TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Drawing Submittal Package

Model MPA

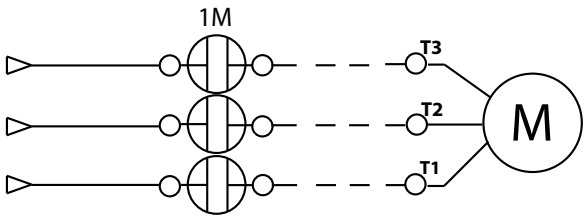
Medium Voltage Electric Fire Pump Controller

Contents:

Data Sheets
Dimensional Data
Wiring Schematics
Field Connections

Note: The drawings included in this package are for controllers covered under our standard offering. Actual AS BUILT drawings may differ from what is shown in this package.

March 2023



Standard, Listings, Approvals and Certifications	Built to NFPA 20 (latest edition)	
	Underwriters Laboratory (UL)	UL218 - Fire Pump Controllers
	FM Global	Class 1321/1323
	Optional	
	☐ CE Mark	Various EN, IEC & CEE directives and standards
Enclosure	• Three compartments with indivdual doors for: • Starter (fuses and vacuum contactor) • Power transformer • Control circuit	
	Protection Rating ☐ Standard: NEMA 2 (IP31) **Optional** ☐ NEMA 12 ☐ NEMA 4X-304 sst painted ☐ IP54 ☐ NEMA 3 ☐ NEMA 4X-304 sst brushed finish ☐ IP55 ☐ NEMA 3R ☐ NEMA 4X-316 sst painted ☐ IP65 ☐ NEMA 4 ☐ NEMA 4X-316 sst brushed finish ☐ IP66	
	Accessories • Back, top and bottom cable entry removable gland plates • Lifting Lugs • Keylock handle	**Paint Specifications** • Red RAL3002 • Powder coating • Glossy textured finish

Short Circuit Protection	Current limiting circuit fuses sized to hold 600% of motor full load current for minimum 100s
Motor Contactor	Vacuum Type
Emergency Start Handle	• Flange mounted • Pull and latch activation • Across the line start (direct on line)
Locked Rotor Protector	• Factory set at 600% of motor full load current • Trip between 8 and 20 seconds • Trip motor contactor
Electrical Readings	• Voltage phase to phase (normal power) • Amperage of each phase when motor is running
Pressure and Event recorder	• Pressure readings with date stamp • Event recording with date stamp • Under regular maintained operation, events can be stored in memory for up to 5 years. • Data viewable on operator interface display screen • Downloadable by USB port to external memory device
Pressure Sensing	• Pressure transducer and run test solenoid valve assembly for fresh water application • Pressure sensing line connection 1/2” Female NPT • Drain connection 3/8” • Rated for 0-500PSI working pressure (calibrated at 0-300psi) • Externally mounted with protective cover
Audible Alarm	Alarm buzzer - 85dB at 3 meters
Visual Indications & Alarms	Visual • Control voltage not healthy • Invalid cut-in • Lock rotor current • Loss of power • Low ambient temperature • Low water level • Motor trouble • Phase reversal (normal power) • Overcurrent • Overvoltage • Phase loss L1 • Phase loss L2 • Phase loss L3 • Phase unbalanced • Pressure transducer fault detected • Pump on demand • Pump room alarm • Service required • Undercurrent • Undervoltage • Check weekly test solenoid • Weekly test cut-in reached Visual and audible • Fail to start

Remote Alarm Contacts	DPDT-8A-250V.AC • Power available • Phase reversal • Motor run • Common pump room alarm (field re-assignable)** • Overvoltage • Undervoltage • Phase unbalance • Low pump room temperature • High Pump room temperature • Common motor trouble (field re-assignable)** • Overcurrent • Fail to start • Undercurrent • Ground fault • Free (field programmable)**		
ViZiTouch V2.1 Operator Interface	• Embedded microcomputer with software PLC logic • 7.0” color touch screen (HMI technology) • Upgradable software • Multi-language		
Communication Protocol Capability	• Protocol: Modbus • Connection type: shielded female connector RJ45 • Frame Format: TCP/IP • Addresses: See bulletin MOD-GPx		
Operation	**Automatic Start**	• Start on pressure drop • Remote start signal from automatic device	
	Manual Start	• Start pushbutton • Run test pushbutton • Deluge valve start • Remote start from manual device	
	Stopping	• Manual with Stop pushbutton • Automatic after expiration of minimum run timer ***	
	Timers	Field Adjustable & Visual Countdown	• Minimum run timer ***(off delay) • Sequential start timer (on delay) • Periodic test timer
	Actuation	Visual Indication	• Pressure • Non-pressure
	Mode		• Automatic • Non-automatic

