



# **Digital Inventory & Leak Detection Probes**

## **Installation Guide**

## Safety

### Warning



Always lock out and tag electrical circuit breakers while installing or servicing this equipment and any 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 during installation or servicing. Please refer to the Installation and Owner's Manual for this equipment, and the appropriate documentation for any other related equipment, for complete installation and safety information.

### 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 this equipment in danger from moving vehicles entering the work area. To help eliminate these unsafe conditions, secure the area by using a service truck to block access to the work environment, or by using any other reasonable means available to ensure the safety of service personnel.

### Warning



When the console system is used to monitor tanks containing gasoline or other flammable substances, you may create an explosion hazard if you do not follow the requirements in this manual carefully.

### Warning



All wiring must enter the console's enclosure through the designated knockouts. An explosion hazard may result if other openings are used.

### Warning



All wiring from probes to the console must be run in conduit separate from all other wiring. Failure to do so will create an explosion hazard.

## Overview of Digital Inventory & Leak

### Detection Probes

INCON® Digital Inventory & Leak Detection Probes are advanced instruments that use magnetostrictive position measurement technology to accurately report inventory levels in storage tanks.

The probes are installed in USTs (underground Storage Tanks) and ASTs (above ground storage tanks). Both Leak Detection and Inventory Control probes are designed to be installed resting on the bottom of the tank and are supplied with hardware to support this installation method.

### Types of Probes

- Leak Detection
- Inventory Control

### Length of Probes

The probe model number indicates its length. The model numbers are in the form FMP-LL3-xxx, where xxx = the tank diameter in inches plus 5.

For example, the FMP-LL3-101 is for 8' (96", 2.4 m) tanks.

FMP-LL3-xxx, Leak Detection and Inventory probes are available in lengths up to 12' (3.7 m) tanks.

FMP-LL3-xxx-I, Inventory Specific probes are available in lengths up to 12' (3.7 m) tanks.

FMP-FLX-xx, Flexible Probes are also available from 4' to 70'.

### Float Kits Available

| Model      | Description   |
|------------|---|
| TSP-IDF2   | 2" (51 mm) float set for diesel tanks   |
| TSP-IGF2   | 2" (51 mm) float set for gasoline tanks   |
| TSP-IDF4   | 4" (102 mm) float set for diesel tanks  |
| TSP-IGF4   | 4" (102 mm) float set for gasoline tanks  |
| TSP-LPGF   | 2" (51 mm) float for LPG tanks, with or without isolation sleeve. See manual 000-0251 for more information. |
| TSP-SSP    | 2-1/16" (52.4 mm) OD, #316 stainless steel float for chemical applications only                             |
| Model      | Description and Density range   |
| TSP-IDF4D3 | Standard Diesel/fuel oil density float kit 790-900 kg/m <sup>3</sup>  |
| TSP-IGF4D3 | Standard Gasoline density float kit 690-800 kg/m <sup>3</sup>   |
| TSP-IDF4D  | Precision Diesel/fuel oil density float kit 790-900 kg/m <sup>3</sup>                                       |
| TSP-IGF4D  | Precision Gasoline density float kit 690-800 kg/m <sup>3</sup>  |

Most kits include a product and water float. Order one float set for each digital inventory and leak detection probe.

- Product floats are white (clear)
- Gasoline water floats are red.
- Diesel water floats are blue

## Probe Installation Kits

### Probe Caps and Adapters

| Model   | Description   |
|---------|---|
| TSP-C2A | Inventory Probe 2" Riser Cap and Adaptor                  |
| TSP-C2B | Inventory Probe 2" Riser Cap and Adaptor with BSP threads |
| TSP-C4A | Inventory Probe 4" Riser Cap and Adaptor                  |
| TSP-C4B | Inventory Probe 4" Riser Cap and Adaptor with BSP threads |

A locally supplied riser cap should meet all applicable codes and approvals. The cord grip must be for use with a cable diameter of 0.19 inches (4.8 mm) and must also be compatible with the liquid installed in the tank.

### Density Floats

Density floats are two-part floats. The inner and outer float are calibrated at manufacture and must be used together.

| Model     | Description                 |
|-----------|-----------------------------|
| TSP-IDF4D | Diesel/Fuel Oil Density Kit |
| TSP-IGF4D | Gasoline density float kit  |

Refer to manual 000-0527 for more information about density float installation.

### Riser Pipe

Below is a example for determining riser length.

|                                     |                        |                        |
|-------------------------------------|------------------------|------------------------|
|                                     | 92" (2.3 m)<br>Tank    | 96" (2.4 m)<br>Tank    |
| FMP-LL3-101 Probe<br>Overall Length | +111" (2.8 m)          | +111" (2.8 m)          |
| Tank Diameter                       | -92" (2.3 m)           | -96" (2.4 m)           |
| <b>Minimum Riser Length</b>         | <b>19"</b><br>(483 mm) | <b>15"</b><br>(381 mm) |

## Installing Floats

For Digital Inventory & Leak Detection Probes, the float(s) will need to be installed on the probe.

1. Carefully remove the E-Clip and bottom-mount foot.
2. Install the floats as shown in figure 2.
3. Reinstall the bottom-mount foot and E-Clip.



