

## Manual Pressurized Cabinet

APEX (APC)

SILAS (SPC)



## Operating Instructions

### Pressurized Cabinet

APEX (APC), Type 07-3704-\*\*\*\*/\*\*\*\*  
ATEX / IECEx Zone 1 / 21

SILAS (SPC), Type A7-3704-\*\*\*\*/\*\*\*\*  
ATEX / IECEx Zone 2 / 22

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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 control unit 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 APEX (SILAS) pressurized cabinet 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](http://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 and English. 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 APEX pressurized cabinet serves exclusively as pressurized enclosure to EN/IEC 60079-2 and is intended for use in explosion group II, category 2G, category 2GD or category 2D.

The SILAS pressurized cabinet serves exclusively as pressurized enclosure to EN/IEC 60079-2 and is intended for use in explosion group II, category 3G, category 3GD or category 3D.

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 Safety instructions

#### 2.2.1 General

- ▶ No technical modifications may be performed on the APEX (SILAS) pressurized cabinet
- ▶ 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 regulations.
- ▶ 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.

## 2.2.2 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/EC, 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

### 2.2.3 Instructions for safe use

- ▶ The user is obliged to take all necessary precautions before using the bypass system.
- ▶ The user may only connect elements to an intrinsically safe terminal if they have electrical properties which are lower or equal to the properties defined in the certificates of the assigned intrinsically safe devices.
- ▶ When setting up the APEX (SILAS) pressurized cabinet with HMIs in the front, the special installation conditions concerning impact protection must be observed.

The APEX (SILAS) pressurized cabinet is to be installed such that the risk of a mechanical danger is low.

- ▶ The outlet must be routed to a safe area if there is a combination of dust and gas.

The APEX (SILAS) pressurized cabinet rules out the following applications/solutions:

- ▶ The introduction of easily flammable or explosive media, so-called containment systems
- ▶ The protection of large electric motors
- ▶ Accessible switch cabinets → containers
- ▶ Batteries / storage batteries may not be fitted in an APEX (SILAS) pressurized cabinet. The subsequent introduction of batteries /storage batteries is also ruled out

Exception: batteries used as support batteries for SPCs, PCs which are smaller than 1% of the free protected volume and have a capacity of < 1.5 Ah.

In this case, the APEX (SILAS) pressurized cabinet must be labelled as follows:

**WARNING – THIS ENCLOSURE CONTAINS BATTERIES – DO NOT OPEN IF AN EXPLOSIVE ATMOSPHERE EXISTS**

## 2.3 Warranty

### WARNING

#### UNAUTHORISED MODIFICATIONS AND/OR ALTERATIONS TO THE PRESSURIZED ENCLOSURE.

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 APEX (SILAS) pressurized cabinet.
- ▶ Incorrect installation, commissioning, operation and maintenance of the APEX (SILAS) pressurized cabinet.
- ▶ Non-compliance with the instructions in the manual with respect to transport, storage, assembly, commissioning, operation and maintenance.
- ▶ Unauthorised structural changes to the APEX (SILAS) pressurized cabinet.
- ▶ Inadequate monitoring of parts that are subject to wear.
- ▶ Improperly performed repairs.
- ▶ Disasters caused by foreign bodies and force majeure.

We guarantee the APEX (SILAS) pressurized cabinet 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.

## 2.4 Obligations of the owner

The owner undertakes to restrict permission to work with and on the APEX / SILAS 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 APEX control unit;
- ▶ 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.

## 2.5 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.

## 2.6 Other applicable documents

The APEX pressurized cabinet and SILAS pressurized cabinet are built and wired to meet customer requirements. As these operating instructions cannot cover all technical details, the following documents apply in addition. It is therefore obligatory that the entire documentation received be kept with the APEX (SILAS) pressurized cabinet. Please make sure that the documents are there and complete when you receive the product.

- ▶ Circuit diagram
- ▶ Operating instructions for the Ex p control unit and its system components
- ▶ Operating instructions for the APEX (SILAS) pressurized cabinet (APC/SPC)
- ▶ Test report
- ▶ Delivery note
- ▶ Operating instructions for the fitted components
- ▶ EU Declaration of Conformity for the Ex p control unit and the APEX pressurized cabinet or. SILAS pressurized cabinet (constituent part of the respective operating instructions)

## 2.7 Standards complied with

### 2.7.1 APEX pressurized cabinet

Standard	Designation
EN 60079-0:2018 IEC 60079-0:2017	Explosive atmospheres – Part 0: General requirements
EN 60079-1:2014 IEC 60079-1:2014	Explosive atmospheres - Part 1: Equipment protection by pressurized enclosure “d”
EN 60079-2:2014 IEC 60079-2:2014	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure “p”
EN 60079-7:2015 + A1:2018 IEC 60079-7:2015 + A1:2017	Explosive atmospheres - Part 7: Equipment protection by increased safety “e”
EN 60079-11:2012 IEC 60079-11:2011 + Cor.: 2012	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety “i”
EN 60079-18:2015 IEC 60079-18:2014	Explosive atmospheres - Part 18: Equipment protection by cast encapsulation “m”
EN 60079-28:2016 IEC 60079-28:2015	Explosive atmospheres – Part 28: Protection of devices and transmission systems operating with optical radiation
EN 60079-31:2014 IEC 60079-31:2013	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure “t”
EN 60529:1991 / A2:2013 / AC:2019 IEC 60529:1989 / AMD2:2013/COR1:2019	Types of protection through enclosure (IP code)
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 3-2: Limits – Limits for harmonic current emissions (equipment input current <= 16 A per phase)

