## 1. GENERAL DESCRIPTION

1.1. Containment Solutions provides a Fluid Electronics float switch sensor (FDAS 710) that is specifically designed to monitor for the presence of liquid within the "dry" annular space of a double-wall fiberglass tank. The sensor can not distinguish between water and hydrocarbons. It must be installed in a "Horizontal" position in the annular space. It consists of a single float switch that actuates in the presence of 1/8" of liquid.

1.2. The FDAS 710 sensor interfaces with CSI's Fluid Electronics' family of control panels, or with most control panels manufactured by other vendors.

2. FEATURES

2.1. The FDAS 710 Non-discriminating "Dry" Float Switch Sensor is a float actuated sensor designed for installation in a Horizontal position within the dry annular space of a double-wall fiberglass tank. The compact size of the assembly and favorable displacement properties of the float make this sensor ideal for monitoring shallow liquid levels.

2.2. The assembly consists of a single ISO plastic float and housing that are compatible with nearly all chemical and petrochemical applications. A single reed switch is installed within the float housing directly adjacent to the magnet that is imbedded in the float. The sensor assembly is placed at the bottom centerline of the tank by attaching a pull string through the hole provided at the head of the sensor housing.

2.3. The sensor assembly is rectangular in shape. It is compact (1.5" W x .4" H x 3.02" L) and is easy to install (see Figure 2-1).

2.4. The sensor may be located up to 5000 feet from a CSI Fluid Electronics CPF control/alarm panel.

2.5. The FDAS 710 float sensor is intended to be used in conjunction with one of the following control/alarm panels:

2.5.1. Fluid Electronics - CPF 1, 2, 3 & 4

2.5.2. Pneumercator - LC 1000, E700-1, LDE-700, LDE-740, LDE 1000

Figure 2-1
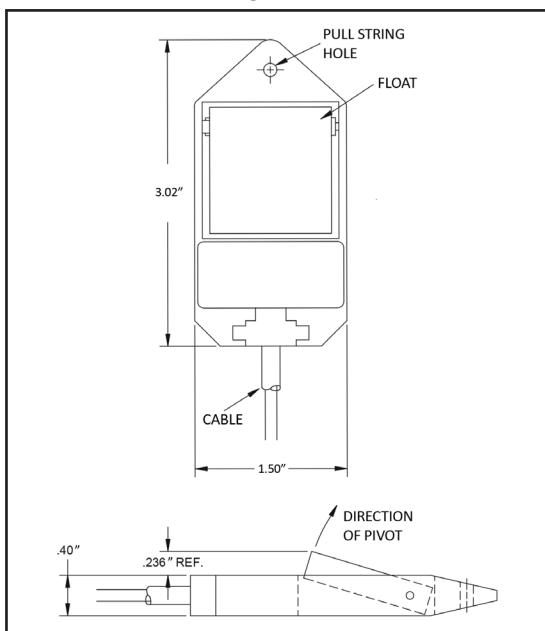
3. SENSOR OPERATION

3.1. The FDAS 710 float sensor is designed for "Horizontal" installation in the dry annular spaces of double-walled fiberglass tanks. The sensor assembly consists of a float that rotates upwards as the liquid level rises 1/8". As the float rotates up, the circuit is opened and a signal is sent to the control panel, indicating an alarm condition. The normal operating conditions of the monitoring areas for which the FDAS 710 is intended are DRY. Any liquid present in these areas indicates a breach may have occurred and further investigation is recommended.

4. SPECIFICATIONS

Float & Pivot Pin	Isoplastic Construction
Connector Cable	2 Conductor 18 AWG 25' Length, PVC coating
Installation Distance	5000' from CSI Fluid Electronics Control Panel
Power Source	Provided by Alarm Panel
Switch Rating	10 Watts
Sensor Dimensions	1.5" W x 0.4" H x 3.02" L
Sensor	Reed type Switch (normally closed)
Alarm Set Point	1/8" from Base
Temperature Range	-40° F to 150° F (-40° C to 65.5° C)
Pressure Rating	Full Vacuum to 100 PSI

5. INSTALLATION

5.1. For detailed information on the installation and wiring of this sensor, see CSI's Fluid Electronics' Installation and Operations Manual for the appropriate control panel.

