

HV/LV distribution transformers

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

insulation voltage ≤ 24 kV – EN 50464-1, losses **A₀** **A_k** (High efficiency)



standards

These transformers comply with standards:

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

France Transfo guarantees that its transformers are assembled using new, PCB-free components.

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 (250 A / 24 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 (type A22 up to 1000 kVA, type A31 above 1000 kVA)
- 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 A₀	Optimum efficiency A_k
B₀	B_k
C₀	C_k
D₀	D_k
E₀	
Standard efficiency	Standard efficiency

electrical characteristics

rated power (kVA)	50	100	160	250	315	400	500	630	630	800	1000	1250	1600	2000	2500		
rated voltage	primary 15 and/or 20 kV secondary at no-load 400 to 433 V between phases, 231 to 250 V phase to neutral																
rated insulation level ⁽¹⁾	primary 17,5 kV for 15 kV 24 kV for 20 kV																
MV tapping range (off-circuit)	± 2,5 % and/or ± 5 %																
vector group	Yzn 11 (50 kVA version only) Dyn 11																
losses (W)	no-load	90	145	210	300	360	430	510	600	560	650	770	950	1200	1450	1750	
	due to load at 75°C	750	1250	1700	2350	2800	3250	3900	4600	4800	6000	7600	9500	12000	15000	18500	
	combination of losses according to EN 50464	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	A ₀ A _k	
rated impedance voltage (%)	4 4 4 4 4 4 4 4 4 6 6 6 6 6 6 6																
no-load current (%)	0,5 0,5 0,5 0,5 0,5 0,5 0,5 0,5 0,5 0,5 0,5 0,5 0,5 0,5 0,5																
switching current	le/ln peak value	8,5	7,5	6	8,5	8	8	8	8	7	6	6	6	6	6	6	
	time constant	0,3	0,3	0,35	0,3	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,5	0,5	0,5	
voltage drop at full load (%)	P.F. = 1	1,57	1,32	1,14	1,02	0,96	0,89	0,86	0,81	0,94	0,93	0,94	0,94	0,93	0,93	0,92	
	P.F. = 0,8	3,45	3,31	3,19	3,12	3,08	3,03	3,01	2,98	4,27	4,26	4,27	4,27	4,26	4,26	4,26	
efficiency (%)	100 % load	P.F. = 1	98,35	98,62	98,82	98,95	99,01	99,09	99,13	99,18	99,16	99,18	99,17	99,17	99,18	99,18	99,20
		P.F. = 0,8	97,94	98,29	98,53	98,69	98,76	98,86	98,91	98,98	98,95	98,97	98,96	98,97	98,98	98,98	99,00
	75 % load	P.F. = 1	98,65	98,88	99,04	99,14	99,19	99,25	99,28	99,33	99,31	99,33	99,33	99,33	99,34	99,35	99,36
		P.F. = 0,8	98,32	98,61	98,80	98,93	98,99	99,07	99,11	99,16	99,14	99,17	99,17	99,17	99,18	99,18	99,20
noise level dB(A) ⁽²⁾	acoustic power L _{WA}	39	41	44	47	49	50	51	52	52	53	55	56	58	60	63	
	acoustic pressure L _{PA} at 1 m	30	33	36	37	39	39	41	42	42	43	45	45	46	48	51	

(1) reminder of insulation levels:

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

(2) measurements according to IEC 60076-10

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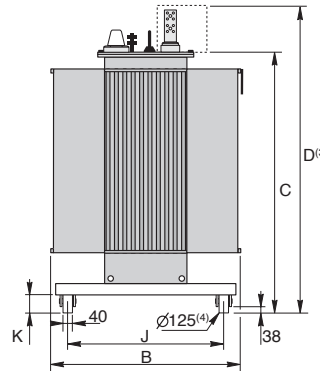
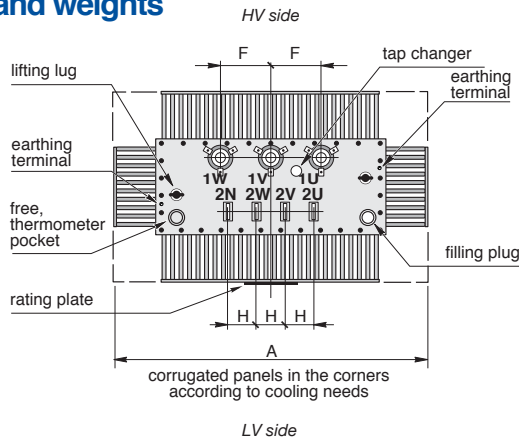
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dimensions and weights



