



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEX TUN 14.0040X	Page 1 of 4	<u>Certificate history:</u>
Status:	Current	Issue No: 3	Issue 2 (2018-03-28)
Date of Issue:	2022-02-09		Issue 1 (2016-03-03)
Applicant:	Hans Turck GmbH & Co. KG Witzlebenstraße 7 45472 Mülheim Germany		Issue 0 (2014-12-19)
Equipment:	Isolating Switch Amplifier type IMX(K)12(18)-DI**_**_*****_***/24VDC/**		
Optional accessory:			
Type of Protection:	Intrinsic safety, increased safety, type of protection "n"		
Marking:	[Ex ia Ga] IIC [Ex ia Da] IIIC Ex ec [ia Ga] IIC T4 Gc Ex ec nC [ia Ga] IIC T4 Gc Ex ec [ia IIIC Da] IIC T4 Gc Ex ec nC [ia IIIC Da] IIC T4 Gc		

Approved for issue on behalf of the IECEx
Certification Body:

Thomas Heinen

Position:

Deputy Head of IECEx Certification Body

Signature:
(for printed version)

 Digital unterschrieben
von Heinen Thomas
Datum: 2022.02.09
17:06:50 +01'00'

Date:

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Germany





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Manufacturer: **Hans Turck GmbH & Co. KG**
Witzlebenstraße 7
45472 Mülheim
Germany

Additional manufacturing locations: **Werner Turck GmbH & Co. KG**
Goethestraße 7
58553 Halver
Germany

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2007-10](#) Explosive atmospheres - Part 0: Equipment - General requirements
Edition:5

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

[IEC 60079-15:2017](#) Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
Edition:5.0

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[DE/TUN/ExTR14.0053/03](#)

Quality Assessment Reports:

[DE/PTB/QAR06.0012/05](#)

[DE/PTB/QAR06.0013/08](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Description:

The Isolating Switch Amplifier type IMX(K)12(18)-DI**_**_****_***/24VDC/** is used for the transmission of binary signals out of the explosion hazardous area into the non-explosion hazardous area as well as for the safe galvanic separation between the intrinsically safe and the non-intrinsically safe circuits.

The device IMX12-DI**_**_****_***/24VDC/** is executed with 1 or 2 channels.

The device IMXK12-DI**_**_****_***/24VDC/** is executed with 1 channel.

The device IMX18-DI**_**_****_***/24VDC/** is executed with 4 channels

Electrical and thermal data:

See Attachment to IECEX TUN 40.0040X issue No.3

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. For EPL Gc applications the Isolating Switch Amplifier type IMX(K)12-DI**_**_****_***/24VDC/** has to be installed in a suitable enclosure according to IEC 60079-7 resp. IEC 60079-15 in such a way that a degree of protection of at least IP54 is achieved
2. For EPL Gc applications the Isolating Switch Amplifier type IMX(K)12-DI**_**_****_***/24VDC/** has to be erected in such a way that a pollution degree 2 or less, according to IEC 60664-1, is achieved.
3. For EPL Gc applications, the use of the switches on the front panel and the connection and disconnection of the terminals of non-intrinsically safe circuits is only permitted if no explosive atmosphere is present.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Proof of conformity of the Isolating Switch Amplifier type IMX(K)12(18)-DI**_**_*****_***/24VDC/** to the current versions of the standards IEC 60079-0:2017; IEC 60079-7:2017; IEC 60079-11:2011 and IEC 60079-15:2017

Annex:

[Attachment to IECEx TUN 14.0040X issue No. 3.pdf](#)

General product information:

Description:

The Isolating Switch Amplifier type IMX(K)12(18)-DI**_**_****_***/24VDC/** is used for the transmission of binary signals out of the explosion hazardous area into the non-explosion hazardous area as well as for the safe galvanic separation between the intrinsically safe and the non-intrinsically safe circuits.

The device IMX12-DI**_**_****_***/24VDC/** is executed with 1 or 2 channels.

The device IMXK12-DI**_**_****_***/24VDC/** is executed with 1 channel.

The device IMX18-DI**_**_****_***/24VDC/** is executed with 4 channels.

