

February 2005

FDM Medium Voltage Controller



Product Description

For over 50 years, EATON Corporation has been the industry leader in Medium Voltage Motor Control. The FDM Medium Voltage Fire Pump Controller is based on the AMPGARD® controller design which incorporates Eaton's industry leading Cutler-Hammer TRITON™ SL Series Medium Voltage Vacuum Contactor. The SL Contactor utilizes Cutler-Hammer's vacuum interrupters that exhibit both a long electrical life and a high interruption capacity.

Product Features

Microprocessor Control

The FDM Medium Voltage controller features field-proven LMR technology and functions.

Standard LMR Features

- Microprocessor Control
- Pressure, Voltage & Current Display
- Alarm & Status LED Indication
- LCD Message Retrieval
Last 2048 Messages
- Externally Mounted Pressure Transducer
600 PSI Max.
- Printer / Recorder
- Elapsed Time Meter
- Number of Operations Counter
- Run Period Timer
- Sequential Start Timer
- Weekly Test Timer
- Common Alarm Relay & Contacts
- NEMA 2 Enclosure
- Emergency Start Operator
- Extra Set of Form-C Contacts for Phase Reversal & Phase Failure
- Additional Output Relay
- Pre-wired Terminals for Remote Start,
- Deluge Valve, Relief Valve Discharge, Low
- Suction Pressure & Interlock On
- Provisions for Spare Set of Fuses
- Space Heater (Thermostat and Humdistat optional)

Accessibility

The LMR controller section has its own separate entrance door and is segregated from the medium voltage section. Power connections are accessible through the front of the controller and are fully isolated from the medium voltage contactor.



Isolation

A positive mechanical isolating switch with visible disconnect, completely grounds and isolates the contactor from the line connectors. This is achieved using a mechanically driven isolating shutter, which eliminates access to exposed high voltage components and wiring.

Maintenance

Since all components are front accessible, routine inspection or parts replacement is easily achieved.

Design Simplicity

Component-to-component direct connection reduces the number of electrical wire connections by over half, making troubleshooting faster and easier.

Space Heater

Included as standard is an internal space heater, which is powered from the test plug circuit. It is not necessary to apply medium voltage power to turn on the heater.



Mechanically Locked

Since the medium voltage door is mechanically locked with the disconnect switch, access to the MV component section is prevented while medium voltage power is applied to the unit.

Enclosure

The FDM comes standard with a NEMA Type 2 (IEC IP11) drip-proof, powder baked finish, free-standing enclosure.

Grounding

A tin-plated copper bus is provided in the incoming / load section of the FDM controller for grounding purposes.

Power Fuses

The FDM controller incorporates fatigue proof Current Limiting fuses. When properly applied, the element of the fuse will not age, become brittle or deteriorate under the most severe duty cycling. Storage space for power fuses is provided within the medium voltage section of the controller.



Fuses

Control Transformer fuse protection is provided by primary and secondary fuses.

Operating Devices

The four external operating devices are EATON Cutler-Hammer 10250T Series NEMA Rated, Oil-Tight pushbuttons and provide the following functions:

Start: Allows for local (manual) starting of the motor. The "Local Start" LED illuminates on the membrane.

Stop: De-energizes the SL-400 Vacuum main run contactor.

Ack. Alarm: Used to acknowledge alarms and reset the common alarm relay 3CR.

Step: Sequentially view messages on the LCD Display without opening the front control section door.

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Contactor

The TRITON™ SL 400 contactor uses three Axial Magnetic (A-M) coils at the fixed end of the vacuum interrupters. The A-M coils establish a magnetic field within the interrupter during fault conditions. The field disperses the arc during fault current interruption, allowing the contactor to interrupt a very high fault current.



Easy Installation

Current limiting fuses, contactor assembly and isolating switch assembly are easily removed from the enclosure; line and load terminals are completely accessible from the front.



Wire Termination

The line and load terminal connection points are located on either side of the medium voltage section and are accessible through gland plates in the bottom of the enclosure.



Technical Data and Specifications

Interrupt Ratings

Motor Horsepower	Line Voltage	Interrupting Ratings 3-Phase Symmetrical MVA	Approx. Weight Lbs. (Kg)
100 - 1000	2200 - 2400V	200	850 (386)
100 - 1250	3000V	400	
100 - 1500	3300 - 3600V	400	
100 - 2000	4160V	400	
100 - 2250	4800V	570	
100 - 2750	5500V	570	
100 - 3000	6000 - 6300V	570	
100 - 3250	6600 - 7200V	570	

Altitude Ratings		Fuse Interrupting Rating	Contactor Short Circuit Rating	Impulse Voltage Crest Line to Ground
Low	-3500 to -1001 meters	50KA Symmetrical 80KA Asymmetrical	6000A - 1 second 63KA Peak 8.7ms (0.5 Cycles)	60KV - 2200-7200V
Standard	-1000 to +2000 meters			
High	+2001 to +4000 meters			

Standards & Certification

The FDM Medium Voltage Fire Pump Controllers meet or exceed the requirements of Underwriters Laboratories, Underwriters Laboratories Canada, Factory Mutual, the Canadian Standards Association, New York City building code and are built to NFPA 20 standards.



