



TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

VPx Series

Full Service - Variable Speed
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.

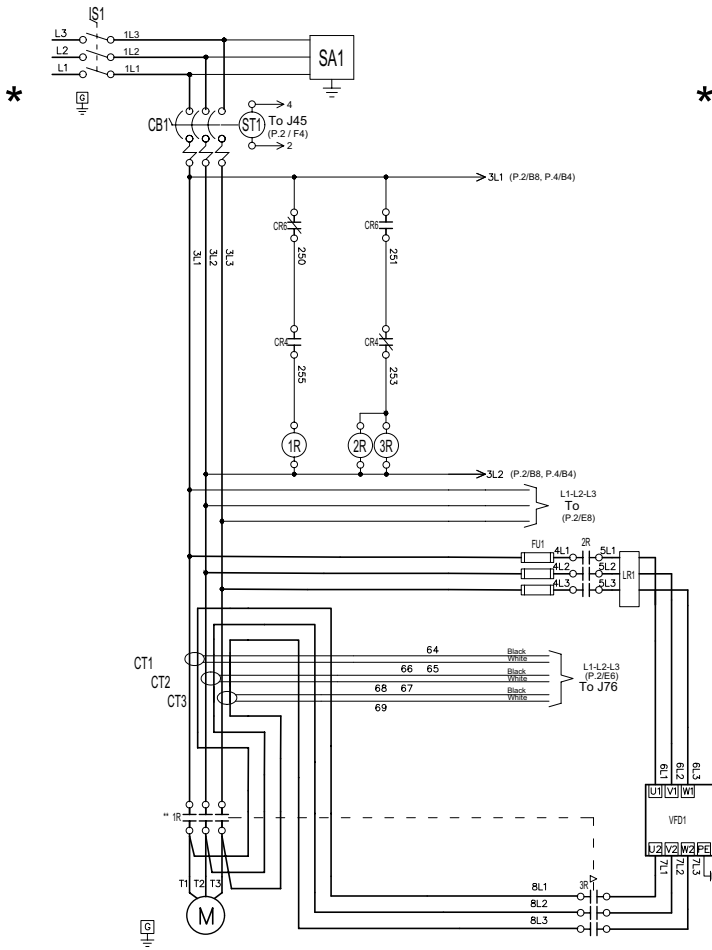


October 2023

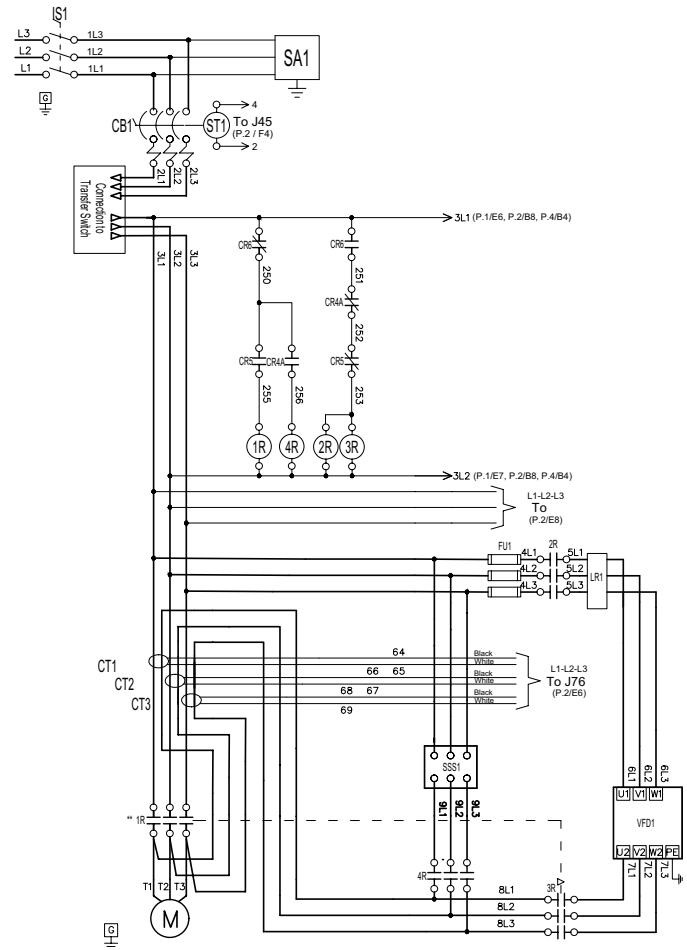


Select Bypass starting method

Model VPA Across the line



Model VPS Soft Start Soft Stop



*From normal incoming power through Disconnecting Means (IS/CB)
 *For Disconnecting Means details see page 3





Technical Data VPx Series Full Service Variable Speed Fire Pump Controller

| | | | | | |
|---|---|---|---|--------------------------|--------------------------|
| Standard, Listings, Approvals and Certifications | Built to NFPA 20 (latest edition) | | | | |
| | Underwriters Laboratory (UL) | UL218 - Fire Pump Controllers | | | |
| | FM Global | Class 1321/1323 | | | |
| Enclosure | Protection Rating | | | | |
| | Standard: NEMA 12 ventilated assembly | | | | |
| | Accessories • Gland plate(s) • Lifting Lugs • Keylock handle | Paint Specifications • Red RAL3002 • Powder coating • Glossy textured finish | | | |
| Shortcircuit Withstand Rating | 200V 60Hz | 208V to 240V 60Hz | 380V to 415V 50 Hz / 60Hz | 440V to 480V 60Hz | 575V to 600V 60Hz |
| | HP (kw) | | | | |
| | 5 to 75 | 5 to 100 | 5 to 350 | 5 to 450 | 5 to 100 |
| | Standard 100kA | | | | Standard 50kA |
| Ambient Temperature Rating | Standard: 4°C to 40°C / 39°F to 104°F | | | | |
| Surge Suppression | Surge arrestor rated to suppress surges above line voltage | | | | |
| Disconnecting Means | <ul style="list-style-type: none"> • Isolating switch and circuit breaker assembly: <ul style="list-style-type: none"> - Door interlocked in the ON position - Isolating switch rated not less than 115% of motor full load current - Circuit breaker continuous rating not less than 115% of motor full load current - Overcurrent sensing non-thermal type, magnetic only - Instantaneous trip setting of not more than 20 times the motor full load current • Common flange mounted operating handle | | | | |
| Service Entrance Rating | Suitable as service entrance equipment | | | | |
| Emergency Start Handle | <ul style="list-style-type: none"> • Flange mounted • Pull and latch activation | <ul style="list-style-type: none"> • Integrated limit switch • Across the line start (direct on line) | | | |
| Locked Rotor Protector | <ul style="list-style-type: none"> • Operate shunt trip to open circuit breaker • Factory set at 600% of motor full load current | | <ul style="list-style-type: none"> • Trip between 8 and 20 seconds | | |
| Electrical Readings | <ul style="list-style-type: none"> • Voltage phase to phase (normal power) • Amperage of each phase when motor is running | | | | |
| Pressure Readings | <ul style="list-style-type: none"> • Continuous system pressure display • Constant pressure output set-point • Cut-in and Cut-out pressure settings | | | | |