Figure 1: Probe E-Clip and Bottom-Mount Foot

### Float orientation

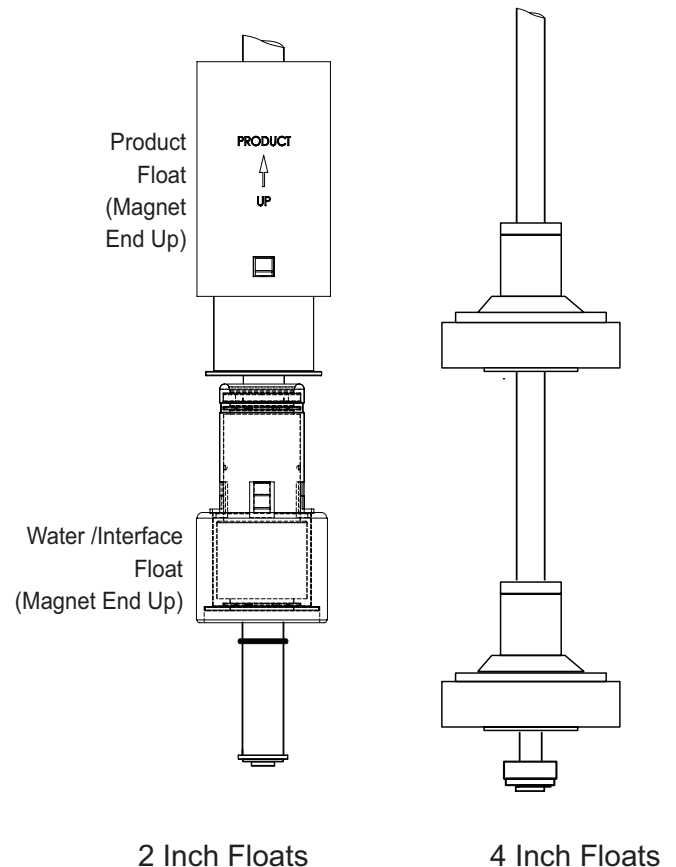


Figure 2: Float Orientation

## Probe Installation

Digital Inventory & Leak Detection Probes must be installed resting on the bottom of the tank.

The bottom-mount assembly consists of:

- Top spacer on the top of the probe head for 3" or 4" probes
- Bottom spacer below the probe head
- Probe foot mounts at the bottom of the probe shaft

When using a 2" riser you will remove the top spacer and replace the bottom spacer with the 2" spacer included in the float kit. When using a 3" riser, cut back the top spacer and replace the bottom spacer with one included in the float kit. The 4" probes are installed with no modification.

### Single Thermistor Probe

The inventory control probe will have one RTD near the bottom of the probe shaft. The Net Volume will be based on the one temperature reading vs. the average of the 5 RTDs in current Inventory probes.

**Note:** The inventory control probes MUST NOT be used for leak detection.

A sticker on the head of the I-probe indicates that it is for inventory use only. Installers must be aware of the probe type in sites that have a mix of inventory-specific and leak detection probes.

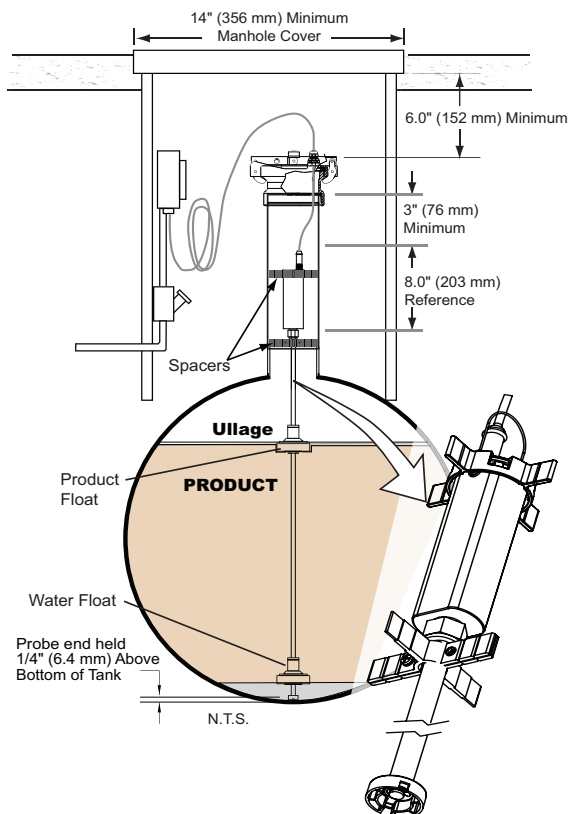


Figure 3: Bottom-Mount Installed

## Above Riser Probes

For above-riser probes or ASTs, install the stainless steel TSP-K4AS riser adapter by tightening the lower swage lock fitting. (Figure 6)

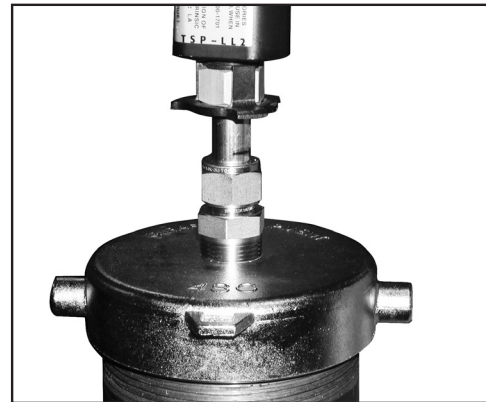


Figure 4: TSP-K4AS cap with Swage-Lock Fitting

Slide the floats onto the probe shaft after the probe has been inserted through the cap. Refer to manual 000-0113, TSP-K4AS with TSP-UVPK Installation Instructions for more information about mounting probes above the riser cap.

