SVEL

TURNKEY SOLUTIONS
IN POWER ENGINEERING

PRODUCT CATALOGUE

INSTRUMENT TRANSFORMERS

INDEX

ABOUT SVEL GROUP

SVEL Group is one of the leading manufacturers of electrotechnical equipment in Russia. SVEL Group's affiliated companies demonstrate extraordinary dynamics in production increase and modernization.

Successful cooperation with the key Russian companies allows contributing into the RF Government Programs on Import Substitution and energy saving. Advanced solutions of our specialists ensure reducing customers' power costs.

SVEL Group is capable to deliver a turnkey substation project in the shortest possible time through the most advanced design that meets all applicable regulatory requirements

DRY TYPE CAST RESIN TRANSFORMERS

Since 2003
Capacity: 3,000 MVA/y

63, Pl Pervoy Piatiletky, Yekaterinburg, 620143 Russian Federation

Phone: +7 (343) 253-50-21
Fax: +7 (343) 253-50-12

dry-type@svel.com

REACTORS

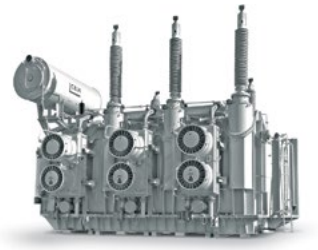
Since 2004
Capacity: 960 phase/y

63, Pl Pervoy Piatiletky, Yekaterinburg, 620143 Russian Federation

Phone: +7 (343) 253-50-19
Fax: +7 (343) 253-50-12

reactors@svel.com

OIL-IMMERSED TRANSFORMERS



Since 2009
Capacity: 24,000 MVA/y

61 Chernyakhovsky Street, Yekaterinburg, 620010, Russian Federation

Phone: +7 (343) 253-50-12
Fax: +7 (343) 253-50-18
oil-immersed@svel.com

DESIGN

MANUFACTURING
TESTING

DELIVERY

SWITCHGEAR

Since 2009
Capacity: 2,000 pcs/y

SUBSTATION

Since 2009
Capacity: 500 pcs/y

LV SWITCHGEAR

Since 2009
Capacity: 1,000 pcs/y

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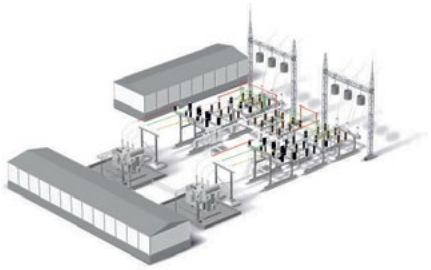
57 Alpinistov Street, Yekaterinburg, 620010 Russian Federation
Phone: +7 (343) 253-50-20
substations@svel.com

E-HOUSE



Since 2009
Capacity: 88 pcs/y

57 Alpinistov Street, Yekaterinburg,
620010 Russian Federation
Phone: +7 (343) 253-50-20
Fax: +7 (343) 253-50-18

substations@svel.com

INSTRUMENT TRANSFORMERS

Since 2010
Capacity: 8000 pcs/y

57 Alpinistov Street, Yekaterinburg,
620010 Russian Federation
Phone: +7 (343) 253-50-66
Fax: +7 (343) 253-50-18

instrument@svel.com

HV EQUIPMENT

Since 2011

57 Alpinistov Street, Yekaterinburg,
620010 Russian Federation
Phone: +7 (343) 253-50-20
Fax: +7 (343) 253-50-18

substations@svel.com

ASSEMBLING
SUPERVISED INSTALLATION

COMMISSIONING

AFTERSALES SERVICE

SVEL INSTRUMENT TRANSFORMERS: PRODUCT LINE

CT PRODUCT LINE				
TYPE	**VOLTAGE CLASS**	**Accuracy of Primary Winding**	**Accuracy of Protective Winding**	**Number of Windings**
TOL-SVEL	6 to 35	0,25S, or below	5P, 10P	Up to 5
TPOL-SVEL	6 to 35			Up to 4
TPL-SVEL	6 to 35			Up to 4
TV-SVEL	10 to 750 (bushing)			Up to 6
TSHL-SVEL	0,66 to 24		5P, 10P	Up to 5
TZLK(R)-SVEL	0,66		-	1

VT PRODUCT LINE				
TYPE	**Voltage Class**	**Accuracy of Primary Winding**	**Accuracy of Protective Winding**	**Number of Windings**
NOL(P)-SVEL	3 to 35	0,2 or below	3P	2
ZNOL(P)-SVEL	3 to 35			Up to 4
3xNOL(P)-SVEL	3 to 35		6P	

POWER TRANSFORMER PRODUCT LINE			
TYPE	**Voltage Class**	**Rated Power, V·A**	**Rated Voltage, Primary Winding, V**
OL-SVEL	6 to 10	630; 1 250	6,300; 6,600; 10,500; 11,000
OLS(P)-SVEL	6 to 10	630; 1 250	
OLZ-SVEL	27,5	1 250	

DESIGN AND MANUFACTURING SPECIFICS

1 VT by SVEL is equipped with a detachable electromagnet safety device designed by SVEL as having no rivals in the world. It is installed on HV Side.

2 Deep vacuum and open casting (casting mould has a shape of an open bath) eliminate air bubbles or cavities in the cast resin that impact reliability and service life of products.

3 VT may have three Secondary Coils, i.e. the rated primary voltage may be switched. Such VTs have the analogues abroad, while no domestic rivals.

4 Magnet core of various shapes are possible to fit to specific dimensions requested by customers.

5 Ratio switch is possible at CTs, both primary and secondary sides. Also instrument transformers may have different ratio for certain windings.

6 Secondary Coil is wound in parallel (by several wires of diverse cross-sections) to ensure turns correction and obtain high-level accuracy, while reducing the design cost.

7 CT SVEL-10 has four Secondary Coils as a standard dimensional option.

8 Plastic housings of CT core reduce labor intensity of insulating and increase product reliability

9 Adaptive plates of own design to arrange any joints or mounting dimensions as requested by customers.

INSTRUMENT TRANSFORMERS BY SVEL – RELIABILITY VIA QUALITY

TAILORED SOLUTIONS

Individual approach to meet Client's technical requirements

CUSTOMIZED PARAMETERS

Adaptive connection dimensions, off-standard characteristics upon Client's request

REDUCED DELIVERY TIME

Due to available stock

TRANSFORMER PROTECTION DURING EMERGENCY MODES

Ensured by the detachable electromagnet safety device – SVEL's innovating design, to protect in case of fault at secondary circuit or overvoltage and primary circuit. No need to replace when triggered, while easy to cock manually.

REDUCED COSTS FOR SUBSTATION UPGRADE

Chance to arrange automated commercial metering in the course of substation upgrade, while avoiding replacement of oil-immersed transformers or reset of relay protection

OPPORTUNITY TO REDUCE SPARE PARTS STOCK FOR SWITCHGEARS

Universal Voltage Transformer for 6-10kV grids is a new design that allow, if necessary, combining transformers of 2 rated voltages into one unit:
6kV and 10kV are convenient if an transformer is built into switchgears, and also it eliminates the required stock of reserve components for maintenance.

INNOVATIONS

Continuous improvement in the area of technical solutions.
Extension in the product lines.

DEVELOPMENT PLANS

Available free spaces to grow, extend warehouse, and production capacities.

SVEL INSTRUMENT TRANSFORMER: ADVANTAGES

- ✓ Operable at the range of -60°C to +55°C
- ✓ Mounting and connection dimensions fit to the earlier manufactured transformers
- ✓ Reduced weight and overall dimensions
- ✓ Free from air pockets
- ✓ Convenient transportation and assembling
- ✓ Thermal class – F
- ✓ Utmost level of automated manufacturing and testing processes

SVEL Group manufactures the following types of instrument transformers:

- ✓ Current Transformers (CT)
- ✓ Earthed and non-earthed Voltage Transformers, as well as three-phase antiresonant VT banks
- ✓ Power transformers
- ✓ Core balance CTs

The most advanced engineering and vast design experience allow manufacturing up to six-windings CTs. As such, Accuracy Classes may come in various combines to satisfy any wishes of maintenance people.

EFFECT OF EQUIPMENT APPLICATION

Reduced costs of substation upgrade, while ability to establish automated commercial metering in the course of substation upgrade, while avoiding replacement of oil-immersed transformers or reset of relay protection.

Easy and fast VT starting due to the in-house innovating unit - the detachable electromagnet safety device designed by SVEL.

Reduced expenses on electricity metering through skillful selection of transformer parameters.

It is possible to scale down the number of backup transformers for switchgear maintenance, by the effect of a 6-10 kV universal VT, which combines 2 2 rated voltages in one unit.zz

CURRENT TRANSFORMER

PURPOSE AND SCOPE

CT is used as a component of indoors and outdoors AC switchgears, 6kV to 220kV

CT is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage.

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TOL-SVEL-10

CURRENT TRANSFORMER TOL-SVEL-10

This CT is used as a component of both indoors and outdoors AC switchgears, 6kV to 220kV. Such CT is mounted into a break of the current conductor.

TOL-SVEL-10 is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TOL-SVEL-10 is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, as per GOST 15150-69.

Working position – optional, upon request.

Technical specification for manufacturing ОЕТ. 591.014.

EQUIPMENT DESCRIPTION

TOL-SVEL-10 is a single-phase, cast resin, bearing-type Current Transformer.

Such CT may have up to 3 Secondary Coils, each upon their own core. Terminals of the primary winding is located on the upper surface of CT, while terminals of the Secondary Coils are located at the bottom of CT. However, optionally, the Secondary Coils' terminals may be mounted on the side.

In addition to that, the Secondary Coils' terminals are sealed with a protective cap.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

CT may have terminals of the Secondary Coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TOL-SVEL-10		
Parameter	**Value**	
Modification	1; 2	7; 8
Rated Voltage, kV	**10**; 11*	
Max Working Voltage, kV	12	
Rated Frequency, Hz	**50**; 60*	
Rated Secondary Current, A	1; **5**	
Rated Primary Current, A	5;10;15;20;30;40;50;75;80; 100;150;200;300;400;600; 750;800;1000; 1200; 1500; 2000; 2500; 3000	
Number of Secondary Coils	2	3
Secondary Coil Accuracy Class:		
Metering and measurements	**0,2S; 0,2; 0,5S; 0,5**; 1; 3	
Protection	5P; **10P**	
Rated Secondary Burden, V·A:		
Secondary Coil, measurements		
cos φ = 1	1; 2; 2,5	
cos φ = 0,8	3; 5; **10**; 15; 20; 25; 30; 50	
Secondary Coil, protection		
cos φ = 0,8	3; 5; 10; **15**; 20; 25; 30; 50	
Accuracy limit factor, Secondary Coil, protection;	2 to 30	
Instrument security factor, measuring winding;	3 to 30	
One second thermal current, kA at rated primary current, A		
5	0,4	
10	0,78	

TECHNICAL PARAMETERS TOL-SVEL-10		
Parameter	**Value**	
15	1,2	
20	1,56	
30	2,5	
40	3,0	
50	5,0	
75	5,85	
80	6,23	
100	10,0	
150	12,5	
200	20,0	
300, 400	31,5	20,0
600 - 3000	40,0	
Peak withstand current kA at rated primary current, A		
5	1,0	
10	1,98	
15	3,0	
20	3,98	
30	6,37	
40	7,65	
50	12,8	
75	14,9	
80	15,8	
100	25,5	
150	31,8	
200	51,0	
300, 400	81,0	51,0
600 - 3000	102,0	

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS TOL-SVEL-10 (1-8)					
TYPE	Number of Windings	Rated Primary Current, A	h, mm	Figure	Weight, kg
TOL-SVEL-10-1	2	5 - 400	21	1	21±1
		600	23		
		750 -1000	25		
		1200 - 2000	35	5	
		2500, 3000		6	24±1
TOL-SVEL-10-2		5 - 400	21	3	21±1
		600	23		
		750 -1000	25		
		1200 - 2000	35	3, 5	
		2500, 3000		3, 6	24±1
TOL-SVEL-10-7	3	5 - 400	21	2	21±1
		600	23		
		750 - 1000	25		
		1200 - 2000	35	2, 5	24±1
		2500, 3000		2, 6	26±1
TOL-SVEL-10-8		5 - 400	21	4	21±1
		600	23		
		750 - 1000	25		
		1200 - 2000	35	4, 5	24±1
		2500, 3000		4, 6	26±1

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TOL-SVEL-10

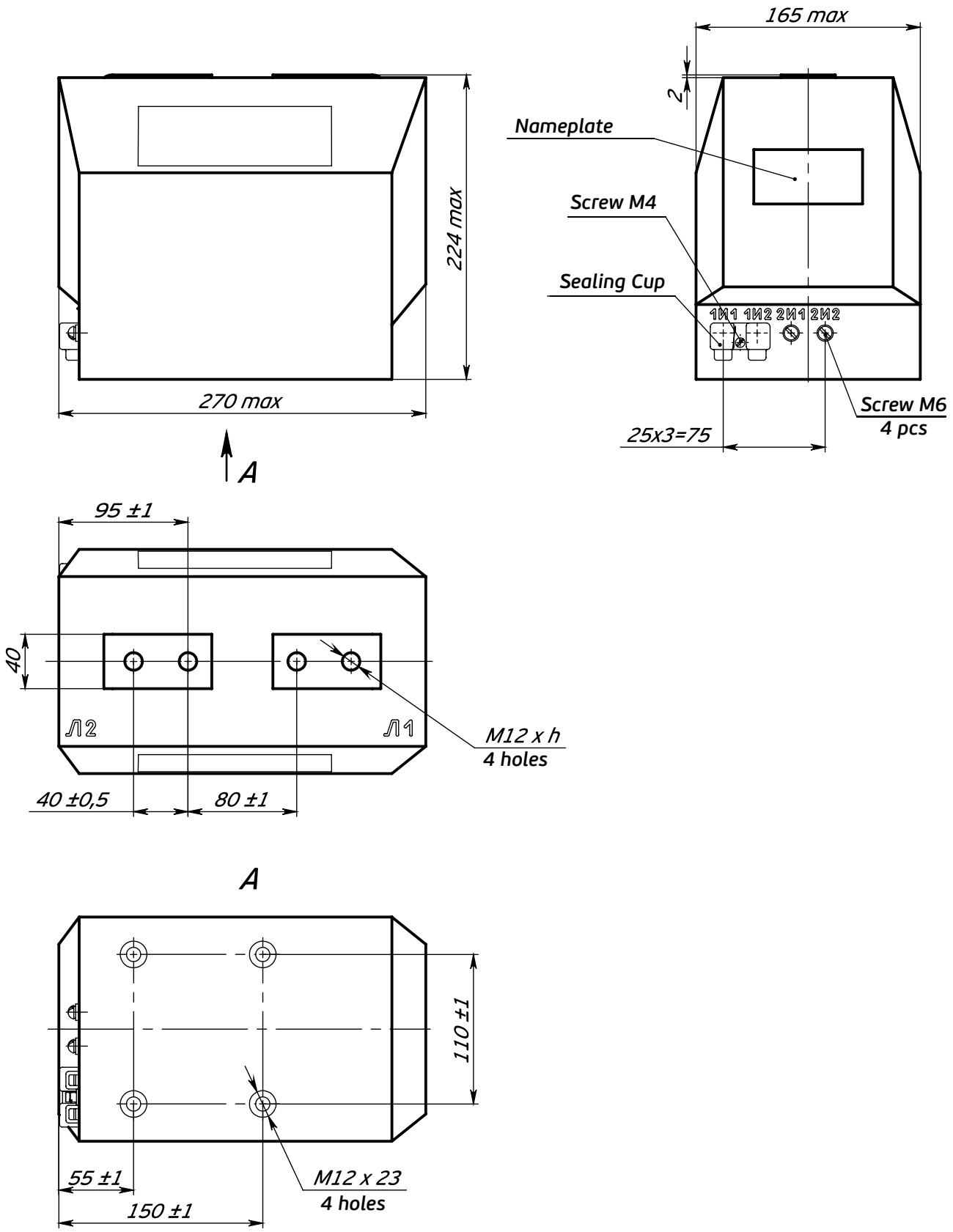


Fig. 1 – General View, Current Transformer TOL-SVEL-10-1

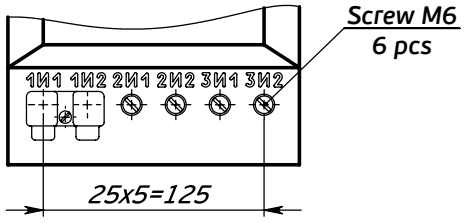
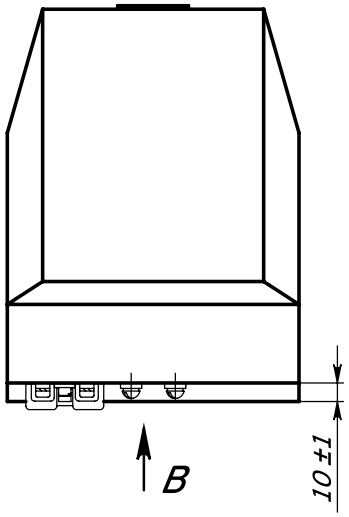


Fig. 2 – General View,
Current Transformer TOL-SVEL-10-7,
otherwise see Fig. 1



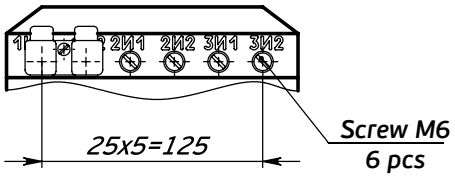


Fig. 4 – General View,
Current Transformer TOL-SVEL-10-8,
otherwise see Fig. 3

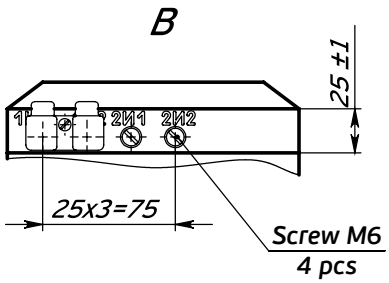


Fig. 3 – General View,
Current Transformer TOL-SVEL-10-2,
otherwise see Fig. 1

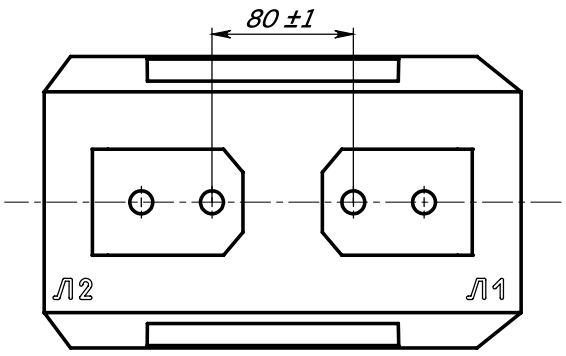


Fig. 5 – General View,
Current Transformer TOL-SVEL-10-1 (2-8),
Primary Rated Current 1,200A
to 2,000A otherwise see Fig. 1

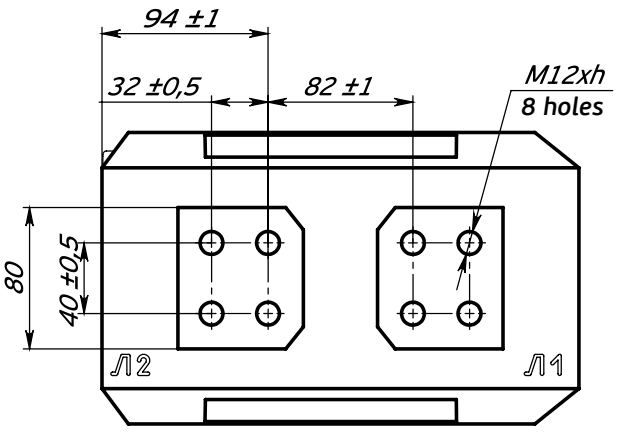


Fig. 6 – General View,
Current Transformer TOL-SVEL-10-1 (2-8),
Primary Rated Current 2,500A
to 3,000A otherwise see Fig. 1

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TOL-SVEL-10M

PURPOSE AND SCOPE

This CT is used as a component of both indoors and outdoors AC switchgears, up to 10kV. Such CT is mounted into a break of the current conductor. TOL-SVEL-10 M-32 modification is designed for mining HV Switchgears to operate at gas and dust environment.

TOL-SVEL-10 is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage
- ✓ Check operability of max current protection under no load at the primary circuit (TOL-SVEL-10 M-32)

TOL-SVEL-10M is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, as per GOST 15150-69. TOL-SVEL-10 M-32 is made in O (Universal) Environment Class, and Location Category 5.1, as per GOST 15150

Working position – optional, upon request.

Technical specification for manufacturing ОЕТ. 591.014.

EQUIPMENT DESCRIPTION

TOL-SVEL-10 is a single-phase, cast resin, bearing-type Current Transformer.

Such CT may have up to 5 Secondary Coils, each upon their own core. Terminals of the primary winding is

located on the upper surface of CT, while terminals of the Secondary Coils are located at the bottom of CT. However, optionally, the Secondary Coils' terminals may be mounted on the side.

In addition to that, the Secondary Coils' terminals are sealed with a protective cup.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture CTs with special isolating partitions at the top of CT to reduce the distance between the conductors of the neighboring phases (subject to insulation of the busbars outside the transformer).

Upon customer's request, we manufacture a CT with increased rated power of Secondary Coils, increased short-time thermal current and peak withstand current.

CT may have terminals of the Secondary Coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request

TECHNICAL PARAMETERS TOL-SVEL-10M-9 (11-32)				
Parameter	**Value**			
Modification	11.1 (2); 14.1 (2); 20.1(2); 22; 26.1(2), 29; 29.1; 32	12.1 (2); 15.1 (2); 21.1 (2); 23; 27.1 (2)	9; 13.1; 16.1; 24; 28.1	30; 31
Rated Voltage, kV	**10**; 11*			
Max Working Voltage, kV	12			
Rated Frequency, Hz	**50**; 60*			
Rated Secondary Current, A	1; **5**			
Rated Primary Current, A	5; 10; 15; 20; 30; 40; 50; 75; 80; 100; 150; 200; 300; 400; 600; 750; 800; 1000; 1200; 1500; 2000; 2500; 3000			
Number of Secondary Coils	2	3	4	5
Secondary Coil Accuracy Class:				
Measurements	**0,2S**; 0,2; **0,5S**; **0,5**; 1; 3			
Protection	5P; **10P**			
Rated Secondary Burden, V·A				
Secondary Coil, measurements:				
cos φ = 1	1; 2; 2,5;			
cos φ = 0,8	3; 5; **10**; 15; 20; 25; 30; 50			
Secondary Coil, protection:				
cos φ = 0,8	3; 5; 10; **15**; 20; 25; 30; 50			
Accuracy limit factor, Secondary Coil, protection;	2 to 30			
Instrument security factor, measuring winding;	3 to 30			

TECHNICAL PARAMETERS TOL-SVEL-10M-9 (11-32)		
Parameter	**Value**	
One second thermal current, kA at rated primary current, A		
5	0,4	
10	0,78	
15	1,2	
20	1,56	
30	2,5	
40	3,0	
50	5,0	
75	5,85	
80	6,23	
100	10,0	
150	12,5	
200	20,0	
300, 400	31,5	20,0
600 – 3000	40,0	
Peak withstand current kA at rated primary current, A		
5	1,0	
10	1,98	
15	3,0	
20	3,98	
30	6,37	
40	7,65	
50	12,8	
75	14,9	
80	15,8	
100	25,5	
150	31,8	
200	51,0	
300, 400	81,0	51,0
600 – 3000	102,0	

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS TOL-SVEL-10M-17 (18; 19)

Parameter	Value	
Modification	17.1 (2)	18.1 (2); 19.1 (2)
Rated Voltage, kV	**10; 11***	
Max Working Voltage, kV	12	
Rated Frequency, Hz	**50; 60***	
Rated Secondary Current, A	1; 5	
Rated Primary Current, A	5/10; 10/20; 15/30; 20/40; 40/80; 50/100; 75/150; 100/200; 150/300; 200/400; 300/600; 400/800	40/80; 50/100; 75/150; 100/200; 150/300; 200/400; 300/600; 400/800
Number of Secondary Coils	2	
Secondary Coil Accuracy Class:		
Measurements	0,2S; 0,2; **0,5S**; 0,5; 1; 3	
Protection	5P; **10P**	
Rated Secondary Burden, V·A:		
Secondary Coil, measurements		
cos φ = 1	1; 2; 2,5	
cos φ = 0,8	3; 5; 10; 15; 20; 25; 30; 50	
Secondary Coil, protection		
cos φ = 0,8	3; 5; 10; 15; 20; 25; 30; 50	
Accuracy limit factor, Secondary Coil, protection	2 to 30	
Instrument security factor, measuring winding	3 to 30	

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS TOL-SVEL-10M (9-32)

TYPE	Rated Primary Current, A	Figure	Weight, kg	h, mm	L, mm	L1, mm	L2, mm	H, mm	S, mm
TOL-SVEL-10M-9	5-400	1	21,0	21,0	270	-	95	165	-
	600		19,0	23,0					
	750-1000			25,0					
	1200-2000	1, 6	22,5	35,0					
	2500-3000	1, 7	25,0						
TOL-SVEL-10M-11.1	5-400	2	21,0	21,0	270	-	95	148	-
	600		19,0	23,0					
	750-1000			25,0					
	1200-2000	2, 6	22,5	35,0					
	2500-3000	2, 7	25,0						

TECHNICAL PARAMETERS TOL-SVEL-10M (9-32)									
TYPE	Rated Primary Current, A	Figure	Weight, kg	h, mm	L, mm	L1, mm	L2, mm	H, mm	S, mm
TOL-SVEL-10M-11.2	5-400	4	21,0	21,0	270	-	95	148	-
	600		19,0	23,0					
	750-1000			25,0					
	1200-2000	4, 6	22,5	35,0					
	2500-3000	4, 7	25,0						
TOL-SVEL-10M-12.1	5-400	3	22,0	21,0	270	-	95	148	-
	600		21,5	23,0					
	750-1000			25,0					
	1200-2000	3, 6	24,0	35,0					
	2500-3000	3, 7	27,5						
TOL-SVEL-10M-12,2	5-400	5	22,0	21,0	270	-	95	148	-
	600		21,5	23,0					
	750-1000			25,0					
	1200-2000	5, 6	24,0	35,0					
	2500-3000	5, 7	27,5						
TOL-SVEL-10M-13,1	5-400	8	26,0	21,0	350	-	231	148	-
	600		27,0	23,0					
	750-1000			25,0					
	1200-2000	8, 6	29,0	35,0					
	2500-3000	8, 7	35,0						
TOL-SVEL-10M-14,1	5-400	2, 9	20,5	21,0	270	260	95	148	-
	600		20,0	23,0					
	750-1000			25,0					
	1200-2000	2, 6, 9	23,0	35,0					
	2500-3000	2, 7, 9	25,5						
TOL-SVEL-10M-14,2	5-400	4, 9	20,5	21,0	270	260	95	148	-
	600		20,0	23,0					
	750-1000			25,0					
	1200-2000	4, 6, 9	23,0	35,0					
	2500-3000	4, 7, 9	25,5						

TECHNICAL PARAMETERS TOL-SVEL-10M (9-32)

TYPE	Rated Primary Current, A	Figure	Weight, kg	h, mm	L, mm	L1, mm	L2, mm	H, mm	S, mm
TOL-SVEL-10M-15,1	5-400	3, 9	22,5	21,0	270	260	95	148	-
	600		22,0	23,0					
	750-1000			25,0					
	1200-2000	3, 6, 9	24,5	35,0					
	2500-3000	3, 7, 9	27,5						
TOL-SVEL-10M-15,2	5-400	5, 9	22,5	21,0	270	260	96	148	-
	600		22,0	23,0					
	750-1000			25,0					
	1200-2000	5, 6, 9	24,5	35,0					
	2500-3000	5, 7, 9	27,5						
TOL-SVEL-10M-16,1	5-400	8, 9	26,0	21,0	350	340	231	148	-
	600		27,5	23,0					
	750-1000			25,0					
	1200-2000	8, 6, 9	29,5	35,0					
	2500-3000	8, 7, 9	35						
TOL-SVEL-10M-17,1	5/10-400/800	10	22,0	21,0	270	-	95	165	-
TOL-SVEL-10M-17,2	5/10-400/800	10, 4		21,0	270	-	95	165	-
TOL-SVEL-10M-18,1	40/80-200/400	10	22,0	21,0	270	-	95	148	-
	300/600-400/800		20,0						
TOL-SVEL-10M-18,2	40/80-200/400	10, 4	22,0	21,0	270	-	95	148	-
	300/600-400/800		20,0						
TOL-SVEL-10M-19,1	40/80-200/400	10, 9	22,0	21,0	270	-	95	148	-
	300/600-400/800		20,0						
TOL-SVEL-10M-19,2	40/80-200/400	10, 4, 9	22,0	21,0	270	-	95	148	-
	300/600-400/800		20,0						
TOL-SVEL-10M-20,1	5-400	11	21,0	21,0	270	-	95	165	6
	600			23,0					8
	750-1000			25,0					10
	1200-1500	11, 12		31,0					16
	2000			35,0					20
	2500-3000		24,0						

TECHNICAL PARAMETERS TOL-SVEL-10M (9-32)

TYPE	Rated Primary Current, A	Figure	Weight, kg	h, mm	L, mm	L1, mm	L2, mm	H, mm	S, mm
TOL-SVEL-10M-20,2	5-400	11, 4	21,0	21,0	270	-	95	165	6
	600			23,0					8
	750-1000			25,0					10
	1200-1500	11, 4, 12		31,0					16
	2000			35,0					20
	2500-3000		24,0						
TOL-SVEL-10M-21,1	5-400	11, 3	21,0	21,0	270	-	95	165	6
	600			23,0					8
	750-1000			25,0					10
	1200-1500	11, 3, 12	24,0	31,0					16
	2000			35,0					20
	2500-3000		26,0						
TOL-SVEL-10M-21,2	5-400	11, 5	21,0	21,0	270	-	95	165	6
	600			23,0					8
	750-1000			25,0					10
	1200-1500	11, 5, 12	24,0	31,0					16
	2000			35,0					20
	2500-3000		26,0						
TOL-SVEL-10M-22	5-400	13	21,0	21,0	270	-	-	148	6
	600			23,0					8
	750-800		24,0	25,0					10
	1000	13, 14							
	1200-1500			31,0					16
	2000			35,0					20
	2500-3000		27,0						
TOL-SVEL-10M-23	5-400	13, 15	22,0	21,0	270	-	-	148	6
	600			23,0					8
	750-800		26,0	25,0					10
	1000	13, 15, 14							
	1200-1500			31,0					16
	2000			35,0					20
	2500-3000		29,0						

TECHNICAL PARAMETERS TOL-SVEL-10M (9-32)

TYPE	Rated Primary Current, A	Figure	Weight, kg	h, mm	L, mm	L1, mm	L2, mm	H, mm	S, mm
TOL-SVEL-10M-24	5-400	11, 16	21,0	21,0	270	-	95	165	6
	600		19,0	23,0					8
	750-1000			25,0					10
	1200-1500	11, 16, 14	22,5	31,0					16
	2000		25,0	35,0					20
	2500-3000								
TOL-SVEL-10M-26,1	5-400	17, 2	21,0	21,0	270	-	95	148	-
	600		19,0	23,0					
	750-1000			25,0					
	1200-2000	17, 2, 6	22,5	35,0					
	2500-3000	17, 2, 7	21,0						
TOL-SVEL-10M-26,2	5-400	17, 4	19,0	21,0	270	-	95	148	-
	600			23,0					
	750-1000			25,0					
	1200-2000	17, 4, 6	25,0	35,0					
	2500-3000	17, 4, 7	21,5						
TOL-SVEL-10M-27,1	5-400	17, 3	22,5	21,0	270	-	95	148	-
	600		22,0	23,0					
	750-1000			25,0					
	1200-2000	17, 3, 6	24,5	35,0					
	2500-3000	17, 3, 7	27,5						
TOL-SVEL-10M-27,2	5-400	17, 5	22,5	21,0	270	-	95	148	-
	600		22	23,0					
	750-1000			25,0					
	1200-2000	17, 5, 6	24,5	35,0					
	2500-3000	17, 5, 7	27,5						
TOL-SVEL-10M-28,1	5-400	17, 8	27,0	21,0	350	-	95	148	-
	600		27,5	23,0					
	750-1000			25,0					
	1200-2000	17, 6, 8	29,5	35,0					
	2500-3000	17, 6, 8	35,0						

TECHNICAL PARAMETERS TOL-SVEL-10M (9-32)									
TYPE	Rated Primary Current, A	Figure	Weight, kg	h, mm	L, mm	L1, mm	L2, mm	H, mm	S, mm
TOL-SVEL-10M-30	5-400	20	26,0	21,0	350	-	231	148	-
	600		27,0	23,0					
	750-1000			25,0					
	1200-2000	20, 6	29,0	35,0					
	2500-3000	20, 7	35,0						
TOL-SVEL-10M-31	5-400	20, 9	26,0	21,0	350	340	231	148	-
	600		27,5	23,0					
	750-1000			25,0					
	1200-2000	20, 6, 9	29,5	35,0					
	2500-3000	20, 7, 9	35						
TOL-SVEL-10M-32,1	5-400	5, 2, 1	24,0	21,0	270	-	95	165	-
	600			23,0					
TOL-SVEL-10M-32,2	5-600	21, 5, 2, 1	26,0	-	270	-	95	165	6

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TOL-SVEL-10M

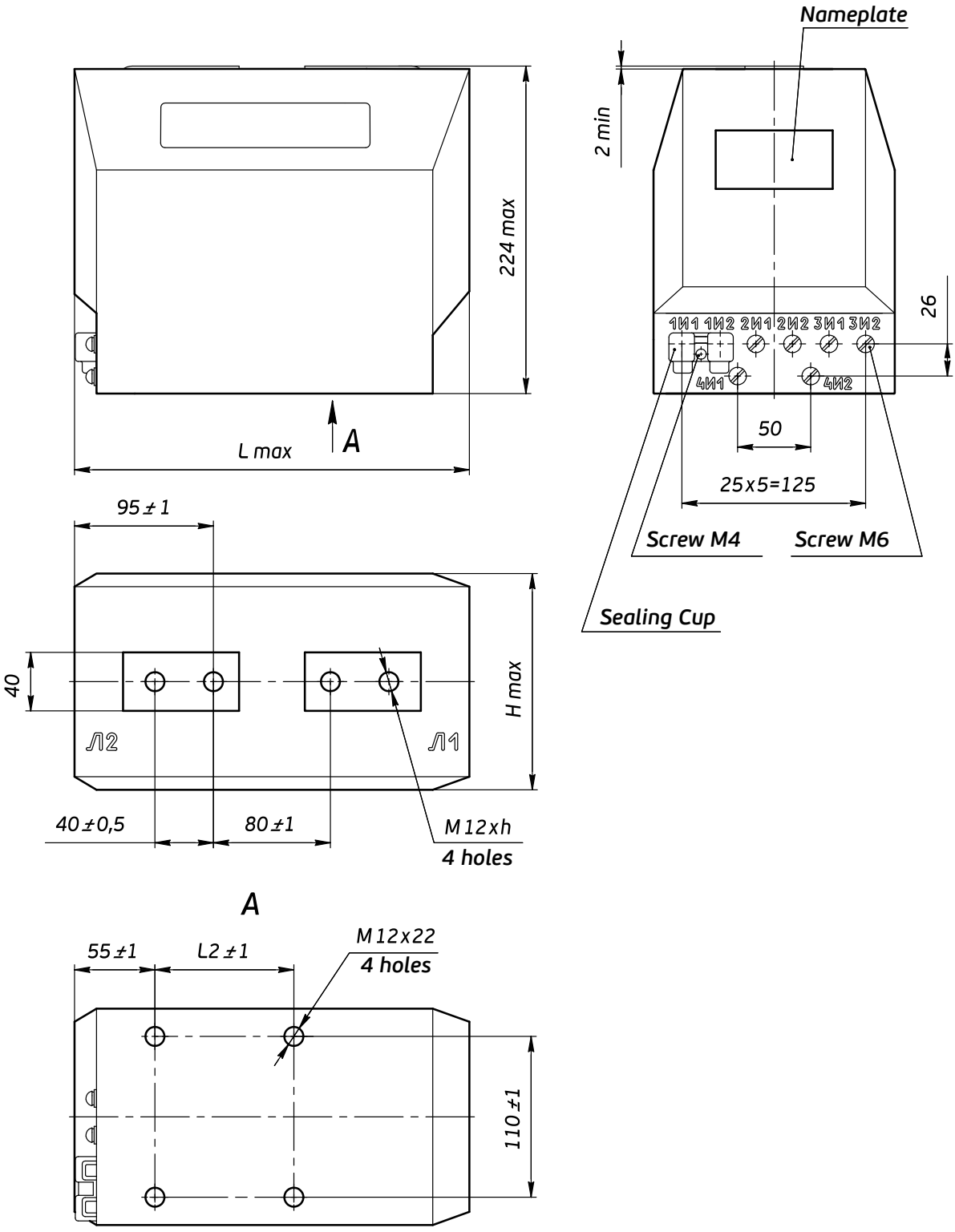


Fig. 1 – General View, Current Transformer TOL-SVEL-10M-9

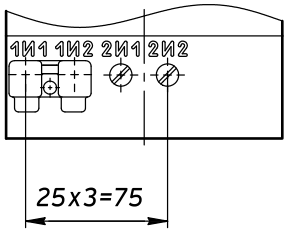


Fig. 2 – General View,
Current Transformer TOL-SVEL-10M-11.1,
otherwise see Fig. 1

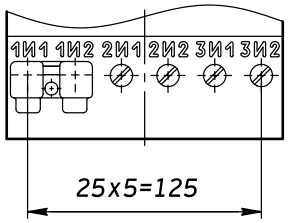
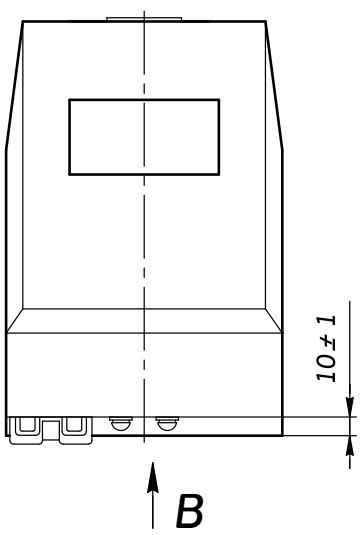


Fig. 3 – General View,
Current Transformer TOL-SVEL-10M-12.1,
otherwise see Fig. 1



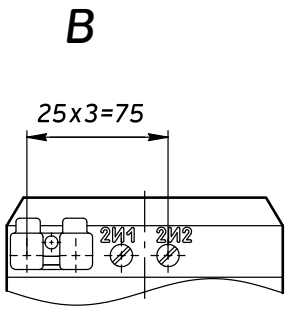


Fig. 4 – General View, Current Transformer TOL-SVEL-10M-11.1,
otherwise see Fig. 1

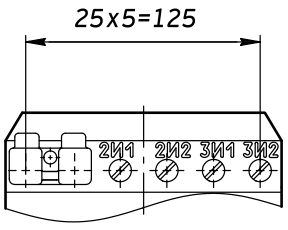


Fig. 5 – General View,
Current Transformer TOL-SVEL-10M-11.2, 32,
otherwise see Fig. 2

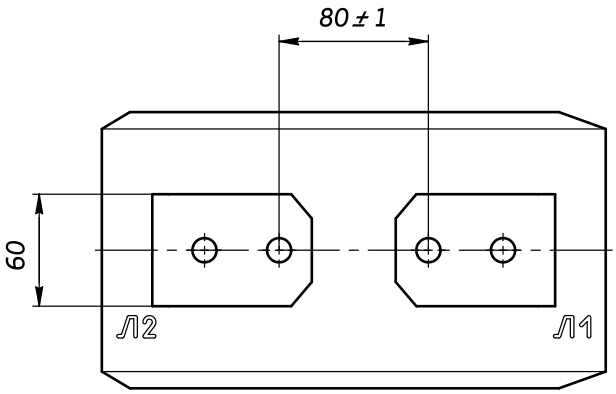


Fig. 6 – General View,
Current Transformer TOL-SVEL-10M-9 (11-16)
for rated primary current (1,200-2,000) A,
otherwise see Fig. 1

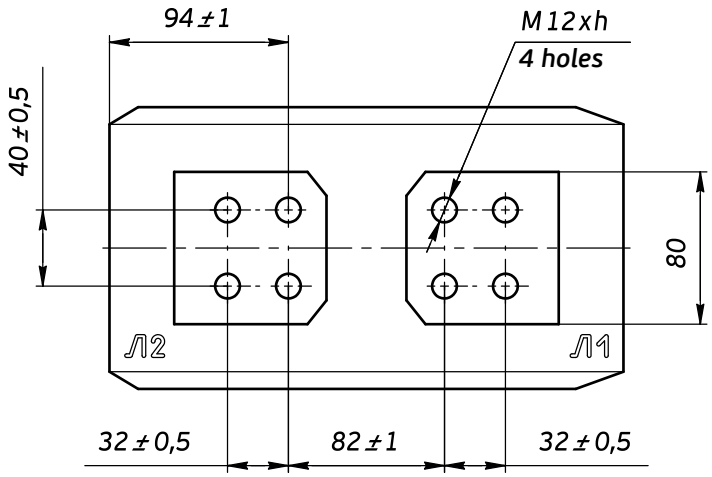


Fig. 7 – General View, Current Transformer TOL-SVEL-10M-9 (11-16) for rated primary current (2,500-3,000) A, otherwise see Fig. 1

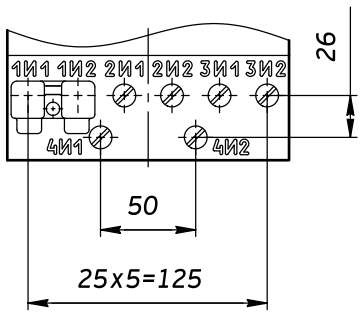


Fig. 8 – General View, Current Transformer TOL-SVEL-10M-13.1, 16.1, otherwise see Fig. 1

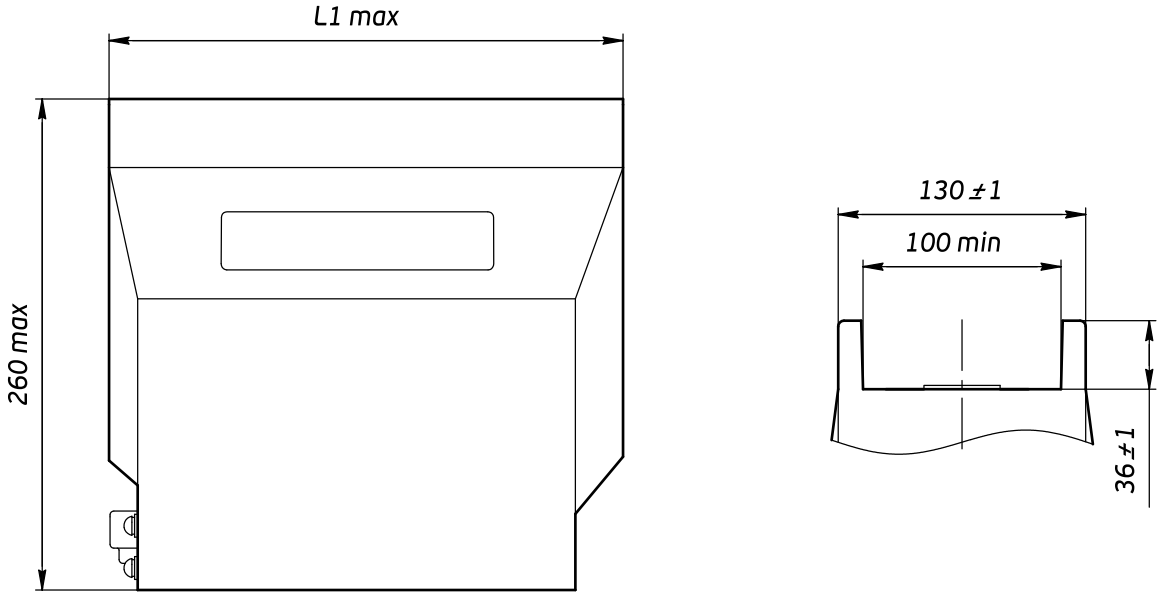


Fig. 9 – General View, Current Transformer TOL-SVEL-10M-14 (15, 16, 19, 31)

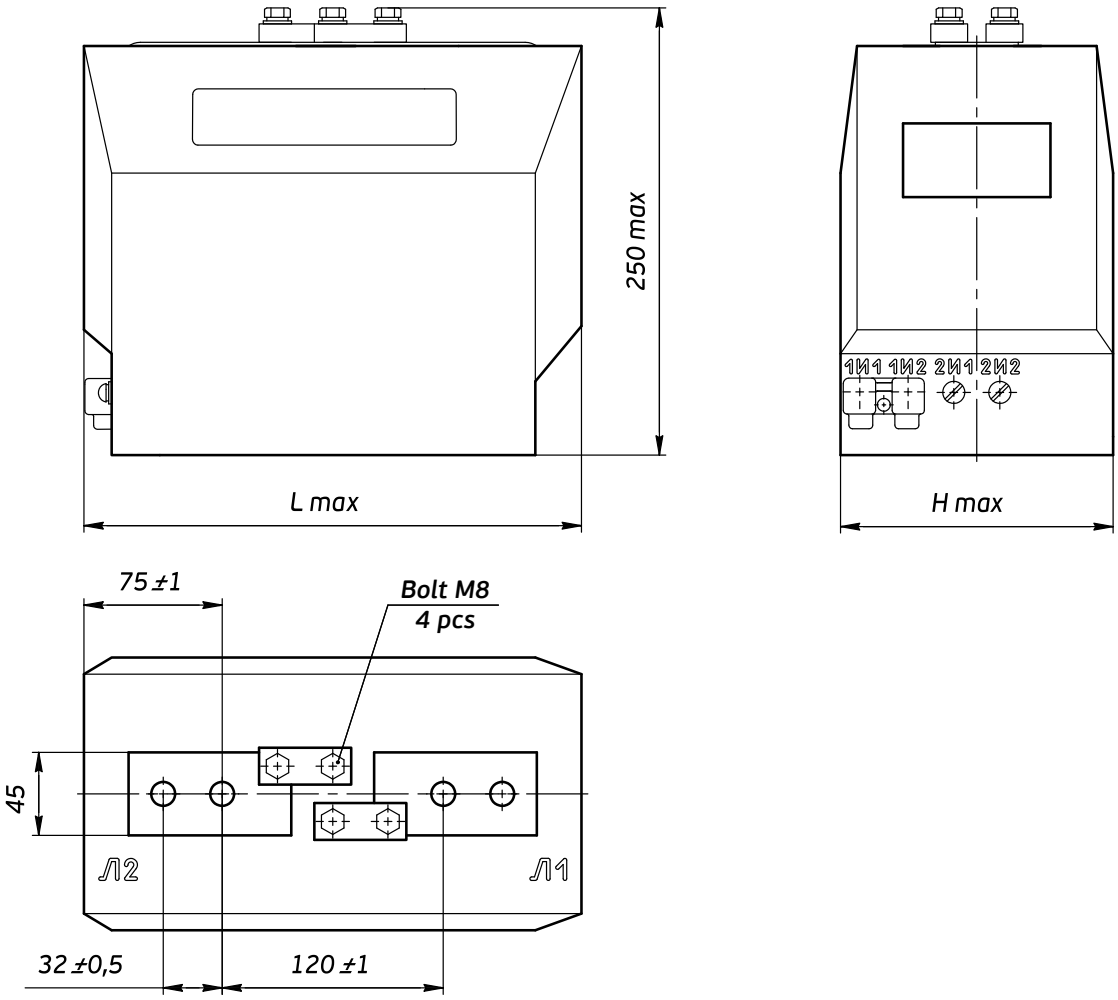


Fig. 10a – General View, Current Transformer TOL-SVEL-10M-17 (18), this tap changing corresponds with the minimum rated primary current, otherwise see Fig. 1

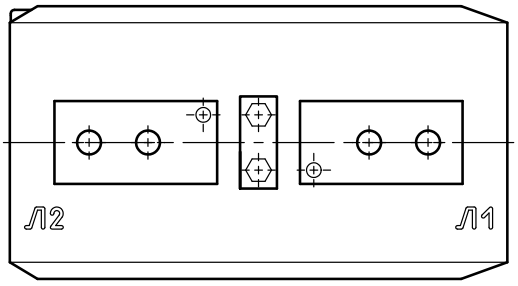


Fig. 10b – General View, Current Transformer TOL-SVEL-10M-17 (18), this tap changing corresponds with the maximum rated primary current, otherwise see Fig. 1

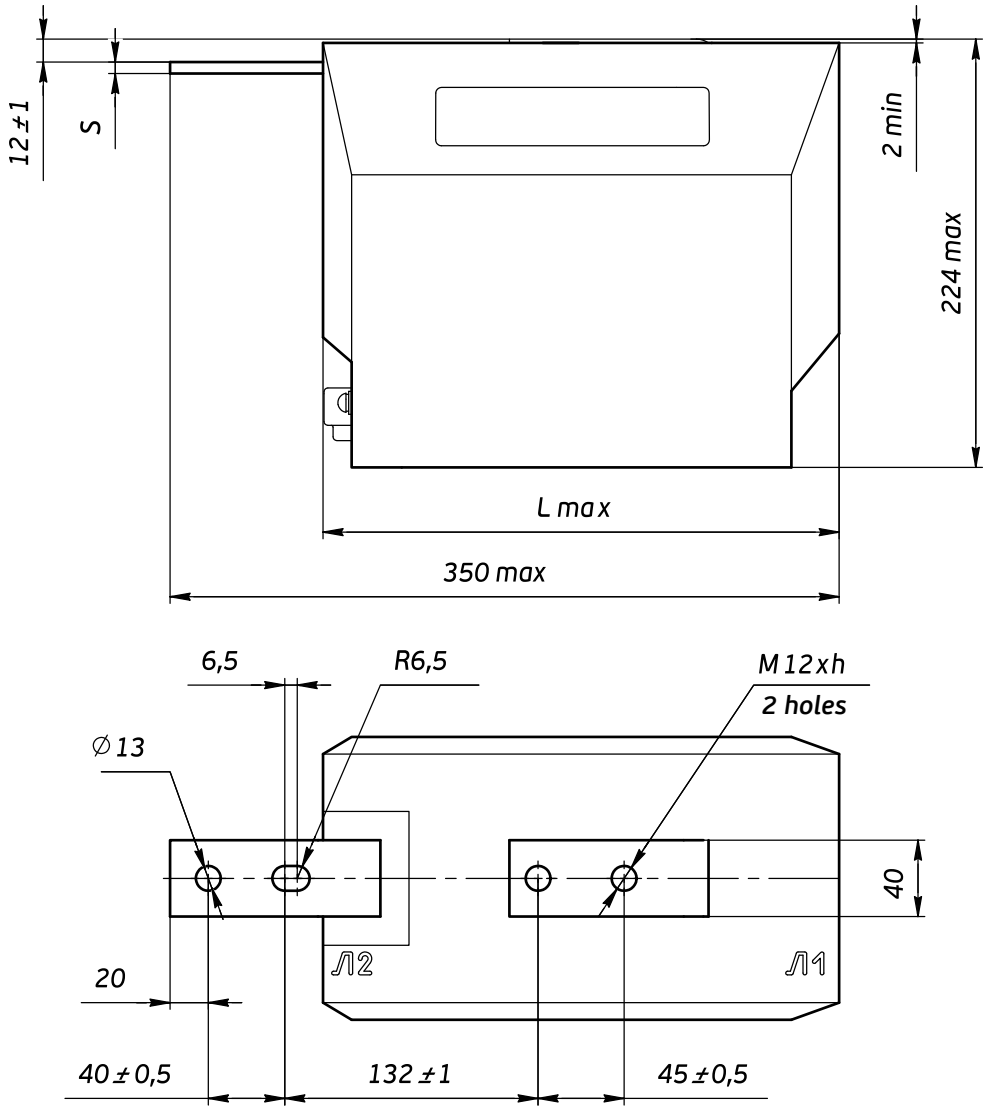


Fig. 11 – General View, Current Transformer TOL-SVEL-10M-20.1 (20.2, 21.1, 21.2), otherwise see Fig. 1

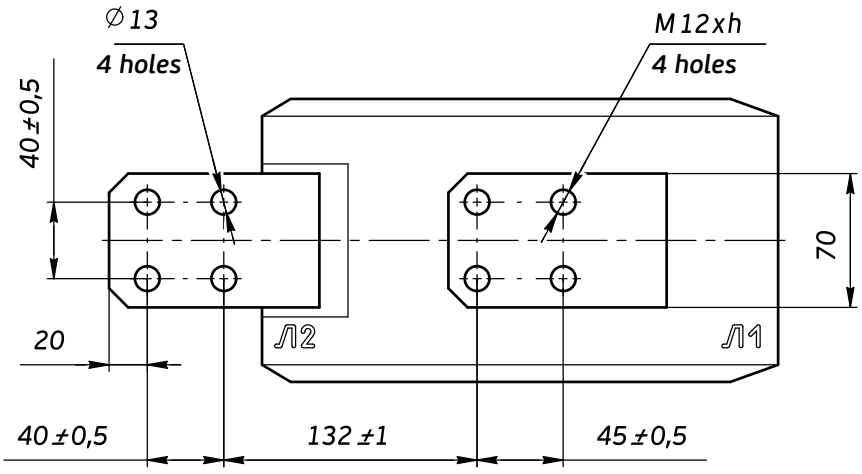


Fig. 12 – General View, Current Transformer TOL-SVEL-10M-20.1 (20.2, 21.1, 21.2), for rated primary current (1,200-3,000) A, otherwise see Fig. 1

