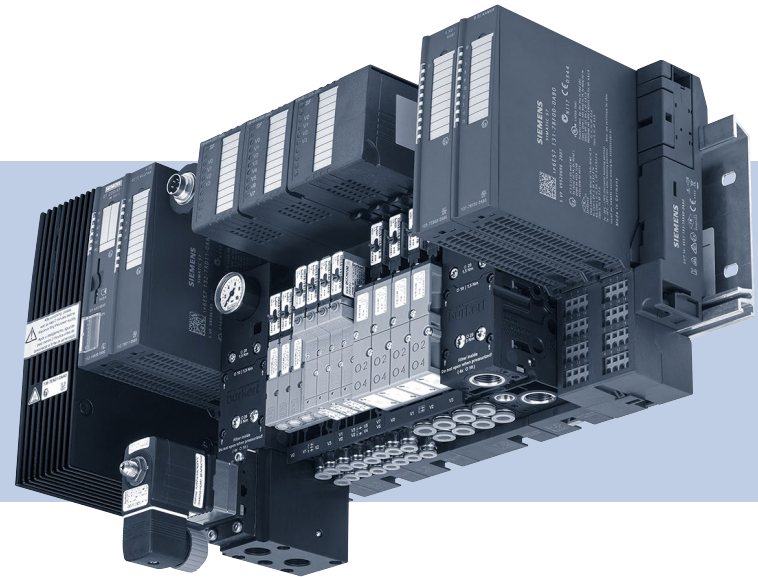


Type 8650 REV.2 AirLINE Ex

Valve block AirLINE Ex with interface to decentral peripheral system SIMATIC ET 200iSP for use in explosive applications



Quickstart

English

This Quickstart refers to device version REV.2.

For information on distinguishing features between device version REV.1 and device version REV.2 see chapter [“6.1 Information on revision status and compatibility”](#) on [Page 12](#).

The operating instructions for device version REV.1 can be found online at:
country.burkert.com

We reserve the right to make technical changes without notice.

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Operating Instructions 2112/00_EUml_00815361 / Original DE

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1 QUICKSTART

Quickstart contains a short summary of the most important information and instructions for using the device. The detailed description can be found in the operating instructions for Type 8650 REV.2.



The operating instructions can be found on the internet at: country.burkert.com

Keep the Quickstart in an easily accessible location for every user. The Quickstart must be available to each new owner of the device.

The current digital Quickstart version can be found at country.burkert.com.

Important safety information!

- ▶ Carefully read these instructions.
- ▶ Observe in particular the safety instructions, intended use and operating conditions.
- ▶ Persons who work on the device must read and understand these instructions.

1.1 Definition of terms

Term	in these instructions stands for
Device, valve block	Valve block AirLINE Ex Type 8650
Valve island	Valve block AirLINE Ex Type 8650 in with modules from the decentral periphery systems Siemens SIMATIC ET 200iSP
I/O system, ET 200iSP	decentral periphery system Siemens SIMATIC ET 200iSP
Ex area	Potentially explosive atmosphere
Explosion protection approval	Approval(s) for operating the device in ex area
Valve, pilot valve	Solenoid valve for pneumatics can be integrated in valve block
Actuator, process valve, pneumatic cylinder, pneumatic actuator, pneumatic components	Pneumatic consumer controlled by the valve island
System	Machine with pneumatic consumers actuated by valve block
Pilot auxiliary air	Additional supply for auxiliary pilot air variant pilot valves
Pilot exhaust air	Pilot valve internal exhaust air

1.2 Symbols used



DANGER

Warning of an immediate danger.

- ▶ Failure to comply will result in death or serious injury.



WARNING

Warning of a potentially dangerous situation.

- ▶ Failure to comply with these instructions may result in serious injury or death.



CAUTION

Warning of a potential danger.

- ▶ Failure to comply with these instructions may result in moderate or minor injury.

ATTENTION

Warning of material damage.



Important tips and recommendations.



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

- ▶ Indicates instructions for avoiding danger.
- Indicates a procedure you must carry out.

2 INTENDED USE

The device is designed for use in ex areas (see chapter [“7 Technical Data”](#) for specific classification). It may be used to control pneumatically operated devices.

- ▶ Device must not be used outdoors unprotected.
- ▶ When using the device, observe the authorised data, operating conditions and deployment conditions specified in the contract documents and in the operating instructions. These are described in chapters [“4 Notes for use in hazardous areas”](#), [“6 Product description”](#) and [“7 Technical Data”](#).
- ▶ Prerequisites for safe and error-free operation include correct transportation, storage, installation, start-up, operation and maintenance.
- ▶ To use the device, observe the permitted data, operating conditions and application conditions. These specifications can be found in the contract documents, the operating instructions and on the type label.
- ▶ Use the device only in conjunction with third-party devices and components recommended or approved by Bürkert.
- ▶ Use the device only as intended. Non-intended use of the device may be dangerous to people, nearby equipment and the environment.

2.2.1 Ex approvals

The ex approvals are only valid if you use the modules and components authorised by Bürkert as described in these operating instructions.

The electronic modules may only be used in combination with the pilot valve types approved by Bürkert, otherwise the ex approvals are void.

The ex approvals are also void for impermissible changes to the system, modules or components.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take into account any coincidences or events occurring 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 and escaping medium.
- ▶ Switch off the pressure before working on the device or system. Vent or empty the lines.
- ▶ Risk of injury from electric shock.
- ▶ Switch off the power supply before working on the device or system. Secure it against reactivation.
- ▶ Observe the applicable accident prevention and safety regulations for electrical devices.
- ▶ Risk of burns or fire from hot device surfaces due to longer duty cycles.
- ▶ Keep the device away from highly flammable substances and media.
- ▶ Do not touch the device with your bare hands.

General hazardous situations.

To prevent injuries, observe the following:

- ▶ Do not feed any aggressive or combustible media into the media connections of the device.
- ▶ Do not feed any liquids into the device's media connections.

- ▶ For underpressure applications, make sure that the device does not intake any flammable or explosive media.
- ▶ Do not place the device under mechanical stress (e.g. by placing objects on it or standing on it).
- ▶ Do not cover the ventilation slots of the body.
- ▶ Do not modify the device.
- ▶ Heavy equipment must only be transported, assembled and disassembled with the help of a second person as appropriate and using suitable apparatus.
- ▶ Secure the device or system to prevent unintentional activation.
- ▶ Following interruption of the process, ensure that the process is restarted in a controlled manner.
Observe the sequence:
 1. Apply electrical or pneumatic supply.
 2. Charge with medium.
- ▶ Installation, operation and maintenance may only be performed by qualified personnel with an appropriate tool.
- ▶ Operate the device only when it is in perfect condition and in accordance with the operating instructions.
- ▶ Observe applicable safety regulations (also national safety regulations) as well as the general rules for the technology during setup and operation.
- ▶ Install the device according to the regulations applicable in the respective country.

ATTENTION

Only provide the device with electricity via SIMATIC ET 200iSP.

- ▶ In order to prevent damage to the device, the device must solely obtain its power supply via the I/O system SIMATIC ET 200iSP.

Avoid pressure drops.

- ▶ To avoid a pressure drop, provide the device's pressure supply to the greatest extent possible.

Electrostatically sensitive components and assemblies.

The device contains electronic components that are susceptible to the effects of electrostatic discharging (ESD). Components that come into contact with electrostatically charged persons or objects are at risk. In the worst case scenario, these components will be destroyed immediately or fail after start-up.

- ▶ Meet the requirements specified by EN 61340-5-1 to minimise or avoid the possibility of damage caused by a sudden electrostatic discharge.
- ▶ Do not touch electronic components when the supply voltage is connected.

4 NOTES FOR USE IN HAZARDOUS AREAS

4.1 Safety instructions



Risk of injury due to electrical voltage.

Turn off the power before performing actions within the device (e.g. disconnecting terminal modules) or system. Secure it against reactivation.

The valves and electronic modules are excluded from this. These may also be plugged and unplugged under voltage in an explosive atmosphere.

- ▶ Observe the applicable accident prevention and safety regulations for electrical devices.

Risk of explosion.

- ▶ Only install and operate the device in accordance with the permissible usage conditions.
- ▶ The device must only be powered via the system SIMATIC ET 200iSP.

Risk of explosion due to electrostatic charge

If there is a sudden discharge of electrostatically charged devices or persons, there is a risk of explosion in the potentially explosive atmosphere.

- ▶ Use suitable measures to ensure that electrostatic charges cannot occur in the potentially explosive atmosphere.
- ▶ Clean the device surface by gently wiping it with a damp or anti-static cloth only.

Risk of burns/fire due to hot device surface if device operated continuously.

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

General hazardous situations.

- ▶ Installation, operation and maintenance may only be performed by qualified personnel with an appropriate tool.
- ▶ Operate the device only when it is in perfect condition and in accordance with the operating instructions.
- ▶ Observe applicable safety regulations (also national safety regulations) as well as the general rules for the technology during setup and operation.
- ▶ Do not feed any flammable media into the media connections of the system.
- ▶ Do not repair the device, but replace it with an equivalent device. Repairs may only be carried out by the manufacturer.
- ▶ Do not place the device under mechanical stress (e.g. by placing objects on it or standing on it).
- ▶ Do not subject the device to mechanical and/or thermal stresses/influences which exceed the limits described in the operating instructions.
- ▶ Do not cover the ventilation slots of the body.

4.2 Intended use



This device is an electrical and pneumatic automation system optimised for use in the control cabinet or switch box. It is used to control pneumatic systems with the specified fieldbus system. It consists of electrical and pneumatic components.

All electrical data are designed to operate with the I/O system SIMATIC ET 200iSP from Siemens. The operator must ensure that the rated voltage does not exceed the permissible limit values of the SIMATIC ET 200iSP system.

- ▶ No other equipment other than the valves approved by Bürkert may be electrically connected to the device.

The valve block is provided with the ATEX marking.

4.3 Special conditions



The device may only be installed in a control cabinet with degree of protection Ex e (increased safety) that ensures at least IP54 ingress protection.

For systems in the potentially explosive atmosphere, which are installed in a control cabinet (degree of protection at least IP 54), ensure the following:

- the control cabinet must be approved for use in the potentially explosive atmosphere.
- The control cabinet must be dimensioned in such a way that the resulting heat loss can be discharged to the outside using suitable means.

- The internal temperature of the control cabinet must not exceed the maximum permitted ambient temperature for the device.

Installation instructions

The earth connection of the mounting rail shall be connected to the potential equalization system per applicable installation standard.

