PROXIMITY PROBE SYSTEMS

ETL Approved Class I Division 2 Hazardous Rated Proximity Probe Systems Product Manual

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Introduction

This document contains information on installation, markings, and special guidelines of ETL approved Class 1, Division 2 North America PRO Proximity Probe Systems. This manual is intended to cover the PRO DP (Prox Probe), DC (Prox Probe extension Cable), and DD (Prox Probe Driver) series parts. This manual is to be used in conjunction with the non-hazardous location manual that accompanies this system. Please see the respective manual for PRO 8 mm, 11 mm, 25 mm, or FFv 5mm Standard Proximity Probe Systems for information on operations and technical specifications. Please note, this manual is approved for ETL North America Approved Class 1, Division 2 Installations without a barrier. For Intrinsically Safe applications, please refer to MNX10075.

Hazardous Rated Proximity Probe Series Overview

Proximity probe products utilize an eddy current that produces a negative voltage that is directly proportional to the “gap” distance between the probe and measured surface. The assembly consists of a proximity probe, optional extension cable, and driver. The driver can be a 2, 3, or 4 wire device powered by a negative voltage power supply or by a 4-20 mA loop of a PLC, DCS, or SCADA system. 4-20 mA drivers can be configured so that the 4-20 mA loop is directly proportional to the “usable gap” distance between the probe and measured surface. The 4-20 mA driver can also be configured so that the 4-20 mA output

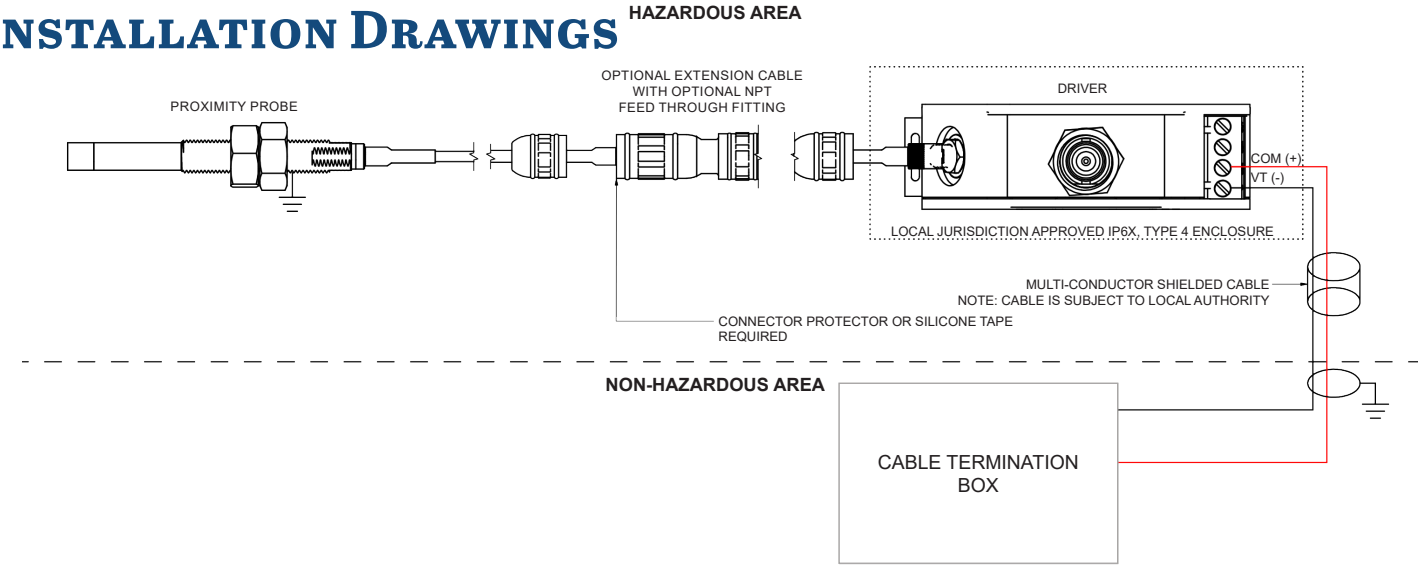
Installation

The ETL control drawings INS10145 (for 2, 3, and 4 wire installations with terminations outside the hazardous zone) and INS10146 (for 2, 3, and 4 wire installations with terminations inside the hazardous zone using customer-supplied Class I, Divison 2 approved enclosure) on the following pages show the installation requirements for CTC Class 1, Division 2 ETL proximity probe systems for use without a barrier. Here are a few highlights:

- As shown on INS10145 and INS10146, the proximity probe driver must be installed inside of an enclosure that has been approved by the local authority for the site. The proximity probe driver must be installed inside a Type 4 and IP6X approved and is acceptable to local authoring for the site.
- Drivers must be electrically isolated from earth ground.
- All exposed metallic surfaces, probe body and/or armor must be grounded to earth ground.
- Wiring is to be done in accordance with Class 1, Division 2 / Zone 2 wiring methods per Canadian electrical code (CEC and per the national electrical code (NFPA 70) for installation within the United States.

is directly proportional to a selectable full scale range.

Installation Drawings



NOTES:

- ALL EXPOSED METAL INCLUDING ARMOR MUST BE GROUNDED
- EXTENSION CABLE USED TO BE APPROVED BY LOCAL JURISDICTION
- TWO WIRE INSTALLATION SHOWN, FOR USE WITH OR WITHOUT 4-20 mA MODELS
- WIRE COLOR FOR CLARITY ONLY
- BNC NOT FOR USE IN HAZARDOUS AREA
- TYPE 4 IS AN OUTDOOR RATING, IF UNIT IS MOUNTED INDOORS, AN INDOOR RATED TYPE 4 ENCLOSURE APPROPRIATE FOR THE APPLICATION CAN BE USED.
- WIRING IS TO BE DONE IN ACCORDANCE WITH CLASS I, DIVISION 2 WIRING METHODS PER THE CANADIAN ELECTRICAL CODE (CEC) AND PER THE NATIONAL ELECTRICAL CODE (NFPA 70) FOR INSTALLATION WITH THE US.

SPECIAL CONDITIONS OF USE:

DRIVERS:

- WARNING - IGNITION HAZARD, PARTS CONTAIN ALUMINUM. FOR PROCESSES REQUIRING EPL RATED EQUIPMENT, SUITABILITY FOR USE MUST BE DETERMINED BY THE END USER TO ELIMINATE IGNITION HAZARD DUE TO IMPACT FRICTION.
- WARNING - ELECTROSTATIC CHARGE HAZARD ON THE PLASTIC COVER, UNARMORED PROBE, AND EXTENSION CABLE COVERING. DO NOT RUB OR CLEAN WITH SOLVENTS.
- DRIVER MUST BE ELECTRICALLY ISOLATED FROM EARTH GROUND.

PROBES:

- THIS PRODUCT IS NOT TO BE INSTALLED IN DIRECT SUNLIGHT OR OTHER SOURCES OF ULTRAVIOLET LIGHT. THIS PRODUCT IS NOT RATED TO BE RESISTANT TO UV LIGHT.

Figure 1. INS10145 - Two Wire System Installation for Terminations Outside of the Hazardous Zone

