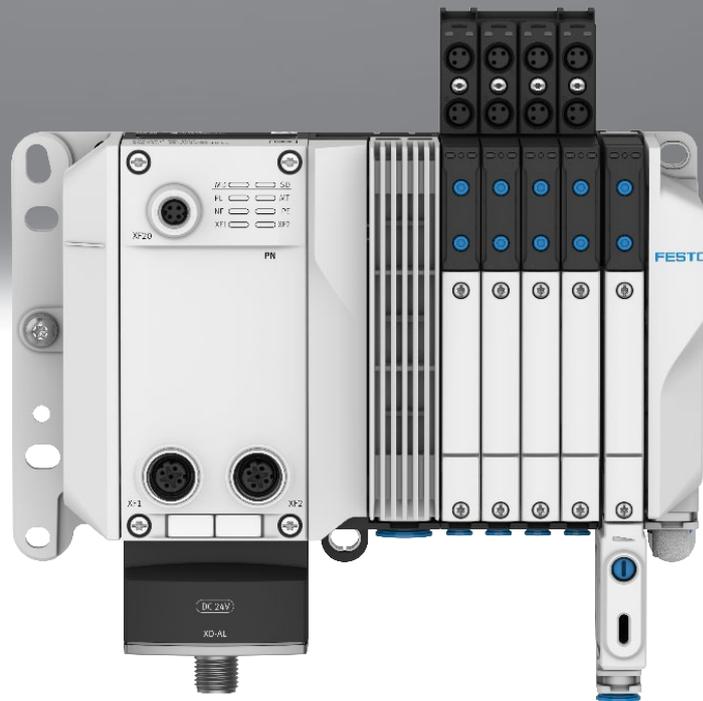
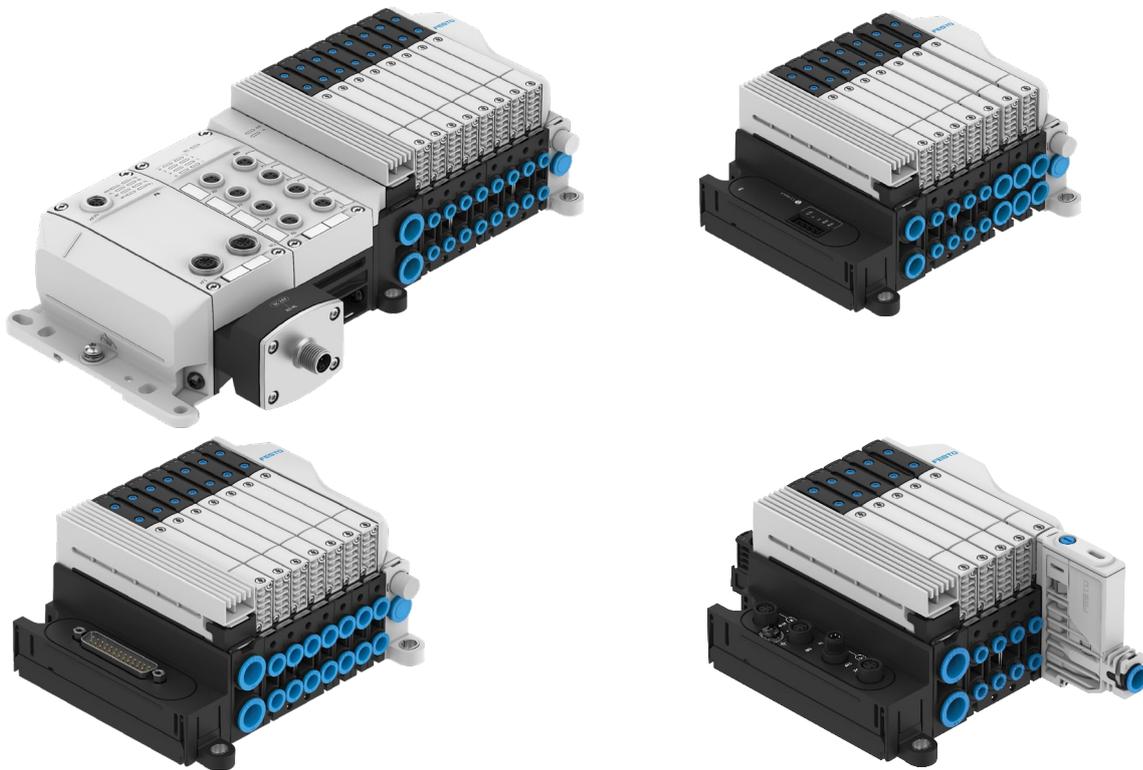