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: 20 kV (HV) / 400 V (LV) – 3-position tap changer, $\pm 2.5\%$

rated power (kVA)	50	100	160	250	315	400	500	630	630	800	1000	1250	1600	2000	2500
dimensions⁽⁵⁾ (mm)															
A	1050	1150	1150	1200	1300	1300	1300	1500	1600	1800	1700	1900	1900	2200	2100
B	600	700	750	800	800	850	900	900	900	1000	1100	1200	1200	1200	1200
C	900	980	960	970	1000	1200	1250	1400	1350	1500	1450	1450	1500	1500	1700
D	1180	1260	1240	1310	1340	1540	1590	1740	1690	1840	1790	1855	1905	2000	2200
F	265	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	150	170	170	170	170
J	520	520	520	520	670	670	670	670	670	670	670	820	820	820	820
K	105	105	105	105	105	105	105	105	105	105	85	85	85	85	85
weights⁽⁵⁾ (kg)															
dielectric (mineral oil)	100	155	180	190	205	260	330	460	475	590	570	630	650	820	820
total	550	800	1000	1200	1300	1650	1850	2400	2450	2950	3200	3450	3500	4500	5200

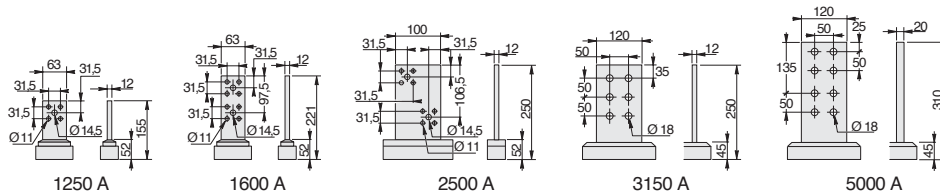
connections

maximum intensity (A)

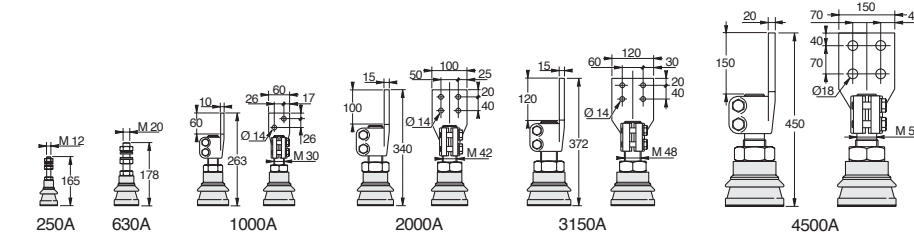
LV flat-bars	-	-	-	1250	1250	1250	1250	1250	1250	1250	1600	2500	2500	3150	5000
LV porcelain bushings	250	250	250	630	630	630	1000	1000	1000	2000	2000	2000	3150	3150	4500

LV connections

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

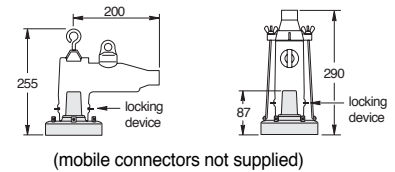


porcelain bushings according to EN 50386 (standard from 50 to 160 kVA – optional for other powers)



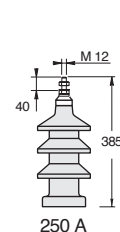
HV connectors according to EN 50180

250 A plug-in bushings (standard)



(mobile connectors not supplied)

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.