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## MT-PML-R4-3P-YMR-6MVA-DMA-LT-DF-A6-BFFF-CZ-2C4-M1

# 6/7.98/9.96 MVA Solar Step Up Pad Mount Transformer - 12470Y/7200 Wye-N Primary - 34500V Delta Secondary - KNAN/KNAF/KNAF - Bell Green

**Product ID: 322803**



Image: MT-PML-R4-3P-YMR-6MVA-DMA-LT-DF-A6-BFFF-CZ-2C4-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-R4-3P-YMR-6MVA-DMA-LT-DF-A6-BFFF-CZ-2C4-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-Up Operation | Complies with ANSI / IEEE C57 12.28 |
| **Phase:** Three Phase | Complies with ANSI / IEEE C57 12.29 |
| **Capacity (w/o Fans):** 6 MVA (6000 KVA) | Complies with ANSI / IEEE C57 12.34 |
| **Capacity (w/ Fans, Stage 1):** 7.98 MVA (7980 KVA) | Complies with ANSI / IEEE C57.12.131 |
| **Capacity (w/ Fans, Stage 2):** 9.96 MVA (9960 KVA) | Complies with ANSI / IEEE C57.12.110 |
| **Vector Group:** Dyn1 | Complies with ANSI / IEEE C57 12.35 |
| **Primary Voltage:** 12470Y/7200 | Complies with ANSI / IEEE C57.12.70 |
| **Primary Voltage Switch:** N/A | Complies with ANSI / IEEE C62.22 |
| **Primary Voltage Class:** 15 kV Class | Complies with ANSI / IEEE C62.11 |
| **Primary Phasor:** Wye-N | Complies with CSA C50 |
| **Primary BIL:** 95 KV | Complies with CSA C2.1-06 |
| **Secondary Voltage:** 34500V | Complies with ANSI / IEEE 386 |
| **Secondary Voltage Class:** 35 kV Class | Complies with ANSI / IEEE C2 |
| **Secondary Phasor:** Delta | Complies with ANSI / IEEE C37.47 |
| **Secondary BIL:** 150 KV | Complies with ANSI Z535.4 |
| **Frequency:** 60 Hz | Complies with ASTM D3487 |
| **Temperature Rise:** 65°C | Complies with ASTM D6871 |
| **Insulation Rating:** Class E Insulation - 120°C, 248°F | Complies with NEMA 260-1996 |
| **Cooling Class:** KNAN/KNAF/KNAF; Self-Cooled/Fan-Cooled | Complies with 10 CFR Part 431 |
| **Forced Air (Fans):** Included, dual stage | Complies with CSA C802-3 |
| **Tap Changer:** 5-position Tap Changer | Complies with CSA C802.1 |
| **Tap Qty:** (2) FCAN Above Taps, (2) FCBN Below Taps | Complies with CSA C88 |

**Tap %:** 2.5%
**Tap Changer Switch Rating:** 600-Amp, 15 kV
**Tap Changer Switch Location:** Primary Side
**Impedance:** 5.0-7.5% Typical
**Primary Connection Type:** Dead Front
**Primary Termination Arrangement:** In-Line Terminal Arrangement
**Primary Connections:** Externally Clamped Well Bushings w/ Removable Studs, Dead Break Elbows w/ Inserts
**Primary Connection Qty:** (4)
**Primary Connection Supports:** N/A
**Primary Overcurrent Protection (OCP):** N/A
**Primary Surge Arrestors:** Included, (3) High Voltage Elbow Surge Arrestors
**Primary Surge Arrestor Voltage Rating:** 15 kV Class Elbow Arrestor
**Primary Surge Arrestor MCOV Rating:** 12.7 kVrms
**Primary Neutral Connection:** Included
**Primary Grounding Provisions:** (1) NEMA Ground Bar attached to tank via (2) Welded Ground Bungs in HV Cabinet
**Secondary Connection Type:** Dead Front
**Secondary Termination Arrangement:** V Terminal Arrangement
**Secondary Connections:** Externally Clamped Well Bushings w/ Removable Studs, Dead Break Elbows w/ Inserts
**Secondary Connection Qty:** (6) Secondary Connections for use w/ Elbow Connectors
**Secondary Parking Stand Qty:** (6) Welded Brackets for Installing Accessory Parking Stand Bushings
**Secondary Bushing Rating:** 35 kV Class, 150 kV BIL, 600A, Dead Break, IEEE 386 Color Red
**Secondary Neutral Connection:** N/A
**Secondary Surge Arrestors:** N/A
**Secondary Surge Arrestor Voltage Rating:** N/A
**Secondary Surge Arrestor MCOV Rating:** N/A
**Secondary Overcurrent Protection (OCP):** Bayonet Expulsion Fuses, In Series with Partial Range Current Limiting Fuses
**Secondary Overcurrent Protection Method:** Fused, Oil-Immersed
**Secondary Overcurrent Protection Holder:** Bayonet Fuse Holder w/ Flapper Valve and External Drip Shield
**Secondary Grounding Provisions:** (1) NEMA Ground Bar attached to tank via (2) Welded Ground Bungs in LV Cabinet
**Metering Current Transformer (CT):** N/A
**Metering Panel:** N/A
**Auxiliary Control Panel:** N/A
**Load Break Switch:** 4-Position Load Break Switch
**Load Break Switch Qty:** (1)
**Load Break Switch Rating:** 600-Amp, 35 kV
**Load Break Switch Location:** High Voltage (HV) Front Compartment
**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
**Insulation Fluid:** FR-3 Insulating Fluid, Non-PCB Fluid
**Fluid (Oil) Capacity*:** 840 Gallons
**Fluid (Oil) Weight*:** 6,468 Lbs
**Liquid Level Indicator:** Analog Dial Gauge, w/ Alarm Contacts
**Liquid Temperature Indicator:** Analog Dial Gauge, w/ Alarm Contacts
**Winding Temperature Indicator:** Analog Dial Gauge, w/ Alarm Contacts
**Pressure/Vacuum Indicator:** Analog Dial Gauge, w/ Alarm Contacts
**Pressure Relief Device:** Included, Automatic Action, w/ 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

