

# **FMP-HIS AND FMP-HIS-U**

## **INSTALLATION GUIDE**



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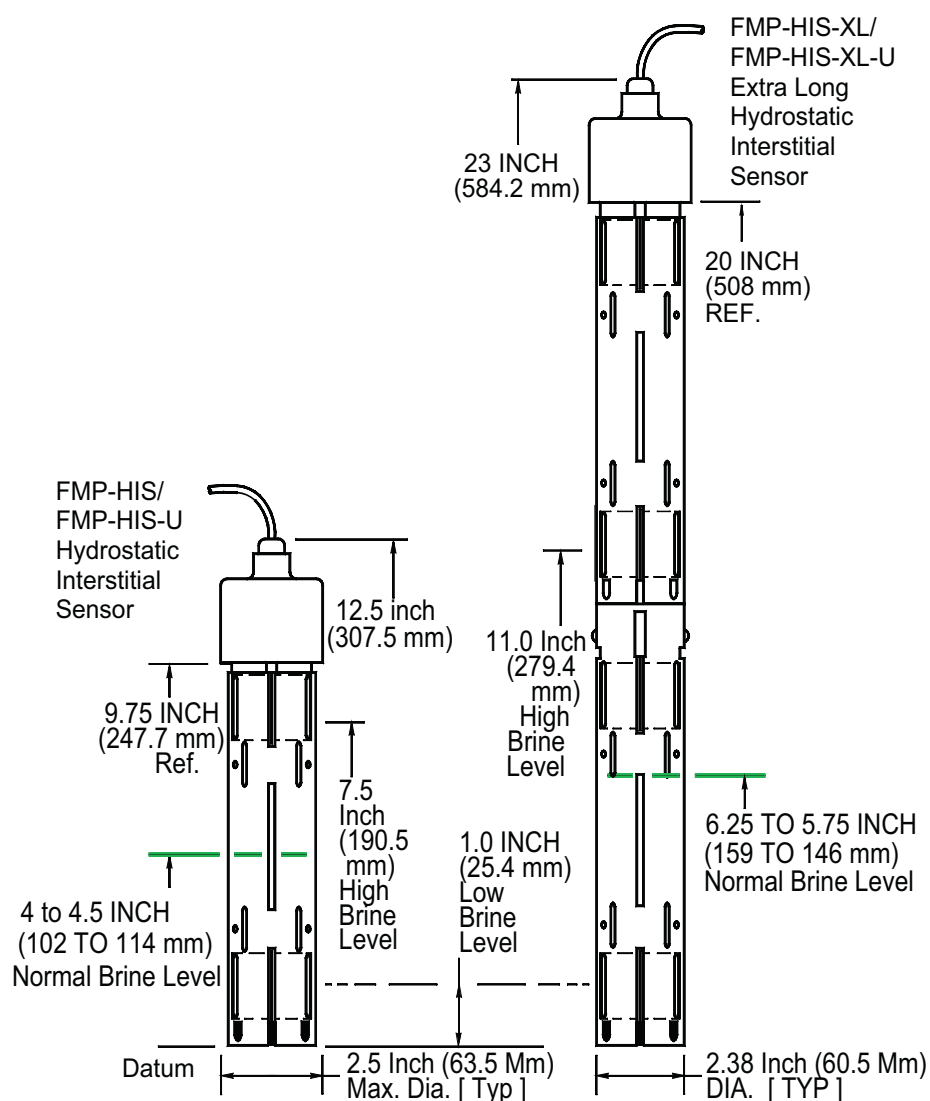
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# Introduction

The FMP-HIS sensor is an intelligent BRITESENSOR® that is used to monitor the brine levels inside hydrostatic interstitial reservoirs of double-walled tanks. A low brine or high brine level are alarm conditions and indicate a leak in either the outer tank or the inner storage tank. The FMP-HIS-XL sensor is an extra long version of this sensor.



Both sensors have upper and lower magnetic reed switch floats, which detect changes in the interstitial reservoir brine level. The sensors use intrinsically safe (IS) leak detection circuits and are approved for use in Class 1, Division 1, Group D Hazardous Areas.

