



TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data Submittal Document

Model GPD

Diesel Engine Driven 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



February 2019



Standard, Listings, Approvals and Certifications	Built to NFPA 20 (latest edition)	
	Underwriters Laboratory (UL)	<ul style="list-style-type: none"> • UL218 - Fire Pump Controllers • CSA C22.2 No. 14 Industrial Control Equipment
	FM Global	Class 1321/1323
	New York City	Accepted for use in the City of New York by the Department of Buildings
	Seismic Certification	See page 5 for details
	Optional	
<input type="checkbox"/> CE Mark	Various EN, IEC & CEE directives and standards	
Enclosure	Protection Rating <input type="checkbox"/> Standard: NEMA 2 (IP31) Optional <input type="checkbox"/> NEMA 12 <input type="checkbox"/> NEMA 4X-304 sst painted <input type="checkbox"/> IP54 <input type="checkbox"/> NEMA 3 <input type="checkbox"/> NEMA 4X-304 sst brushed finish <input type="checkbox"/> IP55 <input type="checkbox"/> NEMA 3R <input type="checkbox"/> NEMA 4X-316 sst painted <input type="checkbox"/> IP65 <input type="checkbox"/> NEMA 4 <input type="checkbox"/> NEMA 4X-316 sst brushed finish <input type="checkbox"/> IP66	
	Accessories <ul style="list-style-type: none"> • Bottom entry gland plate • Lifting Lugs • Keylock handle 	Paint Specifications <ul style="list-style-type: none"> • Red RAL3002 • Powder coating • Glossy textured finish
Ambient Temperature Rating	Standard <input type="checkbox"/> 4°C to 40°C / 39°F to 104°F Optional <input type="checkbox"/> 4°C to 55°C / 39°F to 131°F Controllers built in Dubai, UAE (Tornatech FZE) are supplied standard with 55°C rating.	
General	AC	<input type="checkbox"/> 120V / 1ph / 60hz <input type="checkbox"/> 208V to 240V / 1ph / 50-60hz
	DC	<input type="checkbox"/> 12VDC <input type="checkbox"/> 24VDC
	Grounding system	• Negative
	Battery chargers	<ul style="list-style-type: none"> • Two independent fully automatic • 10A continuous charge • 500mA trickle charge
Electrical Reading	<ul style="list-style-type: none"> • Battery 1 & Battery 2 voltage • Battery 1 & Battery 2 charging amperage • Charging mode 	
Pressure Reading	<ul style="list-style-type: none"> • Continuous system pressure display • Cut-in and cut-out pressure setting 	
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 connection 1/2" Female NPT • Drain connection 3/8" • Rated and calibrated for 0-500psi working pressure • Externally mounted with protective cover
Audible Alarm	4" alarm bell - 85 dB at 10ft. (3m)
Visual Indications	<ul style="list-style-type: none"> • Engine run • Main switch AUTO • Main switch in OFF • Main switch in HAND • Periodic test • Cranking Cycle • AC Power available • Pump room temperature (°F or °C)
Visual & Audible Alarms	<p>Visual only</p> <ul style="list-style-type: none"> • Pump room trouble • Pump on demand • AC Failure • Charger 1 Failure • Charger 2 Failure • Weak battery 1 • Weak battery 2 • Battery 1 overvoltage • Battery 2 overvoltage <p>Visual and Audible</p> <ul style="list-style-type: none"> • Engine trouble • Controller trouble • Engine low oil pressure • Engine high temperature • Engine low temperature • Engine overspeed • DC Failure • Loss of continuity 1 • Loss of continuity 2 • High fuel level • Fuel tank leak • PLD low suction pressure • High raw water temperature • Low pump room temperature • Battery 1 Failure • Battery 2 Failure • Engine fail to start • Low fuel level • ECM fault • ECM SS in Alternate Position • Fuel injection malfunction • High pump room temperature • ECM warning • Weekly test cut-in not reached • Check weekly test solenoid • Pressure transducer fault • Invalid Cut-In • Service required
Remote Alarm Contacts	<p>DPDT-8A-250V.AC</p> <ul style="list-style-type: none"> • Engine run • Common controller trouble <ul style="list-style-type: none"> • Charger #1 & Charger #2 failure • Pressure transducer fault • Common engine trouble <ul style="list-style-type: none"> • High engine temperature • Fail to start • Fuel injection malfunction** • ECM selector switch in alternate position*** • Common pump room trouble (field re-assignable)* <ul style="list-style-type: none"> • Low fuel level • High fuel level • Fuel tank leak • H-O-A selector switch in OFF or HAND • Free (field programmable)* • Battery #1 & battery #2 failure • DC failure • Loss of continuity (starter) #1 and/or #2 • PLD low suction pressure • Overspeed • Fail when running • Low oil pressure • AC Failure

*Except if option C13 is ordered. Tornatech reserves the right to use any of these four alarm points for special specific application requirements