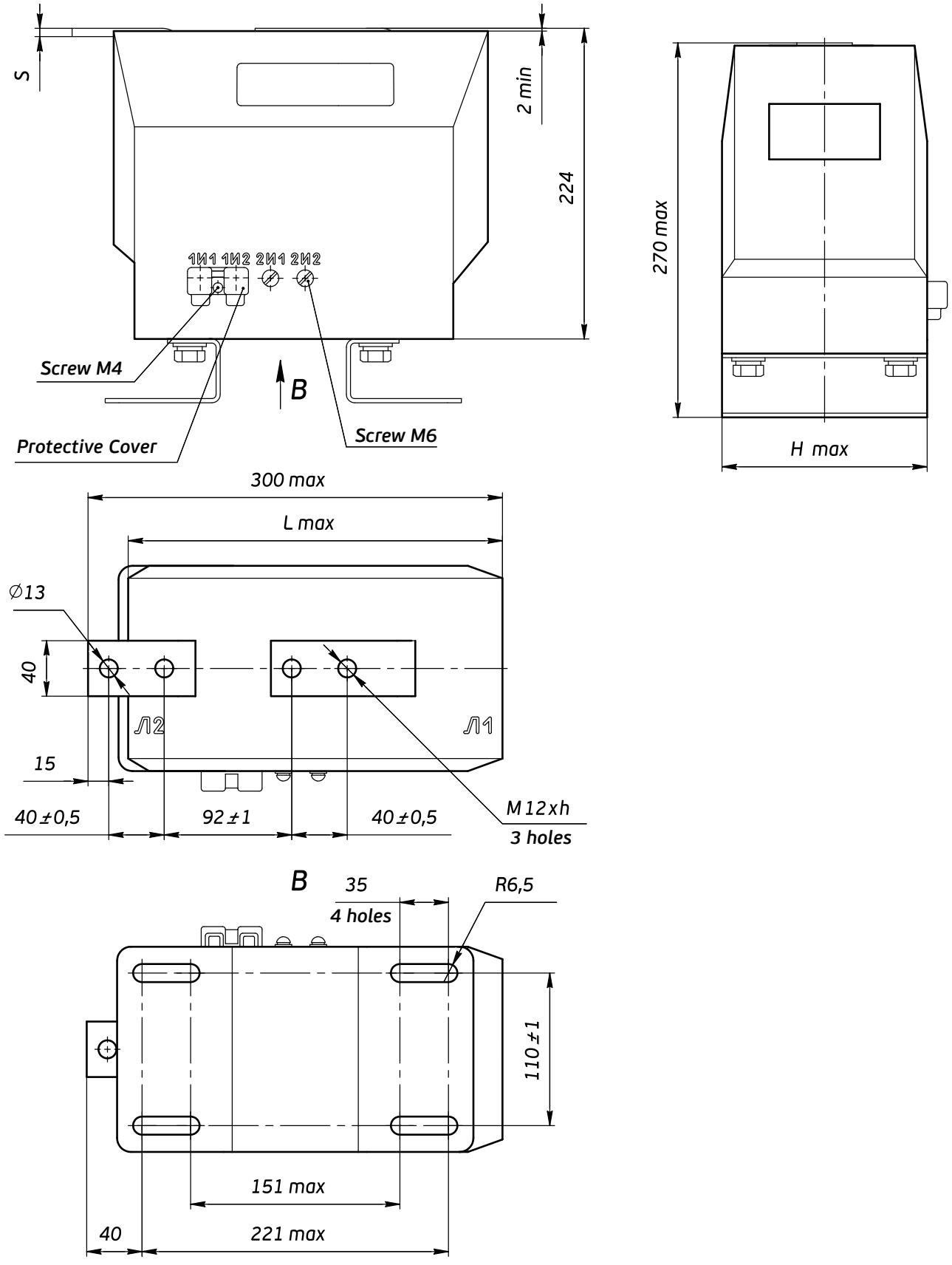


Fig. 13 – General View, Current Transformer TOL-SVEL-10M-22 (23)

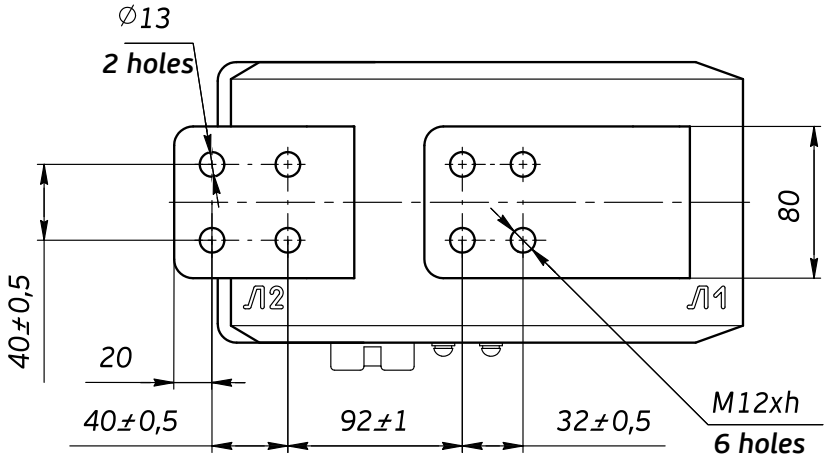


Fig. 14 – General View, Current Transformer TOL-SVEL-10M-22 (23) for rated primary current (1,000-3,000) A, otherwise see Fig. 13

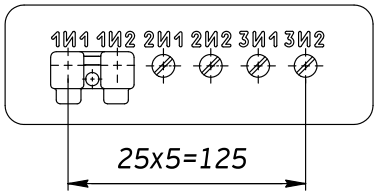


Fig. 15 – General View, Current Transformer TOL-SVEL-10M-23, otherwise see Fig. 13

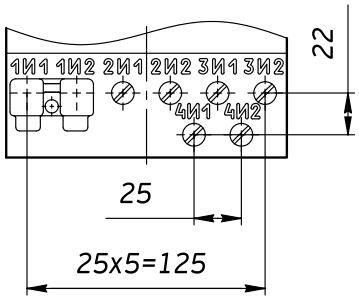


Fig. 16 – General View, Current Transformer TOL-SVEL-10M-24, otherwise see Fig. 13

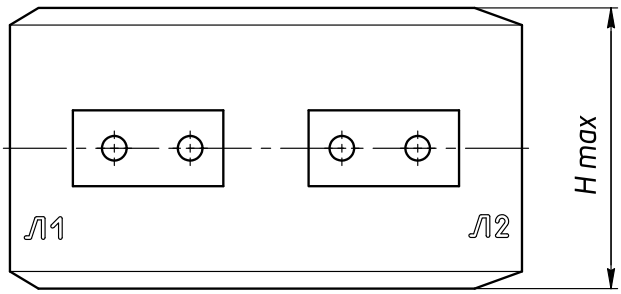


Fig. 17 – General View, Current Transformer TOL-SVEL-10M-26.1 (26.2, 27.1, 27.2, 28.1), otherwise see Fig. 1

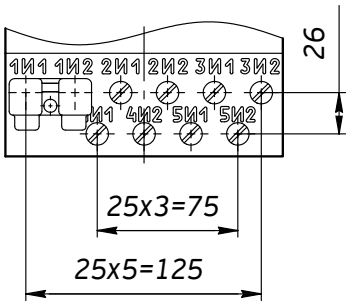
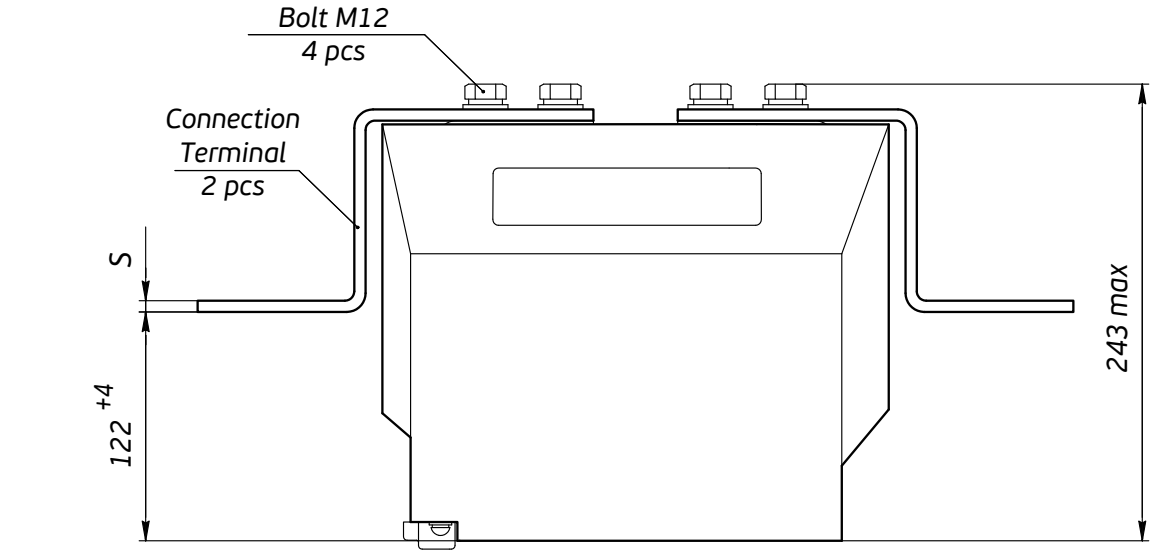


Fig. 20 – General View,
Current Transformer TOL-SVEL-10M-30, 31,
otherwise see Fig. 1



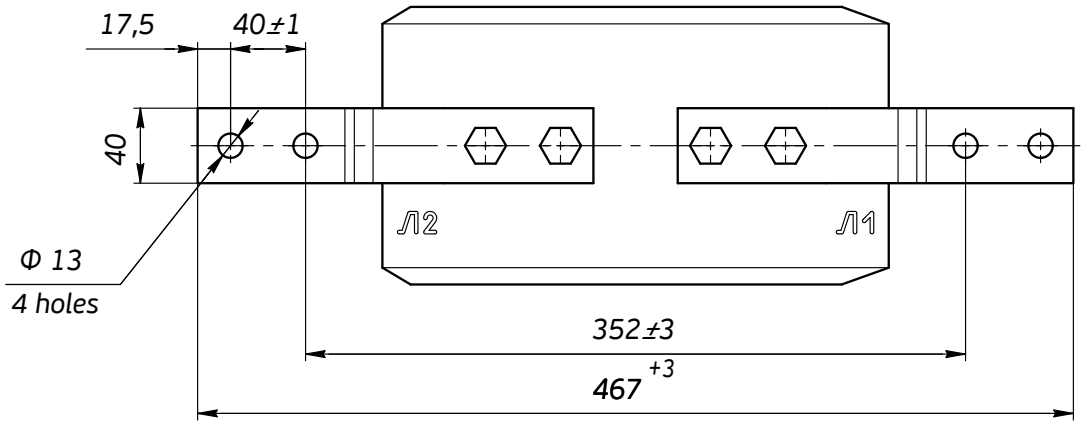


Fig. 21 – General View, Current Transformer TOL-SVEL-10M-32.2,
otherwise see Fig. 5

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TOL-SVEL-10M-29

PURPOSE AND SCOPE

This CT is used as a component of both indoors and outdoors AC switchgears, up to 10kV. Such CT is mounted into a break of the current conductor.

TOL-SVEL-10M-29 is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TOL-SVEL-10 is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2, as per GOST 15150-69.

Working position – optional, upon request.

Technical specification for manufacturing ОЕТ. 591.014.

EQUIPMENT DESCRIPTION

CT is made to ensure one or several transformation ratio.

Upon customer's request, we manufacture CTs with special isolating partitions at the top of CT to reduce the distance between the conductors of the neighboring phases (subject to insulation of the busbars outside the transformer).

CT for differential protection are delivered upon a special request.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio.
CT for differential protection are delivered upon a special request.

(повтор...)

TECHNICAL PARAMETERS TOL-SVEL-10M-29	
Parameter	**Value**
Rated Voltage, kV	10
Max Working Voltage, kV	12
Rated Frequency, Hz	50; 60
Rated Secondary Current, A	1; 5
Rated Primary Current, A	5 - 2000
Number of Secondary Coils	2
Accuracy Class:	
Secondary Coil, measurements	0,2S; 0,2; 0,5S; 0,5;
Secondary Coil, protection	5P; 10P
Rated Secondary Burden, V·A Secondary Coil, measurements:	
Secondary Coil, measurements	10
Secondary Coil, protection	15
Accuracy limit factor, Secondary Coil, protection	10
Instrument security factor, measuring coil	10, **5**
Test Voltage, kV	
One Minute Power Frequency Withstand Voltage, kV	42
Lightning Impulse	75
Climate Class, and Environment Category (as per GOST 15150-69)	UHL 2
One second thermal current, kA at rated primary current, A	
5	0,4
10	0,78
15	1,2
20	1,56

TECHNICAL PARAMETERS TOL-SVEL-10M-29	
Parameter	**Value**
30	2,5
40	3,0
50	5,0
75	5,85
80	6,23
100	10,0
150	12,5
200, 300, 400	20,0
600 – 2000	40,0
Peak withstand current kA at rated primary current, A	
5	1,0
10	1,98
15	3,0
20	3,98
30	6,37
40	7,65
50	12,8
75	14,9
80	15,8
100	25,5
150	31,8
200, 300, 400	51,0
600 – 2000	102,0

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS TOL-SVEL-10M-29				
TYPE	**Rated Primary Current, A**	**Figure**	**a, mm**	**Weight, kg**
TOL-SVEL-10M-29	5-400	1	40	17,0
	600-2000		60	19,0
TOL-SVEL-10M-29,1	5-400	2,1	40	18,0
	600-2000		60	20,0

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TOL-SVEL-10M-29

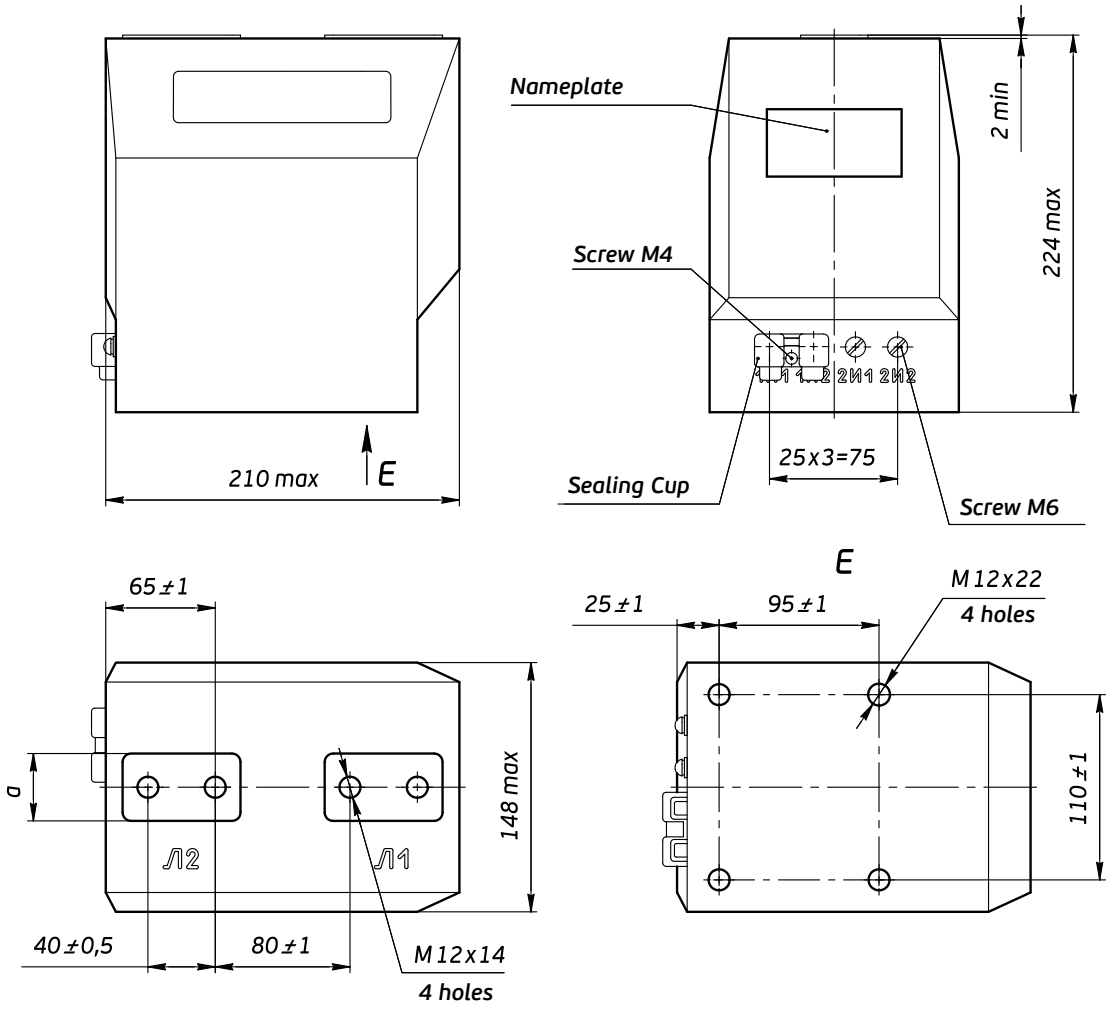


Fig. 1 – General View, Current Transformer TOL-SVEL-10M-29

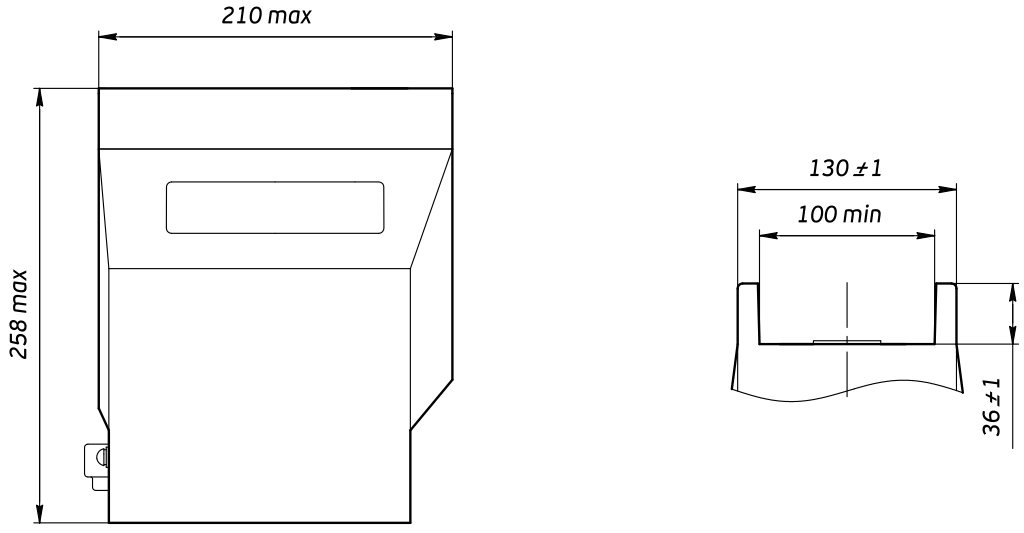


Fig. 2 – General View, Current Transformer TOL-SVEL-10M-29.1

SUMMARY: TOL-SVEL-10 MODIFICATIONS

Modification Number TOL-SVEL-10	Number of Secondary Coils					Location of Terminal			Insulating Partitions	Terminal Box at L1 side	Width of Transformer, mm			Regulation at Primary Side
	2	3	4	5	6	Front	Bottom	Side			148	165	180	
1	●					●						●		
2	●						●					●		
7		●				●						●		
8		●					●					●		
9			●			●						●		
11.1	●					●					●			
11.2	●						●				●			
12.1		●				●					●			
12.2		●					●				●			
13.1			●			●					●			
14.1	●					●			●		●			
14.2	●						●		●		●			
15.1		●				●			●		●			
15.2		●					●		●		●			
16.1			●			●			●		●			
17.1	●					●						●		●
17.2	●						●					●		●
18.1	●					●					●			●
18.2	●						●				●			●
19.1	●					●			●		●			●
19.2	●						●		●		●			●
20.1	●					●						●		
20.2	●						●					●		
21.1		●				●						●		
21.2		●					●					●		
22	●							●			●			
23		●						●			●			
24			●			●						●		
25	●	●	●	●	●	●							●	
26.1	●					●				●	●			
26.2	●						●			●	●			
27.1		●				●				●	●			
27.2		●					●			●	●			
28.1			●			●				●	●			
29	●					●					●			
29.1	●					●			●		●			
30				●		●					●			
31				●		●			●		●			
32.1		●					●					●		
32.2		●					●					●		

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TPL-SVEL-10

PURPOSE AND SCOPE

This CT is used as a component of both indoors and outdoors AC switchgears, up to 10kV. Such CT is mounted into a break of the current conductor.

TPL-SVEL-10 is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TPL-SVEL-10 is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2, as per GOST 15150-69.

Working position – optional, upon request.

Technical specification for manufacturing ОЕТ. 591.008

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EQUIPMENT DESCRIPTION

TPL-SVEL-10 is a single-phase, cast resin, support-type slipover Current Transformer.

Such CT may have up to 4 Secondary Coils, each upon their own core. Terminals of the primary winding is located on the side surfaces, while terminals of the Secondary Coils are located at the bottom of CT.

In addition to that, the Secondary Coils' terminals are sealed with a protective cup

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of Secondary Coils, increased short-time thermal current and peak withstand current.

CT may have terminals of the Secondary Coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request

TECHNICAL PARAMETERS TPL-SVEL-10			
Parameter	**Value**		
Modification	2	3	4
Rated Voltage, kV	**10**; 11*		
Max Working Voltage, kV	12		
Rated Frequency, Hz	**50**; 60*		
Rated Secondary Current, A	1; 5		
Rated Primary Current, A	5; 10; 15; 20; 30; 40; 50; 75; 80; 100; 150; 200; 300; 400; 600; 750; 800; 1000; 1200; 1500; 2000; 2500; 3000		
Number of Secondary Coils	2	3	4
Secondary Coil Accuracy Class:			
Metering and measurements	**0,2S**; 0,2; **0,5S**; **0,5**; 1; 3		
Protection	5P; **10P**		
Rated Secondary Burden, V·A:			
Secondary Coil, measurements			
cos φ = 1	1; 2; 2,5		
cos φ = 0,8	3; 5; **10**; 15; 20; 25; 30; 50		
Secondary Coil, protection			
cos φ = 0,8	3; 5; 10; **15**; 20; 25; 30; 50		
Accuracy limit factor, Secondary Coil, protection**	2 to 30		
Instrument security factor, measuring winding**	3 to 30		
One second thermal current, kA at rated primary current, A:			
5	0,4		
10	0,78		
15	1,2		

TECHNICAL PARAMETERS TPL-SVEL-10		
Parameter	**Value**	
20	1,56	
30	2,5	
40	3,0	
50	5,0	
75	5,85	
80	6,23	
100	10,0	
150	12,5	
200	20,0	
300, 400	31,5	20,0
600 – 3000	40,0	
Peak withstand current kA at rated primary current, A		
5	1,0	
10	1,98	
15	3,0	
20	3,98	
30	6,37	
40	7,65	
50	12,8	
75	14,9	
80	15,8	
100	25,5	
150	31,8	
200	51,0	
300, 400	81,0	51,0
600 – 3000	102,0	

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS TPL-SVEL-10								
TYPE	Number of Windings	Rated Primary Current, A	Dimensions, mm				Figure	Weight, kg
			S	K	L	M		
TPL-SVEL-10-2	2	5-200	6	40	103	121	1	25
		300; 400			80	93		
		600	8			94		
		750; 800	10			95		
		1000						
		1200-2000	20	60	85	100		28
		2500-3000		80				
TPL-SVEL-10-3	3	5-400	6	40	103	121	2	28,5
		600	8		80	94		
		750; 800	10			95		
		1000						
		1200-2000	20	60	85	100		33,5
		2500-3000		80				
TPL-SVEL-10-4	4	5-400	6	40	103	121	3	28,5
		600	8		80	94		
		750; 800	10			95		
		1000						
		1200-3000	20	60	85	100		33,5

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TPL-SVEL-10

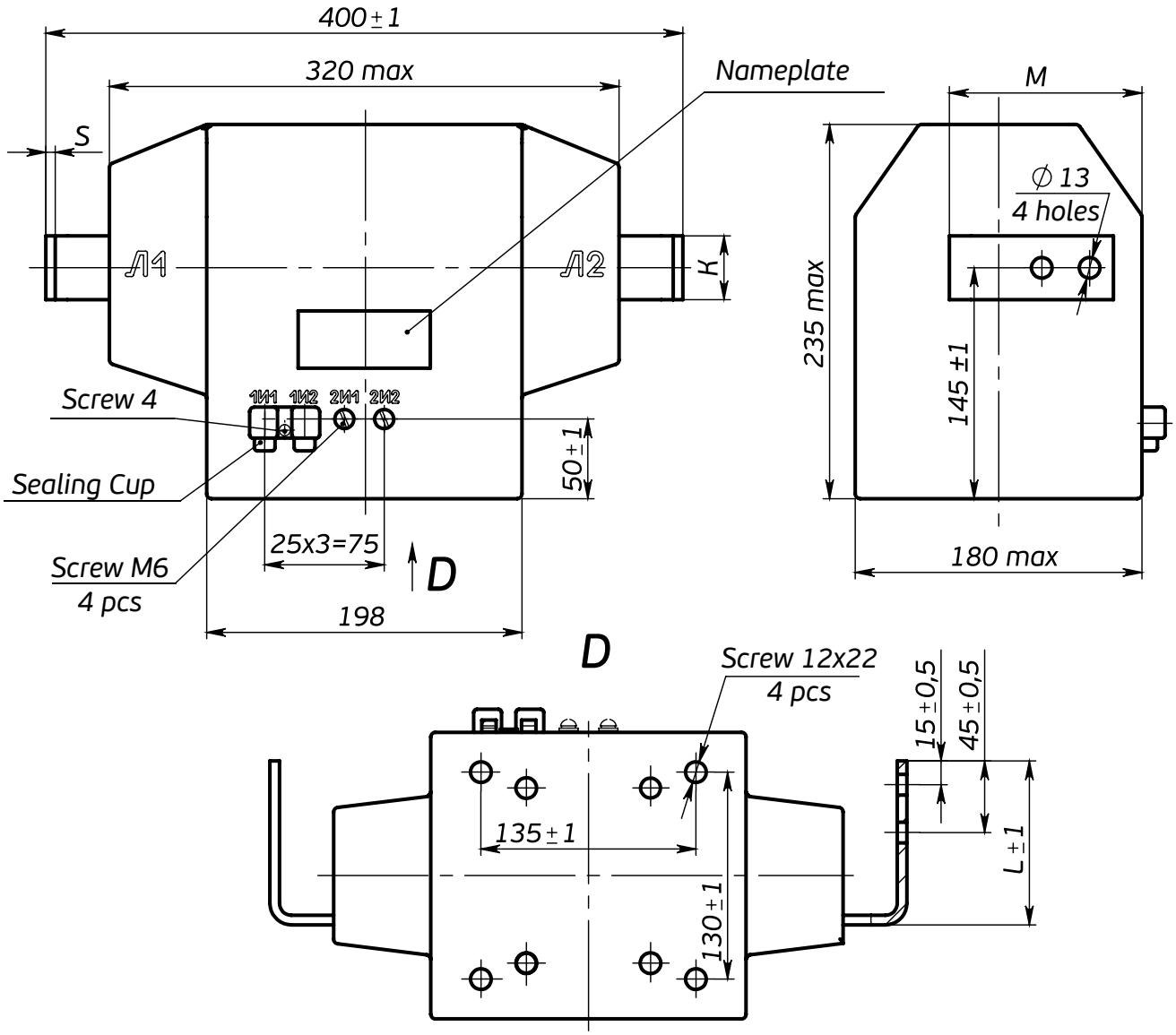


Fig. 1 – General View, Current Transformer TPL-SVEL-10-2

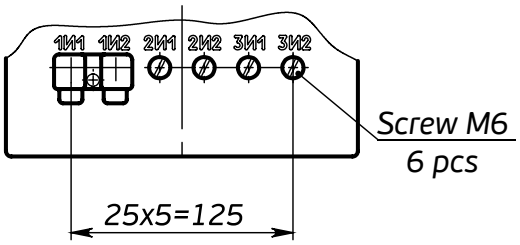


Fig. 2 – General View, Current Transformer TPL-SVEL-10-3, otherwise see Fig. 1

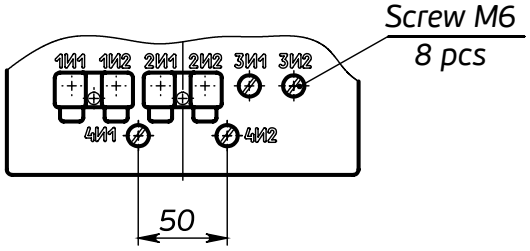
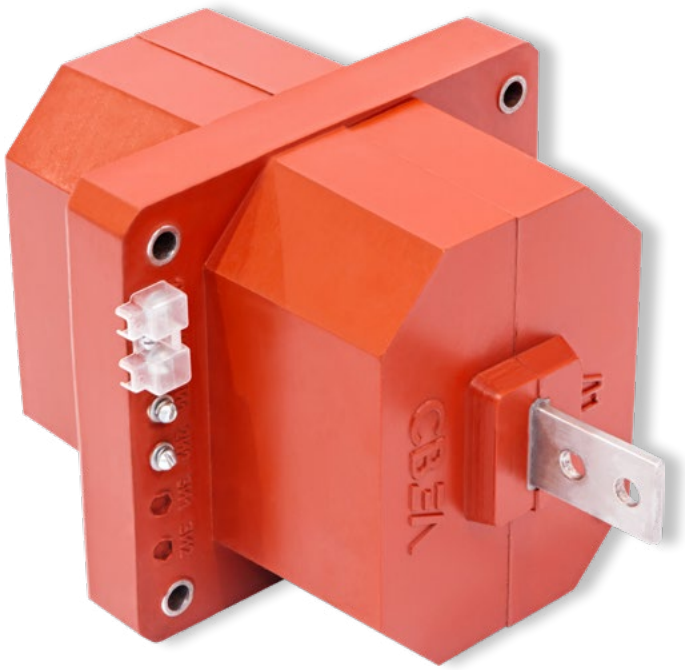


Fig. 3 – General View, Current Transformer TPL-SVEL-10-4, otherwise see Fig. 1

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment



TPOL-SVEL-10

PURPOSE AND SCOPE

This CT is used as a component of both indoors and outdoors AC switchgears, up to 10kV. Such CT is mounted into a break of the current conductor.

TPOL-SVEL-10 is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TPOL-SVEL-10 is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing ОЕТ. 591.008.

EQUIPMENT DESCRIPTION

TPOL-SVEL-10 is a single-phase, support-type slipover Current Transformer.

Such CT may have up to 4 secondary coils, each upon their own core. Terminals of the primary coil is located on the side surfaces, while terminals of the secondary coils are located at the bottom of CT.

In addition to that, the secondary coils' terminals are sealed with a protective cup.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils, increased short-time thermal current and peak withstand current.

CT may have terminals of the secondary coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TPOL-SVEL-10			
Parameter	**Value**		
Modification	2 (2.1)	3 (3.1)	4
Rated Voltage, kV	**10**; 11*		
Max Working Voltage, kV	12		
Rated Frequency, Hz	**50**; 60*		
Rated Secondary Current, A	1; 5		
Rated Primary Current, A	5; 10; 15; 20; 30; 40; 50; 75; 80; 100; 150; 200; 300; 400; 600; 750; 800; 1000; 1200; 1500; 2000; 2500; 3000		
Number of Secondary Coils	2	3	4
Secondary Coil Accuracy Class:			
Measurements	**0,2S**; 0,2; **0,5S**; **0,5**; 1; 3		
Protection	5P; **10P**		
Rated Secondary Burden, V·A:			
Secondary Coil, measurements			
cos φ = 1	1; 2; 2,5		
cos φ = 0,8	3; 5; **10**; 15; 20; 25; 30; 50		
Secondary Coil, protection			
cos φ = 0,8	3; 5; 10; **15**; 20; 25; 30; 50		
Accuracy limit factor, Secondary Coil, protection**	2 to 30 (up to 10***)		
Instrument security factor, measuring winding**	3 to 30 (up to 10***)		
One second thermal current, kA at rated primary current, A:			
5	0,4		
10	0,78		
15	1,2		
20	1,56		

TECHNICAL PARAMETERS TPOL-SVEL-10		
Parameter	**Value**	
30	2,5	
40	3,0	
50	5,0	
75	5,85	
80	6,23	
100	10,0	
150	12,5	
200	20,0	
300, 400	31,5	20,0
600 – 3000	40,0	
Peak withstand current kA at rated primary current, A		
5	1,0	
10	1,98	
15	3,0	
20	3,98	
30	6,37	
40	7,65	
50	12,8	
75	14,9	
80	15,8	
100	25,5	
150	31,8	
200	51,0	
300, 400	81,0	51,0
600 – 3000	102,0	

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

**** These parameters refer to TPOL-SVEL-2.1 and 3.1*

TECHNICAL PARAMETERS TPOL-SVEL-10

TYPE	Number of Windings	Rated Primary Current, A	Dimensions, mm					Figure	Weight, kg
			S	B	H	C	L		
TPOL-SVEL-10-2	2	5-200	6	40	42	250	413	1	23
		300, 400			32			2	18
		600	8						
		750, 800	10						
		1000							
		1200	11.5	60				5	
		1500, 2000	18						21
		2500, 3000	20	80			464	6	
TPOL-SVEL-10-3	3	5-400	6	40	82	290	453	3	29
		600	8		72			2, 3	23
		750, 800	10						
		1000							
		1200	11.5	60				3, 5	
		1500, 2000	18						26
		2500, 3000	20	80			504	3, 6	
TPOL-SVEL-10-4	4	5-400	6	40	82	290	453	4	29
		600	8		72			2, 4	23
		750, 800	10						
		1000							
		1200	11.5	60				4, 5	
		1500, 2000	18						26
		2500, 3000	20	80			504	4, 6	

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TPOL-SVEL-10

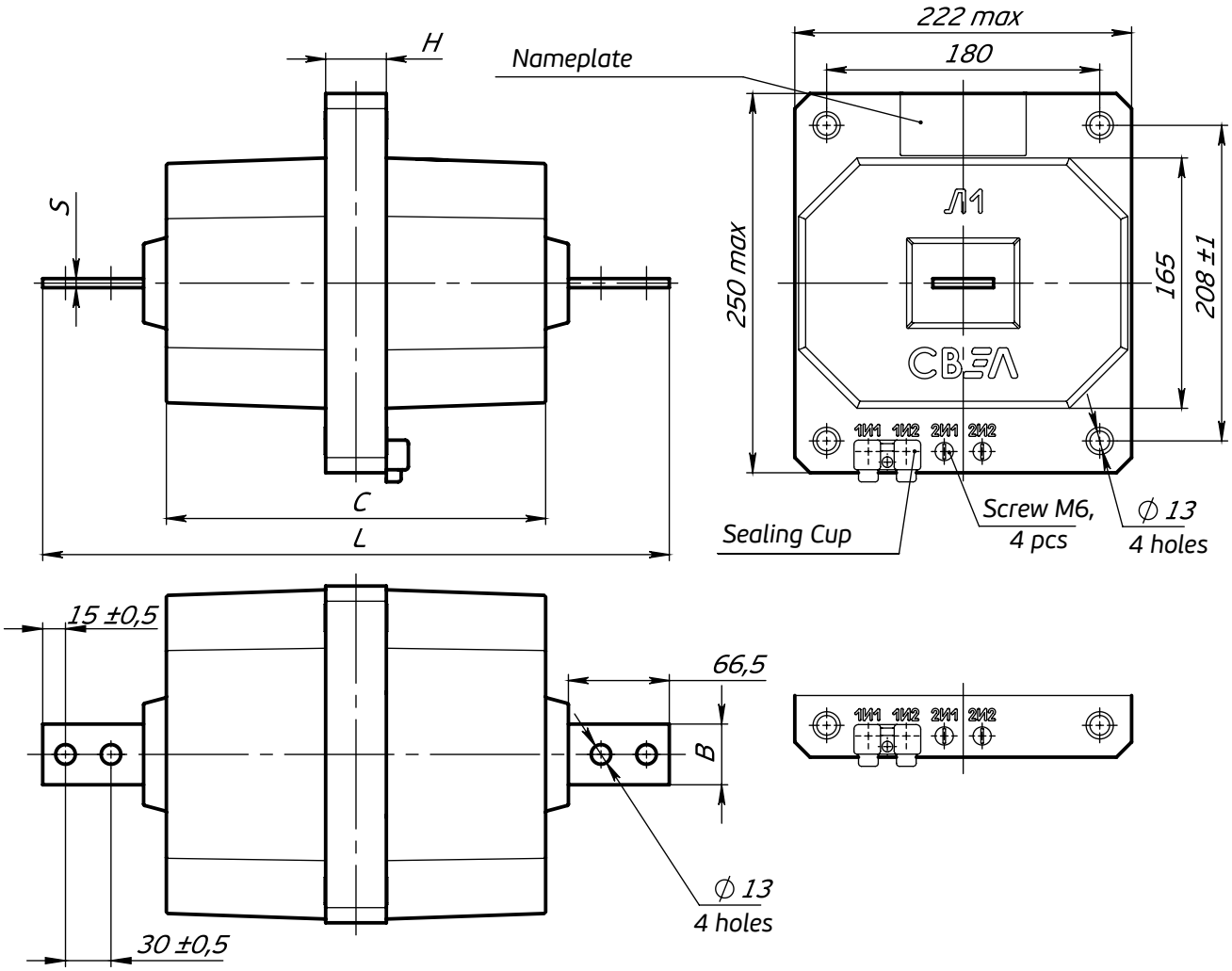


Fig. 1 – Protective Cover, Current Transformer TPOL-SVEL-10-2, 5A to 200A, and TPOL-SVEL-10-3, 5A to 400A

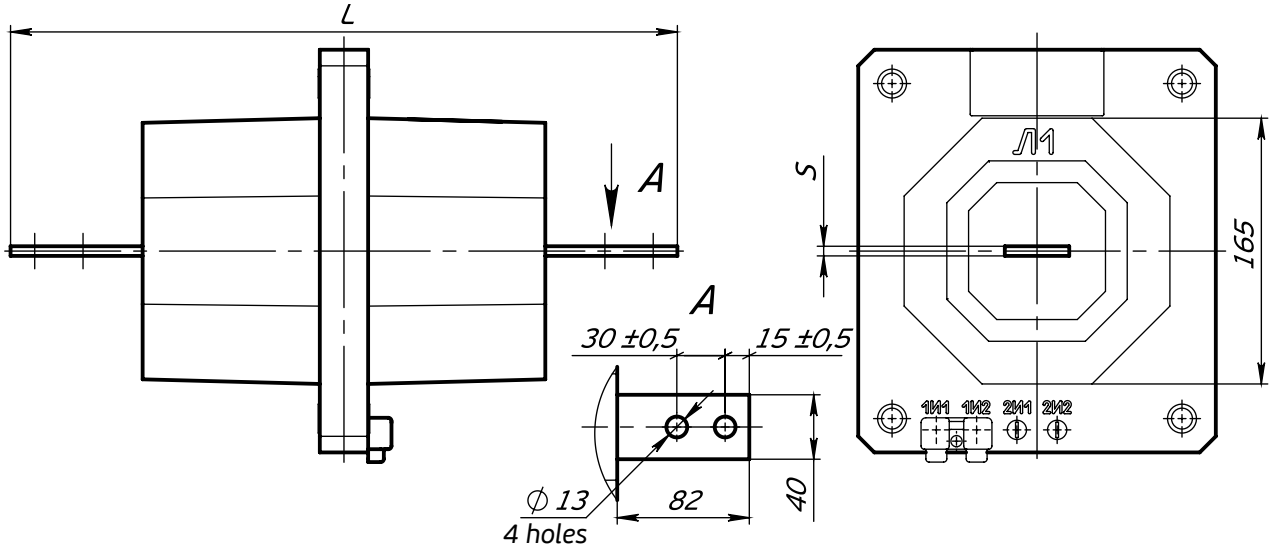


Fig. 2 – Protective Cover, Current Transformer TPOL-SVEL-10-2, 400A to 1,000A, and TPOL-SVEL-10-3, 600A to 1,000A, otherwise see Fig. 1

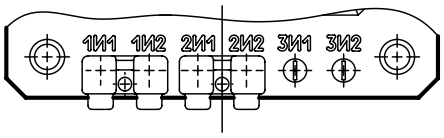


Fig. 3 – General View, Current Transformer TPOL-SVEL-10-3, otherwise see Fig. 1

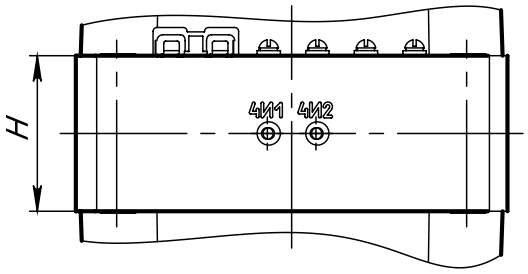


Fig. 4 – General View, Current Transformer TPOL-SVEL-10-4, otherwise see Fig. 1

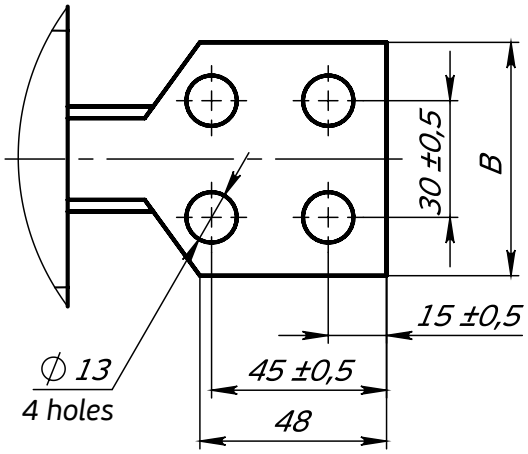


Fig. 5 – General View, Current Transformer TPOL-SVEL-10, 1,200A to 2,000A, otherwise see Fig. 2

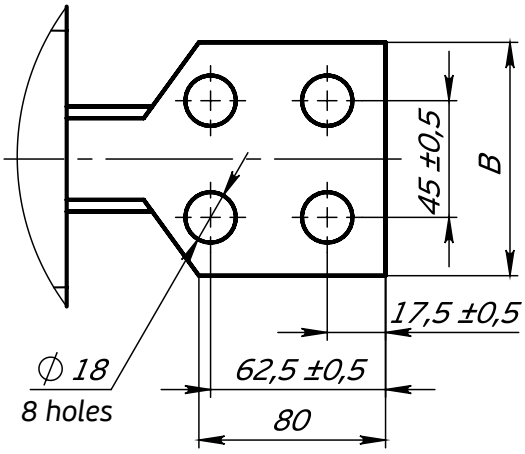


Fig. 6 – General View, Current Transformer TPOL-SVEL-10, 2,500A to 3,000A, otherwise see Fig. 2

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TPOL-SVEL-10-2.1(3.1)

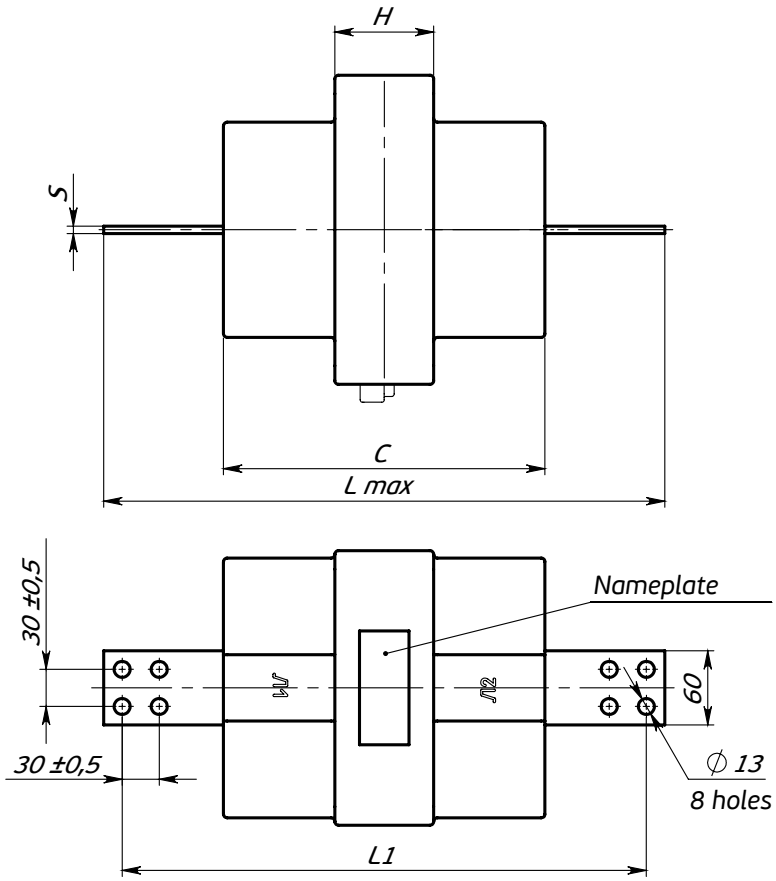


Fig. 1 – General View, Current Transformer TPOL-SVEL-10-2.1 (3.1), 5A to 400A

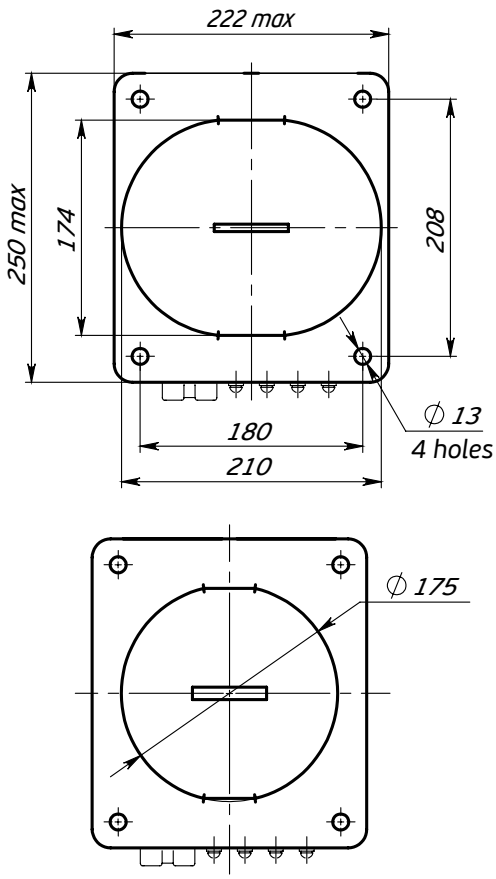


Fig. 2 – General View, Current Transformer TPOL-SVEL-10-2.1 (3.1), 500A to 1,000A

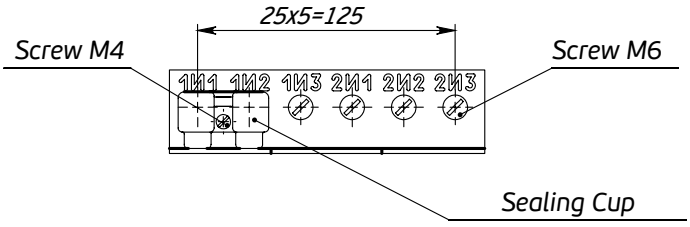


Fig. 3 – General View, Current Transformer TPOL-SVEL-10-2.1

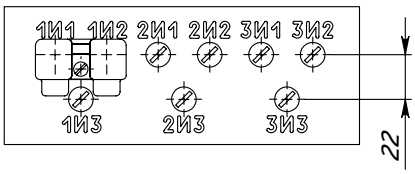


Fig. 4 – General View, Current Transformer TPOL-SVEL-10-3.1

TECHNICAL PARAMETERS TPOL-SVEL-10

Configuration	Number of Windings	Rated Primary Current, A	Dimensions, mm					Weight, kg	Figure
			S	H	C	L	L1		
TPOL-SVEL-10-2.1	2	5-400	6	40	220	414	384	18	1
		500-600	8						2
		750-1000	10						
TPOL-SVEL-10-3.1	3	5-400	6	80	260	454	424	25	1
		500-600	8						2
		750-1000	10						

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TPOL-SVEL-10M

PURPOSE AND SCOPE

This CT is used as a component of both indoors and outdoors AC switchgears, up to 10kV. Such CT is mounted into a break of the current conductor.

TPOL-SVEL-10M is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TPOL-SVEL-10M is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing OET. 591.008.

EQUIPMENT DESCRIPTION

TPOL-SVEL-10M is a single-phase, support-type slipover Current Transformer.

Such CT may have up to 4 secondary coils, each upon their own core. Terminals of the primary coil is located on the side surfaces, while terminals of the secondary coils are located at the bottom of CT.

In addition to that, the secondary coils' terminals are sealed with a protective cup.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils, increased short-time thermal current and peak withstand current.

CT may have terminals of the secondary coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TPOL-SVEL-10M			
Parameter	**Value**		
Modification	2	3	4
Rated Voltage, kV	**10**; 11*		
Max Working Voltage, kV	12		
Rated Frequency, Hz	**50**; 60*		
Rated Secondary Current, A	1; 5		
Rated Primary Current, A	5; 10; 15; 20; 30; 40; 50; 75; 80; 100; 150; 200; 300; 400; 600; 750; 800; 1000; 1200; 1500; 2000; 2500; 3000		
Number of Secondary Coils	2	3	4
Secondary Coil Accuracy Class:			
Measurements	**0,2S**; 0,2; **0,5S**; **0,5**; 1; 3		
Protection	5P; **10P**		
Rated Secondary Burden, V·A:			
Secondary Coil, measurements			
cos φ = 1	1; 2; 2,5		
cos φ = 0,8	3; 5; **10**; 15; 20; 25; 30; 50		
Secondary Coil, protection			
cos φ = 0,8	3; 5; 10; **15**; 20; 25; 30; 50		
Accuracy limit factor, Secondary Coil, protection**	2 to 30		
Instrument security factor, measuring winding**	3 to 30		
One second thermal current, kA at rated primary current, A:			
5	0,4		
10	0,78		

TECHNICAL PARAMETERS TPOL-SVEL-10M		
Parameter	**Value**	
15	1,2	
20	1,56	
30	2,5	
40	3,0	
50	5,0	
75	5,85	
80	6,23	
100	10,0	
150	12,5	
200	20,0	
300, 400	31,5	20,0
600 – 3000	40,0	
Peak withstand current kA at rated primary current, A		
5	1,0	
10	1,98	
15	3,0	
20	3,98	
30	6,37	
40	7,65	
50	12,8	
75	14,9	
80	15,8	
100	25,5	
150	31,8	
200	51,0	
300, 400	81,0	51,0
600 – 3000	102,0	

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS TPOL-SVEL-10M

TYPE	Number of Windings	Rated Primary Current, A	Dimensions, mm					Fig.	Weight, kg
			L_{max}	L1	L2	L3	S		
TPOL-SVEL-10M-2	2	5-200	415	294	250	60	6	1	21
		300; 400		-				2	
		600					8		
		750; 800; 1000					10		
		1200-2000					18	5	
		2500-3000	465				20	6	23
TPOL-SVEL-10M-3	3	5-400	455	344	290	80	6	3	28
		600		-			8	2, 3	
		750; 800; 1000					10		
		1200-2000					18	3, 5	
		2500-3000	505				20	3, 6	34
TPOL-SVEL-10M-4	4	5-400	455	344	290	80	6	4	28
		600		-			8	2, 4	
		750; 800; 1000					10		
		1200-2000					18	4, 5	
		2500-3000	505				20	4, 6	34

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TPOL-SVEL-10M

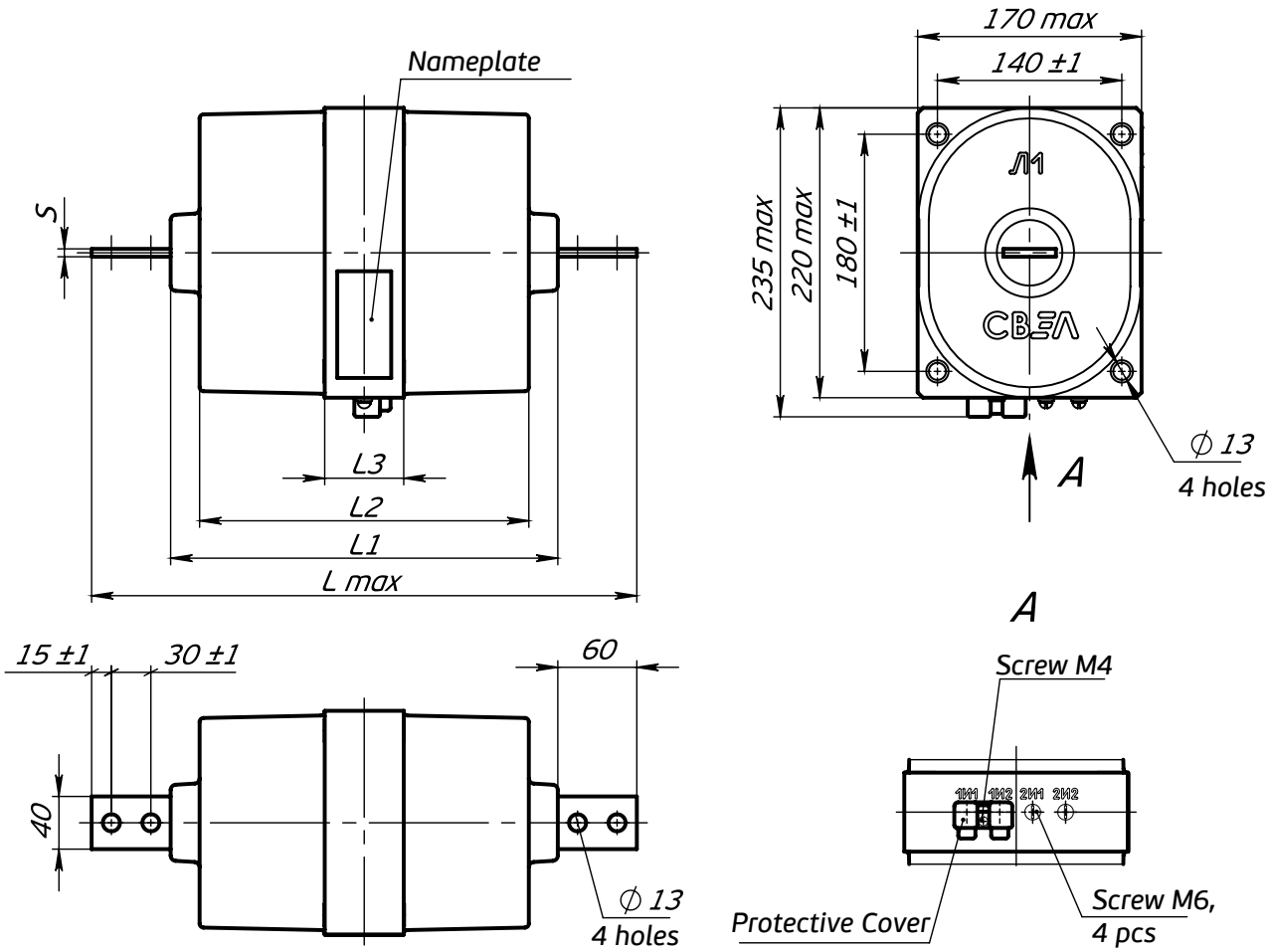


Fig. 1 – General View, Current Transformer TPOL-SVEL-10M-2, 5A to 200A, and TPOL-SVEL-10M-3, 5A to 400A

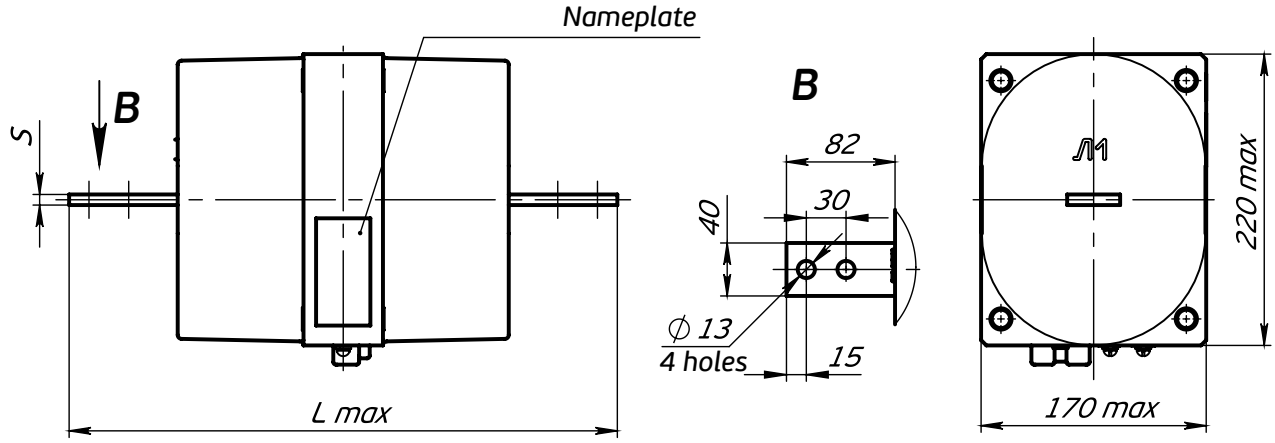


Fig. 2 – General View, Current Transformer TPOL-SVEL-10M-2, 300A to 1,000A, and TPOL-SVEL-10M-3, 600A to 1,000A, otherwise see Fig. 1

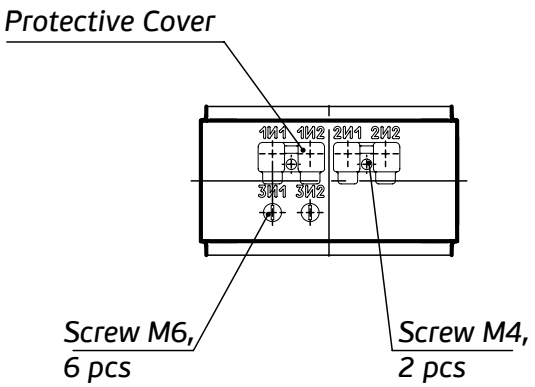


Fig. 3 – General View, Current Transformer TPOL-SVEL-10M-3, otherwise see Fig. 1

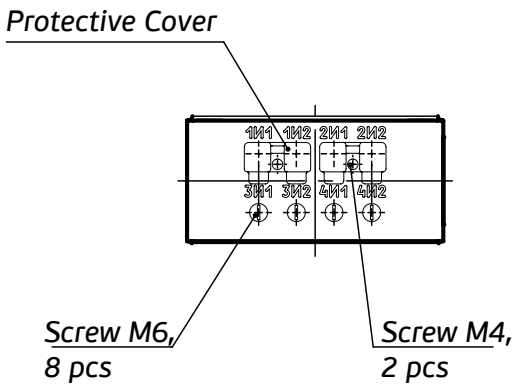


Fig. 4 – General View, Current Transformer TPOL-SVEL-10M-4, otherwise see Fig. 1

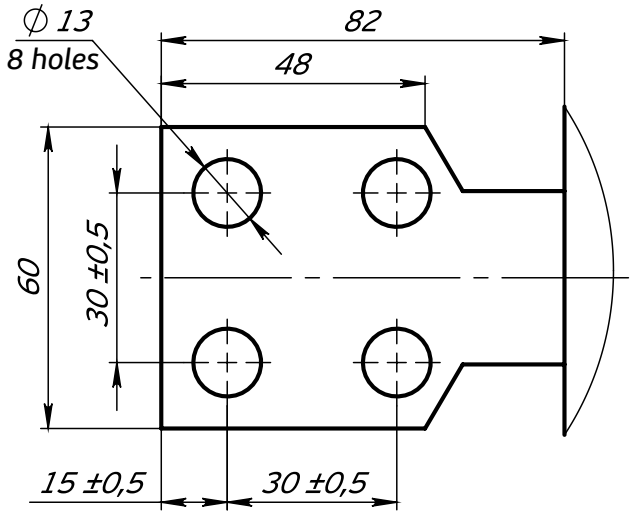


Fig. 5 – General View, Current Transformer TPOL-SVEL-10M, 1,200A to 2,000A, otherwise see Fig. 1

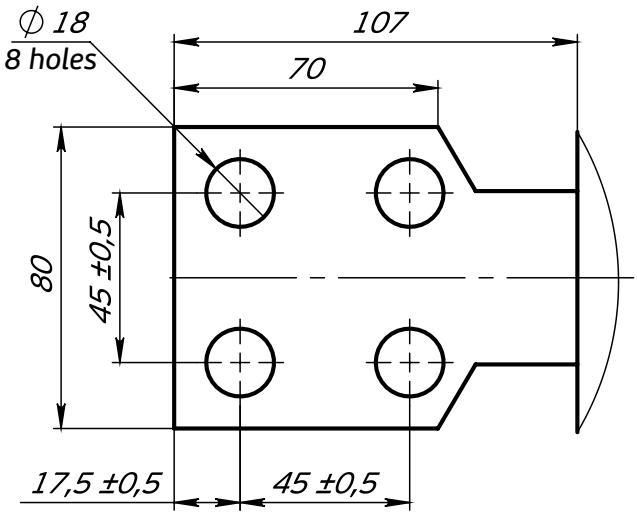


Fig. 6 – General View, Current Transformer TPOL-SVEL-10M, 2,500A to 3,000A, otherwise see Fig. 1

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TSHL-SVEL-10

PURPOSE AND SCOPE

This CT is used as a component of both indoors and outdoors AC switchgears, up to 10kV. Such CT is mounted into a break of the current conductor.

