Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.498.3364

MT-PML-R2-3P-DMQ-225KVA-YE-LT-DF-A6-BB-CS-2B6-T8-M2

225 KVA Pad Mount Transformer - 13200V Delta Primary - 480Y/277 Wye-N Secondary - KNAN/Bell Green

Product ID: 283998

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-R2-3P-DMQ-225KVA-YE-LT-DF-A6-BB-CS-2B6-T8-M2 Pad Mount Transformer

Type: Liquid-Filled Padmounted Transformer
Transformer Core: Grain Oriented Steel
Phase: Three Phase
Capacity: 225 kVA
Primary Voltage: 13200V Delta
Primary BIL: 95 kV
Secondary Voltage: 480Y/277 Wye-N
Secondary BIL: 30 kV
Low Voltage Neutral: X0 Bushing with Ground Strap
Frequency: 60 Hz
Average Winding Rise: 65°C
Ambient Temperature: 30°C
Capacity @ 65°C Temperature Rise: 225 kVA
Forced Air (Fans): None
Tap Changer: 5-Position Tap Changer, (2) +/- 2.5% Taps Above and (2) +/- 2.5% Taps Below
Efficiency: Standard
Insulation Fluid: Biodegradable Cooling Fluid
Fluid Capacity: 140 Gallons
Cooling Class: KNAN
Liquid Level Gauge: Yes - w/ Alarm Contacts
Thermometer: Yes - w/ (2) Alarm Contacts (1 NO & 1 NC Each)
Winding Temperature Indicator: Yes - w/ (4) NO Contacts
Pressure/Vacuum Gauge: Yes - w/ Bleeder & Contacts

Ratings

NRTL Listed for United States and Canada
Conforms to NEMA, ANSI C57.12 Standards
Sealed Tank Construction w/ Welded On Cover
Padlockable Doors
Dry Nitrogen Blanket
Touch Up Paint (12 oz. Spray Can)
Penta-Head Cabinet Handle Bolt
Seal-In Mounted in Low Voltage Compartment
DOE Efficiency (2016)

Fault Pressure Device: None
Pressure Relief Valve: Yes
Fill Valve: Included
SST Upper Filter Press Valve: Included
Drain Valve w/ Sampler Port: Yes
Rapid Rise Relay: Yes
Surge Arrestors: High Voltage Elbow Surge Arrestors Included on Primary Side
Grounding: Ground Connector(s) (#8 - 2/0)
LV Bushings: (4) Threaded Stud LV Bushings
LV Bushing Pattern: ANSI C57.12.26 Fig 3&4a Minimum Stgrd
HV Bushings: (6) 200-Amp HV Bushing Wells w/ Removable Studs
HV Bushing Pattern: ANSI C57.12.34 Fig 9&11
HV Protective Caps: 6
Stand Off Insulators: (6) 200-Amp
Spade Terminals: (4) 12-Hole NEMA
Spade Supports: Yes
Fuses: (3) Fused Bayonets - No Isolation Link; (3) Oil Retaining Valves on Bayonets; (6) Parallel Oil-Immersed Partial Range Current Limiting Fuses
LBOR Transformer Switch: 2-Position 200-Amp
LBOR Line A Switch: 2-Position 200-Amp
LBOR Line B Switch: 2-Position 200-Amp
Fuse/Switch Interlock Mechanism: Yes
Load Break Inserts: 3
Feed Thru Inserts: 3
Front: Dead-Front
Feed Configuration: Loop Feed
Winding Material: Copper
Ambient Temperature Rating: -
Sound Level: -
Non-PCB Label: Yes
External DANGER Label: Yes
Cabinet Material: 304 Stainless Steel
Tank Handhole Cover: Yes
Fault Indicator Provision: Yes
Full Deck Pallet: Yes
Cabinet Type: Deep Cabinet - Tamperproof
Enclosure Rating: NEMA 3R Weatherproof
Paint Type: Munsell 7.0 GY 3.29/1.5 Bell Green
Mounting: Pad Mount
Conduit Opening: -
Dimensions: 72" x 51" x 50"
Weight: +/- 3,150 lb

Special Orders - Special Requirements
Contact us for special requirements
Toll Free: 1-800-369-6671
Intl: 1-903-270-1187
Fax: 1-903-498-3364
E-mail: sales@larsonelectronics.com

