Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.765.7664

MT-PSTC-R7-3P-DXK-108MVA-GMA-HT-LT-X6-BMFF-CZ-2ZZ-M1

108/144/180 MVA Substation Power Transformer, Conservator Type - 138000V Delta Primary, 34500Y/19920 Grounded Wye Secondary, ONAN/ONAF/ONAF, Mineral Oil, Light Grey

Product ID: 336397

Please see last page for supporting documentation for this product (certificates, CAD files & drawings, IES files, wiring diagrams, etc).



Image: MT-PSTC-R7-3P-DXK-108MVA-GMA-HT-LT-X6-BMFF-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-R7-3P-DXK-108MVA-GMA-HT-LT-X6-BMFF-CZ-2ZZ-M1 Conservator Transformer

Transformer Type: Substation Power Transformer, Conservator Type
Transformer Configuration: Liquid Filled
Transformer Feed Type: N/A
Operation: Step-Down Operation (Approved for Step-Up)
Phase: Three Phase
Capacity (w/o Fans): 108 MVA (108,000 KVA)
Capacity (w/ Fans, Stage 1): 144 MVA (144,000 KVA)
Capacity (w/ Fans, Stage 2): 180 MVA (180,000 KVA)
Vector Group: Dyn1
Primary Voltage: 138000V
Primary Voltage Switch: N/A
Primary Voltage Class: 145 kV Class
Primary Phasor: Delta
Primary BIL: 650 KV
Secondary Voltage: 34500Y/19920
Secondary Voltage Class: 38 kV Class
Secondary Phasor: Grounded Wye
Secondary BIL: 200 KV
Main Bus Disconnects: N/A

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 C37.47
Complies with ANSI / IEEE C2
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 Z535.4
Complies with 10 CFR Part 431
Complies with NEMA 260-1996
Complies with CSA C227.4

Frequency: 60 Hz
Anticipated Unbalanced Loading: 60
Over Voltage Operating Capability and duration: 112.5% of rated voltage (continuous)
Withstand Time for Three-Phase Short Circuit: 2 seconds
Magnetizing Current: 1% of Full Load Current
Maximum RIV Level: 300 µV
Temperature Rise: 65°C
Insulation Rating: Class A Insulation
Cooling Class: ONAN/ONAF/ONAF
Forced Air (Fans): Included, Two-Stages, Totally Enclosed, Individually Protected Type, Fan Blades Of One-Piece Cast aluminum, Galvanized Fan Guards, Not directly mounted on Radiators, 120/240 VAC Supply Voltage, HOA Switch + Automatic Temperature Control
Cooling Radiator: Included, Individually Removable, Galvanized Steel, Has Upper And Lower Drain Plugs, ANSI #70 Light Grey
L.V Tap Changer: 5-Position De-energized Tap Changer (DETC), w/ Mechanical Locking
L.V Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
L.V Tap %: 2.5%
L.V Tap Changer Switch Rating: 35 KV
H.V Tap Changer Switch Location: H.V Side, Top Mounted
H.V Tap Changer: 33-Position On-Load Tap Changer (LTC), Automatic / Manual Operation, 125 VDC Control Voltage, 120 VAC Motor Voltage, Capable Of Interface With SCADA For Position And Control
H.V Tap Qty: (16) FCAN Above Taps, (16) FCBN Below Taps
H.V Tap %: 0.625%
H.V Tap Changer Switch Rating: 145 KV
H.V Tap Changer Switch Location: H.V Side, Top Mounted In a Separate Oil Compartment Equipped With Liquid Level Gauge W/ Alarm Contacts, Pressure Relief Device, Drain Valve W/ Sampling Device, Filling Plug, a Lip To Prevent Oil Spills After Draining The Compartment, Motor Drive, Operation Counter, One Separate Contact Deck Row With Resistors For Local Or Remote Position Indication And Beckwith M2025 Current Loop Interface With Appropriate Beckwith Tap Sensor For Integration With Tap Changer Control, w/ Control Relay (SEL 2414)
Impedance: 10% @ 108 MVA
Primary Connection Type: Live Front
Primary Termination Arrangement: Inline, Top Mounted
Primary Termination: NEMA 4-Hole Pad connectors, Tinned Bronze
Primary Bushing Qty: (3)
Primary Bushing Rating: 145 KV Class, 650 KV BIL
Primary Bushing Type: Oil Filled Condenser Type
Primary Bushing Conductor Style: Draw Lead
Primary Neutral Connection: N/A
Primary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, Grey
Primary Surge Arrestor Duty Cycle Voltage: 144 KV
Primary Surge Arrestor MCOV Rating: 115 KV
Primary Overcurrent Protection (OCP): N/A
Primary Bushing CT: Included, (2) Per Each Phase, 2000:5 MR, C800 Accuracy Class, 2.0 RF
Primary Overcurrent Protection Holder: N/A
Primary Grounding Provisions: N/A
Secondary Connection Type: Live Front
Secondary Termination Arrangement: Inline, Top Mounted
Secondary Termination: NEMA 4-Hole Pad connectors
Secondary Bushing Qty: (4)
Secondary Bushing Rating: 35 KV Class, 200 KV BIL, 35 inch. Creepage Distance
Secondary Bushing Type: Oil Filled Condenser Type
Secondary Bushing Conductor Style: Draw Lead
Secondary Neutral Connection: Included, to be Brought Out
Secondary Overcurrent Protection (OCP): N/A

