



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.



March 2024



Standard, Listings, Approvals and Certifications	Built to NFPA 20 (latest edition)		
	Underwriters Laboratory (UL)	UL218 - Fire Pump Controllers	
	FM Global	Class 1321/1323	
	New York City	Accepted for use in the City of New York by the Department of Buildings	
	CE Mark	Various EN, IEC & CEE directives and standards	
	Built in Canada or U.A.E	Built in Europe	
	CE Mark Option	Supplied as Standard	
Enclosure	Protection Rating		
	Built in Canada or U.A.E	Built in Europe	
	Standard: NEMA 2	Standard: IP55	
	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 • Bottom entry gland plate • Lifting Lugs • Keylock handle	Paint Specifications • Red RAL3002 • Powder coating • Glossy textured finish	
	Ambient Temperature Rating	Standard 4°C to 40°C / 39°F to 104°F	
Optional 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	120V / 1ph / 60hz 208V to 240V / 1ph / 50-60hz
	DC	12VDC 24VDC
	Grounding system	• Negative
	Battery chargers	• 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	Alarm buzzer - 85dB at 3 meters
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 & 2 Failure • Weak battery 1 & 2 • Battery 1 & 2 overvoltage • Loss of continuity 1 & 2 • High fuel level • Fuel tank leak • PLD low suction pressure • High raw water temperature • Low pump room temperature • Service required • ECM warning • Weekly test cut-in not reached • Check weekly test solenoid • Pressure transducer fault • Invalid Cut-In <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 • Battery 1 & 2 Failure • Engine fail to start • Low fuel level • ECM fault • ECM SS in Alternate Position • Fuel injection malfunction
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*** • 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 • Common pump room trouble (field re-assignable)* <ul style="list-style-type: none"> • Low fuel level • High fuel level • Fuel tank leak • Low pump room temperature • High pump room temperature • AC Failure • H-O-A selector switch in OFF or HAND • Free (field programmable)*

*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 • Water reservoir low (re-assignable) • Fuel tank leak (re-assignable) • High fuel level (re-assignable) 		
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 		
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 	
	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.



