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MT-PML-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-M1

2 MVA Solar Step Up Pad Mount Transformer - 600Y/347 Wye-N Primary, 12470V Delta Secondary - KNAN/Bell Green - W/ Electrostatic Shield

Product ID: 313352

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-PML-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-M1 Pad Mount Transformer

Transformer Type: Pad Mounted, Compartmental-Type
Transformer Configuration: Liquid Filled Pad Mounted
Transformer Feed Type: Loop Feed
Operation: Step-Up Operation (Reverse Feed) or Step Down Operation
Phase: Three Phase
Capacity: 2 MVA (2000 KVA)
Vector Group: Dyn1
Primary Voltage: 600Y/347
Primary Voltage Class: 1.2 kV Class
Primary Phasor: Wye-N
Primary BIL: 30 KV
Secondary Voltage: 12470V
Secondary Voltage Switch: N/A
Secondary Voltage Class: 15 kV Class
Secondary Phasor: Delta
Secondary BIL: 95 KV
Frequency: 60 Hz
Temperature Rise: 65°C

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%

Ratings

Meets/Exceeds DOE 2016 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 ANSI / IEEE C57 12.35
Complies with ANSI / IEEE C57.12.70
Complies with ANSI / IEEE C62.11
Complies with ASTM D3487
Penta-head 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 %: 99.40%
Based on transformer operating at 50% of nameplate base kVA.

Load Losses Based on 85°C Reference Temp.
No Load Loss (in watts)): +/- 2,100W
Full Load Loss (in watts) at 100%: +/- 14,500W
Total Load Loss (in watts) at 100%: +/- 16,600W

Tap Changer Switch Rating: 200-Amp, 15 kV
Tap Changer Switch Location: High Voltage (HV) Front Compartment
Impedance (Typical): 5.0-7.5%
Primary Connection Type: Live Front
Primary Termination Arrangement: Staggered Terminal Arrangement
Primary Connections: NEMA Spade Terminals, 10-Hole Spade, Externally Clamped, Accepts up to 10) Double Lug connections with (5) cables per side of Spade connector
Primary Connection Qty: (4) Externally Clamped One-Piece Epoxy Bushings Copper Threaded Studs
Primary Neutral Connection: X0 Neutral Grounded to Tank via 1/2”-13 UNC Tapped Hole, 7/16” Deep Bung & Copper Ground Strap
Primary Over Current Protection (OCP): N/A
Primary Grounding Provisions: (1) NEMA Ground Bar attached to tank via (2) Welded Ground Bungs in LV Cabinet
Primary Connection Supports: N/A
Primary Over Current Protection (OCP): N/A
Primary Grounding Provisions: (1) NEMA Ground Bar attached to tank via (2) Welded Ground Bungs in LV Cabinet
Secondary Connection Type: Dead Front
Secondary Termination Arrangement: V Terminal Arrangement
Secondary Termination: Externally Clamped Integral Bushings w/ Removable Studs, 600A Dead Break Elbows w/ Inserts
Secondary Connection Qty: (6) Primary Connections for use w/ Elbow Connectors
Secondary Parking Stand Qty: (6) Welded Brackets for Installing Accessory Pakring Stand Bushings
Secondary Bushing Rating: 15 kV Class, 90 kV BIL, 600A, Dead Break
Secondary Neutral Connection: N/A
Secondary Surge Arrestors: Included, (3) High Voltage Elbow Surge Arrestors
Secondary Surge Arrestor Voltage Rating: 18 kV Class Elbow Arrestor
Secondary Surge Arrestor MCOV Rating: 15.3 kVrms
Secondary Over Current Protection (OCP): Bayonet Expulsion Fuses in series with Partial-Range Current-Limiting Fuses
Secondary Over Current Protection Method: Fused, Oil-Immersed
Secondary Over Current Protection Holder: Bayonet Fuse Holder w/ Drip Shield
Secondary Grounding Provisions: (1) NEMA Ground Bar attached to tank via (2) Welded Ground Bungs in HV Cabinet
Metering Current Transformer (CT): N/A
Metering Panel: N/A