**Applicable to electronic engines only.

*** Applicable to electronic engines only. Alarms when ECM selector switch on the engine is in alternate mode.



Terminals for Field Connections for External Devices	<ul style="list-style-type: none"> • Low fuel level • Remote AUTOMATIC start • Deluge valve start (re-assignable) • Fuel tank leak (re-assignable) • High fuel level (re-assignable) 		
ViZiTouch V2 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 		
Operation	Selector Switch	<ul style="list-style-type: none"> • Hand-Off-Auto • Behind lockable and breakable cover 	
	Automatic Start	<ul style="list-style-type: none"> • Start on pressure drop • Remote start signal from automatic device 	
	Manual Start	<ul style="list-style-type: none"> • Crank 1 and Crank 2 start pushbuttons • Run test pushbutton • Deluge valve start • Remote start from manual device 	
	Crank Cycle	<ul style="list-style-type: none"> • 6 consecutive cycle attempts <ul style="list-style-type: none"> • 3 X 15s crank from battery 1 or 2 alternatively • 15s rest in between each crank attempt 	
	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
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-GPD 		

Alarm and shutdown schedule		Automatic Start	Manual or Remote Start	Run Test or Periodic Test
	High Coolant	Alarm only	Alarm only	Shutdown
	Low Oil Pressure	Alarm only	Alarm only	Shutdown
	Overspeed	Shutdown	Shutdown	Shutdown

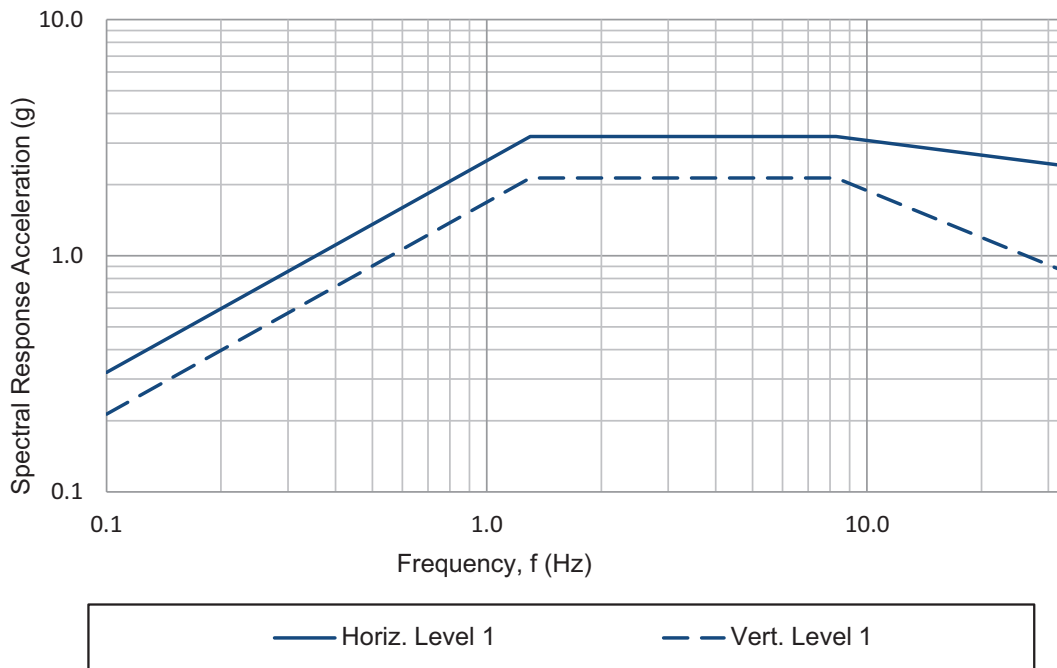
	Wall Mount		Floor Mount	
Starting Voltage	Approx. shipping dimensions in inches (mm)	Approx. Shipping Weight in Lbs (kg)	Approx. shipping dimensions in inches (mm)	Approx. Shipping Weight in Lbs (kg)
12V.DC	32" l x 29" w x 16" h (813 x 737 x 407)	85 (39)	32" l x 29" w x 26" h (813 x 737 x 661)	115 (52)
24V.DC				

**** Automatic shutdown shall be approved by the AHJ.



Seismic Certification	Seismic Certification Company	TRU Compliance, LLC A Tobalski Watkins Affiliate					TWEI Project No.: 15014				
	Mounting details	Rigid wall mounting									
	Seismic Information	Building Code	Test Criteria	Seismic Parameters	S_{DS}	z/h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
	IBC 2015, CBC 2016	ICC-ES AC156	ASCE 7-10 Chapter 13	2.0	1.0	1.5	3.20	2.40	1.33	0.53	
				3.2	0.0	1.5	3.20	1.28	2.13	0.85	

RRS for Nonstructural Components Testing



Notes:

- Components are tested in accordance with ICC-ES AC156, IBC 2015 & CBC 2016.
- OSHPD Special Seismic Certification Preapproval (OSP)