**Tornatech reserves the right to use any of these three alarm points for special specific application requirements.

*** Can only be used if approved by the AHJ

☐ A4	Flow switch provision
☐ A8	Foam pump application w/o pressure transducer and run test solenoid valve
☐ A9	Low zone pump control function
☐ A10	Middle zone pump control function
☐ A11	High zone pump control function
☐ A13	Non-pressure actuated controller w/o pressure transducer and run test solenoid valve
☐ A16	Lockout/interlock circuit from equipment installed inside the pump room
☐ B11	Built in alarm panel (120V.AC supervisory power) providing indication for: • Audible alarm & silence pushbutton for motor run, phase reversal, loss of phase. • Pilot lights for loss of phase & supervisory power available
☐ B11B	Built in alarm panel same as B11 but 220-240VAC supervisory power
☐ B19	High motor temperature thermistor relay c/w visual indication and alarm contact (Form C-SPDT)
☐ B21	Ground fault alarm detection c/w visual indication and alarm contact (Form C-SPDT)
☐ C1	Extra motor run alarm contact (Form C-SPDT)
☐ C4	Periodic test alarm contact (Form C-SPDT)
☐ C6	Low discharge pressure alarm contact (Form C-SPDT)
☐ C7	Low pump room temperature alarm contact (Form C-SPDT)
☐ C10	High water reservoir level alarm contact (Form C-SPDT)
☐ C11	High electric motor temperature alarm contact (Form C-SPDT)
☐ C12	High electric motor vibration c/w visual indication and alarm contact (Form C-SPDT)
☐ C14	Pump on demand/automatic start alarm contact (Form C-SPDT)
☐ C15	Pump fail to start alarm contact (Form C-SPDT)
☐ C16	Control voltage healthy alarm contact (Form C-SPDT)
☐ C17	Flow meter valve loop open c/w visual indication and alarm contact (Form C-SPDT)

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.

☐ C18	High water reservoir level c/w visual indication and alarm contact (Form C-SPDT)
☐ C19	Emergency start alarm contact (Form C-SPDT)
☐ C20	Manual start alarm contact (Form C-SPDT)
☐ C21	Deluge valve start alarm contact (Form C-SPDT)
☐ C22	Remote automatic start alarm contact (Form C-SPDT)
☐ C23	Remote manual start alarm contact (Form C-SPDT)
☐ C24	High pump room temperature alarm contact (Form C-SPDT)
☐ Cx	Additional visual and alarm contact (specify function) (Form C-SPDT)
☐ D1	Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact
☐ D1A	Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact
☐ D5	Pressure transducer and run test solenoid valve for fresh water rated for 0-500PSI (for calibration purposes only)
☐ D5D	Pressure transducer and run test solenoid valve for sea water rated for 0-500PSI
☐ D14	Anti-condensation heater & thermostat
☐ D14A	Anti-condensation heater & humidistat
☐ D14B	Anti-condensation heater & thermostat & humidistat
☐ D15	Tropicalization
☐ D18	CE Mark with factory certificate
☐ D26	Modbus with RTU frame format and RS485 connection
☐ D27	Motor heater connection (external single phase power source and heater on/off contact)
☐ D27A	Motor heater connection (internal single phase power source and heater on/off contact)
☐ D28	Customized drawing set
☐ D34	Field programmable I/O board - 8 Input / 5 output
☐ D35	Field programmable I/O board - 8 Input / 10 output
☐ D36	Redundant pressure transducer for fresh water rated for 0-500PSI (calibrated at 0-300PSI)
☐ D36A	Redundant pressure transducer for sea water rated for 0-500PSI (calibrated at 0-300PSI)
☐ D37	Window kit for operator interface

☐ L01	Other language and English (bilingual)
☐ L02	French
☐ L03	Spanish
☐ L04	German
☐ L05	Italian
☐ L06	Polish
☐ L07	Romanian
☐ L08	Hungarian
☐ L09	Slovak
☐ L10	Croatian
☐ L11	Czech
☐ L12	Portuguese
☐ L13	Dutch