SENSOR PLACEMENT

5.2. The FDAS 710 float sensor is intended for placement in the "dry" annular space of a double-wall fiberglass tank to detect the presence of liquid. The sensor assembly must remain in the Horizontal position for proper operation. Location of the sensor, within the annular space, is accomplished by pulling the sensor with a "pull string", in the sensor rib to the six o'clock position in the tank. The sensor cable is then connected to an electrical junction box, which is wired from the alarm panel, according to the wiring details. Installation of the sensor is accomplished as follows:

5.2.1. Ensure the annular space is free of all fluids. If any fluid is present, remove and dispose of properly and retest tank for leaks. A 2 inch minimum NPT fitting is required for the sensor and sensor attachment items.

5.2.2. If a Riser Pipe is required to access the monitoring area, proceed to Section 5.2.3, otherwise proceed to Section 5.2.4.

Figure 5-1
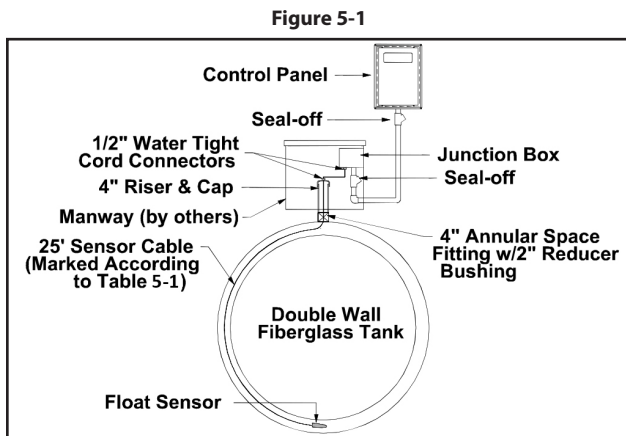
5.2.3. Attach the riser pipe (provided by others) to the NPT fitting provided for installing the sensor within the monitoring area. Petroleum compatible pipe dope should be applied on all threads. The riser pipe should be cut so that when fully assembled it and the sensor assembly do not apply any pressure on the fiberglass tank. They should also not extend above grade.

5.2.4. Remove the sensor from its shipping carton. Test it with an Ohmmeter to assure it works. Place a mark on the sensor cable according to Table 5-1. Add the length of the riser pipe to the figures in Table 5-1 if the sensor is being installed after the tanks have been installed.

Table 5-1

Table Diameter	Mark Cable At
4' Double-Wall	6' 3"
6' Double-Wall	9' 5"
8' Double-Wall	12' 6"
10' Double-Wall	15' 8"

5.2.5. Locate the sensor "pull-string" (located in monitoring access port on top of the tank) and attach it to the sensor. If a pull-string is not available, insert a fish tape through the monitoring port, around the tank through the annular space until its end is visible in the monitoring port. Attach the pull-string to the fish tape and pull the fish tape through the annulus. Attach the sensor to the pull-string.

5.2.6. Pull the sensor through the annulus, using the pull line, until the tag on the sensor cable is at the top of the monitoring port.

5.2.7. Place the sensor cable, from the sensor assembly, through the 3/8" cable clamp in the riser cap before attaching the sensor cable to the wire from the alarm panel.

5.2.8. Attach the sensor cable to the alarm panel wire in an acceptable electrical junction box (supplied by others); see the Wiring Instructions (Section 5.3).

5.2.9. Place the riser cap onto riser pipe and tighten the cable clamp so that the connector wire does not slip through.

5.2.10. Check the alarm panel lights are working correctly.

Figure 5-2
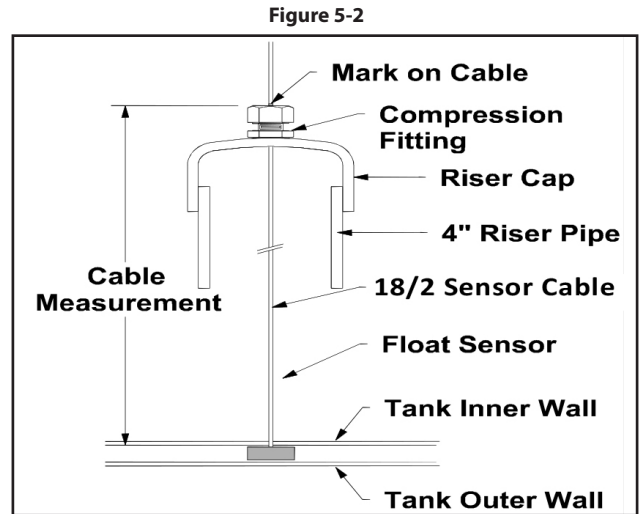
WIRING

5.3. The sensor is wired differently for various alarm panels and must be connected correctly with the alarm panel in order for the system to operate properly. See control panel manufacturer instructions for type of wire to be used and for the most recent wiring diagrams. 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.