Auxiliary Control Panel : N/A

Electrostatic Shield: Included, between primary and secondary windings

Load Break Switch: 2-Position Load Break Switch
Load Break Switch Qty: (3)
Load Break Switch Rating: 200-Amp, 15 kV
Load Break Switch Location: High Voltage (HV) Front Compartment
Efficiency Standard(s): Meets DOE 2016 Standards, Meets ANSI/IEEE Standards
K-Factor Rating (Harmonic Mitigation): K-1 (Standard)
Pulse Drive Rating: N/A
Insulation Fluid: FR-3 Insulating Fluid, Non-PCB Fluid
Fluid Capacity*: 290 Gallons
Fluid Weight*: 2,256 lbs
Liquid Level Indicator: Analog Dial Gauge, w/ N.O. and N.C. contacts
Liquid Temperature Indicator: Analog Dial Gauge, w/ N.O. and N.C. contacts

Winding Temperature Indicator: Analog Dial Gauge, w/ N.O. and N.C. contacts

Pressure/Vacuum Indicator: Analog Dial Gauge
Pressure Relief Device: Included, Automatic Action, w/ N.O. and N.C. contacts
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
Ambient Temperature Rating: 40°C
Sound Level: 61 dBA
Elevation Rating: 3300ft (1000 meters) Above Sea Level
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

Total Losses at 55°C LL Temp.& 20°C NL Temp.
Total Load Loss (in watts) at 50%: +/- 5,429W
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 Label
External Barcode Label
Internal Busing & Accessory Labeling
Stainless Steel Riveted Nameplate

Factory Tests:

Winding Resistance Test
Insulation Resistance Test
Voltage Ratio Error 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

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

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
Enclosure Rating: NEMA 3R Weatherproof Wiring Cabinet, Sealed Tank
Seismic Rating: Yes
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating (Top Powder Coating)
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*: 20"-W x 5"-D
LV Compartment Base Wireway Dimensions*: 20"-W x 5"-D
MV/LV Compartment Cabinet Depth*: 24"
Tank Cover Access Handhole: N/A
Dimensions/: 75"-W x 74"-D x 73"-H
Dry Weight (w/o Oil)*: 4,566 lbs
Total Weight (Liquid Filled)*: 10,567 lbs
*Please note that numbers are approximate and subject to change

Special Orders - Special Requirements
Contact us for special requirements
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The MT-PML-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-M1 from Larson Electronics is a Solar Step Up 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. The MT-PML-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-M1 is designed to step up power fed to it from renewable energy sources and feed that current to the grid.
PLEASE NOTE: ANY FREE SHIPPING OFFERS DO NOT APPLY TO POWER DISTRIBUTION PANELS, TRANSFORMERS, OR SUBSTATIONS*
Transformer Features: With a dual transformer rating of 2000 KVA (2 MVA), the industrial transformer features a primary voltage of three-phase 600Y/347 Wye-N and a secondary voltage of three-phase 12470V Delta. This transformer is designed for reverse feed applications, including stepping up low voltage output from solar inverters for feeding to the local utility grid. The MT-PML-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-M1 is ideal for use in renewable energy systems. It is designed to take power fed to it from customer provided solar inverters that are part of renewable energy systems, such as solar panel fields, step up that current, and feed it into the electrical grid.
The unit has a primary loop feed for single installations and live-front primary connections. This solar step up transformer features a 5-position tap changer on the secondary side with two, +/- 2.5% taps above and two, +/- 2.5% taps below to allow small changes for voltage.
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-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-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 2000 KVA (2 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-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-M1 features FR-3 cooling fluid (KNAN) with a capacity of 290 gallons. We offer transformers with biodegradable 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.

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 secondary (medium voltage) 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-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-M1 is equipped with a pressure relief valve, fill valve, and drain valve with sampler port.

Load Break Switch: This transformer is equipped with three independently operated 2-position load break switches on the secondary (medium voltage) side. One is for the transformer, one is for the secondary A lines, and one is for the secondary B lines.

Protection Fuses: This transformer is equipped with bayonet fuses on the secondary (medium voltage) 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: 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-R4-3P-YC-2MVA-DMR-LT-DF-A6-BF-AZ-2B6-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: Solar step up power distribution, solar panels, electric power distribution, utilities, reverse feed solar, 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)


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