☐ L14	Russian
☐ L15	Turkish
☐ L16	Swedish
☐ L17	Bulgarian
☐ L18	Thai
☐ L19	Indonesian
☐ L20	Slovenian
☐ L21	Danish
☐ L22	Greek
☐ L23	Arabic
☐ L24	Hebrew
☐ L25	Chinese

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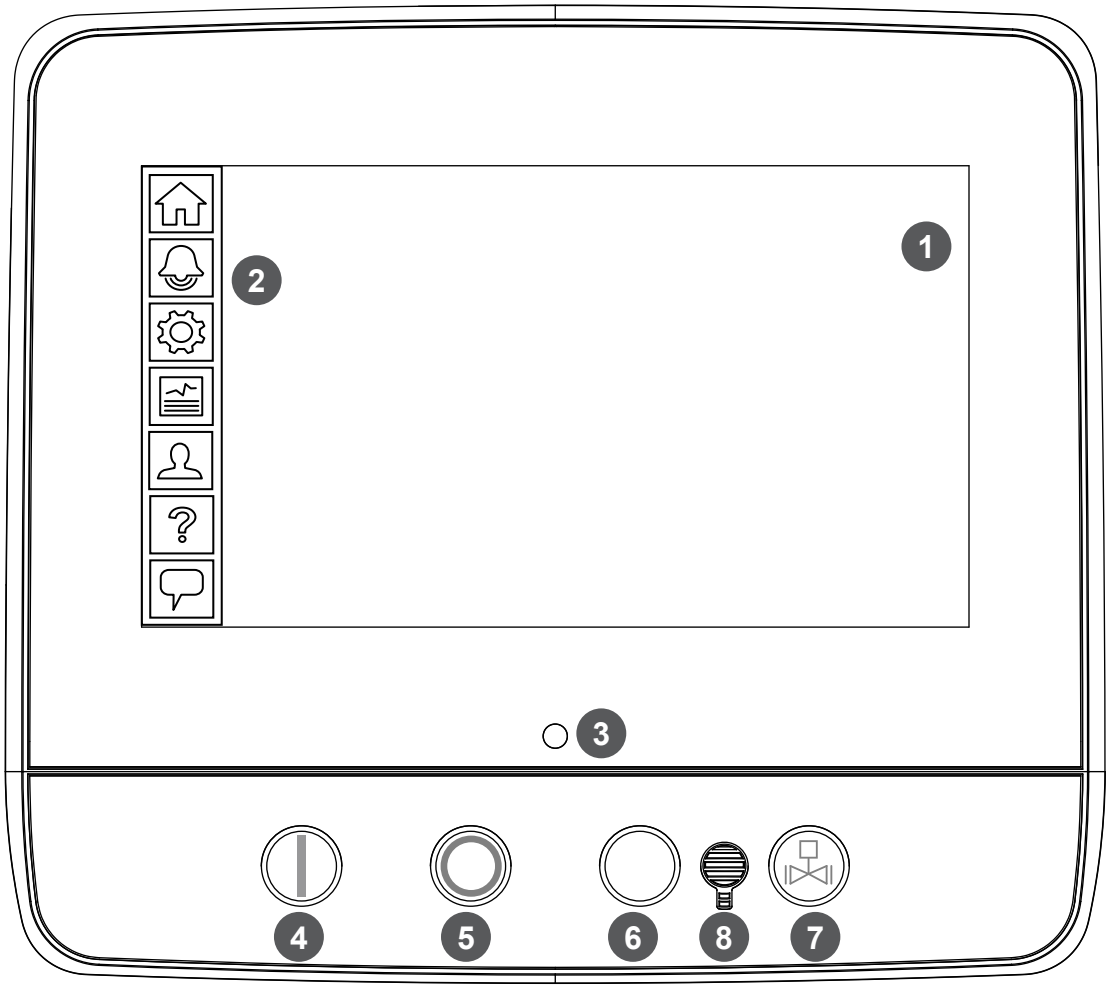
ViZiTouch V2.1 Operator Interface



1 - Color touch screen
2 - Onscreen menu
- HOME page
- ALARM page
- CONFIGURATION page
- HISTORY page
- SERVICE page
- MANUAL page
- LANGUAGES page

3 - Power LED (3 colors)
4 - START button
5 - STOP button
6 - Not Used
7 - RUN TEST button
8 - Alarm buzzer