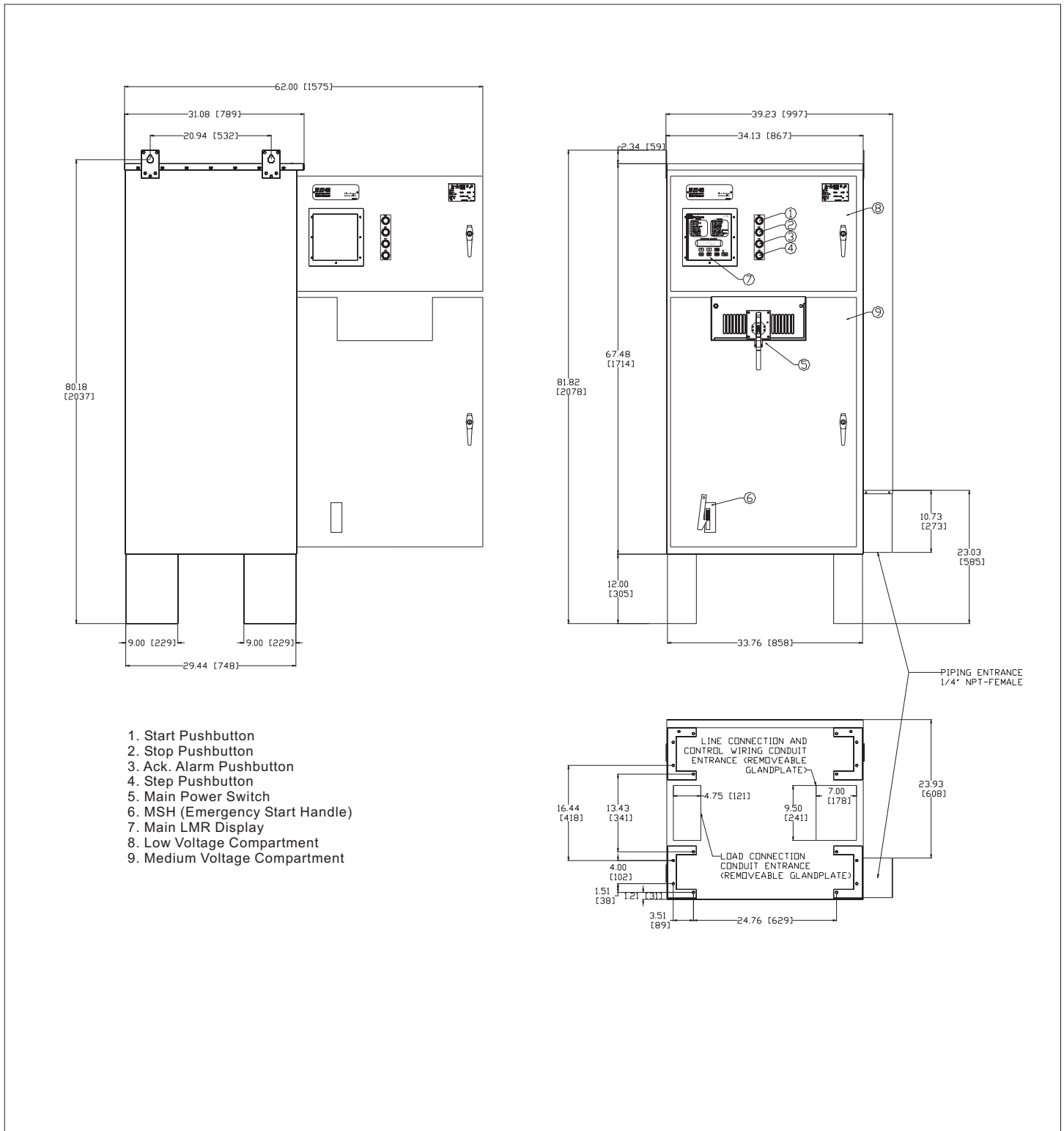
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FDM Medium Voltage Controller