Complies with ASTM D3487
Complies with CSA C227.5
Complies with CSA C802.1
Complies with CSA C802-3
Complies with CSA C50
Complies with CSA C88
Complies with ASTM D6871
Complies with CSA C88-16
Complies with CSA C88.1
Complies with CSA C2.1-06

Features

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

Efficiency %: N/A
Based on transformer operating at 50% of nameplate base kVA.

Load Losses Based on 75°C Reference Temp.
Off-Load Loss (in watts): 21800W, ±10% Tolerance
On-Load Loss (in watts): 120890W, ±10% Tolerance
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*

Secondary Bushing CT: Included, (2) Per Each Phase, 3000:5 MR, C800 Accuracy Class, 2.0 RF
Secondary Neutral Bushing CT: Included, (2) 3000:5 MR, C800 Accuracy Class, 2.0 RF
Secondary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, Grey
Secondary Surge Arrestor Duty Cycle Voltage: 36 KV
Secondary Surge Arrestor MCOV Rating: 29 KV
Secondary Grounding Provisions: Included, (2) Grounding Pads Located On Diagonally Opposite Corners Of The Tank Base For Grounding Of The Transformer With Bolt Type Connectors For Connection To 2/0 to 500 KCMIL Stranded Copper conductor
Metering Current Transformer (CT): Included
Metering Panel: Included
Auxiliary Control Panel : Included, NEMA 3R Rated, Door Activated Internal Light, w/ Thermostat Controlled Space Heater, w/ Duplex Convenience Outlet Receptacle, 120/240V AC Control Power
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-1 (Standard)
Pulse Drive Rating: N/A
Insulation Fluid: Mineral Oil Fluid, Type II, Non-PCB Fluid
Fluid (Oil) Capacity*: TBD
Fluid (Oil) Weight*: TBD
Liquid Level Indicator: Included, Messko, Type: MTO-STF 160 RM/1C
Winding Temperature Indicator: Included Thermometer, Messko, Type: MT-ST/60 VMR/4C/4M
Liquid Temperature Indicator: Included Thermometer, Messko, Type: MT-ST/60 RM/2C/2M
Pressure/Vacuum Indicator: Included, With Scale Range Of Plus Or Minus 10 PSI
Rapid Rise Relay: Included, (63) Qualitrol 910-013-03
Pressure Relief Device: Included, Messko, MPre C Type: 685-10-31-N01-01
Nitrogen Oil Preservation System: Included With A Nitrogen Tank And All Necessary Accessories
Pressure Reducer: Included, Three-Stage
Gas Relay: Included
Fault Indicator: Included, Buchholz Relay
Gas Sampler Valve: Included
Fill Valve: Included
Fill Valve Location: Top Mounted
Drain Valve: Included W/ Sampling Port
Drain Valve Location:
Winding Material: Copper
Ambient Temperature Rating: 50°C
Ambient Operating Temperature Range: -40°C to +50°C
Sound Level: N/A
Elevation (Altitude): < 3300ft (1000 meters) Above Sea Level
Wind Speed: 90 mph
Pollution Level (IEEE 1427): Moderate
Ice Loading: 1.5 Inches
Core Material: Silicon Steel, CRGO
Core Assembly: Boltless Type
Tank Material: Steel
Cabinet Material: Steel
Base Platform Material: Steel
Hardware Material: Stainless Steel

Labeling:

Externally Stenciled (Painted) KVA Rating
Externally Stenciled (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
Pressure Integrity Test
Short-circuit Impedance Test
Separate Source Voltage Withstand Test
No-load Loss (Wattage) Test
Induced Voltage Withstand Test
Load Loss (Wattage) Test
Dissolved Gas Analysis
Sweep Frequency Response Analysis
Efficiency Calculation
Regulation Calculation

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*

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 3R Weatherproof, Welded Steel Plate
Seismic Qualifications (IEEE 693): Low
Seismic Zone (UBC): Zone 1
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating
Finish Color: ANSI 61 Gray
Mounting: Pad Mounted
Conduit Opening: Bottom
Tank Cover Access Handhole: Included
Dimensions*: 315.9"L x 501.3"W x 423.3"H
Weight*: 612,900 Lbs
*Please note that numbers are approximate and subject to change

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-R7-3P-DXK-108MVA-GMA-HT-LT-X6-BMFF-CZ-2ZZ-M1 Conservator Substation from Larson Electronics offers powerful, reliable, and efficient power distribution in 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 transformer ensures extra space for storing oil and is equipped with breathers to facilitate air flow. The conservator transformer should be installed on supporting structures.

