

Set series

Minera

Oil Distribution Transformer up to 3150 kVA

Catalog 2021

Eco Design

Medium Voltage Distribution Transformer



Same technology, same offer, simpler names

We're making it easier for you to navigate across the wide range of our world-class digital products and select the offers that are right for you and your needs with confidence.

EcoStruxure Architecture

To enable brand consistency, relevance and impact, we are reinforcing our EcoStruxure™ architecture and digital customer lifecycle tools to help ensure a seamless experience from the CAPEX to OPEX phases of each project, bridging our entire ecosystem of partners, services providers and end users.

EcoStruxure is our IoT-enabled open and interoperable system architecture and platform. EcoStruxure delivers enhanced values around safety, reliability, efficiency, sustainability and connectivity for our customers. EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity technologies to deliver Innovation At Every Level from Connected Products, Edge Control, Apps, and Analytics & Services: our IoT technology Levels.

Old names	New names
Ecodial	EcoStruxure Power Design
Ecoreal	EcoStruxure Power Build
Ecoreach	EcoStruxure Power Commission
MasterPact MTZ mobile App/Easergy mobile App	EcoStruxure Power Device App

Pact and Set Series

Featuring outstanding medium-voltage (MV) and low-voltage (LV) switchboards, motor control centers and power distribution solutions for high-performance power applications, Schneider Electric's Pact and Set Series are best-in-class solutions based on high levels of safety and an optimized footprint. Built on a modular architecture and incorporating smart connected devices for maximum safety, reliability, performance and energy efficiency, the Set Series is delivered to customers directly from our Schneider Electric plants or via a global network of licensed partner panel builders, who are trained and audited to provide quality equipment and support.

Old names	New names
HVX	EvoPact HVX
Premset	PremSet
Compact	ComPact
Masterpact	MasterPact
Transferpact	TransferPact
Fupact	FuPact

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PM 105926



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

- Hermetically sealed with integral filling
- Cover bolted to the tank
- ONAN
- Mineral oil in accordance with IEC 60296
- 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 RAL 7033

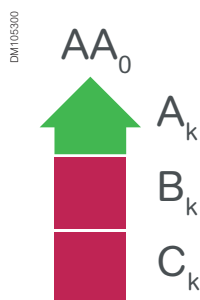
Standards

These transformers comply with standards:

- EN 50588-1 (supersedes EN 50464-1:2007, EN 50708-1, EN 50541-1:2011)
- EN 60076-1
- Ecodesign regulation EU 548-2014 and its amendment EU 2019/1783

Ecodesign regulation EU 548-2014 and its amendment EU 2019/1783

- Maximal loss levels
- Statement on loss tolerances:
 - No tolerance on transformer design
 - 5% tolerance for end user checks
- Additional data requested on the name plates
 - Loss level and measured values
 - Type and weight of main materials used
 - CE Marking is MANDATORY-1



Oil type transformers maximum loss levels according to Ecodesign 2021

- Insulation voltage: MV $\leq$ 24 kV & LV $\leq$ 3.6 kV
 - AA_0A_k up to 3,150 kVA
- Insulation Voltage: MV < 36 kV & LV < 3.6 kV
 - AA_0A_k up to 3,150 kVA

Standard fitting:

- One 3 or 5 positions de-energized tap changer on the cover, with padlocking facility
- 3 HV porcelain bushing up to 250 Amps according to the rated current
- 4 LV porcelain bushings (from 50 to 3,150 kVA)
- 4 bidirectional flat rollers, lifting and untanking lugs
- 4 pulling eyes on the frame
- 1 earthing terminal on the cover and 2 earthing terminals on chassis
- 1 filling plug
- 1 draining device according to EN 50216-4 or DIN 42551
- 1 rating plate

Rating Plate

Minimum information that needs to be stated on the rating plate, in addition to EN 60076-1 standards.