Like other BRITESENSORS®, these sensors have a microprocessor that analyzes the environmental conditions at the sensor and transmits data to the Automatic Tank Gauge (ATG) console. The FMP-HIS sensors detect and communicate a HIGH BRINE alarm level, a LOW BRINE alarm level, and a NORMAL no-alarm state (lower float submerged and upper float dry). The ATG also transmits a specific sensor ID code. The FMP-HIS and FMP-HIS-XL are offered in two communication options:

- The original BRITESENSOR® protocol.
- The new Universal Device Protocol (UDP).

The BRITESENSOR® protocol uses 3 wires and is compatible with the T1 Series, T5 Series, EVO™ 550, and EVO™ 5000 ATGs. The UDP uses 2 wires and is compatible with the EVO™ 200 and EVO™ 400 ATGs.

| Sensor       | Communication Method      | Compatible ATGs                               |
|--------------|---------------------------|-----------------------------------------------|
| FMP-HIS      | BRITESENSOR® protocol     | T1 Series, T5 Series, EVO™ 550, and EVO™ 5000 |
| FMP-HIS-XL   | BRITESENSOR® protocol     | T1 Series, T5 Series, EVO™ 550, and EVO™ 5000 |
| FMP-HIS-U    | Universal Device Protocol | EVO™ 200 and EVO™ 400                         |
| FMP-HIS-XL-U | BRITESENSOR® protocol     | T1 Series, T5 Series, EVO™ 550, and EVO™ 5000 |

Included with the sensor are:

- No-strip electrical wire connectors.
- 25 feet of cable (attached).
- Model ID tags.
- Cord-grip fittings (for connection to a weatherproof electrical junction box).

A vented riser cap (model TSP-KV4) is required for this installation so the brine level can rise or fall (hydrostatically) along with atmospheric pressure without building up positive or negative pressures inside the interstitial area.

## Conventions used in this manual

This manual includes safety precautions and other important information presented in the following format:

**NOTE:** This provides helpful supplementary information.

**IMPORTANT:** This provides instructions to avoid damaging hardware or a potential hazard to the environment, for example: fuel leakage from equipment that could harm the environment.

**⚠ CAUTION:** This indicates a potentially hazardous situation that could result in minor or moderate injury if not avoided. This may also be used to alert against unsafe practices.

**⚠ WARNING:** This indicates a potentially hazardous situation that could result in severe injury or death if not avoided.

**⚠ DANGER:** This indicates an imminently hazardous situation that will result in death if not avoided.

# Operating precautions

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Franklin Fueling Systems (FFS) equipment is designed to be installed in areas where volatile liquids such as gasoline and diesel fuel are present. Working in such a hazardous environment presents a risk of severe injury or death if you do not follow standard industry practices and the instructions in this manual. Before you work with or install the equipment covered in this manual, or any related equipment, read this entire manual, particularly the following precautions:

**IMPORTANT:** To help prevent spillage from an underground storage tank, make sure the delivery equipment is well-maintained, that there is a proper connection, and that the fill adaptor is tight. Delivery personnel should inspect delivery elbows and hoses for damage and missing parts.

**⚠ CAUTION:** Use only original FFS parts. Substituting non-FFS parts could cause the device to fail, which could create a hazardous condition and/or harm the environment.

**⚠ WARNING:** Follow all codes that govern how you install and service this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. A potentially lethal electrical shock hazard and the possibility of an explosion or fire from a spark can result if the electrical circuit breakers are accidentally turned on while you are installing or servicing this product. Refer to this manual (and documentation for related equipment) for complete installation and safety information.

**⚠ WARNING:** Before you enter a containment sump, check for the presence of hydrocarbon vapors. Inhaling these vapors can make you dizzy or unconscious, and if ignited, they can explode and cause serious injury or death. Containment sumps are designed to trap hazardous liquid spills and prevent environmental contamination, so they can accumulate dangerous amounts of hydrocarbon vapors. Check the atmosphere in the sump regularly while you are working in it. If vapors reach unsafe levels, exit the sump and ventilate it with fresh air before you resume working. Always have another person standing by for assistance.

**⚠ WARNING:** Follow all federal, state, and local laws governing the installation of this product and its associated systems. When no other regulations apply, follow NFPA codes 30, 30A, and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.