TSHL-SVEL-10 is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TSHL-SVEL-10 is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing OET. 591.013.

EQUIPMENT DESCRIPTION

TSHL-SVEL-10 is a single-phase, support-type slipover Current Transformer.

Such CT may have up to 4 secondary coils, each upon their own core. Terminals of the primary coil is located on the side surfaces, while terminals of the secondary coils are located at the bottom of CT.

In addition to that, the secondary coils' terminals are sealed with a protective cup

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils, increased short-time thermal current and peak withstand current.

CT may have terminals of the secondary coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TSHL-SVEL-10				
Parameter	**Value**			
Modification	2	3	4	5
Rated Voltage, kV	**10**			
Max Working Voltage, kV	12			
Rated Frequency, Hz	**50;** 60*			
Rated Secondary Current, A	1; **5**			
Rated Primary Current, A	1000; 1200; 1500; 2000; 2500; 3000; 4000; 5000; 6000			
Number of Secondary Coils	2	3	4	5
Secondary Coil Accuracy Class:				
Measurements	**0,2S**; 0,2; **0,5S**; 0,5; 1; 3			
Protection	5P; **10P**			
Rated Secondary Burden, V·A				
Secondary Coil, measurements:				
cos φ = 1	1; 2; 2,5			
cos φ = 0,8	3; 5; 10; 15; 20; 25; 30			
Secondary Coil, protection:				
cos φ = 0,8	3; 5; 10; 15; 20; 25; 30			
Three second thermal current, kA at rated primary current, A				
1000-3000	31,5			
4000	140			
5000; 6000; 8000	175			
Accuracy limit factor, Secondary Coil, protection**	2 to 30			
Instrument security factor, measuring coil**	2 to 30			

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

Parameters of secondary burden, secondary current, accuracy limit factor for protection, instrument security factor of secondary measuring coils, number of secondary coils, and accuracy classes shall be specified in purchase orders.

3. Transformers may be manufactured with flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

TECHNICAL PARAMETERS TSHL-SVEL-10

TYPE	Number of Windings	Rated Primary Current, A	Dimensions, mm							Weight, kg	Fig.
			F	F1	F2	F3	F4	H	M,mm		
TSHL-SVEL-10-2.1	2	1000,1500	230	280	290	204	262	40	42	27	1
		2000,3000								30	
TSHL-SVEL-10-2.2	2	4000,5000,6000	270	320	330	210	310	40	42	37	2
TSHL-SVEL-10-3.1	3	1000,1500,2000	230	280	290	235	262	70	72	31	4,1
		3000								37	
TSHL-SVEL-10-5	5	1000,1500,2000, 3000									6
TSHL-SVEL-10-3.2	3	4000,5000	270	320	330	210	310	40	42	34	3,2
TSHL-SVEL-10-4	4	1000,1500,2000	230	280	290	300	262	130	132	42	5,1
		3000								53	

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TSHL-SVEL-10

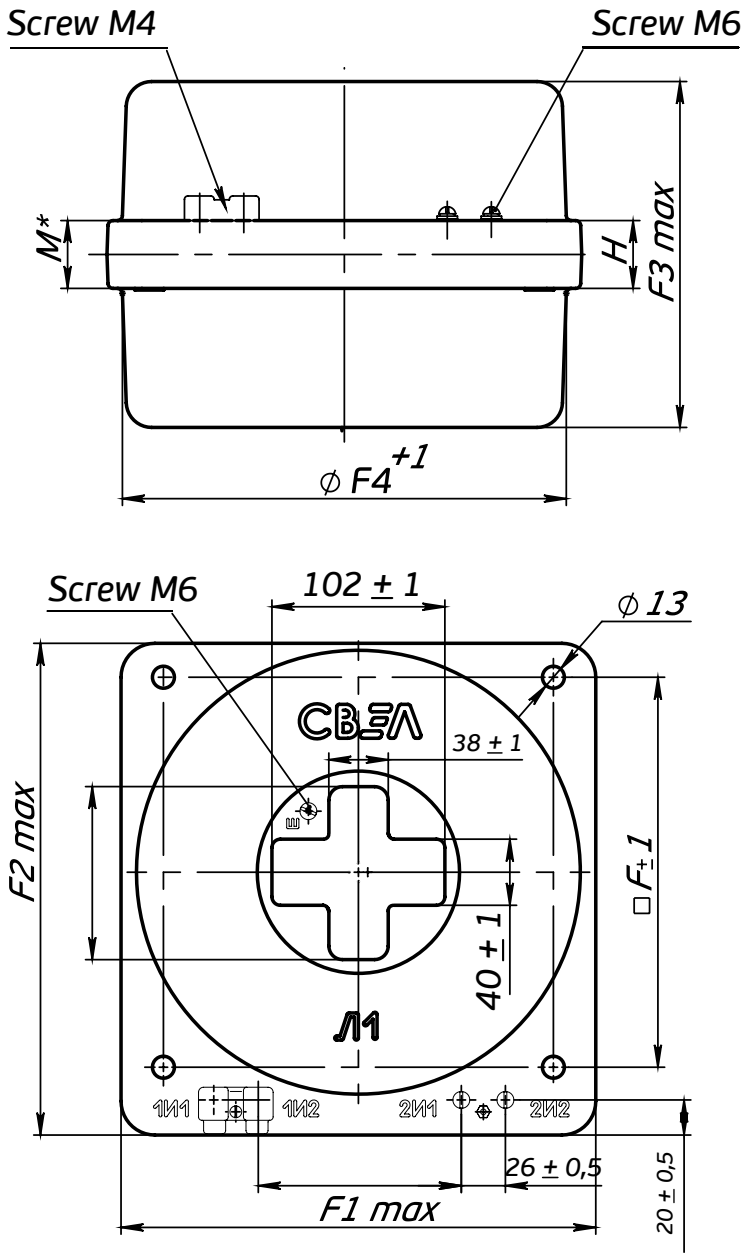


Fig. 1 – General View, Current Transformer TSHL-SVEL-10-2.1

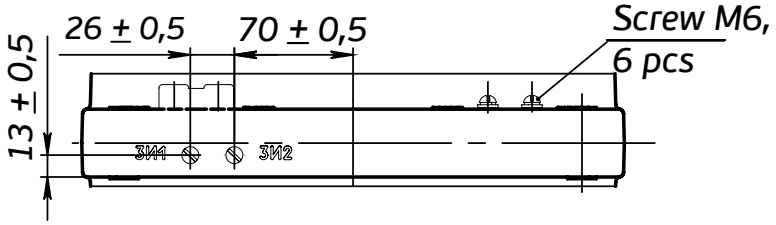


Fig. 3 – General View, Current Transformer TSHL-SVEL-10-3.2, otherwise see Fig. 1

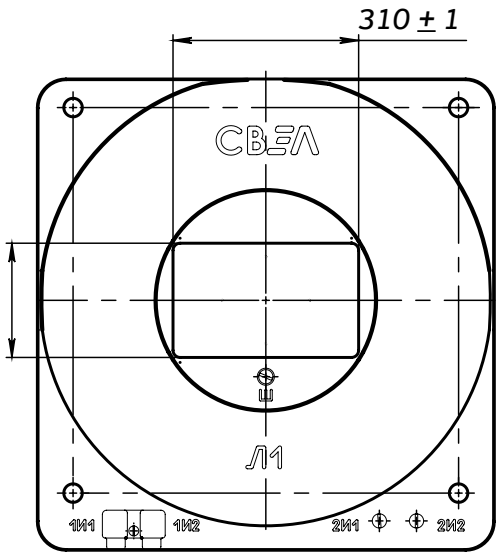


Fig. 2 – General View, Current Transformer TSHL-SVEL-10-2.2, otherwise see Fig. 1

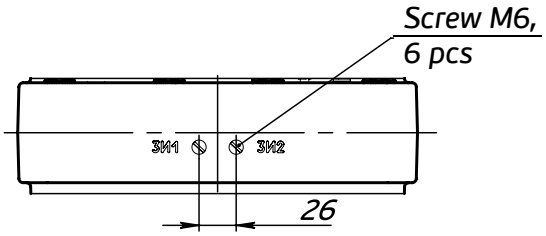


Fig. 4 – General View, Current Transformer TSHL-SVEL-10-3.1, otherwise see Fig. 1

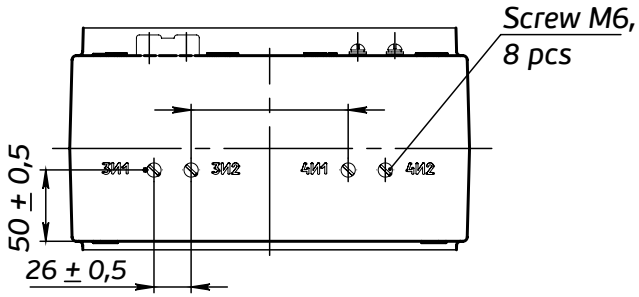


Fig. 5 – General View, Current Transformer TSHL-SVEL-10-4, otherwise see Fig. 1

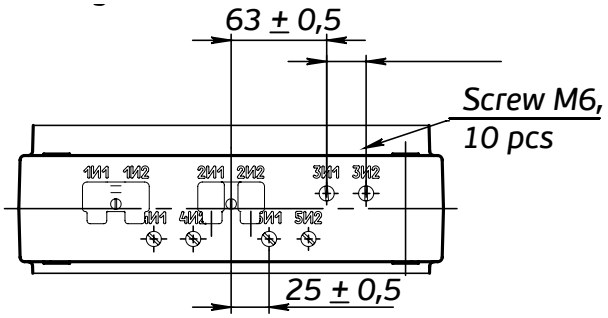


Fig. 6 – General View, Current Transformer TSHL-SVEL-10-5, otherwise see Fig. 1

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TSHL-SVEL-20-1

PURPOSE AND SCOPE

TSHL-SVEL-20 is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2, as per GOST 15150-69. Working position – horizontal. Technical specification for manufacturing 0ET. 591.013.

TSHL-SVEL-20 is a single-phase, bus-type cast resin Current Transformer.

The switchgear's bus entered through the inner window of is a primary of this CT.

TSHL-SVEL-20 is fixed to a support plate and may have up to 4 secondary coils.

CT may have terminals of the secondary coils made of flexible multi-strand conductor.

DESIGN SPECIFICS

TSHL-SVEL-20 is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils.

Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TSHL-SVEL-20-1	
Parameter	**Value**
Modification	1.1 - 1.4
Rated Voltage, kV	20
Max Working Voltage, kV	24
Rated Frequency, Hz	**50;** 60*
Rated Secondary Current, A	1; **5**
Rated Primary Current, A	150; 200; 300; 400; 600; 750; 800; 1000; 1200; 1500; 2000
Number of Secondary Coils	2, 3**
Accuracy Class:	
Secondary Coil, measurements	**0,2S**; 0,2; **0,5S**; **0,5**; 1; 3
Secondary Coil, protection	5P; **10P**
Rated Secondary Burden, VA:	
Secondary Coil, measurements	
cos ϕ = 1	1; 2; 2,5
cos ϕ = 0,8	3; 5; **10**; 15; 20; 25; 30; 50
Secondary Coil, protection	
cos ϕ = 0,8	3; 5; 10; **15**; 20; 25; 30; 50
Three second thermal current, kA at rated primary current, A	
300; 400	31,5
600 - 2000	40
Accuracy limit factor, Secondary Coil, protection**	2 to 30 (10***)
Instrument security factor, measuring winding**	2 to 30

** applicable to the transformers delivered abroad*

*** we can make CT with three secondary coils, and their parameters shall be specified in purchase orders*

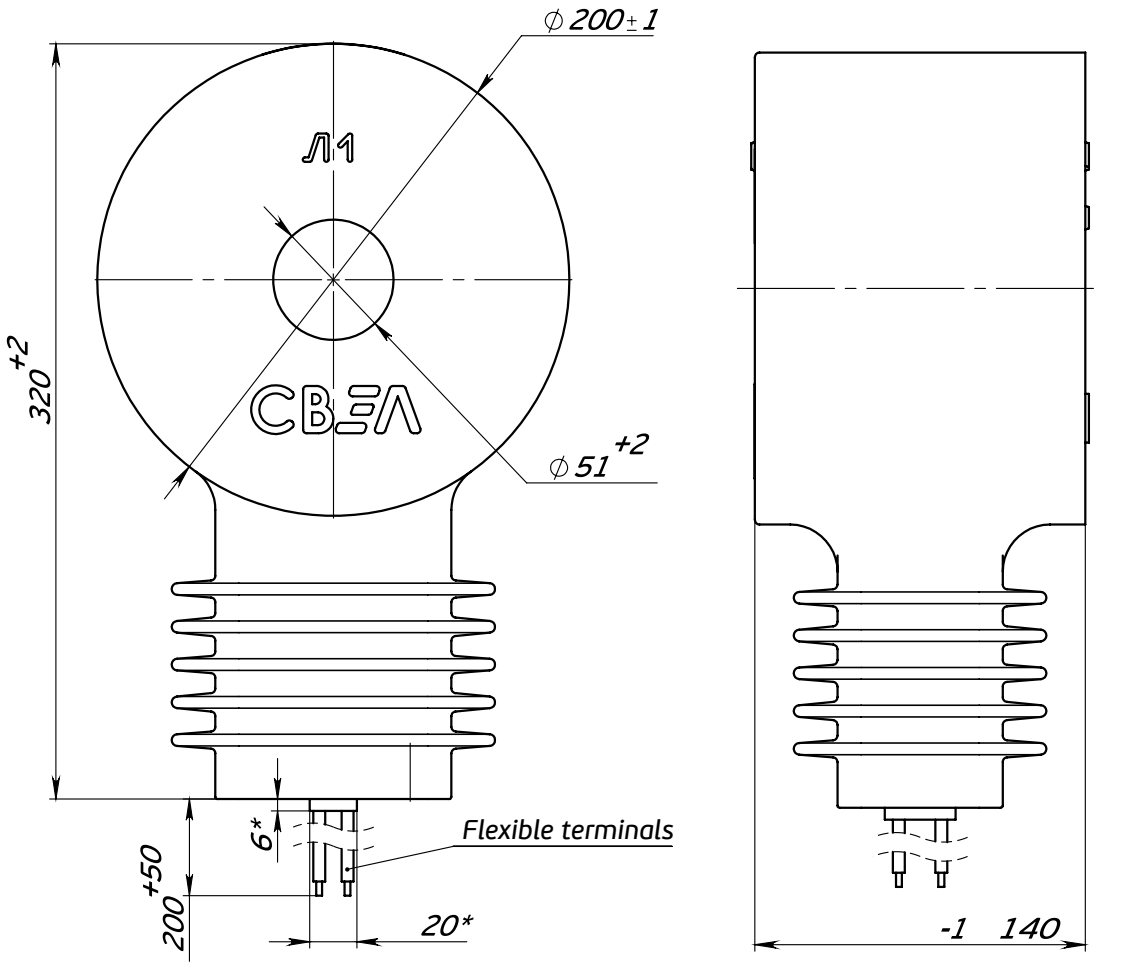
****the standard parameter is presented in parenthesis.*

Parameters of secondary burden, secondary current, accuracy limit factor for protection, and accuracy classes shall be specified in purchase orders.

Transformers may be manufactured with flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

Standard parameters are highlighted bold.

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TSHL-SVEL-20



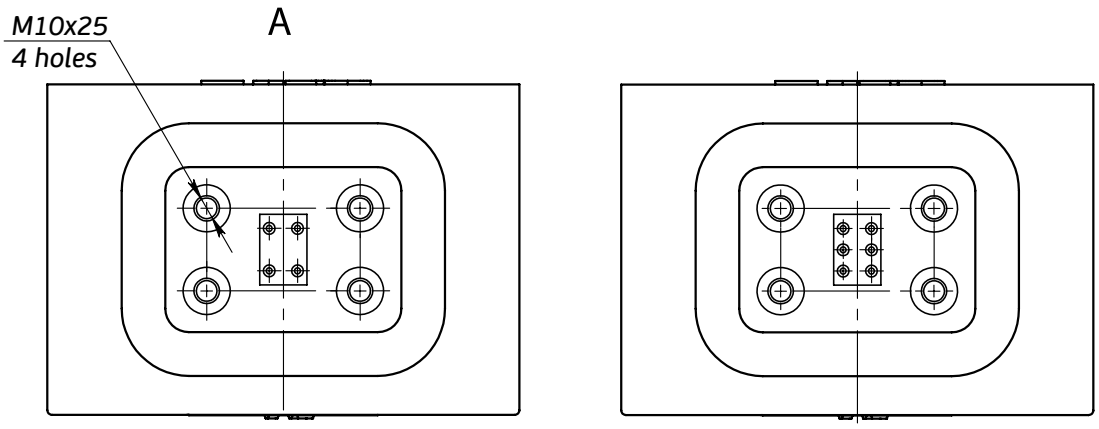


Fig. 1 General View, Current Transformer TSHL-SVEL-20-1.2

Fig. 2 General View, Current Transformer TSHL-SVEL-20-1.3

Max Weight – 14kg

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TSHL-SVEL-20-2(3)

PURPOSE AND SCOPE

TSHL-SVEL-20-2(3,4,5) is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2, as per GOST 15150-69. Working position – horizontal. Technical specification for manufacturing OET. 591.013.

TSHL-SVEL-20 is a single-phase, bus-type cast resin Current Transformer.

The switchgear's bus entered through the inner window of is a primary of this CT.

This CT is made in for modifications. All can be mounted into the current conductor bus.

TSHL-SVEL-20 is fixed to a support plate and may have up to 4 secondary coils.

Terminals of secondary coils are located upon the surface of the cast unit and sealed with a protective cap.

DESIGN SPECIFICS

This CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils.

Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TSHL-SVEL-20-2(3, 4, 5)				
Parameter	**Value**			
Modification	2	3	4	5
Rated Voltage, kV	20			
Max Working Voltage, kV	24			
Rated Frequency, Hz	**50;** 60*			
Rated Secondary Current, A	1; **5**			
Rated Primary Current, A	800; 1000; 1500; 3000;4000; 5000;6000;8000;10000; 12000; 14000;15000;16000;18000			
Number of Secondary Coils	2	3	4	6
Secondary Coil Accuracy Class:				
Measurements	**0,2S**; 0,2; **0,5S**; **0,5**; 1; 3			
Protection	5P; **10P**			
Rated Secondary Burden, V·A				
Secondary Coil, measurements:				
cos φ = 1	1; 2; 2,5			
cos φ = 0,8	3; 5; **10**; 15; 20; 25; 30			
Secondary Coil, protection:				
cos φ = 0,8	3; 5; 10; **15**; 20; 25; 30			
Three second thermal current, kA at rated primary current, A				
800-10000	120			
12000-18000	190			
Accuracy limit factor, Secondary Coil, protection	2 to 40			
Instrument security factor, measuring coil	2 to 40			

** applicable to the transformers delivered abroad*

Parameters of secondary burden, secondary current, accuracy limit factor for protection, and accuracy classes shall be specified in purchase orders.

Standard parameters are highlighted bold.

TSHL-SVEL-20-2 (3; 4; 5)							
TYPE	Rated Primary Current, A	Dimensions, mm					Weight, kg
		D	d	H	L	h	
TSHL-SVEL-20-2.1	800-10000	520	340	200	625	25	60
TSHL-SVEL-20-3.1				260			81
TSHL-SVEL-20-4.1				300			120
TSHL-SVEL-20-5.1				360			160
TSHL-SVEL-20-2.2	12000	680	470	200	745	35	91
TSHL-SVEL-20-3.2				260			120
TSHL-SVEL-20-4.2				300			150
TSHL-SVEL-20-5.2				360			180
TSHL-SVEL-20-2.3	14000-18000	830	600	200	880		130
TSHL-SVEL-20-3.3				260			170
TSHL-SVEL-20-4.3				300			200
TSHL-SVEL-20-5.3				360			250

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TSHL-SVEL-20-2(3, 4, 5)

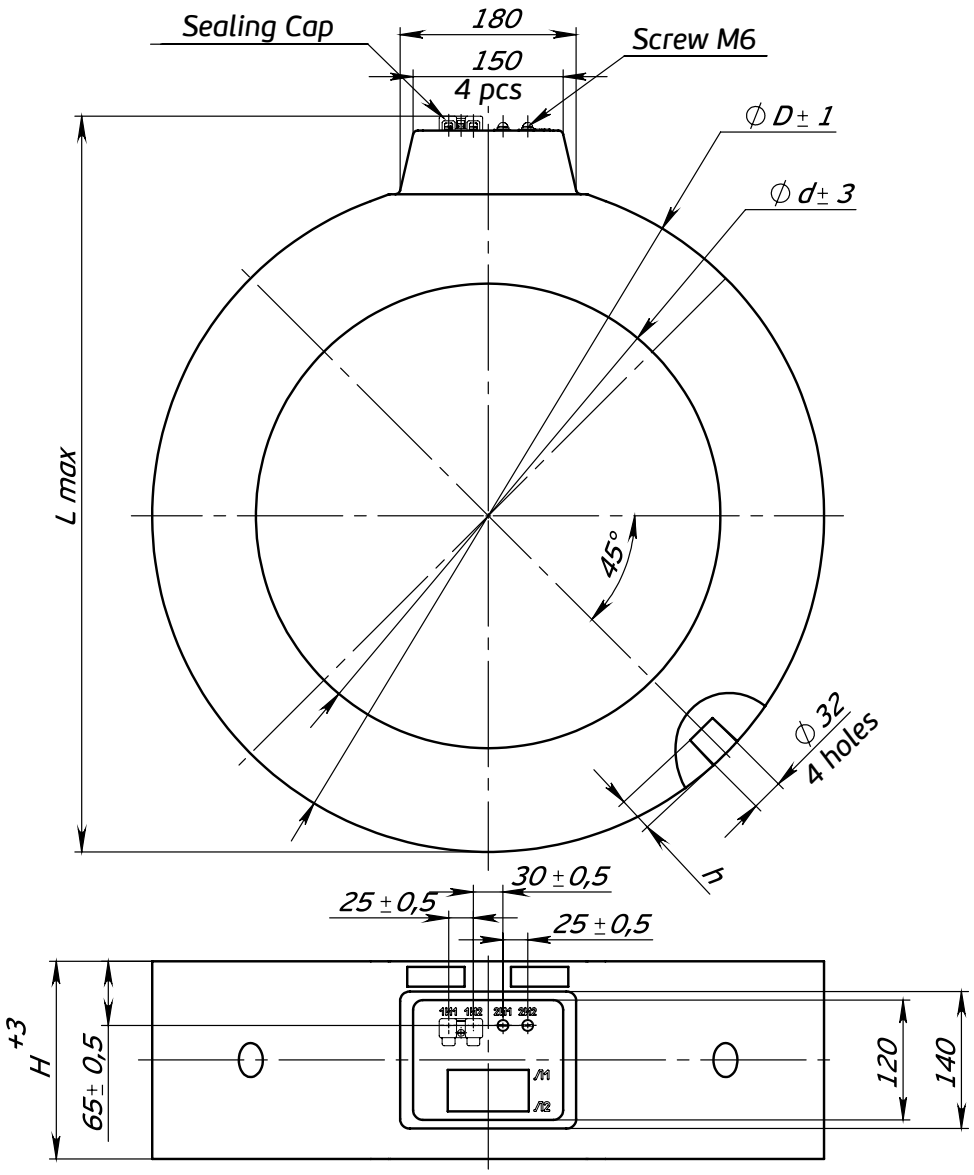


Fig. 1 – General View, Current Transformer TSHL-SVEL-20-2

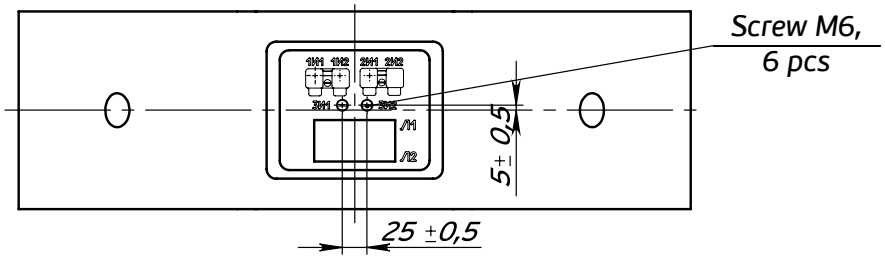


Fig. 2 – General View, Current Transformer TSHL-SVEL-20-3, otherwise see Fig. 1

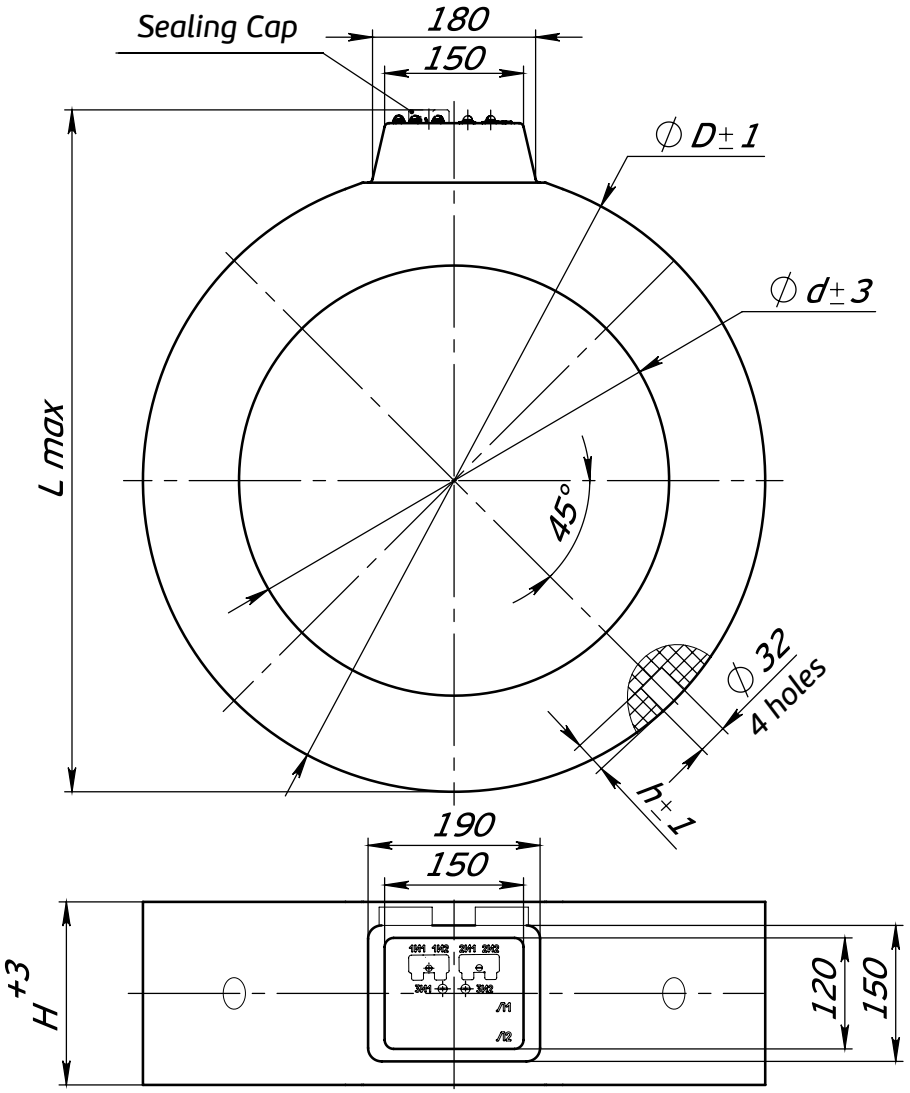


Fig. 1 – General View, Current Transformer TSHL-SVEL-20-2(3,4,5)

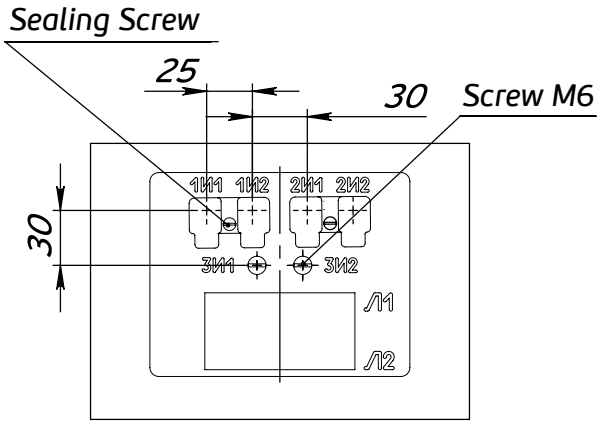


Fig. 2 – Contact Board, Current Transformer TSHL-SVEL-20-3

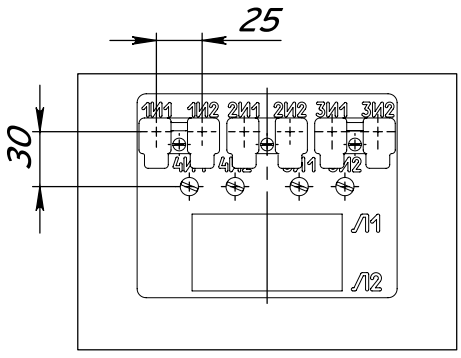


Fig. 3 – Contact Board, Current Transformer TSHL-SVEL-20-5

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TOL-SVEL-20 UHL2

PURPOSE AND SCOPE

TOL-SVEL-20 UHL2 is used as a component of both indoors and outdoors AC switchgears, up to 20kV. Such CT is mounted into a break of the current conductor.

TOL-SVEL-20 is intended to:

- ✓ Transmit signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TOL-SVEL-20 is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2, as per GOST 15150-69.

Working position – optional, upon request.

Technical specification for manufacturing OET. 591.014.

EQUIPMENT DESCRIPTION

TOL-SVEL-20 is a single-phase, cast resin, bearing-type Current Transformer.

Such CT may have up to 4 secondary coils, each upon their own core. Terminals of the primary coil is located on the upper surface of CT, while terminals of the secondary coils are located at the bottom of CT.

The secondary coils' terminals are sealed with a protective cap at the bottom of CT.

CT may have terminals of the secondary coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils, increased short-time thermal current and peak withstand current.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TOL-SVEL-20 UHL2			
Parameter	**Value**		
Modification	2	3	4
Rated Voltage, kV	20		
Max Working Voltage, kV	24		
Rated Frequency, Hz	**50;** 60*		
Rated Secondary Current, A	1; **5**		
Rated Primary Current, A	5 to 3000		
Number of Secondary Coils	2	3	4
Secondary Coil Accuracy Class:			
Measurements	**0,2S**; 0,2; **0,5S; 0,5;** 1; 3		
Protection	5P; **10P**		
Rated Secondary Burden, V·A			
Secondary Coil, measurements:			
cos φ = 1	0,5; 1 ; 2 ; 2,5		
cos φ = 0,8	3; 5; **10**; 15; 20; 25; 30; 40; 50		
Secondary Coil, protection:			
cos φ = 0,8	3; 5; 10; 15; **20**; 25; 30; 40; 50		
Accuracy limit factor, Secondary Coil, protection	2 to 30		
Instrument security factor, measuring winding;	3 to 30		

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold.*

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TOL-SVEL-20 UHL2

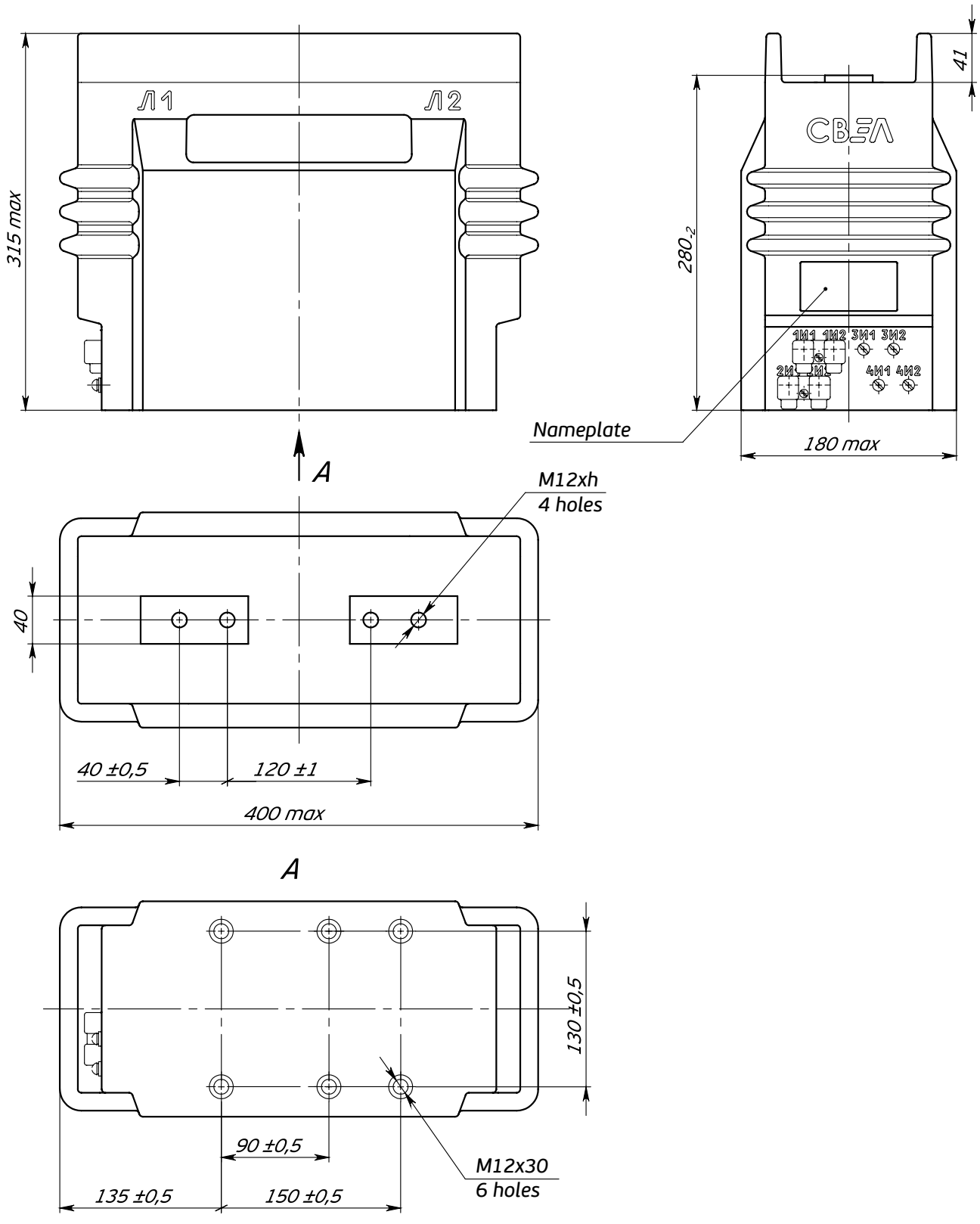


Fig. 1 – General View, Current Transformer TOL-SVEL-20 UHL2, primary rated current up to 1,000A

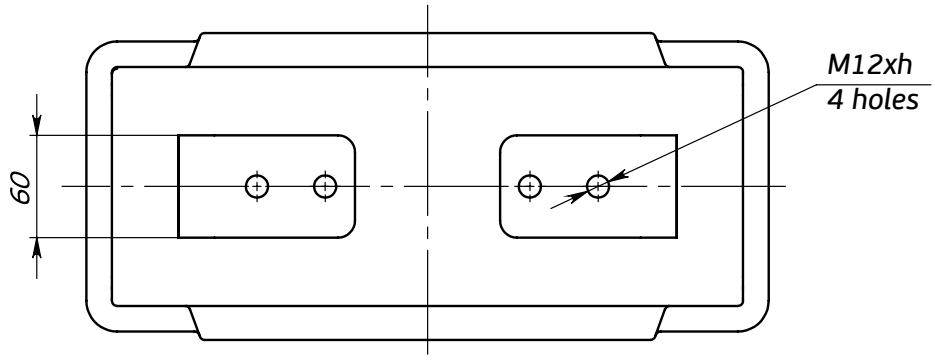


Fig. 2 – General View, Current Transformer TOL-SVEL-20 UHL2, primary rated current up to 2,000A, otherwise see Fig. 1

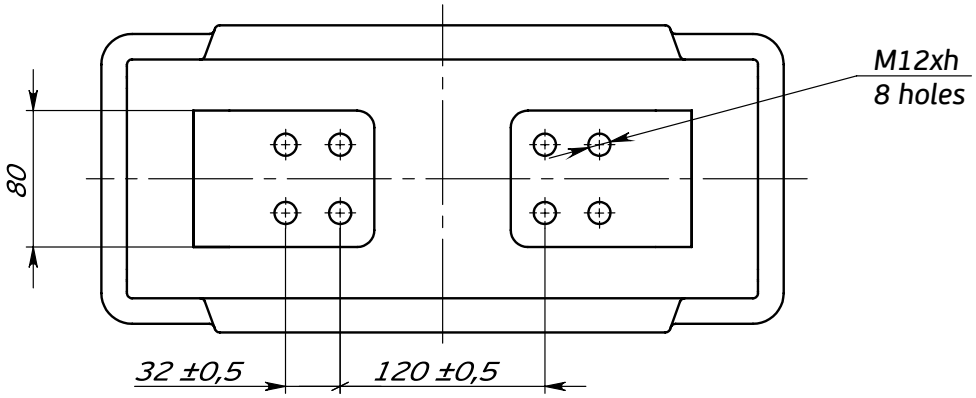


Fig. 3 – General View, Current Transformer TOL-SVEL-20 UHL2, primary rated current up to 3,000A, otherwise see Fig. 1

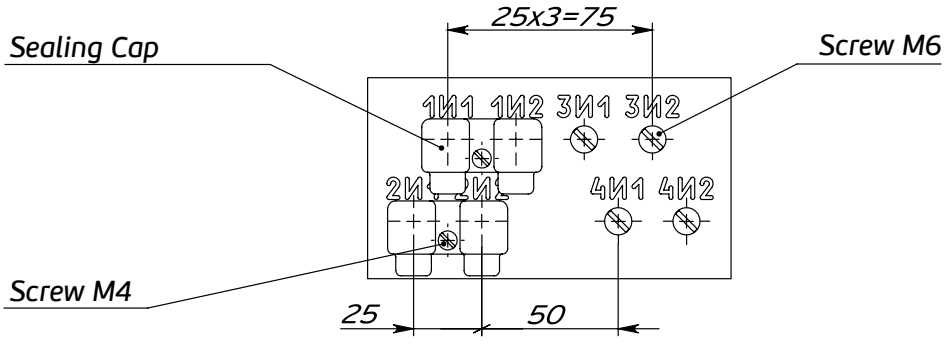


Fig. 4 – Contact Board, Current Transformer TOL-SVEL-20 UHL2

TECHNICAL PARAMETERS TOL-SVEL-20 UHL2				
TYPE	**Rated Primary Current, A**	**h, mm**	**Figure**	**Weight, kg**
TOL-SVEL-20-2	5-500	21	1	38
	600	23		
	750-1000	25		
	1200-2000	35	2	40
	2500-3000		3	45
TOL-SVEL-20-3	5-500	21	1	40
	600	23		
	750-1000	25		
	1200-2000	35	2	41
	2500-3000		3	46
TOL-SVEL-20-4	5-500	21	1	41
	600	23		
	750-1000	25		
	1200-2000	35	2	42
	2500-3000		3	48

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TOL-SVEL-35

PURPOSE AND SCOPE

TOL-SVEL-35 is used as a component of both indoors and outdoors AC switchgears, up to 35kV. Such CT is mounted into a break of the current conductor.

TOL-SVEL-35 is intended to:

- ✓ Transmit signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TOL-SVEL-35 is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 2 as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing OET. 591.014.

EQUIPMENT DESCRIPTION

TOL-SVEL-35 is a single-phase, cast resin, bearing-type Current Transformer.

Such CT may have up to 5 secondary coils, each upon their own core. Terminals of the primary coil is located on the upper surface of CT, while terminals of the secondary coils are located at the bottom of CT.

The secondary coils' terminals are sealed with a protective cap at the bottom of CT.

CT may have terminals of the secondary coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils, increased short-time thermal current and peak withstand current.

TECHNICAL PARAMETERS TOL-SVEL-35				
Parameter	**Value**			
Modification	2.1, 2.2	3.1, 3.2	4.1, 4.2	5.1, 5.2
Rated Voltage, kV	35			
Max Working Voltage, kV	40,5			
Rated Frequency, Hz	**50; 60***			
Rated Secondary Current, A	1; **5**			
Rated Primary Current, A	**5 to 3000**			
Number of Secondary Coils	2	3	4	5
Secondary Coil Accuracy Class:				
Metering and measurements	**0,2S**; 0,2; **0,5S**; **0,5**; 1; 3			
Secondary Coil, protection	5P; **10P**			
Rated Secondary Burden, V·A	1 to 50			
Accuracy limit factor, Secondary Coil, protection	3 to 80			
Instrument security factor, measuring winding	3 to 20			
One second thermal current, kA at rated primary current, A				
15	1,2			
20	1,56			
30	2,5			
40	3,0			
50	5,0			

TECHNICAL PARAMETERS TOL-SVEL-35	
Parameter	**Value**
75	5,85
80	6,23
100	10,0
150	12,5
200	20,0
300, 400	31,5
600 – 3000	40,0
Peak withstand current kA at rated primary current, A	
15	3,0
20	3,98
30	6,37
40	7,65
50	12,8
75	14,9
80	15,8
100	25,5
150	31,8
200	51,0
300, 400	81,0
600 – 3000	102,0

** applicable to the transformers delivered abroad*

TECHNICAL PARAMETERS TOL-SVEL-35							
Modification	**Rated Primary Current, A**	**Dimensions, mm**				**Weight, kg**	**Figure**
		L1	**L2**	**L3**	**h**		
TOL-SVEL-35-2.1	15-750	425	250	365	21	90	1
	800,1000				25		
	1200-2000				35		
	2500-3000						2
TOL-SVEL-35-3.1	15-750	425	250	365	21	90	1
	800,1000				25		
	1200-2000				35		
	2500-3000						2

TECHNICAL PARAMETERS TOL-SVEL-35

Modification	Rated Primary Current, A	Dimensions, mm				Weight, kg	Figure
		L1	L2	L3	h		
TOL-SVEL-35-4.1	15-750	425	250	365	21	90	1
	800,1000				25		
	1200-2000				35		
	2500-3000						2
TOL-SVEL-35-5.1	15-750	425	250	365	21	90	1
	800,1000				25		
	1200-2000				35		
	2500-3000						2
TOL-SVEL-35-2.2	15-750	500	335	450	21	115	1
	800,1000				25		
	1200-2000				35		
	2500-3000						2
TOL-SVEL-35-3.2	15-750	500	335	450	21	115	1
	800,1000				25		
	1200-2000				35		
	2500-3000						2
TOL-SVEL-35-4.2	15-750	500	335	450	21	115	1
	800,1000				25		
	1200-2000				35		
	2500-3000						2
TOL-SVEL-35-5.2	15-750	500	335	450	21	115	1
	800,1000				25		
	1200-2000				35		
	2500-3000						2

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TOL-SVEL-35 UHL2

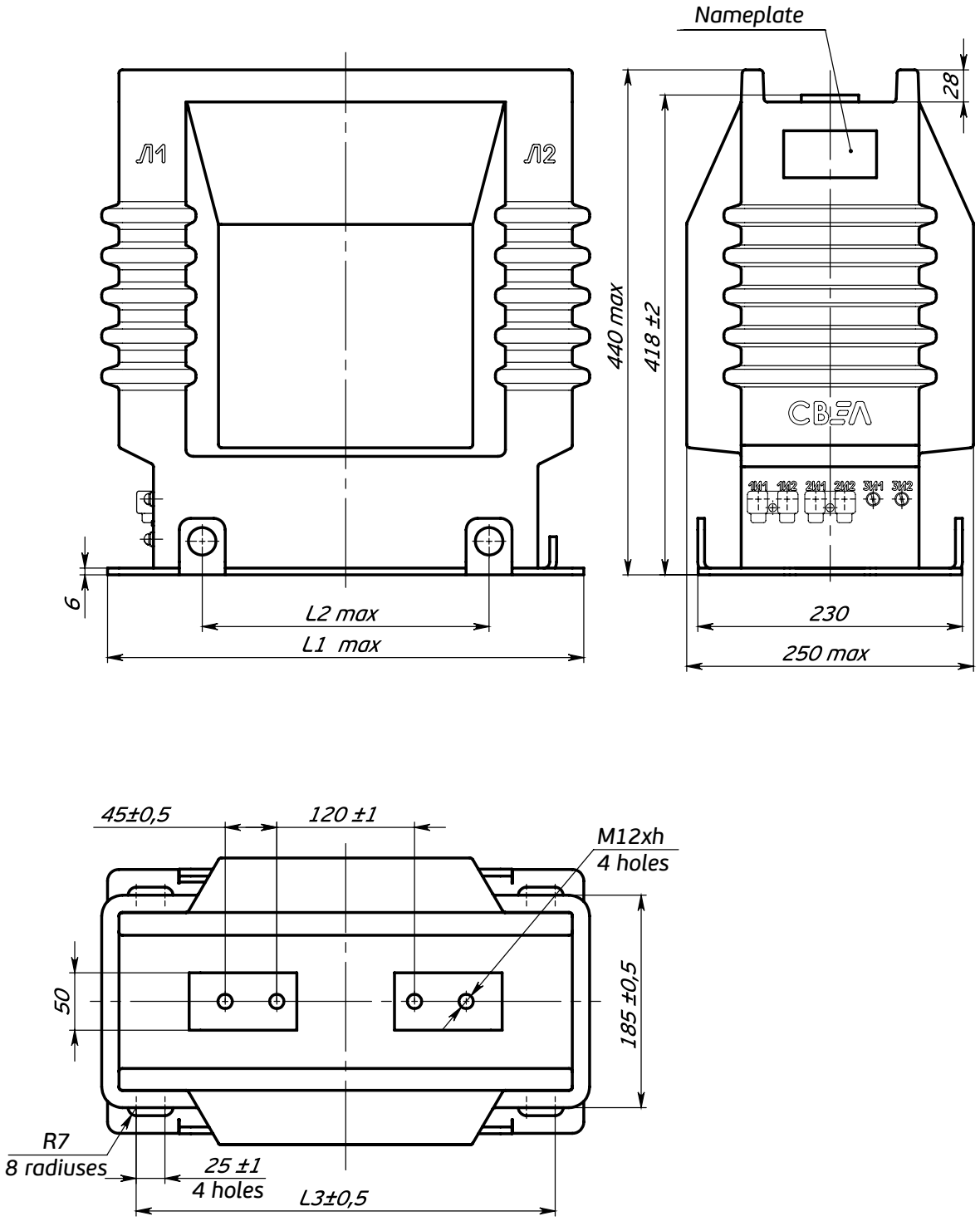


Fig. 1 – General View, Current Transformer TOL-SVEL-35 UHL2, rated primary current up to 2,000A

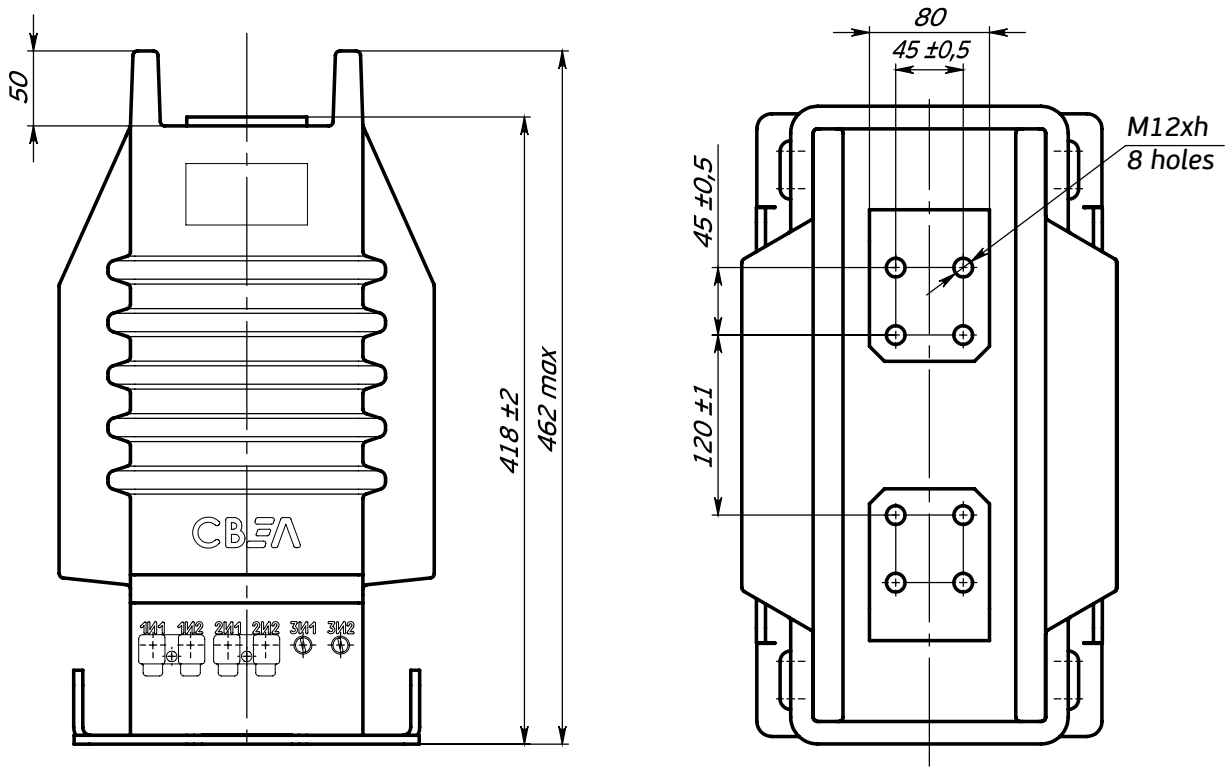


Fig. 2 – General View, Current Transformer TOL-SVEL-35 UHL2, rated primary current up to 2,.500A, 3,000A, otherwise see Fig. 1

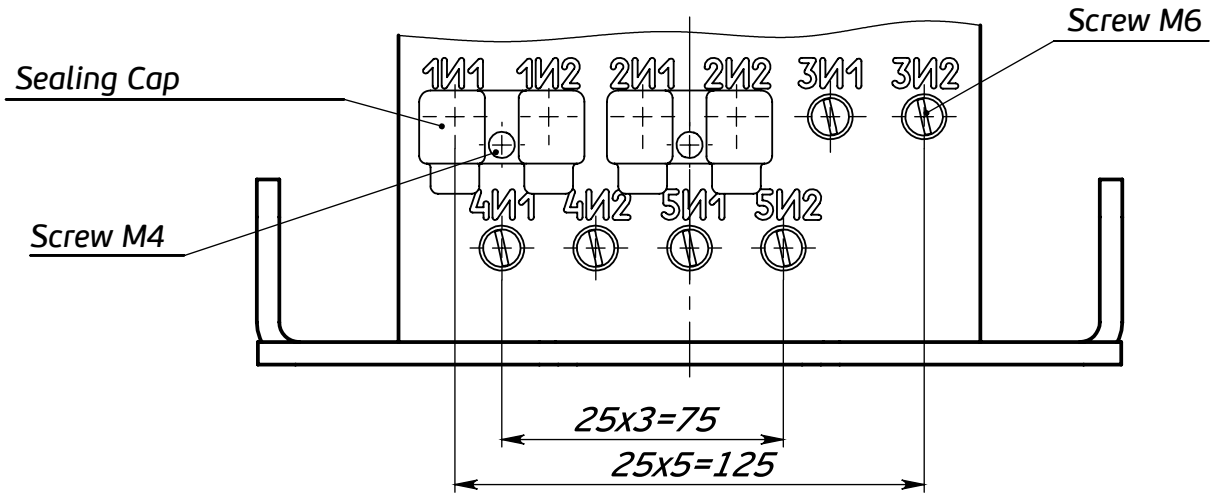


Fig. 3 Contact Board, TOL-SVEL-35 UHL2

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TOL-SVEL-35 III

PURPOSE AND SCOPE

TOL-SVEL-35 IIIM is used as a component of open type AC switchgears, up to 35kV. Such CT is mounted into a break of the current conductor.

