

# CERTIFICATE OF COMPLIANCE

**Certificate Number** E230865  
**Report Reference** E230865-20150731  
**Date** 2022-May-19

**Issued to:** Hans Turck GmbH & Co. KG  
Witzlebenstrasse 7  
Muelheim an der Ruhr 45472 DE

**This is to certify that  
representative samples of**

PROCESS CONTROL EQUIPMENT FOR USE IN  
HAZARDOUS LOCATIONS

See Addendum Page for Product Designation(s).

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

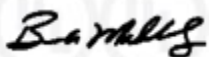
**Standard(s) for Safety:** See Addendum Page for Standards

**Additional Information:** See the UL Online Certifications Directory at  
<https://iq.ulprospector.com> for additional information

This Certificate of Compliance does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

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.

Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D  
Hazardous Locations, Ex ec [ia] IIC X.

Analog Signal Isolator, cat. nos. IMX12-AO01-; followed by 1I-1I- or 2I-2I-; maybe followed by H;  
followed by 0 or PR; followed by /24VDC; maybe followed by /CC providing intrinsically safe outputs  
for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III;  
and Zone 0, Group IIC when installed in accordance with Turck control drawing No. IS-1.318.

Analog Signal Isolator, cat. nos. IMXK12-AO01-1I-1I-H0/24VDC; maybe followed by /CC providing  
intrinsically safe outputs for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1,  
Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control  
drawing No. IS-1.318.

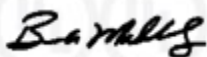
Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D  
Hazardous Locations, Class I, Zone 2, AEx nA [ia] IIC.

Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D  
Hazardous Locations, Ex nA [ia] IIC X.

Solenoid Driver, cat. nos. IMX12-DO; followed by two alpha numeric characters; followed by -1U-1U-  
or -2U-2U-; followed by two alpha numeric characters; followed by /; followed by five alpha numeric  
characters; maybe followed by /; maybe followed by two alpha numeric characters providing  
intrinsically safe outputs for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1,  
Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control  
drawing No. IS-1.314.

Solenoid Driver, cat. nos. IMXK12-DO01-1U-1U-0/24VDC; maybe followed by /CC providing  
intrinsically safe outputs for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1,  
Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control  
drawing No. IS-1.314.

Temperature transmitters, cat. nos. IMX12-TI02-2TCURTD-2I-, IMX12-TI01-2RTDR-2I-; all cat.  
nos. followed by C; followed by 0 or PR; followed by /24VDC; maybe followed by /CC providing  
intrinsically safe circuits for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1,  
Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control  
drawing No. IS-1.319.



Bruce Mahrenholz, Director North American Certification Program

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Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Class I, Zone 2, AEx nA nC [ia] IIC.

Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Ex nA nC [ia] IIC X.

Temperature transmitters, cat. nos. IMX12-TI02-1TCURTR-111R-; followed by C; followed by 0 or PR; followed by /24VDC; maybe followed by /CC providing intrinsically safe circuits for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control drawing No. IS-1.319.

Open type process control equipment, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Class I, Zone 2, AEx ec nC IIC.

Open type process control equipment, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Ex ec nC IIC X.

Power Supply Modules for IMX Power Bridge Devices, cat. nos. IMX12-PS02-UI-UIR-PR/24VDC; maybe followed by /CC to be installed in accordance with Turck control drawing No. IS-1.322.

USL - 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.

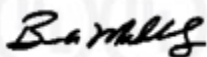
CNL - Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Ex ec [ia] IIC X.

Rotation speed monitor, cat. no. IMX12-FI01-2SF-2I-C; followed by 0 or PR; followed by /24VDC; maybe followed by /CC providing intrinsically safe circuits for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control drawing No. IS-1.320.

Isolating Transducer, cat. nos. IMX12-AI01-2I-2IU-, IMX12-AI01-1I-1IU- and IMX12-AI01-1I-2IU-; all models followed by H; followed by 0 or PR; followed by /24VDC; maybe followed by /CC providing intrinsically safe circuits for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control drawing No. IS-1.317.

