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## Product ID: 309477

**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-YXN.EXM-16MVA-YMP-HT-LS-A6-BMF-CZ-1ZZ-M1 3PH Substation Transformer**

**Transformer Type:** Power Transformer, Conservator-Type
**Transformer Configuration:** Liquid Filled Substation
**Transformer Feed Type:** Radial Feed
**Phase:** Three Phase
**Capacity (w/o Fans):** 16 MVA (16000 KVA)
**Capacity (w/ Fans):** 20 MVA (20000 KVA)
**Vector Group:** YNyn0+d
**Primary Voltage:** 230000Y/132790 x 218500Y/126151
**Primary Line Voltage Class:** 395 kV Class
**Primary Neutral Voltage Class:** 140 kV Class
**Primary Voltage Switch:** Included
**Primary Phasor:** Wye-N
**Primary Line BIL:** 950 KV
**Primary Neutral BIL:** 325 KV
**Secondary Voltage:** 13800Y/7968
**Secondary Line Voltage Class:** 28 kV Class
**Secondary Neutral Voltage Class:** 28 kV Class
**Secondary Phasor:** Wye-N
**Secondary Line BIL:** 75 kV
**Secondary Neutral BIL:** 75 kV
**Tertiary Winding:** Included
**Tertiary Winding Voltage:** 13800V

**Ratings**

Meets/Exceeds IEC 60076 Ratings
Non-PCB Insulating Fluid
Tamper Proof Housing
Class A Insulation
Outdoor

**Tertiary Winding Class:** 28 kV
**Tertiary Winding BIL:** 75 kV
**Tertiary Winding Phasor:** Delta
**Tertiary Winding Power Rating:** 5 MVA
**Frequency:** 60 Hz
**Oil Temperature Rise:** 60°C
**Winding Temperature Rise:** 65°C
**Cooling Class:** ONAN/ONAF
**Forced Air (Fans):** Included
**Tap Changer:** 5-position Off-Load Tap Changer
**Tap Qty:** (2) FCAN Above Taps, (2) FCBN Below Taps
**Tap %:** 2.5%
**Tap Changer Switch Location:** High Voltage (HV) Front Compartment
**Impedance:** 12.04 % @ 20 MVA
**Primary Connection Type:** Dead Front
**Primary Termination:** Spade Terminals
**Primary Connection Qty:** (4)
**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 Line Current Transformer:** Included, (3) [Bushing Type, 400:5 SR, 100 VA Burden Rating, 5P20 Accuracy Class] Per Each Phase, (1) [Bushing Type, 400:5 SR, 100 VA Burden Rating, 0.3 Accuracy Class] Per Each Phase & (1) [Bushing Type, 100:2 SR, 10 VA Burden Rating, 10P2 Accuracy Class] On Phase-2 (V-Phase)
**Primary Neutral Current Transformer:** Included, (1) [Bushing Type, 200:5 SR, 25 VA Burden Rating, 5P20 Accuracy Class]
**Secondary Connection Type:** Live Font
**Secondary Connections:** Spade Terminals
**Secondary Connection Qty:** (4)
**Secondary Over Current Protection (OCP):** N/A
**Secondary Line Current Transformer:** Included, (2) [Bushing Type, 1200:5 SR, 25 VA Burden Rating, 5P20 Accuracy Class] Per Each Phase, (1) [Bushing Type, 1200:5 SR, 45 VA Burden Rating, 0.3 Accuracy Class] Per Each Phase
**Secondary Neutral Current Transformer:** Included, (1) [Bushing Type, 1200:5 SR, 25 VA Burden Rating, 5P20 Accuracy Class]
**Grounding Provisions:** (1) Grounding lug, accepts #2 copper
**Metering Current Transformer (CT):** N/A
**Metering Panel:** N/A
**Control Panel:** Buchholz Relay (alarm and trip), Pressure Relief Device (alarm and trip), Oil Level Indicator (alarm and trip), Dehydrating Breather, Oil Temp (alarm and trip), Coil Winding Temp (alarm and trip)
**System Controls:** AVR Control and Monitors, Fan Controls, Transformer Alarms and Trips (indicator lights and flags), Tap Changer Control and Monitoring; Current, Voltage Oil Level, Temperature Monitoring and Readouts
**Load Break Switch:** N/A
**Load Break Switch Qty:** 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 Insulating Fluid - Non-PCB Fluid
**Fluid Capacity:** TBD
**Fluid Weight:** 39,683 lbs
**Liquid Level Indicator:** Analog Dial Gauge

