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MT-PSTH-R7-3P-DXA-30MVA-GMP-HT-LT-X6-CMFF-CZ-2ZZ-M1

30/40/50 MVA Hermetically Sealed Substation Power Transformer- 69000V Delta Primary, 13800Y/7968 Grounded Wye Secondary - ONAN/ONAF/ONAF, Mineral Oil - Light Grey

Product ID: 305348

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



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-R7-3P-DXA-30MVA-GMP-HT-LT-X6-CMFF-CZ-2ZZ-M1 Substation Transformer

Transformer Type: Substation Power Transformer, Hermetically Sealed 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, @ 55/65^{O}C) 30 MVA (30,000 KVA) / 33.67 MVA (33,670 KVA)
Capacity (w/ Fans, Stage 1, @ 55/65oC): 40 MVA (40,000 KVA) / 44.89 MVA (44,890 KVA)
Capacity (w/ Fans, Stage 2, @ 55/65oC): 50 MVA (50,000 KVA) / 56.11 MVA (56,110 KVA)
Vector Group: Dyn11
Primary Voltage: 69000V
Primary Voltage Switch: N/A
Primary Voltage Class: 72 kV Class
Primary Phasor: Delta
Primary BIL: 350 KV
Secondary Voltage: 13800Y/7968V
Secondary Voltage Class: 15 kV Class
Secondary Phasor: Grounded Wye
Secondary BIL: 110 KV
Frequency: 60 Hz
Temperature Rise: 55/65°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 C88-16
Complies with CSA C227.4
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 ASTM D3487
Complies with ASTM D6871
Complies with NEMA 260-1996
Complies with 10 CFR Part 431

Forced Air (Fans): Included, Two-Stages, 115V-1Ph rating, 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.

Cooling Radiator: Included, Has Upper And Lower Drain Plugs, ANSI #70 Sky Grey, Contains Individual Shut-Off Valves, Interchangeable

H.V Tap Changer: 5-Position De-energized Tap Changer (NLTC), "Wiping" Design Switch

H.V Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps

H.V Tap %: 2.5%

H.V Tap Changer Switch Rating: 72 KV

H.V Tap Changer Switch Location: H.V Side, Top Mounted

L.V Tap Changer: 33-Position ON-Load Tap Changer (LTC), MFR: Reinhausen, Type: RMV-II 2000, Capable Of Interface With SCADA For Position And Control

L.V Tap Qty: (16) FCAN Above Taps, (16) FCBN Below Taps

L.V Tap %: 5/8%

L.V Tap Changer Switch Rating: 15 KV

L.V Tap Changer Switch Location: L.V Side, Top Mounted In a Separate mineral oil Compartment equipped with the following:

1: Liquid Level Gauge W/ two Alarm Contacts And An additional Form “C” Contact For Low Level Rated At 20 Amps 125 VAC For Sump Basin Water Pump

2: One thermostatically controlled heater to prevent condensation in the LTC control cabinet

3: Flanged 1-inch brass ball drain valve with a sampling port at the bottom of the compartment. The valve has 1-inch NPT threaded pipe plug on the open end.

4: Filling Plug (located at the top of the compartment)

5: A Lip To Prevent Oil Spills After Draining The Compartment

6: A drive mechanism with: drive motor (shall be easily accessible and not immersed in oil), Local position indicator, Operation counter (easily readable from ground level and located in the LTC motor cabinet)

7: Rehydrating desiccant breather

8: One light fixture, 100 W equivalent, mechanically protected operated by control cabinet door in the LTC control cabinet

9: One 120 VAC 20A, GFI receptacle in the LTC control cabinet

10: Electronic tap position transducer to provide remote indication of the tap position consists of (Incon syncro transmitter Model #1292-KS & Incon receiver and output display Model #1250 to be mounted in the control cabinet)

11: Electrically interlocked hand crank for manual operation of the LTC

Impedance (@ 30 MVA, 55^{o}C): 7.5% (+/- 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: 72 KV Class, 350 KV BIL, Porcelain, ANSI #70 light Grey, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type

Primary Neutral Connection: N/A

Primary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Sky Grey, Connected to stainless steel ground pad at the base of the transformer

Primary Surge Arrestor Voltage Rating: 54 KV

Primary Surge Arrestor MCOV Rating: 42 KV rms

Primary Over Current Protection (OCP): Included

Primary Bushing CT: Included, (2) Per Each Phase (600:5 MR C400 Relaying Accuracy Class)

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: 25 KV Class, 110 KV BIL, Porcelain, ANSI #70 light Grey, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type

Secondary Neutral Connection: 25 KV Class, 110 KV BIL, Porcelain, ANSI #70 light Grey, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type

Secondary Over Current Protection (OCP): Included

Secondary Bushing CT: Included, (2) Per Each Phase (1200:5 MR C400 Relaying Accuracy Class)

Secondary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Sky Grey, Connected to stainless steel ground pad at the base of the transformer

Secondary Surge Arrestor Voltage Rating: 15 KV

Secondary Surge Arrestor MCOV Rating: 9 KV

Complies with CSA C2.1-06

Complies With IEEE Std 693-2018

Complies with CSA C50

Complies with CSA C88

Complies with CSA C88.1

Complies with CSA C227.5

Complies with CSA C802-3

Complies with CSA C802.1

Features

Pentahead Bolt Entry Assembly

Non-PCB Insulating Fluid

Tamper Proof Housing

Hinged Front Compartment Doors, Pad Lockable

NEMA 4X 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.

