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MT-PSTH-R4-3P-YMR.MQ.MP-10MVA-GMF-HNS-LNS-A56-BFF-AS-2ZZ-M1

10 / 12.5 MVA Hermetically Sealed Substation Power Step Up Transformer, 12470Y/7200 x 13200Y/7620 x 13800Y/7970 Wye-N Primary, 24940Y/14400 Grounded Wye Secondary, KNAN/KNAF, Light Grey, NEMA 4

Product ID: 309412



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-PSTH-R4-3P-YMR.MQ.MP-10MVA-GMF-HNS-LNS-A56-BFF-AS-2ZZ-M1 Substation Transformer	Ratings
Transformer Type: Substation Power Transformer, Hermetically Sealed Type	Meets/Exceeds DOE 2016 Efficiency Ratings
Transformer Configuration: Liquid Filled	Meets/Exceeds CSA Efficiency Ratings
Transformer Feed Type: Loop Feed	Complies with ANSI / IEEE C57.12.00
Operation: Step-Up Operation (Not Approved for Step-Down)	Complies with ANSI / IEEE C57 12.28
Phase: Three Phase	Complies with ANSI / IEEE C57 12.29
Capacity (w/o Fans): 10 MVA (10,000 KVA)	Complies with ANSI / IEEE C57 12.34
Capacity (w/ Fans): 12.5 MVA (12,500 KVA)	Complies With IEEE Std 693-2018
Vector Group: YNyn0	Complies with ANSI / IEEE C57 12.35
Primary Voltage: 12470Y/7200 x 13200Y/7620 x 13800Y/7970	Complies with ANSI / IEEE C57.12.70
Primary Voltage Switch: Included, 3-Position Switch	Complies with ANSI / IEEE C57.12.110
Primary Voltage Class: 15 kV Class	Complies with ANSI / IEEE C57.12.131
Primary Phasor: Wye-N	Complies with ANSI / IEEE C62.11
Primary BIL: 95 KV	Complies with ANSI / IEEE C62.22
Secondary Voltage: 24940Y/14400	Complies with ANSI / IEEE 386
Secondary Voltage Class: 25 kV Class	Complies with ANSI / IEEE C2
Secondary Phasor: Grounded Wye	Complies with ANSI / IEEE C37.47
Secondary BIL: 125 KV	Complies with ANSI Z535.4
Frequency: 50/60 Hz	Complies with CSA C88
Temperature Rise: 65°C	Complies with ASTM D6871
Insulation Rating: Class A Insulation	Complies with NEMA 260-1996
Cooling Class: KNAN/KNAF	Complies with 10 CFR Part 431
Forced Air (Fans): Included, Single-Stage, Totally Enclosed, Individually Protected Type, Fan Blades Of One-Piece Cast aluminum, Galvanized Fan Guards. Fan Motors Are Totally Enclosed And Furnished Without Centrifugal Switches, Fans are Krenz-Vent efficient and maintenance free. Fans are driven by totally enclosed weatherproof, ball bearing induction motors, rated 115/230 volts, single phase, 60	Complies with CSA C2.1-06

hertz, connected to present a balanced load (50/50) to a 208Y/120 three phase supply, Manual/Auto-Operated
Cooling Radiator: Included, Has Upper And Lower Drain Plugs, ANSI #70 Light Grey, Contains Individual Shut-Off Valves, Interchangeable
H.V Tap Changer: 5-Position De-energized Tap Changer (DETC), "Wiping" Design Switch, Externally Operated
H.V Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
H.V Tap %: 2.5%
H.V Tap Changer Switch Rating: 125 KV BIL, No-Load Rating
H.V Tap Changer Switch Location: H.V Side, Side 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 (@ 10 MVA, 65°C): 6.5%
Primary Connection Type: Dead Front
Primary Termination Arrangement: Inline, Side Mounted in ATC
Primary Termination: NEMA 4-Hole Pad connectors
Primary Bushing Qty: (4)
Primary Line Bushing Rating: 15 KV Class, 95 KV BIL, Porcelain
Primary Neutral Connection: Included
Primary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Light Grey, Porcelain
Primary Surge Arrestor Voltage Rating: 15 KV
Primary Surge Arrestor MCOV Rating: 9 KV rms
Primary Over Current Protection (OCP): N/A
Primary Bushing CT: Included, [(3) 1200:5 Ratio, MR, C400 (RF2.0) Accuracy Class] For Each Bushing, [(1) 800:5 Ratio, SR, 1.2B09 (RF2.0) Accuracy Class] For X1 & X2 Bushings
Primary Over Current Protection Holder: N/A
Primary Grounding Provisions: N/A
Primary Neutral Bushing CT: N/A
Secondary Connection Type: Dead Front
Secondary Termination Arrangement: Inline, Side Mounted in ATC
Secondary Termination: NEMA 4-Hole Pad connectors
Secondary Bushing Qty: (4)
Secondary Line Bushing Rating: 25 KV Class, 125 KV BIL, Porcelain
Secondary Neutral Connection: Included, 25 KV Class, 150 KV BIL
Secondary Over Current Protection (OCP): N/A
Secondary Line Bushing CT: Included, [(3) 600:5 Ratio, MR, C400 (RF2.0) Accuracy Class] For Each Bushing
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
Secondary Neutral Bushing CT: N/A
Metering Current Transformer (CT): Included
Metering Panel: Included
Auxiliary Control Panel : Included, Contains Power Sources 125 V DC and 120/208 V, 3-Ph 4-Wire AC
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: Enviro-Temp Insulating Fluid, Non-PCB Fluid
Fluid (Oil) Capacity*: TBD
Fluid (Oil) Weight*: TBD
Silica Gel Breather: Included
Liquid Level Indicator: Included, Magnetic Type, w/ alarm contacts
Winding Temperature Indicator: Included Thermometer, w/ alarm contacts
Liquid Temperature Indicator: Included, w/ multiple alarm contacts
Pressure/Vacuum Indicator: Included, w/ alarm contacts
Rapid Rise Relay: Included, A Rapid Rise (Qualitrol 900 series) sudden pressure device is accessible from the ground and connected to a Qualitrol 909-300-01 seal-in