**⚠ WARNING:** Always secure the work area from moving vehicles. The equipment in this manual is usually mounted underground, so reduced visibility puts service personnel working on it in danger from moving vehicles that enter the work area. To help prevent this safety hazard, secure the area by using a service truck (or some other vehicle) to block access to the work area.

**⚠ WARNING:** Make sure you check the installation location for potential ignition sources such as radio waves, ionizing radiation, and ultrasound sonic waves. If you identify any potential ignition sources, you must make sure safety measure are implemented.

## Questions and concerns

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In case of emergency, follow the procedures established by your facility. If you have questions or concerns about safety or need assistance, use the information below to contact Franklin Fueling Systems:

Web: [franklinfueling.com](http://franklinfueling.com)

Telephone:

USA and Canada: +1.608.838.8786, +1.800.225.9787

USA Technical Support: 1.800.984.6266

UK: +44 (0) 1473.243300

Mexico: 001.800.738.7610

China: +86.10.8565.4566

# Installation

## Installing an FMP-HIS or FMP-HIS-XL sensor

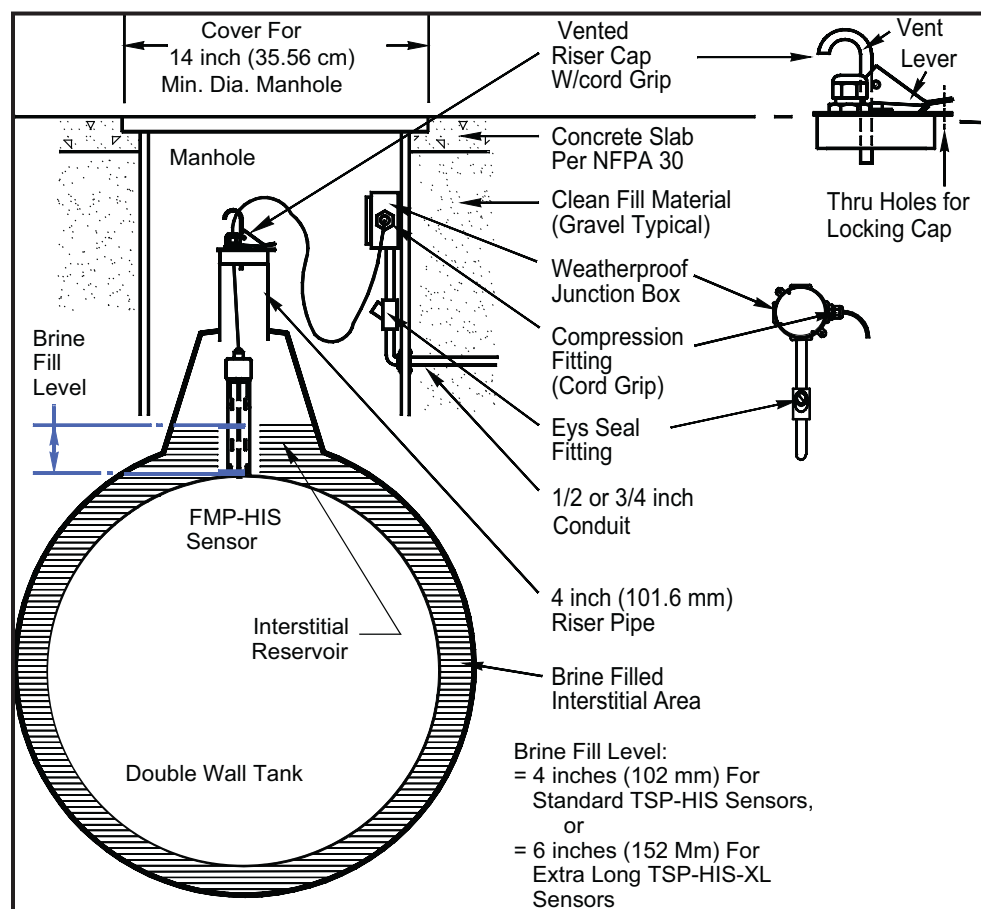
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### Equipment required

