



TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

Model GPL

Limited Service Full Voltage
Across the Line Start
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.

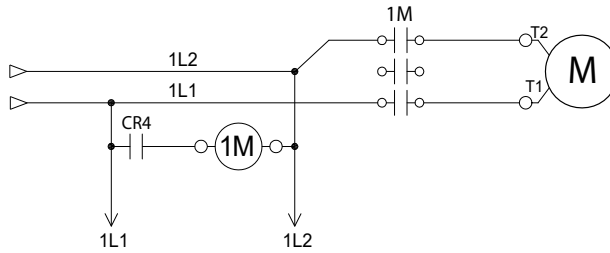


N.Y.C.
APPROVED



March 2023

From normal incoming power through Disconnecting Means (IS/CB)*



| | | |
|---|--|---|
| Standard, Listings, Approvals and Certifications | Built to NFPA 20 (latest edition) | |
| | Underwriters Laboratory (UL) • UL218 - Fire Pump Controllers | |
| | New York City | Accepted for use in the City of New York by the Department of Buildings |
| | Optional | |
| | <input type="checkbox"/> CE Mark | Various EN, IEC & CEE directives and standards |
| Enclosure | Protection Rating | |
| | <input type="checkbox"/> Standard: NEMA 2 | |
| | Optional | |
| | <input type="checkbox"/> NEMA 12 | <input type="checkbox"/> NEMA 4X-304 sst painted |
| | <input type="checkbox"/> NEMA 3 | <input type="checkbox"/> NEMA 4X-304 sst brushed finish |
| | <input type="checkbox"/> NEMA 3R | <input type="checkbox"/> NEMA 4X-316 sst painted |
| | <input type="checkbox"/> NEMA 4 | <input type="checkbox"/> NEMA 4X-316 sst brushed finish |
| | Accessories | Paint Specifications |
| | <ul style="list-style-type: none"> • Bottom entry gland plate • Lifting Lugs • Keylock handle | <ul style="list-style-type: none"> • Red RAL3002 • Powder coating • Glossy textured finish |

| | |
|--------------------------------------|---------------------------|
| Shortcircuit Withstand Rating | 220V to 240V - 1ph - 60Hz |
| <input type="checkbox"/> Standard | 65,000A |
| <input type="checkbox"/> Optional | n/a |



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| Limitations | <ul style="list-style-type: none"> • Across the line starting only • Horsepower rating of maximum 30hp • Can only be installed where acceptable by the authority having jurisdiction • Not accepted in FM insured property |
| Ambient Temperature Rating | <p>Standard: <input type="checkbox"/> 4°C to 40°C / 39°F to 104°F</p> <p>Optional: <input type="checkbox"/> 4°C to 55°C / 39°F to 131°F</p> <p>Controllers built in Dubai, UAE (Tornatech FZE) are supplied standard with 55°C rating.</p> |
| Surge Suppression | Surge arrestor rated to suppress surges above line voltage |
| Disconnecting Means | <ul style="list-style-type: none"> • Door interlocked in the ON position • 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 • 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 • 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 • Cut-in and Cut-out pressure settings |
| Pressure and Event recorder | <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 |
| Pressure Sensing | <ul style="list-style-type: none"> • 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 (standard display at 0-300PSI) • Externally mounted with protective cover |



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| Audible Alarm | Alarm buzzer - 85dB at 3 meters | | |
| Visual Indications | <ul style="list-style-type: none"> • Power available • Motor run • Periodic test • Manual start | <ul style="list-style-type: none"> • Deluge valve start • Remote automatic start • Remote manual start • Emergency start | <ul style="list-style-type: none"> • Pump on demand/Automatic start • Pump room temperature (°F or °C) • Lockout |
| Visual & Audible Alarms | <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) <p>Visual and audible</p> <ul style="list-style-type: none"> • Fail to start | <ul style="list-style-type: none"> • Overcurrent • Overvoltage • Phase loss L1 • Phase loss L2 • Phase loss L3 • Phase unbalanced • Pressure transducer fault detected | <ul style="list-style-type: none"> • Pump on demand • Pump room alarm • Service required • Undercurrent • Undervoltage • Check weekly test solenoid • Weekly test cut-in reached |
| Remote Alarm Contacts | <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 • Free (field programmable)** | | |

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



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|--|---|---|--|--|
| 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 bulletin MOD-GPx | | | |
| 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



