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MT-PSTH-R20-3P-DEHE-60MVA-GJD-HT-LS-X6-BMFF-CZ-1ZZ-M1

60/80/100 MVA Hermetically Sealed Substation Transformer -141000V Delta Primary, 36000Y/20783 Grounded Wye Secondary - Copper - ONAN/ONAF/ONAF - Grey

Product ID: 324757

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



Image: MT-PSTH-R20-3P-DEHE-60MVA-GJD-HT-LS-X6-BMFF-CZ-1ZZ-M1

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-R20-3P-DEHE-60MVA-GJD-HT-LS-X6-BMFF-CZ-1ZZ-M1 Substation Transformer

Transformer Type: Substation Power Transformer, Hermetically Sealed Type
Transformer Configuration: Liquid Filled Pad Mounted
Phase: Three Phase
Transformer Feed Type: Radial Feed
Capacity (w/o Fans): 60 MVA (60,000 KVA)
Capacity (w/ Fans, First Stage): 80 MVA (80,000 KVA)
Capacity (w/ Fans, Second Stage): 100 MVA (100,000 KVA)
Primary Voltage: 141000V
Primary Voltage Class: 145 kV
Primary BIL: 650 kV
Primary Phasor: Delta
Secondary Voltage: 36000Y/20783
Secondary Voltage Class: 38 kV
Secondary Line BIL: 250 kV
Secondary Neutral BIL: 150 kV
Secondary Phasor: Grounded Wye
Vector Group: Dyn1
Frequency: 60 Hz
Temperature Rise: 65°C

Ratings

Listed for United States and Canada
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 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 CSA C2.1-06
Complies with CSA C50
Complies with ANSI / IEEE 386
Complies with ANSI / IEEE C2
Complies with ANSI / IEEE C37.47

Forced Air (Fans): Included, Dual Stage, 240 VAC, single-phase, 60 Hz power rated
Radiator: Included, Removable Cold Rolled Steel, w/ Drain and Vent Plugs, For every (10) radiators or fraction thereof, provisions on the tank for (1) extra radiator is provided
HV Tap Changer: N/A
HV Tap Qty: N/A
HV Tap %: N/A
LV Tap Changer: 33-Position ON-Load Tap Changer
LV Tap Qty: (16) FCAN Above Taps, (16) FCBN Below Taps
LV Tap %: 5/8% Taps
Impedance (@ 60 MVA): 10.0%
Flux Density: ≤ 1.67 tesla on any tap position at 100% operating voltage
Primary Connection Type: Live Front
Primary Termination Arrangement: Top Mounted Porcelain Bushings
Primary Connection: Draw-lead type, Capacitance-graded type, ABB style number 138Z0800AA, w/ NEMA 4 inch, 4-hole, tin-plated copper pad terminals
Primary Connection Qty: (3)
Primary Bushing Rating: 145 kV Class, 650 kV BIL, 79" Min. Creepage Distance
Primary Neutral Connection: N/A
Primary Surge Arrestors: N/A, Included Provisions Only
Primary Surge Arrestor Voltage Rating: N/A
Primary Surge Arrestor MCOV Rating: N/A
Primary Overcurrent Protection (OCP): N/A
Primary Overcurrent Protection Method: N/A
Primary Overcurrent Protection Holder: N/A
Primary Current Transformer: Included, (2) Per Each Bushing [600:5 MR, C400 Accuracy Class], (2) Per Each Bushing [3000:5 MR, C800 Accuracy Class]
Primary Grounding Provisions: N/A
Secondary Connection Type: Live Front
Secondary Termination Arrangement: Side Mounted Porcelain Bushings
Secondary Connections: Draw-lead type, Capacitance-graded type, ABB style number 025W3000BF, w/ NEMA 4 inch, 4-hole, tin-plated copper pad terminals
Secondary Connection Qty: (4)
Secondary Bushing Rating: 38 kV Class, 250 kV BIL, 35" Min. Creepage Distance
Secondary Connection Supports: N/A
Secondary Surge Arrestors: N/A, Included Provisions Only
Secondary Surge Arrestor Voltage Rating: N/A
Secondary Surge Arrestor MCOV Rating: N/A
Secondary Over Current Protection (OCP): N/A
Secondary Line Current Transformer: N/A
Secondary Neutral Current Transformer: Included, (1) 600:5 MR, C400 Accuracy Class
Secondary Neutral Connection: Included, ABB style number 025W3000BF, 150 kV BIL, 11" Min. Creepage Distance, w/ NEMA 4 inch, 4-hole, tin-plated copper pad terminal
Secondary Grounding Provisions: (1) NEMA Ground Bar attached to tank via (2) Welded Ground Bungs
Insulation Fluid: Mineral Oil Insulating Fluid, Type II, Non-PCB Fluid
Fluid Capacity: ≤ 10,000 Gallons
Cooling Class: ONAN/ONAF/ONAF
Liquid Preservation System: Included, Sealed Tank Per IEEE C57.12.10
Liquid Level Gauge: Included, Magnetic Type
Liquid Temperature Gauge: Included, Analog Type, Qualitrol model TR6000B-00267777, w/ alarm Contacts
Winding Temperature Gauge: Included, Analog Type, Qualitrol model TR6000B-00267779, w/ alarm Contacts
Winding Temperature Simulator: Included, Qualitrol model 130-001-02
Pressure/Vacuum Gauge: Included, Analog Type
Pressure Relief Device: Included, (1) For the Main Tank (Messko MPREC-LMPRD, 10psi,