Complies with CSA C88.1
Complies with CSA C88-16
Complies with CSA C227.4
Complies with CSA C227.5

**Features**

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 %:** 98.00%
*Based on transformer operating at 50% of nameplate base kVA.*
**Load Losses Based on 85°C Reference Temp.**
**No Load Loss (in watts):** +/- 10,013W
**Full Load Loss (in watts) at 100%:** +/- 38,265W
**Total Load Loss (in watts) at 100%:** +/- 48,279W
**Total Losses at 55°C LL Temp. & 20°C NL Temp.**
**Total Load Loss (in watts) at 50%:** +/- 19,616W
***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
Short-circuit Impedance Test
Voltage Ratio Error Test
Load Loss (Wattage) Test
No-load Loss (Wattage) Test
Separate Source Voltage Withstand Test
Induced Voltage Withstand Test
Dissolved Gas Analysis
Pressure Integrity Test

**Drain Valve Location:** Front Compartment
**Winding Material:** Copper
**Ambient Temperature Rating:** 40°C
**Ambient Operating Temperature Range:** -40°C to +40°C (-50°F to +104°F)
**Sound Level:** 65 dBA

**Elevation (Altitude):** 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 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
**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"-W x 7"-D
**LV Compartment Base Wireway Dimensions*:** 26"-W x 9"-D
**MV/LV Compartment Cabinet Depth*:** 30"-D
**Tank Cover Access Handhole:** N/A
**Dimensions*:** 96"-W x 108"-D x 94"-H
**Dry Weight (w/o Oil)*:** 12,578 Lbs
**Total Weight (Liquid Filled)*:** 19,398 Lbs
*Please note that numbers are approximate and subject to change

**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 - Requirements**
Contact us for special requirements
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**Intl:** 1-214-616-6180
**Fax:** 1-903-765-7664
**E-mail:** sales@larsonelectronics.com

**The MT-PML-R4-3P-YMR-6MVA-DMA-LT-DF-A6-BFFF-CZ-2C4-M1 Industrial Pad Mount Transformer from Larson Electronics 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 make 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 6 MVA (6000 KVA) [Natural Cooled] / 7.98 MVA (7980 KVA) [1st Stage Fan Cooled] / 9.96 MVA (9960 KVA) [2nd Stage Fan Cooled], the industrial transformer features a primary voltage of three-phase 12470Y/7200 Wye-N and a secondary voltage of three-phase 34500V Delta. The unit has a primary loop feed for daisy chained installations and dead-front primary connections. We also offer systems with radial feed and live front primary connections. This transformer features a 5-position tap changer with two 2.5% taps above and two 2.5% taps below nominal voltage 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-PML-R4-3P-YMR-6MVA-DMA-LT-DF-A6-BFFF-CZ-2C4-M1 has fans for forced air cooling.

**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 allow 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 6 MVA (6000 KVA) [Natural Cooled] / 7.98 MVA (7980 KVA) [1$^{st}$ Stage Fan Cooled] / 9.96 MVA (9960 KVA) [2$^{nd}$ 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-PML-R4-3P-YMR-6MVA-DMA-LT-DF-A6-BFFF-CZ-2C4-M1 features FR-3 cooling fluid (KNAN/KNAF/KNAF). We offer transformers with biodegradable 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 unit is equipped with an automatic 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.

**Load Break Switch:** The transformer is equipped with a load break switch on the primary compartment. This switch has four positions: A side on + transformer on, B side on + transformer

on, A and B sides + transformer on, and A and B sides + transformer off.

**Valves:** The MT-PML-R4-3P-YMR-6MVA-DMA-LT-DF-A6-BFFF-CZ-2C4-M1 is equipped with a pressure relief valve, fill valve and drain valve with sampler port.

**Protection Fuses:** This transformer contains 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:** 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-YMR-6MVA-DMA-LT-DF-A6-BFFF-CZ-2C4-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