## 2.7.2 SILAS pressurized cabinet

Standard	Designation
EN 60079-0:2018 IEC 60079-0:2017	Explosive atmospheres – Part 0: General requirements
EN 60079-1:2014 IEC 60079-1:2014	Explosive atmospheres - Part 1: Equipment protection by pressurized enclosure “d”
EN 60079-2:2014 IEC 60079-2:2014	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure “p”
EN 60079-7:2015 + A1:2018 IEC 60079-7:2015 + A1:2017	Explosive atmospheres - Part 7: Equipment protection by increased safety “e”
EN 60079-11:2012 IEC 60079-11:2011 + Cor.: 2012	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety “i”
EN 60079-15:2010 IEC 60079-15:2010	Explosive atmospheres - Part 15: Equipment protection by class of protection “n”
EN 60079-18:2015 IEC 60079-18:2014	Explosive atmospheres - Part 18: Equipment protection by cast encapsulation “m”
EN 60079-28:2016 IEC 60079-28:2015	Explosive atmospheres – Part 28: Protection of devices and transmission systems operating with optical radiation
EN 60079-31:2014 IEC 60079-31:2013	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure “t”
EN 60529:1991 / A2:2013 / AC:2019 IEC 60529:1989 / AMD2:2013/COR1:2019	Types of protection through enclosure (IP code)
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 3-2: Limits – Limits for harmonic current emissions (equipment input current <= 16 A per phase)



## 2.8 Marking and test certificate

The APEX (SILAS) pressurized cabinet is approved for the following areas

### 2.9 APEX pressurized cabinet, Zone 1 / 21

Only basic markings are listed in the following. Optionally, the marking can be supplemented to include the types of protection of separately certified components, such as "db", "eb", "ma/mb", "Ex II 2(1)G [ia Ga/Da]" or "Ex II 2(2)G [ib Gb/Db]".

#### 2.9.1 APEX pressurized cabinet, category Gb / Db, type pyb, type 07-3704-11\*\*/\*\*\*\*

ATEX (Europe)		07-3704-11**/****
Marking		⊕ II 2G Ex pyb IIC T3 / T4 / T5 Gb
		⊕ II 2D Ex pyb IIIC T95°C / T130 °C Db
Alternatively		
Marking		⊕ II 2G Ex pyb IIC T3 / T4 / T5 Gb
		⊕ Ex II 3D Ex pzc IIIC T95°C / T130 °C Dc
Test certificate		BVS 20 ATEX E 060 X
IECEx (International)		07-3704-11**/****
Marking		Ex pyb IIC T3 / T4 / T5 Gb
		Ex pyb IIIC T95°C / T130 °C Db
Alternatively		
Marking		Ex pyb IIC T3 / T4 / T5 Gb
		Ex pzc IIIC T95°C / T130 °C Dc
Test certificate		IECEx BVS 20.0048X

#### 2.9.2 APEX pressurized cabinet, category Gb / Db, type pxb, type 07-3704-12\*\*/\*\*\*\*

ATEX (Europe)		07-3704-12**/****
Marking		⊕ II 2G Ex pxb IIC T3 / T4 / T5 Gb
		⊕ II 2D Ex pxb IIIC T95°C / T130 °C Db
Alternatively		
Marking		⊕ II 2G Ex pxb IIC T3 / T4 / T5 Gb
		⊕ II 3D Ex pzc IIIC T95°C / T130 °C Dc
Test certificate		BVS 20 ATEX E 060 X
IECEx (International)		07-3704-12**/****
Marking		Ex pxb IIC T3 / T4 / T5 Gb
		Ex pxb IIIC T95°C / T130 °C Db
Alternatively		
Marking		Ex pxb IIC T3 / T4 / T5 Gb
		Ex pzc IIIC T95°C / T130 °C Dc
Test certificate		IECEx BVS 20.0048X

### 2.9.3 APEX pressurized cabinet, category Gb, type pyb, type 07-3704-21\*\*/\*\*\*\*

ATEX (Europe)	07-3704-21**/****
Marking	Ⓔ II 2G Ex pyb IIC T3 / T4 / T5 Gb
Test certificate	BVS 20 ATEX E 060 X
IECEX (International)	07-3704-21**/****
Marking	Ex pyb IIC T3 / T4 / T5 Gb
Test certificate	IECEX BVS 20.0048X

### 2.9.4 APEX pressurized cabinet, category Gb, type pxb, type 07-3704-22\*\*/\*\*\*\*

ATEX (Europe)	07-3704-22**/****
Marking	Ⓔ II 2G Ex pxb IIC T3 / T4 / T5 Gb
Test certificate	BVS 20 ATEX E 060 X
IECEX (International)	07-3704-22**/****
Marking	Ex pxb IIC T3 / T4 / T5 Gb
Test certificate	IECEX BVS 20.0048X

