

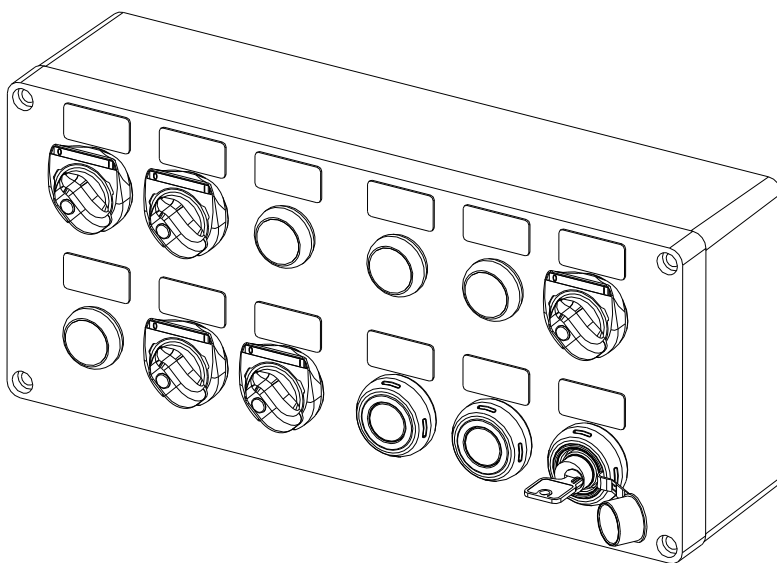
CONTROL PANEL

TYPE 07-31** - **** / **** / ***

INSTRUCTION MANUAL NO. BP/10/06/20



EXPROTEC



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1. Introduction

Control panel type 07-31**_**_****/****/*** is designed to control, control or visualise the operation of automation machines and equipment. The product is adapted for connecting intrinsically and non-intrinsically safe electrical circuits, i.e.: data transmission, control systems, power supply, video surveillance, etc. The boxes are also used for connecting and branching incoming and outgoing wires using certified connection terminals. Depending on the need, explosion-proof or regular electrical components and assemblies are installed in the units according to the specific installation conditions. The modular design allows several housings to be combined into a single, integrated control panel. The boxes are made of black polyester reinforced with glass fibre or of stainless steel. The panel housing is closed by a cover or door. In addition, the panel cover can be equipped with a sight glass. All control panel chambers are of Ex e type.

The product may be used in underground mines in workings classified as class "a", "b" or "c" methane explosion hazard and class "A" or "B" coal dust explosion hazard.

The product in the accompanying device version may be operated in underground mines in workings classified as class "a" methane explosion hazard and class "A" coal dust explosion hazard.

The product may be used in explosive gas atmospheres falling within zone 0, 1 or 2 (G) and may be used in a location where dust explosive atmospheres falling within zone 21 or 22 (D) occur.

2. Type designation

07-31 ****** **-** ****** / ****** **/** *******

Version	Code	Dimensions of the housing LxBxH mm	Code	Housing	Code
polyester with cover	03 ^{*)}	100x100x60	1001/0006	Zone 0,1 and 21	none
polyester with doors	09	150x150x80	1501/5008	Zone 2	3G
304 stainless steel with cover	11	400x150x80	4001/5008	Zone 22	3D
304 stainless steel with doors	13	200x200x80	2002/0008	Zone 2 and 22	3GD
304 stainless steel with cover (sight glass)	30	300x200x80	3002/0008		
316 stainless steel with cover	32	150x150x100	1501/5010		
304 stainless steel with door (sight glass)	34	200x200x120	2002/0012		
316 stainless steel with doors	36	300x200x120	3002/0012		
304 stainless steel with doors	48	400x200x120	4002/0012		
304 stainless steel with doors, covers (sight glass)	50 ^{*)}	600x200x120	6002/0012		
		300x300x120	3003/0012		
		300x300x160	3003/0016		
		380x380x160	3803/8016		
		400x200x160	4002/0016		
		400x400x160	4004/0016		
		200x300x150	2003/0015		
		380x300x155	3803/0015		
		300x380x210	3003/8021		
		400x400x210	4004/0021		
		400x600x210	4006/0021		
		600x600x210	6006/0021		
		600x760x210	6007/6021		
		600x800x300	6008/0030		
800x800x300	8008/0030				
800x1000x300	8001/00030				
1000x1000x300	10001/00030				
1000x1200x300	10001/20030				
1200x1000x300	12001/00030				
1200x1000x400	12001/00040				

Unusual housing sizes

- as requested by the client.

^{*)} - standard variants,

housing manufacturer – see table 9.

3. Technical data

Table 1. Technical specifications

Design features:		
07-3103-****/****/****	glass-fibre reinforced polyester	—
07-3109-****/****/****		
07-3113-****/****/****	304 stainless steel	—
07-3130-****/****/****		
07-3134-****/****/****		
07-3148-****/****/****		
07-3150-****/****/****		
07-3132-****/****/****	316 stainless steel	—
07-3136-****/****/****		
Explosion protection marking ^{*)}	see table 2	
EU-type examination certificate	OBAC 04 ATEX 277X	—
Protection rating	IP65/IP66	—
Installation position	support structure	—
Connected cable cross-section	0.5..16	mm ²
Sizes of cable glands	M16x1,5; M20x1,5; M25x1,5; M32x1,5; M40x1,5; M50x1,5; M63x1,5.	—
Range of cable glands	3..48	mm
Dimensions	up to 1200x1000x400	mm
Weight	depending on size and equipment	kg

^{*)} Explosion-proof design marking specified in a separate table.

Operating conditions:		
Altitude above sea level		up to 1000 m
Ambient temperature (for EPDM gasket)		-20..+40 °C
Ambient temperature (for SILICONE gasket)		-55..+55 °C
Relative humidity at 35°C		up to 95 %
Transport temperature		-20..+60 °C
Relative humidity for transport		up to 95 %
Mechanical exposures – frequency		10..55 Hz
Mechanical exposures – amplitude		0.35 mm
Vibration resistance (10...55Hz)		5 g
Impact strength		7 Nm
Surface resistance of polyester housing	Ro	< 10 ⁹ Ω
Operation position		any position (avoid fixing with glands upwards)
Type of operation		continuous

Basic parameters:			
Rated voltage	Um	250	V AC
	Um	250	V DC
Maximum current per circuit	Im	16	A
Number of terminals		according to the customer, limited by the internal dimensions of the housing and the distance between the electrical circuits	
Terminal types		spring-loaded, screwed	
Power consumption of the optical alarm device		up to 3	W

Table 2. Explosion-proof marking zone 0, 1 and 21

Marking of explosion-proof design:
Group I
I M1 Ex ia ma op is I Ma ^{*)}
I M2 Ex ib mb op pr I Mb ^{*)}
I M2(M1) Ex db eb ib mb op pr [ia ma op is Ma] I Mb ^{*)}
Group II (gases)
II 1G Ex ia ma op is IIA, IIB, IIC T6, T5, T4 Ga ^{**)}
II 2G Ex db eb ib mb op pr IIA, IIB, IIC T6, T5, T4 Gb ^{**)}
II 2(1)G Ex db eb ib mb op pr [ia ma op is Ga] IIA, IIB, IIC T6, T5, T4 Gb ^{**)}
Group II^{*)}(dusts)
II 2D Ex tb IIIA, IIIB, IIIC T80°C T100°C Db ^{***)}
II 2D Ex tb op is [ib Db] IIIA, IIIB, IIIC T80°C T100°C Dc ^{***)}
II 2(1)D Ex tb op is [ia Da] IIIA, IIIB, IIIC T80°C T100°C Dc ^{***)}

^{*)} when the safety feature is not present in the product (ia/ib ma mb op is op pr), abbreviated marking is used, e.g: I M1 Ex ia I Ma.

