

FUEL ***POINT***

***READER INSTALLATION AND
RETROFIT INSTRUCTIONS
MANUAL***

C35628

FUEL POINT READER INSTALLATION AND RETROFIT INSTRUCTIONS MANUAL

C35628

REV. 03/28/03

INSTALLERS - IMPORTANT

In addition to installation information, this manual contains warnings, safeguards and procedures on the use and care of the Fuel Point System. Please leave this manual with the system owner after the installation is complete.

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GASBOY INTERNATIONAL LLC LANSDALE, PA

IMPORTANT WARNINGS AND SAFEGUARDS

Gasoline and petroleum products are flammable. To avoid injury or death to persons or damage to equipment or property, follow these listed warnings and other warnings and precautions outlined in this manual when installing, using, or working around this equipment. Check with GASBOY Technical Services for compatibility of liquids with pump materials.

TURN OFF AND LOCK OUT ALL POWER TO PUMP BEFORE PERFORMING SERVICE, MAINTENANCE OR IN THE EVENT OF A FUEL SPILL.

All products must be installed by a qualified installer and used in conformance with all building, fire, and environmental codes and other safety requirements applicable to its installation and use, including, but not limited to, NFPA 30, NFPA 30A, NFPA 395 & NFPA 70. A qualified installer is familiar with fuel systems installations under the above stated building, fire, and environmental codes and other safety requirements for the particular type of installation.

This product is only part of a fuel dispensing system and additional equipment and accessories, such as, but not limited to, breakaway connectors, shear valves, pressure regulators, flow limiters, and other safety devices may be necessary to meet the applicable codes.

For maximum safety, we recommend that all employees be trained as to the location and procedure for turning off power to the entire system. Instructions regarding proper operation of the equipment along with the appropriate safety warnings should be posted in plain view at the fuel island.

Before performing service or maintenance (including changing of fuel filters or strainers) or in the event of a fuel spill, turn off and lock out all power to the system. In battery-powered pumps, disconnect power source. In submersible pump applications, turn off and lock out power at the master panel and close any impact valves to the submersible pump and any other dispensers which use that submersible pump. AC power can feed back into a shut-off dispenser when dispensers share a common submersible pump or starter relay. Also block islands so no vehicles can pull up to the dispenser when the dispenser is being worked on.

DO NOT use Teflon tape for any pipe threads in the product.

DO NOT use consumer pumps for pumping fuel or additives into aircraft.

DO NOT use commercial pumps for direct fueling of aircraft without filters and separators necessary to ensure product purity.

DO NOT use where sanitary design is required (for food products for human consumption) or with water-based liquids.

DO NOT smoke near the pump or when using the pump.

DO NOT use near open flame or electrical equipment which may ignite fumes.

DO NOT permit the dispensing of gasoline or other petroleum products into a vehicle with its motor running.

DO NOT permit the dispensing of gasoline or other petroleum products into unapproved containers or into approved containers in or on vehicles including trucks. All containers must be filled on the ground to prevent static discharge. Always use Approved and Listed hoses and nozzles with electric pumps and dispensers.

DO NOT block open the nozzle in any manner. Nozzles shall conform to UL and NFPA code requirements for attended or unattended service.

DO ensure that the pump is equipped with proper filters based on the product being dispensed and its intended use.

DO wear safety goggles and protective clothes when dispensing any liquid which may be potentially harmful or hazardous.

DO keep all parts of body and loose clothing clear of belts, pulleys, and other exposed moving parts at all times.

DO require washing and changing of clothes if fuel is spilled on a person or his/her clothing. Keep away from open flames, sparks, or people smoking.

DO provide a receptacle for catching product from pump/meter when servicing.

DO clean up product spills on the driveway. Turn off and lock out all power prior to cleanup.

DO insure pump is properly grounded.

DO insure hose is compatible with fluid being dispensed.

DO inspect hose, nozzle, and pump on a regular basis for wear, damage, or other conditions which may create a safety or environmental hazard.

DO make sure all pipe threads are properly cut and the inside reamed to remove burrs. Use UL classified gasoline-resisting compound on all joints of gasoline handling piping. Sealing compound must also be resistant to Gasohol (Ethanol and Methanol). Use gasoline-resistant pipe compound on male threads only; pipe compound used on female threads can be squeezed into the supply line where it can enter the product stream and become lodged in the pump or meter.

DO ensure that junction box covers are in place and properly tightened. Mating surfaces between the box and cover must be free of dirt, nicks, and scratches. All unused entries into the junction box must be properly plugged.

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WARRANTY

Section 1

INTRODUCTION

PURPOSE

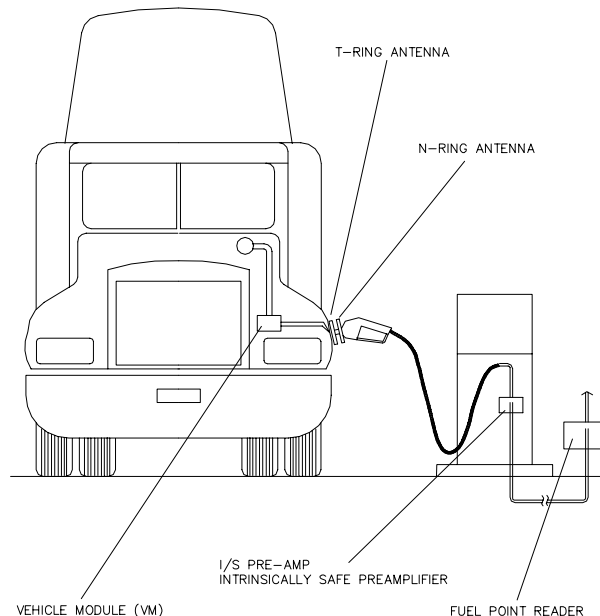
The *GASBOY Fuel Point Reader Installation and Retrofit Instructions Manual* is provided to assist you in installing the Fuel Point option to your GASBOY fuel management system (FMS). It also provides the necessary instructions for installing a Fuel Point Reader on a FMS pedestal (Section 4). This manual should be supplied to the electrician prior to the installation of conduit and wiring to ensure your Fuel Point system is installed properly. Faulty installations are the major cause of system malfunctions. The system must be installed as described in this manual to ensure the reliability and proper operation of the system. Please read this entire manual before starting installation.

GASBOY provides a toll-free number for customers and installers having any questions pertaining to the installation: 1-800-444-5529

SYSTEM OVERVIEW

Fuel Point adapts to Listed GASBOY fuel management systems for hassle-free fueling. System applications determine actual components required. Your system will consist of the following components:

- a GASBOY fuel management system (FMS) (Listed models 1000, 1000P, or 2000S CFN)
- Fuel Point Reader (FPR)
- Pumps/dispensers modified using Listed Dispenser and Hose Retrofit Kits (consisting of I/S Pre-amp and one or two kits)
- T-Ring Tank Antenna (See Manual C35699)
- Vehicles equipped with materials from Vehicle Installation Kits (See Manual C35699)
- Vehicle Module(s) (VM's)



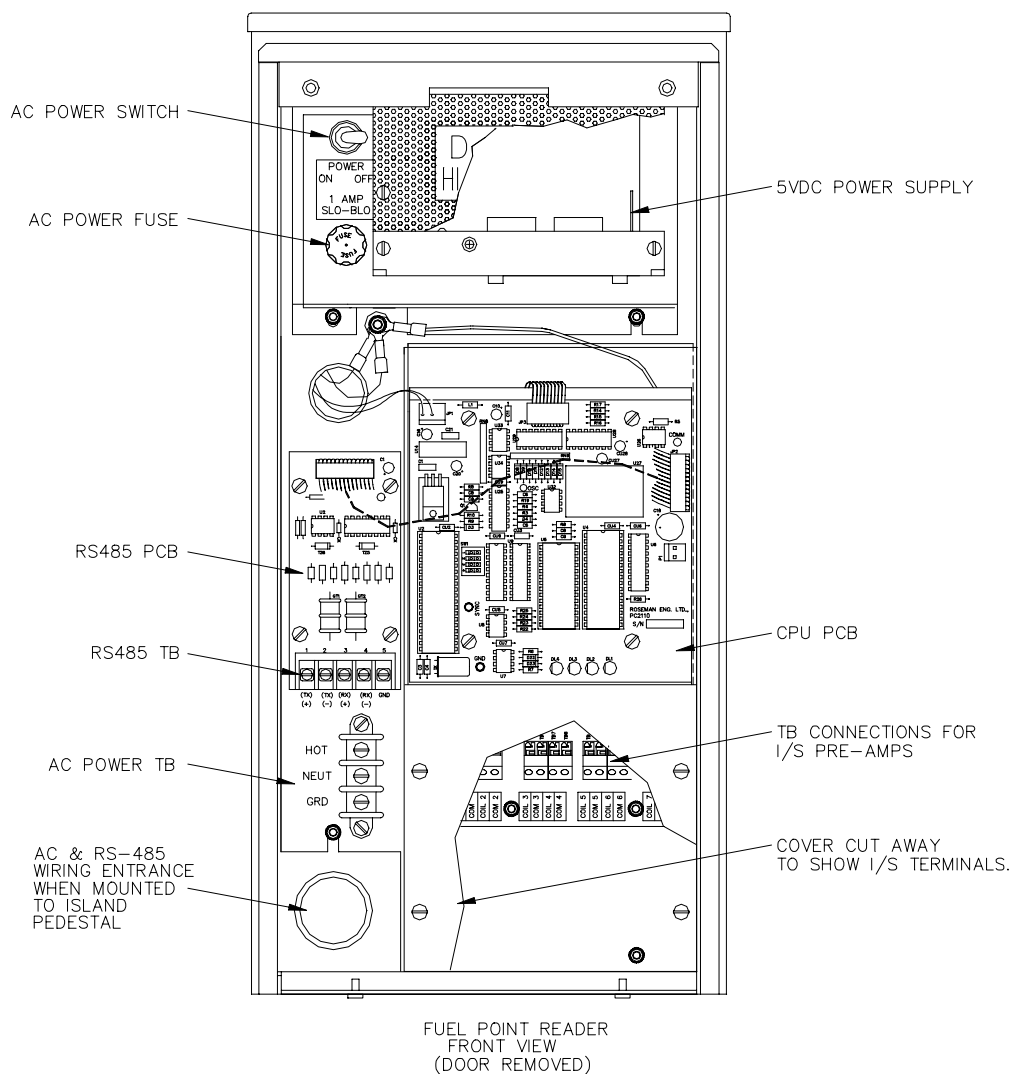
FUEL POINT READER

Description

The Fuel Point Reader (FPR) is housed in a weatherproof cabinet. It is microprocessor-based and consists of modular components and configured software. It communicates vehicle information to the GASBOY fuel management system controller for up to eight fueling positions. Multiple fuel point readers may be used for systems with more than eight fueling positions. When used with the CFN II FMS, multiple FPR's may be connected for controlling up to 32 fueling positions.

Location

The Fuel Point Reader may be factory-mounted to a new FMS, located independently on the island, or retrofitted to an existing GASBOY FMS, as described in Section 4. It can also be wall-mounted inside a building, but this option may increase the installation costs because each N-Ring requires a two-wire run to the FPR. When wall-mounted, the FPR should be located near other fuel system components such as pump control unit, circuit breakers, wiring trough, etc..

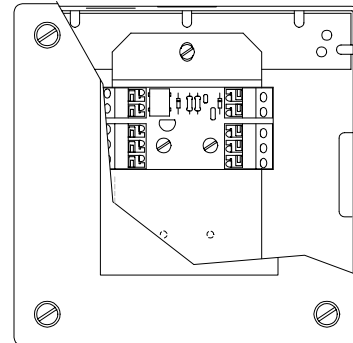


DISPENSER RETROFIT KITS

Dispenser retrofit kits provide the wires, couplings, and hardware needed to modify the hose and nozzle to accept the fuel point hardware. They also contain the I/S Pre-amps and N-ring nozzle antennas. These kits are described in detail in the *Dispenser and Hose Retrofit Installation Manual, C35593*.