- P0, the measured no load loss at rated voltage and rated frequency, on the rated tap
- The name of the no load loss class for transformers with $S_r \leq 3,150$ kVA
- Pk, the measured loss at rated current and rated frequency on the rated tap corrected to reference temperature according to EN 60076-1
- The name of the load loss class for transformers with $S_r \leq 3,150$ kVA
- For dual voltage transformers, the maximum rated power at the lower voltage
- Conductor mass and the nature of the conductor
- Core mass and the nature of the core material
- For medium power pole mounted transformers, a visible display 'For pole-mounted operation only'

Options

- Protection relays (DMCR or DGPT2) on the cover
- 1 free thermometer pocket
- Control device in the thermometer pocket (pointer thermometer with 0 or 2 contacts max, 2-contact thermostat, etc.)
- 3 HV plug-in bushings
- 4 LV porcelain bushings on tank cover (available from 50 kVA)
- LV cable box IP21 or IP54
- 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)
- Retention tank

The above options concern usual cases and are not restrictive. For additional information, please consult Schneider Electric.

Now Minera comes with a best-in-class digital experience to help you meet new challenges and reach Industry 4.0 objectives.

With its new connected features, Minera is the perfect choice for smart distribution systems offering you:

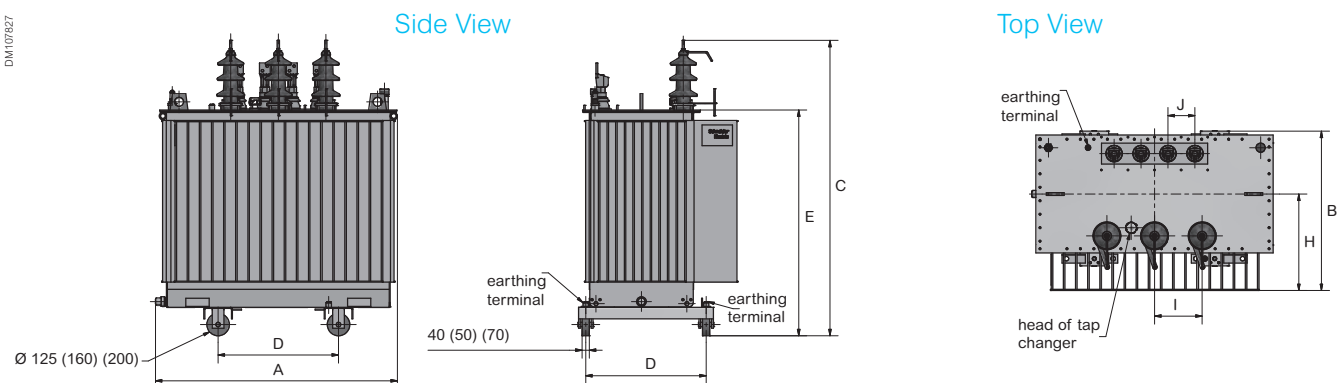
- Real-time condition monitoring to optimize **assets availability** and reduce unscheduled down-time
- Reduced **Total Cost of Ownership** thanks to optimized maintenance
- Increased operator and equipment **safety**
- **24/7 connectivity**, with remote alarming and real-time data supporting fast decision making
- **Consistent** monitoring solution across our MV portfolio, for both new and **modernization** projects
- Integration within any existing **SCADA system**
- Access to Schneider Electric **cloud based digital services** (EcoStruxure Asset Advisor)

Minera - Oil Distribution Transformer Up to 3150 kVA - 12 kV - 400V

Main electrical characteristics

Power kVA	50	100	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Primary voltage	10 kV														
Secondary voltage	400 V between phases (at no load)														
HV insulation level	12 kV (75 / 28 kV)														
HV tapping range	+/- 2.5% and/or +/- 5%														
Temperature	Temperature rise 65 / 60 k														
Vector group	Dyn 11 (other vector groups upon request)														
No-load losses (Watts)	81	130	189	225	270	324	387	459	540	585	693	855	1080	1305	1575
Load Losses at 75°C (Watts)	750	1250	1750	2017	2350	2800	3250	3900	4600	6000	7600	9500	12000	15000	18500
Impedance voltage (%)	4	4	4	4	4	4	4	4	4	6	6	6	6	6	6
Altitude maximum	1000 m														
Acoustic Level dB(A):															
Power L _{pa} (1m)	38	40	43	44	46	48	49	50	51	52	54	55	57	59	62