<input type="checkbox"/>	A1	Periodic test alarm contact (DPDT)
<input type="checkbox"/>	A2	Overspeed alarm contact (DPDT)
<input type="checkbox"/>	A3	Low oil pressure alarm contact (DPDT)
<input type="checkbox"/>	A4	High coolant temperature alarm contact (DPDT)
<input type="checkbox"/>	A5	Failure to start alarm contacts alarm contact (DPDT)
<input type="checkbox"/>	A6	Battery 1 & 2 failure alarm contact (2 x DPDT)
<input type="checkbox"/>	A7	Charger 1 & 2 failure alarm contact (2 x DPDT)
<input type="checkbox"/>	A8	AC failure alarm contact (DPDT)
<input type="checkbox"/>	A9	System overpressure alarm contact (For engines with PLD) (DPDT)
<input type="checkbox"/>	A11	Extra controller trouble alarm contact (DPDT)
<input type="checkbox"/>	A12	Extra engine trouble alarm contact (DPDT)
<input type="checkbox"/>	Ax	Additional engine alarm contact (DPDT) (specify function)
<input type="checkbox"/>	B1	Low fuel level alarm contact (DPDT)
<input type="checkbox"/>	B2	Water reservoir level low alarm contact (DPDT)
<input type="checkbox"/>	B3	Water reservoir empty alarm contact (DPDT)
<input type="checkbox"/>	B4	Low pump room temperature alarm contact (DPDT)
<input type="checkbox"/>	B5	High fuel level alarm contact (DPDT)
<input type="checkbox"/>	B6	Low system (discharge) pressure alarm contact (DPDT)
<input type="checkbox"/>	B7	Low suction pressure alarm contact (DPDT)
<input type="checkbox"/>	B8	Pump on demand alarm contact (DPDT)
<input type="checkbox"/>	B9	Fuel tank leak alarm contact (DPDT)
<input type="checkbox"/>	B10	Main relief valve open alarm contact (DPDT)
<input type="checkbox"/>	B11	Flow meter loop valve open alarm contact (DPDT)
<input type="checkbox"/>	B12	Water reservoir level high alarm contact (DPDT)
<input type="checkbox"/>	B13	High pump room temperature alarm contact (DPDT)
<input type="checkbox"/>	Bx	Additional pump room alarm contact (DPDT) (specify function)
<input type="checkbox"/>	C5	CE Mark with factory certificate
<input type="checkbox"/>	C6	Nickel – cadmium battery chargers (Battery data sheet required)
<input type="checkbox"/>	C7	Engine block heater circuit - 3KW max (same voltage as battery charger primary)

<input type="checkbox"/>	C7A	Engine block heater circuit - 6KW max (same voltage as battery charger primary) Confirm power rating of block heater
<input type="checkbox"/>	C9	Non pressure actuated controller w/o pressure transducer and run test solenoid valve
<input type="checkbox"/>	C13	Louver activation circuit (battery power specific)
<input type="checkbox"/>	C14	Delayed automatic start on AC power failure (factory set at 15 minutes)
<input type="checkbox"/>	C15	Low zone pump control function
<input type="checkbox"/>	C16	Middle zone pump control function
<input type="checkbox"/>	C17	High zone pump control function
<input type="checkbox"/>	C19	Lockout/interlock circuit from equipment installed inside the pump room
<input type="checkbox"/>	D4	Pressure transducer and run test solenoid valve for fresh water rated for 0-500psi (for factory calibration purposes only)
<input type="checkbox"/>	D6	Pressure transducer and run test solenoid valve for sea water rated for 0-500PSI
<input type="checkbox"/>	D7A	Low fuel level float switch supplied as separate item (1-1/4")
<input type="checkbox"/>	D7B	Low fuel level float switch supplied as separate item (1-1/2")
<input type="checkbox"/>	D8A	High fuel level float switch supplied as separate item (1-1/4")
<input type="checkbox"/>	D8B	High fuel level float switch supplied as separate item (1-1/2")
<input type="checkbox"/>	D9A	Anti-condensation heater & thermostat
<input type="checkbox"/>	D9B	Anti-condensation heater & humidistat
<input type="checkbox"/>	D9C	Anti-condensation heater & thermostat & humidistat
<input type="checkbox"/>	D11	Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact
<input type="checkbox"/>	D11A	Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact
<input type="checkbox"/>	D12	Tropicalization
<input type="checkbox"/>	D25	Mounting stand
<input type="checkbox"/>	D25A	Mounting stand SST- 304 painted
<input type="checkbox"/>	D25B	Mounting stand SST- 304 brushed finish
<input type="checkbox"/>	D25C	Mounting stand SST- 316 painted
<input type="checkbox"/>	D25D	Mounting stand SST- 316 brushed finish
<input type="checkbox"/>	D26	Combined low and high fuel level float switch (1-1/4")

