



Project: \_\_\_\_\_  
Customer: \_\_\_\_\_  
Engineer: \_\_\_\_\_  
Pump Manufacturer: \_\_\_\_\_

## Technical Data Submittal Documents

### Model GPD - FM 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.



# Technical Data

## GPD-FM Diesel Fire Pump Controller

<b>Standard, Approvals and Certifications</b>	Built to NFPA 20 (latest edition)	
	FM Global	Class 1321/1323
	CE Mark	Various EN, IEC & CEE directives and standards
<b>Enclosure</b>	<b>Protection Rating</b> Standard: IP55	
	<b>Accessories</b> • Bottom entry gland plate • Lifting Lugs • Keylock handle	<b>Paint Specifications</b> • Red RAL3002 • Powder coating • Glossy textured finish
<b>Ambient Temperature Rating</b>	<b>Standard</b> <input type="checkbox"/> 5°C to 40°C / 41°F to 104°F <b>Optional</b> <input type="checkbox"/> 5°C to 50°C / 41°F to 122°F <input type="checkbox"/> 5°C to 55°C / 41°F to 131°F	
<b>General</b>	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	• Two independent fully automatic • 10A continuous charge • 500mA trickle charge
<b>Electrical Reading</b>	• Battery 1 & Battery 2 voltage • Battery 1 & Battery 2 charging amperage • Charging mode	
<b>Pressure Reading</b>	• Continuous system pressure display • Cut-in and Cut-out pressure setting	
<b>Pressure and Event Recorder</b>	• 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	





# Technical Data GPD-FM Diesel Fire Pump Controller

<b>Pressure sensing</b>	<ul style="list-style-type: none"> <li>• Pressure transducer and run test solenoid valve assembly for fresh water application</li> <li>• Pressure sensing connection 1/2" Female NPT</li> <li>• Drain connection 3/8"</li> <li>• Rated and calibrated for 0-500psi working pressure</li> <li>• Externally mounted with protective cover</li> </ul>
<b>Audible Alarm</b>	4" alarm bell - 85 dB at 10ft. (3m)
<b>Visual &amp; Audible Alarms</b>	<p>Visual only</p> <ul style="list-style-type: none"> <li>• Engine run</li> <li>• Main switch AUTO</li> <li>• ECM warning</li> <li>• Pump room temperature (°F or °C)</li> <li>• Periodic test</li> <li>• Main switch in HAND</li> <li>• High raw water temperature</li> <li>• Cranking Cycle</li> <li>• Main switch in OFF</li> <li>• Low raw water flow</li> </ul> <p>Visual and Audible</p> <ul style="list-style-type: none"> <li>• Overspeed</li> <li>• Low oil pressure</li> <li>• High engine temperature</li> <li>• Fail to start</li> <li>• High fuel level</li> <li>• ECM fault</li> <li>• ECM Selector switch in alternate position</li> <li>• Battery #1 &amp; battery #2 failure</li> <li>• Charger #1 &amp; Charger #2 failure</li> <li>• AC power available</li> <li>• Low pump room temperature</li> <li>• System overpressure</li> <li>• PLD low suction pressure</li> <li>• Low fuel level</li> <li>• Water reservoir low</li> <li>• Fuel tank leak</li> <li>• Fail when running</li> <li>• Fuel injection malfunction</li> <li>• Low engine temperature</li> </ul>
<b>Remote Alarm Contacts</b>	<p>DPDT-8A-250V.AC</p> <ul style="list-style-type: none"> <li>• Engine run</li> <li>• Common controller trouble <ul style="list-style-type: none"> <li>• Charger #1 &amp; Charger #2 failure</li> <li>• Pressure line failure</li> </ul> </li> <li>• Common engine trouble <ul style="list-style-type: none"> <li>• High engine temperature</li> <li>• Fail to start</li> <li>• Fuel injection malfunction**</li> <li>• ECM selector switch in alternate position***</li> </ul> </li> <li>• Common pump room alarm (field re-assignable)* <ul style="list-style-type: none"> <li>• Low fuel level</li> <li>• High fuel level</li> <li>• Fuel tank leak</li> <li>• Low suction pressure</li> <li>• Low pump room temperature</li> <li>• High pump room temperature</li> <li>• Water reservoir low</li> <li>• Water reservoir empty</li> <li>• AC Failure</li> </ul> </li> <li>• Battery #1 &amp; battery #2 failure</li> <li>• DC failure</li> <li>• Loss of continuity (starter) #1 and/or #2</li> <li>• Overspeed</li> <li>• Fail when running</li> <li>• Low oil pressure</li> <li>• H-O-A selector switch in OFF or HAND</li> <li>• Free (field programmable)*</li> </ul>
<b>Terminals for Field Connections for External Devices</b>	<ul style="list-style-type: none"> <li>• Low fuel level</li> <li>• High fuel level (re-assignable)</li> <li>• Fuel tank leak (re-assignable)</li> <li>• Remote AUTOMATIC start</li> <li>• Deluge valve start (re-assignable)</li> </ul>
<b>ViZiTouch Operator Interface</b>	<ul style="list-style-type: none"> <li>• Solid state controls</li> <li>• 4.2" color touch screen (HMI technology)</li> <li>• Upgradable software</li> <li>• Expandable storage</li> <li>• Multi-language</li> </ul>

\*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.



