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## MT-PSTC-R7-3P-DMP-12MVA-GNF-HT-LS-X6-BM-CZ-2ZZ-M1

# 12 MVA Substation Power Transformer, Conservator Type - 13800V Delta Primary, 4160Y/2400 Grounded Wye Secondary - ONAN, Mineral Oil - Light Grey

**Product ID: 338639**

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



Image: MT-PSTC-R7-3P-DMP-12MVA-GNF-HT-LS-X6-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-R7-3P-DMP-12MVA-GNF-HT-LS-X6-BM-CZ-2ZZ-M1 Conservator Transformer | Ratings |
|---|---|
| **Transformer Type:** Substation Power Transformer, Conservator Type | Meets/Exceeds DOE 2016 Efficiency Ratings |
| **Transformer Configuration:** Liquid Filled | Meets/Exceeds CSA Efficiency Ratings |
| **Transformer Feed Type:** N/A | Complies with ANSI / IEEE C57.12.00 |
| **Operation:** Step-Down Operation (Not Approved for Step-Up) | Complies with ANSI / IEEE C57 12.28 |
| **Phase:** Three Phase | Complies with ANSI / IEEE C57 12.29 |
| **Capacity:** 12 MVA (12,000 KVA) | Complies with ANSI / IEEE C57 12.34 |
| **Vector Group:** Dyn11 | Complies with ANSI / IEEE C57 12.35 |
| **Primary Voltage:** 13800V | Complies with ANSI / IEEE C57.12.70 |
| **Primary Voltage Switch:** N/A | Complies with ANSI / IEEE C57.12.110 |
| **Primary Voltage Class:** 15 kV Class | Complies with ANSI / IEEE C57.12.131 |
| **Primary Phasor:** Delta | Complies with ANSI / IEEE C62.11 |
| **Primary BIL:** 95 KV | Complies with ANSI / IEEE C62.22 |
| **Secondary Voltage:** 4160Y/2400 | Complies with ANSI / IEEE 386 |
| **Secondary Voltage Class:** 5 kV Class | Complies with ANSI / IEEE C2 |
| **Secondary Phasor:** Grounded Wye | Complies with ANSI / IEEE C37.47 |
| **Secondary BIL:** 60 KV | Complies with ANSI Z535.4 |
| **Frequency:** 60 Hz | Complies with ASTM D3487 |
| **Winding Temperature Rise:** 65°C | Complies with ASTM D6871 |
| **Oil Temperature Rise:** 65°C | Complies with CSA C802.1 |
| **Insulation Rating:** Class A Insulation | Complies with NEMA 260-1996 |

**Cooling Class:** ONAN; Self-Cooled
**Forced Air (Fans):** None
**H.V Tap Changer:** 17-Position On-Load Tap Changer (OLTC)
**H.V Tap Qty:** (8) FCAN Above Taps, (8) FCBN Below Taps
**H.V Tap %:** 1.25%
**H.V Tap Changer Switch Rating:** 35 KV
**H.V Tap Changer Switch Location:** H.V Side, Top Mounted
**L.V Tap Changer:** 5-Position De-energized Tap Changer (DETC)
**L.V Tap Qty:** (2) FCAN Above Taps, (2) FCBN Below Taps
**L.V Tap %:** 2.5%
**L.V Tap Changer Switch Rating:** 5 KV
**L.V Tap Changer Switch Location:** L.V Side, Side Mounted
**Impedance (Typical):** 9.54%
**Primary Connection Type:** Live Front
**Primary Termination Arrangement:** Inline, Top Mounted
**Primary Termination:** NEMA 4-Hole Pad connectors
**Primary Bushing Qty:** (3)
**Primary Bushing Rating:** 15 KV Class, 95 KV BIL, Porcelain, ANSI #70 Light Grey
**Primary Neutral Connection:** N/A
**Primary Surge Arrestors:** Included, (3) Metal Oxide Polymer Housed Station Class
**Primary Surge Arrestor Voltage Rating:** 15 KV
**Primary Surge Arrestor MCOV Rating:** 12.7 KV
**Primary Overcurrent Protection (OCP):** N/A
**Primary Overcurrent Protection Method:** N/A
**Primary Overcurrent Protection Holder:** N/A
**Primary Bushing CT:** Included, (1) Per Each Phase,600:5 Ratio MR, C400 Accuracy Class
**Primary Grounding Provisions:** N/A
**Secondary Connection Type:** Live Front
**Secondary Termination Arrangement:** Inline, Side Mounted
**Secondary Termination:** NEMA 4-Hole Pad connectors
**Secondary Bushing Qty:** (4)
**Secondary Bushing Rating:** 5 KV Class, 60 KV BIL, Porcelain, ANSI #70 Light Grey
**Secondary Neutral Connection:** Included
**Secondary Overcurrent Protection (OCP):** N/A
**Secondary Bushing CT:** Included, (2) Per Each Phase; (1200:5 Ratio MR, C400 Accuracy Class) & (1200:600 Ratio, 0.3-B1.8 Metering Accuracy)
**Secondary Surge Arrestors:** N/A
**Secondary Surge Arrestor Voltage Rating:** N/A
**Secondary Surge Arrestor MCOV Rating:** N/A
**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
**Neutral Bushing CT:** Included, (1) 600:5 Ratio MR, C400 Accuracy Class
**Metering Current Transformer (CT):** Included
**Metering Panel:** Included
**Auxiliary Control Panel:** Included, Contains Power Sources 48 Vdc, 240 Vac-1Ph For Control Cabinet Heater And 120/240 Vac-1Ph For Cooling Equipment
**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, Non-PCB Fluid
**Fluid (Oil) Capacity*:** TBD
**Fluid (Oil) Weight*:** TBD
**Liquid Level Indicator:** Included, Messko, Type: MTO-STF 160 RM/1C

