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Product ID: 316186

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-GSU-R4-3P-DMP-21MVA-GEXV-HT-LT-A6-BFFF-CZ-2ZZ-M1 Conservator Transformer

Transformer Type: Power Generator Step-Up Substation Transformer, Conservator Type
Transformer Configuration: Liquid Filled Pad Mounted
Transformer Feed Type: Radial Feed
Operation: Step-Up Operation (Not Approved for Step-Down)
Phase: Three Phase
Capacity (w/o fans): 21 MVA (21,000 KVA)
Capacity (w/ 1st Stage fans): 28 MVA (28,000 KVA)
Capacity (w/ 2nd Stage fans): 38 MVA (38,000 KVA)
Vector Group: YNd1
Primary Voltage: 13800V
Primary Voltage Switch: N/A
Primary Voltage Class: 15 kV Class
Primary Phasor: Delta
Primary BIL: 110 KV
Secondary Voltage: 117875Y/68055
Secondary Voltage Class: 123 kV Class
Secondary Phasor: Grounded Wye
Secondary BIL: 450 KV
Tertiary Voltage: N/A
Tertiary Voltage Class: N/A
Tertiary BIL: N/A
Frequency: 60 Hz
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 CSA C88.1
Complies with CSA C88
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 C802.1
Complies with CSA C802-3
Complies with CSA C227.5
Complies with ASTM D3487
Complies with ASTM D6871

Insulation Rating: Class E Insulation - 120°C, 248°F
Cooling Class: KNAN/KNAF/KNAF
Forced Air (Fans): Included With Galvanized Fan Guards (meet all OSHA requirements) And Provided With One Piece Fan Blades, 208 VAC Motor Voltage, 120 VAC, 60 Hz Control Voltage, TENV Enclosure, Class B with class F temperature rise Insulation, located only on the sides (not on the top or bottom) of the radiators
Radiators: Included, Hot dip galvanized to a thickness of 3.9 mils, 2.3oz/ft2, Panel Type, Removable
Tap Changer: 5-Position De-Energized Tap Changer
Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
Tap %: 2.5%
Tap Changer Switch Rating: 15 kA Short-Circuit Current , 650 kV BIL, 6 kA Peak Withstand Current, 3 sec. Peak Current Duration, De-Energized Rated
Tap Changer Switch Location: High Voltage (HV)], located no more than 60 inches (1,500 mm) above ground level
Impedance (@ 21 MVA): 14%
X/R Ratio: TBD
Primary Connection Type: Live Front
Primary Termination Arrangement: Top Mounted Terminals
Primary Termination: Draw-lead Type, Physically interchangeable with circuit breaker bushings, w/ NEMA 4-Hole Spade Terminals, ANSI 70 Light Grey, (Pcore Catalog Number 88743-70)
Primary Connection Qty: (3) Primary Connections
Primary Bushing Rating: 15 kV Class, 150 kV BIL, 2000A
Primary Neutral Connection: N/A
Primary Surge Arrestors: N/A
Primary Surge Arrestor Voltage Rating: N/A
Primary Surge Arrestor MCOV Rating: N/A
Primary Over Current Protection (OCP): N/A
Primary Over Current Protection Method: N/A
Primary Over Current Protection Holder: N/A
Primary Current Transformer: Included, (3) Per Each Phase, 2000:5A Ratio, C800 Relaying Accuracy Class, 2.0 Thermal Rating Factor
Primary Grounding Provisions: N/A

Secondary Connection Type: Live Front
Secondary Termination Arrangement: Top Mounted Terminals
Secondary Connections: Draw-lead Type, Physically interchangeable with circuit breaker bushings, w/ NEMA 4-Hole Spade Terminals, ANSI 70 Light Grey
Secondary Connection Qty: (4) Externally Clamped One-Piece Epoxy Bushings Copper Threaded Studs
Secondary Bushing Rating: 123 kV Class, 650 kV BIL, 800A, 126" Min. Creepage Distance
Secondary Connection Supports: N/A
Secondary Over Current Protection (OCP): N/A
Secondary Surge Arrestors: Included, Station Class, Gapless, w/ polymer housings
Secondary Surge Arrestor Voltage Rating: 108 KV
Secondary Surge Arrestor MCOV Rating: 84 KVrms
Secondary Current Transformer: Included, (1) Per Each Phase [Provisions for 2], 600:5A Ratio, C800 Relaying Accuracy Clas, 2.0 Thermal Rating Factor
Secondary Neutral Connection: Secondary H0 Neutral Grounded to Tank via 1/2"-13 UNC Tapped Hole, 7/16" Deep Bung & Copper Ground Strap
Secondary Neutral Current Transformer: Included, (1) [Provisions for 2] 1200:5A Ratio, C800 Relaying Accuracy Clas, 2.0 Thermal Rating Factor
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

Complies with NEMA 260-1996
Complies with 10 CFR Part 431
Complies with CSA C227.4
Complies with CSA C2.1-06
Complies with CSA C50
Complies with CSA C88-16
UL Listed

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 4 Wiring Compartment
Hot Stick Included, HV Door Mount

Efficiency %: 99.79%
Based on transformer operating at 50% of nameplate base kVA.
Load Losses Based on 85°C Reference Temp.
No Load Loss (in watts): -
Full Load Loss (in watts) at 100%: -
Total Load Loss (in watts) at 100%: -
Total Losses at 55°C LL Temp.& 20°C NL Temp.
Total Load Loss (in watts) at 50%: -
Note: *Losses offered are typical only, not guaranteed*