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|--------------------------|------|--|
| <input type="checkbox"/> | A4 | Flow switch provision |
| <input type="checkbox"/> | A8 | Foam pump application w/o pressure transducer and run test solenoid valve. |
| <input type="checkbox"/> | A9 | Low zone pump control function |
| <input type="checkbox"/> | A10 | Middle zone pump control function |
| <input type="checkbox"/> | A11 | High zone pump control function |
| <input type="checkbox"/> | A13 | Non-pressure actuated controller w/o pressure transducer and run test solenoid valve |
| <input type="checkbox"/> | A16 | Lockout/interlock circuit from equipment installed inside the pump room |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | B11B | Built in alarm panel same as B11 but 220-240VAC supervisory power |
| <input type="checkbox"/> | B19A | High motor temperature c/w thermostat relay and alarm contacts (DPDT) |
| <input type="checkbox"/> | B19B | High motor temperature c/w PT100 relay and alarm contacts (DPDT) |
| <input type="checkbox"/> | B21 | Ground fault alarm detection c/w visual indication and alarm contact (DPDT) |
| <input type="checkbox"/> | C1 | Extra motor run alarm contact (DPDT) |
| <input type="checkbox"/> | C4 | Periodic test alarm contact (DPDT) |
| <input type="checkbox"/> | C6 | Low discharge pressure alarm contact (DPDT) |
| <input type="checkbox"/> | C7 | Low pump room temperature alarm contact (DPDT) |
| <input type="checkbox"/> | C10 | Low water reservoir level alarm contact (DPDT) |
| <input type="checkbox"/> | C11 | High electric motor temperature alarm contact (DPDT) |
| <input type="checkbox"/> | C12 | High electric motor vibration c/w visual indication and alarm contact (DPDT) |
| <input type="checkbox"/> | C14 | Pump on demand / automatic start alarm contact (DPDT) |
| <input type="checkbox"/> | C15 | Pump fail to start alarm contact (DPDT) |
| <input type="checkbox"/> | C16 | Control voltage healthy alarm contact (DPDT) |
| <input type="checkbox"/> | C17 | Flow meter valve loop open c/w visual indication and alarm contact (DPDT) |
| <input type="checkbox"/> | C18 | High water reservoir level c/w visual indication and alarm contact (DPDT) |

| | | |
|--------------------------|------|--|
| <input type="checkbox"/> | C19 | Emergency start alarm contact (DPDT) |
| <input type="checkbox"/> | C20 | Manual start alarm contact (DPDT) |
| <input type="checkbox"/> | C21 | Deluge valve start alarm contact (DPDT) |
| <input type="checkbox"/> | C22 | Remote automatic start alarm contact (DPDT) |
| <input type="checkbox"/> | C23 | Remote manual start alarm contact (DPDT) |
| <input type="checkbox"/> | C24 | High pump room temperature alarm contact (DPDT) |
| <input type="checkbox"/> | C25 | Second set of standard alarm contacts (DPDT) (Typical for city of Los Angeles and Denver) |
| <input type="checkbox"/> | Cx | Additional visual and alarm contact (Specify function) (DPDT) |
| <input type="checkbox"/> | D1 | Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact |
| <input type="checkbox"/> | D1A | Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact |
| <input type="checkbox"/> | D13A | High withstand rating for • 380V to 480V = 65kA* • 600V = 25kA* |
| <input type="checkbox"/> | D14 | Anti-condensation heater & thermostat |
| <input type="checkbox"/> | D14A | Anti-condensation heater & humidistat |
| <input type="checkbox"/> | D14B | Anti-condensation heater & thermostat & humidistat |
| <input type="checkbox"/> | D15 | Tropicalization |
| <input type="checkbox"/> | D18 | CE Mark with factory certificate |
| <input type="checkbox"/> | D26 | Modbus with RTU frame format and RS485 connection |
| <input type="checkbox"/> | D27 | Motor heater connection (external single phase power source and heater on/off contact) |
| <input type="checkbox"/> | D27A | Motor heater connection (internal single phase power source and heater on/off contact) |
| <input type="checkbox"/> | D28 | Customized drawing set |
| <input type="checkbox"/> | D34A | Field programmable I/O board - 5 Input / 5 output |
| <input type="checkbox"/> | D36 | Redundant pressure transducer for fresh water rated for 0-500PSI |
| <input type="checkbox"/> | 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.