Complies with CSA C227.4
Complies with CSA C50
Complies with ASTM D3487
Complies with CSA C802.1
Complies with CSA C802-3
Complies with CSA C227.5
Complies with CSA C88-16
Complies with CSA C88.1

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

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): TBD
On-Load Loss (in watts): TBD
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
No-load Loss (Wattage) Test
Insulation Resistance Test
Voltage Ratio Error Test
Induced Voltage Withstand Test
Short-circuit Impedance Test
Load Loss (Wattage) Test

relay
Pressure Relief Device: Included, cover-mounted extra-large mechanical type, (Qualitrol XPRD), With automatic resealing operation, With 2-form "C" and 2-form "A" alarm contacts. “A” contact to I/O module. Other form “C” to terminal board 3, Includes mechanical signal for indication of device operation, Includes directional discharge outlet and applicable piping to direct discharge to a location approximately 1-foot above base of transformer, Includes screen at pipe exit to prevent animal ingress.
I/O Module: Included, Qualitrol ITM 509
Transformer Monitor: Included, Qualitrol 509DW Panel mounted Intelligent Transformer Monitor
Nitrogen Oil Preservation System: Included With A Nitrogen Tank And All Necessary Accessories, The Control System is The RNx INERTAIRE series manufactured by the ABB Power T&D Company
Pressure Reducer: Included, Three-Stage
Fault Gas Monitoring: Included, Serveron TM-10000-00281624 with all accessories / equipment needed for continuous monitoring and analysis, mounted on the transformer tank wall at eye level
Loss of DC Indicator: Included, A contact is provided to indicate the loss of main 125VDC supply to the transformer
Alarm and SCADA Controller: Included, A SEL-2411 Programmable Automation Controller, Schweitzer Engineering Laboratories part number 241101A3A3A3A5X1130 is installed as the transformer monitor
Fault Indicator: Included, Buchholz Relay
Gas Sampler Valve: N/A
Fill Valve: Included, 2" NPT upper filter valve, Globe type, With male 3" NPT vacuum connection with cap provided on the cover
Fill Valve Location: Top Mounted
Drain Valve: Included, 2” NPT combination drain and lower filter valve, Globe Type With 3/8” Sampling Valve
Drain Valve Location: within one (1) inch of the bottom of the tank
Winding Material: Aluminum
Design Maximum Temperature: 40°C
Ambient Operating Temperature Range: -37° to 43.3°C
Recorded Maximum Temperatures: -48.8° and 47.7°C
Precipitation: Driving rain, Fog, Snow, and Sleet
Airborne Contaminants: Flour-sand, Cottonwood Tree seed and fluff, and Dust (Including grain and coal)
Wind Loading: 114 mph sustained gusts Wind Load
Sound Level Rating (At KNAN/KNAF): 68/70 dBA
Elevation (Altitude): 3300ft (1000 meters) Above Sea Level
Core Material: Silicon Steel, Grain Oriented
Tank Material: 304L Stainless Steel
Cabinet Material: 304L Stainless Steel
Base Platform Material: 304L Stainless 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 4 Weatherproof
Seismic Rating: IEEE 693 Moderate
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: Bottom Entry
Tank Cover Access Handhole: Included
Transformer Overall Dimensions: TBD
Dry Weight (w/o Oil)*: TBD
Total Weight (Liquid Filled)*: 43,000 lbs
*Please note that numbers are approximate and subject to change

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
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Fax: 1-903-498-3364
E-mail: sales@larsonelectronics.com

The MT-PSTH-R4-3P-YMR.MQ.MP-10MVA-GMF-HNS-LNS-A56-BFF-AS-2ZZ-M1 Hermetically Sealed Substation Power 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 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 triple primary voltages of three-phase 12470Y/7200 x 13200Y/7620 x 13800Y/7970 Wye-N and a secondary voltage of three-phase 24940Y/14400 Grounded Wye. This system is rated for 10 MVA (10,000 KVA) natural cooled, 12.5 MVA (12,500 KVA) 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 No-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 aluminum 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-PSTH-R4-3P-YMR.MQ.MP-10MVA-GMF-HNS-LNS-A56-BFF-AS-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 10 MVA (100,000 KVA) natural cooled, 12.5 MVA (12,500 KVA) 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-PSTH-R4-3P-YMR.MQ.MP-10MVA-GMF-HNS-LNS-A56-BFF-AS-2ZZ-M1 features Enviro-Temp FR-3 Insulation fluid (KNAN/KNAF). We offer transformers with biodegradable cooling 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 Rapid Pressure Rise Relay and Seal-In Relay 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-PSTH-R4-3P-YMR.MQ.MP-10MVA-GMF-HNS-LNS-A56-BFF-AS-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 hermetically sealed substation transformer installed on supporting structures, such as the roof of the transformer main tank.

Benefits: The MT-PSTH-R4-3P-YMR.MQ.MP-10MVA-GMF-HNS-LNS-A56-BFF-AS-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.

Frequently Asked Questions (FAQ)