Technical Data
VPx Series Full Service Variable Speed
Fire Pump Controller

| | |
|--|--|
| <p>Pressure and Event recorder</p> | <ul style="list-style-type: none"> • Pressure readings with date stamp • Event recording with date stamp • Under regular maintained operation, events are stored in memory for the life of the controller. • Data viewable on operator interface display screen • Downloadable by USB port to external memory device |
| <p>Pressure Sensing</p> | <ul style="list-style-type: none"> • Pressure transducers 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 (standard display at 0-300PSI) • Externally mounted with protective cover |
| <p>Variable Speed Drive Circuit</p> | <ul style="list-style-type: none"> • Variable speed drive (VFD) • Line reactor 5% • Mode selector switch <ul style="list-style-type: none"> • VFD • Bypass |
| <p>Audible Alarm</p> | <p>Alarm buzzer - 85dB at 3 meters</p> |
| <p>Visual Indications</p> | <ul style="list-style-type: none"> • Power available • Motor run • Periodic test • Manual start • Deluge valve start • Remote automatic start • Remote manual start • Emergency start • Pump on demand/Automatic start • Pump room temperature (°F or °C) • Lockout • VFD fault • VFD bypass • VFD Hertz |
| <p>Visual & Audible Alarms</p> | <p>Visual</p> <ul style="list-style-type: none"> • 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 <p>Visual and audible</p> <ul style="list-style-type: none"> • Fail to start |
| <p>Remote Alarm Contacts</p> | <p>DPDT-8A-250V.AC</p> <ul style="list-style-type: none"> • Power available • Phase reversal • Motor run • Common pump room alarm (field re-assignable)** <ul style="list-style-type: none"> • Overvoltage • Undervoltage • Phase unbalance • Low pump room temperature • High Pump room temperature • Common motor trouble (field re-assignable)** <ul style="list-style-type: none"> • Overcurrent • Fail to start • Undercurrent • Ground fault • Overpressure • Bypass mode • VFD failure |

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



Technical Data VPx Series Full Service Variable Speed Fire Pump Controller

| | | | | |
|--|--|---|--|--|
| ViZiTouch V2.1 Operator Interface | <ul style="list-style-type: none"> • Embedded microcomputer with software PLC logic • 7.0" color touch screen (HMI technology) • Upgradable software • Multi-language | | | |
| Communication Protocol Capability | <ul style="list-style-type: none"> • Protocol: Modbus • Connection type: Shielded female connector RJ45 • Frame Format: TCP/IP • Addresses: See Technical Bulletin - Modbus TCP/IP Communication Protocol for Electric Fire Pump Controllers | | | |
| Operation | Automatic Start | <ul style="list-style-type: none"> • Start on pressure drop • Remote start signal from automatic device • Deluge valve start | | |
| | Manual Start | <ul style="list-style-type: none"> • Start pushbutton • Run test pushbutton • Remote start from manual device | | |
| | Stopping | <ul style="list-style-type: none"> • Manual with Stop pushbutton • Automatic after expiration of minimum run timer *** | | |
| | Timers | Field Adjustable & Visual Countdown | <ul style="list-style-type: none"> • Minimum run timer ***(off delay) • Sequential start timer (on delay) • Periodic test timer | |
| | Actuation | Visual Indication | <ul style="list-style-type: none"> • Pressure • Non-pressure | |
| | Mode | | <ul style="list-style-type: none"> • Automatic • Non-automatic | |

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



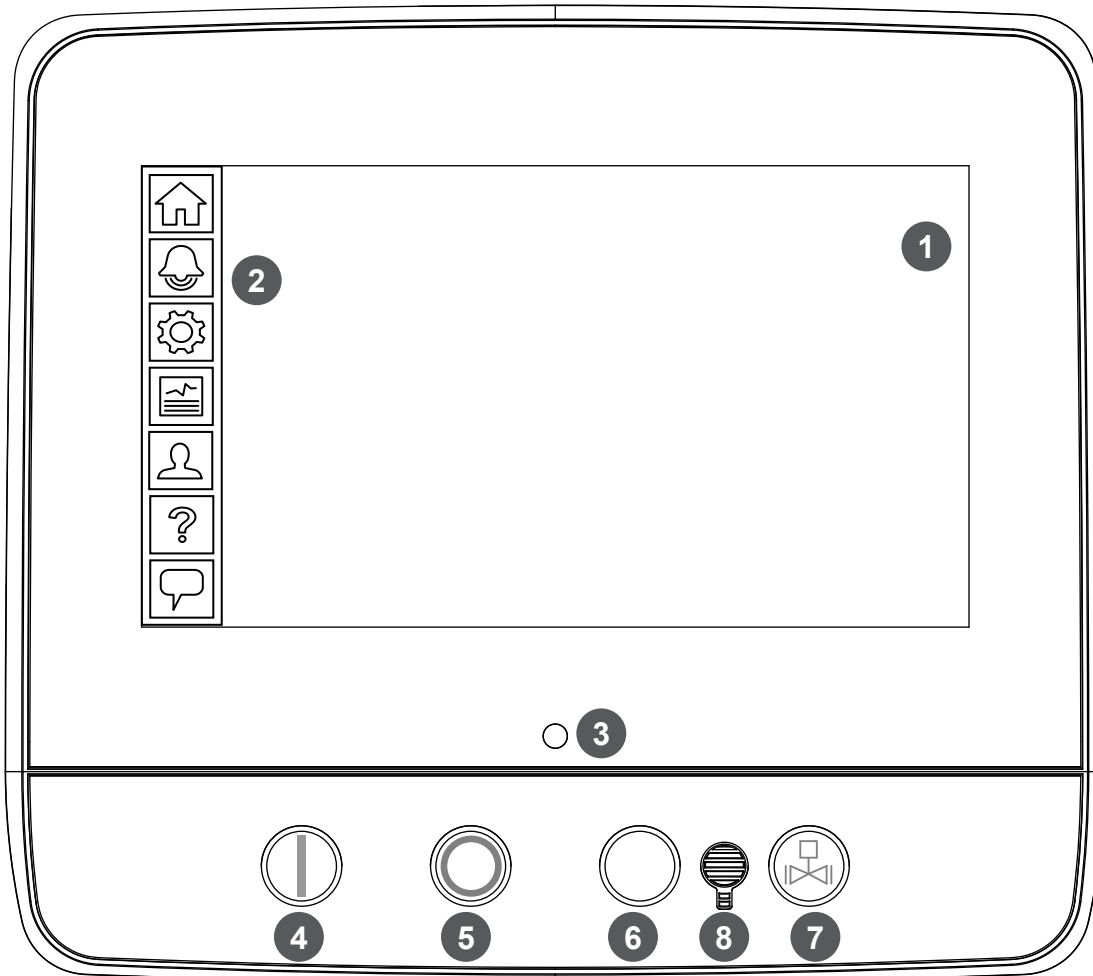
Technical Data VPx Series Full Service Variable Speed Fire Pump Controller

