

MT-PSTC-K4-1P-DXK-4.5MVA-SMT-HT-LT-A2-BM-CZ-2ZZ-M1

4.5 MVA Conservator Substation Transformer - 138000V Delta Primary, 12000V Secondary - ONAN, Light Grey, NEMA 4X Enclosure

Product ID: 313118



Image: MT-PSTC-K4-1P-DXK-4.5MVA-SMT-HT-LT-A2-BM-CZ-2ZZ-M1

Larson Electronics LLC manufactures a wide variety of products, including custom built to spec designs. The pictures displayed for this unit are a general representation of form factor for the product line and may not accurately represent this exact configuration in every detail due to custom builds and changes between similar products in our standard catalog. The specifics for this configuration are listed in the specification table and supporting documentation (CAD files, Dimensional Drawing, Name Plate Diagram, Wiring Diagram, etc.). This means that specific details (receptacles, plugs, wires, connections, mounting brackets, external finishes, etc.) may not be accurately represented in images vs specifications. Please review specifications and do not order based solely on images.

MT-PSTC-K4-1P-DXK-4.5MVA-SMT-HT-LT-A2-BM-CZ-2ZZ-M1 Conservator Substation

Transformer

Transformer Type: Substation Power Transformer, Conservator Type

Transformer Configuration: Liquid Filled Pad Mounted

Transformer Feed Type: Radial Feed

Operation: Approved for Step-Up and Step-Down Operations

Phase: Single Phase

Capacity: 4.5 MVA (4500 KVA)

Vector Group: II6

Primary Voltage: 138000V

Primary Voltage Switch: N/A

Primary Voltage Class: 138 kV Class

Primary Phasor: Delta

Primary BIL: 650 kV

Secondary Voltage: 12000V

Secondary Voltage Class: 25 kV Class

Secondary Phasor: Single Phase

Secondary BIL: 95 kV

Frequency: 25 Hz

Excitation Current (@ 110% of Rated Voltage): ≤ 3% Of Rated Current

Power Factor: 0.8 lagging

Load Cycle: Design duty: continuous full load, 100% of 4.5 MVA, 24 h/day, 25 Hz. Indicative overload capability per IEEE C57.91 (pre-load 70%, 30 °C ambient; hot-spot ≤120 °C planned / ≤130 °C emergency; top-oil ≤105/110 °C): 4 h at 1.15/1.25 pu; 2 h at 1.25/1.35 pu; 1 h at 1.35/1.45 pu.

