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MT-PML-R7-3P-GNF-3MVA-DL.L-LT-DF-A6-BF-AZ-2B4-M1

3 MVA Pad Mount Transformer - 4160Y/2400 Grounded Wye Primary, 380V Delta Dual Secondary - Aluminum, FR-3, ANSI 70 Gray

Product ID: 332781

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



Image: MT-PML-R7-3P-GNF-3MVA-DL.L-LT-DF-A6-BF-AZ-2B4-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-PML-R7-3P-GNF-3MVA-DL.L-LT-DF-A6-BF-AZ-2B4-M1 Pad Mount Transformer	Ratings
Transformer Type: Pad Mounted, Compartmental-Type	Meets/Exceeds DOE 2016 Efficiency Ratings
Transformer Configuration: Liquid Filled Pad Mounted	Meets/Exceeds CSA Efficiency Ratings
Transformer Feed Type: Loop 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: 3 MVA (3000 KVA)	Complies with ANSI / IEEE C57 12.34
Vector Group: YnD1	Complies with ANSI / IEEE C57 12.35
Primary Voltage: 4160GrdY/2400	Complies with ANSI / IEEE C57.12.70
Primary Voltage Switch: N/A	Complies with ANSI / IEEE C57.12.110
Primary Voltage Class: 5 kV Class	Complies with ANSI / IEEE C57.12.131
Primary Phasor: Grounded Wye	Complies with ANSI / IEEE C62.11
Primary BIL: 60 KV	Complies with ANSI / IEEE C62.22
Secondary Voltage: 380V x 380V	Complies with ANSI / IEEE 386
Secondary Voltage Class: 1.2 kV Class	Complies with ANSI / IEEE C2
Secondary Phasor: Delta	Complies with ANSI / IEEE C37.47
Secondary BIL: 30 KV	Complies with ANSI Z535.4
Line to Ground Peak, V: 1600 V	
Frequency: 60 Hz	Complies with ASTM D3487
Temperature Rise: 65°C, Maximum 65°C top oil rise, 65°C average winding rise, and 80°C winding hot spot rise	Complies with ASTM D6871

Insulation Rating: Class E Insulation - 120°C, 248°F
Cooling Class: KNAN; Self-Cooled
Forced Air (Fans): None
Tap Changer: 5-position Tap Changer
Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
Tap %: 2.5%
Tap Changer Switch Rating: 600-Amp, 5 kV
Tap Changer Switch Location: High Voltage (HV) [Left Side] Front Compartment
Impedance: 7.5% Absolute Minimum, support maximum short circuit current 75kA
Primary Connection Type: Dead Front
Primary Termination Arrangement: V Terminal Arrangement
Primary Termination: Externally Clamped Integral Bushings w/ Removable Studs, 600A Dead Break Elbows, 35kV Rated
Primary Connection Qty: (6) Primary Connections for use w/ Elbow Connectors
Primary Parking Stand Qty: (6) Welded Brackets for Installing Accessory Parking Stand Bushings
Primary Bushing Rating: 5 kV Class, 60 kV BIL, 600A, Dead Break, IEEE 386 Color Green
Primary Neutral Connection: Primary HO Bushing Brought Out to HV Compartment w/ ground strap to ground pad
Primary Surge Arrestors: (3) High Voltage Elbow Surge Arrestors, Included
Primary Surge Arrestor Voltage Rating: 3 kV Class Elbow Arrestor
Primary Surge Arrestor MCOV Rating: 2.55 kVrms
Primary Over Current Protection (OCP): Bayonet Expulsion Fuse in series w/ Partial-Range Current-Limiting Fuse
Primary Over Current Protection Method: Fused, Oil-Immersed
Primary Over Current Protection Holder: Bayonet Fuse Holder w/ Flapper Valve and External Drip Shield
Primary Grounding Provisions: (1) NEMA 2 Hole Ground Pad attached to tank via (2) Welded Ground Bungs in HV Cabinet, 5" from front side of the cabinet and 15" from base
Secondary Connection Type: Live Front
Secondary Termination Arrangement: Inline Terminal Arrangement
Secondary Connections: NEMA Spade Terminals, 10-Hole Spade, Externally Clamped, Accepts up to (10) Double Lug connections with (5) cables per side of Spade connector
Secondary Connection Qty: 2 x (3) Porcelain Bushing Mounted on Opposite Sides of Tank Wall
Secondary Connection Supports: Included
Secondary Over Current Protection (OCP): N/A
Secondary Neutral Connection: N/A
Secondary Grounding Provisions: (1) NEMA 2 Hole Ground Pad attached to tank via (2) Welded Ground Bungs in LV Cabinet, 5" from front side of the cabinet and 15" from base, w/ additional Ground Pad in rear of tank below radiators lower lefthand side 16"
Secondary Inverters: (3) Inverters Connected to left LV Bushing, (2) Inverters Connected to right LV Bushing
Metering Current Transformer (CT): N/A
Alarm Termination Panel: Terminal Block Mounted on LV Cabinet on LV Side of LV/HV Partition, Located Above mid height of cabinet
Auxiliary Control Panel: Optional Fan Control, Terminated to the Alarm Termination Block, 120V Fans via Temperature Gauge)below Low Temp = Fan Off, Above Low Temp & below High Temp = Fan On/Normal Operation, Above High Temp = alarm & inverter off or operate at min base kVA max inverter output limited)
Load Break Switch: 2-Position Load Break Switch
Load Break Switch Qty: (1)
Load Break Switch Rating: 600-Amp, 5 kV
Load Break Switch Location: Low Voltage (LV) Front Compartment, Right Side
Efficiency Standard(s): Meets DOE 2016 Standards, Meets CSA Standards Meets ANSI/IEEE Standards
K-Factor Rating (Harmonic Mitigation): K-1 (Standard)
Pulse Drive Rating: N/A