### 2.9.5 APEX pressurized cabinet, category Db, type pyb, type 07-3704-31\*\*/\*\*\*\*

ATEX (Europe)	07-3704-31**/****
Marking	Ⓔ Ex II 2D Ex pyb IIIC T95°C / T130 °C Db
Test certificate	BVS 20 ATEX E 060 X
IECEX (International)	07-3704-31**/****
Marking	Ex pyb IIIC T95°C / T130 °C Db
Test certificate	IECEX BVS 20.0048X

### 2.9.6 APEX pressurized cabinet, category Db, type pxb, type 07-3704-32\*\*/\*\*\*\*

ATEX (Europe)	07-3704-32**/****
Marking	Ⓔ Ex II 2D Ex pxb IIIC T95°C / T130 °C Db
Test certificate	BVS 20 ATEX E 060 X
IECEX (International)	07-3704-32**/****
Marking	Ex pxb IIIC T95°C / T130 °C Db
Test certificate	IECEX BVS 20.0048X

## 2.10 SILAS pressurized cabinet, Zone 2 / 22

Only basic markings are listed in the following. Optionally, the marking can be supplemented to include the types of protection of separately certified components, such as "dc", "ec", "mc", "ic", "Ex II 3(3)G [ic Gc/Dc]", "Ex II 3(1)G [ia Ga/Da]" or "Ex II 3(2)G [ib Gb/Db] "

### 2.10.1 SILAS pressurized cabinet, category Gc / Dc, type pzc, type A7-3704-11\*\*/\*\*\*\*

ATEX (Europe)	A7-3704-11**/****
Marking	Ⓜ II 3G Ex pzc IIC T3 / T4 / T5 Gc Ⓜ II 3D Ex pzc IIIC T95°C / T130 °C Dc
Test certificate	BVS 20 ATEX E 061 X
IECEX (International)	A7-3704-11**/****
Marking	Ex pzc IIC T3 / T4 / T5 Gc Ex pzc IIIC T95°C / T130 °C Dc
Test certificate	IECEX BVS 20.0048X

### 2.10.2 SILAS pressurized cabinet, Category Gc, type pzc, type A7-3704-21\*\*/\*\*\*\*

ATEX (Europe)	A7-3704-21**/****
Marking	Ⓜ II 3G Ex pzc IIC T3 / T4 / T5 Gc
Test certificate	BVS 20 ATEX E 061 X
IECEX (International)	A7-3704-21**/****
Marking	Ex pzc IIC T3 / T4 / T5 Gc
Test certificate	IECEX BVS 20.0048X

### 2.10.3 SILAS pressurized cabinet, category Dc, type pzc, type A7-3704-31\*\*/\*\*\*\*

ATEX (Europe)	A7-3704-31**/****
Marking	Ⓜ II 3D Ex pzc IIIC T95°C / T130 °C Dc
Test certificate	BVS 20 ATEX E 061 X
IECEX (International)	A7-3704-31**/****
Marking	Ex pzc IIIC T95°C / T130 °C Dc
Test certificate	IECEX BVS 20.0048X

## 2.11 Avoidance of damage to property

### 2.11.1 Short circuit due to improper connection

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

### 2.11.2 Storage at an excessively high temperature

Store the APEX (SILAS) pressurized cabinet at the intended storage temperature since otherwise damage to the electronics or seals may occur.



Ensure adequate air conditioning at high storage temperatures.

### 2.11.3 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.

### 2.11.4 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

The Ex p type of protection, referred to as “pressurized enclosure”, is based on the measure of purging out any explosive gases that are in a closed enclosure and then generating and maintaining a level of pressure that is higher than that of the ambient atmosphere. As the pressure inside the enclosure is higher than the atmospheric pressure, it is not possible at any time for explosive gases to penetrate the inside of the enclosure. This creates an Ex-free area in which electrical devices that are not themselves explosion-proof can be mounted and operated.

The APEX (SILAS) pressurized cabinets described in these operating instructions function on the principle of “pressurized enclosure with leakage loss compensation”. Specifically, this means that an overpressure in an enclosure is maintained by the addition of purging gas to compensate for the leakage losses from the enclosure. In addition a defined quantity of purging gas can be introduced also during the operating phase, depending on application; constant purging.

To ensure that an explosive atmosphere that has penetrated during downtimes cannot become a hazard, the pressurized cabinet must be flushed with purging gas (compressed air or inert gas) before commissioning. The quantity depends on the inspection carried out during initial commissioning. The rate of flow is measured or determined at the outlet of the pressurized enclosure.

After purging, the Ex p protected application is switched on. Depending on version of the APEX (SILAS) pressurized cabinet, the activation may take the following form.

- ▶ APEX pressurized cabinet type, pxb  
Automatic connection via the Ex p control unit or, in the case of larger switching capacities, via a separately certified switching module or indirectly from the Ex safe area.
- ▶ APEX pressurized cabinet type, pyb  
Automatic connection via the Ex p control unit or, in the case of larger switching capacities, via a separately certified switching module or indirectly from the Ex safe area.

The automatic connection can also be realised by manual connection, whereby the switching module must be certified separately.

- ▶ SILAS pressurized cabinet type, pzc  
Automatic connection via the Ex p control unit or, in the case of larger switching capacities, via a separately certified switching module or indirectly from the Ex safe area.