# Technical Data

## GPD-FM Diesel Fire Pump Controller

<b>Operation</b>	<b>Selector Switch</b>	<ul style="list-style-type: none"> <li>• Hand-Off-Auto</li> <li>• Behind lockable and breakable cover</li> </ul>		
	<b>Automatic Start</b>	<ul style="list-style-type: none"> <li>• Start on pressure drop</li> <li>• Remote start signal from automatic device</li> </ul>		
	<b>Manual Start</b>	<ul style="list-style-type: none"> <li>• Crank 1 and Crank 2 start pushbuttons</li> <li>• Run test pushbutton</li> <li>• Deluge valve start</li> <li>• Remote start from manual device</li> </ul>		
	<b>Crank Cycle</b>	<ul style="list-style-type: none"> <li>• 6 consecutive cycle attempts               <ul style="list-style-type: none"> <li>• 3 X 15s crank from battery 1 or 2 alternatively</li> <li>• 15s rest in between each crank attempt</li> </ul> </li> </ul>		
	<b>Stopping</b>	<ul style="list-style-type: none"> <li>• Manual with Stop pushbutton</li> <li>• Automatic after expiration of minimum run timer ***</li> </ul>		
	<b>Timers</b>	<b>Field Adjustable &amp; Visual Countdown</b>	<ul style="list-style-type: none"> <li>• Minimum run timer ***(off delay)</li> <li>• Sequential start timer (on delay)</li> <li>• Periodic test timer</li> </ul>	
	<b>Actuation</b>	<b>Visual Indication</b>	<ul style="list-style-type: none"> <li>• Pressure</li> <li>• Non-pressure</li> </ul>	
	<b>Mode</b>		<ul style="list-style-type: none"> <li>• Automatic</li> <li>• Non-automatic</li> </ul>	
<b>Communication Protocol Capability</b>	<ul style="list-style-type: none"> <li>• Protocol: Modbus</li> <li>• Connection type: shielded female connector RJ45</li> <li>• Frame Format: TCP/IP</li> <li>• Addresses: See bulletin MOD-GPD</li> </ul>			

<b>Alarm and shutdown schedule</b>		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

	<b>Wall Mount</b>		<b>Floor Mount</b>	
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.



# Technical Data GPD-FM Diesel Fire Pump Controller

<input type="checkbox"/> A1	Periodic test alarm contact (Form C-SPDT)
<input type="checkbox"/> A2	Overspeed alarm contact (Form C-SPDT)
<input type="checkbox"/> A3	Low oil pressure alarm contact (Form C-SPDT)
<input type="checkbox"/> A4	High coolant temperature alarm contact (Form C-SPDT)
<input type="checkbox"/> A5	Failure to start alarm contacts alarm contact (Form C-SPDT)
<input type="checkbox"/> A6	Battery 1 & 2 failure alarm contact (2 x Form C-SPDT)
<input type="checkbox"/> A7	Charger 1 & 2 failure alarm contact (2 x Form C-SPDT)
<input type="checkbox"/> A8	AC failure alarm contact (Form C-SPDT)
<input type="checkbox"/> A9	System overpressure alarm contact (For engines with PLD) (Form C-SPDT)
<input type="checkbox"/> A11	Extra controller trouble alarm contact (Form C-SPDT)
<input type="checkbox"/> A12	Extra engine trouble alarm contact (Form C-SPDT)
<input type="checkbox"/> Ax	Additional engine alarm contact (Form C-SPDT) (specify function)
<input type="checkbox"/> B1	Low fuel level alarm contact (Form C-SPDT)
<input type="checkbox"/> B2	Water reservoir level low alarm contact (Form C-SPDT)
<input type="checkbox"/> B3	Water reservoir empty alarm contact (Form C-SPDT)
<input type="checkbox"/> B4	Low pump room temperature alarm contact (Form C-SPDT)
<input type="checkbox"/> B5	High fuel level alarm contact (Form C-SPDT)
<input type="checkbox"/> B6	Low system (discharge) pressure alarm contact (Form C-SPDT)
<input type="checkbox"/> B7	Low suction pressure alarm contact (Form C-SPDT)
<input type="checkbox"/> B8	Pump on demand alarm contact (Form C-SPDT)
<input type="checkbox"/> B9	Fuel tank leak alarm contact (Form C-SPDT)
<input type="checkbox"/> B10	Main relief valve open alarm contact (Form C-SPDT)
<input type="checkbox"/> B11	Flow meter loop valve open alarm contact (Form C-SPDT)
<input type="checkbox"/> B12	Water reservoir level high alarm contact (Form C-SPDT)
<input type="checkbox"/> B13	High pump room temperature alarm contact (Form C-SPDT)
<input type="checkbox"/> Bx	Additional pump room alarm contact (Form C-SPDT) (specify function)
<input type="checkbox"/> C6	Nickel – Cadmium battery chargers
<input type="checkbox"/> C7	Engine block heater circuit (same voltage as battery charger primary)
<input type="checkbox"/> C8	Foam pump application w/o pressure transducer and run test solenoid valve
<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	Medium 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"/> 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")
<input type="checkbox"/> D26A	Combined low and high fuel level float switch (1-1/2")
<input type="checkbox"/> D27	Fuel level probe (1-1/4") Level indication
<input type="checkbox"/> D28	Field programmable I/O board - 8 Input / 5 output
<input type="checkbox"/> D29	Field programmable I/O board - 8 Input / 10 output
<input type="checkbox"/> D30	Redundant pressure transducer for fresh water rated for 0-500PSI (calibrated at 0-300PSI)
<input type="checkbox"/> D31	Redundant pressure transducer for sea water rated for 0-500PSI (calibrated at 0-300PSI)
<input type="checkbox"/> D33	Window kit for operator interface