- TSP-DB1 epoxy seal kit for no-strip electrical connectors. (See step 1 of the "Procedure" section in this chapter.) This is optional and is recommended for sites where one or more of the following apply:
  - The area is in a flood zone.
  - The groundwater table is high.
  - There is poor drainage
  - Junction boxes are not used.
- Model TSP-KS unistrut mounting kit. This is optional and is recommended for mounting the sensors.
- ½ or ¾ inch NPT (National Pipe Thread, tapered), Rigid Metal Conduit (RMC), or nonmetallic (PVC) if allowed by local code.
- EYS seal fittings and epoxy to fill the fitting after operational testing.
- Weatherproof junction box, gasket, cover, and a ¾ to ½ inch NPT reducing bushing if you use ½" RMC. (See the *ATG Installation Guide* for recommended electrical junction boxes.)
- Wire: THHN, TFFN or THWN, 18 AWG: Red, White, & Black, or Alpha Cable # 58113, 0.131" (3.3 mm) OD, 1,500' (457 meters) maximum length. Use alpha cable 58113 with non-metallic (PVC) conduit.
- Slip joint pliers.
- UL-classified thread sealant or pipe dope.
- Standard adjustable or pipe wrench for a 2" square fitting.
- TSP-KV4 vented riser cap (included with sensor).

## Installation procedure

**⚠ WARNING:** To avoid electrical shock hazards, make sure all power going to the ATG console is turned off, tagged, and locked-out at the power panel before doing any maintenance or installation work at the ATG console.



1. Install a manhole.
2. Install the conduit, EYS fittings, and weatherproof junction box. (See the diagram at the beginning of this procedure.)
3. Turn off power to the console.
4. Pull the sensor cable through the cord grip fitting at the junction box. (Leave enough cable to allow for the installation of the sensor in the interstitial area.) Before you pull wires, mark them to avoid confusion when you connect to the ATG console.
5. Tighten the cord-grip fitting at the junction box, trim the wires and cables in the junction box to a 6–8" (156–20 cm) length, and then splice the sensor and console cable and wires together (as shown in the diagram at the beginning of this procedure) for the appropriate communication type, BRITESENSOR® or UDP.
6. Turn on power to the console.

7. Test the sensor:

- Remove the sensor from the brine solution. This should produce a Low Brine Alarm at the ATG console.
- Rotate the sensor with the cable down. This should produce a High Brine Alarm at the ATG console.

If these tests produce the expected alarms, seal the EYS seal fittings with epoxy.

8. Turn off power to the console if you are going to install other devices.
9. Reinstall all safety covers and guards, as well as junction box gasket and covers. Use pipe-dope to seal all fitting threads.
10. Install the manhole cover.
11. Record the location where the sensor was installed in the "Sensor location record" at the end of this manual. You will need this information when you set up the ATG.
12. Turn on power to the console, and program the ATG. (For more information, refer to the documentation for your ATG.)

## **Installation notes**

**⚠ WARNING:** Conduits must have EYS seal fittings installed in accordance with NFPA 70 (National Electric Code) and NFPA 30A (Automotive and Marine Service Station Code). If you do not seal conduits in accordance with NFPA 30A, and NFPA 70, flammable vapors could travel through the conduit in the ATG console. An explosion could result causing property loss, serious injury, and death.

**⚠ CAUTION:** Seal all threaded fittings and conduit connections so that there is a weatherproof seal in place during installation and maintenance.

**IMPORTANT:** It is the installer's responsibility to comply with all applicable federal, state and local codes. Failure to do so may create an environmental hazard.

**IMPORTANT:** You must install a weatherproof, electrical junction box inside each manhole. The junction box should be installed high on the manhole wall to prevent it from being submerged during heavy rains.

