

Operating Instructions Ex p power relay

ATEX/IECEX Zone 1/21



Operating Instructions

Ex p power relay

Type 17-51P6-1*11/****

ATEX / IECEx Zone 1 / 21

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1 About these operating instructions



Please read carefully before putting the device into operation.
Please observe the corresponding user manual.

This manual contains the information required for using the Ex p relay in accordance with its intended purpose. It is addressed to technically qualified personnel.

Familiarity with and the technically perfect implementation of the safety instructions and warnings described in this manual are preconditions for safe installation and commissioning. The safety notes and warnings in these operating instructions are given in a general manner and only qualified personnel will have the necessary know how to interpret and implement them correctly in specific individual cases.

These operating instructions are an integral part of the scope of delivery even if, for logistical reasons, they can be ordered and delivered separately.

- ▶ Should you require further information, please request the required information from your local or responsible BARTEC branch. Read the operating instructions and in particular the safety instructions carefully before using the device.
- ▶ Keep the operating instructions during the entire service life of the device.
- ▶ Make the brief instructions accessible to all persons entrusted with handling the device.

1.1 Highlighting in the document

1.1.1 Warnings

Warnings are used in this user manual to warn of property damage and personal injury.

- ▶ Always read and follow these warnings.

Warnings are specially highlighted in this user manual and identified by symbols:

DANGER

DANGER indicates a hazardous situation which, if safety measures are not observed, may result in death or serious injuries with permanent damage.

WARNING

WARNING indicates a hazardous situation which, if safety measures are not observed, may result in serious injuries without permanent damage.

CAUTION

CAUTION indicates a hazardous situation which, if safety measures are not observed, can result in minor injuries.

ATTENTION

ATTENTION indicates a hazardous situation which, if the safety measures are not observed, may result in damage to property.

Explanation of the structure of a warning notice

WARNING WORD

Identifies the source of danger, cause of danger or type of danger

Consequence of non-compliance with the described safety measure.

- ▶ Safety measure

Example of a warning notice

DANGER

Operation of the control unit in the case of damage!

Death or serious injury.

- ▶ Put the control unit out of operation and secure it against restart.

1.1.2 Symbols and icons



Symbol	Explanation
	Important notices and information for the effective, efficient and environmentally friendly use of the product.
	Ex application; this symbol indicates special information for Ex applications

Table 1: Symbols and icons

1.2 Technical changes

The current versions of the datasheets, operating instructions, certificates and EC declarations of conformity as well as information on new accessories can be downloaded from www.bartec.de under “Products” in the product area “Control and Connection Equipment”, or requested directly from BARTEC GmbH.

1.3 Languages

The original user manual is written in German. All other available languages are translations of the original user manual.

The user manual is available in German. If further languages are required, these must be requested from BARTEC or stated when placing the order.

2 Safety

2.1 Intended use

2.1.1 Exclusive purpose

The Exp relay serves exclusively as a separation from non-intrinsically safe voltage supply lines in connection with the Exp control units APEX and SILAS.

It is intended for use in explosion group II, category 2GD and temperature class T4 or for use in dusty environments with surface temperature of T130 °C.

The permissible operating data of the device used must be observed.

2.1.2 Improper use

Any other use is not in accordance with the intended purpose and may lead to damage and accidents. The manufacturer will not be liable for any use beyond that of its intended purpose.

2.2 Warranty

WARNING

UNAUTHORISED MODIFICATIONS AND/OR ALTERATIONS TO THE CONTROL SYSTEM.

Explosion protection as well as design and manufacture in line with strain and safety requirements are no longer guaranteed.

- ▶ Before making any modifications or alterations, contact the manufacturer to obtain written approval.
- ▶ Use only original spare parts and original wearing parts.



Assumption of warranty

The manufacturer assumes the complete warranty only and exclusively for the spare parts ordered from the manufacturer.

As a basic rule, our “General Terms and Conditions of Sale and Delivery” apply. They are available to the managing operator on conclusion of contract at the latest. Warranty and liability claims for personal injury and damage to property are excluded if they are due to one or several of the following reasons:

- ➔ Improper use of the Exp relay.
- ➔ Incorrect installation, commissioning, operation and maintenance.
- ➔ Non-compliance with the instructions in the manual with respect to transport, storage, assembly, commissioning, operation and maintenance.
- ➔ Unauthorised structural changes.
- ➔ Inadequate monitoring of parts that are subject to wear.
- ➔ Improperly performed repairs.
- ➔ Disasters caused by foreign bodies and force majeure.