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



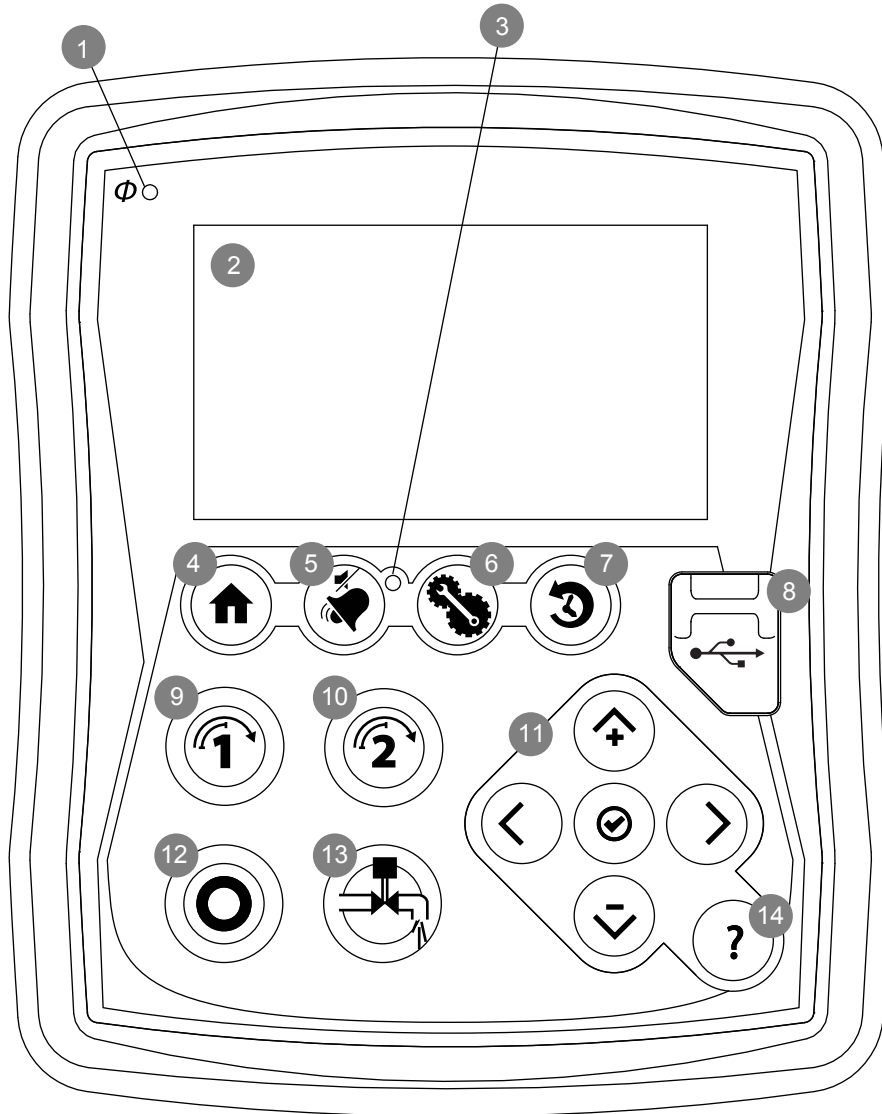
## Technical Data GPD-FM Diesel Fire Pump Controller

