

# EPS 21 ATEX 1 234 X, IECEx EPS 21.0078X/UL E504714

Solenoid coil Type AC10  
with cable plug Type 2509 or Type 2513

Device with II 3G/D Ex approval  
and Hazardous Locations Zone 2/22 and Class I, II, III Div 2 Listing



Operating Instructions



We reserve the right to make technical changes without notice.  
Technische Änderungen vorbehalten.  
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Operating Instructions 2408/03\_EU-ML\_00815422 / Original DE



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## 1 OPERATING INSTRUCTIONS

The operating instructions describe the entire life cycle of the device. Keep these instructions in a location which is easily accessible to every user, and make them available to every new owner of the device.

### Important safety information!

- ▶ Carefully read these instructions.
- ▶ Above all, observe the safety instructions, intended use and operating conditions.
- ▶ People who work on the device must read and understand these instructions.

### 1.1 Terms and abbreviations

The terms and abbreviations in these instructions represent the following definitions:

Device/system	Type AC10 solenoid in connection with Type 2509 or Type 2513 cable plug
Ex area	Potentially explosive atmosphere
Ex approval	Approval for potentially explosive atmosphere
Hazardous Locations	Explosion protection area USA/CA

### 1.2 Symbols

The following symbols are used in these instructions.



#### DANGER!

Warns of an immediate danger.

- ▶ Failure to observe these instructions will result in death or serious injuries.



#### WARNING!

Warns of a potentially hazardous situation.

- ▶ Failure to observe these instructions may result in serious injuries or death.



#### CAUTION!

Warns of a potential danger.

- ▶ Failure to observe these instructions may result in moderate or minor injuries.

#### NOTE!

Warns of damage!



Important tips and recommendations.



Refers to information in these operating instructions or in other documentation.

- ▶ Highlights instructions to avoid a danger.
- Highlights a procedure which you must carry out.

## 2 INTENDED USE

Improper use of the Type AC10 solenoid may be dangerous to people, nearby equipment and the environment.

The Type AC10 solenoid is used to operate valves that control gaseous or liquid media.

- ▶ A valve operated with the Type AC10 solenoid is to be used exclusively with the permissible media specified in the data sheet and for use in explosion group IIC, category 3G and/or explosion group IIIC, category 3D and temperature class T4 (see details on the type label for the Ex area).
- ▶ The solenoid may only be used for the applications specified in chapter „5 Operational conditions of the devices“ and in connection with the Type 2509 or Type 2513 cable plugs available from Bürkert.  
Variants with UL listing are only authorised for Type 2509 cable plugs.
- ▶ Prerequisites for safe and trouble-free operation of the device are proper transport, storage and installation as well as careful operation and maintenance. Any other or additional use is not considered part of the **intended use**. Bürkert will not be liable for any damage resulting from this. The user alone bears the risk.
- ▶ Only use the device as intended.

### 2.1 Ex approval

The explosion protect approval is only valid if you use the modules and components authorised by Bürkert as described in these operating instructions. The Type AC10 solenoid with Type 2509 or Type 2513 cable plug may be used only in combination with the additional components approved by Bürkert, otherwise the explosion protection approval is terminated. In the event of unauthorised changes to the device, modules or components, the explosion protection approval is also void. The EU type approval test certificate and the following IECEx certificates have been issued by:

Bureau Veritas  
 Consumer Products Services Germany GmbH  
 Businesspark A96  
 86842 Türkheim

Type AC10 solenoid with Type 2509 or Type 2513 cable plug

EPS 21 ATEX 1 234 X  
 II 3G Ex ec IIC T4 Gc  
 II 3D Ex tc IIIC T135°C Dc

IECEx EPS 21.0078X  
 Ex ec IIC T4 Gc  
 Ex tc IIIC T135°C Dc

Production will be audited by:

CE 102  
 PTB (Physikalisch Technische Bundesanstalt -  
 German Federal Metrology Institute)  
 Bundesallee 100  
 38116 Braunschweig, Germany

You can find the EU type approval test certificate online at:

[country.burkert.com](http://country.burkert.com)

## 2.2 UL approval

The UL approval is only valid if you use the modules and components authorised by Bürkert as described in these operating instructions. The Type AC10 solenoid with Type 2509 cable plug may be used only in combination with the additional components approved by Bürkert, otherwise the UL approval will be terminated. In the event of unauthorised changes to the device, modules or components, the UL approval is also void.