Type code and Marking:

IMX12-DI**_**_****_***/24VDC/** IMXK12-DI**_**_****_***/24VDC/** IMX18-DI**_**_****_***/24VDC/**	[Ex ia Ga] IIC [Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc Ex ec nC [ia Ga] IIC T4 Gc
	Ex ec [ia IIIC Da] IIC T4 Gc Ex ec nC [ia IIIC Da] IIC T4 Gc

Electrical data:

All versions of IMX12-DI**_**_****_***/24VDC/**:

Supply circuit For connection to non-intrinsically safe circuits with the following maximum values:
(X11-Terminals 15[+], 16[-]) U = 10 ... 30 V d.c; P ≤ 2 W
or X2-Terminals 4[+], 5[-] U_m = 253 V a.c / d.c

Transistor version IMX12-DI**_**_****T-***/24VDC/**:

Output circuits For connection to non-intrinsically safe circuits with the following maximum values:
(X14- Terminals 9[+], 10[-]) resp. U = 30 V d.c; I = 100 mA
(X13- Terminals 11[+], 12[-]) U_m = 253 V a.c / d.c

Failure signal output For connection to non-intrinsically safe circuits with the following maximum values:
(X2- Terminals 1, 2) U = 30 V d. c.; 100 mA; potential free contact
U_m = 253 V a. c. / d. c.

Relay version IMX12-DI**_**_****R-***/24VDC/**:

Output circuits For connection to non-intrinsically safe circuits with the following maximum values:
(Make contacts U = 250 V a.c; I = 2 A; S = 500 VA; P = 60 W
X14- Terminals 9, 10 U = 125 V d.c; I = 0.5 A resp.
X12- Terminals 13, 14 U = 30 V d.c; I = 2 A
Break contacts
X14- Terminal 9, X13- Terminal 12
X12- Terminal 13, X13- Terminal 11)

IMX12-DI01-2S-2PP:

Failure signal output For connection to non-intrinsically safe circuits with the following maximum values:
(X2- Terminals 1, 2) U = 30 V d. c.; 100 mA; potential free contact
U_m = 253 V a. c. / d. c.

Transistor output circuits For connection to non-intrinsically safe circuits with the following maximum values:
(X14- Terminals 9[+], 10[-]) U = 30 V d. c.; 10 mA
X13- Terminals 11[+], 12[-]) U_m = 253 V a. c. / d. c.

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IMX12-DI03-1S-1NAM1T(R):

Failure signal output
(X2- Terminals 1, 2)

For connection to non-intrinsically safe circuits with the following maximum values:

U = 30 V d. c.; 100 mA; potential free contact
U_m = 253 V a. c. / d. c.

Transistor output circuit
(X14-Terminals 9[+], 10[-])

For connection to non-intrinsically safe circuits with the following maximum values:

NAMUR, U = 8.2 V d. c.; 4 mA
U_m = 253 V a. c. / d. c.

Transistor version IMX12-DI03-1S-1NAM1T:

Transistor output circuit
(X13- Terminals 11[+], 12[-])

For connection to non-intrinsically safe circuits with the following maximum values:

U = 30 V d. c.; 100 mA
U_m = 253 V a. c. / d. c.

Relay version IMX12-DI03-1S-1NAM1R:

Output circuits
(Make contacts
X12-Terminals 13, 14
Break contacts
X12-Terminal 13, X13- Terminal 11)

For connection to non-intrinsically safe circuits with the following maximum values:

U = 250 V a.c; I = 2 A; S = 500 VA; P = 60 W
U = 125 V d.c; I = 0.5 A resp.
U = 30 V d.c; I = 2 A

IMX12-DI03-1S-2T(R):

Failure signal output
(X2-Terminals 1, 2)

For connection to non-intrinsically safe circuits with the following maximum values:

U = 30 V d. c.; 100 mA; potential free contact
U_m = 253 V a. c. / d. c.

Transistor version IMX12-DI03-1S-2T:

Transistor output circuits
(X14-Terminals 9[+], 10[-]
X13-Terminals 11[+], 12[-])

For connection to non-intrinsically safe circuits with the following maximum values:

U = 30 V d. c.; 100 mA
U_m = 253 V a. c. / d. c.