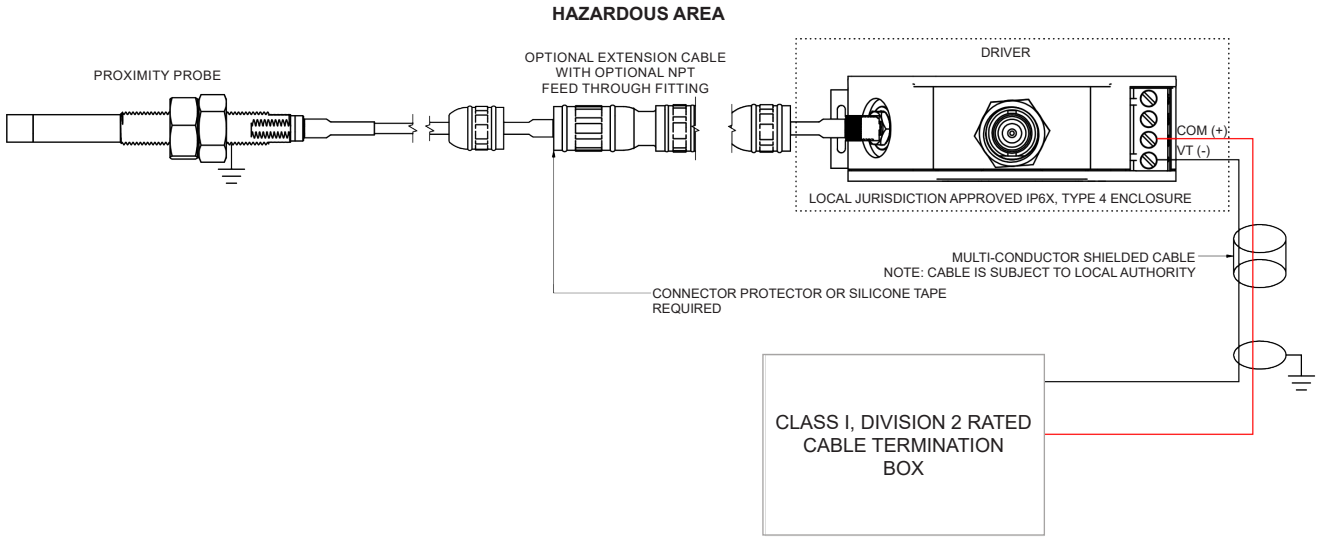


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Figure 2. INS10146 - Two Wire System Installation for Terminations Inside of the Hazardous Zone

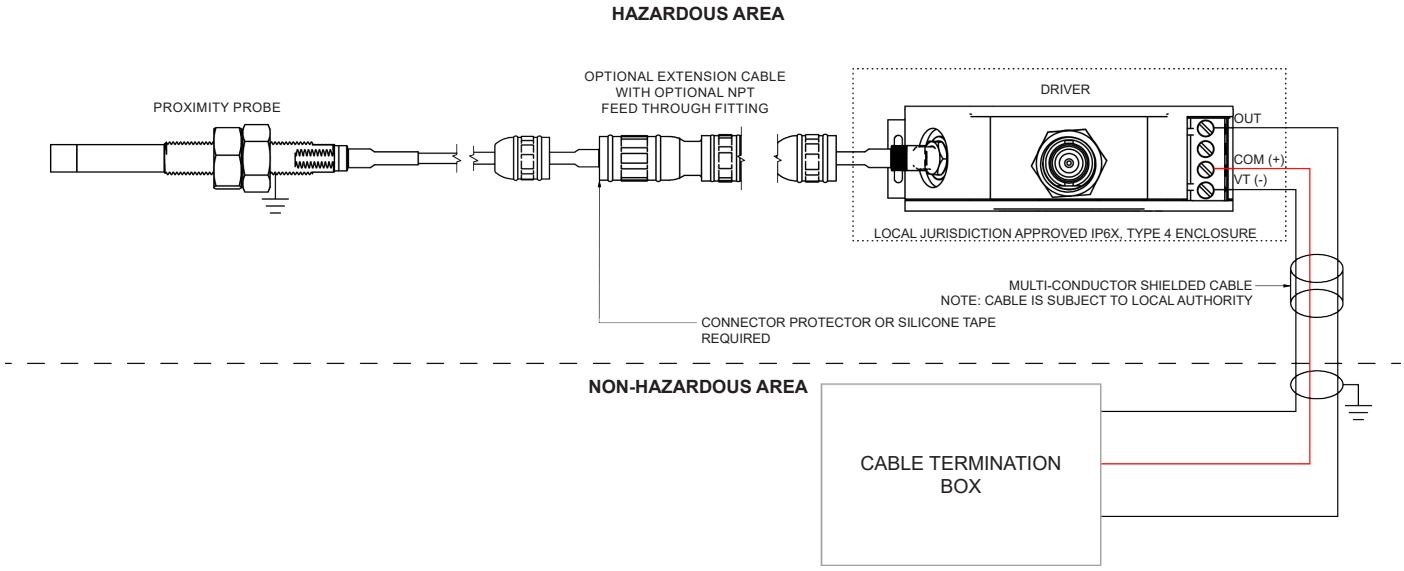

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Figure 3. INS10145 - Three Wire System Installation for Terminations Outside of the Hazardous Zone