<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

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

### ViZiTouch Operator Interface



- |                               |                               |
|-------------------------------|-------------------------------|
| 1 - Power on LED              | 8 - USB port                  |
| 2 - Color touch screen        | 9 - CRANK 1 button            |
| 3 - Alarm LED                 | 10 - CRANK 2 button           |
| 4 - HOME page button          | 11- Contextual navigation pad |
| 5 - ALARM page button         | 12 - STOP button              |
| 6 - CONFIGURATION page button | 13 - RUN TEST button          |
| 7 - HISTORY page button       | 14 - HELP button              |

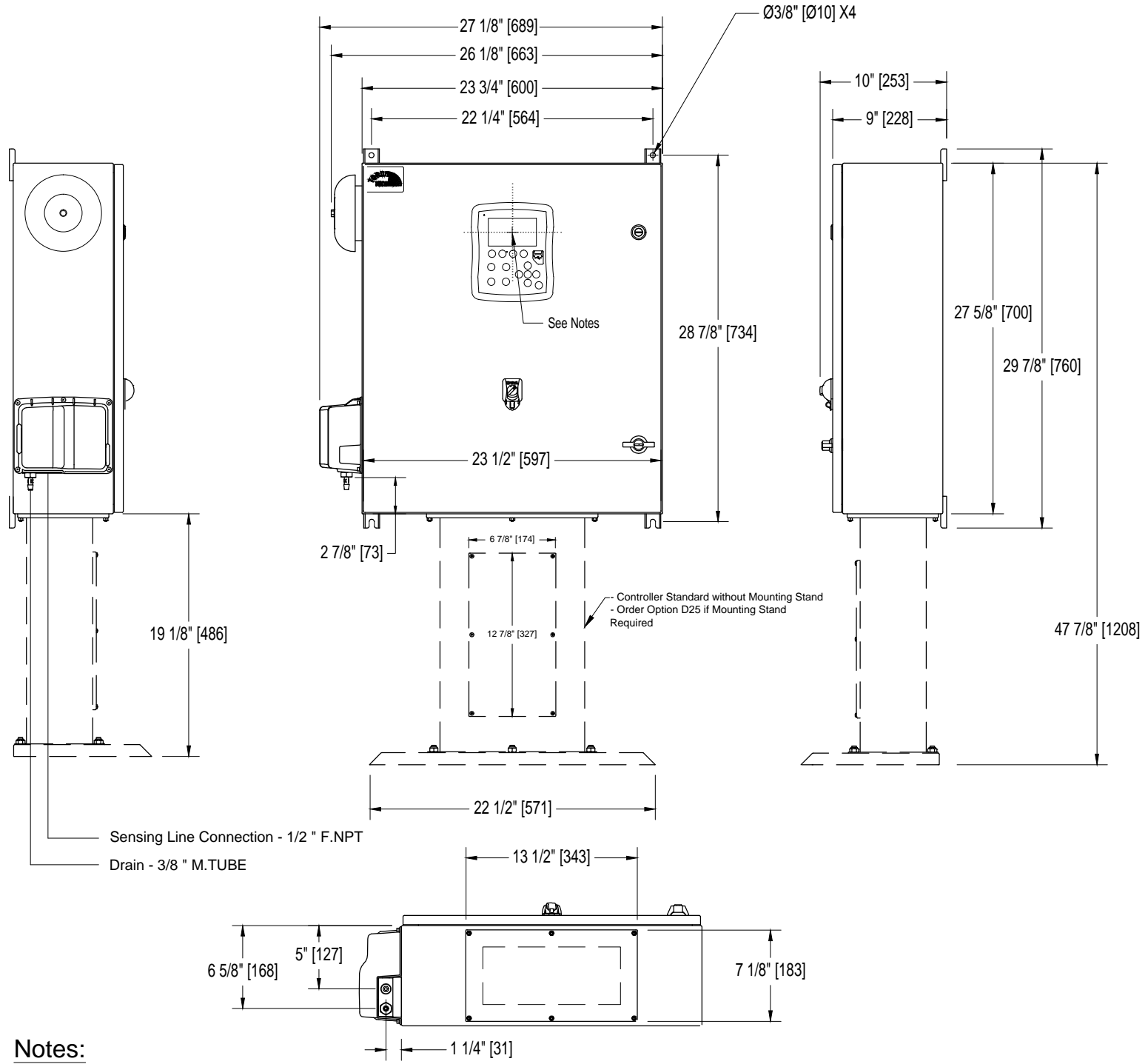
# Diesel Engine Fire Pump Controller

Model: GPDFM

12Vdc or 24Vdc Negative Ground

## Dimensions

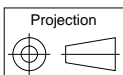
Built to the latest edition of the NFPA 20 standard



### Notes:

- Standard NEMA: NEMA 2
- Standard Paint : Textured Red RAL 3002.
- All Dimensions are in Inches [Millimeters].
- Center of ViZiTouch Screen: 22-1/4" [565] 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.

