



FireConnect Jockey Controller FCJC

Installation and Operation Manual

Another Digital Innovation from the Peerless Pump Company

2005 Dr. Martin Luther King Jr
Indianapolis, 46202 - U.S.A.
Phone: (+1) (317) 925-9661
www.peerlesspump.com

Blank

Table of Contents

Chapter 1 - Symbols Used in This Document	5
Chapter 2 - General Information	6
2.1 Product Description	6
2.2 Warranty	6
2.3 Personnel Qualification	6
2.4 Warnings	7
Chapter 3 - Transportation, Handling, & Storage	8
3.1 Receipt and Inspection	8
3.2 Storage	8
3.2.1 Controlled Storage	8
3.2.2 Uncontrolled Storage	9
3.2.3 Standard Short-Term Storage	9
3.2.4 Long-Term Storage	9
3.3 Disposal of Packaging Materials	9
Chapter 4 - Identification	10
4.1 Identification Tag	10
4.1.1 Certifications	10
4.2 Model Number & Product Matrix of Configuration	11
4.3 Standard Product Specifications	12
4.3.1 Approvals	12
4.3.2 Voltage Rating	12
4.3.3 Pressure Display Accuracy	12
4.3.4 Short Circuit Current Rating	12
4.3.5 Horsepower Rating	12
4.3.6 Service Factor	12
4.3.7 Locked Rotor Code	12
4.3.8 Remote Contacts	12
4.3.9 Pressure Rating	12
4.3.10 Plumbing	13
4.3.11 Enclosure	13
4.3.12 Ambient Temperature	13
4.3.13 Standard Automatic Functions	13
Chapter 5 - Equipment & Installation	14
5.1 Factory Support	14
5.2 Inspection	14
5.3 Required Tools and Fixtures	14
5.4 Location	15
5.5 FireConnect® Jockey Controller (FCJC) Installation	15
5.5.1 Location	15
5.5.2 Ratings	15
5.5.3 Mounting	15
5.5.4 Conduit Entrance	15
5.6 Connections	15
5.6.1 General Piping Connections	15
5.6.2 Power Connections	15

5.6.3 Motor Circuit Conductors	16
5.6.4 Remote Alarm Connections	16
5.6.5 Modbus Connections	17
5.7 Suction & Discharge Pressure Sensing Lines	20
5.8 Transit Time Flow Meter (TTFM)	21
5.8.1 Transit Time Flow Meter (TTFM) Wiring	21
5.9 Diesel Tank Level Monitoring & Visual Indicator	24
5.9.1 Installation of the FireConnect Diesel Fuel Tank Level Sensor	24
5.9.2 Diesel Fuel Tank Level Monitoring (Dimensional Analysis)	25
5.10 Closed Cooling Loop; Tank Return Monitoring	27
5.10.1 Closed Cooling Loop; Tank Return Monitoring Installation	27
5.11 Digital Temperature Sensor Programming	29
5.11.1 Digital Temperature Sensor Display & Menu Navigation	29
5.11.2 Digital Temperature Sensor Menu Structure	30
5.11.2 Digital Temperature Sensor Menu Setting	31
5.12 Battery Backup	32
5.12.1 Battery Recommendations	32
5.12.2 Battery Location	32
5.12.3 Battery Wiring	33
5.12.4 Battery Maintenance	33
6.1 Menu Functions	34
6.1.1 Moving through the menus:	34
6.1.2 Function changes with buttons:	34
6.2 Menu & Recorded Memory (HMI Only)	35
6.2.1 Recorded Controller Settings	35
6.2.2 Recorded Controller History	35
Chapter 7 - FireConnect® Jockey Controller Startup Procedure & Checklist	36
7.1 Procedure	36
7.2 Startup Checklist	36
7.2.1 Energizing Controller	36
7.2.2 Energizing Controller; Stand-By Operation	37
7.2.3 De-energizing Controller	37
7.2.4 Manual Starting	37
7.2.5 Manual Electric Stopping	37
Chapter 8 - Maintenance	38
8.1 Annual Maintenance Checklist	38
Peerless Pump Contact Information	39
Appendix I - Drawings & Diagrams	40
Appendix-II	48
Greyline TTFM 6.1 Instruction Manual	48
Appendix-III	49
ProSense Digital Temperature Sensor Manual	49

Chapter 1 - Symbols Used in This Document



- ***Warning! If these safety instructions are not observed, personal injury may result.***



- ***Warning! If these instructions are not observed, electric shock with consequent risk of serious personal injury or death may occur.***

CAUTION

- ***If these safety instructions are not observed, the result may be a malfunction or damage to the equipment.***

Note

- ***These are notes or instructions that make the job easier and ensure safe operation.***

Chapter 2 - General Information

These instructions should be retained for reference regarding future maintenance and operation. Additional copies can be found at www.PeerlessPump.com

These are general instructions and may not take into account possible local regulations. All installations are subject to local code and regulations, and/or the authority having jurisdiction. The user should ensure such regulations are observed by all parties involved.

Information in this manual is believed to be reliable. In spite of all efforts to provide sound and necessary information, the content of this manual may be insufficient. It is not guaranteed to be complete or accurate in all instances.

2.1 Product Description

The **FireConnect® Jockey Controller** system is a hardware and software package developed by Peerless Pump to provide real-time fire pump system monitoring through cloud networking. FireConnect® integration to the pressure maintenance controller collects data from peripherals on-site such as: the controllers for the fire pump and jockey pump, a bulkhead mounted discharge and suction pressure transducer, an externally mounted, transit time flowmeter and other sensors as supplied. It will then communicate that data to the cloud via 3G or 4G LTE cellular communication. The system can then be monitored using the Peerless Pump FireConnect® application. Through the application, the user can view real-time fire system information such as: alarm conditions, system pressure, water flow, event logs, and much more...

Pressure maintenance controllers are used in installations designed to NFPA-20, Standard for the Installation of Stationary Fire Pumps for Fire Protection. They are designed to maintain the system pressure, so the fire pump does not start due to small leaks in the system.

Model FCJC controllers provide across-the-line (direct-on-line) full voltage starting for single or three phase motor driven jockey pumps.

See Appendix for Piping & Installation Diagram (P&ID) and Wiring Diagram for a typical electrical wiring connection diagram.

2.2 Warranty

This unit is manufactured under a quality management standard as certified and audited by external quality assurance organizations. Genuine parts and accessories have been designed, tested, and incorporated into the products to help ensure their continued product quality and performance in use.

Damage or malfunction caused by misuse, abuse, or failure to follow these instructions are not covered by warranty.

Any modification of our products or removal of original components may impair the safety of these products and affect their operation.

Standard warranty conditions can be found at www.PeerlessPump.com.

2.3 Personnel Qualification

All operations must be carried out by qualified personnel. Please consult the procuring organization for the recommended procedure for connections to equipment not supplied by Peerless Pump Company.

2.4 Warnings



- **Warning!**
Do not remove or paint over any safety labels. If labels are lost or damaged, contact a Peerless Pump representative for replacement.
- **Warning!**
Never perform maintenance work when the unit is connected to power. Use only qualified electricians for electrical installation and maintenance.
- **Warning!**
Danger of lethal electrical shock and arc flash hazard - use appropriate personal protective equipment (PPE) in accordance with NFPA 70e.



- **Warning!**
To prevent the possibility of serious injury or death due to an electrical fault, be sure the door is closed and latched before closing the manual motor protector or disconnect switch or operating the controller.
- **Warning!**
This equipment must only be serviced by qualified electrical personnel.
- **Warning!**
Do not defeat any interlocks or safety features or equipment or circuitry.

Chapter 3 - Transportation, Handling, & Storage

The FireConnect® system has been prepared for shipment at the factory in such a way as to minimize potential damage due to handling and transport.

Caution

- ***The equipment should not be subjected to excessive g-forces during the handling or transport.***

3.1 Receipt and Inspection

Receiver should report any shortage or damage to the transport company handling the shipment and to Peerless Pump.

Note any extent of damage or shortage on the freight bill and bill of lading. Failure to note damage may result in a declined warranty.

Take inventory of the shipment to ensure that the parts received match the list of parts on the order. Failure to report missing parts may result in a declined warranty.

It is important that all the components for the FireConnect® system are identified and properly stored until time of installation. There may be many small parts that are best left in their original shipping container until installation.

Check within all packaging material in order to verify that no parts or instructions are accidentally discarded. **In some shipments, be aware that small boxes containing additional parts may be bound to pump skids.** At the time of installation, match components using their markings to the system they are to be installed on if there is more than one.

3.2 Storage

Standard factory packaging and protection is suitable during transit and within covered storage at a jobsite for a short period between delivery and installation/startup. This protection includes preservatives applied at the factory to the components.

The effective protection is two to three months from the date of shipment from the factory. This is dependent on storage conditions and the severity of the environment to which the equipment is exposed as described below. For an international destination, this will vary depending on the seaworthiness of export boxing.

At the time of specification and/or order placement

Peerless Pump should be advised about an extended storage duration that will be excess of two to three months and other than what is described below. This is to ensure special storage protection can be provided for the equipment prior to shipping from the factory.

3.2.1 Controlled Storage

Storage facilities should be maintained at an even temperature of at least 40°F (4.5 °C) above the dew point with relative humidity lower than 50 % with little or no dust. The equipment is to be inspected weekly to ensure that all preservatives are intact, and internals are protected.

Caution

- ***Protect the equipment from flooding or from harmful chemical vapors.***
- ***Storage should be free from ambient vibration. Excessive vibration can cause bearing damage.***
- ***Precautions should be taken to prevent rodents, snakes, birds, insects, etc. from nesting inside the equipment.***

3.2.2 Uncontrolled Storage

For uncontrolled storage periods of three months or less, the equipment is to be inspected weekly to ensure internals are protected.

Provide a roof or shed shelter to protect from direct exposure to the elements

3.2.3 Standard Short-Term Storage

The FireConnect® system, as shipped, has an effective protection for short-term (two to three months) storage in a covered, dry, and ventilated location as described above at the job site prior to installation.

3.2.4 Long-Term Storage

Long-term storage protection from the factory does not extend the warranty in any manner. Warranty policy is twelve months from startup or eighteen months from time of shipment, whichever occurs first. This warranty is valid only if equipment has been properly handled and stored as per the stated requirements.

Should the equipment be stored or handled improperly, then the warranty becomes invalid and may be reinstated only after a factory representative inspects the equipment prior to startup. Expenses for the representative will be billed in accordance with the latest schedule for the field service engineer.

Any repairs or replacement parts needed will be billed to the customer at prices in effect at time they are shipped.

In addition to having complied with the storage conditions the FireConnect® system, once installed, should be inspected at regular periods, with intervals not to exceed three months.

3.3 Disposal of Packaging Materials

This product or parts of it must be disposed of in an environmentally sound way. For assistance, please contact Peerless Pump when disposing of packaging materials or FireConnect® components.

All electronic waste should be disposed of in a way that aligns with the EPA standards and recommendations.

Chapter 4 - Identification

4.1 Identification Tag

The product or device identification number can be found on the outside of the FireConnect Jockey Controller (FCJC) door. This unique number corresponds to the original device configuration and features.

Please reference this number when inquiring with the factory. Be sure to include any other pertinent information as deemed necessary by the inquiring personnel. Model NO, Part NO, Serial NO, and FireConnect ID NO should be included in the subject matter as well for optimum inquiry experiences.

Reference **Figure - 1 & 2** for illustration of product identification nameplate.

4.1.1 Certifications

The FireConnect® Jockey Controller will provide a UL Type-1 enclosure as standard on all configurations. Additional enclosure types are available.

4.1.2 Special Certifications Nameplate

The FireConnect Jockey Controller may also come With a second nameplate, specifically to identify special listings and certifications.

An example is displayed in **Figure- 2** below

This nameplate is intended to separate the FireConnect remote monitoring portion from the system as a whole as required by the FM-1330 standard.

Only the FireConnect remote monitoring portion of the system is approved by the FM-1330 standard. When a product configuration is requested to meet the FM-1330 requirements, a second nameplate will be used at such time to separately identify and differentiate the monitoring system from the pressure maintenance control system.

All other listings or certifications displayed on this nameplate will apply to the FireConnect Jockey Controller as a whole and includes both the monitoring and controller components.

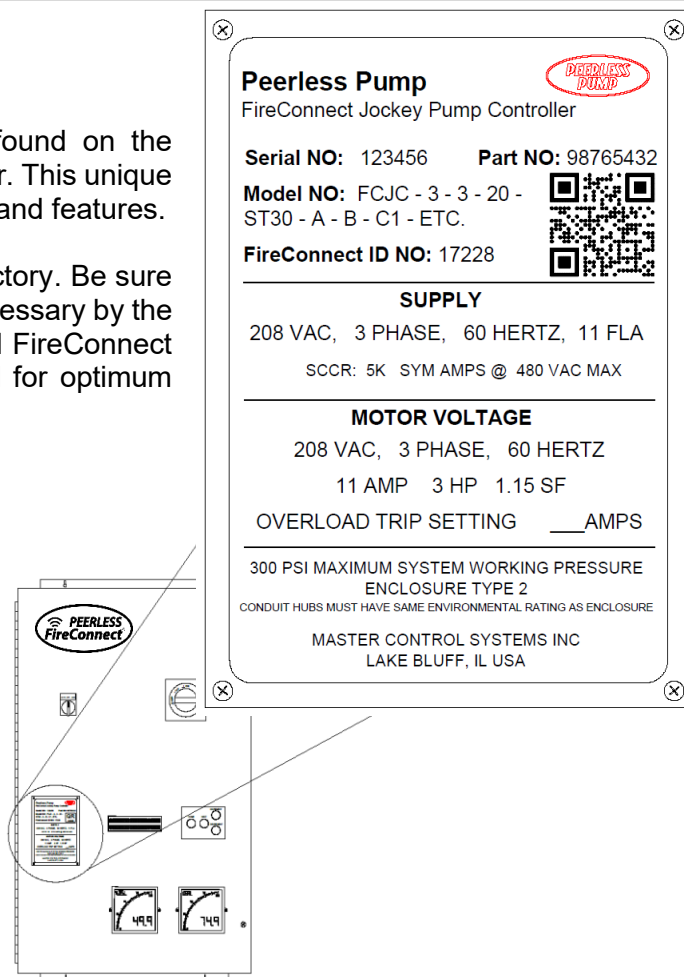


Figure 1 - FCJC FireConnect Jockey Controller & Nameplate

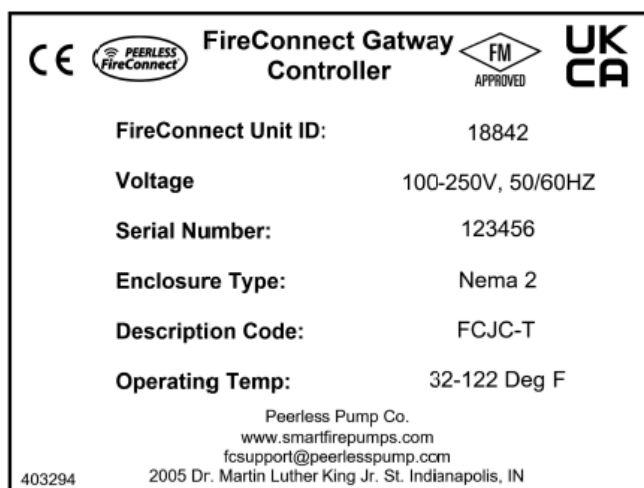


Figure 2 - FireConnect Remote Monitoring System Special Certifications and Listings Nameplate

4.2 Model Number & Product Matrix of Configuration

Please refer to the tables below in **Figure - 3 & 4** for the Model Number description key.

