

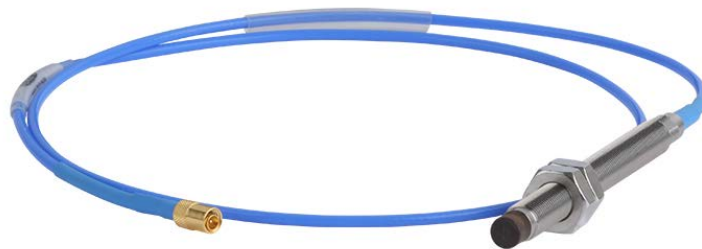


PROTECTION & RELIABILITY
OPTIMIZATION INSTRUMENTS

A CTC COMPANY

P R O D U C T M A N U A L

Hazardous Rated / Intrinsically Safe Proximity Probes



Proximity Probe Assemblies

MNX10075 REV D • 4/22/2016

1

C O N T E N T S

Section I

Overview

Introduction.....	3
Description.....	3

Section II

Installation

Installation Procedure.....	4
Installation Drawings	4

Section III

Operation

Standards.....	6
Markings.....	7

Section IV

Maintenance

General.....	8
Warranty.....	8

SECTION 1 : OVERVIEW

Introduction

This document contains information on the operation, installation guidelines and maintenance of proximity probe series products located in hazardous or volatile areas. This manual is intended to cover the PRO DD, DP, and DC series and Bently™ Compatible DX Series Proximity Probe systems. This manual is to be used in conjunction with the non-hazardous location manual that accompanies this system.

Intrinsic Safety (IS) is based on the principle that the electrical energy in hazardous area circuits is deliberately restricted such that any electrical sparks or hot spots that may occur are too weak to cause ignition. This is achieved by inserting an energy limiting interface in the wiring between safe and hazardous areas. The interface passes signals in either direction as required but limits the voltage and current that can reach the hazardous area under fault conditions. It may be integral with the safe area equipment or separate for greater flexibility.

Description

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, extension cable and driver.

The driver can be a 3 or 4 wire device powered by a negative voltage power supply or by a 4-20mA loop of a PLC, DCS, or SCADA system. 4-20mA drivers can be configured so that the 4-20mA loop is directly proportional to the “usable gap” distance between the probe and measured surface. The 4-20mA driver can also be configured so that the 4-20mA output is directly proportional to a selectable full scale range.

SECTION 2: INSTALLATION

Installation procedure:

The IECEx control drawing INS10060 (attached) shows the installation requirements for CTC IECEx proximity probe. As shown, properly installed barriers are required to limit the energy the proximity probe and driver can receive. Cabling brings the signal from the proximity probe to the Zener diode barrier of galvanic isolator, which is the energy-limiting interface. The signal is transferred through the barrier (which is located in a non-hazardous area to measure equipment, such as a data collector or junction box) for further processing.

Here are a few highlights we thought might be useful to point out:

- As shown on INS10060, 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.
- Properly installed barriers and/or galvanic isolators are required to limit the energy the proximity probe can receive. These barriers and/or galvanic isolators must met the entity parameters listed on INS10060 for a safe installation.
- All exposed metallic surfaces, probe body and/or armor must be grounded to earth ground.

Installation Drawings:

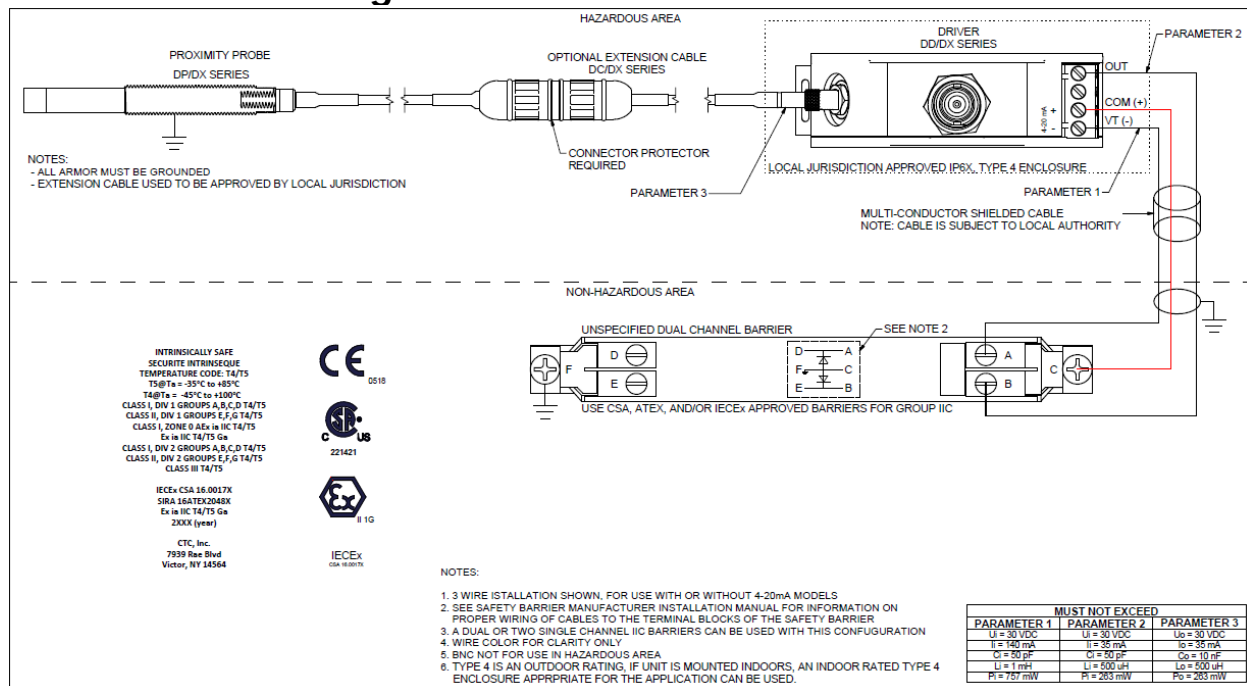


Figure 1 - 3 Wire Installation

SECTION 2: INSTALLATION

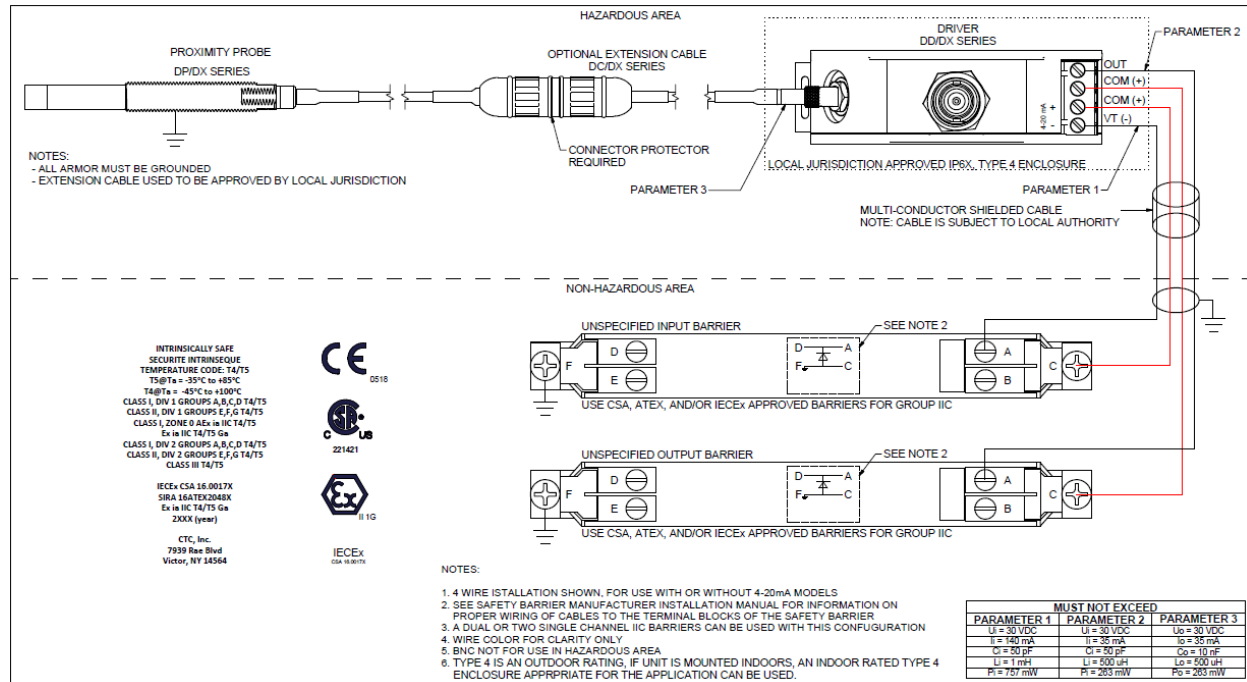


Figure 2 - 4 Wire Installation

SECTION 3 : OPERATION

Standards

Each proximity probe that is approved for IS must meet or exceed the requirements for standards recognized by the countries that would use the proximity probes.

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:

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 by compliance with:

EN 60079-0:2012/A11:2013
EN 60079-11:2012
EN 60529:1989 A2:2013

IEC 60079-0 Ed. 6
IEC 60079-11 Ed. 6
IEC 60529 Ed. 2.2

CSA C22.2 No. 213-15
CSA C22.2 No. 94-2-2015

CAN/CSA C22.2 No. 60079-0-15
CAN/CSA C22.2 No. 60079-11-14

UL Standard 913, 8th Ed.
ANSI/ISA-12.12.01-2015
UL Standard 508 17th Ed.
UL Standard 50E, 2nd Ed.

UL Standard 60079-0 6th Ed.
UL Standard 60079-11 6th Ed.

SECTION 3: OPERATION

Markings:

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


PN: DXXXXXX-AA-BB-CC-XX-RR SN: MMDDYYPPXXXX		
T5@Ta = -35°C to +85°C T4@Ta = -45°C to +100°C		INSTALL PER CONTROL DRAWING INS10060
 CTC, INC 7939 RAE BLVD VICTOR, NY 14564		