Complies with NEMA 260-1996
Complies with 10 CFR Part 431
Complies with CSA C2.1-06
Complies with CSA C50
Complies with CSA C88
Complies with CSA C88.1
Complies with CSA C88-16
Complies with CSA C227.4
Complies with CSA C227.5
Complies with CSA C802-3
Complies with CSA C802.1

Features

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

Efficiency %: 99.00%

Based on transformer operating at 100% of nameplate base kVA.

Load Losses Based on 85°C Reference Temp.

No Load Loss (in watts): +/- 5,985W

Full Load Loss (in watts) at 100%: +/- 24,402W

Total Load Loss (in watts) at 100%: +/- 30,387W

Total Losses at 55°C LL Temp.& 20°C NL Temp.

Total Load Loss (in watts) at 50%: +/- 12,090W

Note: *Losses offered are typical only, not guaranteed*

Labeling:

Externally Stencilled (Painted) KVA Rating
Externally Stencilled (Painted) Voltage Rating
External Non-PCB Label
External Warning & Danger High Voltage Label
External Shock & Arc Flash Warning Label
External Barcode Label
Internal Busing & Accessory Labeling
Stainless Steel Riveted Nameplate, additional second nameplate outside the LV cabinet, 6" above door handle

Insulation Fluid: FR-3 Oil Insulating Fluid - Non-PCB Fluid
Nitrogen Blanket: Included
Fluid (Oil) Capacity*: 330 Gallons
Fluid (Oil) Weight*: 2,545 lb
Liquid Level Indicator: Analog Dial Gauge with Alarm Contacts
Temperature Indicator: Analog Dial Gauge with Alarm Contacts
Pressure/Vacuum Indicator: Analog Dial Gauge
Pressure Relief Device: Included, Automatic Action with Alarm Contacts
Fault Indicator: N/A
Gas Sampler Valve: Included, Schrader Valve
Fill Valve: 1" NPT Port w/ Removable Bolt Plug
Fill Valve Location: Front Compartment
Drain Valve: 1" NPT Port w/ 5/8" NPT Sampler Valve
Drain Valve Location: Front Compartment
Winding Material: Aluminum, with Electrostatic Shield between Primary & Secondary Windings
Ambient Temperature Rating: 100% of top rated kVA at 40°C, 91% of top rated kVA at 50°C
Ambient Operating Temperature Range: -40°C to +40°C (-50°F to +104°F)