^{**)} when the safety feature is not present in the product (db eb ma mb op is op pr ia/ib), abbreviated marking is used, e.g: II 2(1)G Ex db eb [ia Ga] IIB T4 Gb, II 2G Ex eb ib IIA T4 Gb. Subgroup IIA, IIB, IIC and temperature T6, T5, T4 are selected for the equipment.

^{***)} when the safety feature is not present in the product (op is ia/ib), abbreviated marking is used, e.g: II 2D Ex tb IIIB 80°C Db. Subgroup IIIA, IIIB, IIIC and temperature T80°C, T100°C are selected for specific equipment.

Table 3. Explosion-proof design markings accompanying device and zone 2 and 22

Marking of explosion-proof design:
Group I
I (M1) [Ex ia ma op is Ma] I ^{*)}
Group II (gases)
II 3G Ex dc ec nA nC nR mc op is op pr ia/ib/ic [ic] IIA, IIB, IIC T6, T5, T4 Gc ^{**)}
II 3(2)G Ex dc ec nA nC nR mc op is op pr ia/ib/ic [ib Gb] IIA, IIB, IIC T6, T5, T4 Gc ^{**)}
II 3(1)G Ex dc ec nA nC nR mc op is op pr ia/ib/ic [ia Ga][ib Gb] IIA, IIB, IIC T6, T5, T4 Gc ^{**)}
Group II^{*)}(dusts)
II 3D Ex tc op is [ic] IIIA, IIIB, IIIC T80°C T100°C Dc ^{***)}
II 3(2)D Ex tc op is [ib Db] IIIA, IIIB, IIIC T80°C T100°C Dc ^{***)}
II 3(1)D Ex tc op is [ia Da][ib Db] IIIA, IIIB, IIIC T80°C T100°C Dc ^{***)}

^{*)} when the safety feature is not present in the product (ia ma op is), abbreviated marking is used, e.g: I (M1) [Ex ia Ma] I.

^{**)} when the safety feature is not present in the product (dc ec nA nC nR mc op is op pr ia/ib/ic) abbreviated marking is used, e.g: II 3(1)G Ex dc ec nA [ia Ga] IIB T4 Gc, II 3G Ex ec nA IIA T4 Gc. Subgroup IIA, IIB, IIC and temperature T6, T5, T4 are selected for the equipment.

^{***)} when the safety feature is not present in the product (op is ia/ib/ic), abbreviated marking is used, e.g: II 3D Ex tc IIIB 80°C Dc. Subgroup IIIA, IIIB, IIIC and temperature T80°C, T100°C are selected for specific equipment.

Table 4. Ambient temperature and IP

Marking of explosion-proof design:	Ambient temperature	Gasket	Protection rating
Group I	-20..+40°C	EPDM	IP66
	-55..+55°C	SILICONE	IP65
Group II (gases)	-20..+40°C	EPDM	IP66
	-55..+40°C	SILICONE	IP65
	-55..+55°C		
Group II (dusts)	-55..+40°C	SILICONE	IP65
	-55..+55°C		

Table 5. Intrinsically safe technical parameters

Permitted parameters of the intrinsically safe circuit at the terminals of the terminal strip (branch):			
Terminal strip	Ui = 60	—	V
Safety level "ia"/"ib"	li = 2	—	A

CAUTION!

Permitted parameters of intrinsically safe circuits of the modules included in the control panel are included in operating manuals or technical and operational documentation of these modules.

4. Identification of the hazards caused by the equipment during its operation.

4.1 Introduction

CAUTION!

Safe operation of the equipment requires special training, knowledge and experience. Do not attempt to operate this equipment unless qualified to do so. Improper or careless operation can lead to serious accidents or death for the operator or others.

The equipment is designed to meet specific technical conditions and customer requirements.

CAUTION!

Modification of equipment for which authorisation has not been granted or use of repaired parts or other replacement parts not meeting the manufacturer's technical specifications may result in serious risk or loss of warranty, certification or approvals.

If modifications to the equipment are required, they must be made only after written authorisation has been obtained from the manufacturer.

4.2 Hazards during operation of equipment

Before starting up the equipment, ensure that it does not endanger the life and health of others.

CAUTION!

Before starting up the equipment, make sure that the dangerous voltage supply cables are undamaged and properly inserted into the appropriate glands.

The installation of temporary connections is prohibited.

4.3 Special conditions for safe use

CAUTION!

Application temperature range:
-20..+40°C - HUMMEL cable entries (for EPDM gasket)
-55..+55°C - silicone gasket and BARTEC cable entries (for SILICONE gasket)

CAUTION!

Special conditions for safe use:

- When installing the certified devices listed in the table into the control panel type 07-31**_**_****/****/**** housing, the conditions and guidelines for installation of these devices must be taken into account.
- When installing components working in intrinsically safe circuits, observe the insulation distances on the surface of materials and in the air according to the requirements of PN-EN 60079-11.
- The manufacturer shall specify on the information plate the permissible parameters of the intrinsically safe circuits of the Ex-certified components used.

CAUTION!

The associated equipment may be used in mining plants, in workings classified as class "a" methane explosion hazard and as class "A" coal dust explosion hazard. The device must be de-energized when the methane concentration exceeds the value specified in applicable regulations.

CAUTION!

The device can be used in mining plants, in workings classified as class "a", "b" or "c" methane explosion hazard and as class "A" or "B" coal dust explosion hazard. The device must be de-energized when the methane concentration exceeds the value specified in applicable regulations.

The equipment can be operated in explosive gas atmospheres of zone 0, 1 or 2 (G) and operated in a location where dust explosive atmospheres of zone 21 or 22 (D) occur.

Devices with type "n" protection are only intended for use in explosion hazard zone 2 (G).

5. Construction and principle of operation

5.1 Mechanical part

The control panel housing type 07-31**_**_****/****/****, depending on the variant, is made of glass-fibre-reinforced black polyester or stainless steel. The front of the housing can be made of a cover screwed to the base with non-remaining Allen screws or a lockable door. Between the cover and the base there is a gasket in the form of a rope arranged in the groove of the cover or a hot poured seal. Installation of the box to the ground is carried out by means of mounting screws laid in the ducts, lying outside the space sealed with a gasket or by means of dedicated mounting brackets.

Unused threaded holes for cable entries must be sealed with certified plugs with the required protection level of at least IP65(66).

The panel can be built from a single housing or from several different housings connected with each other by means of culverts. Electrical equipment containing intrinsically and non-intrinsically safe circuits has been manufactured in accordance with the requirements of PN-EN 60079-11, table 5 (for voltage up to 375 V). Wires connecting individual elements of intrinsically and non-intrinsically safe circuits are routed in separate bundles of wires attached to the housing to prevent uncontrolled movement.

5.2 Electrical part

The electrical equipment of the control panel depends on its design. Only certified terminal modules and/or bus terminals with a maximum rated voltage of up to 250V AC/DC and a maximum cable cross section of up to 16 mm² may be used. Electrical equipment containing intrinsically and non-intrinsically safe circuits should be made so that the requirements of PN-EN 60079-11 table 5 (for voltages up to 375 V) are met. Wires connecting individual elements of intrinsically and non-intrinsically safe circuits are routed in separate bundles of wires attached to the housing to prevent uncontrolled movement.

5.3 Installation and layout of the components

The various Ex components needed for the measurement, control and adjustment systems are installed in panels on mounting plates, covers, doors or TH-35 rails.

All certified connection terminals are clearly marked. The connection terminals for protective conductors are separated and marked. These terminals are connected to metal mounting plates and/or metal housings installed inside the unit. The panel can be equipped with an external grounding terminal connected to the terminals inside the housing. The external earthing terminal is made in the form of a threaded pin (bolt) passing through the wall of the housing, protected against unscrewing. A distance "k" of at least 50 mm is maintained between the intrinsically and non-intrinsically safe connection terminals. The insulation distances in the air and on the material surface between the individual connection terminals meet the requirements of PN-EN 60079-11.