Isolating Transducer, cat. nos. IMXK12-AI01-1I-1I-H0/24VDC; maybe followed by /CC providing intrinsically safe circuits for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control drawing No. IS-1.317.

Strain Gauge Interface Module, cat. no. IMX12-SG10-1U-1UI-0/24VDC; maybe followed by /CC providing intrinsically safe circuits for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control drawing No. IS-1.325.



Bruce Mahrenholz, Director North American Certification Program

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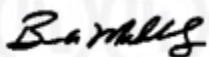
Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Class I, Zone 2, AEx ec nC [ia] IIC.

Associated Apparatus, non-hazardous locations or Class I, Division 2, Groups A, B, C and D Hazardous Locations, Ex ec nC [ia] IIC X.

Rotation speed monitor, cat. no. IMX12-FI01-1SF-; maybe followed by 1I; followed by 1R-; maybe followed by C; followed by 0 or PR; followed by /24VDC; maybe followed by /CC providing intrinsically safe circuits for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; and Zone 0, Group IIC when installed in accordance with Turck control drawing No. IS-1.320.

## Standards:

UL 913, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations  
UL 60079-0, Explosive atmospheres – Part 0: Equipment – General requirements  
UL 60079-7, Explosive atmospheres – Part 7: Equipment Protection by Increased Safety “e”  
UL 60079-11, Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety “i”  
UL 121201, 9th Ed., Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 And 2 Hazardous (Classified) Locations  
UL 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements  
CAN/CSA-C22.2 No. 60079-0:15, Explosive atmospheres — Part 0: Equipment — General requirements  
CAN/CSA-C22.2 No. 60079-7, Explosive Atmospheres - Part 7: Equipment Protection by Increased Safety "e"  
CAN/CSA-C22.2 No. 60079-11:14 , Explosive atmospheres — Part 11: Equipment protection by intrinsic safety “i”  
CAN/CSA C22.2 No. 213, 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 No. 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements



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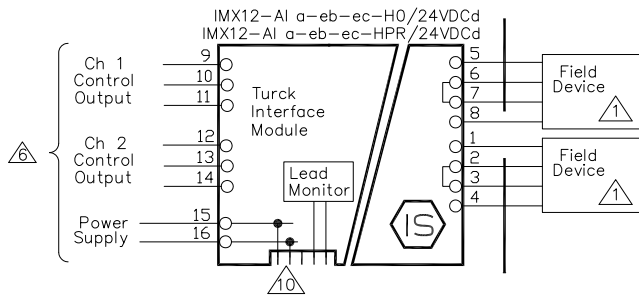


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# Analog Input Devices with Intrinsically Safe Field Circuits

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: Linear

Model $\Delta$	Terminals	$V_{oc}/U_o$ (V)	$I_{sc}/I_o$ (mA)	R ( $\Omega$ )	$P_o$ (mW)	$C_a/C_o$ (nF)		$L_a/L_o$ (mH)	
						AB/IIC	CDEFG/IIB,IIA	AB/IIC	CDEFG/IIB,IIA
IMX12-AI ..-1..-..-./..	5-8	26.1	97	269	632	47	320	1.5	9.9
	1-4	26.1	97	269	632	58	340	0.9	1.9
IMX12-AI ..-2..-..-./..	5-8	26.1	97	269	632	74	400	0.4	0.9

$P_o$  is calculated using the formula  $P = (U_o * I_o)/4 = (26.1V * 97mA)/4 = 632mW$

$U_i = 25V, I_i = 85mA, P_i = 2.125W, L_i = 110\mu H$

Valid only for hardware version HW2.0

- a = Function 01 (4-20mA active/passive, line monitoring),
- b = Input type I (current)
- c = Output type IU (current and voltage)
- d = Connection /CC (cage clamp terminals), or blank (screw clamp terminals)
- e = Number of inputs/outputs, 0 or 2



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 T4, Ex [ia] IIC T4 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. Install per Turck control drawing IS-1.317. [www.turck.com/fmcd](http://www.turck.com/fmcd)  
-25°C < T<sub>a</sub> < +70°C U<sub>m</sub> = 253V Temp Code T4

Notes:

1. 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.
2. 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.
3. 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.
4. 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 ( $C_{cable}$ ) 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 ( $L_{cable}$ ,  $L_i$  and  $L_a$ , respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used:  $C_{cable} = 60$  pF/ft,  $L_{cable} = 0.2$   $\mu$ H/ft.

