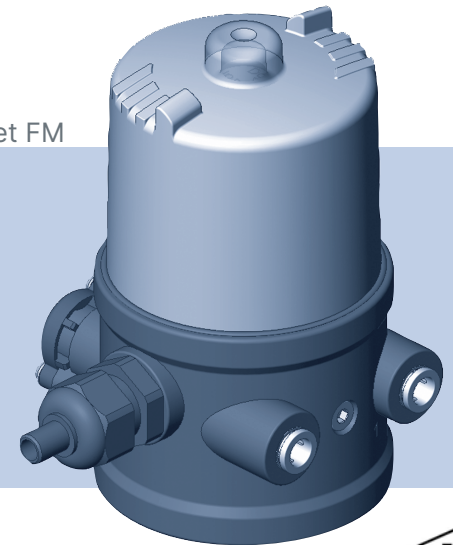


BVS 13 ATEX E104X, BVS 13 ATEX E087X FM24US0217X, FM24CA0058X Type 8697

Pneumatic Control Unit with ATEX approval and FM approval
Pneumatische Ansteuerung mit ATEX- und FM-Zulassung
Unité de commande pneumatique avec mode de protection ATEX et FM



Operating Instructions

Bedienungsanleitung
Manuel d'utilisation



We reserve the right to make technical changes without notice.
Technische Änderungen vorbehalten.
Sous réserve de modifications techniques.

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Operating Instructions 2502/07_EU-ml_00810359 / Original DE

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1 ADDITIONAL INSTRUCTIONS

The additional instructions for the use in potentially explosive environments describe the entire life cycle of the device. Keep these instructions in a location which is easily accessible to every user and make these instructions available to every new owner of the device.

Important safety information.

Read the additional instructions carefully and thoroughly. Study in particular the chapters entitled Particular safety instructions and Authorized use.

- ▶ The additional instructions must be read and understood.

The additional instructions describe safety instructions and information for the use of the pneumatic control unit in a potentially explosive environment.

All other descriptions and information can be found in the operating instructions of the device for the Type 8697.



The operating instructions can be found on the Internet at:

country.burkert.com

1.1 Definition of terms / abbreviation

In these instructions, the term "device" always refers to the pneumatic control unit Type 8697.



In these instructions, the abbreviation "Ex" always refers to "potentially explosive atmosphere".

2 SYMBOLS

The following symbols are used in these instructions.



DANGER!

Warns of an immediate danger.

- ▶ Failure to observe the warning will result in a fatal or serious injury.



WARNING!

Warns of a potentially dangerous situation.

- ▶ Failure to observe the warning may result in a serious or fatal injury.



CAUTION!

Warns of a possible danger.

- ▶ Failure to observe this warning may result in a moderate or minor injury.

NOTE!

Warns of damage to property.



Important tips and recommendations.



Refers to information in these instructions or in other documentation.

- ▶ Designates instructions for risk prevention.
- Designates a procedure which you must carry out.

3 AUTHORIZED USE

Incorrect use of the pneumatic control unit Type 8697 can be dangerous to people, nearby equipment and the environment.

- ▶ The device is designed to be mounted on pneumatic actuators of process valves for the control of media. The device was designed for the use in
 - Type 8697 PX03, PR08:
Explosion group II, category 3G Ex ec, T4 and explosion group II, category 3D Ex tc, T135°C
 - Type 8697 PE99:
Explosion group II, category 2G Ex ia, T4 and explosion group II, category 2D Ex ia, T135°C
 - Type 8697 PE51:
Explosion group II, category 2G Ex ia, T4
(see information listed on the sticker for the approval).
- ▶ The device is mounted onto a pneumatic actuator of a process valve. The process valve and the actuator must have at least the Ex approval of the pneumatic control unit.
- ▶ During use observe the admissible data, the operating conditions and conditions of use specified in the contract documents, operating instructions and on the type label
 - of the pneumatic control unit Type 8697 and
 - the process valve.
- ▶ Use the device only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- ▶ Correct transportation, storage and installation, as well as careful use and maintenance are essential for reliable and faultless operation.
- ▶ Use the device only for its intended purpose.

3.1 Restrictions

If exporting the system/device, observe any existing restrictions.

3.2 Identification (V code) Pxxx

The identification (V code) PX03, PE99 or PE51 is on the type label of the device.