The UL certificate was issued by:

UL LLC 333 Pfungsten Road Northbrook IL 60062-2096 USA

Type AC10 solenoid with Type E504714  
2509 cable plug

Production will be audited by:

UL LLC 333 Pfungsten Road Northbrook IL 60062-2096 USA

## 2.3 Applied Standards for Hazardous Locations Zone 2/22 and Class I, II, III Div. 2 Listing

USL - U.S. Listed certification in accordance with UL 429 and

UL 60079-0	EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS	Edition 7 - Revision Date 04/15/2020
UL 60079-7	STANDARD FOR EXPLOSIVE ATMOSPHERES - PART 7: EQUIPMENT PROTECTION BY INCREASED SAFETY "E"	Edition 5 - Revision Date 2017/04/21
UL 60079-31	EXPLOSIVE ATMOSPHERES - PART 31: EQUIPMENT DUST IGNITION PROTECTION BY ENCLOSURE "T"	Edition 2 - Issue Date 2015/06/12

CNL - Canada Listed certification in accordance with CSA C22.2 NO. 139 and

CSA C22.2 No 60079-0	EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS	Edition 4 - Issue Date 02/2019
CSA C22.2 No 60079-7	STANDARD FOR EXPLOSIVE ATMOSPHERES - PART 7: EQUIPMENT PROTECTION BY INCREASED SAFETY "E"	Edition 2 - Issue Date 2016/10/01
CSA C22.2 No 60079-31	EXPLOSIVE ATMOSPHERES - PART 31: EQUIPMENT DUST IGNITION PROTECTION BY ENCLOSURE "T"	Edition 2 - Issue Date 2015/10/01

### 3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take into account any unforeseen circumstances and events which occur during installation, operation and maintenance.

The operator is responsible for observing the location-specific safety regulations, also with reference to personnel.



#### Risk of injury due to high pressure in the system or device.

- ▶ Before working on the system or device, switch off the pressure and ventilate or empty the lines.

#### Risk of injury due to electric shock.

- ▶ Before working on the system or device, switch off the power supply and secure against reactivation.
- ▶ Observe the applicable accident prevention and safety regulations for electrical devices.

#### Risk of burns or fire from hot device surfaces due to prolonged operation.

The solenoid can become very hot during continuous operation.

- ▶ Keep the device away from highly flammable substances and media and do not touch with bare hands.



### **Risk of explosion.**

Solenoids and valve bodies form a closed system after installation. When used in a potentially explosive atmosphere, there is a risk of explosion when the system is opened while in operation.

- ▶ Do not dismantle or open the system during operation.

### **Risk of explosion due to electrostatic discharge.**

If there is a sudden discharge of electrostatically charged devices or people, there is a risk of explosion in the Ex area.

- ▶ Use suitable measures to ensure that electrostatic charges cannot occur in the Ex area.
- ▶ The device must not be used in areas with processes that generate heavy charges, involve automated grinding or cutting, the spraying of electrons (e.g. near electrostatic painting equipment) or generate pneumatically propelled dust.
- ▶ Clean the device surface by gently wiping it with a damp or anti-static cloth only.

**To avoid the risk of explosions, the following must be observed in the Ex area:**

- ▶ Information about temperature class, ambient temperature, degree of protection and voltage on the type label for the Ex area.
- ▶ Installation, operation and maintenance may only be performed by qualified personnel.

- ▶ Observe applicable safety regulations (as well as national safety regulations), as well as the general rules for the technology during setup and operation.
- ▶ Repairs may only be carried out by the manufacturer.
- ▶ Do not subject the device to mechanical and/or thermal stresses which exceed the limits described in the operating instructions.
- ▶ Do not disconnect connector while circuit is live.

### **General hazardous situations.**

To prevent injuries, observe the following:

- ▶ Secure the device or system against unintentional activation.
- ▶ Note the flow direction when installing.
- ▶ Following an interruption in the power supply, ensure that the process is restarted in a controlled manner.
- ▶ Do not use the device as a lever when screwing the valve into the line.



## 4 GENERAL NOTES

### 4.1 Contact addresses

#### Germany

Bürkert Fluid Control Systems  
Sales Centre  
Christian-Bürkert-Str. 13-17  
D-74653 Ingelfingen  
Tel. + 49 (0) 7940 - 10 91 111  
Fax + 49 (0) 7940 - 10 91 448  
E-mail: [info@buerkert.com](mailto:info@buerkert.com)

#### International

The contact addresses can be found on the back pages of the printed operating instructions.