Sound Level: 63 dBA

Elevation (Altitude): 3300ft (1000 meters) Above Sea Level
Wind Load: 150 mph
Core Material: Grain Oriented Steel
Tank Material: Coated Steel
Cabinet Material: Coated Steel
Base Platform Material: Coated Steel
Portability: Lifting lugs, provisions for jacking under base, w/ base construction suitable for using rollers or skidding
Housing Type: Compartmental Air-Filled Cabinet w/ Locking Doors, HV Compartment Left, LV Compartment Right, Steel Barrier Separation, HV Door Spring-Loaded Release Pin in LV Compartment, Gauges Located in LV Cabinet w/ (4) holes 0.375" Diameter, drilled in divider between HV and LV
LV Bushing Cabinet: Close Coupling, Outside Tank, Full Length Cabinet to house the LV Cable Connections, Bottom Cable Entry with removable plate w/ four access panels top/bottom, front and rear, access panels are hinged with penta-head bolt, w/ non-metallic bracket on top, bottom and mid-height
Enclosure Rating: NEMA 3R Weatherproof Wiring Cabinet, Sealed Tank
Seismic Rating: Yes, 1, or 2, Zone 4
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating
Finish Color: Munsell™ 7.0 GY 3.29/1.5 Bell Green
Mounting: Pad Mounted
Conduit Opening: Bottom Feed Underground Entry/Exit
HV Compartment Base Wireway Dimensions*: 21"-7 x 7"-D
LV Compartment Base Wireway Dimensions*: 26"-W x 7"-D
MV/LV Compartment Cabinet Depth*: 24"-D
Tank Cover Access Handhole: N/A
Dimensions*: 90"-W x 80"-D x 83"-H
Dry Weight (w/o Oil)*: 5,810 lb
Total Weight (Liquid Filled)*: 12,576 lb
*Please note that numbers are approximate and subject to change

Factory Tests:
Winding Resistance Test
Insulation Resistance Test
Voltage Ratio Error, Polarity and Phase Rotation Test
Short-circuit Impedance Test
No-load Loss (Wattage) Test
Load Loss (Wattage) Test
Induced Voltage Withstand Test
Separate Source Voltage Withstand Test
Pressure Integrity Test 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
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The MT-PML-R7-3P-GNF-3MVA-DL.L-LT-DF-A6-BF-AZ-2B4-M1 from Larson Electronics is an Industrial Pad Mount Transformer that offers powerful, reliable, and efficient power distribution in indoor, outdoor, and public 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. An enclosed design caters to installations on

concrete pads without protective fencing.

PLEASE NOTE: ANY FREE SHIPPING OFFERS DO NOT APPLY TO POWER DISTRIBUTION PANELS, TRANSFORMERS, OR SUBSTATIONS*

Transformer Features: With a transformer rating of 3000 KVA (3 MVA), the industrial transformer features a dual rated primary voltage of three-phase 4160Y/2400 grounded Wye and a secondary voltage of three-phase 380 V x 380 V Delta. An input voltage switch allows the transformer to be switched between primary voltages. The unit has a primary loop feed for single installations and dead-front primary connections. 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. There are no load break switches, rapid rise relays and protection fuses present on the system.

Aluminum transformer winding material helps improve performance, reduce weight and lower cost. Compared to copper, aluminum windings have lower eddy losses due to higher resistivity. 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-PML-R7-3P-GNF-3MVA-DL.L-LT-DF-A6-BF-AZ-2B4-M1 is air cooled and does not have fans or mounting provision for fans.

Enclosure Design: This pad mounted transformer is a compartmental design. The tank and housing are fabricated from steel. The front electrical enclosure carries a NEMA 3R rating. The high voltage and low voltage compartments are located in front of the transformer tank, with the high voltage compartment on the left side and low voltage compartment on the right side. The HV and LV compartments are air filled and separated by a full length steel barrier between the compartments. A removable steel plate at the base of the HV and LV compartments prevents rodents and other intrusions from entering the enclosure once installed. This steel plate allows for underground conduit entry into the enclosure compartments. Two hinged exterior doors allows for access into the compartments. A single pad lockable handle on the low voltage compartment door allows for securing the transformer. A spring loaded pin within the low voltage compartment prevents the high voltage door from being opened without pulling the safety pin. A hot stick is included in the high voltage compartment, mounted to the HV door.

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 3000 KVA (3 MVA). 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-PML-R7-3P-GNF-3MVA-DL.L-LT-DF-A6-BF-AZ-2B4-M1 features FR-3 cooling fluid (KNAN) with a capacity of 330 gallons. We offer transformers with FR-3 oil fluid, 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. These gauges do not have auxiliary contacts.

Fault Pressure Devices: This transformer features an automatic action fault pressure device. 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 comes with high elbow 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.

Valves: The MT-PML-R7-3P-GNF-3MVA-DL.L-LT-DF-A6-BF-AZ-2B4-M1 is equipped with a pressure relief valve, fill valve, and drain valve with sampler port.

Protection Fuses: This transformer does not contain protection fuses. 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: The heavy-duty enclosure makes the unit suitable for both indoor and outdoor applications. This power distribution system can be pad mounted on concrete pads.

Benefits: The MT-PML-R7-3P-GNF-3MVA-DL.L-LT-DF-A6-BF-AZ-2B4-M1 pad mount 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, public locations, 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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