We guarantee the Ex p relay and its accessories for a period of one year starting on the date of delivery from the Bad Mergentheim plant. This warranty covers all parts of the delivery and is restricted to the replacement free of charge or the repair of the defective parts in our Bad Mergentheim plant. Any packaging delivered here should be kept where possible. If necessary, the goods should be sent to us after written agreement. There is no entitlement to rectification at the site of installation.

2.3 Qualification of staff

Target group	Skills
Design / engineering	<ul style="list-style-type: none"> • Technical training • Knowledge and experience to identify and avoid hazards that may be caused by electricity • Understanding of the overall system • Configuration / programming • Special induction for the Ex area
Electrician / installer	<ul style="list-style-type: none"> • Technical training • Knowledge and experience to identify and avoid hazards that may be caused by electricity • Understanding of the overall system • Special induction for the Ex area
Operator	<ul style="list-style-type: none"> • Induction in operation by the owner • Special induction for the Ex area
Storage and transport companies	<ul style="list-style-type: none"> • Loading and transport activities • Professional storage

Table 2: Tasks of individual target groups

2.4 Safety instructions

2.4.1 General

- ➔ Do not dry wipe or clean devices in hazardous areas!
- ➔ Do not open devices in hazardous areas.
- ➔ The general statutory regulations or guidelines relating to safety at work, accident prevention and environmental protection legislation must be observed, e.g. the German Industrial Health and Safety Ordinance (BetrSichV) or the applicable national ordinances.
- ➔ Wear suitable clothing and footwear in view of the risk of dangerous electrostatic charges.
- ➔ Avoid exposure to heat outside the specified temperature range (see Chapter "General technical data").
- ➔ Avoid exposure to moisture.

2.4.2 Safety instructions for operation

Commissioning

- Before commissioning, check that all components and documents are available.

Inspection

- Under EN/IEC 60079-17, the owner of electrical systems in hazardous areas is obliged to have them checked by a qualified electrician to ensure that they are in a proper condition.

Maintenance

- For electrical systems, the relevant installation and operating regulations must be observed (e.g. Directive 99/92/EC, Directive 2014/34/EU, BetrSichV or the nationally applicable ordinances EN/IEC 60079-14 and the DIN VDE 0100 series)!
- Please observe the national waste disposal regulations for disposal.

Servicing

- Regular servicing is not necessary if the device is operated correctly in accordance with the installation instructions and ambient conditions.
- BARTEC recommends annual servicing and inspection.
- See Chapter "Maintenance and care".

Repairs

- Repairs on explosion-protected equipment may be done only by authorised persons working in accordance with the latest developments in technology and using original spare parts. The applicable provisions must be observed.
- Repairs must be carried out in accordance with EN / IEC 60079-19.
- For Ex applications, only one device and one electronic module may be used with corresponding Ex approval. Order the spare parts from your local representative. The serial number can be found on the type plate of the device, inside the enclosure.

2.5 Obligations of the owner

The owner undertakes to restrict permission to work with and on the Exp power relay control unit to people who:

- ➔ are familiar with the basic regulations on safety and accident prevention and have been instructed in the use of the Exp power relay;
- ➔ have read and understood the documentation, the chapter on safety and the warnings.
- ➔ The owner must check that the safety regulations and accident prevention rules valid for the respective application are observed.

2.6 Instructions for use

- ➔ The control unit must be completely installed in an enclosure that meets the requirements for the enclosure according to IEC 60079-0 with a minimum degree of protection of IP 54 for EPL Gb and IP 6X for EPL Db.
- ➔ The overvoltage category II of the non-intrinsically safe circuits according to IEC 60664-1 must be observed.
- ➔ The warning “WARNING – DO NOT OPEN UNDER VOLTAGE” must be part of the external marking of the entire electrical device or the enclosure must have a locking system to prevent the fuses from being energised during replacement.