5.3.1 Cable glands

Certified metal or plastic cable entries can be used for control panels. The gullies are secured against unscrewing by locknuts or gluing. In the case of fixed installations, not exposed to mechanical forces on the cables lead into the panel, it is not necessary to use cable glands with fixings. In mobile installations, which are exposed to forces on the cables connected to the control panel, it is recommended to use cable entries with a mounting bracket or use an external mounting bracket to fix the cables to the control panel mounting structure.

5.3.2 The "l" distance between cables and/or wires inserted into the housing

In order to eliminate the difficulty for the user to insert cables or single-wire wires into the panel housing and connect them to the terminals, the minimum air distance calculated as (1.5 x S) for the cable cross-section (S) up to 6 mm² and (2 x S) for the cable cross-section (S) above 6 mm² was used. The value of the "l" distance is given in the table below:

Table 6. "l" distance

No.	Cable cross section	Number of single- and multi-core cable entries minimum distance "l" (mm)		
		single wire	two wires	three or more wires, two next to each other
1.	2.5	20	20	20
2.	4	20	20	25
3.	6	20	25	30
4.	10	25	30	40
5.	16	30	40	50

5.3.3 "m" distances

The minimum distance (without taking into account the position of the cables) between the Ex component and other electrical equipment or the housing wall is 3 mm unless distance "k" or "l" is required.

5.3.4 "n" distances

The minimum distance (taking into account the cable position) between the Ex component and another device or housing wall is 20 mm.

5.3.5 "o" distances

The minimum distance between the Ex component and the bottom, cover or door, including the hinges and possible connecting beams, is 3 mm.

Ex components and electrical equipment for temperature class T4, current limiters, protections should be selected so that the temperature of each of the components installed in the panel does not exceed the permissible limits. The temperature of the connecting cables and wires must also be taken into account. Generally, the ratings for cables and wires are given so that the maximum temperature of the cables and wires when loaded with the rated current does not exceed temperature class T6 or T5.

5.3.6 Ex component installation

Inside the panel housing, Ex-certified components with their own EU type-examination certificates or simple electrical devices can be mounted on a mounting plate or rail. However, the temperature conditions at the place of installation of these devices must be met. If intrinsically safe circuits will be routed near non-intrinsically safe circuits, the intrinsically safe circuits must be routed in an additional insulating sleeve. Shielded cables or wires can also be inserted into the panel housing. If intrinsically safe circuits will be conducted in them, the diameter of a single conductor must not be less than 0.1 mm.

The isolation gap between the conductors of intrinsically and non-intrinsically safe circuits shall comply with the requirements of Table 5, except for circuits with protection level "ib" for which the isolation resistance between circuits above 2000 V AC is sufficient.

Electromagnetic interference with intrinsically safe circuits is eliminated by using shielded wires or cables or a suitable distance from non-intrinsically safe circuits.

The insulation strength between intrinsically safe circuits and PE is at least 500 V (wire - PE, shield - wire, shield - PE unless the screen is connected to PE).

The distance between a possible isolation partition and the housing wall should not exceed 1,5 mm (in all directions) - especially when it concerns the separation of intrinsically and non-intrinsically safe circuit terminals. Metal partitions shall be at least 0,45 mm thick. Partitions made of insulating material shall be at least 0,9 mm thick.

The multi-contact connectors used in control panels meet the same requirements as for connection terminals when it comes to connecting cables.

Intrinsically safe circuits in panels are marked in light blue (connection terminals, connecting cables, connectors). If it is not possible to mark an intrinsically safe circuit with colour, blue insulating sleeves or description tags are used.

5.3.7 Marking of terminal strips and electrical equipment

The standard designations for the terminal strips and connection terminals are -X*, where (*) is the next strip designation. In order to differentiate between the outgoing, additional numbering of the strip after the dot (.) is used

e.g: -X1.1, -X1.2, etc. Terminal numbers are always provided after a colon (:), e.g. -X3:1, -X2:42L1,

-X2:A11. All terminals and connectors of intrinsically safe circuits are blue, the rest are grey as standard. The marking of electrical equipment is in accordance with the PN-EN 81346-1 and PN-EN 81346-2 standards.

Due to the different variants and requirements of the end customer (different standards of marking), individual marking of terminal strips and electrical equipment components is allowed.

6. Marking

Each device has a nameplate, made of stainless steel or self-adhesive foil, attached to the cover of the housing (on the outside and inside) containing the following data: CE mark, number of the

supervisory unit, name of the manufacturer, name of the device, type, Ex symbol in a hexagon, explosion-proof version marking, degree of protection, manufacturer / factory number / year of manufacture.

7. Installation and safety instructions

7.1 General information

The activities listed below should be performed by an employee with appropriate qualifications and authorisations to install electrical equipment in potentially explosive atmospheres, in accordance with applicable regulations.

7.2 Information on installation and disassembly

Use suitable tools in good working order for installation and disassembly. The housings should be mounted to the base through the holes in the body using screws or dowels. The housing can be mounted in any position; avoid mounting the housing with the glands facing upwards. When using cables or wires with wire conductors, use tube ends at their ends, in accordance with the cross-section of the conductor and pressed with suitable tools.

7.3 Anti-electrocution protection

Stainless steel and polyester housings are equipped with an internal earthing terminal. During installation and operation, general rules of conduct and health and safety under such conditions must be followed.

7.4 Analysis of hazards during operation and installation

Table 7. Hazards and protection measures

Predicted hazard	Methods of protection
Injuries, crushing during transport	Manual transport using handles mounted to the housing
Mechanical assembly: injuries, abrasions	Use appropriate spanners and assembly tools in good working order as well as working clothes
Electrocution	Earthing terminals and warning signs. Installation and operation only by persons with appropriate professional qualifications

8. Storage and transport conditions

The unit should be stored in closed storage rooms in the temperature and relative humidity specified in the technical data, in an environment free from harmful vapours and corrosive gases. Transport horizontally or vertically, secured against movement.

9. Inspections and maintenance principles

During operation, ad hoc and periodic inspections should be carried out to ensure trouble-free operation of the unit.

- **Ongoing inspections:**
Ongoing inspections are to be carried out in case of changing the installation location and in case of need to replace damaged elements or components.
- **Periodical inspections:**
Periodical inspections – depending on the operating conditions, inspections should be carried out at intervals of 6 to 12 months.

WARNING!

Observe the safety regulations before and during any inspections or maintenance. Maintenance and repair work should be carried out by qualified personnel and

should be carried out with the power supply switched off and protected.

9.1 Inspections and maintenance

9.1.1 External

It is recommended that the condition of the housing be checked periodically once a year, with particular emphasis on the seals, the completeness of fixing screws and the condition of cable entries and plugs. Each time the housing is opened, all screw connection terminals must be checked and tightened.

9.1.2 Housing interior

Check the cleanliness of the interior of the unit housing. If there is a significant accumulation of dust, remove it. Compressed air must not be used for this purpose in order to prevent dust from entering the connectors and terminals in places where it is not visible.

9.1.3 Electrical connection

Check the electrical connections in order to detect possible mechanical damage to the insulation of the cables. If the insulation is damaged, replace cable with a new one.

10. List of spare parts

The installation of the individual elements listed in the table below. Their electrical connections are made according to the drawings attached to this manual.