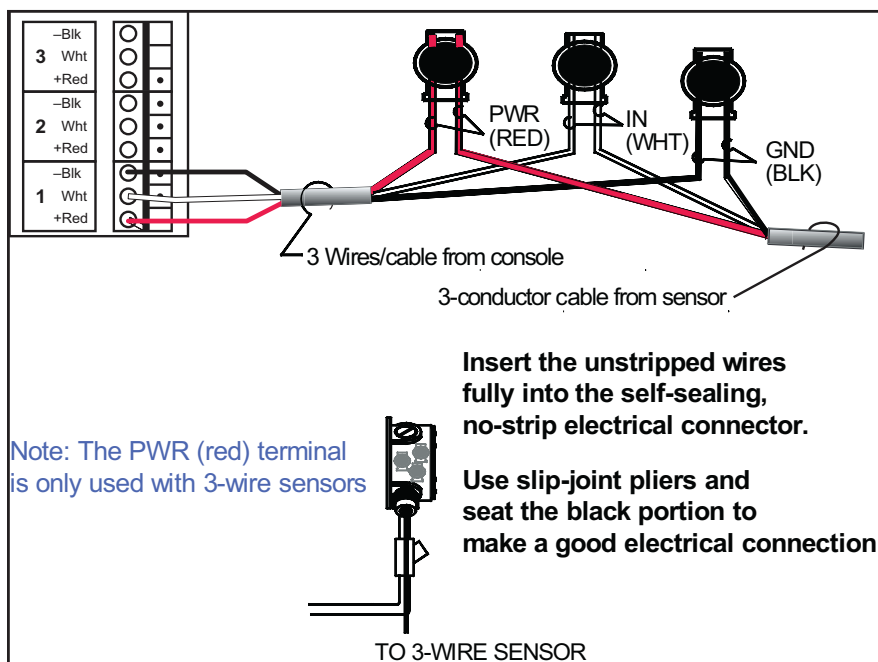
- Fill the bottom of the manhole with crushed stone to facilitate drainage. Do not cover the sensor or access bung hole with fill material—it must remain accessible for sensor installation, service, and testing.
- Plan your conduit routing. Dig trenches as necessary to install conduit from each manhole junction box to the intrinsically safe (IS) knockouts at the ATG console. The conduit may enter the manhole from either the bottom or the side. You will need only one knockout when, inside the building, there is a junction box that you can use as a pull box to combine multiple sensor cables.

## Electrical wiring

Refer to your ATG installation documentation for sensor wiring information.