The MT-PML-R2-3P-DMQ-225KVA-YE-LT-DF-A6-BB-CS-2B6-T8-M2 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 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 225 kVA, this industrial transformer features a primary voltage of three-phase 13200V Delta and a secondary voltage of three-phase 480Y/277 Wye-N. This 304 stainless steel unit has a primary loop feed for single 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 to allow small changes for voltage.
The MT-PML-R2-3P-DMQ-225KVA-YE-LT-DF-A6-BB-CS-2B6-T8-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 225 kVA. The transformer meets DOE 2016 efficiency standards. 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-R2-3P-DMQ-225KVA-YE-LT-DF-A6-BB-CS-2B6-T8-M2 features biodegradable cooling fluid (KNAN) with a capacity of 140 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/Valves: The following gauges are included with the system: liquid level gauge with alarm contacts, thermometer with two alarm contacts (1 NO and 1 NC each), pressure/vacuum gauge with bleeder and contacts, winding temperature indicator with four NO contacts, pressure relief valve, SST upper filter press valve, drain valve with sampler port, and fault indicator provision.

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 is a rapid rise relay on this 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 Breaker Switch: The MT-PML-R2-3P-DMQ-225KVA-YE-LT-DF-A6-BB-CS-2B6-T8-M2 is equipped with a 2-position, 200-amp LBOR transformer switch, a 2-position, 200-amp LBOR line A switch, and a 2-position, 200-amp LBOR line switch B.

Protection Fuses: This transformer has three fused bayonets with no isolation link, three oil retaining valves on the bayonets, and six parallel oil-immersed partial range current limiting fuses.

Mount: The heavy-duty, 304 stainless steel 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-R2-3P-DMQ-225KVA-YE-LT-DF-A6-BB-CS-2B6-T8-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: 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.

Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.498.3364

Frequently Asked Questions (FAQ)

Q. What type of transformers does Larson Electronics offer?

A. Larson Electronics offered dry type transformers and liquid filled transformers. For liquid filled transformers, Larson Electronics' offers overhead distribution transformers (utility pole mount), pad mounted distribution transformers (mounts to a concrete pad), pad mounted power transformers, underground submersible distribution transformers, and substation transformers.

Q. What are the main benefits of a liquid filled transformer?

A. Liquid filled transformers have higher energy efficiency, durability, short circuit strength, low sound level, lower maintenance costs, and longer useful life expectancy compared to dry type transformers.

Q. What types of transformer liquids does Larson Electronics use?

A. Larson Electronics offered mineral oil fluid (ONAN) and biodegradable fluid (KNAN). On request we can provide brand name FR3 fluid or other brand name fluids for additional cost and lead time. All fluids offered by Larson Electronics are non-PCB containing fluids.

Q. Can this transformer be customized?

A. Yes, Larson Electronics allows for customization of all transformers. Please send customization requests to sales@larsonelectronics.com. If you have an engineered specification or engineered drawings, please provide those at the time of request.

Q. What is the difference between Loop Feed and Radial Feed?

A. Radial feed Transformers will have three high voltage bushings (H1, H2, and H3). There is one bushing for each phase to allow for the incoming high voltage cables. On Wye and Grounded Wye connected Transformers, there will also be an H0 bushing. Loop feed Transformers will have six high voltage bushings (H1A, H2A, H3A, H1B, H2B, and H3B). There are two bushings for each phase. This allows the customer to connect all of their Transformers in a loop configuration. It will also allow the customer to bring two feeds to the Transformer. A four position switch can be used to switch between the A feed and the B feed.

Q. What is the lifespan of a transformer?

A. The average lifespan of a liquid filled transformer is 25 years. Many transformers will survive past the 25 year mark and are still in service for up to 35 years.

Q. Is this transformer UL Listed? Is this transformer CSA Listed?

A. By default, no. The majority of medium voltage transformer installations do not require certification by a Nationally Recognized Testing Laboratory (NRTL) unless being installed inside a building. Medium voltage equipment is built to and complies to ANSI, ASTM, DOE, IEEE, and NETA standards. UL is one of multiple NRTLs per OSHA certification for testing facilities for USA standards. CSA is one of multiple NRTLs per Canada certification standards. For an additional fee, we can submit your order for NRTL testing after completion of build. This testing service is per order, requires payment of testing fees, and will increase lead time.

Q. What are the transformer ratings?

A. IEEE Std C57.12.20 (Overhead Type), IEEE Std C57.12.34 (Three-Phase Pad-Mounted Compartmental), IEEE Std

C57.12.38 (Single-Phase Pad-Mounted), IEEE Std C57.12.36 (Distribution Substation Transformers). For more detailed list of standards, please see the ASTM Certificate 1 link.

