

**CONTROL PANELS FOR FLOAT SWITCH SENSORS  
MODELS CPF 1, 2, 3 OR 4 - ONE TO FOUR CHANNELS**

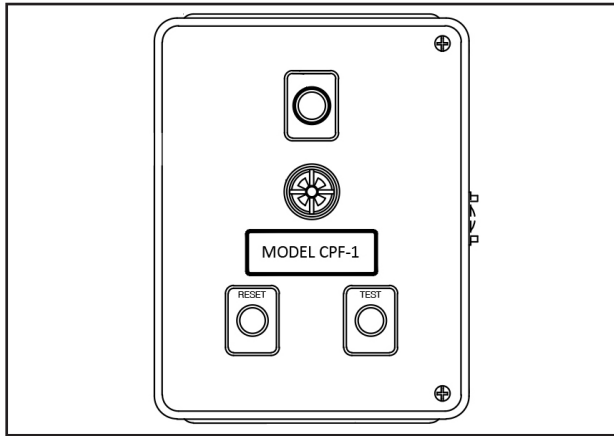
**1. GENERAL DESCRIPTION**

1.1. Fluid Electronics' Control Panels for Float Switches (CPF) by Containment Solutions are intrinsically safe and designed for use with CSI's Fluid Electronics' float switch sensors - see below for a complete list. The CPF panels assure minimum installation cost by requiring only low current, intrinsically safe wiring between the control panel and sensor. The solid state circuitry is housed in a NEMA 4 watertight enclosure and provides from 1 to 4 channels for monitoring up to four independent sensing points. Bright LED's and a loud sounding horn warn of alarm conditions. Dry contacts are provided for controlling external devices such as pumps, valves or remote alarm stations.

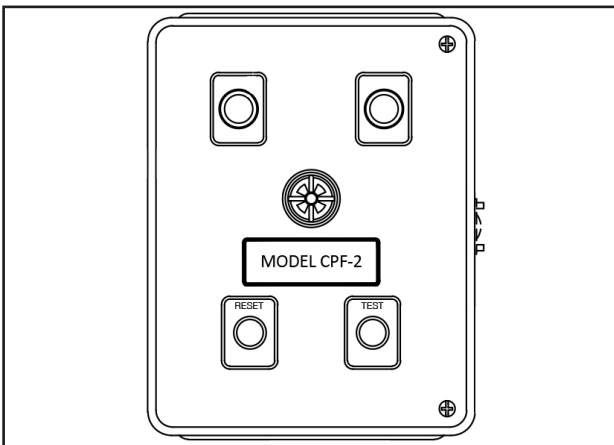
**2. FEATURES**

- 2.1. The CPF Control Panels are Factory Mutual approved as intrinsically safe systems. They are available in four models:  
**CPF 1 - One Channel (See Figure 2-1)**  
**CPF 2 - Two Channels (See Figure 2-2)**  
**CPF 3 - Three Channels (See Figure 2-3)**  
**CPF 4 - Four Channels(See Figure 2-4)**
- 2.2. They are lightweight and coated with an industrial enamel paint, and consist of a main housing and a weathertight access door.
- 2.3. The main housing has mounting brackets and electrical knock-outs conveniently located on the bottom of the enclosure. The solid state circuitry and dry contact relays are located within this enclosure.