They are also available online at: [country.burkert.com](http://country.burkert.com)

### 4.2 Warranty

A precondition for the warranty is that the Type AC10 solenoid is used as intended in consideration of the specified application conditions.

### 4.3 Information on the Internet

Operating instructions and data sheets for Bürkert products can be found online at: [country.burkert.com](http://country.burkert.com)

## 5 OPERATIONAL CONDITIONS OF THE DEVICES

### 5.1 Special conditions

- ▶ Only use the device in an area which has pollution degree 2 at least, as defined in IEC 60664-1.
- ▶ Ensure that the transient protection has been set to a value which does not exceed 140% of the rated peak voltage value on the supply connections of the device.
- ▶ Use the device only in a mounting position that is not subject to mechanical stress.

#### Installation advice

The information for the authorised ambient temperature concerns the single installation of the solenoids. If multiple solenoids are installed in one valve block:

- ▶ Prevent mutual heating by using a suitable distance.



## WARNING!

### Hazard due to electrostatic discharge.

If there is a sudden discharge of electrostatically charged devices or people, there is a risk of explosion in the Ex area.

- ▶ Use suitable measures to ensure that electrostatic charges cannot occur in the Ex area.
- ▶ The device must not be used in areas with processes that generate heavy charges, involve automated grinding or cutting, the spraying of electrons (e.g. near electrostatic painting equipment) or generate pneumatically propelled dust.
- ▶ Clean the device surface by gently wiping it with a **damp** or **anti-static cloth** only.

## 5.2 Operating conditions

The valve fulfils a cooling function for the solenoid.

The solenoid must not be operated without a valve. The valve body must meet the following prerequisites:

- Material  
Metal (brass, aluminium, stainless steel) or polyamide
- Minimum dimensions  
32 mm x 32 mm x 10 mm

A larger valve body with better thermal conductivity may be used at any time.

Solenoids intended for single installation must not be used for block installation.

## 5.3 Operating temperature range

Pay attention to the operating temperature range for each type listed in the electrical data.

## 6 TECHNICAL DATA

### 6.1 Safety instructions



#### **DANGER!**

##### **Risk of explosion.**

If the technical safety information and values listed on the type label are not observed and complied with, dangerous situations could occur.

- ▶ Observe the degree of protection and temperature class for operating the device.

Exceeding the voltage stated on the type label is a technical safety risk that can cause the device to overheat.

- ▶ Do not connect the device to voltage higher than the one specified on the type label.

### 6.2 Standards and directives

The device complies with the relevant EU harmonisation legislation. In addition, the device also complies with the requirements of the laws of the United Kingdom.

The harmonised standards that have been applied for the conformity assessment procedure are listed in the current version of the EU Declaration of Conformity/UK Declaration of Conformity.

### 6.3 Type label for Ex area

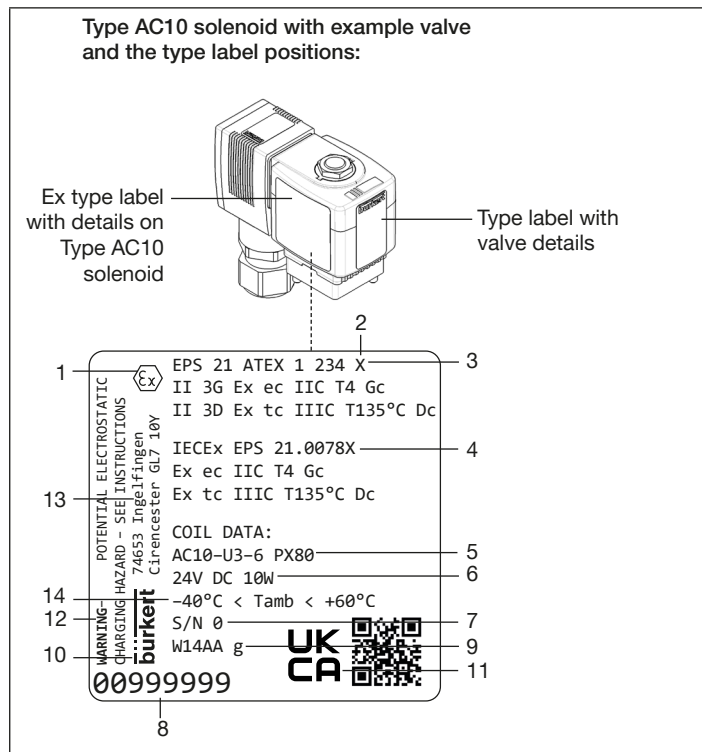
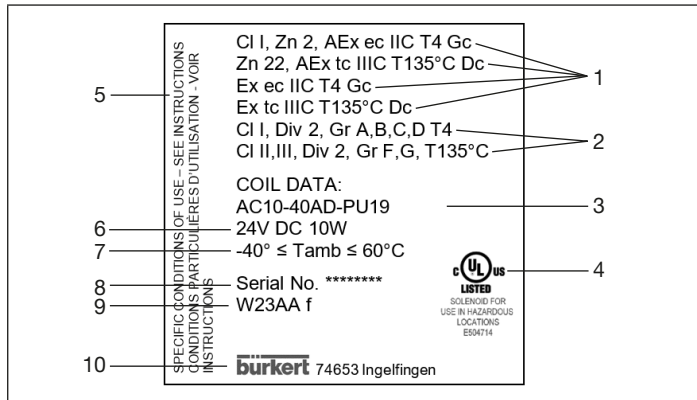