Temperature Rise: 65°C

Ratings

Meets/Exceeds DOE 2016 Efficiency Ratings

Meets/Exceeds CSA Efficiency Ratings

Complies with ANSI / IEEE C57.12.00

Complies with ANSI / IEEE C57.12.28

Complies with ANSI / IEEE C57.12.29

Complies with ANSI / IEEE C57.12.34

Complies with ANSI / IEEE C57.12.35

Complies with ANSI / IEEE C57.12.70

Complies with ANSI / IEEE C57.12.110

Complies with ANSI / IEEE C57.12.131

Complies with ANSI / IEEE C62.11

Complies with ANSI / IEEE C62.22

Complies with ANSI / IEEE 386

Complies with ANSI / IEEE C2

Complies with ANSI / IEEE C37.47

Complies with ANSI Z535.4

Complies with ASTM D3487

Complies with CSA C802.1

Complies with CSA C802-3

Complies with CSA C50

Complies with ASTM D6871

Insulation Rating: Class E Insulation - 120°C, 248°F
Cooling Class: ONAN; Self Cooled
Forced Air (Fans): N/A
Tap Changer: 5-Position Off-Load Tap Changer
Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
Tap %: 2.5% Taps
Tap Changer Switch Rating: 25 kV, Off-Load Rated
Tap Changer Switch Location: 6" above transformer base
Impedance: 4.0-4.3%
Primary Connection Type: Live Front
Primary Termination Arrangement: Top Mounted Terminals
Primary Termination: Porcelain Bushings, OIP condenser type, Each Is Provided w/ GE Type KA-108 Capacitance Bushing Potential Device, Model #44H996C400
Primary Connection Qty: (2) Primary Connections
Primary Bushing Rating: 138 kV class, 650 kV BIL (per IEEE C57.19.01 a 650 kV BIL bushing is the 138 kV class). 1-min dry withstand 310 kV, 10-s wet 275 kV. 600 A
Primary Neutral Connection: N/A
Primary Surge Arrestors: Included
Primary Surge Arrestor Voltage Rating: 108 kV, Station class
Primary Surge Arrestor MCOV Rating: 84 kV
Primary Over Current Protection (OCP): N/A
Primary Over Current Protection Method: N/A
Primary Over Current Protection Holder: N/A
Primary Current Transformers: Included, Window-Type, (2) on Each Bushing, C50 Relaying Accuracy Class, 300:5 MR Ratio, continuous thermal rating factor (RF) = 2.0 at 30°C, mounted around the bushing inside the tank in oil; secondary leads to terminal blocks in the NEMA 4X wiring cabinet (shorting-type blocks)
Primary Grounding Provisions: NEMA 2-hole grounding pads
Secondary Connection Type: Live Front
Secondary Termination Arrangement: Top Mounted Porcelain Bushings
Secondary Connections: Porcelain Bushings, w/ Flat NEMA Spade
Secondary Connection Qty: (2)
Secondary Bushing Rating: 23 kV Class, 110 kV BIL
Secondary Connection Supports: N/A
Secondary Surge Arrestors: Included
Secondary Surge Arrestor Voltage Rating: 21 kV, Station class
Secondary Surge Arrestor MCOV Rating: 17 kV
Secondary Over Current Protection (OCP): N/A
Secondary Current Transformers: Included, Window-Type, (2) on Each Bushing, C200 Relaying Accuracy Class, 600:5 MR Ratio, continuous thermal rating factor (RF) = 2.0 at 30°C, mounted around the bushing inside the tank in oil; secondary leads to terminal blocks in the NEMA 4X wiring cabinet (shorting-type blocks)
Secondary Neutral Connection: TBD
Secondary Grounding Provisions: (1) NEMA Ground Bar Attached to Tank via (2) Welded Ground Bungs
Metering Current Transformer (CT): N/A
Metering Panel: N/A
Auxiliary Control Panel : N/A
Load Break Switch: N/A
Load Break Switch Qty: N/A
Load Break Switch Rating: N/A
Load Break Switch Location: N/A
Efficiency Standard(s): Meets ANSI/IEEE Standards
K-Factor Rating (Harmonic Mitigation): K-4
Pulse Drive Rating: Appropriate For Use With 6-Pulse Drive Equipment On Secondary Side
Insulation Fluid: Mineral Oil, Type II, Non-PCB Fluid
Fluid (Oil) Capacity*: Approx. 2,800 Gallons
Fluid (Oil) Weight*: Approx. 20,500 lbs
Oil Level Indicator: Analog Dial-type Gauge (Located in an externally accessible housing) with two alarm contacts (Alarm-Trip)
Oil Temperature Indicator: Analog Dial-type Gauge with two alarm contacts
Pressure/Vacuum Indicator: Nitrogen System Gauge with two alarm contacts (High-Low)
Pressure Relief Device: Included, Automatic Action, with an alarm contact.

Complies with NEMA 260-1996
Complies with 10 CFR Part 431
Complies with CSA C2.1-06
Complies with CSA C88-16
Complies with CSA C88
Complies with CSA C88.1
Complies with CSA C227.5
Complies with CSA C227.4

Features

Penta-head Bolt Entry Assembly
High-Fire Point Insulating Fluid
Non-PCB Insulating Fluid
Tamper Proof Housing
Hinged Front Compartment Doors, Pad Lockable
NEMA 4X Wiring Compartment, Stainless steel
Hot Stick Included, HV Door Mount

Efficiency % (@ 25% Load): TBD
Efficiency % (@ 50% Load): TBD
Efficiency % (@ 75% Load): TBD
Efficiency % (@ Full Load): TBD
Efficiency % (@ 150% Load): TBD
Efficiency % (@ 200% Load): TBD