The automatic connection can also be realised by manual connection, whereby the switching module must be certified separately.

## 3.2 Pressurized cabinet

### 3.2.1 APEX pressurized cabinet, type pyb



The APEX pressurized cabinet, type pyb, is a pressurized enclosure which functions automatically in the hazardous areas of Zone 1/21, permitting components certified for Zone 2/22 to be operated in Zone 1/21.

It consists of the pressurized enclosure, the corresponding Ex p control unit and the application in the pressurized room.

The APEX pressurized cabinet is suitable for all customary applications in the field of pressurized enclosures.

### 3.2.2 APEX pressurized cabinet, type pxb



The APEX pressurized cabinet, type pxb, is a pressurized enclosure which functions automatically in the hazardous areas of Zone 1/21, permitting industrial components to be operated in Zone 1/21.

It consists of the pressurized enclosure, the corresponding Ex p control unit and the application in the pressurized room.

The APEX pressurized cabinet is suitable for all customary applications in the field of pressurized enclosures.

### 3.2.3 SILAS pressurized cabinet, type pzc



The SILAS pressurized cabinet, type pzc, is a pressurized enclosure which functions automatically in the hazardous areas of Zone 2/22, permitting industrial components to be operated in Zone 2/22.

It consists of the pressurized enclosure, the corresponding Ex p control unit and the application in the pressurized room.

The SILAS pressurized cabinet is suitable for all customary applications in the field of pressurized enclosures.

## 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 APEX (SILAS) pressurized cabinet is delivered with the following scope of delivery:

- ▶ Connection plan with transfer point between Ex p and protected application
- ▶ Technical drawing
- ▶ Operating instructions for the APEX (SILAS) pressurized cabinet
- ▶ Operating instructions for the Ex p control unit

### 4.2 Packaging

The Ex p control unit 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 APEX (SILAS) pressurized cabinet before transport using suitable fastening (e.g. straps)

#### ATTENTION

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

The APEX (SILAS) pressurized cabinet 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 APEX (SILAS) pressurized cabinet.

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

## 4.4 Storage

### ATTENTION

#### DAMAGE DUE TO INCORRECT STORAGE!

BARTEC GmbH's warranty conditions do not apply to damage caused by incorrect storage.

- ▶ Observe the correct storage temperatures
- ▶ Keep the APEX (SILAS) pressurized cabinet free from moisture

Store the control unit in a horizontal position and at a temperature of 0 °C to +60 °C in its original packaging. The environment must be dry, dust-free and low vibration.

Store the APEX (SILAS) pressurized cabinet for a maximum of 2 years.

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

## 4.5 Disposal



Please observe the national regulations for disposal purposes

Dispose of the control unit at the intended disposal points.



## 5 Installation



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

### 5.1 Requirements placed on the location

The location must be selected such as to provide good lighting at the front and sides of the system. Good lighting is essential to allow a rapid recognition and elimination of faults and to facilitate maintenance work. Sufficient air circulation must also be ensured. The system may not be operated outdoors without protection!

The APEX (SILAS) pressurized cabinet must also be freely accessible from both left and right to allow sufficient space for maintenance and dismantling work at a later point in time.

The floor at the location must be even and level. A mains connection with an appropriate fuse must be available near-by.

Observe the correct dimensions of the system to allow compliance with the necessary spacing (in this context, see the technical documents included in the scope of supply).

### 5.2 Special conditions placed on the location

In general, the standard erection areas can be used for switch cabinets.

Special conditions are placed on the location in the case of APEX (SILAS) pressurized cabinets with front display units in the form of an HMI.

- ▶ Erection must ensure that the risk of mechanical danger is low.
- ▶ The display unit must be protect from mechanical strain of  $> 4 \text{ J}$  and of  $> 2 \text{ J}$  in the area of the display
- ▶ If the requirement is to be met by the selected location, the display device must be protected by a protective door

### 5.3 Erection

Proceed as follows when installing the APEX (SILAS) pressurized cabinet:

#### Procedure

- Align the APEX (SILAS) pressurized cabinet horizontally and vertically and attach it with the fastening material provided for that purpose.
- During the installation, comply with the diagrams and technical documents and the respective operating instructions for the fitted components and all associated operating equipment.
- Make sure that the APEX (SILAS) pressurized cabinet is installed in compliance with the details in the technical documentation and the specifications on the type plate.

Make sure that the following requirements are satisfied when installing:

- ▶ Effective ventilation and exhaust and also adequate air circulation must be ensured in front of the purging outlet.
- ▶ To prevent the accumulation of stale air, suitable spacing must be ensured in front of the purging gas outlets and openings.
- ▶ In particular, in front of the outlets, care must be taken to keep the ambient air free of any dirt which might enter the outlets.
- ▶ It is not permissible to allow any moisture near the external outlet openings as it is important not to let moisture enter the openings (protection from the weather).

## 5.4 Mobile erection

If the APEX (SILAS) pressurized cabinet is to be mobile, please erect as follows:

### Procedure

- Erect the APEX (SILAS) pressurized cabinet at the intended site and actuate the fixing elements to secure against rolling away.
- Make the connection to the local potential equalisation.
- During the installation, comply with the diagrams and technical documents and the respective operating instructions for the fitted components and all associated operating equipment.
- Make sure that the APEX (SILAS) pressurized cabinet is installed in compliance with the details in the technical documentation and the specifications on the type plate.