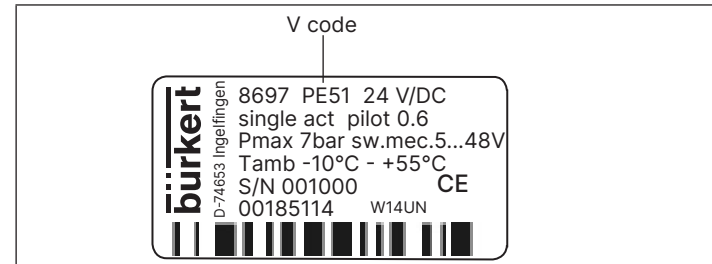


Fig. 1: Example of type label

4 PARTICULAR SAFETY INSTRUCTIONS



DANGER!

Risk of explosion when removing the electric circular plug.

- ▶ Secure cable connections, which use circular plugs, with suitable locking clips.
For example: EXCLIP, FA. Phoenix Contact, Type SAC-M12-EXCLIP-M, Art. no. 1558988 or Type SAC-M12-EXCLIP-F, Art. no. 1558991 or locking clip, FA. ESCHA, M12 × 1, Art. no. 8040501.
- ▶ Remove electric circular plug only after the power supply has been disconnected.

Risk of explosion when opening the device.

- ▶ Open device only when no Ex atmosphere is present.
- ▶ During the installation and setting of the micro switches, no Ex atmosphere may be present.
- ▶ Prior to start-up, secure the transparent cap against being opened without tools by using the enclosed locking wire.

Risk of explosion due to electrostatic discharge.

In the event of a sudden discharge from electrostatically charged devices or individuals, there is a risk of an explosion in the explosion-risk area.

- ▶ Take suitable measures to ensure that no electrostatic discharges can build up in the explosion-risk area.
- ▶ Clean the device surface by gently wiping it with a damp or anti-static cloth only.



DANGER!

To prevent the risk of explosion, observe not only the safety instructions in the operating instructions for operation in the explosion-risk area, but also the following:

- ▶ Observe information on temperature class, ambient temperature, degree of protection and voltage on the approval sticker.
- ▶ Do not use devices in areas where there is gas or dust with a lower ignition temperature than indicated on the approval sticker.
- ▶ Installation, operation and maintenance may be performed by qualified technicians only.
- ▶ Observe the applicable safety regulations (also national safety regulations) as well as the general rules of technology for construction and operation.
- ▶ Do not repair the device yourself, but replace it with an equivalent device.
- ▶ Repairs may be performed by the manufacturer only.
- ▶ Do not expose the device to any mechanical and/or thermal loads which will exceed the limits described in the operating instructions.
- ▶ Use only cable and line entry points which have been approved for the respective application area and which have been screwed into place according to the associated installation instructions.
- ▶ The cable glands shall only be used for fixed installations.
- ▶ Close all unnecessary cable glands with lock screws approved for the explosions area.

- ▶ The required degree of protection (min. degree of protection see chapter "4.1") is only guaranteed in connection with suitable adaption sets. All pneumatic and electrical connections must be equipped with suitable connectors.

4.1 Specific conditions of use in potentially explosive atmosphere

Type 8697 PX03

- For the variant with cable plug M12 the plug is provided by the end user in the end use application. This plug is no part of this Type Examination Certificate and shall be in accordance with all applicable clauses of IEC 60079-0, IEC 60079-7 and IEC 60079-31. A minimum degree of protection IP54 according to IEC 60529 shall be ensured.
- The connection to the control valve shall only be realized by special assembly kits. They shall be in accordance with all applicable clauses of IEC 60079-0, IEC 60079-7 and IEC 60079-31. A minimum degree of protection IP54 according to IEC 60529 shall be ensured.
- The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1.
- Transient protection shall be provided that is set a level not exceeding 140% of the peak rated voltage at the supply terminals to the equipment.

Type 8697 PE99, PE51

- The pneumatic control units have to be installed in such a way that electrostatic charges/discharges are avoided.
- The pneumatic control units shall be installed in combination with the assembly kits FA03 resp. FA05 only. The combination of control units and assembly kits has to ensure a minimum degree of protection IP64 according to EN 60529 for type 8697 PE99. For type 8697 PE51, the combination has to ensure a minimum degree of protection IP20 according to EN 60529.
- The pneumatic connections have to be fitted with suitable connection elements.
- For type 8697 PE99 only suitable and separately certified cable glands or blanking elements shall be used.

Type 8697 PR08

- For the variant with cable plug M12, the plug is provided by the end user in the end use application. This plug shall be installed in accordance with all applicable clauses from ANSI/UL 60079-0, ANSI/UL 60079-7 and ANSI/UL 60079-31. A minimum degree of protection of IP54 according to ANSI/IEC 60529 shall be ensured.
- Cable gland shall be positioned in such a way as to minimize the risk of mechanical impact.
- The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1.