| | |
|------|--|
| 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 |
| B19A | High motor temperature c/w thermostat relay and alarm contacts (DPDT) |
| B19B | High motor temperature c/w PT100 relay and alarm contacts (DPDT) |
| B21 | Ground fault alarm detection c/w visual indication and alarm contact (DPDT) |
| C1 | Extra motor run alarm contact (DPDT) |
| C4 | Periodic test alarm contact (DPDT) |
| C6 | Low discharge pressure alarm contact (DPDT) |
| C7 | Low pump room temperature alarm contact (DPDT) |
| C10 | Low water reservoir level alarm contact (DPDT) |
| C11 | High electric motor temperature alarm contact (DPDT) |
| C12 | High electric motor vibration c/w visual indication and alarm contact (DPDT) |
| C14 | Pump on demand / automatic start alarm contact (DPDT) |
| C15 | Pump fail to start alarm contact (DPDT) |
| C16 | Control voltage healthy alarm contact (DPDT) |
| C17 | Flow meter valve loop open c/w visual indication and alarm contact (DPDT) |
| C18 | High water reservoir level c/w visual indication and alarm contact (DPDT) |

| | |
|------|--|
| C19 | Emergency start alarm contact (DPDT) |
| C20 | Manual start alarm contact (DPDT) |
| C21 | Deluge valve start alarm contact (DPDT) |
| C22 | Remote automatic start alarm contact (DPDT) |
| C23 | Remote manual start alarm contact (DPDT) |
| C24 | High pump room temperature alarm contact (DPDT) |
| C25 | Second set of standard alarm contacts (DPDT) (Typical for city of Los Angeles and Denver) |
| Cx | Additional visual and alarm contact (Specify function) (DPDT) |
| 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 factory 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 |
| 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 |
| D34A | Field programmable I/O board - 5 Input / 5 output |
| D36 | Redundant pressure transducer for fresh water rated for 0-500PSI |
| D36A | Redundant pressure transducer for sea water rated for 0-500PSI |

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

ViZiTouch V2.1 Operator Interface



- | | |
|------------------------|--------------------------|
| 1 - Color touch screen | 3 - Power LED (3 colors) |
| 2 - Onscreen menu | 4 - START button |
| • HOME page | 5 - STOP button |
| • ALARM page | 6 - Not Used |
| • CONFIGURATION page | 7 - RUN TEST button |
| • HISTORY page | 8 - Alarm buzzer |
| • SERVICE page | |
| • MANUAL page | |
| • LANGUAGES page | |



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| | | | |
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| BY | | DD/MM/YY | |
| DRAWN BY | ZS | 10/07/23 | |
| FINAL APPROVAL | FC | 10/07/23 | |

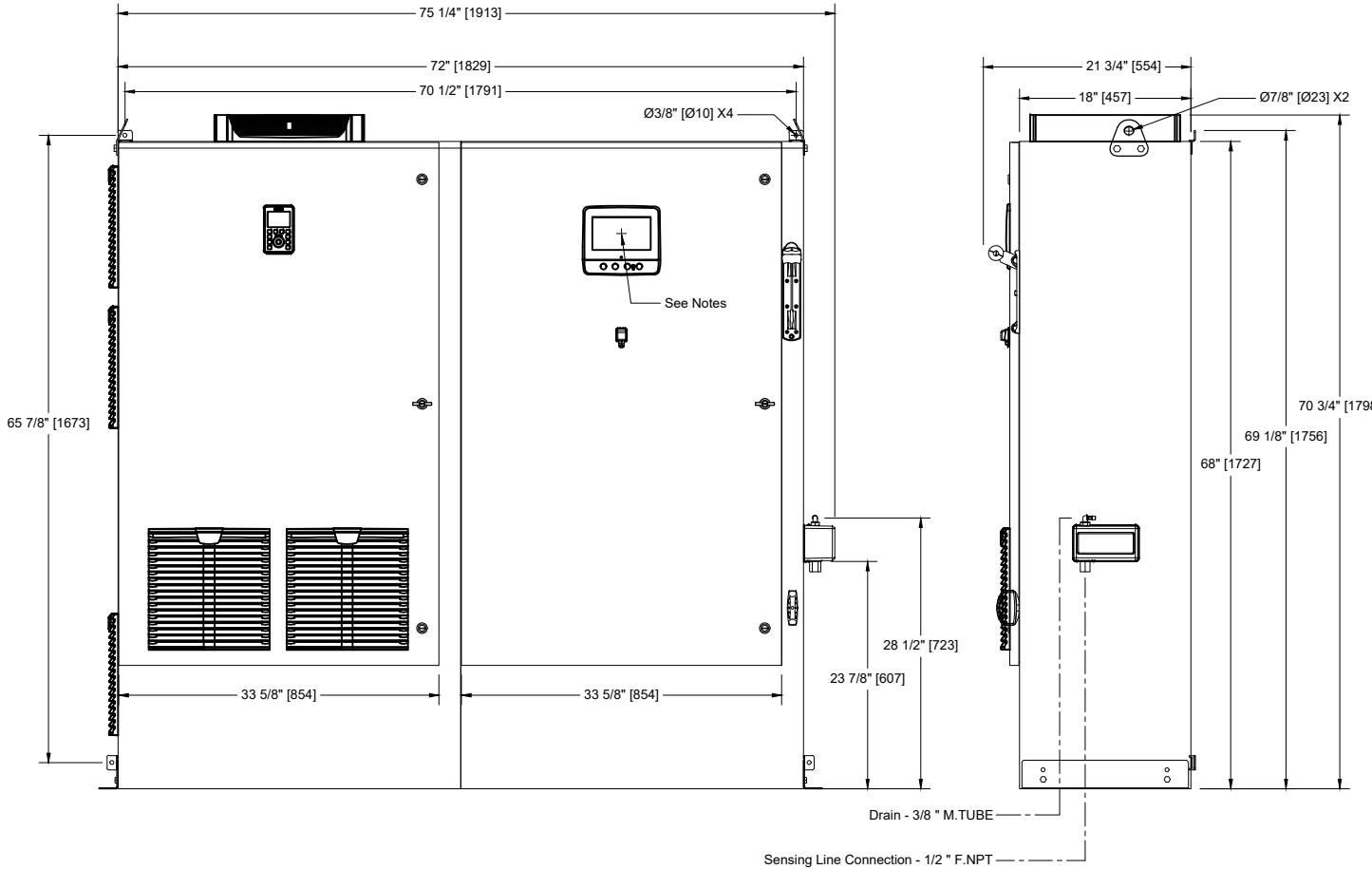
ELECTRIC FIRE PUMP CONTROLLER

MODEL: VPA / VPS

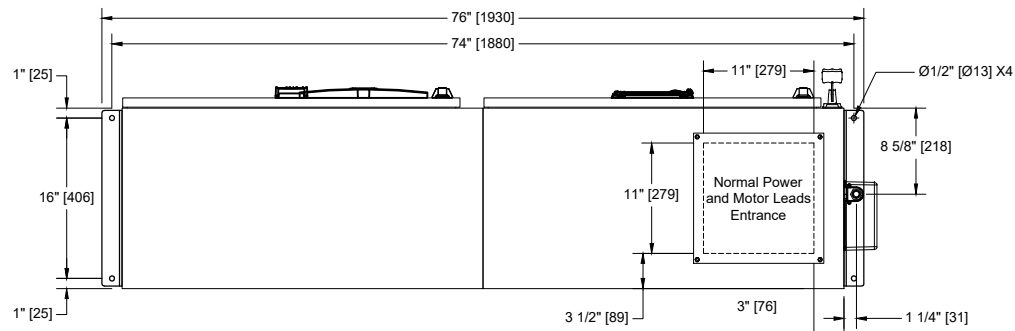
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



| | |
|----------------|--------------|
| DRAWING NUMBER | VPX-DI803 /E |
| DWG REV. 0 | |
| SHEET 1 OF 1 | |



| Voltage | Min HP | Max HP |
|-----------------|--------|--------|
| 200 | 40 | 75 |
| 208 - 240 | 40 | 100 |
| 380 - 400 - 415 | 50 | 150 |
| 440 - 480 | 60 | 200 |
| 600 | 75 | 100 |



Notes:

- Standard: NEMA 12
- Standard paint : textured red RAL 3002.
- All dimensions are in inches [millimeters].
- Center of screen: 29-5/8" [751] from bottom (no feet).
- Bottom conduit entrance through removable gland plate recommended.
- Use watertight conduit and connector only.
- Protect equipment against drilling chips.
- Door swing equal to door width.



