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**MT-PML-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2**

# Alliant 2500 KVA Solar Step Up Pad Mount Transformer, 24940GrdY/14400 & 13200GrdY/7620 Pri. 600Y/347 Secondary, KNAN, Green, Alliant Energy Spec

**Product ID: 296014**

**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-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2 Pad Mount Transformer**

**Transformer Type: Pad Mounted, Compartmental-Type**
**Transformer Configuration: Liquid Filled Pad Mounted, Solar Inverter Duty**
**Transformer Feed Type: Loop Feed %-Legged Core**
**Operation: Step-Up Operation (Reverse Feed) or Step Down Operation**
**Phase: Three Phase**
**Capacity: 2.5 MVA (2500 KVA)**
**Vector Group:YnYn0**
**Primary Voltage: 24940GrdY/14400 & 13200GrdY/7620**
**Primary Voltage Switch: Dual Voltage Selector Switch**
**Primary Voltage Class: 25 kV Class**
**Primary Phasor: Grounded Wye**
**Primary BIL: 125 KV**
**Secondary Voltage: 600Y/347**
**Secondary Voltage Switch: N/A**
**Secondary Voltage Class: 1.2 kV Class**
**Secondary Phasor: Wye-N**
**Secondary BIL: 30 KV**
**Frequency: 60 Hz +/- 5%**
**Temperature Rise: 65°C - 80°C Max Winding Core Hotpost**
**Insulation Rating: Class E Insulation - 120°C, 248°F**
**Cooling Class: KNAN; Self-Cooled**
**Forced Air (Fans): None**

**Tap Changer: N/A**

**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 C57.18.10-2021
Complies with ANSI / IEEE C57.110-2018
Complies with ANSI / IEEE C57.159-2016
Complies with ANSI / IEEE C62.11
Complies with ASTM D3487
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
Electrostatically Shielded

**Efficiency %: 99.40%**
*Based on transformer operating at 50% of nameplate base kVA.*

**Tap Qty: N/A**
**Tap %: N/A**
**Tap Changer Switch Rating: N/A**
**Tap Changer Switch Location: N/A**
**Impedance (Typical): 5.3%-6.2%, Target 5.75%**
**Primary Connection Type: Dead Front**
**Primary Termination Arrangement: V Terminal Arrangement**
**Primary Termination: Externally Clamped 15/25 kV Well Bushings w/ Removable Studs, 200A Load Break Elbows w/ Inserts**
**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: 25 kV Class, 125 kV BIL, 200A, Load Break, IEEE 386 Color Blue**
**Primary Neutral Connection: External H0 Porcelain Connection w/ NEMA 2-Hole Spade Terminal, H0 Neutral Grounded to Tank via 1/2"-13 UNC Tapped Hole, 7/16" Deep Bung & Copper Ground Strap**
**Primary Surge Arrestors: (3) Oil Immersed, In-Tank Surge Arrestors**
**Primary Surge Arrestor Voltage Rating: 18 kV Class Arrestor**
**Primary Surge Arrestor MCOV Rating: 15.3 kVrms**
**Primary Over Current Protection (OCP): C05CB Curve, 125A Bayonet Fuse in Series w/ Isolation Link**
**Primary Over Current Protection Method: Fused, Oil-Immersed**
**Primary Over Current Protection Holder: Bayonet Fuse Holder w/ Drip Shield**
**Primary Side (Load) Winding: ithstands DC Current up to 0.5% of Rated Output Current, Withstand spikes of 2,500 volts between phase and ground, Withstand dV/dt of 500V/us between phase and ground**
**Primary Grounding Provisions: (1) NEMA Ground Bar attached to tank via (2) Welded Ground Bungs in LV Cabinet**
**Secondary Connection Type: Live Front**
**Secondary Termination Arrangement: Staggered Terminal Arrangement**
**Secondary Termination: NEMA H-Spade Terminals, 20-Hole Spade, Externally Clamped, Accepts up to (20) Double Lug connections with (10) cables per side of Spade connector**
**Secondary Connection Qty:(4) Externally Clamped One-Piece Epoxy Bushings Copper Threaded Studs**
**Secondary Connection Supports: Phenolic Cable Bracket Brace Support Mounted to Cabinet Sidewalls**
**Secondary Bushing Rating: 1.2 kV Class**
**Secondary Neutral Connection: X0 Neutral Grounded to Tank via 1/2"-13 UNC Tapped Hole, 7/16" Deep Bung & Copper Ground Strap**
**Secondary Surge Arrestors: (3) Oil Immersed, In-Tank Surge Arrestors**
**Secondary Surge Arrestor Voltage Rating: 600V Class Arrestor**
**Secondary Surge Arrestor MCOV Rating: 780 Vrms**
**Secondary Over Current Protection (OCP): N/A**
**Secondary Over Current Protection Method: N/A**
**Secondary Over Current Protection Holder: N/A**
**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**