MODEL FCJC - FIRECONNECT JOCKEY CONTROLLER						
Maximum Motor Horsepower	Motor Rated Voltage					
	Single Phase		Three Phase			
	110-120V	220-240V	208V	220-240V	380-415V (50 Hz)	440-600V
1/3 to 3/4	X	X	X	X	X	X
1 - 2	X	X	X	X	X	X
3		X	X	X	X	X
5		X	X	X	X	X
7 1/2			X	X	X	X
10				X	X	X
15					X	X
20						X

Figure 3 - FireConnect Jockey Controller Voltage, Phase, & Horsepower Configuration Matrix

Symbol	Description
AUD	Audible alarm with silence switch
A1	Pump Pumping contacts (one N.O. and one N.C.)
A2	Pump Running contacts (Two N.O. and two N.C.)
A3	Power Failure contacts (one N.O. and one N.C.)
A4	Power Failure contacts (Two N.O. and two N.C.)
DMD	Demand Relay contacts (one N.O.)
ESR	Excessive Start contacts (one N.O. and one N.C.)
F1	Failure to Start contacts
L1	Pump Running pilot light
L2	Power Available pilot light
L5	Failure to Start pilot light
MP	MMP closed contact (one N.C.)
OVP	Overpressure contacts (one N.O. and one N.C.)
RS	Remote Start Input
SOA	Switch OFF contact (one N.O.)
ST30	Suction transducer - 30 psi range replaces standard 150 psi range
TR	Trouble contacts (one N.C. and one N.O.)
TRA	Trouble contacts (one N.O. and one N.C.) with alarm light
W1	316 SS wetted parts
W7	High-pressure transducer (600 PSI)
H1	Space heater and CPT
H2	Space heater with thermostat and CPT
H3	Space heater with humidistat and CPT
PM	Phase Failure Monitor

Figure 4 - FireConnect Jockey Controller Option Codes

4.3 Standard Product Specifications

The following specifications are in regard to the controller itself and the physical components therein.

4.3.1 Approvals

UL listed to ANSI/UL 508A
CE, UKCA, Reach, & RoHS
FM 1330

4.3.2 Voltage Rating

Controllers are designed for or it's rated voltage, -15% and +10%.

4.3.3 Pressure Display Accuracy

The display accuracy is designed for +/- 2% of rated voltage and current.

4.3.4 Short Circuit Current Rating

Standard controllers are rated for 5,000 symmetrical RMS amps at 200 VAC to 480 VAC.

Higher ratings may be available, refer to factory support for availability.

4.3.5 Horsepower Rating

Controller are designed to control the specific nameplated motor horsepower rating.

4.3.6 Service Factor

Controllers are designed for use with motors having a maximum Service Factor of 1.75 at 1/3 hp, 1.60 at 1/2 hp, 1.50 at 3/4 hp, 1.40 at 1 hp, 1.30 at 1 1/2 hp, 1.25 at 2 hp, and 1.15 at 3 hp and above.

4.3.7 Locked Rotor Code

Standard three phase and single-phase controllers are designed for use with motors having a locked rotor KVA/HP code based on the tables provided in **Figure-5**

Motor Voltage 200-600 VAC			Motor Voltage 380-415 VAC			Single Phase - Motor 230 VAC		
HP	Frequency	KVA/HP	HP	Frequency	KVA/HP	HP	Frequency	LRC
1/2	60	R	1/2	50	P	1/3	60	18
3/4	60	P	3/4	50	P	1/2	60	25
1	60	N	1	50	P	3/4	60	35
1 1/2	60	M	1 1/2	50	N	1	60	45
2	60	L	2	50	M	2	60	65
3	60	K	3	50	L	3	60	90
5	60	J	5	50	K	5	60	135
7 1/2	60	H	7 1/2	50	J	7 1/2	60	200
10	60	H	10 & up	50	H	10	60	260
15 & up	60	G						

Figure 5 - FireConnect Jockey Controller Approved Design Locked Rotor KVA/HP Codes

4.3.8 Remote Contacts

Optional voltage free contacts are rated for 6 amps (resistive) at 30 vdc, 6 amps (resistive) at 250 vac.

4.3.9 Pressure Rating

Standard controllers are rated for 300 PSI (20.7 BAR).

Higher ratings may be available, refer to factory support for availability.

4.3.10 Plumbing

Standard controllers are provided with brass fittings.

Other materials may be available, refer to factory support for availability.

4.3.11 Enclosure

Standard controllers are rated for NEMA Type 1.

Other enclosures may be available, refer to factory support for availability.

4.3.12 Ambient Temperature

Rated for operation in a 40C ambient.

No direct sunlight is allowed on the enclosure.

4.3.13 Standard Automatic Functions

- Pressure Start
- Remote Start (delayed by sequence start)
- 2 second fixed Sequence Start Delay
- Minimum Run Timer (factory set to 2 seconds)
- Restart delay (factory set to 3 seconds)
- Failure to Start alarm
- Excessive Start alarm
- Overpressure alarm and shutdown (999 disables alarm)
- Conversion between PSI and BAR

Chapter 5 - Equipment & Installation

5.1 Factory Support

For these customized products, we recommend that a Peerless Pump service engineer supervise installation, commissioning, and startup. This is to ensure that the equipment is properly installed. In addition, this allows end user personnel the opportunity to review and see implemented, factory recommended instructions.

5.2 Inspection

All system parts were carefully inspected before leaving the factory but may have become soiled or damaged in shipping and handling or storage at the site. The installer must therefore confirm that all parts are clean and undamaged prior to installation.

If there is reason to believe the factory wired connections have been damaged in transit, please refer to the factory support team for assistance in tracing the line diagram connections found in **Appendix-I**

For any and all other damages or discrepancies, please contact the Peerless Pump Company warranty services.

5.3 Required Tools and Fixtures

Tools and fixtures for FireConnect® system installation, disassembly and reassembly may include (but not limited to) these items:

- Lifting devices (hoist or straps)
- Screwdriver (slotted and/or Phillips)
- Wire strippers
- Standard pipefitting equipment (for the flowmeter & transducer installation)
- Drill motor and bits
- Calibrated measuring tape
- Calipers (for proper spacing of the Greyline TTFM Flowmeter and the ultrasonic sensors)
- Personal Computing Device for Field Programming (If not done prior to shipment; lack of site details)

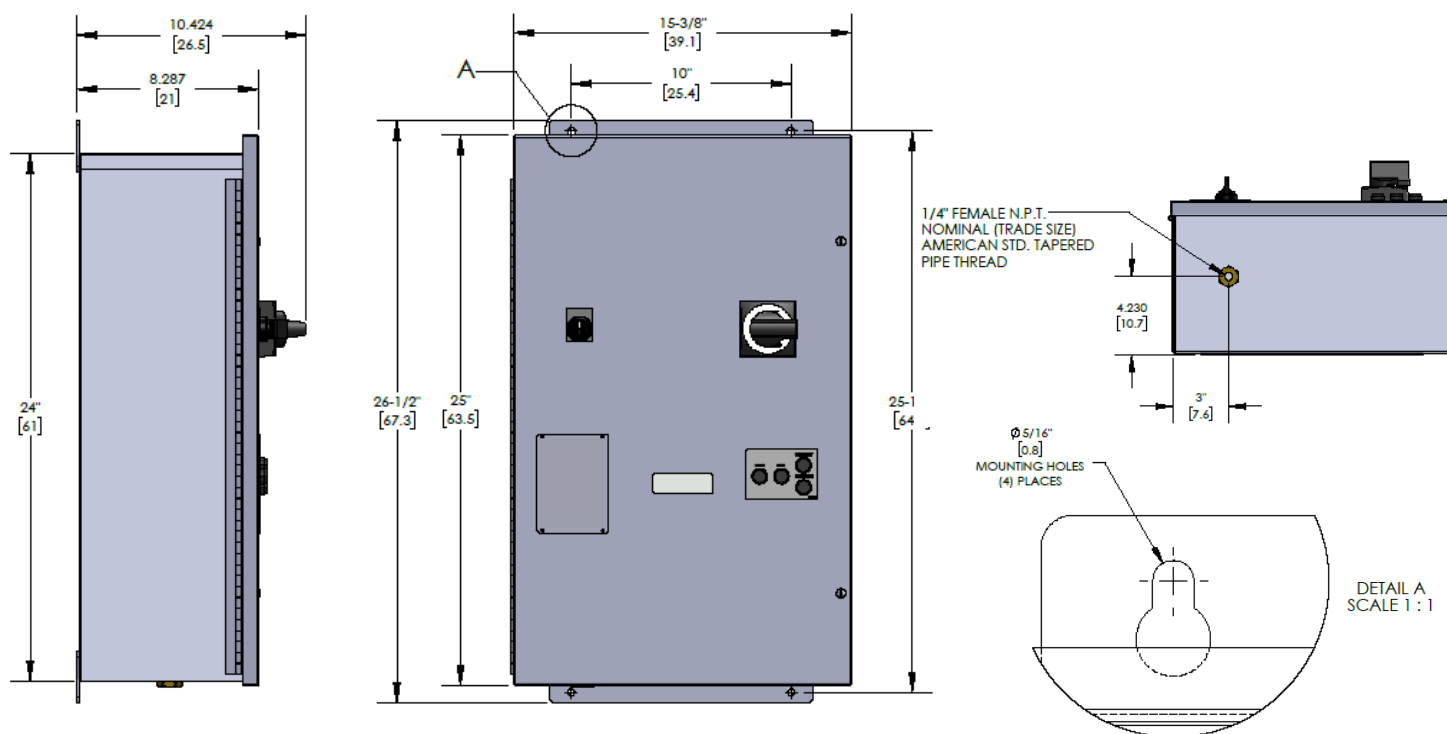


Figure 6 - Panel Specifications; Including Dimensions for Mounting and Plumbing

5.4 Location

The FireConnect® system must be installed on a panel stand or wall rigid enough to support the entire weight of the device. The system must be located indoors and protected from environmental exposures such as excessive heat, cold, dust, and water entry. Peerless Pump recommends installing the FCJC on the wall near the main fire pump controller.

5.5 FireConnect® Jockey Controller (FCJC) Installation

See **Figure-6.** (FCJC Panel Dimensions) for mounting dimensions and installation space requirements.

The FireConnect® Jockey Controller (FCJC) is essentially a pressure maintenance controller and all of its wiring and plumbing should be installed in accordance with the requirements given below and the wiring diagram located in the drawing section of this manual. It is designed to be installed in accordance with the requirements of NFPA-70, article 430, the National Electric Code, as well as any local requirements.

5.5.1 Location

Controllers should be located as close as practical to the motors they control. It should also be located within sight of the motor and in an area free from dripping and spraying water.

5.5.2 Ratings

Check that the system voltage and the motor nameplate voltage and horsepower ratings agree with the controller nameplate voltages and horsepower ratings before beginning installation.

5.5.3 Mounting

Controllers should be securely mounted and bolted to noncombustible surface or structure.

5.5.4 Conduit Entrance

Conduit entrance can be made either through the top or bottom of the enclosure.

Use appropriate conduit hub that matches the "Enclosure Type" as shown on the controller nameplate. When controllers suitable for outside installation are used, be sure the appropriate weatherproof conduit hub is used and provide a sun roof to prevent direct sunlight on the controller.

NOTE: If entering from the top, waterproof hubs are required for all installations.

Caution

- ***Foreign metallic debris, such as drilling chips, can cause a dangerous and/or damaging electrical fault when the equipment is energized. Be sure to protect all electrical parts from metallic debris during installation.***

5.6 Connections

5.6.1 General Piping Connections

A 1/4 inch nominal pressure sense line, typically made of brass, rigid copper or 300 series stainless steel, shall be connected to the incoming bulkhead connector located on the controller. The pressure sense line shall have two 3/32" orifices installed between the fire protection system and the bulkhead fitting. Secure this sense line as needed to prevent vibration or damage. For further installation details, consult NFPA-20 or refer to the Piping Diagram drawing located in the drawing section of this manual.

5.6.2 Power Connections

The three phase input power conductors are connected to the MMP line terminals **L1, L2, & L3**. The output motor wiring is connected to the bottom of the Main Contactor M load side terminal lugs **T1, T2, & T3**. Refer to the Wiring diagram for details.

For Single Phase motors, see the wiring diagram at the back of this manual.

5.6.3 Motor Circuit Conductors

All motor circuit conductors must be sized according to the National Electric Code (NFPA-70) on a continuous duty basis. Insulation for these conductors should be chosen so it will not be affected by the surrounding environment and have an insulation temperature rating at least 90 degrees C.

The ampacity of the wire is based on 125% of the motor full load current (FLA) using the 60C column for 100 amps or less and the 75C column in field wiring table 310.15(B)(16) of the 2017 edition of the NFPA 70 for higher currents. Also, apply the appropriate correction factors in accordance with 310.15(B)(1) through 310.15(B)(7).

Caution

- ***Be sure to secure conductors in such a manner so they will not move or interfere or rub against any components or mechanisms in the controller. Protect against contact with sharp edges or corners.***

NOTE: If modification code S1 is provided, the controller will be Suitable for Use as Service Entrance Equipment. A dual grounding lug is provided for the grounding electrode conductor and the grounded service conductor. No neutral connection is provided or needed. The controller is suitable for use on either three wire or four wire systems without the use of a neutral.

5.6.4 Remote Alarm Connections

See the contact rating limitations on the wiring diagram.

5.6.4.1 Pump Running Signal (Mod Code A1)

Terminals numbered M1, M2, and M3 provide a form "C" set of contacts which transfer when the motor current is detected. Contacts on terminals M1 and M2 close in the alarm state, while contacts on terminals M2 and M3 open in the alarm state.

5.6.4.2 Pump Running Signal (Mod Code A2 - 2nd set)

Terminals numbered M1, M2, and M3 and M4, M5, and M6 provide two form "C" sets of contacts which transfer when the motor current is detected. Contacts on terminals M1 and M2, M4 and M5 close in the alarm state, while contacts on terminals M2 and M3, M5 and M6 open in the alarm state.

5.6.4.3 A.C. Power Failure Signal (Mod Code A3)

Terminals numbered P1, P2, and P3 provide a form "C" set of contacts which transfer when any phase of the incoming normal power fails. Contacts on terminals P1 and P2 close in the alarm state, while contacts on terminals P2 and P3 open in the alarm state.

5.6.4.4 Pump Trouble Signal (Mod Code TR)

Terminals numbered T1, T2, and T3 provide a form "C" set of contacts which transfer when internal controller trouble exists. These are Low Voltage (80%), Failure to Start, Over Pressure, and Excessive Starting. Contacts on terminals T1 and T2 close in the alarm state, while contacts on terminals T2 and T3 open in the alarm state.

5.6.4.5 Failure to Start Signal (Mod Code F1)

Terminals numbered F1, F2, and F3 provide a form "C" set of contacts which transfer when the controller fails to start. Contacts on terminals F1 and F2 close in the alarm state, while contacts on terminals F2 and F3 open in the alarm state.

5.6.4.6 Excessive Start Signal (Mod Code ESR)

Terminals numbered E1, E2, and E3 provide a form "C" set of contacts which transfer when the controller starts excessively. Contacts on terminals E1 and E2 close in the alarm state, while contacts on terminals E2 and E3 open in the alarm state.

5.6.4.7 Overpressure Signal (Mod Code OVP)

Terminals numbered O1, O2, and O3 provide a form "C" set of contacts which transfer when an overpressure in the system exists. Contacts on terminals O1 and O2 close in the alarm state, while contacts on terminals O2 and O3 open in the alarm state.

5.6.4.8 Low Zone Remote Start (Mod Code DMD)

Terminals numbered D1, D2, and D3 provide a form “C” set of contacts which transfer immediately when a start demand is received. Contacts on terminals D1 and D2 close in the alarm state, while contacts on terminals D2 and D3 open in the alarm state.

5.6.4.9 Jockey Pump Off Signal (Mod Code MP)

Terminals numbered J1 and J2 provide a form “A” set of contacts which transfer when the MMP operator is turned Off or the internal overload trips. Contacts on terminals J2 and J3 close in the alarm state.

5.6.4.10 Switch Off Signal (Mod Code SOA)

Terminals numbered S1 and S2 provide a form “A” set of contacts which transfer when the Auto-Off-Man switch is turned Off. Contacts on terminals S1 and S2 close in the alarm state.