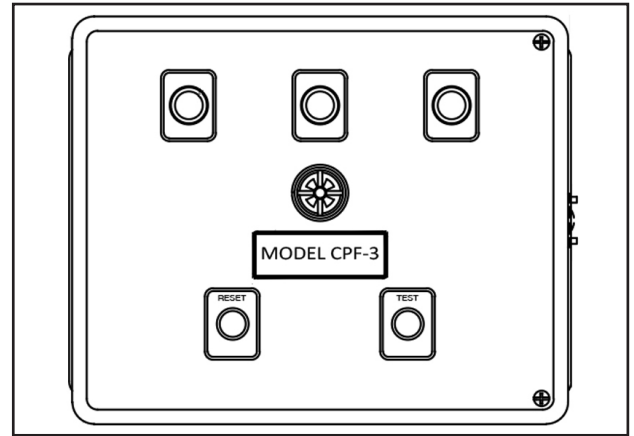
**Figure 2-1**



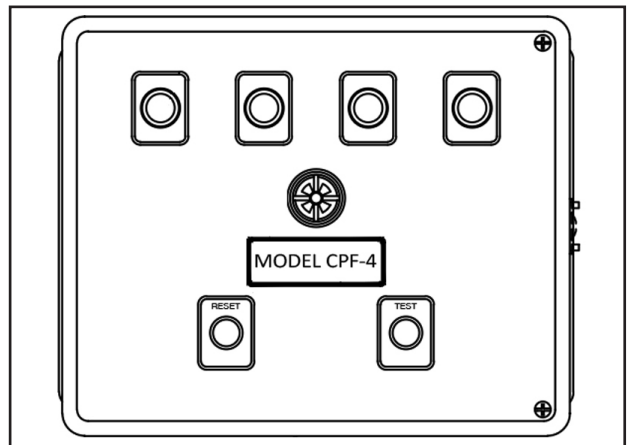
**Figure 2-2**



**Figure 2-3**



**Figure 2-4**



- 2.4. The Reset and Test buttons, Audible Alarm, and Alarm Indicators are located on the access door, in full view of the operator. Designation of the alarm indicators can be customized, for example: High and Low level alarms, Leak alarm, etc.
- 2.5. The CPF Control Panels are intended for use with one of the following CSI Fluid Electronics Float Switch Sensors or with any normally closed mechanical switch contact:

- FHLS 300 Series - High and Low Level**
- FOWS 400 Series - Oil/Water Interface**
- FOWS 500 Series - Oil/Water Interface**
- FOVF 600 Series - Overfill**
- FCBS 700 - Collars, Bulkheads, Sumps**
- FDAS 710 - "Dry" Annulus Space**
- FHRB 810 - Hydrostatic "Wet" Annulus**

**3. CONTROL PANEL OPERATION**

3.1. Each alarm channel transmits a 12 VDC signal to a tank mounted normally closed float switch. When the switch senses an alarm condition, the switch actuates and opens and the circuit from the panel energizes the audible horn and indicator light(s). The light will remain on until the alarm condition has been corrected. The horn can be silenced by pushing the Reset button. An operator may test the alarm circuit at any time by pushing the Test button. For detailed information on the operation of these control panels, see CSI's Fluid Electronics' Installation and Operations manual.

## 4. SPECIFICATIONS

<b>Control Relay Output</b>	Dry switch contact - SPDT per point, rated 3 AMPS at 120 VAC; selectable either normally open or normally closed
<b>Response Time</b>	Typically 1/2 second
<b>Alarm Indicators</b>	Red LED On Audible Horn On
<b>Controls</b>	Reset Button silences horn Test Button tests alarm circuits
<b>Sensor Cable</b>	Standard 2 conductor 18 AWG up to 5000' (provided by customer)
<b>Terminal Blocks</b>	Pressure type, enclosed under metal barriers
<b>Installation Distance</b>	Up to 5000' from Control Panel
<b>Power to Sensor</b>	Low electrical energy 12 VDC at 15mA provided by control panel to each sensor Intrinsically Safe for Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, G
<b>Power Input</b>	120 VAC ( $\pm 10\%$ , 60 Hz)
<b>Fuse</b>	0.1 AMP, 3AG - SLO BLO
<b>Operating Temperature</b>	-40° F to 160° F (-40° C to 71° C)
<b>Enclosure Rating</b>	NEMA 4 - Weatherproof
<b>Weight</b>	6 lbs (2.7 kg) - CPF 1, 2 Panels 11 lbs (5 kg) - CPF 3, 4 Panels
<b>Audible Alarm</b>	Loudness adjustable Adjustable auto silence (optional)