I/S Pre-Amplifiers (I/S Pre-Amp)

The I/S Pre-Amp assemblies are small PCB's mounted in junction boxes within the dispenser. An I/S Pre-Amp amplifies the antenna signal to the FPR, assuring reliable communication. The Pre-Amps come factory-installed inside a metal junction box. Wiring between the I/S Pre-Amp and the Fuel Point Reader is shown in the **System Wiring** section of this manual. Wiring between the I/S Pre-Amp and the nozzle ring is shown in the *Dispenser and Hose Retrofit Installation Manual, C35593*.



N-Ring Nozzle Antenna

The N-Ring nozzle antenna mounts on the base of the nozzle spout and is concealed by a special nozzle cover. It is connected to the I/S Pre-Amp via antenna wire that is run down the inside or outside of the hose. It transmits/receives communication to/from the vehicle's T-Ring antenna. Installation of the N-Ring is detailed in the *Dispenser and Hose Retrofit Installation Manual, C35593*.

VEHICLE COMPONENTS

Each vehicle is modified to work with the Fuel Point system by installation of a T-Ring tank antenna connected to a Vehicle Module (VM). Vehicle installation kits provide the required elements to install the T-ring and VM. Vehicle kit installation instructions are contained in the *Vehicle Module (VM) Installation Manual, C35699*.

Section 2

CONDUIT LAYOUT AND FPR INSTALLATION

PURPOSE

Use this section for detailed planning of the installation of your system. This section covers conduit requirements and shows conduit layout examples for basic system configurations. Careful planning of the site layout will help eliminate possible problems with the start-up of your system and will ensure continued, reliable system operation.

CONDUIT REQUIREMENTS

The conduit requirements outlined in this section are relevant to all components making up the GASBOY system. The GASBOY Warranty will not apply to any system deviating from the requirements outlined in this section.

All wiring and conduit runs must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.

All wiring (AC and DC) connecting the different components of the Fuel Point System and all communication equipment signal wires must be installed underground in **threaded, rigid, metal conduit**. **PVC IS NOT ACCEPTABLE**. High voltage AC power wires must be installed in separate conduit from the low voltage DC signal wires; they cannot be run in any sort of common conduit or trough. Exceptions to these requirements are noted in Section 3, **Communication Requirements (RS-485)**. I/S wires must be in separate conduit from all AC or DC wires.

All holes and knockouts accept up to 3/4" conduit. All conduit must be connected to the components through the holes and knockouts provided by the factory. Do not make any other holes in these units. If alternate holes are required, contact GASBOY for approval first.

The chart below shows conduit capacity for rigid metal conduit with 50% fill of gas- and oil-resistant wire. Use this chart as a guideline to determine the proper conduit sizes for the GASBOY Fuel Point System wiring. When planning the orientation of the wire runs, follow the applicable GASBOY wiring diagrams and consider the layout of the components at the site. Long runs or a large number of bends may require you to increase conduit size over what is listed.

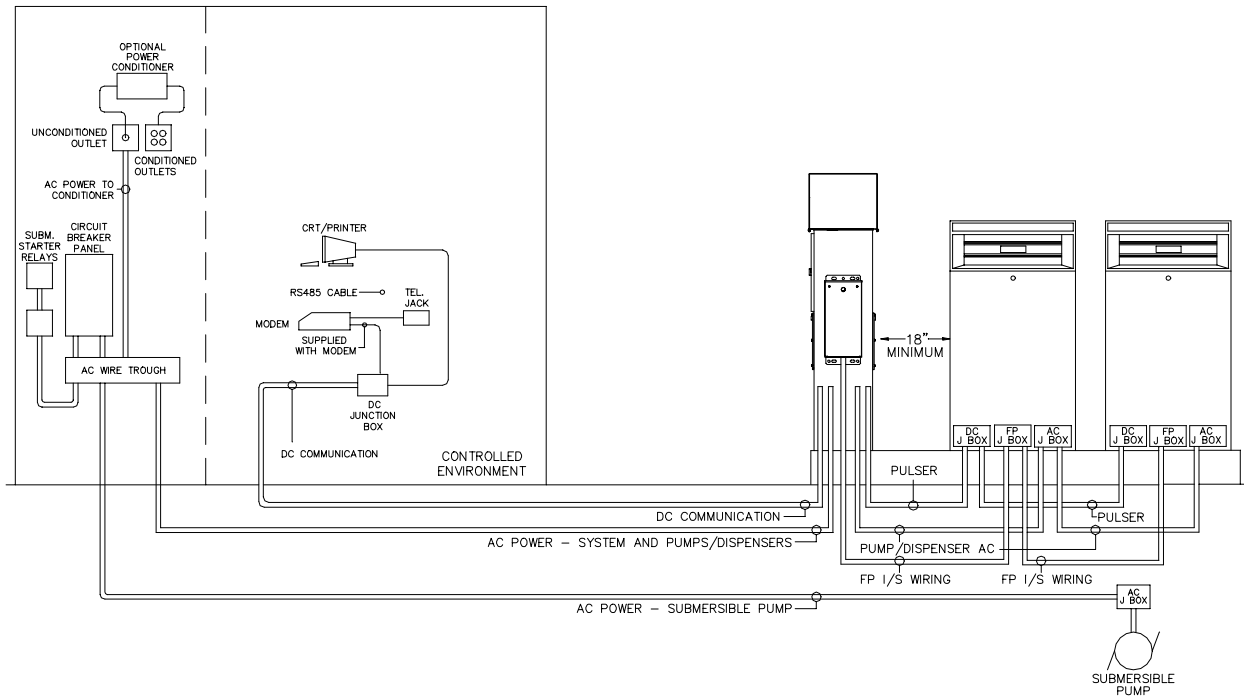
Table 2-1. Conduit Size Chart

	CONDUIT SIZE					
	1/2" 12.7mm	3/4" 19mm	1" 25.4mm	1-1/4" 31.8mm	1-1/2" 38.1mm	2" 50.8mm
18 AWG	19 Wires	34 Wires	55 Wires	97 Wires	132 Wires	216 Wires
14 AWG	13 Wires	24 Wires	39 Wires	69 Wires	94 Wires	154 Wires
12 AWG	10 Wires	18 Wires	29 Wires	51 Wires	70 Wires	114 Wires
10 AWG	6 Wires	11 Wires	18 Wires	32 Wires	44 Wires	73 Wires
8 AWG	3 Wires	5 Wires	9 Wires	16 Wires	22 Wires	36 Wires
6 AWG	1 Wire	4 Wires	6 Wires	11 Wires	15 Wires	26 Wires
4 AWG	1 Wire	2 Wire	4 Wires	7 Wires	9 Wires	16 Wires
2 AWG	1 Wire	1 Wire	3 Wires	5 Wires	7 Wires	11 Wires

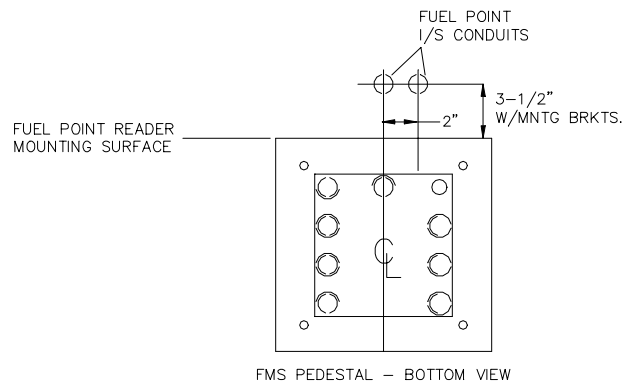
CONDUIT LAYOUT/INSTALLATION SPECIFICATIONS

1. All wiring must be installed and used in accordance with all building/fire codes, all Federal, State, and Local codes, National Electrical Code (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
2. Power must come from a separate dedicated circuit breaker rated at no less than 10 AMPS or may share the fuel management system breaker. When mounted to an island pedestal (factory or retrofit), the FPR will get its power from the pedestal device via a GASBOY-supplied AC power cable.
3. All conduit must be rigid metal to provide the necessary shielding.
4. All conduit must be run underground, not overhead.
5. The I/S Pre-Amp comes factory-installed in a metal junction box and mounts in the base of the pump or dispenser. Twin pumps or dispensers have two Pre-Amps mounted in the same junction box. The box is secured by threading onto conduit. It can be mounted wherever it is convenient as long as it does not interfere with other dispenser components. The junction box has 1/2 inch hubs, so you need to use a reducer if running larger conduit for the I/S wiring. Strain relief connectors must be used to protect the N-ring wiring entering the box. **I/S Pre-Amp wires are intrinsically safe and must be in a separate conduit from any AC or DC wires.** The distance between the Pre-Amp and the Fuel Point Reader cannot exceed 1000 feet.
6. It is recommended that the RS-485 wiring be in a separate metal conduit from any AC wires. However, the RS-485 wires may be run in the AC conduit if the requirements outlined in **Communication Requirements (RS-485)** in Section 3 are followed.
7. Use the wire size chart (Table 4-1) to determine the wire gauge.
8. Use the conduit size chart (Table 2-1) to determine the size according to the number of wires and wire gauge.
9. Consult the applicable section of this manual for specific system installation requirements.

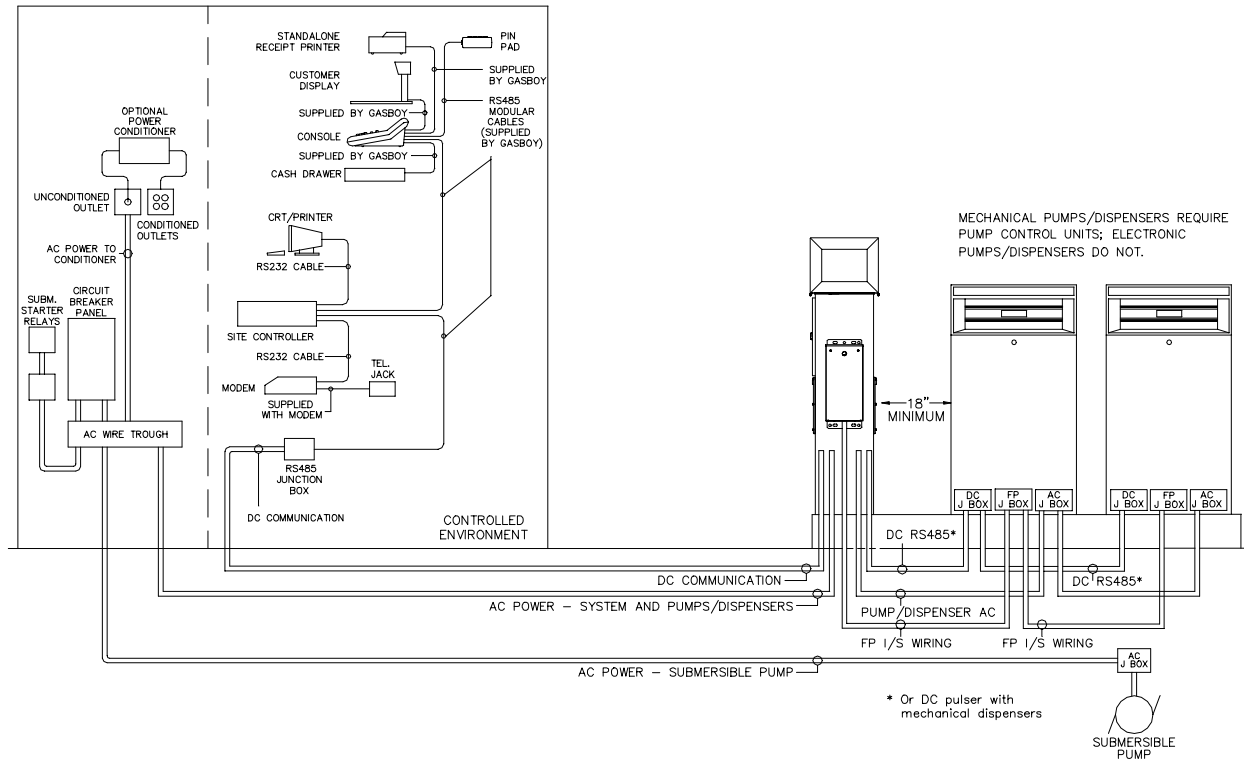
Conduit Layout - Series 1000 FMS with FPR