Type 8697

Particular safety instructions

- Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.
- The circuits shall be limited to overvoltage Category II as defined in IEC 60664-1.
- The surface of the equipment may cause risk of electrostatic discharge. Avoid installation that could cause electrostatic build-up and clean with a damp cloth.

4.2 Instructions on operation in an explosion-risk (Ex) area

4.2.1 Safety instructions

For operation in an explosion-risk area zone (gas) 1 and 2, the following applies:



DANGER!

Risk of explosion caused by electrostatic charge.

In the event of a sudden discharge from electrostatically charged devices or individuals, there is a risk of an explosion in the explosion-risk area.

- ▶ Take suitable measures to ensure that no electrostatic discharges can build up in the explosion-risk area.
- ▶ Clean the device surface by gently wiping it with a damp or anti-static cloth only.

4.2.2 Media in explosion-risk areas



If explosive media are used, this can result in additional explosion risks.

4.2.3 Actuators / valves in explosion-risk areas



Use in an explosive atmosphere may be restricted by the actuators / valves. Observe the operating instructions of the actuators / valves.

4.2.4 Cleaning in explosion-risk areas



Check that any cleaning agents are approved for use in explosive atmospheres.

4.2.5 Adhesive signs for explosion-risk areas

Sign

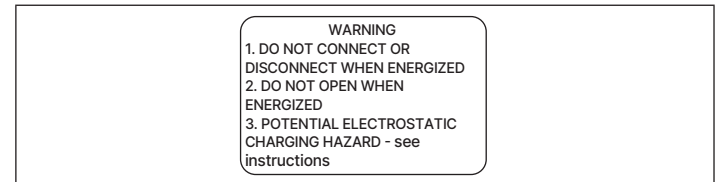


Fig. 2: Sign

Approval sticker PX03

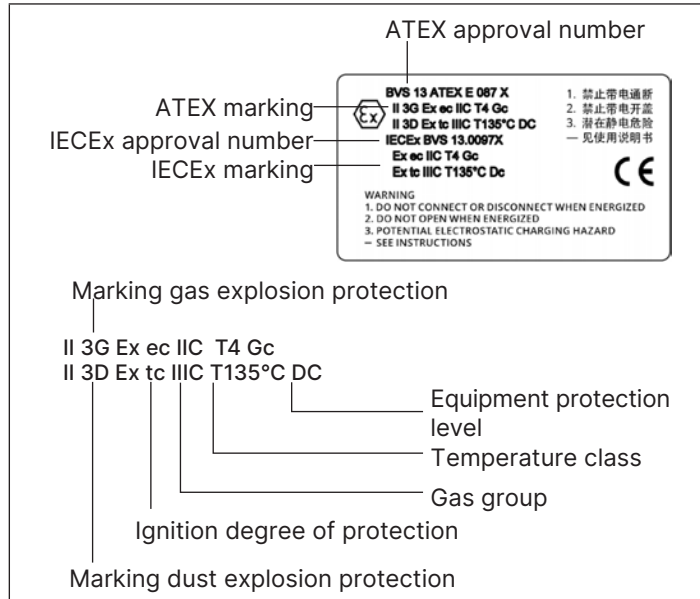


Fig. 3: Example approval sticker PX03

Approval sticker PE99

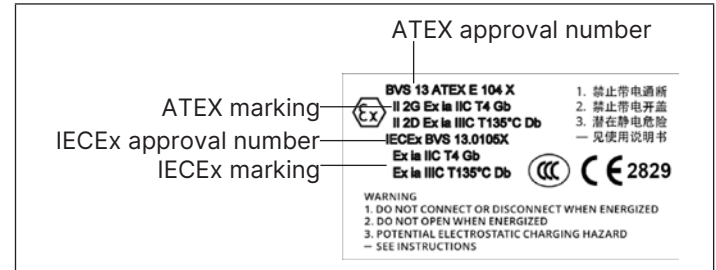


Fig. 4: Example approval sticker PE99

Approval sticker PE51

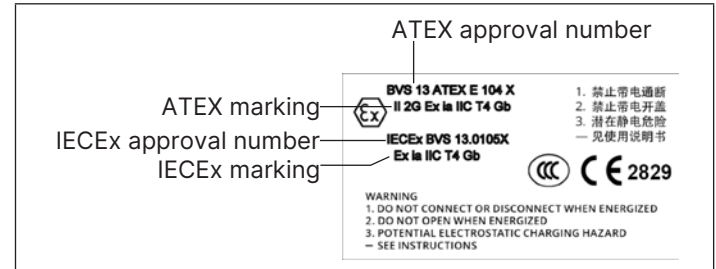


Fig. 5: Example approval sticker PE51

Approval sticker PR08

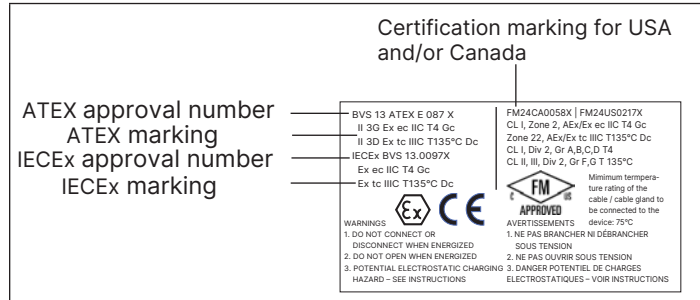


Fig. 6: Example approval sticker PR08

4.2.6 Temperature ranges in explosion-risk areas

Ambient temperature

| | |
|--|----------------------------|
| Type 8697 PX03, PR08 (3 GD (ec tc)) | 0 – + 55 °C |
| Type 8697 PE99 (2 GD) | 0 – + 55 °C ¹⁾ |
| Type 8697 PE51 (2 G with pilot valve) | -10 – +55 °C ¹⁾ |
| Type 8697 PE51 (2 G without pilot valve) | -20 – +60 °C |

4.2.7 Electrical data PE99 and PE51