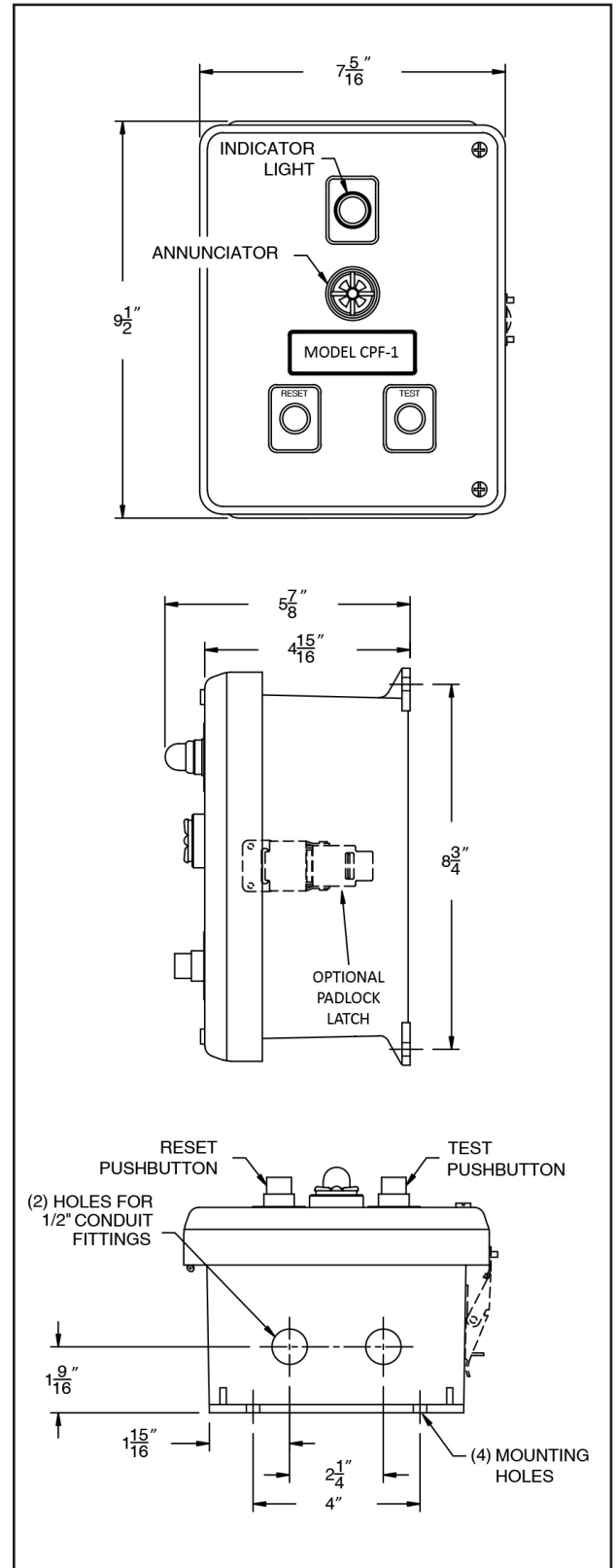
## 5. INSTALLATION

5.1. For detailed information on the installation and wiring of these control panels, see CSI's Fluid Electronics' Installation and Operation Manual Pub No. ELC 7047.

