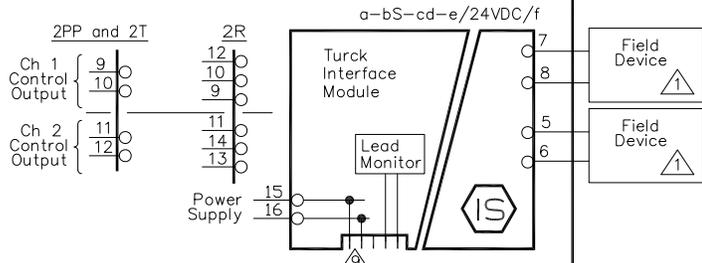


Discrete Input Devices with Intrinsically Safe Field Circuits

NON-HAZARDOUS LOCATION
 or
 Class I, Div. 2, Group A, B, C or D
 or
 Class I, Zone 2, Group IIC
 IMX12-DI

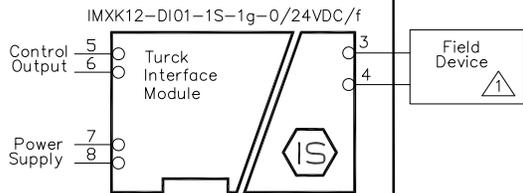
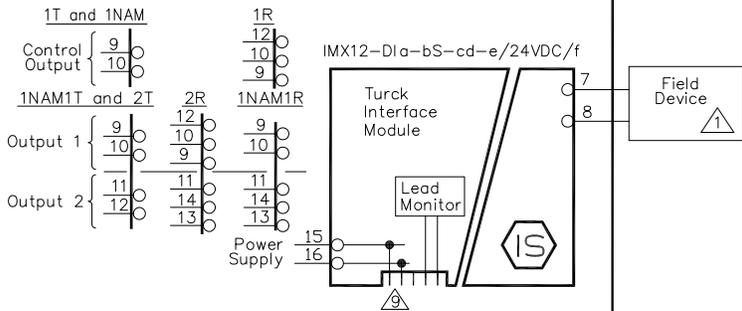
HAZARDOUS (CLASSIFIED) LOCATION
 Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, Div. 1
 or
 Class I, Zone 0, Group IIC, IIB, or IIA



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-DI01-2S-...-./..	5-6	9.3	9.6	969	22	1.2	6.6	1	1
	7-8	9.3	9.6	969	22	0.89	4.1	5	10
IMX12-DI01-1S-...-./..	7-8	9.3	9.6	969	22	1.2	6.6	1	1
						0.89	4.1	5	10
IMXK12-DI01-1S-1-0/..	3-4	9.3	9.6	969	22	1.2	6.6	1	1
						0.89	4.1	5	10

P_o is calculated using the formula $P = (U_o * I_o) / 4 = (9.3V * 9.6mA) / 4 = 22mW$



For Relay Version
 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, Ex nA 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-1.315.
 -25°C < T_a < +70°C U_m = 253V Temp Code T5

For Transistor Version
 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 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-1.315.
 -25°C < T_a < +70°C U_m = 253V Temp Code T5

- a = Function 01 (switchable line monitoring), 02 (without line monitoring), or 03 (fixed line monitoring)
- b = Number of inputs (1 or 2)
- c = Number of outputs (1 or 2)
- d = Output type T (potential free transistor), R (relay), NAM (NAMUR output), or PP (push-pull)
- e = Extra function S (fault output), PR (Power Rail), or 0 (without extra function)
- f = Connection CC (cage clamp), or blank (screw clamp terminals)
- g = Output type T (potential free transistor), R (relay), or PP (push-pull)