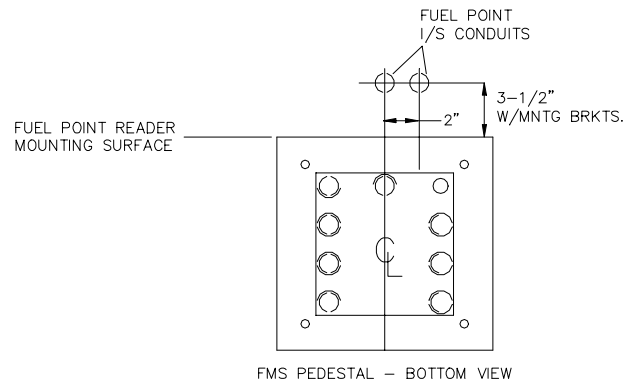
Conduit Detail for FPR Mounted on Fuel Management System Pedestal



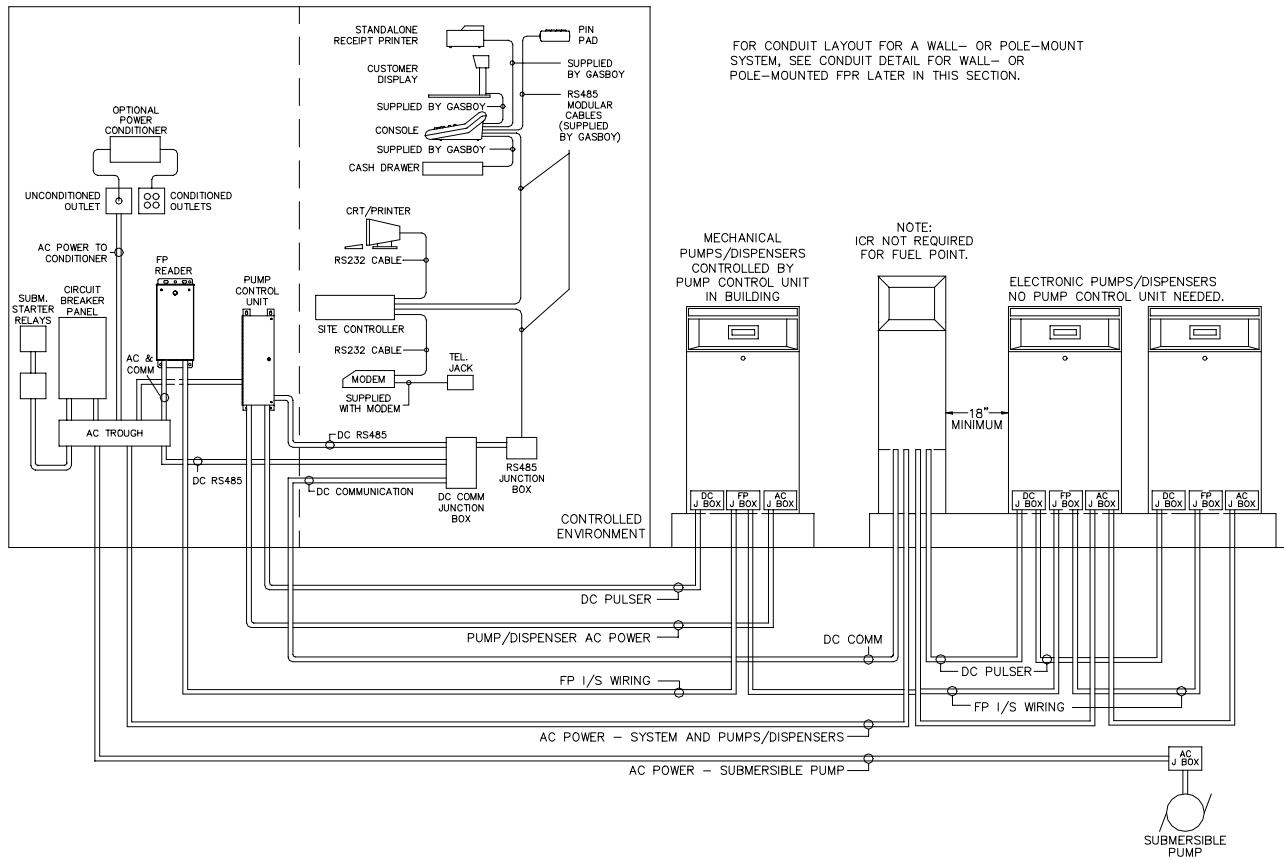
Conduit Layout - CFN FMS with Pedestal Pump Control and Pedestal-Mounted FPR



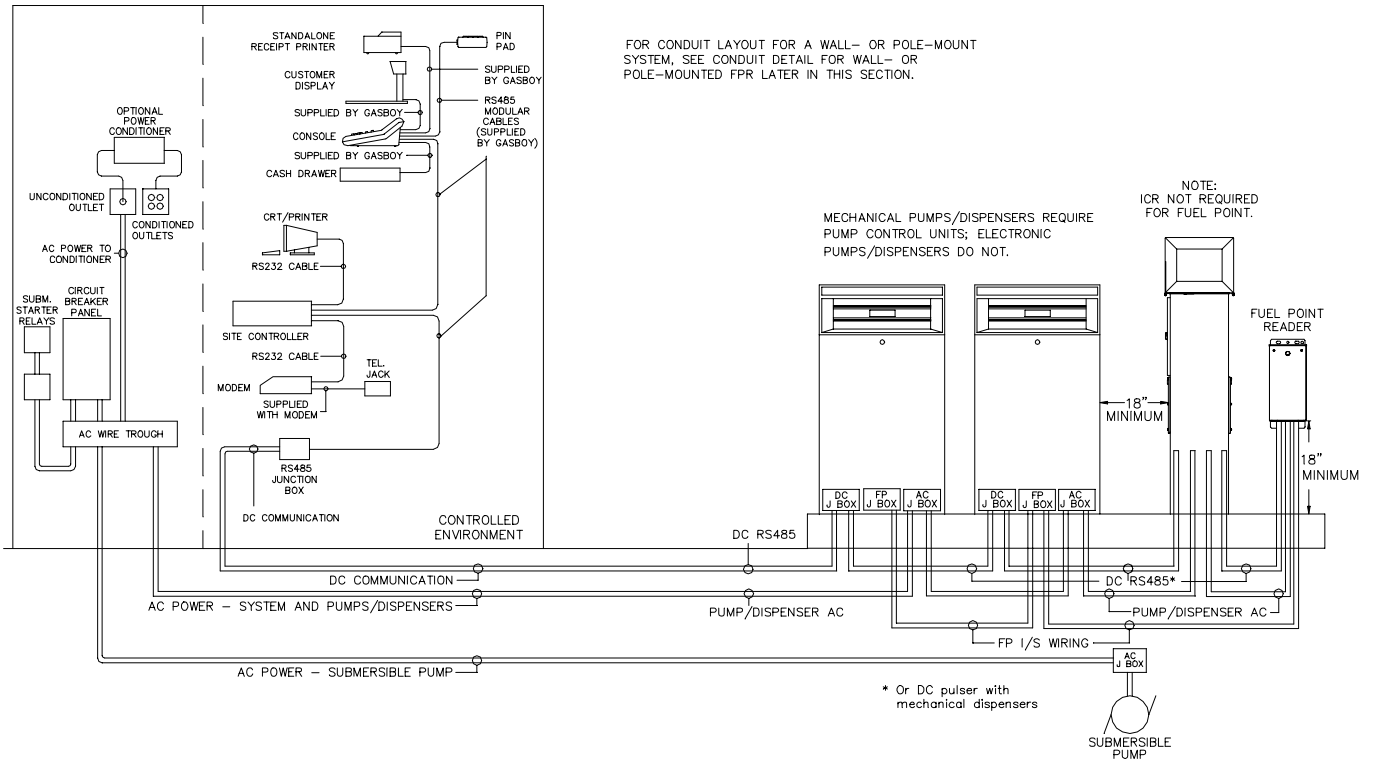
Conduit Detail for FPR Mounted on Fuel Management System Pedestal



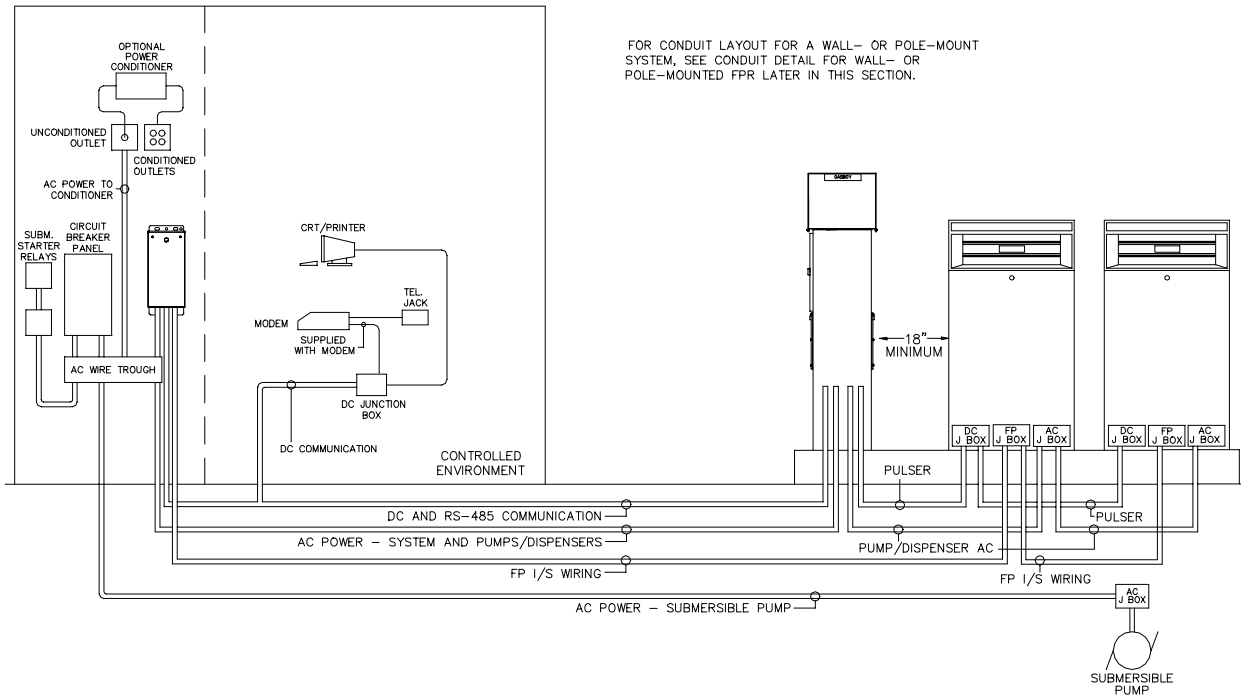
Conduit Layout - CFN FMS with Wall-Mounted PCU and Wall-Mounted FPR



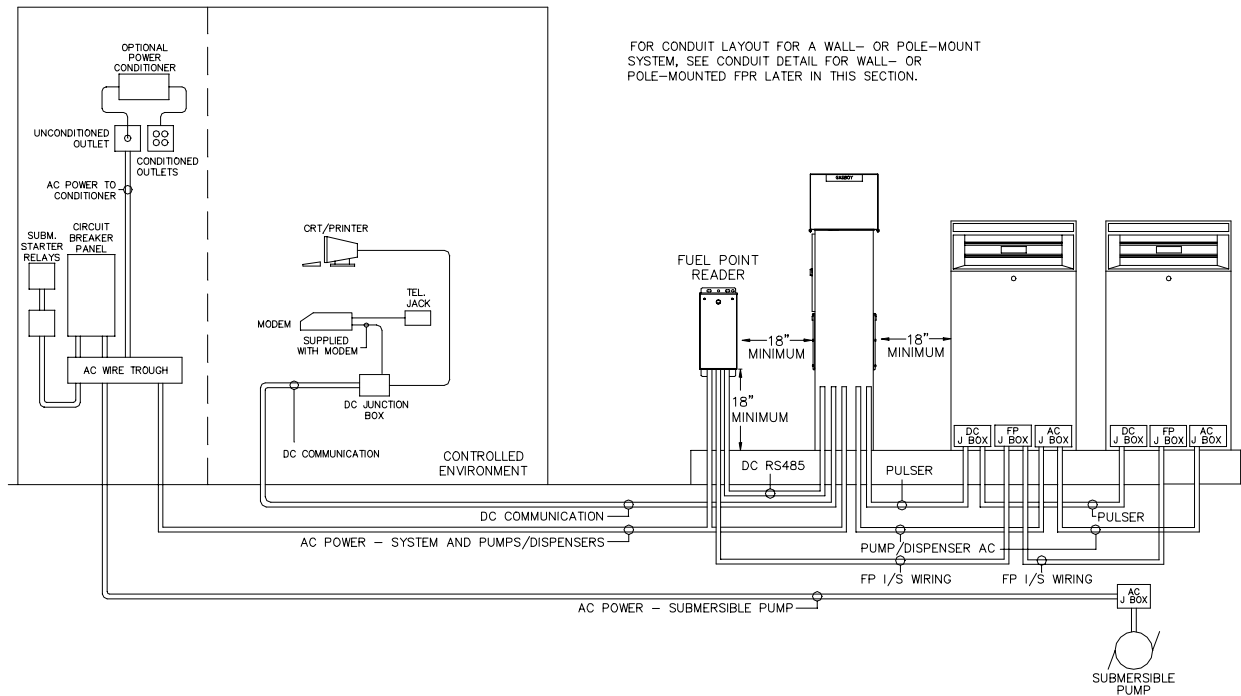
Conduit Layout - CFN FMS with Pedestal Pump Control and Pole-Mounted FPR



