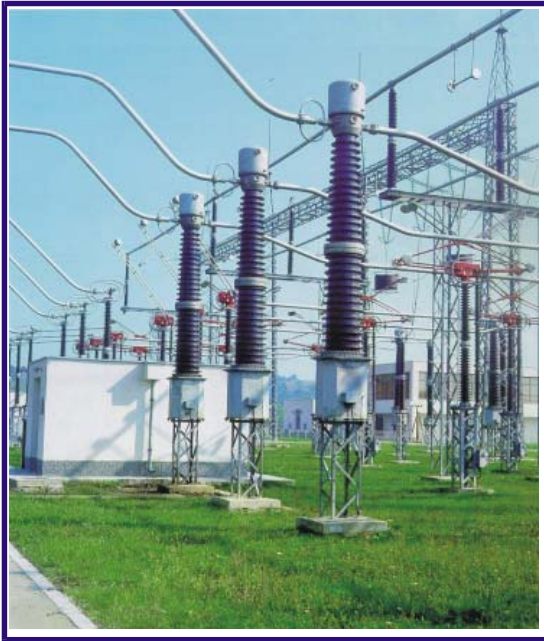


**CURRENT TRANSFORMERS WITH OIL INSULATION
FOR VOLTAGE LEVEL 72.5 kV - 420 kV
TYPE TPE**



APPLICATION

The current transformers for outdoor installation type TPE are installed into high and the highest voltage system between phase conductor and earth.

They are used to transform the high currents to the values which can be measured by the devices of a standard design and which are suitable for supply of protective devices current circuits, and devices for measuring and recording of electric power and energy.

The second task of the measuring transformers is to insulate the circuits of measuring and protective devices from a high voltage.

For safe measuring of the current it is necessary to limit the secondary current so that regardless how high the primary current is the measuring instrument connected to the secondary should be protected against the current which could damage it.

The protection however requires the exact transformation of a primary current on the secondary up to highest primary currents.

TEHNIICAL FEATURES

The current transformers, type TPE are produced applying the most up-to-date technology and highest quality materials.

They are featured by high service reliability which is achieved by a successful solution of:

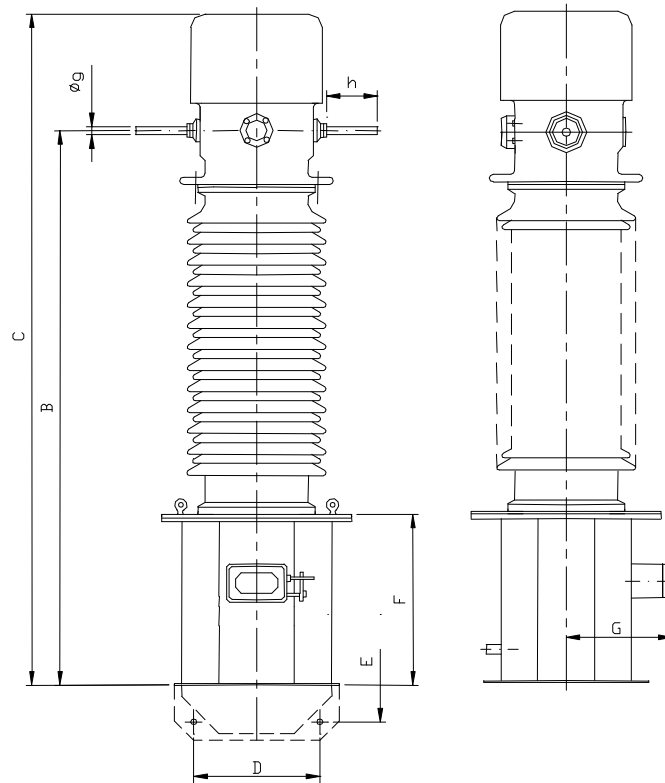
- high voltage insulation
- heatings at load by a rated primary current and required current of extended range

- withstanding of short circuit and overvoltage currents

The use of the cold rolled silicium sheet with an oriented crystal line structure of a high magnetic permeability made it possible to construct the transformer of the reduced dimensions and total mass. Capacitor insulation consisting of a high quality insulating cable paper makes the construction capable to withstand power frequency over-voltage strains and impulse over-voltage strains.