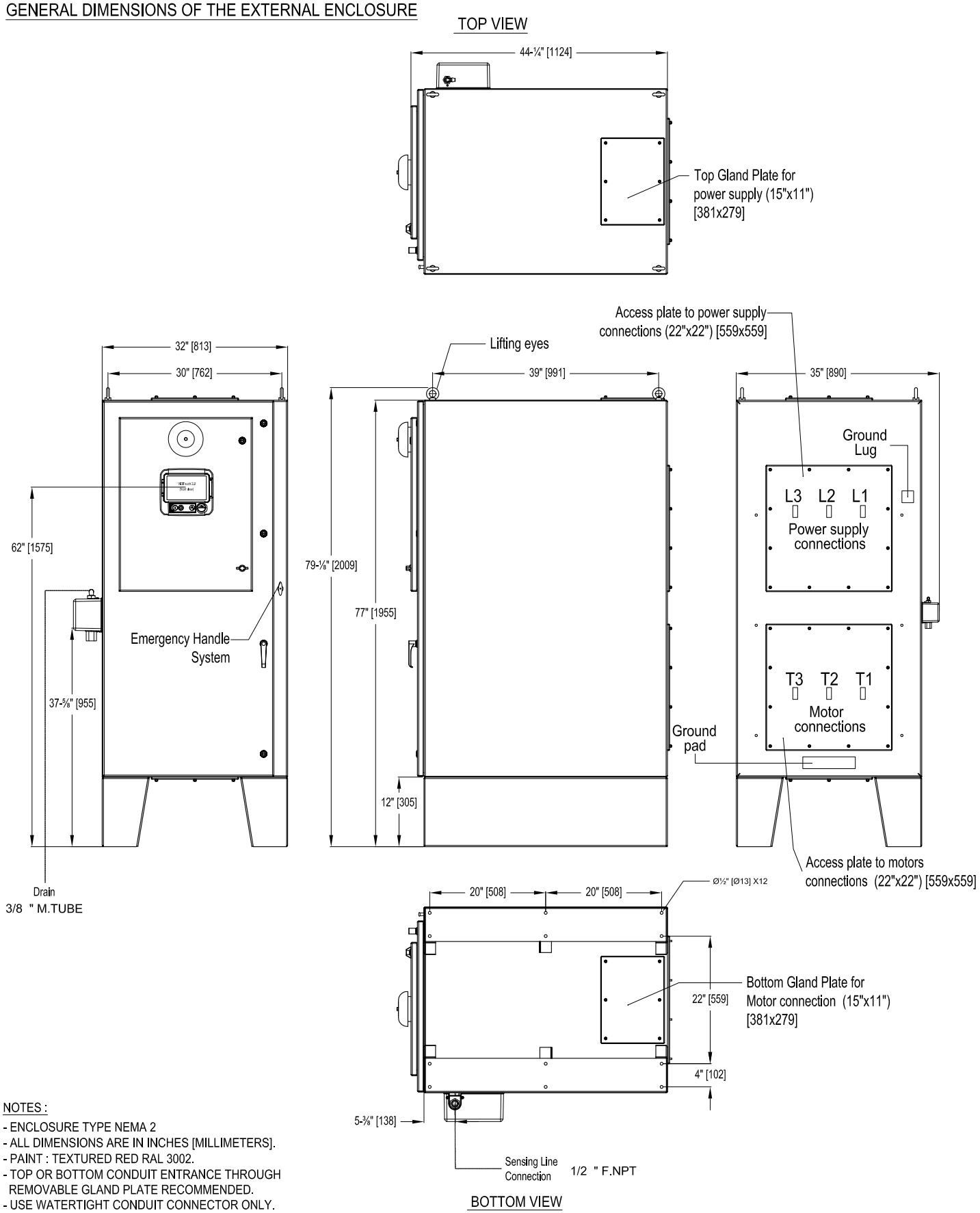
ELECTRIC FIRE PUMP CONTROLLER
MEDIUM VOLTAGE - ACROSS THE LINE

MODEL : MPA

Dimension diagram

BUILT TO LATEST NFPA 20 STANDARD EDITION

GENERAL DIMENSIONS OF THE EXTERNAL ENCLOSURE



NOTES :

- ENCLOSURE TYPE NEMA 2
- ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
- PAINT : TEXTURED RED RAL 3002.
- TOP OR BOTTOM CONDUIT ENTRANCE THROUGH REMOVABLE GLAND PLATE RECOMMENDED.
- USE WATERTIGHT CONDUIT CONNECTOR ONLY.
- PROTECT EQUIPMENT AGAINST DRILLING CHIPS.