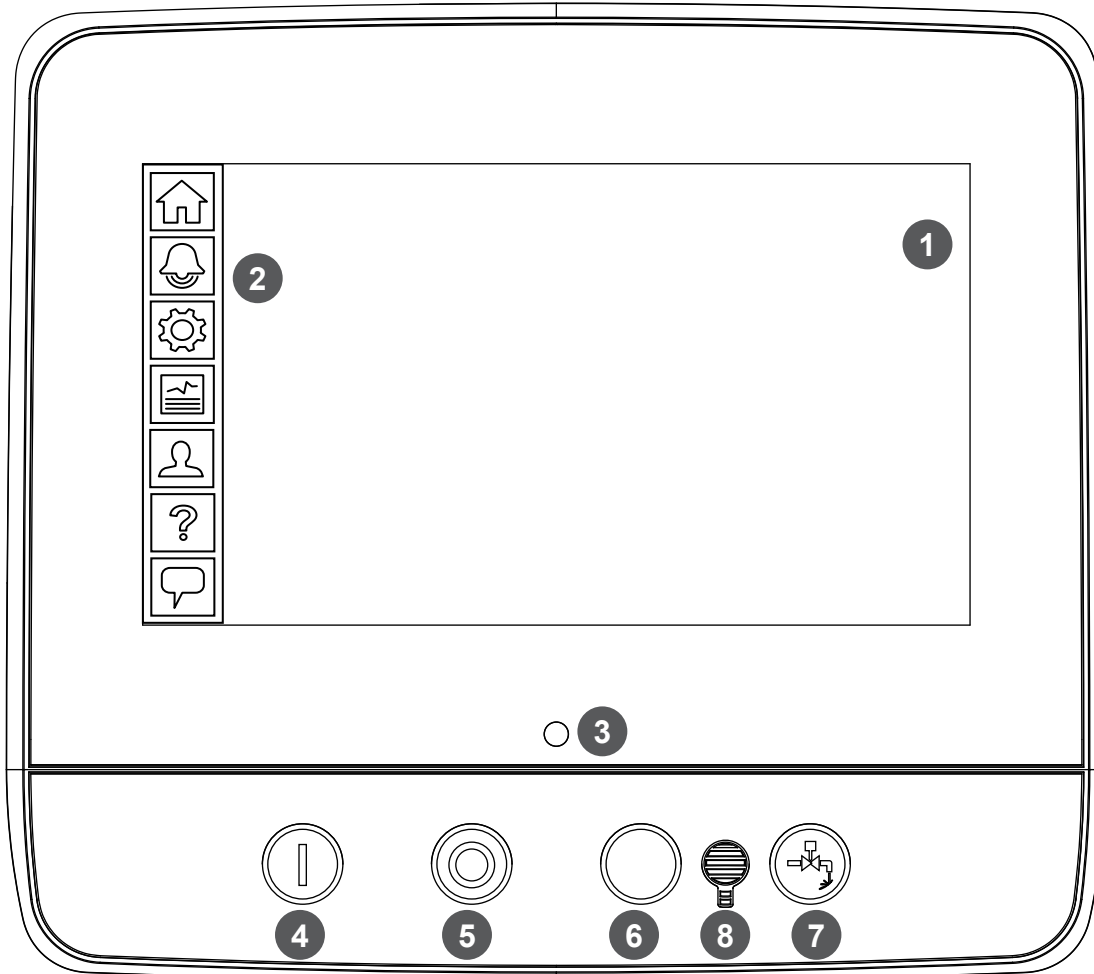


| | | |
|--------------------------|-----|--|
| <input type="checkbox"/> | L01 | Other language and English (bilingual) |
| <input type="checkbox"/> | L02 | French |
| <input type="checkbox"/> | L03 | Spanish |
| <input type="checkbox"/> | L04 | German |
| <input type="checkbox"/> | L05 | Italian |
| <input type="checkbox"/> | L06 | Polish |
| <input type="checkbox"/> | L07 | Romanian |
| <input type="checkbox"/> | L08 | Hungarian |
| <input type="checkbox"/> | L09 | Slovak |
| <input type="checkbox"/> | L10 | Croatian |
| <input type="checkbox"/> | L11 | Czech |
| <input type="checkbox"/> | L12 | Portuguese |
| <input type="checkbox"/> | L13 | Dutch |
| <input type="checkbox"/> | L14 | Russian |
| <input type="checkbox"/> | L15 | Turkish |
| <input type="checkbox"/> | L16 | Swedish |
| <input type="checkbox"/> | L17 | Bulgarian |
| <input type="checkbox"/> | L18 | Thai |
| <input type="checkbox"/> | L19 | Indonesian |
| <input type="checkbox"/> | L20 | Slovenian |
| <input type="checkbox"/> | L21 | Danish |
| <input type="checkbox"/> | L22 | Greek |
| <input type="checkbox"/> | L23 | Arabic |
| <input type="checkbox"/> | L24 | Hebrew |
| <input type="checkbox"/> | L25 | Chinese |

Additional Options:

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 | |