



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
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Germany





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

Manufacturing locations: **Werner TURCK GmbH & Co. KG** **Turck (Tianjin) Technology Co. Ltd.**
Goethestraße 7 No.23 Hongyuan Road, Xiqing District
58553 Halver Tianjin, 300381
Germany 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.

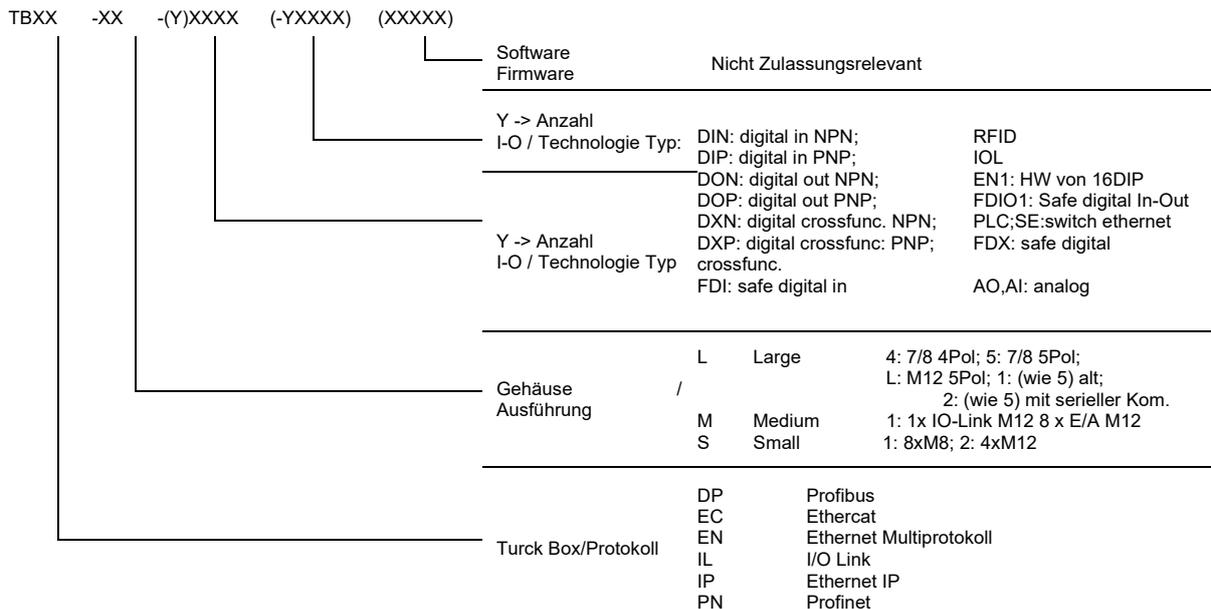
Annex:

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

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:



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		h	
a	R W					straight angled						Alignment	
b	K S					Female Male						Design	
c	M MV	7/8"				Nickel-plated brass Stainless steel						Coupling nut	
	P S	M12				Plastic housing Shielded						Housing	
d	4 5	7/8"				4-pin, 4-wire 5-pin, 5-wire						Pins and wires	
	46 44 56 54	M12				4 × 16 AWG 1.5 mm ² 4 × 14 AWG 2.5 mm ² 5 × 16 AWG 1.5 mm ² 5 × 14 AWG 2.5 mm ²							
	3 2	7/8"				Serial number							Coding
	PLA	M12				Power designation, L-Coded, Design							
f	...M					...m						Cable Length [m]	
g	blank RSM43					Connection cable Extension cable (Example) Grip Body						Cable Type	
h						blank						Standard	

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				Cable Quality
							TXG PUR, gray, halogen-free				
							TXO PUR, orange, halogen-free				
							TXY PUR, yellow, halogen-free				

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					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	blank					Connection cable		Cable type			
	PSG3M					Extension cable (Example) Grip Body					
h	4422					44...PUR green		Cable Quality			
						84...PUR green					
						88...PUR green					
i	...M					...m		Cable Length [m]			

Electrical data:

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

P-switching:

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

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

$I_{max} = 1.5 \text{ A}$ (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:

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

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

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

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

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

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

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

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

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

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

with digital I/Os:

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

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

with analog I/Os:

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

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

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> <ul style="list-style-type: none"> • 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> <ul style="list-style-type: none"> • 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>	
<ul style="list-style-type: none"> • WEVOPUR 552 FL + WEVONAT 300 from WEVO Chemie GmbH 	alternative <ul style="list-style-type: none"> • RAKU-PUR® 21-2360-1 from RAMPF Giessharze GmbH & Co. KG
<u>M12-Connection seal:</u>	
<ul style="list-style-type: none"> • FPM/Viton rot from DDT Dichtungstechnik GmbH • FPM70C5-032RE from SHS Dichtungen GmbH 	<ul style="list-style-type: none"> • 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.