

HV/LV distribution transformers

ground-mounted, mineral oil-immersed transformers
from 50 to 2500 kVA

insulation voltage ≤ 36 kV – EN 50464-1, losses **C₀₃₆** **C_{k36}**



standards

These transformers comply with standards:

- EN 50464-1
- EN 60076-1 to 10

Products assembled using new components, PCB-free guaranteed.

description

Mineral oil-immersed, 50 Hz, three-phase distribution transformers with the following characteristics:

- hermetically sealed with integral filling
- cover bolted to the tank
- ONAN-type natural cooling
- Indoor/outdoor use (depending on selected fittings and options)
- anti-corrosion surface treatment : corrosivity category class C3, "Medium" durability (according to ISO 12944-2)
- final colour grey RAL 7033
- protection index IP00 (coverless version)

liquid dielectric

- new insulating mineral oil
- tested in accordance with IEC 60296
- compatible with all the transformer's components

standard fittings

- one 3 or 5 positions off-circuit tap changer on the cover, with padlocking
- 3 HV plug-in bushings (400 A / 36 kV) on the cover
- 4 LV flat-bars (from 250 kVA)
- 4 LV porcelain bushings (from 50 to 160 kVA)
- 4 bi-directional flat rollers
- 2 lifting and untanking lugs
- 2 pulling eyelets on the frame
- 2 earthing terminals on the cover (M12 studs)
- 1 filling plug
- 1 draining device (according to EN 50216-4)
- 1 aluminium rating plate

optional fittings

- protection relays (DMCR® or DGPT2®) on the filling plug
- 1 free, thermometer pocket
- control device in the thermometer pocket (pointer thermometer with 0 or 2 contacts max, 2-contact thermostat, etc.)
- 3 HV, 250 A porcelain bushings
- 4 LV porcelain bushings (from 250 kVA)
- LV, sealable cover, rated IP21 or IP54 (only with plug-in bushings on the HV side)



- locking device for plug-in bushings (with or without lock)
- 3 mobile connectors for plug-in bushings – straight or elbow (cable characteristics must be specified)
- liquid retention container

No-load losses performance Minera oil-immersed transformers according to EN 50464-1	Load losses performance Minera oil-immersed transformers according to EN 50464-1
Optimum efficiency	Optimum efficiency
A₀	A_k
B₀	B_k
C₀	C_k
Standard efficiency	Standard efficiency

electrical characteristics

rated power (kVA)	50	100	160	250	315*	400	500*	630	800	1000	1250	1600	2000	2500		
rated voltage	primary 30 kV															
	secondary at no-load 400 to 433 V between phases, 231 to 250 V phase to neutral															
rated insulation level ⁽¹⁾	primary 36 kV															
MV tapping range (off-circuit)	$\pm 2,5$ % and/or ± 5 %															
vector group	Yzn 11 (50 kVA version only) Dyn 11															
losses (W)	no-load	230	380	520	780	950	1120	1300	1450	1700	2000	2400	2800	3400	4100	
	due to load at 75°C	1450	2350	3350	4250	5150	6200	7200	8800	10500	13000	16000	19200	24000	29400	
	combination of losses according to EN 50464	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	C ₀₃₆ C _{k36}	
rated impedance voltage (%)	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	6	6	6	6	6		
no-load current (%)	4	3,5	3	3	2,5	2,5	2,5	2	2	2	2	1,5	1,5	1,5		
switching current	le/ln peak value	11	11	10,5	10,5	10	10,5	10	10	8,5	8	7,5	7,5	7,5	8	
	time constant	0,1	0,1	0,15	0,15	0,15	0,15	0,15	0,2	0,25	0,25	0,25	0,3	0,3	0,25	
voltage drop at full load (%)	P.F. = 1	2,96	2,42	2,17	1,79	1,72	1,64	1,53	1,49	1,48	1,47	1,45	1,37	1,37	1,35	
	P.F. = 0,8	4,39	4,20	4,08	3,89	3,85	3,80	3,74	3,72	4,64	4,63	4,62	4,57	4,57	4,55	
efficiency (%)	100 % load	P.F. = 1	96,75	97,34	97,64	98,03	98,10	98,20	98,33	98,40	98,50	98,52	98,55	98,64	98,65	98,68
		P.F. = 0,8	95,97	96,70	97,07	97,55	97,64	97,76	97,92	98,01	98,13	98,16	98,19	98,31	98,32	98,35
	75 % load	P.F. = 1	97,29	97,78	98,04	98,34	98,40	98,49	98,59	98,66	98,75	98,77	98,80	98,88	98,89	98,91
		P.F. = 0,8	96,63	97,24	97,56	97,93	98,01	98,12	98,25	98,34	98,44	98,47	98,50	98,60	98,61	98,64
noise level dB(A) ⁽²⁾	acoustic power L _{WA}	52	56	59	62	63	65	66	67	68	68	70	71	73	76	
	acoustic pressure L _{PA} at 1 m	44	48	50	53	53	55	56	56	57	57	59	59	61	63	

(1) reminder of insulation levels:

rated insulation level (kV)	7,2	12	17,5	24	36
kV eff, 50 Hz - 1 mn	20	28	38	50	70
kV choc, 1,2/50 μ s	60	75	95	125	170