Dimensions

Standard Enclosure - Type NEMA 2

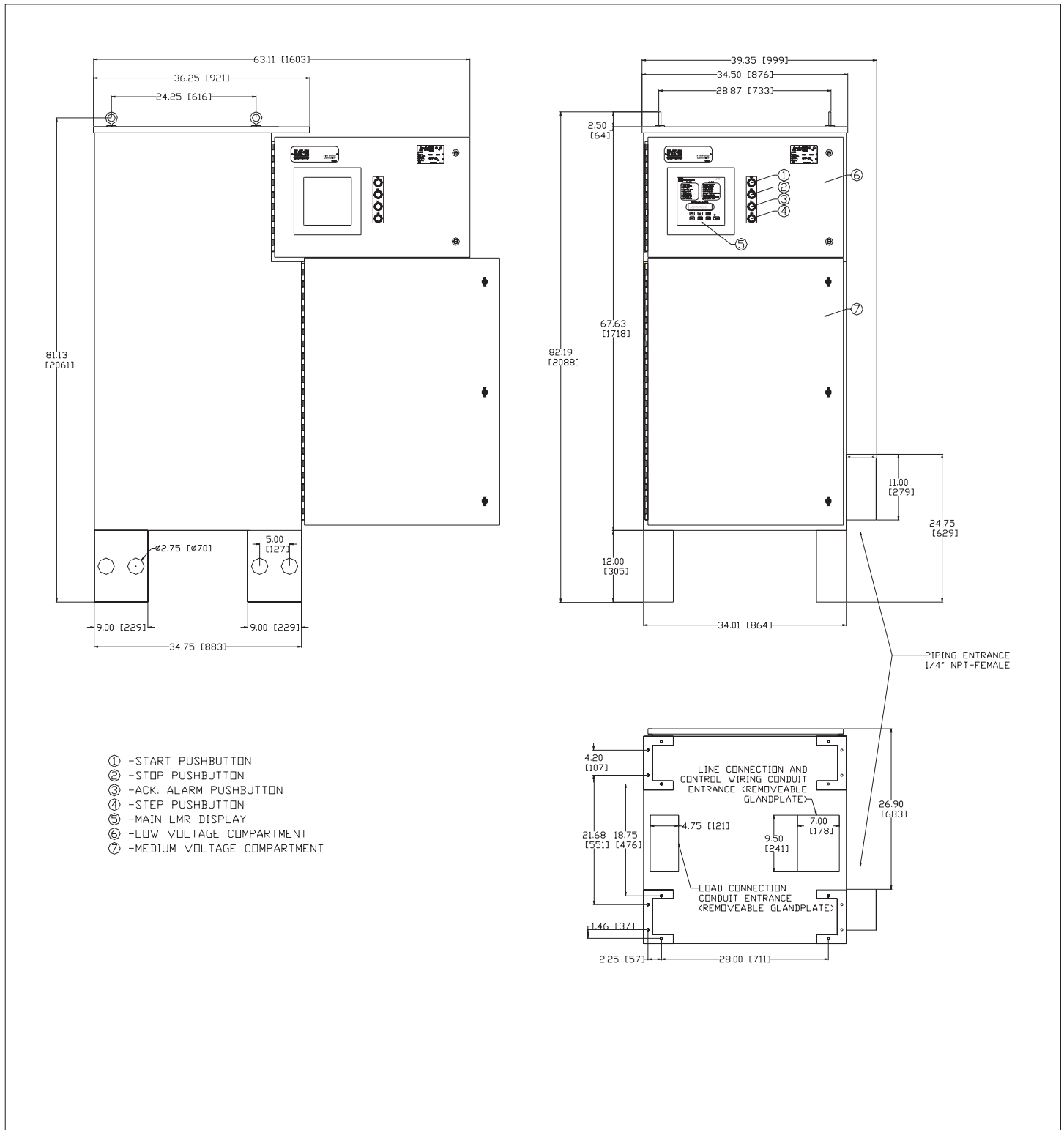


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Dimensions

Standard Enclosure - Type NEMA 4 / 4X



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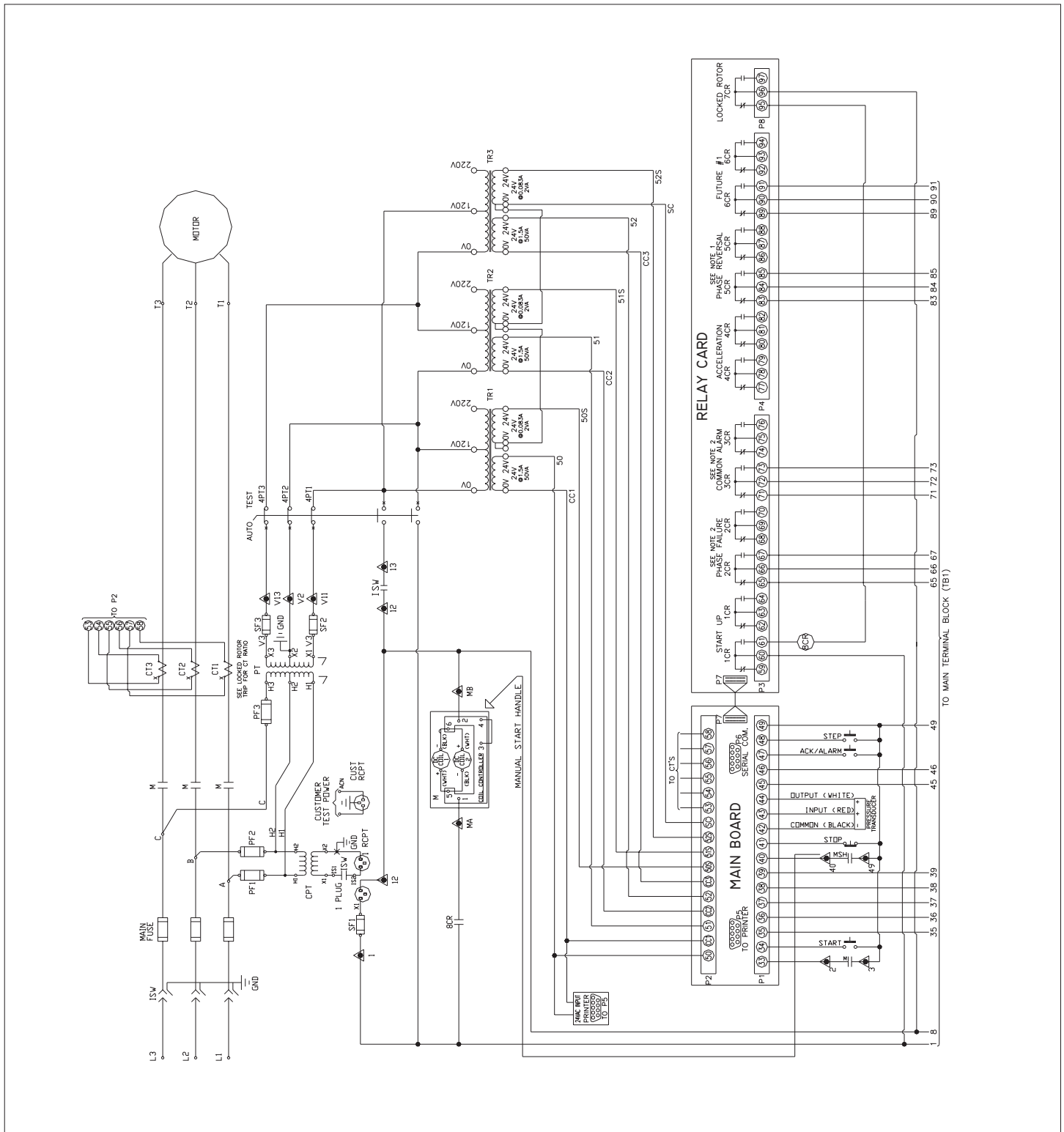
NOTES:

- All enclosures finished in FirePump red.
- Cable Entrance through bottom gland plates.
- Standard Enclosure type NEMA 4 / 4X.

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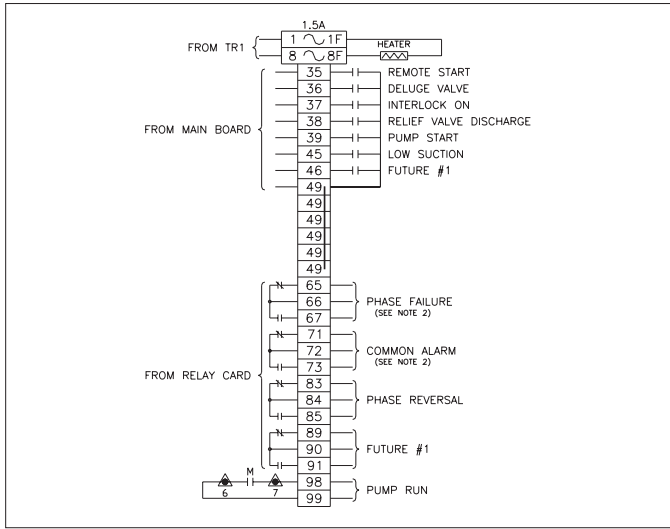
Electrical Wiring Schematic



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FDM Medium Voltage Controller

Main Terminal Block: TB1



Legend

Legend	Line Voltage
8CR	Start Relay
CPT	Control Power Transformer
CT	Current Transformer
CUST RCPT	Customer Receptacle
GND	Ground
ISW	Isolation Switch
M	Run Contactor
MSH	Mechanical Start Handle
PF	Power Fuse
PT	Potential Transformer
RCPT	Receptacle
SF	Secondary Fuse
TB	Terminal Block
TR	Control Transformer
▲	Internal Terminal Block(s)

Catalog Number Selection

FDM Medium Voltage Controller Catalog Numbering System