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| FINAL APPROVAL | FC | 10/07/23 |

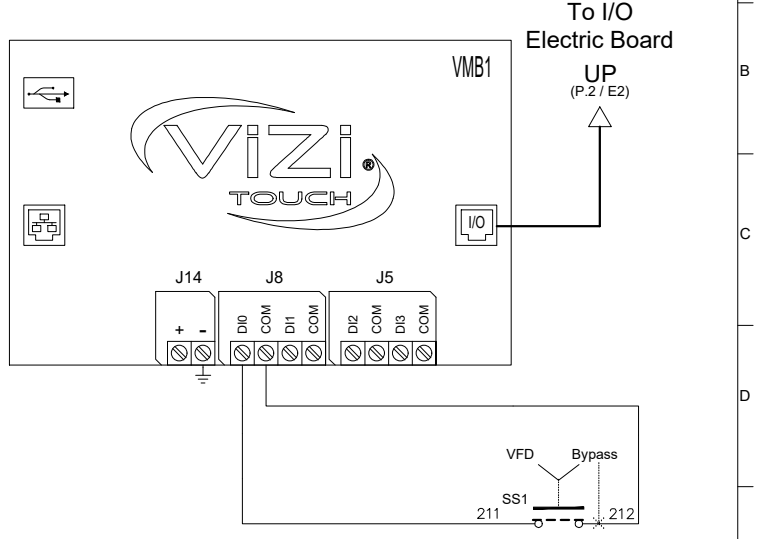
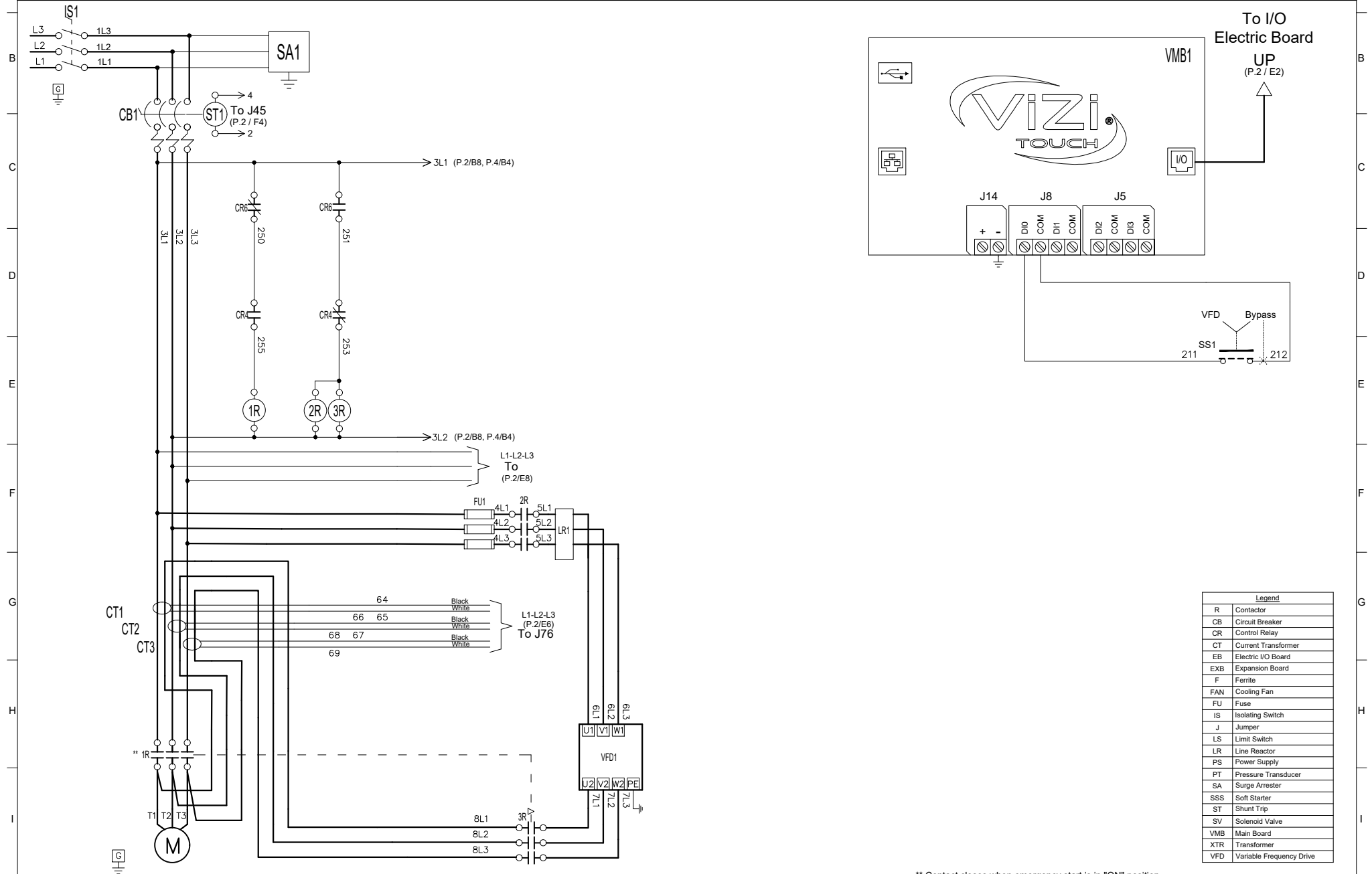
ELECTRIC FIRE PUMP CONTROLLER VARIABLE SPEED / ACROSS THE LINE BYPASS STARTING

MODEL: VPA

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



| | |
|----------------|---------------|
| DRAWING NUMBER | VPA-WS800 / E |
| DWG REV. 0 | |
| SHEET 1 OF 4 | |



| Legend | |
|--------|--------------------------|
| R | Contact |
| CB | Circuit Breaker |
| CR | Control Relay |
| CT | Current Transformer |
| EB | Electric I/O Board |
| EXB | Expansion Board |
| F | Ferrite |
| FAN | Cooling Fan |
| FU | Fuse |
| IS | Isolating Switch |
| J | Jumper |
| LS | Limit Switch |
| LR | Line Reactor |
| PS | Power Supply |
| PT | Pressure Transducer |
| SA | Surge Arrester |
| SSS | Soft Starter |
| ST | Shunt Trip |
| SV | Solenoid Valve |
| VMB | Main Board |
| XTR | Transformer |
| VFD | Variable Frequency Drive |

** Contact closes when emergency start is in "ON" position.



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| DRAWN BY ZS | 10/07/23 |
| FINAL APPROVAL FC | 10/07/23 |