2.7 Standards complied with

Standard	Designation
EN IEC 60079-0:2018 IEC 60079-0:2017	Explosive atmospheres – Part 0: General requirements
EN 60079-5:2015 IEC 60079-5:2015	Explosive atmospheres - Part 5: Equipment protection by powder filling "q"
EN 60079-7:2015 IEC 60079-7:2015	Explosive atmospheres – Part 7: Equipment protection by increased safety “e”
EN 60079-31:2014 IEC 60079-31:2013	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure “t”
EN 61000-6-4:2019 IEC 61000-6-4:2018	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments
EN 61000-6-2:2019 IEC 61000-6-2:2016	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments

2.8 Marking and test certificate

The relay is approved for the following areas

ATEX (Europe)		17-51P6-1*11/****
Marking		⊕ II 2G Ex eb qb IIC T4 Gb
		⊕ II 2D Ex tb IIIC T130 °C Db
Test certificate		EPS 18 ATEX 1159 X
IECEx (International)		17-51P6-1*11/****
Marking		Ex eb qb IIC T4 Gb
		Ex tb IIIC T130 °C Db
Test certificate		IECEx EPS 18.0082X

2.9 Avoidance of damage to property

2.9.1 Short circuit due to improper connection

An incorrect connection of the power supply will destroy the electronics and void the warranty.

2.9.2 Storage at an excessively high temperature

Store the Exp control unit at the intended storage temperature since otherwise damage to the electronics or seals may occur. Ensure adequate air conditioning at high storage temperatures.

2.9.3 Aggressive cleaning agents

When selecting the correct cleaning agent, it is essential that it is suitable for use since otherwise damage may occur to seals and connections. Combustible products are generally not permitted.

2.9.4 Danger to health due to improper disposal

According to the European WEEE Directive, electrical and electronic equipment may not be disposed of with household waste. Their components must be sent separately for recycling or disposal because toxic and hazardous components can cause long-term damage to health and the environment if not disposed of properly.

As consumers, you are obliged under the Electrical and Electronic Equipment Act (ElektroG) to return electrical and electronic equipment at the end of its serviceable life free of charge to the manufacturer, the point of sale or to public collection points set up for this purpose. Details of this are regulated by the respective national law. The symbol on the product, the operating instructions or/and the packaging refers to these regulations. With this type of material separation, recycling and disposal of old devices, you make an important contribution to the protection of our environment.

3 Product description

3.1 General information

The Ex p power relay is intended for the safe separation of supply lines directly in hazardous areas and can be used together with the BARTEC pressurised enclosure systems APEX or SILAS.

The Ex p power relay has four electrically isolated switch contacts which open the contacts when the power falls away. The safe opening of the contacts is guaranteed by two series-connected relays. Up to three phases of supply lines can be switched off using the switching power of 400V, 16 A and 4kW.

The Ex p power relay is available in three different activation voltages and as a module for integration in a separately certified enclosure or as a complete control unit.

3.2 Ex p power relay

3.2.1 Module



The Ex p power relay (module) must be installed in an enclosure with the minimum dimensions of 220 mm x 120 mm x 90 mm.

The enclosure must be certified according to a recognised ignition protection class in accordance with section 1 of IEC/EN 60079-0.

In the case of installation in an enclosure with enhanced safety “e” IEC/EN 60079-7, the clearances and creepage distances and ambient temperatures must be observed.

If used in atmospheres with high air humidity, a separately approved enclosure with breathing device must be used.

3.2.2 Complete control unit



The Ex p power relay (complete control unit) is installed in an enclosure in accordance with IEC/EN 60079-7 with the dimensions 220 mm x 120 mm x 90 mm.

It can be simply mounted to the Ex p protected equipment using the installation aids on the enclosure.

4 Transport and storage

4.1 Scope of delivery



Missing parts or damage must be reported immediately in writing to the forwarding agent, the insurance company or BARTEC GmbH.

Check the completeness of the scope of delivery using the delivery note

As standard, each Exp relay unit is delivered with the following scope of delivery:

- ➔ Exp power relay in the ordered version
- ➔ Operating instructions

4.2 Packaging

The Exp power relay is delivered packed in film, on pallets and/or in boxes.

- ➔ Dispose of the packaging materials at the designated disposal points. Observe the applicable national regulations for disposal.

4.3 Transport



WARNING

DEATH OR RISK OF INJURY FROM FALLING HEAVY SUSPENDED LOADS.