Relay version IMX12-DI03-1S-2R:

Output circuits
(Make contacts
X14-Terminals 9, 10
X12-Terminals 13, 14
Break contacts
X14- Terminal 9, X13- Terminal 12
X12- Terminal 13, X13- Terminal 11)

For connection to non-intrinsically safe circuits with the following maximum values:

U = 250 V a.c; I = 2 A; S = 500 VA; P = 60 W
U = 125 V d.c; I = 0.5 A resp.
U = 30 V d.c; I = 2 A

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All versions of IMX12-DI**_**_****_***/24VDC/**:

Input circuits (X24-Terminals 7[+], 8[-]) In type of protection intrinsic safety Ex ia IIC/IIIC with following maximum values per channel:

X23-Terminals 5[+], 6[-]
X23 Terminals not for the versions IMX12-DI03-1S-1NAM1T(R) and IMX12-DI03-1S-2T(R)

$U_o = 9.3 \text{ V}$
 $I_o = 9.6 \text{ mA}$
 $P_o = 22 \text{ mW}$
Characteristic line: linear
Effective internal capacitance C_i negligibly small
Effective internal inductance $L_i = 76.5 \mu\text{H}$

The maximum permissible values for the external inductance L_o and the external capacitance C_o can be taken from the following tables:

Ex ia IIC	L_o [mH]	1	5	10
	C_o [μF]	1.2	0.89	0.8

Ex ia IIIC (IIB)	L_o [mH]	1	10	20
	C_o [μF]	6.6	4.1	3.6

The maximum values of the following table are allowed to be used up to the permissible limits as cable reactances:

Ex ia IIC	L_o [mH]	100
	C_o [μF]	4.1

Ex ia IIIC (IIB)	L_o [mH]	100
	C_o [μF]	31

All versions of IMXK12-DI**_**_****_***/24VDC/**:

Supply circuit (X11-Terminals 7[+], 8[-]) For connection to non-intrinsically safe circuits with the following maximum values:
 $U = 20 \dots 30 \text{ V d.c.}; P \leq 2 \text{ W}$
 $U_m = 253 \text{ V a.c. / d.c}$

Transistor version IMXK12-DI01-1S-1T-0/24VDC/**:

Output circuit (X12-Terminals 5[+], 6[-]) For connection to non-intrinsically safe circuits with the following maximum values:
 $U = 30 \text{ V d.c.}; I = 100 \text{ mA}$,
 $U_m = 253 \text{ V a.c. / d.c}$

Failure signal output (X2-Terminals 1, 2) For connection to non-intrinsically safe circuits with the following maximum values:
 $U = 30 \text{ V d. c.}; 100 \text{ mA}$; potential free contact
 $U_m = 253 \text{ V a. c. / d. c.}$

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Relay version IMXK12-DI01-1S-1R-0/24VDC/**:

Output circuit (Make contacts X12-Terminals 5, 6) (Break contacts, not applicable)	For connection to non-intrinsically safe circuits with the following maximum values: U = 250V a.c; I = 2 A; S = 500 VA; P = 60 W U = 125V d.c; I = 0.5 A resp. U = 30 V d.c; I = 2 A
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Version IMXK12-DI01-1S-1PP-0/24VDC/**:

Transistor output circuit (X12-Terminals 5[+], 6[-])	For connection to non-intrinsically safe circuits with the following maximum values: U = 30 V d.c; I = 10 mA, U _m = 253 V a.c / d.c
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All versions of IMXK12-DI**_**_****_***/24VDC/**:

Input circuits (X22-Terminals 3[+], 4[-])	In type of protection intrinsic safety Ex ia IIC/IIIC with following maximum values per circuit: U _o = 9.3 V I _o = 9.6 mA P _o = 22 mW Characteristic line: linear Effective internal capacitance C _i negligibly small Effective internal inductance L _i = 76.5 μH
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The maximum permissible values for the external inductance L_o and the external capacitance C_o can be taken from the following tables:

Ex ia IIC	L _o [mH]	1	5	10
	C _o [μF]	1.2	0.89	0.8
Ex ia IIIC (IIB)	L _o [mH]	1	10	20
	C _o [μF]	6.6	4.1	3.6

The maximum values of the following table are allowed to be used up to the permissible limits as cable reactances:

Ex ia IIC	L _o [mH]	100
	C _o [μF]	4.1
Ex ia IIIC (IIB)	L _o [mH]	100
	C _o [μF]	31

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All version of IMX18-DI**-*-*-**/24VDC/**:

Supply circuit
(X11-Terminals 2[+], 3[-]) or
(X30-Terminals 1[+], 2[-])