Make sure that the following requirements are satisfied when installing:

- ▶ Effective ventilation and exhaust and also adequate air circulation must be ensured in front of the purging outlet.
- ▶ Connection to the local potential equalisation
- ▶ To prevent the accumulation of stale air, suitable spacing must be ensured in front of the purging gas outlets and openings.
- ▶ In particular, in front of the outlets, care must be taken to keep the ambient air free of any dirt which might enter the outlets.
- ▶ It is not permissible to allow any moisture near the external outlet openings as it is important not to let moisture enter the openings (protection from the weather).

## 6 Connections

### 6.1 Purging gas supply

#### 6.1.1 Protective gas

##### 6.1.1.1 General

The temperature of the protective gas at the inlet of the APEX (SILAS) pressurized cabinet may not be higher +40 °C.



In special circumstances, the temperature of the purging gas may be higher. All internally protected components as well as the components carrying purging gas are specially designed for this. In this case, the maximum permitted purging gas temperature is stated on the type plate.

##### 6.1.1.2 Cleaned instrument compressed air

When using instrument air, attention should be focused on purity. The purging air supplied should be dry and cleaned.

The following quality features are recommended:

- Residual dust: < 40 µm
- Residual water: dew point < +3 °C
- Residual oil content: < 1 mg/m<sup>3</sup>

##### 6.1.1.3 Inert gas

When using an inert gas as purging gas, the APEX (SILAS) pressurized cabinet must be labelled with the following warning notice.

**WARNING –  
THIS ENCLOSURE CONTAINS INERT GAS  
AND CAN CAUSE DANGER OF SUFFOCATION.**

### 6.1.2 Purging gas connection



**IF THE PURGING GAS SUPPLY IS DIMENSIONED INADEQUATELY, FAULTS IN THE PURGING PHASE ARE TO BE EXPECTED.**

- ▶ Adjust the internal diameter of the purging gas supply to the purging flow required.

Depending on protected volume, a pressure reducer of the size G ¼" or G ½" is connected to the APEX (SILAS) pressurized cabinet. The supplied purging gas is to be connected to it. The remaining connections are preinstalled.

The supply line must have a sufficiently large diameter to provide the requisite volume of purging gas for purging.

Ex p volume	Connection size	Pressure	Supply line
< 50 litres	G ¼"	2 bar	8 mm
50 to 300 litres	G ¼"	2 bar	8 mm
300 to 700 litres	G ½"	2 bar	12 mm
700 to 1,000 litres	G ½"	3 bar	16 mm
> 1,000 litres to 1,500 litres	* G ½"	3 bar	25 mm

\*) for Ex p volumes > 1,500 litres, inlet and outlet purging gas are to be dimensioned according to the application.

### 6.1.3 Purging gas discharge with the gas / dust version

#### DANGER

**FAILURE TO DISCHARGE PURGING GAS INTO A SAFE ZONE IN THE CASE OF GAS / DUST APPLICATIONS**

Danger of explosion from whirled up dust!

- ▶ Discharge of the purging gas into a safe zone.

At the pressure switch outlet there is an M 36 female thread which serves to connect a pipe system for the discharge of the purge gas into a safe zone.

This is connected to APEX pressurized cabinet, type 07-3704-1\*\*\*/\*\* or SILAS pressurized cabinet of type, A7-3704-1\*\*\*/\*\*.

## 6.2 Electrical connections

### 6.2.1 Wiring requirements

#### ATTENTION

#### SHORT-CIRCUITS DUE TO LOOSE OR PROTRUDING WIRES IN THE APEX (SILAS) PRESSURIZED CABINET

Assemblies and components become defective or dangerous sparks may arise.

- ▶ All core wires, including those not required, must be attached to a terminal.
- ▶ Make sure that none of the wires are loose or protrude.

The following describes the procedure for feeding and connecting cables to the APEX pressurized cabinet:

#### Procedure

- Run the supply, data and enable line through the cable glands into the junction box.
- Establish the electrical connections in accordance with the terminal assignment. Screw the terminals in securely with 0.4-0.6 Nm.
- Put the shields and earthing connections onto the shield bus.
- Use the appropriate closures to seal cable glands that are not in use.
- Tighten cable glands with 3.0 Nm.

### 6.2.2 Connections

All installation details required for the electrical connections can be found in the system-specific circuit diagram included in the scope of delivery.

Before starting work, make sure that the available mains voltage agrees with the operating voltage stated on the type plate. If this is not the case, please consult BARTEC GmbH immediately.

All external cable connections (mains connections and measuring and signalling outputs, in particular intrinsically safe circuits) must be installed securely on the basis of the system-specific terminal connection plan. Check the polarity of the signal cable here if necessary.

Only factory-provided cable entries may be used on the APEX (SILAS) pressurized cabinet. Only BARTEC may make any additional cable entries.

Connect the supply voltage and all signal lines as explained in the terminal connection plan.

## 7 Commissioning

### 7.1 Initial commissioning

Before the APEX (SILAS) pressurized cabinet is put into operation, a first test must be performed.

See IEC/EN 60079-14 for the first test.