## Probe Operation Modes

Digital Inventory & Leak Detection Probes have two modes of operation.

- The new **Universal Device Protocol (UDP)** Mode communicates digitally and provides enhanced functionality. UDP Mode can only be used on TS-550evo™ systems with a software version greater than 2.6.0.
- The second mode is **LL2 Emulation Mode**, which is used to communicate using our LL2 protocol. LL2 Emulation Mode can be used on the TS-1001/2001™, TS-504/508™, TS-750™, the T5 Series™, Colibri®, and TS-550evo™.

## Record Probe Information

Note: Probe information is needed only when using LL2 Emulation Mode. UDP Mode will transmit the information digitally, eliminating the need to record the information.

Find the information label included in the probe splice kit and record which tank the probe is installed in. Provide this to the person programming the tank gauge.

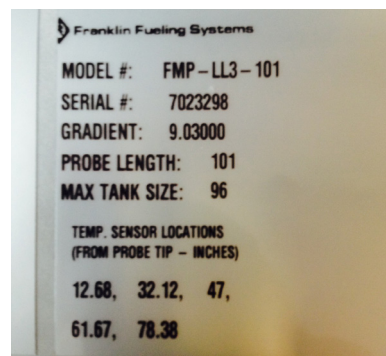
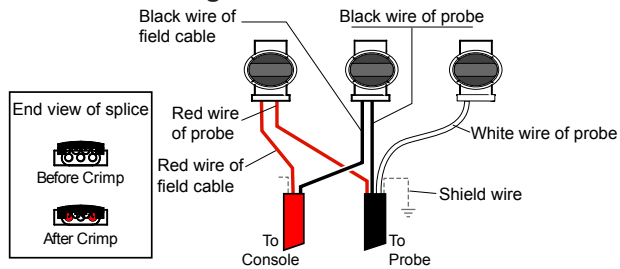


Figure 5: Sample Probe Information Label

## Probe Wiring Installation Instructions

The Liquid Level Probe Splice Kit includes 3 Electrical Connectors for installation inside the manhole Junction Box.\*

### UDP Mode Wiring



**Figure 6: UDP Splice Wiring**

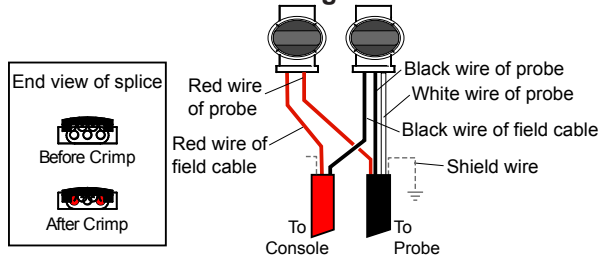
1. Insert 2 red unstripped wires into two separate openings of the first connector.
2. Insert 2 black unstripped wires into two separate openings of the second connector
3. Insert the white wire from the probe cable into one of the openings of the third connector.

**Note:** It is important to isolate the white wire even it is not used. Do NOT cut it. Connect it to a separate sealed connector.

4. Squeeze each connector together using 8" slip-joint pliers.
5. Connect the shield from the probe cable to Ground.

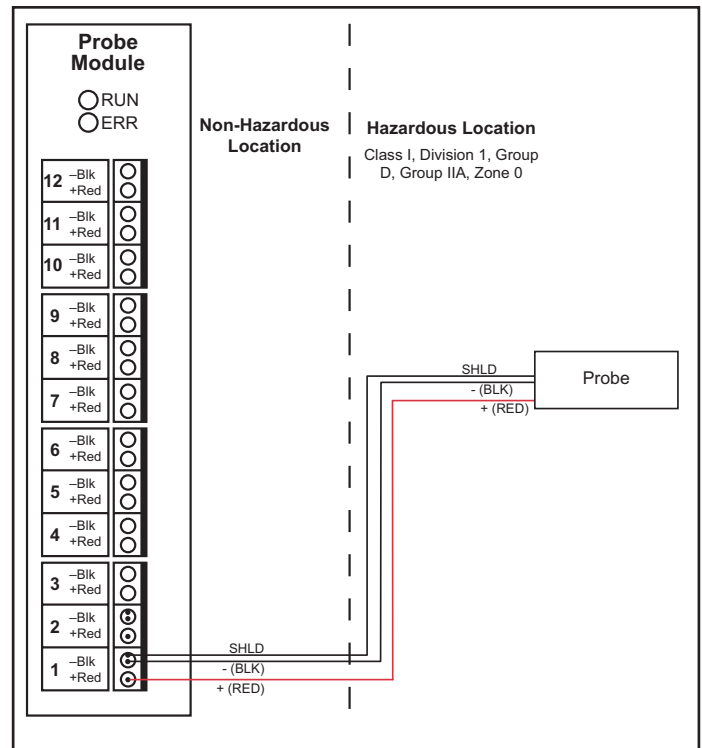
\* Refer to manual 000-1041, Direct Burial Cable Installation Instructions and 000-1133, Direct Burial Splice Kit Installation Guide, for information about direct-burial applications.

