

# PTB 15 ATEX 2001 X IECEX 16.0014 X

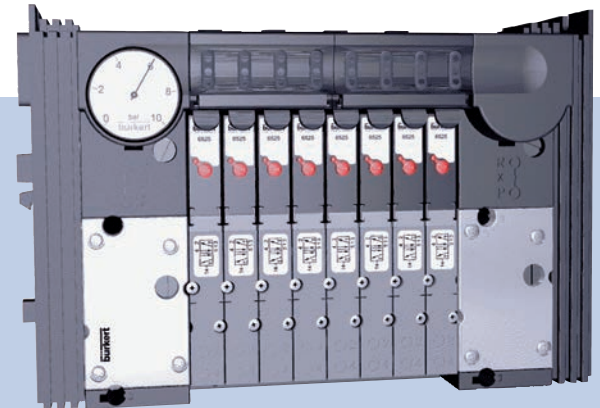
Type 8644

AirLINE

Electro-pneumatic automation system with ATEX approval

Elektropneumatisches Automatisierungssystem  
mit ATEX Zulassung

Système d'automatisation électropneumatique avec  
homologation ATEX



Additional Instructions

Zusatzanleitung

Instruction supplémentaire



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

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Further information on the cooperation partners can be found on the Internet.

Company	Product
WAGO Kontakttechnik	Series 750
SIEMENS	SIMATIC ET 200S
PHOENIX CONTACT	I/O system Inline
Rockwell Automation, Allen-Bradley	POINT I/O

# 1 ADDITIONAL INSTRUCTIONS

If Bürkert devices have the code PX18, observe not only the respective operating instructions but also the information in these additional instructions when using the devices in the explosion-risk area.

The additional instructions contain safety instructions and information for the use of the electro-pneumatic automation system Type 8644 in the explosion-risk area.

**The additional instructions contain important safety information.**

- ▶ Read the additional instructions carefully and follow the safety instructions.
- ▶ The additional instructions must be available to every user.
- ▶ The liability and warranty do not apply if the procedures in the additional instructions are not observed.

All other required descriptions and information can be found in the operating instructions for Type 8644.

The operating instructions can be found on the Internet at: [www.burkert.com](http://www.burkert.com)

## 1.1 Definition of terms / Abbreviation

Definition of the terms used in these instructions.

- **Device:** always stands for the electro-pneumatic automation system Type 8644.
- **Ex area:** stands for explosion-risk area
- Ex approval stands for approval in the explosion-risk area according to PTB 15 ATEX 2001 X and IECEx PTB 16.0014 X

## 2 SYMBOLS

The following symbols are used in these instructions.



### **DANGER!**

**Warns of an immediate danger!**

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



### **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

**Unauthorized use of the device Type 8644 may be dangerous to people, nearby equipment and the environment.**

The electro-pneumatic automation system is optimized for use in the control cabinet or switch box. It is used to control pneumatic systems with the specified fieldbus system. The system consists of electrical and pneumatic components and can be expanded if required. All electrical data is designed for 24 V DC. The plant operator must ensure that the rated voltage is not exceeded by more than 40 % even if malfunctions occur.

The individual components of the automation system are provided with the ATEX marking. Other systems with a Type Examination Certificate may also be used.

- ▶ During use observe the permitted data, the operating conditions and conditions of use specified in the contract documents, operating instructions and on the type label.
- ▶ 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 Special conditions

- The housing for the production equipment must comply at least with degree of protection IP54.
- Rated voltage < 60 VAC or 75 VDC (specified by electrical data).
- Transient overvoltages >40% of the rated voltage must be prevented by taking suitable measures.

**In the case of systems in the explosion-risk area, which are installed in a housing (degree of protection at least IP 54), ensure the following:**

- The control cabinet must be authorized for use in the explosion-risk area.
- The internal temperature of the control cabinet must not exceed the maximum permitted ambient temperature for the device. To ensure this, the control cabinet must be dimensioned adequately large. If required, the resulting heat loss must be discharged to the exterior.