Q. Do Larson Electronics transformers contain PCB?

A. All dry-type and liquid filled transformers manufactured by Larson Electronics are PCB (polychlorinated biphenyl) free at the time of shipment. Mixtures of polychlorinated biphenyls (PCB's) were banned commercially for use as transformers cooling fluids in 1977 due to being toxic, bio-accumulative, not at all biodegradable, and difficult to dispose of safely. None of Larson Electronics transformers contain PCB and only use PCB-free fluids.

Q. What is the difference between FR3 fluid and biodegradable fluid?

A. Envirotemp FR3 is a brand name of biodegradable ester oils made by Cargill. Cargill is not the only manufacturer of biodegradable ester fluids used for cooling liquid filled transformers. Larson Electronics stocks RAPO biodegradable fluid that exceeds testing for ASTM D6871. Cargill Envirotemp FR3 can be used in substitution of the standard biodegradable fluid. This substitution will increase cost and lead times.

Q. What is the difference between mineral oil (ONAN) and biodegradable fluid (KNAN)?

A. Mineral oil has a flash point of 147-165°C. Biodegradable insulation fluids have a higher flash point up to 350°C. Using biodegradable fluids reduce the risk of potential fire due to the transformer overheating. Utilizing biodegradable fluids extends the lifespan on the transformer due to better insulation, higher flash point, better moisture resistance, and higher maximum voltage breakdown points over mineral oils.

Q. What is the warranty of this transformer?

A. 12 months from point of connecting electrical service to the transformer or 18 months from point of ordering, whichever comes first.

Q. Where is the detailed dimensional drawing for this unit?

A. We can provide a feature drawing that shows accessories and estimated form factor. Due to the variety of options and varying voltages, an exact dimensional drawing for the specific unit you have ordered is not available until after purchase and engineering has completed the drawing for your sales order. We do not offer completed detailed engineered drawings before purchase. The feature drawings are detailed enough for concrete pad designs and preliminary engineering site designs.

Q. Does my primary and secondary voltage matter for a transformer?

A. Yes, this matters greatly. For primary voltage, most transformers will be equipped with a tap changer for small primary voltage changes due to voltage drop for losses experienced in the transmission line. Some transformers will be equipped with dual voltage primaries with a voltage selector switch to choose which voltage to operate the transformer on. In both cases, these are designed to provide a steady output voltage. It is very important to confirm what voltage your primary voltage being delivered from the utility provider and what the required electrical voltage for the building or house is. You cannot only provide the KVA size, or the abbreviated primary voltage as there is not standardized voltage across the country and each region can be different. Once manufacturing has started, these cannot be changed.

Q. What is required for mounting this transformer?

A. For mounting requirements, please see the ASTM Certificate 2 link.

Q. What types of transformer protection are available?

A. For over-current protection, Larson Electronics offers Fuses, breakers and interrupters. For over-voltage protection, Larson Electronics offers arresters. Larson Electronics can provide both Primary and Secondary protection equipment.

Q. Do you have to ground this transformer?

A. In most cases the enclosure of the transformer is grounded for safety reasons. However, a transformer will function properly without being grounded. Be sure to research all grounding requirements for your specific application against the NETA and NEC as well as any local electrical codes.

Q. How many BTU's of heat does a transformer generate?

A. The heat a transformer generates is dependent upon the transformer losses. To determine air conditioning requirements multiply the sum of the full load losses (obtained from factory or test report) of all transformers in the room by 3.41 to obtain the BTUs/hour. For example: A transformer with losses of 2000 watts will generate 6820 BTUs/hour.

Q. What is the difference between copper and aluminum windings inside the transformer?

A. Transformers wound with aluminum or copper wire have similar losses and performance. The choice of using copper or aluminum windings depends upon the application and the individual preferences. The type of winding material does not affect the transformer's reliability. A transformer's life is defined by the life of its insulation system.

Q. What is the difference between Dead Front and Live Front?

A. Live-front: The voltage-carrying parts are exposed. Live-front terminations have high voltage connectors, arresters, or fuses are exposed to the operator after cabinet has been opened. Dead-front: Often referred to as dead-front bushings. Safety is enhanced as there are no current-carrying parts exposed to the operator. For overhead distribution transformers and underground submersible transformers, live front is common. For pad mount transformers, the primary is typically dead front and the secondary is live front. Protection barriers can be added to live front pad mounted transformers.

Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.498.3364



Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.498.3364





Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.498.3364



MT-PML-R2-3P-DMQ-225KVA-YE-LT-DF-A6-BB-CS-2B6-T8-M2

Product ID: 283998

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
- Video3
- ISO 9001 Certification
- Business Certificate
- Shipping Time Map