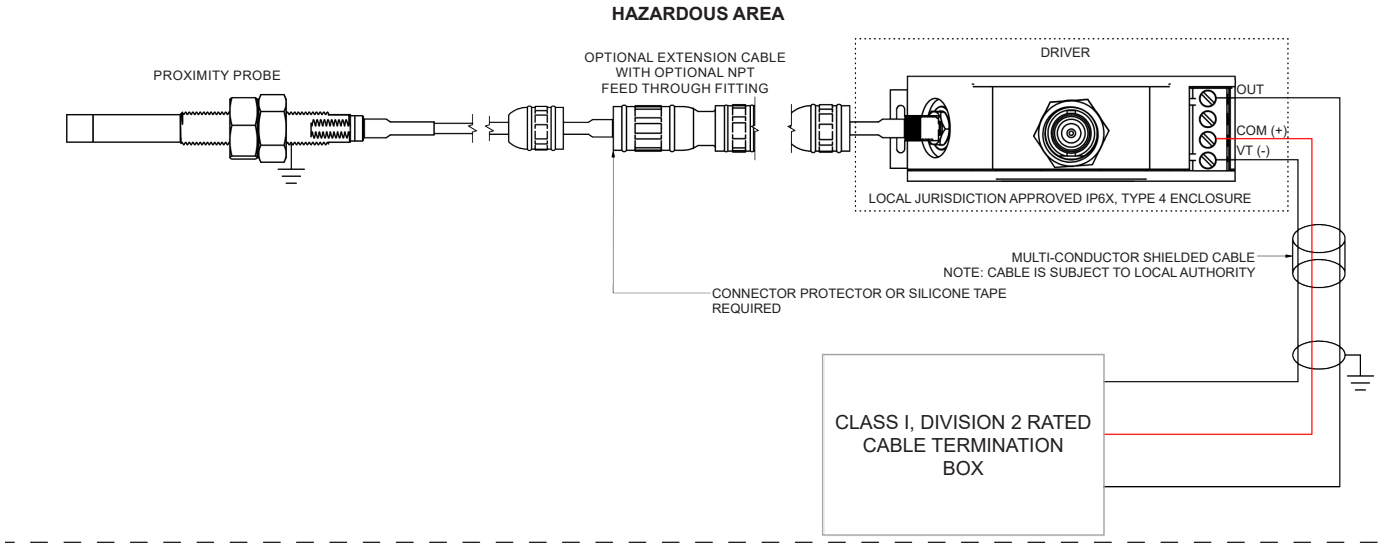

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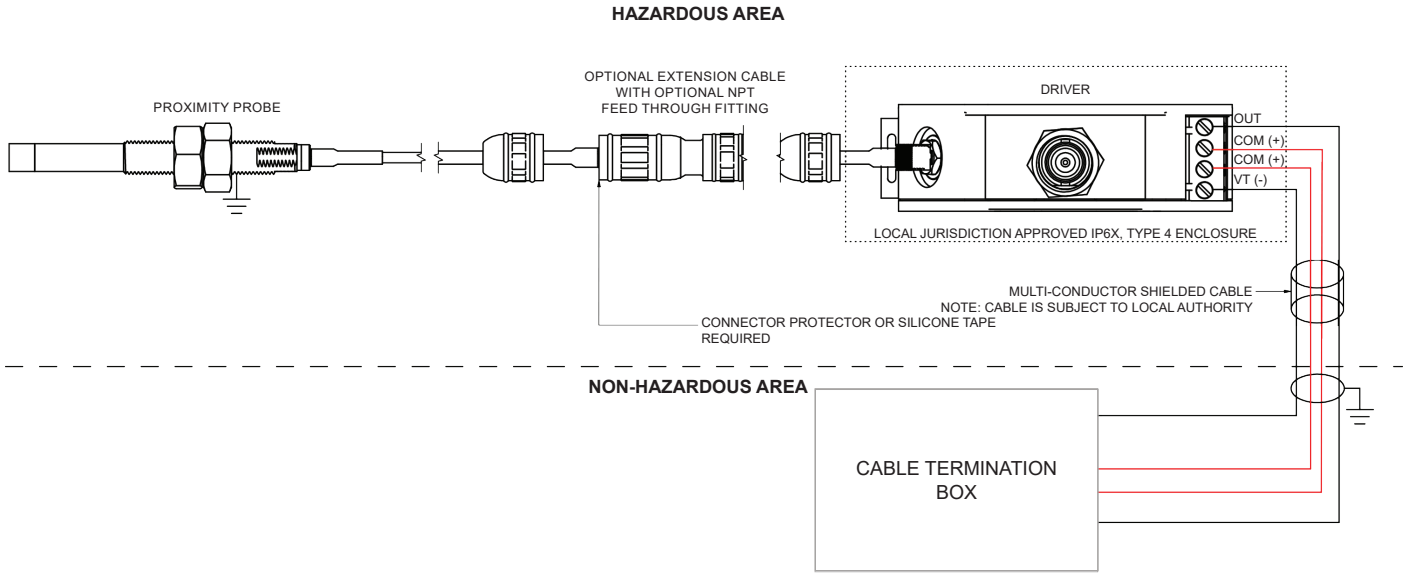
Figure 4. INS10146 - Three Wire System Installation for Terminations Inside of the Hazardous Zone



