



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 20.0010X	Page 1 of 4	<u>Certificate history:</u>
Status:	Current	Issue No: 3	Issue 2 (2023-07-20)
Date of Issue:	2024-02-28		Issue 1 (2021-04-14)
Applicant:	Hans Turck GmbH & Co KG Witzlebenstrasse 7 45472 Mülheim Germany		Issue 0 (2020-08-04)
Equipment:	Block I/O modules type TB**-L*-(Y)***(-Y****)(****), TBIL-M1-(Y)***(-Y****)(****) and TB**-S*-(Y)***(-Y****)(****)		
Optional accessory:			
Type of Protection:	Increased Safety "e", Equipment dust ignition protection by enclosure "t"		
Marking:	Ex ec IIC T4 Gc Ex tc IIIC T115 °C Dc		

Approved for issue on behalf of the IECEx
Certification Body:

Thomas Heinen

Position:

Deputy Head of the IECEx Certification Body

Signature:
(for printed version)

Date:
(for printed version)

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Hanover Office
Am TÜV 1, 30519 Hannover
Germany





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

Manufacturing
locations: **Werner TURCK GmbH & Co. KG**
Goethestraße 7
58553 Halver
Germany

Turck (Tianjin) Technology Co. Ltd.
No.23 Hongyuan Road, Xiqing District
Tianjin, 300381
China

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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-31:2022 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
Edition:3.0

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/ExTR20.0012/03

Quality Assessment Reports:

DE/PTB/QAR06.0012/06

DE/PTB/QAR06.0013/11



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Block I/O modules type TB**-L*-(Y)****(-Y****)(****), TBIL-M1-(Y)****(-Y****)(****) and TB**-S*-(Y)****(-Y****)(****) are used for factory automation and are prepared for fieldbus PROFIBUS-DP, CANopen, Modbus TCP, Ethernet/IP™, PROFINET and Ethercat. The IP67-modules are for use in harsh environments have glass-fiber reinforced plastic housings and metal-connectors, are fully potted, vibration and shock-proof.

The permissible ambient temperature range is -25 °C ... +60 °C.

See Attachment to IECEx tun 20.0010X issue No.3 for details.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. For EPL Gc, the block I/O modules type TB**-L*-(Y)****(-Y****)(****) may be installed in an area of not more than pollution degree 2 according to IEC 60664-1.
2. The connection and disconnection of all live electrical circuits and the operation of switches is only permitted during installation, for maintenance or repair purposes if there is no potentially explosive atmosphere. After setting the switches of the IP_address of the block I/O modules of type TB**-L*-(Y)****(-Y****)(****), the service window must be closed again in order to comply with the IP protection.
3. The metallic protective cover must be connected to the potential equalization in the explosion hazardous area.
4. The installation of the apparatus must not be performed in areas with critical influence of UV light.
5. The equipment has to be installed in such a way, that, under normal conditions of use, dangers from electrostatic charges are avoided.
6. All plug connectors have to be installed; not used connectors have to be protected with blind plugs.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

See Attachment to IECEx TUN 20.0010X issue No.3 for details.

Annex:

[Attachment to IECEx TUN 20.0010X issue No.3.pdf](#)

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Attachment to IECEx TUN 20.0010 X issue No.: 03

Product:

The Block I/O modules type TB**-L*(-Y)****(-Y****)(*****), TBIL-M1-(Y)****(-Y****)(***** and TB**-S*(-Y)****(-Y****)(***** are used for factory automation and are prepared for fieldbus PROFIBUS-DP, CANopen, Modbus TCP, Ethernet/IP™, PROFINET and Ethercat. The IP67-modules are for use in harsh environments have glass-fiber reinforced plastic housings and metal-connectors, are fully potted, vibration and shock-proof.