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

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

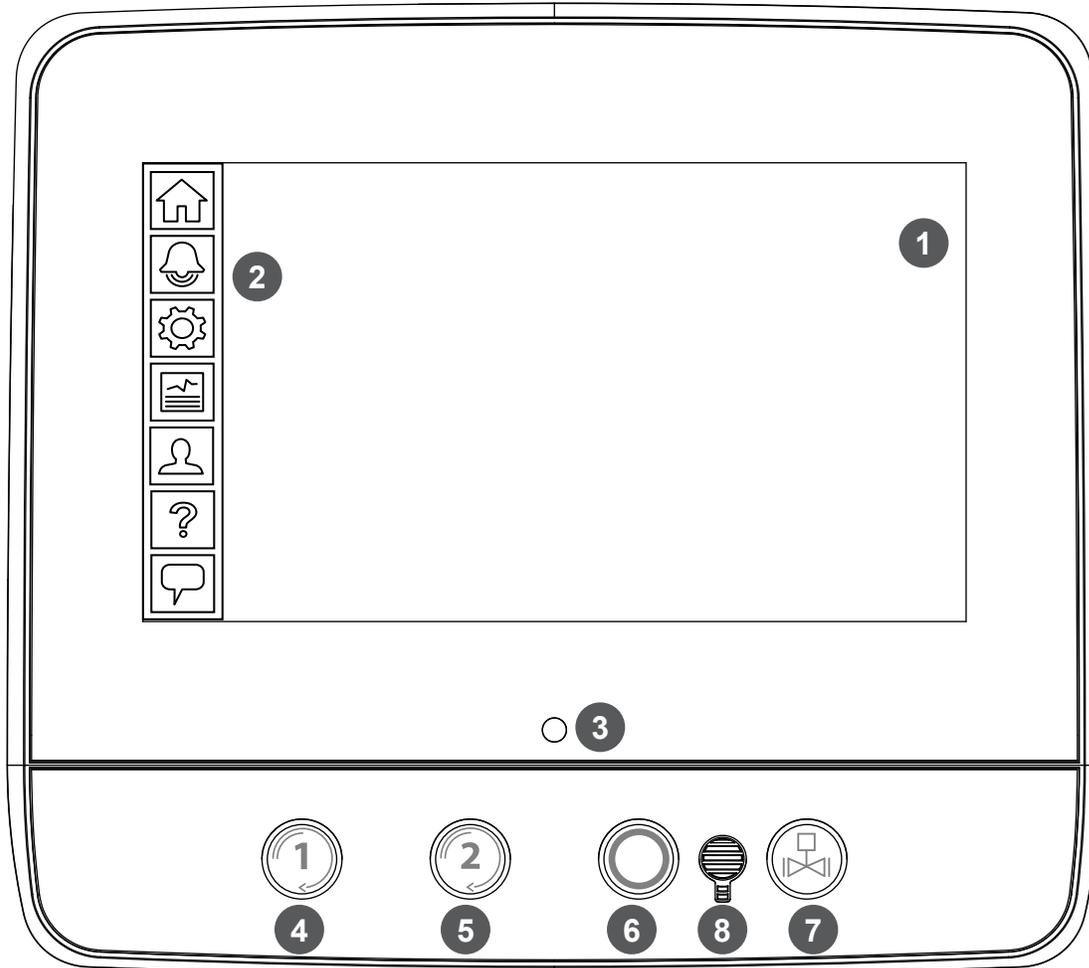


D26A	Combined low and high fuel level float switch (1-1/2")
D27	Fuel level probe (2") Level indication
D28A	Field programmable I/O board - 5 Input / 5 output
D30	Redundant pressure transducer for fresh water rated for 0-500PSI
D31	Redundant pressure transducer for sea water rated for 0-500PSI
D32	Modbus with RTU frame format and RS485 connection
D35	Seismic Certification compliant to CBC 2019, IBC 2018 rigid base/wall mounted only
D38	Special Seismic Certification compliant to OSHPD rigid base/wall mounted only

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

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 - CRANK 1 button |
| • HOME page | 5 - CRANK 2 button |
| • ALARM page | 6 - STOP button |
| • CONFIGURATION page | 7 - RUN TEST button |
| • HISTORY page | 8 - Alarm buzzer |
| • SERVICE page | |
| • MANUAL page | |
| • LANGUAGES page | |



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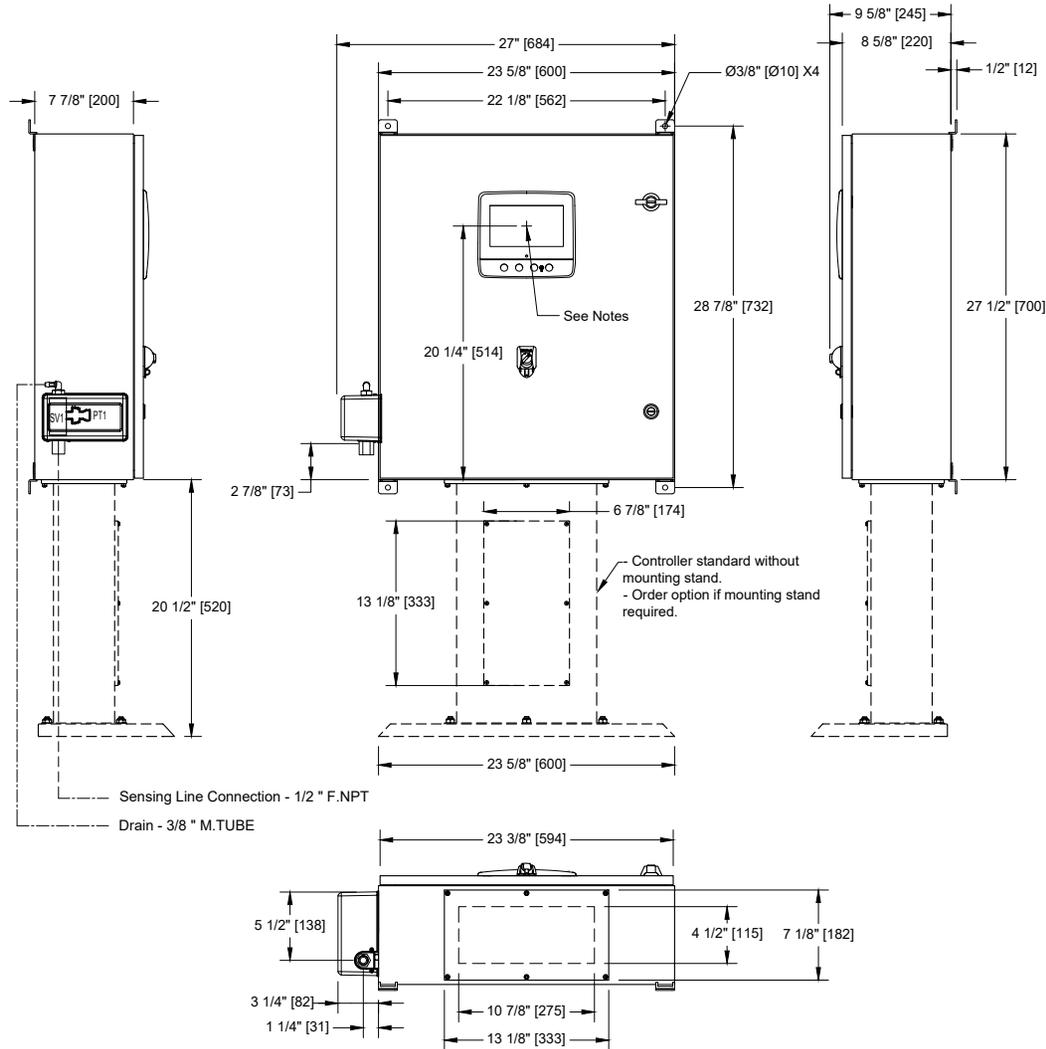
DIESEL ENGINE FIRE PUMP CONTROLLER 12VDC OR 24VDC NEGATIVE GROUND