Load Losses Based on 75°C Reference Temp.
No Load Loss (in watts): TBD
Full Load Loss (in watts) at 100%: TBD
Total Load Loss (in watts) at 100%: TBD

Total Losses at 55°C LL Temp. & 20°C NL Temp.
Total Load Loss (in watts) at 50%: TBD

Note: Losses offered are typical only, not guaranteed

Labeling:

Externally Stencilled (Painted) KVA Rating
Externally Stencilled (Painted) Voltage Rating
External Non-PCB Label
External Warning & Danger Label
External Barcode Label
Internal Busing & Accessory Labeling
Stainless Steel Riveted Nameplate

Factory Tests:

Winding Resistance Test
Insulation Resistance Test
Voltage Ratio Error Test
Short-circuit Impedance Test
No-load Loss (Wattage) Test

Fault Indicator: N/A
Gas Sampler Valve: N/A
Fill Valve: Included
Fill Valve Location: TBD
Oil Drain Valve: 2" Globe-Type with 3/8" Sampling Valve
Drain Valve Location: Front Compartment
Vacuum-filling (full vacuum) pressure of the main tank: The main tank is designed for full vacuum, i.e. 760 mmHg (101.3 kPa / 14.7 psi) below atmospheric = 0 absolute, with no permanent deformation
Nitrogen Pressure System: Normal operating range 0.5 to 5.0 psig (3.5 to 35 kPa). Low alarm $\approx$ 0.5 psig, high alarm $\approx$ 5 psig. Tank pressure design limit 7 psig (48 kPa) positive; pressure relief device operates at $\approx$ 10 psig (69 kPa) and carries an alarm contact.
Winding Material: Copper
Ambient Temperature Rating: 40°C
Ambient Operating Temperature Range: -40°C to +40°C (-50°F to +104°F)
Sound Level: 67 dBA
Elevation (Altitude): 3300ft (1000 meters) Above Sea Level
Core Material: Grain Oriented Steel
Core Design: Circular
Tank Material: Coated Steel
Cabinet Material: Coated Steel
Base Platform Material: Coated Steel
Portability: Lifting Lugs, Provisions for Jacking Under Base, w/ Base Construction Suitable for Using Rollers or Skidding
Housing Type: Metal Casing Liquid Filled Transformer
Enclosure Rating: NEMA 4X Weatherproof Wiring Cabinet, Stainless steel
Seismic Rating: D, and risk category 2
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating
Finish Color: Munsell™ 5BG 7.0/0.4 Light Grey (ANSI #70)
Mounting: Skid Type Base w/ Lifting Lugs
Conduit Opening: N/A
Tank Cover Access Manhole: Included, $\geq$ 16" x 20" Size
Dimensions*: Approx. 165 L x 110 W x 180 H (Reference ONLY, to be confirmed according to the actual design)
Dry Weight (w/o Oil)*: Approx. 34,000 lbs
Total Weight (Liquid Filled)*: Approx. 54,500 lbs
*Please note that numbers are approximate and subject to change

Load Loss (Wattage) Test
Induced Voltage Withstand Test
Separate Source Voltage Withstand Test
Pressure Integrity Test

Shipping:

Shipped on pallet on open flatbed
Palletized on Wooden Pallet w/ Skid Pockets
Pallet Skid Facing Outward Sides of Truck
Note: Crated shipping in lieu of palletizing can be done upon request for an additional fee

Special Orders - Special Requirements

Contact us for special requirements

Toll Free: 1-800-369-6671

Intl: 1-903-270-1187

Fax: 1-903-765-7664

E-mail: sales@larsonelectronics.com

The MT-PSTC-K4-1P-DXK-4.5MVA-SMT-HT-LT-A2-BM-CZ-2ZZ-M1 Conservator Substation Transformer from Larson Electronics offers powerful, reliable, and efficient power distribution in indoor or outdoor locations. The low operating costs, low heat emissions, and low cost of ownership make this transformer ideal for a wide range of applications and businesses. This air tight transformer does not have doors and must be installed in a contained or protected area away from public access.