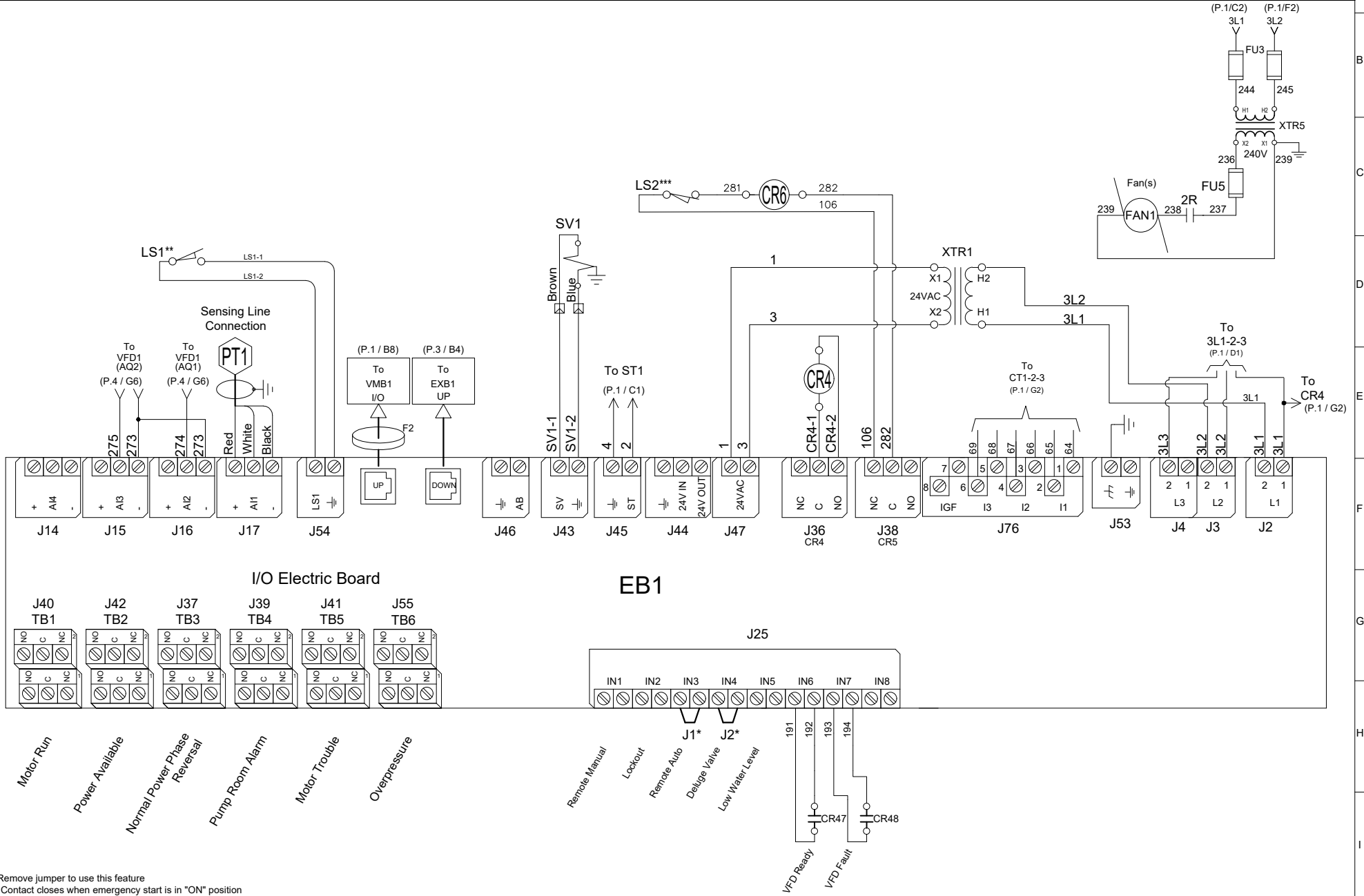
ELECTRIC FIRE PUMP CONTROLLER VARIABLE SPEED / ACROSS THE LINE BYPASS STARTING

MODEL: VPA

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



| | |
|----------------|--------------|
| DRAWING NUMBER | VPA-WS800 /E |
| DWG REV. 0 | |
| SHEET 2 OF 4 | |



I/O Electric Board

EB1

- Motor Run
- Power Available
- Normal Power Phase Reversal
- Pump Room Alarm
- Motor Trouble
- Overpressure

- Remote Manual
- Lockout
- Remote Auto
- Deluge Valve
- Low Water Level
- VFD Ready
- VFD Fault

* Remove jumper to use this feature
** Contact closes when emergency start is in "ON" position



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| FINAL APPROVAL | FC | 10/07/23 | |

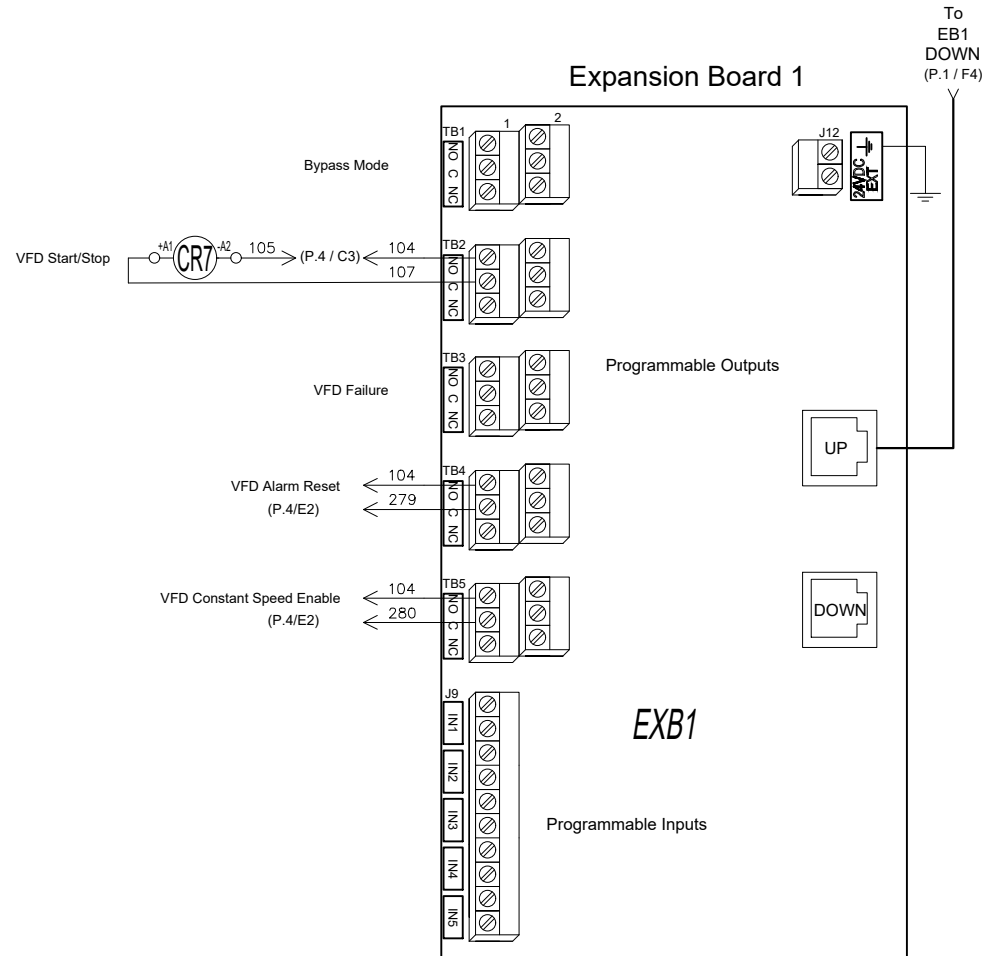
ELECTRIC FIRE PUMP CONTROLLER VARIABLE SPEED / ACROSS THE LINE BYPASS STARTING

MODEL: VPA

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



| | |
|----------------|--------------|
| DRAWING NUMBER | VPA-WS800 /E |
| DWG REV. 0 | |
| SHEET 3 OF 4 | |





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| FINAL APPROVAL | FC | 10/07/23 |