A reliable protection against harmful atmospheric effects on the insulation in a normal atmosphere, and especially in tropical ambients is realised by the construction of the completely enclosed transformer with a flexible diaphragm. The current transformers, during short-circuits suffer very high dynamic and thermic stresses. The dynamic stresses are expressed by an electromagnetic force which acts upon the primary and secondary windings during the flow of high short-circuit currents in case of a complete assymetry of short-circuit current. A correct selection of amper turns and construction of the primary provide a very realible transformer in respect of the ability to withstand the dynamic currents. Short-circuit current besides its mechanical force acting upon the windings manifest also thermic effects.

The transformers windings suffer the heating which depending upon the installation site can reach remarkable values. Using the appropriate conductive and insulation materials these values are reduced to standard ones. In this respect the current transformers are classified into certain classes which corespond to the effective short-circuit current withstood by the transformer windings during one sec. causing neither mechanical damages not changes in its technical features and insulation. For special purposes (longer time of protection adjustment) the transformers which can conduct the short-circuit current longer than one sec. can be designed.

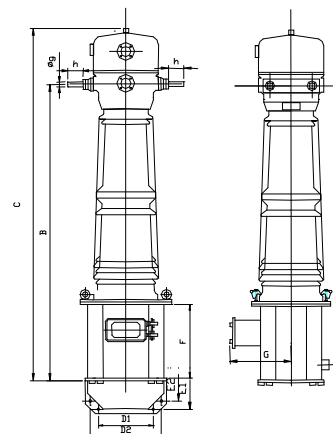
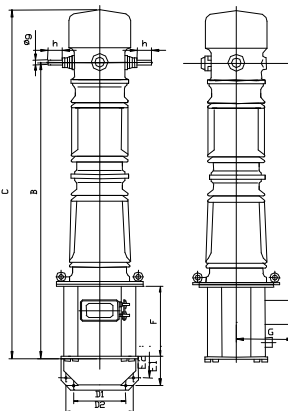
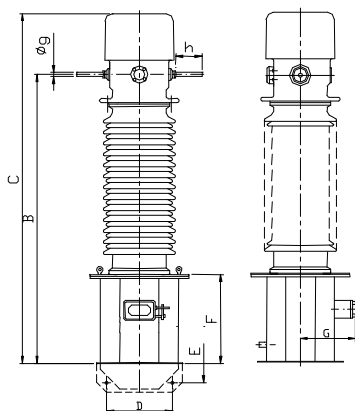