**Load Break Switch: 2-Position Load Break Switch**
**Load Break Switch Qty: (2)**
**Load Break Switch Rating: 300-Amp, 25 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: Approved for use w/ Inverters w/ Pulse Wave Outputs**
**Insulation Fluid: Biodegradable Natural Vegetable Oil Ester Insulating Fluid - Non-PCB Fluid**
**Fluid Capacity*: 310 Gallons**
**Fluid Weight*: 2,410 lb**
**Liquid Level Indicator: Analog Dial Gauge, Magnetic Operation, w/ Current & Max Indicators, Resettable**
**Temperature Indicator: Analog Dial Gauge, w/ Current & Max Indicators, Resettable**
**Pressure/Vacuum Indicator: Analog Dial Gauge**
**Pressure Relief Device: Included, Automatic Action, w/ (2) Additional 1-1/2" NPT Ports w/ Plug Bolts for Future PRD Installation**
**Gas Sampler Valve: Included, Schrader Valve**
**Fill Valve: 1" NPT Port w/ Removable Bolt Plug**
**Fill Valve Location: Front Compartment, LV Cabinet**

**Load Losses Based on 85°C Reference Temp.**
**No Load Loss (in watts)): +/- 2,700W**
**Full Load Loss (in watts) at 100%: +/- 15,500W**
**Total Load Loss (in watts) at 100%: +/- 18,200W**

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

**Total Load Loss (in watts) at 50%: +/- 6,408W**

***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 Alliant Energy ID #
External Barcode Label
Internal Busing & Accessory Labeling
Stainless Steel Riveted Nameplate inside LV Compartment
Stainless Steel Riveted Nameplate Outside LV Compartment Door

**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 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***

**Alliant Energy Spec**
**Complies with Specification No. 0030**

**Drain Valve: 1" NPT Port w/ 5/8" NPT Sampler Valve**
**Drain Valve Location: Front Compartment, LV Cabinet**
**Winding Material: Copper**
**Ambient Temperature Rating: 40°C**
**Electrostatic Shield (Including Core and Coils): Dielectric Barrier & Foil Type Shield, located between primary and secondary windings, Bonded Externally to Ground in LV Cabinet**
**Sound Level: 62 dBA**
**Elevation Rating: 3300ft (1000 meters) Above Sea Level**
**Core Material: Grain Oriented Steel, 5-Legged Core, Inside Grounded**
**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"-7 x 7"-D**
**LV Compartment Base Wireway Dimensions*: 26"-W x 7"-D**
**MV/LV Compartment Cabinet Depth*: 30"**
**Tank Cover Access Handhole: 15"-W X 24"-H Bolted & Gasketed Cover Tank Access Hole w/ False Cover**
**Dimensions/: 110"-W x 88"-D x 83"-H**
**Dry Weight (w/o Oil)*: 4,918 lb**
**Total Weight (Liquid Filled)*: 11,534 lb**

*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-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2 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-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2 is designed to step up power fed to it from renewable energy sources and feed that current to the grid.**
**This transformer from Larson Electronics complies with Alliant Energy Specification No. 0030**
***PLEASE NOTE: ANY FREE SHIPPING OFFERS DO NOT APPLY TO POWER DISTRIBUTION PANELS, TRANSFORMERS, OR SUBSTATIONS****
**Transformer Features:** With a dual transformer rating of 2500 KVA (2.5 MVA), the industrial transformer features a primary voltage of three-phase 600Y/347 Wye-N and a secondary voltage of three-phase 24940Y/14400 & 13200Y/7620 Grounded Wye. 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-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2 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-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2 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 2500 KVA (2.5 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-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2 features biodegradable cooling fluid (KNAN) with a capacity of 310 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 voltage under oil surge arresters on the primary and secondary 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 surge arresters that have mounting provisions for customer-provided surge arresters.
**Valves:** The MT-PML-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2 is equipped with a pressure relief valve, fill valve, and drain valve with sampler port.
**Load Break Switch:** This transformer is equipped with two independently operated 2-position load break switches. One is for the transformer and one is for the Primary A lines. There is no load break switch for the Primary B lines.

**Protection Fuses:** This transformer contain Bayonet protection fuses on the HV 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-R85-3P-GMF.MQ-2.5MVA-YC-LT-DF-A6-BB-CZ-3B3-M2 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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**Product ID: 296014**

**Harmonized System (HS) Code:** 85043300
**Export Control Classification Number (ECCN):** EAR99

Links (Click on the below items to view):

- ANSI Certificate 1
- ANSI Certificate 2
- Catalog Page - Product Series
- FCC Certificate (Federal Communications Commission, USA)
- Internal Component Spec Sheet 3
- MSDS (Material Safety Data Sheet
- Operations Manual
- HigResPic1
- HigResPic2
- HigResPic3
- HigResPic4
- HigResPic5
- HigResPic6
- HigResPic7
- HigResPic8
- HigResPic9
- HigResPic10
- Video1
- Video2
- ISO 9001 Certification
- Business Certificate
- Shipping Time Map