5.4. Fluid Electronics CPF 1, 2, 3, & 4 (See Figure 5-3).

5.5. Pneumercator LC 1000, LDE 700 & LDE 740 (See Figure 5-4).

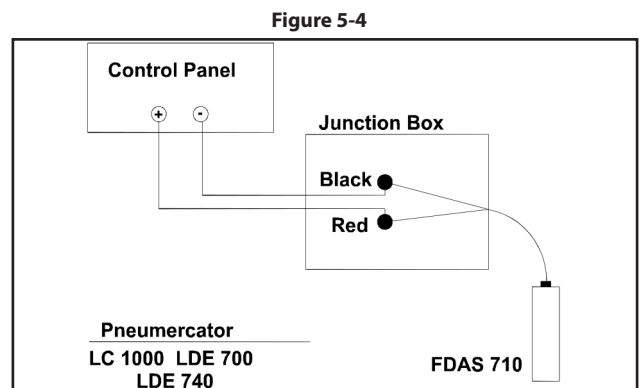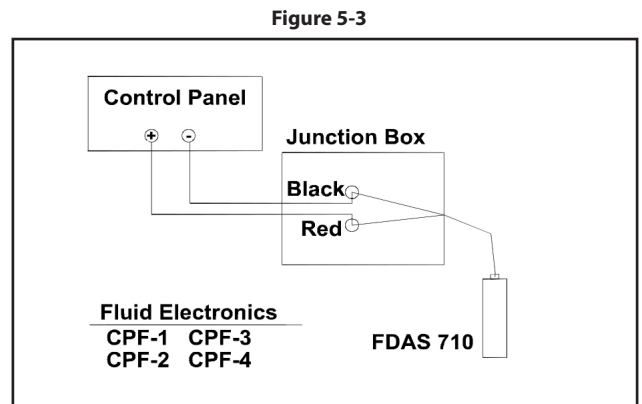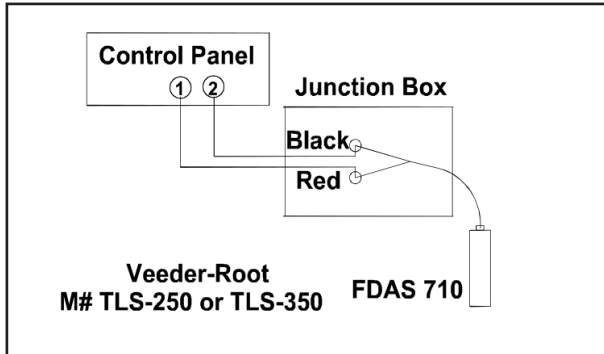5.6. Veeder-Root M# TLS-250 or TLS-350 (See Figure 5-5).

Figure 5-3

Figure 5-4

Figure 5-5

Control Panel
① ②

Junction Box

Black

Red

Veeder-Root
M# TLS-250 or TLS-350   **FDAS 710**

6. SENSOR TESTING AND MAINTENANCE

6.1. The FDAS 710 float sensor consists of a single reed switch and float installed within a sensor housing. The actuation point is located 1/8" off the base of the housing. To determine if the float switch is functioning properly these steps must be followed before installation, at least annually or when an alarm condition exists:

6.2. Prior to Installation

6.2.1. Connect the sensor to the control panel according to Section 5. The alarm panel should be in the normal operations mode.

6.2.2. Fill a bucket with water to a height of 1".

6.2.3. Place the sensor "horizontally" in the bucket. The control panel should be reporting an alarm condition. The red alarm indicator should be illuminated and the buzzer should be sounding.

6.2.4. The sensor is ready for installation according to Section 5.

6.3. Periodic Testing

6.3.1. The alarm panel can be in either the normal operations mode or an alarm condition during this test procedure.

6.3.2. Fill a bucket with water to a height of 1".

6.3.3. Remove the sensor from the annulus and place it "horizontally" in the bucket. The control panel should be reporting an alarm condition. The red alarm indicator should be illuminated and the buzzer should be sounding.

6.3.4. Reinstall the sensor according to Section 5.

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