

INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC Certification System for Explosive Atmospheres

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

Certificate No .:	IECEx BVS 22.0043X	Page 1 of 4	Certificate history:
Status:	Current	Issue No: 1	Issue 0 (2023-02-10)
Date of Issue:	2023-12-19		
Applicant:	BECKHOFF Automation GmbH & Co. KG Huelshorstweg 20 33415 Verl Germany		
Equipment:	EtherCAT Box type EPX****-****-****		
Optional accessory:			
Type of Protection:	Intrinsic Safety "i", Protection by Enclosu	ure "t", Increased Safety "e"	
Marking:	Ex ec [ia Ga] IIC T4 Gc Ex tc [ia Da] IIIC T135°C Dc [Ex ia Ma] I		
Approved for issue o Certification Body:	n behalf of the IECEx	Dr Franz Eickhoff	
Position:		Senior Lead Auditor, Certification Manager recognised expert	and officially
Signature: (for printed version)		P. 00.00	
Date: (for printed version)		2023-12-19	
 This certificate and s This certificate is not The Status and auth 	schedule may only be reproduced in full. t transferable and remains the property of the issuing bo enticity of this certificate may be verified by visiting www	ody. v.iecex.com or use of this QR Code.	
Certificate issued	l by:		

DEKRA Testing and Certification GmbH Certification Body Dinnendahlstrasse 9 44809 Bochum **Germany**





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Date of issue:	2023-12-19	Issue No: 1
Manufacturer:	BECKHOFF Automation GmbH & Co. KG Huelshorstweg 20 33415 Verl Germany	
Manufacturing locations:	BECKHOFF Automation GmbH & Co. KG Huelshorstweg 20 33415 Verl Germany	
This certificate is issu	led as verification that a sample(s), representative of production, wa	as assessed and tested and found to comply with the

Inis 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 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-31:2022 Edition:3.0	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7:2017 Edition:5.1	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
	This Certificate does not indicate compliance with safety and performance requirem

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/BVS/ExTR23.0002/01

Quality Assessment Report:

DE/BVS/QAR16.0010/07



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Subject and Type

See Annex

Description

See Annex

Parameters

See Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

- Transient protection shall be provided that is set at a level not exceeding 140 % of the peak rated voltage value at the supply terminals 1 to the equipment.
- 2 The apparatus may only be connected to SELV / PELV-circuits according to IEC 60950.
- 3 The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1.
- 4 The equipment shall not be exposed to direct sunlight.
- 5 The EtherCAT Box must be operated in such a way that it is protected from mechanical hazards, for example by installation of the protective housing BG2000-0020.
- Only accessories listed above may be used with the EtherCAT Box type EPX****-****. 6
- 7 The EtherCAT Box must be protected from the risk of electrostatic charge in EPL Gc. The following equipment must be protected from the risk of electrostatic charge under normal conditions of use in EPL Ga:

Power cables – ZK2020-****-****

- ZK2020-34xx-0xxx ٠
- ZK2020-31xx-0xxx
- ZK2020-33xx-0xxx •
- . ZK2020-32xx-0xxx

Sensor Actuator Cables – ZK2000-****-****

- ZK2000-61xx-6xxx ٠
- ZK2000-63xx-0xxx
- ZK2000-51xx-0xxx
- ZK2000-53xx-0xxx •
- ZK2000-61xx-0xxx

Other:

ZC2000-0000-0050



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Approval of the new box type EPX3184-0022-**** ٠

- Additional cables were approved •
- A protective housing was approved
- Functional modifications to the O-board of the EPX box EPX3158-0022 Redesign of the lower board EPX0020U.2-V1 to EPX0020U.4-V1 •
- •

Annex:

BVS_22_0043X_Beckhoff_Annex_issue1_.pdf





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General product information:

Subject and Type

EtherCAT Box type EPX****-****

Instead of the *** in the complete denomination letters and numerals will be inserted which characterize the different modifications:

Type EPX * * * * - * * * * - * * *

1058	8-channel digital input box NAMUR		 	
3158	8-channel analog input box 4 20 mA			
318/	4-channel analog input box 4 20 mA HART			
3104	4-channel analog input box 420 mA, HART			
0022	wide body housing, M12 connectors			
0092	wide body housing, M12 connectors,			
	TwinSAFE SC			
Softwa	ire revision			
(Not E	x-relevant, for information purposes only)			

Description

The EtherCAT Box type EPX****-**** is an I/O module with input connectors rated in the type of protection "ec" resp. "tc" (supply connectors).