The device in ignition degree of protection intrinsic safety Ex ia IIC/IIIC (PE99 and PE51) may be connected only to intrinsically safe electric circuits.

| | |
|-------------------|-------------|
| Explosion group | IIC/IIIC |
| Category | ia |
| Temperature class | T4 / 135 °C |

¹⁾ The maximum ambient temperature may be restricted by the maximum allowable input power P_i of the pilot valve (see "Tab. 1: Value pairs input voltage - input current" on page 11).

Type 8697

Particular safety instructions

The electric circuits have the following parameter:

Electric circuit limit switch

Upper end position: Terminals INI Top 1 +/-

Lower end position: Terminals INI BTM 1 +/-

Each:

Max. allowable input voltage (U_i) 20 V

Max. allowable input current (I_i) 60 mA

Max. allowable input power (P_i) 200 mW

Max. inner capacitance (C_i) 178 nF

Max. inner inductance (L_i) 66 μ H

Electric circuit pilot valve

Pilot valve 1: Terminals VALVE +/-

Max. allowable input voltage U_i and input current I_i
(use only value pairs that are displayed one below the other)

| Voltage value [V] = U_i | 15 | 18 | 20 | 22 | 25 | 28 | 30 | 35 |
|------------------------------|-----|------|-------|-------|-------|-------|-------|-------|
| Current value [A] = I_i | 0.9 | 0.44 | 0.309 | 0.224 | 0.158 | 0.120 | 0.101 | 0.073 |

Tab. 1: Value pairs input voltage - input current

Max. allowable input power P_i

| Number of pilot valves | Max. allowable output P_i | Max. ambient temperature Type 8697 | |
|---------------------------|--------------------------------|---------------------------------------|--------|
| | | PE99 | PE51 |
| 0 | - | +55 °C | +60 °C |
| 1 | 0.7 W | +55 °C | +55 °C |
| 1 | 1.1 W | +50 °C | +50 °C |

Tab. 2: Max. allowable input power

Max. inner capacitance (C_i)

negligible

Max. inner inductance (L_i)

negligible

4.3 Installation locking wire for PE99 and PX03



DANGER!

Risk of explosion when opening the device.

- ▶ Open device only when no Ex atmosphere is present.
- ▶ Prior to start-up, secure the transparent cap against being opened without tools by using the enclosed locking wire.

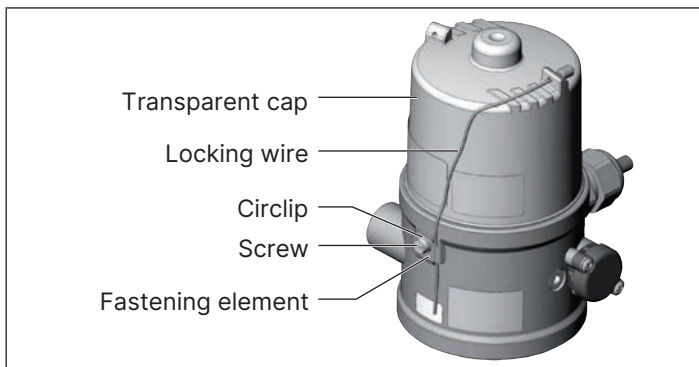


Fig. 7: Installation locking wire

Procedure:

- Push locking wire through the bore of the transparent cap.
- Push locking wire through fastening element and pull it tight.
- Tighten the screw on the fastening element.