Auxiliary Power Supply: 120/240 VAC 1-Phase 3 wire, 60 Hz / 125 VDC
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)
Flux Density: ≤ 1.7 Tesla @ 110% of Normal Voltage
Pulse Drive Rating: N/A
Insulation Fluid: Enviro-temp FR-3 Insulating Fluid, Non-PCB Fluid
Fluid (Oil) Capacity*: 5447 Gal
Fluid (Oil) Weight*: 46186.4 lbs
Liquid Level Indicator: Analog Dial Gauge, w/ Contacts
Liquid Temperature Indicator: Analog Dial Gauge, w/ Contacts
Winding Temperature Indicator: Analog Dial Gauge, w/ Contacts
Pressure/Vacuum Indicator: Analog Dial Gauge
Pressure Relief Device: Included, Automatic Action, Qualitrol XPRD, w/ Contacts
Gas Detector Relay: Included, w/ Contacts
Dissolved Gas Analyzer: Included, Qualitrol
Space Heater: Included, 120 VAC, 1-Ph, 60 Hz
Loss Of Power Relay: Included
Rapid Rise Relay: Included, w/ Seal-In-Relay
Fault Indicator: Included, Buchholz Relay
Fluid Preservation System: Included With All The Required Accessories; Conservator Tank, Desiccant Breather, Air Piping, Fluid Piping and Main Tank
Gas Sampler Valve: Included, Schrader Valve
Fill Valve: 1" NPT Port w/ Removable Bolt Plug
Fill Valve Location: Front Compartment
Vacuum Valve: Included, 4 inches
Future Gas Sensor Valve: Included, (1) 1 inches
Buchholz Relay Isolation Valve: Included, (2) Flanged Type
Sudden Pressure Relay Isolation Valve: Included
DGM Valve: Included, (2) 2 inches
Drain Valve: 2" NPT Port w/ 5/8" NPT Sampler Valve
Drain Valve Location: Front Compartment
Winding Material: Copper
Ambient Temperature Rating: 43°C
Ambient Operating Temperature Range: 0°C to +43°C
Sound Level: Complies to IEEE C57.12.00 std
Relative Humidity: 70-90%
Solar Radiation: Medium
Ice Load: 0.5 inch
Wind Speed Rating: 85 mph
Elevation (Altitude): 3300ft (1000 meters) Above Sea Level
Seismic Level: High Level
Core Material: Cold Rolled Grain Oriented Silicon Steel; Circular; flux <1..7 tesla @110% nominal voltage; lamination <0.012" thick; epoxy coated
Tank Material: Ductile Iron
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 4, Weatherproof Wiring Cabinet
Seismic Rating: Yes
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating
Finish Color: ANSI 61 Light Grey

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
Load Loss (Wattage) Test
Short-circuit Impedance Test
No-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*

Mounting: Base With Wheels
Conduit Opening: N/A
Tank Cover Access Handhole: Included
Dimensions*: 295"-W x 197"-D x 261"-H
Dry Weight (w/o Oil)*: 100,420 lbs
Total Weight (Liquid Filled)*: 168,653.63 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-GSU-R4-3P-DMP-21MVA-GEXV-HT-LT-A6-BFFF-CZ-2ZZ-M1 Conservator Substation Generator Step-Up 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 117875Y/68055 Grounded Wye. This system is rated for 21 MVA (21,000 KVA) natural cooling, 28 MVA (28,000 KVA) first stage fan cooling and 38 MVA (38,000 KVA) second stage fan cooling. We offer systems with loop or radial feed, as well as dead front or live front primary connections. This transformer features a 5-position tap changer with (2) + 2.5% taps above and (2) - 2.5% taps below to allow small changes in voltage.

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-GSU-R4-3P-DMP-21MVA-GEXV-HT-LT-A6-BFFF-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 21 MVA (21,000 KVA) natural cooling, 28 MVA (28,000 KVA) first stage fan cooling and 38 MVA (38,000 KVA) second stage fan cooling. 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-GSU-R4-3P-DMP-21MVA-GEXV-HT-LT-A6-BFFF-CZ-2ZZ-M1 features FR-3 oil fluid (KNAN/KNAF/KNAF). We offer transformers with mineral oil or biodegradable 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% loan conditions, which helps preserve the transformer's lifespan and performance.

Gauges: The following gauges are included with the system: liquid level, temperature, fault indicator, and pressure/vacuum gauges. Standard liquid level, temperature, and pressure/vacuum gauges are analog, manual reading types.

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

Rapid Rise Relay: There is rapid rise relay on this 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 has surge arresters on the secondary side.

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

Valves: The MT-PSTC-GSU-R4-3P-DMP-21MVA-GEXV-HT-LT-A6-BFFF-CZ-2ZZ-M1 is equipped with a pressure relief valve, fill valve, and drain valve with sampler port.

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 should be installed on supporting structures, such as the roof of the transformer main tank.

Benefits: The MT-PSTC-GSU-R4-3P-DMP-21MVA-GEXV-HT-LT-A6-BFFF-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: 316186

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/316186.PDF)
- **HigResPic1**(https://www.larsonelectronics.com//images/product/HigResPic1/316186.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)