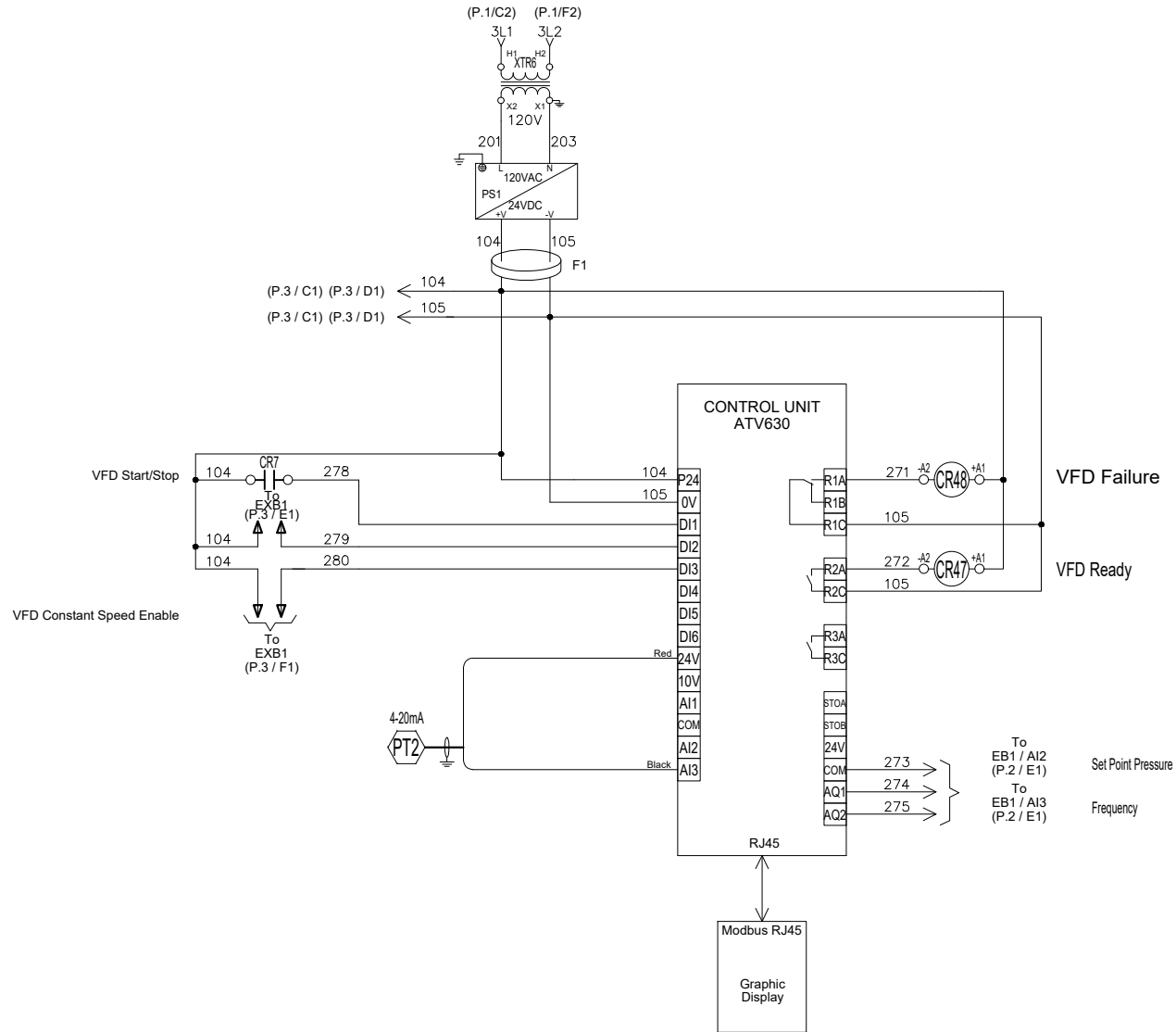
ELECTRIC FIRE PUMP CONTROLLER VARIABLE SPEED / ACROSS THE LINE BYPASS STARTING

MODEL: VPA

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



| | |
|----------------|--------------|
| DRAWING NUMBER | VPA-WS800 /E |
| DWG REV. 0 | |
| SHEET 4 OF 4 | |





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ELECTRIC FIRE PUMP CONTROLLER

MODEL: VPA / VPS

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



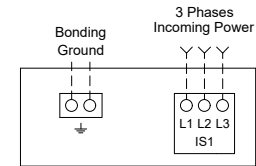
| | |
|----------------|--------------|
| DRAWING NUMBER | VPX-TD800 /E |
| DWG REV. 0 | |
| SHEET 1 OF 1 | |

COPPER CONDUCTORS for Isolating Switch (IS1).

Field Wiring According to Bending Space (AWG or MCM). Terminals L1 - L2 - L3

| Bending Space | 5" (127 mm) | | | | | | | 8" (203 mm) | | | 12" (305 mm) | |
|---------------|----------------|----------------|----------------|----------------|----------------|---------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| HP Voltage | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 |
| 200 | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (2 to 1/0) | 1x (1/0 to 3/0) | 1x (3/0 to 250) | 1x (4/0 to 250) | 2x (1/0 to 500) | ----- |
| 208 | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (2 to 1/0) | 1x (1/0 to 3/0) | 1x (3/0 to 250) | 1x (4/0 to 250) | 2x (1/0 to 500) | 2x (2/0 to 500) |
| 220 to 240 | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (1 to 3/0) | 1x (2/0 to 3/0) | 1x (3/0 to 250) | 1x (250) | 2x (2/0 to 500) |
| 380 to 416 | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (3 to 1/0) | 1x (1/0 to 3/0) | 1x (3/0 to 250) |
| 440 to 480 | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (1 to 3/0) | 1x (2/0 to 3/0) |
| 600 | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (1 to 3/0) |
| | | | | | | | | | | | 5" (127 mm) | 8" (203 mm) |

Power Terminals



| Bending Space | 12" (305 mm) | | 16" (406 mm) | | | | | |
|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| HP Voltage | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
| 380 to 416 | 1x (250) | 2x (1/0 to 500) | 2x (3/0 to 500) | 2x (4/0 to 500) | 2x (300 to 500) | 2x (400 to 500) | ----- | ----- |
| 440 to 480 | 1x (3/0 to 250) | 1x (4/0 to 250) | 2x (1/0 to 500) | 2x (3/0 to 500) | 2x (4/0 to 500) | 2x (300 to 500) | 2x (350 to 500) | 2x (400 to 500) |
| Bending Space | 8" (203 mm) | | 12" (305 mm) | | | | | |

ALUMINUM CONDUCTORS for Isolating Switch (IS1).