### 7.2 Putting into operation

The APEX (SILAS) pressurized cabinet has an automatically functioning Ex p control unit. This means that after applying the supply voltage and activating the purging gas supply, the system automatically starts the operation of the Ex p phases.

#### 7.2.1 Type 0(A)7-3704-1\*\*\*/\*\*\*(gas/dust)

To put the APEX (SILAS) pressurized cabinet into operation, proceed as follows:

- Dust the enclosure
- Make sure that the operating pressure of the purging gas for the pressurized encapsulation is set at the pressure reducer station to the pressure specified on the type plate.
- Make sure that the discharged purging air at the pressure monitor outlet is discharged into a safe zone.
- Close and lock the main door of the APEX (SILAS) pressurized cabinet.

An overpressure is then built up in the pressurized enclosure due to the inflowing purging gas.

As soon as the inner pressure exceeds the set minimum limit, the purging time starts to count down. After expiry of the purging time, the internally protected assemblies and components are switched on as follows:

- ▶ APEX pressurized cabinet, type “pxb“: the internal fitted components are automatically switched on.
- ▶ APEX (SILAS) pressurized cabinet, type “pyb“ and “pzc“: the internal components are either switched on automatically or manually by the operator.

The APEX (SILAS) pressurized cabinet is ready for operation from this point in time.

### 7.2.2 Type 0(A)7-3704-2\*\*\*/\*\* (gas)

To put the APEX (SILAS) pressurized cabinet into operation, proceed as follows:

- Make sure that the operating pressure of the purging gas for the pressurized encapsulation is set at the pressure reducer station to the pressure specified on the type plate.
- Close and lock the main door of the APEX (SILAS) pressurized cabinet.

An overpressure is then built up in the pressurized enclosure due to the inflowing purging gas.

As soon as the inner pressure exceeds the set minimum limit, the purging time starts to count down. After expiry of the purging time, the internally protected assemblies and components are switched on as follows:

- ▶ APEX pressurized cabinet, type “pxb“: the internal fitted components are automatically switched on.
- ▶ APEX (SILAS) pressurized cabinet, type “pyb“ and “pzc“: the internal components are either switched on automatically or manually by the operator.

The APEX (SILAS) pressurized cabinet is ready for operation from this point in time.

### 7.2.3 Type 0(A)7-3704-3\*\*\*/\*\* (dust)

To put the APEX (SILAS) pressurized cabinet into operation, proceed as follows:

- Dust the enclosure
- Make sure that the operating pressure of the purging gas for the pressurized encapsulation is set at the pressure reducer station to the pressure specified on the type plate.
- Close and lock the main door of the APEX (SILAS) pressurized cabinet.

An overpressure is then built up in the pressurized enclosure due to the inflowing purging gas.

As soon as the inner pressure exceeds the set minimum limit, the APEX (SILAS) pressurized cabinet is in a safe state. The internally protected assemblies and components are switched on as follows:

- ▶ APEX pressurized cabinet, type “pxb“: the internal fitted components are automatically switched on.
- ▶ APEX (SILAS) pressurized cabinet, type “pyb“ and “pzc“: the internal components are either switched on automatically or manually by the operator.

The APEX (SILAS) pressurized cabinet is ready for operation from this point in time.



## 8 Operation

### 8.1 Operating phases of the APEX (SILAS) pressurized cabinet

The operation of the APEX (SILAS) pressurized cabinet can be divided into three phases, which are preparatory, purging and operating phase.

### 8.2 Process diagram of the operating phases

The APEX (SILAS) pressurized cabinet is built in compliance with the currently applicable guidelines and standards and fulfils the requirements specified therein. The processes in the respective states are listed in the following.

Operating phase	Requirements	Effects
Preparatory phase	<ul style="list-style-type: none"> <li>- Mains voltage connected</li> <li>- Build-up of internal pressure</li> <li>- Purging time set</li> <li>- Purging time has not yet expired</li> </ul>	Initiation of the purging phase
Purging phase (not applicable for dust)	<ul style="list-style-type: none"> <li>- Minimum pressure ok</li> <li>- Maximum pressure ok</li> <li>- Flow rate ok</li> </ul>	Purging time is running
Operating phase	<ul style="list-style-type: none"> <li>- Purging time has expired</li> <li>- Minimum pressure ok</li> <li>- Maximum pressure ok</li> </ul>	Operation enabled

#### 8.2.1 Preparatory phase

The preparatory phase begins when the supply voltage for the APEX (SILAS) pressurized cabinet and the supply with purging gas is switched on. The purging gas flows through the purging gas valve into the APEX (SILAS) pressurized cabinet.

##### **Preparatory phase sequence:**

The influx of purging gas increases the internal pressure in the pressurized enclosure.

- ▶ The minimum pressure of the enclosure is exceeded.
- ▶ The purging gas valve opens.
- ▶ In the case of dust applications, the purging gas valve is replaced by the adjustable needle valve.
- ▶ The next phase, the “purging phase“ is initiated.

## 8.2.2 Purging phase

The pressurized enclosure of the APEX (SILAS) pressurized cabinet is purged with purging gas in order to remove any explosive gas-and-air mixture inside or to dilute it to a harmless concentration before the possible sources of ignition are connected and activated in the pressurized enclosure.