Dimensions and weights*



Rated power (kVA)		50	100	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Without enclosure IP00																
Length	A mm	880	960	1010	1060	1060	1165	1165	1261	1261	1390	1552	1517	1736	1936	2096
Width	B mm	638	711	707	750	750	800	800	867	867	955	1114	1102	1104	1234	1244
Height to bushings	C mm	1155	1272	1294	1350	1350	1456	1456	1586	1586	1688	1734	1843	1812	2010	2325
Roller distance	D mm	520	520	520	520	520	670	670	670	670	670	820	820	820	1070	1070
Height to cover	E mm	849	966	988	1044	1044	1150	1150	1280	1280	1343	1389	1498	1465	1663	1801
Distance between HV bushings	I mm	265	265	265	265	265	265	265	265	265	265	265	265	265	265	265
Distance between LV bushings	J mm	105	105	105	105	150	150	150	150	150	150	150	150	155	155	220
Distance to middle of cover	H mm	388	438	437	440	440	482	482	527	527	577	557	551	552	617	622
Total weight	kg	580	870	960	1120	1260	1570	1790	2160	2420	3150	3810	4030	4440	5210	6480
Oil weight	kg	126	176	185	253	232	349	315	471	419	583	699	778	860	996	1159
Roller Dimension	mm	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 160	Fi 200	Fi 200
HV Bushings Type	Porcelain bushing															
LV Bushings Type	Porcelain bushing															

* Dimensions and weights

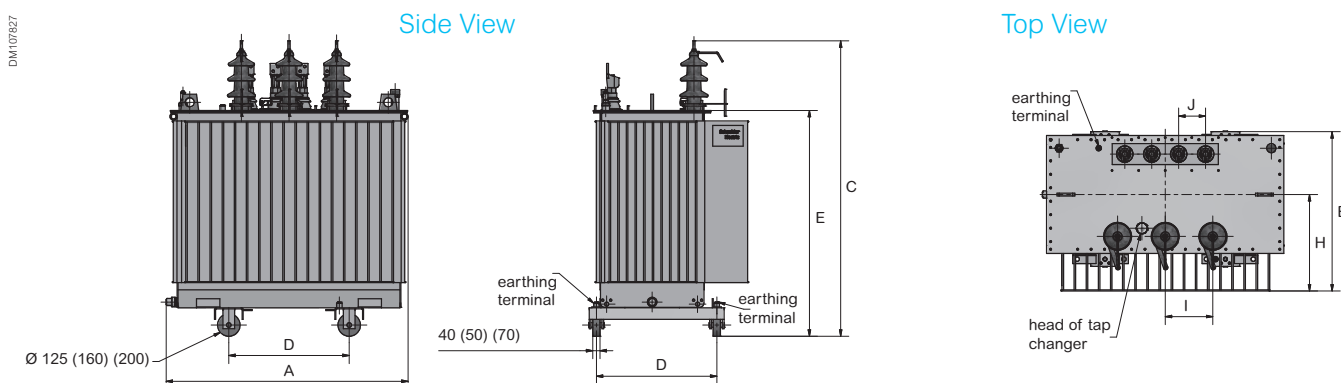
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Minera - Oil Distribution Transformer Up to 3150 kVA - 17.5 kV - 400V