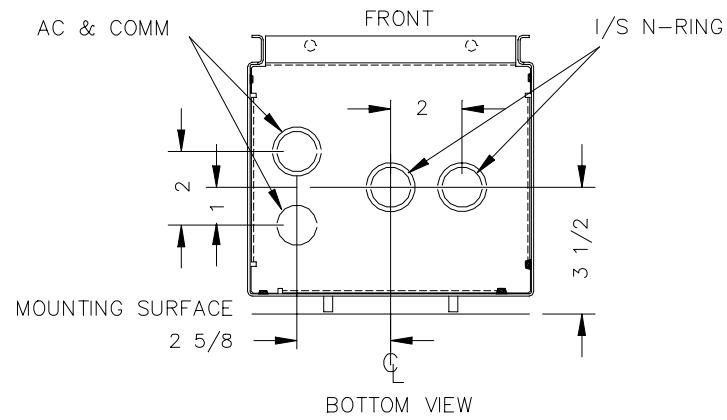
Conduit Layout - Series 1000 FMS with Wall-Mounted FPR



Conduit Layout - Series 1000 FMS with Pole-Mounted FPR



Conduit Detail for Wall- or Pole-Mounted FPR



Section 3

SYSTEM WIRING

GENERAL WIRING PRECAUTIONS

The quality of the electrical installation is a major factor in maintaining proper safety levels and providing trouble-free operation of your GASBOY Fuel Point Reader. To ensure a quality installation, follow these rules:

1. All wiring must be installed and used in accordance with all building/fire codes, all Federal, State, and Local codes, National Electrical Code (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
2. Use rigid metal conduit and insulated gasoline- and oil-resistant wiring of the proper size.
3. Wire connections must be tightly spliced and secured with a wire nut; close off the open end of the wire nut with electrical tape.
4. Install an emergency power cutoff. In addition to circuit breaker requirements of NFPA 70, NFPA 30, NFPA 30A, and the Canadian Electrical Code (Canadian users only), a single control which simultaneously removes AC power from all site dispensing equipment is recommended. This control must be readily accessible, clearly labeled, and in accordance with all local codes.

In a fuel management system application, the EMERGENCY STOP button on the island card reader and/or the EMERGENCY STOP and STOP keys on the console (if applicable) do not remove AC power from equipment and under certain conditions, will not stop product flow.

In order to provide the highest level of safety to you, your employees, and customers, we recommend that all employees be trained as to the location and procedure for turning off power to the entire system.

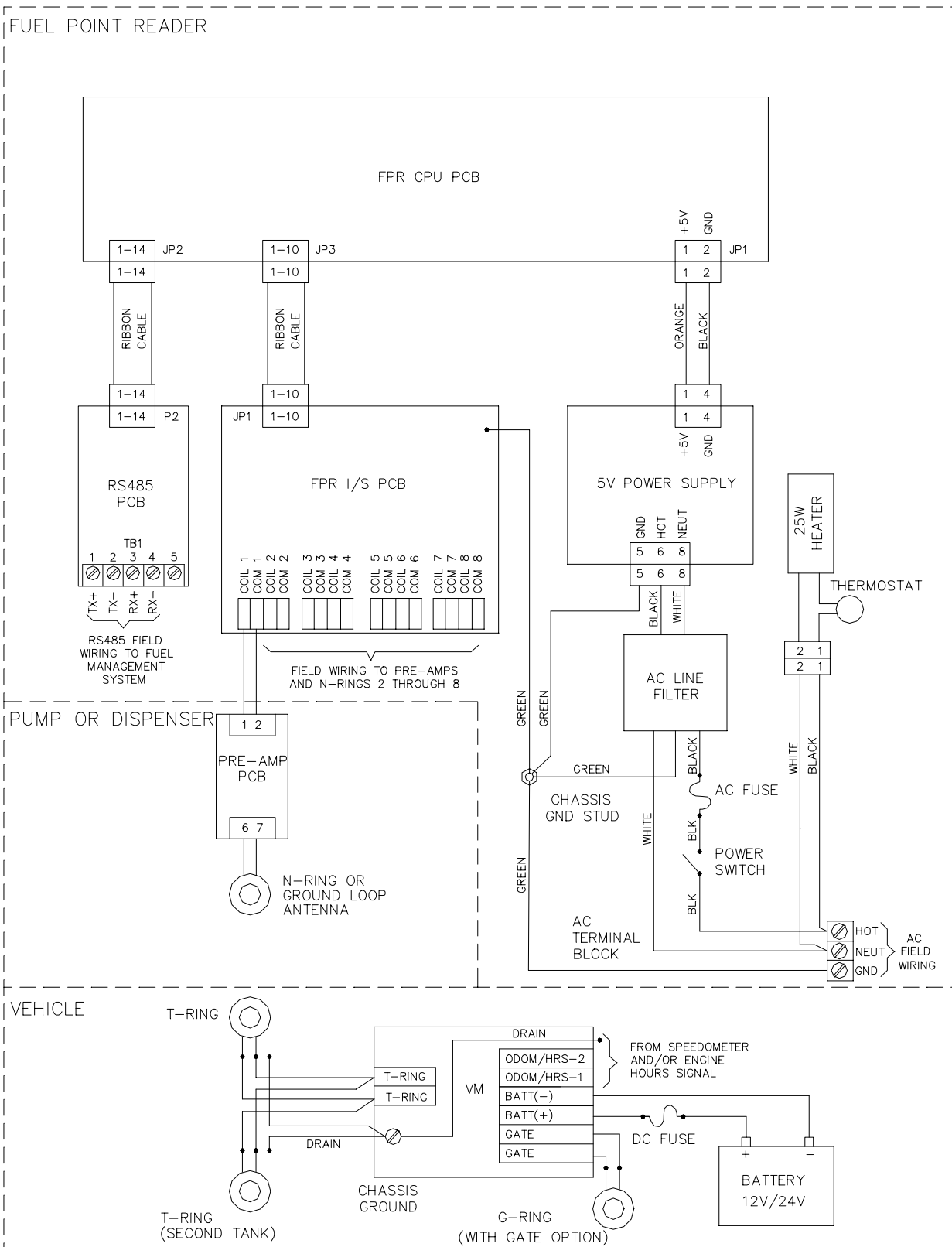
WARNING

To reduce the risk of electrical shock when servicing, turn off all power to the pump/dispenser. In submersible pump applications, turn off all power to the submersible pump and any other dispensers which use that submersible pump. AC power can feed back into a shut-off dispenser when dispensers share a common submersible pump or starter relay.

AVERTISSEMENT

Pour réduire le risque de choc électrique lors de l'entretien/révision, coupez totalement le courant à la pompe/distributeur. Dans les applications de pompe immerisible, coupez totalement le courant à la pompe immerisible et tous autres distributeurs qui utilisent la pompe immerisible. Le courant alternatif peut alimenter de nouveau un distributeur à l'arrêt quand les distributeurs partagent une pompe immerisible commune ou un relais de démarrage.

SYSTEM WIRING DIAGRAM



POWER REQUIREMENTS

Pedestal Mount

AC power for a pedestal-mounted FPR will come from the Fuel Management System via a GASBOY-supplied AC power cable. This means the VA rating for the entire pedestal assembly will be the sum of the ratings on the tags for both the FMS and the FPR.

Wall or Pole Mount

AC power for the wall- or pole-mounted FPR must come from a separate, dedicated circuit breaker rated at no less than 10 AMPS or may share the fuel management system breaker. No other equipment, including the system's pumps or dispensers, may be powered from this breaker. Whenever possible, one breaker should be used to supply the FMS components, data terminal, and modem. However, it is acceptable to supply the power to the different FMS components and accessories from multiple **breakers within the same breaker panel** and the same phase of power. When necessary, power for the data terminal or modem may be supplied from a separate, dedicated breaker located in a different breaker panel. The system requires 120 VAC \pm 10% 47-63 HZ for power.

Proper system grounding is an extremely important part of the system installation. As with the AC power, the grounds for all components should return to the same breaker panel. This helps to assure a common ground throughout the system which is necessary for protection of the circuitry. Grounds for all system devices should be wired to the breaker panel ground bus bar which in turn should be grounded to a ground rod. A conduit ground does not provide a sufficient ground. It is recommended that the neutral and ground bus bars be bonded together when it is not prohibited by local codes.

The AC wire size for power of the FPR must be 14 AWG or larger. This gauge of wire will be sufficient for runs of up to 300 feet from the breaker panel to the system. Components with distances over 300 feet must use 12 AWG wire or larger. All wire should be stranded. When connecting AC power wires to FPR, keep wire slack near bottom of cabinet.

RS-485 COMMUNICATION REQUIREMENTS

RS-485 wiring is used for communication between the FPR and FMS components. This communication takes place over the RS-485 field wiring. The following installation requirements must be followed when installing the RS-485 communication lines:

1. All wiring must be installed and used in accordance with all building/fire codes, all Federal, State, and Local codes, National Electrical Code (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
2. **Cable:** Twisted pair shielded cable is highly recommended for RS-485 wiring. Although it is recommended that wires be run in a conduit separate from AC wires, they can be combined in the same conduit with AC wires providing UL-Listed cable with the following specifications is used:

Conductor:	18 AWG stranded wire. 2 twisted-pairs.
Shield:	Foil-wrapped 100% coverage and/or tinned copper braid 90% coverage
Drain Wire:	Stranded, tinned copper, 20 AWG or larger/or braided shield
Voltage Rating:	Maximum operating voltage of 600V
Environmental:	Gas- and oil-resistant; suitable for wet or dry locations.

GASBOY can supply Belden 1063A (P/N C09655) which is a UL-Listed, 4-conductor cable that meets the requirements listed above. *NOTE: Belden 1063A is UL-Listed but not CSA listed.*

Cable with a voltage rating of less than 600V must be installed in a conduit separate from all AC wires.

3. **Conduit:** When using the recommended shielded, twisted-pair cable described above, the cable can be run with AC wires in metal conduit. The shield drain wire must be connected to the system AC ground. Only AC wires for the system and pumps can be installed in the AC conduit. Do not run the cable outdoors without the use of metal conduit. Do not run this cable overhead, outdoors.

The cable can be run indoors without the use of metal conduit. The shield drain wire must be connected to the system AC ground.

If using cable other than that recommended above, the RS-485 field wires must be installed in a metal conduit separate from any AC wires.