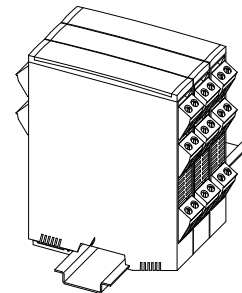
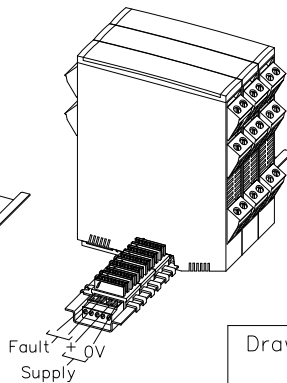
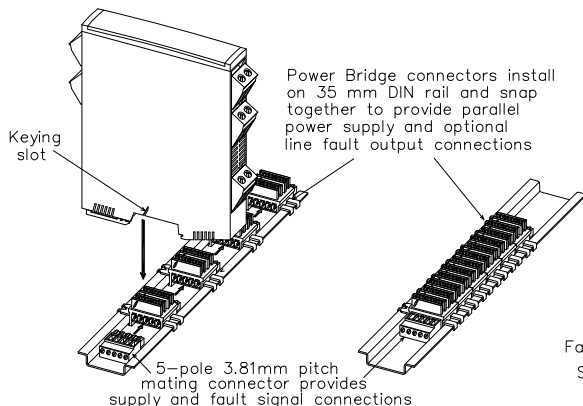
Table 1

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 $I_t$ )	$I_i$	$\geq I_o$
$C_i + C_{cable}$	$\leq C_a$	$C_i + C_{cable}$	$\leq C_o$
$L_i + L_{cable}$	$\leq L_a$	$L_i + L_{cable}$	$\leq L_o$
$P_{max}$	$\geq P_o$	$P_i$	$\geq P_o$

5. 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.

6. Control equipment must not use or generate more than 253V rms or dc.
7. This associated apparatus has not been evaluated for use in combination with another associated apparatus.

8. 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.
9. WARNING: EXPLOSION HAZARD - Substitution of components may impair intrinsic safety.  
AVERTISSEMENT: RISQUE D'EXPLOSION - La substitution de composants peut compromettre la sécurité intrinsèque
10. Connections: IMX12-AI...-..-..-PR/24VDC. devices may be connected to "Power Bridge" connectors installed on 35 mm DIN rail or attached directly to the DIN rail.  
IMX12-AI...-..-..-0/24VDC. devices must be attached directly to the DIN rail.
11. The maximum terminal tightening torque is 0.5 Nm.
12. The barriers must be installed in a Pollution Degree 2 environment.
13. 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.
14. The maximum installation altitude is 2000 meters.
15. Use conductors rated 75°C minimum.



Drawing No.:

IS-1.317

**TURCK**  
3000 Campus Drive  
Plymouth, MN 55441  
[www.Turck.com](http://www.Turck.com)

Title: Control Drawing for UL Listed  
IMX12-AI...-..-..-.../24VDC, HW2.0. Analog Input Isolated Barriers with I/S (Entity) Field Circuits

Scale: NONE

Sheet 1 of 1

Rev	Description	Drft	Chk	Date
D	Add validity for hardware version HW2.0	BVL		4/2/20
C	Add validity for hardware version HW1.0	BVL		4/1/20
B	Correct terminal designations	BVL		4/20/18
A	Release	BVL		10/30/15