4.4 Usage conditions

Rated voltage	according to specification of the system SIMATIC ET 200iSP
Ambient temperature range	0–60 °C for horizontal installation position 0–50 °C for all other installation positions
Solenoid valve types used	intrinsically safe variants of the Types 6144 or 6106 (pilot controls of pneumatic valves, Types 6524– 6527)
Max. number of valve functions	96

If device structures have fewer than 96 valve functions, less power is converted, so that the considered and measured maximum temperatures are the same or lower.

Device variants with the following characteristics are permissible:

- up to 96 valve functions
- Combination of pneumatic valves of Types 6524 – 6527 (the maximum number of 96 valve functions must not be exceeded)
- Structures with additional pneumatic connection segments “Middle”

4.5 Backwards compatibility and spare parts

On a valve block of Type 8650 Revision 1 (REV.1), electronic modules may be exchanged for electronic modules of Type 8650 Revision 2 (REV.2) (i.e. terminal module and valves of the valve segment concerned remain).

Valve blocks of Type 8650 REV.1 can be expanded with components of Type 8650 REV.2. See chapter [“6.1 Information on revision status and compatibility”](#) for compatibility restrictions.

4.6 Conformity

The unit conforms to the following standards:

- IEC 60079-0:2017
- IEC 60079-7:2015/A1:2017
- IEC 60079-11:2011
- EN IEC 60079-0:2018
- EN IEC 60079-7:2015/A1:2018
- EN 60079-11:2012

5 GENERAL NOTES

5.1 Contact address

Bürkert Fluid Control Systems
Sales Centre
Christian-Bürkert-Strasse 13–17
D-74653 Ingelfingen
Tel. +49 (0) 7940 - 10 91 111
Fax +49 (0) 7940 - 10 91 448
Email: info@burkert.com

International contact addresses can be found on the last pages of the printed Quickstart and on the Internet at

country.burkert.com

5.2 Warranty

A precondition for the warranty is that the device is used as intended in consideration of the specified operating conditions.

5.3 Information on the Internet

Operating instructions and data sheets for Bürkert products can be found on the Internet at:

country.burkert.com

Information on Siemens decentralized peripheral systems can be found on the Internet at

<https://support.industry.siemens.com>

5.4 Conformity and standards

The device conforms to EU directives as per the EU Declaration of Conformity. The applied standards as used to verify compliance with the EU Directives can be found in the EC type examination certificate and/or the EC Declaration of Conformity.

6 PRODUCT DESCRIPTION

Valve block AirLINE Ex Type 8650 (hereafter also AirLINE Ex) is a modular, electric and pneumatic automation system with degree of protection IP30. The device is intended for use with the decentral I/O system SIMATIC ET 200iSP from Siemens and is designed for use in potentially explosive environments.

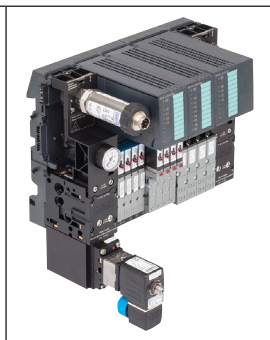
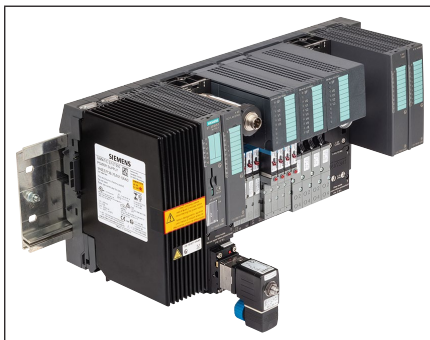


Fig. 1:
View of valve island (Siemens SIMATIC ET 200iSP and Bürkert AirLINE Ex)

Fig. 2:
View of valve block (Bürkert AirLINE Ex)



The detailed product description can be found in the Type 8650 REV.2 user manual at country.burkert.com → 8650 🔍

6.1 Information on revision status and compatibility

6.1.1 Overview of revision status

REV.1 Production date before 02/2022	REV.2 Production date from 02/2022
Terminal modules and electronic modules light grey	Terminal modules and electronic modules dark grey
Labelling of the electronic modules: EM-44-4/EM-44-8/EM-66-4	Labelling of the electronic modules: 4DO 11 mm/8DO 11 mm/ 4DO 16.5 mm
Pneumatic base modules and connection modules REV.1	Basic pneumatic modules and connection modules REV.2 — Optimized P shutoff and check valves — Uniform valve flange profiles (see below)
Flange image of double valve Type 6524 different from flange image of single valve Types 6524 and 6525	Flange image of single valves Types 6524 and 6525, made compatible with flange profile of double valve Type 6524
	Maximum permissible ambient temperature during operation increased to 60 °C

REV.1 Production date before 02/2022	REV.2 Production date from 02/2022
	Connection segments: <ul style="list-style-type: none"> — Integrated filter for compressed air supply — Integrated connection for a pressure sensor/pressure switch — Integrated interface for a shut-off valve



For more information see the operating instructions.

6.1.2 Information on Revision 2 (REV.2)

Type 8650 REV.2 devices are a development of Type 8650 REV.1 and offer the following additional characteristics, among others:

- Integrated connections for pressure sensors/pressure switches for monitoring supply pressure
- Integrated filters for compressed air supply.
- Standard equipment with pressure gauge; pressure gauges can be aligned according to the installation position.
- Connection segments can (also belatedly) be equipped with an electrically actuated on/off valve.

The electronic modules, pneumatic base modules and connection modules, as well as the single valves of Types 6524, 6525, 6526 and 6527, were revised for Type 8650 REV.2 to implement various optimisations.

The interfaces (mechanical, electric, software) of the electronic modules and terminal modules were unchanged.

6.1.3 Compatibility



Compatibility must be ensured in the following instances:

- Replacement of single valves with 11 mm width per valve (see chapter [“13.10 Replace valve”](#)).
- Expansion, repair or renovation of valve blocks (see chapter [“13.7 Assembling, renovating and expanding a device \(valve block\) with individual segments”](#))
- The pneumatic modules (base modules and connection modules) of REV.1 and REV.2 are **not** compatible with each other.

Differences remain in

- the electrical data (electronic modules of REV.2 have slightly more output)
- the Ex approvals
- the permissible ambient temperature range during operation (expanded to 60 °C for REV.2)
- the external dimensions
- the housing colour of the terminal and electronic modules
- Omission of blue cover flaps in REV.2

In the projection there is no difference between REV.1 and REV.2 devices. Revision 2 (REV.2) is mainly described and presented in this document.

The documentation of Revision 1 (REV.1) is still available at:
country.burkert.com

6.2 Application range

Valve block AirLINE Ex Type 8650 is designed for decentralised use in industrial environments. Electronics assemblies and armatures can be easily and efficiently combined due to the modular assembly. The device is compliant with degree of protection IP30.



DANGER

Risk of injury due to electrical voltage.

The terminal modules (with standing system wiring) are listed in the Ex degree of protection “Ex e” (increased safety).

- ▶ You must disable the system’s operating voltage before working on the terminal modules.
Additional information can be found in the SIMATIC ET 200iSP handbook.

Risk of explosion.

For systems in the potentially explosive atmosphere, which are installed in a control cabinet, ensure the following:

- the control cabinet must be approved for use in the potentially explosive atmosphere.
- The control cabinet must be dimensioned in such a way that the resulting heat loss can be discharged to the outside using suitable means.
- The internal temperature of the control cabinet must not exceed the maximum permitted ambient temperature for the device.

6.3 Labelling

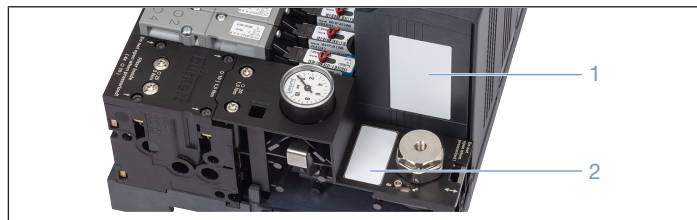


Fig. 3: Position of the type labels

Item	
1	Type label for general data
2	Type label for unit-specific data

6.3.1 Type label for general data

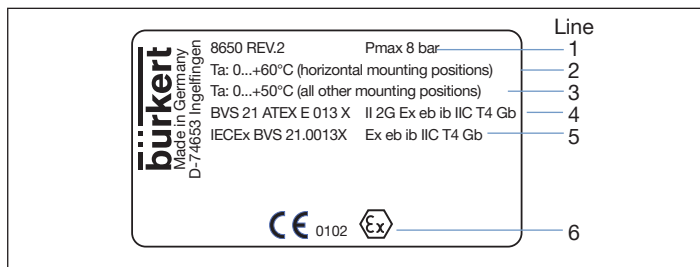


Fig. 4: Example of a type label for general data

Line	Description	Specification
1	Device type	8650 REV.2
1	Maximum operating pressure	Pmax 8 bar
2	Permitted ambient temperature range	Ta: 0... +60°C (horizontal mounting positions)
3		Ta: 0... +50°C (all other mounting positions)
4	ATEX approval number	BVS 21 ATEX E 013 X
4	Identification of the Ex protection ATEX	II 2G Ex eb ib IIC T4 Gb
5	Approval number IECEX	IECEX BVS 21.0013X
5	Identification of the Ex protection IECEX	Ex eb ib IIC T4 Gb
6	Number of the approving body auditing the production	0102

6.3.2 Type label for unit-specific data

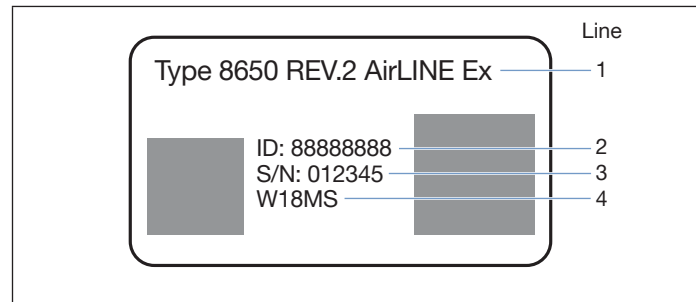


Fig. 5: Example of a type label for unit-specific data

Line	Description	Specification
1	Device type	Type 8650 REV.2
1	Device Name	AirLINE Ex
2	Order number of the device	ID: 88888888
3	Device serial number	S/N: 012345
4	Manufacture code	W18MS



You can find information on labelling the electronic modules in chapter [“11 Description of the electronic module”](#).