# Valve terminal VTUX

**FESTO**



## Key features



### Innovative

- Compact design with low overall height and width
- Manifold sub-bases with different widths for different flow rate with the same valves
- Vacuum generator integrated in the manifold sub-base with pressure sensor and ejector pulse
- Flow rate up to 690 l/min
- Flexibly configurable push-in fittings as a cartridge, easy to exchange in just a few simple steps
- Connection to the remote I/O system CPX-AP-I
- Connection to the remote I/O system CPX-AP-A
- IO-Link® interface
- Internal serial communication as infrastructure for highly integrated technology modules

### Versatile

- Modular system offering a range of configuration options
- Manifold sub-bases for 4 valves or an individual valve, can be combined as required
- System can be extended as needed with individual manifold sub-bases and modular tie rods
- Up to 64 valve positions
- Can be converted and extended at a later date
- Air supply can be extended via additional pressure zones using supply modules
- Can be assembled using individually ordered components
- Wide range of electrical connection types for multi-pin: Sub-D, ribbon cable or spring-loaded terminal

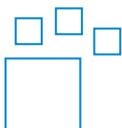
### Reliable

- High output reserves thanks to large pneumatic cross sections and exhausting with high flow rates
- Resilient thanks to high mechanical rigidity
- Lightweight polymer components
- Fast troubleshooting with LEDs on the valves
- Easy to service with replaceable valves and manifold sub-bases
- Manual override either non-detenting, detenting or protected against unauthorised activation (concealed)

### Easy to install

- Fast and reliable delivery as a ready-to-install and tested unit or for self-assembly from individual components
- Reduced selection, ordering, installation and commissioning costs
- Solid wall mounting or DIN rail mounting

### Ordering data – Product options

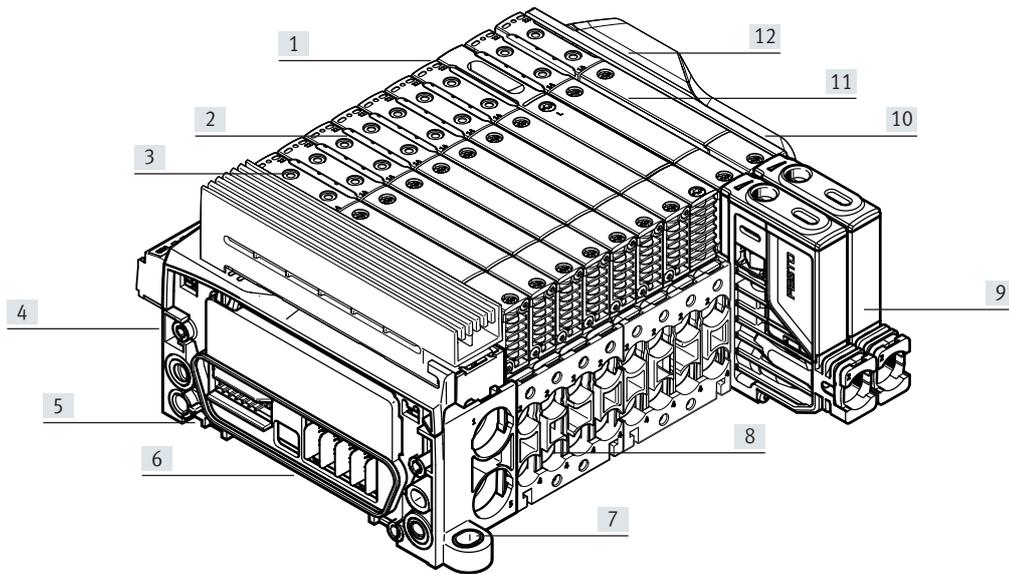


Configurable product  
This product and all its product options can be ordered using the configurator.

The configurator can be found at  
→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)  
Enter the part number or the type.