#### 3.1.1 Installation, operation and maintenance

- Only qualified technicians may install, operate and service the device.
- When working on the device, use suitable tools only.
- Follow the operating instructions relevant for the device and the Quickstart. In particular, the instructions for general safety and the safety instructions for set-up, installation, operation and maintenance.
- Do not operate the device unless it is in perfect working order.
- 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 physically stress the device (e.g. by placing objects on it or standing on it).
- Do not expose the device to any mechanical and/or thermal loads/effects which will exceed the limits described in the operating instructions.

#### Permitted installation work



#### **DANGER!**



#### **Risk of explosion due to valve replacement.**

The safety of Type 8644 is only ensured if suitable valve versions are used for replacement.

- ▶ To replace the valve Type 6524 with double coil, use only the version with integrated power reduction.

**Variable code CZ26!**

The valves of the electro-pneumatic automation system Type 8644 may be replaced for maintenance purposes; in doing so, observe the following:

- ▶  Isolate the electro-pneumatic automation system from the power supply!  
Before removing or installing valves, isolate them from the power supply.
- ▶  Ensure that an explosive atmosphere cannot occur during the installation work.

## 4 PARTICULAR SAFETY INSTRUCTIONS



### DANGER!

#### 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 explosion in the explosion-risk area.

- ▶ When the housing is open, clean the plastic surfaces by gently wiping them with a damp cloth only.

**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:**

- ▶ Information on temperature class, ambient temperature, degree of protection and voltage on the type label for explosion-risk area.
- ▶ Do not use devices in areas where there is gas which has a lower ignition temperature than indicated for approval on the type label.
- ▶ 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.



### DANGER!

#### Risk of electric shock!

- ▶ Before reaching into the device or the equipment, switch off the power supply and secure to prevent reactivation!
- ▶ Observe the applicable accident prevention and safety regulations for electrical equipment!

#### 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 explosion in the explosion-risk area.

## 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 or to the modules and components, the explosion protection approval will expire.

The EC type-examination certificate **PTB 15 ATEX 2001 X** and the certificate **IECEx 16.0014 X** was issued by the

PTB (Physikalisch Technische Bundesanstalt)  
Bundesallee 100  
38116 Braunschweig

which also audits production.

## 6 INSTRUCTIONS ON OPERATION IN AN EXPLOSION-RISK (EX) AREA

- ▶ 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 explosion in the explosion-risk area.

- ▶ When the housing is open, clean the plastic surfaces by gently wiping them with an anti-static cloth only.

### 6.1 Media in the explosion-risk area



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

### 6.2 Operating conditions for the explosion-risk area

Rated voltage: 24 V DC

Nominal power: Depending on the set-up

Ambient temperature range: Depending on the electrical control and the set-up.

For further information see chapter "[6.5.1 Restrictions for use in Zone 2](#)", page 9.

Maximum ambient temperature for automation system Type 8644 for a set-up consisting of maximum 48 valves:

Manufacturer of the electrical control		Ambient temperature (for set-up with max. 48 valves)
WAGO Kontakttechnik		max. 55 °C
PHOENIX CONTACT		
Rockwell Automation, Allen-Bradley		
SIEMENS	Double valves	max. 50 °C
	Single valves	max. 55 °C

Tab. 1: Maximum ambient temperature

### 6.3 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.

#### 6.3.1 Solenoid valve types used

- Type 6524 (3/2-way valve) with pilot control Type 6144
- Type 6525 (5/2-way valve) with pilot control Type 6144
- Type 6526 (3/2-way valve) with pilot control Type 6106
- Type 6527 (5/2-way valve) with pilot control Type 6106

Max. number of solenoid valves: depending on the set-up

## 6.4 Ex type label



Fig. 1: Description of the Ex type label

## 6.5 Authorized system set-ups

### Authorized system set-up for valves with auxiliary control air, Add-on dimension 11 mm

Cooperation partner	Valve type	Max. number of valves	Intermediate supply	AirLINE Quick
Wago, Phoenix, Rockwell, SIEMENS	6524, 6525 single-acting	1 to 16	0	-
		17 to 32	1	
		33 to 48	2	
Wago, Phoenix, Rockwell, SIEMENS	6524 double coil	2 to 12	0	-
		13 to 24	1	

Tab. 2: System set-up, valves with auxiliary control air (add-on dimension 11mm)