Table 8. List of materials

No.	Name and type	Manufacturer	Marking	Certificate No.	Gr. I	Gr. II
1.	Smart head temperature transducer LI-24G	Aplisens	I M1 Ex ia I Ma II 1G Ex ia IIC T5/T6 Ga II 1D Ex ia IIIC T105C Da	KDB 15ATEX0080X	X	X
2.	Smart head temperature transducer ATX-2 GIX-22-2	Aplisens	II 1G Ex ia IIC T6	ZELM 11 ATEX 0452 X	–	X
3.	Control button 05-0003-00**	Bartec	II 2G Ex e IIC Gb II 2D Ex tb IIIC Db	PTB 00 ATEX 3114U	X	X
4.	Control button 05-0003-00**	Bartec	II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db	CML 13ATEX3010U	X	X
5.	Limit switches 07-1511-****	Bartec	II 2G Ex d IIC Gb II 2G Ex db IIC	PTB 98 ATEX 1032 U	X	X
6.	Limit switches 07-1511-****	Bartec	I M2 Ex d I Mb I M2 Ex db I	EPS 14 ATEX 1 765 U	X	X
7.	Limit connector 07-2511-****	Bartec	II 2G Ex d IIC T6,T5 Gb II 2G Ex db IIC T6,T5	PTB 00 ATEX 1093 X	X	X
8.	Limit connector 07-2511-****	Bartec	II 2D Ex tb IIIC T80C, T95C Db II 2D Ex tb IIIC T80C, T95C	EPS 14 ATEX 1 766 X	X	X
9.	Control Units MODEX 07-3311-****	Bartec	I M2 Ex db e [ia Ma resp. Ib] I Mb	PTB 97 ATEX 1068 U	X	X
10.	Optical signalling device 07-33**-***0	Bartec	II 2G Ex d e IIC Gb I M2 Ex d e I Mb II 2G Ex d e ia IIC Gb I M2 Ex d e ia I Mb	PTB 97 ATEX 1064U	X	X
11.	Optical signalling device Button with backlight 07-335*-**** 07-336*-****	Bartec	I M2 Ex db eb I Mb I M2 Ex db eb ia I Mb II 2G Ex db eb IIC Gb II 2G Ex db eb ia IIC Gb	CML 17ATEX1106U	X	X

No.	Name and type	Manufacturer	Marking	Certificate No.	Gr. I	Gr. II
12.	Connecting module 07-33**_****	Bartec	II 2G Ex d e IIC Gb I M2 Ex d e I Mb	PTB 99 ATEX 1043U	X	X
13.	Connecting module 07-32**_**** 07-33**_**** 07-3381-****	Bartec	I M2 Ex db eb I Mb II 2G Ex db eb IIC Gb	CML 17ATEX1105U	X	X
14.	Potentiometer 07-337*_****	Bartec	I M2 Ex db eb I Mb II 2G Ex db eb IIC Gb	CML 17ATEX1119U	X	X
15.	Potentiometer 07-661*_****/****	Bartec	II 2G Ex IIC Gb bzw. Ex db IIC I M2 Ex d I Mb bzw. Ex db I	PTB Ex 88.B.1034U PTB 03 ATEX 1025 U EPS 16 ATEX 1 004 U	X	X
16.	Control Module 07-7331-****/****	Bartec	I M2 Ex db e [ia Ma bzw. ib] I Mb	PTB 97 ATEX 1066 U	X	X
17.	Cable gland 07-9534-****	Bartec	II 2G Ex e II II 1D Ex tD A20 IP68	BVS 11 ATEX E 074 X	X	X
18.	Terminal strips 07-97**_****/****	Bartec	I M2 Ex e I II 2G Ex e II	PTB 99 ATEX 3117 U PTB 01 ATEX 1049 U PTB 01 ATEX 1050 U PTB 01 ATEX 1051 U ZELM 13 ATEX 0514 U	X	X
19.	Terminal strips 07-9721-****/****	Bartec	I M2 Ex eb I Mb II 2G Ex eb IIC Gb	EPS 17 ATEX 1 041 U	X	X
20.	Current-/voltage limiter- modul 17-1923-1111/****	Bartec	II(2)G [Ex ib] IIC/II B II(2)D [Ex ibD]	TUV 99 ATEX 1404 X	X	X
21.	Bus interface 4xRTD in Ex 17-6583-7**/****	Bartec	II (1)G [Ex ia Ga] IIC II (1)G [Ex ia Ga] IIB II (1)D [Ex ia Da] IIIC II (1)D [Ex ia Da] IIIB	TUV 01 ATEX 1668	X	X
22.	Bus-Interface HART 17-6583-H**_****	Bartec	II (1)G [Ex ia Ga] IIC II (1)G [Ex ia Ga] IIB II (1)D [Ex ia Da] IIIC II (1)D [Ex ia Da] IIIB	TUV 01 ATEX 1724	X	X
23.	Profibus Interface 16 NAMUR 17-6583-33**/****	Bartec	II (1)G [Ex ia Ga] IIC II (1)G [Ex ia Ga] IIB II (1)D [Ex ia Da] IIIC II (1)D [Ex ia Da] IIIB	TUV 98 ATEX 1355 X	X	X
24.	Profibus Interface 8 Transmitter 17-6583-34**/****	Bartec	II (1)G [Ex ia Ga] IIC II (1)G [Ex ia Ga] IIB II (1)D [Ex ia Da] IIIC II (1)D [Ex ia Da] IIIB	TUV 98 ATEX 1367 X	X	X
25.	Bus interface 8 ana- logues out 17-6583-6**/****	Bartec	II (1)G [Ex ia Ga] IIC II (1)G [Ex ia Ga] IIB II (1)D [Ex ia Da] IIIC II (1)D [Ex ia Da] IIIB	TUV 99 ATEX 1426	X	X
26.	Relay function unit for bus interface 8 relays out 17-6583-8**/****	Bartec	II (1)G [Ex ia Ga] IIC II (1)G [Ex ia Ga] IIB II (1)D [Ex ia Da] IIIC II (1)D [Ex ia Da] IIIB	TUV 99 ATEX 1457	X	X
27.	CAN bus communica- tion module DPM-C-XCN	Bartec	I M2 Ex ib I	DMT 02 ATEX E 120 U	X	–
28.	Input module for CAN DPM-C-XIN 004	Bartec	I M2 Ex ib I	DMT 02 ATEX E 120 U	X	–
29.	Output module for CAN DPM-C-XPV 004	Bartec	I M2 Ex ib I	DMT 02 ATEX E 120 U	X	–
30.	CAN bus regeneration amplifier DPM-C11,14	Bartec	I M2 Ex ib I	DMT 02 ATEX E 0158 U /N2	X	–
31.	Profibus controller Safe.t -PL DP-K-xx DP-AM-xx DP-EM-xx	Bartec	I M2(M1) Ex ib [ia] I	OBAC 09 ATEX 411U	X	–