5.6.4.11 Remote Start Inputs

Wire a normally open remote contact between terminals R1 and R2. Contacts close to start. See Circuit Wiring Table below for size and length of wire run.

Note

- **Resistance and number of splices and contacts in circuit must be taken into consideration. A single splice may exceed the total resistance of 1,000 Ft. or more of wire.**

Remote Start Circuit Wiring Table			
<u>Wire Size</u>	<u>Wire Resistance Ohm/1,000 Ft.</u>	<u>12 vdc (50 Ohms)</u>	<u>24 vdc (250 Ohm)</u>
#12 AWG	1.588	15,700 Ft.	78,500 Ft.
#14	2.525	9,900	49,000
#16	4.016	6,200	31,000
#18	6.385	3,900	19,500
#20	10.15	2,500	12,500
#22	16.14	1,500	7,500
#24	25.67	940	4,700
#26	40.18	620	3,100

5.6.5 Modbus Connections

The FireConnect® system is compatible with a number of Fire Pump Controllers (FPC) and Jockey Pump Controllers (JPC). The built-in functionality of the FireConnect® system utilizes the accessible information from these panels in such a way, as to provide Smart Pump Technology with real time monitoring and analytics for existing systems and new installations alike.

Prior to purchasing the FireConnect® system for retrofit applications, contact with our sales team is required determine compatibility with existing systems and retrofitting requirements. Prior to purchase, the customer is required to complete the RFQ Peerless FireConnect® retrofit forms to complete the quote and determine (if any) retrofitting requirements.

The FireConnect Jockey Controller utilizes Modbus RTU protocols for serial data transmission, both to the FireConnect Gateway for cloud communications, as well as the main fire pump controllers.

Reference subcategories below for further information regarding specific compatibility to various manufacturers.

Note

- Every Main Pump Controller will have specific terminals or ports for Modbus communication (TCP/IP or RS485) and will vary depending on manufacturer, make, and model. Each installation will require contact with the respective main pump controllers' manufacturer to obtain the specific directions for networking communication, connection points, and programming parameters within the panels user interface.

Reference **Figures–7 & 8** for network communication terminals and location with respect to the components on the inside of the FireConnect Jockey Controller enclosure.

5.6.5.1 FireConnect Jockey Controller – Master Main Pump Controller

An RJ45 connector is provided on the control board inside the pressure maintenance controller. It is designed to connect directly to the RJ45 connector on the MASTER fire pump controller control unit (Modbus RTU connector).

Communications with the FireConnect gateway utilize an integrated RJ45 to RS485 converter and connect directly to gateway as configured from the factory.

5.6.5.2 FireConnect Jockey Controller – Firetrol Main Pump Controller

The FireConnect® Jockey Controller system is currently compatible with Firetrol Legacy FPC's known as the Mark II and the Mark IIxg, as well as their latest design, the Mark III.

These legacy controllers, the Mark II and Mark IIxg, may require some retrofitting for compatibility with the Modbus RTU RS485 communication protocol in order to communicate with the FCGC. This retrofitting may involve replacement of the microcontroller, and an update to the operating system firmware. The controller will also require the ZPM option for Modbus RTU. The latest design FPC's are called the Mark III and utilizes the TCP/IP Modbus communication protocol. Therefore, legacy controllers Mark II and Mark IIxg will utilize Modbus RS485, and the Mark III will utilize Modbus TCP/IP.

Mark II & IIxg Modbus connections will be connected to the gateway board via RS485 2-wire configuration and should be installed with modern conventions for the typical "Daisy Chain" configuration as needed for system integration

Mark III will require CAT-6 cables for connection to the gateway board via the ethernet jack for TCP/IP communications via Modbus protocol.

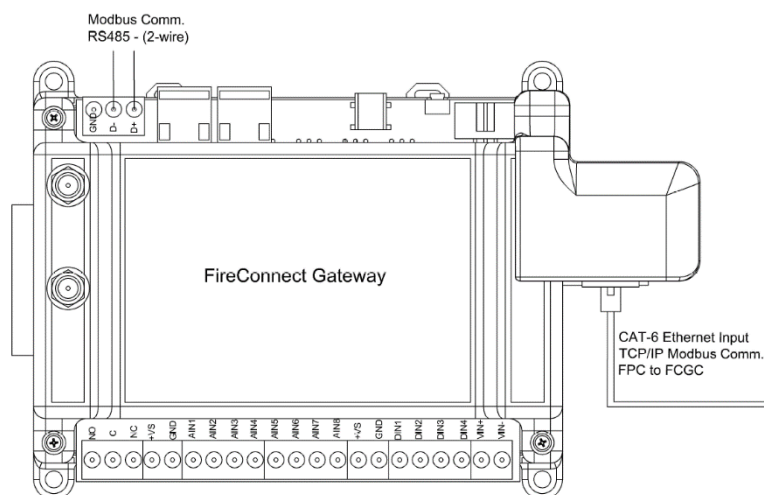


Figure 7 - FireConnect Gateway Board; Communication Terminals for Networking Main Fire Pump Controllers

5.6.5.3 FireConnect Jockey Controller – Tornatech Main Pump Controller

Current design of the main FPC is called the Tornatech Vizitouch V2 and utilizes the TCP/IP Modbus communication protocol.

Tornatech main controllers will require CAT-6 cables for connection to the gateway board via the ethernet jack for TCP/IP communications via Modbus protocol.

5.6.5.4 FireConnect Jockey Controller – Eaton Main Pump Controller

The FireConnect® Jockey Controller system utilizes Modbus RTU RS485 communication protocols on all Eaton FPC's with the appropriate Modbus options (**Reference section 5.6.5.5 for Modbus Option Codes**)

5.6.5.5 FPC & JPC Modbus Option Codes

The below is list of option codes for FPC's and JPC's

Required FCGC Modbus Option Adder by Brand:	Firetrol	Tornatech	Eaton	Master
Electric Controller FC Option Code	Y99	ELE-OPTD26H	COM	82H
Diesel Controller FC Option Code	Y99	DIE-OPTD32H	COM	82H

This configuration would have been specified at the time of order by the Sales Representative upon submittal of the "RFQ Peerless FireConnect® Retrofit" form used to specify controller options required for communication to the FireConnect Jockey Controller and gateway.

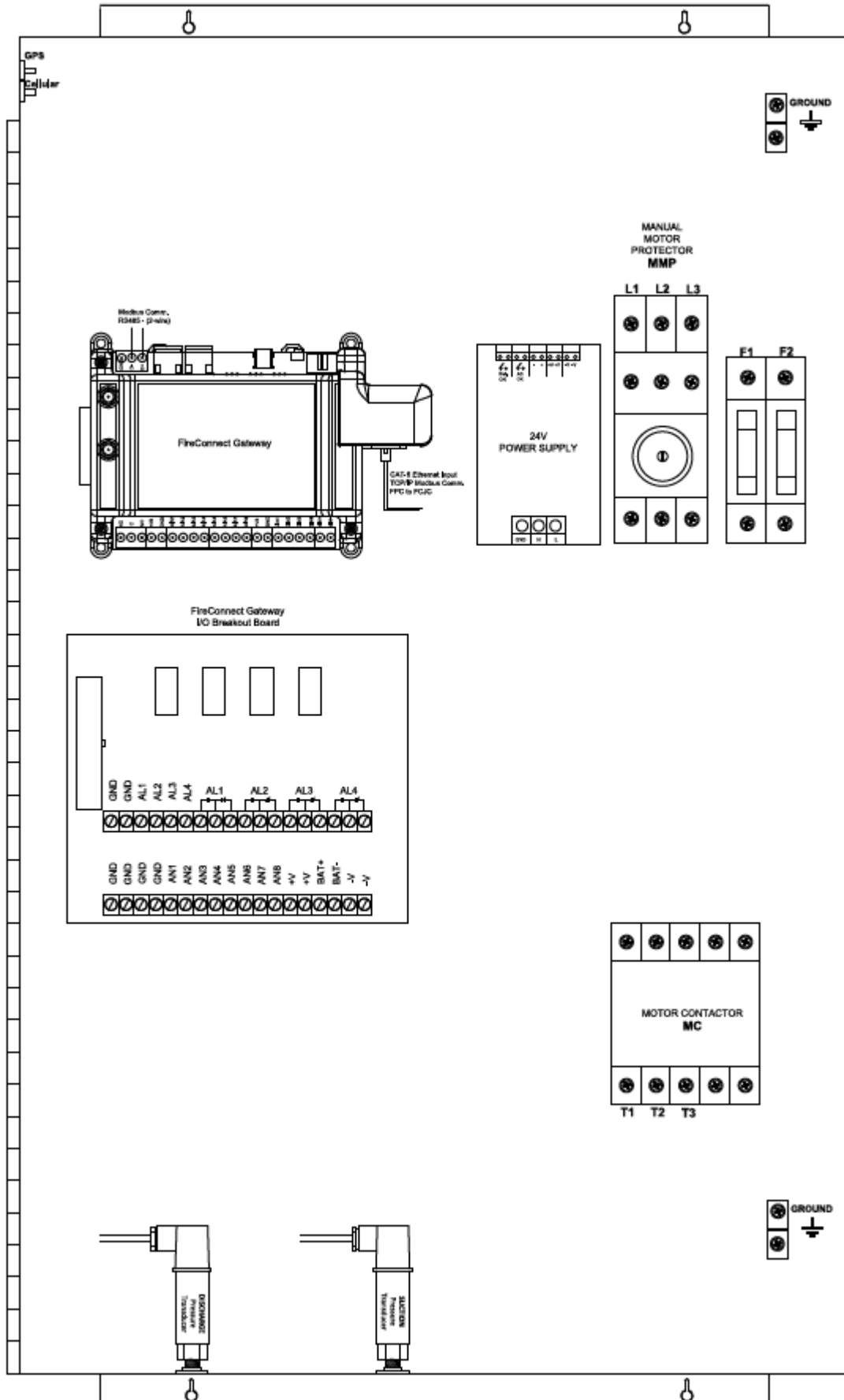


Figure 8 - FireConnect Jockey Controller Internal Component Layout and Orientation

5.7 Suction & Discharge Pressure Sensing Lines

The FireConnect Jockey Controller comes equipped with two pressure transducers installed in the bottom of the enclosure via bulkhead fittings. Both transducers will be wired as an integral part of the system, but after installation critical dimensions will need to be recorded for proper scaling of the display meter if a storage supply tank is being utilized.

Both sensing lines will need to be plumbed and connected with respect to their intended application, both suction and discharge, in relatively close in proximity to the flange of the pump. The factory recommended placement of connection for suction is directly on the side of the flange via the 1/4" NPT female connection provided on all Peerless Pumps. The discharge pressure line will need to be placed downstream from the check valve for proper system pressure readings.

5.7.1 Dimensional Analysis (Tank Applications)

Once the enclosure has been mounted and installed or the permanent location determined with the sensing lines marked to their respective locations, critical dimensions will need to be recorded and sent to factory support for optimal programming and scaling. This is required for the Tank Level Remote Monitoring via the FireConnect User Interface and to be sure the level is accurately reflected therein.

Note

- Any inaccuracies on critical dimensions will be directly reflected on the accuracy for the Tank Level Remote Monitoring via the FireConnect User Interface.
- All measurements must be recorded as vertical distance with critical respect to earth level

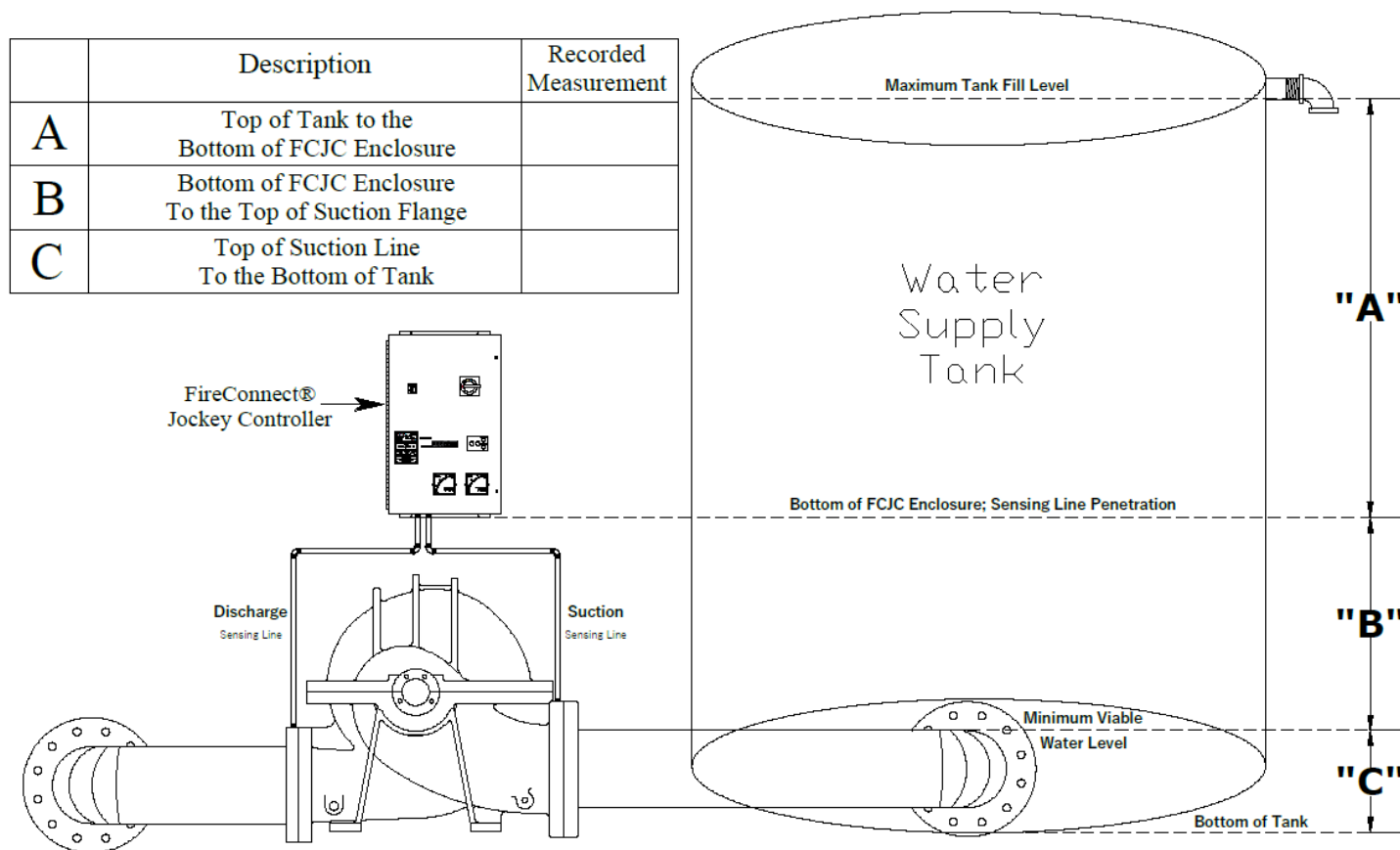


Figure 9 - Tank Level Monitoring; Illustration for Reference to Dimensions Required

Please use the following instruction subset with illustration to determine three dimensions as described. Record all information in the table provided to be communicated with factory support and stored within the enclosure for future reference. Reference **Figure-9** for illustration of required dimensions.

- Record the “**A**” dimension
 - This will be the vertical distance from the top of the tank to the bottom of the FCJC enclosure
- Record the “**B**” dimension
 - This will be the vertical distance from the FCJC enclosure bottom, to the top of the suction line
- Record the “**C**” dimension
 - This will be the vertical distance from the top of the suction line to the bottom of the tank

Note

- To ensure all dimensions have been recorded accurately, all three dimensions should add up to the total linear height of the tank.

This information should be collected at the time of order entry for programming prior to shipment, but in the event placement of enclosure cannot be guaranteed please consult the factory service department for detailed programming instructions.