### LL2 Emulation Mode Wiring



**Figure 7: LL2 Emulation Wiring**

1. Insert 2 red unstripped wires into two separate openings of the first connector.
2. Insert 2 black unstripped wires into two separate openings of the second connector and insert the white wire from the probe cable into the remaining opening of the second connector.
3. Squeeze each connector together using 8" slip-joint pliers.
4. Connect the shield from the probe cable to Ground.



**Figure 8: Probe Module Wiring**

Refer to manual 000-2142, Fuel Management System Programming guide and 000-2150 Fuel Management System Installation guide for information about setting up the probe with the tank gauge.

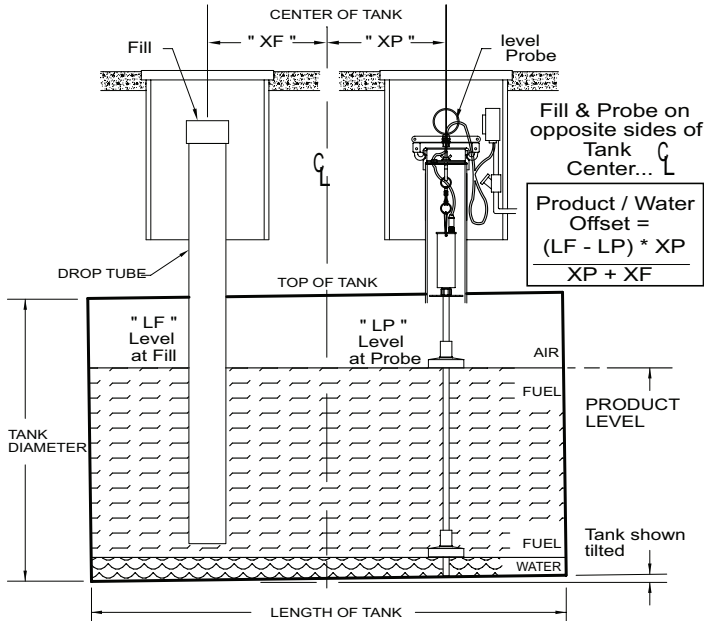
For TS-550 evo™ manuals, refer to 000-2173 for Programming and 000-2170 for Installation.

For Colibri® Tank Gauge Consoles, refer to manual 000-2153, Colibri® Automatic tank Gauge Installation Guide, and 000-2155, Colibri® Set-Up and Operation Guide. For Colibri® manuals on the web, go to: [www.franklinfueling.com/colibri/literature.aspx](http://www.franklinfueling.com/colibri/literature.aspx)

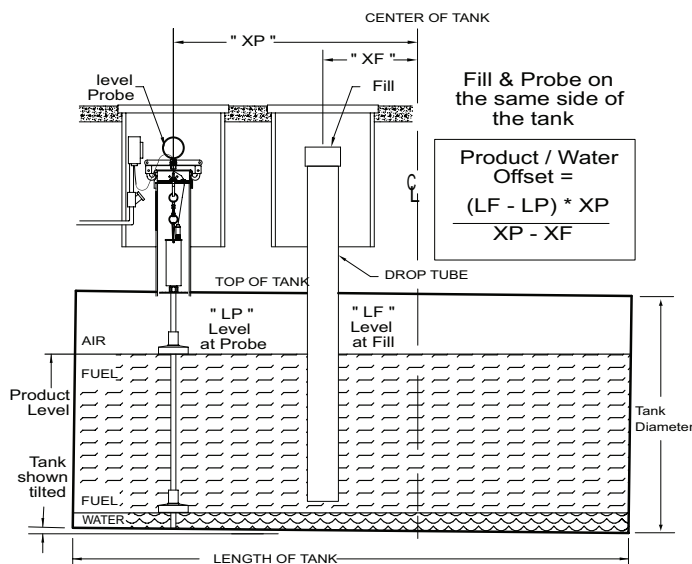
## Tank Tilt/ Offset Calculations

If the data to calculate tank tilt is not known, or if the tank is not seriously tilted, then use +/- offsets to adjust the probe readings to match the stick readings at fill.

Figure 9 shows the tank tilt formula to use when the fill tube and probe are on opposite sides of the tank center-line. Figure 10 shows the formula to use when the fill tube and probe are on the same side of the tank center-line.



**Figure 9: Tank Tilt Calculation  
Probe and Fill on Opposite Sides**



**Figure 10: Tank Tilt Calculation  
Probe and Fill on Same Side**

## Troubleshooting

When troubleshooting a probe problem, it is important not to presume any particular cause. Follow the steps outlined below to properly and quickly troubleshoot probes:

**Note:** Do not start troubleshooting by swapping probes. It may cause confusion in the process of identifying the problem.

### Float Missing:

1. Check programming of probe for correct number of floats
2. Look for active High water or Float Missing Alarms in the run status at the ATG (Automatic Tank Gauge).
3. If possible, have the technician stick the tank and compare the measurement with the level reported by the ATG.
4. Is the level correct? If not, is the ATG measuring in reverse (the lower the actual product level the higher it reads on the ATG)? Verify the Probe ratio is programmed correctly. If programming is correct it may be a probe issue, continue with the next steps.
5. Check the water level does the ATG list it as float missing? If it is listed as missing, it could be a probe issue, but again continue to troubleshoot.
6. Try to cycle power. If previously noted, check to see if High Water alarm or float missing alarm have cleared. If they clear, again this could be a probe issue, but acknowledge and continue to troubleshoot.
7. After completing the above steps, replace the probe.