Part no.	Type
8000800	VTUX-A-P
8000805	VTUX-A-S
8000810	VTUX-A-P-APA
8000815	VTUX-A-S-APA
8000850	VUVX

## Key features



- |  |  |  |  |
|--|--|--|--|
| <p>[1] Valves in width 10 mm and manifold sub-bases in widths of 10 mm and 12 mm</p> <p>[2] Reduced downtime: LED signal status indicator</p> <p>[3] Safe operation: Manual override, non-detenting/detenting or concealed</p> <p>[4] Internal communication in parallel or series</p> | <p>[5] Simple electrical connection<br/>– Multi-pin plug connection<br/>– Fieldbus interface CPX-AP-A<br/>– Interface CPX-AP-I<br/>– IO-Link®</p> <p>[6] Safe: operating voltage connection, can be switched off separately for valves</p> <p>[7] Quick to mount: Directly using screws or on a DIN rail</p> | <p>[8] Practical: Pre-assembled cartridges can be exchanged in just a few steps</p> <p>[9] Vacuum generation integrated directly into the valve terminal</p> <p>[10] Adaptable: The pilot air supply (internal or external) is selected using a separator in the end plate</p> | <p>[11] Variable: 32 valve positions/32 solenoid coils with parallel communication and 64 valve positions with serial communication</p> <p>[12] Space-saving and modular: low-profile valves and flat plate silencers; creation of pressure zones, multiple additional exhaust air and supply air possible using power supply module</p> |
|--|--|--|--|

### Equipment options

#### Valve functions

- |  |   |   |  |
|--|---|---|--|
| <ul style="list-style-type: none"> <li>• 5/2-way valve, single solenoid</li> <li>• 5/2-way valve, double solenoid</li> </ul> | <ul style="list-style-type: none"> <li>• 2x 3/2-way valve, normally open</li> </ul> | <ul style="list-style-type: none"> <li>• 2x 3/2-way valve, normally closed</li> </ul> | <ul style="list-style-type: none"> <li>• 5/3-way valve, mid-position closed</li> <li>• 5/4-way valve, exhausted</li> </ul> |
|--|---|---|--|

#### Special features

- |   |   |   |  |
|---|---|---|--|
| <ul style="list-style-type: none"> <li>• Max. 32 valve positions/max. 32 solenoid coils with parallel communication</li> <li>• Max. 64 valve positions with serial communication</li> </ul> | <ul style="list-style-type: none"> <li>• Any compressed air supply</li> <li>• Creation of pressure zones possible</li> <li>• Vacuum generation possible in the manifold sub-base</li> <li>• Sensor connections/input modules directly on the valve</li> </ul> | <ul style="list-style-type: none"> <li>• Modular, individually extendable tie rods</li> <li>• Single valves or combinations of four valves</li> </ul> | <ul style="list-style-type: none"> <li>• Freely selectable tubing size at each port</li> </ul> |
|---|---|---|--|