Main electrical characteristics

Power kVA	50	100	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Primary voltage	20 kV														
Secondary voltage	400 V between phases (at no load)														
HV insulation level	24kV (95 / 38 kV)														
HV tapping range	+/- 2.5% and/or +/- 5%														
Temperature	Temperature rise 65 / 60 k														
Vector group	Dyn 11 (other vector groups upon request)														
No-load losses (Watts)	81	130	189	225	270	324	387	459	540	585	693	855	1080	1305	1575
Load Losses at 75°C (Watts)	750	1250	1750	2017	2350	2800	3250	3900	4600	6000	7600	9500	12000	15000	18500
Impedance voltage (%)	4	4	4	4	4	4	4	4	4	6	6	6	6	6	6
Altitude maximum	1000 m														
Acoustic Level dB(A):															
Power L _{pa} (1m)	38	40	43	44	46	48	49	50	51	52	54	55	57	59	62

Dimensions and weights*



Rated power (kVA)		50	100	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Without enclosure IP00																
Length	A mm	880	960	1010	1060	1060	1165	1165	1261	1261	1390	1552	1517	1736	1936	2096
Width	B mm	638	711	707	750	750	800	800	867	867	955	1114	1102	1104	1234	1244
Height to bushings	C mm	1236	1353	1375	1430	1430	1537	1537	1667	1667	1730	1776	1885	1852	2050	2325
Roller distance	D mm	520	520	520	520	520	670	670	670	670	670	820	820	820	1070	1070
Height to cover	E mm	849	966	988	1044	1044	1150	1150	1280	1280	1343	1389	1498	1465	1663	1801
Distance between HV bushings	I mm	265	265	265	265	265	265	265	265	265	265	265	265	265	265	265
Distance between LV bushings	J mm	105	105	105	105	150	150	150	150	150	150	150	150	155	155	220
Distance to middle of cover	H mm	388	438	437	440	440	482	482	527	527	577	557	551	552	617	622
Total weight	kg	580	870	960	1120	1260	1570	1790	2160	2420	3150	3810	4030	4440	5210	6480
Oil weight	kg	126	176	185	253	232	349	315	471	419	583	699	778	860	996	1159
Roller Dimension	mm	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 160	Fi 200	Fi 200
HV Bushings Type	Porcelain bushing															
LV Bushings Type	Porcelain bushing															

* Dimensions and weights

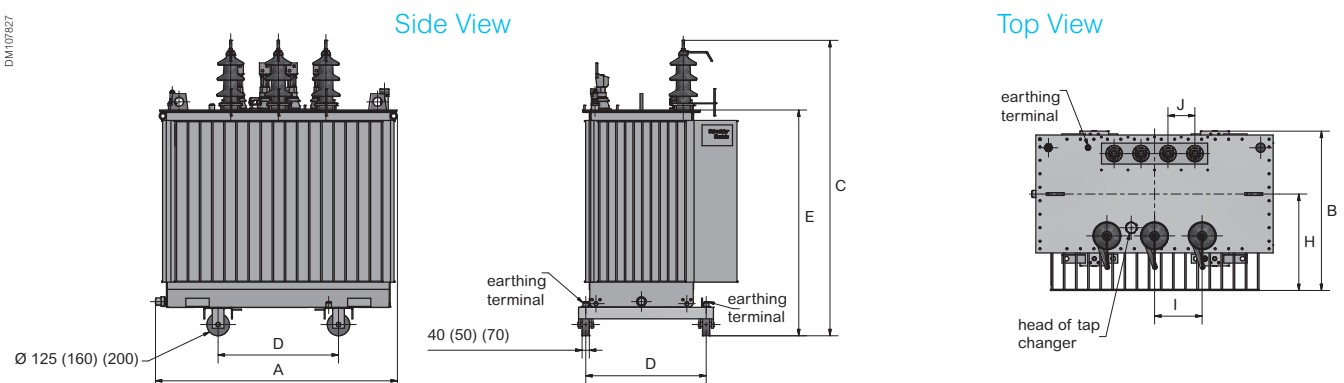
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Minera - Oil Distribution Transformer Up to 3150 kVA - 24 kV - 400V