TORNATECH

ISO 9001 REGISTERED

c UL us

FM APPROVED

MPA-WS-ViZi

REV.	DATE	DESCRIPTION	APP.
0	31/10/19	FIRST ISSUE	VER.

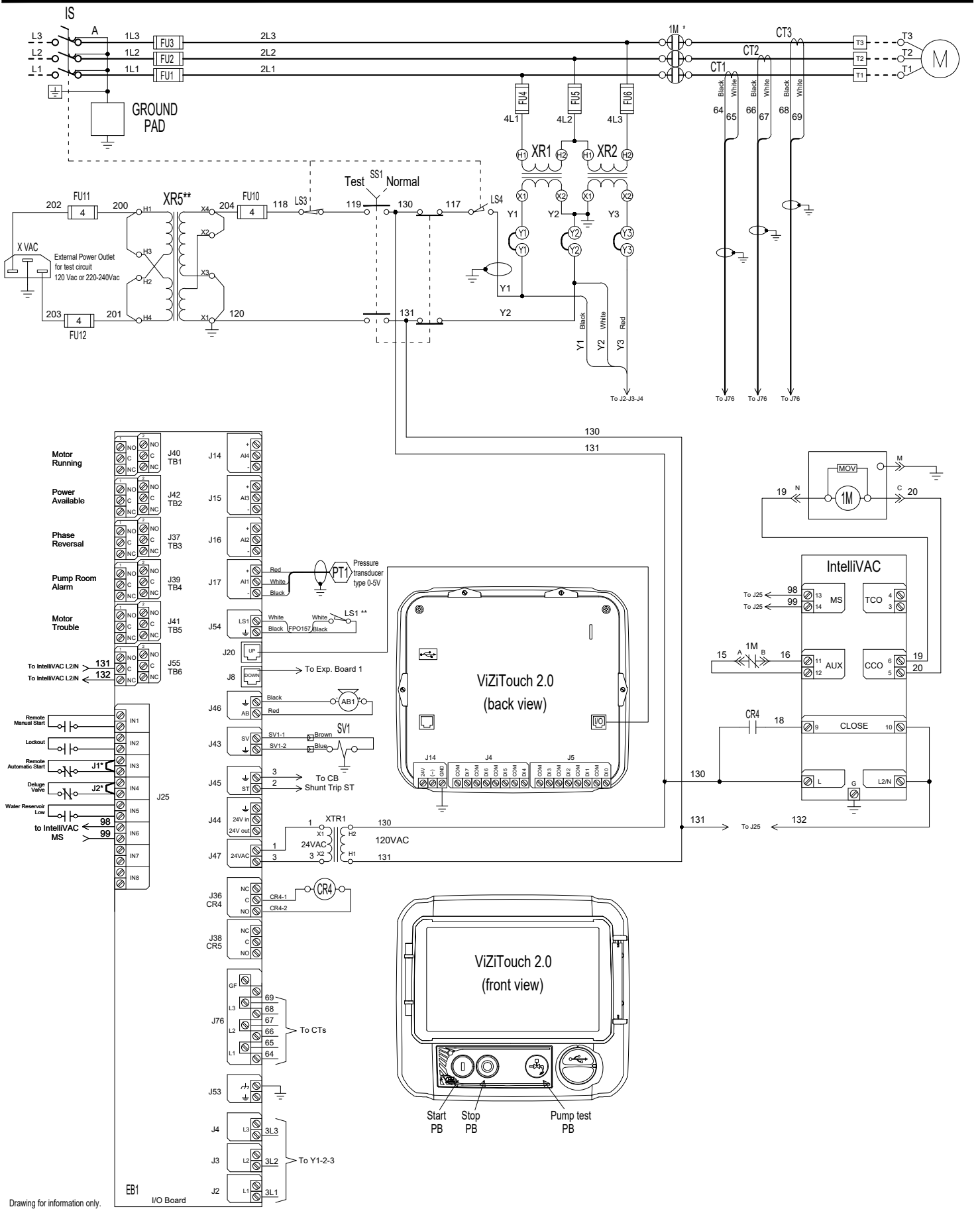
Drawing No. MPA-DI700/E

ELECTRIC FIRE PUMP CONTROLLER
MEDIUM VOLTAGE - ACROSS THE LINE

MODEL : MPA

Wiring schematic

BUILT TO LATEST NFPA 20 STANDARD EDITION



Drawing for information only.
Manufacturer reserves the right to modify this drawing without notice.
For drawing for approval or installation, please contact manufacturer.