4.4 Adaption set - installation note



DANGER!

Risk of explosion if incorrect adaption set is used.

- ▶ Only use suitable adaption set.



The degree of protection required for ignition degree of protection intrinsic safety "i", is only guaranteed in connection with suitable adaption sets.

| Attachment | Adaption set series |
|------------|---------------------|
| FA03 | ELEMENT |
| FA05 | CLASSIC |

Tab. 3: Attachment and adaption set



The order designations for the adaption sets can be found in the "Order table adaption sets" in the data sheet for Type 8697.

Attachment FA03

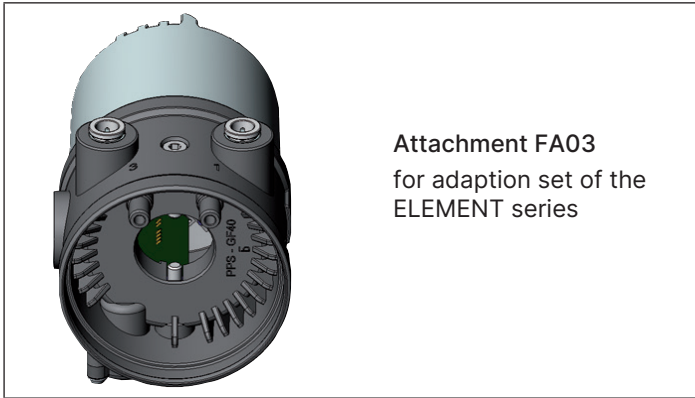


Fig. 8: Attachment FA03

Attachment FA05

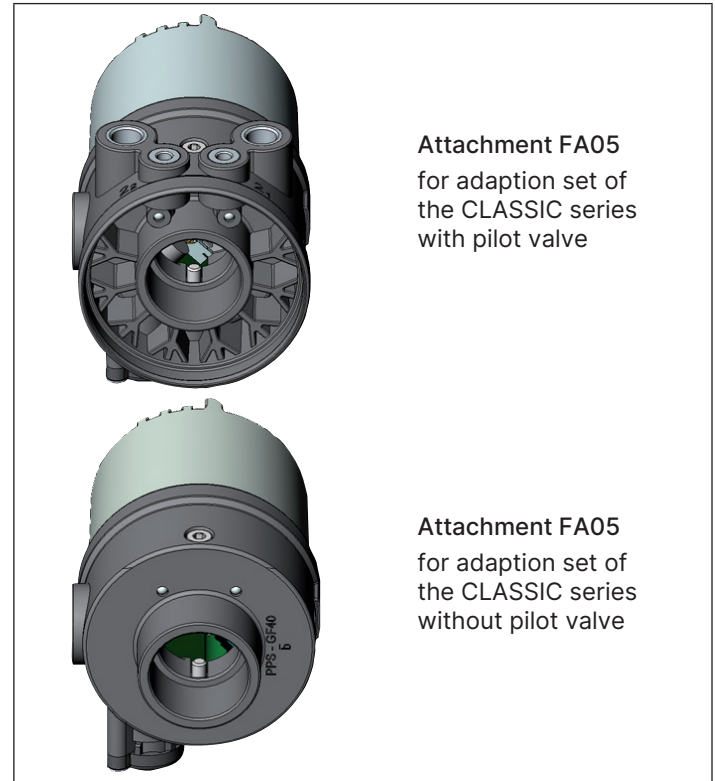


Fig. 9: Attachment FA05

Type 8697

Particular safety instructions

4.5 Explosion protection approval

The explosion protection approval is only valid if you use the modules and components authorized by Bürkert, as described in these operating instructions.

If you make unauthorized changes to the system, the modules or components, the explosion protection approval will be terminated.

This product is subject to review by the Shanghai Inspection and Testing Institute of Instruments and Automation Systems Co., Ltd. (SITIIAS), has been CCC certified to comply with requirements of national explosion-proof series standard (GB/T 3836.2021-Explosive Atmospheres).

Type examination certificates for PX03 and PE99, PE51

BVS 13 ATEX E104X and
IECEX BVS 13.0105X,

BVS 13 ATEX E087X and
IECEX BVS 13.0097X were issued by

DEKRA EXAM GmbH
Dinnendahlstraße 9
D-44809 Bochum

The PTB (CE0102) audits the manufacture.

For PR08

The Hazardous Locations certificates
FM24US0217X
FM24CA0058X

were issued by

FM Approvals LLC. 1151 Boston-Providence
Turnpike, Norwood, MA 02062 USA

country.burkert.com

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