This CT is intended to:

- ✓ Transmit signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TOL-SVEL-35 IIIM is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 1, as per GOST 15150-69.

The specific creepage path of the external insulation of this CT corresponds to average (II) and strong (III) degree of contamination according to GOST 9920-89.

Working position – vertical.

Technical specification for manufacturing 0ET.591.014.

EQUIPMENT DESCRIPTION

TOL-SVEL-35 IIIM is a single-phase, cast resin, bearing-type Current Transformer.

Such CT may have up to 5 secondary coils, each upon their own core. Terminals of the primary coil is located on the upper surface of CT, while terminals of the secondary coils are located at the bottom of CT and sealed with a protective cap.

The secondary coils' terminals intended for measurements and electricity metering are sealed with an additional protective cap.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils, increased short-time thermal current and peak withstand current.

The specific creepage path of the external insulation of this CT corresponds to a strong (III) and very strong (IV) degree of contamination according to GOST 9920-89 (depending on modification).

Upon customer's request, we can manufacture CTs with optional mounting dimensions and connections.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TOL-SVEL-35 III				
Parameter	**Value**			
Modification	2.1	3.1	4.1	5.1
Rated Voltage, kV	35			
Max Working Voltage, kV	40,5			
Rated Frequency, Hz	**50** or 60*			
Number of Secondary Coils	2	3	4	5
Secondary Coil Accuracy Class:				
Measurements	**0,2S**; 0,2; **0,5S; 0,5**; 1; 3			
Protection	5P; **10P**			
Rated Secondary Burden, V·A:				
Secondary Coil, measurements				
cos φ = 1	1; 2; 2,5			
cos φ = 0,8	3, 5, 10, 15, 20, 25, 30, 50, 75, 100			
Secondary Coil, protection				
cos φ = 0,8	3, 5, 10, 15, 20, 25, **30**, 50		3, 5, 10, 15, **20**, 30	
Accuracy limit factor, Secondary Coil, protection**	5 to 50			
Instrument security factor, measuring coil	5 to 15			

** applicable to the transformers delivered abroad*

*** Accuracy limit values of Secondary Coil for protection and Instrument security factor of Secondary Coil for measurements are provided under the standard value of the rated secondary burden.*

Standard parameters are highlighted bold.

TECHNICAL PARAMETERS TOL-SVEL-35 III

Modification	Rated Primary Current, A	L, mm	L1, mm	Figure	Weight, kg
TOL-SVEL-35 III -2.1	15-800	857	625	1	170
	1000-2000	787	690	2	160
	3000		630	3	
TOL-SVEL-35 III -3.1	15-800	857	625	1	180
	1000-2000	787	690	2	170
	3000		630	3	
TOL-SVEL-35 III -4.1	15-800	857	625	1	180
	1000-2000	787	690	2	170
	3000		630	3	
TOL-SVEL-35 III -5.1	15-800	857	625	1	185
	1000-2000	787	690	2	175
	3000		630	3	
TOL-SVEL-35 III -2.1.7	15-800	957	725	1	197
	1000-2000	887	750	2	187
	3000		730	3	
TOL-SVEL-35 III -3.1.7	15-800	957	725	1	207
	1000-2000	887	750	2	197
	3000		730	3	
TOL-SVEL-35 III -4.1.7	15-800	957	725	1	207
	1000-2000	887	750	2	197
	3000		730	3	
TOL-SVEL-35 III -5.1.7	15-800	957	725	1	212
	1000-2000	887	750	2	202
	3000		730	3	

ADDITIONAL TECHNICAL PARAMETERS, TOL-SVEL-35 III

Rated Primary Current, A	S, mm
15-1000	10
1500	12,5
2000, 3000	20

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TOL-SVEL-35 III

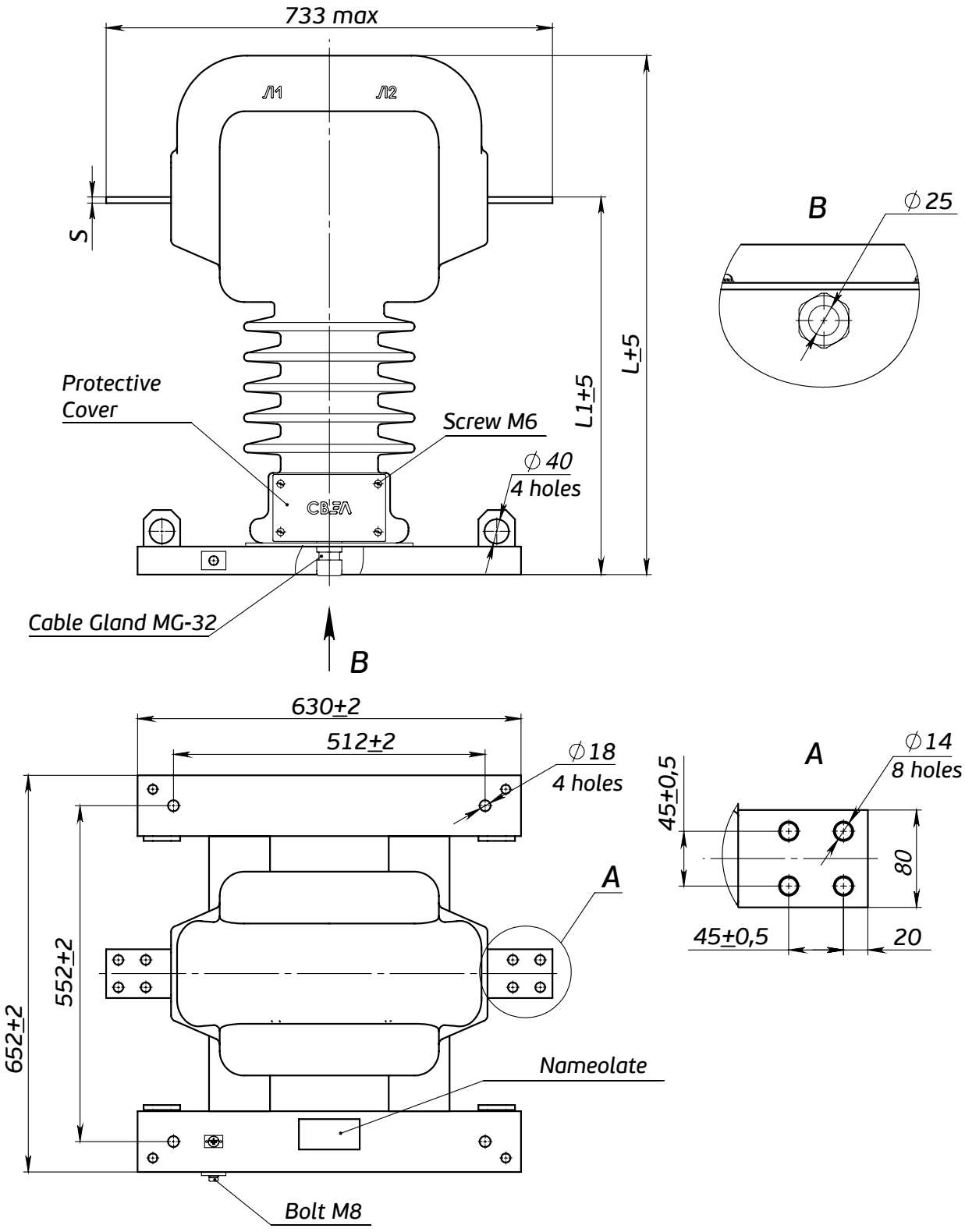


Fig. 1 – General View, Current Transformer TOL-SVEL-35 III, rated primary current up to 800A

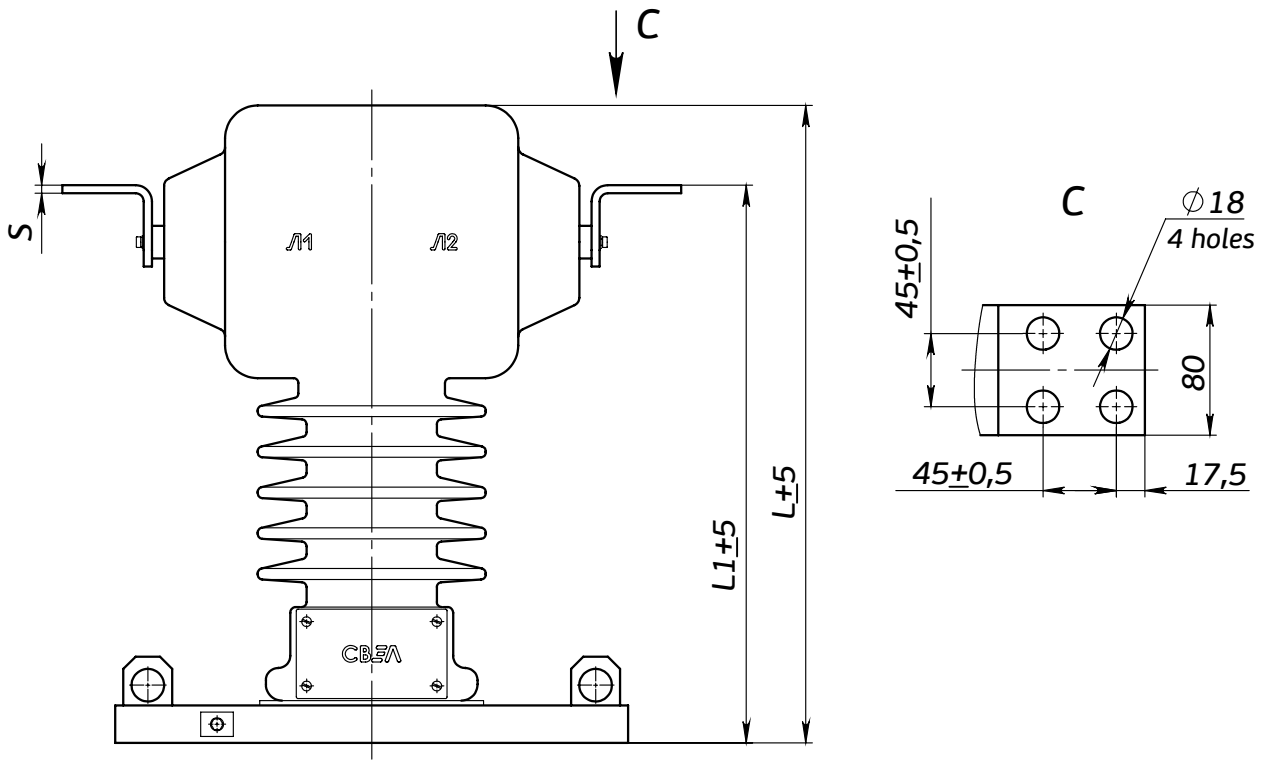


Fig. 2 – General View, Current Transformer TOL-SVEL-35 III, rated primary current up to 1,000A, 2,000A, otherwise see Fig. 1

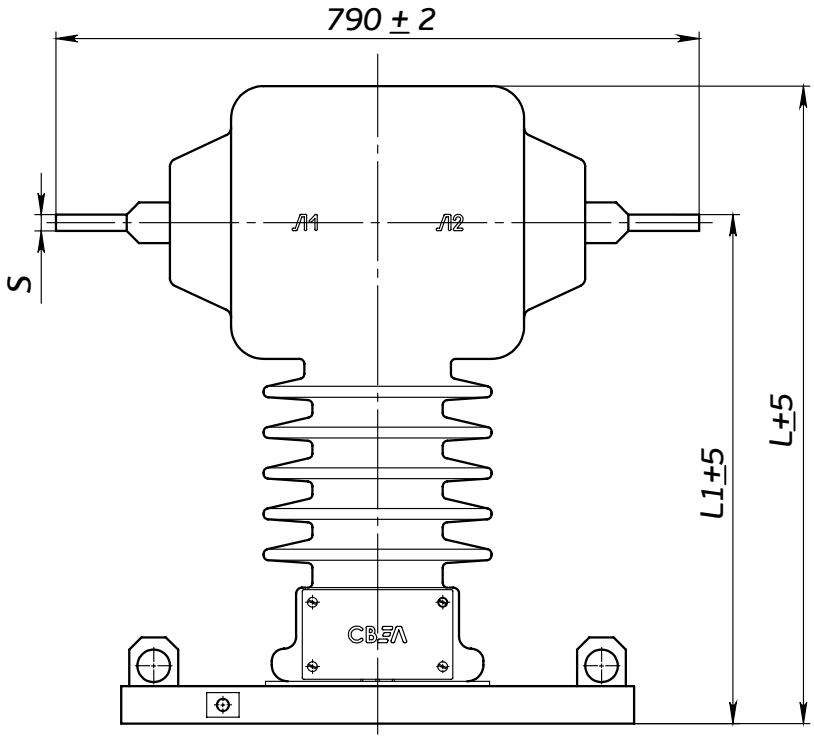


Fig. 3 General View, Current Transformer TOL-SVEL-35 III, rated primary current up to 3,000A, otherwise see Fig. 2

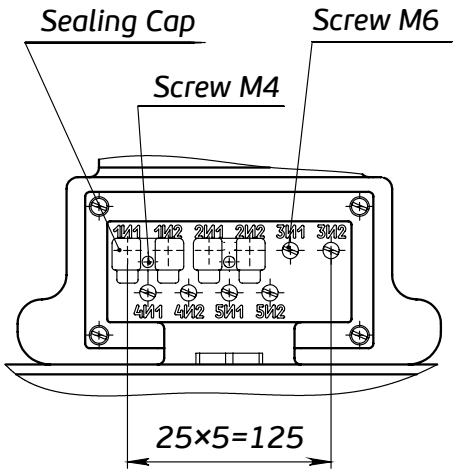


Fig. 4 Contact Board, TOL-SVEL-35 III

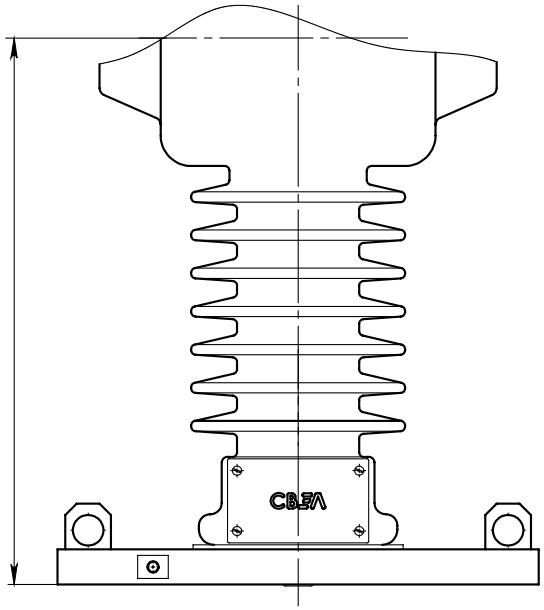


Fig. 1 – General View, Current Transformer TOL-SVEL-20 UHL2, primary rated current up to 1,000A

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TOL-SVEL-35 IIIM

PURPOSE AND SCOPE

TOL-SVEL-35 IIIM is used as a component of open type AC switchgears, up to 35kV. Such CT is mounted into a break of the current conductor.

This CT is intended to:

- ✓ Transmit signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TOL-SVEL-35 IIIM is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 1, as per GOST 15150-69.

The specific creepage path of the external insulation of this CT corresponds to average (II) and strong (III) degree of contamination according to GOST 9920-89.

Working position – vertical.

Technical specification for manufacturing 0ET.591.014.

EQUIPMENT DESCRIPTION

TOL-SVEL-35 IIIM is a single-phase, cast resin, bearing-type Current Transformer.

Such CT may have up to 5 secondary coils, each upon their own core. Terminals of the primary coil is located on the upper surface of CT, while terminals of the secondary coils are located at the bottom of CT and sealed with a protective cap.

The secondary coils' terminals intended for measurements and electricity metering are sealed with an additional protective cap.

DESIGN SPECIFICS

CT is made to ensure one or several transformation ratio, which is optionally controlled at secondary side.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils, increased short-time thermal current and peak withstand current.

The specific creepage path of the external insulation of this CT corresponds to a strong (III) and very strong (IV) degree of contamination according to GOST 9920-89 (depending on modification).

Upon customer's request, we can manufacture CTs with optional mounting dimensions and connections.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TOL-SVEL-35 III M				
Parameter	**Value**			
Modification	2.1; 2.2	3.1; 3.2	4.1; 4.2	5.2
Rated Voltage, kV	35			
Max Working Voltage, kV	40,5			
Rated Frequency, Hz	**50** or 60*			
Number of Secondary Coils	2	3	4	5
Secondary Coil Accuracy Class:				
Measurements	**0,2S**; 0,2; **0,5S; 0,5**; 1; 3			
Protection	5P; **10P**			
Rated Secondary Burden, V·A:				
Secondary Coil, measurements				
cos φ = 1	1; 2; 2,5			
cos φ = 0,8	3; 5; **10**; 15; 20; 25; 30			
Secondary Coil, protection				
cos φ = 0,8	3, 5, 10, **15**, 20, 25, 30, 50			
Accuracy limit factor, Secondary Coil, protection**, min	5 to 50			
Instrument security factor, measuring winding**, max	5 to 15			

** applicable to the transformers delivered abroad*

*** Accuracy limit values of Secondary Coil for protection and Instrument security factor of Secondary Coil for measurements are provided under the standard value of the rated secondary burden.*

Standard parameters are highlighted bold.

TECHNICAL PARAMETERS TOL-SVEL-35 IIIM

Configuration	Number of Windings	Rated Primary Current, A	Dimensions, mm		Weight, kg	Figure
			L	S		
TOL-SVEL-35 IIM-2.1	2	15-1500	505	10	100	1
		2000-3000	515	20		
TOL-SVEL-35 IIIM-2.2		15-1500	600	10	115	2
		2000-3000	610	20		
TOL-SVEL-35 IIM-3.1	3	15-1500	505	10	100	1
		2000-3000	515	20		
TOL-SVEL-35 IIIM-3.2		15-1500	600	10	115	2
		2000-3000	610	20		
TOL-SVEL-35 IIM-4.1	4	15-1500	505	10	100	1
		2000-3000	515	20		
TOL-SVEL-35 IIIM-4.2		15-1500	600	10	115	2
		2000-3000	610	20		
TOL-SVEL-35 IIIM-5.2	5	15-1500	600	10	120	2
		2000-3000	610	20		

One second thermal current, kA at rated primary current, A	Value
5	0,4
10	0,78
15	1,2
20	1,56
30	2,5
40	3,0
50	5,0
75	5,85
80	6,23
100	10,0
150	12,5 (16,0)*
200	20,0 (25,0)*
300, 400	31,5
600 – 3000	40,0

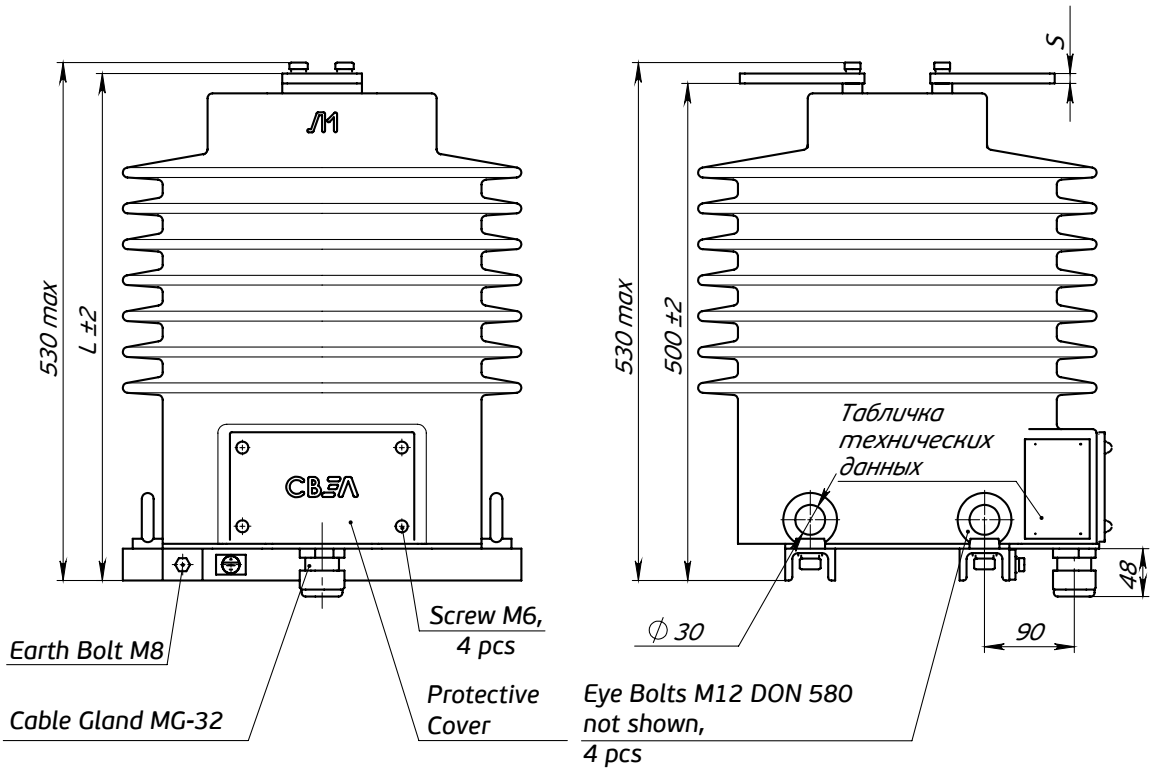
Peak withstand current kA at rated primary current, A	Value
5	1,0
10	1,98
15	3,0
20	3,98
30	6,37
40	7,65
50	12,8
75	14,9
80	15,8
100	25,5
150	31,8 (41,0)*
200	51,0 (64,0)*
300, 400	81,0
600 – 3000	102,0

**upon Customer's request, it is permitted to specify the value in parenthesis*

To obtain 3 Second thermal current, please divide the value of one second thermal current by the square root of three (1,732)

Peak withstand current shall be equal or above 2,55 one second thermal current value – as required by GOST 7746-2015 (thermal current value cannot be 60kA at Peak withstand current of 30kA).*

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TOL-SVEL-35 IIIM



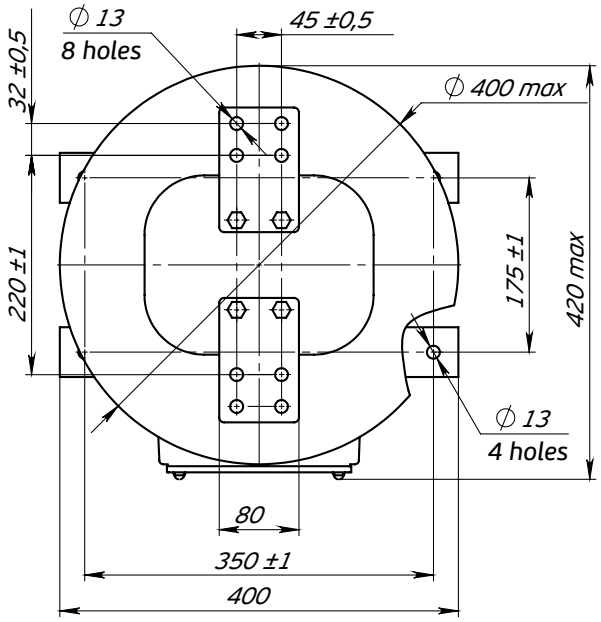


Fig. 1 – General View, Current Transformer TOL-SVEL-35 IIIM – 2.1 (3.1; 4.1)

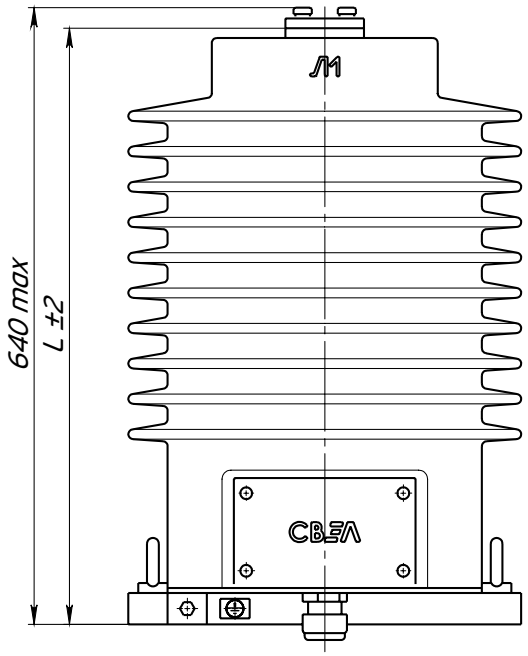


Fig. 2 – General View, Current Transformer TOL-SVEL-35 IIIM – 4.2 (2.2; 3.2; 5.2)

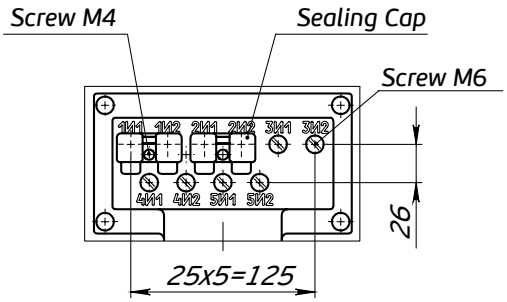


Fig. 3 – Contact Board, TOL-SVEL-35 IIIM

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TV-SVEL

PURPOSE AND SCOPE

This CT is intended for operation inside of power transformer's tank, or circuit breaker, as we as in air (subject to absence of solar radiation or precipitation).

TV-SVEL is designed to:

- ✓ Transmit signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TV-SVEL is made in U (Moderate, N), T (Tropic, T), O (Universal, U), HL (Frigid), UHL (Moderate Frigid, NF) and Environment Class, and Location Category 2, as per GOST 15150-69.

Working position – depending on bushing position.

Technical specification for manufacturing ОЕТ. 591.017.

EQUIPMENT DESCRIPTION

This CT is a single-phase embedded current transformer, voltage class 0,66kV, therefore it can be mounted on bushings of any voltage class subject to they would ensure the required characteristics without any interference of the general running, and if the location fits their mounting.

The primary coil of this CT is the bushing of the circuit breaker or power transformer, entering through the inner round-shape opening.

To obtain various transformation ratios, the secondary coil may have several taps. Terminals of the

secondary coils are made of a flexible multiconductor wire. Length of the terminals is supposed to be specified in a purchase order.

DESIGN SPECIFICS

Upon customer's request, we manufacture a CT with increased rated power of secondary coils.
Upon customer's request, we can manufacture CTs with optional mounting dimensions
CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TV-SVEL	
Parameter	**Value**
Bushing Voltage Class, kV	10; 20; 35; 110; 220; 330; 500; 750
Rated Frequency, Hz	**50**; 60*
Rated Secondary Current, A	1; 5
Rated Primary Current, A	50 to 12000
Accuracy Class	0,2S; 0,5S; 0,2; 0,5; 1; 3; 5; 10; 5P; 10P
Rated Secondary Burden, V·A:	
cos φ = 1	1; 2; 2,5
cos φ = 0,8	3; 5; 10; 15; 20; 25; 30; 40; 50; 60; 75; 100
Peak withstand current kA	7 to 85,5
Duration of short circuit current, s	
Transformers, rated voltage up to 220kV	1; 3
Transformers, rated voltage 330kV to 750kV	1; 2
Accuracy limit factor, Secondary Coil, protection	3 to 80
Instrument security factor, measuring coil	5 to 30
Outer diameter, mm	100 to 900
Inner diameter, mm	50 to 860
Height, mm	20 to 300

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TV-SVEL

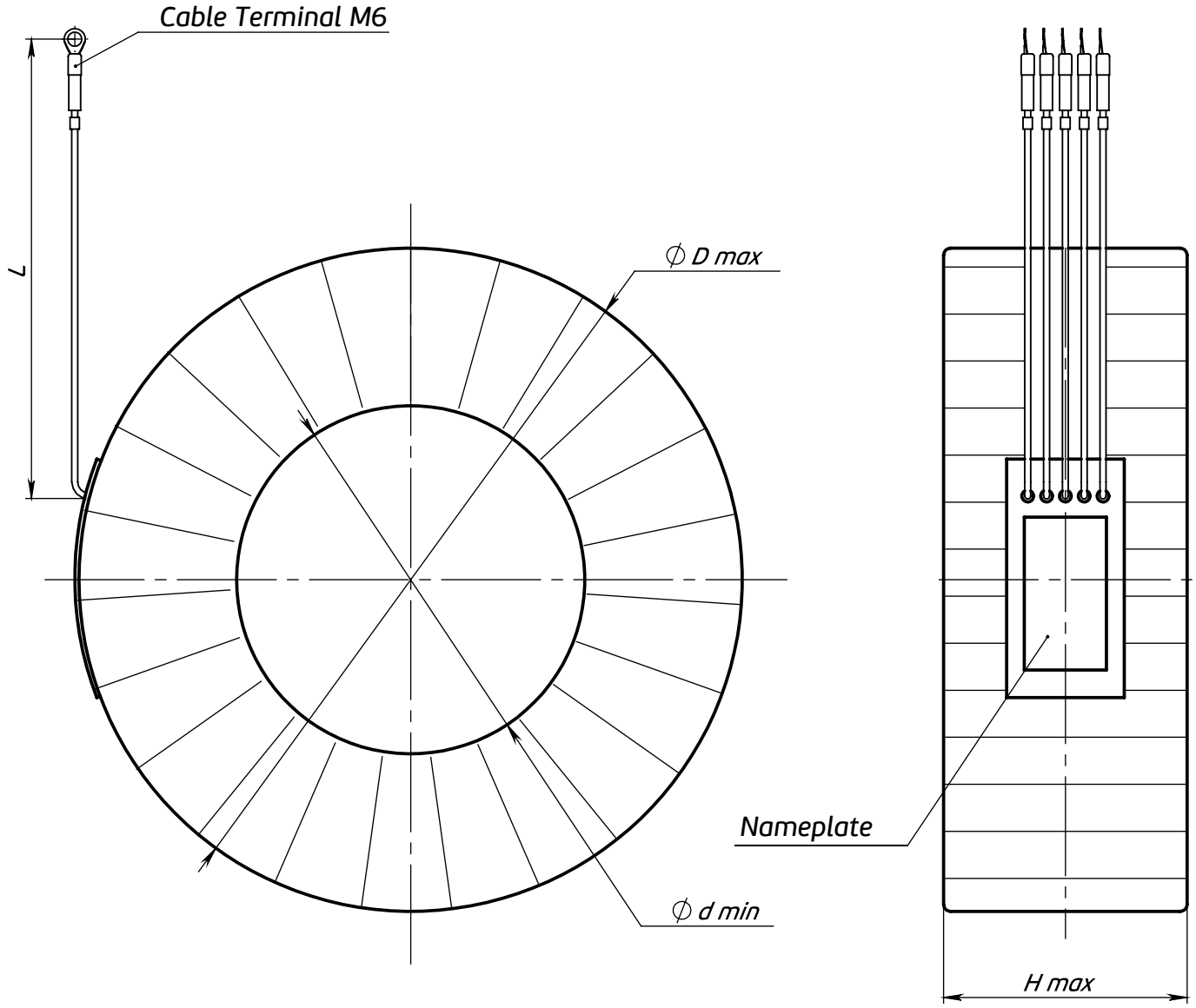


Fig. 1 – General View, Current Transformer TV-SVEL

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TV-SVEL-35(110, 220)-IX

PURPOSE AND SCOPE

TV-SVEL-35 (110, 220)-IX is used as a component of open type AC switchgears, voltage class 35kV, 110kV and 220kV. Such CT is mounted directly on the bushing of circuit breaker, power transformer or line bushing.

This CT is designed to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

TV-SVEL-35 (110, 220)-IX is made in UHL (Moderate Frigid) configuration and T (Tropic) Environment Class, and Location Category 1, as per GOST 15150-69.

Working position – depending on bushing position.

Technical specification for manufacturing ОЕТ. 591.017.

EQUIPMENT DESCRIPTION

TV-SVEL-35 (110, 220)-IX is a single-phase, cast resin embedded current transformer.

The primary coil of this CT is HV bushing of circuit breaker, power transformer, or line bushing entering through the inner round-shape opening.

Secondary coil terminals intended for measurements and metering shall be additionally covered with a sealed cap.

The contact board of this CT is protected from precipitation with a cover. Upon customer's request, to ensure tightness, CT may be delivered with cable glands at the cable exit points to the contact board.

DESIGN SPECIFICS

CT is made to ensure one or several secondary coils (up to 6, totally). To obtain various transformation ratio, secondary coils may have several taps.

Upon customer's request, we manufacture a CT with increased rated power of secondary coils, as well as ensure optional mounting dimensions.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TV-SVEL-35-IX					
Ratio	**Rated Accuracy Class**	**Rated Secondary Burden cos φ = 0,8 V·A**	**Accuracy limit factor, Secondary Coil, protection**	**Instrument security factor, Secondary Coil, measuring**	**Three second thermal current, kA (accuracy factor)**
100/1	1	5	-	12	50*
150/1	0,5S			17	
200/1		10		12	
300/1		30		7	
400/1				9	
500/1	0,2S	20		14	
100/5	1	5		11	
150/5	0,5S			15	
200/5		10		11	
300/5		30		6	
400/5				8	
500/5	0,2S	20		13	
600/5		30		11	
750/5		40			
800/5		50		9	
1000/5				8	
1200/5		100		5	
1500/5				6	
2000/5				8	
3000/5				11	

TECHNICAL PARAMETERS TV-SVEL-35-IX					
Ratio	**Rated Accuracy Class**	**Rated Secondary Burden cos φ = 0,8 V·A**	**Accuracy limit factor, Secondary Coil, protection**	**Instrument security factor, Secondary Coil, measuring**	**Three second thermal current, kA (accuracy factor)**
100/1	10P	3	26	-	(34)
150/1		5	24		
200/1		10	17		
300/1			24		
400/1		15	22		
500/1	10P (5P)		26		
100/5	10P	3	27		
150/5		5	24		
200/5		10	17		
300/5			24		
400/5		15	22		
500/5	10P (5P)		27		
600/5		20	24		
750/5			29		
800/5			31		
1000/5		30	26		
1200/5			30		
1500/5		50	24		
2000/5			30		
3000/5			39		

** Thermal Strength for this modification is specified for the coil circuited to the rated power.*

TECHNICAL PARAMETERS TV-SVEL-110-IX-1.1(1.2)					
Ratio	Accuracy Class	Rated Secondary Burden cos φ = 0,8 V·A	Accuracy limit factor, Secondary Coil, protection	Instrument security factor, Secondary Coil, measuring	Three second thermal current, kA (accuracy factor)
100/1	1	3	-	11	50*
150/1	0,5			15	
200/1		5		12	
300/1	0,5S	10		10	
400/1		20		8	
500/1		20	-	9	
600/1		30		8	
750/1		50		7	
1000/1	0,2S	30		11	
200/5	0,5	10		8	
300/5	0,5S			10	
400/5		15		9	
500/5				10	
600/5		30		8	
750/5		50		6	
1000/5	0,2S	30		10	
1200/5		40			
1500/5		50			
2000/5		75			
3000/5		100			
200/5	10P	5	22	-	
300/5		10	17		
400/5		15	16		
500/5		10	26		
600/5		15	22		
750/5		20	21		
1000/5		25	22		

** Thermal Strength for this modification is specified for the coil circuited to the rated power.*

TECHNICAL PARAMETERS TV-SVEL-110-IX-2.1(2.2)-6.1(6.2)

Ratio	Accuracy Class	Rated Secondary Burden cos φ = 0,8 V·A	Accuracy limit factor, Secondary Coil, protection	Instrument security factor, Secondary Coil, measuring	Three second thermal current, kA (accuracy factor)
200/1	0,5	5	-	10	50*
300/1	0,5S	10			
400/1		25		8	
500/1		30			
600/1					
750/1	0,2S	25		10	
800/1					
1000/1		40			
1200/1		50		8	
1500/1		75			
2000/1		100			
3000/1					
200/1	10P	10	13	-	
300/1			19		
400/1		15	17		
500/1	10P (5P)		21		
600/1		20	19		
750/1			24		
800/1			25		
1000/1		30	21		
1200/1			19		
1500/1			24		
2000/1		50	19		
3000/1			27		
200/5	0,5	5		10	
300/5	0,5S	10			
400/5		25		8	
500/5		30			
600/5					
750/5	0,2S	25		10	
800/5					
1000/5		40			

TECHNICAL PARAMETERS TV-SVEL-110-IX-2.1(2.2)-6.1(6.2)

Ratio	Accuracy Class	Rated Secondary Burden cos φ = 0,8 V·A	Accuracy limit factor, Secondary Coil, protection	Instrument security factor, Secondary Coil, measuring	Three second thermal current, kA (accuracy factor)
1200/5	0,2S	50	27	8	50*
1500/5		75			
2000/5		100			
3000/5					
200/5	10P	10	13	-	
300/5			19		
400/5		15	17		
500/5	10P (5P)		21		
600/5		20	19		
750/5			23		
800/5			24		
1000/5		30	20		
1200/5			24		
1500/5			29		
2000/5		50	23		
3000/5			29		

** Thermal Strength for this modification is specified for the coil circuited to the rated power.*

TECHNICAL PARAMETERS TV-SVEL-110-IX-3

Ratio	Accuracy Class	Rated Secondary Burden cos φ = 0,8 V·A	Accuracy limit factor, Secondary Coil, protection	Instrument security factor, Secondary Coil, measuring	Three second thermal current, kA (accuracy factor)
300/1	0,5S	10	-	10	50*
400/1		25		8	
500/1		50		5	
600/1		50			
	0,2S	10		19	
750/1	0,5S	50		7	
	0,2S	15		16	

TECHNICAL PARAMETERS TV-SVEL-110-IX-3					
Ratio	**Accuracy Class**	**Rated Secondary Burden cos φ = 0,8 V·A**	**Accuracy limit factor, Secondary Coil, protection**	**Instrument security factor, Secondary Coil, measuring**	**Three second thermal current, kA (accuracy factor)**
1000/1	0,5S	50	-	8	50*
	0,2S	30		12	
1200/1		50		9	
300/1	10P	10	23	-	
400/1		15	21		
500/1			26		
600/1		20	23		
750/1		25			
1000/1		30	25		
1200/1			30		
300/5	0,5S	10	-	10	
400/5		25		7	
500/5		50		6	
600/5				5	
	0,2S	10		16	
750/5	0,5S	50		6	
	0,2S	15		14	
1000/5	0,5S	50		8	
	0,2S	30		10	
1200/5		50		8	
1500/5				9	
2000/5		100		7	
300/5	10P	10	27	-	
400/5		15	25		
500/5			30		
600/5	10P	20	27		
750/5		25			
1000/5		30	24		
1200/5			28		
1500/5			33		
2000/5			41		

** Thermal Strength for this modification is specified for the coil circuited to the rated power.*

TECHNICAL PARAMETERS TV-SVEL-220-IX				
Ratio	**Accuracy Class**	**Rated Secondary Burden cos φ = 0,8 V·A**	**Instrument security factor, Secondary Coil, measuring**	**Three second thermal current, kA (accuracy factor)**
200/1	0,5	5	37	50*
300/1	0,5S	10	29	
400/1		20	20	
500/1		30	17	
600/1		50	13	
750/1			16	
1000/1	0,2S	25	34	
1200/1		40	27	
1500/1		50		
2000/1			34	
200/5	0,5	5	31	
300/5	0,5S	10	25	
400/5		20	18	
500/5		30	16	
600/5		50	12	
750/5			14	
1000/5	0,2S	25	32	
1200/5		40	26	
1500/5		50		
2000/5			31	

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TV-SVEL-35-IX

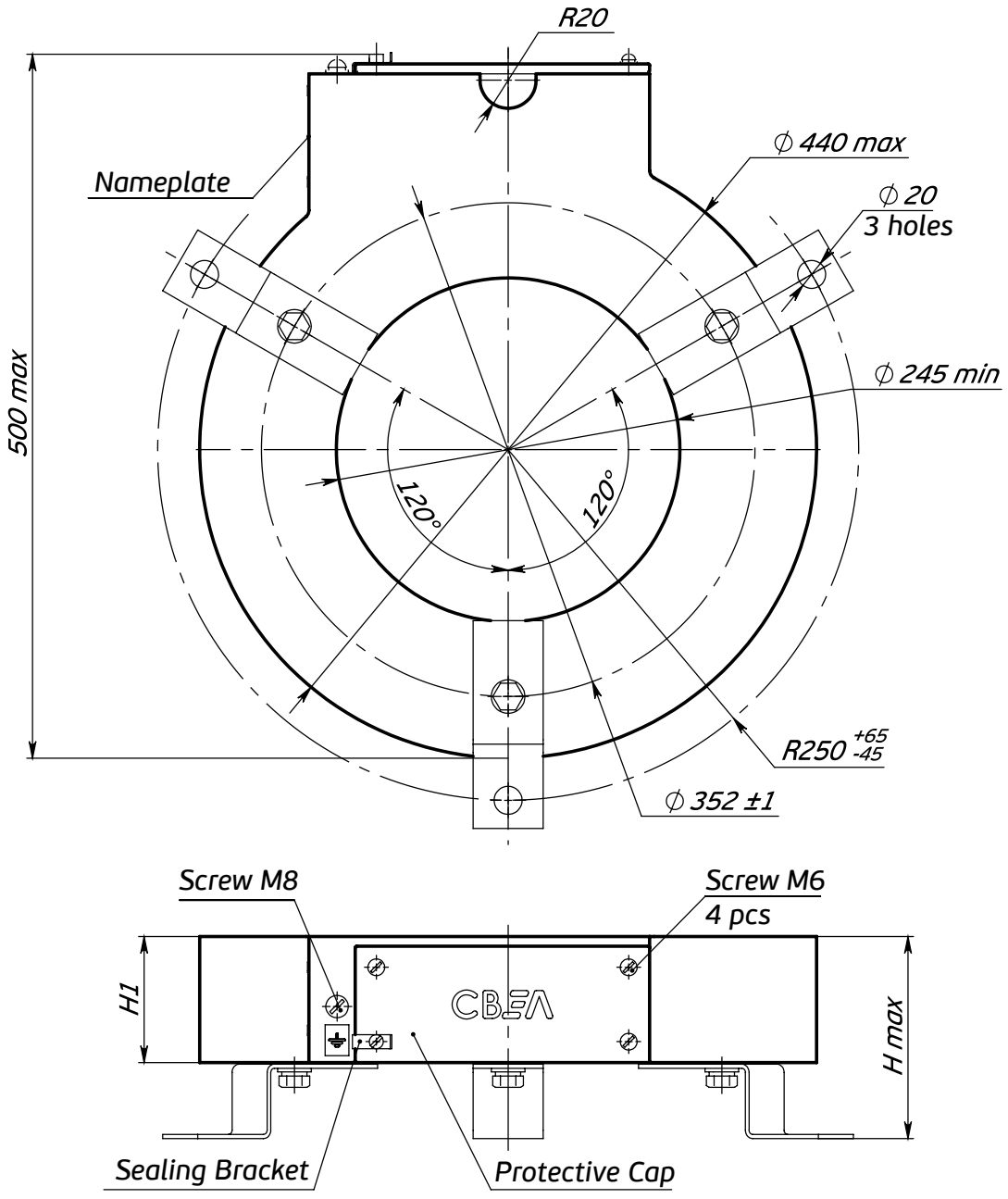


Fig. 1 – General View, Current Transformer TV-SVEL-35-IX-1.1

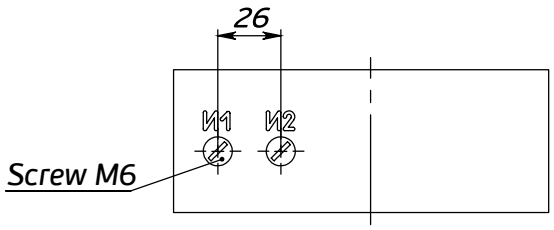


Fig. 2 – Contact Board, TV-SVEL-35-IX-1.1

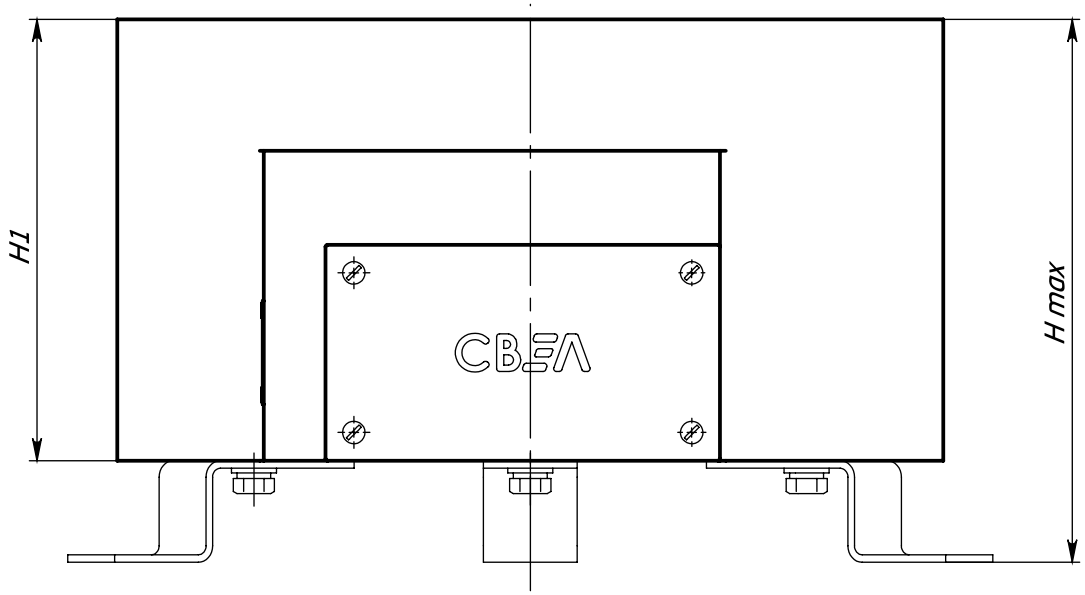


Fig. 3 – General View, Current Transformer TV-SVEL-35-IX-2.1 (6.1), otherwise see Fig. 1

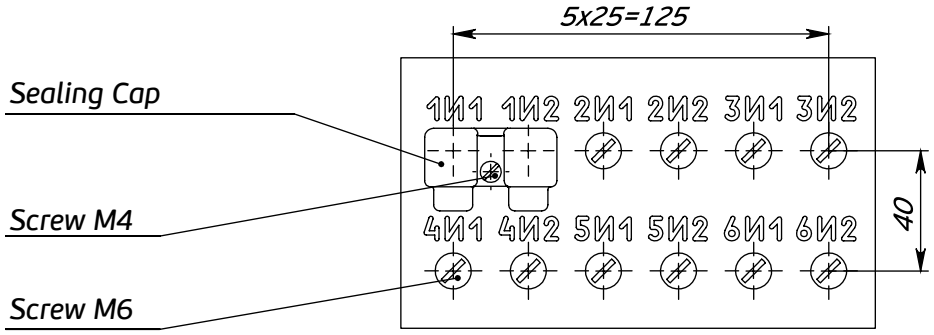


Fig. 4 – Contact Board, Current Transformer TV-SVEL-35-IX-2.1 (6.1)

TECHNICAL PARAMETERS TV-SVEL-35-IX (1.1 - 6.1)

Configuration	Number of Windings (max)	Dimensions, mm		Weight, kg	Figure
		N1	N		
TV-SVEL-35-IX-1.1	1	90	145	35	1, 2
TV-SVEL-35-IX-2.1	2	165	220	70	3, 4
TV-SVEL-35-IX-3.1	3	235	290	105	
TV-SVEL-35-IX-4.1	4	305	360	140	
TV-SVEL-35-IX-5.1	5	375	430	170	
TV-SVEL-35-IX-6.1	6	445	500	205	

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TV-SVEL-110-IX

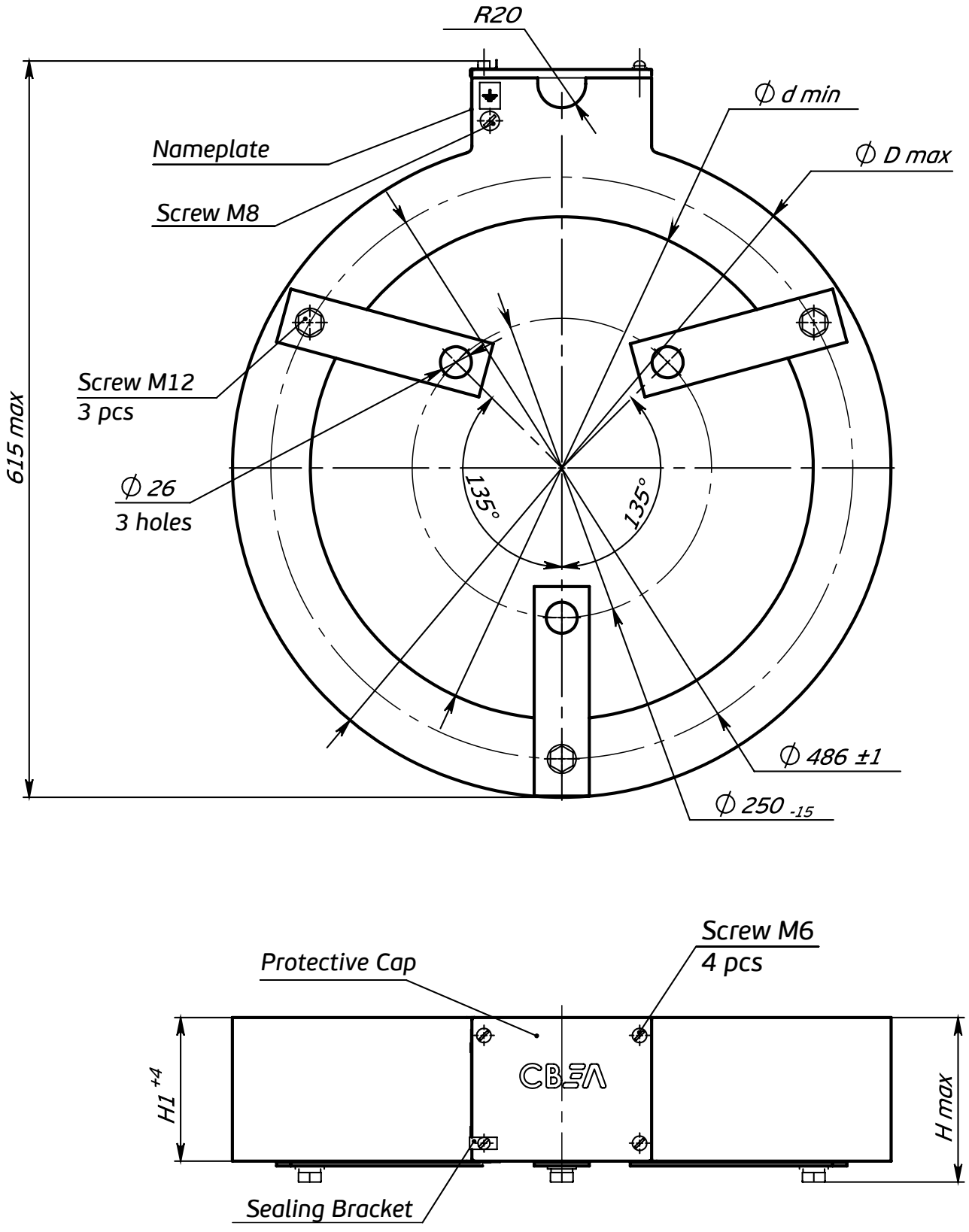


Fig. 1 – General View, Current Transformer TV-SVEL-110-IX-1.1

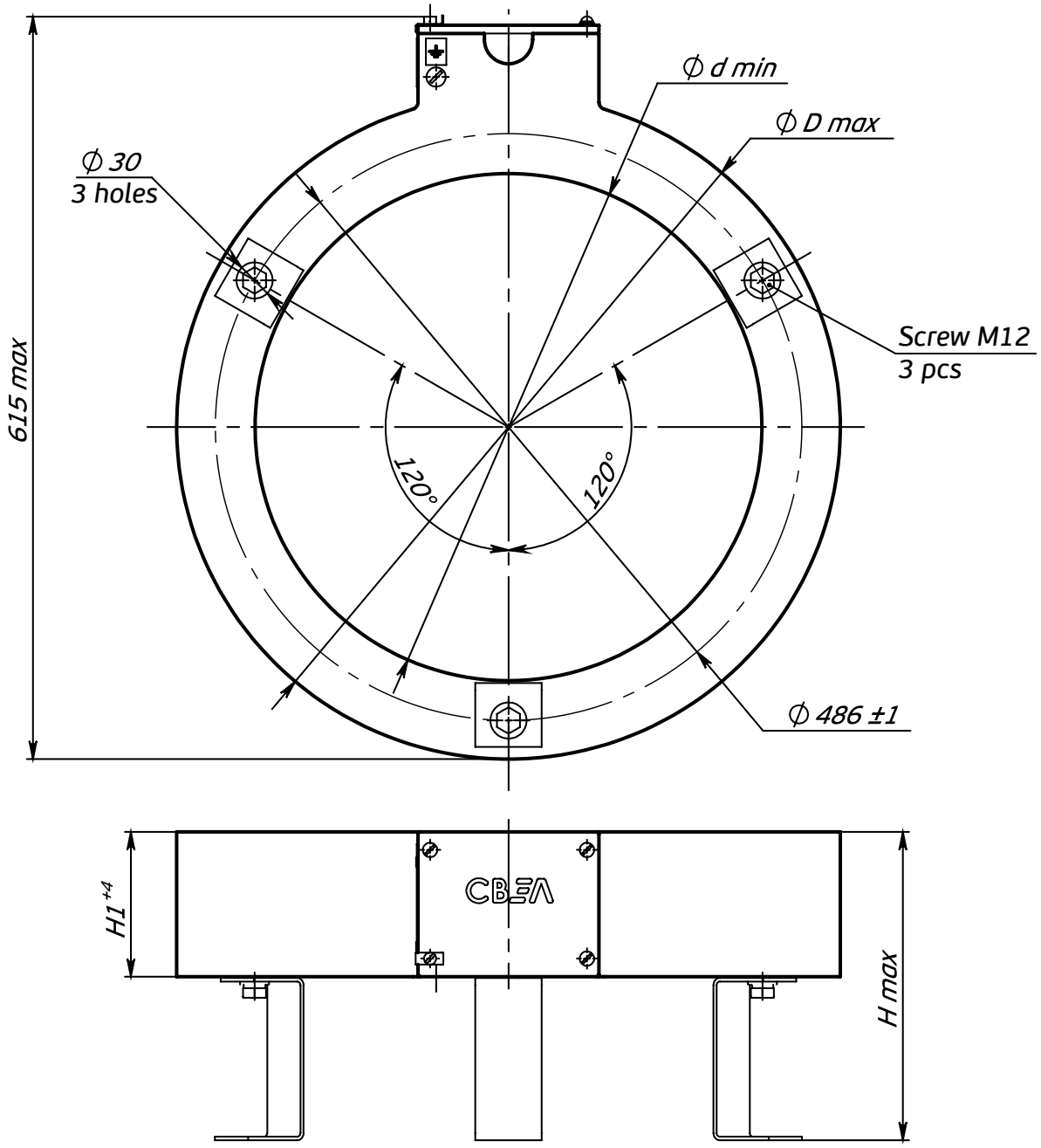


Fig. 2 – General View, Current Transformer TV-SVEL-110-IX-1.2, otherwise see Fig. 1