No.	Name and type	Manufacturer	Marking	Certificate No.	Gr. I	Gr. II
32.	Pilot light LIE...	Bartec FEAM	II 2G Ex de IIC Gb	LCIE 13 ATEX 3021U	–	X
33.	Push buttons PBE...	Bartec FEAM	II 2G Ex de IIC Gb	LCIE 13 ATEX 3005U	–	X
34.	Ammeters AM...	Bartec FEAM	II 2G Ex de IIC Gb	LCIE 13 ATEX 3007U	–	X
35.	Selector switches IRE...	Bartec FEAM	II 2G Ex de IIC Gb	LCIE 13 ATEX 3004U	–	X
36.	Central-blocking leakage protection ER 100ims	Bartec Polska Sp. z o.o.	I (M1) [Ex ia Ma] I	OBAC 06 ATEX 059U	X	X
37.	RS Intrinsically Safe Signal Transmitter IPS-** **	Bartec Polska Sp. z o.o.	I (M1) [Ex ma ia Ma] I II 1(G) [Ex ma ia Ga] IIC	OBAC 08 ATEX 449U	X	X
38.	Intrinsically safe sig- nals separator ISS-1	Bartec Polska Sp. z o.o.	I (M1) [Ex ia Ma] I II 1(G) [Ex ia Ga] IIC	TEST 14 ATEX 0070U	X	X
39.	Intrinsically safe sig- nals separator ISS-2	Bartec Polska Sp. z o.o.	I (M1) [Ex ia Ma] I II 1(G) [Ex ia Ga] IIC II 1(D) [Ex ia Da] IIIC	TEST 16 ATEX 0037U	X	X
40.	Relay control module PMS-*/**	Bartec Polska Sp. z o.o.	I (M1) [Ex ia Ma] I II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC	OBAC 08 ATEX 268U	X	X
41.	Relay separator for intrinsically and non- intrinsically safe cir- cuits PSOI-*/**	Bartec Polska Sp. z o.o.	I (M1) [Ex ia Ma] I II (1)G [Ex ia Ga] IIC T6 II (1)D [Ex ia Da] IIIC T85C	OBAC 05 ATEX 021X	X	X
42.	Barrier SSW-*/**	Bartec Polska Sp. z o.o.	I (M1) [Ex ia Ma] I II (1)G [Ex ia Ga] IIA T4	OBAC 06 ATEX 074U	X	X
43.	Temperature protec- tion TMA100Am	Bartec Polska Sp. z o.o.	I (M1) [Ex ia Ma] I II (1)G [Ex ia Ga] IIC T4 II (1)D [Ex ia Da] IIIC	OBAC 10 ATEX 081X	X	X
44.	Barrier TSOI-*/**	Bartec Polska Sp. z o.o.	I (M1) [Ex ia] I II (1)G [Ex ia] IIC T5	OBAC 06 ATEX 250U	X	X
45.	I/O module series ELX****_****_**** (except ELX9410-****_**** ELX9560-****_****)	Beckhoff	I (M1) [Ex ia Ma] I II 3(1)G Ex ec [ia Ga] IIC T4 Gc II (1)D [Ex ia Da] IIIC	BVS 18 ATEX E 005 X	X	X
46.	I/O module series ELX9410-****_**** ELX9560-****_****	Beckhoff	II 3G Ex ec IIC T4 Gc	BVS 18 ATEX E 005 X	X	X
47.	Modules type BK, BC, KL, KS, EK, EL, ES	Beckhoff	II 3G Ex nA IIC T4 Gc II 3G Ex nA nC IIC T4 Gc	KEMA 10ATEX0075 X	–	X
48.	Intrinsically Safe HMI Module BT-ISC-01-HMI	BIN-TECH	I M1 Ex ia I Ma	OBAC 17 ATEX 0419U	X	–
49.	Intrinsically safe com- pact controller module BT-ISC-01-MB	BIN-TECH	I M1 Ex ia I Ma	OBAC 17 ATEX 0420U	X	–
50.	2-pole surge arrester DCO SD2 MD EX 24 (917 960)	DEHN	II 2(1) G Ex ia [ia Ga] IIC T4,T5,T6 Gb	DEKRA 12ATEX0261 X	–	X
51.	Modules series D10XX	GMI	I (M1) [Ex ia Ma] I II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1) G Ex nA [ia Ga] IIC T4 Gc	DMT 01 ATEX E 042 X	X	X
52.	Modules series D1061 D1063	GMI	I (M1) [Ex ia Ma] I II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC	DNV 2004 OSL ATEX 0199	X	X
53.	PLC/HMI controller XLCE	HORNER	II 3G Ex nA IIC Tx	CE Declaration	–	X

No.	Name and type	Manufacturer	Marking	Certificate No.	Gr. I	Gr. II
54.	Separator binary SBEx-2	LABOR-ASTER	I (M1) [Ex ia] I II (1) G [Ex ia] IIC II (1) D [Ex ia] IIIC	KDB 04ATEX061	X	X
55.	Converter S2Ex-...	LABOR-ASTER	I (M1) [Ex ia] I II (1) G [Ex ia] IIC II (1) D [Ex ia] IIIC	KDB 04ATEX120	X	X
56.	Control relay KFD2-SOT-Ex2	Pepperl+Fuchs	I (M1) [Ex ia] I	DMT 01 ATEX E 133	X	–
57.	Signal separator MACX MCR-EX-SL-RPSS-2I-2I-* MACX PL-EX-SL-RPSS-2I-2I-*	Phoenix Contact	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia Ga] IIC T4 Gc	BVS 13 ATEX E001 X	–	X
58.	Relay amplifier MACX MCR-EX-SL-*	Phoenix Contact	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia Ga] IIC T4 Gc	IBExU07ATEX1069 X	–	X
59.	Output separation amplifier MACX MCR-EX-SL-IDSI-* BTS211-A0	Phoenix Contact	II (1)G [Ex ia Ga] IIC/IIB II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia Ga] IIC/IIB T4 Gc	BVS 08 ATEX E 074 X	–	X
60.	NAMUR signal separator MACX MCR-EX-SL-NAM-***	Phoenix Contact	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA ic IIC T4 X	IBExU12ATEX1169	–	X
61.	Power and input isolation amplifier MACX MCR-EX-SL-RPSSI-* BTS-211-E0	Phoenix Contact	I (M1) [Ex ia Ma] I II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia Ga] IIC T4 Gc	BVS 08 ATEX E 054 X	X	X
62.	Power and input separation amplifier MACX MCR-EX-SL-RPSSI-I-UP-* BTS311-E0	Phoenix Contact	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia Ga] IIC T4 Gc	BVS 08 ATEX E094 X	–	X
63.	Signal separator MACX MCR-EX-SL-RPSSI-2I-xxx-* MACX PL-EX-SL-RPSSI-2I-xxx-*	Phoenix Contact	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia Ga] IIC T4 Gc	BVS 10 ATEX E 143 X	–	X
64.	Valve solenoid driver MACX MCR-EX-SL-SD-**	Phoenix Contact	II (1)G [Ex ia Ga] IIC/IIB II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA nC [ia Ga] IIC T4 Gc X	IBExU13ATEX1045 X	–	X
65.	Valve solenoid driver MACX MCR-EX-SL-SD-2*	Phoenix Contact	II (1)G [Ex ia Ga] IIC/IIB/IIA II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia IIC Ga] IIC T4 Gc X	IBExU07ATEX1133 X	–	X
66.	Valve solenoid driver MACX MCR-EX-SL-SD-21-60	Phoenix Contact	II (1)G [Ex ia Ga] IIB/IIA II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia IIB Ga] IIC T4 Gc X	IBExU07ATEX1133 X	–	X
67.	NAMUR signal separator MACX MCR-EX-SL-xNAM-yR-UP(-SP)	Phoenix Contact	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA nC ic IIC T4 Gc X	IBExU10ATEX1005	–	X
68.	NAMUR signal separator MACX MCR-EX-SL-xNAM-yT(-SP)	Phoenix Contact	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA [ia Ga] IIC T4 Gc	IBExU08ATEX1100 X	–	X
69.	Temperature transducer MACX MCR-EX-T-UI(REL)-UP(-SP)-*	Phoenix Contact	II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC II 3(1)G Ex nA nC ic IIC T4 Gc X	IBExU10ATEX1044	–	X