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- BNC NOT FOR USE IN HAZARDOUS AREA ⚠
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Figure 5. INS10145 - Four Wire System Installation for Terminations Outside of the Hazardous Zone

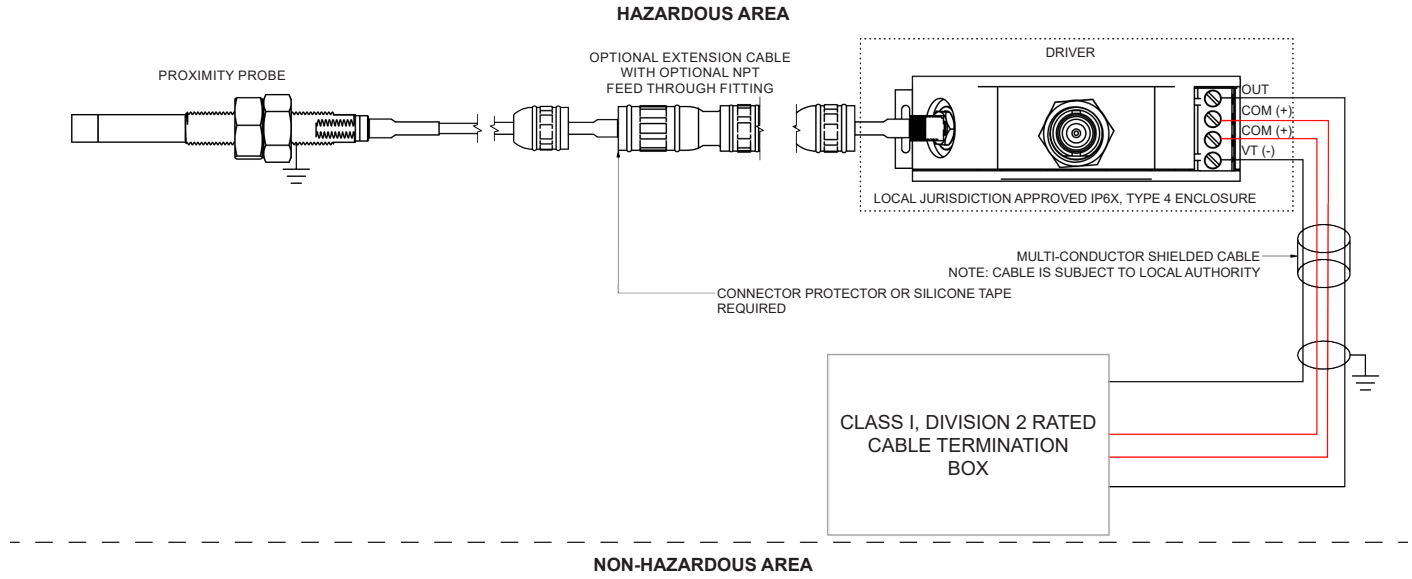

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Figure 6. INS10146 - Four Wire System Installation for Terminations Inside of the Hazardous Zone

Standards

Each Proximity Probe System that is ETL North America approved for use in Class 1, Division 2 applications must meet or exceed the following criteria:

Specific Conditions of Use:

1. Specific Ambient Conditions of Use include:
    a. -45 C to 100 C for all proximity probes and drivers (T4)
    b. -35 C to 85 C for all proximity probes and drivers (T5)

Special Conditions of Use:

5. Cautionary Markings - The following are required:
   Warning – Ignition hazard, parts contain Aluminum. For processes requiring EPL rated equipment, suitability for use must be determined by the end user to eliminate ignition hazard due to impact friction.

   Mise en garde: risque d'inflammation; pièces contenant de l'aluminium. Dans le cas des processus nécessitant du matériel homologué EPL, l'aptitude à l'emploi doit être déterminée par l'utilisateur final afin d'éliminer les risques d'inflammation causés par la friction d'impact.

   Warning – Electrostatic charge hazard on the plastic cover, unarmored probe, and extension cable covering. Do not rub or clean with solvents. To do so could result in explosion.

   Mise en garde: risque de charge électrostatique sur le couvercle de plastique, la sonde sans armature et l'enveloppe de la rallonge. Ne pas frotter ni nettoyer avec des solvants. Cela pourrait causer une explosion.