## No Probe, Probe Sync and Unstable Probe

(New Install or Replacement Probe)

1. Check Wiring. Ensure that the Red, Black and Shield wires are connected to the correct terminals to the ATG. There should be two connections in the junction box, (refer to figure 8).

(Probe Alarms on Multiple Channels or Only One Probe Connected)

2. Check Main Board Power Supply. There should be approximately 21 VDC loaded (probe connected) and 24 VDC unloaded across the Red and Black terminals of the probe channel in the ATG.
3. Check Field Wiring. Ensure that the voltage is getting to the probe by checking at the junction box splice or quick disconnect pigtail. With the pigtail end facing you, keyslot up, there should be 24 VDC across the two bottom pins. Test field wiring for a short or open.
4. Remake Splice. Cutback and remake the splice connection in the junction box using the approved seal pack and connectors.

(Quick Disconnect Pigtail)

5. Try a New Pigtail. If this probe has a quick disconnect pigtail, try replacing it.
6. Try another Probe Channel. Once the field wiring has been checked and the junction box connection remade, try moving the field wiring to another channel.
7. Connect the Probe Directly to the ATG. If possible, bring the probe inside and wire directly to the ATG. (If this probe has a quick disconnect pigtail then the white wire should be connected to shield or ground).

Listed below are additional steps for troubleshooting the probe. For missing float or incorrect level problems, consider the following actions:

- Pull probe from tank and manually raise and lower floats. Does the ATG accurately report the change in level?
- Are the right number of floats installed on the probe (verify number of floats programming)
- Is float too close to the end of the probe? (Was tank overfilled or is the float stuck in riser)? If float is too close to the probe head a float missing alarm will occur.
- Is there debris on the magnets? If so, clean debris from magnet and check operation of ATG.
- Are the magnets cracked or broken? If so replace float
- Are the floats installed correctly? Product float on top, closest to the probe head. Product float will have a white collar. Water floats have colored collars (Red for use in gasoline, blue for use in diesel)
- Is the probe shaft clean? If dirty use an abrasive pad to clean the probe shaft.
- Check that wire connections from probe cable to field wiring are good and dry.
- Are the floats compatible with the probe? LL and LL2/LL3 floats are NOT interchangeable.

| REVISED |                                 |                 |
|---------|---------------------------------|-----------------|
| REV     | DESCRIPTION                     | DATE            |
| A       | RELEASE FOR REGULATORY REVIEW   | 01/14/14 405885 |
| B       | CHANGE FMP WAS TSP ADD 485 1-32 | 02/28/14 405885 |
| C       | CHANGE PER UL FINAL REVIEW      | 02/27/14 405885 |
| D       | REMOVE UBP AND KS485 VERSIONS   | 02/08/16 707385 |

# HAZARDOUS LOCATION CLASS I, DIV. 1, GROUP D

## NON-HAZARDOUS LOCATION ASSOCIATED APPARATUS [Exid]

- NOTES ON ASSOCIATED APPARATUS:
- MAY BE IN A ZONE 2 LOCATION IF SO APPROVED.
  - DO NOT CURRENTLY BE LIMITED BY A DESIGN OR RATED CURRENT. THE CURRENT CARRYING CAPABILITY OF THE CABLE MUST BE OPEN TO THE INTRINSICALLY SAFE EQUIPMENT TO THE CAPACITANCE AND INDUCTANCE OF THE FIELD WIRING FROM THE INTRINSICALLY SAFE EQUIPMENT TO THE ASSOCIATED APPARATUS SHALL BE CALCULATED AND MUST BE INCLUDED IN THE SYSTEM CALCULATIONS AS SHOWN IN TABLE 1. CABLE CAPACITANCE,  $C_c$ , PLUS INTRINSICALLY SAFE EQUIPMENT CAPACITANCE,  $C_i$ , MUST BE LESS THAN THE MARKED CAPACITANCE  $C_o$ , SHOWN ON ANY ASSOCIATED APPARATUS USED. THE SAME APPLIES FOR INDUCTANCE ( $L_c$  AND  $L_o$ , RESPECTIVELY), WHERE THE CABLE CAPACITANCE AND INDUCTANCE PER FOOT ARE NOT KNOWN, THE FOLLOWING VALUES SHALL BE USED:  $C_c = 60 \text{ pF/ft}$  (200  $\text{pF/m}$ ),  $L_c = 0.2 \text{ uH/ft}$  (1.0  $\text{uH/m}$ ).
  - SELECTED ASSOCIATED APPARATUS MUST BE THIRD PARTY APPROVED AS INTRINSICALLY SAFE FOR THE APPLICATION AND HAVE  $U_o$  NOT EXCEEDING  $U_i$  AND  $I_o$  NOT EXCEEDING  $I_i$  OF THE INTRINSICALLY SAFE FMP-LL3 & FMP-XMS AS SHOWN IN TABLE 1.

TABLE 1  
FMP-LL3 & FMP-XMS ASSOCIATED APPARATUS

| PARAMETER   | ASSOCIATED APPARATUS |
|-------------|----------------------|
| $U_o$       | $U_i$                |
| $I_o$       | $I_i$                |
| $C_i + C_c$ | $C_o$                |
| $L_i + L_c$ | $L_o$                |

IF  $P_o$  OF THE ASSOCIATED APPARATUS IS NOT KNOWN, IT MAY BE CALCULATED USING THE FORMULA  $P_o = (U_o * I_o)/4$ .