5.8 Transit Time Flow Meter (TTFM)

Please reference **Appendix-II** for the complete Installation and Operations Manual of the Greyline Transit Time Flow Meter (TTFM) to be used in conjunction with the FireConnect Gateway Controller (FCGC), utilizing the +/- 24V power source contained within and the analog signal output from the TTFM wired to the analog input of the FCGC.

The location selected should be in close proximity to the FireConnect Jockey Controller and the TTFM local display (25 feet max).

The factory recommended placement on the desired line should have 5x the pipes diameter in liner straight length upstream and be free from bends, flanges, and fittings while also having 2x the pipes diameter in liner straight length downstream and be free from bends, flanges, and fittings as well.

Reference **Figure-10** for optimal TTMF installation location.

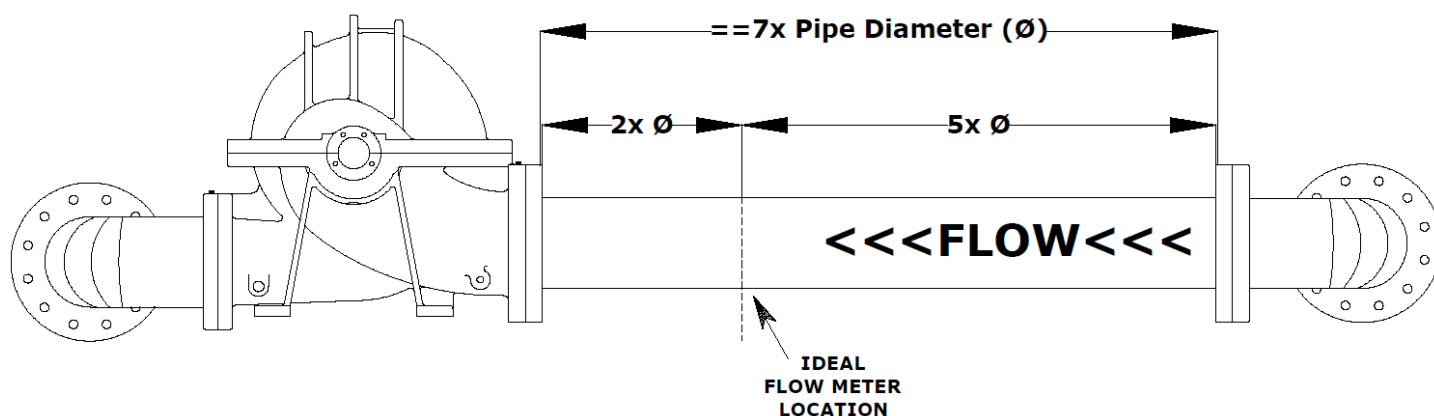


Figure 10 - TTFM Flowmeter; Illustration for Factory Preferred Location

5.8.1 Transit Time Flow Meter (TTFM) Wiring

In most installations, FireConnect® utilizes a Transit Time Flow Meter (TTFM) requiring two ultrasonic sensors to be mounted to the suction or discharge piping, which ever presents the best suited conditions to meet the installation requirements and straight run of piping dimensions. See Appendix-II for the complete installation and operation manual for the Greyline TTFM Flow Meter with available quick start instruction set.

Connection of the TTFM display unit to the FCJC will utilize the +24VDC and analog input terminals between the flow meter display unit and the FCJC.

After following the **Appendix-II** instructions for choosing your location to install the TTFM display unit and setting up the hardware, make the connections for the power supply and analog signal to and from the TTFM & FCJC as follows:

1. Make sure the power is off and all “Lock Out Tag Out” procedures are followed according to site practices.
2. Run all the necessary conduit and connections to and from the bottom of each enclosure, the TTFM and FCJC
3. Run two lengths of 18awg/2c shielded wire, or wire approved by the local authority, from the TTFM to the FCJC
4. Route both sets of shielded wire properly labeled and exposed in the bottom of each enclosure
5. TTFM Display Unit Enclosure
 - a. Terminate the Positive (+) and Negative (-) leads to their respective terminals in the TTFM enclosure for the power supply terminals labeled **9-32 VDC Power Input**
 - i. Reference **Figure-11**
 - b. Terminate the Analog OUTPUT signal to its respective terminal for the data to be sent to the FCJC controller.
 - i. Reference **Figure-11**
6. FCJC Enclosure
 - a. Terminate the leads for TTFM power supply to their respective polarity inside the FCJC
 - i. The **Positive +24v** lead is to be connected to either **Terminal 9 or 10** (both +24v)
 - ii. The **Negative 0v** ground reference lead is to be connected in any available in available grounding terminals (**GND**)
 - b. Terminate the leads for TTFM Analog Signal to their respective polarity inside the FCJC
 - i. Terminate the Analog signal positive line to the terminal labeled (**Analog**) **Input 2** and the negative lead to be grounded in available grounding terminals (**GND**)

Once these connections are made and checked for errors, power on FCJC to verify the TTFM has been properly connected.

Once power and communication has been established to the TTFM display unit, proceed with the installation and calibration steps found in the **Appendix-II Greyline TTFM Flow Meter Installation and Operation Manual**

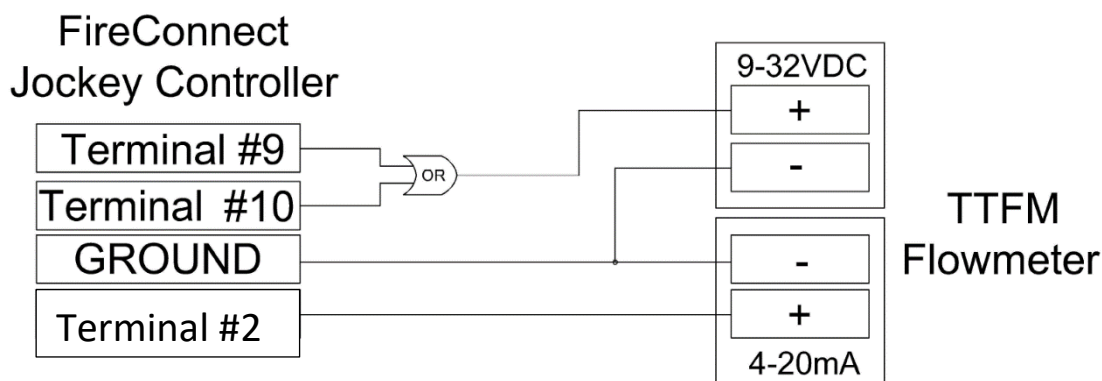


Figure 11 - Connections for the FireConnect Jockey Controller to the TTFM

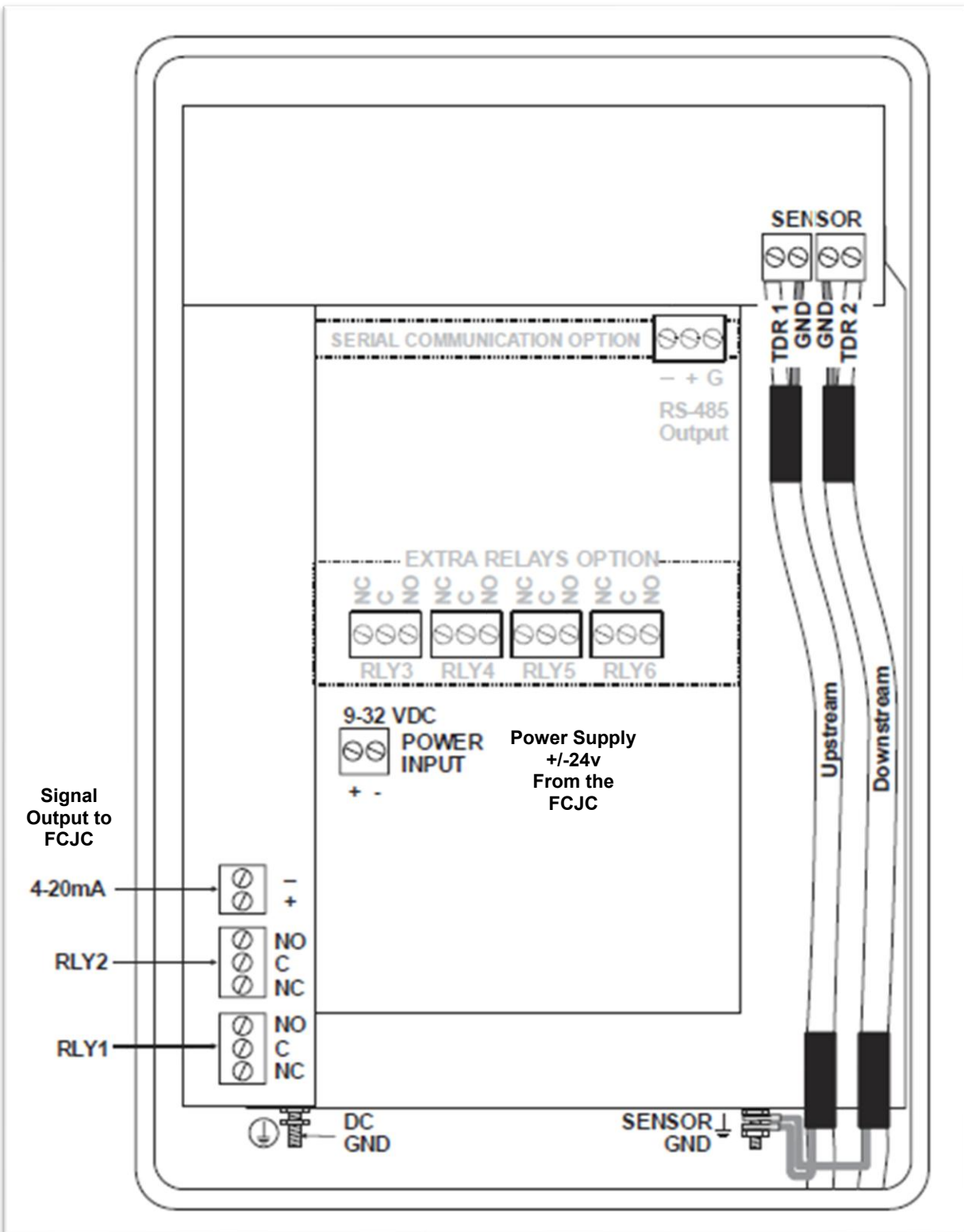


Figure 12 - TTFM Wiring Diagram; Terminal Illustration

5.9 Diesel Tank Level Monitoring & Visual Indicator



- Warning! If these safety instructions are not observed, personal injury may result. Read entire instruction set prior to beginning the installation process, including the standards provided within NFPA 20 in regard to the assembly and configuration requirements for fuel lines on Diesel Driven Fire Pumps.

Caution

- If these instructions are not observed, the result could lead to malfunction, damage to the equipment, or violations to the NFPA 20 standards. All of which are to ensure safe and reliable installations for peripheral monitoring.

The Diesel Tank Level Monitoring system is designed to be an integral part of the FireConnect® Gateway Controller. The system includes a Visual Tank Level Display mounted to the FCGC enclosure which will provide visual confirmation of the current tank level. The gauge will be preconfigured at the time of order fulfillment based on the tank size and dimensions provided at the time of order placement.

The Installation of the FireConnect Diesel Fuel Tank Level Monitoring Assembly is to be performed by qualified personnel according to the following procedure and in accordance with the authority having jurisdiction. The customer assumes all responsibility for installation and plumbing connections, acknowledging that deviations from the recommended installation procedure could potentially result in violations to the NFPA 20 standard.

All responsible parties should review NFPA 20, chapter 11 to ensure complete compliance.

Provided in **Figure – 13 & 14** are two options for installation, both for new construction and retrofitting an existing tank. These options are designed to prevent the need for an existing tank to be drained which is filled with fuel. However, if at all possible, the primary design in **Figure - 13** should be applied for the most accurate readings to be returned by the Diesel Tank Level Monitoring option. Should the method of installation found in **Figure – 13 & 14** be utilized, the “A” dimension should be reported at the time of order, or parameterization will need to be performed at the time of installation.

All sensing units supplied with the Diesel Tank Level Monitoring option are to be ATEX certified in order to ensure intrinsic isolation of the electrical components and meet the appropriate requirements for the specified application.

5.9.1 Installation of the FireConnect Diesel Fuel Tank Level Sensor

Prior to installation, review of NFPA 20 Chapter 11 is required

The Peerless FireConnect Diesel Fuel Tank Level Monitoring Assembly is installed on the outlet of the tank where the fuel line connections to the engine are attached. Please note, the path of fuel from the tank to the engine must not be obstructed in any way, contain only one isolation valve, and is to remain locked open at all times per NFPA requirements. The sensing assembly is designed as a peripheral unit, leaving the path of fuel flow unobstructed and unaltered from the tank to the engine. Please refer to **Figure-13 &14** for the recommended configuration diagrams.

Contained within **Figure-13** is the preferred method of installation but may require the fuel to be drained from the tank if installation is to be performed on an existing system. This installation method is best suited for “New Construction” and should be performed prior to commissioning and filling the tank.

The Tee fitting to be installed for the sensing configuration should be of equal diameter to the outlet of the tank and be constructed of NON-galvanized steel or cast iron, along with all other required fittings. The sensing lines must all be horizontally aligned with earth level to the outlet of the tank for accurate measurement. All fittings should be installed with the appropriate PTFE thread sealant.

The orientation of the locked isolation valve can be modified to meet the needs of installation as required by the customer and conditions of the installation environment. The customer assumes all responsibility for the compliance of regulations according to NFPA standards. Reference **Figures-13 & 14** for examples of these options and dimensions required.

The wiring and connections for the sensing unit:

- Run one length of 18awg/2c shielded wire, or wire approved by the local authority, from the Microsensor transducer provided in the kit to the FCJC using approved conduit connections for penetrations to the enclosure
- A positive +24v connection is made to the +24v rail found inside the FCGC and is to be connected to the sensing unit by conduit or means approved by the authority having jurisdiction.
 - Refer to device label for color code of wire
- A second wire is connected to the Analog Input #6 and runs alongside the +24v lead and is to be run to the sensing unit by conduit or means approved by the authority having jurisdiction.
 - Refer to device label for color code of wire.

5.9.2 Diesel Fuel Tank Level Monitoring (Dimensional Analysis)

The optional Diesel Fuel Tank Level Monitoring Assembly must be configured in a similar manor to the Tank Level Monitoring found in section 5.7 of this Installation and Operation Manual. Configuration will be programmed prior to shipment if all dimensions are provided at the time of order placement.

