



VIBRATION ANALYSIS HARDWARE

Product Manual
MNX10014 / REV C
MODELS AC90X, AC91X,
LP80X, LP81X, LP90X, LP91X



Intrinsically Safe

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Section I Overview

Introduction

This document contains information on the installation, operation, and maintenance of the Intrinsically Safe Vibration Sensor.

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

Accelerometers will produce a voltage output that is proportional to the vibration output (in g's) the sensor is experiencing. 4-20mA Vibration Sensors will create a 4-20mA output proportional to the specified full scale range of sensor (for 4-20mA acceleration model), or integrates accelerometer (g's) to velocity and then creates a 4-20 mA output proportional to the full scale range specified by the part ordered.

Compliance with the Essential Health & Safety Requirements:

Assured by compliance with EN60079-0:2004, EN60079-11:2007, EN60079-26:2007, EN61241-0:2006, EN61241-11:2007

ATEX Related Nameplate Markings

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



**II 1 G/D
KEMA 04 ATEX 1066**



CSA Marking

Figure 1. Nameplate Marking

**Class 1 Div 1 (Zone 0) Labeling
(AC90*/LP80*/LP90*)**

INTRINSICALLY SAFE
SECURITE INTRINSEQUE
Ex ia IIC T3 / T4
Ex iaD A20 T150°C (T-Code = T3) / T105°C (T-Code = T4)
DIP A20 IP6X T150°C (T-Code = T3) / T105°C (T-Code = T4)
AEx ia IIC T3 / T4
AEx iaD 20 T150°C (T-Code = T3) / T105°C (T-Code = T4)
CLI GPS A,B,C,D
CLII, GPS E,F,G, CLIII
CLI, ZONE 0, ZONE 20
OPERATING TEMP CODE: T3
AMBIENT TEMP RANGE = -54°C TO +125°C
OPERATING TEMP CODE: T4
AMBIENT TEMP RANGE = -40°C TO +80°C
CONTROL DRAWING INS10012
Ex ia IIC T3 -54°C < Ta < +125 °C
Ex ia IIC T4 -40°C < Ta < +80°C
Ui=28VDC Ii=100mA
Ci=70nF Li=51uH Pi=1W
CSA 221421
KEMA 04ATEX1066

AC90* Series – Temperature Code: T3
Ambient Temperature range = -54°C to +125°C

LP80*, and LP90* Series – Temperature Code: T4
Ambient temperature range = - 40°C to +80°C

Figure 2. Specific Nameplate Markings for ATEX/CSA Intrinsic Safe Parameters

**Class 1 Div 1 (Zone 0) Labeling Low Capacitance
(AC91*/LP81*/LP91*)**

INTRINSICALLY SAFE
SECURITE INTRINSEQUE

Ex ia IIC T3 / T4

Ex iaD A20 T150°C (T-Code = T3) or T105°C (T-Code = T4)
DIP A20 IP6X T150°C (T-Code = T3) or T105°C (T-Code = T4)

AEx ia IIC T3 / T4

AEx iaD 20 T150°C (T-Code = T3) or T105°C (T-Code = T4)

CLI GPS A,B,C,D

CLII, GPS E,F,G, CLIII

CLI, ZONE 0, ZONE 20

OPERATING TEMP CODE: T3

AMBIENT TEMP RANGE = -40°C TO +125°C

OPERATING TEMP CODE: T4

AMBIENT TEMP RANGE = -40°C TO +80°C

CONTROL DRAWING INS10012

Ex ia IIC T3 -40 °C < Ta < +125 °C

Ex ia IIC T4 -40°C < Ta < +80°C

Ui=28VDC Ii=100mA

Ci=0nF Li=0uH Pi=1W (Models without integral cable)

Ci=70 nF Li=137.8 uH Pi=1W (Models with max. 500 meters integral cable)

CSA 221421

KEMA 04ATEX1066

AC91* Series – Temperature Code: T3

Ambient Temperature range = -40°C to +125°C

AC91*, LP81*, and LP91* Series – Temperature Code: T4

Ambient temperature range = - 40°C to +80°C

**Figure 2a. Specific Nameplate Markings for ATEX/CSA Intrinsic Safe
Parameters**

Section II Installation

Installation Procedure:

The Intrinsic Safety Control Drawing INS10012 (attached) shows the installation requirements for CTC IS Sensors. As shown, properly installed barriers are required to limit the energy the sensor can receive. Cabling brings the signal from the sensor to the Zener diode barrier or galvanic isolator, which is the energy-limiting interface. The signal is transferred through the barrier (which can be located in a Class I Div 2 or non-hazardous area to measurement equipment, such as a data collector or junction box) for further processing.

Section III Operation

Standards

Each sensor that is approved for IS must meet or exceed the requirements for standards recognized by the countries that would use the sensors.

Specific Conditions of Use:

1. Specific Ambient Conditions of Use include:
 - a. -40 C to 80 C for all LP series & AC91X series sensors (T4).
 - b. -54 C to 125 C for all AC90X series sensors (T3).
 - c. -40 C to 125 C for all AC91X series sensors (T3).

Special Conditions for safe use:

None

Section IV Maintenance

General

There are no customer replaceable parts. This product should provide trouble-free continuous service under normal operating conditions.

Warranty

CTC Products - Unconditional Lifetime Warranty. If any CTC product should ever fail, we will repair or replace it at no charge.

PRO Products - Lifetime Warranty on materials and workmanship. PRO 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:

Connection Technology Center, Inc (CTC)

7939 Rae Boulevard

Victor, NY 14564

1-800-999-5290 (US & Canada) 1-585-924-5900 (International)

sales@ctconline.com – www.ctconline.com