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



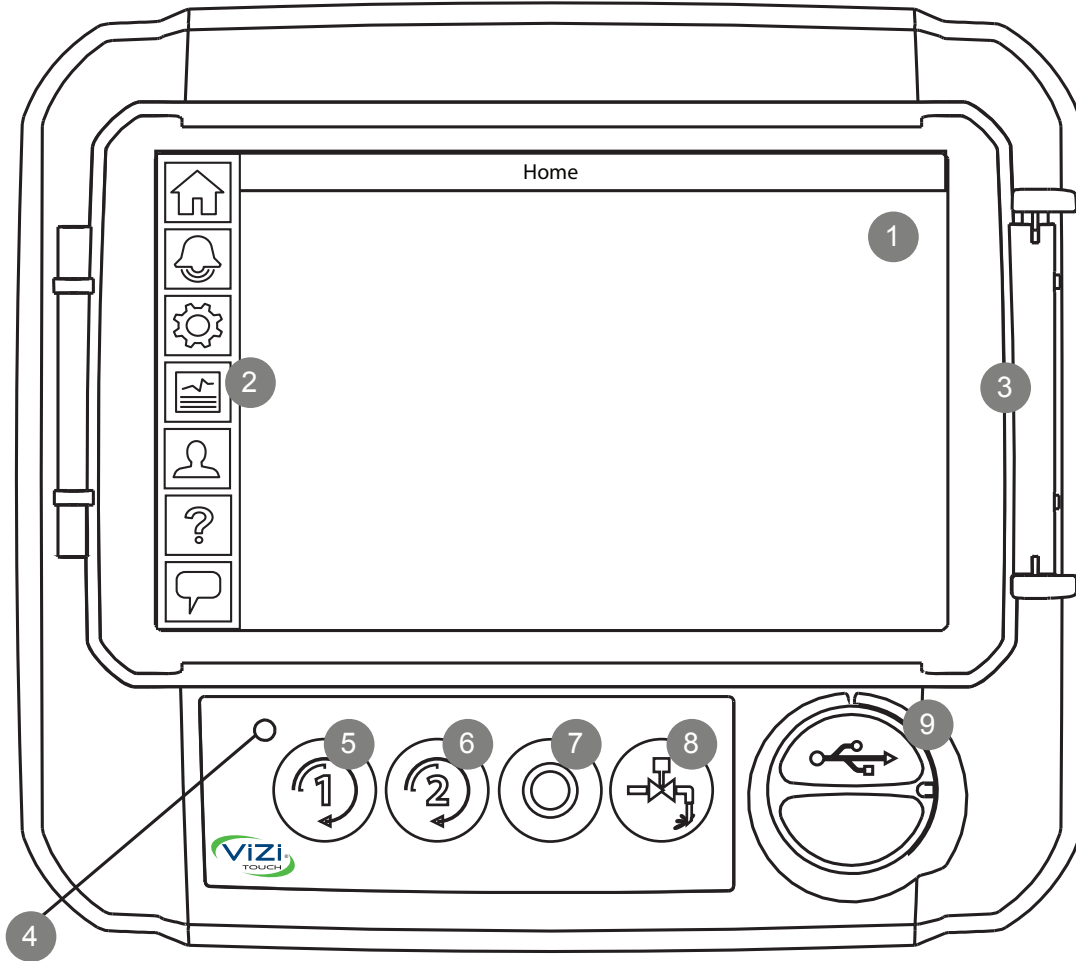
<input type="checkbox"/>	D26A	Combined low and high fuel level float switch (1-1/2")
<input type="checkbox"/>	D27	Fuel level probe (2") Level indication
<input type="checkbox"/>	D28A	Field programmable I/O board - 5 Input / 5 output
<input type="checkbox"/>	D30	Redundant pressure transducer for fresh water rated for 0-500PSI
<input type="checkbox"/>	D31	Redundant pressure transducer for sea water rated for 0-500PSI
<input type="checkbox"/>	D32	Modbus with RTU frame format and RS485 connection

<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 Operator Interface



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

- 3 - Screen protector
- 4 - Power LED (3 colors)
- 5 - CRANK 1 button
- 6 - CRANK 2 button
- 7 - STOP button
- 8 - RUN TEST button
- 9 - USB port