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70.	Temperature transducer MACX MCR-T-UI(REL)-UP(-SP)-*	Phoenix Contact	II 3(1)G Ex nA nC ic IIC T4 Gc X	IBExU10ATEXB001 X	–	X
71.	Power supply QUINT-PS	Phoenix Contact	II 3G Ex nA nC IIC T4 Gc	TUV 11 ATEX 555674 X	–	X
72.	2-wire transmitter with HART® protocol 5335D (PR5335D) 5337D (PR5337D)	PR electronics A/S (Termoaparatura Wrocław)	I M1 Ex ia I Ma II 1G Ex ia IIC T6 ora T4 Ga II 1D Ex ia IIIC Da	KEMA 03ATEX1537	X	X
73.	Power supply PS 24 VDC 6ES7138-7EA01-0AA0	SIEMENS	I M2 Ex d e [ib] I Mb II 2 G Ex d e [ib] IIC T4 Gb	KEMA 04ATEX2263	X	X
74.	Power supply PS 120/230 VAC 6ES7138-7EC00-0AA0	SIEMENS	I M2 Ex d e [ib] I Mb II 2 G Ex d e [ib] IIC T4 Gb	KEMA 09ATEX0156	X	X
75.	Interface module IM 152-1 6ES7152-1AA00-0AB0	SIEMENS	I M2 Ex ib I Mb II 2 G Ex ib IIC T4 Gb	KEMA 04ATEX1243	X	X
76.	8 DI NAMUR 6ES7131-7RF00-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1248	X	X
77.	4 DO DC23.1V/20mA SHUT DOWN "H" 6ES7132-7RD01-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1249	X	X
78.	4 DO DC17.4V/27mA SHUT DOWN "H" 6ES7132-7RD11-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1249	X	X
79.	4 DO DC17.4V/40mA SHUT DOWN "H" 6ES7132-7RD21-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1249	X	X
80.	4 DO DC23.1V/20mA SHUT DOWN "L" 6ES7132-7GD00-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1249	X	X
81.	4 DO DC17.4V/27mA SHUT DOWN "L" 6ES7132-7GD10-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1249	X	X
82.	4 DO DC17.4V/40mA SHUT DOWN "L" 6ES7132-7GD20-0AB0 6ES7132-7GD21-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1249	X	X
83.	2 DO Relay UC60V/2A 6ES7132-7HB00-0AB0	SIEMENS	I M2 Ex e ib mb I Mb II 2 G Ex e ib mb IIC T4 Gb	KEMA 07ATEX0180	X	X
84.	4 AI I 2WIRE HART 6ES7134-7TD00-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1244	X	X
85.	4 AI I 4WIRE HART 6ES7134-7TD50-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1245	X	X
86.	4 AI TC 6ES7134-7SD00-0AB0 TC-sensor A5E00330457	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1246	X	X

No.	Name and type	Manufacturer	Marking	Certificate No.	Gr. I	Gr. II
87.	4 AI RTD 6ES7134-7SD50-0AB0 6ES7134-7SD51-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1247	X	X
88.	4 AO I HART 6ES7135-7TD00-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX1250	X	X
89.	RESERVE 6ES7138-7AA00-0AA0	SIEMENS	I M2 Ex ib I Mb II 2 G Ex ib IIC T4 Gb	KEMA 04ATEX1251	X	X
90.	WATCHDOG 6ES7138-7BB00-0AA0	SIEMENS	I M2 Ex ib I Mb II 2 G Ex ib IIC T4 Gb	KEMA 06ATEX0086	X	X
91.	TM-PS-A 6ES7193-7DA10-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
92.	TM-PS-A UC 6ES7193-7DA20-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
93.	TM-PS-B 6ES7193-7DB10-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
94.	TM-PS-B UC 6ES7193-7DB20-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
95.	TM-IM/EM 60S 6ES7193-7AA00-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
96.	TM-IM/EM 60C 6ES7193-7AA10-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
97.	TM-IM/EM 60C 6ES7193-7AA20-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
98.	TM-IM/IM 6ES7193-7AB00-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
99.	TM-EM/EM 60S 6ES7193-7CA00-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
100.	TM-EM/EM 60C 6ES7193-7CA10-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
101.	TM-EM/EM 60S 6ES7193-7CA20-0AA0	SIEMENS	I M2 Ex e [ia/ib] I Mb II 2 G (1) GD Ex e [ia Ga/ib] [ia IIIC Da] IIC T4 Gb	KEMA 04ATEX2242	X	X
102.	TM-RM/RM 6ES7193-7CB00-0AA0	SIEMENS	I M2 Ex d e ib I Mb II 2 G Ex d e ib IIC T4 Gb	KEMA 07ATEX0205	X	X
103.	8F-DI Ex NAMUR 6ES7138-7FN0.-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 10ATEX0056	X	X
104.	4F-DO Ex 17,4V/40mA 6ES7138-7FD0.-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 10ATEX0057	X	X
105.	4F-AI Ex HART 6ES7138-7FA0.-0AB0	SIEMENS	I M2 Ex ib [ia] I Mb II 2 G (1) GD Ex ib [ia Ga] [ia IIIC Da] IIC T4 Gb	KEMA 10ATEX0058	X	X
106.	Profibus connector RS 485-IS 6ES7972-0DA60-0XA0	SIEMENS	I M2 Ex ib I Mb II 2 G Ex ib IIC T4 Gb	KEMA 04ATEX1233	X	X
107.	Coupler RS 485-IS 6ES7972-0AC80-0XA0	SIEMENS	II 3(2) G Ex nA [ib Gb] IIC T4 Gc	KEMA 03ATEX1183 X	X	X

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108.	Modules series 857-***	WAGO	II 3G Ex nA nC IIC T4 Gc II 3G Ex nA IIC T4 Gc	BVS 14 ATEX E 091 X	–	X
109.	Two-piece multi-pin quick release coupling REVOS EX **	WIELAND	I M1 Ex ia I	BVS 03 ATEX E 184 X	X	–
110.	Cable glands PAPD PAP PA PNA PNAF	Bartec FEAM	II 2G Ex d IIC Gb II 2G Ex e IIC Gb II 2G Ex ia IIC Gb II 2D Ex tb IIIC Db	INERIS 09 ATEX 0028X	X	X
111.	Cable gland HSK-M-Ex-d, HSK-M-PVDF-Ex-d, HSK-MZ-Ex-d	Hummel	II 2 G Ex db IIC Gb II 1 D Ex ta IIIC Da	KEMA 99 ATEX 6968 X	X	X
112.	End cap V-Ms-Ex-d, V-Ms-FPM-Ex-d, V-Ms-VMQ-Ex-d	Hummel	II 2 G Ex d e IIC Gb II 1 D Ex ta IIIC Da	KEMA 06ATEX0024	X	X
113.	Reduction RSD-Ms-Ex-d	Hummel	II 2 G Ex d e IIC Gb II 1 D Ex ta IIIC Da	KEMA 06ATEX0024	X	X
114.	Cable gland HSK-K-Ex	Hummel	II 2G 1D Ex e II tD A20 IP68*	DMT 02 ATEX E 047 X	X	X
115.	Blanking plug cable entry HSK-V-Ex	Hummel	II 2G Ex e IIC Gb II 1D Ex ta IIIC Da	BVS 03 ATEX E 298 X	X	X
116.	Cable gland HSK-K-Ex-Active	Hummel	II 2G Ex e IIC Gb II1D Ex ta IIIC Da	BVS 14 ATEX E 025X	X	X
117.	Cable gland HSK-K-MZ-Ex, HSK-M-Ex, HSK-M-PVDF-Ex, HSK-MZ-Ex, HSK-MZ-PVDF-Ex	Hummel	II 2G Ex e IIC Gb II 1D Ex ta IIIC Da	KEMA 99 ATEX 6971 X	X	X
			II 2G 1D Ex e II tD A20 IP68*	DMT 03 ATEX E 051X	X	X
118.	End cap V-Ms-Ex-d, V-Ms-FPM-Ex-d, V-Ms-VMQ-Ex-d	Hummel	II 2G Ex e IIC Gb II 1D Ex ta IIIC Da	DMT 03 ATEX E 049	X	X
119.	End cap V-Ex, V-Ms-Ex, V-Ms-FPM-Ex, V-Ms-VMQ-Ex	Hummel	II 2G Ex e IIC Gb II 1D Ex ta IIIC Da	DMT 03 ATEX E 049	X	X
120.	Reduction RSD-Ms-Ex	Hummel	II 2G Ex e IIC Gb II 1D Ex ta IIIC Da	DMT 03 ATEX E 049	X	X
121.	Connectors MBK 3/E-Z MBK 6/E	Phoenix Contact	II 2 GD Ex eb IIC Gb	KEMA 01ATEX2134 U	X	X
122.	Connectors MPT	Phoenix Contact	II 2 Ex eb IIC	SEV 14 ATEX 0140 U	X	X
123.	Connectors MUT	Phoenix Contact	II 2 Ex eb IIC	SEV 13 ATEX 0178 U	X	X
124.	Connectors PT	Phoenix Contact	II 2 GD Ex eb IIC	SEV 13 ATEX 0159 U	X	X
125.	Connectors PT 2,5, PTTB 2,5	Phoenix Contact	II 2 G Ex eb IIC II 2 D	PTB 09 ATEX 1111 U	X	X
126.	Connectors ST 1,5, STTB 1,5	Phoenix Contact	II 2 GD Ex eb IIC	KEMA 01ATEX2129 U	X	X
127.	Connectors ST 2,5, STTB 2,5	Phoenix Contact	II 2 GD Ex eb IIC	KEMA 00ATEX2052 U	X	X
128.	Connectors ST 4, STTB 4, ST 6, STTB 6,	Phoenix Contact	II 2 GD Ex eb IIC	KEMA 00ATEX2129 U	X	X
129.	Connectors UHSK/S 2000	Phoenix Contact	II 2 GD Ex eb IIC	SEV 12 ATEX 0168 U	X	X
130.	Connectors UK	Phoenix Contact	II 2 GD Ex eb IIC	KEMA 98ATEX1651 U	X	X