Fig. 1: Location and description of the Ex type label

Item	Description	Details
1	Ex logo	
2	Information on special operating conditions	X
3	ATEX, identification of the Ex protection for the solenoid	EPS 21 ATEX 1 234 X II 3G Ex ec IIC T4 Gc II 3D Ex tc IIIC T135°C Dc
4	IECEX, identification of the Ex protection for the solenoid	IECEX EPS 21.0078X Ex ec IIC T4 Gc Ex tc IIIC T135°C Dc
5	Type designation	AC10-U3-6 PX80
6	Nominal voltage, nominal power	24V DC 10W
7	Serial number	S/N 0
8	ID number	00999999
9	Date of manufacture	W14AA
10	Manufacturer's logo	
11	UKCA logo	
12	Warning	
13	Address	
14	Ambient temperature	-40°C < Tamb < +60°C

Tab. 1: Description of the Ex type label details

## 6.4 Type label for the USA/CA Hazardous Locations area



Item	Description	Details
1	Ex labelling in accordance with zone concept (US and CA separately)	Cl I, Zn 2, AEx ec IIC T4 Gc Zn 22, AEx tc IIIC T135°C Dc Ex ec IIC T4 Gc Ex tc IIIC T135°C Dc
2	Ex labelling in accordance with division concept (US and CA together)	Cl I, Div 2, Gr A,B,C,D T4 Cl II,III, Div 2, Gr F,G, T135°C
3	Type code (abbreviated)	AC10-40AD-PU19
4	Certificate issuer's label	
5	Reference to operating instructions re. "Special operating conditions" (EN and FR)	
6	Nominal data (voltage, frequency, output)	24V DC 10W
7	Ambient temperature	-40° ≤ Tamb ≤ 60°C
8	Serial number	Serial No. *****
9	Key for producing plant, date of manufacture, materials	W23AA f
10	Manufacturer's logo and address details	

Tab. 2: Description of type label details for USA/CA Hazardous Locations area

## 6.5 Electrical data for solenoids

VAR	Structural width [mm]	Temperature class	Ambient temperature range [°C]	Nominal voltage [V]	Nominal power [W]
PX80	40	T4	-40...+60	max. 24	max. 10
PX80	32	T4	-40...+60	max. 24	max. 10
PX80 CZ05	40	T4	-40...+60	max. 24	20/2 <sup>1)</sup>
PX80 CZ05	40	T4	-40...+60	max. 24	65/7 <sup>1)</sup>

1) inrush power/holding power

## 7 INSTALLATION AND DISASSEMBLY



### DANGER!

**Risk of injury due to high pressure in the system or device.**

- ▶ Before working on the system or device, switch off the pressure and ventilate or empty the lines.

**Risk of injury due to electric shock.**

- ▶ Before working on the system or device, switch off the power supply and secure against reactivation.
- ▶ Observe the applicable accident prevention and safety regulations for electrical devices.

**Risk of burns or fire from hot device surfaces due to prolonged operation.**

- ▶ Keep the device away from highly flammable substances and media and do not touch with bare hands.

**Danger of short circuit due to damaged connection cables.**

- ▶ Solenoid connection cables must be attached firmly and protected from damage.

**Risk of explosion.**

Solenoids and valve bodies form a closed system after installation. When used in a potentially explosive atmosphere, there is a risk of explosion when the system is opened while in operation.

- ▶ Do not dismantle or open the system during operation.
- ▶ Before connecting the cable plug ensure that all contacts as well as the terminal room are clean and dry.