Complies with ANSI Z535.4
Complies with ASTM D3487
Complies with ASTM D6871
Complies with NEMA 260-1996
Complies with 10 CFR Part 431
Complies with CSA C227.4
Complies with CSA C802.1
Complies with CSA C802-3
Complies with CSA C227.5
Complies with CSA C88.1
Complies with CSA C88
Complies With IEEE Std 693-2018

Features
Penta-head Bolt Entry Assembly
Non-PCB Insulating Fluid
Tamper Proof Housing
NEMA 3R Wiring Compartment
Hinged Front Compartment Doors, Pad Lockable
Hot Stick Included, HV Door Mount

Efficiency %: 99.760%
Based on transformer operating at 50% of nameplate base kVA.

Load Losses Based on 75°C Reference Temp.

Off-Load Loss (in watts): 28,000W
On-Load Loss (in watts): 160,000W
Total Load Loss (in watts) at 100%: 188,000W
Total Losses at 55°C LL Temp. & 20°C NL Temp.
Total Load Loss (in watts) at 50%: 47,000W
Note: *Losses offered are typical only, not guaranteed*

Factory Tests:
Separate Source Voltage Withstand Test

with indication flag, 2 NC and 2 NO contacts, standard cover, and direct wire (terminal block). Part number 685-OM10NS2BOLM) and (1) For the OLTC (Messko MPREC-LMPRD, 10psi, with indication flag, 1 NC and 1 NO contact, standard cover, and direct wire (terminal block). Part number 685-SM10NS1BPLM)

Pressure Relief Valve: Included, Ball Type
Fill Valve: Included, Ball Type
Drain Valve w/ Sampler Port: Included, Ball Type
Full Flow Valves: Included, (2) 2-inch full-flow ball valves constructed of stainless steel
Rapid Rise Relay: Included, Qualitrol model 900-FLA-T-NO-STD, w/ Qualitrol Model 909-300-01, 125 VDC seal-in relay w/ Trip and Alarm Contacts
On-Line Dissolved Gas Analysis Monitor: Included, Serveron TM-8
Load Break Switch: N/A
Winding Material: Copper
Ambient Temperature Rating: 30°C
Altitude: 3,300frt Above Sea Level
Sound Level: ≤ 75 dBA (@ ONAF2 rating), ≤ 72 dBA (@ ONAN rating)
Core Type/Construction: Step-lap type
Enclosure Rating: NEMA 3R
Paint Type: Munsell™ 5BG 7.0/0.4 Light Grey (ANSI #70)
Mounting: Pad Mounted
Transformer Tank Cover Manhole: Included, (2) w/ removable, bolted covers, 18 inch min. DIA
Dimensions: 311.02"-W, 220.47"-D, 240.16"-H
Weight: 295,100 Lbs

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

Special Orders - Special Requirements
Contact us for special requirements
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The MT-PSTH-R20-3P-DEHE-60MVA-GJD-HT-LS-X6-BMFF-CZ-1ZZ-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 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 susbstaion 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 141000V Delta and a secondary voltage of three-phase 36000Y/20783 Grounded Wye. This system is rated for 60 MVA (60,000 KVA) [Natural Cooled] / 80 MVA (80,000 KVA) [First Stage Fan Cooled] / 100 MVA (100,000 KVA) [Second Stage Fan Cooled]. We offer systems with loop or radial feed, as well as dead front or live front primary connections. This transformer features a 33-position OLTC tap changer with sixteen +5/8% taps above and sixteen -5/8% taps below to allow small changes in voltage.

The system features copper windings for high strength and thermal/electrical conductivity. This transformer consists of a rectangular coil and a 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-R20-3P-DEHE-60MVA-GJD-HT-LS-X6-BMFF-CZ-1ZZ-M1 has dual stage fans for forced air cooling.

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 60 MVA (60,000 KVA) [Natural Cooled] / 80 MVA (80,000 KVA) [First Stage Fan Cooled] / 100 MVA (100,000 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 electrical rooms, air conditioned spaces in buildings, underground vaults and similar locations, in addition to outdoor areas.

Insulation Fluid: The MT-PSTH-R20-3P-DEHE-60MVA-GJD-HT-LS-X6-BMFF-CZ-1ZZ-M1 features mineral oil 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% 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 doesn't come with surge arresters. Surge arresters are 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 is not equipped with load breaker switches.

Valves: The MT-PSTH-R20-3P-DEHE-60MVA-GJD-HT-LS-X6-BMFF-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, upstream protection is provided. We recommend provisions for protection fuses when possible, as blown fuses may require more frequent oil changes.

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

Benefits: The MT-PSTH-R20-3P-DEHE-60MVA-GJD-HT-LS-X6-BMFF-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

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Warranty: 24 Months.

Export Control Classification Number (ECCN): EAR99

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