* Contact closed when Emergency Start is in ON position

** XR5 only required if 220-240 VAC

MPA-WS-ViZi	0	13/12/19	FIRST ISSUE	VER.
	REV.	DATE	DESCRIPTION	APP.

Drawing No.

MPA-WS701/E

ELECTRIC FIRE PUMP CONTROLLER
MEDIUM VOLTAGE - ACROSS THE LINE

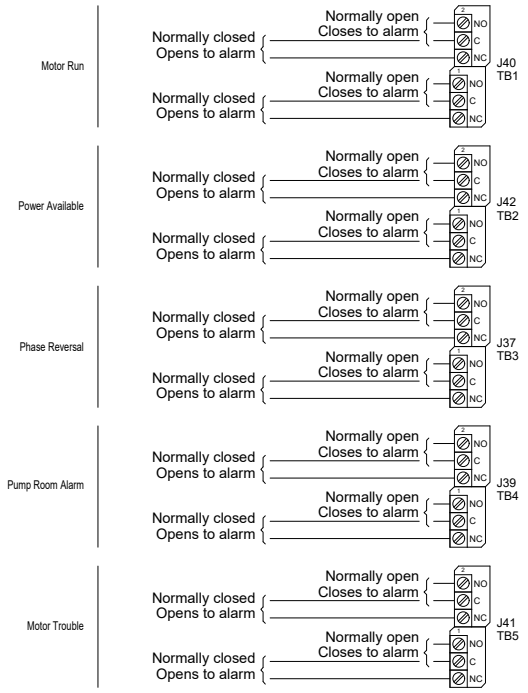
MODEL : MPA

Terminal diagram

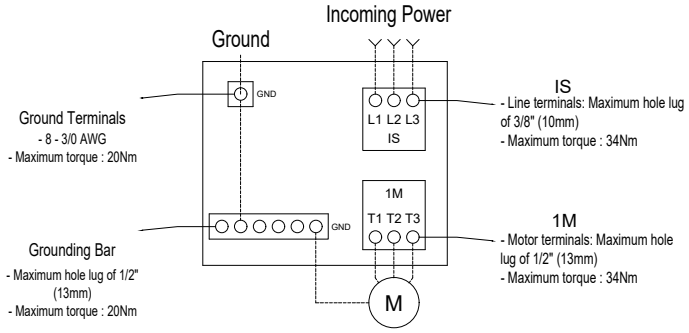
BUILT TO LATEST NFPA 20 STANDARD EDITION

Remote Alarm Terminals (I/O board)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



Power Terminals

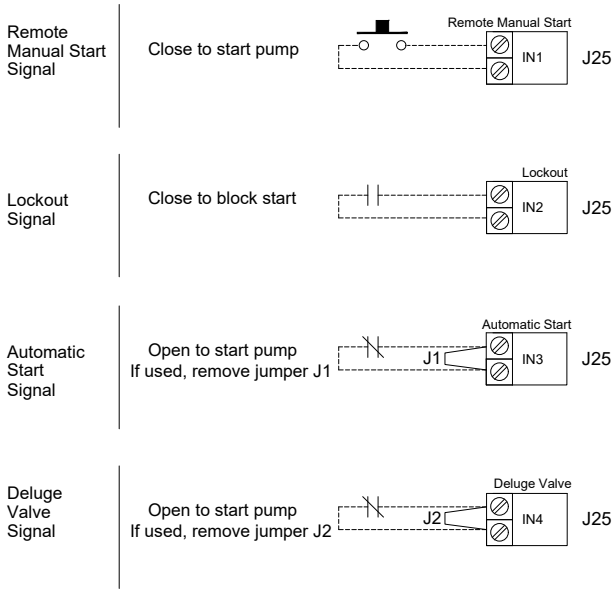


Network Connection (VMB1)

Shielded Female Connector RJ45

Control Terminals (I/O board)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



Alarms Inputs (I/O board)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

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MPA-WS-ViZi

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0	13/12/19	FIRST ISSUE	VER.

Drawing No.
MPA-TD700/E