Field Wiring According to Bending Space (AWG or MCM). Terminals L1 - L2 - L3

| Bending Space | 5" (127 mm) | | | | | | | 8" (203 mm) | | 10" (254 mm) | 12" (305 mm) | |
|---------------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|-----------------|-----------------|---------------------------------|-------------------|-----------------|
| HP Voltage | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 |
| 200 | 1x (10 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (1 to 1/0) | 1x (1/0) | 1x (3/0) | 1x (4/0 to 250) | 1x (300)** or 1x (250) 90°C* | 2x (2/0 to 500) | ----- |
| 208 | 1x (10 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (1 to 1/0) | 1x (1/0) | 1x (3/0) | 1x (4/0 to 250) | 1x (300)** or 1x (250) 90°C* | 2x (2/0 to 500) | 2x (4/0 to 500) |
| 220 to 240 | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (3 to 1/0) | 1x (2 to 1/0) | 1x (1 to 1/0) | 1x (2/0 to 3/0) | 1x (3/0) 90°C* | 1x (250) | 1x (350)** N/A | 2x (3/0 to 500) |
| 380 to 416 | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (4 to 1/0) | 1x (2 to 1/0) | 1x (1 to 1/0) | 1x (1/0) | 1x (3/0) | 1x (250 to 350) |
| 440 to 480 | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (2 to 1/0) | 1x (1 to 1/0) | 1x (1/0 to 3/0) | 1x (3/0) |
| 600 | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (10 to 1/0) | 1x (8 to 1/0) | 1x (6 to 1/0) | 1x (6 to 1/0) | 1x (4 to 1/0) | 1x (4 to 1/0) | 1x (2 to 1/0) | 1x (1 to 1/0) | 1x (2/0 to 3/0) |
| | | | | | | | | | | | 5" (127 mm) | 8" (203 mm) |

| Bending Space | 12" (305 mm) | | 16" (406 mm) | | | | | |
|---------------|--------------|-------------------------------------|-----------------|-----------------|-----------------|-------------------------------------|----------|----------------|
| HP Voltage | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
| 380 to 416 | 1x (350)** | 2x (3/0 to 500) | 2x (4/0 to 500) | 2x (300 to 500) | 2x (500) | 3x (300 to 500)** 2x (500) 90°C* | ----- | ----- |
| 440 to 480 | 1x (250) | 1x (300 to 350)** 1x (250) 90°C* | 2x (3/0 to 500) | 2x (250 to 500) | 2x (300 to 500) | 2x (400 to 500) | 2x (500) | 2x (500) 90°C* |
| Bending Space | 8" (203 mm) | | 12" (305 mm) | | | | | |

Notes:

- For proper wire sizing, refer to NFPA70 and NEC (USA) or CEC (Canada) or local code.
- Controller suitable for service entrance in USA.
- For more accurate motor connections refer to motor manufacturer or motor nameplate.
- Controller is phase sensitive. Incoming lines must be connected in ZS sequence.

Drawing for information only.
Manufacturer reserves the right to modify this drawing without notice.
Contact manufacturer for "As Built" drawing.

*For standard enclosure, use 90°C aluminium wire. Consult Factory for Use of Conductors Rated Lower than 90°C.

** Consult Factory



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| | | | |
|----------------|----|----------|--|
| BY | | DD/MM/YY | |
| DRAWN BY | ZS | 10/07/23 | |
| FINAL APPROVAL | FC | 10/07/23 | |

ELECTRIC FIRE PUMP CONTROLLER

MODEL: VPA / VPS

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



| | |
|----------------|--------------|
| DRAWING NUMBER | VPX-TD801 /E |
| DWG REV. 0 | |
| SHEET 1 OF 1 | |

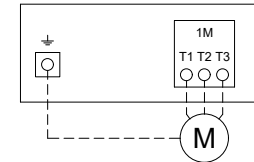
COPPER CONDUCTORS for Motor Connection (1M).

Field Wiring According to Bending Space (AWG or MCM). Terminals T1 - T2 - T3

| HP Voltage | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 |
|---------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 200 | 1x (10 to 2) | 1x (8 to 2) | 1x (8 to 2) | 1x (6 to 2) | 1x (4 to 2) | 1x (3 to 2/0) | 1x (2 to 2/0) | 1x (1/0 to 3/0) | 1x (3/0) | 1x (4/0 to 300) | 1x (300) | ----- |
| 208 | 1x (10 to 2) | 1x (8 to 2) | 1x (8 to 2) | 1x (6 to 2) | 1x (4 to 2) | 1x (3 to 2/0) | 1x (2 to 2/0) | 1x (1/0 to 3/0) | 1x (3/0) | 1x (4/0 to 300) | 1x (300) | 2x (2/0 to 300) |
| 220 to 240 | 1x (10 to 2) | 1x (10 to 2) | 1x (8 to 2) | 1x (6 to 2) | 1x (4 to 2) | 1x (4 to 2/0) | 1x (3 to 2/0) | 1x (1/0 to 3/0) | 1x (2/0 to 3/0) | 1x (3/0) | 1x (250 to 300) | 2x (2/0 to 300) |
| 380 to 416 | 1x (10 to 2) | 1x (10 to 2) | 1x (10 to 2) | 1x (8 to 2) | 1x (8 to 2) | 1x (6 to 2) | 1x (6 to 1/0) | 1x (4 to 2) | 1x (3 to 2/0) | 1x (1 to 2/0) | 1x (1/0 to 3/0) | 1x (3/0) |
| 440 to 480 | 1x (10 to 2) | 1x (10 to 2) | 1x (10 to 2) | 1x (10 to 2) | 1x (8 to 2) | 1x (8 to 2) | 1x (6 to 2) | 1x (6 to 2) | 1x (4 to 2/0) | 1x (3 to 2/0) | 1x (1 to 1/0) | 1x (2/0 to 3/0) |
| 600 | 1x (10 to 2) | 1x (10 to 2) | 1x (10 to 2) | 1x (10 to 2) | 1x (10 to 2) | 1x (8 to 2) | 1x (8 to 2) | 1x (6 to 2) | 1x (6 to 2) | 1x (4 to 2/0) | 1x (3 to 1/0) | 1x (1 to 1/0) |

| HP Voltage | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 380 to 416 | 1x (250 to 300) | 1x (300) | 2x (3/0 to 300) | 2x (4/0 to 300) | 2x (300) | 2x (400 to 500) | ----- | ----- |
| 440 to 480 | 1x (3/0) | 1x (4/0 to 300) | 2x (1/0 to 300) | 2x (3/0 to 300) | 2x (4/0 to 300) | 2x (300) | 2x (350 to 500) | 2x (400 to 600) |

Motor Terminals



Models: VPA / VPS

ALUMINUM CONDUCTORS for Contactor (1M).