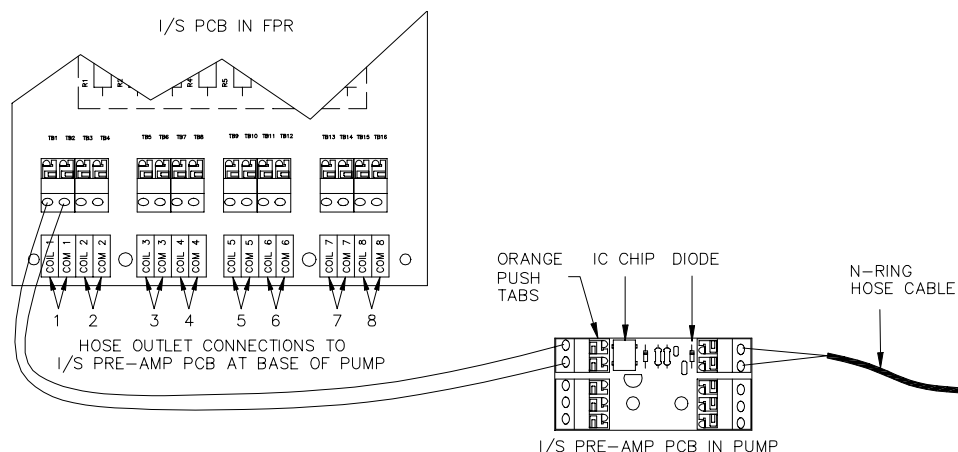
4. **Distance:** The following distances must be adhered to when installing the RS-485 field wiring.
 - Wiring over 100 feet must meet the specifications outlined in **Cable** above.
 - The distance from the FPR to the FMS is limited to 1000 feet.
5. **Connections:** See the **Wiring Diagrams** later in this section for proper connection of the RS-485 field wiring to the FMS components.

N-RING WIRING REQUIREMENTS

N-Ring wiring between the FPR and the pump must be 18 AWG, gas- and oil-resistant wire. Heavier gauge wire will not fit into the connectors on the I/S or Pre-Amp PC boards. To preserve intrinsic safety, N-Ring wiring must be in separate conduit from AC and DC, RS-485, or pulser wiring.

FIELD WIRING, I/S PRE-AMP TO FPR

The following diagram shows the wiring between the I/S PCB in the Fuel Point Reader and the I/S Pre-Amp PCB located in the pump junction box. These connections should be made after the FPR mounting is complete, as described in Section 4.



1. Remove the wiring cover protecting the terminal blocks on the I/S PCB in the FPR.
2. Strip about 3/8" of insulation from each wire end. To connect the wire, push down on the orange tab and insert the wire. Release tab and gently tug on the wire to verify a tight connection.

CAUTION: Wire polarity is not important, but connection to the wrong side of the pre-amp assembly will cause damage!!! Always make sure the IC chip side of the Pre-Amp PCB connects to the FPR and the diode side connects to the N-Ring hose cable.

3. Replace the wiring cover protecting the terminal blocks on the I/S PCB.

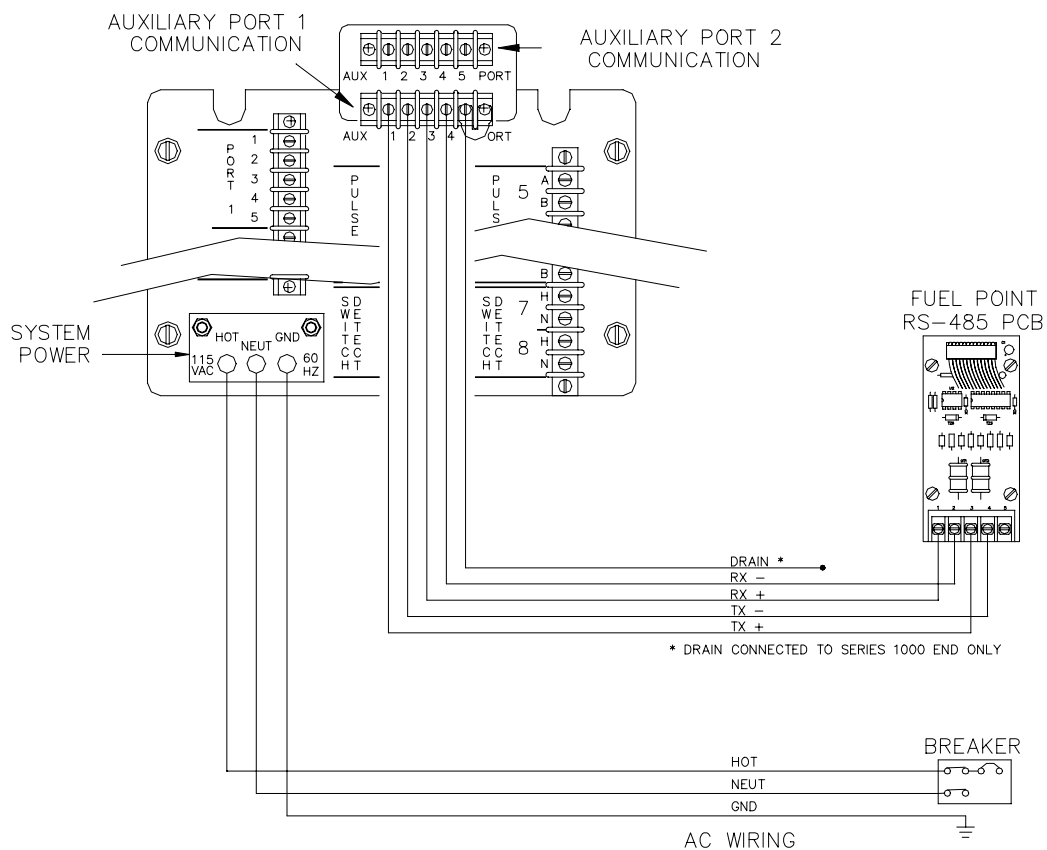
IMPORTANT: Make sure the cover is tight against the chassis, with no more than 1/16 inch gap around all sides, to preserve the intrinsic safety of the area.

FIELD WIRING, SERIES 1000 AC POWER AND RS-485

Wall- or Pole-Mounted FPR To Series 1000

If your Fuel Point Reader was installed on your FMS at the factory, you do not need to reference this field wiring diagram. If you are retrofitting an existing FMS, see Section 4. For wall- or pole-mounted FPR's, use wire type and size as described earlier in this section.

NOTE: If two auxiliary terminal blocks are present (as shown), the bottom TB is for Fuel Point and the top is for tank monitor.

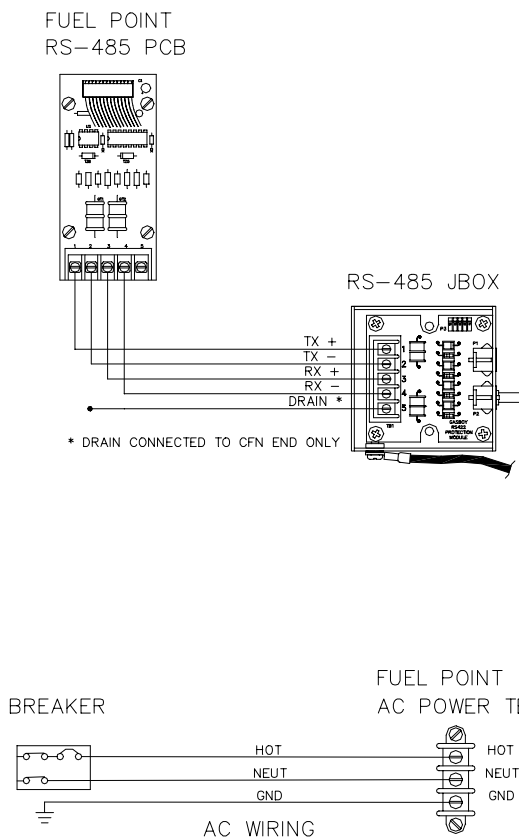


FIELD WIRING, CFN AC POWER AND RS-485

Wall-or Pole-Mounted FPR To CFN

If your Fuel Point Reader will be wall- or pole-mounted for use with CFN, follow this diagram. Use wire type and size as described earlier in this section.

Pedestal-Mounted to CFN Islander Satellite



If your Fuel Point Reader was installed on your CFN Islander satellite pedestal at the factory, you do not need to do any field wiring between the FPR and the satellite.

Pedestal-Mounted to CFN ICR

If your Fuel Point Reader was installed on your CFN ICR pedestal at the factory, follow the wiring diagrams in Section 4 to connect the AC and RS-485 communications cables to the ICR. The AC and RS-485 cables are factory-installed on the FPR side only.

Section 4

FIELD RETROFIT INSTRUCTIONS

FIELD UPGRADE KITS

Use this section when you are installing a Fuel Point Reader (FPR) for use with an existing FMS. If your FPR was shipped from the factory already attached to a GASBOY Fuel Management System Pedestal, you do not need to reference this section.

Several kits exist to help you in the retrofit. Use the chart on the right to identify the appropriate retrofit kit based on your system type.

Use Kit C06800 to add a FPR to a Series 1000.

Use Kit C06801 to add a FPR to a Series 1000 with tank monitor interface, Series 1000P with printer, or 2000S CFN System.

Contents	C06800	C06801
C06699 Fuel Point Reader, 115 VAC	1	1
C06790 FPR Pedestal Mounting Kit	1	1
C06822 Auxiliary Comm. Kit	1	
C06823 Auxiliary Comm. Port 2 TB Kit	1	1
C35699 Manual, Vehicle Module Installation	2	2
C35628 Manual, Reader Installation	1	1
C35593 Manual, Hose & Dispenser Retrofit	1	1
C35786 Video, Vehicle Module Installation	1	1
C35618 Bracket, FPR Mounting	1	1
038860 Nut, 1/4-20 HEX	1	1
068891 Washer, Lock Ext 1/4	1	1

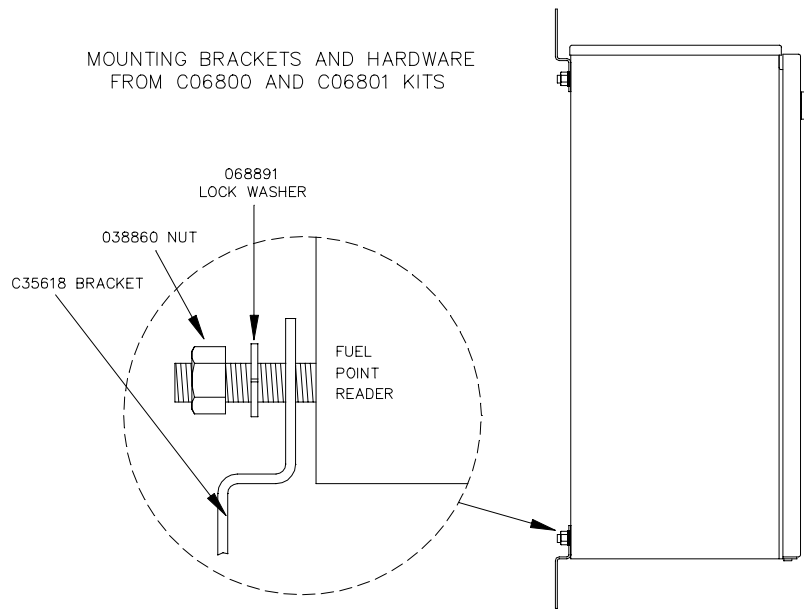
FPR FIELD MOUNTING OPTIONS

There are four FPR field mounting options:

- Wall mount to a studded wall
- Wall mount to a masonry wall
- Pole mount
- FMS pedestal mount

ATTACHING FPR MOUNTING BRACKETS

Before mounting the FPR to a wall, pole, any FleetKey pedestal, or a CFN pedestal with built-in Pump Control Unit, you must first attach mounting brackets from the C06800 or C06801 upgrade kit. If the FPR is to be mounted to a CFN standard (blank) pedestal, or CFN receipt printer pedestal, skip this step, as the mounting brackets are not used.



