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Product ID: 312243

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



Image:

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.XA-12MVA-GMR-HT-LT-A6-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 (Not Approved for Step-Up)
Phase: Three Phase
Capacity (w/o Fans @ 65°C): 12 MVA (12,000 KVA)
Capacity (w/ Fans, Stage 1 @ 65°C): 16 MVA (16,000 KVA)
Capacity (w/ Fans, Stage 2 @ 65°C): 20 MVA (20,000 KVA)
Vector Group: Dyn1
Primary Voltage: 138000V x 69000V
Primary Voltage Switch: Included
Primary Voltage Class: 138 kV Class
Primary Phasor: Delta
Primary Line Winding BIL: 650 KV
Secondary Voltage: 12470Y/7200V
Secondary Voltage Class: 15 kV Class
Secondary Phasor: Grounded Wye
Secondary Line Winding BIL: 110 KV
Secondary Neutral Winding BIL: 110 KV
Frequency: 60 Hz
Temperature Rise: 65°C
Insulation Rating: Class A Insulation
Cooling Class: ONAN/ONAF/ONAF

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 CSA C227.4
Complies with CSA C88-16
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 CSA C227.5
Complies with ASTM D3487
Complies with ASTM D6871
Complies with NEMA 260-1996
Complies with 10 CFR Part 431

Forced Air (Fans): Included, Two-Stages, Totally Enclosed, Individually Protected Type, Fan Blades Of One-Piece Cast aluminum, Galvanized Fan Guards, 1ph, 240V motors
Cooling Radiator: Included, Galvanized, with valves on the tank at both the top and bottom, and are furnished with upper and lower drain plugs, ANSI #70 Light Grey
H.V Tap Changer: 5-Position De-energized Tap Changer (DETC)
H.V Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
H.V Tap %: 2.5%
H.V Tap Changer Switch Rating: 138 KV
H.V Tap Changer Switch Location: H.V Side, Top Mounted
L.V Tap Changer: N/A
L.V Tap Qty: N/A
L.V Tap %: N/A
L.V Tap Changer Switch Rating: N/A
L.V Tap Changer Switch Location: N/A
Impedance (@ 138 kV, 12 MVA): < 10 % (±7.5%)
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: 138 KV Class, 650 KV BIL, Porcelain, ANSI #70 Light Grey, oil-filled condenser type
Primary Neutral Connection: N/A
Primary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class
Primary Surge Arrestor Voltage Rating: 120 KV
Primary Surge Arrestor MCOV Rating: 60 KV
Primary Over Current Protection (OCP): N/A
Primary Bushing CT: Included, (1) Per Each Phase, 1200:5 MR, C800 Accuracy Class, Top Set, 1.0 Rating Factor
Primary Over Current 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: 15 KV Class, 110 KV BIL, Porcelain, ANSI #70 Light Grey
Secondary Neutral Connection: Included, 15 KV Class, 110 KV BIL, Porcelain, ANSI #70 Light Grey
Secondary Over Current Protection (OCP): N/A
Secondary Bushing CT: Included, (1) Per Each Phase, 1200:5 MR, C800 Accuracy Class, Top Set, 1.0 Rating Factor & (1) Per Each Phase, 1200:5 MR, 0.3B1.8 Accuracy Class, Bottom Set, 1.0 Rating Factor
Secondary Neutral Bushing CT: Included, (1) 400:5 MR, C800 Accuracy Class, 1.0 Rating Factor
Secondary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class
Secondary Surge Arrestor Voltage Rating: 15 KV
Secondary Surge Arrestor MCOV Rating: 12.7 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, Contains Power Sources 48 Vdc, 240 Vac-1Ph For Control Cabinet Heater And 120/240 Vac-1Ph-60Hz 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

Complies with CSA C2.1-06
Complies with CSA C88
Complies with CSA C802-3
Complies with CSA C802.1
Complies with CSA C50
Complies with CSA C88.1

Features

Hot Stick Included, HV Door Mount
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

Efficiency %: 99.35
Based on transformer operating at 50% of nameplate base kVA.

Load Losses Based on 75°C Reference Temp.
Off-Load Loss (in watts): 16,000W
On-Load Loss (in watts): 115,000W
Total Load Loss (in watts) at 100%: 131,000W

Total Losses at 55°C LL Temp.& 20°C NL Temp.
Total Load Loss (in watts) at 50%: 44,750W
Note: *Losses offered are based on 138kV, 20MVA*

Labeling:

Externally Stenciled (Painted) KVA Rating
Externally Stenciled (Painted) Voltage Rating
External Non-PCB Label
External Warning & Danger Label
External Barcode Label

K-Factor Rating (Harmonic Mitigation): K-1 (Standard)
Pulse Drive Rating: N/A
Insulation Fluid: Mineral Oil Fluid - Non-PCB Fluid
Fluid (Oil) Capacity*: -
Fluid (Oil) Weight*: 31,548.15 lbs
Liquid Level Indicator: Included, Magnetic type, complete with Form C alarm contacts
Winding Temperature Indicator: Included gauge, complete with four (4) contacts, one each for stage 1 fans, stage 2 fans, alarm, and trip
Liquid Temperature Indicator: Included Thermometer, complete with four (4) contacts, one each for stage 1 fans, stage 2 fans, alarm, and trip
Pressure Gauge: N/A
Pressure/Vacuum Indicator: N/A
Rapid Rise Relay: Included, with seal-in relay, associated wiring and equipment as required. Unit is capable of operating on 24VDC, 48VDC, or 125VDC systems, and includes one set of Form C contacts for an alarm and one set of contacts rated for tripping duty at 24VDC. The control voltage is set for 125VDC
Pressure Relief Device: Included, with alarm contacts and a mechanical signal for indication of device operation
Nitrogen Oil Preservation System: Included With A Nitrogen Tank And All Necessary Accessories
Monitoring System: Included, SEL 2414
Pressure Reducer: N/A
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, with caps, equipped with lockable valve covers
Drain Valve Location: Located to allow draining from the bottom of the tank
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: N/A
Tank Cover Access Handhole: Included
Dimensions*: 255"-W x 183.86"-D x 215.35"-H
Weight*: 99,185.97 lbs
*Please note that numbers are approximate and subject to change

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
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-R7-3P-DXK.XA-12MVA-GMR-HT-LT-A6-BMFF-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 makes 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 dual primary voltages of three-phase 138000V x 69000V Delta and a secondary voltage of three-phase 12470Y/7200V Wye-N. This system is rated for 12 MVA (12,000 KVA) natural cooled, 16 MVA (16,000 KVA) first stage fan cooled and 20 MVA (20,000 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 for 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 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).

The MT-PSTC-R7-3P-DXK.XA-12MVA-GMR-HT-LT-A6-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 12 MVA (12,000 KVA) natural cooled, 16 MVA (16,000 KVA) first stage fan cooled and 20 MVA (20,000 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.XA-12MVA-GMR-HT-LT-A6-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.XA-12MVA-GMR-HT-LT-A6-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, up stream protection is provided. We recommend provisions for protection fuses when possible, as blown fuses may require more frequent oil changes.

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

Benefits: The MT-PSTC-R7-3P-DXK.XA-12MVA-GMR-HT-LT-A6-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

Product ID: 312243

Warranty: 24 Months.

Export Control Classification Number (ECCN): EAR99

Links (Click on the below items to view):

- **Operations Manual**(https://www.larsonelectronics.com//images/product/Manual/312243.PDF)
- **HigResPic1**(https://www.larsonelectronics.com//images/product/HigResPic1/312243.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)