MODEL: GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



DRAWING NUMBER	GPD-DI800/E
DWG REV. 0	
SHEET 1 OF 1	



- Notes:**
- Standard: NEMA 2
 - Standard paint : textured red RAL 3002.
 - All dimensions are in inches [millimeters].
 - Center of screen: 20-1/4" [514] 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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DIESEL ENGINE FIRE PUMP CONTROLLER

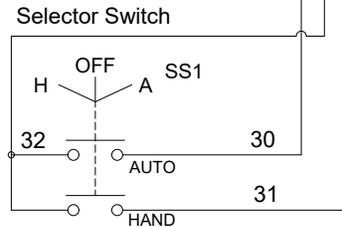
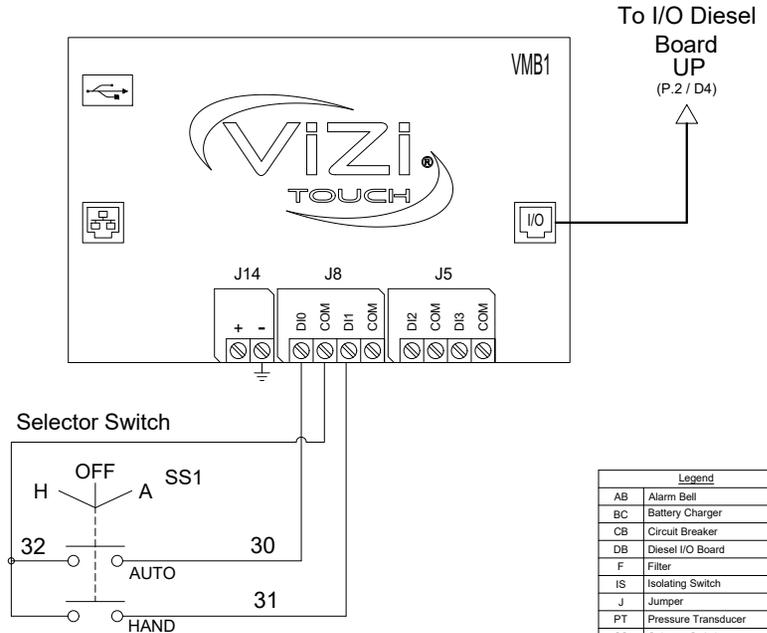
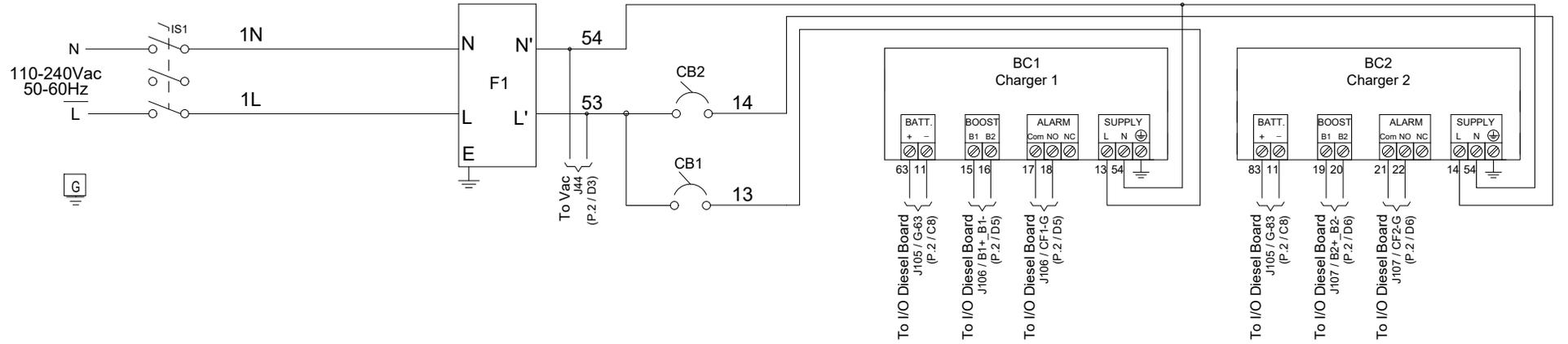
12VDC OR 24VDC NEGATIVE GROUND

