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MT-PML-R4-3P-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-M1

4.8 MVA BESS Step Up Pad Mount Transformer - 480Y/277 Grounded Wye Primary, 13800V Delta Secondary - KNAN/FR-3 - Traffic White, w/ SEL-851 Feeder Protection Relay, NEMA 4

Product ID: 341799

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



Image: MT-PML-R4-3P-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-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-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-M1 Pad Mount Transformer	Ratings
Transformer Type: Pad Mounted, Compartmental-Type	Meets/Exceeds DOE 2016 Efficiency Ratings
Transformer Configuration: Liquid Filled Pad Mounted	Complies with ANSI / IEEE C57.12.00
Transformer Feed Type: Loop Feed	Complies with ANSI / IEEE C57 12.28
Operation: Step-Up Operation (Reverse Feed) or Step Down Operation	Complies with ANSI / IEEE C57 12.29
Phase: Three Phase	Complies with ANSI / IEEE C57 12.34
Capacity: 4.8 MVA (4800 KVA)	Complies with ANSI / IEEE C57 12.35
Vector Group: Dyn1	Complies with ANSI / IEEE C57.12.70
Primary Voltage: 480Y/277 x 480Y/277	Complies with ANSI / IEEE C62.11
Primary Voltage Class: 1.2 kV Class	Complies with ASTM D3487
Primary Phasor: Grounded Wye	Penta-head Bolt Entry Assembly
Primary BIL: 30 KV	High-Fire Point Insulating Fluid
Secondary Voltage: 13800V	Non-PCB Insulating Fluid
Secondary Voltage Switch: N/A	Tamper Proof Housing
Secondary Voltage Class: 15 kV Class	Hinged Front Compartment Doors, Pad Lockable
Secondary Phasor: Delta	NEMA 4 Wiring Compartment
Secondary BIL: 95 KV	Hot Stick Included, HV Door Mount
Frequency: 60 Hz	Electrostatically Shielded
Temperature Rise: 75°C	
Insulation Rating: Class E Insulation - 120°C, 248°F	**Efficiency %:** 98.00%
Cooling Class: KNAN; Self-Cooled	*Based on transformer operating at 50% of nameplate base*

kVA.

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, 15 kV
Tap Changer Switch Location: High Voltage (HV) Front Compartment
Impedance: 8% ± 7.5%
Primary Connection Type: Live Front
Primary Termination Arrangement: Staggered Terminal Arrangement
Primary Connections: NEMA Spaced 2-Hole Spade Terminals
Primary Connection Qty: 2 sets of (4) Terminals Located in opposite sides of the MV Terminals
Primary Connection Support: Included
Primary Neutral Connection: X0 Neutral Bushing Grounded to Tank via 1/2"-13 UNC Tapped Hole, 7/16" Deep Bung & Copper Ground Strap
Primary Bushing Rating: 30 kV BIL, FLA continuous, 85 kA short time
Primary Conductor Size: 6 x 750 kcmil copper per phase
Primary Overcurrent Protection (OCP): Bayonet Expulsion Fuse in series w/ Partial-Range Current-Limiting Fuse
Primary Grounding Provisions: (1) NEMA Ground Bar/Bus Attached to Tank via (2) Welded Ground Bungs in LV Cabinets
Primary Connection Supports: Phenolic Spade End Supports
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. Size for 4/0 AWG Cable
Secondary Connection Qty: (6) Primary Connections for use w/ Elbow Connectors
Secondary Parking Stand Qty: (6) Welded Brackets for Installing Accessory Parking Stand Bushings
Secondary Bushing Rating: 150 kV BIL, 900 A continuous, 40 kA short time
Secondary Neutral Connection: N/A
Secondary Surge Arrestors: Included, (3) High Voltage Elbow Surge Arrestors
Secondary Surge Arrestor Voltage Rating: 15 kV Class Elbow Arrestor
Secondary Surge Arrestor MCOV Rating: 12.7 kVrms
Secondary Overcurrent Protection (OCP): Bayonet Expulsion Fuse
Secondary Overcurrent Protection Method: Fused, Oil-Immersed
Secondary Overcurrent Protection Holder: Bayonet Fuse Holder w/ Drip Shield
Disconnecting Means: Included, Non Fused Disconnect Switch, 15kV, 600A
Secondary Grounding Provisions: (1) NEMA Ground Bar/Bus attached to tank via (2) Welded Ground Bungs in HV Cabinet
Metering Current Transformer (CT): Included, 250:1 A, 5P10, 3VA or better
Metering Panel: Included, CT Test Switch Included
Auxiliary Control Panel: NEMA 4 Enclosure
Load Break Switch: 2-Position Load Break Switch
Load Break Switch Qty: (3)
Load Break Switch Rating: 600-Amp, 15 kV
Load Break Switch Location: High Voltage (HV) Front Compartment
Feeder Protection Relay: Included, SEL-851 (or shorter lead time equivalent)
IR Window: Included, For LV & HV Cabinets
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*: 700 Gallons
Fluid Weight*: 5,390 lbs
Liquid Level Indicator: Magnetic Analog Dial Gauge w/ (2) Dry Type Form C Auxiliary