Type designation:

TBXX	-XX	-(Y)XXXX	(-YXXXX)	(XXXXX)	
					Software Firmware
					Nicht Zulassungsrelevant
					Y -> Anzahl I-O / Technologie Typ:
					DIN: digital in NPN; DIP: digital in PNP; DON: digital out NPN; DOP: digital out PNP; DXN: digital crossfunc. NPN; DXP: digital crossfunc. PNP; crossfunc. FDI: safe digital in
					RFID IOL EN1: HW von 16DIP FDIO1: Safe digital In-Out PLC;SE:switch ethernet FDX: safe digital AO,AI: analog
					Y -> Anzahl I-O / Technologie Typ
					Gehäuse Ausführung
					L Large M Medium S Small
					4: 7/8 4Pol; 5: 7/8 5Pol; L: M12 5Pol; 1: (wie 5) alt; 2: (wie 5) mit serieller Kom. 1: 1x IO-Link M12 8 x E/A M12 1: 8xM8; 2: 4xM12
					Turck Box/Protokoll
					DP EC EN IL IP PN
					Profibus Ethercat Ethernet Multiprotokoll I/O Link Ethernet IP Profinet

The type code for qualified confectioned cables to ensure the tightness of the housing are:
7/8" and M12 power supply cable:

Grip Body					Cable Length					Wildcard Extension Cable					Cable Quality				
R	K	M	4	3	-	5M	-	RSM	/										
a	b	c	d	e		f		g											
a	R					straight													Alignment
b	K					angled													Design
c	M					Female													
	V					Male													
	M					Nickel-plated brass													Coupling nut
	P					Stainless steel													
	S					Plastic housing													Housing
	S					Shielded													
d	4					4-pin, 4-wire													
	5					5-pin, 5-wire													
	46					4 × 16 AWG 1.5 mm ²													
	44					4 × 14 AWG 2.5 mm ²													
	56					5 × 16 AWG 1.5 mm ²													
	54					5 × 14 AWG 2.5 mm ²													
e	3					Serial number													
	2																		
	PLA					Power designation, L-Coded, Design													
f	...					...													Cable Length [m]
g	blank					Connection cable													
	RSM43					Extension cable (Example) Grip Body													Cable Type
h						blank													Standard

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Ethernet M12 cable:

Grip Body						Wildcard Extension Cable		Cable Quality		Cable Length
R	S	S	*	D	-	*	-	4422	/	5M
a	b	c	d	e		f		g		h
a	R	W				straight angled				Alignment
b	S					Male				Design
c	S					Shield auf Coupling nut				Shield
d	blank					Standard				Flang Design
e	D	X				D-coded X-coded				Coding
f	blank	WSSD				Connection cable Extension cable (Example) Grip Body				Cable type
g	4422					44...PUR green 84...PUR green 88...PUR green				Cable Quality
h	...M					...m				Cable Length [m]

PROFIBUS M12 cable:

Grip Body						Wildcard Extension Cable		Cable type/-qualität		Cable Length
R	S	S	W	V	-	*	-	451	/	5M
a	b	c	d	e		f		g		h
a	R	W				straight angled				Alignment
b	S	K				Male Female				Design
c	S					Shield auf Coupling nut				Shield
d	W					B-coded				Coding
e	blank	V				Nickel-plated brass Stainless steel				Coding
f	blank	WSSD				Connection cable Extension cable (Example) Grip Body				Cable type
g	451					451 PROFIBUS-DP PUR, qualified for drag chain use				Cable type/-quality
h	...M					...m				Cable Length [m]

RFID M12 cable:

Grip Body				Cable Length		Wildcard Extension Cable		Cable Quality
R	K	4.5T	-	5M	-	RS4.5T	/	S2503
a	b	c		d		e		f
a	R	W				straight angled		Alignment
b	K	S				Female Male		Design
c	4.5T					5-pin		Pole
d	...M					...m		Cable Length [m]
e	blank	RS4.5T				Connection cable Extension cable (Example) Grip Body		Cable type
f	S2500	S2503				PUR, yellow qualified for drag chain use PUR, black qualified for drag chain use		Cable Quality

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Sensor M12 cable:

Grip Body						Cable Length		Wildcard Extension Cable		Cable Quality	
R	S	S	V	4.4	T	-	5m	-	*	/	TXL
a	b	c	d	e	f		g		h		i
a	R						straight				Alignment
	W						angled				
b	S						Male				Design
	K						Female				
c	C						Standard				Housing
	S						Shield auf Coupling nut				
	H						Hygienic design (incl. Stainless steel nut)				
d	blank						Nickel-plated brass				Coupling nut
	V						Stainless steel				
e	4.4						4-pin, 4-wire				Pins and wires
	4.5						5-pin, 5-wire				
f	T						Sleeve				Design
g	...M						...m				Cable Length [m]
h	blank						Connection cable				Cable type
	RWSC4.4T						Extension cable (Example) Grip Body				
i	TXL						PUR, black, halogen-free				Cable Quality

M8 cable:

Grip Body						Cable Length		Wildcard Extension Cable		Cable Quality	
P	K	G	S	3	M	-	5m	-	*	/	TXL
a	b	c	d	e	f		g		h		i
a	P						M8/Ø 8 mm				Connector
b	S						Male				Design
	K						Female				
c	G						straight				Alignment
	W						angled				
d	blank						Nickel-plated brass				Coupling nut
	V						Stainless steel				
	H						Hygienic design (incl. Stainless steel nut)				
	S						Nut, Nickel-plated brass, shielded				
e	3						3-pin, 3-wire				Pins and wires
	4						4-pin, 4-wire				
f	M						Metric				Lock
g	...M						...m				Cable Length [m]
h	blank						Connection cable				Cable type
	PSR4M						Extension cable (Example) Grip Body				
i	TXL						TXL PUR, black, halogen-free TXG PUR, gray, halogen-free TXO PUR, orange, halogen-free TXY PUR, yellow, halogen-free				Cable Quality

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Ethernet M8 cable:

Grip Body							Wildcard Extension Cable			Cable Quality			Cable Length	
P	S	G	*	3	M	-	*		-	4422		/	5M	
a	b	c	d	e	f		g			h			i	
a	P					M8/Ø 8 mm							Connector	
b	S					Male							Design	
c	G W					straight angled							Alignment	
d	blank V H S					Nickel-plated brass Stainless steel Hygienic design (incl. Stainless steel nut) Nut, Nickel-plated brass, shielded							Coupling nut	
e	3 4					3-pin, 3-wire 4-pin, 4-wire							Pins and wires	
f	M					Metric							Lock	
g	blank PSG3M					Connection cable Extension cable (Example) Grip Body							Cable type	
h	4422					44...PUR green 84...PUR green 88...PUR green							Cable Quality	
i	...M					...m							Cable Length [m]	

Electrical data:

TB-L*(Y)****(-Y****)(****):**

P-switching:

$U_n = 24 \text{ V d.cc } \pm 10 \%$

$I_{\max}$ (total per module) = 9 A

$I_{\max} = 1.5 \text{ A}$ (per output) DI(P), DOP, DX(P), RFID, IOL, PLC, SE

The electrical data for the Safety-Modules have to be taken from the data sheet

N-switching:

$U_n = 24 \text{ V d.c. } \pm 10 \%$

$I_{\max}$ (total per module) = 9 A

$I_{\max} = 1.0 \text{ A}$ (per output) DIN, DON, DXN

TBIL-M1-(Y)**(-Y****)(****):**

$U_n = 24 \text{ V d.c. } \pm 10 \%$

$I_{\max}$ (total per module) = 4 A

$I_{\max}$ (per channel DIP, DOP, DXP) = 0.5 A;

for TBIL-M1-16DXP-B variant: $I_{\max}$ (per connector) = 1.5 A

TB-S*(Y)****(-Y****)(****):**

$U_n = 24 \text{ V d.c. } \pm 10 \%$

with digital I/Os:

$I_{\max}$ (total per module) = 5.5 A

$I_{\max}$ (per output) for DIP, DOP, DXP, RFID, IOL = 0.5 A

with analog I/Os:

$I_{\max}$ (total per module) = 5.5 A

$I_{\max}$ (C0-C3 Supply of sensors or actuators per connector) = 1 A

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Thermal data:

The permissible ambient temperature range during operation is -25 °C...+60 °C.