- BARRIER MUST BE INSTALLED IN ACCORDANCE WITH BARRIER MANUFACTURER'S CONTROL DRAWING AND ARTICLE 504 OF THE NATIONAL ELECTRICAL CODE, ANSI/NFPA 70, OR SECTION 18 OF THE CANADIAN ELECTRICAL CODE FOR INSTALLATIONS IN CANADA, OR THE APPLICABLE NATIONAL OR LOCAL CODE.

- ASSOCIATED APPARATUS MUST NOT USE OR GENERATE MORE THAN 250 V WITH RESPECT TO EARTH.
- EACH GROUND TERMINAL SHALL BE CONNECTED TO A SURFACE SYSTEM EARTH GROUND. THE DC RESISTANCE BETWEEN GROUND TERMINALS AND EARTH GROUND SHALL BE LESS THAN 1 OHM.
- THE GENERAL CONTRACTOR MUST SUPPLY THE SPECIFIED WIRE, CONDUITS AND ALL ELECTRICAL ACCESSORIES.
- ASSOCIATED APPARATUS MUST NOT BE USED IN COMBINATION UNLESS PERMITTED BY THE ASSOCIATED APPARATUS CERTIFICATION.
- THE ASSOCIATED APPARATUS MAY ALSO BE CONNECTED TO SIMPLE APPARATUS AS DEFINED IN ARTICLE 504.2 AND INSTALLED AND TEMPERATURE CLASSIFIED IN ACCORDANCE WITH ARTICLE 504.10(6) OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70), OR OTHER LOCAL CODES, AS APPLICABLE.

### NOTES ON INTRINSICALLY SAFE (SECURITE INTRINSEQUE) DEVICE:

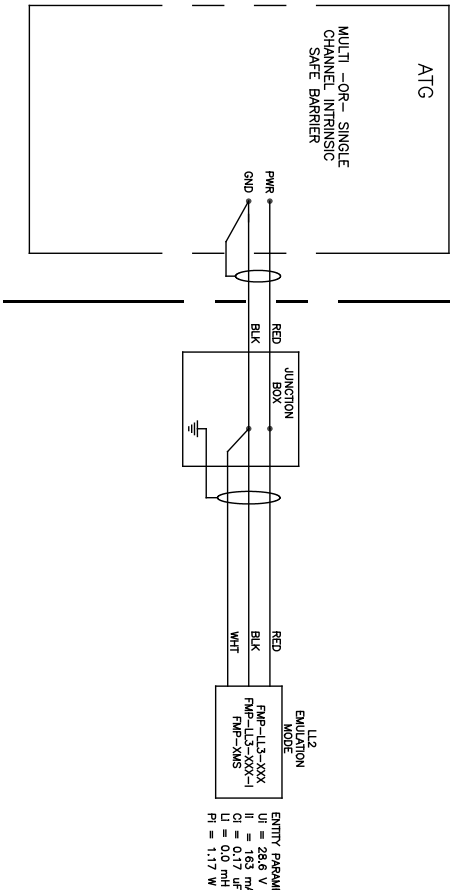
- THE FMP-LL3 AND FMP-XMS WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE INTRINSICALLY SAFE EQUIPMENT MANUFACTURER'S CONTROL DRAWING AND ARTICLE 504 OF THE APPLICABLE NATIONAL OR LOCAL CODES. CONDUCTORS OF DIFFERENT INTRINSICALLY SAFE CIRCUITS RUN IN THE SAME CABLE/CONDUIT SHOULD HAVE AT LEAST 0.01 (0.25 mm) OF INSULATION.
- DEVICE IS NOT FIELD SERVICEABLE.
- AMBIENT TEMPERATURE  
-40°C <  $T_a$  < +60°C

- FMP-LL3-XXX(-) AND FMP-XMS-XX  
WARNING - ENCLOSURE CONTAINS ALUMINUM. CARE MUST BE TAKEN TO AVOID IGNITION HAZARDS DUE TO IMPACT OR FRICTION.  
- SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.  
- REPAIRS MUST BE MADE BY A QUALIFIED PERSON. FLAMMABLE OR COMBUSTIBLE ATMOSPHERES, DISCONNECT POWER BEFORE SERVING.

ATTENTION - LE BOÎTER CONTIENT DE L'ALUMINIUM. MANIPULER AVEC SOINS POUR ÉVITER TOUT RISQUE D'INCENDIE DUS AUX IMPACTS OU FRICTION.  
- REMPLACEMENT DES COMPOSANTS PEUT NUIRE À LA SÉCURITÉ INTRINSÈQUE.  
- RÉPARATION DOIT ÊTRE FAITE PAR UNE PERSONNE QUALIFIÉE. DÉBRANCHER LE COURANT ÉLECTRIQUE AVANT L'ENTRETIEN.  
- POUR ÉVITER TOUT RISQUE D'INCENDIE, DÉCONNECTER LE COURANT ÉLECTRIQUE, NETTOYER AVEC UN CHIFFON HUMIDE.

- FMP-XMS-XX ONLY  
WARNING - TO PREVENT IGNITION DUE TO ELECTROSTATIC DISCHARGE, CLEAN ONLY WITH A DAMP CLOTH.  
ATTENTION - POUR ÉVITER TOUT RISQUE D'INCENDIE DUE À UNE DÉCHARGE ÉLECTRIQUE, NETTOYER AVEC UN CHIFFON HUMIDE.