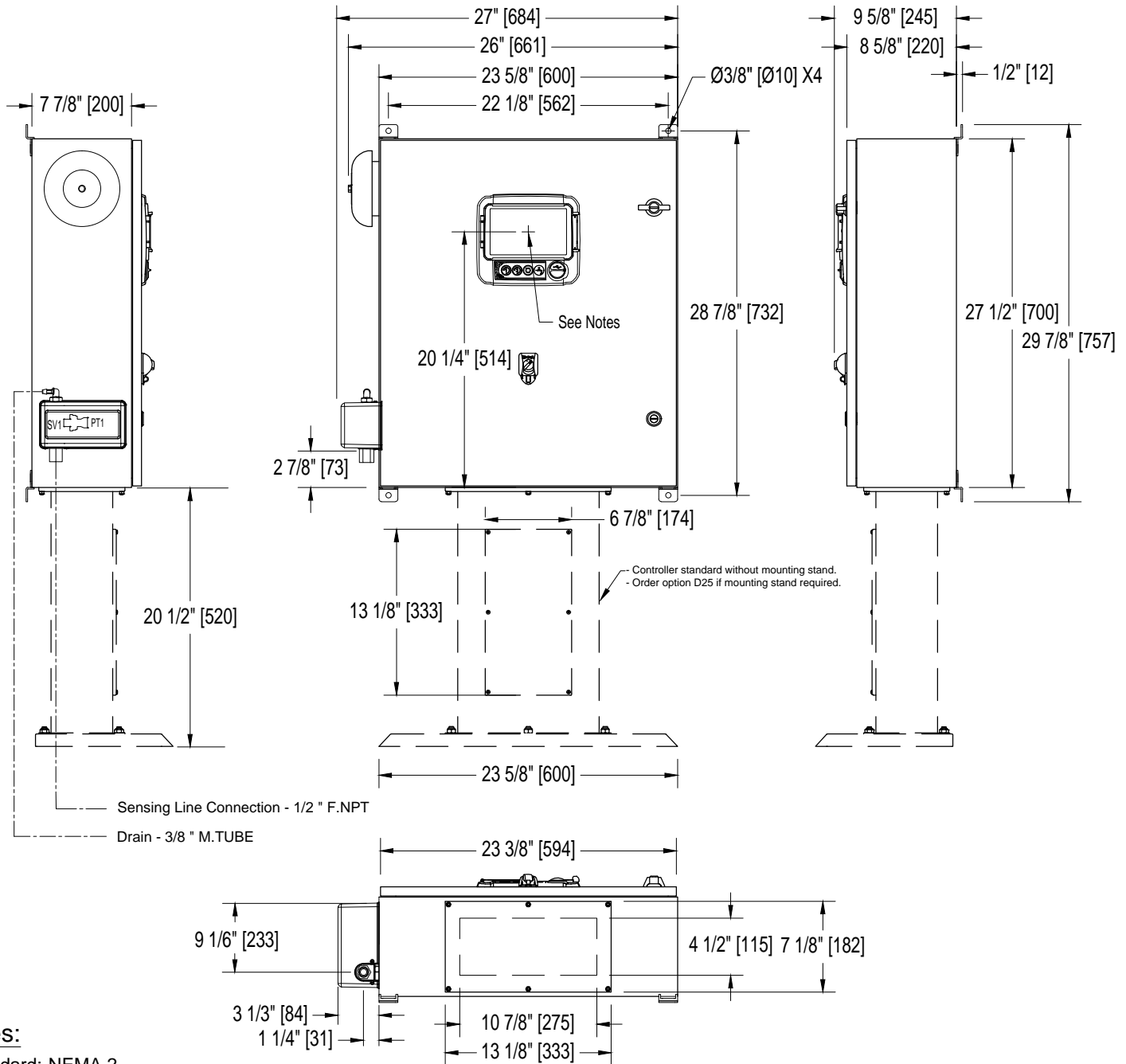
Diesel Engine Fire Pump Controller

12Vdc or 24Vdc Negative Ground

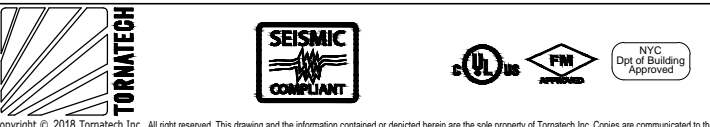
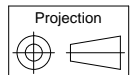
Model: GPD

Dimensions

Built to the latest edition of the NFPA 20 standard



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



REV.	DESCRIPTION	DD/MM/YY	Drawing number
1.	Revised logo	18/06/18	GPD-DI700 /E
0.	First issue	18/11/16	

