

Frequency Transducer Devices with Intrinsically Safe Field Circuits

NON-HAZARDOUS LOCATION, or
Class I, Div. 2, Group A, B, C or D, or
Class I, Zone 2, Group IIC

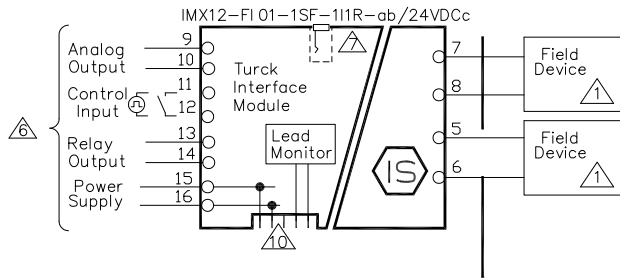
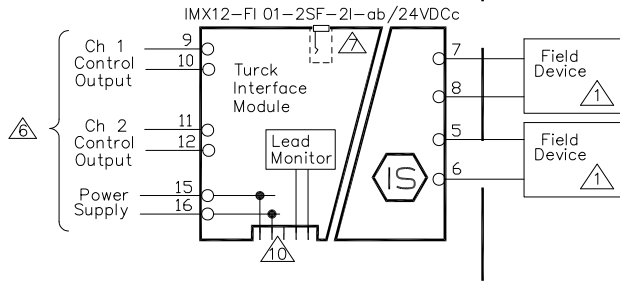
HAZARDOUS (CLASSIFIED) LOCATION

Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, Div. 1
or
Class I, Zone 0, Group IIC, IIB, or IIA

Entity Parameters: Class I, Division 1; Class II, Division 1; Class III, Division 1
Class I, Zone 0, 1, or 2
Circuit Characteristic: Linear

Model	Terminals	V_{oc}/U_o (V)	I_{sc}/I_o (mA)	R (Ω)	P_o (mW)	C_o/C_o (uF)		L_o/L_o (mH)	
						AB/IIC	CDEFG/ IIB,IIA	AB/IIC	CDEFG/ IIB,IIA
IMX12-FI 01-...-.../..	5-6, 7-8	9.3	10.5	882	24.5	1.0	4.0	1.85	9.8
						0.89	3.6	4.8	19.8
						0.79	3.1	9.8	48.8

P_o is calculated using the formula $P = (U_o * I_o)/4 = (9.3V * 10.5mA)/4 = 24.5mW$



a = C (programming port), or blank
b = Extra function PR (power bridge) or 0 (no extra function)
c = Connection /CC (cage clamp terminals), or blank (screw clamp terminals)

For Versions With Relay Output

Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Class I, Zone 2, AEx ec nC [ia] IIC, Ex ec nC [ia] IIC X, providing intrinsically safe circuits for use in hazardous locations Cl I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1, and Zone 0 Group IIC when installed in accordance with Turck control drawing IS-1.320.
-25°C < T_a < +70°C U_m = 253V Temp Code T5



For Versions Without Relay Output

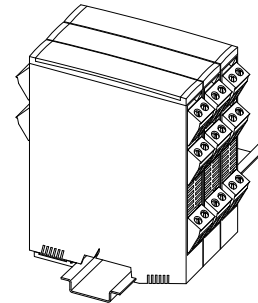
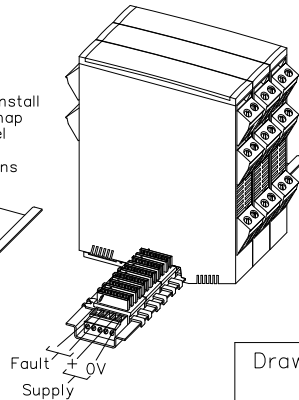
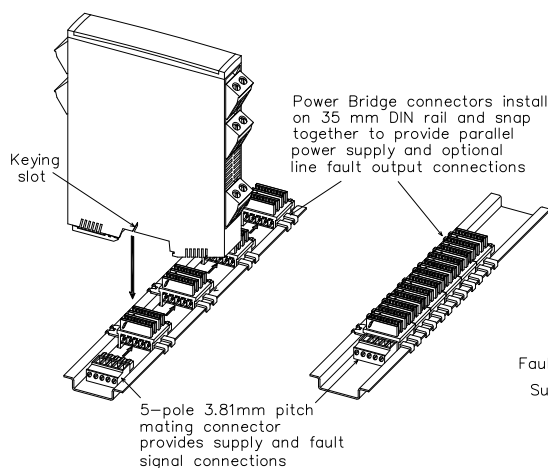
Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Class I, Zone 2, AEx ec [ia] IIC, Ex ec [ia] IIC X, providing intrinsically safe circuits for use in hazardous locations Cl I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1, and Zone 0 Group IIC when installed in accordance with Turck control drawing IS-1.320.
-25°C < T_a < +70°C U_m = 253V Temp Code T5