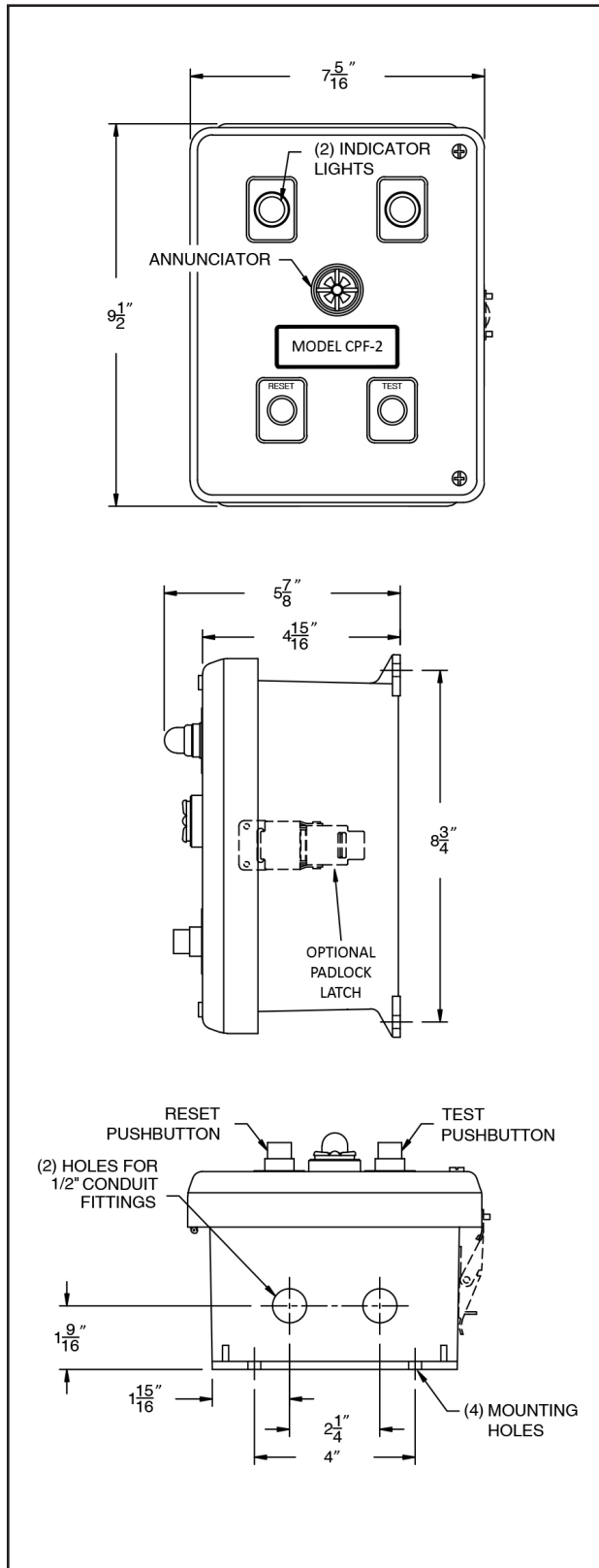
### DIMENSIONS

- 5.2. The CPF Series "Float Switch" Control Panels have a NEMA 4 rating and may be installed outdoors up to 5000 feet from the sensors. They have standard wall mount brackets with 4x .313" diameter mounting holes.
- 5.3. CPF 1 One Channel (See Figure 5-1).
- 5.4. CPF 2 Two Channel (See Figure 5-2).
- 5.5. CPF 3 Three Channel (See Figure 5-3).
- 5.6. CPF 4 Four Channel (See Figure 5-4).