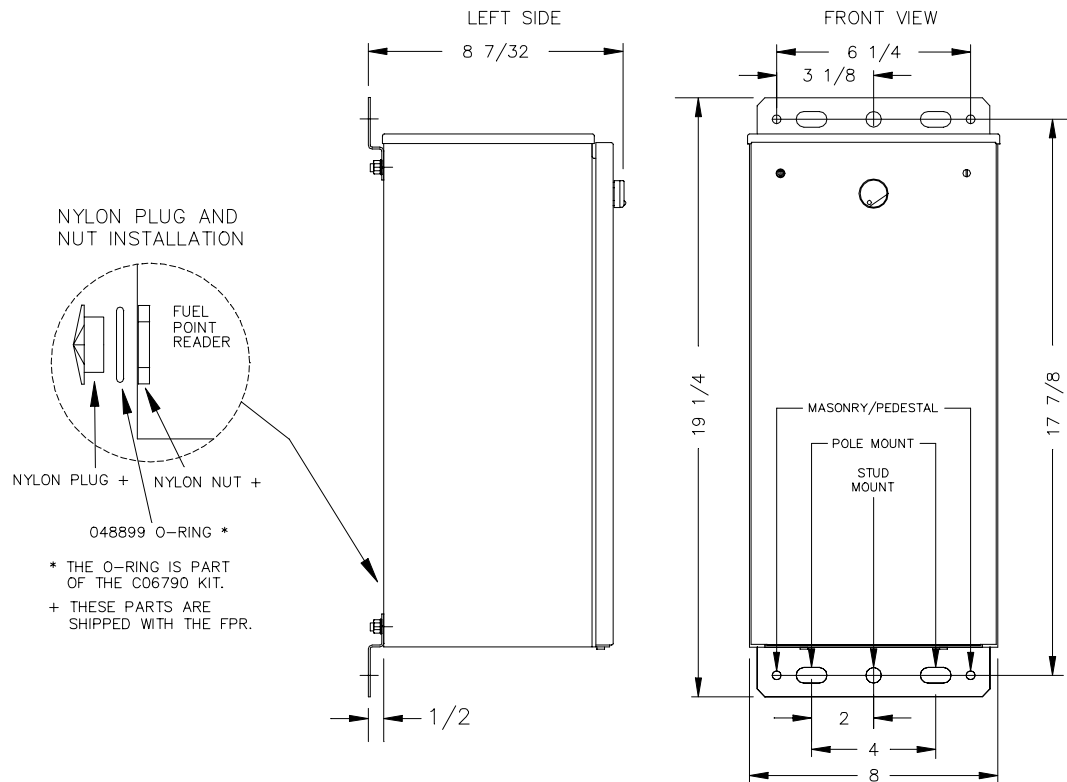
WALL-MOUNT - STUDDED OR MASONRY WALL

1. There is a nylon plug and nut included with the FPR. It must seal the un-used machined conduit hole. When the FPR is mounted to a wall, the hole to seal is on the back of the FPR. Use the nylon plug and nut, along with an o-ring from the C06790 kit.
2. Refer to the FPR dimension drawing on the next page.
For a studded wall, use 3/8" diameter lag bolts in the two center holes to attach the FPR to a wall stud.
For a masonry wall, use 1/4" diameter bolts and wall anchors in the four outer holes to mount the FPR.
3. Go to Section 3, **System Wiring**.

POLE-MOUNT

1. There is a nylon plug and nut included with the FPR. It must seal the un-used machined conduit hole. When the FPR is mounted to a pole, the hole to seal is usually on the back of the FPR. Use the nylon plug and nut, along with an o-ring from the C06790 kit.
2. Refer to the FPR dimension drawing on the next page. Use 3/8 inch diameter U-Bolts in the four oval holes to attach the FPR to a 2-inch through 3-inch diameter pole.
3. Go to Section 3, **System Wiring**.

FPR DIMENSIONS



FMS PEDESTAL MOUNT

C06790 FPR Pedestal Mounting Kit

The C06790 kit (itemized below) contains the parts needed for mounting the FPR to a FMS pedestal.

Qty	Part No.	Description
4	051790	Bolt, 1/4-20 x 1/2
4	068891	Washer, 1/4 External Locking
4	068005	Washer, 1/4 Plated
4	C08875	Washer, 11-32 x 5/8 Round Gasket
4	038860	Nut, 1/4 Hex
2	039210	Nut, 3/4 NPT
1	021042	Conduit, 3/4 Close Nipple
2	068444	Washer, 3/4 Conduit
2	048899	O-Ring, 1" ID
2	C09548	Bushing, 5/8" Snap
1	C06778	Cable Assy, FPR 115V Power
1	C06779	Cable Assy, FPR RS-485 Comm.

Attaching the FPR to all FleetKey Pedestals, or to CFN Pedestal with Built-in Pump Control Unit

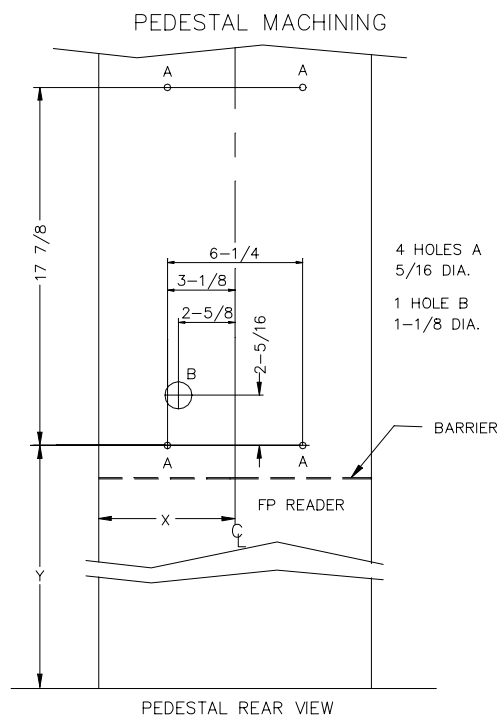
WARNING: Before proceeding, move the GASBOY fuel management system/island reader unit to a safe location away from the fueling island.

This procedure assumes the fuel management system was installed according to the applicable codes and according to the specifications set forth in the GASBOY fuel management system *Installation Manual*. Be sure to follow these same restrictions and guidelines when re-installing the FMS back onto the island.

1. Turn off all breakers supplying power to the Fuel Management System pedestal, including breakers supplying power to pumps that are controlled through the pedestal. Remove the pedestal's side access covers. Mark and detach all wiring coming from the pedestal conduits. Unbolt and remove the pedestal from the island. Take the pedestal to a safe location away from the fuel island.
2. Measure the height of the internal barrier plate and mark a horizontal line on the outside of the pedestal as shown. Measure to the center of the pedestal and mark a vertical line as shown. Using the measurements from the diagram below, mark and drill four mounting holes. For the conduit hole, drill a pilot hole, then finish with a 1-1/8" diameter punch.

PEDESTAL MACHINING CHART

PEDESTAL TYPE	X	Y
PRINTER – FLEETKEY	7-3/8"	24"
PRINTER – ISLANDER	7-3/8"	24"
FLEETKEY NON-PRINTER	4"	20"
CFN NON-PRINTER, W/PEDESTAL PCU	4"	20"
ISLANDER NON-PRINTER	7-3/8"	20"

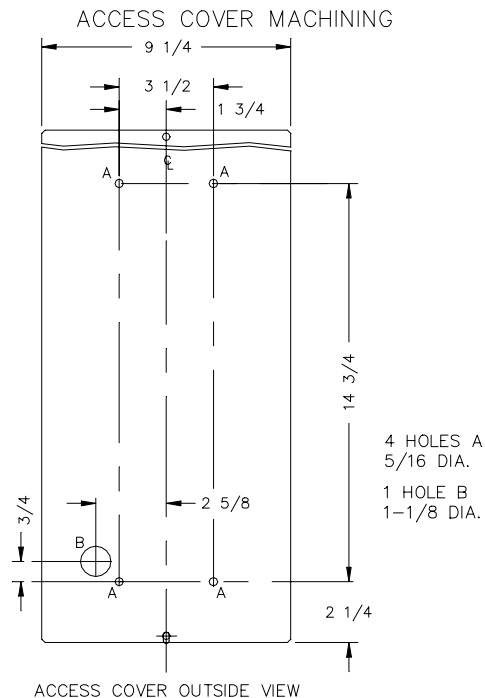


3. Hold the FPR against the rear of the pedestal to make sure the five holes line up. Attach the FPR using the four 051790 bolts, 068891 lock washers, 068005 flat washers, C08875 gasket washers, and 038860 nuts as shown on page 4-6. The steel washers are used on the outside, under the bolt head and the gasket washers go between the FPR brackets and FMS pedestal.
4. Proceed to **Completing the FPR Mounting - All Pedestal Types**.

Attaching the FPR to CFN Standard (Blank) and CFN Printer Pedestals

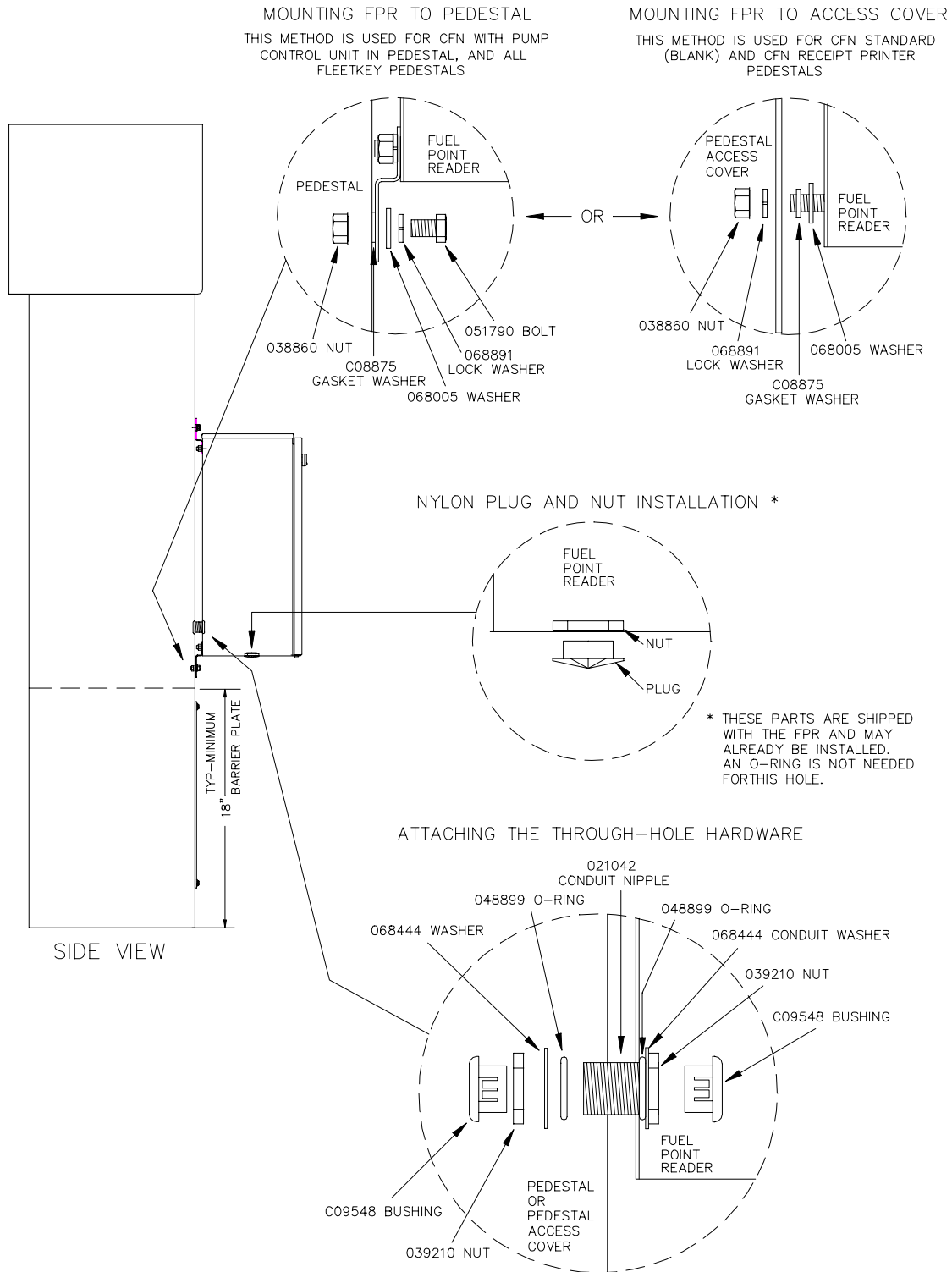
WARNING: Before proceeding, remove the rear access cover of the CFN pedestal to a safe location away from the fueling island.

1. Turn off all breakers supplying power to the Fuel Management System pedestal. Remove the pedestal's side access covers. Remove the pedestal's rear access cover and take it to a safe location away from the fuel island.
2. Measure to the center of the cover and mark a vertical line as shown. Using the measurements from the diagram below, mark and drill four mounting holes. For the conduit hole, drill a pilot hole, then finish with a 1-1/8" diameter punch.