Notes:

- Selected intrinsically safe equipment must be third party approved with correct entity parameters meeting the relations shown in Table 1, or simple apparatus.
- Multiple circuits extending from the same piece of Associated Apparatus equipment must be installed in separate cables or in one cable having suitable insulation. Refer to International Society of Automation Recommended Practice ISA RP12.6 for installing intrinsically safe equipment.
- A simple apparatus is defined as an electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5V, 100mA, and 25mW, or a passive component that does not dissipate more than 1.3W and is compatible with the intrinsic safety of the circuit in which it is used.
- Capacitance and inductance of the field wiring from the intrinsically safe equipment to the barrier should be calculated and should 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_a) shown on any barrier used. The same applies for inductance (L_c, L_i and L_a, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: C_c = 60 pF/ft, L_c = 0.2 uH/ft.
- The barriers must be installed in accordance with barrier manufacturer's control drawing and Article 504 of the National Electrical Code, ANSI/NFPA 70, for installation in the United States.
- Control equipment must not use or generate more than 253V rms or dc.
- Optional programming port (Extra function 'C') must not be used, connected, or disconnected in the Division 2 or Zone 2 hazardous location.
- WARNING: EXPLOSION HAZARD - To prevent ignition of flammable or combustible atmospheres, do not connect or disconnect when energized.
AVERTISSEMENT: RISQUE D'EXPLOSION - Pour éviter l'inflammation d'atmosphères inflammables ou combustibles, ne pas brancher ni débrancher sous tension.
- WARNING: EXPLOSION HAZARD - Substitution of components may impair intrinsic safety.
AVERTISSEMENT: RISQUE D'EXPLOSION - La substitution de composants peut compromettre la sécurité intrinsèque
- Connections: IMX12-FI ...-...-PR/... devices may be connected to "Power Bridge" connectors installed on 35 mm DIN rail or attached directly to the DIN rail.
IMX12-FI ...-...-0/... devices must be attached directly to the DIN rail.
- The maximum terminal tightening torque is 0.5 Nm.
- The barriers must be installed in a Pollution Degree 2 environment.
- The barriers must be installed in a final enclosure rated IP54 or better.
- The maximum installation altitude is 2000 meters.
- Use conductors rated 75°C minimum.

I.S. Equipment		Barrier		I.S. Equipment		Barrier	
V _{max}	≥	V _{oc} (or V _t)		U _i	≥	U _o	
I _{max}	≥	I _{sc} (or I _t)		I _i	≥	I _o	
C _i + C _{cable}	≤	C _o		C _i + C _c	≤	C _a	
L _i + L _{cable}	≤	L _o		L _i + L _c	≤	L _a	
P _i	≥	P _o					



Drawing No.:

IS-1.320

TURCK
3000 Campus Drive
Plymouth, MN 55441
www.Turck.com

Title: Control Drawing for UL Listed
IMX12-FI01-...-.../.. Frequency Transducer
Isolated Barriers with I/S (Entity) Field Circuits

Scale: NONE

Sheet 1 of 1

A	Release	BVL	12/12/18
Rev	Description	Drft	Chk