This process prepares the pressurized enclosure for the operating phase. The necessary purging volume depends on the free capacity of the pressurized enclosure.

### **Purging phase sequence:**

- ▶ Increase in the flow with purging gas.
- ▶ The set purging time counts down and the APEX (SILAS) pressurized cabinet is purged with purging gas.
- ▶ At the end of the purging time, the purging gas valve closes.
- ▶ The next phase, the “operating phase“ is initiated.

This phase is not applicable for dust applications because it is replaced by the prior cleaning of the switch cabinet from dust.

## 8.2.3 Operating phase

The operating phase begins when the purging gas valve closes.

The operating pressure must be maintained throughout the entire operation of the pressurized enclosure to prevent the penetration of combustible substances. The electrical installed parts in the pressurized enclosure are connected and activated by means of the Ex p control unit.

If the enclosure pressure drops below the set minimum levels during the operating phase, all electrical installed parts in the pressurized enclosure which are not themselves explosion-proof, are switched off and the purging process starts again.

In the case of the “pyb“ and “pzc“ types with manual switching on and off, the deactivation must be performed manually. The message is given via a visual and/or audible signal.

### **Operating phase sequence:**

- ▶ The purging valve closes and the leakage losses are compensated.
- ▶ The Ex p control unit activates the pressurized enclosure of the APEX (SILAS) pressurized cabinet.

## 8.3 Purging time

### CONSTANT PURGING AIR SUPPLY



When counting down the purging time it is important that the available purging air is constant in terms of pressure and flow. Otherwise, the purging time may be reset automatically.

- ▶ Pay attention to the purging air supply and its layout

The APEX (SILAS) pressurized cabinet can have a manual or automatic purging time calculation.

It is delivered as standard with a manual purging time. In the version with automatic purging time calculation, this is shown on the type plate.

#### 8.3.1 Manual purging time

In the case of manual purging time, the corresponding Ex p control unit has a permanently set purging time which only expires once the corresponding flow rate has been reached and the corresponding parameters have been exceeded.

#### 8.3.2 Automatic purging time

In the case of automatic purging time, the parameters of volume and applied outlet are stored in the Ex p control unit. During the booting of the Ex p control unit the purging air flow rate achieved during the first 10 seconds is determined and the corresponding purging time calculated, set and run. After expiry of the purging time, the Ex p control unit is in normal operating mode.

## 8.4 Bypass operation

### DANGER

#### COMMISSIONING WITH BYPASS KEY SWITCH IN EXPLOSIVE ATMOSPHERE

Risk of explosion!

- ▶ Have the commissioning with a bypass key switch approved by the factory manager or his appointee. Approval may only be given if it has been ensured that there will not be any explosive atmosphere for the duration of the commissioning or if the necessary precautions have been taken to protect against the risk of explosion (fire permit).
- ▶ A warning sign informing that the Ex protection will be invalidated if the key switch is activated must be affixed near the key switch.

During the operating phase it may be necessary to change settings on internally mounted components. The Ex p control unit provides the bypass function for this purpose.

If the bypass mode is activated, it must be ensured that there is no explosive gas in the atmosphere. The concentration of gas in the surrounding atmosphere must be determined with a gas detector.

Once the bypass mode is activated, the door on the pressurized enclosure can be opened without interrupting the operation of the internal components. The required settings can be carried out and, once done, the pressurized enclosure must be closed again. The operation of the pressurized enclosure is not interrupted for this duration. The purging phase for the pressurized enclosure is not repeated.

#### Procedure:

- Measure the ambient atmosphere for compliance with safe levels.
- Activate bypass operation.
- Open the door of the pressurized enclosure.
- Perform the required work inside the pressurized enclosure.
- Close the door of the pressurized enclosure.
- Deactivate bypass operation.

## 8.5 Operation with safety foil

### ATTENTION

#### FURTHER OPERATION WITH DAMAGED SAFETY FOIL.

Operation with damaged safety foil can invalidate the protection against explosions.

- ▶ Put the APEX (SILAS) pressurized cabinet out of operation and repair the foil.

The safety foil protects Ex assemblies from electrostatic charging. It must be ensured that the foil is always in perfect condition.

If the safety foil is damaged, the APEX (SILAS) pressurized cabinet must be put out of operation and the safety foil must be replaced.

## 9 Putting out of operation

### 9.1 Shut-down

Proceed as follows in order to switch off the APEX (SILAS) pressurized cabinet:

- Make sure that there is no explosive atmosphere.
- Switch off the fuse or the main switch for the APEX (SILAS) pressurized cabinet and lock it against unintended restart.
- Observe the specified waiting times before opening the door of the APEX (SILAS) pressurized cabinet.

### 9.2 Cooling and discharge times

#### CAUTION

#### **WHEN OPENING THE APEX (SILAS) PRESSURIZED CABINET THAT HAS COOLING OR DISCHARGE TIMES.**

Hot assemblies and/or assemblies with a discharge time may be integrated within the APEX (SILAS) pressurized cabinet.

- ▶ Observe the marked waiting time before opening
- ▶ Observe the operating instructions

APEX (SILAS) pressurized cabinet with assemblies requiring a waiting time for cooling or discharge are labelled with a warning sign on the front.