Field Wiring According to Bending Space (AWG or MCM). Terminals T1 - T2 - T3

| HP Voltage | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 |
|---------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|--------------------|------------------|------------------|-----------------|-----------------|-----------------|
| 200 | 1x (10 to 2/0) ** | 1x (10 to 2/0) ** | 1x (6 to 2/0) ** | 1x (4 to 2/0) ** | 1x (2 to 2/0) ** | 1x (1 to 2/0) ** | 1x (1/0 to 2/0) ** | 1x (2/0) 90°C * | Consult Factory | 1x (300) | 1x (300) 90°C * | ----- |
| 208 | 1x (10 to 2/0) ** | 1x (10 to 2/0) ** | 1x (6 to 2/0) ** | 1x (4 to 2/0) ** | 1x (2 to 2/0) ** | 1x (1 to 2/0) ** | 1x (1/0 to 2/0) ** | 1x (2/0) 90°C * | Consult Factory | 1x (300) | 1x (300) 90°C * | 2x (4/0 to 300) |
| 220 to 240 | 1x (10 to 2/0) ** | 1x (10 to 2/0) ** | 1x (8 to 2/0) ** | 1x (4 to 2/0) ** | 1x (3 to 2/0) ** | 1x (2 to 2/0) ** | 1x (1 to 2/0) ** | 1x (2/0) | 1x (3/0) 90°C * | Consult Factory | 1x (300) 90°C * | 2x (3/0 to 300) |
| 380 to 416 | 1x (12 to 2/0) ** | 1x (12 to 2/0) ** | 1x (10 to 2/0) ** | 1x (8 to 2/0) ** | 1x (6 to 2/0) ** | 1x (6 to 2/0) ** | 1x (4 to 2/0) ** | 1x (2 to 2/0) ** | 1x (1 to 1/0) | 1x (1/0) | 1x (3/0) | Consult Factory |
| 440 to 480 | 1x (12 to 2/0) ** | 1x (12 to 2/0) ** | 1x (10 to 2/0) ** | 1x (10 to 2/0) ** | 1x (8 to 2/0) ** | 1x (6 to 2/0) ** | 1x (6 to 2/0) ** | 1x (4 to 2/0) ** | 1x (2 to 1/0) | 1x (1 to 1/0) | 1x (1/0) | 1x (3/0) |
| 600 | 1x (12 to 2/0) ** | 1x (12 to 2/0) ** | 1x (12 to 2/0) ** | 1x (10 to 2/0) ** | 1x (10 to 2/0) ** | 1x (8 to 2/0) ** | 1x (8 to 2/0) ** | 1x (4 to 2/0) ** | 1x (4 to 2/0) ** | 1x (2 to 1/0) | 1x (1 to 1/0) | Consult Factory |

| HP Voltage | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------|----------|
| 380 to 416 | 1x (300) 90°C * | Consult Factory | 2x (4/0 to 300) | 2x (300) | Consult Factory | 2x (600) | ----- | ----- |
| 440 to 480 | Consult Factory | 1x (300) | 2x (3/0 to 300) | 2x (250 to 300) | 2x (300) | 2x (300) 90°C * | 2x (500) | 2x (600) |

*For standard enclosure, use 90°C aluminium wire. Consult Factory for Use of Conductors Rated Lower than 90°C.

** Option V659 required.

Notes:

- 1 - For proper wire sizing, refer to NFPA70 and NEC (USA) or CEC (Canada) or local code.
- 2 - Controller suitable for service entrance in USA.
- 3 - For more accurate motor connections refer to motor manufacturer or motor nameplate.
- 4 - Controller is phase sensitive. Incoming lines must be connected in ZS sequence.

Drawing for information only.
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Contact manufacturer for "As Built" drawing.



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Subject to change without notice.

| | | | |
|----------------|----|----------|--|
| BY | | DD/MM/YY | |
| DRAWN BY | ZS | 10/07/23 | |
| FINAL APPROVAL | FC | 10/07/23 | |

ELECTRIC FIRE PUMP CONTROLLER

MODEL: VPA

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

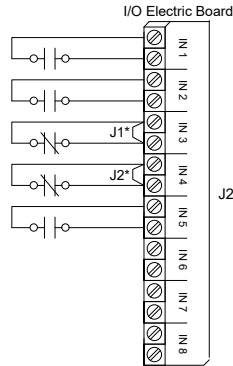


| | |
|----------------|--------------|
| DRAWING NUMBER | VPA-TD800 /E |
| DWG REV. 0 | |
| SHEET 1 OF 1 | |

Field Connections

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

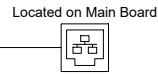
- Remote Manual
- Lockout
- Remote Auto
- Deluge Valve
- Low Water Level



Network Connections

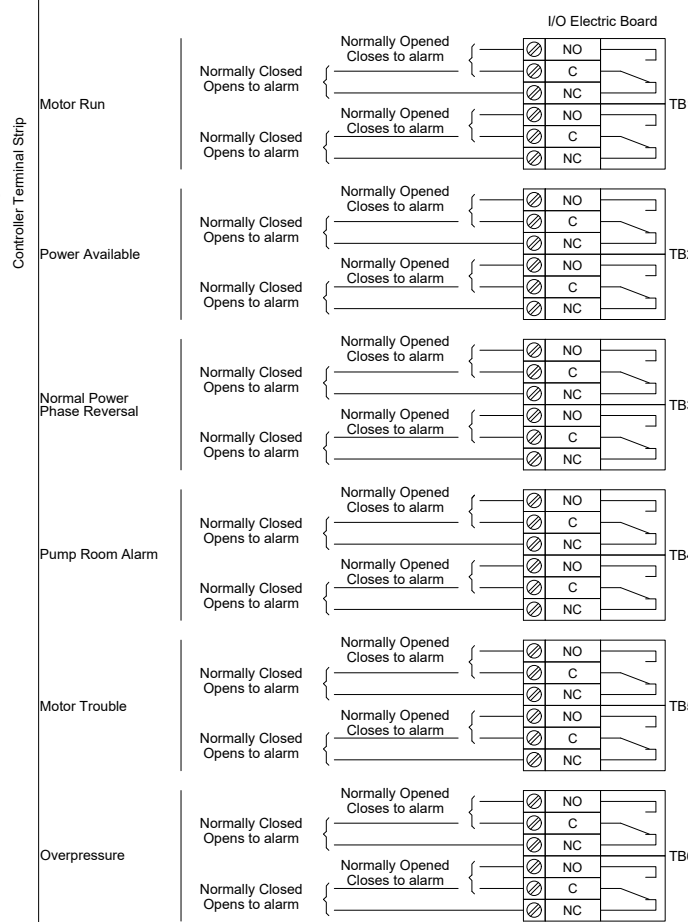
Terminals Wire Size:
Shielded Female Connector RJ45

Modbus TCP/IP RJ45



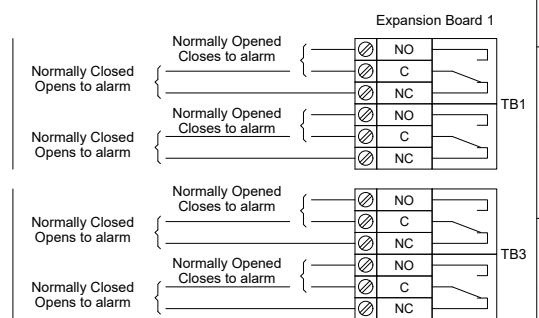
Alarm Contacts

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



Alarm Contacts

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



* Remove jumper to use this feature