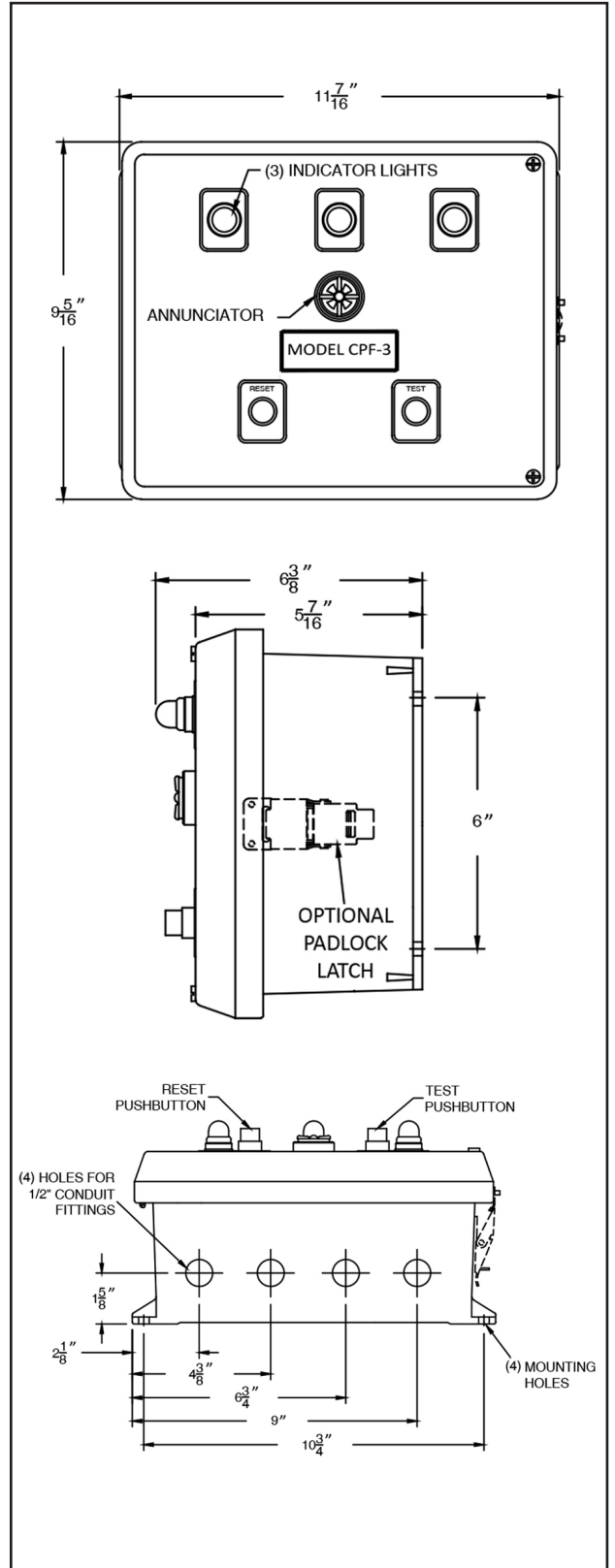
Figure 5-1  
CPF 1 Dimensions



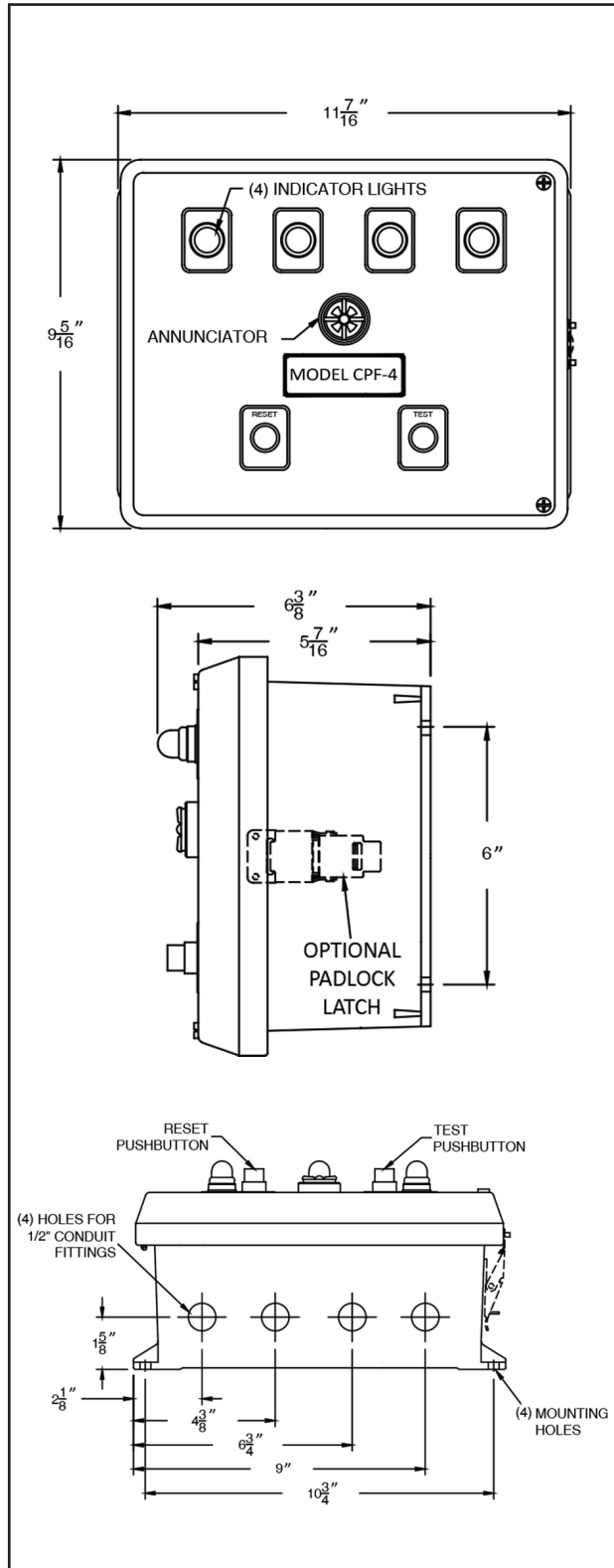
**Figure 5-2**  
**CPF 2 Dimensions**



**Figure 5-3**  
**CPF 3 Dimensions**



**Figure 5-4**  
**CPF 4 Dimensions**



## WIRING

- 5.7. For more detailed information on the wiring of these control panels with the associated sensors, see CSI's Fluid Electronics' Installation and Operation Manual Pub No. ELC 7047..
- 5.8. The control panels must be wired in the following manner. All conduit and electrical junction boxes must be watertight to prevent intrusion of groundwater or rainwater from entering conduits and junction boxes. Ensure that wiring meets all local, state and national codes.
- 5.9. CPF 1 or CPF 2 Wiring (See Figure 5-5).
- 5.10. CPF 3 or CPF 4 Wiring (See Figure 5-6).

## 6. SYSTEM TESTING AND MAINTENANCE

- 6.1. The on/off switching control operation of the CPF panels make it simple to test and trouble-shoot the systems. Pressing the TEST button performs a functional test of the horn, all indicator lights and all relay contacts. Before pressing TEST, make sure all externally controlled devices are on standby or are accordingly addressed.
- 6.2. To check the operation of the CPF panels from a field wiring location, e.g., at the field sensor location, simply open the field wiring pair of wires for normally closed sensors. This action will set the CPF panels into alarm mode.