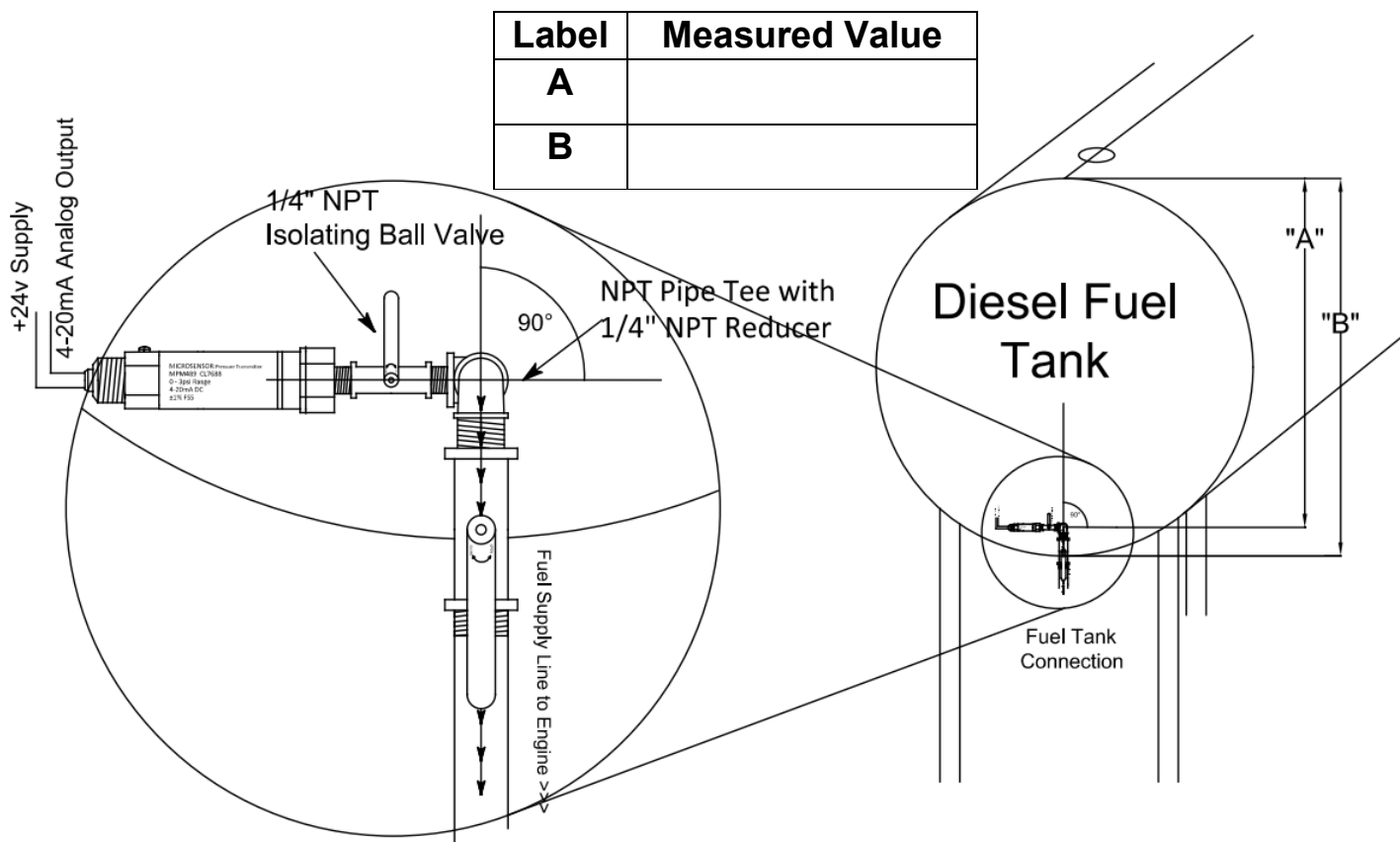


Figure 13 - Diesel Level Monitoring; Factory Preferred Installation Method

If dimensions are not provided at the time of order, field programming may be necessary and will require the dimensions to be provided as shown below in **Figure-13**

Please use the following instruction subset with illustration to determine the dimensions as described. Record all information in the table provided and to be communicated with factory support and stored within the enclosure for future reference.

- Record the “**A**” dimension
 - This will be the vertical distance from the Center Line of tank outlet to the Top of the Tank
- Record the “**B**” dimension
 - This will be the vertical distance from the Center Line of tank outlet to the Bottom of the Tank

5.9.2.1 Diesel Fuel Tank Level Monitoring; *Alternate Installation Method*

In the event of installation on an existing tank and in order to prevent draining the tank for installation, please use the following instruction subset with illustration to determine the dimensions as described. This method allows the peripheral monitoring transducer to be installed below the isolation valve.

- Record the “**A**” dimension
 - This will be the vertical distance from the Centerline of tank outlet to the Top of the Tank
- Record the “**B**” dimension
 - This will be the vertical distance from the Centerline of tank outlet to the Centerline of the Transducer
 - Installations may vary with configurations of the isolation valve in relation to the tank and illustration provided in **Figure-14** and can be accounted for with careful measurement of the dimensions for vertical distance (height) to account for the difference in “**C**” dimension

Label	Measured Value
A	
B	
C	

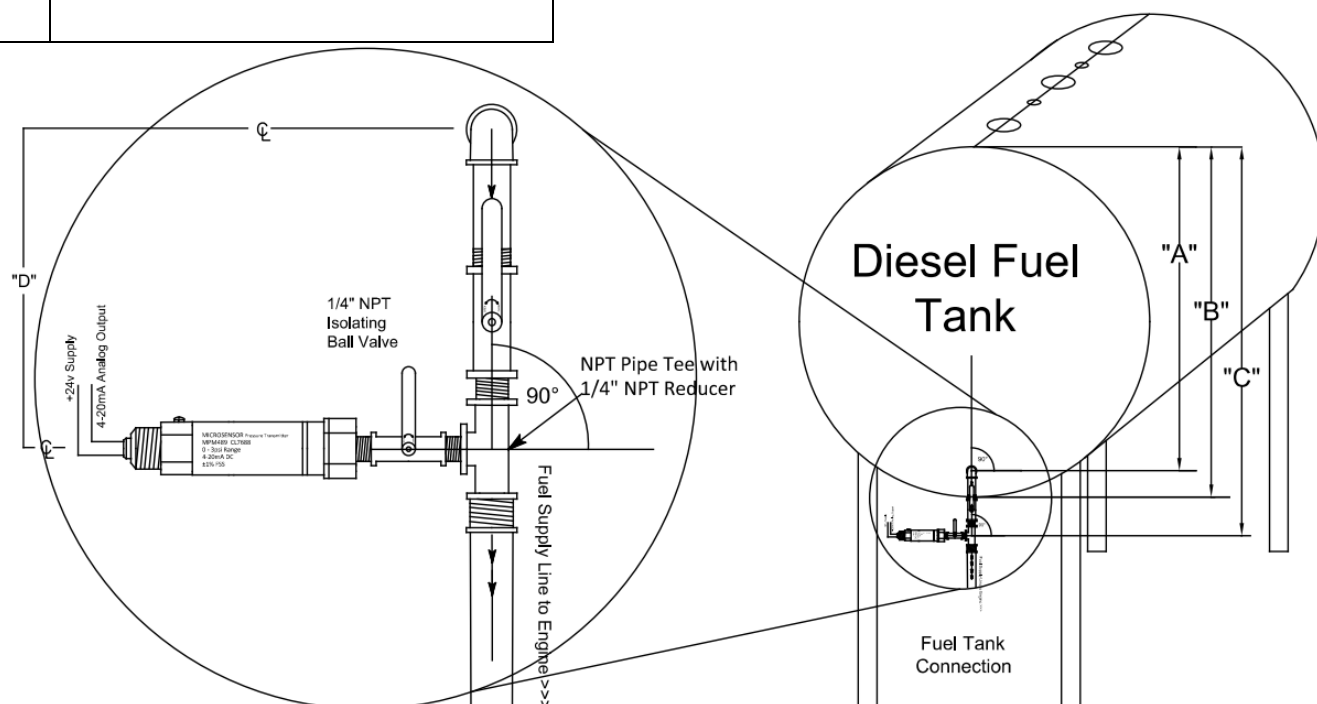


Figure 14 - Diesel Level Monitoring; Alternate Installation Method for Existing Fire Systems
(Allows Installation Without Draining Tank)

5.10 Closed Cooling Loop; Tank Return Monitoring

The closed cooling loop with tank return monitoring is an option available for the FireConnect Jockey Controller and allows the FireConnect Gateway User Interface to monitor and capture the amount of water conserved and track the annual savings for positive representation of the environmental impact.



Caution

- This option is available for installations with a FireConnect Jockey Controller, but it is the customers responsibility to ensure compatibility with their systems diesel engine manufacturers specification for minimum required flow through the heat exchanger for proper functionality and required thermal transfer of engine coolant.
- Each installation and purchase of this remote monitoring package will require the customer to consult their respective engine manufacturer for approval of the installation.
 - This is required due to the positive head pressure created by gravity when returning the cooling water to the reservoir.

The customer assumes all liability and risk ensued by the installation of this modification and is responsible for ensuring the engine manufacturer specifications are compliant.

The customer assumes all responsibility for NFPA compliance, or compliance with authority having jurisdiction.

5.10.1 Closed Cooling Loop; Tank Return Monitoring Installation

The closed cooling loop return is to be connected to the discharge from the heat exchanger of the diesel engine. The piping must be increased by at least two nominal pipe sizes and will be connected to the assembly provided as part of the monitoring kit. The nominal sizes for components provided will be 2.0" NPT pipe threads and connected as shown in **Figure – 15**.

The Kit assembly will include the following:

- 2x Digital Temperature Sensor
- Discrete Flow Switch
- Sight Glass Indicator

When installing the kit assembly, orientation must be observed with respect to the direction of flow indicated by the markings on the flow switch.

The return line should be routed to the top of tank for factory approved installation, or by best means as deemed necessary and approved by the authority having jurisdiction.

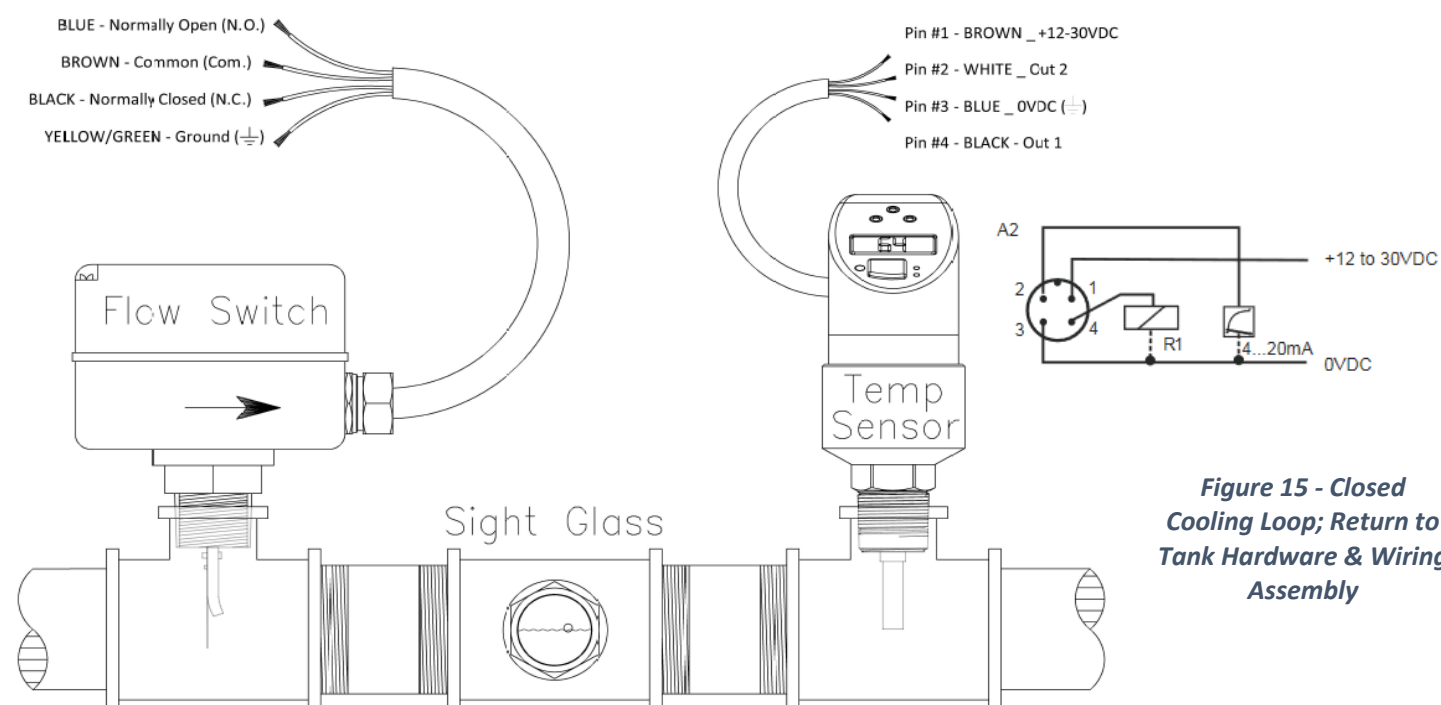


Figure 15 - Closed Cooling Loop; Return to Tank Hardware & Wiring Assembly

5.10.1.1 Closed Cooling Loop; Tank Return Monitoring Installation (Wiring)

The closed cooling loop return will require termination of the Flow Switch and Temperature Sensor inside the FireConnect Jockey Controller.

The wiring and connections for the Flow Switch unit:

- Run one length of 18awg/2c shielded wire, or wire approved by the local authority, from the discrete Flow Switch transducer provided in the kit to the FCJC using approved conduit connections for penetrations to the enclosure.
- A negative (0v) connection is made to the **GROUND** rail found inside the FCJC
 - Connection to the sensing unit will be terminated by connection to the **Brown – Common (Com)** lead of the flow switch
- The second wire is connected to the **Digital Input #1** Found inside the FCJC
 - Connection to the sensing unit will be terminated by connection to the **BLUE – Normally Open (NO)** lead of the switch now configured as a Normally Open switch.

The wiring and connections for the Temperature Sensing unit:

- Run one length of 18awg/4c shielded wire, or wire approved by the local authority, from the Digital Temperature Sensor M12 connection lead provided in the kit to the FCJC using approved conduit connection & penetration to the enclosure.
 - A negative (0v) connection is made to the **GROUND** rail found inside the FCJC
 - Connection to the temperature sensing unit will be terminated by connection to
 - **Pin #3 – Blue Lead**
 - A positive (+24v) connection is made to **Pin #9 or #10** for the +24v DC supply found inside the FCJC
 - Connection to the temperature sensing unit will be terminated by connection to
 - **Pin #1 – Brown Lead**
 - The third wire is connected to the **Analog Input #7** found inside the FCJC
 - Connection to the sensing unit will be terminated by connection to
 - **Pin #2 – White Lead**
- Note; The sensing device can also be configured for the same 4-20mA signal on Pin #4 as well, using the same Analog Input inside the FCJC

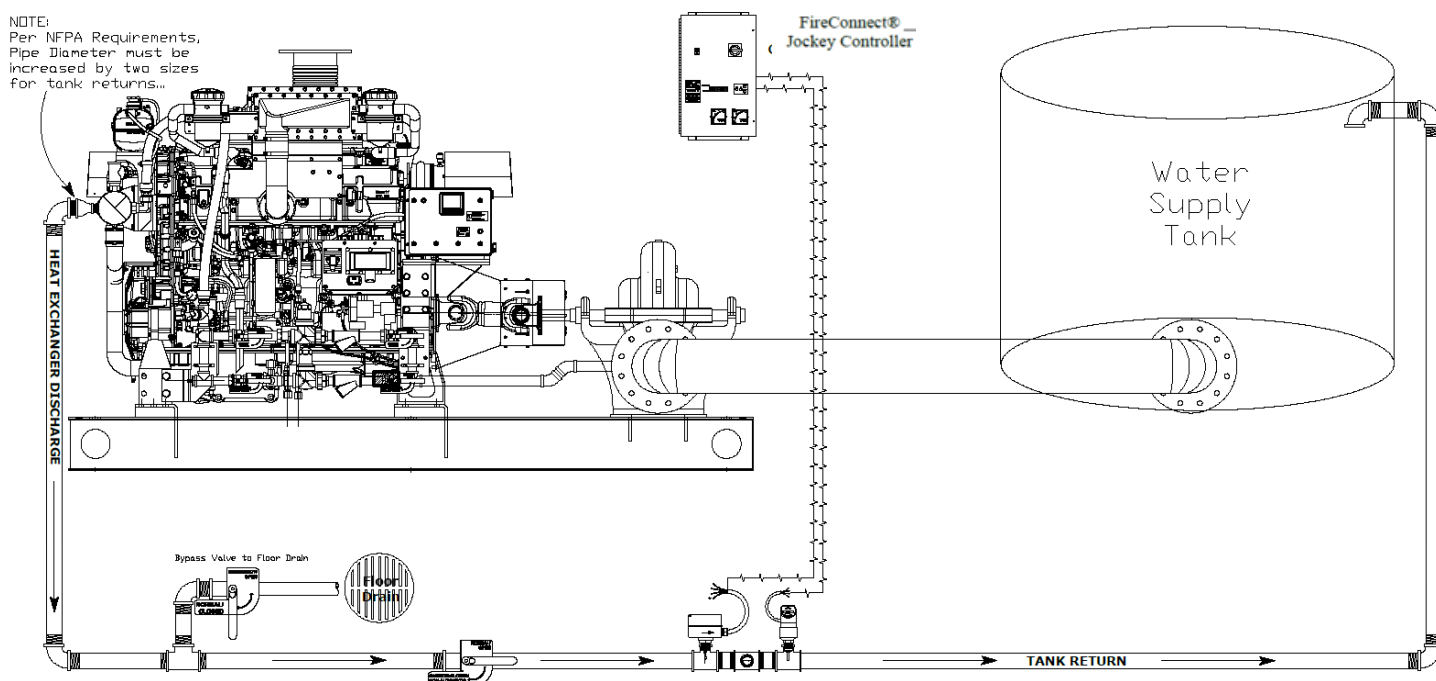


Figure 16 - Closed Cooling Loop; Tank Return Monitoring Hardware Assembly and Overview

5.11 Digital Temperature Sensor Programming

The ProSense ETS Series digital temperature sensor is available as an integral part of the closed cooling loop return monitoring feature and is also available as a standalone instrument for measuring the temperature of liquid being pumped. This device has the ability to be custom programmed for various settings and applications, although the unit should arrive preconfigured for the specific application.