INTRINSICALLY SAFE SECURITE INTRINSEQUE CL I, DIV 1 GRP A,B,C,D T4/T5 CL II DIV 1 GRP E,F,G T4/T5 CL III T4/T5 CL I ZONE 0 AEx ia IIC Ex ia IIC T4/T5 Ga CL I DIV 2 GRP A,B,C,D T4/T5 CL II DIV 2 GRP E,F,G T4/T5		
IECEx CSA 16.0017X SIRA 16ATEX2048X Ex ia IIC T4/T5 Ga 2XXX (YEAR)		
TYPE 4 ENCLOSURE		
Vo = 30 VDC Io = 35 mA Co = 10 nF	Lo = 500 uH Po = 263 mW	

Figure 3 – Probe Label Marking



Figure 4 - Driver Side Panel Marking

SECTION 4 : MAINTENANCE

Maintenance

Once the proximity probe assembly has been installed, minimal maintenance will be required. Basic visual checks to ensure integrity and proper function should be made periodically.

General

This product should provide trouble-free continuous service under normal operating conditions. For optimal performance, only replace proximity probe system components with CTC parts.

Warranty

Lifetime warranty on materials and workmanship. CTC will repair or replace any of our products under warranty so long as the product was not subjected to misuse, neglect, natural disasters, improper installation, or modification which caused the defect.

Contact Information

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