6.4 Optional components



For information on the optional components “shut-off valve” and “pressure sensor/pressure switch”, see the Type 8650 REV.2 operating instructions at country.burkert.com → 8650 🔍

7 TECHNICAL DATA

7.1 Operating conditions and ambient conditions

Type of condition	Permissible range
Ambient temperature during operation	Horizontal installation position: 0 – +50/55 °C (Type 8650 REV.1) 0 – +60 ¹⁾ °C (Type 8650 REV.2) all other installation positions: 0 – +50 °C (Type 8650 REV.1 and REV.2)
Storage temperature	-40 – +70 °C
Relative air humidity	5 – 95 %, without condensation
Usage height during operation	max. 2000 m above sea level
Pollution degree	2
Vibrations during operation	5 ≤ f ≤ 9 Hz max. 1.75 mm amplitude 9 ≤ f ≤ 150 Hz max. 0.5 g acceleration
Nominal operating mode	100% duty cycle (continuous operation)

7.2 General technical data

Dimensions	max. 660 mm x 194.3 mm x 164 mm (depending on design, valve variants, module variants; without optional components)
Weight	max. 10 kg (depending on design; without optional components)
Body materials	Pneumatic modules and valves: PA, PPS Terminal and electronic modules: PC
Seal materials	Valve block AirLINE Ex REV.2: NBR valves: NBR and other materials (see chapter “12 Description of the valves”)
Degree of protection	IP30
Protection class	III as per VDE 0580

Type 8650 REV.2 meets the required limit values for electrostatic discharge according to EN 61000-4-2.

Type 8650 REV.2 doesn't reach the increased limit value of 6 kV for contact discharges specified for SIMATIC ET 200iSP.

¹⁾ The valve series (Type 6524–6527) used in Type 8650 are nominally only specified for ambient temperatures up to 55 °C. Due to the relatively low self-heating of the intrinsically safe product variants used, however, operation is possible in ambient temperatures up to 60 °C. But permanent temperatures close to 60 °C or frequent changes in temperature near 60 °C can accelerate the aging of the valves and deteriorate the tightness. The functional reliability of the valves is not affected, however.

7.3 Pneumatic data

Medium	dry air oiled or oil-free, neutral gases (hereafter referred to as “compressed air”)
Compressed air quality	ISO 8573-1:2010, class 7.4.4 ²⁾
Operating pressure	up to 8 bar (bottom and upper limit dependent on valves used)

For more pneumatic data see chapter [“9 Assembly of the connection washers”](#), chapter [“10 Assembly of the valve disc structure”](#) and chapter [“12 Description of the valves”](#).

7.4 Electrical data

Communication	The terminal modules automatically contact the back wall bus of ET 200iSP during the appositioning.	
Operating voltage	Supply via PowerSupply module of SIMATIC ET 200iSP (see documentation for SIMATIC ET 200iSP for details)	
Power consumption: (only the electronic modules with connected valves consume power)		
Module type (electronic module)	Order no.	Power consumption incl. the respective valves
4DO 11 mm (4 channels, for 11 mm single valves)	171 941	max. 3.2 W
8DO 11mm (8 channels, for 11 mm double valves)	171 942	max. 3.95 W
4DO 16.5 mm (4 channels, for 16.5 mm single valves)	171 943	max. 3.2 W

The values listed refer to the electronic modules of REV.2. The values of the power consumption for REV.1 electronic modules are somewhat lower.

See chapter [“10 Assembly of the valve disc structure”](#) for current consumption values.

²⁾ To prevent the expanded compressed air from freezing, its pressure dew point must be at least 10 K less than the medium temperature.

7.5 Approvals

Usage of the valve island compliant with the approval requires installation in a suitable, certified housing (see also documentation for SIMATIC ET 200iSP):

For zone 1: Housing with degree of protection Ex e or

For zone 21: Dust-proof (certified) housing with degree of protection IP6x (as per Directive 2014/34/EU for Category 2D)

Type 8650 REV.1:

see operating instructions for REV.1 at: country.burkert.com

TYPE 8650 REV.2:

Type of protection: II 2G Ex eb ib IIC T4

Approval no. (ATEX): BVS 21 ATEX E 013 X

Approval no. (IEC-Ex): IECEx BVS 21.0013X

8 ASSEMBLY OF FULL SYSTEM AND VALVE BLOCK

8.1 Maximum system expansion

Number of modules

- Up to 32 electronic modules in the complete system Siemens SIMATIC ET 200iSP / Bürkert AirLINE Ex
- Each at least 1 interface module and 1 PowerSupply module; these can be double (redundantly) assembled as needed.

For details, see operating instructions SIMATIC ET 200iSP under <https://support.industry.siemens.com>

Valve slots

Maximum width of the valve block AirLINE EX: 660 mm

When using 1 “connection segment centre” this equals

- 48 valve spots for 11 mm valves of Types 6524/6525
- or
- 32 valve spots for 16.5 mm valves of Types 6526/6527

A mixed assembly of valve segments 44/66 mm is possible.

Multiple AirLINE Ex valve blocks can also be installed in an ET 200iSP system as long as the permissible parameters (width of ET 200iSP, sum of current consumption of all electronic modules) are adhered to.

Max. width of full system

See SIMATIC ET 200iSP operating instructions under <https://support.industry.siemens.com>

Further restrictions

Further restrictions may result from installation position and performance considerations, see operating instructions SIMATIC ET 200iSP at <https://support.industry.siemens.com>

8.2 Siemens SIMATIC ET 200iSP — system components



For information, see operating instructions SIMATIC ET 200iSP at <https://support.industry.siemens.com>

8.3 Valve block AirLINE Ex – components

8.3.1 Labelling of modules

The AirLINE Ex Type 8650 valve block consists of various modules. These are consolidated in assemblies (“segments”) in favour of simple, use-oriented operation. The assembly of the valve block is schematically presented below and the individual modules are labelled.

The components highlighted in grey can optionally be installed (only REV.2), but by default are not part of the valve block nor part of the approvals of AirLINE Ex.

The texts in parentheses are the brief descriptions of the modules. These vary between REV.1 and REV.2 in the last item.

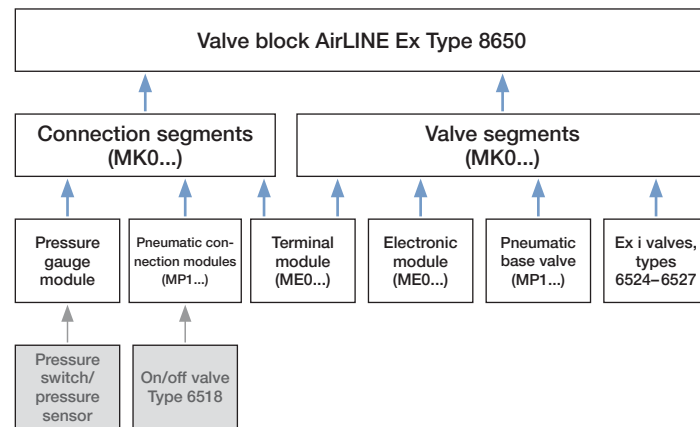


Fig. 6: Structural assembly valve block AirLINE Ex from modules and “segments”

8.3.2 Assembly of a complete AirLINE Ex system (example)

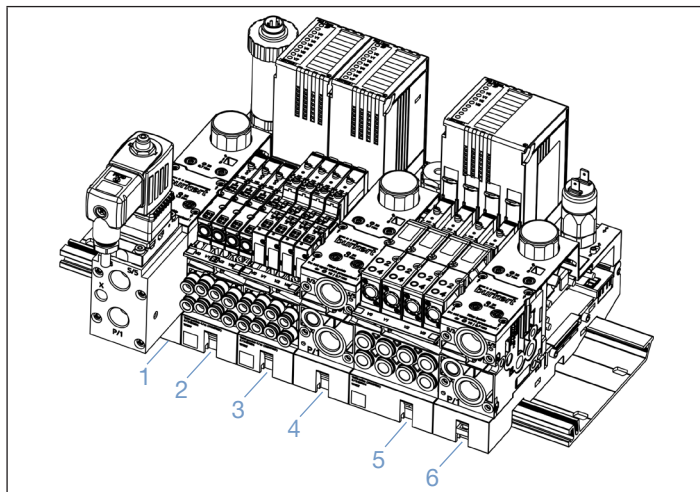


Fig. 7: Assembly of a complete valve block AirLINE Ex, REV.2 (example)

Item		Item	
1	Left connection segment (with shut-off valve and pressure sensor)	4	Connection segment centre (interim input)
2	Valve segment 44 mm, 4 valve functions	5	Valve segment 66 mm, 4 valve functions
3	Valve segment 44 mm, 8 valve functions	6	Right connecting washer (with pressure switch)

9 ASSEMBLY OF THE CONNECTION WASHERS

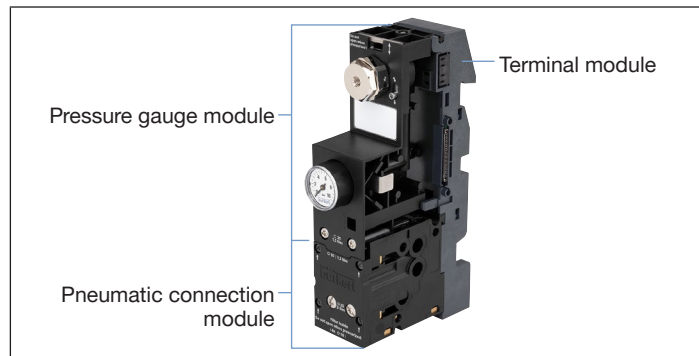


Fig. 8: Connection segment valve block AirLINE Ex REV.2

9.1 Technical data connection washers

Power consumption	0 W (module is electrically passive)
Pneumatic connections	G3/8 (P/1 for supply air and R/3/S/5 for exhaust air) G1/4 (X; depending on valves used: pre-pilot exhaust or pre-auxiliary pilot air) G1/8 (for pressure switch/pressure sensor, pluggable)
Dimensions	approx. 52 (width per valve 44) x 190 x 113 mm (without pressure switch/pressure sensor)
Material	PA, PC Brass/nickel-plated brass, stainless steel
Weight	approx. 500 g
Filter	Integrated



For more information about the connection segments
see the 8650 REV.2 operating instructions for Type 8650
REV.2 at country.burkert.com → 8650 🔍

