

Analog Input Devices with Intrinsically Safe Field Circuits

NON-HAZARDOUS LOCATION

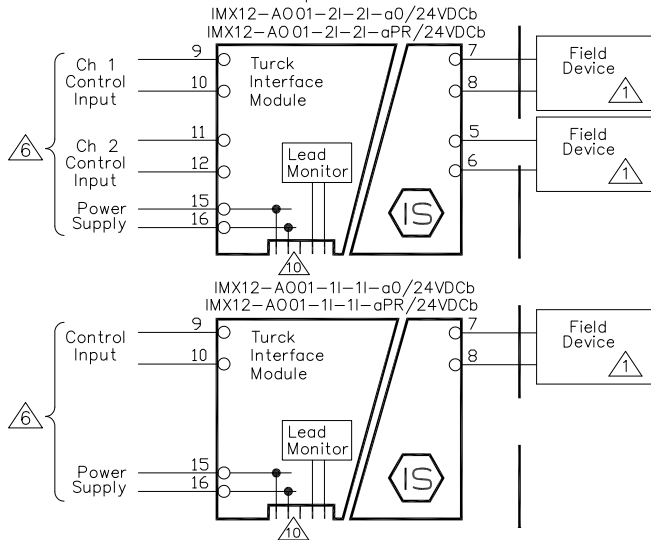
or
Class I, Div. 2, Group A, B, C or D

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: Angular

| Model | Terminals | V_{oc}/U_o (V) | I_{sc}/I_o (mA) | R (Ω) | P_o (mW) | C_a/C_o (nF) | | L_a/L_o (mH) | |
|------------------------|-----------|------------------|-------------------|------------------|------------|----------------|---------------|----------------|---------------|
| | | | | | | AB/IIC | CDEFG/IIB,IIA | AB/IIC | CDEFG/IIB,IIA |
| IMX12-AO01-2I-2I-../.. | 5-6 | 21.8 | 53.2 | 134.6 | 671 | 69 | 540 | 1.5 | 20 |
| | 7-8 | 21.8 | 53.2 | 134.6 | 671 | 95 | 600 | 0.5 | 10 |
| | | | | | | 169 | 660 | 0.1 | 0.5 |
| IMX12-AO01-1I-1I-../.. | 7-8 | 21.8 | 53.2 | 134.6 | 671 | 69 | 540 | 1.5 | 20 |
| | | | | | | 95 | 600 | 0.5 | 10 |
| | | | | | | 169 | 660 | 0.1 | 0.5 |



Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Class I, Zone 2, AEx nA [ia] IIC, Ex nA [ia] IIC, 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. Install per Turck control drawing IS-1.318. www.turck.com/fmcd
 $-25^{\circ}\text{C} < T_a < +70^{\circ}\text{C}$ $U_m = 253\text{V}$ Temp Code T4

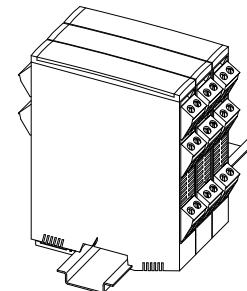
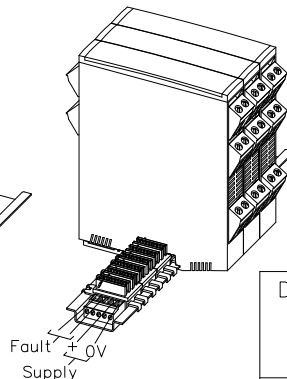
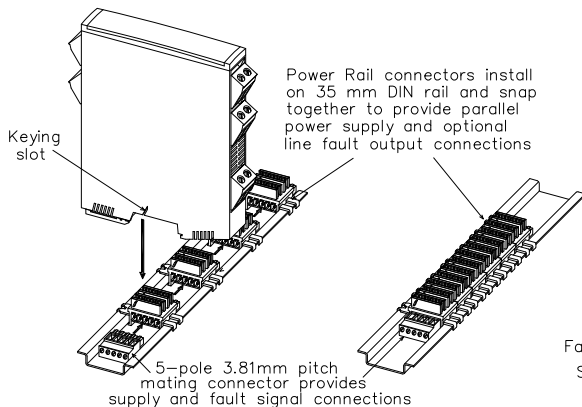
Notes:

- Selected intrinsically safe equipment must be third party listed as intrinsically safe for the application, with correct entity parameters meeting the requirements shown in Table 1, or simple apparatus as defined in the NEC (National Electrical Code, ANSI/NFPA 70), Article 504.2 and installed and temperature classified in accordance with NEC Article 504.10(D), or other local codes, as applicable.
- Intrinsically safe circuits must be wired and separated in accordance with NEC Article 504.20 or other local codes, as applicable. Where multiple circuits extend from the same piece of associated apparatus they must be installed in separate cables or in one cable having suitable insulation. Refer to NEC Article 504.30(B), and ISA (International Society of Automation) Recommended Practice ISA RP12.06 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 associated apparatus shall be calculated and must be included in the system calculations as shown in Table 1. Cable capacitance (C_{cab}) plus intrinsically safe equipment capacitance (C_i) must be less than the marked capacitance C_a (or C_o) shown on any associated apparatus used. The same applies for inductance (L_{cab}, L_i and L_a, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: C_{cab} = 60 pF/ft, L_{cab} = 0.2 μ H/ft.

Table 1

| I.S. Equipment | Associated Apparatus | I.S. Equipment | Associated Apparatus |
|-------------------|---------------------------|-------------------|----------------------|
| V_{max} | $\geq V_{oc}$ (or V_t) | U_i | $\geq U_o$ |
| I_{max} | $\geq I_{sc}$ (or I_t) | I_i | $\geq I_o$ |
| $C_i + C_{cable}$ | $\leq C_a$ | $C_i + C_{cable}$ | $\leq C_o$ |
| $L_i + L_{cable}$ | $\leq L_a$ | $L_i + L_{cable}$ | $\leq L_o$ |
| P_{max} | $\geq P_o$ | P_i | $\geq P_o$ |

- Associated apparatus must be installed in accordance with the manufacturer's control drawing and NEC Article 504 for installation in the United States, or the CEC, Section 18 for installations in Canada.
- Control equipment must not use or generate more than 253V rms or dc.
- This associated apparatus has not been evaluated for use in combination with another associated apparatus.
- WARNING: EXPLOSION HAZARD** - To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.
AVERTISSEMENT: RISQUE D'EXPLOSION - Pour éviter l'inflammation d'atmosphères inflammables ou combustibles, débrancher l'alimentation électrique avant l'entretien.
- 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-AO...-...-PR/24VDC. devices may be connected to "Power Rail" connectors installed on 35 mm DIN rail or attached directly to the DIN rail.
IMX12-AO...-...-0/24VDC. 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 associated apparatus must be installed in an enclosure suitable for the application in accordance with the NEC for installation in the United States, the CEC for installations in Canada, or other local codes, as applicable.
- The maximum installation altitude is 2000 meters.
- Use conductors rated 75°C minimum.



IMX12-AO...-...-0/24VDC. devices must be attached directly to the DIN rail.

Drawing No.:

IS-1.318

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

Title: Control Drawing for UL Listed
IMX12-AO...-...-0/24VDC. Analog Output
Isolated Barriers with I/S (Entity) Field Circuits

Scale: NONE

Sheet 1 of 1

| A | Release | BVL | 11/17/15 |
|-----|-------------|------|----------|
| Rev | Description | Drft | Chk |