In the event of your preconfigured devices memory becoming compromised during transit or from prolonged periods of storage prior to commissioning, the unit will require configuration.

The wiring diagrams and instructions will utilize **Output-#2** for both the closed cooling return monitoring and the pumped liquid temperature applications. This output will need to be configured as a 4-20mA analog output and a quick start set of instructions are as follows for the basic elements. This basic setup procedure is required for commissioning and compatibility with the FireConnect Jockey Controller and Remote Monitoring user interface. A complete set of the programming instructions are included in the **Appendix-III**

5.11.1 Digital Temperature Sensor Display & Menu Navigation

The ProSense ETS Series is programmed and operated by means of three keys (+, -, E) or by using XT-SOFT programming software (see the Programming with XT-SOFT Software section in **Appendix-III**). The digital display and the light emitting diodes (LEDs) support navigation in the operating menu.

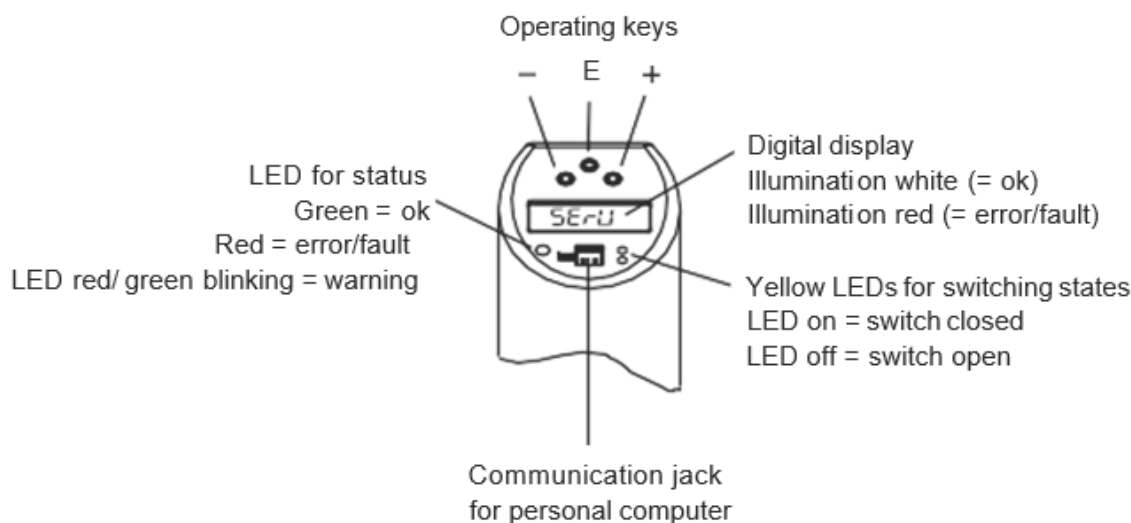


Figure 17 – ProSense Digital Temperature Sensor Display and Function Controls

The ProSense ETS Series is programmed and operated by means of three keys (+, -, E) and is the most suitable option for field programming and configuration. The following steps outline the

1. Enter the operating menu.
 - Press the **E** key for longer than 3 seconds.
2. Select the “Function group” with the + or - key.
3. Select the “Function” with the **E** key.
4. Enter or change parameters with the + or - key. Then return to “Function” with the **E** key.
 - Note: If software locking is enabled, it must be disabled before making entries or changes.
5. Press the **E** key several times to return to the “Function group” - until the appropriate function group is reached again.
6. To exit, press the **E** key for longer **than 3** seconds. If changes were made, see step 7.
7. Query to save data (select “**YES**” or “**NO**” with the + or - key) - confirm with the **E** key.
 - Changes to the parameter settings only become effective if you choose ‘**YES**’ when asked to save data.

5.11.2 Digital Temperature Sensor Menu Structure

The following outline is specific to the FireConnect Jockey Controller in regard to the desired output configuration. Further information is available in Appendix-III for the full functionality.

In **Figure-18** we can see the menu structure and the breakout for selections. All values are acceptable for use as configured by default with exception to **Output-#2** which will need to be configured for a 4-20mA analog signal.

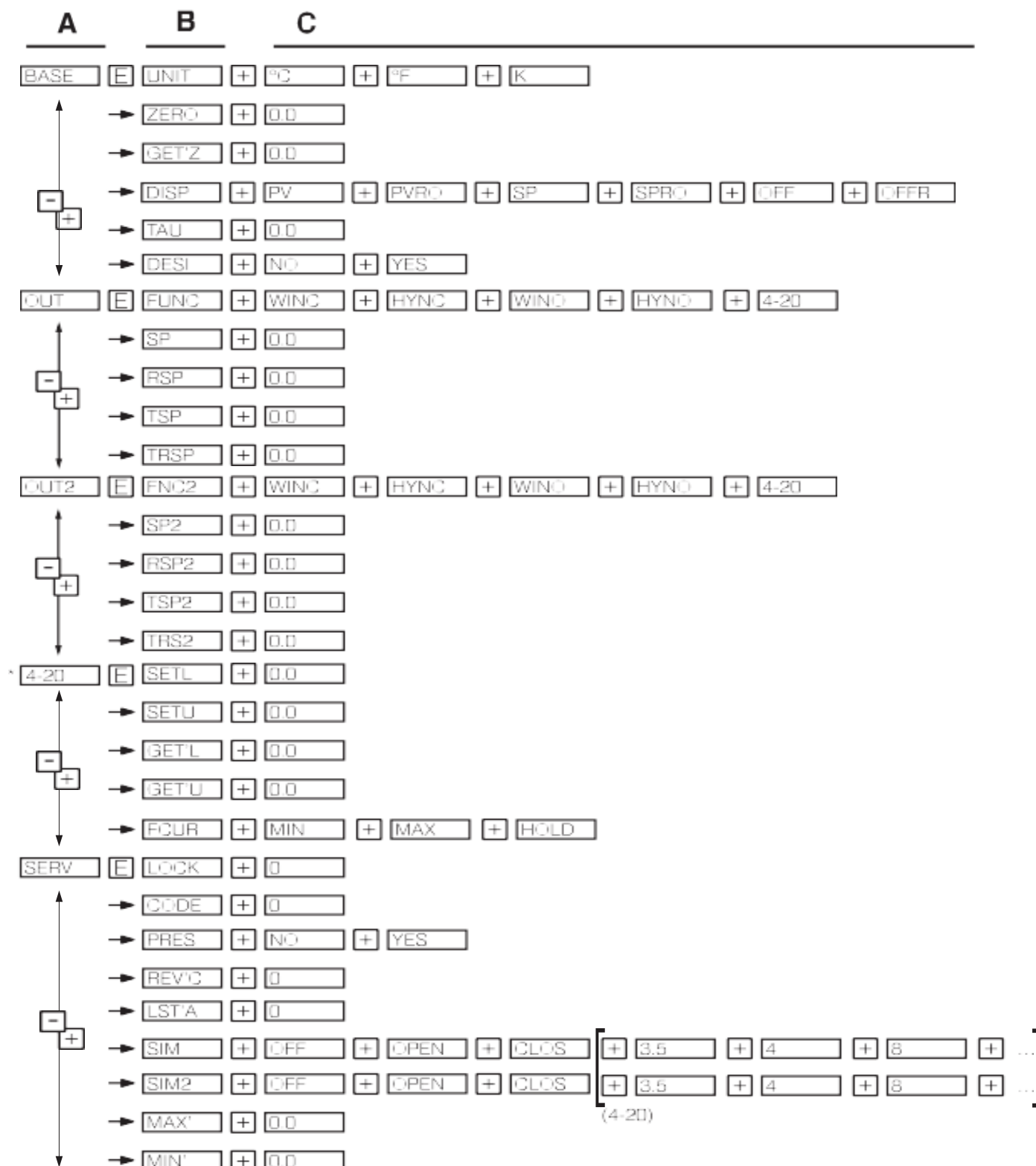


Figure 18 - ProSense Digital Temperature Sensor; Menu Function Tree
Operating menu: A=function groups, B=functions, C=settings

5.11.2 Digital Temperature Sensor Menu Setting

The **Output-#2** will need to be configured as an analog output with a 4-20mA span. Follow the menu structure tree found in **Figure-18** to establish this selection and be sure to commit the changes by selecting the “YES” query.

All other settings do not need to be changed from the default values unless desired by the user. Some of the available options desired by the user may be units of measure for the temperature value (F, C, K) or various display options.

Note

- If any other settings or values are changed on the Temperature Sensor, this information will need to be communicated with the FireConnect Support Team in order to properly configure the remote monitoring system and user interface.

Function Group	Function		Settings	Description
BASE	UNIT	Technical unit	°C °F K	Select technical unit: °C, °F, K Factory setting: °F
	ZERO	Configure zero point	0 . 0	Position adjustment: within ±18°F/K (±10°C) of the upper range limit
	GETZ	Accept zero point	0 . 0	No settings possible (not available in XT-SOFT)
	DISP	Display	PV PVRO SP SPRO OFF OFFR	PV: measured value display PVRO: measured value display rotated 180° SP: set switch point display SPRO: set switch point display rotated 180° OFF: display off OFFR: display off rotated 180° Factory setting: measured value PV
	TRU	Damping: display value, output signal	0 . 0	Measured value damping with regard to display value and output: 0 (no damping) or 9 to 40s (in increments of 1 second) Factory setting: 0s
BASE	DES	DESINA	NO YES	PIN assignment of the M12 connector is in accordance with the guidelines of DESINA Factory setting: No
OUT 2 Output 2	FUNC FUNC2	Switching characteristic	WINC HYNC WINO HYNO 4-20	WINC: window/NC contact HYNC: hysteresis/NC contact WINO: window/NO contact HYNO: hysteresis/NO contact 4-20: analog output Factory setting: HYNO

Figure 19 - Digital Temperature Sensor; Menu Functions Specific to the FireConnect System Integration

5.12 Battery Backup

Each FireConnect Jockey Controller comes equipped with an internal battery charger for the intended application of a battery backup to the remote monitoring portion of the system. This is intended to prevent a loss of monitoring services in the event of a power failure to the installed site. The system does NOT include batteries, these will need to be furnished by the customer. Reference section **5.12.1** for the types of batteries recommended by the manufacturer.

5.12.1 Battery Recommendations

The factory recommended equipment is a sealed lead acid battery designed for backup power supply, preferably with an F1 terminal type for ease of installation. The battery should be approximately 3-5 Amp hours in capacity for extended duration of the remote monitoring in the event of a power failure.

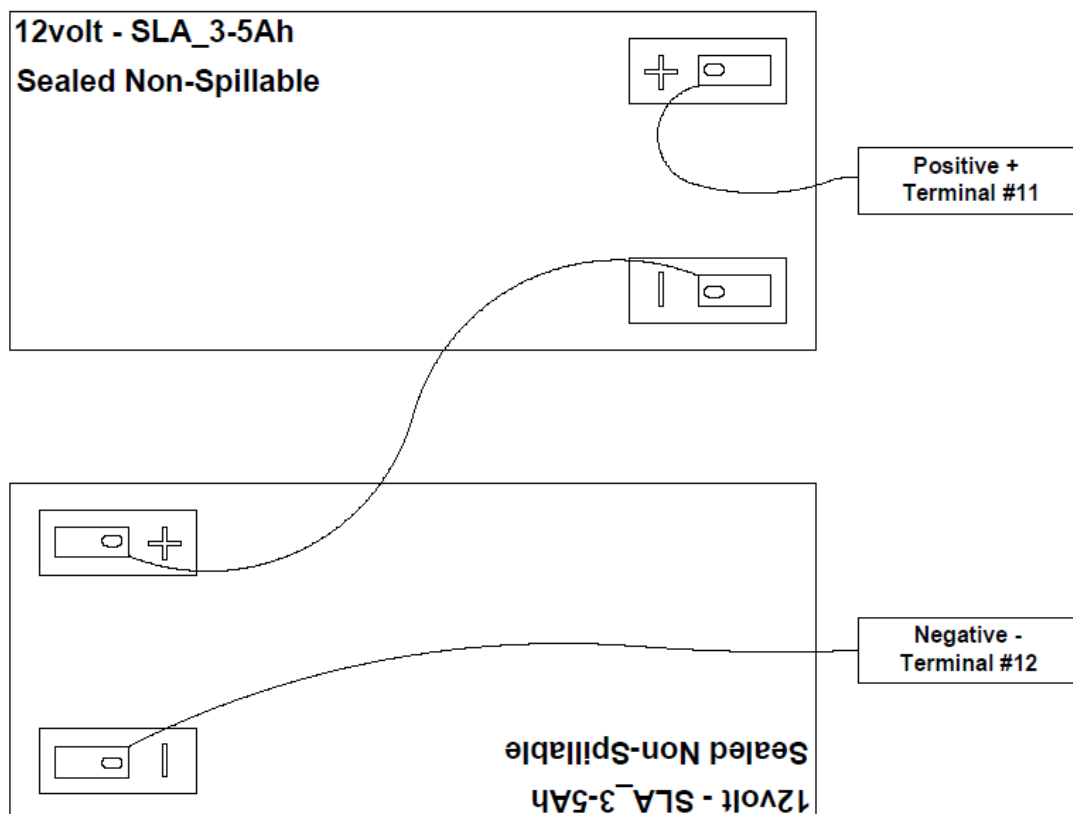
Recommended products:

- SLA12-5F Duracell Ultra 12V 5AH AGM SLA Battery with F1 Terminals
- Interstate Batteries FAS1055 12V 5AH SLA .187 FASTON

5.12.2 Battery Location

It is recommended that the batteries be placed in an external enclosure, separate from the internal control components, but in close proximity to the controller.

This is recommended due to inherent risk created by the combination from the arc flash created by the motor contactor and poorly maintained batteries having the potential to excrete volatile gasses.



*Figure 20 - Remote Monitoring Battery Backup.
Series Wiring Configuration*

5.12.3 Battery Wiring

The recommended batteries are a 12v design in nature, therefore two batteries will need to be connected in series for a 24v configuration. Reference **Figure-20** for an illustration of a series connection.

- Run two lengths of 18awg insulated wire, or wire approved by the local authority, from the batteries configured in series to the FCJC using approved conduit connection & penetration to the enclosure.
 - The **Positive +** lead will be connected to **Terminal #11**
 - The **Negative –** lead will be connected to **Terminal #12**

Reference the wiring diagram found in **Appendix-I** for further illustration on the battery backup feature.

5.12.4 Battery Maintenance

All battery backup systems require regular maintenance. An annual inspection of the system is recommended, and batteries must be replaced on, or before their expiration date.

Chapter 6 - FireConnect® Jockey Controller HMI Menu

6.1 Menu Functions

6.1.1 Moving through the menus:

- On power up, the Home screen is displayed.
- Press the Home button to always return to the Home screen.
- Press the Next button to move to the next screen
- Hold Next, then press DEC to move to the previous screen.
- In all menus, except the Home screen, use the INC or DEC buttons to change values. Hold the INC or DEC buttons down for 3 seconds to change values by 10.