No.	Name and type	Manufacturer	Marking	Certificate No.	Gr. I	Gr. II
131.	Connectors UT	Phoenix Contact	II 2 GD Ex eb IIC	KEMA 04ATEX2048 U	X	X
132.	Connectors UK 5-TWIN MSLKG	Phoenix Contact	II 2 GD Ex e II	KEMA 00ATEX2100 U	X	X
133.	Connectors USLKG	Phoenix Contact	II 2 GD Ex eb IIC	KEMA 99ATEX4487 U	X	X
134.	Connectors 262-	Wago	I M2 Ex eb I Mb II 2G Ex eb IIC Gb, 2D	PTB 98 ATEX 3125 U	X	X
135.	Connectors 279-	Wago	I M2 Ex eb I Mb II 2G Ex eb IIC Gb	PTB 00 ATEX 3113 U	X	X
136.	Connectors 280-	Wago	I M2 Ex e I II 2G Ex e II, II 2D	PTB 99 ATEX 3109 U	X	X
137.	Connectors 281-	Wago	I M2 Ex e I II 2G Ex e II, II 2D	PTB 00 ATEX 3110 U	X	X
138.	Connectors 282-	Wago	I M2 Ex e I II 2G Ex e II, II 2D	PTB 98 ATEX 3131 U	X	X
139.	Connectors 283-	Wago	I M2 Ex e I II 2G Ex e II, II 2D	PTB 98 ATEX 3132 U	X	X
140.	Connectors 284-	Wago	I M2 Ex eb I Mb II 2G Ex eb IIC Gb	PTB 98 ATEX 3133 U	X	X
141.	Connectors 285-	Wago	I M2 Ex e I II 2G Ex e II, II 2D	PTB 98 ATEX 3134 U	X	X
142.	Connectors 781-	Wago	I M2 Ex eb I Mb II 2G Ex eb IIC Gb	PTB 00 ATEX 3129 U	X	X
143.	Connectors 870-	Wago	I M2 Ex eb I Mb II 2G Ex eb IIC Gb	PTB 03 ATEX 1188 U	X	X
144.	Connectors 2000-	Wago	I M2 Ex e I Mb II 2G Ex e IIC Gb	PTB 11 ATEX 1041 U	X	X
145.	Connectors 2001-	Wago	I M2 Ex e I Mb II 2G Ex e IIC Gb, II 2D	PTB 05 ATEX 1094 U	X	X
146.	Connectors 2002-	Wago	I M2 Ex e II 2G Ex e II, II 2D	PTB 03 ATEX 1162 U	X	X
147.	Connectors 2004-	Wago	I M2 Ex e I II 2G Ex e II, II 2D	PTB 05 ATEX 1095 U	X	X
148.	Connectors 2006-	Wago	I M2 Ex e I II 2G Ex e II, II 2D	PTB 05 ATEX 1030 U	X	X
149.	Connectors 2010-	Wago	I M2 Ex e I Mb II 2G Ex e IIC Gb, II 2D	PTB 05 ATEX 1070 U	X	X
150.	Connectors 2016-	Wago	I M2 Ex e I Mb II 2G Ex e IIC Gb	PTB 03 ATEX 1031 U	X	X
151.	Connectors WDU, WPE	Weidmüller	II 2 GD Ex eb IIC	DEMKO 14 ATEX 1338U	X	X
152.	Connectors WDK 2,5N, WDK 4N	Weidmüller	II 2 GD Ex e II	KEMA 00ATEX2061 U	X	X
153.	Connectors ZDU 1,5, ZPE 1,5	Weidmüller	II 2 GD Ex e II	KEMA 01ATEX2106 U	X	X
154.	Connectors ZDU 2,5, ZPE 2,5	Weidmüller	II 2 GD Ex e II	KEMA 06ATEX0271 U	X	X
155.	Connectors ZDUB 2,5	Weidmüller	II 2 GD Ex e II	KEMA 97ATEX2755 U	X	X
156.	Connectors ZDU, ZPE, ZDK	Weidmüller	II 2 GD Ex e II	KEMA 97ATEX4677 U	X	X
157.	Connectors ZDUA, ZPEA	Weidmüller	II 2 GD Ex e II	KEMA 97ATEX4678 U	X	X
158.	Connectors WDK 2,5	Weidmüller	II 2 GD Ex e II	KEMA 98ATEX1687 U	X	X
159.	Connectors ZDU 10, ZDU 16	Weidmüller	II 2 GD Ex e II	KEMA 99ATEX5514 U	X	X
160.	Connectors WDK 1,5	Weidmüller	II 2 GD Ex e II	KEMA 99ATEX6545 U	X	X
161.	Connectors WT	Wieland	II 2G 2D Ex eb IIC	SEV 14 ATEX 0124 U	X	X
162.	Connectors WKN	Wieland	II 2G 2D Ex eb IIC	SEV 15 ATEX 0108 U	X	X
163.	Connectors WKF	Wieland	I M2 Ex e I II 2GD Ex e II	KEMA 01ATEX2087 U	X	X