## Key features

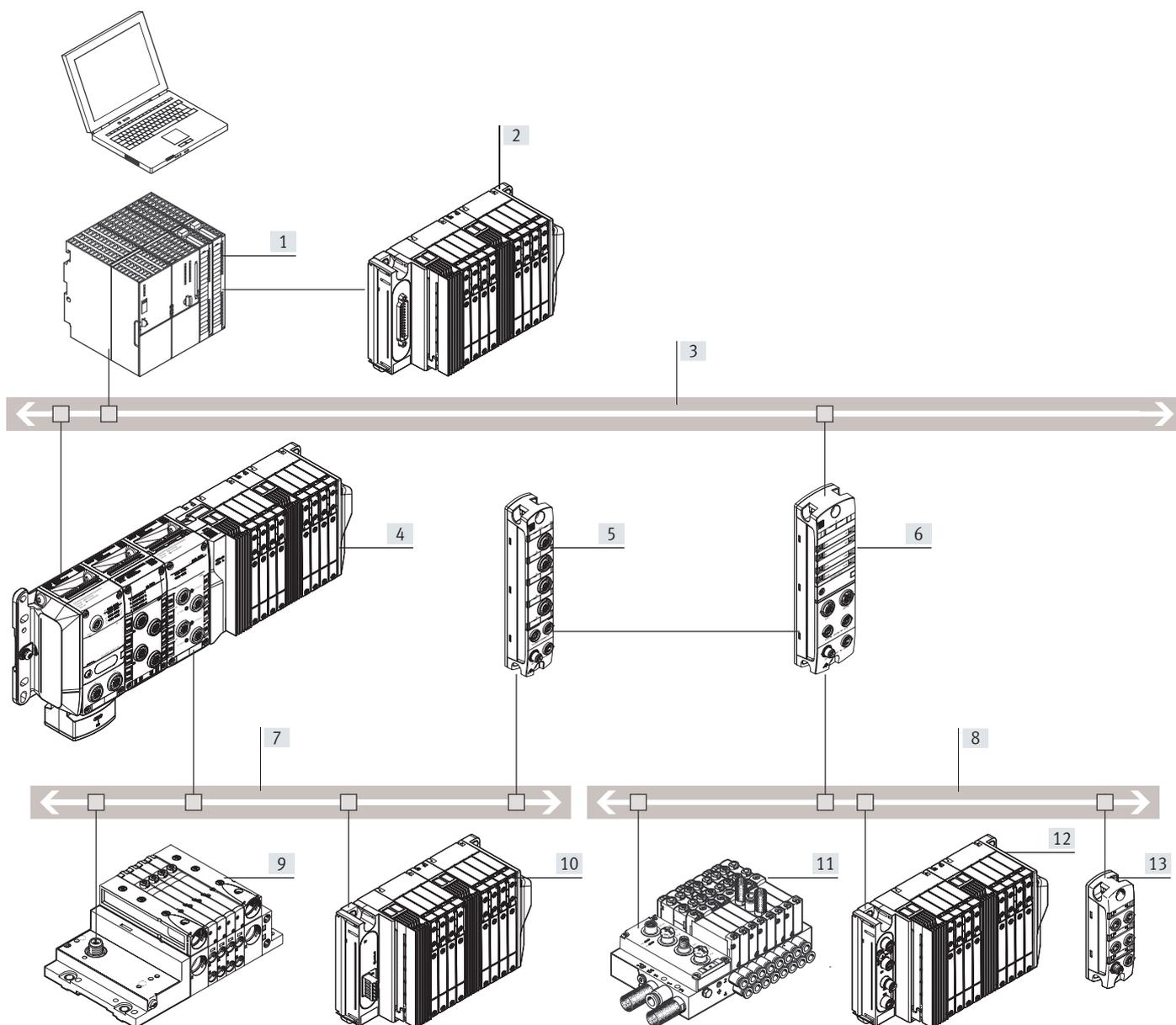
### Control variants of the valve terminal VTUX

The VTUX can be integrated in control systems in a variety of ways. There are a range of designs available for actuation via electrical multi-pin connection. Likewise, valve terminals can be connected via IO-Link® using round plugs with a high degree of protection or using terminal connections.

The valve terminals are particularly versatile and high-performing thanks to the perfect integration into the Festo AP Automation Platform. In combination with the remote I/O system CPX AP-A, it is possible to complete valve terminals by configuring and combining them with a range of peripheral modules.

Integration into the remote I/O system CPX-AP-I offers the option of decentralised solutions in particular. It is thus possible to have particularly space-saving solutions close to the pneumatic drives, enabling rapid movements and short cycle times.

A unique feature is the ability to combine the remote I/O system CPX-AP-A and the remote I/O system CPX-AP-I for a combination of centralised and decentralised machine functions. This modularity makes the VTUX perfectly adaptable to any application.



- [1] Higher-order controller (PLC)
- [2] VTUX with multi-pin plug connection
- [3] Fieldbus
- [4] VTUX with remote I/O system CPX-AP-A with fieldbus interface

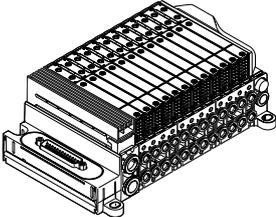
- [5] IO-Link master of the remote I/O system CPX-AP-I
- [6] Bus node of the remote I/O system CPX-AP-I
- [7] IO-Link®
- [8] AP bus