- ▶ Never stand under suspended loads.
- ▶ Secure the Exp power relay before transport using suitable fastening (e.g. straps)

ATTENTION

AVOID HARD IMPACTS, E.G. BY FALLING DOWN OR SETTING DOWN TOO VIGOROUSLY.

The Exp control unit may be damaged.

- ▶ Only use hoists and load handling attachments with sufficient load bearing capacity.
- ▶ The permissible lifting weight of a lifting device may not be exceeded.
- ▶ Slowly set down the control unit.

Observe the weight of the goods to be transported and select an adequate transport device.

4.4 Storage

Store the Exp relay in a horizontal position and at a temperature of -25 °C to +65 °C in its original packaging. The environment must be dry, dust-free and low vibration.

Store the control unit for a maximum of 2 years.

For warehouse logistics, we recommend the “first in – first out” principle.

5 Installation



Before starting work, find out about the general safety instructions (see Chapter 2 Safety instructions).

The Ex p power relay has been developed for use in hazardous areas of Zone 1/21.

Carry out the installation according to the following sections, unless otherwise agreed for customer-specific control units.

5.1 General information

The installation of the Ex p relay is explained in the following chapters.

Deviations in the installation of customer-specific superstructures may arise.

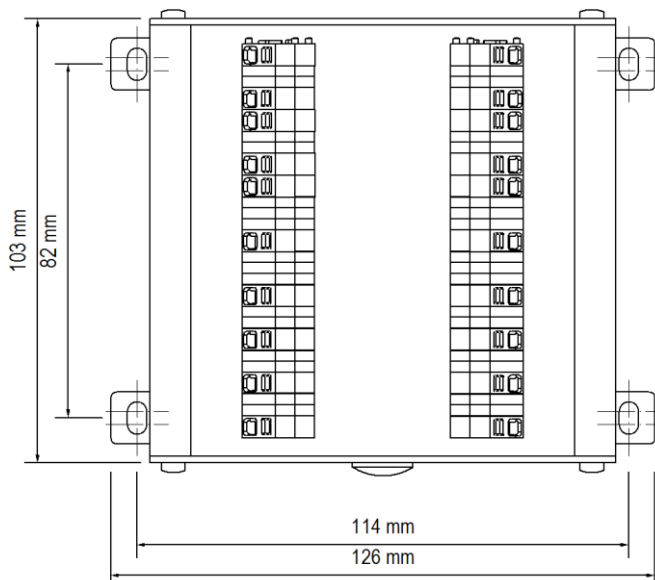
5.2 Installation of the Ex p power relay

5.2.1 Installation of the module version



Install the Ex p power relay at the desired position with the following drilling pattern (82 mm x 204 mm).

The module version can be installed in any position.