Main electrical characteristics

Power kVA	50	100	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Primary voltage	20 kV														
Secondary voltage	400 V between phases (at no load)														
HV insulation level	24kV (125 / 50 kV)														
HV tapping range	+/- 2.5% and/or +/- 5%														
Temperature	Temperature rise 65 / 60 k														
Vector group	Dyn 11 (other vector groups upon request)														
No-load losses (Watts)	81	130	189	225	270	324	387	459	540	585	693	855	1080	1305	1575
Load Losses at 75°C (Watts)	750	1250	1750	2017	2350	2800	3250	3900	4600	6000	7600	9500	12000	15000	18500
Impedance voltage (%)	4	4	4	4	4	4	4	4	4	6	6	6	6	6	6
Altitude maximum	1000 m														
Acoustic Level dB(A):															
Power L _{pa} (1m)	38	40	43	44	46	48	49	50	51	52	54	55	57	59	62

Dimensions and weights*



Rated power (kVA)		50	100	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
Without enclosure IP00																
Length	A mm	880	960	1010	1060	1060	1165	1165	1261	1261	1390	1552	1517	1736	1936	2096
Width	B mm	638	711	707	750	750	800	800	867	867	955	1114	1102	1104	1234	1244
Height to bushings	C mm	1236	1353	1375	1430	1430	1537	1537	1667	1667	1730	1776	1885	1852	2050	2325
Roller distance	D mm	520	520	520	520	520	670	670	670	670	670	820	820	820	1070	1070
Height to cover	E mm	849	966	988	1044	1044	1150	1150	1280	1280	1343	1389	1498	1465	1663	1801
Distance between HV bushings	I mm	265	265	265	265	265	265	265	265	265	265	265	265	265	265	265
Distance between LV bushings	J mm	105	105	105	105	150	150	150	150	150	150	150	150	155	155	220
Distance to middle of cover	H mm	388	438	437	440	440	482	482	527	527	577	557	551	552	617	622
Total weight	kg	580	870	960	1120	1260	1570	1790	2160	2420	3150	3810	4030	4440	5210	6480
Oil weight	kg	126	176	185	253	232	349	315	471	419	583	699	778	860	996	1159
Roller Dimension	mm	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 160	Fi 200	Fi 200
HV Bushings Type	Porcelain bushing															
LV Bushings Type	Porcelain bushing															

* Dimensions and weights

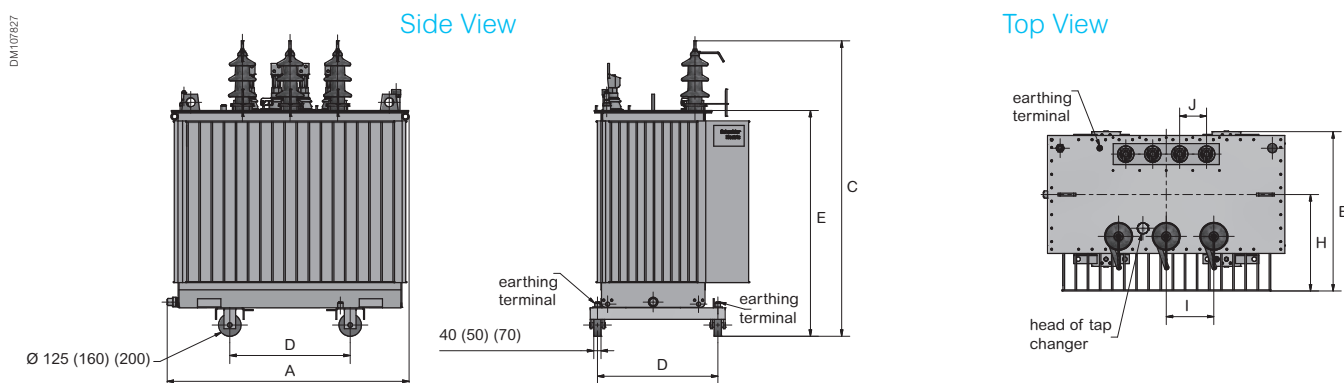
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Minera - Oil Distribution Transformer Up to 3150 kVA - 36 kV - 400V