MODEL: GPD

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DRAWING NUMBER	GPD-WS800/E
DWG REV. 0	
SHEET 1 OF 2	



Legend	
AB	Alarm Bell
BC	Battery Charger
CB	Circuit Breaker
DB	Diesel I/O Board
F	Filter
IS	Isolating Switch
J	Jumper
PT	Pressure Transducer
SS	Selector Switch
SV	Solenoid Valve
VMB	Main Board



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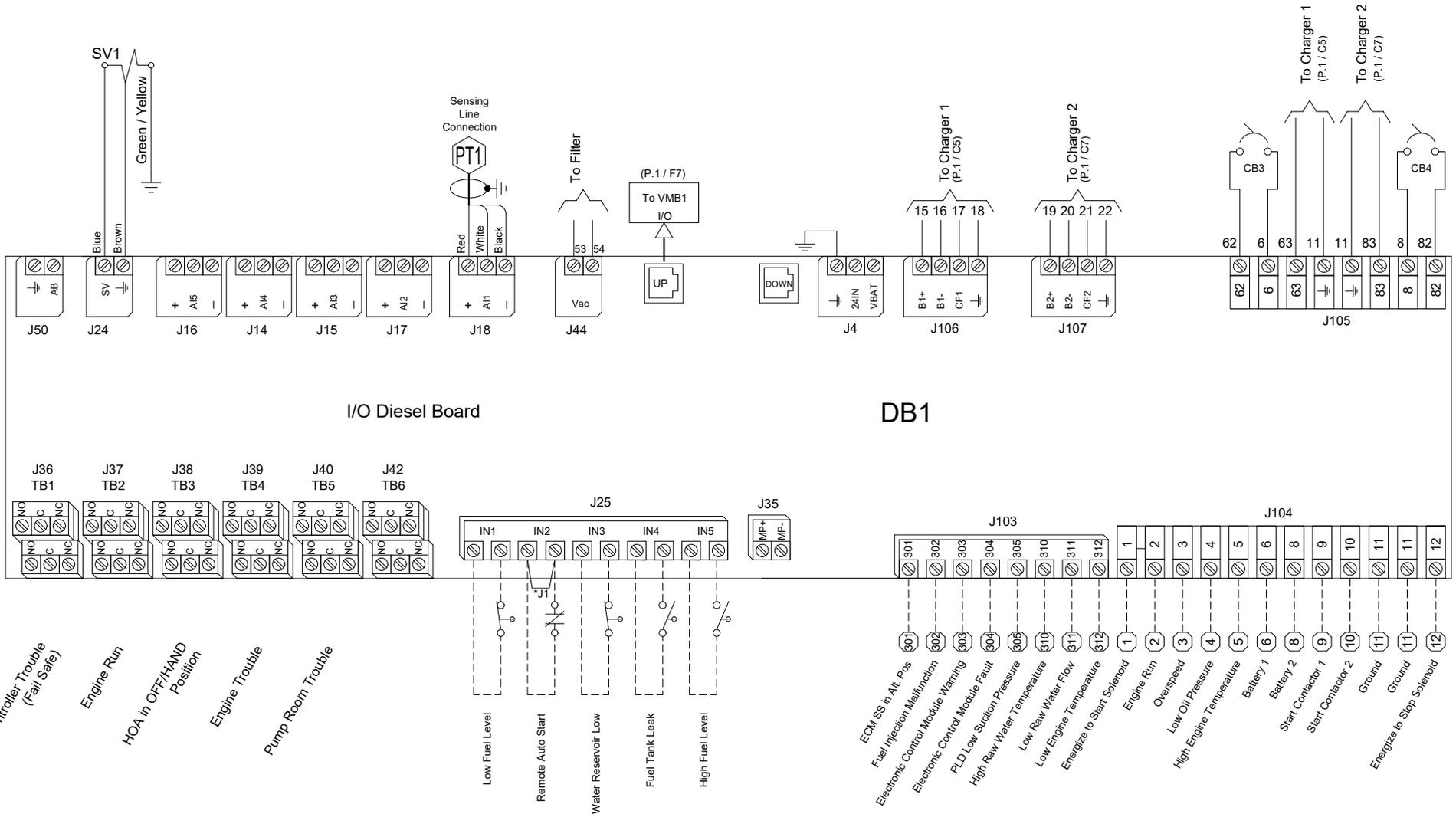
DIESEL ENGINE FIRE PUMP CONTROLLER 12VDC OR 24VDC NEGATIVE GROUND