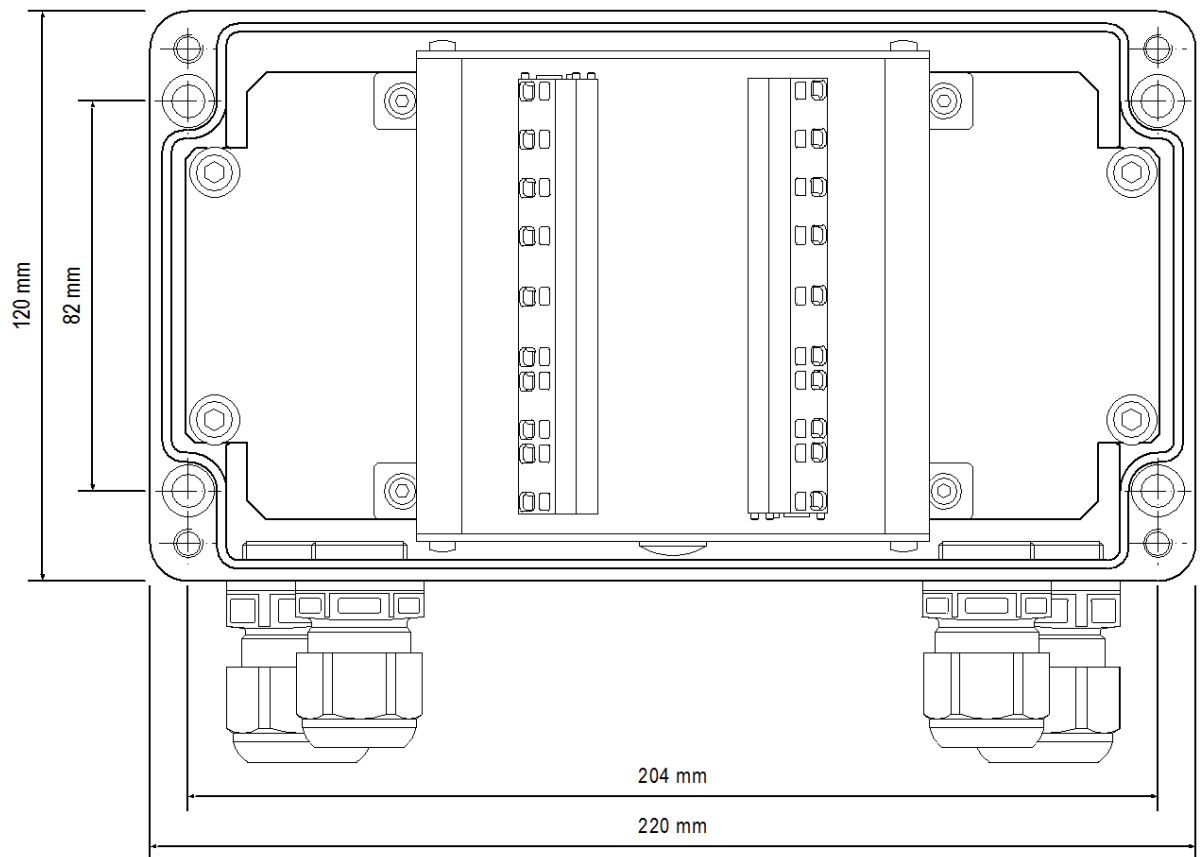


5.2.2 Installation of complete control unit version



Install the Ex p power relay at the desired position with the following drilling pattern (82 mm x 204 mm).

The complete control unit version can be installed in any position.



6 Electrical connections

⚠ DANGER

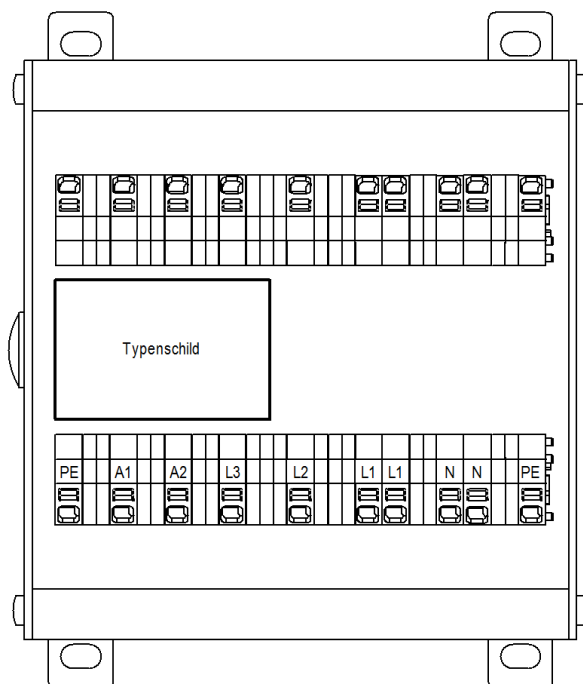
DEATH OR SERIOUS PHYSICAL INJURY DUE TO WORK ON LIVE PARTS.

Fatal injury from electrical current.

- ▶ Observe the 5 safety rules for work on electrical systems: Disconnect mains; protect against unintended reconnection; verify the absence of voltage; earth and short-circuit; cover or safeguard nearby live parts.

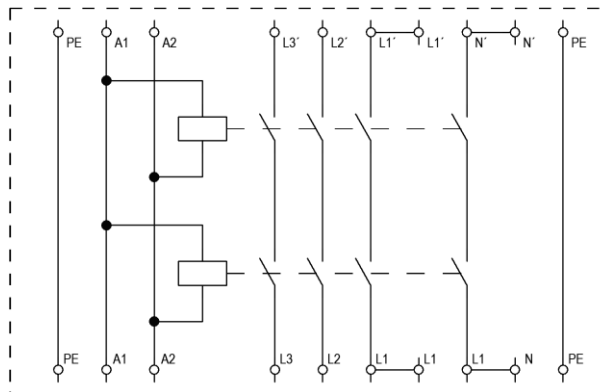
6.1 General information

Connection terminals with the type of protection “Ex e” are on the connection board of the Ex p relay.