Details of Change:

Proof of conformity of the block I/O modules type TB**-L*-(Y)***(-Y****)(****), TBIL-M1-(Y)***(-Y****)(****) and TB**-S*-(Y)***(-Y****)(****) (previously named TBEN-S*-(Y)***(-Y****)(****)) to the standard IEC 60079-0:2017; IEC 60079-7:2017 and IEC 60079-31:2022 by considering the following changes:

•

IECEx TUN 20.0010X issue No.0...2	IECEx TUN 20.0010X issue No.3
<u>Material of the used contact carriers of M8/M12:</u> - Elastolla®n C85A und Elastollan® C64D from Elastogran GmbH BASF Gruppe - TE250F6 from DSM Engineering Materials B V - Wellamid 6600-PA66-GV20 from CP-POLYMER-Technik GMBH & CO KG - Radiflam A FRX from Radicinovacips SPA	<u>Material of the used contact carriers of M8/M12:</u> LCPA-R40G2508 from KINGFA SCI & TECH CO LTD

- Alternative sockets from the company Degson for M12, with the same design as previously, were used:

IECEx TUN 20.0010X issue No.0...2	IECEx TUN 20.0010X issue No.3
<u>M12-socket:</u> Manufacturer Escha	<u>M12-socket:</u> Manufacturer Degson

- New materials used:

IECEx TUN 20.0010X issue No.0...2	IECEx TUN 20.0010X issue No.3
<u>Casting compound:</u>	
WEVOPUR 552 FL + WEVONAT 300 from WEVO Chemie GmbH	alternative RAKU-PUR® 21-2360-1 from RAMPF Giessharze GmbH & Co. KG
<u>M12-Connection seal:</u>	
- FPM/Viton rot from DDT Dichtungstechnik GmbH - FPM70C5-032RE from SHS Dichtungen GmbH	VT7001 / VT67Y01 from xiamen hongyangxin rubber technology co. ltd

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Further changes to the previous approvals have been taken into account:

- The approval is to be extended to include the product variants listed below that have a new PCB and are used in the same and already approved housings.

TB**-L*-(Y)***(-Y****)(****)	TB**-S*-(Y)***(-Y****)(****)
TBEN-L4-4RFID-8DXP-CDS-WV	TBEN-S1-8DIP-D
TBEN-LL-8IOL	TBEN-S2-2RFID-4DXP/C64
TBEN-LL-SE-M2	TBEC-S2-4RFID
TBEN-L4-SE-U1	---
TBEN-LL-SE-U1	---
TBEN-LL-16DOP	---
TBEN-LL-16DIP	---
TBEN-LL-8DIP-8DOP	---
TBEN-LL-16DXP	---
TBEN-LL-EN1	---
TBPN-LL-FDIO1-2IOL	---
TBIP-LL-FDIO1-2IOL	---
TBPN-LL-4FDI-4FDX	---
TBIP-LL-4FDI-4FDX	---
TBEN-LL-4FDI-4FDX	---
TBPS-LL-4FDI-4FDX	---
TBCS-LL-4FDI-4FDX	---
TBEN-L4-8IOLA	---
TBEN-LL-8IOLA	---
TBEC-LL-8IOL	---

- M12 power supply cable as well as alternative M8 and M12 Ethernet cables are to be qualified.
- Type code for tested cables added.

Special conditions for safe use

- For EPL Gc, only the block I/O module type TB**-L*-(Y)***(-Y****)(****) may be installed in an area of not more than pollution degree 2 according to IEC 60664-1.
- The connection and disconnection of all live electrical circuits and the operation of switches is only permitted during installation, for maintenance or repair purposes if there is no potentially explosive atmosphere.
 After setting the switches of the IP_address of the block I/O modules of type TB**-L*-(Y)***(-Y****)(****), the service window must be closed again in order to comply with the IP protection.
- The metallic protective cover must be connected to the potential equalization in the explosion hazardous area.
- The installation of the apparatus must not be performed in areas with critical influence of UV light.
- The equipment has to be installed in such a way, that, under normal conditions of use, dangers from electrostatic charges are avoided.
- All plug connectors have to be installed; not used connectors have to be protected with blind plugs.