Main electrical characteristics

Power kVA	50	100	160	250	400	630	800	1000	1250	1600	2000	2500
Primary voltage	33 kV											
Secondary voltage	400 V between phases (at no load)											
HV insulation level	36 kV (170 / 70 kV)											
HV tapping range	±/- 2.5% and/or ±/- 5%											
Temperature	Temperature rise 65 / 60 k											
Vector group	Dyn 11 (other vector groups upon request)											
No-load losses (Watts)	93	149	217	310	445	621	672	796	983	1242	1500	1811
Load Losses at 75°C (Watts)	825	1375	1925	2585	3575	5060	6600	8360	10450	13200	16500	20350
Impedance voltage (%)	4	4	4	4	4	4	6	6	6	6	6	6
Altitude maximum	1000 m											
Acoustic Level dB(A):												
Power L _{pa} (1m)	38	40	43	46	49	51	52	54	55	57	59	62

Dimensions and weights*



Rated power (kVA)		50	100	160	250	400	630	800	1000	1250	1600	2000	2500
Without enclosure IP00													
Length	A mm	865	1075	1105	1155	1220	1325	1450	1535	1535	1945	2060	2362
Width	B mm	630	720	760	820	870	930	970	1160	1160	1180	1350	1540
Height to bushings	C mm	1500	1600	1620	1640	1730	1940	1960	1980	2080	2150	2370	2440
Roller distance	D mm	520	520	520	520	670	670	670	820	820	820	1070	1070
Height to cover	E mm	980	1085	1105	1135	1200	1420	1450	1460	1555	1640	1870	1940
Distance between HV bushings	I mm	350	350	350	350	350	350	350	350	350	350	350	350
Distance between LV bushings	J mm	105	105	105	150	150	150	150	150	150	165	165	220
Distance to middle of cover	H mm	390	440	460	500	515	550	575	580	550	560	640	720
Total weight	kg	590	940	1130	1370	1750	2470	2960	3400	3690	4260	5300	6490
Oil weight	kg	147	244	277	308	374	515	630	715	748	873	1059	1249
Roller Dimension	mm	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 125	Fi 160	Fi 160	Fi 200
HV Bushings Type	Porcelain bushing												
LV Bushings Type	Porcelain bushing												

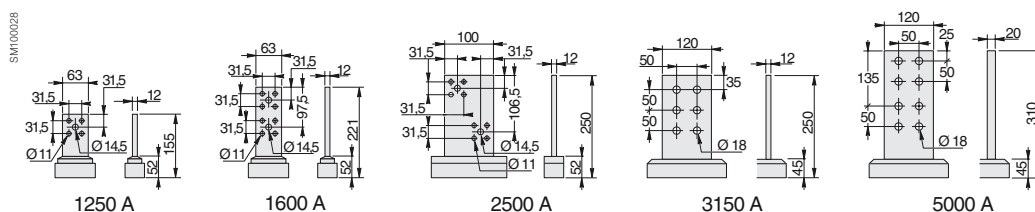
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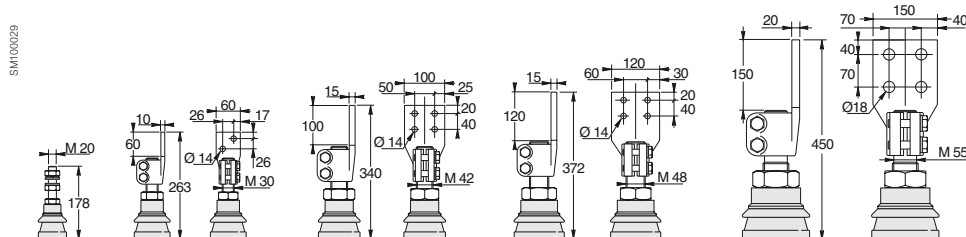
Connections - Minera transformers

The winding coating and the plug-in connectors do not ensure any protection against touch when the transformer is energized. The contractor must ensure that cables and busbars are adequately supported to prevent mechanical stresses from being imposed on the transformer terminals, busbars or bushings.