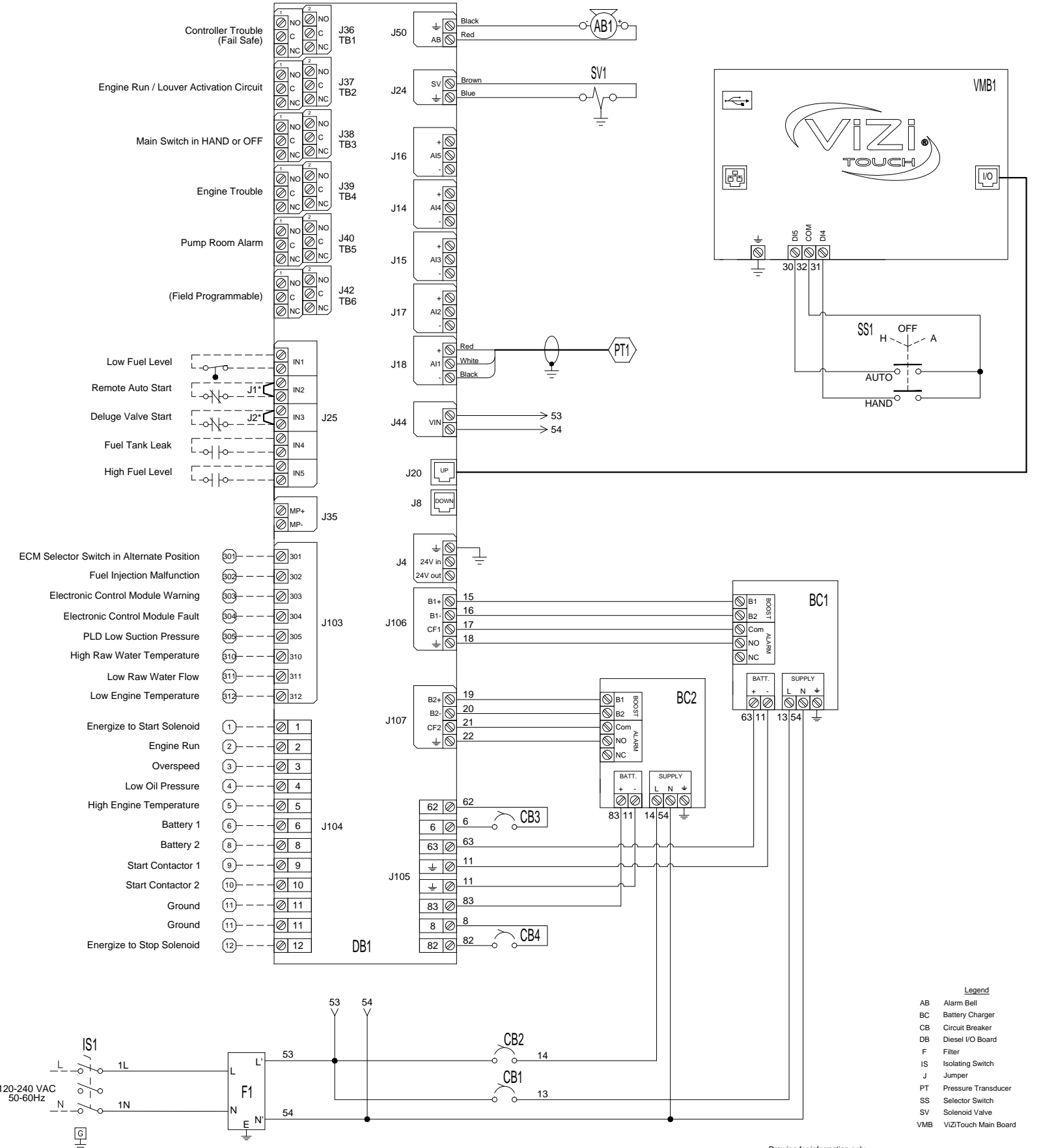
Diesel Engine Fire Pump Controller

12VDC or 24VDC Negative Ground

Model: GPD

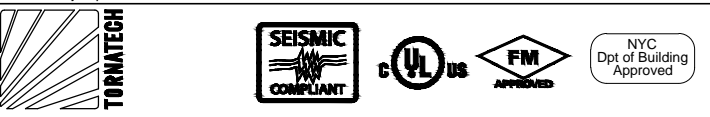
Wiring schematic

Built to the latest edition of the NFPA 20 standard



* Remove jumper to use this feature

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



REV.	DESCRIPTION	DD/MM/YY	Drawing number
2	Revised logo	18/06/18	GPD-WS700 /E
1	Corrected SS1 inputs	16/01/17	
0	First issue	10/11/16	