10 ASSEMBLY OF THE VALVE DISC STRUCTURE

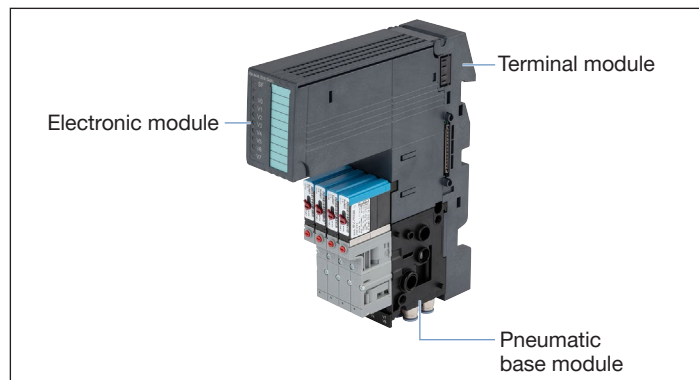


Fig. 9: Valve segment valve block AirLINE Ex REV.2

10.1 Valve disc technical data

	Valve segment for 11 mm valves		Valve segment for 16.5 mm valves
Number of valve outlets	4	8	4
Dimensions [mm]	44 x 194.3 x 163.5		66 x 190.5 x 163.5
Weight with valves [g]	540	630	740
Material Housing Pneumatic modules	PC PA		
Electronic module data:			
Current consumption [mA]	275 ³⁾	340 ³⁾	275 ³⁾
Module power con- sumption (incl. valve units) [W]	max. 3.2	max. 3.95	max. 3.2
Status indicator	1 LED (red) for module status 1 LED (green) per channel (valve function)		
Pneumatic connections	Push-in connection D6 or D1/4" (chosen by user)		Push-in connection D8, 5/16"

Valve data:			
Valve type	6524 3/2-way	6525 5/2-way	6524 2x 3/2-way
Circuit function ⁴⁾	C/D	H	2xC
Width per valve [mm]	11		
QNn ⁵⁾ [l/min]	300		
Valve type	6526 3/2-way		6527 5/2-way
Circuit function ⁴⁾	C/D		H
Width per valve [mm]	16.5		
QNn ⁵⁾ [l/min]	700		

³⁾ These values are considered in the calculation of the maximum total power consumption of the station (see also table 3–4 in the handbook for ET 200iSP)

⁴⁾ C=NC (normally closed), D=NO (normally open)

⁵⁾ Flow rate QNn value air [l/min]: measured at +20 °C, pressure 6 bar at valve inlet and 1 bar pressure difference

10.2 Valve island pneumatic connections



DANGER

Risk of injury from high pressure, escaping medium and uncontrolled movement of the actuators.

- ▶ Secure the actuators against shifting before working on the device or system.
- ▶ Switch off the pressure before working on the device or system. Vent or empty the lines.

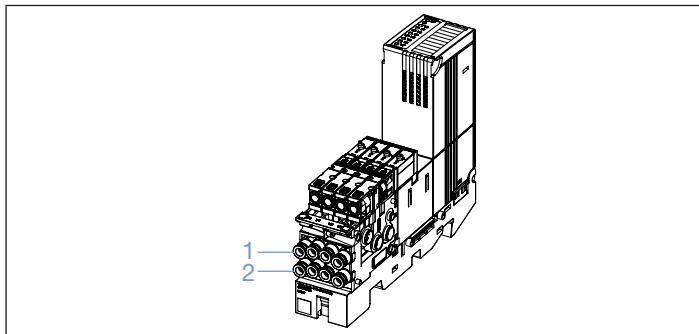


Fig. 10: Possible variants of the work ports
(example: width per valve 44 mm)

Assignment of work ports

Item	3/2-way valves (Types 6524/6526)	5/2 way valves (types 6525/6527)	2x3/2-way valves (type 6524)
1	unused	2	2 (valve 12)
2	2	4	4 (valve 14)

10.3 Pneumatic options

The following equipment options are available for the pneumatic base modules:

	Valve segments 44 mm	Valve segments 66 mm
Check valves (optional)	Check valve in R channel and R channel	
P shutoff (optional)	P shutoff ⁶⁾	not available

Check valves for ventilation channels

Check valves in the ventilation channels prevent unintended activation of valves and actuators due to back pressure.

The check valves are not suitable for under-pressure applications.

P shutoff

For pneumatic base modules equipped with a P shutoff (marked on the module, see below), a valve can also be replaced if supply pressure is available.

The P shutoff reduces the flow rate by about 25 % for the AirLINE Ex REV.2 (stronger reduction for AirLINE Ex REV.1).

⁶⁾ Not available for valves/valve blocks that use external auxiliary pilot air

Operating pressure range:










The P shutoff from AirLINE Ex REV.2 can be used from 0 bar to the permissible maximum operating pressure of REV.2 (smaller pressure range for AirLINE Ex REV.1). The P shutoff is not suitable for under-pressure applications.

P bulkhead

A bulkhead can be inserted into the P channel between valve segments. This makes it possible to set up several pressure levels or media circuits within an AirLine Ex system (for details, see operating instructions at country.burkert.com).

Labelling the options

The lower edge of the base modules contains symbols indicating which options the base modules are equipped with.

Option	with check valves	with P shutoff and check valves	with P-bulkhead ⁷⁾
Icon	3  1  5 	3  1  5 	3  1  5 

⁷⁾ If a bulkhead is installed in the P channel between pneumatic modules (base modules or connection modules), the corresponding interface is labelled with this symbol.

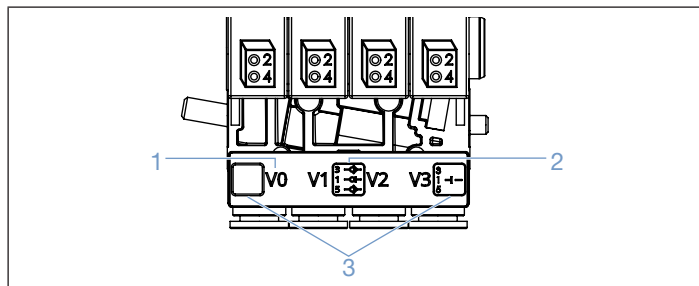


Fig. 11: Labelling on lower edge of pneumatic base modules

Item		Item	
1	Labelling of valve position	3	Labelling of P bulkhead (here at the interface with the right adjacent module)
2	Labelling "P shutoff" and "check valve"		

10.4 Channel assignment

2 bytes must be projected per valve segment/electronic module.
These are occupied and assigned to the channels/valves as follows:

	Byte	High-byte			Low-byte							
	Bit	7	...	0	7	6	5	4	3	2	1	0
4-channel module	Channel no.	–	–	–	–	–	–	–	3	2	1	0
	LED								V3	V2	V1	V0
8-channel module	Channel no.	–	–	–	7	6	5	4	3	2	1	0
	LED				V7	V6	V5	V4	V3	V2	V1	V0

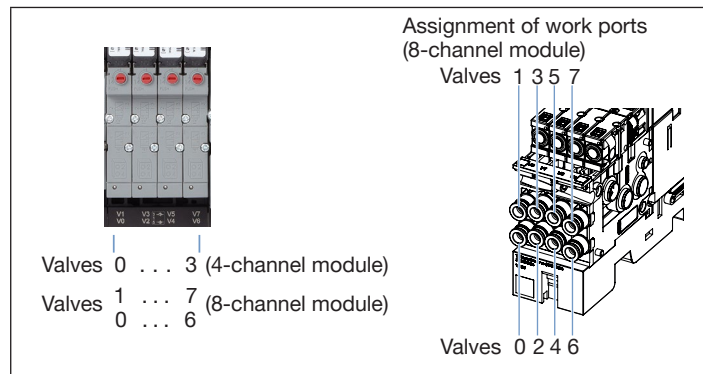
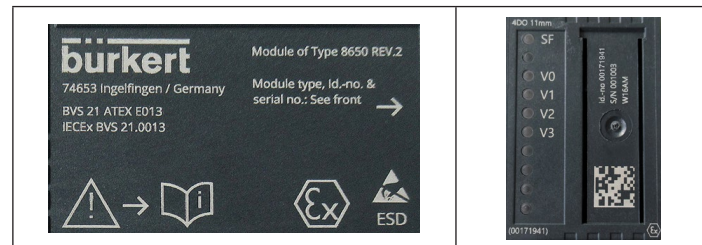


Fig. 12: Assignment of working ports to the valves

For more information about the valve segments see the Type 8650 REV.2 operating instructions at country.burkert.com → 8650

11 DESCRIPTION OF THE ELECTRONIC MODULE

11.1 Labelling



11.2 Technical data electronic module

Electrical data and status indicators:
see chapter “10.1 Valve disc technical data” Page 22

Module ID number	171 941	171 942	171 943
Number of valve outlets	4	8	4

11.3 Overview

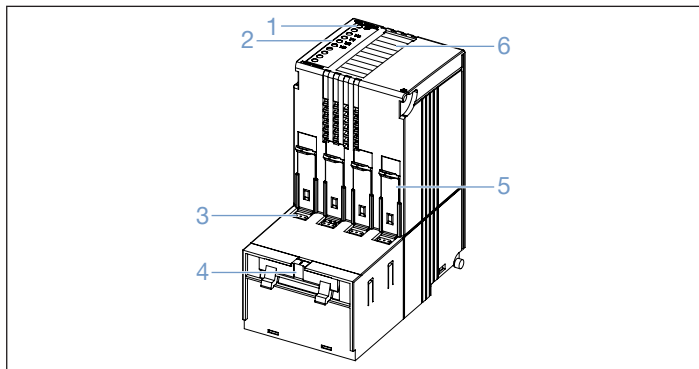


Fig. 15: Overview of connection segment valve block AirLINE Ex REV.2

Item		Item	
1	LED (red) to indicate module status	4	Lock slider (below the valves)
2	LEDs (green) to indicate channel status	5	Valve extractor (only for width per valve 66 mm)
3	Plug for connecting the valves	6	insertable label strip ⁸⁾



For more information about the electronic modules, see the Type 8650 REV.2 operating instructions at country.burkert.com → 8650 🔍

⁸⁾ The slip-in label strips are identical with those used for SIMATIC ET 200iSP.

12 DESCRIPTION OF THE VALVES

Valves of the variant “auxiliary pilot air”

Valves of the variant “auxiliary pilot air” make it possible to switch to <2.5 bar pressure on the work ports. For reliable operation you require the “auxiliary pilot air” with a pressure of >2.5 bar. This is fed to the connection segments of the valve block via the connection “X”.

The pilot valve exhaust air escapes into the surrounding area when using “auxiliary pilot air” valves.

“Auxiliary pilot air” valves cannot be combined with standard valves on the valve block (internal auxiliary pilot air), as the connection X of the valve block is used differently.

The option “P shutoff” of the pneumatic base modules cannot be used in combination with “auxiliary pilot air” valves.