LV Terminations

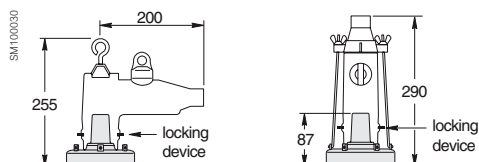


LV bus-bars terminations - EN 50387 (standard from 250 kVA)

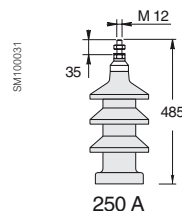


LV porcelain bushings - EN 50386
(standard from 50 to 160 kVA – option for other powers)

HV Terminations - EN 50180



HV plug-in bushings 250 A/24 kV (standard).

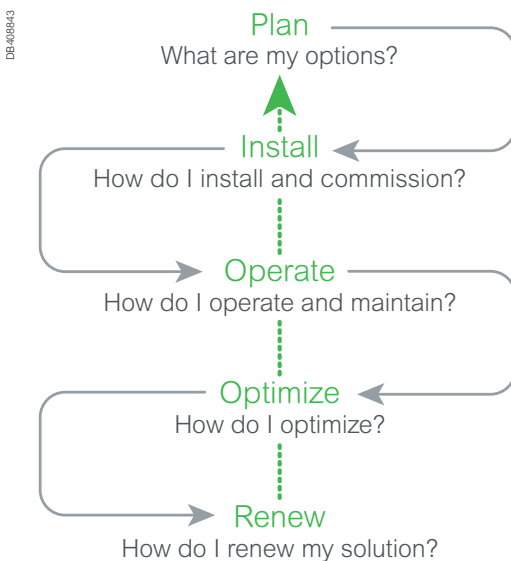


HV porcelain bushing 250 A (option)

How can you cut costs and improve performance at the same time?

When it comes to your electrical distribution infrastructure, the answer is straightforward: get professional expertise.

Lifecycle services



When it comes to your electrical distribution installation, we can help you:

- Mitigate risk and limit downtime
- Keep equipment up to date and extend lifespan
- Cut costs and increase savings
- Improve your return on investment

CONTACT US!

<https://www.schneider-electric.com/en/work/services/>

Plan

Schneider Electric helps you plan the full design and execution of your solution, looking at how to make your process more dependable and optimize time:

- **Technical feasibility studies:** Design a solution in your environment
- **Preliminary design:** Accelerate turnaround time to reach a final solution design

Install

Schneider Electric will help you to install more efficient, more reliable solutions based on your plans.

- **Project management:** Complete your projects on time and within budget
- **Commissioning:** Ensure your actual performance matches the design, through on-site testing and commissioning, tools, and procedures

Operate

Schneider Electric helps you maximize your installation uptime and control your capital expenditures through its service offering.

- **Asset operation solutions:** Provide the information you need to enhance installation performance, and optimize asset maintenance and investment
- **Advantage service plans:** Customize service plans that include preventive, predictive, and corrective maintenance
- **On-site maintenance services:** Deliver extensive knowledge and experience in electrical distribution maintenance
- **Spare parts management:** Ensure availability of spare parts and an optimized maintenance budget for your spare parts
- **Technical training:** Build necessary skills and competencies to properly operate your installations

Optimize

Schneider Electric proposes recommendations to help with availability, reliability, and quality.

- **MP4 electrical assessment:** Define an improvement and risk management program

Renew

Schneider Electric's solutions extend the original life of your system, while providing upgrades.

Life Is On



More info on se.com

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