- UL APPROVAL DISPLAYED



- IF PROTECTION IS INSTALLED IN LOCATIONS REQUIRING EQUIPMENT PROTECTION LEVEL 'Gd', SINCE PROTECTION LEVEL 'Gd' MAY BE INSTALLED BETWEEN EACH NON-EARTH BONDED CORE OF THE CABLE AND THE LOCAL STRUCTURE (UL 60079-14).
- EQUIPMENT COMPLIES WITH THE FOLLOWING STANDARDS: UL 913, 8th EDITION AND CSA C22.2 NO. 157-92, 3rd EDITION, REV 2003-06, REAFFIRMED 2012.
- ONLY THIS PAGE REPRESENTS UL CONTROL DRAWING FOR THE UNITED STATES AND CANADA. ADDITIONAL PAGES OF THIS DOCUMENT REPRESENT SIMILAR INFORMATION FOR ALTERNATE COUNTRIES OR CERTIFICATIONS.

UL, ATEX, IECEx  
CERTIFIED PRODUCT  
-AS-INSTALLED  
ATTENTION NO MODIFICATION  
PERMITTED WITHOUT APPROVAL  
OF THE APPROPRIATE  
AUTHORIZED PERSON.

| UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES |                                     | TYPICAL DIMENSIONS                  |   |
|--|-------------------------------------|-------------------------------------|---|
| DECIMALS: .001 & .005                                | INCHES: .001 & .005                 | INCHES: .001 & .005                 | MM: .025 & .127   |
| FRACTIONS: 1/16, 1/8, 1/4, 1/2, 3/4                  | FRACTIONS: 1/16, 1/8, 1/4, 1/2, 3/4 | FRACTIONS: 1/16, 1/8, 1/4, 1/2, 3/4 | MM: 1.5, 3.175, 6.35, 12.7, 19.05, 25.4, 31.75, 38.1, 50.8, 63.5, 76.2, 88.9, 101.6, 127, 152.4, 177.8, 203.2, 228.6, 254, 279.4, 304.8, 330.2, 355.6, 381, 406.4, 431.8, 457.2, 482.6, 508, 533.4, 558.8, 584.2, 609.6, 635, 660.4, 685.8, 711.2, 736.6, 762, 787.4, 812.8, 838.2, 863.6, 889, 914.4, 939.8, 965.2, 990.6, 1016, 1041.4, 1066.8, 1092.2, 1117.6, 1143, 1168.4, 1193.8, 1219.2, 1244.6, 1270, 1295.4, 1320.8, 1346.2, 1371.6, 1397, 1422.4, 1447.8, 1473.2, 1498.6, 1524, 1549.4, 1574.8, 1600.2, 1625.6, 1651, 1676.4, 1701.8, 1727.2, 1752.6, 1778, 1803.4, 1828.8, 1854.2, 1879.6, 1905, 1930.4, 1955.8, 1981.2, 2006.6, 2032, 2057.4, 2082.8, 2108.2, 2133.6, 2159, 2184.4, 2209.8, 2235.2, 2260.6, 2286, 2311.4, 2336.8, 2362.2, 2387.6, 2413, 2438.4, 2463.8, 2489.2, 2514.6, 2540, 2565.4, 2590.8, 2616.2, 2641.6, 2667, 2692.4, 2717.8, 2743.2, 2768.6, 2794, 2819.4, 2844.8, 2870.2, 2895.6, 2921, 2946.4, 2971.8, 2997.2, 3022.6, 3048, 3073.4, 3098.8, 3124.2, 3149.6, 3175, 3200.4, 3225.8, 3251.2, 3276.6, 3302, 3327.4, 3352.8, 3378.2, 3403.6, 3429, 3454.4, 3479.8, 3505.2, 3530.6, 3556, 3581.4, 3606.8, 3632.2, 3657.6, 3683, 3708.4, 3733.8, 3759.2, 3784.6, 3810, 3835.4, 3860.8, 3886.2, 3911.6, 3937, 3962.4, 3987.8, 4013.2, 4038.6, 4064, 4089.4, 4114.8, 4140.2, 4165.6, 4191, 4216.4, 4241.8, 4267.2, 4292.6, 4318, 4343.4, 4368.8, 4394.2, 4419.6, 4445, 4470.4, 4495.8, 4521.2, 4546.6, 4572, 4597.4, 4622.8, 4648.2, 4673.6, 4699, 4724.4, 4749.8, 4775.2, 4800.6, 4826, 4851.4, 4876.8, 4902.2, 4927.6, 4953, 4978.4, 5003.8, 5029.2, 5054.6, 5080, 5105.4, 5130.8, 5156.2, 5181.6, 5207, 5232.4, 5257.8, 5283.2, 5308.6, 5334, 5359.4, 5384.8, 5410.2, 5435.6, 5461, 5486.4, 5511.8, 5537.2, 5562.6, 5588, 5613.4, 5638.8, 5664.2, 5689.6, 5715, 5740.4, 5765.8, 5791.2, 5816.6, 5842, 5867.4, 5892.8, 5918.2, 5943.6, 5969, 5994.4, 6019.8, 6045.2, 6070.6, 6096, 6121.4, 6146.8, 6172, 