“Auxiliary pilot air” valves can essentially be used in combination with the on/off valve. However, the on/off valve only serves to vent the amplifiers, while the pilot valves must be pressurised as the auxiliary pilot air is not deactivated by the on/off valve.



Further information on the valves can be found under the respective type number at country.burkert.com.

12.1 Pneumatic valve Types 6524/6525 (width per valve 11 mm)



Fig. 16: Pneumatic valves Type 6524 and Type 6525



Various flange profiles of single valves 6524 and 6525 for REV.1 and REV.2!

The single valves (3/2-way valve Type 6524 and 5/2-way valve Type 6525) were optimised for REV.2. The channel cross-sections and flange profile of these valves were revised, among other things. REV.1 and REV.2 valves thus differ from each other.

When replacing single valves, consider:

- The different design of the mechanical interface eliminates the accidental installation of incompatible valves.
- It is not possible to switch between REV.1 and REV.2 single valves (Type 6524/6525).

- With regard to spare parts, it must be ensured that the matching variant of the valve is being used.

This does not apply to the double valve (2x 3/2-way valve Type 6524).

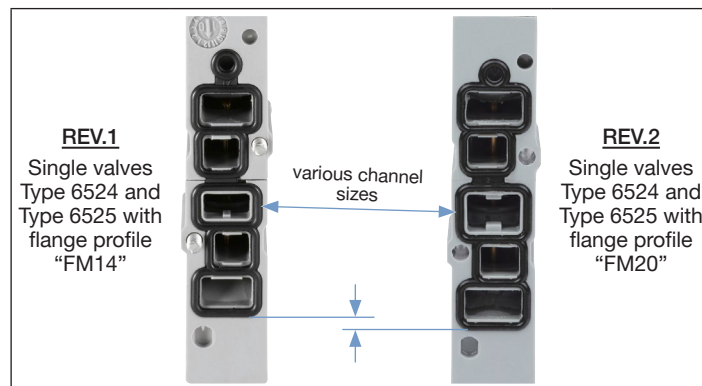


Fig. 17: Variations in flange profiles of single valves Type 6524 and Type 6525

12.2 Pneumatic valve Types 6526/6527 (width per valve 16.5 mm)

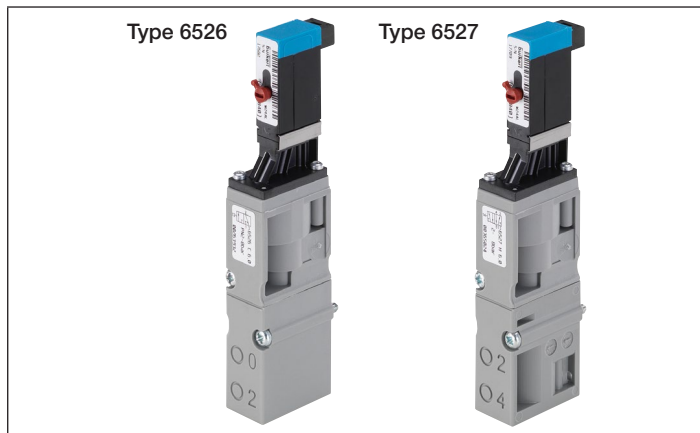


Fig. 18: Pneumatic valves Type 6526 and Type 6527

13 INSTALLATION



DANGER

Risk of injury due to high pressure and escaping medium.

- ▶ Switch off the pressure before working on the device or system. Vent or empty the lines.

Risk of explosion.

- ▶ To prevent explosion hazards, the power supply for the device must solely be provided via the I/O system SIMATIC ET 200iSP.

Risk of injury from electric shock.

- ▶ Switch off the power supply before working on the device or system. Secure it against reactivation.
- ▶ Observe the applicable accident prevention and safety regulations for electrical devices.

Valves and electronic modules can be replaced under voltage.



WARNING

Risk of injury due to improper installation.

- ▶ Only trained technicians may perform installation work.
- ▶ Perform installation work using suitable tools only.

Risk of injury due to unintentional activation of the system and uncontrolled restart.

- ▶ Secure the device or system to prevent unintentional activation.
- ▶ Ensure a controlled restart after maintenance is completed.

**CAUTION****Medium escape and malfunction.**

If seals are not properly positioned, leaks and functional impairments may arise due to pressure loss.

- ▶ Ensure the seals are properly positioned in the electronics assemblies and pneumatics.

Short circuit, loss of function

The electrical connection requires precise contacting.

- ▶ Do not bend the contacts.
- ▶ Replace the affected components if connections are damaged or bent.
- ▶ Only activate the system when the components are in perfect condition.

Risk of injury due to sharp edges

Sharp edges can cause cuts.

- ▶ Wear suitable protective gloves.

NOTE**Only provide the device with electricity via SIMATIC ET 200iSP**

- ▶ In order to prevent damage to the device, the device must solely obtain its power supply via the I/O system SIMATIC ET 200iSP.

Preventing pressure drop

- ▶ To avoid a pressure drop, provide the device's pressure supply to the greatest extent possible.

Electrostatically sensitive components and assemblies

The device contains electronic components that are susceptible to the effects of electrostatic discharging (ESD). Components that come into contact with electrostatically charged persons or objects are at risk. In the worst case scenario, these components will be destroyed immediately or fail after start-up.

- ▶ Meet the requirements specified by EN 61340-5-1 to minimise or avoid the possibility of damage caused by a sudden electrostatic discharge.
- ▶ Do not touch electronic components when the supply voltage is connected.

Restrictions

The applicable restrictions must be observed for the renovation/expansion of systems.

- ▶ Learn more about this in chapter [“8.1 Maximum system expansion” Page 18](#)).

Installation instructions

Improperly installed systems (e.g., inclined tie rods not properly tightened) might not be properly sealed.

- ▶ Firmly close all opened fastenings and locks before start-up.
- ▶ To prevent condensation: When moving from a cold to a warm environment, wait until the system has adjusted to the ambient temperature before installation.

This Quickstart describes the installation and deinstallation of Type 8650 REV.2. These differ in some aspects from Type 8650 REV.1.

For installation and deinstallation of Type 8650 REV.1 see the operating instructions of this variant at:

country.burkert.com.

13.1 Removing pre-installed systems

NOTE

Important: Properly remove the assembly from the packaging.

Note the following to ensure that the pre-installed system is not damaged while being removed from the packaging:

- Grab the system by the pneumatic connection modules and remove it from the packaging (see image “Grabbing points”).

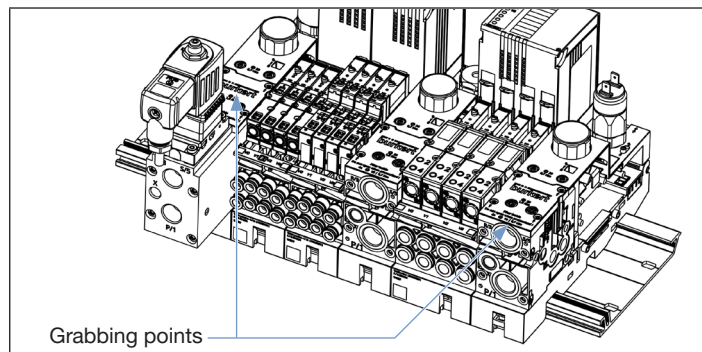


Fig. 19: Grabbing points for removing pre-installed systems

13.2 Installation tools and tightening torques

Usage	Type and size of the tool	Tightening torque
Operating the locking elements	Slot screwdriver size 5	-
Fitting the clamping bolts on the connection modules	Key for hexalobular-internal screw size T25	1.5 Nm
Installation/deinstallation of valves with 11 mm width per valve	Cross-tip screwdriver size 0	0.2 Nm
Installation/deinstallation of valves with 16.5 mm width per valve	Cross-tip screwdriver size 1	0.3 Nm
Fitting valve segments/connection segments to each other (inclined tie rods)	Allen key 3 mm	0.7 Nm
Fitting the protective cover for filters	Key for hexalobular-internal screw size T10	0.7 Nm
Fitting the pressure gauge module	Key for hexalobular-internal screw size T20	0.7 Nm
Fitting on/off valve	Key for hexalobular-internal screw size T20	0.7 Nm

13.3 Position of screw connections and controls



Fig. 20: Position of screw connections and controls

Item		Item	
1	Screws (2x) for fastening the pressure gauge module	4	Locking elements of electronic modules (below the valves)
2	Screws (4x) for protective cover for filters	5	Screws (2x) for fastening the valve
3	Clamping bolts (2x) for fastening the AirLINE Ex on standard rail		

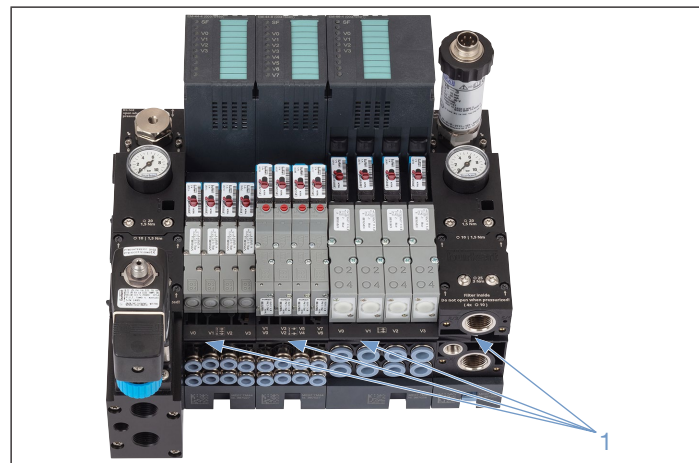


Fig. 21: Position of the inclined tie rods on the installed system

Item	
1	Position of the inclined anchors

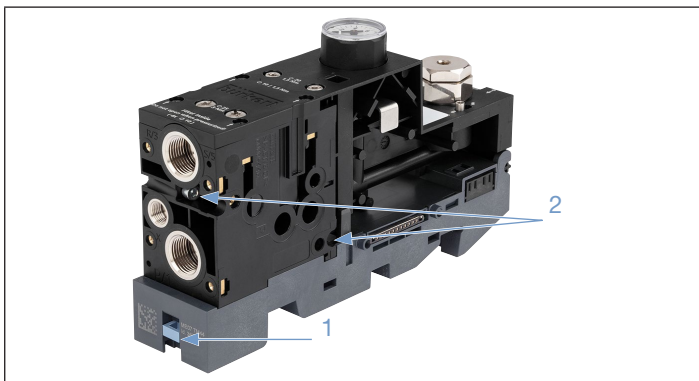


Fig. 22: Inclined tie rods of a segment and unlocking slider

Item		Item	
1	Unlocking slider (only for right connection segments)	2	Inclined tie rods (in pockets), 2x per connection segment/ valve segment

13.4 Installing/uninstalling on S7 standard rail (pre-installed system)



WARNING

Risk of injuries and property damage.