Diesel Engine Fire Pump Controller

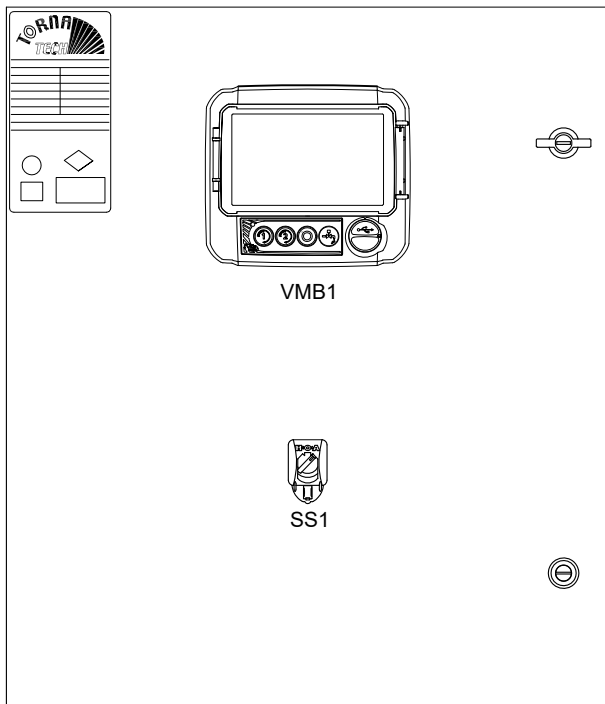
12VDC or 24VDC Negative Ground

Layout

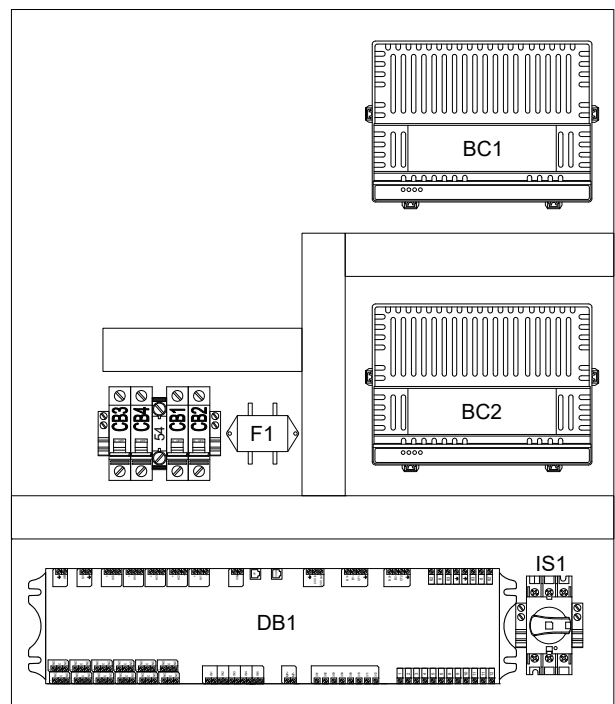
Model:GPD

Built to the latest edition of the NFPA 20 standard

Designation	Description
BC1-BC2	Battery Charger #1 and #2
CB1-2	Magnetic Breaker 1 Pole 10 A
CB3-4	Magnetic Breaker 1 Pole 16 A
DB1	I/O Diesel Board
F1	Filter
IS1	Isolating Switch
SS1	Lockable 3 Position Selector Switch
VMB1	ViZiTouch Main Board



Front Door Layout



Internal Layout



REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Revised logo	18/06/18	GPD-LY700 /E
0	First issue	21/11/16	

Diesel Engine Fire Pump Controller

12VDC or 24VDC Negative Ground

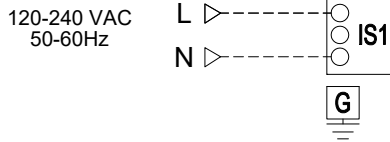
Model: GPD

Terminal Diagram

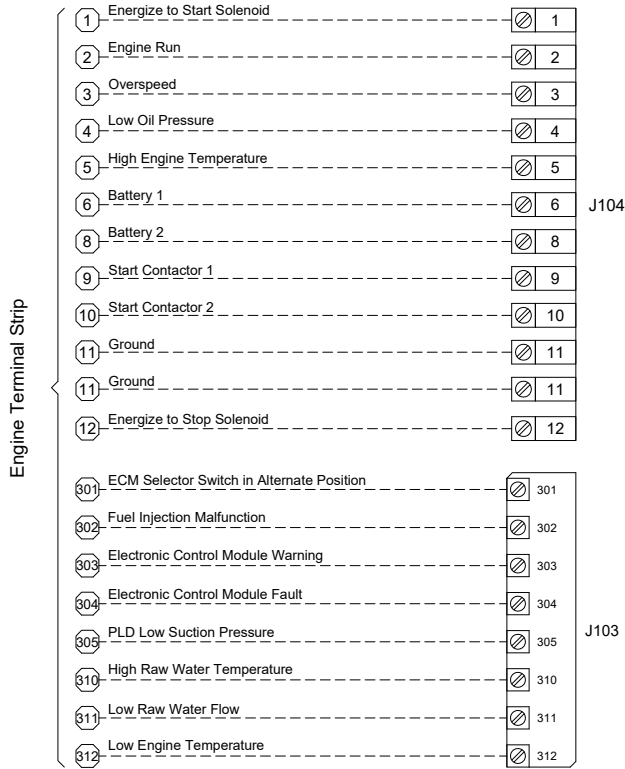
Built to the latest edition of the NFPA 20 standard

Power Supply

Terminals Wire Size:
14 - 6 AWG
3.9 Nm

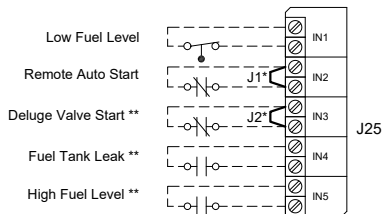


Engine Connections (DB1)



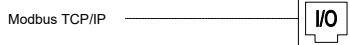
Field Connections (DB1)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



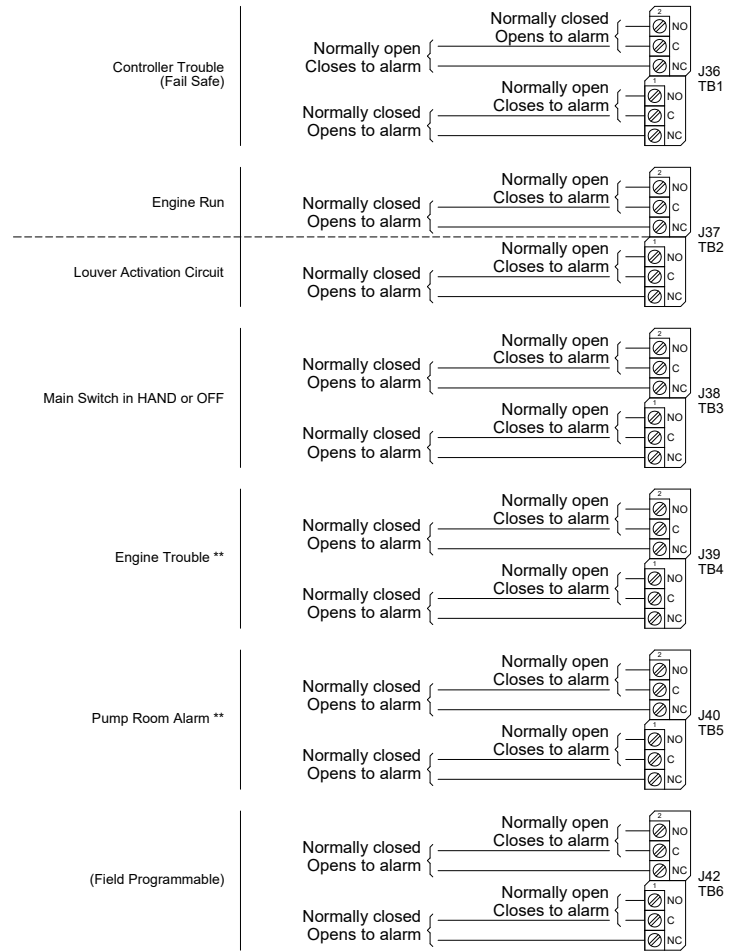
Network Connection (VMB1)