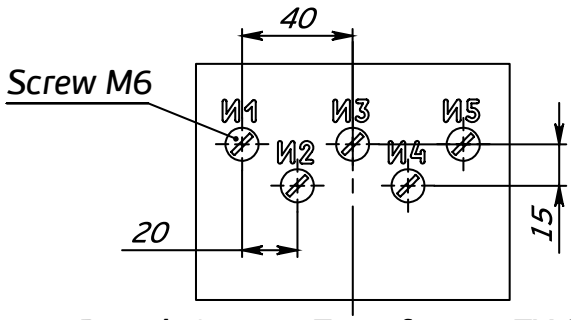


Fig. 3 – Contact Board, Current Transformer TV-SVEL-110-IX-1.1 (1.2)

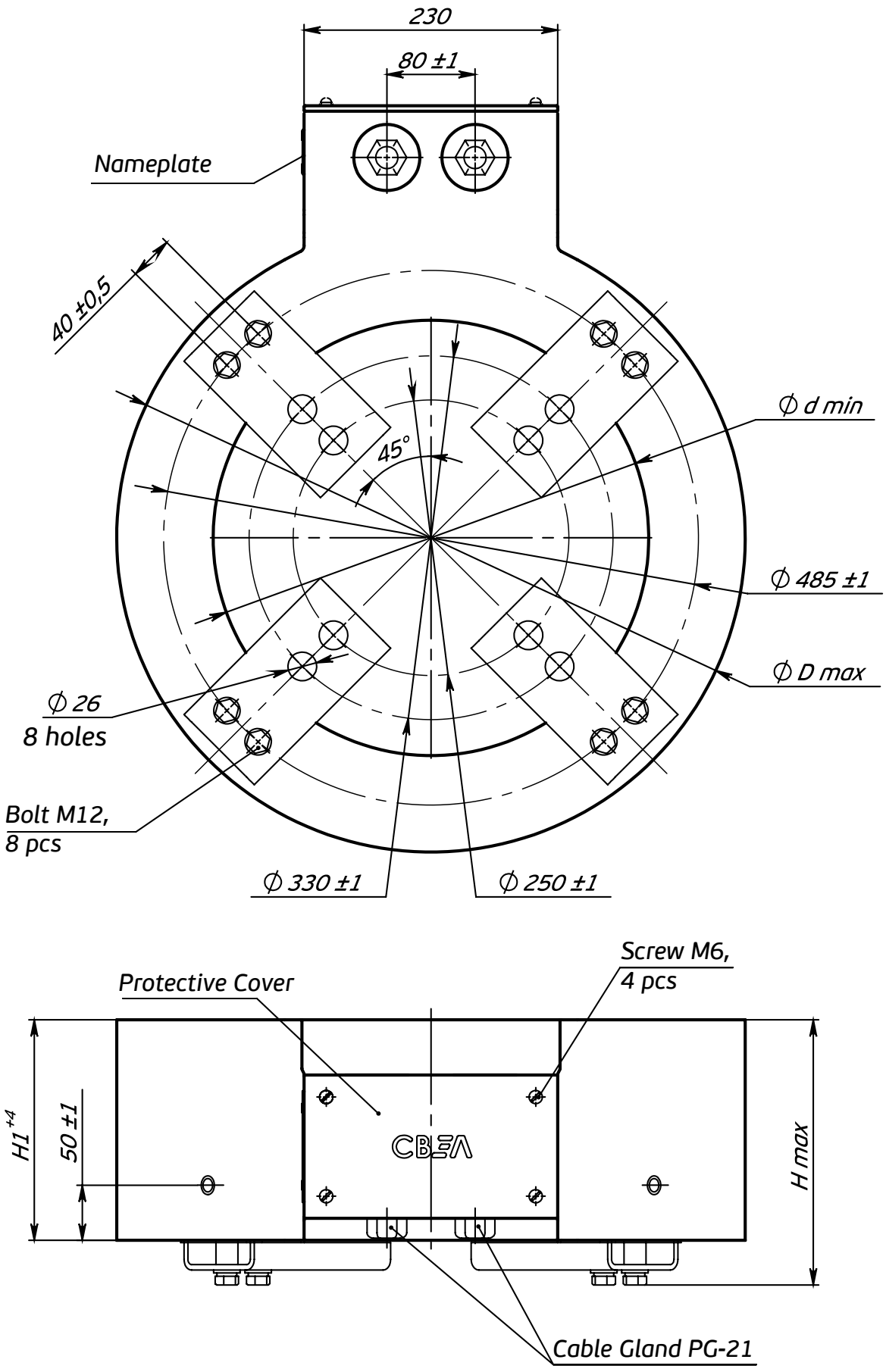


Fig. 4 – General View, Current Transformer TV-SVEL-110-IX-2.1 (6.1)

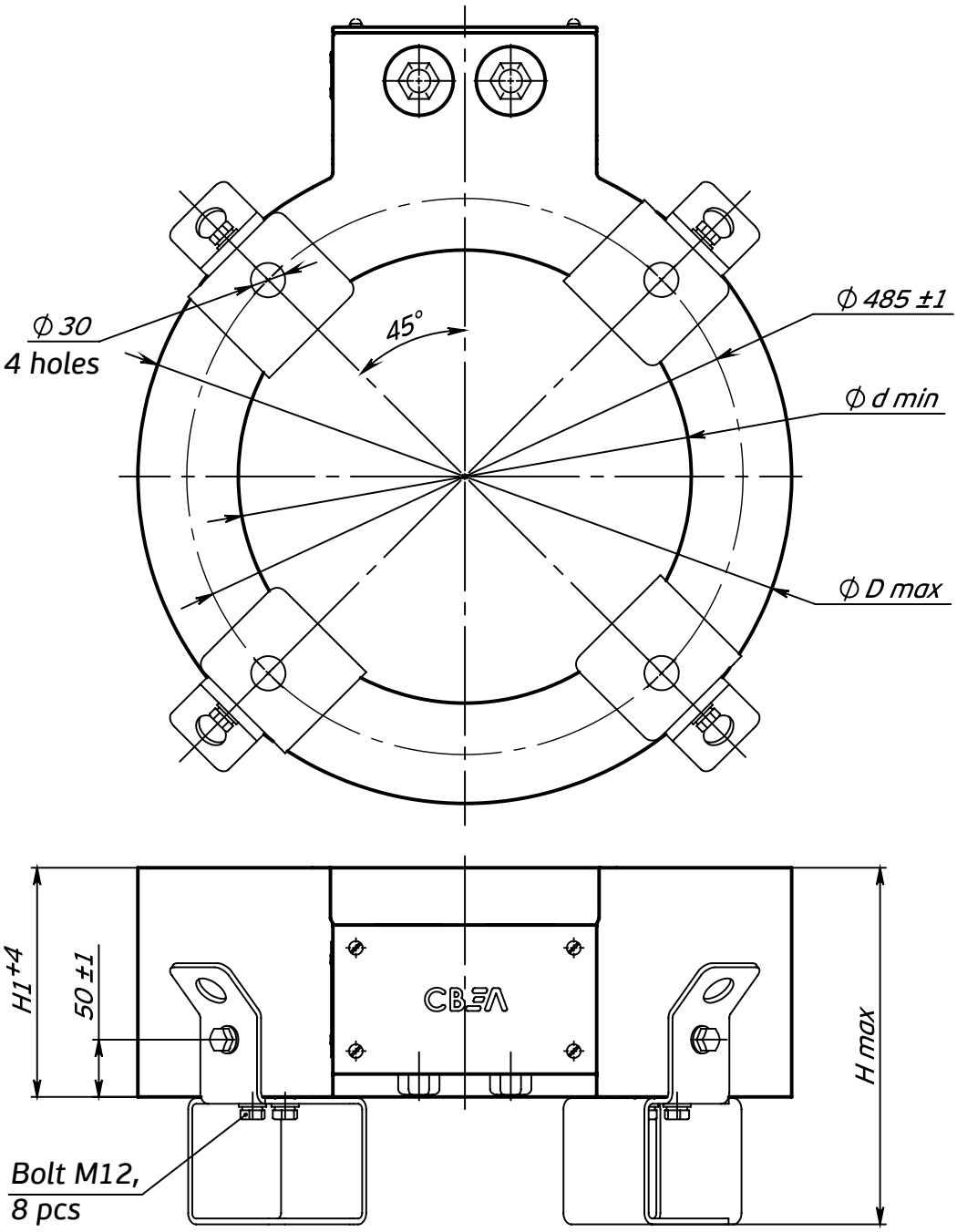


Fig. 5 – General View, Current Transformer TV-SVEL-110-IX-2.2 (6.2), otherwise see Fig. 4

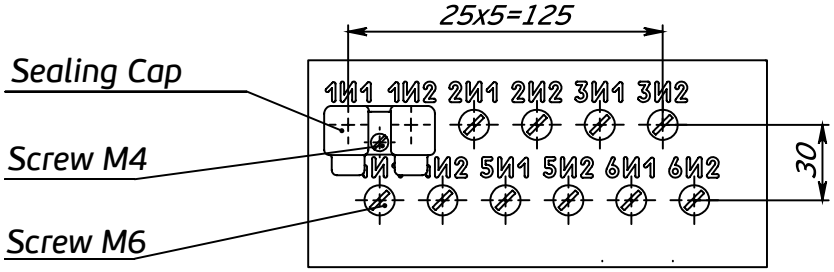


Fig. 6 – Contact Board, Current Transformer TV-SVEL-110-IX-2.1 (2.2) – 6.1 (6.2)

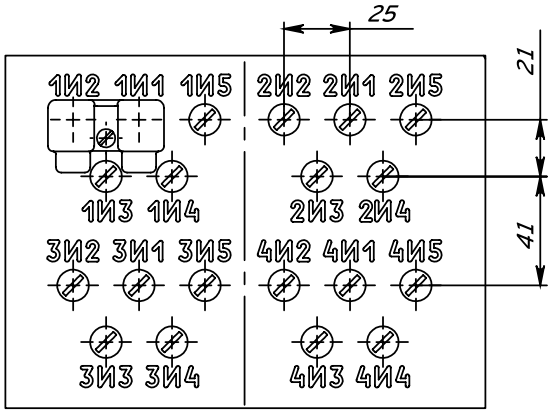


Fig. 7 – Contact Board, Current Transformer TV-SVEL-110-IX-2.1 (2.2) – 4.1 (4.2), control at secondary side, otherwise see Fig. 6

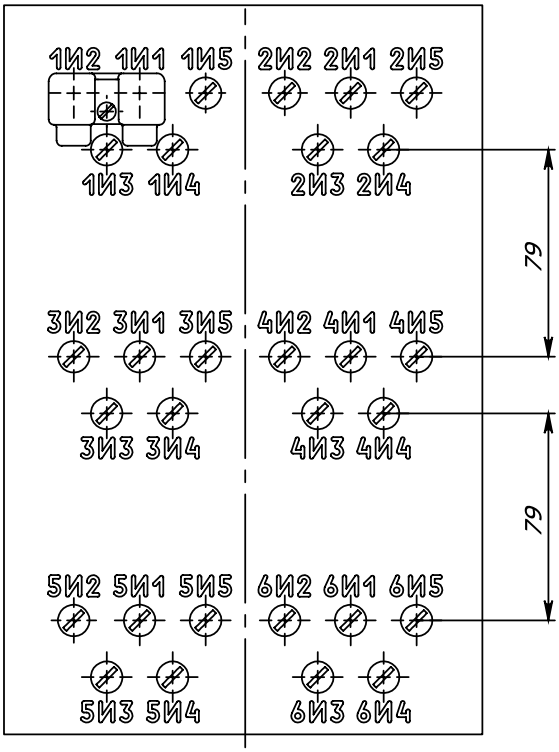


Fig. 8 – Contact Board, Current Transformer TV-SVEL-110-IX-5.1 (5.2) – 6.1 (6.2), control at secondary side, otherwise see Fig. 7

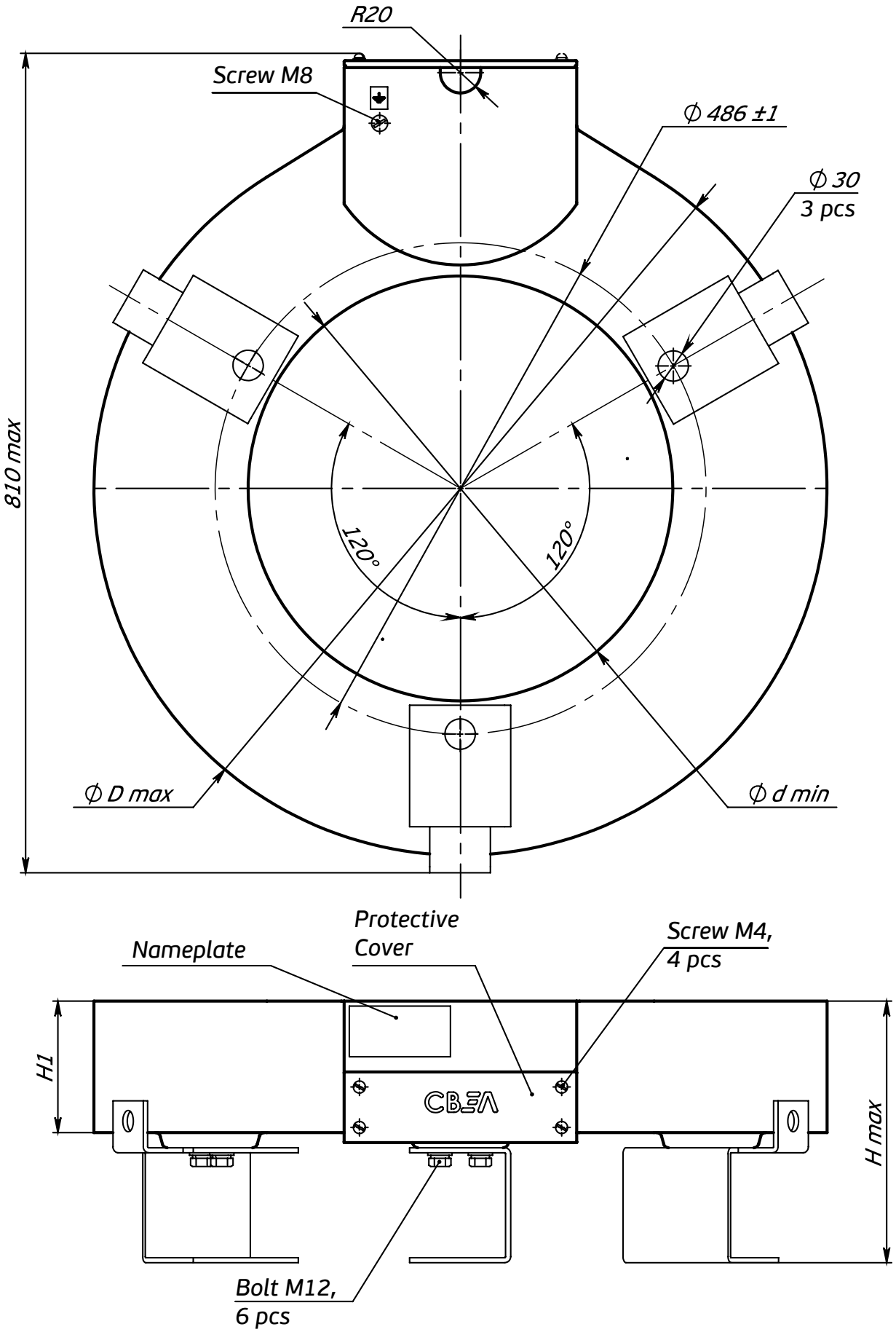


Fig. 9 - General View, Current Transformer TV-SVEL-110-IX-3

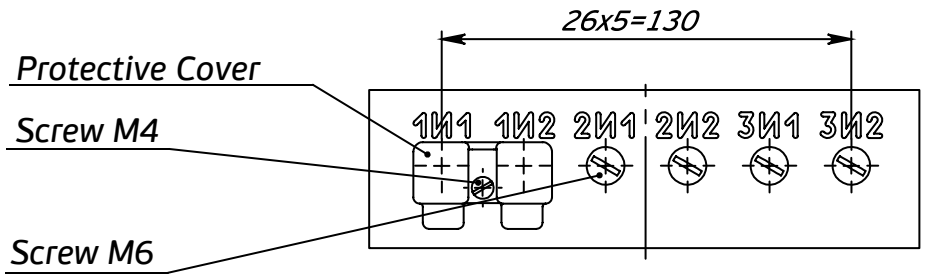


Fig. 10 – Contact Board, Current Transformer TV-SVEL-110-IX-3

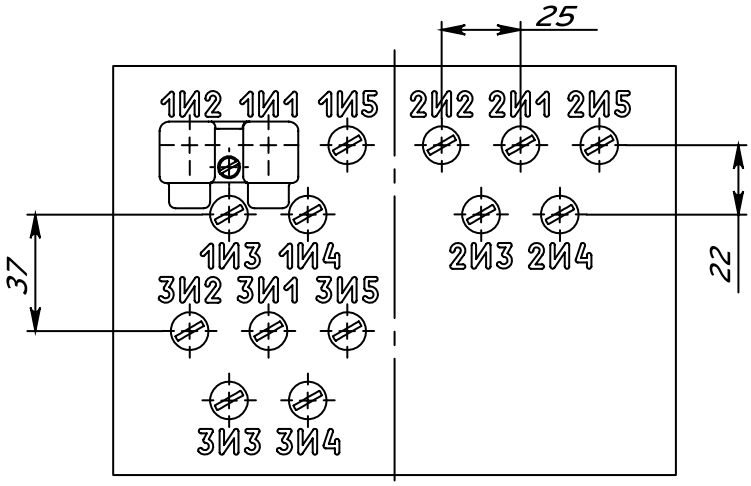


Fig. 11 – Contact Board, Current Transformer TV-SVEL-110-IX-3, otherwise see Fig, 10

TECHNICAL PARAMETERS TV-SVEL-110-IX

Configuration	Number of Windings (max)	Dimensions, mm				Weight, kg	Figure
		D	d	H1	H		
TV-SVEL-110-IX-1.1	1	550	420	120	140	35	1, 3
TV-SVEL-110-IX-1.2					255		2, 3
TV-SVEL-110-IX-2.1	2	570	395	150	185	55	4, 6, 7
				200	235	70	
TV-SVEL-110-IX-3.1	3			250	285	95	
TV-SVEL-110-IX-4.1	4			300	335	125	
TV-SVEL-110-IX-5.1	5			350	385	155	4, 6, 8
TV-SVEL-110-IX-6.1	6			400	435	180	
TV-SVEL-110-IX-2.2	2			150	260	55	5, 6, 7
				200	310	70	
TV-SVEL-110-IX-3.2	3			250	360	95	
TV-SVEL-110-IX-4.2	4			300	410	125	
TV-SVEL-110-IX-5.2	5			350	460	155	5, 6, 8
TV-SVEL-110-IX-6.2	6			400	510	180	
TV-SVEL-110-IX-3	3	725	420	145	260	120	9, 10, 11

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
TV-SVEL-220-IX

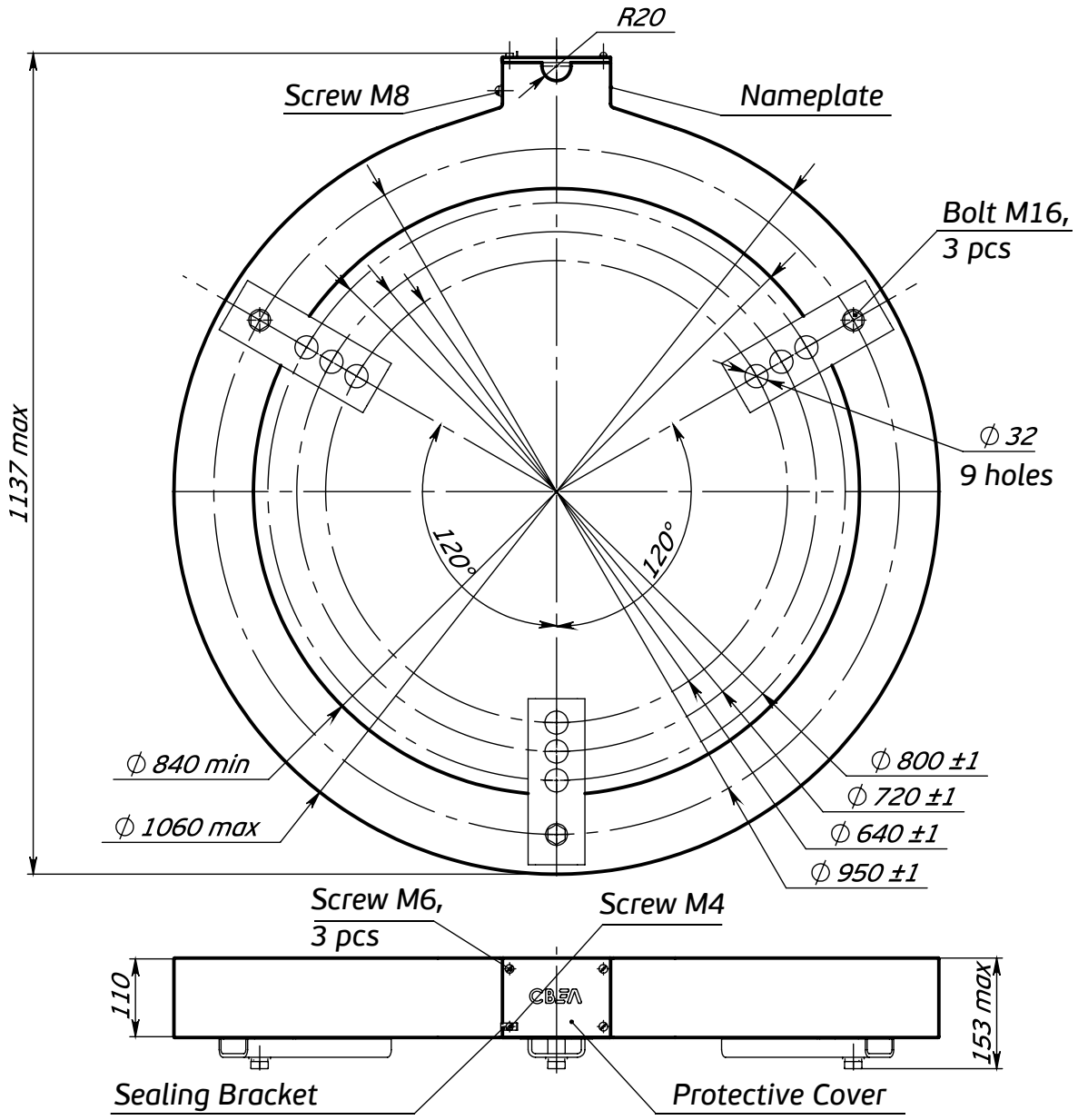


Fig. 1 – General View, Current Transformer TV-SVEL-220-IX

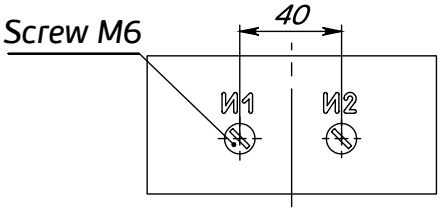


Fig. 2 – Contact Board, Current Transformer TV-SVEL-220-IX

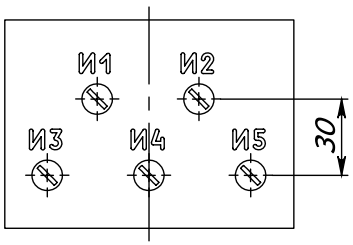


Fig. 3 – Contact Board, Current Transformer TV-SVEL-220-IX, control at secondary side, otherwise see Fig. 2

Weight, max 110 kg

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TSHL-SVEL-0,66-1(2)

PURPOSE AND SCOPE

This CT is used as a component of both indoors and outdoors AC switchgears, up to 0,66kV. Such CT is mounted into the busbar.

This CT is intended to:

- ✓ Transmit measuring signals to measuring units, protection, switch, alarm, and control devices
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

This CT is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 2, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing ОЕТ. 591.009.

EQUIPMENT DESCRIPTION

TSHL-SVEL-0,66 is a single-phase, cast resin busbar Current Transformer.

This CT has one secondary coil on the core. while terminals of the secondary coils are located at the bottom of CT and sealed with a protective cap. The primary coil of this CT is the busbar of the switchgear entering through the inner square-shape opening.

The secondary coils' terminals are located at the top of the CT unit and equipped with a protective cap.

DESIGN SPECIFICS

The rated burden of the secondary coil – up to 30VA.

CT may have terminals of the secondary coils made of flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

CT for differential protection are delivered upon a special request.

TECHNICAL PARAMETERS TSHL-SVEL-0,66		
Parameter	**Value**	
Modification	1(2)	2.1
Rated Voltage, kV	0,66	
Max Working Voltage, kV	0,8	
Rated Frequency, Hz	**50;** 60*	
Rated Secondary Current, A	1; 5	
Rated Primary Current, A	300; 400; 500; 600; 750; 800; 1000; 1200; 1500; 2000	2500; 3000; 4000;5000
Accuracy Class	**0,2S;** 0,2; **0,5S; 0,5**; 1; 3; 5P; 10P	
Rated Secondary Burden, V·A:		
Secondary Coil, measurements		
cos φ = 1	1; 2; **2,5**	
cos φ = 0,8	3; 5; **10**; **15**; 20; 25; 30; 50	
Instrument security factor, Secondary Coil, measurements	2 to 30	

** applicable to the transformers delivered abroad*

*** Instrument security factor of Secondary Coil for measurements are provided under the standard value of the rated secondary burden.*

Standard parameters are highlighted bold.

Parameters of secondary burden, secondary current, accuracy limit factor for protection, instrument security factor of secondary measuring coils, number of secondary coils, and accuracy classes shall be specified in purchase orders.

Transformers may be manufactured with flexible multi-strand conductor. Length of the terminals is supposed to be specified in a purchase order.

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TSHL-SVEL-0,66-1(2)

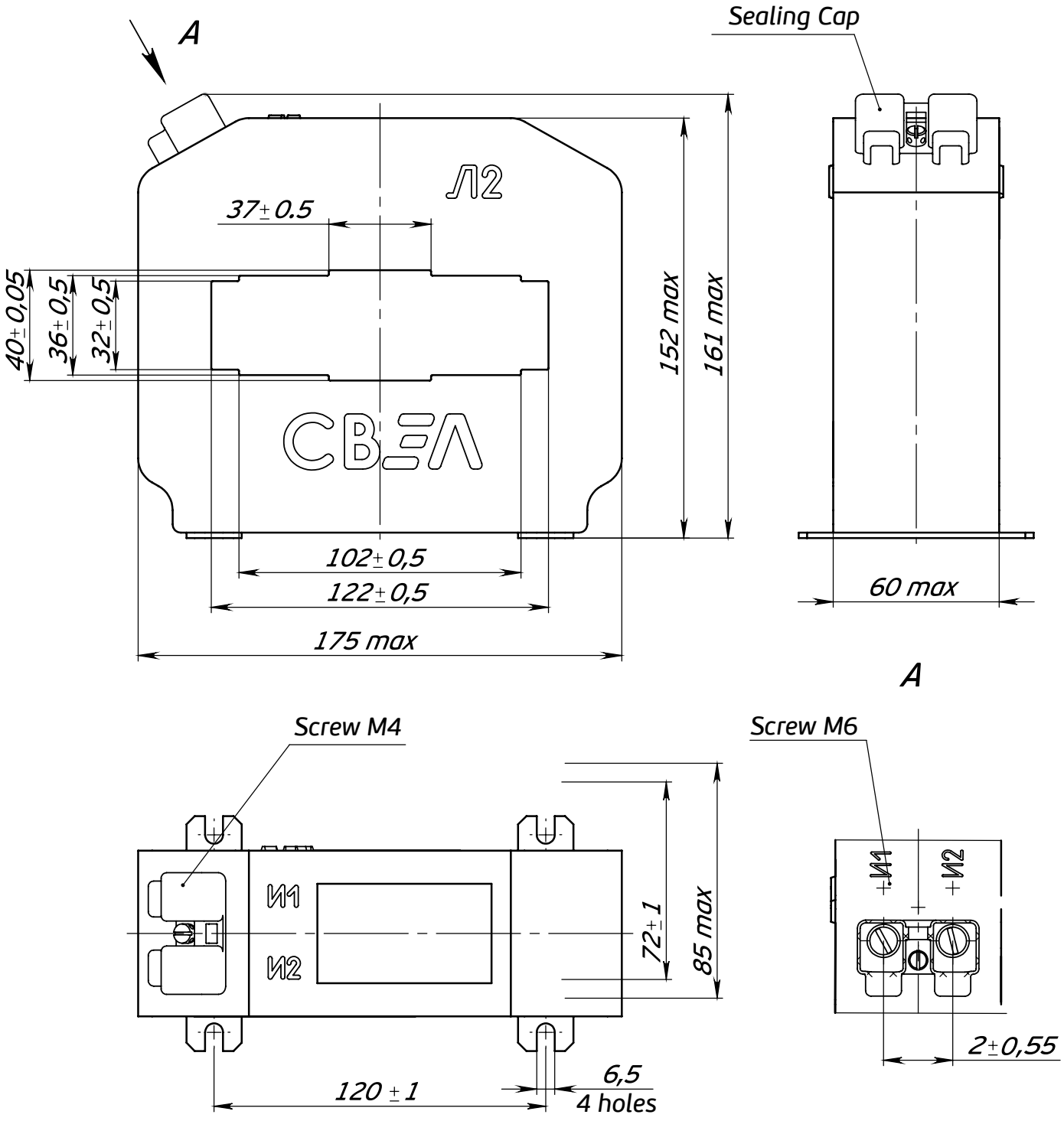


Fig. 1 – General View, Current Transformer TSHL-SVEL-0.66-1

Weight, max 3 kg

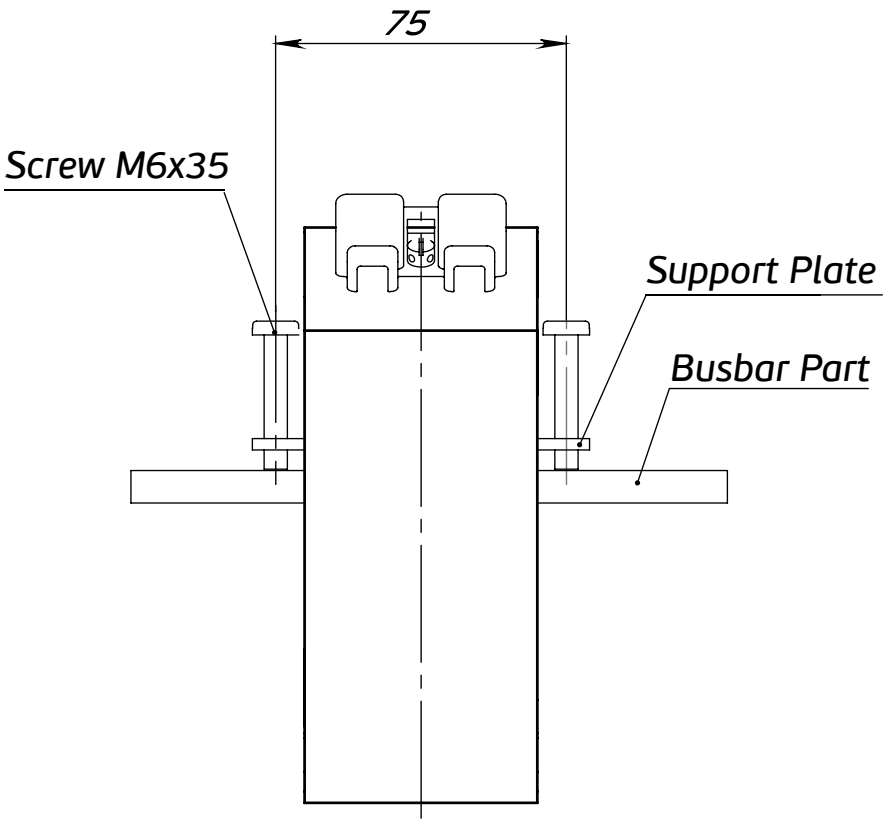


Fig. 2 – General View, Current Transformer TSHL-SVEL-0.66-2, otherwise see Fig. 1

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

TZLK(R)-SVEL-0,66

PURPOSE AND SCOPE

This CT is made in UHL (Moderate Frigid) configuration, and Location Category 2, as per GOST 15150-69 and GOST 15543.1, and intended for power supply of relay circuits protecting from earth faults at separate wires of the three-phase cable via transforming of the zero sequence currents generated at the moment, and mounted on the cable.

This CT is operated under the following conditions:

- ✓ Max ambient temperature +50°C
- ✓ Min ambient temperature -60°C
- ✓ Relative humidity 100% at +25°C
- ✓ Altitude – up to 1,000m
- ✓ Non-explosive environment, free from any conducting dust, chemically active gas or vapor in concentrations capable to destroy metals – Type II Atmosphere, as per GOST 15150
- ✓ Working position - optional.

DESIGN SPECIFICS

This CT is a single-phase, bus type cast resin current transformer.

It has one secondary coil. The wires of the three-phase cable passing through the inner round opening are used as primary coil.

TECHNICAL PARAMETERS TZLK-SVEL-0,66

Parameter		Value							
Modification		70		100		125		200	
Rated Voltage, kV		0,66							
Max Working Voltage, kV		0,72							
Rated Frequency, Hz		50							
Rated Transformation Ratio		30/1						60/1	
Number of Secondary Coils		1							
Current Set, A	Relay Scale Pitch, A								
For PT-140/0.2	0,1-0,2	0,1		0,1		0,1		0,1	
For PT3-51	0,02-0,1	0,03		0,03		0,032		0,03	
Protection response, primary, A, max		PT-140/0,2	PT3-51	PT-140/0,2	PT3-51	PT-140/0,2	PT3-51	PT-140/0,2	PT3-51
For 1 transformer		8,5	2,5	8,5	2,5	8,5	2,8	8,5	2,8
For 2 transformers in series		10,2	3,2	10,2	3,2	10,2	3,2	10,2	3,2
For 2 transformers in parallel		12,5	4,8	12,5	4,8	12,5	4,8	12,5	4,8
One second thermal current, A		140							
Environment Category/ Class		UHL2							
Opening Dia for incoming cable, mm		70		100		125		205	
Dimensions, mm (BxLxW)		160x144x82		216x206x82		238x230x82		320x308x82	
Mounting dimensions, F, mm		100		130		130		180	

TECHNICAL PARAMETERS TZLK-SVEL-0,66

Parameter		Value							
Rated Voltage, kV		0,66							
Max Working Voltage, kV		0,72							
Frequency, Hz		50							
Modification		70		100		125		200	
Transformation Ratio		30/1						60/1	
Number of Secondary Coils		1							
Current Set, A	Relay Scale Pitch, A								
For PT-140/0.2	0,1-0,2	0,1							
For PT3-51	0,02-0,1	0,03							
Protection response, primary, A, max		PT-140/0,2	PT3-51	PT-140/0,2	PT3-51	PT-140/0,2	PT3-51	PT-140/0,2	PT3-51
For 1 transformer		25	3	25	3	25	3	25	3
For 2 transformers in series		30	4	30	4	30	4	30	4
For 2 transformers in parallel		45	4,5	45	4,5	45	4,5	45	4,5
One second thermal current, A		140							
Environment Category/ Class		UHL2							
Opening Dia for incoming cable, mm		72		102		127		205	
Dimensions, mm (BxLxW)		210x170x60		250x205x60		270x230x60		360x310x60	
Mounting dimensions, F, mm		100		130		130		180	

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TZLK-SVEL-0,66

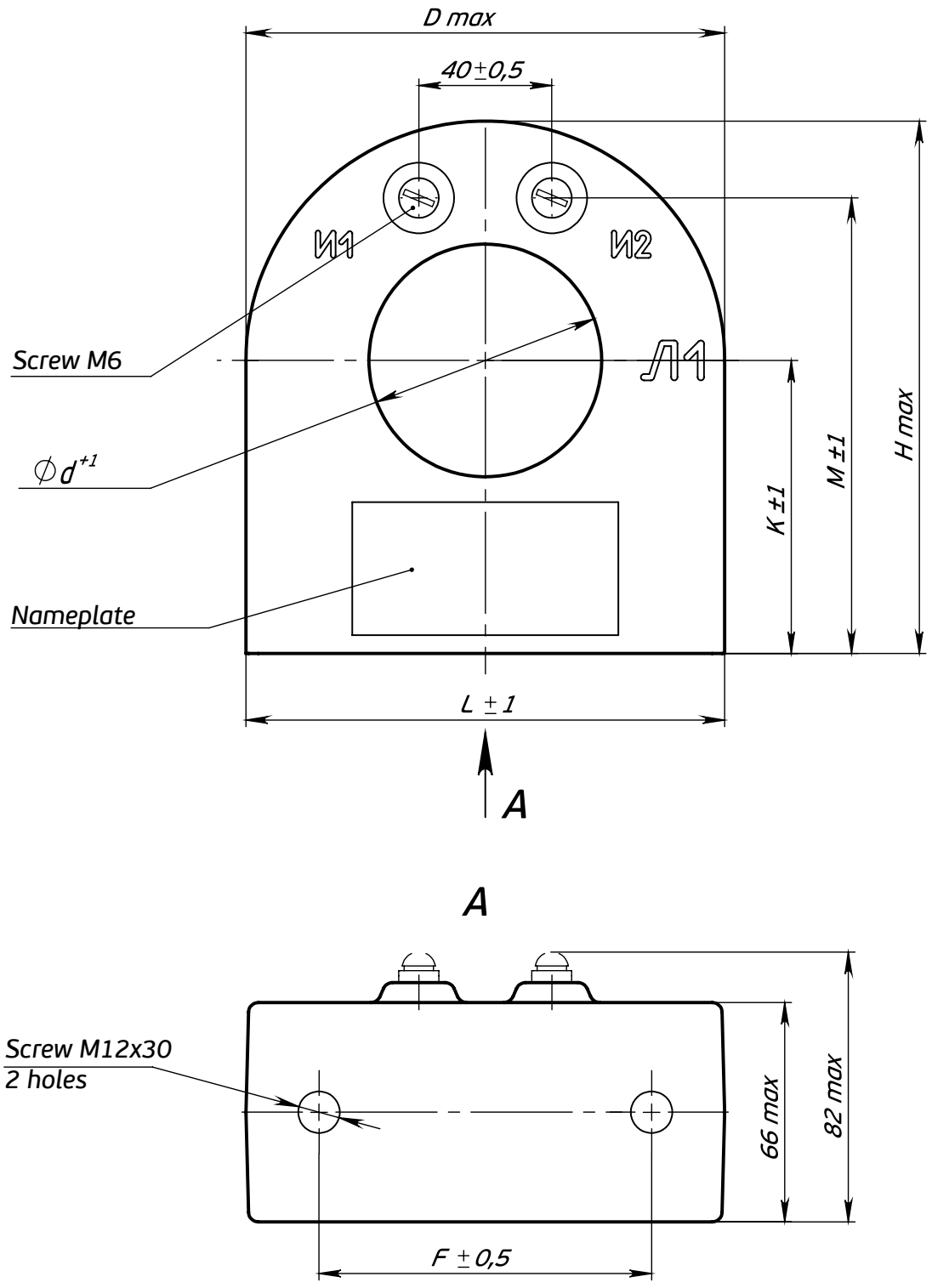


Fig. 1 – General View, Current Transformer TZLK-SVEL-0.66-70 (100)

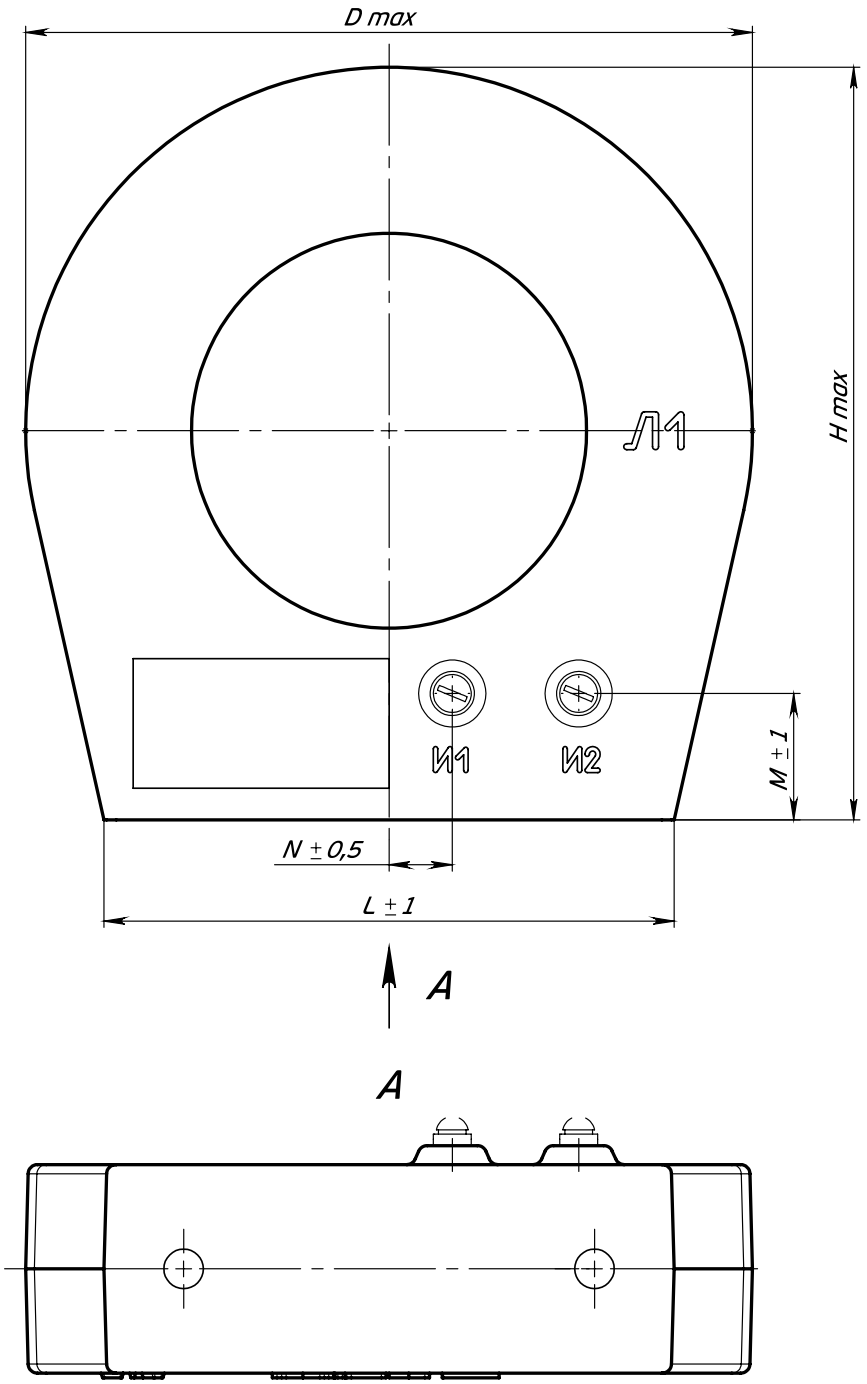


Fig. 2 – General View, Current Transformer TZLK-SVEL-0.66-125 (200), otherwise see Fig. 1

TECHNICAL PARAMETERS TZLK-SVEL-0,66

TYPE	Ratio	Dimensions, mm								Weight, kg	Figure
		M	F	d	D	L	H	K	N		
TZLK-SVEL-0,66-70	30/1	137	100	70	144	144	160	88	-	2,8	1
TZLK-SVEL-0,66-100		187	130	100	206	170	216	113		4,9	
TZLK-SVEL-0,66-125		40		125	230	180	238	123	20	5,5	2
TZLK-SVEL-0,66-200	60/1		180	205	308	250	320	165	40	8,8	

DIMENSION, MOUNTING AND CONNECTION DRAWINGS TZLK-SVEL-0,66

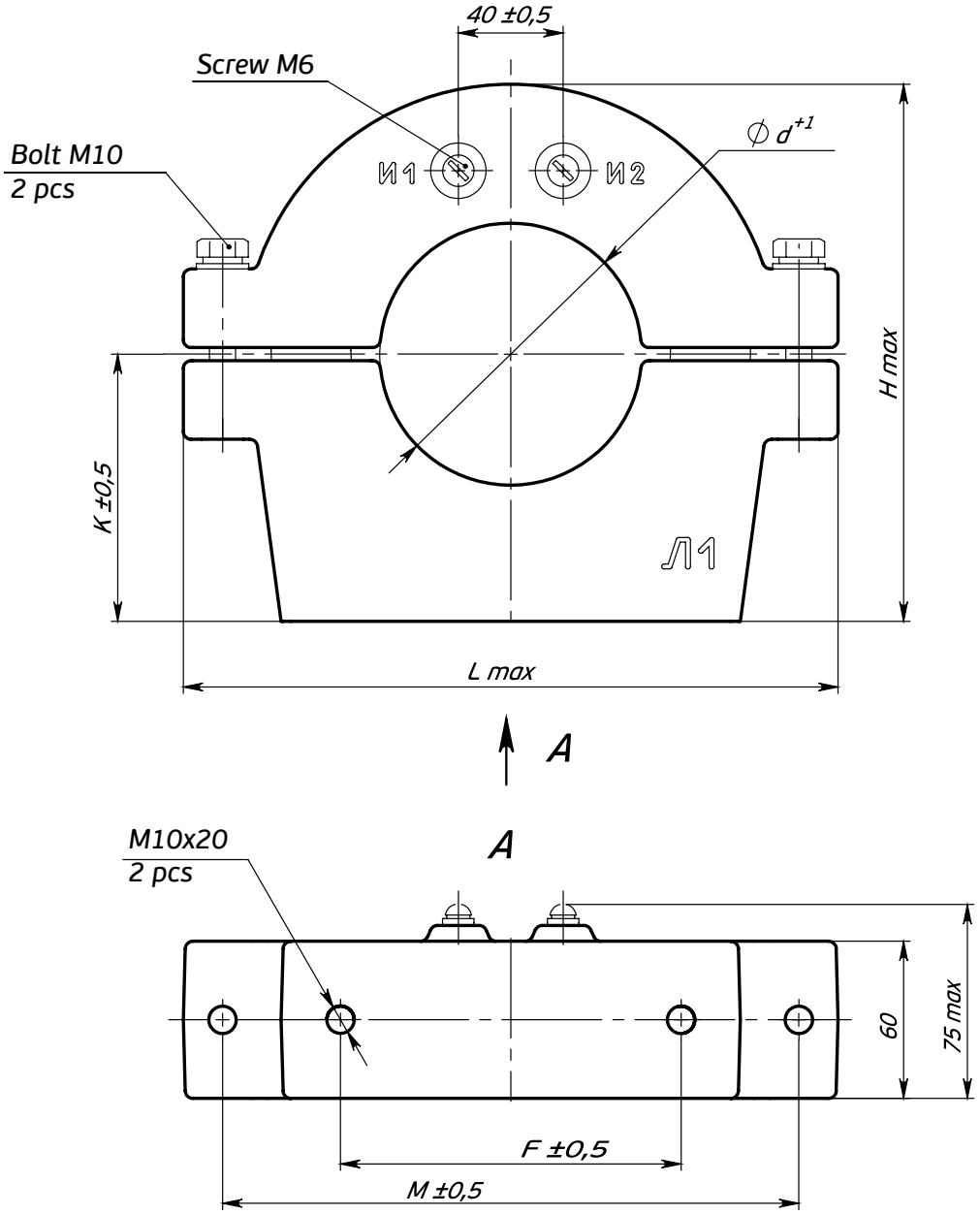


Fig. 1 General View, Current Transformer TZLKR-SVEL-0.66

TECHNICAL PARAMETERS TZLK-SVEL-0,66

TYPE	Ratio	Dimensions, mm						Weight, kg	Figure
		d	F	H	K	L	M		
TZLK-SVEL-0,66-70	30/1	70	100	170	85	210	184	4,3	1
TZLK-SVEL-0,66-100		100	130	205	102	250	224	5,9	
TZLK-SVEL-0,66-125		125		230	115	270	244	6,6	
TZLK-SVEL-0,66-200	60/1	205	180	310	155	360	334	9,6	

CURRENT TRANSFORMERS, INTERCHANGEABILITY

INTERCHANGEABILITY TABLE							
SVEL	**Sverdlovsk Current Transformer Plant**	**Nevsky Transformer Plant**	**Elektroshchit-K**	**Samara Elektroshchit**	**Kentau Transformer Plant**	**Samara Transformer Company**	**ABB, RITZ**
TSHL-SVEL-0,66-1	TSHL-0,66-III	-	-	TSHL-SESHCH-0,66	TSHL-0,66S	TT-0,66-TSHL-II-3	-
TSHL-SVEL-0,66-2	TSHL-0,66-I, II	-	-	TSHL-SESHCH-0,66	TSHL-0,66S	TT-0,66-TSHL-I	-
TZLK-SVEL-0,66	TZLK-0,66	TZLK-NTZ-0,66	TZLK-0,66	TZLK-SESHCH-0,66	-	TDZLK-0,66	-
TSHL-SVEL-10-2.1	TSHL-10	TSHL-NTZ-10-11	TLP-10-1 M1	TSHL-SESHCH-10-01	TSHL-10	TLK-ST-10-TSHLP	-
TSHL-SVEL-10-2.2	TSHL-10-2	TSHL-NTZ-10-21	TLP-10-1 M3	TSHL-SESHCH-10-04	-	TLK-ST-10-TSHLP	-
TSHL-SVEL-10-3.1	TSHL-10-1	TSHL-NTZ-10-12	TLP-10-1 M1 (M2)	TSHL-SESHCH-10-02	TSHL-10	TLK-ST-10-TSHLP-1	-
TSHL-SVEL-10-3.2	TSHL-10-1-2	TSHL-NTZ-10-21	TLP-10-1 M3	TSHL-SESHCH-10-04	-	TLK-ST-10-TSHLP-1	-
TSHL-SVEL-10-4	TSHL-10-5	TSHL-NTZ-10-13	TLP-10-1 M1 (M2)	TSHL-SESHCH-10-03	TSHL-10	TLK-ST-10-TSHLP-2	-
TPL-SVEL-10-2(3,4)	TPL-10-M	TOL-NTZ-10-41	TPL-10-5	TPL-SESHCH-10-81	TPL-10S, TPLM-10, TPLU-10	TLK-ST-10-TPL (TPL-10S)	-
TPOL-SVEL-10-2(3,4)	TPOL-10	TPL-NTZ-10	TLP-10-3 M1 B	TPL-SESHCH-10-01,02,11, 12,21,22,31	TPK-10 ; TPOL-10	TLK-ST-10-TPK (TPK-10)	TTR 4X.XX; GDS 12
TPOL-SVEL-10M-2(3,4)	TPOL-10M	-	TLP-10-2 M1 B	TPL-SESHCH-10-51,71	-	-	-
TOL-SVEL-10-1	TOL-10-I-2, TOL-10-I-4, TOL-10-I-6, TOL-10-M-2	TOL-NTZ-21,22,23,24,25.26	TLO-10 M5 (M6 - M10)	TOL-SESHCH-10-11-1 (14-1)	TOL-10	TLK-ST-10-7	TPU 4X.31 (5X.31, 6X.11); GSWS12D
TOL-SVEL-10-2	TOL-10-I-1, TOL-10-I-3, TOL-10-I-5, TOL-10	-	TLO-10 M5 (M6 - M10)	TOL-SESHCH-21-1 (24-1)	-	TLK-ST-10-8	-
TOL-SVEL-10-7	TOL-10-I-8, TOL-10-M-3	TOL-NTZ-21,22,23,24,25.26	TLO-10 M5 (M6 - M10)	TOL-SESHCH-10-11-1 (14-1)	-	-	TPU 4X.31 (5X.31, 6X.11); GSWS12D
TOL-SVEL-10-8	TOL-10-I-7, TOL-10	-	TLO-10 M5 (M6 - M10)	-	-	TLK-ST-10-7	-
TOL-SVEL-10M-9	TOL-10-I-16; TOL-10-I-17; TOL-10-M-4	TOL-NTZ-21,22,23,24,25.26	TLO-10 M5 (M6 - M10)	TOL-SESHCH-10-21-1 (24-1)	-	TLK-ST-10-8	TPU 4X.31 (5X.31, 6X.11); GSWS12D
TOL-SVEL-10M-11.1(11.2)	TOL-10-11, TOL-10-9	TOL-NTZ-10-01A, TOL-NTZ-10-01-11,12,13	TLO-10 M1 (M11, M13, M15)	TOL-SESHCH-10-01 (04, 07,10-14, 21-24, 31-34, 41-44, 51-54, 61-64, 71-74, 81-84, 11M, 21M, 31M, 41M)	-	TLK-ST-10-15	TPU 4X.11 (5X.11, 7X.51); GIS 12