Procedure:

- Deactivate the pressurized compartment of the APEX (SILAS) pressurized cabinet using the main switch for the internal application.
- Observe the waiting time (waiting time marked on the sign).
- APC can be opened.

## 10 Maintenance and care



Find out about the general safety instructions before starting work (see Chapter 2.2 Safety instructions).

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

### 10.1 Maintenance work

#### 10.1.1 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
Monthly	Visual inspection according to Chapter 10.1.2
Semi-annually	Cleaning according to Chapter 10.1.3
Annually	Regular maintenance according to Chapter 10.1.4

### 10.1.2 Visual inspection

Perform a visual inspection monthly by:

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

### 10.1.3 Cleaning

No solvents should be used to clean the APEX (SILAS) pressurized cabinet as these can impair the properties on contact with the seals.

### 10.1.4 Regular maintenance

Depending on the purity of purging air used, the inlet and outlet of the components carrying purging gas must be checked regularly for impurities (e.g. oil, dust, etc.) or corrosion.

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.

Furthermore, the function of the overall system should be checked. The correct sequence of the purging phase and of the operating phase should be checked.

## 10.2 Repairs

Repairs to the APEX (SILAS) pressurized cabinet and accessories may only be made by BARTEC GmbH.

## 10.3 Faults and troubleshooting

### ATTENTION

**AN ALTERED OPERATING BEHAVIOUR CAN BE AN INDICATION OF ALREADY EXISTING DAMAGE.**

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

Use the respective operating instructions for the Ex p control unit as well as the corresponding technical documentation of the APEX (SILAS) pressurized cabinet for troubleshooting.



## 11 Technical data

Product designation	: APC – APEX pressurized cabinet	SPC – SILAS pressurized cabinet
Generation	: 4th generation, Pro Series	4th generation, Pro Series
Explosion protection		
Erection area	: Ex II 2G / Ex II 2D, Zone 1 (Gb) / 21 (Db)	Ex II 3G / Ex II 3D, Zone 2 (Gc) / 22 (Dc)
Protection type	: Ex pxb * IIC Gb Ex pxb * IIIC Db  Ex pyb * IIC Gb Ex pyb * IIIC Db	Ex pzb * IIC Gb Ex pzb * IIIC Db
Temperature class	: Gas T5, T4, T3 Dust T95 °C, T130 °C	
Test certificate ATEX	: BVS 20 ATEX E 060 X	BVS 20 ATEX E 061 X
Test certificate IECEx	: IECEx BVS 20.0048X	
Ambient conditions		
Ambient temperature	: max. -55 °C to + 70 °C (depending on application)	
Storage temperature	: Depending on application	
IP protection class	: Min. IP 4x	
Purging and overpressure parameters		
Dimensions	: max. 6000 B x 2400 H x 1200 D mm	
Volumes	: max. 17300 dm <sup>3</sup>	
Protective gas	: Instrument air or inert gas	
Temperature of protective gas	: max. +40 °C <sup>3</sup>	
Protective gas prepressure	: constant 100... 2500 kPa (1...25 bar)	

<sup>1</sup> \* = As an option, the marking of protection type can be extended by separately certified components, such as "db", "eb", "ma/mb", "Ex II 2(1)G [ia Ga/Da]" or "Ex II 2(2)G [ib Gb/Db]".

<sup>2</sup> \* = As an option, the marking of protection type can be extended by separately certified components, such as "dc", "ec", "mc", "ic", "Ex II 3(3)G [ic Gc/Dc]", "Ex II 3(1)G [ia Ga/Da]" or "Ex II 3(2)G [ib Gb/Db]"

<sup>3</sup> In the case of higher purging air temperatures, the deviation must be specified on the type plate. Maximum media temperatures of the components carrying the purging air and maximum operating temperatures of the fitted components must be considered.

Purging gas	:	Up to zu 2500 Pa (25 mbar)
Purging gas flow	:	up to 100 m <sup>3</sup> / hour
Minimum overpressure	:	80 Pa (0.8 mbar)
Maximum overpressure	:	2500 Pa (25 mbar)
Purging factor - gas	:	min. 5 times cabinet volume
Protective gas consumption	:	Specification on type plate
Safety device	:	<p>APC:            BARTEC Ex p control unit            APEXpx / APEXpy; BVS 19 ATEX E015X // IECEx BVS 19.0038X</p> <p>Ex p control unit            APEX; BVS 19 ATEX E018U // IECEx BVS 19.0032U</p> <p>SPC:            BARTEC Ex p control unit            SILAS pz; BVS 19 ATEX E016X // IECEx BVS 19.0038X</p> <p>Exp control unit            SILAS; BVS 19 ATEX E032U // IECEx BVS 19.0032U</p> <p>BARTEC Ex p control unit            SILAS; TÜV 09 ATEX 553359 // IECEx TUN 10.0030X</p>
Electrical parameters		
Rated voltage	:	max. 10 kV (±10%)
Internal generated voltage	:	max. 24 kVac (e.g. ignition transformers)
Rated current	:	max 10 kA
Rated cross-section	:	max. 500 mm <sup>2</sup>
Earth connection	:	max. 250 mm <sup>2</sup>

Rated voltage, rated current and rated cross-section are guided by the protected application.

## 12 Notes

## **BARTEC**

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