Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.498.3364

MT-PSTH-R7-3P-DXA-10MVA-GMP-HT-LS-X6-BXF-CZ-2ZZ-M1

10 / 12.5 MVA Hermetically Sealed Substation Power Transformer, 69000V Delta Primary, 13800Y/7970 Grounded Wye Secondary, KNAN/KNAF, Light Grey

Product ID: 307077



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-10MVA-GMP-HT-LS-X6-BXF-CZ-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: Radial Feed	Complies with ANSI / IEEE C57.12.00
Operation: Step-Down Operation (Not Approved for Step-Up)	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: Dyn1	Complies with ANSI / IEEE C57 12.35
Primary Voltage: 69000	Complies with ANSI / IEEE C57.12.70
Primary Voltage Switch: N/A	Complies with ANSI / IEEE C57.12.110
Primary Voltage Class: 72 kV Class	Complies with ANSI / IEEE C57.12.131
Primary Phasor: Delta	Complies with ANSI / IEEE C62.11
Primary BIL: 350 KV	Complies with ANSI / IEEE C62.22
Secondary Voltage: 13800Y7970	Complies with ANSI / IEEE 386
Secondary Voltage Class: 15 kV Class	Complies with ANSI / IEEE C2
Secondary Phasor: Grounded Wye	Complies with ANSI / IEEE C37.47
Secondary BIL: 110 KV	Complies with ANSI Z535.4
Frequency: 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: ONAN/ONAF	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 hertz, connected to present a balanced load (50/50) to a 208Y/120 three phase supply, Manual/Auto-Operated	Complies with CSA C2.1-06

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
H.V Tap Qty: (1) FCAN Above Taps, (3) FCBN Below Taps
H.V Tap %: 2.5%
H.V Tap Changer Switch Rating: 350 KV BIL, No-Load Rating
H.V Tap Changer Switch Location: H.V Side, Top Mounted
L.V Tap Changer: 33-Position ON-Load Tap Changer (OLTC), MFR: Reinhausen, Type: RMV-II, 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:
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: Cover-mounted extra-large mechanical Pressure Relief Device (Qualitrol XPRD Type) with automatic resealing operation, 2-form "C" alarm contacts. “A” contact to I/O module. Other form “C” to terminal board, mechanical signal for indication of device operation
3: Drain Valve W/ Sampling Device
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 (is easily accessible and not immersed in oil), Local position indicator, Operation counter

Impedance (@ 10 MVA, 65^{o}C): 6.69%
Primary Connection Type: Live Front
Primary Termination Arrangement: Inline, Top Mounted
Primary Termination: NEMA 4-Hole Pad connectors
Primary Bushing Qty: (3)
Primary Line Bushing Rating: 35 KV Class, 200 KV BIL, 400A, Porcelain, ANSI #70 Light Grey, ABB Style Number 034Z0412UT
Primary Neutral Connection: N/A
Primary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Light Grey, Porcelain, Ohio Brass VL216022-3001
Primary Surge Arrestor Voltage Rating: 27 KV
Primary Surge Arrestor MCOV Rating: 22 KV rms
Primary Over Current Protection (OCP): N/A
Primary Bushing CT: Included, [(3) 600:5 Ratio, MR, C400 (RF2.0) Accuracy Class] For Each Bushing
Primary Over Current Protection Holder: N/A
Primary Grounding Provisions: N/A
Primary Neutral Bushing CT: N/A

Secondary Connection Type: Live Front
Secondary Termination Arrangement: Inline, Side Mounted
Secondary Termination: NEMA 4-Hole Pad connectors
Secondary Bushing Qty: (4)
Secondary Line Bushing Rating: 25 KV Class, 150 KV BIL, 1200A, Porcelain, ANSI #70 Light Grey, ABB Style 025W0412AT
Secondary Neutral Connection: Included, 25 KV Class, 150 KV BIL, 1200A, ABB Style 025W0412AT
Secondary Over Current Protection (OCP): N/A
Secondary Line 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
Secondary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Light Grey, Ohio Brass EVP000900-3001
Secondary Surge Arrestor Voltage Rating: 10 KV
Secondary Surge Arrestor MCOV Rating: 8.4 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
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

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

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: Bio-Temp Insulating Fluid, Non-PCB Fluid
Fluid (Oil) Capacity*: TBD
Fluid (Oil) Weight*: TBD
Silica Gel Breather: Included
Liquid Level Indicator: Included, Magnetic Type, Qualitrol LLCG 042, With (2) alarm contacts: (1) for low oil level alarm and (1) for critical low oil level alarm
Winding Temperature Indicator: Included Thermometer, Qualitrol ITM509-00390129 (Direct Winding), with fiber optic probes and RTD's
Liquid Temperature Indicator: Included, Qualitrol 103-023-01
Pressure/Vacuum Indicator: Included, Qualitrol 070-35C series with 351-2A PV bleeder and 050-35E PV gauge
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 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: Copper
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 ONAN/ONAF): 72/73 dBA
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 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

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
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

Tank Cover Access Handhole: Included
Transformer Foundation Dimensions: 132" x 84"
Transformer Overall Dimensions: 132"-W, 174"-D, 162"-H
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

Special Orders - Special Requirements
Contact us for special requirements
Toll Free: 1-800-369-6671
Intl: 1-903-270-1187
Fax: 1-903-498-3364
E-mail: sales@larsonelectronics.com

The MT-PSTH-R7-3P-DXA-10MVA-GMP-HT-LS-X6-BXF-CZ-2ZZ-M1 Hermetically Sealed Substation Power 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/7970 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 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-10MVA-GMP-HT-LS-X6-BXF-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 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-R7-3P-DXA-10MVA-GMP-HT-LS-X6-BXF-CZ-2ZZ-M1 features Bio-Temp Insulation fluid (KNAN/KNAF). We offer transformers with biodegradable or FR-3 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 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-10MVA-GMP-HT-LS-X6-BXF-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 hermetically sealed substation transformer installed on supporting structures, such as the roof of the transformer main tank.
Benefits: The MT-PSTH-R7-3P-DXA-10MVA-GMP-HT-LS-X6-BXF-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.

Frequently Asked Questions (FAQ)