### DANGER!

#### Risk of explosion due to electrostatic discharge.

If there is a sudden discharge of electrostatically charged devices or people, there is a risk of explosion in the Ex area.

- ▶ Use suitable measures to ensure that electrostatic charges cannot occur in the Ex area.
- ▶ The device must not be used in areas with processes that generate heavy charges, involve automated grinding or cutting, the spraying of electrons (e.g. near electrostatic painting equipment) or generate pneumatically propelled dust.
- ▶ Clean the surface of the solenoid valve by gently wiping it with a damp or anti-static cloth only.



### WARNING!

#### Risk of injury due to improper installation.

- ▶ Installation may be carried out by trained technicians only with the appropriate tools.
- ▶ Secure the system against unintentional activation.
- ▶ Ensure a controlled restart after installation.

## 7.1 Installing the cable plug



An exact description of the installation can be found in the operating instructions for the cable plug attached to each cable plug and/or online at: [country.burkert.com](https://country.burkert.com) via searching for 2509 or 2513.

Type of Approval	Applicable Manual of Cable Plug
ATEX + IECEx	Type 2513 or 2509
ATEX + IECEx + UL Haz Loc	Type 2509

## 7.2 Electrical connection



### DANGER!

#### Risk of injury due to electric shock.

- ▶ Before reaching into the system, switch off the power supply and secure against reactivation.
- ▶ Observe the applicable accident prevention and safety regulations for electrical devices.

If there is no electrical contact between the metal valve components and the protective conductor of the solenoid, there is a risk of electric shock.

- ▶ Always connect the protective conductor.
- ▶ Check electrical continuity between the protective conductor of the solenoid and the core guide tube of the valve.

## 7.3 Disassembly



### DANGER!

**Risk of injury due to high pressure in the system or device.**

- ▶ Before working on the system or device, switch off the pressure and ventilate or empty the lines.

**Risk of injury due to electric shock.**

- ▶ Before working on the system or device, switch off the power supply and secure against reactivation.
- ▶ Observe the applicable accident prevention and safety regulations for electrical devices.



### WARNING!

**Risk of injury due to improper disassembly.**

- ▶ Disassembly must be performed only by trained personnel using suitable tools.

**Risk of injury due to medium leaking out of loose connections.**

- ▶ Carefully seal connection lines.

→ Disconnect electrical connection.

→ Disconnect valve body from the pipeline.

## 8 START-UP



### WARNING!

**Risk of injury due to improper operation.**

Improper operation may result in injuries as well as damage to the device and the area around it.

- ▶ Before start-up, ensure that the operating personnel are aware of and have completely understood the contents of the operating instructions.
- ▶ The safety instructions must be followed and the device used only as intended.
- ▶ Only adequately trained personnel may start up the system or device.

**Before start-up, ensure that**

- the device is installed according to regulations,
- the connection has been properly made,
- the device is not damaged,
- all screws have been tightened.



## 9 MAINTENANCE, REPAIRS, TROUBLESHOOTING

### 9.1 Maintenance

The Type AC10 solenoid is maintenance-free if the operating conditions described in the instructions are observed.

### 9.2 Repair



#### **DANGER!**

**Risk of injury due to improper repair.**

The safety and function of the Type AC10 solenoid and the accompanying solenoid valve can only be guaranteed after a repair if the repairs were done by the manufacturer.

- ▶ Only have the device repaired by the manufacturer.

### 9.3 Troubleshooting

In the case of malfunction, ensure that

- the device is installed according to regulations,
- the connection has been properly made,
- the device is not damaged,
- voltage and pressure have been applied,
- the pipelines are free,
- all screws have been tightened.

## 10 TRANSPORT, STORAGE, PACKAGING

### NOTE!

#### **Transport damage.**

Inadequately protected devices may be damaged during transport.

- ▶ Use shock-resistant packaging to protect the device against moisture and dirt during transport.
- ▶ Avoid exceeding or falling below the permitted storage temperature.

#### **Incorrect storage may damage the device.**

Permitted storage temperature  $-40 \dots +60 \text{ }^\circ\text{C}$ .

- ▶ Store the device in a dry and dust-free location.

### Environmentally friendly disposal



- ▶ Follow national regulations regarding disposal and the environment.
- ▶ Collect electrical and electronic devices separately and dispose of them as special waste.

Further information [country.burkert.com](https://www.country.burkert.com).

**[country.burkert.com](https://country.burkert.com)**