In a non-horizontal installation position, the device is only securely fastened once all clamping bolts are applied as stipulated.

- ▶ During installation, hold the device in the desired position until all clamping bolts have been applied.
- ▶ Hold tightly onto the device during deinstallation until all clamping bolts have been loosened and the device can be removed from the standard rail.

13.4.1 Installing the system on a standard rail

- Carefully turn all clamping bolts (see “Fig. 20”) on the connection segments counterclockwise until they stop.
- Suspend the system in the desired position from the upper edge of the standard rail and tilt it up.
- Tighten all clamping bolts clockwise (see chapter “13.2” Page 30 for required tightening torque).

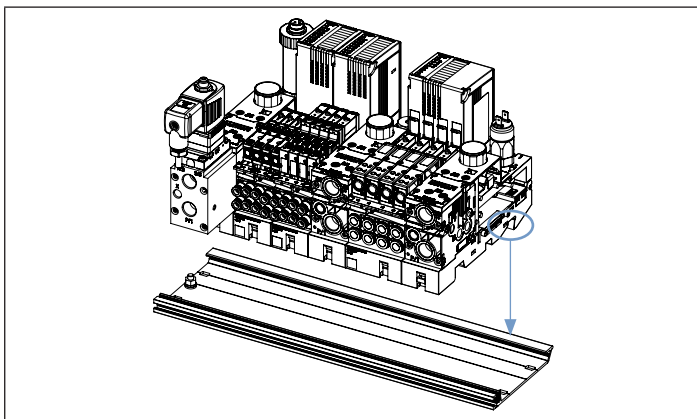


Fig. 23: Suspending from the standard rail

13.4.2 Removing the system from a standard rail

- Loosen all clamping bolts (see “Fig. 20”) on the connection segments (carefully turn the clamping bolts counterclockwise until they stop).
- Tilt the system from the standard rail and lift it up.

13.5 Installing/uninstalling ET 200iSP modules

Installation

- Place ET 200iSP modules (terminal modules) on the standard rail and lock onto the AirLINE Ex system.
- ET 200iSP modules that are attached to the right connection segment lock with the connection segment.

Disassembly

- Insert a slotted screwdriver into the unlocking slider on the right connection segment (see “Fig. 24”) (I) and tilt (II) the slider out approx. 2 to 3 mm. This opens up the terminal module locked to the right.
- Only REV.2 devices: If the accessibility of the unlocking slider is impeded by an on/off valve, the unlocking slider can also be operated from the front side (see “Fig. 25”). Insert a thin slot screwdriver (shaft with a length of at least 85 mm and a diameter of max. 4 mm) into the opening in the pressure gauge module (I) until it stops and then tilt it slightly upwards (II).
- Push the adjacent terminal module away to the right.

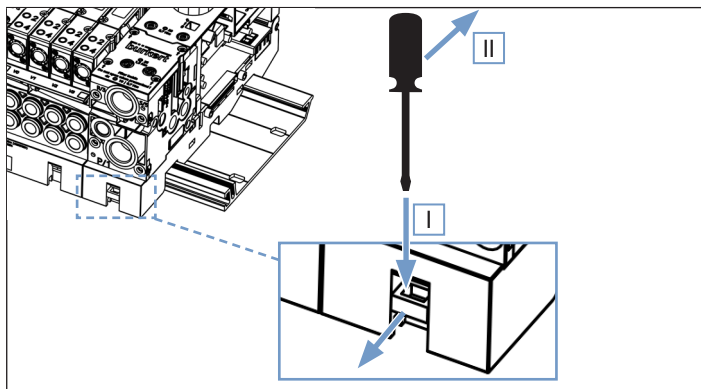


Fig. 24: Operating unlocking slider

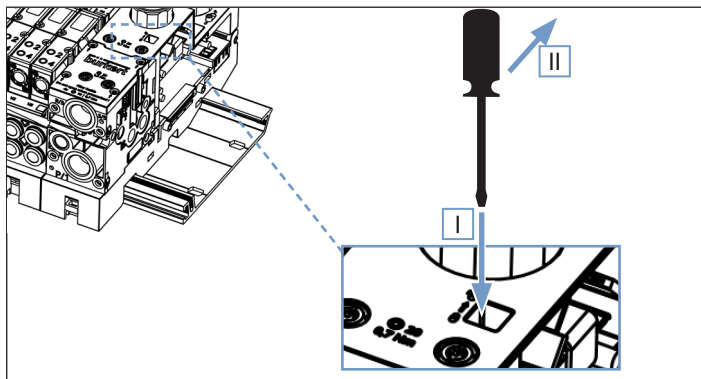


Fig. 25: Unlocking for inaccessible unlocking slider

13.6 Control cabinet installation

The distances that must be adhered to when installing in a control cabinet can be found in the SIMATIC ET 200iSP handbook.

The minimum distance specified in “Fig. 26” is recommended for easy replacement of an electronic module.

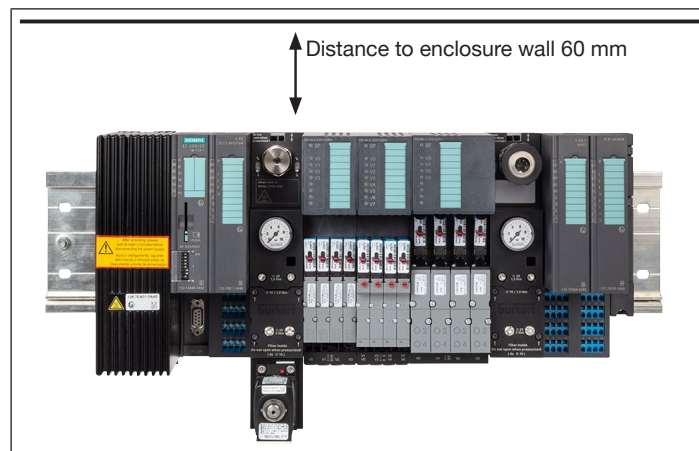


Fig. 26: Distance from top control cabinet wall

13.7 Assembling, renovating and expanding a device (valve block) with individual segments

NOTE

- Observe the compatibility requirements (REV.1 <> REV.2); see chapter “[6.1 Information on revision status and compatibility](#)”.

Renovating or expanding a device

- Observe the permissible parameters for the maximum expansion of the system (see chapter “[8.1 Maximum system expansion](#)”). Please contact your Bürkert representative if you have any questions.

Lubricating pneumatic module seal rings

Lubricated seal rings of pneumatic modules make installation easier and protect the device against damage.

- Lubricate seal rings before installation, e.g., with Centoplex 2 from Klüber Lubrication.

The device's serial and identification number lose their validity

This device's serial and identification number are no longer valid upon renovation or expansion.

- Remove the description label and label the device accordingly.



For more information, see the Type 8650 REV.2 operating instructions at country.burkert.com → 8650 

13.7.1 Installing/uninstalling individual segments



DANGER

Risk of injury due to high pressure and escaping medium.

- Switch off the pressure before working on the device or system. Vent or empty the lines.

13.7.2 Connection segments

Uninstalling the pressure gauge module

- Loosen both screws on the pressure gauge module.
- Tilt the pressure gauge module up out of the terminal module (I) and remove it (II).

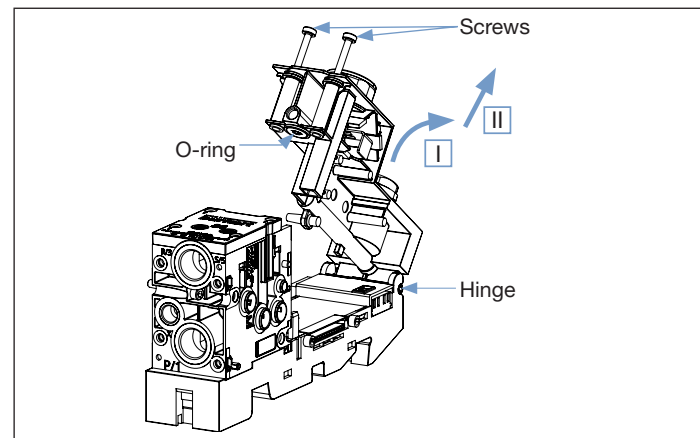


Fig. 27: Installing/uninstalling the pressure gauge module

Installing the pressure gauge module

- Ensure that the O-ring is correctly positioned in the pressure gauge module.
- Suspend the pressure gauge from the hinge on the upper edge of the terminal module, tilt it in and fasten it with both screws (for tightening torque see chapter ["13.2"](#)).

Uninstalling the filter

- Loosen the 4 screws.
- Remove the protective cover for the filter (I).
- Pull out the filter (II).

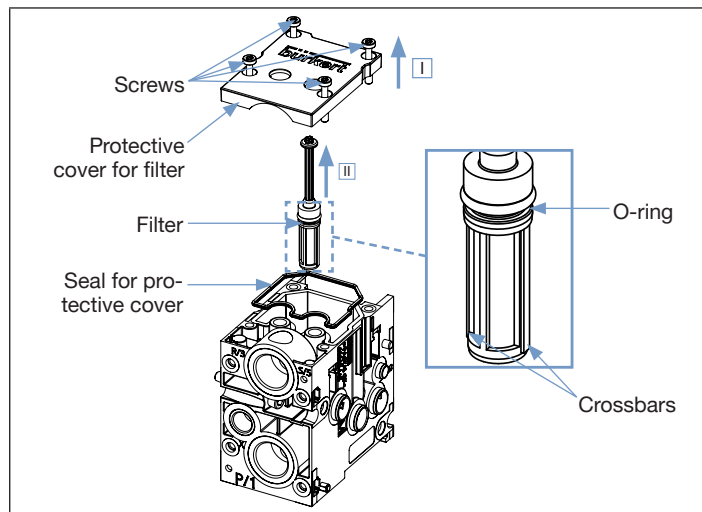


Fig. 28: Installing/uninstalling the filter

Installing the filter

- Ensure that the filter is clean and undamaged.
- Insert the filter into the opening in the connection module and turn it so that the crossbars lock into the opening.
- Press the filter into the connection module until it stops (lightly lubricate the O-ring before inserting if necessary).
- Ensure that the seal for the protective cover is correctly positioned.
- Place the protective cover on top and tighten the 4 screws cross-wise (for tightening torque see chapter ["13.2"](#)).