3. Hold the FPR against the rear of the access cover to make sure the five holes line up. Attach the FPR using the four 068005 flat washers, C08875 gasket washers, 068891 lock washers, and 038860 nuts as shown on the next page. Be sure to use the gasket washers on the outside of the cover.
4. Proceed to **Completing the FPR Mounting - All Pedestal Types.**

MOUNTING THE FUEL POINT READER USING PARTS FROM THE C06790 MOUNTING KIT



Completing the FPR Mounting - All Pedestal Types

1. The Fuel Point Reader comes shipped with a nylon plug and nut. They may be installed in one of the two machined conduit holes. When the FPR is pedestal-mounted, the plug and nut must be installed in the machined conduit hole in the bottom of the FPR as shown in the drawing on the next page.
2. Thread a 039210 nut onto the 021042 conduit nipple as far as you can, typically a few turns. Add a 068444 washer, then a 048899 O-ring against the inside of the nut.
3. Insert the conduit assembly into the FPR, through the large hole on the rear wall. Working from inside the FMS pedestal, install a 048899 O-ring, 068444 washer, and 039210 nut on the conduit nipple. Tighten the nuts on both ends of the nipple. Snap a C09548 bushing into each end of the conduit.
4. The C06778 and C06779 cables will be used in the wiring diagrams at the end of this section.
5. See Section 2 for the applicable conduit installations.

SERIES 1000 UPGRADE KITS

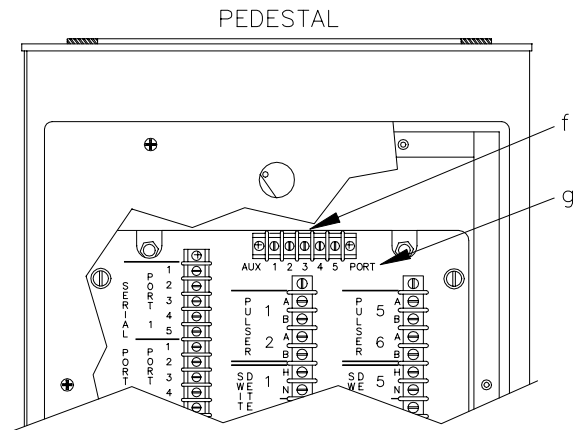
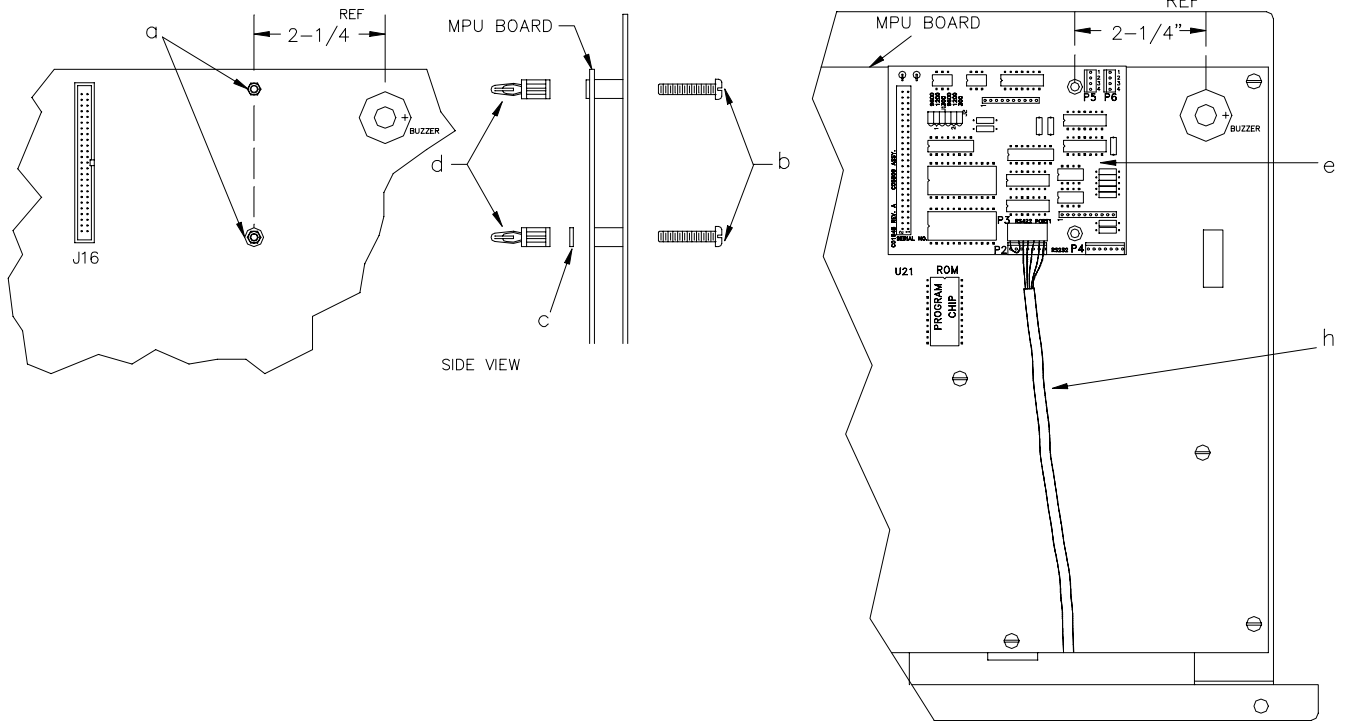
As mentioned earlier, your Fuel Point shipment may have included various upgrade kits for the Series 1000 System. The Series 1000 needs the Auxiliary Communications PCB to communicate to the Fuel Point Reader. If your Series 1000 doesn't have a tank monitor interface or a receipt printer, start at the next section, **Adding Auxiliary Communications and Comm. Port 1 Using the C06822 Kit**. If your Series 1000 has a tank monitor interface, you already have the Auxiliary Communications PCB installed; proceed to **Adding Comm. Port 2 Using the C06823 Kit**. If your Series 1000 has a receipt printer, you already have the Auxiliary Communications PCB and Port 1 cable installed; proceed to **Field Wiring, Series 1000 AC Power and RS-485**.

Adding Auxiliary Communications and Comm. Port 1 to Series 1000 Using the C06822 Kit

The C06800 Fuel Point system contains a C06822 kit for adding the communications board to the Series 1000. It also contains a spare cable that can be used for a tank monitor. The contents of the C06822 kit are shown below.

Qty	Part Number	Description	Qty	Part Number	Description
2	C04291	Screw, 6-32 x 3/4	1	C05918	Cable, Auxiliary Comm.
1	067765	Fiber Washer	2	C04030	Screw, 8-32 x 3/4
2	C02896	PCB Support	1	C01695	Decal, "AUX. 12345 PORT"
1	C05909	PCB, Auxiliary Comm.			

1. Remove the housing wrapper and access panels on the Series 1000.
NOTE: Refer to the drawings on the next page for this procedure.
2. Remove the two screws (a) located approximately 2-1/4 inches to the left of the buzzer on the MPU board.
3. Install two C04291 screws (b) in their place. Start the screws from the inside so that the threads protrude out through the MPU board.
4. The top screw already has a fiber washer glued to the MPU board. Add an 067765 fiber washer to the bottom screw (c).
5. Add two C02896 PCB supports to the screws (d).
6. Push the C05909 Auxiliary Communications PCB (e) onto the standoffs. Make sure that connector P1 on the bottom of the Communications PCB mates properly with connector J16 on the MPU PCB.
7. Attach the C05918 terminal block and cable (f) to the Series 1000 pedestal using two C04030 screws. When installing the cable, the red wire from the terminal block must be on the left.
8. Place the C01695 decal under the terminal block as shown (g).
9. Pass the cable (h) through the large nylon bushing at the top of the pedestal. Route the cable under the MPU board and attach it to P3 on the Auxiliary Comm. PCB (e).
10. Proceed to the next section, **Adding Comm. Port 2 to Series 1000 Using the C06823 Kit**.



Adding Comm. Port 2 to Series 1000 Using the C06823 Kit

The C06800 and C06801 Fuel Point systems contain a C06823 kit for adding the Comm. Port 2 cable to the Series 1000. The contents of the C06823 kit are shown below.

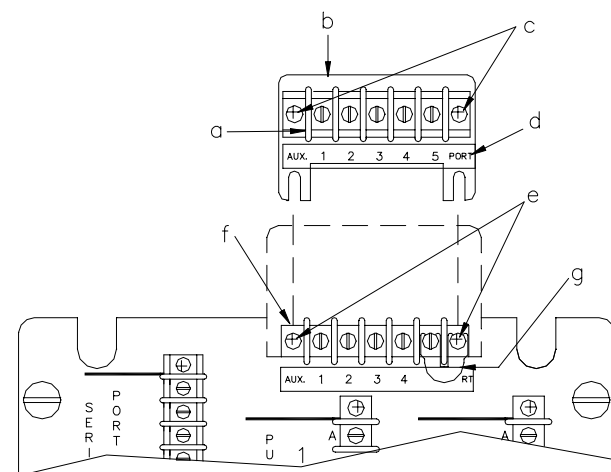
Qty.	Part Number	Description
1	C05918	Cable, Auxiliary Comm.
1	C35621	Bracket, Aux. Comm.
2	C04030	Screw, 8-32 x 3/4
1	C01695	Decal, "AUX. 12345 PORT"
1	C08938	Terminal Block Jumper

1. Remove the housing wrapper and access panels on the Series 1000.

2. Attach the C05918 terminal block and cable assembly (a) to the C35621 bracket (b) using two C04030 screws (c). When installing the assembly, the red wire from the terminal block must be on the left.

3. Place the C01695 decal below the terminal block (d).

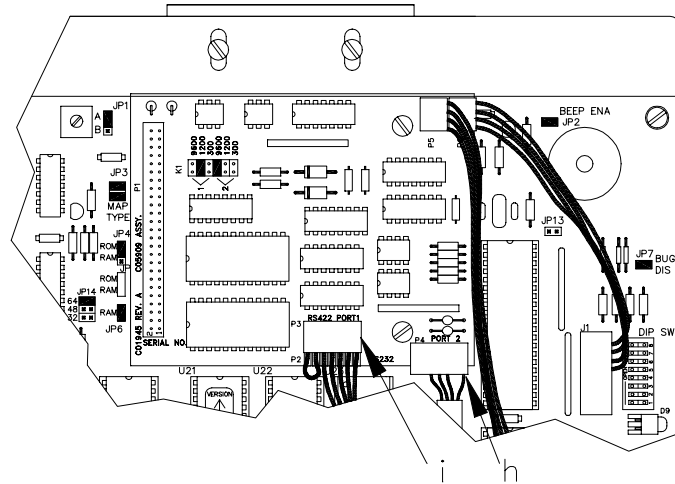
4. Loosen, but do not remove, the two screws (e) holding the Auxiliary Comm. Port 1 terminal block to the pedestal. Place the C35621 bracket assembly behind the terminal block (f) in the pedestal.



5. Add the C08938 jumper (g) to the two right-most screws of the Fuel Point (bottom) terminal block.

6. If the Series 1000 was previously interfacing to the tank monitor, the tank monitor's communication wiring is on the bottom terminal block. You must move the tank monitor wiring from the bottom terminal block to the top one. The other end of the top terminal block cable must plug into P4 on the Auxiliary Comm. PCB (h). Note that P4 is an RS-232 port. If the tank monitor was previously connected to P3, also RS-232, then no re-wiring is needed. If the tank monitor was previously connected to P2, RS-422, you must consult your tank monitor manual to see what changes are required for RS-232 communications. When routing the cable to the Auxiliary Comm. PCB, pass it through the large nylon bushing where the head joins the post. Pass it under the MPU PCB so it comes out in front of the boards.

7. Pass the cable from the bottom terminal block in the same fashion and attach it to P3 (Port 1) on the Auxiliary Comm. PCB (i). This will be the FPR port.
8. Proceed to the next section, Field Wiring - Series 1000 AC Power and RS-485.