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, 2 (1200:5 MR C400 Relaying Accuracy Class)
Metering Current Transformer (CT): Included
Metering Panel: Included
Auxiliary Control Panel : Included, Contains Power Sources 125 Vdc, 120/240 Vac-1Ph
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)
Current Total Harmonic Distortion: 5.0%
Insulation Fluid: Mineral Oil - Non-PCB Fluid
Fluid (Oil) Capacity*: TBD
Fluid (Oil) Weight*: 59,524.81
Silica Gel Breather: Included
Liquid Level Indicator: Included, Magnetic Type, With High and Low alarm contacts (form "C" alarm contacts). An additional form "C" contact for low level rated at 20 amps 125 VAC for sump basin water pump
Winding Temperature Indicator: Included Thermometer, Messko, Type: MT-ST/60 VMR/4C/4M
Liquid Temperature Indicator: Included, Three-Stage Type, with minor alarm and major alarm contacts, (form "C" alarm contacts)
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, (2) cover-mounted extra-large mechanical type, (Qualitrol XPRD), mounted on diagonally opposite ends of the transformer cover, 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.
Transformer Monitor And I/O Processor: Included, Schweitzer SEL-2414 Transformer Monitor (P/N: 241421ABA913A3A0131), An SEL-2725S Ethernet Switch installed to network the SEL-2411 I/O Controller, SEL-2414 Transformer Monitor, SEL-2411 Load Tap Changer Controller
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, 2" Globe Type With 3/8" Sampling Valve
Drain Valve Location: N/A
Winding Material: Copper
Ambient Temperature Rating: 40°C
Ambient Operating Temperature Range: -40°C to +40°C
Sound Level: N/A
Elevation (Altitude): 3300ft (1000 meters) Above Sea Level
Core Material: Silicon Steel, Grain Oriented
Tank Material: Steel
Cabinet Material: Steel
Base Platform Material: 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 4X Weatherproof
Seismic Rating: Zone 1
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: 311.02"-W, 220.47"-D, 240.16"-H

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
Pressure Integrity Test
Insulation Resistance Test
Voltage Ratio Error Test
Separate Source Voltage Withstand Test
Short-circuit Impedance Test
Load Loss (Wattage) Test
No-load Loss (Wattage) Test
Induced Voltage Withstand 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

Dry Weight (w/o Oil)*: 214,950.7 Lbs
Total Weight (Liquid Filled)*: 274,475.52 Lbs
*Please note that numbers are approximate and subject to change

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The MT-PSTH-R7-3P-DXA-30MVA-GMP-HT-LT-X6-CMFF-CZ-2ZZ-M1 Hermetically Sealed 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 primary voltage of three-phase 69000V Delta and a secondary voltage of three-phase 13800Y/7968V Grounded Wye. This system is rated for 30 MVA (30,000 KVA) natural cooled, 40 MVA (40,000 KVA) first stage fan cooled and 50 MVA (50,000 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-PSTH-R7-3P-DXA-30MVA-GMP-HT-LT-X6-CMFF-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 55/65°C temperature rise for reduced heat waste, increased reliability and longer life. At 55°C temperature rise, the transformer offers 30 MVA (30,000 KVA) natural cooled, 40 MVA (40,000 KVA) first stage fan cooled and 50 MVA (50,000 KVA) second stage fan cooled. At 65°C temperature rise, the transformer offers 33.67 MVA (33,670 KVA) natural cooled, 44.89 MVA (44,890 KVA) first stage fan cooled and 56.11 MVA (56,110 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-PSTH-R7-3P-DXA-30MVA-GMP-HT-LT-X6-CMFF-CZ-2ZZ-M1 features mineral oil Insulation fluid (ONAN/ONAF/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% 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 both the primary

and secondary sides.
Load Break Switch: The transformer is not equipped with a load break switch.
Valves: The MT-PSTH-R7-3P-DXA-30MVA-GMP-HT-LT-X6-CMFF-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-PSTH-R7-3P-DXA-30MVA-GMP-HT-LT-X6-CMFF-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)

Warranty: 24 Months.

Export Control Classification Number (ECCN): EAR99

Links (Click on the below items to view):

- **HigResPic1**
- **Video1**
- **ISO 9001 Certification**
- **Business Certificate**
- **Shipping Time Map**