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 three-phase 34500Y/19920V Grounded Wye. This system is rated for 108 MVA (108,000 KVA) natural cooled, 144 MVA (144,000 KVA) first stage fan cooled and 180 MVA (180,000 KVA) second stage fan cooled. We offer systems with loop or radial feed, as well as dead front or live front primary connections. The transformer features a 5-position off-load tap changer with two +2.5% taps above and two -2.5% taps below to allow small changes in voltage. There is a rapid rise relay present on the system.

The system features copper windings for high strength and thermal/electrical conductivity. This transformer consists of a rectangular coil and a 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).

The MT-PSTC-R7-3P-DXK-108MVA-GMA-HT-LT-X6-BMFF-CZ-2ZZ-M1 has fans for forced air cooling. This non-sealed system features breathers for cooling when operating temperatures increase.

Temperature Rise: This unit features 65°C temperature rise for reduced heat waste, increased reliability and longer life. At 65°C temperature rise, the transformer offers 108 MVA (108,000 KVA) natural cooled, 144 MVA (144,000 KVA) first stage fan cooled and 180 MVA (180,000 KVA) second stage fan cooled. The transformer meets standard efficiency requirements. The combination of low temperature rise and high efficiency makes this unit suitable for use in outdoor areas.

Insulation Fluid: The MT-PSTC-R7-3P-DXK-108MVA-GMA-HT-LT-X6-BMFF-CZ-2ZZ-M1

features mineral oil fluid (ONAN/ONAF/ONAF). We offer transformers with biodegradable fluid or FR-3 fluids, if needed.

Biodegradable Fluid: Biodegradable cooling fluid (vegetable oil) has a higher heat capacity compared to mineral oil, making the liquid safer to use and more reliable during operations. Vegetable oil has a higher flash point and fire point than mineral oil, hydrocarbon oil, silicone oil and synthetic ester. This cooling fluid is also non-toxic and can tolerate higher breakdown voltages than mineral oil. When operating at high temperatures, biodegradable cooling liquid sustains up to 120% load conditions, which helps preserve the transformer's lifespan and performance.

Gauges: The following gauges are included with the system: liquid level indicator, Fluid temperature indicator, Winding Temperature Indicator, pressure/vacuum indicator. Standard liquid level, temperature and pressure/vacuum gauges are analog dial types.

Fault Pressure Devices: There is a Buchholz relay fault indicator on this unit.

Gas Relay: A gas relay with indicators for light gas and heavy gas is included with the transformer. The relay includes two Dry Type Form C auxiliary contacts (1NO + 1NC) for remote alarm when pressure rises above in-field set pressure located in auxiliary control cabinet.

Surge arresters: This system comes with surge arresters on both the primary and secondary sides.

Load Break Switch: The transformer is not equipped with a load break switch.

Valves: The MT-PSTC-R7-3P-DXK-108MVA-GMA-HT-LT-X6-BMFF-CZ-2ZZ-M1 is equipped with a pressure relief valve.

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

Mount: This conservator substation transformer is installed on supporting structures, such as the roof of the transformer main tank.

Benefits: The MT-PSTC-R7-3P-DXK-108MVA-GMA-HT-LT-X6-BMFF-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.

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Frequently Asked Questions (FAQ)

There are no Faqs

Warranty: 24 Months.

Export Control Classification Number (ECCN): EAR99

Links (Click on the below items to view):

- **HigResPic1**(https://www.larsonelectronics.com/images/product/HigResPic1/336397.JPG)
- **Video1**(https://www.youtube.com/watch?v=4-JEyYeYcn8)
- **Video6**(https://www.youtube.com/watch?v=olihKUo24KU)
- **Video7**(https://www.youtube.com/watch?v=Yez7eCilgDE)
- **Video8**(https://www.youtube.com/watch?v=Ac5BDPSy964)
- **ISO 9001 Certification**(http://larsonelectronics.com/images/pdfdocs/ISO9001.PDF)
- **Business Certificate**(https://www.larsonelectronics.com/images/pdfdocs/w9.PDF)
- **Shipping Time Map**(https://www.larsonelectronics.com/images/product/ShippingTimeMap/ShippingTimeMap.pdf)