	Terminal row	Function
	PE	Ground connection
	A1	Activation of the Ex p relay (L / +)
	A2	Activation of the Ex p relay (N / GND)
Ex e	L3	Phase L3
	L2	Phase L2
	L1	Phase L1
	N	Neutral conductor

6.1.1 Functional circuit diagram



6.1.2 Connection notes

⚠ DANGER

DEATH OR SERIOUS PHYSICAL INJURY WHEN THE COVER OF THE APEX CONTROL UNIT IS OPENED IN AN EXPLOSIVE ATMOSPHERE.

Risk of explosion.

- ▶ Before opening the lid of the enclosure, check the atmosphere for any explosive gases.

ATTENTION

SHORT-CIRCUITS DUE TO LOOSE OR PROTRUDING WIRES IN THE EX P POWER RELAY.

The Ex p relay may be damaged.

- ▶ All core wires, including those not required, must be attached to a terminal.
- ▶ Lay the wires only in the space between the shield bus and the connecting terminal.
- ▶ Make sure that none of the wires are loose or jump out/protrude.

AVOID DAMAGE TO THE SEAL.

Cancellation of the Ex protection concept.

- ▶ Visual inspection of the seal when closing the Ex p relay (cleanliness, seat and integrity).

The procedure for connecting cables to the Ex p control unit is described in the following:

Procedure:

- ▶ Establish the electrical connections in accordance with the terminal assignment. Terminals are designed in tension spring technology. A suitable tool must be used for this purpose.

7 Maintenance and care



Find out about the general safety instructions before starting work (see Chapter 2.4 Safety instructions).

Carry out maintenance and care in accordance with the following sections, unless otherwise agreed for customer-specific versions.

7.1 Maintenance work

7.1.1 Maintenance intervals

MAINTENANCE INTERVALS



Maintenance according to the following maintenance schedule is recommended in the case of proper operation, observing the installation instructions and ambient conditions.

ATTENTION

MAINTENANCE AND CARE

- ▶ The currently applicable regulations and the national provisions must be observed for maintenance, service and inspection of the equipment!
- ▶ Operation and maintenance work may be performed by trained specialist personnel only. The statutory regulations and the other binding directives on occupational health and safety, accident prevention and environmental protection must be observed.
- ▶ When opening covers or removing parts, unless possible by hand, live parts may be exposed. Connecting parts may also be live.

Maintenance interval	Work to be performed
Semi-annually	Visual inspection
Annually	Regular maintenance

7.1.1.1 Visual inspection

Perform a visual inspection monthly by:

- ▶ Checking the enclosure, cable entries and cables for damage.
- ▶ Checking the screwed connections for tight fit.

7.1.1.2 Regular maintenance

No solvents should be used to clean the Ex p relay as these can impair the properties on contact with the seals.

In the case of anomalies, the operator should weigh up the possibility of a timely and proper cleaning by BARTEC GmbH against a spontaneous failure of the Ex p relay.

Furthermore, the function of the overall system should be checked. The correct function (safe separation of the power supply to the Ex p equipment) should be checked.

7.2 Repairs

Repairs to the control unit and accessories may only be made by BARTEC GmbH.

7.3 Faults and troubleshooting

ATTENTION

AN ALTERED OPERATING BEHAVIOUR CAN BE AN INDICATION OF ALREADY EXISTING DAMAGE TO THE CONTROL UNIT.

- ▶ Only put the Ex p system back into operation after the cause of a fault has been rectified.

It is assumed that all external electrical and mechanical equipment has been properly connected. Therefore, the correct installation and connection of the electrical devices should be checked first.

7.3.1 Faults

Error / fault	Possible cause	Remedy
Sporadic failure	Cable break	Check connections
Ex p relay without function	Activation voltage not available	Check activation voltage
	Device defective	Return to manufacturer

7.4 Disposal



Observe the applicable national regulations for disposal

Dispose of the control unit at the designated disposal points.