**No Power Factor Efficiency @ 100% Load:** 99.46%
**No Power Factor Efficiency @ 75% Load:** 99.55%
**No Power Factor Efficiency @ 50% Load:** 99.60%
**No Power Factor Efficiency @ 25% Load:** 99.55%
**0.8 Power Factor Efficiency @ 100% Load:** 99.33%
**0.8 Power Factor Efficiency @ 75% Load:** 99.43%
**0.8 Power Factor Efficiency @ 50% Load:** 99.51%
**0.8 Power Factor Efficiency @ 25% Load:** 99.44%
**No Load Loss:** 13.5 KW @ 16 MVA
**Full Load Loss:** 73 KW @ 16 MVA
***Note:*** *Losses offered are typical only, not guaranteed*

**Temperature Indicator:** Analog Dial Gauge - Measuring Oil and Coil Temperature
**Pressure/Vacuum Indicator:** Analog Dial Gauge
**Pressure Relief Device:** Included, Automatic Action
**Fill Valve:** Removable Bolt
**Fill Valve Location:** Front Compartment
**Drain Valve:** Included, w/ Sampler
**Drain Valve Location:** Front Compartment
**Winding Material:** Copper
**Ambient Temperature Rating:** 55°C
**Sound Level:** Complies With NEMA TR-1
**Elevation Rating:** 3300ft (1000 meters) Above Sea Level
**Core Material:** Grain Oriented Silicon Steel
**Tank Material:** Coated Steel
**Cabinet Material:** Coated Steel
**Base Platform Material:** Coated Steel
**Housing Type:** Compartmental Cabinet w/ Doors, HV Compartment Left, LV Compartment Right
**Paint Type:** Weatherproof and UV Resistant Epoxy Coating and Undercoating
**Finish Color:** Munsell™ 5BG 7.0/0.4 Light Grey (ANSI #70)
**Mounting:** Supporting Structures
**Conduit Opening:** N/A
**Dimensions:** TBD
**Total Weight:** 105,822 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-YXN.EXM-16MVA-YMP-HT-LS-A6-BMF-CZ-1ZZ-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 voltage of three-phase 230000Y/132790 x 218500Y/126151 Wye-N and a secondary voltage of three-phase 13800Y/7968 Wye-N. This system is dual rated for 16 MVA (16,000 KVA) [Natural Cooled] and 20 MVA (20,000 KVA) [Fan Cooled]. This transformer features a 5-position tap changer with two, +/- 2.5% taps above and two, +/- 2.5% taps below to allow small changes for voltage. The tap changer offers automatic action (automatic voltage sensing) with manual override. We offer systems with loop or radial feed, as well as dead front or live front primary connections.

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-YXN.EXM-16MVA-YMP-HT-LS-A6-BMF-CZ-1ZZ-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. The transformer meets standard ANSI/IEEE 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-R7-3P-YXN.EXM-16MVA-YMP-HT-LS-A6-BMF-CZ-1ZZ-M1 features mineral oil fluid (ONAN/ONAF). We offer transformers with biodegradable 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% loan conditions, which helps preserve the transformer's lifespan and performance.

**Gauges:** The following gauges are included with the system: liquid level, temperature and pressure/vacuum gauges. Standard liquid level, temperature 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 are no rapid rise relays 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 does not come with surge arresters on the primary side. 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 does not have a load breaker switch.

**Valves:** The MT-PSTC-R7-3P-YXN.EXM-16MVA-YMP-HT-LS-A6-BMF-CZ-1ZZ-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, 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 should be installed on supporting structures, such as the roof of the transformer main tank.

**Benefits:** The MT-PSTC-R7-3P-YXN.EXM-16MVA-YMP-HT-LS-A6-BMF-CZ-1ZZ-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: 309477**

**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/309477.PDF )
- **HigResPic1**( https://www.larsonelectronics.com//images/product/HigResPic1/309477.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 )