynamic current	Nearest support	Weight (approx.)
	Highest voltage for equipment	Power frequency withstand voltage (r.m.s)	Lighting impulse withstand voltage (peak)		thermal (1s)	dynamic					
	[kV]	[kV]	[kV]	[Hz]	[kA]	[kA]	[A]	[kA]	[kA]	[mm]	[kg]
IPZ 10	12	28	75	50	100 x I_{pn}	2.5 x I_{th}	200-800	60	150	300	20
							1000-2000	80	200	0	
IPZ 20	24	50	125				200-800	60	150	300	28
							1000-2000	80	200	0	



Current circuit of the transformer IPZ 10, 20
“K” – maximum distance to the nearest support

Extended range of parameters of secondary circuits of the transformers type IPZ 10, 20

Table of performance

Total number of fillings LWc = 170 i ≥ ∑LW

Rated primary current [A]																								
	200						30	40	50					30	60	80	150							
	250						30	40	50					30	60	70	120							
	300						30	40	50					30	40	60	110	160						
	400	30	60				25	30	30	60				30	35	50	90	130	170					
	500	30	60				25	30	30	60				30	30	35	70	120	170					
	600	35	60				25	30	30	70				30	30	40	60	85	110					
	750	35	60	80			25	30	40	65	90			30	30	35	60	80	100	140				
	800	30	50	70			25	30	40	65	80			30	30	40	60	70	95	135				
	1000	30	40	60	100		25	25	30	50	70	80	110	30	30	50	90	120	155	-	-			
	1200	40	50	60	100		30	30	35	60	70	90	120	35	40	50	80	100	140	-	-			
	1250	40	50	60	100		30	30	35	60	70	90	120	35	40	50	80	100	140	-	-			
	1500	35	50	60	100	140	30	30	40	60	70	90	120	30	35	40	60	90	110	150	170			
	1600	35	50	60	100	140	40	40	40	70	80	100	150	30	35	40	60	90	110	150	170			
	2000	50	60	80	110	150	40	40	45	60	90	110	150	30	35	50	60	90	110	150	170			
Power [VA]		5	10	15	30	45	5	10	15	30	45	60	90	5	10	15	30	45	63	90	120			
Accuracy class		0.2					0.5							5P										
Overcurrent parameters		FS10												10										

Secondary measurement windings are also made with the rated instrument safety coefficient FS5. Secondary protection windings are also made with the limit accuracy factor AFL = 5; 15; 20; 30. The values of rated secondary currents are: 5 A and 1 A.

Transformers type IPZ 10, 20 may be made to special order with any set of secondary circuit parameters, provided that the sum of fillings LW indicated in the table of performance does not exceed the total number of fillings LWc = 170. Filling numbers LW of secondary circuits in serial production are given in bold. Transformers with other parameters may be made to special order. Example selection of secondary circuit parameters:

Type IPZ 10 L4H I_{pn} = 1500 A

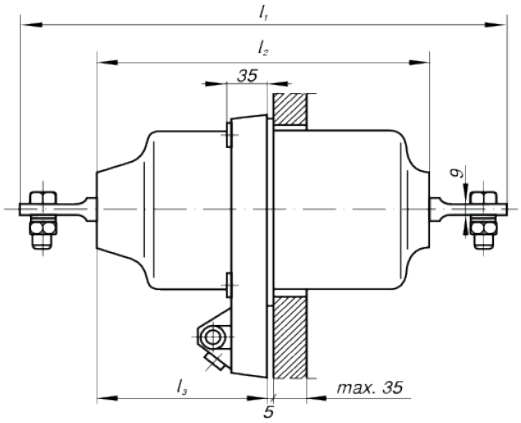
1. 10 VA cl. 0.2 FS 10 LW = 50
2. 15 VA 5P10 LW = 40
3. 15 VA 5P10 LW = 60

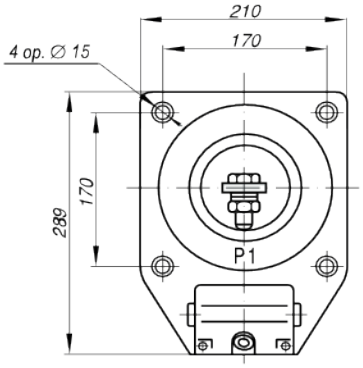
∑LW = 150

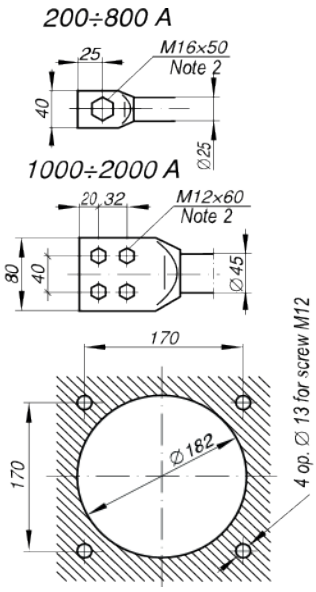
Since LWc = 170 > ∑LW = 150 - the transformer can be produced.

Dimensional Drawing

	IPZ 10 L		IPZ 20 L	
U_m [kV]	12		24	
I_{pn} [A]	200 - 800	1000 - 2000	200 - 800	1000 - 2000
Weight [kg] (approx.)	25	30	28	34
g [mm]	8	12	8	12
l1 [mm]	510	610	710	810
l2 [mm]	350		550	
l3 [mm]	178		260	







Notes:

1. Primary terminals: Cu – Ag 12 μm.
2. Spring washers: Fe – (Cu 3 μm + Sn 10 μm)
   other standardised parts: Ms – Ni 10 μm.
3. Secondary terminals: Ms – Ni 10 μm.
   M6 standardised parts: as per sec. 2.

The deviations of non-tolerated dimensions are within ±3%.

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