A leak from P → R/S occurs if the filter is defective, damaged or incorrectly installed.

13.7.3 Valve segments

Uninstalling the electronic module

- Remove valves and any protective caps from the plug contacts.
- Move the locking element on the electronic module in the direction of the arrow (I), tilt the module out (II) and remove it (III).

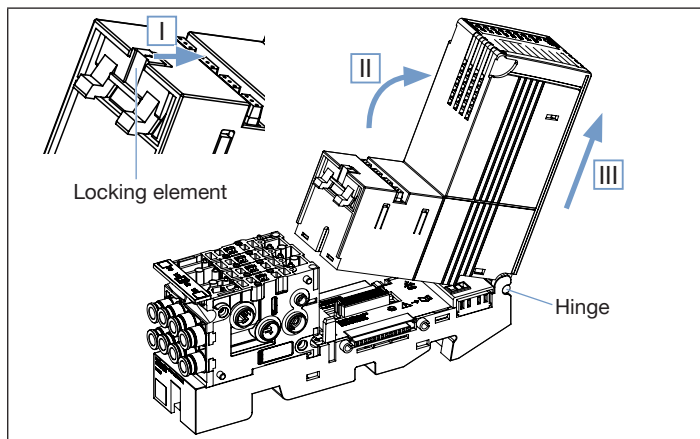


Fig. 29: Installation/deinstallation of a valve segment

Installing the electronic module

- Suspend the electronic module from the hinge on the upper edge of the terminal module.
- Move the locking element in the direction of the arrow while fully tilting the module in.
- Screw the valves in place. Cover the plug contacts of unoccupied valve seats with protective caps.

13.8 Installing/uninstalling the on/off valve

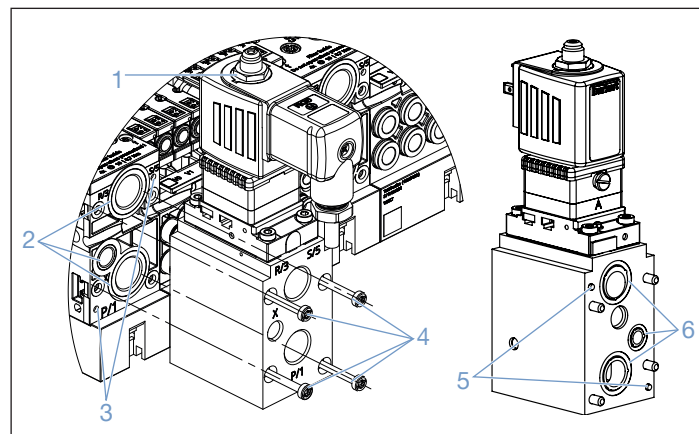


Fig. 30: Installing/uninstalling the on/off valve

Item		Item	
1	Nut	4	Screws (4x)
2	Seal surfaces	5	Spigot
3	Centring holes	6	O-rings

Installing the on/off valve on a connection segment

Required tool: Key for hexalobular-internal screw size T20

- Ensure that the seal surfaces of the connection segment are not dirty or damaged.
- Check that the O-rings at the interface to the connection segment on the on/off valve are inserted and undamaged.

- Place the on/off valve with the spigots on the connection segment such that the spigots lock into the centring holes (see image), then tighten the 4 screws crosswise (tightening torque 0.7 Nm).

Uninstalling the on/off valve from the connection segment

- Loosen the 4 screws.
- Remove the on/off valve.

Electrically connecting the on/off valve

- Connect the valve's solenoid according to the specifications in the valve documentation.
 - Variants with Ex-i coil: with cable plug (e.g. Type 2518)
 - Variants with Ex-m coil are equipped with a cast-on cable



The on/off valve has no electrical connection to the valve block.



Note the polarity specified on the coil for variants with Ex-i coil.



The plug/cable outlet of the solenoid can be aligned in various ways to facilitate optimal laying of the connection cable.

Procedure:

- Loosen nut by approx. 3 turns.
- Lift the coil somewhat, turn it in the desired position and press it back down.
- Refasten nut (max. 5 Nm)

13.9 Installing/uninstalling pressure switch/pressure sensor

Installing the pressure switch/pressure sensor

The following method facilitates installation of a pressure sensor, even in limited installation conditions. If the adaptor is easily accessible, it can also remain in the pressure gauge module to install the pressure switch/pressure sensor.

- Place a slot screwdriver in the opening of the clamp (I) and use a tilt motion (II) to bring the clamp to the upper end position (position indicator is on the symbol "Unlocked").
- Pull out the adaptor from the front (III).
If needed, an M6 screw can be used to pull on the adaptor or dummy plug.
- Removing dummy plugs from the adaptor
- Screw the pressure switch/pressure sensor into the adaptor (thread G $\frac{1}{4}$)
The adaptor is equipped with an axial seal. If the pressure switch/pressure sensor used does not offer a suitable seal surface, secure the seal by other means (e.g., with PTFE seal band on the thread).
- Insert assembly consisting of adaptor and pressure switch/pressure sensor into pressure gauge module and press until it stops.
- Press the clamp into the lower end position (IV, position indicator is on the symbol "Locked").

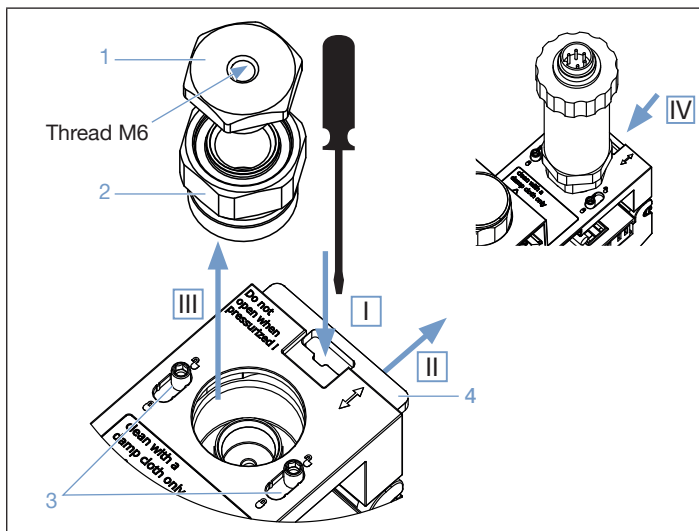


Fig. 31: Installing/uninstalling the pressure switch/pressure sensor on a connection segment

Item		Item	
1	Dummy plugs with thread M6	3	Position indicator
2	Pressure sensor adaptor	4	Clamp for pressure sensor adaptor

Uninstalling the pressure switch/pressure sensor

→ Perform the steps listed in “Installing the pressure switch/pressure sensor” in reverse order.



The assembly consisting of pressure switch/pressure sensor and adaptor can be arranged in any manner in the pressure gauge module (twisted) so that the connected cable can be laid in the best position.

- Only set up the assembly when it is not connected to power.
- Turn it clockwise so that the fitting between the pressure switch/pressure sensor and adaptor does not loosen.

Electrical connection

→ Connect the pressure switch/pressure sensor according to the manufacturer's specifications.



The pressure switch/pressure sensor has no electrical connection to the valve block.

13.10 Replace valve



DANGER

Risk of injury due to pressure change.

Only the P channel is blocked during deinstallation of a valve from a base module with P shutoff. The pressure at work outlets A or B is reduced. Any connected actuator is thus also depressurised, which can cause movement.

- In the event of a potential hazard, mechanically secure the position of the actuator or apply a block to the work connections in order to prevent the actuator from moving.

13.10.1 Installation instructions

Put the system in a secure state before replacing the valve. If the respective valve position is not equipped with a P shutoff, depressurise the system first.

Base module with P shutoff:

If valves are switched under pressure, only a maximum of 4 valves can be uninstalled at the same time. Otherwise the pressure may drastically decrease in the other valves.

When the valve is being uninstalled, a lot of air is emitted at first until the valve is completely loosened. However, an automatic block reduces the air loss so that there is only a minor residual leak when the P shutoff is closed.

13.10.2 Installing

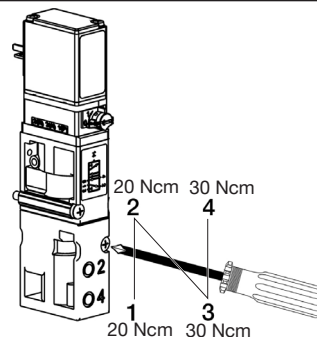


DANGER

Risk of injury due to pressure change.

When installing the valve, make sure that the work connections in the corresponding rest position of the valve are also pressurised until it is switched. A connected actuator can thus move depending on the pressurisation.

- Ensure that the actuator's movements cannot damage the system or cause it to perform any undesired actions.
- Before installation, make sure that the seal on the bottom of the valve is correctly positioned.
- Install the valve as shown in the following image, while observing the specified tightening torques and sequence.



13.11 Connecting input air lines and exhaust air lines

Note the following when using one or more on/off valves:



WARNING

Risk of injury due to uncontrolled movement of the actuators.

The valve block's venting function cannot be guaranteed if the on/off valve is used improperly.

Note the following so that the valve block and the actuators connected to it are securely vented:

- ▶ Form pneumatic segments (option "P bulkhead") if necessary in order to vent just a part of the work connections (valve segments) of the valve block via on/off valve.
- ▶ Either supply each P connection of a pneumatic segment of the valve block with pressure via an on/off valve or seal it with a dummy plug.
- ▶ Do not feed compressed air directly at the P connection of a connection segment if an on/off valve is being used in the same pneumatic segment.
- ▶ Ensure quick and secure venting. Use all available exhaust connections of the valve block and on/off valve and ensure that pressure cannot build up in the exhaust channels.

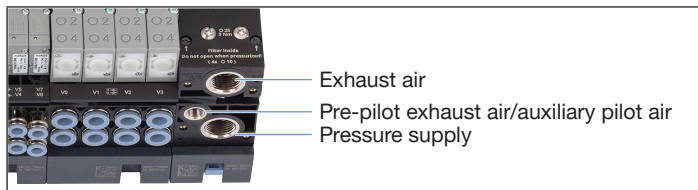


Fig. 32: Connection to input and exhaust air lines

13.11.1 Connecting pressure supply

NOTE

Avoid drops in pressure.

- ▶ Ensure a comprehensive pressure supply (minimum hose diameter 8/6 mm), especially for base modules with P shutoff.
- ▶ For larger AirLINE Ex systems and heavily used applications, connect the pressure supply to all P/1 connections (right, left, and if applicable middle connection segments).