6197.4, 6222.8, 6248.2, 6273.6, 6299, 6324.4, 6349.8, 6375.2, 6400.6, 6426, 6451.4, 6476.8, 6502, 6527.4, 6552.8, 6578.2, 6603.6, 6629, 6654.4, 6679.8, 6705.2, 6730.6, 6756, 6781.4, 6806.8, 6832, 6857.4, 6882.8, 6908.2, 6933.6, 6959, 6984.4, 7009.8, 7035.2, 7060.6, 7086, 7111.4, 7136.8, 7162, 7187.4, 7212.8, 7238, 7263.4, 7288.8, 7314, 7339.4, 7364.8, 7390.2, 7415.6, 7441, 7466.4, 7491.8, 7517, 7542.4, 7567.8, 7593, 7618.4, 7643.8, 7669, 7694.4, 7719.8, 7745, 7770.4, 7795.8, 7821, 7846.4, 7871.8, 7897, 7922.4, 7947.8, 7973, 7998.4, 8023.8, 8049, 8074.4, 81, 8125.6, 8150.8, 8176, 8201.2, 8226.4, 8251.6, 8276.8, 8302, 8327.2, 8352.4, 8377.6, 8402.8, 8428, 8453.2, 8478.4, 8503.6, 8528.8, 8554, 8579.2, 8604.4, 8629.6, 8654.8, 8680, 8705.2, 8730.4, 8755.6, 8780.8, 8806, 8831.2, 8856.4, 8881.6, 8906.8, 8932, 8957.2, 8982.4, 9007.6, 9032.8, 9058, 9083.2, 9108.4, 9133.6, 9158.8, 9184, 9209.2, 9234.4, 9259.6, 9284.8, 9310, 9335.2, 9360.4, 9385.6, 9410.8, 9436, 9461.2, 9486.4, 9511.6, 9536.8, 9562, 9587.2, 9612.4, 9637.6, 9662.8, 9688, 9713.2, 9738.4, 9763.6, 9788.8, 9814, 9839.2, 9864.4, 9889.6, 9914.8, 9940, 9965.2, 9990.4, 10015.6, 10040.8, 10066, 10091.2, 10116.4, 10141.6, 10166.8, 10192, 10217.2, 10242.4, 10267.6, 10292.8, 10318, 10343.2, 10368.4, 10393.6, 10418.8, 10444, 10469.2, 10494.4, 10519.6, 10544.8, 10570, 10595.2, 10620.4, 10645.6, 10670.8, 10696, 10721.2, 10746.4, 10771.6, 10796.8, 10822, 10847.2, 10872.4, 10897.6, 10922.8, 10948, 10973.2, 10998.4, 11023.6, 11048.8, 11074, 11099.2, 11124.4, 11149.6, 11174.8, 112, 1124.8, 1127, 1129.2, 1131.2, 1133.2, 1135.2, 1137.2, 1139.2, 1141.2, 1143.2, 1145.2, 1147.2, 1149.2, 1151.2, 1153.2, 1155.2, 1157.2, 1159.2, 1161.2, 1163.2, 1165.2, 1167.2, 1169.2, 1171.2, 1173.2, 1175.2, 1177.2, 1179.2, 1181.2, 1183.2, 1185.2, 1187.2, 1189.2, 1191.2, 1193.2, 1195.2, 1197.2, 1199.2, 1201.2, 1203.2, 1205.2, 1207.2, 1209.2, 1211.2, 1213.2, 1215.2, 1217.2, 1219.2, 1221.2, 1223.2, 1225.2, 1227.2, 1229.2, 1231.2, 1233.2, 1235.2, 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1487.2, 1489.2, 1491.2, 1493.2, 1495.2, 1497.2, 1499.2, 1501.2, 1503.2, 1505.2, 1507.2, 1509.2, 1511.2, 1513.2, 1515.2, 1517.2, 1519.2, 1521.2, 1523.2, 1525.2, 1527.2, 1529.2, 1531.2, 1533.2, 1535.2, 1537.2, 1539.2, 1541.2, 1543.2, 1545.2, 1547.2, 1549.2, 1551.2, 1553.2, 1555.2, 1557.2, 1559.2, 1561.2, 1563.2, 1565.2, 1567.2, 1569.2, 1571.2, 1573.2, 1575.2, 1577.2, 1579.2, 1581.2, 1583.2, 1585.2, 1587.2, 1589.2, 1591.2, 1593.2, 1595.2, 1597.2, 1599.2, 1601.2, 1603.2, 1605.2, 1607.2, 1609.2, 1611.2, 1613.2, 1615.2, 1617.2, 1619.2, 1621.2, 1623.2, 1625.2, 1627.2, 1629.2, 1631.2, 1633.2, 1635.2, 1637.2, 1639.2, 1641.2, 1643.2, 1645.2, 1647.2, 1649.2, 1651.2, 1653.2, 1655.2, 1657.2, 1659.2, 1661.2, 1663.2, 1665.2, 1667.2, 1669.2, 1671.2, 1673.2, 1675.2, 1677.2, 1679.2, 1681.2, 1683.2, 1685.2, 1687.2, 1689.2, 1691.2, 1693.2, 1695.2, 1697.2, 1699.2, 1701.2, 1703.2, 1705.2, 1707.2, 1709.2, 1711.2, 1713.2, 1715.2, 1717.2, 1719.2, 1721.2, 1723.2, 1725.2, 1727.2, 1729.2, 1731.2, 1733.2, 1735.2, 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