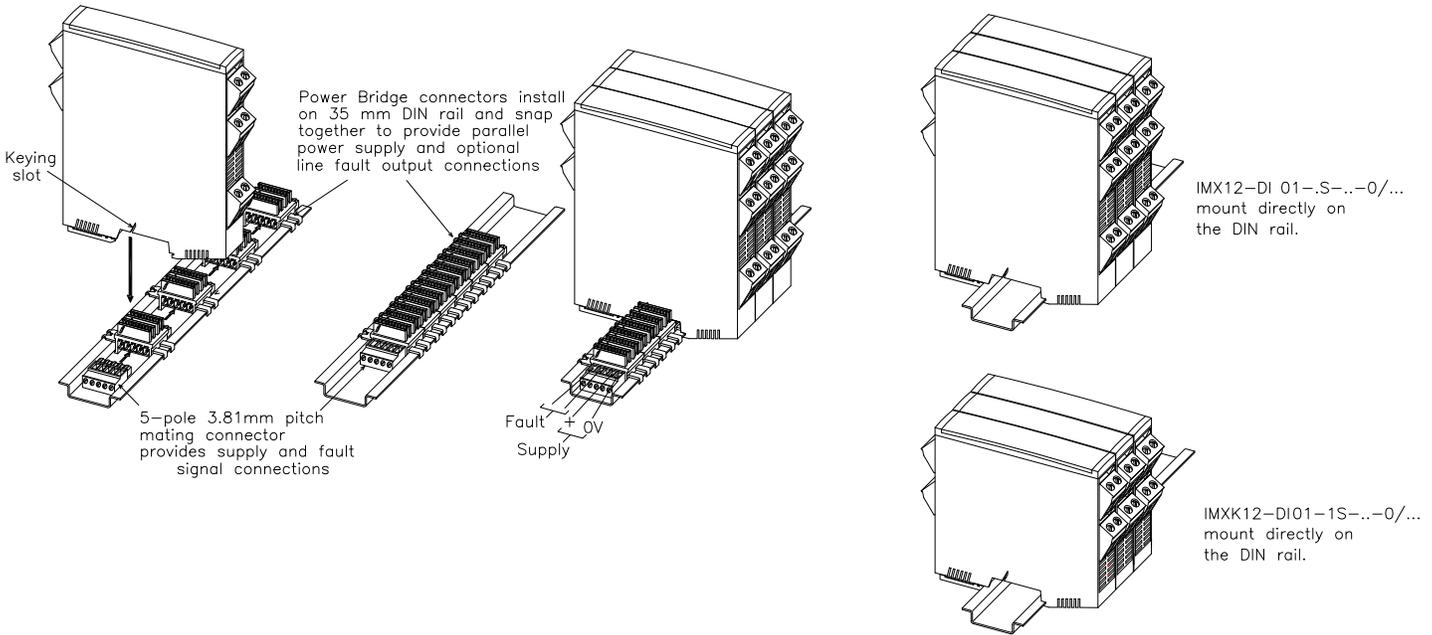
Drawing No.: IS-1.315		TURCK 3000 Campus Drive Plymouth, MN 55441 www.Turck.com	
Title: Control Drawing for UL Listed IMX(K)12-DI01-.S-...-./.. Discrete Input Isolated Barriers with I/S (Entity) Field Circuits			
Scale: NONE	Sheet 1 of 2		

Rev	Description	Drft	Chk	Date
C	Add IMXK devices	BVL		4/5/19
B	Add NAM and PP output types, line monitoring options	BVL		4/4/16
A	Release	BVL		9/10/15

- Notes:
1. Selected intrinsically safe equipment must be third party approved with correct entity parameters meeting the relations shown in Table 1, or simple apparatus.
 2. 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 the International Society of Automation Recommended Practice ISA RP12.6 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 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.
 5. 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.
 6. Control equipment must not use or generate more than 253V rms or dc.
 7. 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.
 8. WARNING: EXPLOSION HAZARD – Substitution of components may impair intrinsic safety.
 AVERTISSEMENT: RISQUE D'EXPLOSION – La substitution de composants peut compromettre la sécurité intrinsèque
 9. Connections: IMX12-DI01-S-...-PR/... devices may be connected to "Power Bridge" connectors installed on 35 mm DIN rail or attached directly to the DIN rail. IMX12-DI01-S-...-0/... and IMXK-DI01-1S-1.-0/... devices must be attached directly to the DIN rail.
 10. The maximum terminal tightening torque is 0.5 Nm.
 11. The barriers must be installed in a Pollution Degree 2 environment.
 12. The barriers must be installed in a final enclosure rated IP54 or better.
 13. The maximum installation altitude is 2000 meters.
 14. Use conductors rated 75°C minimum.