8 Technical data

8.1 Ex p power relay

Parameters	Specifications
Type	17-51P6-1*11/****
EU type examination certificate	EPS 18 ATEX 1 159 X
IECEX certification	IECEX EPS 18.0082X
Marking	⊕ II 2G Ex eb qb IIC T4 Gb
	⊕ II 2D Ex tb IIIC T130 °C Db
Ambient temperature range	-25 °C to +65 °C
Storage and transport	-25 °C to +65 °C
Mains voltage DC (variant)	24 Vdc, +/- 10 %
Mains voltage AC (variant)	110 Vac, 230 Vac, +/- 10%
Power loss	3.5 W
Max. switching voltage	400 Vac, 28Vdc
Max. switching current	16 A
Max. starting current	80 A (20 ms), 30 A (4 s)
Breaking capacity	4000 VA
Terminal type	Tension spring
Connection terminal "Ex e"	2.5 mm ² (fine stranded)
	4.0 mm ² (rigid)
IP degree of protection	IP 66 in separately approved enclosure
	IP 20 Ex q container
Dimensions (module)	115 mm x 112 mm x 57 mm
Dimensions (controller)	220 mm x 120 mm x 90 mm
Weight	1.5 kg

8.2 Ampacity of the Ex p power relay

Ampacity [A]	10	12	13	14	15	16
Ambient temperature Ta [°C]	65	60	52	45	38	25

9 Order numbers

9.1 Exp power relay (module)

Module, Exp power relay, 230 Vac	17-51P6-1111
Module, Exp power relay, 110 Vac	17-51P6-1211
Module, Exp power relay, 24 Vdc	17-51P6-1311

9.2 Exp power relay (control unit)

Control unit, Exp power relay, 230 Vac, polyenclosure	17-51P6-1111/9001
Control unit, Exp power relay, 110 Vac, polyenclosure	17-51P6-1211/9001
Control unit, Exp power relay, 24 Vdc, polyenclosure	17-51P6-1311/9001

10 Declaration of conformity

EU Konformitätserklärung
EU Declaration of Conformity
Déclaration UE de conformité
N° 11-51P6-7C0001

BARTEC

Wir	We	Nous
BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany		
erklären in alleiniger Verantwortung, dass das Produkt	declare under our sole responsibility that the product	attestons sous notre seule responsabilité que le produit
Exp Relais - Power		

Typ 17-51P6-1*11/****
Type 17-51P6-1*11/****

auf das sich diese Erklärung bezieht den Anforderungen der folgenden Richtlinien (RL) entspricht	to which this declaration relates is in accordance with the provision of the following directives (D)	se référant à cette attestation correspond aux dispositions des directives (D) suivantes
ATEX-Richtlinie 2014/34/EU	ATEX-Directive 2014/34/EU	Directive ATEX 2014/34/EU
EMV-Richtlinie 2014/30/EU	EMC-Directive 2014/30/EU	Directive CEM 2014/30/UE
RoHS-Richtlinie 2011/65/EU	RoHS-Directive 2011/65/EU	Directive RoHS 2011/65/UE
RoHS-Richtlinie 2015/863/EU	RoHS-Directive 2015/863/EU	Directive RoHS 2015/863/UE
WEEE-Richtlinie 2012/19/EU	WEEE-Directive 2012/19/EU	Directive WEEE 2012/19/UE
und mit folgenden Normen oder normativen Dokumenten übereinstimmt	and is in conformity with the following standards or other normative documents	et est conforme aux normes ou documents normatifs ci-dessous

EN IEC 60079-0:2018

EN IEC 61000-6-2:2019

EN 60079-5:2015

EN IEC 61000-6-4:2019

EN 60079-7:2015

EN 60529 + A1:2000 + A2:2013

EN 60079-31:2014

+ COR1:2019

Verfahren der EU-Baumusterprüfung / Benannte Stelle	Procedure of EU-Type Examination / Notified Body	Procédure d'examen UE de type / Organisme Notifié
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EPS 18 ATEX 1 159 X

2004, Bureau Veritas Consumer Products Services Germany GmbH

CE 0044

Bad Mergentheim, 04.06.2020

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11 Notes

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