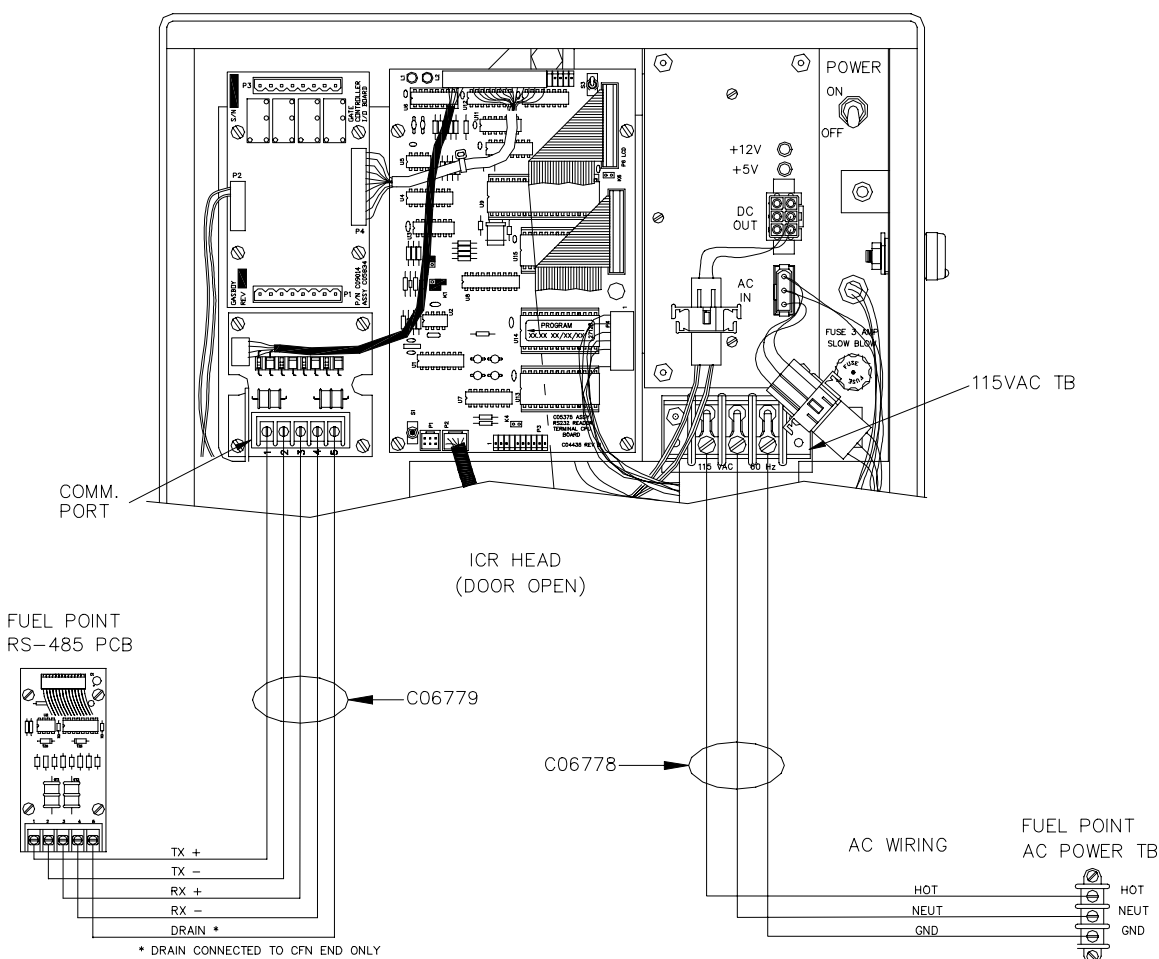
FIELD WIRING, CFN AC POWER AND RS-485

Wall- or Pole-Mount FPR to CFN ICR

See Section 3, Field Wiring.

Pedestal-Mount FPR to CFN ICR

When installing the FPR to the FMS pedestal, use the C06778 and C06779 cables from the C06790 mounting kit.

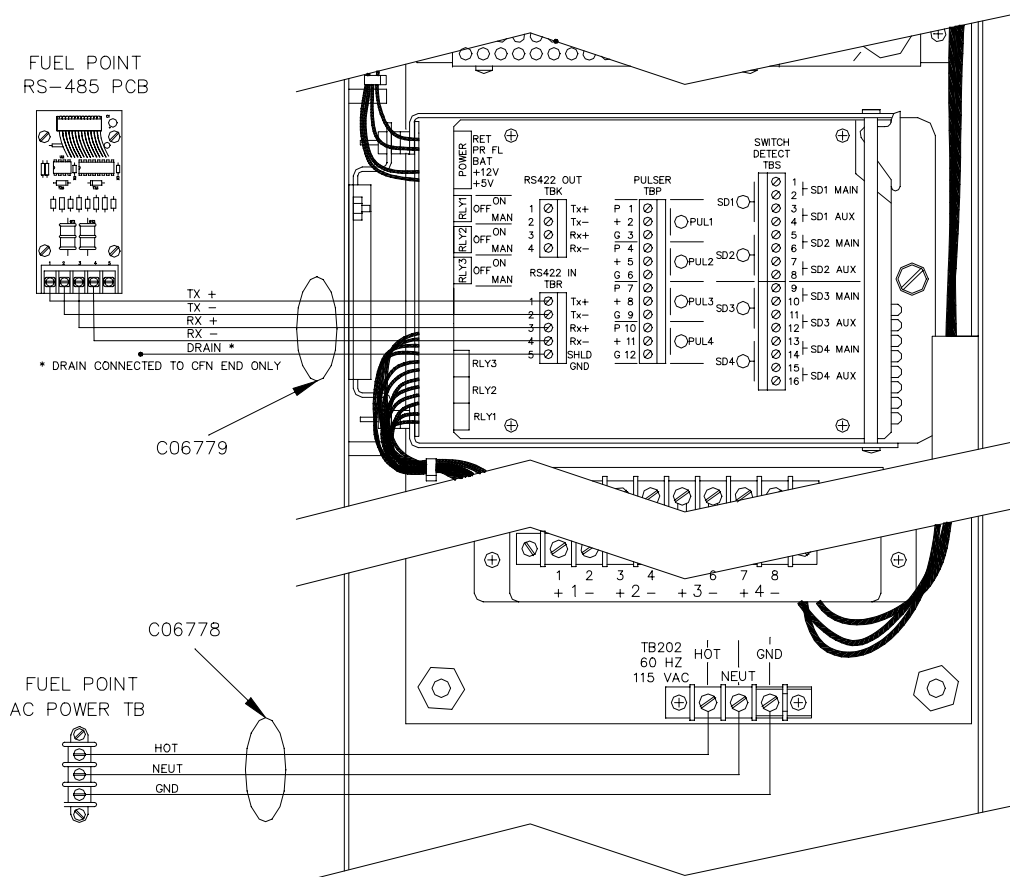


Wall- or Pole-Mount FPR to CFN Pedestal PCU

See Section 3, Field Wiring.

Pedestal-Mount FPR to CFN Pedestal PCU

When installing the FPR to the FMS pedestal, use the C06778 and C06779 cables from the C06790 mounting kit.

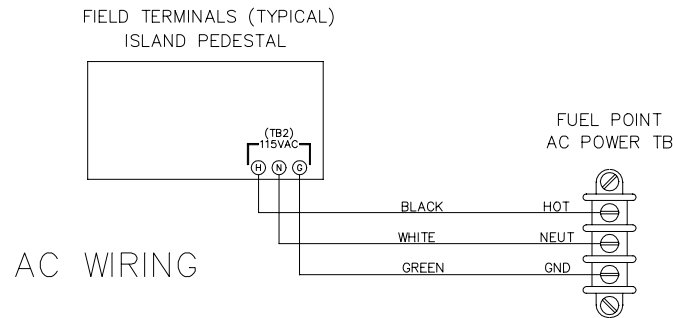
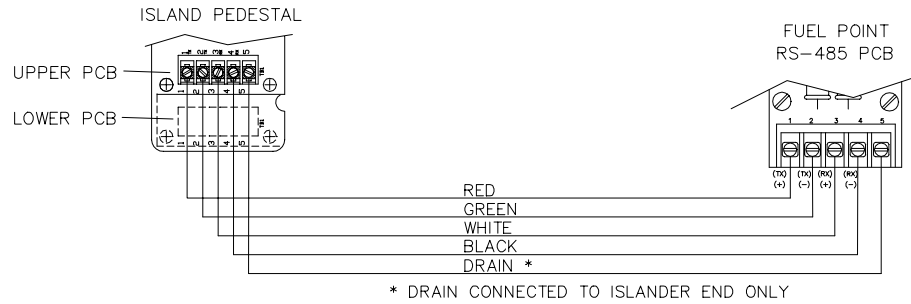


Wall- or Pole-Mount FPR to CFN Islander Series

See Section 3, Field Wiring.

Pedestal-Mount FPR to CFN Islander Series

When installing the FPR to the FMS pedestal, use the C06778 and C06779 cables from the C06790 mounting kit.



WARRANTY

General Statements:

Gasboy International LLC. warrants all new equipment manufactured by Gasboy against defective material and/or workmanship, for the warranty period specified below, when the equipment is installed in accordance with specifications prepared by Gasboy.

This warranty does not cover damage caused by accident, abuse, Acts of God, lack of surveillance of automatic recording systems, negligence, mis-application, faulty installation, improper or unauthorized maintenance, installation or use in violation of product manuals, instructions, or warnings. Under no circumstance shall Gasboy be liable for any indirect, special, or consequential damages, losses, or expenses to include, but not limited to, loss of product, loss of profits, litigation fees, or the use, or inability to use, our product for any for any purpose whatsoever.

Parts Only - During the warranty period, Gasboy will, at its option, repair or replace defective parts returned transportation prepaid to its factory.

On-Site Labor Included - Gasboy will also provide, within the Continental United States and during the warranty period, the services of an Authorized Service Representative (ASR) for on-site repair or replacement of defective parts.

Replacement Parts - Any system components that are not part of the original system order, including Island Card Readers, Pump Control Units, etc., are considered replacement parts.

Equipment	Term	Coverage
Commercial Pumps and Dispensers Full-Cabinet Consumer Pumps	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts and Labor.
Small Transfer Pumps, Meters, Pressure Regulators	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first. - Excepting the Model 2020 Hand Pump, which has a 90-day warranty from date of GASBOY International's invoice.	Parts Only.
Keytrol	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts and Labor.
Fuel Management Systems: - CFN/ Profit Point - Series 1000/Fleetkey - TopKAT - Fuel Point Readers (sold with new systems)	One year from date of start-up or 15 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first. - The basic warranty only applies to systems which have been started up by a Gasboy Authorized Service Representative (ASR).	Parts and Labor.
Additional Fuel Point Items: - Fuel Point Readers sold for retrofitting existing systems. - Fuel Point vehicle and dispenser components.	One year from date of start-up or 15 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts Only.
Encoders, Embossers, Modems, CRTs, and Logger Printers	Purchased with Fuel Management System (Encoders, Embossers only): 90 days from the date of start-up by a Gasboy ASR, or 180 days from date of Gasboy International's invoice, whichever occurs first. Purchased with Fuel Management System (Modems, CRTs, and Logger Printers only): Matches system warranty. Purchased Separately: 90 days from date of Gasboy International's invoice to the purchaser.	Purchased with System (Encoders, Embossers only): Parts only. Purchased with System (Modems, CRTs, Logger Printers only): Matches system warranty. Purchased Separately: Parts Only.
Air Diaphragm Pumps	Three years from date of purchase (for full warranty description, see Price List).	Parts Only.
Items not manufactured by Gasboy (ex. automatic nozzles, hoses, swivels, etc.)	Not warranted by Gasboy International (consult original manufacturer's warranty).	Not Applicable.
Replacement Parts	One year from date of Gasboy International's invoice to the purchaser.	Parts Only.

To the extent permitted by law, this warranty is made in lieu of all other warranties, expressed or implied, including warranties of freedom from patent infringement, or merchantability, or fitness for a particular purpose, or arising from a course of dealing or usage of trade. No one is authorized to vary the terms of the warranty nor may anyone make any warranty of representation, or assume any liability other than that herein stated, in connection with the sale described herein. The acceptance of any order by Gasboy International is expressly made subject to the purchaser's agreement to these conditions.



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