- Connect the pressure supply to the P/1 connections of the connection segments.
- Seal unused P/1 connections with a stopper.
- Tightening torque on threaded connections: max. 20 Nm
- When using one or more on/off valves, observe the warning notice in chapter ["13.11"](#).

13.11.2 Connecting exhaust air

- Connect the exhaust air to connections R/3 / S/5 of the connection modules.

This should be done with the largest possible lines, and a silencer if applicable, with high flow rate values to prevent back pressure.

The exhaust air should be connected to the right and left connection segment, as well as the middle connection segments (if present).

13.11.3 Connecting the pre-pilot exhaust air/ auxiliary pilot air

Depending on which valves are present on the AirLINE Ex system, the connection X is used as follows:

Standard valves

In this case the exhaust air of the pilot controls is located at connection X, separate from the R/3 / S/5 connection. This prevents problems in the event that there is high back pressure in the channels R/3 / S/5.

The connection should be made with the largest possible lines, and a silencer if applicable, with high flow rate values to prevent back pressure.

Valves with auxiliary pilot air

For valves which are to be used in an expanded pressure range, the pilot control is supplied via its own pressure port. This must be connected to connection X.

Tightening torque on threaded connections: max. 8 Nm

13.11.4 Bulkhead

Optionally, the system's pressure supply can be segmented by a bulkhead in the central P channel between two pneumatic modules.

→ When connecting the pressure supply, make sure that each segment is suitably supplied.

13.11.5 REV.2 with on/off valve

If a connection segment is equipped with an on/off valve, the external connections for P, R/S and X are made as described above, but on the on/off valve.

14 INITIAL START-UP AND PROJECT PLANNING



For information on initial start-up and project engineering see the operating instructions for Type 8650 REV.2 at

country.burkert.com → 8650 🔍

15 SERIALISATION DATA SET



For information on the serialization data record see the Type 8650 REV.2 operating instructions at

country.burkert.com → 8650 🔍

16 SERVICING AND MAINTENANCE



DANGER

Risk of explosion due to improper handling.

Only certain activities are allowed during operation in a potentially explosive area. In addition to the activities listed in the documentation for SIMATIC ET 200iSP, the following also apply to AirLINE Ex Type 8650: Pulling/plugging valves and electronic modules during operation in Zone 1 and Zone 2, see chapter [“16.2 Upkeep”](#).



WARNING

Risk of injury due to improper maintenance work.

- ▶ Only trained technicians may perform maintenance work.
- ▶ Perform maintenance work using suitable tools only.

16.1 Maintenance

16.1.1 Maintaining modules

The AirLINE Ex system modules do not require maintenance if used in accordance with these operating instructions.

If coarse residue occurs in the compressed air supply lines, it may accumulate in the filter of the connection segments (only REV.2). If necessary, uninstall the filter as described in chapter [“13.7.2 Connection segments”](#) Page 35, clean it and reinstall it.

16.1.2 Cleaning



DANGER

Risk of explosion due to electrostatic charge

If there is a sudden discharge of electrostatically charged devices or persons, there is a risk of explosion in the potentially explosive atmosphere.

- ▶ Clean the device surface by gently wiping it with a **damp** cloth only.

→ Only use a damp, lint-free cloth to clean the system. Detergents or alcohol are not suitable for cleaning. They can damage plastic parts.

16.1.3 Diagnostics function

Switching cycle counter

The current counter values are saved in the electronic modules in an outage-proof manner at regular intervals.



In the event of frequent operating voltage failures, it may happen that individual switching cycles are not documented in the remanent storage, thereby causing the saved number of switching cycles to be slightly lower than the number of actual switching cycles.



For details see the Type 8650 REV.2 operating instructions at country.burkert.com → 8650 

16.2 Upkeep



DANGER

Risk of injury due to high pressure and escaping medium.

- ▶ Switch off the pressure before working on the device or system. Vent or empty the lines.

The valves can show signs of wear over time (e.g. tightness may deteriorate). Valves opened when necessary must be replaced as described below.

16.2.1 Replacing valves in operation



DANGER

Risk of injury due to pressure change.

Only the P channel is blocked during deinstallation of a valve from a base module with P shutoff. The pressure at work outlets A or B is reduced. Any connected actuator is thus also depressurised, which can cause movement.

- ▶ In the event of a potential hazard, mechanically secure the position of the actuator or apply a block to the work connections in order to prevent the actuator from moving.

Installation instructions

- Put the system in a secure state before replacing the valve. If the respective valve position is not equipped with a P shutoff, depressurise the system first.

Base module with P shutoff:

If valves are switched under pressure, only a maximum of 4 valves can be uninstalled at the same time. Otherwise the pressure may drastically decrease in the other valves.

When the valve is being uninstalled, a lot of air is emitted at first until the valve is completely loosened. However, an automatic block reduces the air loss so that there is only a minor residual leak when the P shutoff is closed.

Installing



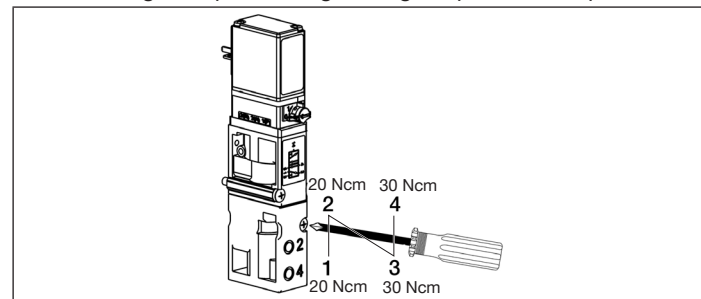
DANGER

Risk of injury due to pressure change.

When installing the valve, make sure that the work connections in the corresponding rest position of the valve are also pressurised until it is switched. A connected actuator can thus move depending on the pressurisation.

- ▶ Ensure that the actuator's movements cannot damage the system or cause it to perform any undesired actions.

- Before installation, make sure that the seal on the bottom of the valve is correctly positioned.
- Install the valve as shown in the following image, while observing the specified tightening torques and sequence.



16.2.2 Replacing the electronic module in operation



SIMATIC ET 200iSP only allows the removal of one individual electronic module in operation. If multiple electronic modules are being removed simultaneously, the station reports the disruption.

- First remove all connected valves as described in the previous chapter “[16.2.1](#)”. Remove the protective caps of the electrical contacts of unused valve positions.
- Remove the electronic module.
The procedure is described in chapter “[13.7.3](#)” [Page 36](#).
- The substitute module is installed in reverse order.

16.3 Troubleshooting

Fault	Possible cause → Elimination
Valves do not switch.	No operating voltage or operating voltage too low. → Check the electrical connection. → Ensure the correct operating voltage.
	Manual override not in neutral position. → Bring manual override to zero position.
	Pressure supply insufficient or not available. → Set up the largest possible volume of pressure supply (also for upstream devices such as pressure regulators, maintenance units, on/off valves, etc.). Minimum operating pressure ≥ 2.5 bar
	Wrong configuration. → Use the corresponding module from the hardware catalogue.
	Channel not released for use or Set to lower value for “boost time”. → Change parameter setting
	The fuse in the module was triggered by a short circuit (can only occur in an extreme malfunction). → Replace the electronic module. Check whether the respective valves might be damaged.

Fault	Possible cause → Elimination
Valves switch with a delay or blow off at the exhaust ports	Pressure supply insufficient or not available. → Set up the largest possible volume of pressure supply (also for upstream devices such as pressure regulators, maintenance units, on/off valves, etc.). Minimum operating pressure ≥ 2.5 bar
	Valves are not in home position (de-energised) during pressure build-up. → Apply pressure to the valve block before switching the valves.
	Insufficient ventilation of the exhaust air ducts due to too small or dirty silencers (back pressure) → Use appropriately large silencers or expansion vessels. → Clean the dirty silencers.
	Impurities or foreign objects in the pilot valve or main valve. → Replace valve.
Leaky valve blocks.	Missing or crushed O-rings between the modules, or Missing or incorrectly positioned profile seals between valve and pneumatic base module. → Identify leaks or missing seals. → Insert missing seals or replace damaged seals.

Fault	Possible cause → Elimination
CF LED is lit.	Wrong configuration. → Use the corresponding module from the hardware catalogue.
	Valve diagnostics responds (short circuit, open output). → Check whether the valve is properly installed. → Replace defective valves. → Disable diagnostics for unused valve seats.
	The module is not starting up due to internal power limit (short circuits in the outputs). → Remove short circuits (defective valves at outputs). → Perform power reset of the module or system.



If the ET 200iSP station (interface module IM 152) has started up with a profibus address X, the address can be changed as follows (for details see [SIMATIC ET 200iSP operating instructions](#)):

- Switch off the station.
- Set the address 0 (all DIP switches in OFF position).
- Turn the station on, wait approx. 10 seconds.
- Turn off station, wait approx. 10 seconds.
- Set the new, desired address Y.
- Switch on the station.

The new address is adopted.

16.4 Repairs

If a repair is required, send the assembly to the responsible Bürkert sales department or contact our Customer Service.



Find the address and telephone number in chapter [“5.1 Contact address”](#) Page 11.

17 SHUTDOWN



WARNING

Risk of injury due to improper installation work.

- ▶ Only trained technicians may perform installation work.
- ▶ Perform installation work using suitable tools only.

17.1 Deactivate the system

- Vent the system.
- Switch off the power supply.
- Uninstall the modules. The procedure is described in chapter [“13.7.1 Installing/uninstalling individual segments”](#) Page 35.
- Store modules in the original packaging or a similar protective packaging.

17.2 Reactivation

- Unpack the modules and acclimatise them before reactivation.



For information on initial start-up and project engineering see the operating instructions for Type 8650 REV.2 at country.burkert.com → 8650

18 PACKAGING, TRANSPORT, STORAGE



WARNING

Risk of injury due to improper behaviour during transport.

- ▶ Only have transport carried out by trained specialists.

During transportation or installation work, a heavy device may fall down and cause injuries.

- ▶ Transport, install and dismantle a heavy device only with the aid of a second person and using suitable equipment.

CAUTION

Damage in transit

Inadequately protected devices may be damaged during transport.

- ▶ Protect the device against moisture and dirt in shock-resistant packaging during transportation.
- ▶ Avoid exceeding or dropping below the permitted storage temperature.
- ▶ Protect the electrical interfaces and pneumatic connections from damage and dirt by placing protective caps on them.

Incorrect storage may damage the device.

- ▶ Store the device in a dry and dust-free location.
- ▶ Storage temperature $-40...+70\text{ °C}$.

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