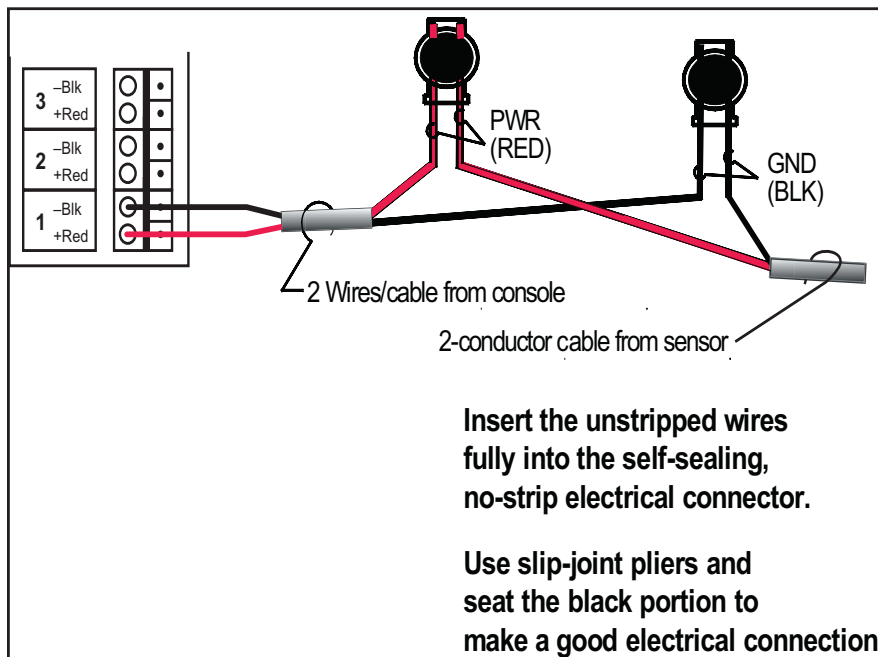
### BRITESENSOR® wiring

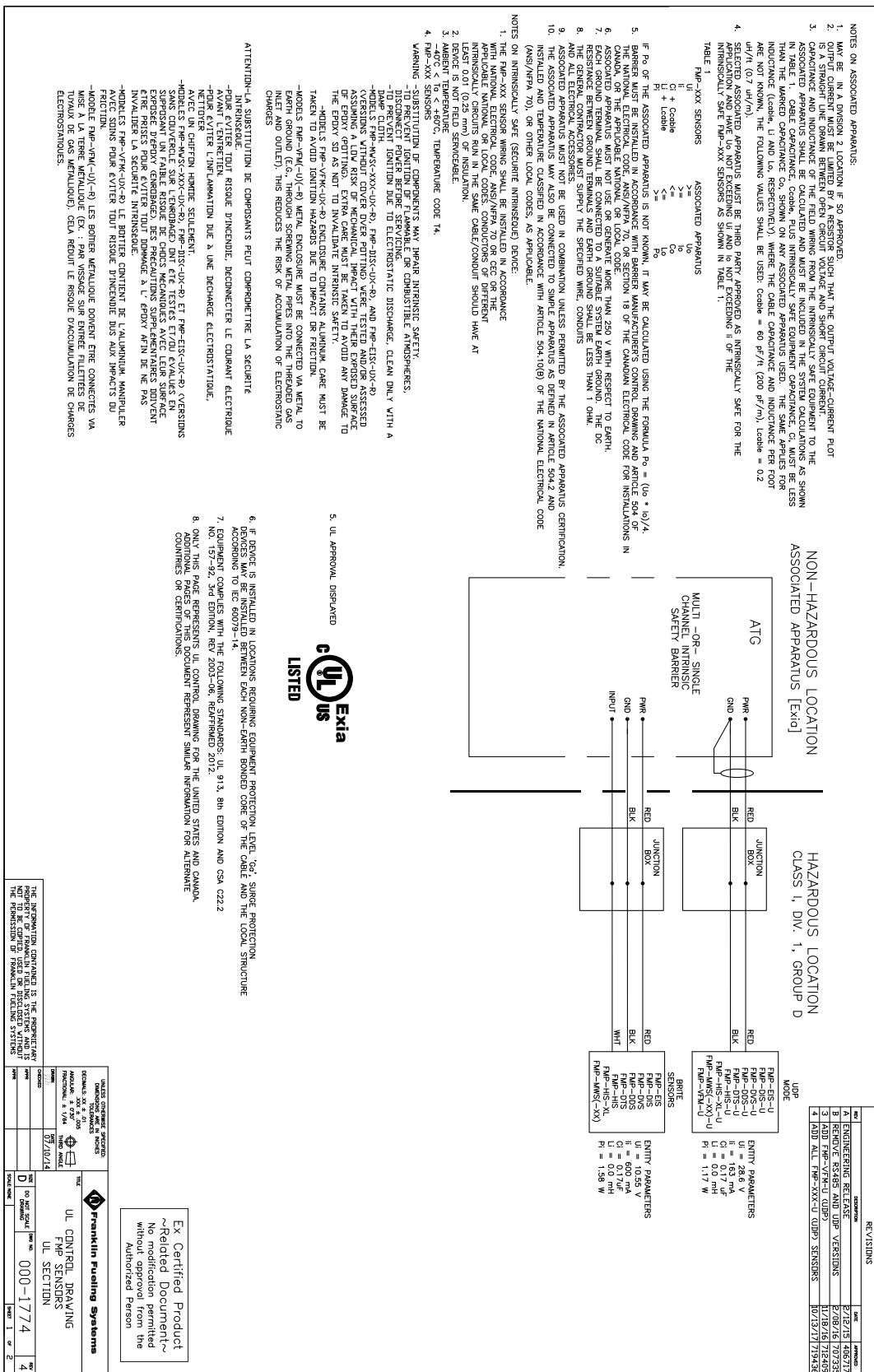
These sensors are compatible with T1 Series, T5 Series, EVO™ 550, and EVO™ 5000 ATGs.



### Universal Device Protocol wiring

These sensors are compatible with EVO™ 200 and EVO™ 400 ATGs.







# Maintenance

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## Testing the sensor

Dip the sensor in 2" (50 mm) of water, and remove it after one minute to produce a LOW BRINE alarm. Rotate the sensor 180 degrees (float up) to cause a HIGH BRINE alarm at the ATG console. Test the sensor for proper operation every year or as required by local code..

## Sensor location record

| Sensor | Channel Number/Notes |
|--------|----------------------|
|        |                      |
|        |                      |
|        |                      |
|        |                      |