**Figure 5-5  
CPF 1 or CPF 2 Wiring**

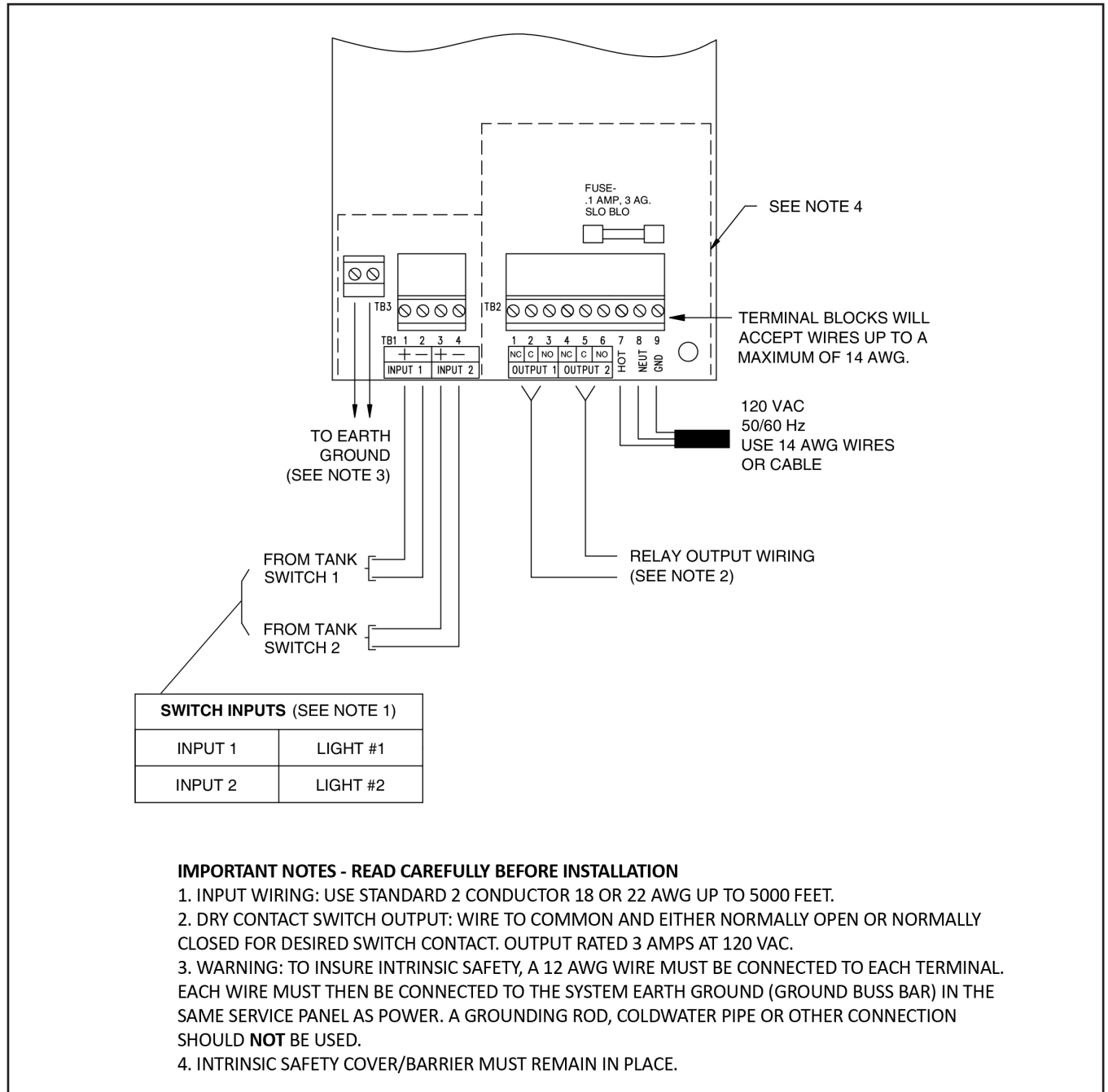
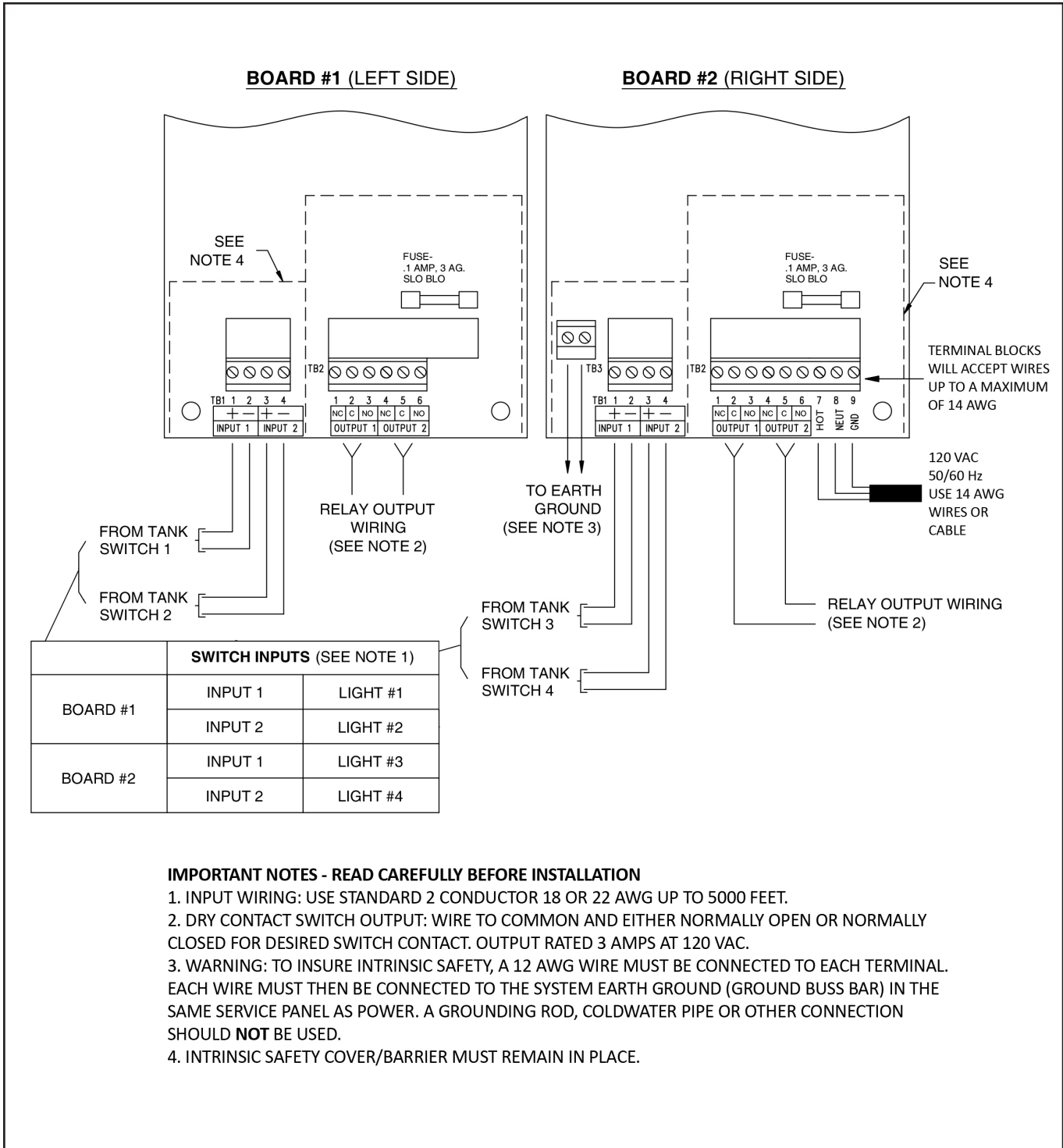


Figure 5-6  
CPF 3 or CPF 4 Wiring



**IMPORTANT NOTES - READ CAREFULLY BEFORE INSTALLATION**

1. INPUT WIRING: USE STANDARD 2 CONDUCTOR 18 OR 22 AWG UP TO 5000 FEET.
2. DRY CONTACT SWITCH OUTPUT: WIRE TO COMMON AND EITHER NORMALLY OPEN OR NORMALLY CLOSED FOR DESIRED SWITCH CONTACT. OUTPUT RATED 3 AMPS AT 120 VAC.
3. WARNING: TO INSURE INTRINSIC SAFETY, A 12 AWG WIRE MUST BE CONNECTED TO EACH TERMINAL. EACH WIRE MUST THEN BE CONNECTED TO THE SYSTEM EARTH GROUND (GROUND BUSS BAR) IN THE SAME SERVICE PANEL AS POWER. A GROUNDING ROD, COLDWATER PIPE OR OTHER CONNECTION SHOULD **NOT** BE USED.
4. INTRINSIC SAFETY COVER/BARRIER MUST REMAIN IN PLACE.