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
0	First Issue	19/10/11	GPDFM-DI500 /E
1	Change Solenoid Valve Cover	20/11/14	



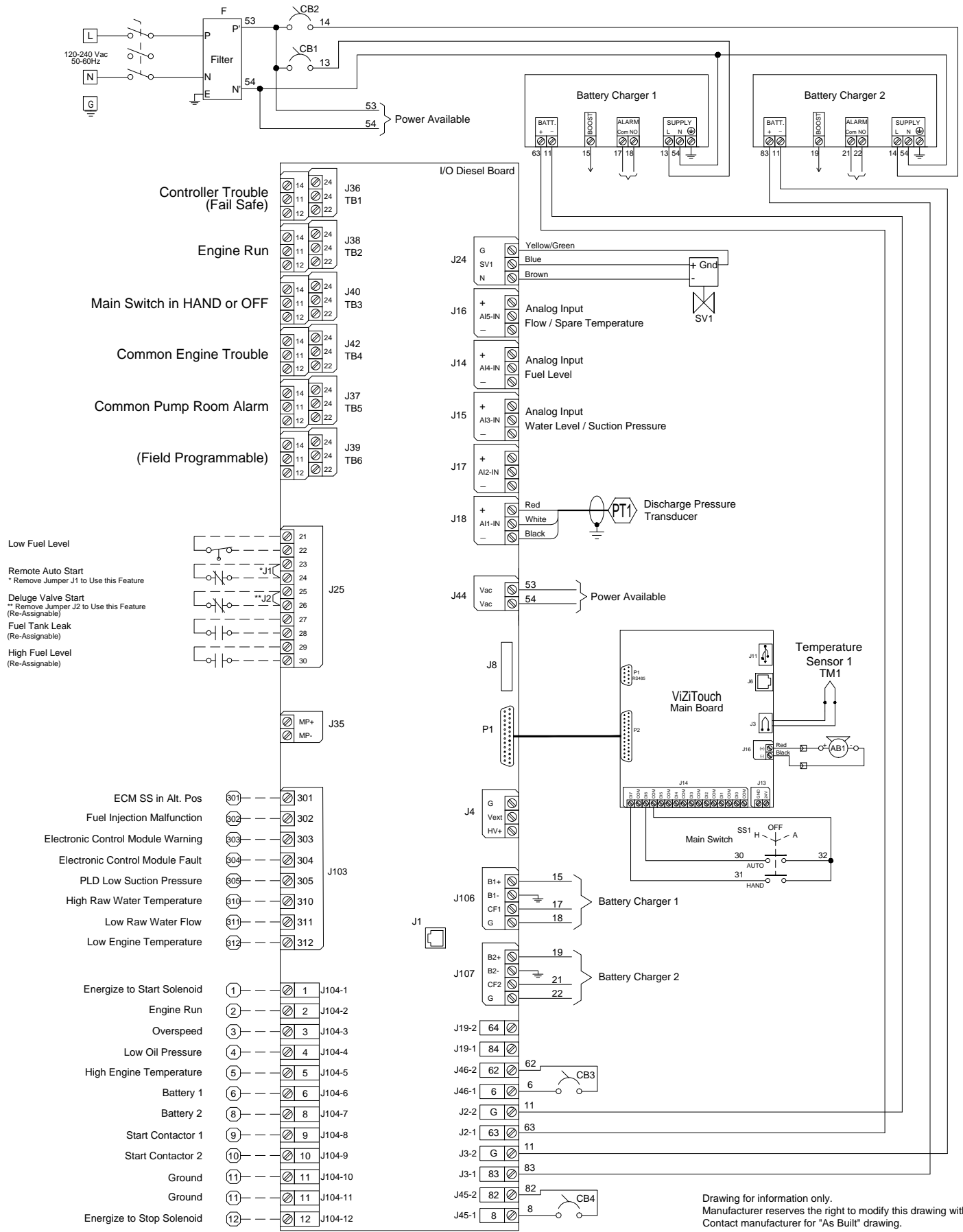
# Diesel Engine Fire Pump Controller

Model: GPDFM

12Vdc or 24Vdc Negative Ground

Wiring schematic

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
0	First Issue	08/04/15	GPDFM-WS603 /E