No.	Name and type	Manufacturer	Marking	Certificate No.	Gr. I	Gr. II
164.	Connectors WKF 1,5	Wieland	II 2GD Ex e II	KEMA 03ATEX2056 U	X	X
165.	Connectors WKFN 2.5	Wieland	I M2 Ex e I II 2GD Ex e II	PTB 04 ATEX 1051 U	X	X
166.	Connectors WKFN 4	Wieland	I M2 Ex e I II 2GD Ex e II	PTB 05 ATEX 1104 U	X	X
167.	Connectors WKFN 6/10/16	Wieland	I M2 Ex e I II 2GD Ex e II	PTB 06 ATEX 1075 U	X	X
168.	Connectors WKC	Wieland	I M2 Ex e I II 2GD Ex e II	KEMA 02ATEX2113 U	X	X
169.	Connectors WKM	Wieland	I M2 Ex e I II 2GD Ex e II	KEMA 02ATEX2114 U	X	X
170.	Connectors WKMF	Wieland	II 2GD Ex e II	KEMA 03ATEX2071 U	X	X
171.	Control buttons and manipulators IP65/IP66	Various manufacturers	Only Ex i circuits	Simple device	X	X
172.	03 07-5185-..../....	Bartec	I M2 Ex e I II 2G Ex eb ia/ib IIA,IIB,IIC T6,T5,T4 Gb II 2G Ex ia/ib IIA,IIB,IIC, T6,T5 Gb II 2D Ex tb IIIC T80C,T95C Db II 2D Ex ia/ib IIIC T80C,T95C Db	IBExU01ATEX1042U PTB 08 ATEX 1062U PTB 08 ATEX 1064 X PTB Ex 13-13151	X	X
173.	09 KEL 92XX.YYYY	RITTAL	II 2G Ex e IIC Gb II 2G Ex eb IIC II 2D Ex tb IIIC Db IP66 II 2D Ex tb IIIC IP66	PTB Ex92.C.3132U PTB 03 ATEX 1011 U	X	X
174.	11 KEL 92XX.YYYY	RITTAL	II 2G Ex e IIC Gb II 2G Ex eb IIC II 2D Ex tb IIIC Db IP66 II 2D Ex tb IIIC IP66	PTB Ex93.C.3103U PTB 03 ATEX 1013 U	X	X
175.	13 KEL 92XX.YYYY	RITTAL	II 2G Ex e IIC Gb II 2G Ex eb IIC II 2D Ex tb IIIC Db IP66 II 2D Ex tb IIIC IP66	PTB Ex93.C.3106U PTB 02 ATEX 1082 U	X	X
176.	30 07-56A(E)1-..../....	Bartec	II 2G Ex e IIC Gb II 2D Ex tb IIIC Gb	IBExU 99 ATEX 1118U	X	X
177.	32 07-56B(F)1-..../....	Bartec	II 2G Ex e IIC Gb II 2D Ex tb IIIC Gb	IBExU 99 ATEX 1118U	X	X
178.	34 07-56C(G)1-..../....	Bartec	II 2G Ex e IIC Gb II 2D Ex tb IIIC Gb	IBExU 99 ATEX 1118U	X	X
179.	36 07-56D(H)1-..../....	Bartec	II 2G Ex e IIC Gb II 2D Ex tb IIIC Gb	IBExU 99 ATEX 1118U	X	X
180.	48 NXT *****	C. Crouse Hinds	II 2G EEx e II II 2D IP66	KEMA 99ATEX3174U	X	X
181.	50 07-56..-..../....	Bartec Polska Sp. z o.o.	I M2 Ex e I II 2GD Ex e II	OBAC 07 ATEX 210U	X	X

Table 9. Housings used in type 07-31_****/**** control panels/*****

No.	Designation	Name and type	Manufacturer	Housing material	Housing form
1.	03	07-5185-..../....	BARTEC	Polyester ≤ 1GΩ	Cover, bottom
2.	09	KEL 92XX.YYYY	RITTAL	Polyester ≤ 1GΩ	Door, the bottom
3.	11	KEL 93XX.YYYY	RITTAL	Stainless steel	Cover, bottom
4.	13	KEL 94XX.YYYY	RITTAL	Stainless steel	Door, bottom
5.	30	07-56A(E)1-..../....	BARTEC	Stainless steel (V2A)	Housing set with cover (sight glass)
6.	32	07-56B(F)1-..../....	BARTEC	Stainless steel (V4A)	Housing set with door (sight glass)
7.	34	07-56C(G)1-..../....	BARTEC	Stainless steel (V2A)	Housing set with door (sight glass)
8.	36	07-56D(H)1-..../....	BARTEC	Stainless steel (V4A)	Housing set with door (sight glass)
9.	48	NXT ****	C. Crouse Hinds	Stainless steel	Housing set with door (sight glass)
10.	50	07-56..-..../....	BARTEC POLAND	Stainless steel	Housing set with doors, covers (sight glass)

Table 10. Type of explosion protection

2014/34/EU		PN-EN 60079-0			PN-EN 60079-10-X
EQUIPMENT GROUP	EQUIPMENT CATEGORY	GROUP	TYPE SAFETY DEVICES	EPL	ZONES
I	M1	I	ia, ma	Ma	N.A.
	M2		db, eb, ib, mb	Mb	
II	1G	IIA, IIB, IIC	ia, ma	Ga	0
	2G		db, eb, ib, mb	Gb	1
	3G		dc, ec, ic, nA, nC, nR,	Gc	2
	1D	IIIA, IIIB, IIIC	ia, ma, ta	Da	20
	2D		ib, mb, tb	Db	21
	3D		ic, tc	Dc	22

11. List of standards and regulations

The following standards and regulations have been used in the design of this unit:

Table 11. Standards and regulations

Directive/Standard	Description
Directive 2014/34/EU	Equipment and protective systems intended for use in a potentially explosive atmosphere (ATEX)
PN-EN IEC 60079-0:2018-09 (EN IEC 60079-0:2018)	Explosive atmospheres - Part 0: Equipment. Essential requirements.
PN-EN 60079-1:2014-12 (EN 60079-1:2014)	Explosive atmospheres - Part 1: Equipment protection with “d” flame-proof enclosures.
PN-EN 60079-7:2016-02 /A1:2018-03 (EN IEC 60079-7:2015/A1:2018)	Explosive atmospheres - Part 7: Equipment protection with “e” reinforced design.
PN-EN 60079-11:2012 (EN 60079-11:2012)	Explosive atmospheres - Part 11: Equipment protection with “i” intrinsic safety.
PN-EN IEC 60079-15:2019-06 (EN IEC 60079-15:2019)	Explosive atmospheres - Part 15: Equipment protection with “n” protection type.
PN-EN 60079-18:2015-06 (EN 60079-18:2015)	Explosive atmospheres - Part 18: Equipment protection with “m” hermetic design.
PN-EN 60079-28:2015-12 (EN 60079-28:2015)	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation.
PN-EN 60079-31:2014-10 (EN 60079-31:2014)	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure “t”
PN-EN 50303:2004 (EN 50303:2000)	Group I category M1 equipment intended to remain functional in atmospheres endangered by methane and/or coal dust

Directive/Standard	Description
Directive 2014/30/EU	Electromagnetic compatibility (EMC)
PN-EN IEC 61000-6-2:2019-04 (EN IEC 61000-6-2:2019)	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards. Industrial environment immunity.
PN-EN IEC 61000-6-4:2019-12 (EN IEC 61000-6-4:2019)	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards. Emissions for industrial environments.
Additional	
PN-G 50003:2003	Work protection in the mining industry – Electrical devices for mining operations – Requirements and tests.
PN-EN 60079-14:2014-06 (EN 60079-14:2014)	Explosive atmospheres - Part 14: Electrical installations design, selection and erection

12. Disposal

After the period of use is finished, disposal must be performed according to environmental protection regulations.

In case of a lack of knowledge in the matter, the town or municipal office will provide all necessary information.

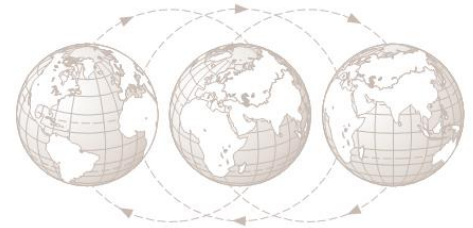
13. Orders and service

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Internet: www.exprotec.pl

Components should be replaced by the manufacturer or a company authorised by the manufacturer. The manufacturer is not responsible for the quality of the equipment after the customer provides repairs or replacement of components on their own.

EXPROTEC

EXPROTEC
protects the people
and the environment
by the
safety of
its components,
systems
and equipment



EXPROTEC develops and manufactures innovative components and systems, compliant with international standard and suitable for use in potentially explosive atmospheres, environmental protection, radioactive protection and industry.

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