INTERCHANGEABILITY TABLE							
SVEL	Sverdlovsk Current Transformer Plant	Nevsky Transformer Plant	Elektroshchit-K	Samara Elektroshchit	Kentau Transformer Plant	Samara Transformer Company	ABB, RITZ
TOL-SVEL-10M-12.1 (12.2)	TOL-10-9	TOL-NTZ-10-01-11,12,13	TLO-10 M1	TOL-SESHCH-10-01 (04, 07, 11-14, 21-24, 31-34, 41-44, 51-54, 61-64, 71-74, 81-84)	-	TLK-ST-10-3 (4, 5, 5(2), 5(3), 6, 8, 9, 10, 14)	TPU 4X.11 (5X.11, 7X.51); GIS 12
TOL-SVEL-10M-13 (4 Coils)	TOL-10-9	TOL-NTZ-10-01-11,12,13	TLO-10 M3	TOL-SESHCH-10-02 (03, 05, 06, 08, 09, 11-14, 31-34, 41-44, 51-54, 71-74)	-	TLK-ST-10-11 (12, 12.1, 12.2)	TPU 4X.21 (4X.51, 5X.21, 5X.51); GIS 12
TOL-SVEL-10M-14.1 (14.2)	TOL-10-IM-2, TOL-10-9, TOL-10-11	TOL-NTZ-10-01AB, TOL-NTZ-10-01-11,12,13	TLO-10 M2 (M12, M14, M16)	TOL-SESHCH-10-01 (04, 07, 11-14; 21-24, 31-34, 41-44, 51-54, 61-64, 71-74, 81-84, 11M, 21M, 31M, 41M)	-	-	TPU 4X.13 (5X.13); GIS 12
TOL-SVEL-10M-15.1 (15.2)	TOL-10-IM-3, TOL-10-9	TOL-NTZ-10-01-11,12,13	TLO-10 M2	TOL-SESHCH-10-01 (04, 07, 11-14, 21-24, 31-34, 41-44, 51-54, 61-64, 71-74, 81-84)	-	TLK-ST-10-4M1 (5M, 5M1, 9M1)	TPU 4X.13 (5X.13); GIS 12
TOL-SVEL-10M-16 (4 Coils, Partition)	TOL-10-IM-4	TOL-NTZ-10-01-11,12,13	TLO-10 M4	TOL-SESHCH-10-02 (03, 05, 06, 08, 09, 11-14, 31-34, 41-44, 51-54, 71-74)	-	TLK-ST-10-12M1	TPU 4X.23 (4X.53, 5X.23, 5X.53); GIS 12
TOL-SVEL-10M-17.1	TOL-10-I-12; TOL-10-I-14	-	TLO-10	-	-	-	TPU 4X.32 (5X.32, 6X.12); GSWS12D
TOL-SVEL-10M-17.2	TOL-10-I-15	-	TLO-10	-	-	-	-
TOL-SVEL-10M-18.1 (18.2)	-	TOL-NTZ-10-01-11,12	TLO-10	TOL-SESHCH-01 (04, 07, 31-34, 41-44, 51-54, 61-64, 71-74, 81-84)	-	-	TPU 4X.12 (5X.12); GIS 12
TOL-SVEL-10M-19.1	-	-	TLO-10		-	-	TPU 4X.14 (5X.14); GIS 12
TOL-SVEL-10M-20 (21)	TOL-10-8	TOL-NTZ-10-31	-	TOL-SESHCH-10-201-11-1 (21-1, 31-1, 41-1)	-	TLK-ST-10-TLM1 (TLM-10-1)	-
TOL-SVEL-10M-22 (23)	-	-	-	-	-	TLK-ST-10-TBLM (TBLM-10)	-
TOL-SVEL-10M-24	-	-	-	TOL-SESHCH-10-201-11-2 (41-2)	-	TLK-ST-10-TLM1 (TLM-10-1)	-
TOL-SVEL-10M-25	TOL-10-M-2 (3,4)	TOL-NTZ-21,22,23,24,25.26	TLO-10 M5 (M7, M9)	-	-	TLK-ST-10-7 (8(3), 13)	TPU 4X.41 (6X.11,6X21); GSWS12D
TOL-SVEL-35-2.1	TLK-35-1	TOL-NTZ-35-11 (12)	TLO-35-M2 (M3-M8)	TOL-SESHCH-35	-	TLK-ST-35 (TLK-35, TLK-ST-35-1, TLK-ST-35-1.2)	TP 7X.XX, GI 40,5

INTERCHANGEABILITY TABLE							
SVEL	**Sverdlovsk Current Transformer Plant**	**Nevsky Transformer Plant**	**Elektroshchit-K**	**Samara Elektroshchit**	**Kentau Transformer Plant**	**Samara Transformer Company**	**ABB, RITZ**
TOL-SVEL-35-3.1	TLK-35-1	TOL-NTZ-35-11 (12)	TLO-M2 (M3-M8)	TOL-SESHCH-35	-	TLK-ST-35 (TLK-35, TLK-ST-35-1, TLK-ST-35-1.2)	TP 7X.XX, GI 40,5
TOL-SVEL-35-4.1 (4.2)	TLK-35-2	TOL-NTZ-35-11 (12)	TLO-M2 (M3-M8)	TOL-SESHCH-35	-	TLK-ST-35-1, TLK-ST-35-1.2	TP 7X.XX, GI 40,5
TOL-SVEL-35-5.1 (5.2)	-	TOL-NTZ-35-11 (12)	TLO-M2 (M3-M8)	TOL-SESHCH-35	-	TLK-ST-35-1.2	-
TOL-SVEL-35 III-2.1(2.2)	TOL-35 III-II(II-1)	-	-	TOL-SESHCH-35-IV-01 (04, 14)	TLK-35-2	TLK-35-2.1 (2.2; 3.1)	-
TOL-SVEL-35 III-3.1(3.2)	TOL-35 III-III(III-1)	-	-	TOL-SESHCH-35-IV-02 (05, 15)	TLK-35-3	TLK-35-2.1 (2.2)	-
TOL-SVEL-35 III-4.1(4.2)	TOL-35 III -4 (V-4-1)	-	-	TOL-SESHCH-35-IV-03 (06, 16)	TLK-35-4	-	-
TOL-SVEL-35 III-5.1(5.2)	TOL-35 III -5 (V-5-1)	-	-	-	TLK-35-5	-	-
TOL-SVEL-35 IIIM	TOL-35 III-7.2	TOL-NTZ-35-IV-11	TL-EK-35 M1 (M2)	TOL-SESHCH-35-IV-21	TLK-35-3.1	-	TPO 7X.XX, GIF 40,5
TV-SVEL-35(110,220)-IX	TB-35(110,220)-IX	-	TB-EK 35(110,220) M3	TBL-SESHCH-35	-	-	-

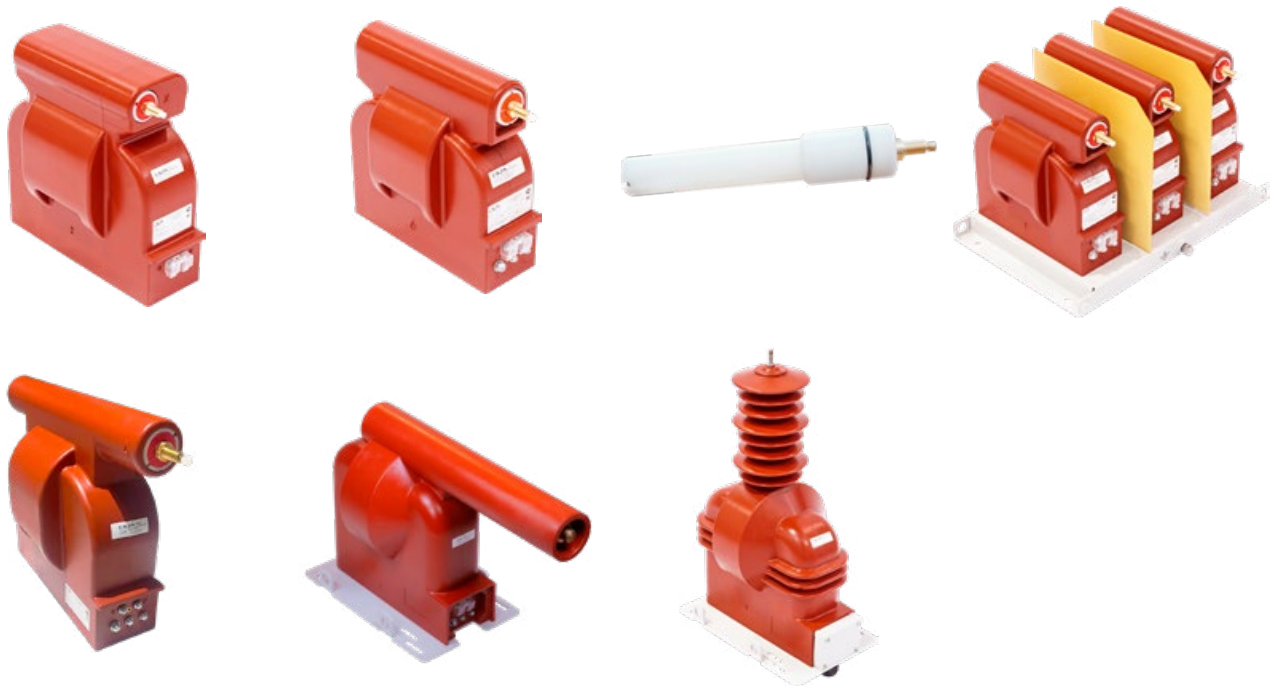
VOLTAGE TRANSFORMER (VT)

PURPOSE AND SCOPE

Voltage Transformers (VT) is a component of switchgears, AC, 6kV to 220kV for both indoors and outdoors operation.

VT is designed to:

- ✓ Transmit signals to measuring, protection, switch, alarm, and control units
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage



RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

NOL(P)-SVEL-6(10)M

PURPOSE AND SCOPE

Voltage Transformer (VT) Type NOLP-SVEL-6(10)M is a component of switchgears, AC, 6kV to 220kV for both indoors and outdoors operation.

This VT is designed to:

- ✓ Transmit signals to measuring, protection, switch, alarm, and control units
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

This CT is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 2, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing OET. 591.003.

EQUIPMENT DESCRIPTION

NOL(P)-SVEL-6(10)M is a single-phase, inductive, double-coil voltage transformer with non-grounded primary coil. By their design, it is a support type case resin VT.

Primary terminals are completely earth-isolated and located on the top of VT. Secondary terminals are located at the bottom and sealed with a protective cap.

DESIGN SPECIFICS

NOLP-SVEL-6(10) is equipped with a removable reusable electromagnet protective unit SPUE-SVEL-10 to protect from fault at the secondary circuit and overvoltage at the primary circuit.

TECHNICAL PARAMETERS NOL(P)-SVEL-6(10)		
Parameter	**Value**	
Voltage Class, kV	6	10
Max Working Voltage, kV	7,2	12
Rated Frequency, Hz	**50** or 60	
Rated Primary Voltage, V	6000	10000
Rated Power, at Power Factor, inductive and non-inductive load, 0,8 VA**:		
Accuracy Class 0,2	**10, 30**	
Accuracy Class 0,5	**30, 50, 75**	
Accuracy Class 1,0	**75, 100**	
Accuracy Class 3,0	200	300
Rated Line Voltage at Main Secondary Terminals, V·A	100	
Limit Power beyond Accuracy Class, V·A	400	
Limiting Continuous Primary Current, A	0,067	0,04
Vector Group	1/1 - 0	

** Applicable to the transformers delivered abroad*

*** VT is manufactured with the rated power corresponding to a single accuracy class, as ordered.*

**** Standard parameters are highlighted bold*

DIMENSION, MOUNTING AND CONNECTION DRAWINGS NOL(P)-SVEL-10

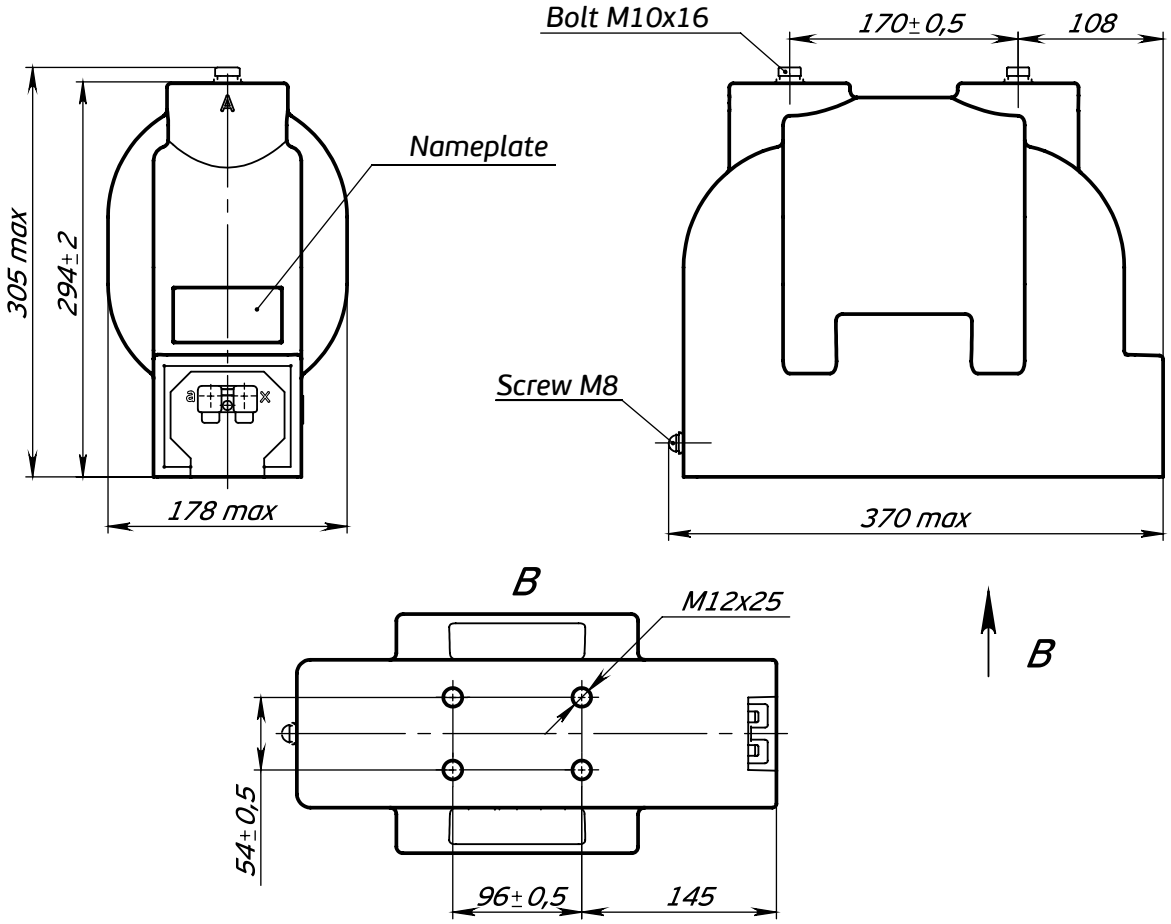


Fig. 1 General View, Voltage Transformer NOL-SVEL-6(10)M

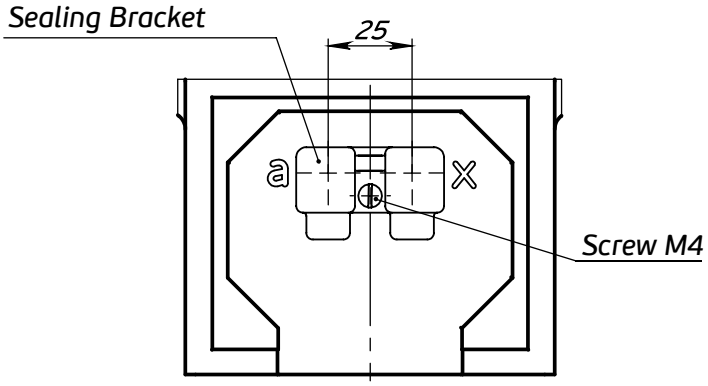


Fig. 2 Contact Board, NOL(P)-SVEL-6(10)M

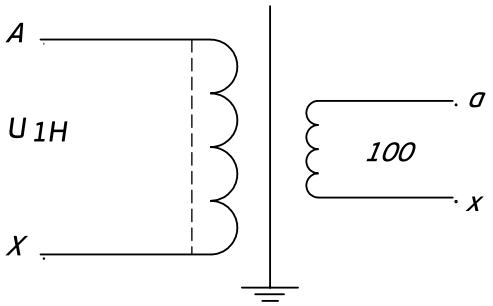


Fig. 3 Circuit Diagram, NOL-SVEL-6(10)M

Weight, max 33 kg

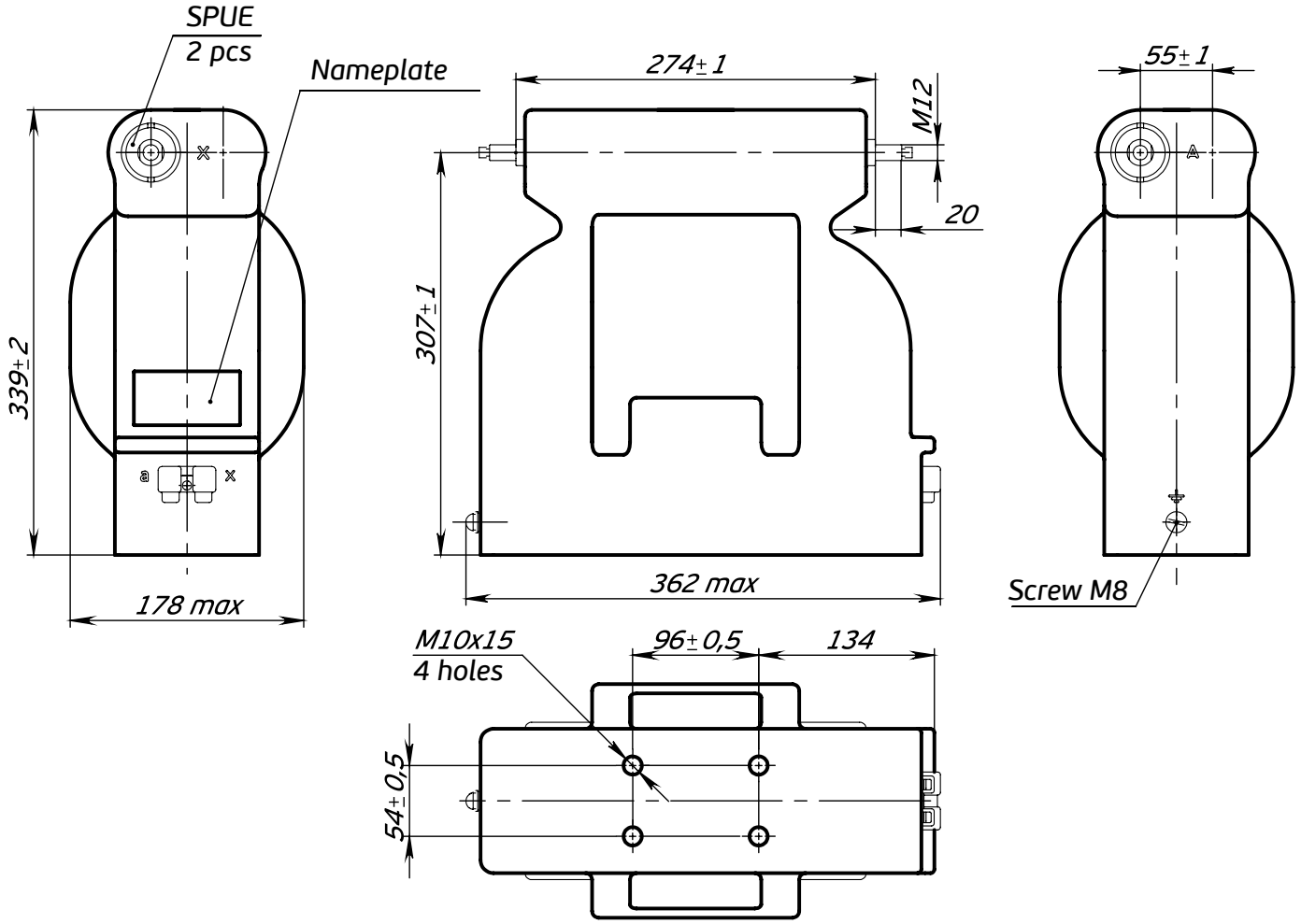


Fig. 4 General View, Voltage Transformer NOLP-SVEL-6(10)M

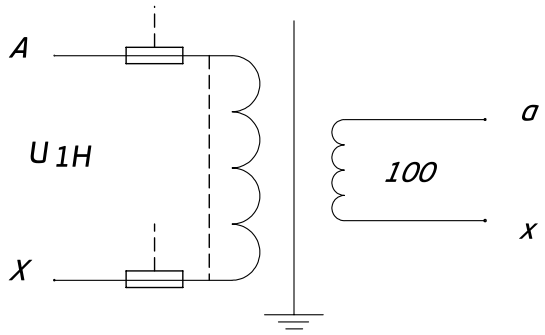


Fig. 5 Circuit Diagram, NOLP-SVEL-6(10)M

Weight, max 36 kg

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

ZNOL(P)-SVEL-6(10)M

PURPOSE AND SCOPE

Voltage Transformer (VT) Type ZNOLP-SVEL-6(10)M is a component of switchgears, AC, up to 10kV, for both indoors and outdoors operation.

This VT is designed to:

- ✓ Transmit signals to measuring, protection, switch, alarm, and control units
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

This CT is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 2, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing OET. 591.001.

EQUIPMENT DESCRIPTION

ZNOL(P)-SVEL-6(10)M is a single-phase, inductive, three- or four-coil (Type ZNOL(P)-SVEL-6(10)-4) voltage transformer with grounded primary X Terminal. By their design, it is a support type case resin VT.

Main (one, or two – for type ZNOL(P)-SVEL-6(10)-4) secondary coil is intended to conduct electricity measuring and metering, while additional secondary coil – to protect and energize automation, control, and alarm circuits, as well as monitor dielectrics.

HV Terminal A of the primary coil is located on the top of VT. Secondary terminals and grounded Terminal X are located at the bottom. Secondary measuring terminals and sealed with a protective cap.

DESIGN SPECIFICS

Upon Customer's request, VT may be manufactured with two rated primary voltages (ZNOL(P)-SVEL-6(10)-5) that switched at secondary site. This type of VT is designed to combine two rated voltages in one unit – 6kV or 10kV.

This VT is good for packaged switchgears of any voltage class. Also, having such unit in stock, you would immediately replace any transformer – both 6kV or 10kV – In case of failure.

Upon Customer's request, VT may be is equipped with a removable reusable electromagnet protective unit SPUE-SVEL-10 (Type ZNOL(P)-SVEL-6(10)M). Also ZNOL(P)-SVEL-6(10)M may be made with inverted HV Terminal A.

TECHNICAL PARAMETERS ZNOL(P)-SVEL-6(10)M		
Parameter	**Value**	
Voltage Class, kV	6	10
Max Working Voltage, kV	7,2	12
Rated Frequency, Hz	**50**; 60*	
Rated Primary Voltage, V	6000/√3 6300/√3 6600/√3 6900/√3	10000/√3 10500/√3 11000/√3
Rated Main Secondary Voltage, V	100/√3	
Rated Auxiliary Secondary Voltage, V	100 or 100/3	
Rated Power, at Power Factor, Main Secondary, inductive and non-inductive load, 0,8 VA, per Voltage Class **:		
0,2	10, 15, 20, 25, **30*** **	
0,5	20, 25, 30, **50**, 75***	
1	50, 75, **100*** **	
3	100, 150, **200*** **	
Rated Line Voltage at Main Secondary Coil, 3P VA	200	
Limit Power beyond Accuracy Class, V·A	400	
Limiting Continuous Primary Current, A	0,115 0,11 0,105 0,1	0,069 0,066 0,063
Vector Group	1/1/1-0-0	

** Applicable to the transformers delivered abroad*

*** For commercial metering, VT may be delivered with a single accuracy class, as ordered.*

**** Upon Customer's request VT may be manufactured with non-standard technical characteristics.*

***** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS ZNOL(P)-SVEL-6(10)M-4

Parameter	Value			
Voltage Class, kV	6		10	
Max Working Voltage, kV	7,2		12	
Rated Frequency, Hz	**50;** 60*			
Rated Primary Voltage, V	6000/√3 6300/√3 6600/√3 6900/√3		10000/√3 10500/√3 11000/√3	
Rated First Secondary Voltage, V	100/√3			
Rated Second Secondary Voltage, V	100/√3			
Rated Auxiliary Secondary Voltage, V	100/3	100	100/3	100
Rated Power, First Secondary Coil, Accuracy Class 0,2, VA	10			
Rated Power, First Secondary Coil, Accuracy Class 0,5, V·A	25**	15**	30**	15**
Rated Power, Auxiliary Secondary Coil, Accuracy Class 3 V·A	200	50	200	50
Limit Power beyond Accuracy Class, V·A	400	160	400	160
Limiting Continuous Primary Current, A	0,12	0,05	0,07	0,03
Vector Group	1/1/1/1-0-0-0			

** Applicable to the transformers delivered abroad*

*** Upon Customer's request VT may be manufactured with non-standard technical characteristics.*

TECHNICAL PARAMETERS ZNOL(P)-SVEL-10M-5

Parameter	Value			
Voltage Class, kV	6/10			
Max Working Voltage, B	7,2/12			
Rated Frequency, Hz	**50**; 60*			
Rated Primary Voltage, V	6000/√3 or 10000/√3			
Rated Main Secondary Voltage, V	100/√3			
Rated Auxiliary Secondary Voltage, V	100/3	100	100/3	100
Rated Power, First Secondary Coil, Accuracy Class 0,2, VA	10		10, 30	

TECHNICAL PARAMETERS ZNOL(P)-SVEL-10M-5				
Parameter	**Value**			
Rated Power, First Secondary Coil, Accuracy Class 0,5, V·A	30		50, 75	
Rated Power, Auxiliary Secondary Coil, Accuracy Class 3 V·A	200	50	200	50
Limit Power beyond Accuracy Class, V·A	400	160	400	160
Limiting Continuous Primary Current, A	0,12	0,05	0,07	0,03
Vector Group	1/1/1-0-0			

** Applicable to the transformers delivered abroad*

*** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS ZNOL(P)-SVEL						
Configuration	Voltage Class, kV	Number of Windings	Inversed	For rollout unit	Switch between 6kV/10kV	Weight, kg
ZNOL-SVEL-6(10)M	6(10)	3	-	-	-	27,5
ZNOLP-SVEL-6(10)M	6(10)	3	-	-	-	28
ZNOLP-SVEL-6(10)M-3.2	6(10)	3	+	-	-	28
ZNOLP-SVEL-6(10)M-3.3	6(10)	3	-	+	-	28,5
ZNOLP-SVEL-6(10)M-3.4	6(10)	3	+	+	-	28,5
ZNOL-SVEL-6(10)M-4	6(10)	4	-	-	-	26
ZNOLP-SVEL-6(10)M-4	6(10)	4	-	-	-	26,5
ZNOLP-SVEL-6(10)M-4.2	6(10)	4	+	-	-	26,5
ZNOLP-SVEL-6(10)M-4.3	6(10)	4	-	+	-	27
ZNOLP-SVEL-6(10)M-4.4	6(10)	4	+	+	-	27
ZNOL-SVEL-10M-5	10	3	-	-	+	26
ZNOLP-SVEL-10M-5	10	3	-	-	+	25,5
ZNOLP-SVEL-10M-5.2	10	3	+	-	+	25,5
ZNOLP-SVEL-10M-5.3	10	3	-	+	+	26
ZNOLP-SVEL-10M-5.4	10	3	+	+	+	26

DIMENSION, MOUNTING AND CONNECTION DRAWINGS ZNOL(P)-SVEL-6(10)M

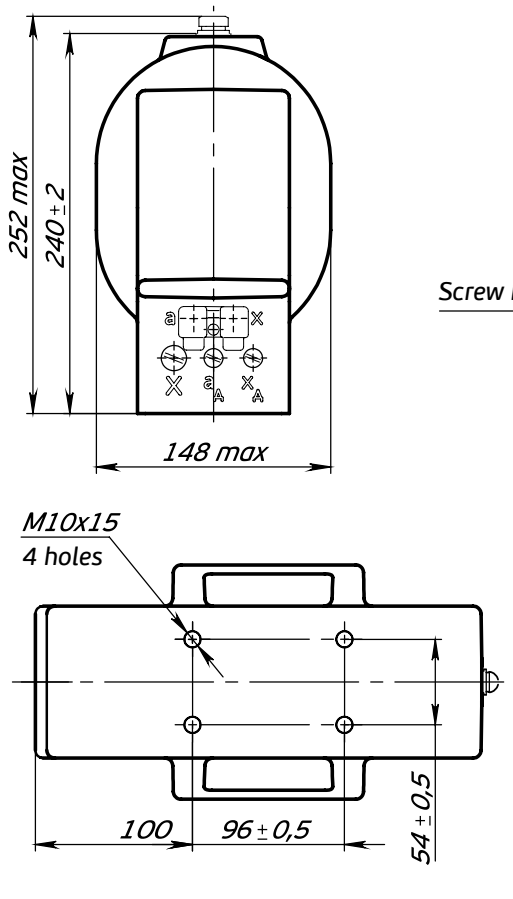


Fig. 1 – General View, Voltage Transformer ZNOL(P)-SVEL-6(10)M

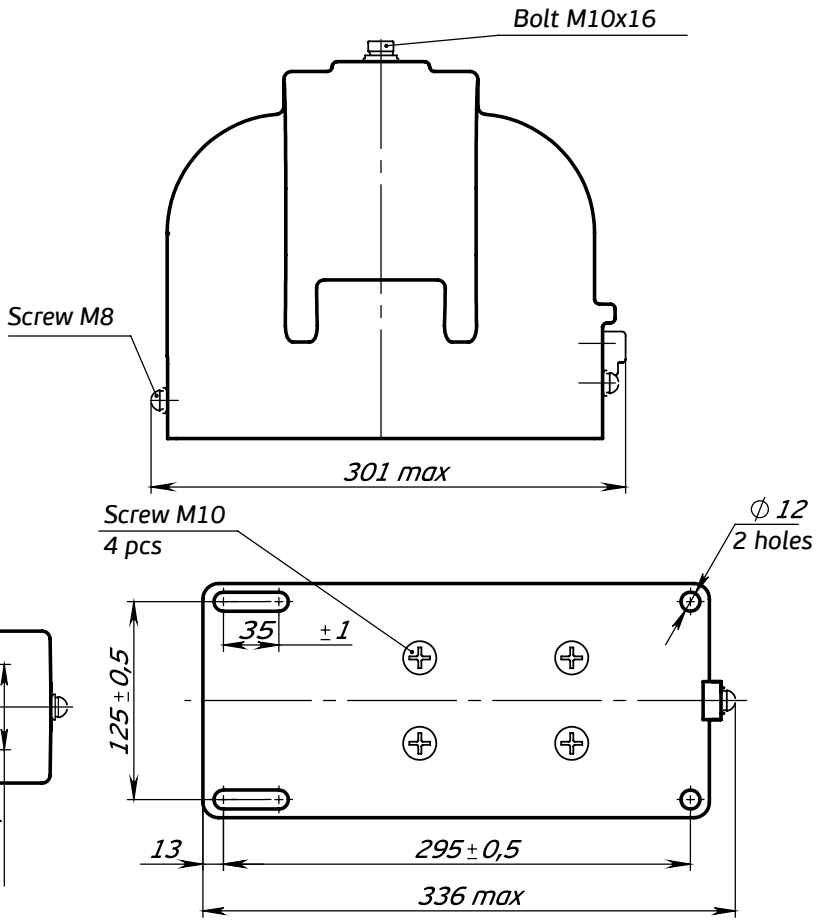


Fig. 2 General View, Voltage Transformer and Plate

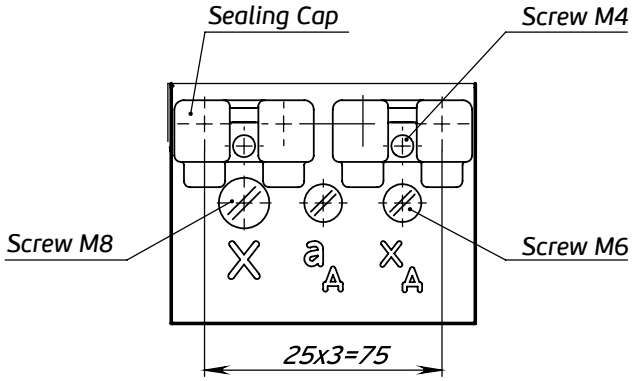


Fig. 3 Contact Board, Voltage Transformer ZNOL(P)-SVEL-6(10)M-4

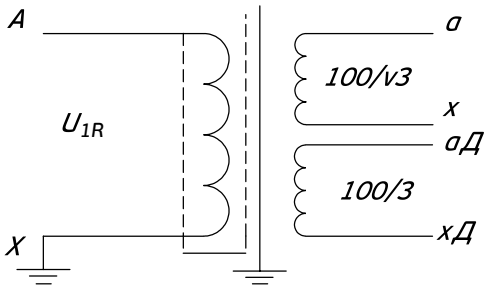


Fig. 4 Wiring Diagram, Voltage Transformer ZNOL(P)-SVEL-6(10)M

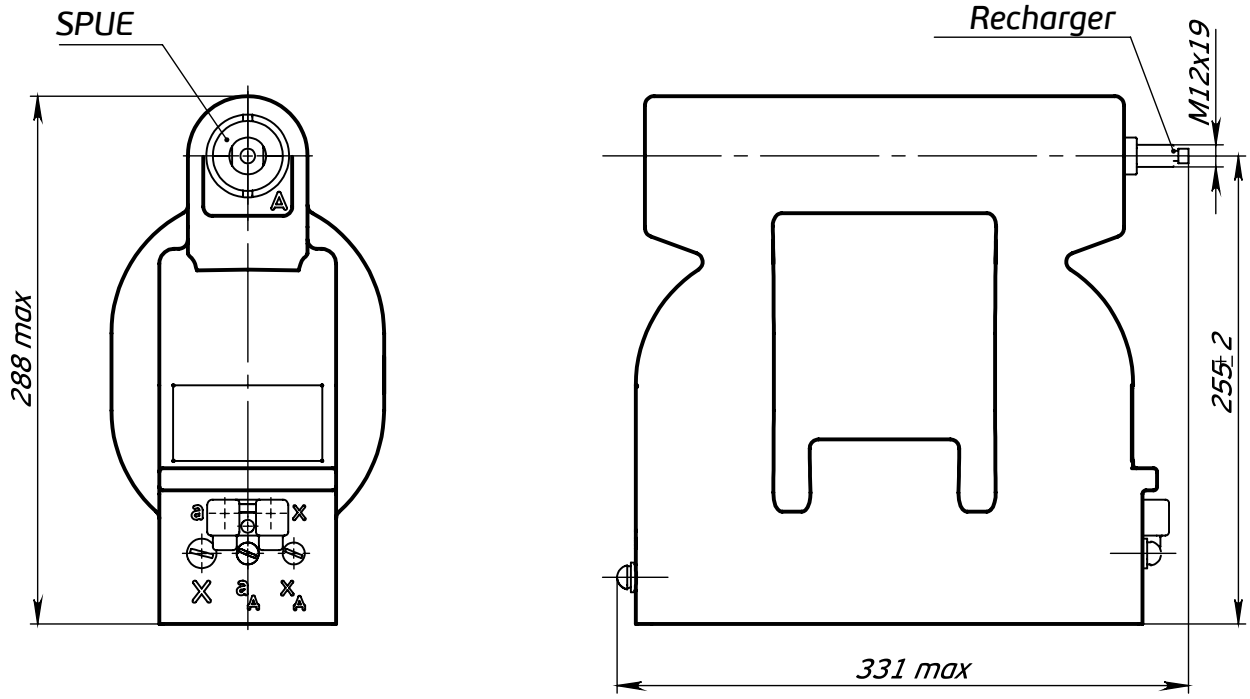


Fig. 5 General View, Voltage Transformer ZNOLP-SVEL-6(10)M, otherwise see Fig. 1

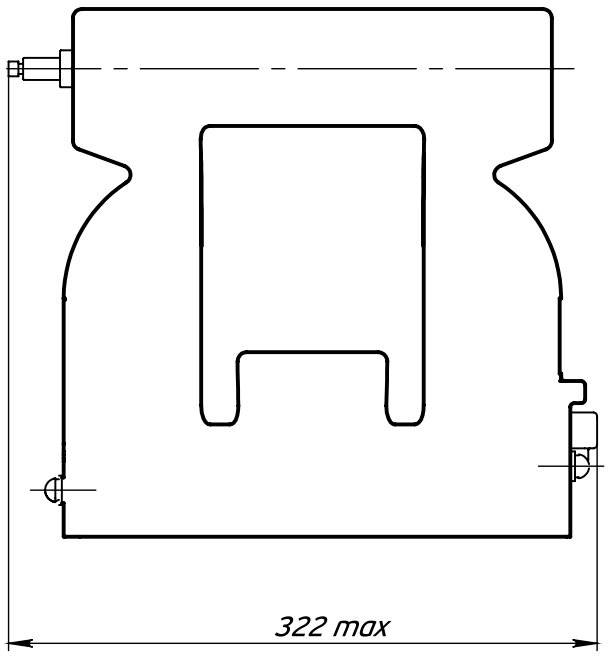


Fig. 6 General View, Voltage Transformer ZNOLP-SVEL-6(10)M-3.2, otherwise see Fig. 5

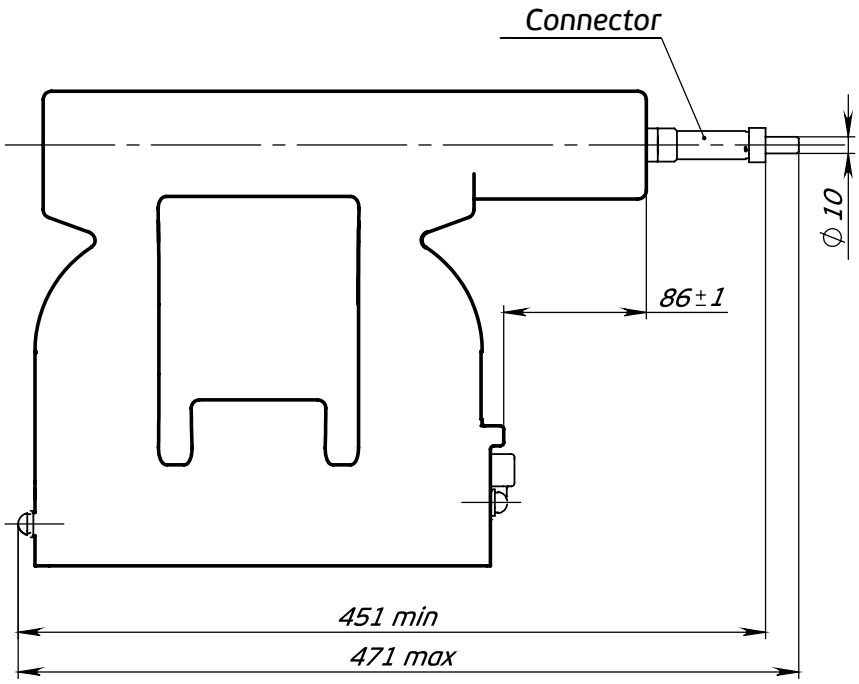


Fig. 7 General View, Voltage Transformer ZNOLP-SVEL-6(10)M-3.3, otherwise see Fig. 5

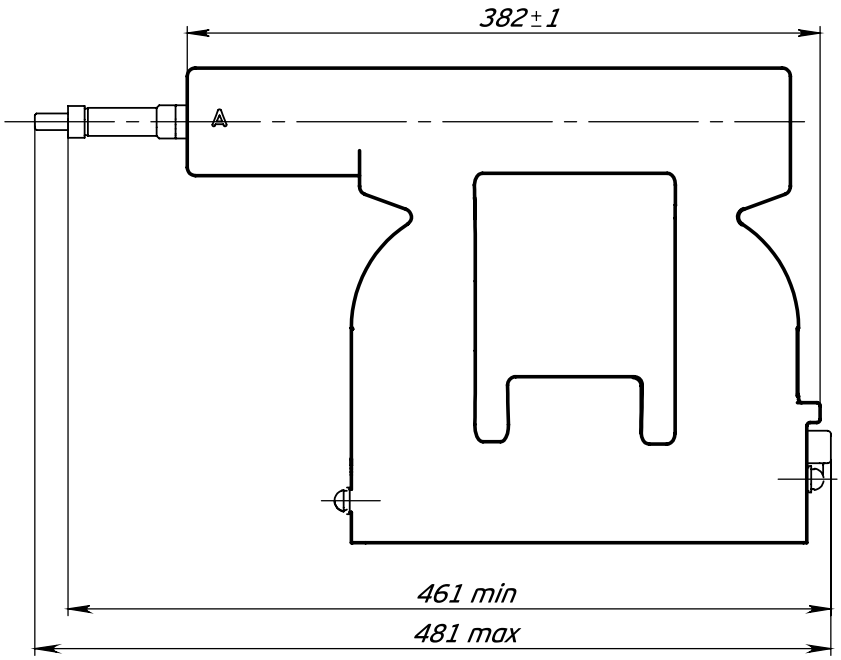


Fig. 7 General View, Voltage Transformer ZNOLP-SVEL-6(10)M-3.3, otherwise see Fig. 5

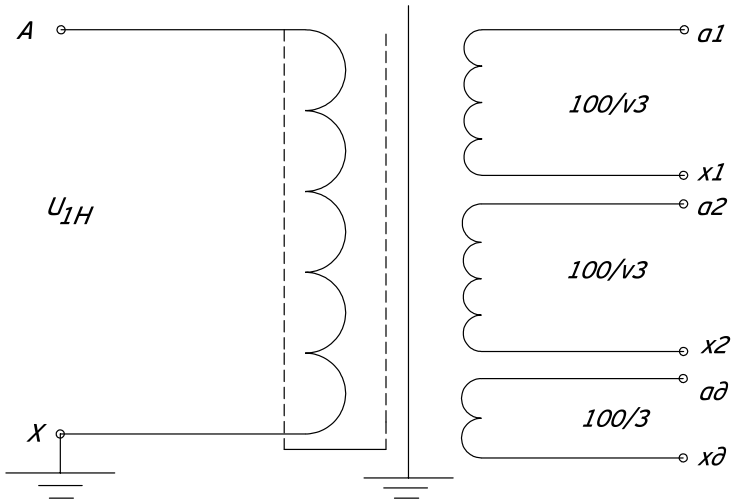


Fig. 9 Wiring Diagram, Voltage Transformer ZNOLP-SVEL-6(10)M-4

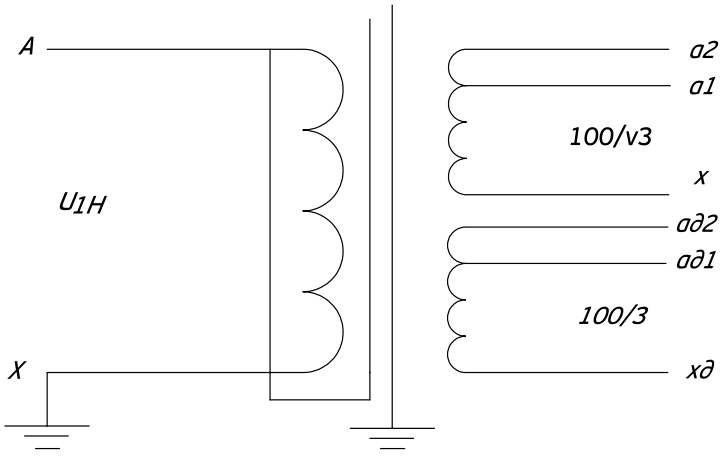


Fig. 10 Wiring Diagram, Voltage Transformer ZNOLP-SVEL-6(10)M-5

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

REMOVABLE REUSABLE ELECTROMAGNET PROTECTIVE UNIT (SPUE-SVEL)

To facilitate maintenance of Voltage Transformers with protection devices, we designed this removable reusable electromagnet protective unit (SPUE).

Functionally, it is an electromagnet release device that allowed taking the fuse out.

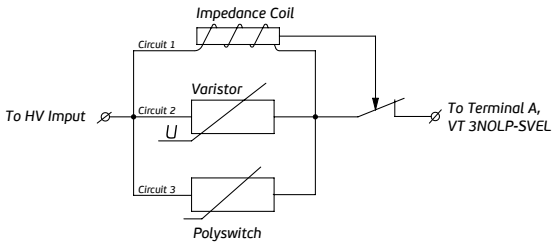
Now, to start transformer, there is no need to dismantle it, all you need to do is retract the unit.

SPUE-SVEL is used jointly with Voltage Transformer.

SPUE is designed to protect transformers from potentially harmful ferroresonance, or nonlinear resonance, caused by single-phase arcing to earth, as well as from faults at VT's secondary circuit (as confirmed by the relevant Test Protocols).

SPUE-SVEL is not intended for faults clearing in VT's primary circuit.

In 2018, upon the expert review on the SPUE Patent Application, it is stated that SPUE subjected to the patent law as per the patentability, and therefore, the decision is made to issue the patent RU 2649661 C1.



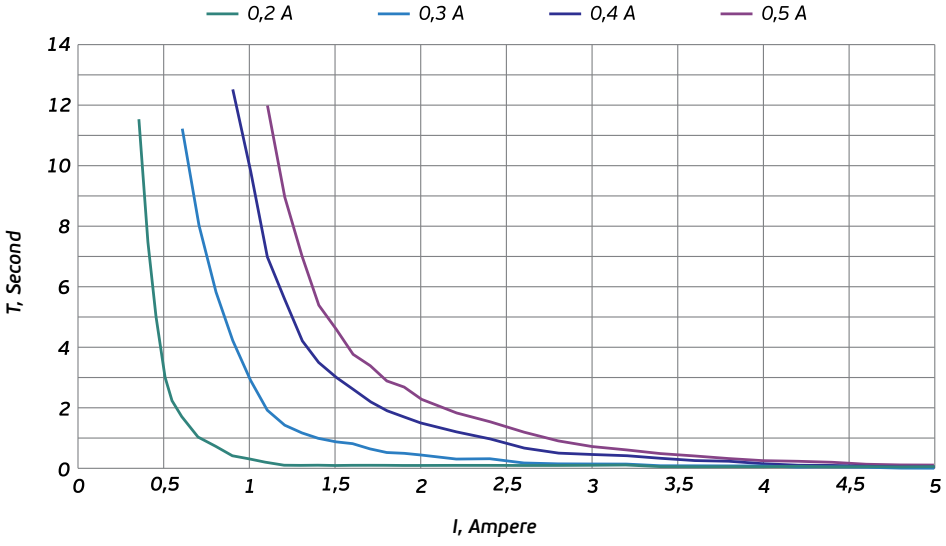
PRINCIPLE OF OPERATION

1. Design Mode. Varistor closed. Due to normal resistance in the coil, the current flows in circuit 3.
2. Increased Current. Varistor closed. Polyswitch closed. The current flows in circuit 1 (SPUE triggered).
3. Impulse Overvoltage. Polyswitch open. Varistor open. The current flows in circuit 2 (resistance of the open Varistor – near zero).

TECHNICAL PARAMETERS SPUE-SVEL

TYPE	VOLTAGE CLASS	MAX OPERATING VOLTAGE, V	RATED CURRENT, A	MAX TRIPPING CURRENT, A	DC RESISTANCE, OHM	RATED FREQUENCY, HZ	SWITCHING LIFE, NUMBER OF CYCLES, MIN	MECHANICAL DURABILITY, NUMBER OF CYCLES, MIN
SPUE-SVEL-6(10)(M)-0,2	10	12	0,2	7	4±1	50	100	300
SPUE-SVEL-6(10)(M)-0,3			0,3					
SPUE-SVEL-6(10)(M)-0,4			0,4					
SPUE-SVEL-6(10)(M)-0,5			0,5					
SPUE-SVEL-20(M)-0,2	20	24	0,2					

TIME-CURRENT CURVE



DIMENSIONS SPUE-SVEL

TYPE	L1, MM	L2, MM	L3, MM	L4, MM	FIGURE	WEIGHT, KG
SPUE-SVEL-10	296	244	227	163	Figure1	1,2
SPUE-SVEL-20	464	411	395	331		1,4
SPUE-SVEL-10M	282	239	-	-	Figure2	0,45
SPUE-SVEL-20M	426	390	-	-		0,55

DIMENSION, MOUNTING AND CONNECTION DRAWINGS
SPUE-SVEL-6(10)

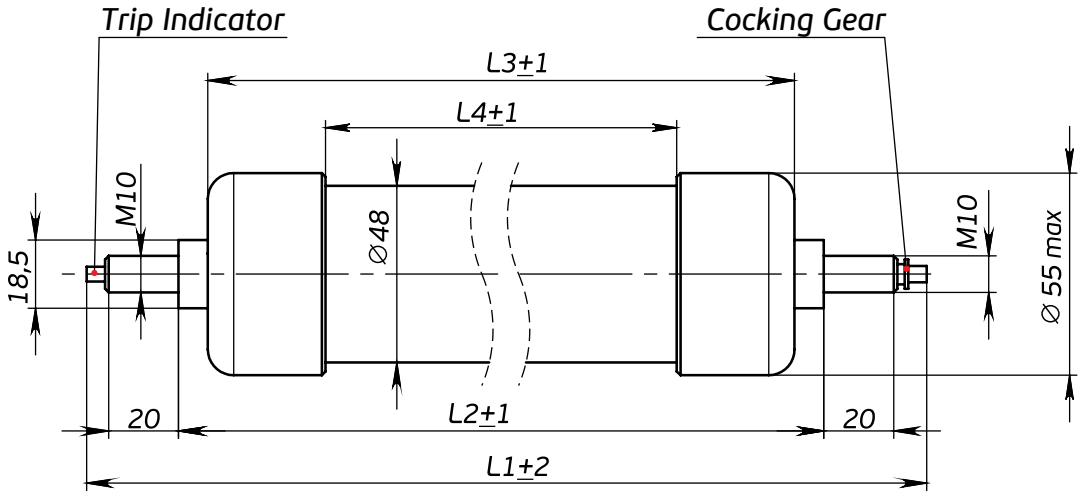


Fig. 1 - Overview, Removable Reusable Electromagnet Protective Unit, SPUE-SVEL-10

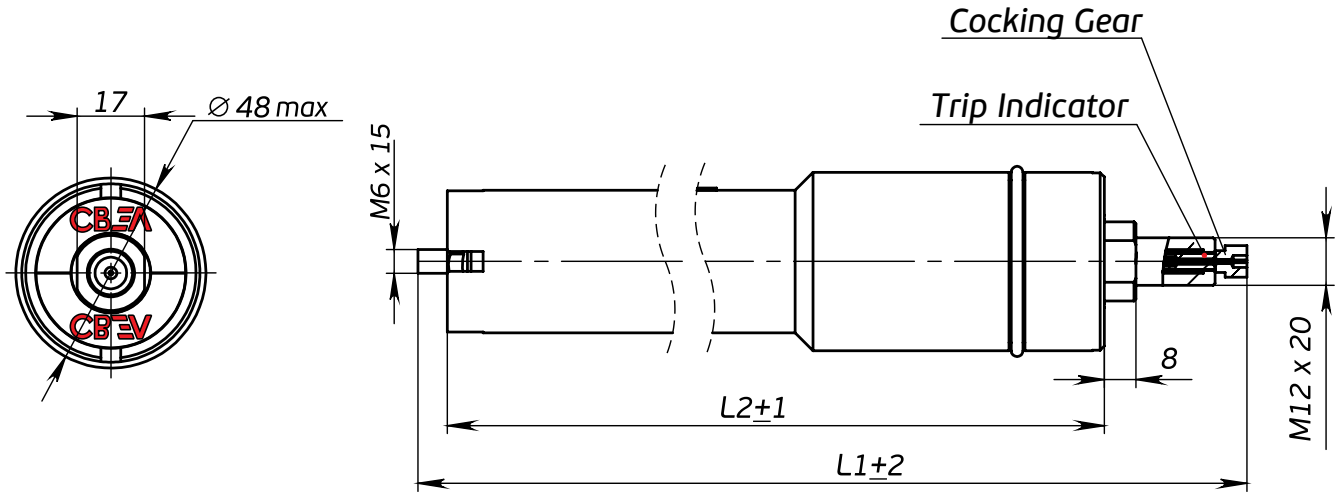


Fig. 2 - Overview, Removable Reusable Electromagnet Protective Unit, SPUE-SVEL-10M

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

To facilitate maintenance, use Removable reusable electromagnet protective unit (SPUE).

3xZNOL(P)-SVEL-6(10)M

PURPOSE AND SCOPE

Three-phase Anti-Resonance Bank of Voltage Transformers 3xZNOL(P)-SVEL-6(10)M is a component of switchgears, AC, up to 10kV, for both indoors and outdoors operation. For three-phase main, VT bank is connected to line voltage.

Three-Phase VT Bank is designed to:

- ✓ Transmit signals to measuring, protection, switch, alarm, and control units
- ✓ Ensure commercial and technical metering of electricity
- ✓ Insolate secondary circuits from high voltage.

DESIGN SPECIFICS

This VT is a single-phase, inductive, three- or four-coil (at 3xZNOL(P)-SVEL-6(10)-4 VT Bank) electromagnet unit with grounded primary Terminal X. By their design, it is a support type case resin VT.

Single secondary (or two secondary – at 3xZNOL(P)-SVEL-6(10)-4 VT Bank) is intended for measuring and metering, while auxiliary secondary coil – for protection, switch, alarm, and dielectric circuit control.