****PLEASE NOTE: ANY FREE SHIPPING OFFERS DO NOT APPLY TO POWER DISTRIBUTION PANELS, TRANSFORMERS, OR SUBSTATIONS****

Transformer Features: The industrial transformer features a primary voltage of three-phase 138000V Delta and a secondary voltage of single-phase 12000V. This system carries the following ratings: 4.5 MVA (4500 KVA). The unit has a primary radial feed and live front primary connections. We also offer systems with loop feed and dead front primary connections. This transformer features a 5-position tap changer with two, $\pm$ 2.5% taps above and two, $\pm$ 2.5% taps below to allow small changes for voltage. There are no load break switches or protection fuses present on the system.

The system features copper windings for high strength and thermal/electrical conductivity. This transformer consists of rectangular coil and five-legged wound core design with three coils and four core loops (this is for three-phase transformers only; single-phase units have one coil and two core loops).

Temperature Rise: This unit features a 50°C ambient temperature rating and a 65°C temperature rise for reduced heat waste, increased reliability, and longer life. At 65°C temperature rise, the transformer offers 4.5 MVA (4500 KVA). The transformer meets standard efficiency requirements. The combination of low temperature rise and high efficiency makes this unit suitable for use in electrical rooms, air conditioned spaces in buildings, underground vaults and similar locations, in addition to outdoor areas.

Insulation Fluid: The MT-PSTC-K4-1P-DXK-4.5MVA-SMT-HT-LT-A2-BM-CZ-2ZZ-M1 features mineral oil (ONAN).

Gauges: The following gauges are included with the system: oil level indicator, oil thermometer, winding hot-spot thermometer and pressure/vacuum gauge. Standard oil level indicator, oil thermometer, and pressure/vacuum gauges are analog, manual reading types.

Fault Pressure Devices: There are no fault pressure devices on the unit. Fault pressure devices are used to detect high rates of pressure rise within the tank.

Rapid Rise Relay: There is a rapid rise relay on the unit. This safety component is designed for protection when a rapid increase in tank pressure occurs. The relay is suitable for detecting sudden pressure fluctuations above predetermined safe limits.

Surge arresters: This system comes with surge arresters on the primary and secondary sides. Designed for over-voltage and transient voltage protection, the components prevent damage caused by lightning, internal switching or voltage surges. We can offer models without high elbow surge arresters that have mounting provisions for customer-provided surge arresters.

Load Breaker Switch: The transformer is not equipped with a load breaker switch.

Valves: The MT-PSTC-K4-1P-DXK-4.5MVA-SMT-HT-LT-A2-BM-CZ-2ZZ-M1 is equipped with an oil drain valve, an oil sampling valve, and a pressure relief valve.

Protection Fuses: This transformer does not have bayonet protection fuses on the primary side. For units without protection fuses, up stream protection is provided. We recommend provisions for protection fuses when possible, as blown fuses may require more frequent oil changes.

Terminal Connections: The primary and secondary terminal connections are located on the top of the transformer. We can configure the location to be top located or side located for both the high voltage and low voltage sides.

Mount: This conservator transformer is equipped with a skid type base with lifting lugs.

Benefits: The MT-PSTC-K4-1P-DXK-4.5MVA-SMT-HT-LT-A2-BM-CZ-2ZZ-M1 transformer

offers many benefits to consumers. This transformer provides owners with significant energy savings, as well as offering environmental benefits. Higher efficiency not only extends the life of the transformer, but also turns into cost savings for owners in the form of lower energy bills and decreased cost of ownership.

Applications: General purposes, industrial sites, electrical rooms, underground vaults, manufacturing facilities, steel plants, offshore, commercial, military, processing plants, electric power distribution, utilities, and more.

Larson Electronics is a manufacturer and as such can build stationary and portable transformer systems to your specifications. Although we carry several models of power distribution transformer systems, we can deliver custom ordered units almost as quickly as our prebuilt units. If this model does not meet your needs, please contact us at 1-800-369-6671 or sales@larsonelectronics.com to discuss your specific requirements.



Frequently Asked Questions (FAQ)

There are no Faqs