Type		TPE 9B	TPE 11B	TPE12B	TPE 9L	TPE 11A	TPE 9C	TPE 11C	TPE 12C	
Rated insulation level	kV	72.5	123	145	72,5	123	72,5	123	145	
Power frequency withstand voltage 50 Hz (1 min)	kV	140	230	275	140	230	140	230	275	
Lightning impulse withstand voltage (1.2/50 μ s)	kV	325	550	650	325	550	325	550	650	
Rated frequency	Hz	50 or 60								
Minimal inter distance	mm	666 \pm 16	1020 \pm 20	1260 \pm 28	666 \pm 16	1020 \pm 20	666 \pm 16	1015 \pm 20	1252 \pm 28	
Creepage distance	Normal	mm	-	-	-	-	-	-	-	
	Medium pollution	mm	1765	2595	3350	1765	2595	1765	2595	
	Great pollution	mm	2160	3075	4350	2160	3075	2160	3075	
Rated primary current I _{pn} up to	A	800	800	800	1600	1600	800	800	800	
Rated secondary current	A	1 or 5								
Rated short-time withstand current I _{th} /3s	kA	100 I _{pn} -(max.40kA)								
Rated permanent withstand current I _{th}	%I _{pn}	120-or upon request								
Rated short-circuit making current (peak value)	kA	2.5 I _{th} -(max.100kA)								
Rated power	VA	10-75								
Class and accuracy factor		Measurement:0.2-0.5-1 / Fs=5-10 Protection:5P-10P / Fs=5-10-15-20-30								
Number of cores		3	3	3	3,4	3,4	4	4	4	
Design with linear core		Upon request								
Dimensions	B	mm	1406 \pm 16	1766 \pm 20	2006 \pm 28	1376 \pm 16	1766 \pm 20	1650 \pm 16	2011 \pm 20	2248 \pm 28
	C	mm	1749 \pm 16	2115 \pm 20	2355 \pm 28	1781 \pm 16	2115 \pm 20	1995 \pm 16	2350 \pm 20	2587 \pm 28
	DXE	mm	380x280	380x280	380x280	380x280	380x280	520x460	520x460	520x460
	F	mm	456	456	456	456	456	706	706	706
	G	mm	325	330	325	325	330	415	415	415
Primary terminals ϕ g x h	mm	ϕ 30x125 (80) ϕ 50x125 (80) or upon request								
Mass (approximately)	kg	400	450	650	420	450	650	750	780	
Mass of oil (approximately)	kg	80	100	120	80	100	270	300	320	

TPE 9E
TPE 11E
TPE 12E
TPE 13

TPE 14B
TPE 14C

TPE 16H



Type		TPE 9E	TPE 11E	TPE 12E	TPE 13	TPE 14B	TPE 14C	TPE 16H	
Rated insulation level	kV	72.5	123	145	170	245	245	420	
Power frequency withstand voltage 50 Hz (1 min)	kV	140	230	275	325	460	460	680	
Lightning impulse withstand voltage (1.2/50µs)	kV	325	550	650	750	1050	1050	1550	
Rated frequency	Hz	50 or 60							
Minimal inter distance	mm	650 ^{±16}	1005 ^{±20}	1173 ^{±30}	1473 ^{±30}	2435 ^{±30}	2435 ^{±30}	3480 ^{±108}	
Creepage distance	Normal	mm	1250	1920	2690	3470	4850	6490	
	Medium pollution	mm	-	-	3410	3900	-	-	
	Great pollution	mm	2175	3075	4350	4350	6153	10700	
Rated primary current I _{pn} up to		1600	1600	1600	1600	1600	1600	2000	
Rated secondary current		1 or 5							
Rated short-time withstand current I _{th} /3s		100 I _{pn} -(max.40kA)							
Rated permanent withstand current I _{th}		120-or upon request							
Rated short-circuit making current (peak value)		2.5 I _{th} -(max.100kA)							
Rated power		10-75							
Class and accuracy factor		Measurement:0.2-0.5-1 / Fs=5-10 Protection:5P-10P / Fs=5-10-15-20-30							
Number of cores		4	4	4	4	4	4,5	4	
Design with linear core		Upon request							
Dimensions	B	mm	1635 ^{±16}	2049 ^{±20}	2310 ^{±30}	2480 ^{±30}	3380 ^{±30}	3544 ^{±30}	4755 ^{±108}
	C	mm	2016 ^{±16}	2430 ^{±20}	2691 ^{±30}	2861 ^{±30}	3873 ^{±30}	4037 ^{±30}	5535 ^{±108}
	DXE	mm	520x460	520x460	520x460	520x460	500x440 550x450	470x520 720x720	470x620 720x720
	F	mm	706	706	706	706	804	960	961
	G	mm	415	415	415	415	430	490	440
Primary terminals φ gxh		φ 30x125 (80) φ 50x125 (80) or upon request							
Mass (approximately)		870	800	880	900	1500	1600	2100	
Mass of oil (approximately)		310	360	380	400	450	480	680	

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