Primary HV terminal A is located on the top of VT. Secondary terminals and grounded Primary Terminal X are located at the bottom.

Secondary terminals used for measurements are sealed with a protective cap.

Earthing of the support plate for VT Bank is mandatory.

CONCLUSION ON 3XZNOL(P)-SVEL-6(10)-4 VT BANK FERRO-RESONANCE TEST RESULTS BY KONČAR ELECTRICAL ENGINEERING INSTITUTE LTD

Ferro-resonance Test completed on January 09, 2018 summary:

The test conducted on the test object as shown in Figure 1, R = 0 Ω, confirmed that ferro-resonance originated at 10,00kV demonstrated no reduction, while SPUE-SVEL ensured protection of transformer from potential harmful operation state.

The test under R=2,4 k Ω at 12,00kV without protection units (replaced with solid wire) showed that resonance occurred during test was characterized with reduction.

The test took 1 hour. Ferro-resonance was initiated by a single-phase ground fault. This ground fault was simulated 3 time per minute and lasted for 3 seconds. Measurements of temperature after both tests proved that it remained within the prescribed limit.

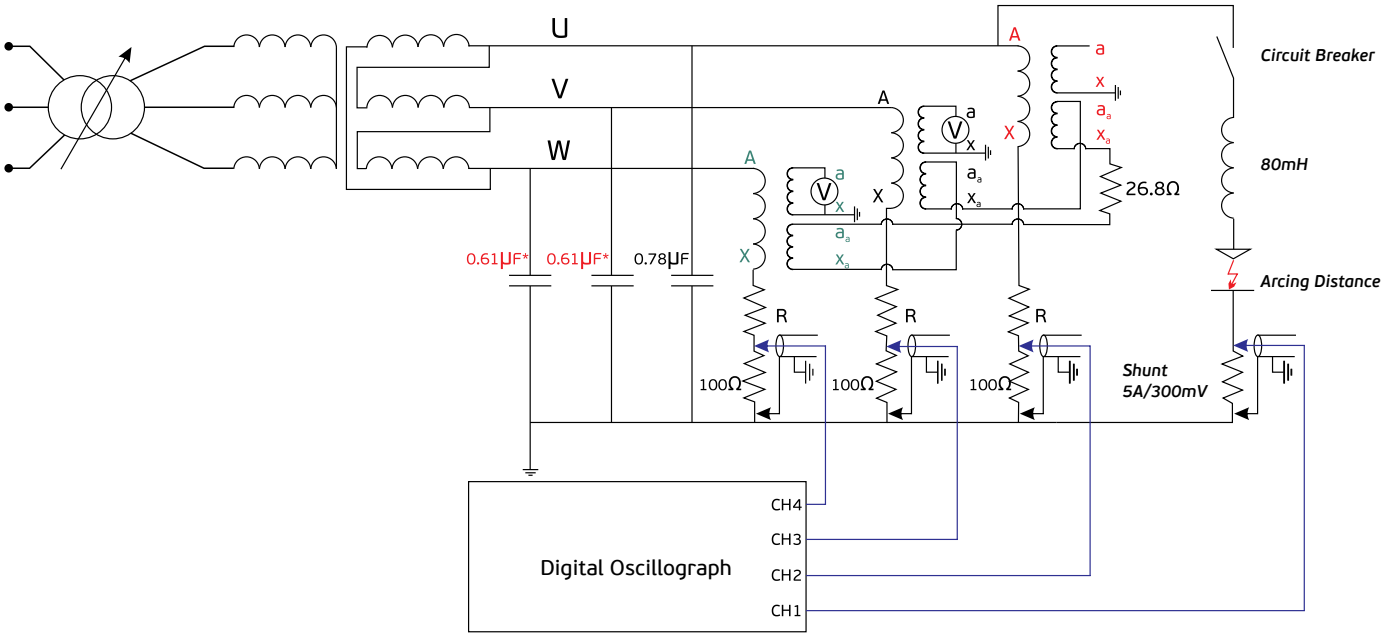


Fig. 1 Test Object

TECHNICAL PARAMETERS 3XZNOL(P)-SVEL-6(10)M		
Parameter	**Value**	
Voltage Class, kV	6	10
Max Working Voltage, kV	7,2	12
Rated Frequency, Hz	**50*** or 60**	
Rated line voltage at primary terminals, V	6000, 6300, 6600, 6900	10000, 10500, 11000
Three-phase power per accuracy class, V·A		
0,2	30, **60**, 90****	
0,5	75, **90**, 150****	
1	**150**, 225, 300****	
Rated Line Voltage at Main Secondary Terminals, V·A	100	
Load power at open triangle terminals of auxiliary secondary coil, at 100V, and power factor 0,8 (inductive load), V·A	400	
Limit Power beyond Accuracy Class, V·A	1200	
Voltage at open triangle terminals of auxiliary secondary coils:		
at the balanced main, max, V	3	
at one line circuited to earth, V	90 to 110	
Vector Group	 -0	
Weight, max, kg	92	102

** Standard parameters are highlighted bold*
** Applicable to the transformers delivered abroad*
***Upon Customer's request, three-phase VT banks may be manufactured with the rated power per the applicable accuracy class.*
**** Upon Customer's request VT may be manufactured with non-standard technical characteristics.*

TECHNICAL PARAMETERS 3XZNOL(P)-SVEL-6(10)M-4		
Parameter	**Value**	
Voltage Class, kV	6	10
Max Working Voltage, kV	7,2	12
Rated Frequency, Hz	50 or 60	
Rated line voltage at primary terminals, V	6000 6300 6600 6900	10000 10500 11000
Rated three-phase power of First Secondary Coil, Accuracy Class 0.2 V·A**	**30***, 45, 60	
Rated three-phase power of Second Secondary Coil, Accuracy Class 0,5, V·A	30, 45, 60, 75, **90***, 150	
Rated Line Voltage at First Main Secondary Terminals, V·A	100	
Rated Line Voltage at Second Main Secondary Terminals, V·A	100	
Load power at open triangle terminals of auxiliary secondary coil, at 100V, and power factor 0,8 (inductive load)	400	
Limit Power beyond Accuracy Class, V·A	1200	
Voltage at open triangle terminals of auxiliary secondary coils:		
at the balanced main, max, V	3	
at one line circuited to earth, V	90 to 110	
Vector Group	⏉/⏉/⏉/▽-0	
Weight, kg, max	92	102

** Standard parameters are highlighted bold*

*** Applicable to the transformers delivered abroad*

**** Sum of three-phase rated power values of main secondary coils, accuracy classes 0.2/0.2 shall not exceed 90VA, accuracy classes 0.2/0.5 – 135VA.*

Upon Customer's request, three-phase VT banks may be manufactured with the rated power per the applicable accuracy class.

Upon Customer's request VT may be manufactured with non-standard technical characteristics.

DIMENSION, MOUNTING AND CONNECTION DRAWINGS 3XZNOL(P)-SVEL-6(10)M

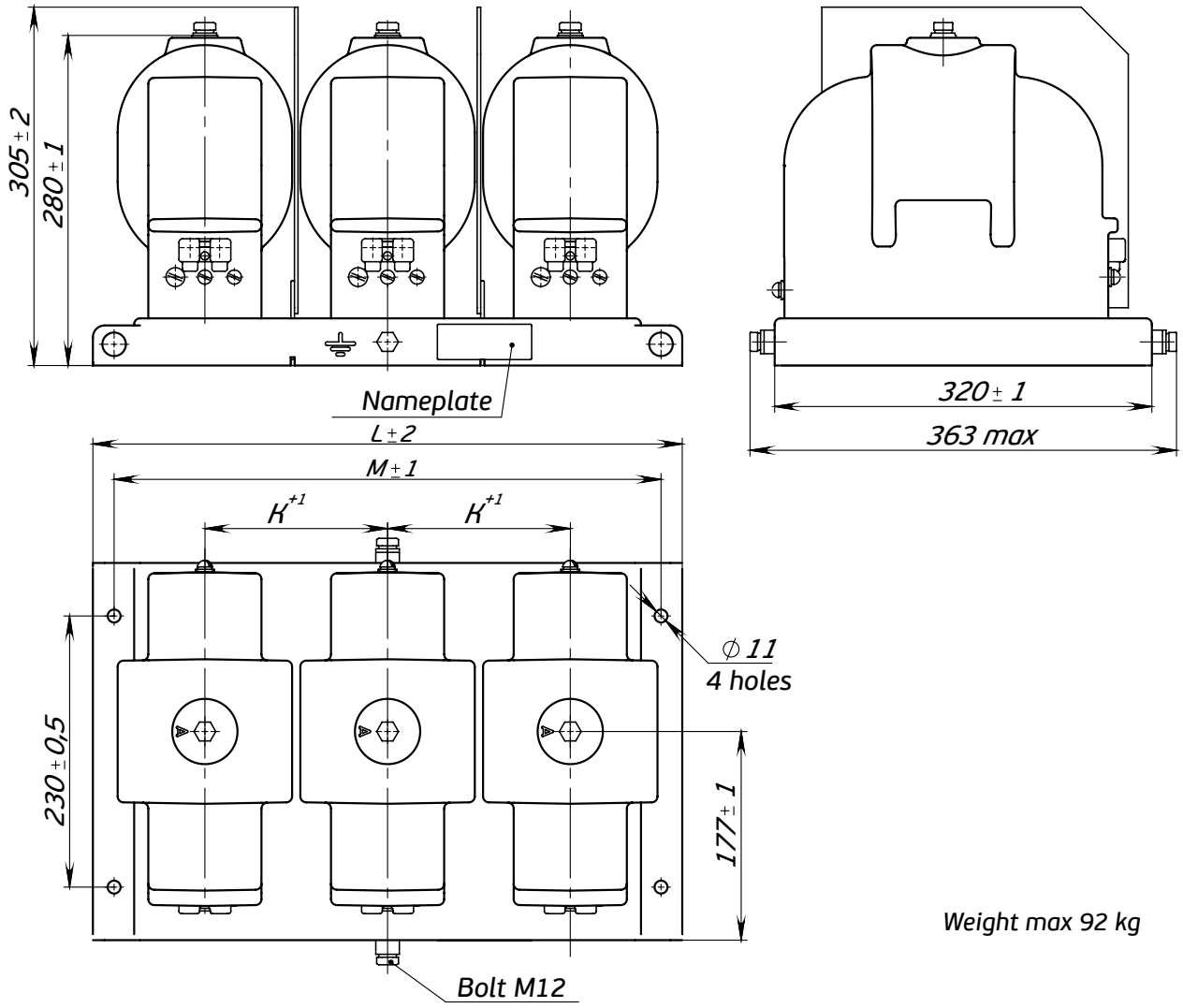
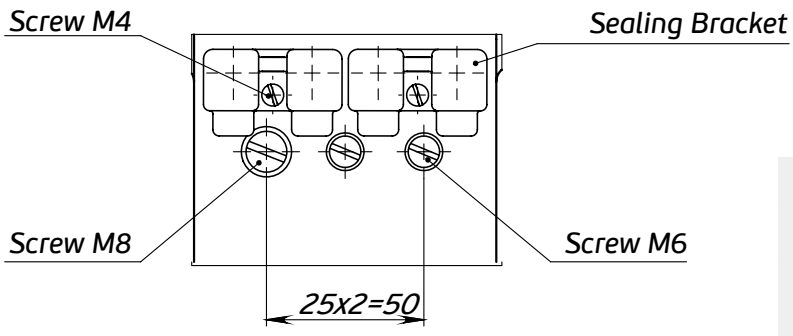


Fig. 1 – General View, Three-phase VT Bank, 3xZNOL(P)-SVEL-6(10)M



Frame Options	L, mm	M, mm	K, mm
	500	464	155
	556	515	183
	590	550	200

Fig. 2 Contact Board, ZNOL(P)-SVEL-6(10)M-4

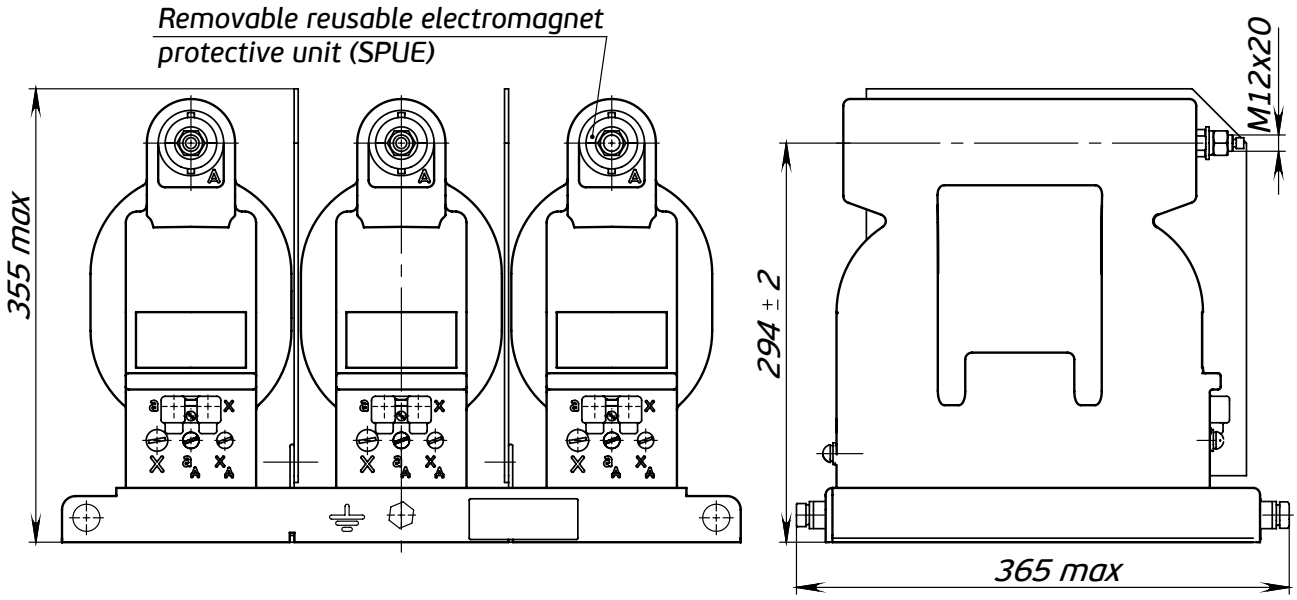


Fig. 3 General View, Three-phase VT Bank,
3xZNOL(P)-SVEL-6(10)M, otherwise see Fig. 1

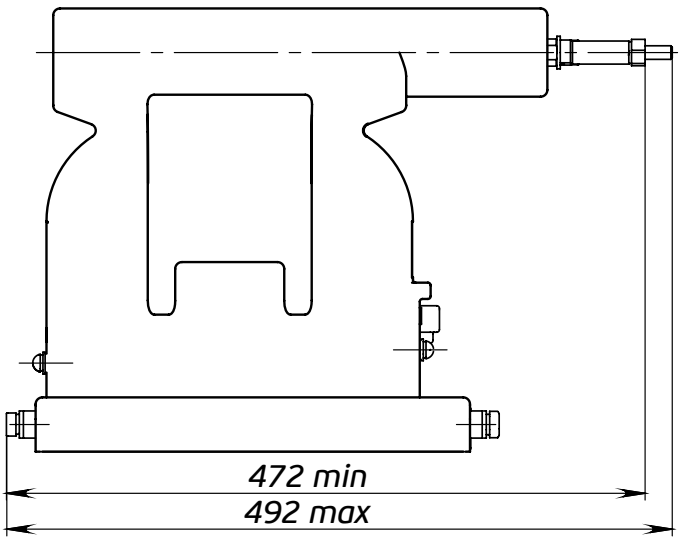


Fig. 4 General View, Three-phase VT Bank,
3xZNOL(P)-SVEL-6(10)M-3.3,
for rollout unit, otherwise see Fig. 5

Weight, max, 102kg

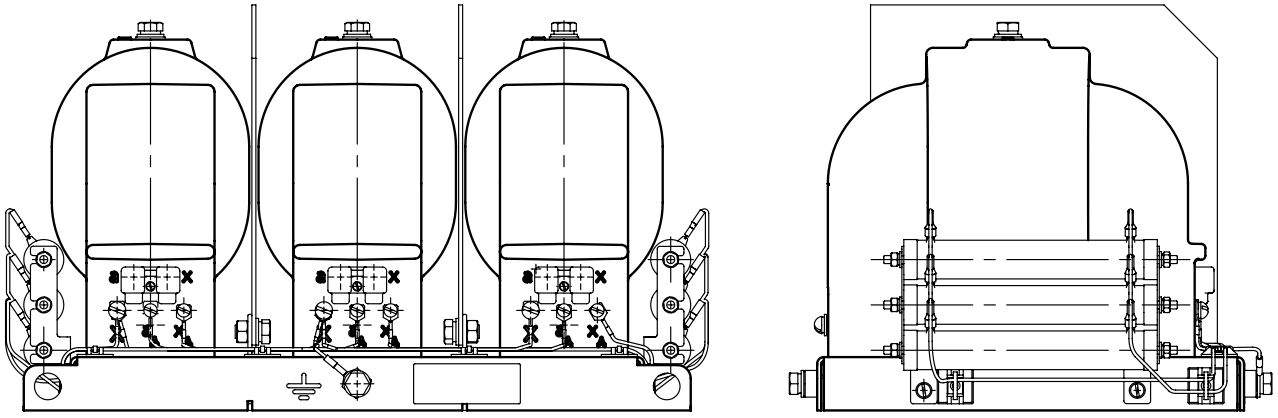


Fig. 5 Resistors on Three-phase VT Bank, 3 x 3NOL(P)-SVEL-6(10)M Frame

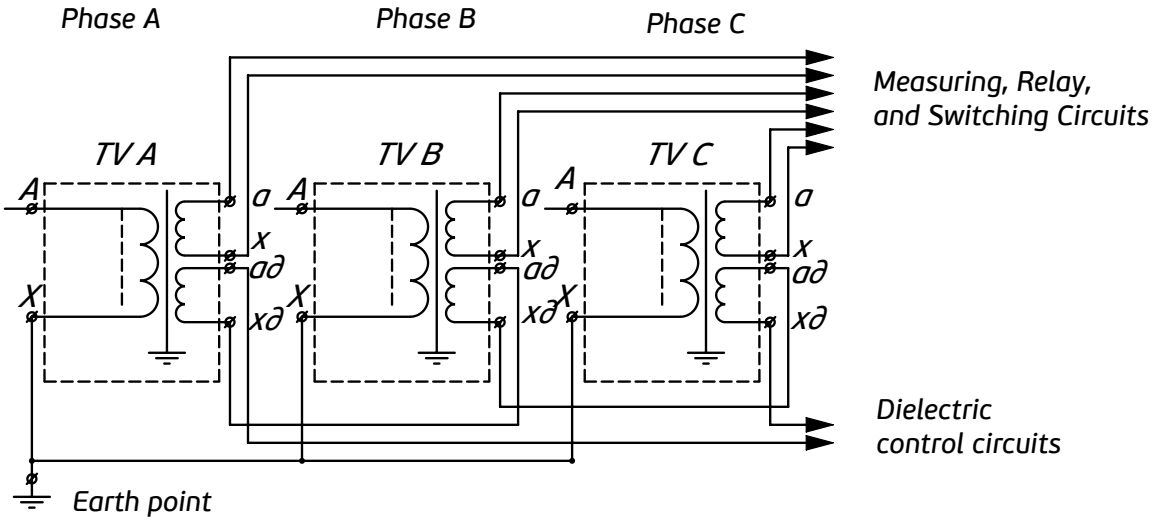


Fig. 6 Wiring Diagram, Three-phase VT Bank, 3xZNOL(P)-SVEL-6(10)M

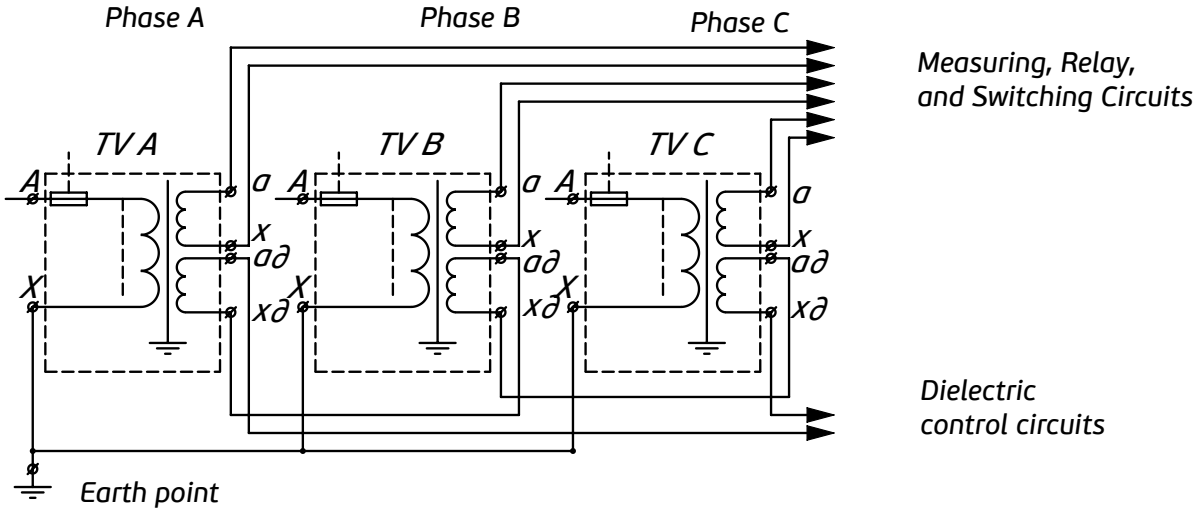


Fig. 7 Wiring Diagram, Three-phase VT Bank, 3xZNOL(P)-SVEL-6(10)M

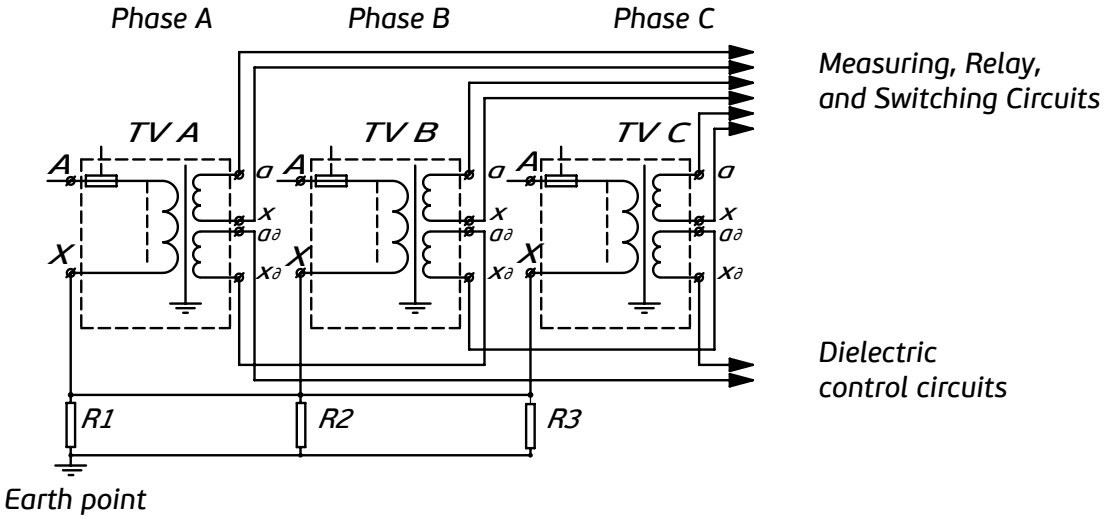


Fig. 8 Wiring Diagram, Three-phase VT Bank, 3xZNOL(P)-SVEL-6(10)M, with Resistors at Neutral Primary Circuit

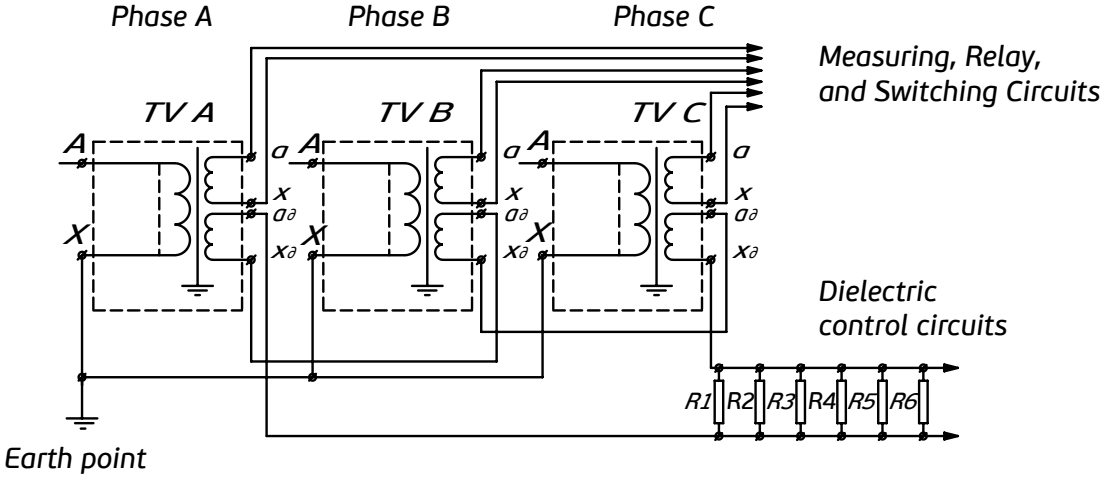


Fig. 9 Wiring Diagram, Three-phase VT Bank, 3xZNOL(P)-SVEL-6(10)M, with Resistors at Auxiliary Coil

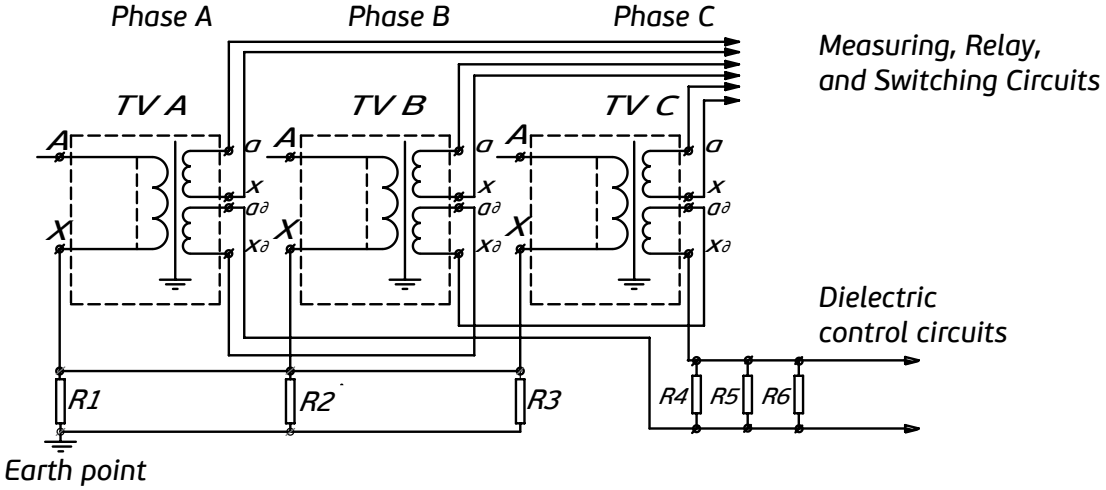


Fig. 10 Wiring Diagram, Three-phase VT Bank, 3xZNOL(P)-SVEL-6(10)M, with Resistors at Neutral Primary Circuit and Auxiliary Coil

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

ZNOL(P)-SVEL-20

PURPOSE AND SCOPE

Voltage Transformer (VT) Type ZNOLP-SVEL-20 is a component of switchgears, AC, up to 24kV, for both indoors and outdoors operation. For three-phase main, VT is connected to line voltage.

This VT is designed to:

- ✓ Transmit signals to measuring, protection, switch, alarm, and control units
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

This CT is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 2, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing 0ET.591.001.

EQUIPMENT DESCRIPTION

This VT is a single-phase, inductive, three- or four-coil (at ZNOL(P)-SVEL-20-4) electromagnet unit with grounded primary Terminal X. By their design, it is a support type case resin VT.

Single secondary terminal is intended for measuring and metering, while auxiliary secondary coil – for protection, switch, alarm, and dielectric circuit control.

Primary HV terminal A is located on the top of VT. Secondary terminals and grounded Primary Terminal X are located at the bottom.

Secondary terminals used for measurements are sealed with a protective cap.

DESIGN SPECIFICS

Upon Customer's request, VT may be equipped with the removable reusable electromagnet protective unit (SPUE-SVEL-20) (at ZNOL(P)-SVEL-20M). Also, ZNOL(P)-SVEL-20M may be manufactured with inversed HV Terminal A.

TECHNICAL PARAMETERS ZNOL(P)-SVEL-20

Parameter	Value		
Voltage Class, kV	15	20	24
Max Working Voltage, kV	17,5	24	26,5
Rated Primary Voltage, V	13800/√3 15750/√3	18000/√3 20000/√3 22000/√3	24000/√3
Rated Main Secondary Voltage, V	100/√3 or 110/√3		
Rated Auxiliary Secondary Voltage, V	100, 100/3, 110, 110/3		
Rated Power, at Power Factor, Main Secondary, inductive and non-inductive load, 0,8 V·A, per Voltage Class*:			
0,2	**10**, 15, 20, 25, 30**		
0,5	20, 25, **30**, 50, 75**		
1	50, **75**, 100**		
3	**100**, 150, 200**		
Rated Power, Auxiliary Secondary Coil, Accuracy Class 3 V·A	200		
Limit Power beyond Accuracy Class, V·A	400		
Limiting Continuous Primary Current, A	0,050 0,044	0,038 0,035 0,031	0,029
Vector Group	1/1/1-0-0		
Rated Frequency, Hz	50		

** For commercial metering, VT may be delivered with a single accuracy class, as ordered. Upon Customer's request VT may be manufactured with non-standard technical characteristics.*

TECHNICAL PARAMETERS ZNOL(P)-SVEL-20-4

Parameter	Value		
Voltage Class, kV	15	20	24
Max Working Voltage, kV	17,5	24	26,5
Rated Primary Voltage, V	13800/√3 15750/√3	18000/√3 20000/√3 22000/√3	24000/√3
Rated Main First Secondary Voltage, V	100/√3 or 110/√3		

TECHNICAL PARAMETERS ZNOL(P)-SVEL-20-4

Parameter	Value		
Rated Main Second Secondary Voltage, V	100/√3 or 110/√3		
Rated Auxiliary Secondary Voltage, V	100, 100/3, 110, 110/3		
Rated Power, at Power Factor, Main Secondary, inductive and non-inductive load, 0,8 V·A, Accuracy Class *:			
0,2	**10**, 15, 20, 25, 30**		
0,5	20, 25, **30**, 50, 75**		
1	50, **75**, 100**		
3	**100**, 150, 200**		
Rated Power, Auxiliary Secondary Coil, Accuracy Class 3 V·A	200		
Limit Power beyond Accuracy Class, V·A	400		
Limiting Continuous Primary Current, A	0,050 0,044	0,038 0,035 0,031	0,029
Vector Group	1/1/1/1-0-0		
Rated Frequency, Hz	50		

TECHNICAL PARAMETERS ZNOL(P)-SVEL

Configuration	Voltage Class, kV	Number of Windings	Inversed	For rollout unit	Weight, kg
ZNOL-SVEL-20	20	3	-	-	40
ZNOLP-SVEL-20	20	3	-	-	41
ZNOLP-SVEL-20-3.2	20	3	+	-	41
ZNOLP-SVEL-20-3.3	20	3	-	+	42
ZNOLP-SVEL-20-3.4	20	3	+	+	42
ZNOL-SVEL-20-4	20	4	-	-	39,5
ZNOLP-SVEL-20-4	20	4	-	-	40,5
ZNOLP-SVEL-20-4.2	20	4	+	-	40,5
ZNOLP-SVEL-20-4.3	20	4	-	+	41
ZNOLP-SVEL-20-4.4	20	4	+	+	41

DIMENSION, MOUNTING AND CONNECTION DRAWINGS ZNOL(P)-SVEL-20

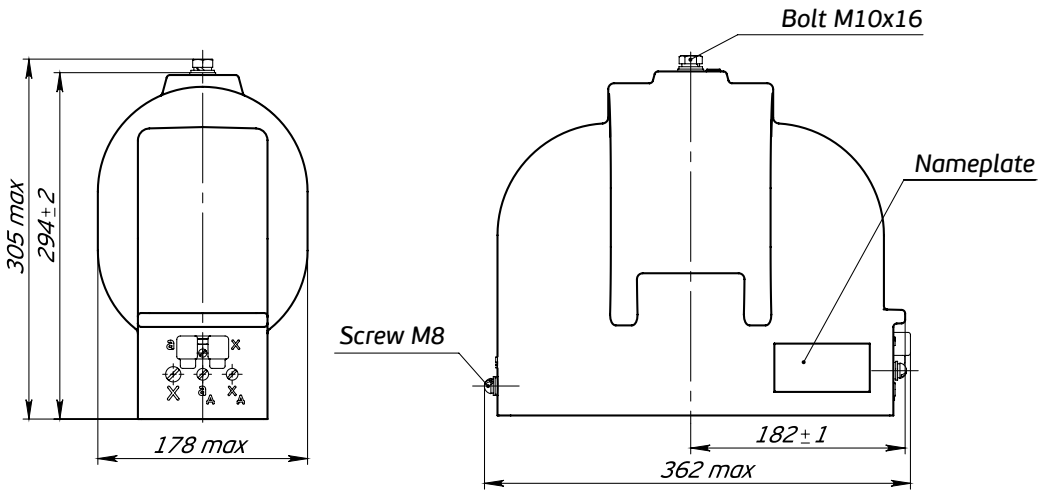


Fig. 1 General View, Voltage Transformer ZNOL(P)-SVEL-20

Fig. 2 General View, Voltage Transformer with Plate

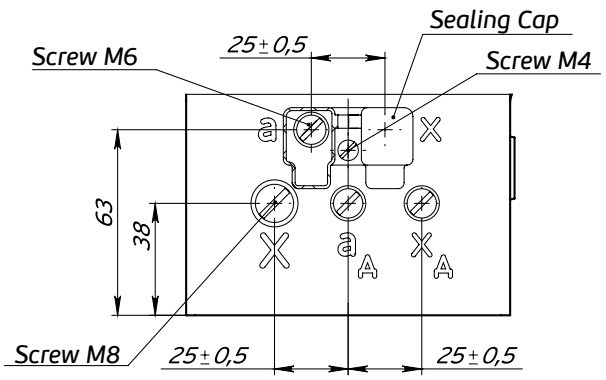


Fig. 3 Terminal Block, VT ZNOL(P)-SVEL-20

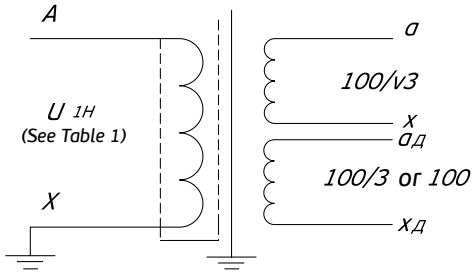


Fig. 4 Basic Diagram

Weight max 40 kg

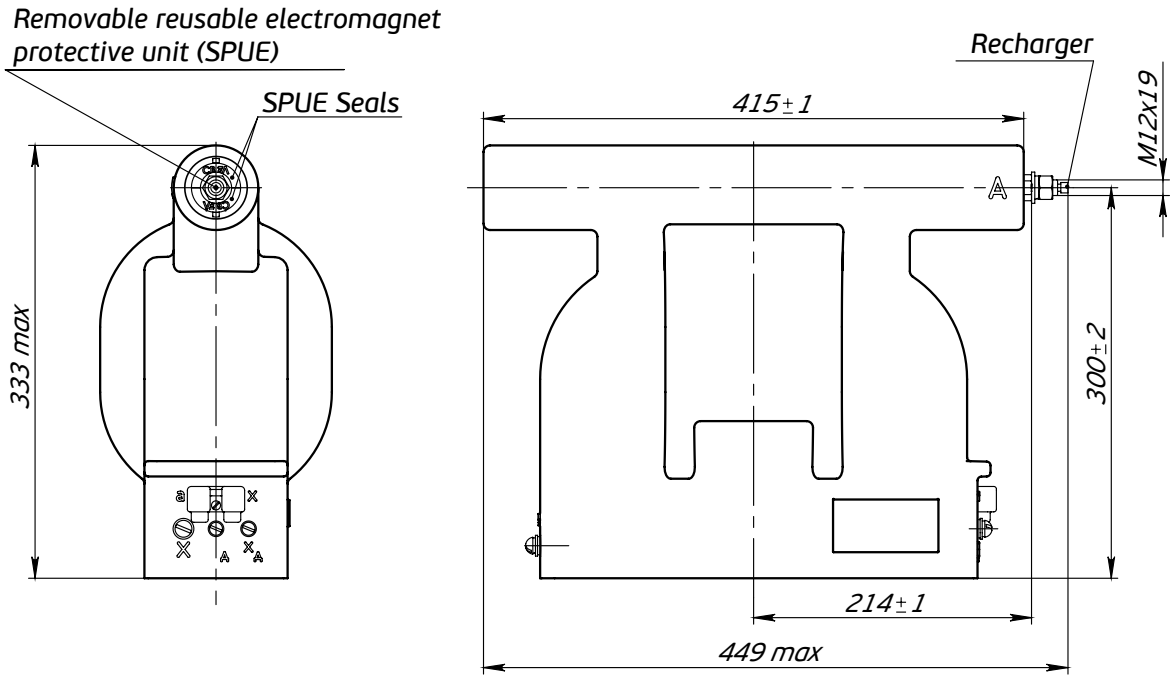


Fig. 5 General View, VT ZNOLP-SVEL-20, otherwise see Fig. 1

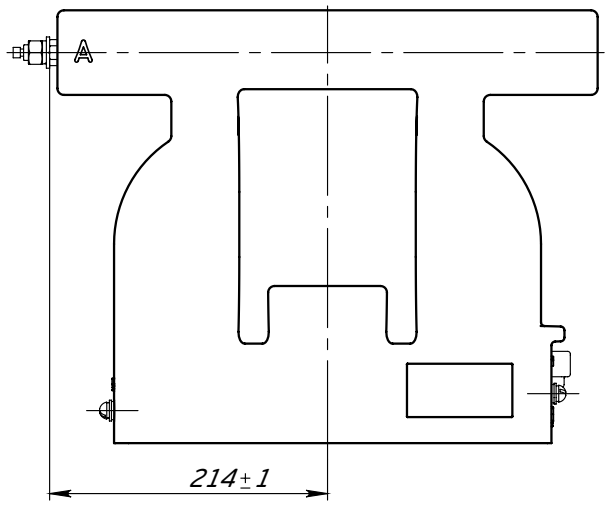


Fig. 6 General View, VT ZNOLP-SVEL-20-3.2, otherwise see Fig. 5

Weight max 41 kg

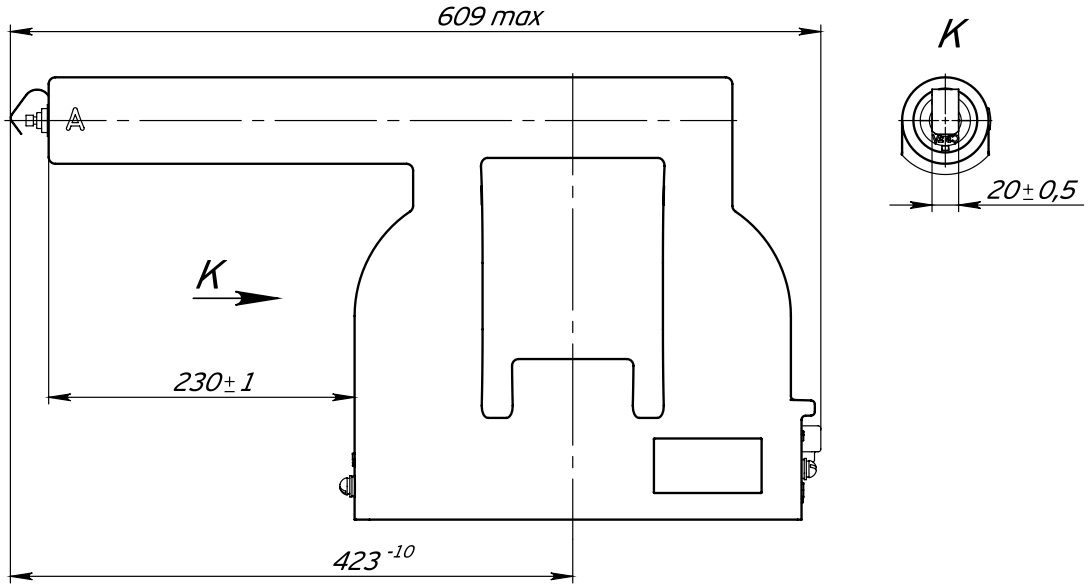


Fig. 7 General View, VT ZNOLP-SVEL-20-3.3
with contact for rollout unit, otherwise see Fig. 5

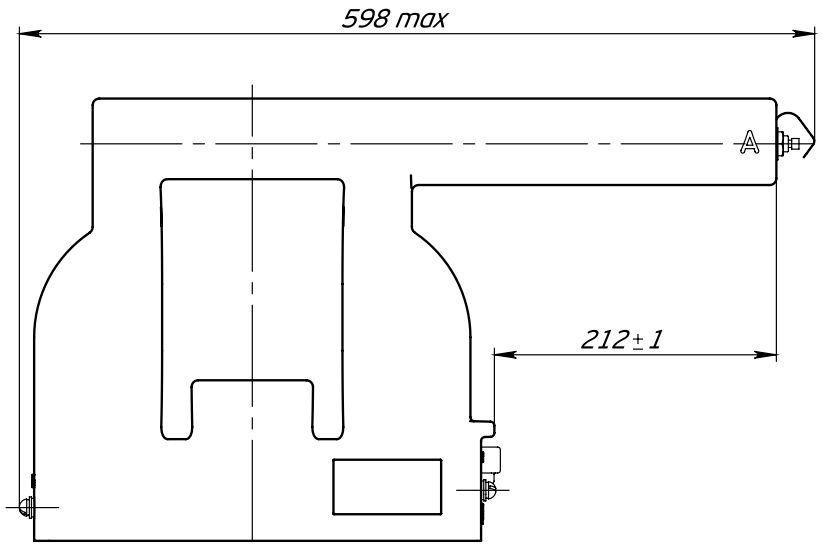


Fig. 8 General View, VT ZNOLP-SVEL-20-3.4
with contact for rollout unit, otherwise see Fig. 7

Weight max 41 kg

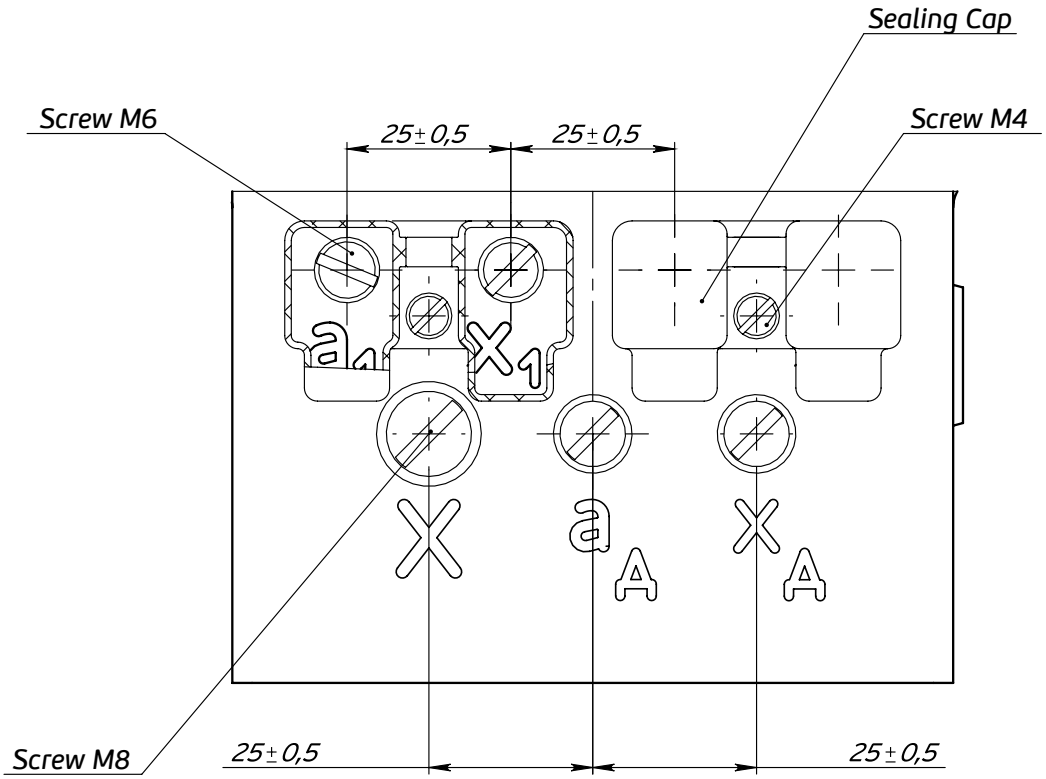


Fig. 9 Terminal Block, VT ZNOL(P)-SVEL-20-4

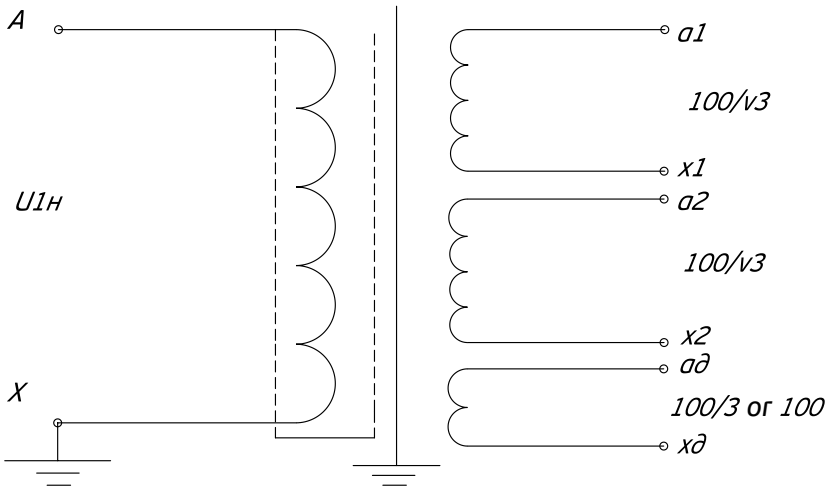


Fig. 10 Wiring Diagram, VT ZNOLP-SVEL-20-4

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

ZNOL(P)-SVEL-35

PURPOSE AND SCOPE

Voltage Transformer (VT) Type ZNOLP-SVEL-35 is a component of switchgears, AC, up to 35kV, for both indoors and outdoors operation. For three-phase main, VT is connected to the line voltage.

This VT is designed to:

- ✓ Transmit signals to measuring, protection, switch, alarm, and control units
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

This VT is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 2, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing 0ET.591.001.

EQUIPMENT DESCRIPTION

This VT is a single-phase, inductive, three- or four-coil (at ZNOL(P)-SVEL-35-4) electromagnet unit with grounded primary Terminal X. By their design, it is a support type case resin VT.

Single secondary coil (or two secondary coils – at ZNOL(P)-SVEL-35-4) is intended for measuring and metering, while auxiliary secondary coil – for protection, switch, alarm, and dielectric circuit control.

Primary HV terminal A is located on the top of VT. Secondary terminals and grounded Primary Terminal X are located at the bottom.

Secondary terminals used for measurements are sealed with a protective cap.

DESIGN SPECIFICS

Upon Customer's request, VT may be equipped with the built-in protective unit (at ZNOL(P)-SVEL-35). Also, ZNOL(P)-SVEL-35 may be manufactured with inversed HV Terminal A.

TECHNICAL PARAMETERS ZNOL(P)-SVEL-35	
Parameter	**Value**
Voltage Class, kV	35
Max Working Voltage, kV	40,5
Rated Primary Voltage, V	27500, 35000/√3
Rated Main Secondary Voltage, V	100, **100/√3**, 110/√3
Rated Auxiliary Secondary Voltage, V	**100/3**, 110/3, 100, 110
Rated Power, at Power Factor, Main Secondary, inductive and non-inductive load, 0,8 V·A:	
Accuracy Class 0,2	10, 15, 20, 25, **30**, 40, 50
Accuracy Class 0,5	30, **50**, 60, 75, 100, 120
Accuracy Class 1	50, **100**, 120, 150, 200
Rated Power, Auxiliary Secondary Coil, Accuracy Class 3P, V·A	200
Limit Power beyond Accuracy Class, V·A	400, 600, 630
Limiting Continuous Primary Current, A	0,03
Vector Group	1/1/1-0-0
Rated Frequency, Hz	50 or 60**

** VT is manufactured with the rated power corresponding to a single accuracy class, as ordered;*

*** Applicable for the transformers delivered abroad.*

**** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS ZNOL(P)-SVEL-35-4	
Parameter	**Value**
Voltage Class, kV	35
Max Working Voltage, kV	40,5
Rated Primary Voltage, V	35000/√3
Rated First Secondary Voltage, V	**100/√3**, 110/√3
Rated Second Secondary Voltage, V	**100/√3**, 110/√3
Rated Auxiliary Secondary Voltage, V	**100/3**, 110/3, 100, 110
Rated Power, at Power Factor, Main Secondary, inductive and non-inductive load, 0,8 V·A*:	
Accuracy Class 0,2	**10,** 15, 20, 30
Accuracy Class 0,5	10, 15, 20, 25, **30**, 50, 75
Rated Power, Auxiliary Secondary Coil, Accuracy Class 3 V·A	200
Limit Power beyond Accuracy Class, V·A	400, 600, 630
Limiting Continuous Primary Current, A	0,03
Vector Group	1/1/1/1-0-0-0
Rated Frequency, Hz	50 or 60**

** Sum of rated power values of main secondary coils, accuracy class 0.2/0.2 shall not exceed 40VA, accuracy class 0.2/0.5 – 50VA, and accuracy class 0.5/0.5 – 100VA;*

*** Applicable for the transformers delivered abroad.*

**** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS ZNOL(P)-SVEL					
Configuration	**Voltage Class, kV**	**Number of Windings**	**Inversed**	**For rollout unit**	**Weight, kg**
ZNOL-SVEL-35	35	3	-	-	60
ZNOLP-SVEL-35	35	3	-	-	65
ZNOLP-SVEL-35-3.4	35	3	+	+	65
ZNOL-SVEL-35-4	35	4	-	-	65
ZNOLP-SVEL-35-4	35	4	-	-	65
ZNOLP-SVEL-35-4.4	35	4	+	+	65

DIMENSION, MOUNTING AND CONNECTION DRAWINGS ZNOL(P)-SVEL-35

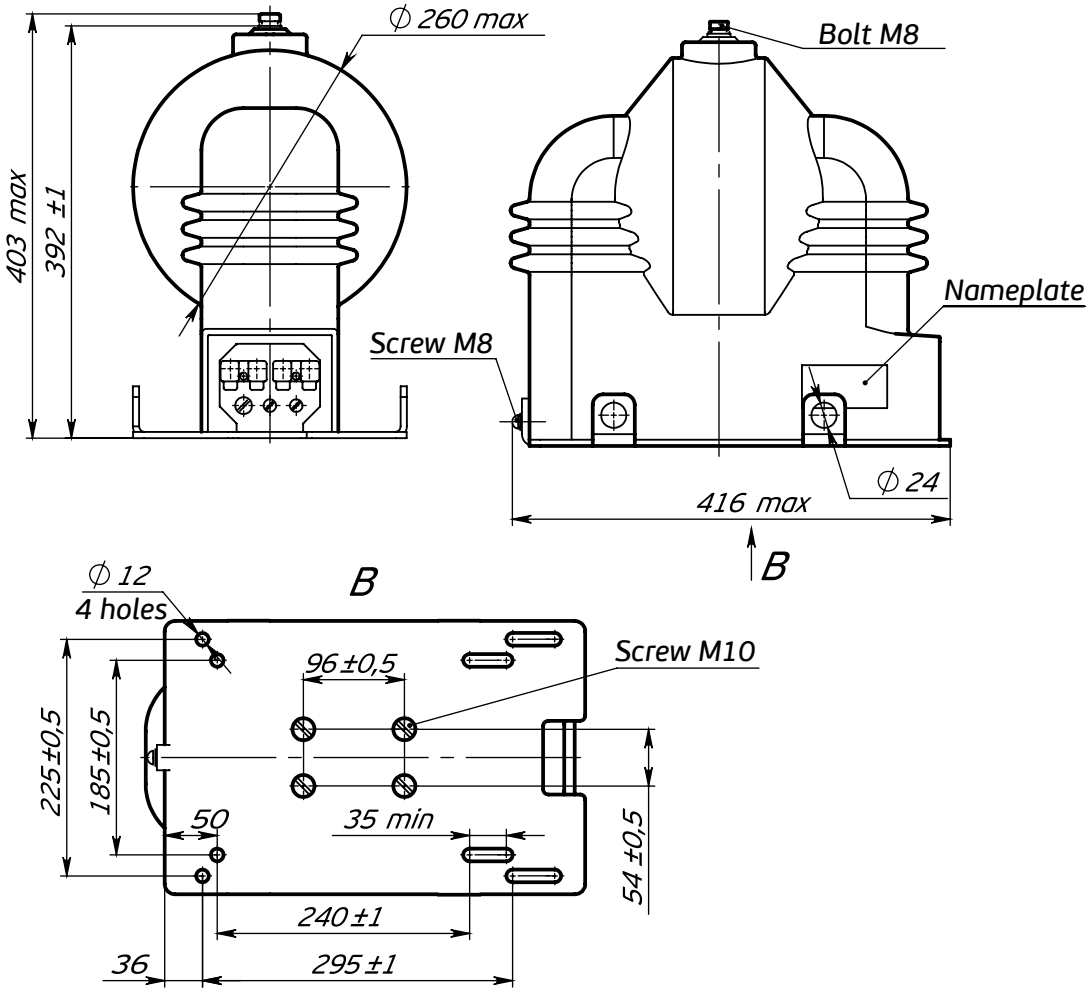


Fig. 1 General View,
Voltage Transformer ZNOL(P)-SVEL-35

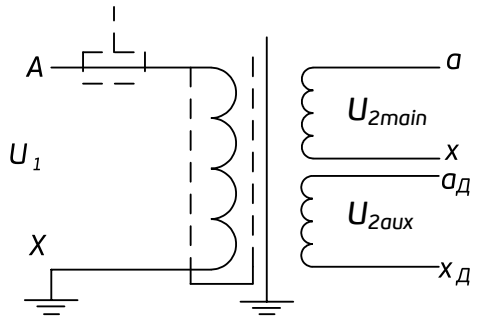


Fig. 2 Wiring Diagram,
Three-Coil VT ZNOL(P)-SVEL-35

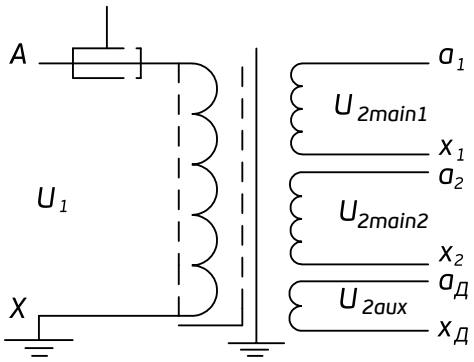


Fig. 3 Wiring Diagram,
Four-Coil VT ZNOL(P)-SVEL-35-4

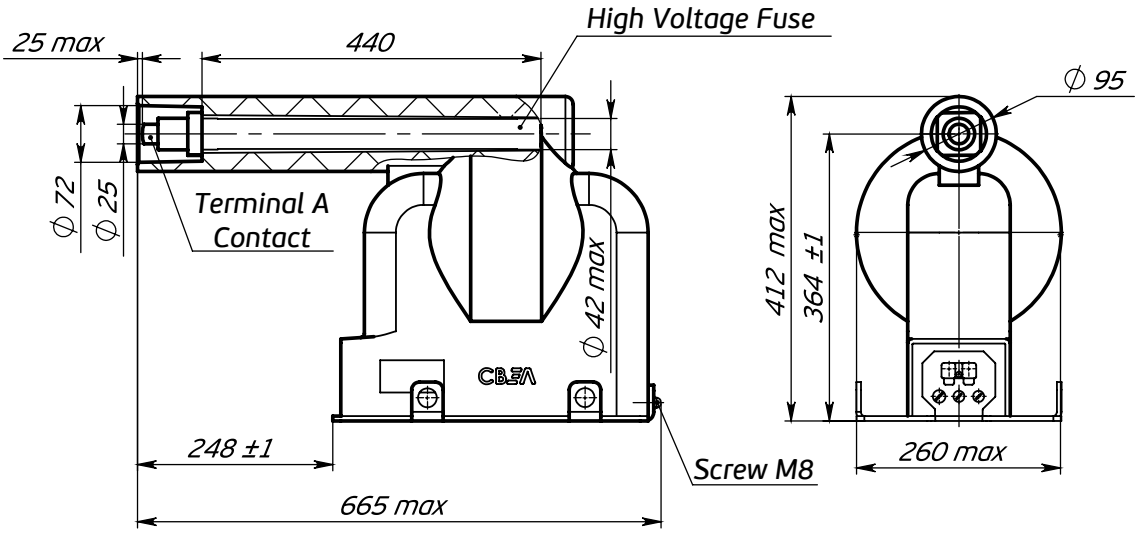


Fig. 4 General View, Voltage Transformer ZNOL(P)-SVEL-35, otherwise see Fig. 1

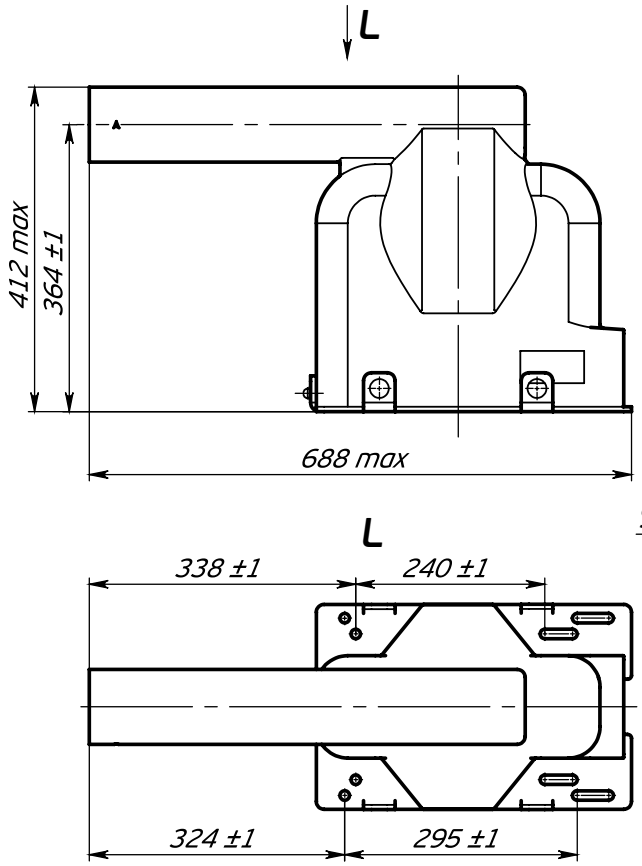


Fig. 5 General View, Voltage Transformer ZNOL(P)-SVEL-35-3.4, with inversed terminal, otherwise see Fig. 4

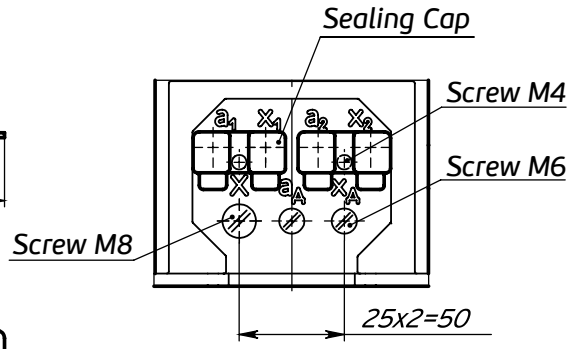


Fig. 6 Contact Board, Voltage Transformer ZNOL(P)-SVEL-35-4

Weight, max 65 kg

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

ZNOL-SVEL-35 III

PURPOSE AND SCOPE

Voltage Transformer (VT) Type ZNOL-SVEL-35 III is a component of switchgears, AC, up to 35kV, for both indoors and outdoors operation. For three-phase main, VT is connected to the line voltage.