6.1.2 Function changes with buttons:

- To change **PSI to BAR**
 - In the Home screen, press the **HOME** button for 3 seconds to change the pressure reading from **PSI to BAR** or vice versa.
- To enable **Sequence Start**
 - In the Home screen, press the **INC** button for 3 seconds to enable the “D” setting for a fixed 2 second sequence starting time delay.
- To calibrate the **Pressure**
 - In the Home screen, press the **INC** and **DEC** buttons simultaneously for 3 seconds to access the pressure calibration screen.
 - Reduce the incoming pressure to zero, then Hold **HOME** for 3 seconds to set zero.
 - Press **NEXT**.
 - Increase the incoming pressure to the highest pressure possible, then Press INC or DEC to adjust the screen pressure to the calibrated gauge pressure reading.
 - Hold HOME for 3 seconds to set calibration.
 - Press INC and DEC to return to Home screen.
- To reset **Motor Run Hours**
 - In the Motor Run Hours screen, press **INC** and **DEC** simultaneously for 3seconds.
- To reset **Starts**
 - In the Starts/24Hr screen, press **INC** and **DEC** simultaneously for 3 seconds.
- To reset all settings to **Factory Defaults**, power-up while pressing the **HOME** button.
- To view **SOFTWARE VERSION**
 - In the HOME screen, press the **HOME** button 3 times to view version number.
- To **Secure Settings**, move jumper **J1** on the control board to position 2-3 (upper).

6.1.2.1 Home Menu

Powers up to this screen. Displays actual pressure, Start and Stop pressures, and the Auto-OFF-Man mode. Press **HOME** three times to view the software version.

6.1.2.2 Motor Run Hours

Displays the total motor run hours to tenths of an hour. Press the **INC** and **DEC** buttons simultaneously for 3 seconds to clear the Run Hour history.

6.1.2.3 Trip Setting

Displays the Trip/Start setting. Press the **INC** or **DEC** buttons to change.

6.1.2.4 Reset Setting

Displays the Reset/Stop setting. Press **INC** or **DEC** buttons to change.

6.1.2.5 Minimum Run Setting

Displays the minimum run time. The factory default is 2. Press **INC** or **DEC** buttons to change.

6.1.2.6 Restart Time Setting

Displays the restart delay time. The factory default is 3. Press **INC** or **DEC** buttons to change.

6.1.2.7 Motor Starts In 24 Hours Setting

Displays the number of Auto starts in a 24 hour period that will trip the Excessive Start Alarm. The factory default is 96. Press **INC** or **DEC** buttons to change. Press the **INC** and **DEC** buttons simultaneously for 3 seconds to clear the start history. Note: The EEPROM is written to every 15 minutes so depending on when the power is turned off, the last 15 minutes of start data may be lost.

6.1.2.8 Overpressure

Displays the overpressure that will stop the pump and trip the alarm. Automatically resets 10 psi below trip point. The factory default is 999, which is disabled. Press **INC** or **DEC** buttons to change.

6.2 Menu & Recorded Memory (HMI Only)

These functions are relevant only to the actual controller interface and are not relative to the capabilities found within the FireConnect dashboard on the remote monitoring interface.

Once connected and enabled in the SERVICE menu, the pressure maintenance controller settings will be shown on the fire pump controller FCJC screen. They can now be adjusted at the fire pump controller. Also, the fire pump controller will record the settings and history.

6.2.1 Recorded Controller Settings

The jockey pump controller settings recorded on the fire pump controller are as follows:

- Jockey Start
- Jockey Reset
- Jockey Restart
- Jockey Minimum Run Delay
- Jockey 24HR Over Cycle
- Jockey Starts/24HR
- Jockey Runtime-Hours
- Jockey Total Starts
- Jockey Delay Start
- Jockey VFD Mode

6.2.2 Recorded Controller History

The jockey pump controller history recorded on the fire pump controller are as follows:

- | | |
|-----------------------------|--------|
| • Jockey Sequence Timer | On/Off |
| • Jockey Auto mode | On/Off |
| • Jockey Manual mode | On/Off |
| • Jockey Security | On/Off |
| • Jockey Running | On/Off |
| • Jockey Remote Start | On/Off |
| • Jockey Motor Run Timer | On/Off |
| • Jockey Failure to Start | On/Off |
| • Jockey Excessive Starting | On/Off |
| • Jockey Trouble | On/Off |
| • Jockey Comm Lost | On/Off |
| • Jockey VFD mode | On/Off |

Chapter 7 - FireConnect® Jockey Controller Startup Procedure & Checklist



- *Perform these preliminary checks before energizing any input connection to the controller*

Caution



- *be sure the discharge valve is closed, and the fire pump and fire sprinkler system are ready for operation.*
- *To prevent the possibility of serious injury or death due to an electrical fault, be sure the door is closed and latched before closing the manual motor protector or disconnect switch on the controller.*

7.1 Procedure

Make absolutely sure that the system (power supply) voltage, motor nameplate voltage and horsepower ratings correspond to the controller nameplate voltages and horsepower ratings.

Inspect for and remove any metal chips which may have fallen in the controller during installation.

Remove all shipping ties and packing material that may not yet have been removed. Check all control wires for tightness.

Check that all connectors are seated and latched.

Check all connections in the power path of the motor and any Ground or Grounded conductors for tightness. Re-torque any loose connections to the component manufacturer's specifications. Contact Master Control Systems for additional information.

7.2 Startup Checklist

The following checklist is designed to verify basic operation and all field input and output connections. It is recommended for each new installation and the annual fire pump test.

Caution

- *Be sure the discharge valve is closed and the fire pump and fire sprinkler system are ready operation.*

7.2.1 Energizing Controller

When energizing the controller for the first time after installation or after any service to the controller, motor, or motor wiring, follow the "Start-up Procedure" found earlier in this manual. For other cases, follow the Operating Instructions.

- ☐ 1. Close and Latch the controller door(s).
- ☐ 2. Place the Auto-Off-Man switch in the OFF position
- ☐ 3. With the controller door closed, close the MMP Operator.
- ☐ 4. Check that the display begins powering up.
- ☐ 5. Check the Pump Rotation by jogging (bumping) the motor. Do this by momentarily changing the Auto-Off-Man switch to Man position. For 3 phase motors, if the pump runs backwards, open the MMP Operator or Disconnect Switch and have a qualified electrician change rotation by swapping two of the three motor leads on the (M) contactor output terminals.
- ☐ 6. Change the Auto-Off-Man switch to Man position to run the motor.
- ☐ 7. Change the Auto-Off-Man switch to Off position to stop the motor.

7.2.2 Energizing Controller; Stand-By Operation

The normal stand-by configuration for the controller is for the MMP Operator to be closed, the display to be On and the Auto-Off-Man to be in the Auto position.



- *To prevent the possibility of serious injury or death due to an electrical fault, be sure the door is closed and latched before closing the manual motor protector or disconnect switch or operating the controller.*



- *Emergency Stopping – rotate the MMP operator counter clock- wise 90 degrees to power off the controller and stop the motor.*

- ☐ 1. Go to the Trip Setting menu and adjust the trip setting to the desired value.
- ☐ 2. Go to the Reset Setting menu and adjust the reset setting to the desired value.
- ☐ 3. Go to the Minimum Run Setting menu and set to the desired value.
- ☐ 4. Go to the Overpressure Setting menu and set to the desired value.
- ☐ 5. Change the Auto-Off-Man switch to Auto position.
- ☐ 6. Drop the pressure and check for a pressure start at the desired setting.
- ☐ 7. Verify it stops at the desired setting.

7.2.3 De-energizing Controller

To de-energize the controller, rotate the MMP operator counterclockwise 90 degrees.

7.2.4 Manual Starting

Change the Auto-Off-Man switch to Man position.

7.2.5 Manual Electric Stopping

Change the Auto-Off-Man switch to Off position.

Chapter 8 - Maintenance



- *Danger of lethal electrical shock and arc flash hazard - use appropriate personal protective equipment (PPE) in accordance with NFPA 70E.*



- *This equipment must only be serviced by qualified electrical personnel.*

8.1 Annual Maintenance Checklist

On an annual basis, qualified electrical personnel should inspect the inside of the controller and check:

- ☐ 1. Verify all control wires for appropriate tightness.
- ☐ 2. Verify that all connectors are seated and latched.
- ☐ 3. Verify all connections in the power path for tightness, re-torque any loose connections.
- ☐ 4. Verify there are no indications of water marks or signs of moisture on any of the components.
- ☐ 5. Verify there are no indications that the wire insulation is cracking.
- ☐ 6. Verify Battery Backup (optional) components have not expired and still maintaining sufficient charge.
- ☐ 7. Verify the TTFM Flow Meter is operational with sufficient signal strength, found in the display settings.

If any operation of the controller does not function correctly, or the inspection reveals any of the above problems, contact Master Control Systems Inc. for factory authorized service agent recommendations and/or torque specifications.

Peerless Pump Contact Information



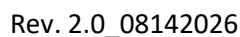
Peerless Pump Company

2005 Dr. Martin Luther King Jr

Indianapolis, 46202 - U.S.A.

Phone: (+1) (317) 925-9661

www.peerlesspump.com



MASTER



Model FCJC Fire Connect Wiring Diagram

Date	11 October 2024
Drawing	24411 Issue 3

MASTER



Model FCJC Fire Connect Wiring Diagram W/Mod BC

Date	20 December 2024
Drawing	24410

MASTER



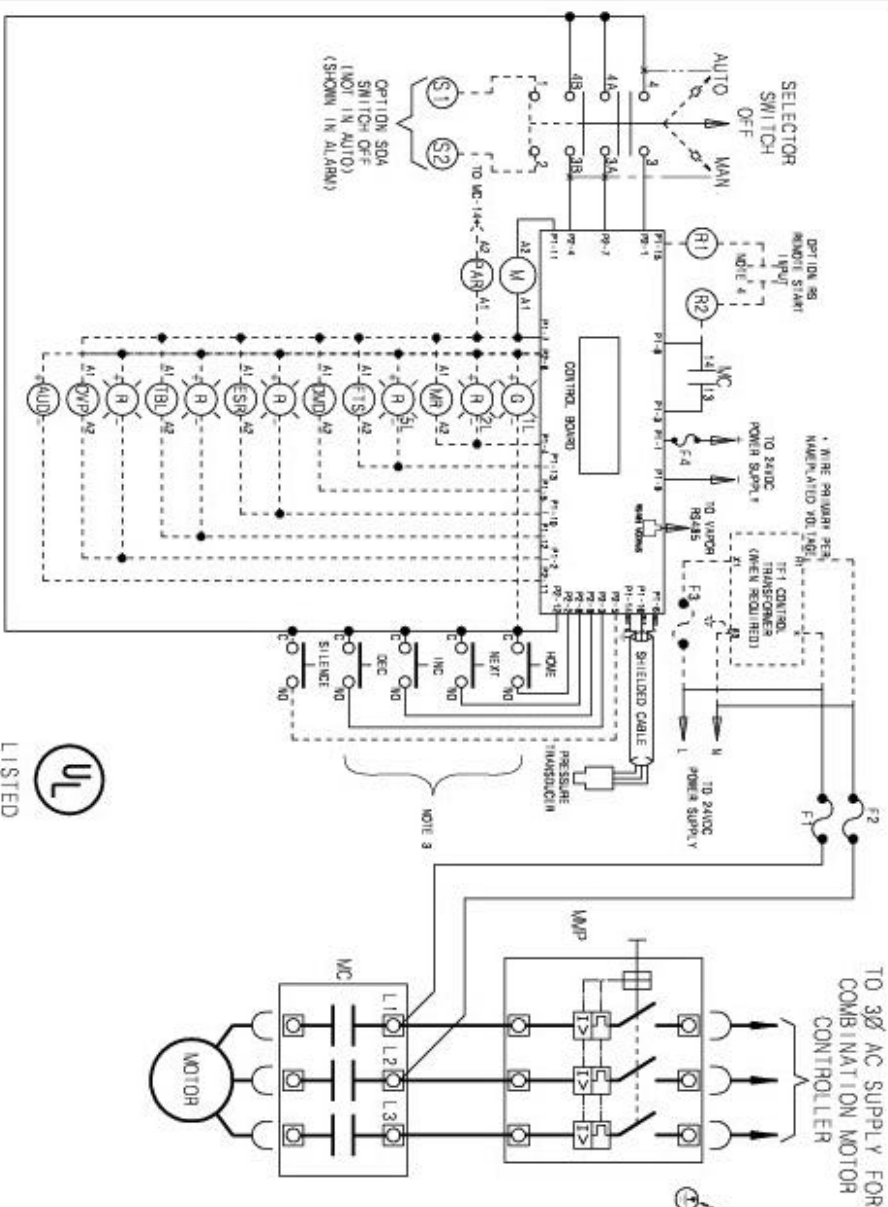
NOTES:

1. MINIMUM RUN TIMER FACTORY SET TO 3 SECONDS. MAX SETTING 999 SECONDS.
2. RESTART DELAY TIMER FACTORY SET TO 3 SECONDS. MAX SETTING 99 SECONDS.
3. PRESS 'NEXT' TO MOVE THROUGH SETUP SCREENS. PRESS 'INC/DEC' TO CHANGE SETTINGS. SEE MANUAL FOR MORE DETAILS.
4. MOMENTARY CONTACT. RUNS FOR MIN RUN TIME IF RESET PRESSURE IS SATISFIED. USE MAINTAINED CONTACT FOR CONTINUOUS RUNNING.