# Diesel Engine Fire Pump Controller

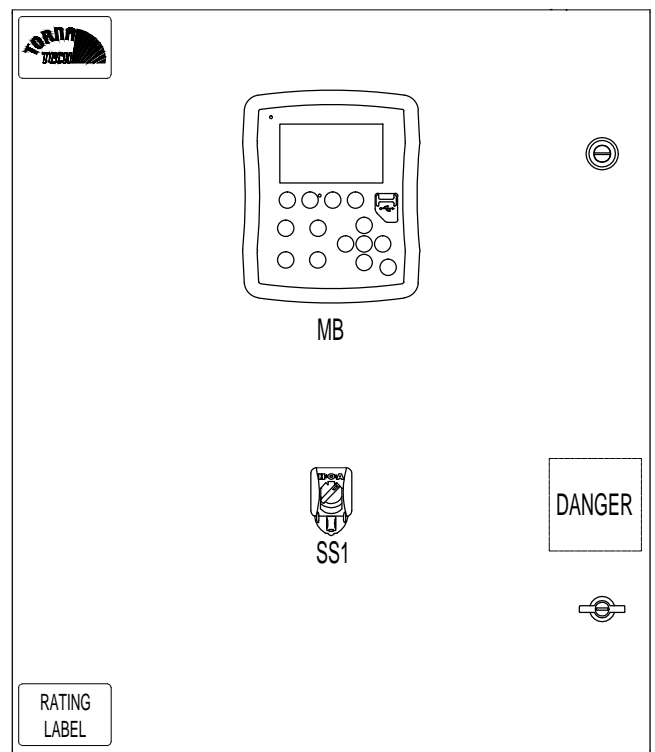
Model: GPDFM

12Vdc or 24Vdc Negative Ground

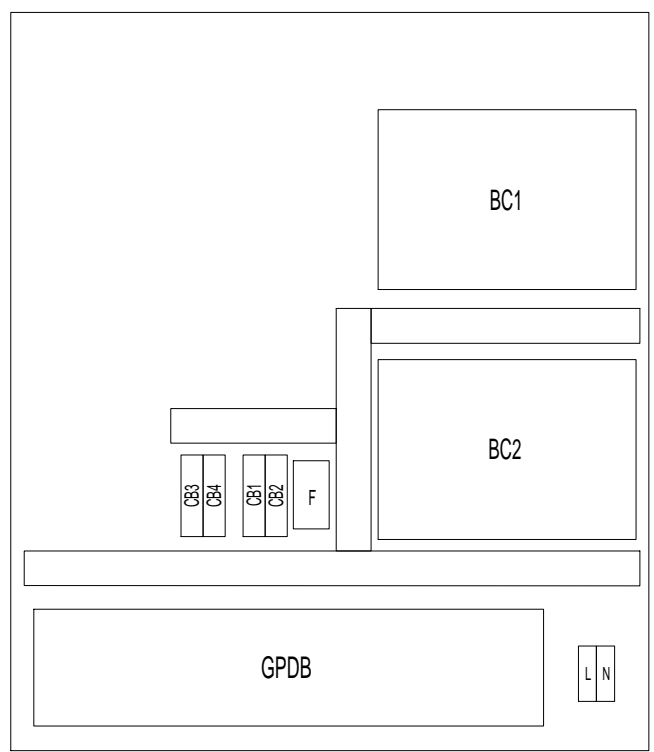
Layout

Built to the latest edition of the NFPA 20 standard

Designation	Description
F	Filter
CB1-2	Magnetic Breaker 1 Pole 10 Amp.
BC1-BC2	Battery Charger #1 and #2
CB3-4	Magnetic Breaker 1 Pole 15 Amp.
GPDB	I/O Diesel Board
SS1	Lockable 3 Position Selector Switch
MB	ViZiTouch Main Board
L & N	Incoming Power Terminals