Complies with 10 CFR Part 431
Complies with CSA C2.1-06
Complies with CSA C50
Complies with CSA C88
Complies with CSA C88.1
Complies with CSA C88-16
Complies with CSA C227.4
Complies with CSA C227.5
Complies with CSA C802-3

**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 3R Wiring Compartment
Hot Stick Included, HV Door Mount

**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*

**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

**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:** N/A
**Fill Valve:** Included
**Fill Valve Location:** Top Mounted
**Drain Valve:** Included W/ Sampling Port
**Drain Valve Location:**
**Winding Material:** Copper
**Ambient Temperature Rating:** 40°C
**Ambient Operating Temperature Range:** -40°C to +45°C
**Sound Level:** N/A
**Elevation (Altitude):** 3300ft (1000 meters) Above Sea Level
**Core Material:** Silicon Steel, Grain Oriented
**Tank Material:** Coated Steel
**Cabinet Material:** Coated Steel
**Base Platform Material:** Coated Steel
**Hardware Material:** Stainless 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 3R Weatherproof
**Seismic Rating:** N/A
**Paint Type:** Weatherproof and UV Resistant Epoxy Coating and Undercoating
**Finish Color:** ANSI #70 Light Grey
**Mounting:** Supporting Structures
**Conduit Opening:** Bottom
**Tank Cover Access Handhole:** Included
**Dimensions*:** TBD
**Dry Weight (w/o Oil)*:** TBD
**Total Weight (Liquid Filled)*:** TBD
*Please note that numbers are approximate and subject to change

Voltage Ratio Error Test
Short-circuit Impedance Test
No-load Loss (Wattage) Test
Pressure Integrity Test
Separate Source Voltage Withstand Test
Induced Voltage Withstand Test
Load Loss (Wattage) 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-R7-3P-DMP-12MVA-GNF-HT-LS-X6-BM-CZ-2ZZ-M1 Conservator Substation Transformer 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 13800V Delta and a secondary voltage of three-phase 4160Y/2400 Grounded Wye. This

system is rated for 12 MVA (12,000 KVA). 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-DMP-12MVA-GNF-HT-LS-X6-BM-CZ-2ZZ-M1 does not have 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 12 MVA (12,000 KVA). 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-DMP-12MVA-GNF-HT-LS-X6-BM-CZ-2ZZ-M1 features mineral oil fluid (ONAN). 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 the primary side.

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

**Valves:** The MT-PSTC-R7-3P-DMP-12MVA-GNF-HT-LS-X6-BM-CZ-2ZZ-M1 is equipped with a pressure relief valve.

**Protection Fuses:** This transformer doesn't contain 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-DMP-12MVA-GNF-HT-LS-X6-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.

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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/HigResPic1/338639.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 )
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- **Shipping Time Map**( https://www.larsonelectronics.com/images/product/ShippingTimeMap/ShippingTimeMap.pdf )