For connection to non-intrinsically safe circuits with the following maximum values:
 $U = 10 \dots 30 \text{ V d.c.}; P \leq 2 \text{ W}$
 $U_m = 253 \text{ V a.c. / d.c}$

Transistor version IMX18-DI**-*-*-*T-*/24VDC/**:

Output circuits
(Channel 1:X14-Terminals 13[+], 14[-])
(Channel 2:X13-Terminals 16[+], 17[-])
(Channel 3:X14-Terminals 15[+], 18[-])
(Channel 4:X12-Terminals 20[+], 21[-])

For connection to non-intrinsically safe circuits with the following maximum values:
 $U = 30 \text{ V d.c.}; I = 100 \text{ mA}$
 $U_m = 253 \text{ V a.c. / d.c}$

Failure signal output
(X30-Terminals 5[+], 4[-])

For connection to non-intrinsically safe circuits with the following maximum values:
 $U = 30 \text{ V d.c.}; 100 \text{ mA}; \text{Potential-free contact}$
 $U_m = 253 \text{ V a.c. / d.c}$

Relais version IMX18-DI**-*-*-*R-*/24VDC/**:

Output circuits
(Make contacts)
(Channel 1:X14-Terminals 13[+], 14[-])
(Channel 2:X13-Terminals 16[+], 17[-])
(Channel 3:X14-Terminals 15[+], 18[-])
(Channel 4:X12-Terminals 20[+], 21[-])

For connection to non-intrinsically safe circuits with the following maximum values:
 $U = 250 \text{ V a.c.}; I = 2 \text{ A}; S = 500 \text{ VA}; P = 60 \text{ W}$
 $U = 125 \text{ V d.c.}; I = 0.5 \text{ A resp.}$
 $U = 30 \text{ V d.c.}; I = 2 \text{ A}$

Input circuits
(Channel 1:X24-Terminals 10[+], 11[-])
(Channel 2:X23-Terminals 7[+], 8[-])
(Channel 3:X22-Terminals 4[+], 5[-])
(Channel 4:X21-Terminals 1[+], 2[-])

In type of protection intrinsic safety Ex ia IIC/IIIC with following maximum values per circuit:

$U_o = 10.1 \text{ V}$
 $I_o = 11.2 \text{ mA}$
 $P_o = 28.3 \text{ mW}$
Characteristic line: linear
Effective internal capacitance C_i negligibly small
Effective internal inductance $L_i = 76.5 \mu\text{H}$

The maximum permissible values for the external inductance L_o and the external capacitance C_o can be taken from the following tables:

Ex ia IIC	L_o [mH]	1	5	10
	C_o [μF]	1.1	0.83	0.75
Ex ia IIIC (IIB)	L_o [mH]	1	10	20
	C_o [μF]	7.7	5.1	4.6

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The maximum values of the following table are allowed to be used up to the permissible limits as cable reactances:

Ex ia IIC	L _o [mH]	100
	C _o [μF]	2.8

Ex ia IIIC (IIB)	L _o [mH]	100
	C _o [μF]	19.4

The intrinsically safe signal circuit is safely galvanically isolated from the non-intrinsically safe circuits up to a peak voltage value of 375 V.

The intrinsically safe input circuits are galvanically connected to each other.

Thermal data:

Permissible ambient temperature range during operation $-25\text{ °C} \leq T_a \leq +70\text{ °C}$

Specific Conditions of Use:

1. For EPL Gc applications the Isolating Switch Amplifier type IMX(K)12-DI**_**_****_***/24VDC/** has to be installed in a suitable enclosure according to IEC 60079-7 resp. IEC 60079-15 in such a way that a degree of protection of at least IP54 is achieved.
2. For EPL Gc applications the Isolating Switch Amplifier type IMX(K)12-DI**_**_****_***/24VDC/** has to be erected in such a way that a pollution degree 2 or less, according to IEC 60664-1, is achieved.
3. For EPL Gc applications, the use of the switches on the front panel and the connection and disconnection of the terminals of non-intrinsically safe circuits is only permitted if no explosive atmosphere is present.

Details of change:

Proof of conformity of the Isolating Switch Amplifier type IMX(K)12(18)-DI**_**_****_***/24VDC/** to the current versions of the standards IEC 60079-0:2017; IEC 60079-7:2017; IEC 60079-11:2011 and IEC 60079-15:2017