Load Losses Based on 85°C Reference Temp.
No Load Loss (in watts): +/- 8,889W
Full Load Loss (in watts) at 100%: +/- 34,996W
Total Load Loss (in watts) at 100%: +/- 43,885W

Total Losses at 55°C LL Temp. & 20°C NL Temp.
Total Load Loss (in watts) at 50%: +/- 17,640W
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*

Contacts for Remote Alarms (1NO + 1NC) located in Aux Control Cabinet
Temperature Indicator: Analog Dial Gauge w/ (2) Dry Type Form C Auxiliary Contacts for Remote Alarms (1NO + 1NC) located in Aux Control Cabinet
Pressure/Vacuum Indicator: Analog Dial Gauge w/ (2) Dry Type Form C Auxiliary Contacts for Remote Alarms (1NO + 1NC) located in Aux Control Cabinet
Pressure Relief Device: Included, Automatic Action
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/ 3/8" NPT Sampler Valve
Drain Valve Location: Front Compartment
Winding Material: Copper
Ambient Temperature Range: -29.2°C to +50°C
Electrostatic Shield (Including Core and Coils): One-foil type, located between primary and secondary windings
Sound Level: 63 dBA
Elevation Rating: 622.5ft Above Sea Level
Design Life: 30 years
Core Material: Grain Oriented Steel
Tank Material: Coated Steel
Cabinet Material: Coated Steel
Base Platform Material: Coated Steel
Portability: Lifting Lugs on Top & Side, Provisions for Jacking Under Base, w/ Base Construction Suitable for Using Rollers or Skidding
Housing Type: HV Compartment w/ Locking Cabinet in Front of Transformer, Dual LV Compartments w/ Locking Cabinets, (One on Left Side of HV Compartment & One of Right Side of HV Compartment w/ LV Cable Tray Openings 2 x 30" Wide spaced 18" apart), Individual Accessory Cabinet w/ Locking Door Above HV Compartment, LV Compartments Have (2) Wireway Cable Tray Cutouts Each w/ Removable Block Plates
Cooling Fins: Rear Mounted Only
Enclosure Rating: NEMA 4 Weatherproof Wiring Cabinet, Sealed Tank
Seismic Rating: Yes
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating
Finish Color: RAL 9016 Traffic White
Mounting: Pad Mounted
Conduit Opening: Bottom Feed Underground Entry/Exit
HV Compartment Base Wireway Dimensions*: 63"-W x 44"-D
LV Compartment Base Wireway Dimensions*: (2) 14"-W x 60"-D Wireway Tray Cutouts in Base Sill per LV Cabinet, Compatible w/ Megapack XL Wireway Cable Tray Installation
MV/LV Compartment Cabinet Depth*: 24"
Tank Cover Access Handhole: 19" x 15" Bolted Tank Access Hole on Top of Tank Lid
Dimensions: 140"-W x 156"-D x 87"-H
Dry Weight (w/o Oil)*: 10,462 lbs
Total Weight (Liquid Filled)*: 18,610 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-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-M1 from Larson Electronics is a BESS (Battery Energy Storage System) 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 make 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-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-M1 is designed to step up power fed to it from a BESS (Battery Energy Storage System, such as a Tesla Megapack XL system, 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 4800 KVA (4.8 MVA), the industrial transformer features a dual primary voltages of three-phase 480Y/277 Grounded Wye and a secondary voltage of three-phase 13800V Delta. This transformer is designed for reverse feed applications, including stepping up low voltage output from a BESS (Battery Energy Storage System) for feeding to the local utility grid. The MT-PML-R4-3P-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-M1 is ideal for use in battery energy storage systems such as the Tesla Megapack XL system. It is designed to take power fed to it from a customer provided BESS, such as a Tesla Megapack XL, step up that current, and feed it into the electrical grid.

The unit has a primary loop feed for dual installations and live-front primary connections. This BESS 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 in voltage.

Copper transformer winding material helps improve performance, reduce weight, and lower cost. Compared to aluminum, copper windings have lower eddy losses due to higher resistivity. This transformer consists of a rectangular coil and a three-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-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-M1 does not have fans or mounting provision for fans.

Enclosure Design: This pad mounted transformer is a compartmental design. It features an individual high voltage compartment with locking cabinet on the front of the transformer. The high voltage compartment is flanked on either side by low voltage locking compartments; one on the left side and one on the right side. The low voltage cabinets each feature two wireway cable tray cutouts which include a removable block plate. This allows operators to install a single wireway tray and have the other cutout block off when not in use. A separate accessory cabinet with locking door is mounted above the high voltage compartment. The accessory cabinet holds gauges and the fill valve. The tank and housing are fabricated from steel. The enclosure carries a NEMA 4 rating. A hot stick is included in the high voltage compartment, mounted to the HV door.

Temperature Rise: This unit features 75°C temperature rise for reduced heat waste, increased reliability and longer life. At 75°C temperature rise, the transformer offers 4800 KVA (4.8 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-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-M1 features FR-3 cooling fluid (KNAN) with a capacity of 700 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. These gauges 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 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-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-2B6-M1 is equipped with a pressure relief valve, fill valve, and drain valve with a 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, 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-GE.E-4.8MVA-DMP-LT-DF-A6-DF-CZ-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: BESS (Battery Energy Storage System) systems such as the Tesla Megapack XL system.

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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