(2) measurements according to IEC 60076-10

(*) non standard ratings

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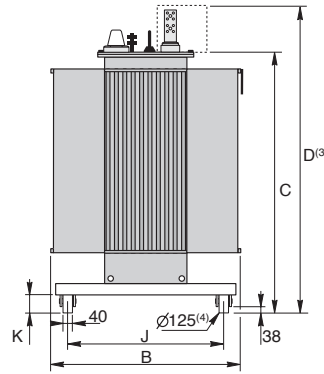
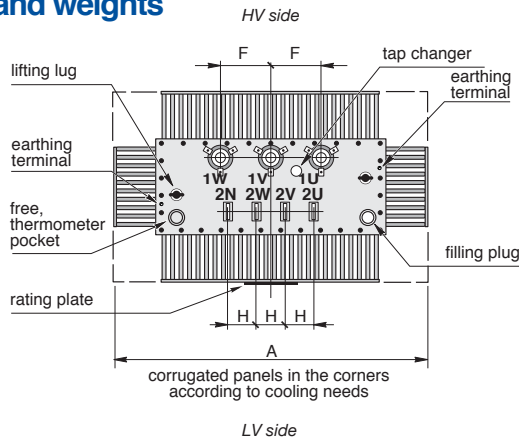
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C₀₃₆ **C_{k36}**



dimensions and weights



Note : Bushings are marked according to the IEC 60616 standard.

⁽³⁾ D : Height over LV cable box (optional accessory, compatible with HV plug-in bushings only).

⁽⁴⁾ Ø 80 mm for the 50 kVA version.

⁽⁵⁾ Dimensions and weights are for guidance only, and are provided for a single-voltage transformer with the following electrical characteristics: 36 kV (HV) / 400 V (LV) – 3-position tap changer, $\pm 2.5\%$

rated power (kVA)	50	100	160	250	315*	400	500*	630	800	1000	1250	1600	2000	2500
dimensions⁽⁵⁾ (mm)														
A	850	900	1050	1300	1320	1500	1500	1550	1770	1850	1850	2030	2200	2450
B	800	800	820	880	850	900	950	1000	1150	1150	1150	1250	1270	1330
C	900	900	1000	1020	1130	1150	1250	1270	1400	1450	1450	1500	1550	1750
D	1180	1180	1280	1360	1470	1490	1590	1610	1740	1790	1855	1905	2050	2250
F	265	265	265	265	265	265	265	265	265	265	265	265	265	265
H	80	80	75	150	150	150	150	150	150	150	170	170	170	170
J	520	520	520	520	670	670	670	670	670	670	820	820	820	820
K	105	105	105	105	105	105	105	105	105	85	85	85	85	85
weights⁽⁵⁾ (kg)														
dielectric (mineral oil)	130	160	220	300	360	390	440	490	580	680	800	900	1080	1300
total	450	570	750	980	1180	1350	1520	1750	2100	2500	2900	3450	4200	5300

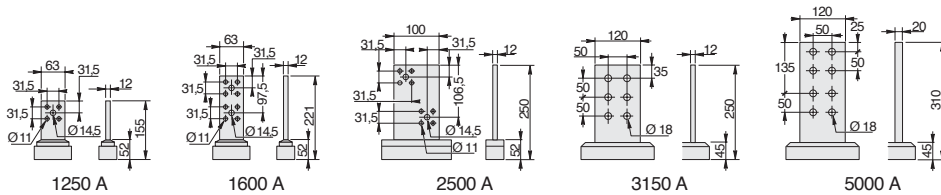
connections

maximum intensity (A)

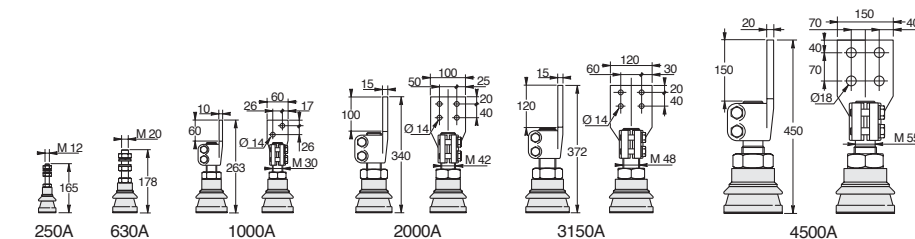
	50	100	160	250	315*	400	500*	630	800	1000	1250	1600	2000	2500
LV flat-bars	-	-	-	1250	1250	1250	1250	1250	1250	1600	2500	2500	3150	5000
LV porcelain bushings	250	250	250	630	630	630	1000	1000	2000	2000	2000	3150	3150	4500

LV connections

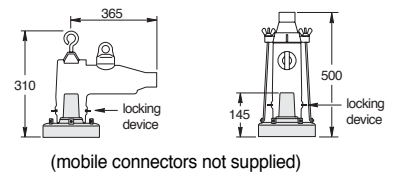
flat-bars according to EN 50387 (standard from 250 kVA)



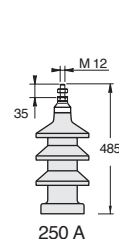
porcelain bushings according to EN 50386 (standard from 50 to 160 kVA – optional for other powers)



HV connectors according to EN 50180 400 A plug-in bushings (standard)



250 A porcelain bushings (option)



Routine fittings such as bar and cable supports, flexible connectors, etc. will be supplied by the contractor, who will ensure that the transformer bushings are not subject to mechanical stresses.

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Due to the evolution of standards and materials, the present document will bind us only after confirmation from the technical department.