MODEL: GPD

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DRAWING NUMBER	GPD-WS800/E
DWG REV. 0	
SHEET 2 OF 2	



* Remove this jumper to use this feature



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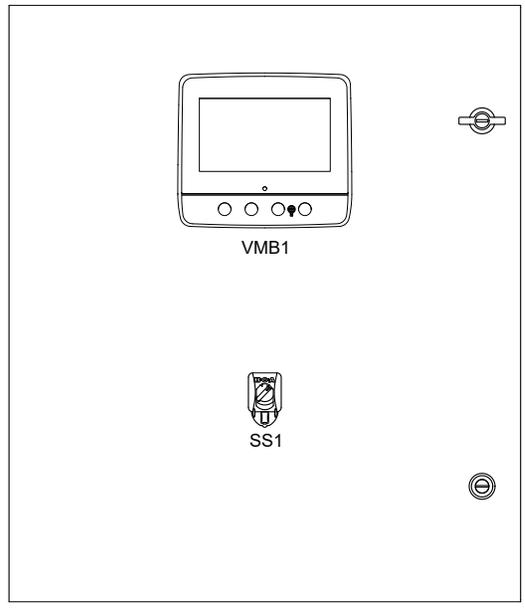
MODEL: GPD

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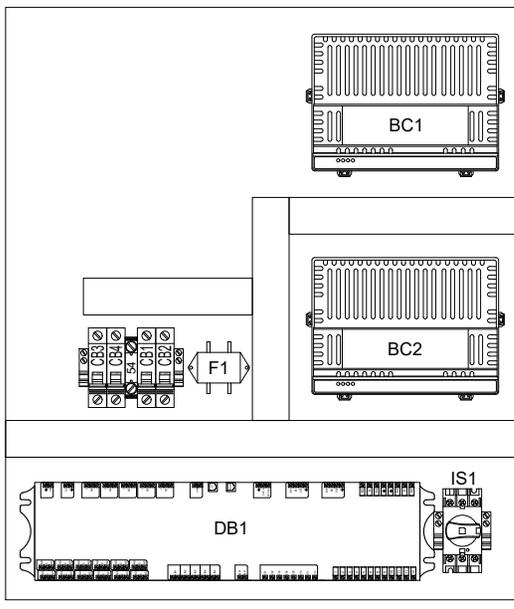


DRAWING NUMBER	GPD-LY800/E
DWG REV.	0
SHEET	1 OF 1

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	Main Board



Front Door Layout



Internal Layout



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MODEL: GPD

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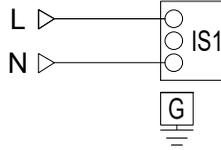