This VT is designed to:

- ✓ Transmit signals to measuring, protection, switch, alarm, and control units
- ✓ Ensure commercial metering of electricity
- ✓ Insolate secondary circuits from high voltage

This VT is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 1, as per GOST 15150-69.

The specific creepage path of the outer insulation of this VT corresponds to average (II) and strong (III) degree of contamination according to GOST 9920-89.

Working position – vertical.

Technical specification for manufacturing ОЕТ.591.001.

EQUIPMENT DESCRIPTION

This VT is a single-phase, inductive, three- or four-coil (at ZNOL-SVEL-35 III-4) electromagnet unit with grounded primary Terminal X. By their design, it is a support type case resin VT.

Single secondary coil (or two secondary coils – at ZNOL-SVEL-35 III-4) is intended for measuring and metering, while auxiliary secondary coil – for protection, switch, alarm, and dielectric circuit control.

Primary HV terminal A is located on the top of VT. Secondary terminals and grounded Primary Terminal X are located at the bottom and sealed with a protective cap.

Secondary terminals used for measurements are additional covered with a sealed cap.

The contact board is equipped with a cover protecting from precipitation. Upon customer's request, in order to ensure tightness, it is possible to deliver VTs with cable glands at the point of cable outlet to facilitate connection with the contact board.

DESIGN SPECIFICS

Upon Customer's request, VT may be manufactured with increased rated secondary burden, i.e. for ZNOL-SVEL-35 III-4 with two main secondary coils: max rated power in accuracy class 0.5/0.5 shall be 50/50VA.

TECHNICAL PARAMETERS ZNOL-SVEL-35 III	
Parameter	**Value**
Voltage Class, kV	35
Max Working Voltage, kV	40,5
Rated Frequency, Hz	**50**; 60*
Rated Primary Voltage, V	35000/√3
Rated Main Secondary Voltage, V	**100/√3**, 110/√3
Rated Auxiliary Secondary Voltage, V	**100/3**, 110/3, 100, 110
Rated Power, at Power Factor, Main Secondary**, inductive and non-inductive load , 0,8 V·A:	
Accuracy Class 0,2	10, 15, 20, 25, **30**, 40, 50
Accuracy Class 0,5	30, **50**, 60, 75, 100, 120
Accuracy Class 1	50, **100**, 120, 150, 200
Rated Power, Auxiliary Secondary Coil, Accuracy Class 3 V·A	200
Limit Power beyond Accuracy Class, V·A	400, 600, 630, 1000
Vector Group	1/1/1-0-0
Rated Frequency, Hz	50 or 60**
Limiting Continuous Primary Current, A	0,03

** Applicable to the transformers delivered abroad*

*** VT is manufactured with the rated power corresponding to a single accuracy class, as ordered;*

**** Standard parameters are highlighted bold*

TECHNICAL PARAMETERS ZNOL-SVEL-35 III-4	
Parameter	**Value**
Voltage Class, kV	35
Max Working Voltage, kV	40,5

TECHNICAL PARAMETERS ZNOL-SVEL-35 III-4	
Parameter	**Value**
Rated Frequency, Hz	**50**; 60*
Rated Primary Voltage, V	35000/√3
Rated First Secondary Voltage, V	**100/√3**, 110/√3
Rated Second Secondary Voltage, V	**100/√3**, 110/√3
Rated Auxiliary Secondary Voltage, V	**100/3**, 110/3, 100, 110
Rated Power, at Power Factor, Main Secondary**, inductive and non-inductive load, 0,8 V·A	
Accuracy Class 0,2	**10**, 15, 20
Accuracy Class 0,5	10, 15, 20, 25, **30**, 50
Rated Power, Auxiliary Secondary Coil, Accuracy Class 3 V·A	200
Limit Power beyond Accuracy Class, V·A	400, 630
Limiting Continuous Primary Current, A	0,02, 0,03
Vector Group	1/1/1/1-0-0-0

** Applicable to the transformers delivered abroad*

*** Sum of rated power values of main secondary coils, accuracy class 0.2/0.2 shall not exceed 30VA, accuracy class 0.2/0.5 – 45VA, and accuracy class 0.5/0.5 – 100VA;*

**** Standard parameters are highlighted bold*

DIMENSION, MOUNTING AND CONNECTION DRAWINGS ZNOL-SVEL-35 III

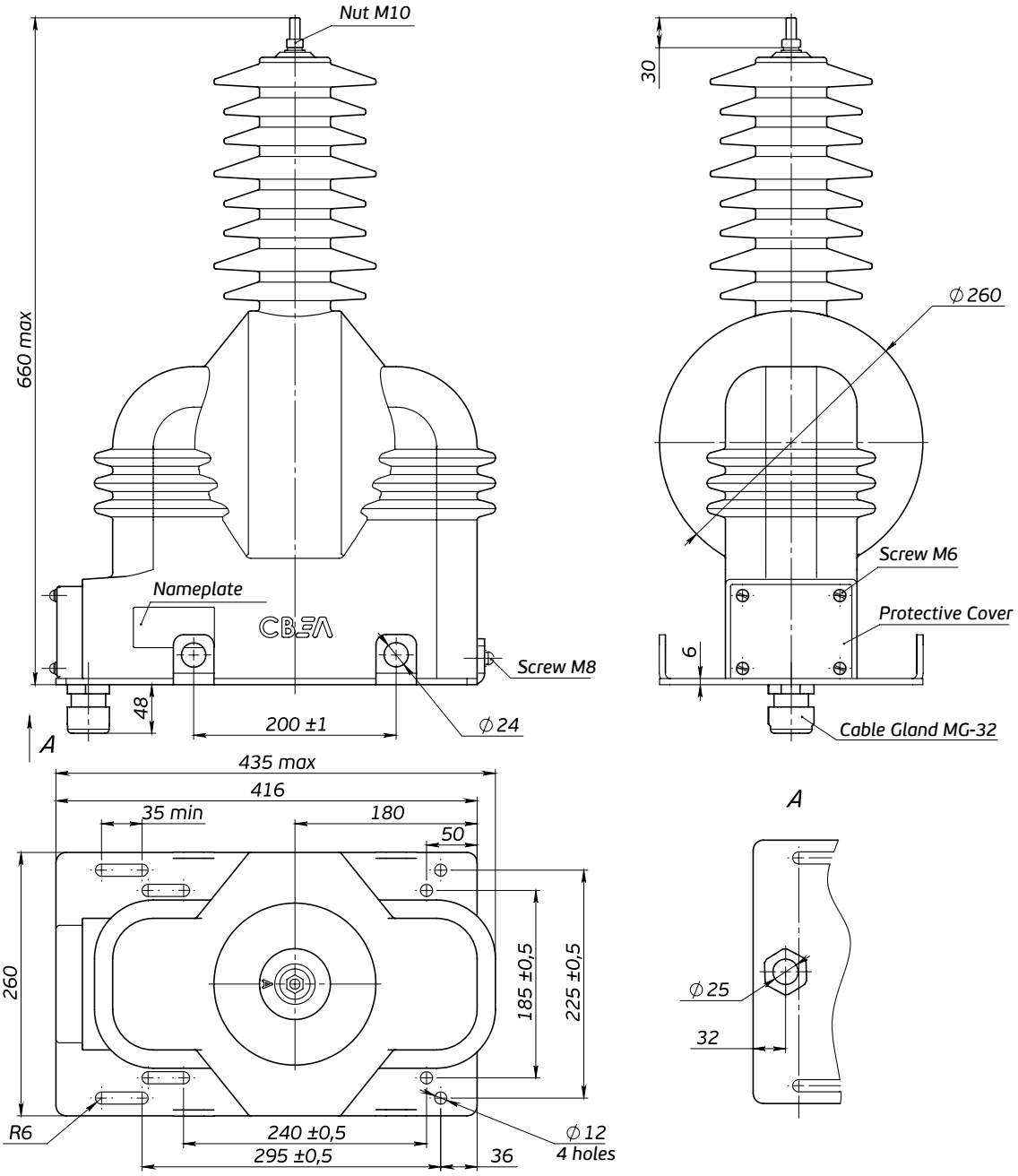
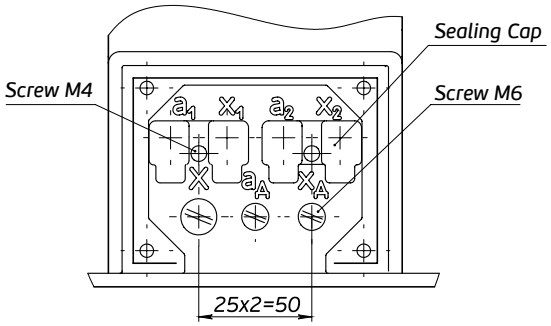


Fig. 1 General View, Voltage Transformer ZNOL-SVEL-35 III



Weight, max 65 kg

Fig. 2 Contact Board, Voltage Transformer ZNOL-SVEL-35 III-4

VOLTAGE TRANSFORMERS, INTERCHANGEABILITY

INTERCHANGEABILITY TABLE

SVEL	Sverdlovsk Current Transformer Plant	Nevsky Transformer Plant	Elektroshchit-K	Samara Elektroshchit	Kentau Transformer Plant	Samara Transformer Company	ABB, RITZ
ZNOL(P)-SVEL-6(10)	ZNOL.0.6.-6(10)	ZNOL(P)-NTZ-6(10)	ZNOL(P)-EK-10(6)	ZNOL-SESHCH-6(10)-20	ZNIOL-6(10), ZNIOL-6(10)-P	-	-
ZNOLP-SVEL-6(10)M	ZNOLPM-6(10)	-	-	-	-	-	-
ZNOL(P)-SVEL-6(10)-4	ZNOL.0.6.4-6(10), ZNOLP-6(10)	-	ZNOL(P)-EK-10(6) (3 winding LV)	ZNOL-SESHCH-6(10)(3 winding VW), ZNOL-SESHCH-6(10)-1 (3 winding LV)	ZNIOL-6(10) (3 winding VW), ZNIOL-6(10)-P (3 winding LV)	-	-
ZNOL(P)-SVEL-6/10	-	-	-	-	-	-	-
ZNOL(P)-SVEL-35		ZNOLP-NTZ-35	-	-		ZNIOL-35 (P)	TJP 7.1
ZNOL(P)-SVEL-35-4	-	-	-	-	-	-	-
3xZNOL(P)-SVEL-6(10)	3xZNOL.0.6.-6(10), 3xZNOLPM-6(10)	3xZNOL(P)-NTZ-6-10	3XZNOL(P)-EK-10(6)	3xZNOL-SESHCH-6(10); NALI-SESHCH-6(10), 3xZNOL-SESHCH-6(10)-1	3xZNIOL-6(10), NAMI-6(10), NTMI-6(10), 3xZNIOL-6(10)-P	-	-
3xZNOLP-SVEL-6(10)M	-	-	-	-	-	-	-
3xZNOL(P)-SVEL-6(10)-4	3xZNOL.0.6.4-6(10), 3xZNOLP.4-6(10)	NALI-NTZ-6(10)	3XZNOL(P)-EK-10(6) (3 winding LV)	3XZNOL(P)-SESHCH-10(6) (3 winding LV)	3xZNIOL-6(10) (3 winding VW), 3xZNIOL-6(10)-P (3 winding LV)	3xNIOL-ST-6(10)-2MP	-
NOL(P)-SVEL-6(10)	NOL.08-6(10), NOLP-6(10)	NOL(P)-NTZ-6(10)	-	NOL-SESHCH-6(10), NOL-SESHCH-6(10)-1	NOL-6(10)	NIOL-ST-6(10), NIOL-ST-6(10)-P	-
ZNOL-SVEL-35 III	ZNOL-35 III	ZNOL-NTZ-35	-	ZNOL-SESHCH-35-IV	ZNIOL-35-1		GEF 40,5, TJO 7
ZNOL-SVEL-35 III-4	ZNOL-35 III-4	-		ZNOL-SESHCH-35-IV (3 winding LV)	-	-	-

VOLTAGE TRANSFORMER DESIGN SPECIFICS

- ✓ Outdoor transformers are manufactured by a single epoxy resin cast
- ✓ High-level UV Resistance
- ✓ Decreased heating values
- ✓ Reduced costs of equipment
- ✓ Facilitate maintenance by using SPUE (Removable Reusable Protection Unit).

VOLTAGE TRANSFORMER FOR OUTDOOR APPLICATION

While designing VTs for outdoor application for voltage class 6kV to 35kV, SVEL Group's Design Engineers, jointly with several German manufacturers of the casting equipment, came up with an outdoor VT design that require a single epoxy resin cast.

This design allowed solving several issued at a time: skip the second cast, i.e. accelerate manufacturing process; decrease heating of the transformer; drop polyurethane resins, which reduces the cost of equipment and, therefore, save customer's funds.

Currently, SVEL continue their efforts to improve reliability of the cast resin transformers. New modification of VT are developed upon the most advanced manufacturing methods, modern composite materials aiming at launching reliable goods at reasonable prices.

LOW POWER TRANSFORMERS

PURPOSE AND SCOPE

Low Power Transformer is one of the most common type of converter widely used in power industry, including auxiliary purposes of electrical sites, to convert AC voltage of various power systems and further transmit to the end users.

These days, low power transformers become an integrate part of industrial companies, urban infrastructure, and railway power lines.

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

OL-SVEL-0,63(1,25)/6(10)

PURPOSE AND SCOPE

This Low Power Transformer is intended to ensure power supply for automated overhead line blocking and railways lateral power supply.

At a three-phase main, this transformer shall be connected to the line voltage.

This transformer is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 1, as per GOST 15150-69. The specific creepage path of the outer insulation of this transformer corresponds to average (II) and strong (III) degree of contamination according to GOST 9920.

Working position – optional.

Technical specification for manufacturing ОЕТ.591.005.

EQUIPMENT DESCRIPTION

This transformer is a single-phase, inductive, double-coil electromagnet unit with non-grounded primary coil.

By their design, it is a support type case resin transformer.

Primary terminals are located on the top. Secondary terminals are located at the bottom of the cast unit, and covered with a protective cover

TECHNICAL PARAMETERS OL-SVEL-0,63(1,25)/6(10)

Parameter	Value			
	OL-SVEL-0,63/6	OL-SVEL-1,25/6	OL-SVEL-0,63/10	OL-SVEL-1,25/10
Voltage Class, kV	6		10	
Max Working Voltage, kV	7,2		12	
Rated Frequency, Hz	50			
Rated Primary Voltage, V	6300, 6600		10000, 10500, 11000	
Rated Main Secondary Voltage, V*				
x – a1	218			
x – a2	224			
x – a3	230			
x – a4	236			
x – a5	242			
Rated power, V·A	630	1250	630	1250
10 min Limit Power at 230V (x – a3), V·A	2000			
No Load Current, max %	30			
No Load Loss, max, W	50			
Impedance Voltage, %	4,5			
Short Circuit Loss, max, W	55			
Vector Group	1/1-0			

** Optionally, transformers may be manufactured with non-standard technical characteristics, upon customer's request.*

DIMENSION, MOUNTING AND CONNECTION DRAWINGS OL-SVEL-0,63(1,25)-6(10)

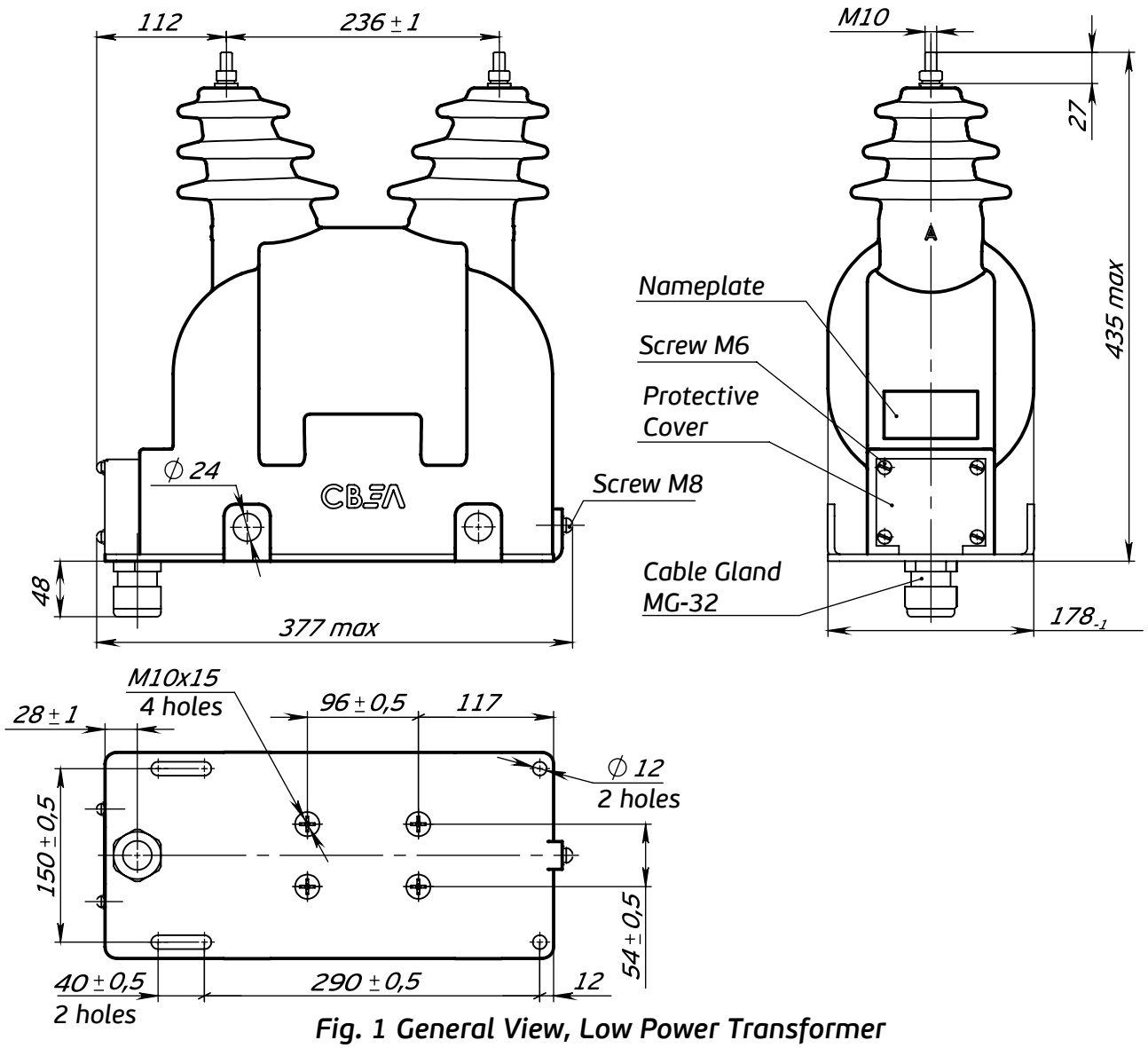


Fig. 1 General View, Low Power Transformer OL-SVEL-0.63(1.25)/6(10)

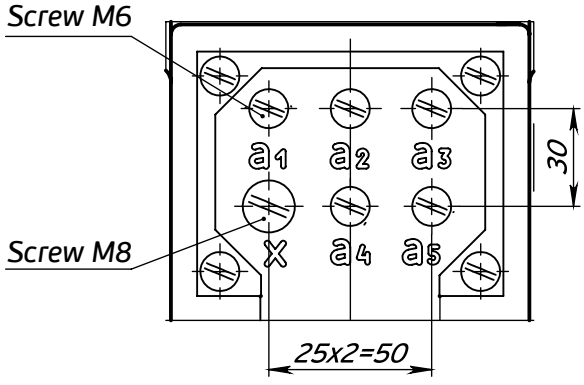


Fig. 2 Contact Board, Low Power Transformer, OL-SVEL-0.63(1.25)/6(10)

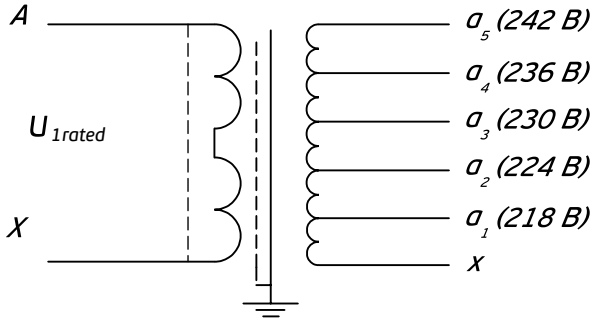


Fig. 3 Wiring Diagram, OL-SVEL-0.63(1.25)/6(10)

Weight, max 43 kg

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

OLS(P)-SVEL-0,63(1,25)/6(10)

PURPOSE AND SCOPE

This Low Power Transformer is a component of switchgears, AC, up to 10kV, for both indoors and outdoors operation. For three-phase main, VT is connected to the line voltage.

This transformer is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 1, as per GOST 15150-69.

Working position – optional.

Technical specification for manufacturing ОЕТ.591.005.

EQUIPMENT DESCRIPTION

This transformer is a single-phase, inductive, double-coil electromagnet unit with non-grounded primary coil. By their design, it is a support type case resin transformer.

Primary terminals are located on the top. Secondary terminals are located at the bottom of the cast unit.

TECHNICAL PARAMETERS OLS(P)-SVEL-0,63(1,25)/6(10)				
Parameter	Value			
	OLS(P)-SVEL-0,63/6	OLS(P)-SVEL-1,25/6	OLS(P)-SVEL-0,63/10	OLS(P)-SVEL-1,25/10
Voltage Class, kV	6		10	
Max Working Voltage, kV	7,2		12	
Rated Frequency, Hz	50			
Rated Primary Voltage, V	6300, 6600		10000, 10500, 11000	
Rated Main Secondary Voltage, V				
$x - a_1$	100			
$x - a_2$	209			
$x - a_3$	220			
$x - a_4$	231			
Rated power, V·A	630	1250	630	1250
10 min Limit Power at 220V (x – a3), V·A	2000			
No Load Current, max %	30			
No Load Loss, max, W	50			
Impedance Voltage, %	4,5			
Short Circuit Loss, max, W	55			
Vector Group	1/1-0			

DIMENSION, MOUNTING AND CONNECTION DRAWINGS OLS-0,T63(1,25)-6(10)

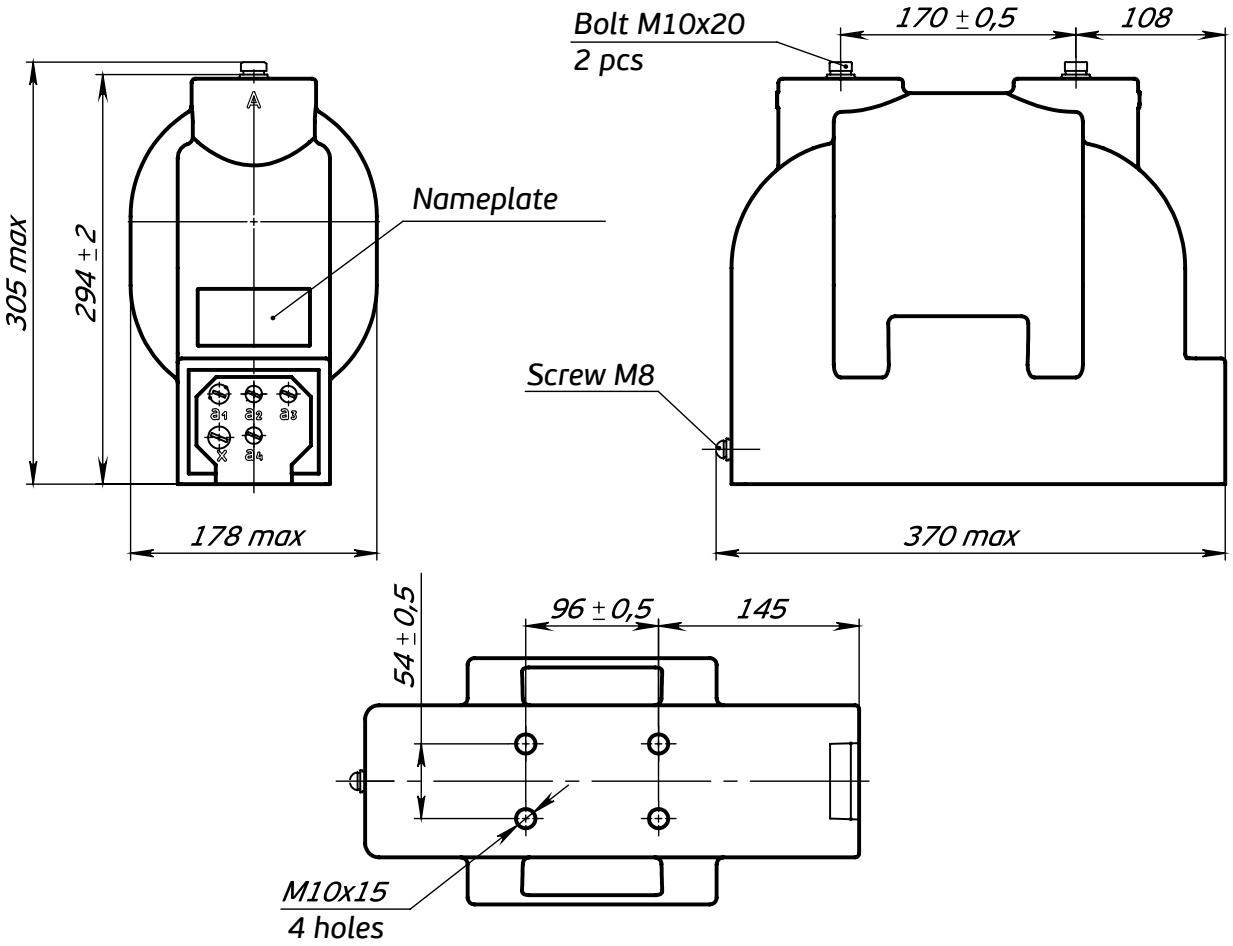


Fig. 1 General View,
Low Power Transformer
OLC-SVEL-0.63(1.25)/6(10

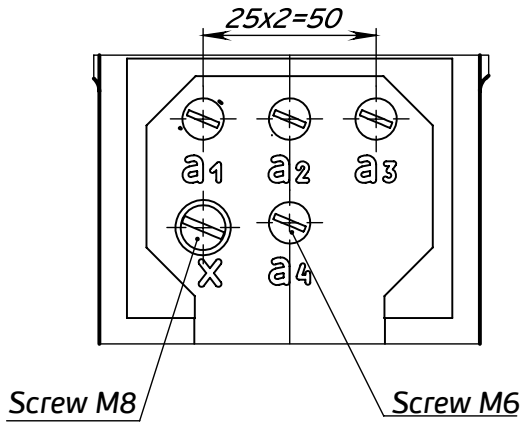


Fig. 2 Contact Board,
Low Power Transformer,
OLC-SVEL-0.63(1.25)/6(10)

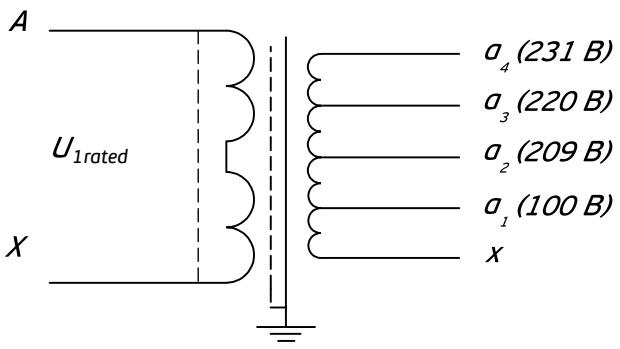


Fig. 3 Wiring Diagram,
OLC-SVEL-0.63(1.25)/6(10)

Weight, max 43 kg

DIMENSION, MOUNTING AND CONNECTION DRAWINGS OLSP-0,63(1,25)-6(10)

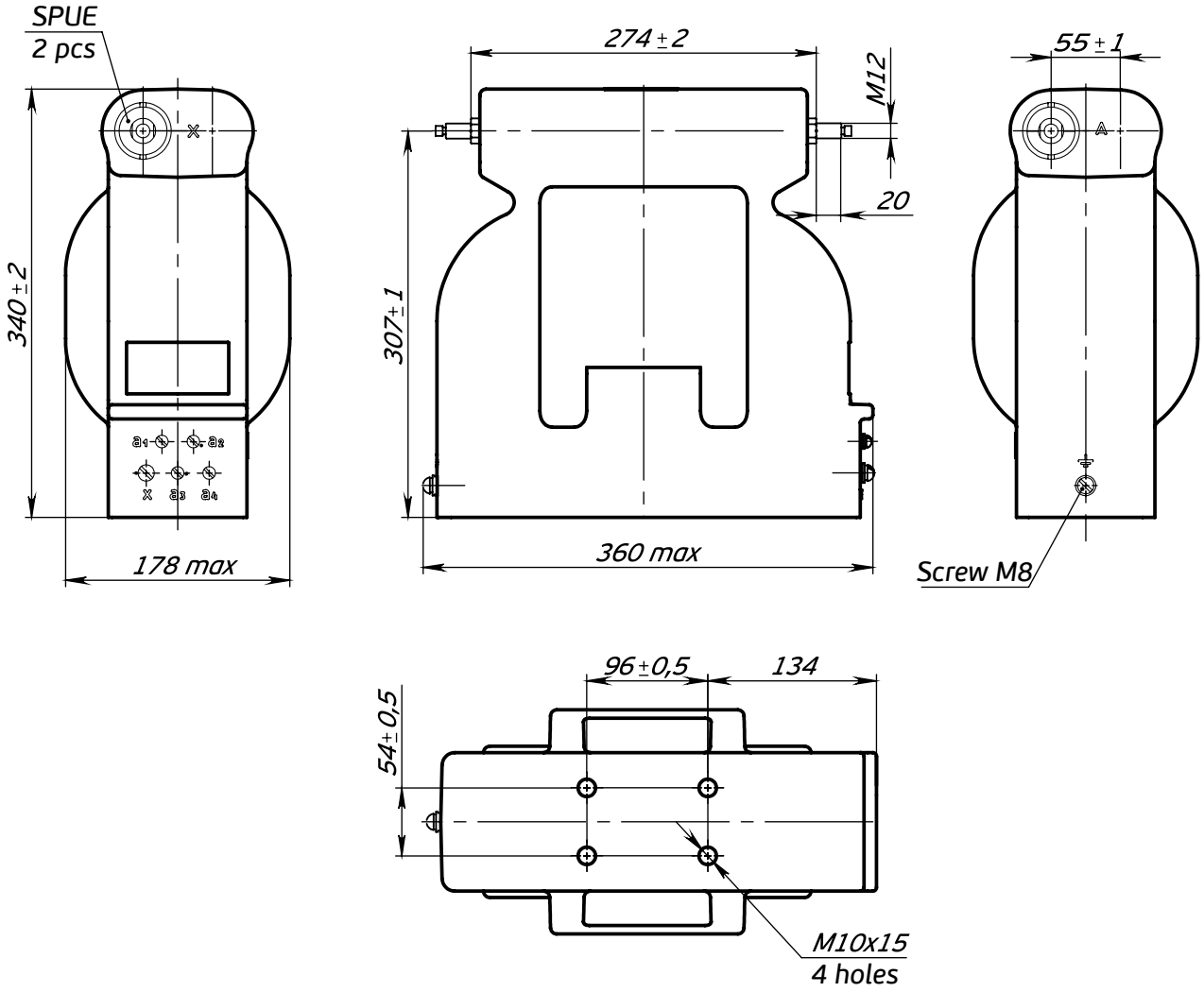


Fig. 1 Fig. 1 General View,
Low Power Transformer OLCP-SVEL-0.63(1.25)/6(10)

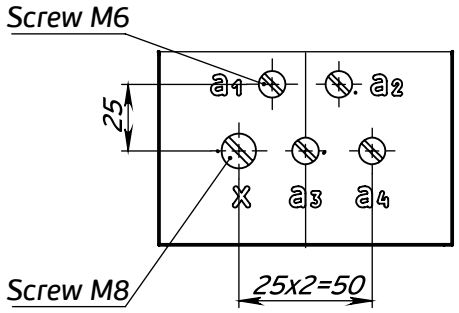


Fig. 2 Contact Board,
Low Power Transformer,
OLCP-SVEL-0.63(1.25)/6(10)

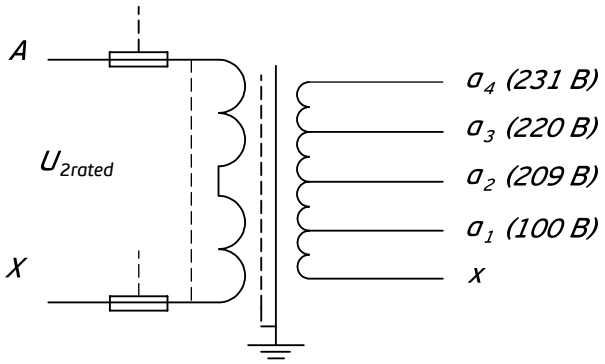


Fig. 3 Wiring Diagram,
OLCP-SVEL-0.63(1.25)/6(10)

Weight, max 40 kg

RELIABLE DESIGN AND PRECISE MEASUREMENTS

Innovations, modern engineering and manufacturing methods, high quality composite materials allow making highly reliable and highly accurate equipment

OLZ-SVEL-1,25/27,5

PURPOSE AND SCOPE

This Low Power Transformer is intended to ensure power supply for centralized traffic control, automated overhead line blocking and railways lateral power supply.

At a three-phase main, this transformer shall be connected to the line voltage.

This transformer is made in UHL (Moderate Frigid) and T (Tropic) Climate Class, and Environment Category 1, as per GOST 15150-69. The specific creepage path of the outer insulation of this transformer corresponds to very strong (IV) degree of contamination, and equals to 3.1 cm/kV, according to GOST 9920-89.

Working position – vertical.

Technical specification for manufacturing ОЕТ.591.005.

EQUIPMENT DESCRIPTION

This transformer is a single-phase, inductive, double-coil electromagnet unit with grounded primary coil.

By their design, it is a support type case resin transformer.

Primary terminal A is located on the top of the transformer. Secondary terminals and terminal X are located at the bottom., and covered with a protective cover.

TECHNICAL PARAMETERS OLZ-SVEL-1,25/27,5	
Parameter	**Value**
Voltage Class, kV	27
Max Working Voltage, kV	30
Rated Primary Voltage, V	27500
Rated Main Secondary Voltage, by taps V:	
x-a_1	218
x-a_2	224
x-a_3	230
x-a_4	236
x-a_5	242
Rated power, V·A	1250
Rated Frequency, Hz	50 or 60*
No Load Current,%, max	35
No Load Loss, max, W	50
Impedance Voltage, max, %	4,5
Vector Group	1/1-0

DIMENSION, MOUNTING AND CONNECTION DRAWINGS OLZ-SVEL-1,25/27,5

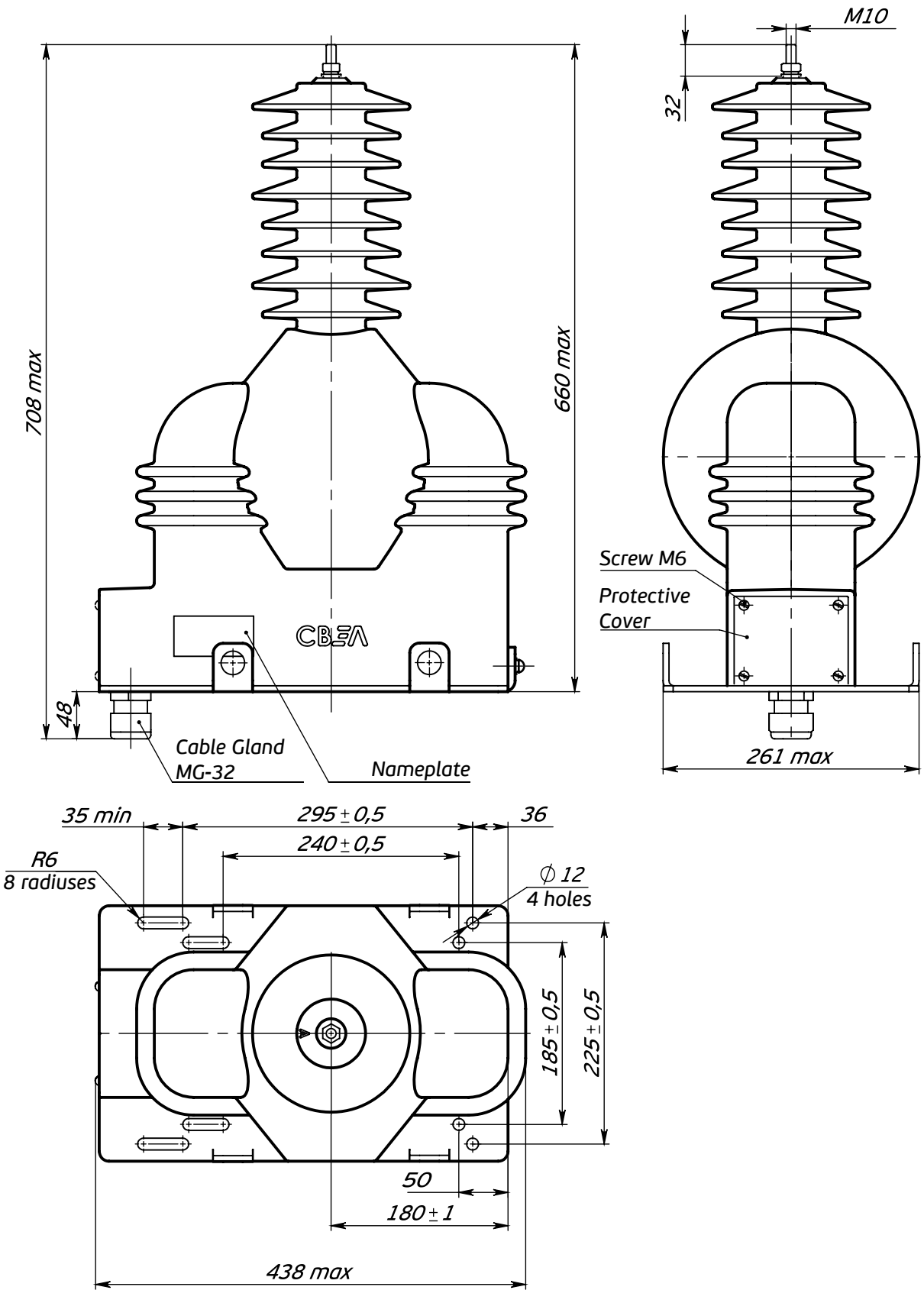


Fig. 1 General View, Low Power Transformer OLZ-SVEL-1.25/27.5, UHL1

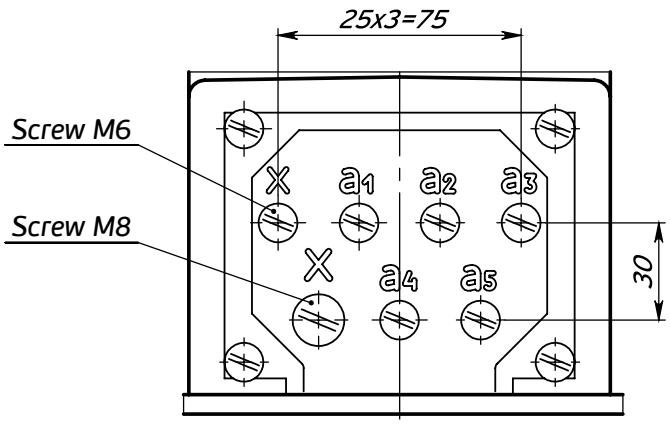


Fig. 2 Contact Board,
Low Power Transformer OLZ-SVEL-1.25/27.5

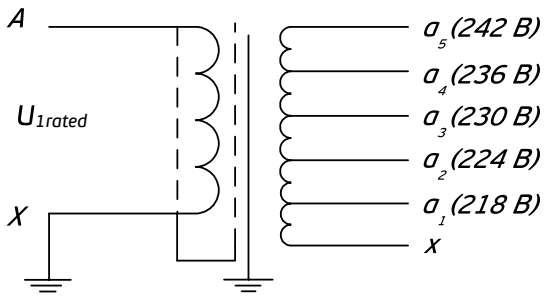


Fig. 3 Wiring Diagram,
Low Power Transformer OLZ-SVEL-1.25/27.5

Weight, max 65 kg

POWER TRANSFORMERS, INTERCHANGEABILITY

INTERCHANGEABILITY TABLE							
SVEL	Sverdlovsk Current Transformer Plant	Nevsky Transformer Plant	Elektroshchit-K	Samara Elektroshchit	Kentau Transformer Plant	Samara Transformer Company	ABB, RITZ
OL-SVEL-0,63(1,25)/6(10)	OL-0,63(1,25)/6(10)	-	-	OL-SESHCH-0,63(1,25)/6(10)	OM-0,63(1,25)	OM-0,63(1,25)	-
OLS-SVEL-0,63(1,25)/6(10)	OLS-0,63(1,25)/6(10)	OLS-NTZ-0,63(1,25)/6(10)	-	OLS-SESHCH-0,63(1,25)/6(10)	-	-	-
OLSP-SVEL0,63(1,25)/6(10)	OLSP-0,63(1,25)/6(10)	OLSP-NTZ-0,63(1,25)/6(10)	-	OLS-SESHCH-0,63(1,25)/6(10)-1	-	-	-
OLZ-SVEL-0,63(1,25)/27,5	OLZ-0,63(1,25)/27,5	-	-	-	-	-	-

ENGINEERING DATA SHEET
CURRENT TRANSFORMER

Company Name:
Taxpayer Registration No:
Contact:
Phone:
Fax:
Email:

SVEL Group, JSC
61 Chernyakhovsky Street,
Yekaterinburg 620010 Russia
Phone/Fax: +7 (343) 253-50-66
Email: instrument@svel.com
Website: svel.com

TYPE: _____ Quantity: _____

Rated Voltage, kV: _____ Creepage Path, cm/kV: _____

Short-time Thermal Current, kA: _____ Climate Category: _____

Peak Withstand Current, kA: _____ Environment Class: _____

CURRENT TRANSFORMERS

☐ TOL-SVEL-10 ☐ TOL-SVEL-35 III ☐ TPOL-SVEL-10 ☐ TPL-SVEL-10 ☐ TSHL-SVEL-0,66

☐ TOL-SVEL-10M* ☐ TOL-SVEL-35 III M ☐ TPOL-SVEL-10M ☐ TSHL-SVEL-10

☐ TOL-SVEL-20 ☐ TSHL-SVEL-20

☐ TOL-SVEL-35

○ *Primary Side Regulation*

○ *Secondary Side Regulation*

*Isolating Walls

Coil #	Rated Current, A		Rated Second-ary Bur-den, V·A	Accura-cy Class	Accuracy Limit Fac-tor (for protec-tion coils)	Safety Factor (for measur-ing coils)	Differen-tial Protec-tion Coil	Flexible Termi-nal (Pig-tail) Length
	Prima-ry	Second-ary						
1								
2								
3								
4								
5								

Comment: _____

_____

_____

_____

ENGINEERING DATA SHEET
BUILT-IN CURRENT TRANSFORMER

Company Name:
Taxpayer Registration No:
Contact:
Phone:
Fax:
Email:

SVEL Group, JSC
61 Chernyakhovsky Street,
Yekaterinburg 620010 Russia
Phone/Fax: +7 (343) 253-50-66
Email: instrument@svel.com

Website: svel.com

TYPE: _____

Quantity: _____

Rated Voltage, kV: _____

Environment Class: _____

Peak withstand current kA: _____

Climate Category: _____

BUILT-IN CURRENT TRANSFORMER

	1S1-1S2	1S1-1S3	1S1-1S4	1S1-1S5	1S1-1S6	1S1-1S7
Rated Primary Current, A						
Rated Secondary Current, A						
Accuracy Class						
Rated Secondary Burden, VA						
Accuracy Limit Factor (for protection coils)						
Safety Factor (for measuring coils)						

BUILT-IN CURRENT TRANSFORMER, OUTDOORS

	TV-SVEL-35-IX	TV-SVEL-110-IX	TV-SVEL-110-IX-3	TV-SVEL-220-IX
Outer diameter, mm	440	550	725	1060
Inner diameter, mm	245	420	420	840

Coil #	Tap	Rated Current, A		Rated Secondary Burden, V·A	Accuracy Class	Accuracy Limit Fac-tor (for protection coils)	Safety Fac-tor (for measuring coils)
		Primary	Secondary				
1	1S1-1S2						
	1S1-1S3						
	1S1-1S4						
	1S1-1S5						
2	2S1-2S2						
3	3S1-3S2						
4	4S1-4S2						
5	5S1-5S2						
6	6S1-6S2						

Comment: _____

_____

_____

_____

_____

ENGINEERING DATA SHEET
VOLTAGE TRANSFORMER

Company Name:
Taxpayer Registration No:
Contact:
Phone:
Fax:
Email:

SVEL Group, JSC
61 Chernyakhovsky Street,
Yekaterinburg 620010 Russia
Phone/Fax: +7 (343) 253-50-66
Email: instrument@svel.com
Website: svel.com

Request:_____ Purchase Order:_____ Quantity:_____

TYPE	ZNOL-SVEL	-		-		ZNOLP-SVEL	-		-	
TYPE	3xZNOL-SVEL	-		-		3xZNOLP-SVEL	-		-	
TYPE	NOL-SVEL	-				NOLP-SVEL	-			

Voltage Class, kV: _____ Rated Frequency, Hz: _____

Climate Category: _____ Environment Class: _____

○ *Protection Unit with Inversed terminal*

○ *Mounting Plate*

○ *Secondary Side Regulation*

Please fill out for VT Types ZNOL-SVEL and ZNOLP-SVEL
Rated Primary Voltage, kV: _____ / √3

Parameter	Main First Secondary Coil	Main Second Secondary Coil	Auxiliary Secondary Coil
Rated Voltage, B	/ √3	/ √3	
Rated power, VA			
Accuracy Class			

Please fill out for VT Types 3xZNOL-SVEL и 3xZNOLP-SVEL
Rated Primary Voltage, kV: _____

Parameter	Main First Secondary Coil	Main Second Secondary Coil	Auxiliary Secondary Coil
Rated Voltage, B			
Rated power, VA			
Accuracy Class			

Please fill out for VT Types NOL-SVEL и NOLP-SVEL
Rated Primary Voltage, kV _____

Parameter	Secondary Coil
Rated Voltage, B	
Rated power, VA	
Accuracy Class	

Comment: _____

_____

_____

_____

_____

ENGINEERING DATA SHEET
POWER TRANSFORMERS

Company Name:
Taxpayer Registration No:
Contact:
Phone:
Fax:
Email:

SVEL Group, JSC
61 Chernyakhovsky Street,
Yekaterinburg 620010 Russia
Phone/Fax: +7 (343) 253-50-66
Email: instrument@svel.com
Website: svel.com

Request:_____ Purchase Order:_____ Quantity:_____

TYPE	OLS-SVEL	-		/		OLS-SVEL	-		/	
TYPE	OLSP-SVEL	-		/		OLSP-SVEL	-		/	
TYPE	OLZ-SVEL	-		/						

Voltage Class, kV: _____ Rated Frequency, Hz: _____

Climate Category: _____ Environment Class: _____

Mounting Plate: _____

HV Side, kV	LV Side, V	Rated Power, V·A
6,0, 6,3; 6,6; 10,0; 10,5; 11	100/209/220/231 or 218/224/230/236/242	630 or 1250
27,5	218/224/230/236/242	1250

Comment: _____

_____

_____

_____

_____

ENGINEERING DATA SHEET
CORE BALANCE CURRENT TRANSFORMER

Company Name:
Taxpayer Registration No:
Contact:
Phone:
Fax:
Email:

SVEL Group, JSC
61 Chernyakhovsky Street,
Yekaterinburg 620010 Russia
Phone/Fax: +7 (343) 253-50-66
Email: instrument@svel.com
Website: svel.com

Rated Voltage, kV _____

Max Working Voltage, kV _____

Frequency, Hz _____

Climate Category / Environment Class _____

One Second Thermal Current, A _____

○ *Split* ○ *Solid*

Rated Transformation Ratio ☐ 30/1 ☐ 60/1

Number of Secondary Coils ☐ 1

Current Set, A	Relay Scale Pitch, A				
For PT-140/0,2 Relay	☐ 0,1-0,2	☐ 0,1	☐ 0,1	☐ 0,1	☐ 0,1
For PT3-51 Relay	☐ 0,02-0,1	☐ 0,03	☐ 0,03	☐ 0,032	☐ 0,03

Sensitivity of Primary Current Protection, max, A	PT-140/0,2	PT3-51	PT-140/0,2	PT3-51	PT-140/0,2	PT3-51	PT-140/0,2	PT3-51
For 1 transformer	8,5	2,5	8,5	2,5	8,5	2,8	8,5	2,8
2 transformers, in series	8,5	2,5	8,5	2,5	8,5	2,8	8,5	2,8
2 transformers, in parallel.	12,5	4,8	12,5	4,8	12,5	4,8	12,5	4,8

Cable inlet hole, dia, mm ☐ 70 ☐ 100 ☐ 125 ☐ 200

Comment: _____

HOLDING COMPANY
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Yekaterinburg 620010 Russia
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info@svel.com | svel.com

SALES, INSTRUMENT TRANSFORMERS
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instrument@svel.com | svel.com

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