Assured Compliance With:

Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations [UL 121201:2017 Ed.9+R:01Apr2021]

Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations [CSA C22.2#213:2017 Ed.3+U1;U2;U3]

Markings

The following is a complete recapitulation of markings so the customer has complete information for specific conditions of use:

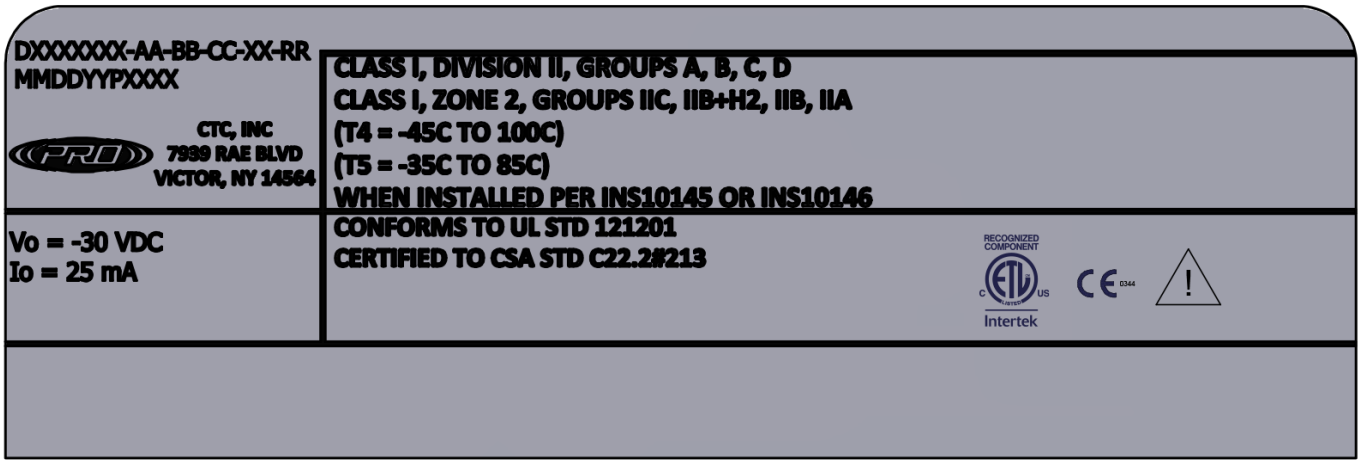

Figure 3. Probe Label Marking

-30VDC, 25mA
TEMPERATURE CODE: T4/T5
T5@TA = -35°C TO +85°C
T4@TA = -45°C TO +100°C
CLASS I, DIV II GROUPS A,B,C,D T4/T5
CLASS I, ZONE 2 GROUPS IIC,IIB+H2,IIB,IIA

INSTALL PER CONTROL DRAWING INS10145 OR INS10146

CTC, INC.
7939 RAE BLVD
VICTOR, NY 14564
MADE IN USA

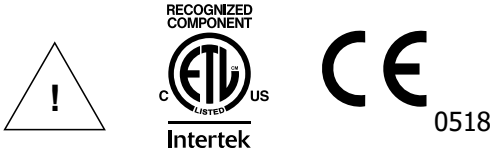

Figure 4. Driver Side Panel Marking

Troubleshooting

Problem	Recommended Action
-05 to -0.6 VDC signal output	Check probe cable/extension cable connection to driver
No signal output	Check power supply

Maintenance

There are no customer replaceable parts on the proximity probe driver. Once the proximity probe assembly has been installed, minimal maintenance will be required. Basic visual checks should be made periodically to ensure integrity and proper function. It is designed to provide trouble-free continuous service under normal operating conditions. Should the instrument require repair, visit ctconline.com for a return material authorization.

Warranty and Refund

Warranty

The PRO line offers a full line of complete proximity probe systems. All PRO products are backed by a lifetime warranty on materials and workmanship. CTC will repair or replace any PRO products as long as the product was not subjected to misuse, neglect, natural disasters, improper installation, or modification.

Refund

All stock products can be returned for a 25% restocking fee if returned in new condition within 90 days of shipment. Stock products qualify for free cancellation if your order is cancelled within 24 hours of purchase. Built-to-order products qualify for a 50% refund if returned in new condition within 90 days of shipment. Custom products are quoted and built specifically to the requirements of the customer, which may include completely custom product designs or private labeled versions of standard products for OEM customers. Custom products ordered are non-cancellable, non-returnable and non-refundable.