### Authorized system set-up for valves with auxiliary control air, add-on dimension 16.5 mm

Cooperation partner	Valve type	Max. number of valves	Intermediate supply	AirLINE Quick
Wago, Phoenix, Rockwell, SIEMENS	6526, 6527 single-acting	1 to 16	0	-
		17 to 32	1	

Tab. 3: System set-up, valves with auxiliary control air (add-on dimension 16.5mm)



**System set-up for valves without auxiliary control air, add-on dimension 11 mm**

Cooperation partner	Valve	Max. number of valves	Intermediate supply	AirLINE Quick
Wago, Phoenix, Rockwell, SIEMENS	6524, 6525 single-acting	1 to 16	0	-
		17 to 32	1	
		33 to 48	2	
		1 to 24	0	Yes
		16*	1	
		24*	1	
Wago, Phoenix, Rockwell, SIEMENS	6524 double coil	1 to 12	0	-
		13 to 24	1	
		1 to 24	0	
		16*	1	Yes
		24*	1	
		* The number of valves is suitable for the AirLINE Quick adaption and contains an intermediate supply		

Tab. 4: System set-up, valves without auxiliary control air (add-on dimension 11mm)

**Authorized system set-up for valves without auxiliary control air, add-on dimension 16.5 mm**

Cooperation partner	Valve	Max. number of valves	Intermediate supply	AirLINE Quick
Wago, Phoenix, Rockwell, SIEMENS	6526, 6527 single-acting	1 to 16	0	-
		17 to 32	1	

Tab. 5: System set-up, valves without auxiliary control air (add-on dimension 16.5mm)

**Authorized system set-up for valves without auxiliary control air, add-on dimension 16.5 mm**

Cooperation partner	Valve	Max. number of valves	Intermediate supply	AirLINE Quick
Wago, Phoenix, Rockwell, SIEMENS	6526, 6527 single-acting	1 to 16	0	-
		17 to 32	1	

Tab. 6: System set-up, valves without auxiliary control air (add-on dimension 16.5mm)



Modifications permitted for the system set-up, see chapter "6.5.2 Permitted modifications", page 10.

**6.5.1 Restrictions for use in Zone 2**

For valve types 6526 and 6527 the valve switch-off time restriction  $T_{OFF} \geq 0.2$  s must be strictly observed for use in Zone 2 with temperature class T4 under the following conditions:

- quick switch-on cycles (valve switch-on time  $T_{ON} < 3$  s)
- maximum permitted overvoltage of  $U_{Nominal} + 10\%$
- maximum ambient temperature  $+55$  °C.

The permitted ambient temperature range for the electro-pneumatic automation system Type 8644 is 0 °C to 55 °C. An exception is the SIEMENS system integration "ET200S" with the valve type 6524 and the pilot valve Type 6144 (2x0.8W) which may be used at 0 °C to 50 °C only.

The Ex identification for the electro-pneumatic automation system will lose its validity if components are added which are not authorized for the explosion-risk area.

**Note:**

The approval identification refers to the electro-pneumatic automation system Type 8644. Electric modules of the cooperation partners which are added on have their own approval.

### 6.5.2 Permitted modifications

- Fewer valves
- Mixed set-up with valves of the same pilot control, e.g. valve of Type 6524 / 6525 (single coil 0.8W) or of Type 6526 / 6527 (single coil 1W).
- Combination of Type 6524\*\* (double coil 2 x 0.8 W) with Type 6525 (single coil 1x 0.8W) -> number of max. functions must not be exceeded. Limit 50 °C.

\*\*For Type 6524 with double coil, the following applies: Only the version with power reduction, which has the variable code CZ26, is suitable for use in the automation system of Type 8644.

- Set-ups with additional pneumatic intermediate supplies (ZE) (the pneumatic ZE do not introduce any heat into the system, the HotSpots are reduced on the coils by the additional distance from the adjacent valves).

- Other connection versions for pressure supply and working connections of the modules (pressure supply: G1/4, NPT1/4, D10, G3/8; NPT3/8,...; working connections: D6, D4, D1/4, M7, M5, G1/8, NPT1/8, D8, ...).
- Use of non-return valves in the pneumatic modules.
- Clock conditions during which the switch-off time is greater.

### 6.6 Cleaning in the explosion-risk area



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

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