Their intrinsically safe output circuits, type of protection Ex ia, can be led into areas which require EPL Ga, EPL Da or EPL Ma equipment.

The fully encapsulated electronics are built into a plastic housing with IP67.

EtherCAT Box type EPX****-**** can only be used with the listed accessories:

EtherCAT cables - ZK1090-****-****

Designation of the test line	Designation of the product series
ZK1090-3100-1010	ZK1090-31xx-1xxx
ZK1090-3100-0005	ZK1090-31xx-0xxx
ZK1090-3300-0100	ZK1090-33xx-0xxx
ZK1090-3191-2020	ZK1090-31xx-2xxx
ZK1090-3100-6010	ZK1090-31xx-6xxx

Power cables – ZK2020-****-****

Designation of the test line	Designation of the product series
ZK2020-3400-0005	ZK2020-34xx-0xxx*
ZK2020-3100-0010	ZK2020-31xx-0xxx*
ZK2020-3200-6010	ZK2020-32xx-6xxx
ZK2020-3132-6005	ZK2020-31xx-6xxx
ZK2020-3300-0050	ZK2020-33xx-0xxx*
ZK2020-3200-0020	ZK2020-32xx-0xxx*
ZK2027-3132-0020	ZK2027-31xx-0xxx
ZK2027-3200-0010	ZK2027-32xx-0xxx





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* see Specific Conditions of Use 7.

Sensor Actuator Cables - ZK2000-****-****

Designation of the test line	Designation of the product series
ZK2000-6100-6020	ZK2000-61xx-6xxx*
ZK2000-6300-0020	ZK2000-63xx-0xxx*
ZK2000-5100-0003	ZK2000-51xx-0xxx*
ZK2000-5300-0010	ZK2000-53xx-0xxx*
ZK2000-6100-0005	ZK2000-61xx-0xxx*
ZC1066-0000-0001	ZC1064-0000-000x*
	ZC1065-0000-000x*
	ZC1066-0000-000x*

* see Specific Conditions of Use 7.

Protections Caps ZS5000-****-****

- ZS5000-0014
- ZS5000-0010
- ZS5000-0020

Protective housing BG2000-0020

Other

Designation of the test line	Designation of the product series
ZC2000-0000-0250	ZC2000-0000-0050

Listing of all components used referring to older standards

None

Parameters

1 Non-intrinsically safe circuits in level of protection ec or tc

- Power supply circuits:
 - Power supply connector, M8 plug, 4 pin (IN)
 - Power supply connector, M8 socket, 4 pin (OUT)
- EtherCAT circuits
 - EtherCAT connector M8 socket, 4 pin, green (IN)
 - EtherCAT connector M8 socket, 4 pin, green (OUT)

For each non-intrinsically safe circuit, the following values apply:

Rated nominal input voltage

 Control voltage Peripheral voltage Rated maximal input current 	Us	DC	24 (-15%/+2	20%) V
	Up	DC	24 (-15%/+2	20%) V
Control currentPeripheral current	ls	DC	4	A
	IP	DC	4	A
Maximum voltage	Um	DC	60	V





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2 Intrinsically safe output circuits in level of protection "ia" for connection of intrinsically safe sensors or actuators

2.1 Type **EPX1058-0022-******

Channel 1: M12 socket, 5 pin, X01 Pin 1 (Uv1); Pin 4 (Input1) Channel 2: M12 socket, 5 pin, X02 Pin 11 (Uv2), Pin 14 (Input2) Channel 3: M12 socket, 5 pin, X03 Pin 21 (Uv3), Pin 24 (Input3) Channel 4: M12 socket, 5 pin, X04 Pin 31 (Uv4), Pin 34 (Input4)