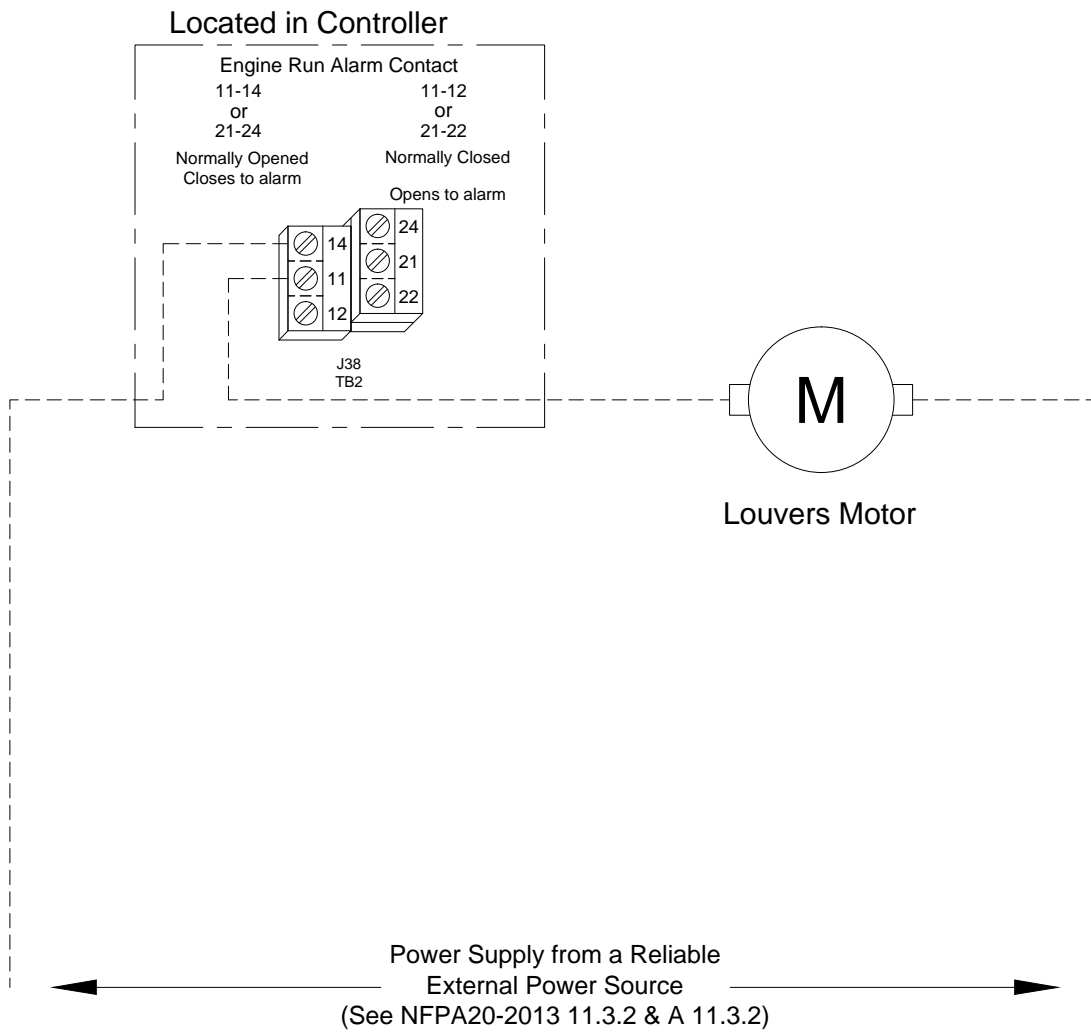
Front Door Layout



Internal Layout



REV.	DESCRIPTION	DD/MM/YY	Drawing number
1	Update for New Charger	26/01/15	GPDFM-LY600 /E
2	Change CB position	09/04/15	
3	General Revision	26/06/15	



REV.	DESCRIPTION	DD/MM/YY	Drawing number
0	First Issue	25/05/15	GPDFM-TD403 /E

# Diesel Engine Fire Pump Controller

## 12Vdc or 24Vdc Negative Ground

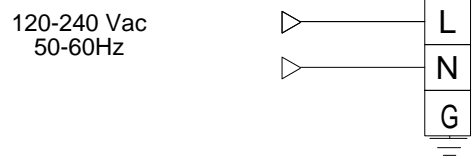
### Terminals Diagram

Model: GPDFM

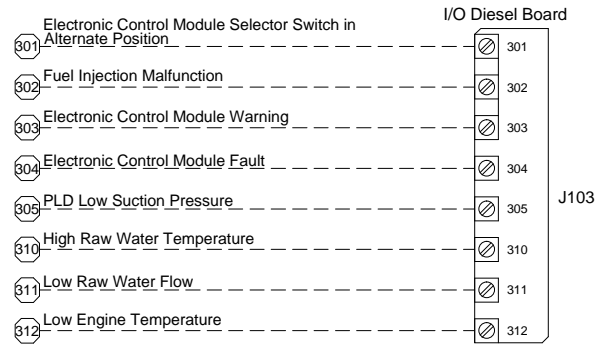
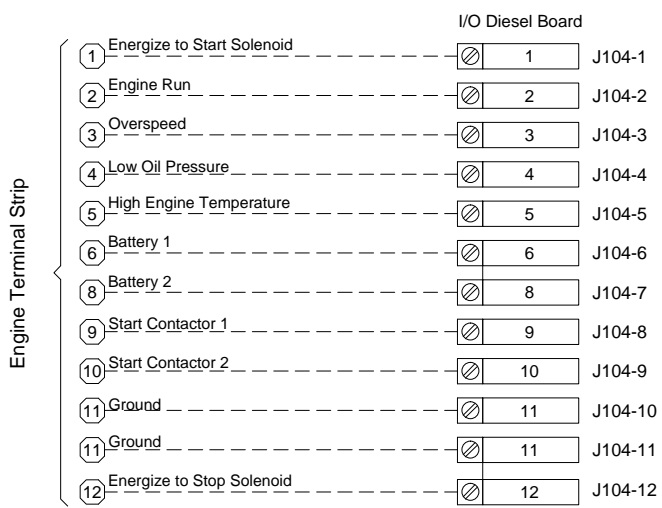
Built to the latest edition of the NFPA 20 standard