Shielded Female Connector RJ45



Remote Alarm Terminals (DB1)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



All wiring between the controller and diesel engine shall be stranded (NFPA20)

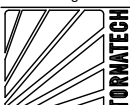
Wiring between controller and engine (terminals 301, 302, 303, 304, 305, 310, 311, 312, 2, 3, 4, 5) must be #14AWG as minimum.

Wiring between controller and engine (terminals 12 [rated at 10A or 22A for 20 seconds] 1, 9, 10 [rated at 10A]) must be stranded #10AWG as minimum.

Wiring between controller and engine (terminals 6, 8, 11 [rated at 30A]) must be stranded and sized according to distance.

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

* Remove jumper to use this feature
** Re-assignable



REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Revised logo	18/06/18	GPD-TD700 /E
0	First issue	10/11/16	

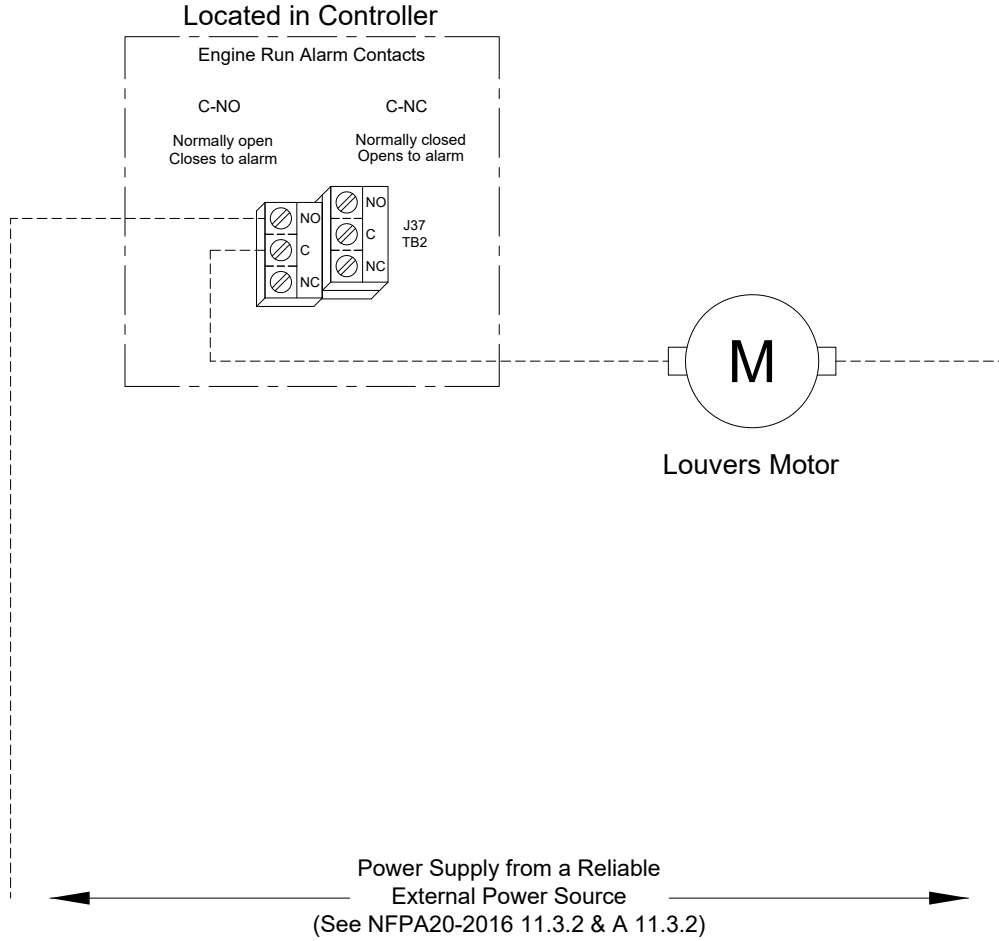
Diesel Engine Fire Pump Controller

12VDC or 24VDC Negative Ground

Model: GPD

Louver Connection

Built to the latest edition of the NFPA 20 standard



REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Revised logo	18/06/18	GPD-TD701 /E
0	First issue	10/11/16	