DRAWING NUMBER
GPD-TD800/E
DWG REV. 0
SHEET 1 OF 1

Power Supply

Terminals Wire Size:
14 - 6 AWG
1.8-2 Nm

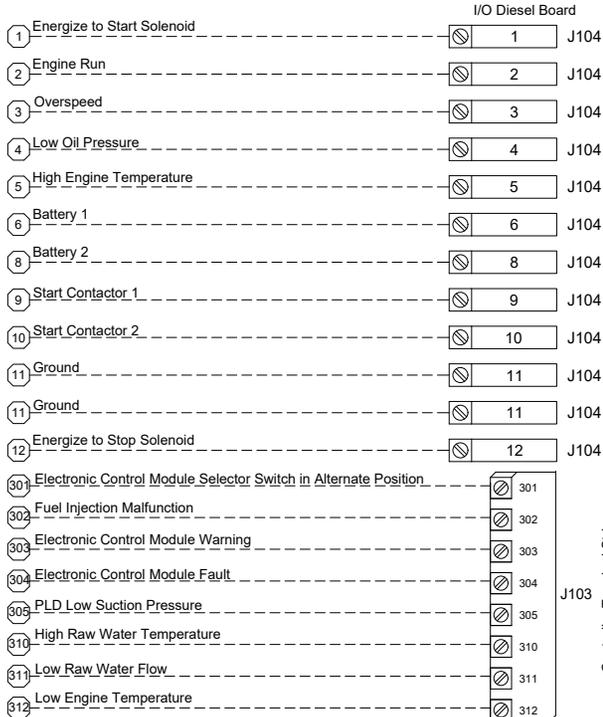
110-240Vac
50-60Hz



Engine Connections

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.

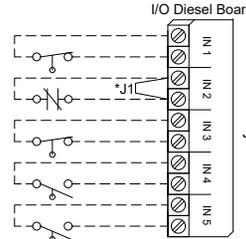
0-5' (0-1.5m) - 12 AWG (4 mm2)
6-10' (1.8-3m) - 10 AWG (6 mm2)
11-15' (3.3-4.5m) - 8 AWG (10 mm2)
16-20' (4.8-6m) - 2x10 AWG (2x6 mm2)
21-32' (6.4-9.75m) - 2x8 AWG (2x10 mm2)



Field Connections

Terminals Wire Size:
24 - 12 AWG
0.5 Nm

- Low Fuel Level
- Remote Auto Start
- Water Reservoir Low
- Fuel Tank Leak
- High Fuel Level



Network Connections

Terminals Wire Size:
Shielded Female Connector RJ45

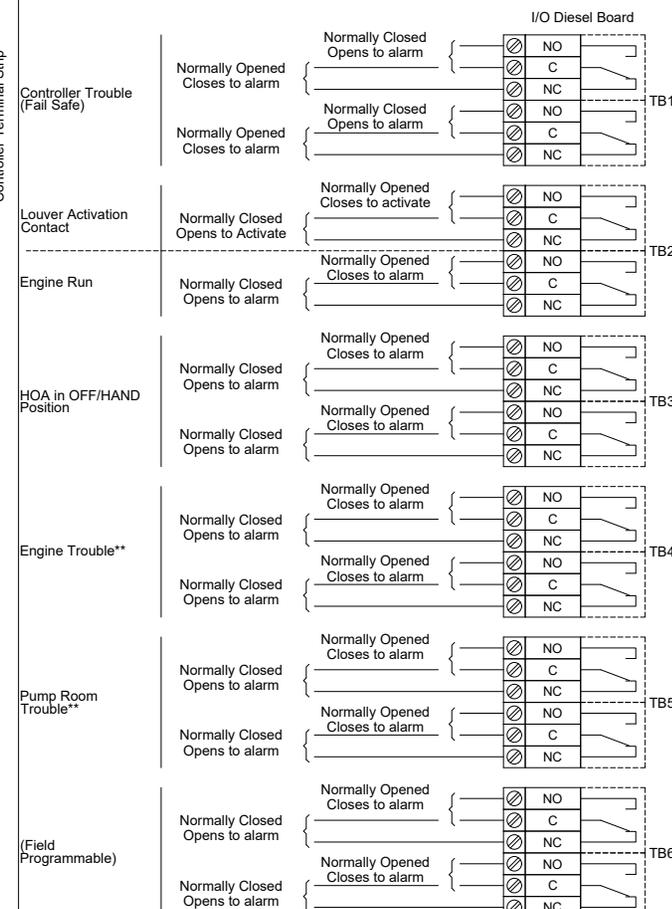
Modbus TCP/IP

Located on Main Board



Alarm Contacts

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



* Remove this jumper to use this feature

** Re-assignable



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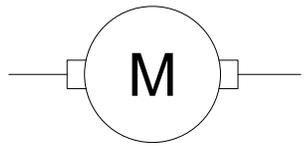
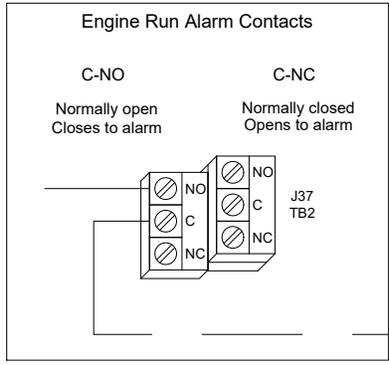
MODEL: GPD

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70



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

Located in Controller



Louvers Motor