#### Power Supply

Terminals Wire Size:  
1.5 - 16 mm<sup>2</sup>  
2 Nm

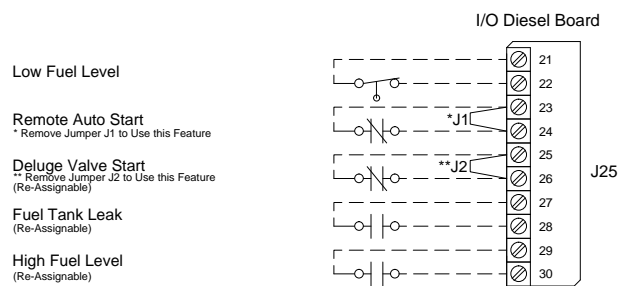


#### Engine Connections



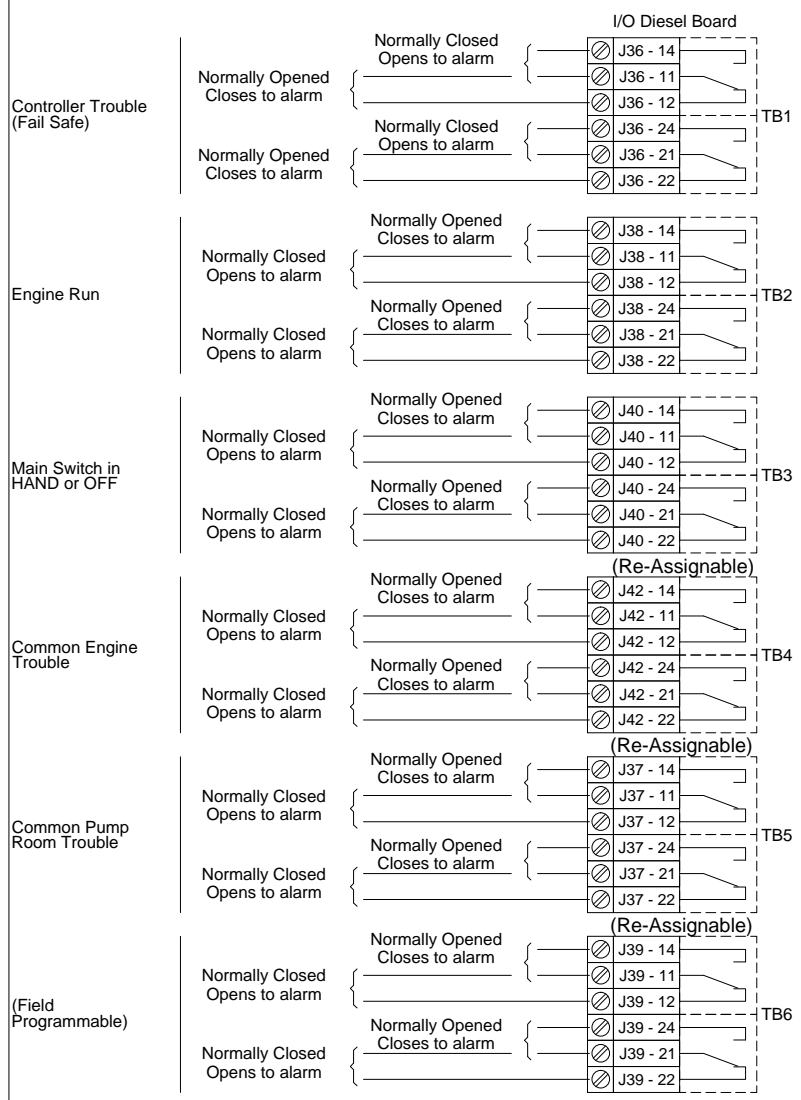
#### Field Connections

Terminals Wire Size:  
0.5 - 4 mm<sup>2</sup>  
0.5 Nm



#### Alarm Contacts

Terminals Wire Size:  
0.5 - 2.5 mm<sup>2</sup>  
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 2.5mm<sup>2</sup> as minimum.

Wiring between controller and engine (terminals 1, 9, 10, 12) must be stranded 6mm<sup>2</sup> as minimum.

Wiring between controller and engine (terminals 6, 8, 11) must be stranded 10mm<sup>2</sup> as minimum.



REV.	DESCRIPTION	DD/MM/YY	Drawing number
0	First Issue	08/04/15	GPDFM-TD603 / E