JOCKEY PUMP OFF
(SHOWN IN ALARM)

Model FCJC Pump Motor Controller

MASTER

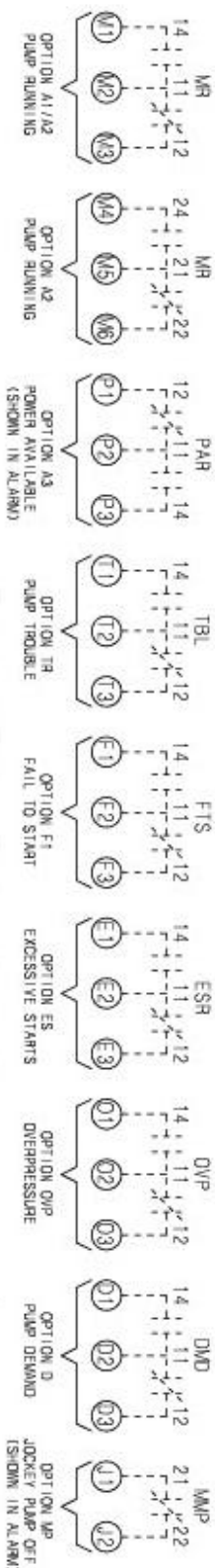


LISTED 

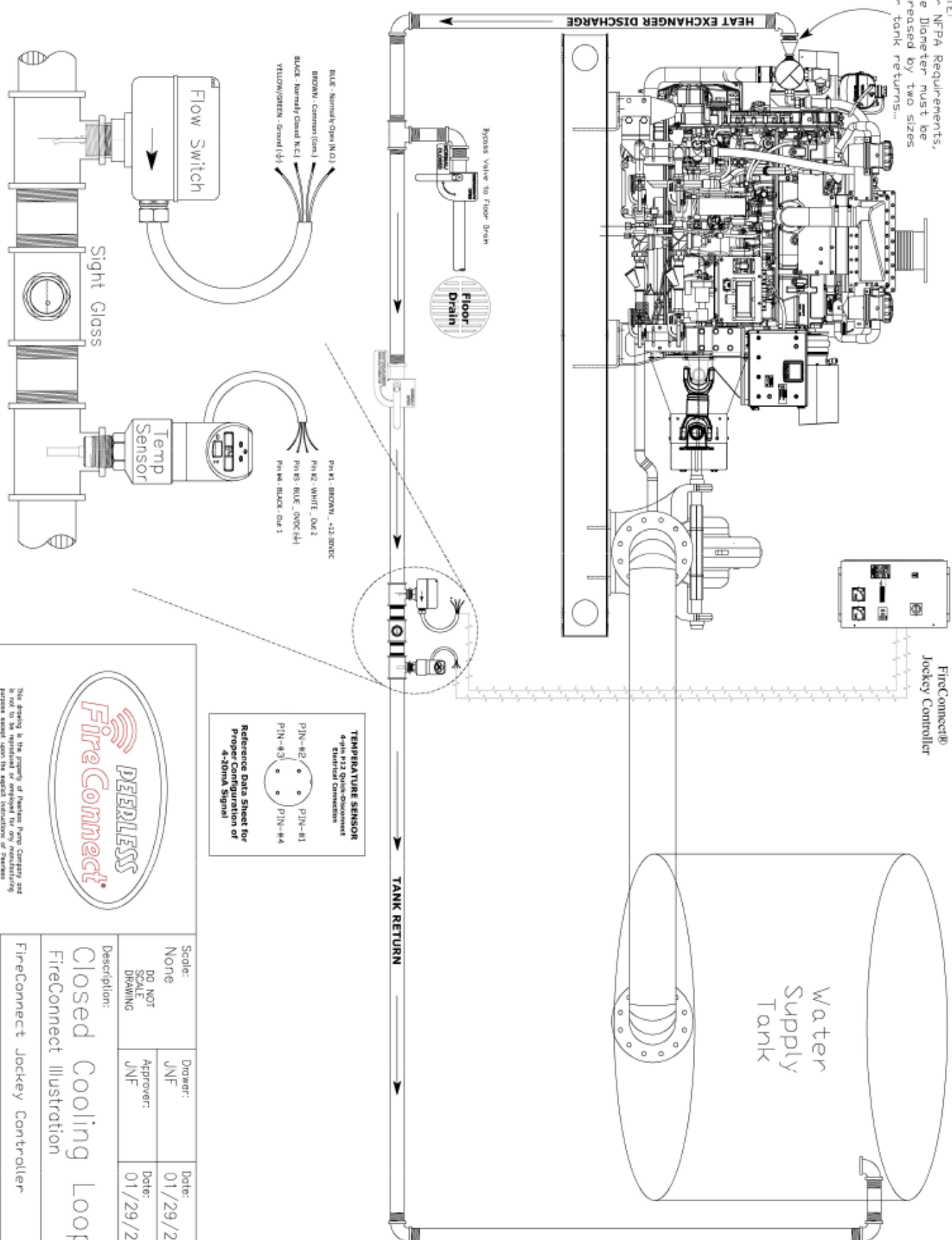
ALARM CONTACTS CONTACT RATING: 5A MAX. AT 240VAC OR 28VDC

- NOTES

1. MINIMUM RUN TIMER FACTORY SET TO 3 SECONDS. MAX SETTING 999 SECONDS.
2. RESTART DELAY TIMER FACTORY SET TO 3 SECONDS. MAX SETTING 99 SECONDS.
3. PRESS 'NEXT' TO MOVE THROUGH SETUP SCREENS. PRESS 'INC/DEC' TO CHANGE SETTINGS. SEE MANUAL FOR MORE DETAILS.
4. MOMENTARY CONTACT. RUNS FOR MIN RUN TIME IF RESET PRESSURE IS SATISFIED. USE MAINTAINED CONTACT FOR CONTINUOUS RUNNING.



NOTE:
Per NFPA Requirements,
Pipe Diameter must be
increased by two sizes
for tank returns...



This drawing is the property of Deerless Fire Company and is not to be reproduced or used in any way without the written permission of Deerless Fire Company. All rights reserved. Deerless Fire Company is not responsible for any errors or omissions in this drawing or for any damage or loss resulting from the use of this drawing.

Scale: None
DO NOT SCALE DRAWING

Drawer: JNF
Apprver: JNF
Date: 01/29/2022

Description: Closed Cooling Loop
FireConnect Illustration

FireConnect Jockey Controller

Page: 1 of 1

Customer assumes responsibility for assembly and maintaining NFPA compliance

11.4.4.2

"Fuel piping shall not be galvanized steel or copper"

11.4.4.2.1

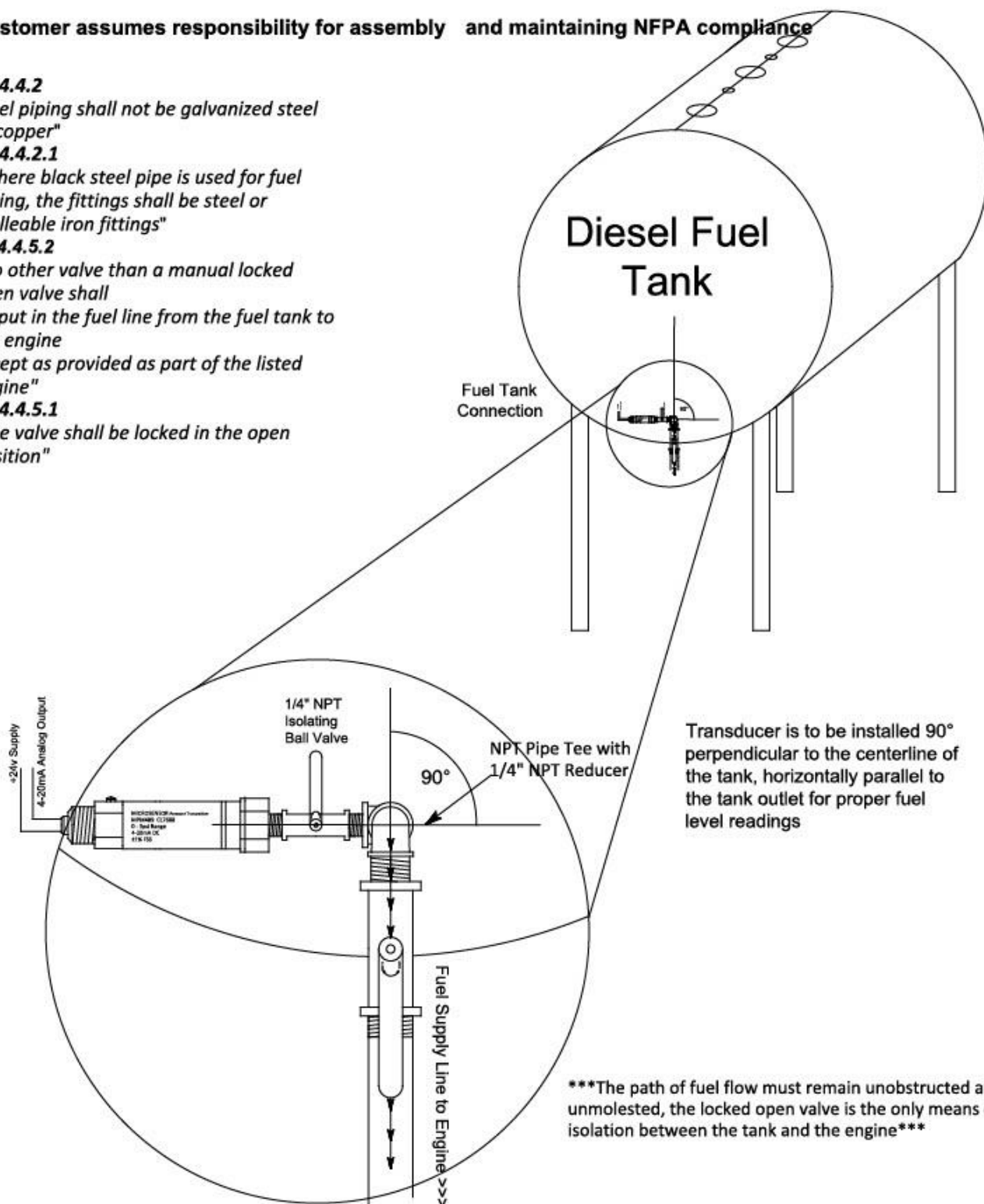
"Where black steel pipe is used for fuel piping, the fittings shall be steel or malleable iron fittings"

11.4.4.5.2

"No other valve than a manual locked open valve shall be put in the fuel line from the fuel tank to the engine except as provided as part of the listed engine"

11.4.4.5.1

"The valve shall be locked in the open position"



REV	DESCRIPTION	DATE	BY	APP
1	ADDED REVISION TABLE, REMOVED COLOR LABEL FOR SUPPLY AND OUTPUT WIRING	07/01/2021	JNF	JNF

Basic Material No.: Installation Option #1	Drawing Type: SHOP
Dimension of basic material: 1"	Related Drawings: 1"
Type of basic material: 1"	THIRD ANGLE PROJECTION
Chg note	Date Int.



1500 St. Martin Luther King Jr. Street
Indianapolis, IN 46202

This drawing is the property of Peerless Pump Company and is not to be reproduced or employed for any manufacturing purpose except upon the explicit instructions of Peerless Pump Company. At the request of Peerless Pump Company or upon completion of the job, it is to be returned to Peerless Pump Company, Indianapolis, Indiana.

Scale: None	Drawn: JNF	Date: 07/01/2021
DO NOT SCALE DRAWING	Approved: JNF	Date: 07/01/2021

Description: FireConnect Fuel Tank Level Monitoring Assembly
Drawing No.: Front View Orientation (MicroSensor)
Page: 1 of 1

Customer assumes responsibility for assembly and maintaining NFPA compliance

11.4.4.2

"Fuel piping shall not be galvanized steel or copper"

11.4.4.2.1

"Where black steel pipe is used for fuel piping, the fittings shall be steel or malleable iron fittings"

11.4.4.5.2

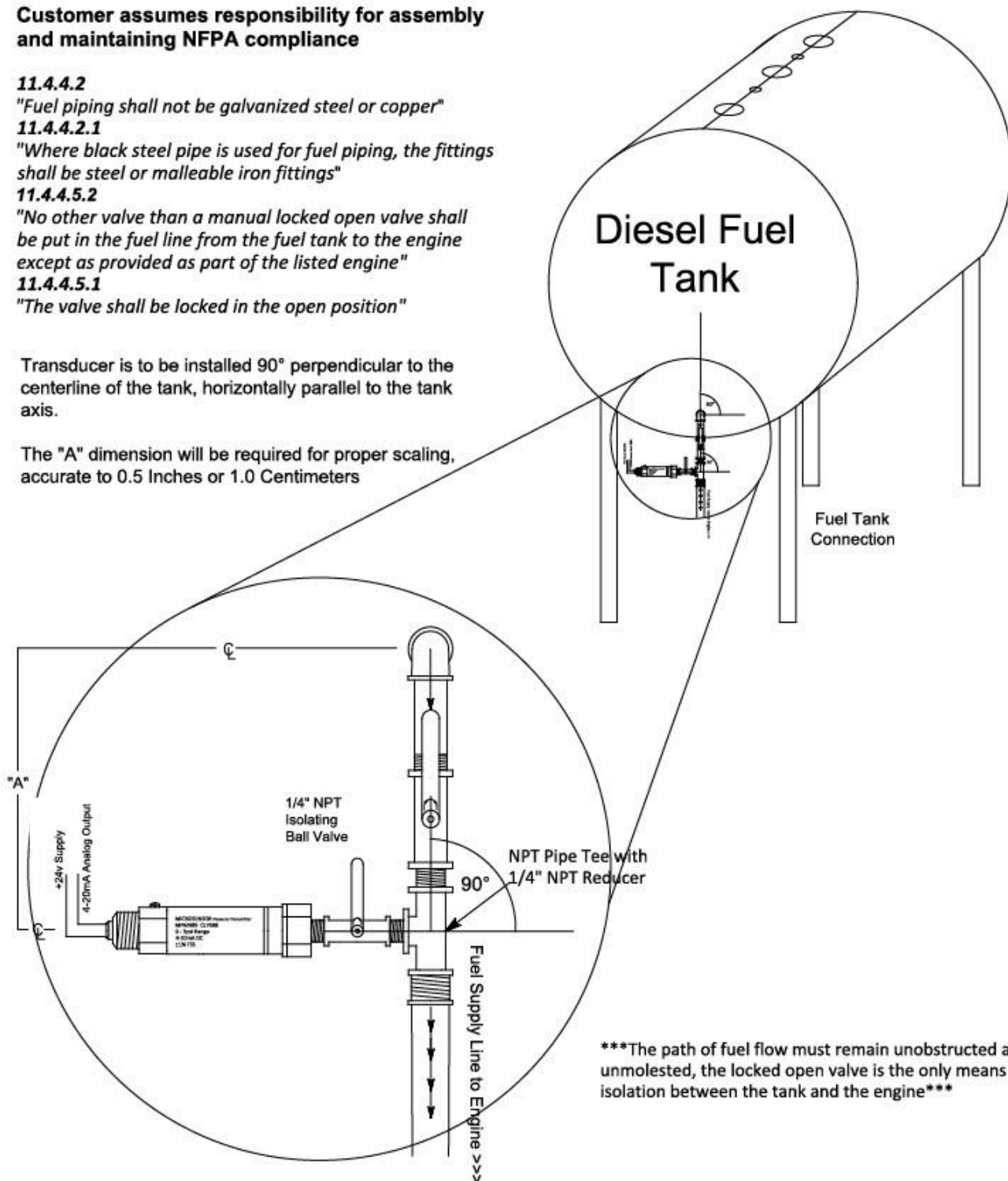
"No other valve than a manual locked open valve shall be put in the fuel line from the fuel tank to the engine except as provided as part of the listed engine"

11.4.4.5.1

"The valve shall be locked in the open position"

Transducer is to be installed 90° perpendicular to the centerline of the tank, horizontally parallel to the tank axis.

The "A" dimension will be required for proper scaling, accurate to 0.5 Inches or 1.0 Centimeters



REV	DESCRIPTION	DATE	BY	APP
1	ADDED REVISION TABLE, REVISED CONNECTIONS FOR SUPPLY AND OUTPUT WIRING	07/01/2021	JNF	JNF

Basic Material No.: INSTALLATION OPTION #2	
Dimension of basic material:	
Type of basic material:	
Drawing Type: SHOP	
Related Drawing:	
Chg note	Date Int.
BRIEF ANGLE PROJECTION	



2005 Dr. Martin Luther King Jr. Street
Indianapolis, IN 46202
This drawing is the property of Fireless Pump Company and is not to be reproduced or employed for any manufacturing purpose except upon the explicit instructions of Fireless Pump Company. At the request of Fireless Pump Company or upon completion of the job, it is to be returned to Fireless Pump Company, Indianapolis, Indiana.

Scale: None	Drawn: JNF	Date: 07/01/2021
DO NOT SCALE DRAWING	Apprver: JNF	Date: 07/01/2021
Description: FireConnect Fuel Tank Level Monitoring Assembly Drawing No.: Front View Orientation (MicroSensor)		
Page:	1	of 1

Appendix-II

Greyline TTFM 6.1 Instruction Manual

The following contents is property of the Pulsar Measurement Company, and to be used only in accordance with the installation of the Greyline TTFM 6.1 Flowmeter and intended for application as an integral component to the FireConnect line of products.

Utilize the QR Code for access to the complete installation manual provided by the Pulsar Measurement Company if further information is required.



<https://drive.google.com/file/d/1hYuSSvoXdl3TBe9o9MUFqyvMI823W1a/view?usp=sharing>

Appendix-III

ProSense Digital Temperature Sensor Manual

The following contents is property of the Automation Direct, and to be used only in accordance with the installation of the ProSense ETS Series Digital Temperature Sensors and intended for application as an integral component to the FireConnect line of products.

Utilize the QR Code for access to the complete installation manual provided by Automation Direct if further information is required.



<https://drive.google.com/file/d/14Q2UB9nc5awxXJs8RvBd7oF9XqXs9gVL/view?usp=sharing>

REV #	Description	Date	Author	Approval
1.9	Added Revision Table	6/15/2026	JNF	JNF
2.0	Updated MICROSENSOR Transducer Drawings	8/14/2026	NRF	JNF