Table 1

I.S. Equipment	Barrier	I.S. Equipment	Barrier
V_{max}	$\geq V_{oc}$ (or V_t)	U_i	$\geq U_o$
I_{max}	$\geq I_{sc}$ (or I_t)	I_i	$\geq I_o$
$C_i + C_{cable}$	$\leq C_a$	$C_i + C_c$	$\leq C_a$
$L_i + L_{cable}$	$\leq L_a$	$L_i + L_c$	$\leq L_a$
P_i	$\geq P_o$		



CERTIFICATE OF COMPLIANCE

Certificate Number 20190719-E230865
Report Reference E230865-20150911
Issue Date 2019-July-19

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

**This certificate confirms that
representative samples of**

PROCESS CONTROL EQUIPMENT FOR USE IN
HAZARDOUS LOCATIONS
PROCESS CONTROL EQUIPMENT FOR USE IN ZONE
CLASSIFIED HAZARDOUS LOCATIONS
See Addendum Page

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

Standard(s) for Safety: See Addendum Page
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
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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.

USL - 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.

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

Switching amplifier, cat. nos. IMX12-DI; followed by 01- or 02- or 03-; followed by 1 or 2; maybe followed by S; followed by -; followed by 1 or 2; followed by R or NAM; maybe followed by 1R; followed by -; maybe followed by S; maybe followed by PR or 0; followed by /24VDC/; maybe followed by CC, providing intrinsically safe circuits for use in Hazardous Locations Class 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 No. IS-1.315.

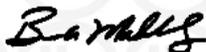
Switching amplifier, cat. nos. IMXK12-DI01-1S-1R-0/24VDC; maybe followed by /CC, providing intrinsically safe circuits for use in Hazardous Locations Class I, Division 1, Groups A, B, C and D; Class II Division 1, Groups E, F and G; Class III Division 1; and Zone 0, Group IIC when installed in accordance with Turck control drawing No. IS-1.315.

USL - 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.

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

Switching amplifier, cat. nos. IMX12-DI; followed by 01- or 02- or 03-; followed by 1 or 2; maybe followed by S; followed by -; followed by 1 or 2; followed by T or NAM or PP; maybe followed by 1T; followed by -; maybe followed by S; maybe followed by PR or 0; followed by /24VDC/; maybe followed by CC, providing intrinsically safe circuits for use in Hazardous Locations Class 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 No. IS-1.315.

Switching amplifier, cat. nos. IMXK12-DI01-1S-; followed by 1T- or 1PP-; followed by 0/24VDC; maybe followed by /CC, providing intrinsically safe circuits for use in Hazardous Locations Class 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 No. IS-1.315.



Bruce Mahrenholz, Director North American Certification Program

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

Relay coupler device, cat. no. IMX12-CD01-2R-2U-0/L; maybe followed by /CC, providing intrinsically safe circuits for use in Hazardous Locations Class 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 No. IS-1.321.

STANDARDS

Standard No. UL 913, 8th Ed., Revision 2018-12-10, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations

Standard No. UL 60079-0, 6th Ed., Issued 2013-07-26, Explosive atmospheres – Part 0: Equipment – General requirements

Standard No. UL 60079-11, 6th Ed., Rev. 2014-03-28, Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety “i”

Standard No. UL 60079-15, 4th Ed., Rev. 2013-08-02 Explosive atmospheres – Part 15: Equipment protection by type of protection ²n²

Standard No. UL 121201, Edition 9 - Issue Date 2017/09/15, Nonincendive Electrical Equipment for Use in Class I and II, Division 2 And Class III, Divisions 1 and 2 Hazardous (Classified) Locations

Standard No. UL 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements - Edition 3 - Issue Date 2012/05

Standard No. CAN/CSA-C22.2 No. 60079-0:2015, Third Edition, Issued 2015-10, Explosive atmospheres — Part 0: Equipment — General requirements

Standard No. CAN/CSA-C22.2 No. 60079-11:14, Second Edition, Issued 2014-02, Explosive atmospheres — Part 11: Equipment protection by intrinsic safety “i”

Standard No. CAN/CSA C22.2 No. 60079-15:16, Second Edition, Issued 2016-06, Electrical apparatus for explosive gas atmospheres — Part 15: Equipment Protection by Type of Protection “n”

Standard No. CSA C22.2 No. 213, Edition 3 - Issue Date 2017/09/01, Nonincendive Electrical Equipment for Use in Class I And II, Division 2 And Class III, Divisions 1 and 2 Hazardous (Classified) Locations

Standard CSA C22.2 No. 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General Requirements - Edition 3 - Issue Date 2012/05



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