Channel 5: M12 socket, 5 pin, X05 Pin 6 (Uv5), Pin 9 (Input5) Channel 6: M12 socket, 5 pin, X06 Pin 16 (Uv6), Pin 19 (Input6) Channel 7: M12 socket, 5 pin, X07 Pin 26 (Uv7), Pin 29 (Input7) Channel 8: M12 socket, 5 pin, X08 Pin 36 (Uv8), Pin 39 (Input8)

(the remaining pins are not used)

Each channel

Maximum output voltage	Uo	10.72	V
Maximum output current	lo	10.4	mΑ
Linear output characteristics			
Maximum output power	Po	28	mW

Maximum external capacitance Co or maximum external inductance Lo:

		IIA	IIB / IIIC	IIC
C₀ [µF]	58	66	15	2.14
L₀ [mH]	100	100	100	100

The cable capacitance $C_c = 200 \text{ pF/m}$ and the cable inductance $L_c = 1 \mu\text{H/m}$ depending on the cable length have not yet been taken into account.

2.2 Type **EPX3158-0022-******

Channel 1: M12 socket, 5-pin, X01 Pin 1 (UV1), Pin 2 (Input1), Pin 3 (Ground1) Channel 2: M12 socket, 5-pin, X02 Pin 11 (UV2), Pin 12 (Input2), Pin 13 (Ground2) Channel 3: M12 socket, 5-pin, X03 Pin 21 (UV3), Pin 22 (Input3), Pin 23 (Ground3) Channel 4: M12 socket, 5-pin, X04 Pin 31 (UV4), Pin 32 (Input4), Pin 33 (Ground4) Channel 5: M12 socket, 5-pin, X05 Pin 6 (UV5), Pin 7 (Input5), Pin 8 (Ground5) Channel 6: M12 socket, 5-pin, X06 Pin 16 (UV6), Pin 17 (Input6), Pin 18 (Ground6) Channel 7: M12 socket, 5-pin, X07 Pin 26 (UV7), Pin 27 (Input7), Pin 28 (Ground7) Channel 8: M12 socket, 5-pin, X08 Pin 36 (UV8), Pin 37 (Input8), Pin 38 (Ground8)

(the remaining pins are not used)

Each channel:

Maximum output voltage	Uo	27	V
Maximum output current	lo	80	mA
Linear output characteristics			
Maximum output power	Po	540	mW

Maximum external capacitance Co or maximum external inductance Lo:

		IIA	IIB / IIIC	IIC
C₀ [µF]	3.75	2.33	0.705	0.09
L₀ [mH]	49	35	21	2.8

The cable capacitance $C_c = 200 \text{ pF/m}$ and the cable inductance $L_c = 1 \mu\text{H/m}$ depending on the cable length have not yet been taken into account.



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2.3 Type **EPX3184-0022-******

Channel 1: M12 socket, 5 pin, X01 Pin 1 (Uv1); Pin 2 (I_CH1) Channel 2: M12 socket, 5 pin, X02 Pin 11 (Uv2), Pin 12 (I_CH2) Channel 3: M12 socket, 5 pin, X03 Pin 6 (Uv3), Pin 7 (I_CH3) Channel 4: M12 socket, 5 pin, X04 Pin 16 (Uv4), Pin 17 (I_CH4)

Each channel

Maximum output voltage	Uo	27	V
Maximum output current	Io	79	mA
Linear output characteristics Maximum output power	Po	534	mW

Maximum external capacitance Co or maximum external inductance Lo:

	1	IIA	IIB / IIIC	IIC
C₀ [µF]	3.75	2.33	0.705	0.09
L₀ [mH]	49	35	21	2.8

The cable capacitance $C_c = 200 \text{ pF/m}$ and the cable inductance $L_c = 1 \mu \text{H/m}$ depending on the cable length have not yet been taken into account.

3	Ambient temperature range	T _a	-25 °C 70 °C
5	Amplent temperature range	Ia	-20 0 10 0

4 Ingress protection

IP67