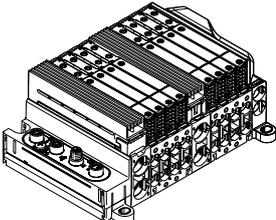
- [9] Festo components having an I/O interface (e.g. valve terminal MPA-L)
- [10] VTUX with IO-Link® node
- [11] Festo components having an AP bus interface (e.g. valve terminal VTUG)

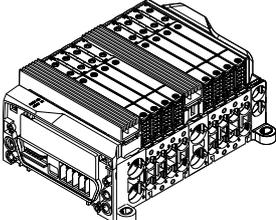
- [12] VTUX with pneumatic interface for remote I/O system CPX-AP-I
- [13] Input/output module with AP bus

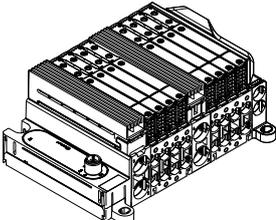
## Key features

<b>Valve terminal selection</b>		Online via: → <a href="http://www.festo.com">www.festo.com</a>
Valve terminal configurator		2D/3D CAD data
The appropriate valve terminal VTUX can be selected quickly and easily using the online catalogue. This includes a convenient valve terminal configurator, making it much easier to order the right product.	The valve terminals are assembled according to your order specification and are individually checked. This reduces assembly and installation time to a minimum.	Order a valve terminal VTUX using the order code.  Ordering system for VTUX → Internet: vtux Ordering system for CPX-AP-I → Internet: cpx-ap-i
You can request the CAD data for a valve terminal you have configured. To do so, start the product search as described above. Click on the CAD/EPLAN symbol. On the next page, you can generate a 3D preview or request a data format of your choice via e-mail.		

<b>Multi-pin plug connection</b>		
	The signals are transmitted from the controller to the valve terminal via a pre-assembled or self-assembled multi-core cable to the multi-pin plug connection. This substantially reduces installation time. Internal signal flow via parallel communication.	The valve terminal can be equipped with max. 32 solenoid coils. This corresponds to 2 to 32 valves.
Versions: <ul style="list-style-type: none"> <li>• Sub-D connection                         <ul style="list-style-type: none"> <li>– Pre-assembled multi-pin cable</li> <li>– Multi-pin cable for self-assembly</li> <li>– Connection on top or at the side</li> </ul> </li> <li>• Ribbon cable connection</li> <li>• Terminal strip connection</li> </ul>		

<b>Fieldbus interface from the remote I/O system CPX-AP-I</b>		
	CPX-AP-I is a flexible, decentralised, compact and lightweight remote I/O system with a high protection rating IP65/IP67. A remote I/O system CPX-AP-I comprises a bus interface and at least one other module. System communication between the modules takes place via connecting cables.	The process data is exchanged cyclically. The following module types are available: <ul style="list-style-type: none"> <li>• Bus interface</li> <li>• Input modules</li> <li>• Input/output modules</li> <li>• Interface for valve terminal</li> </ul> Internal signal flow via serial or parallel communication.
Fieldbus protocols that can be combined with VTUX: <ul style="list-style-type: none"> <li>• PROFINET</li> <li>• EtherNet/IP</li> <li>• EtherCAT®</li> </ul>		

<b>Fieldbus interface from the remote I/O system CPX-AP-A</b>		
	CPX-AP-A is a flexible, central, compact and lightweight remote I/O system with a high degree of protection to IP65/IP67. A bus node directly mounted on the valve terminal VTUX manages communication with a higher-order PLC.	A compact unit, combining pneumatics, sensors and a bus interface, can be designed using directly linked input and output modules. Internal signal flow via serial or parallel communication.
Fieldbus protocols: <ul style="list-style-type: none"> <li>• PROFINET</li> <li>• EtherNet/IP</li> <li>• EtherCAT®</li> </ul>		

<b>IO-Link®</b>		
	IO-Link® consists of a central master and the IO-Link® devices connected via special connecting cables. This permits a decentralised layout of the devices.	The connection type corresponds to a star topology. As well as transmitting the communication data, the IO-Link® interfaces also handle the power supply for the connected devices.
The maximum length of a string is 20 m. Internal signal flow via parallel communication.		

## Peripherals overview

### Modular pneumatic components

The modular design of the valve terminal VTUX enables outstanding flexibility right from the planning stage and offers maximum ease of service in operation.

The system consists of manifold sub-bases and valves.

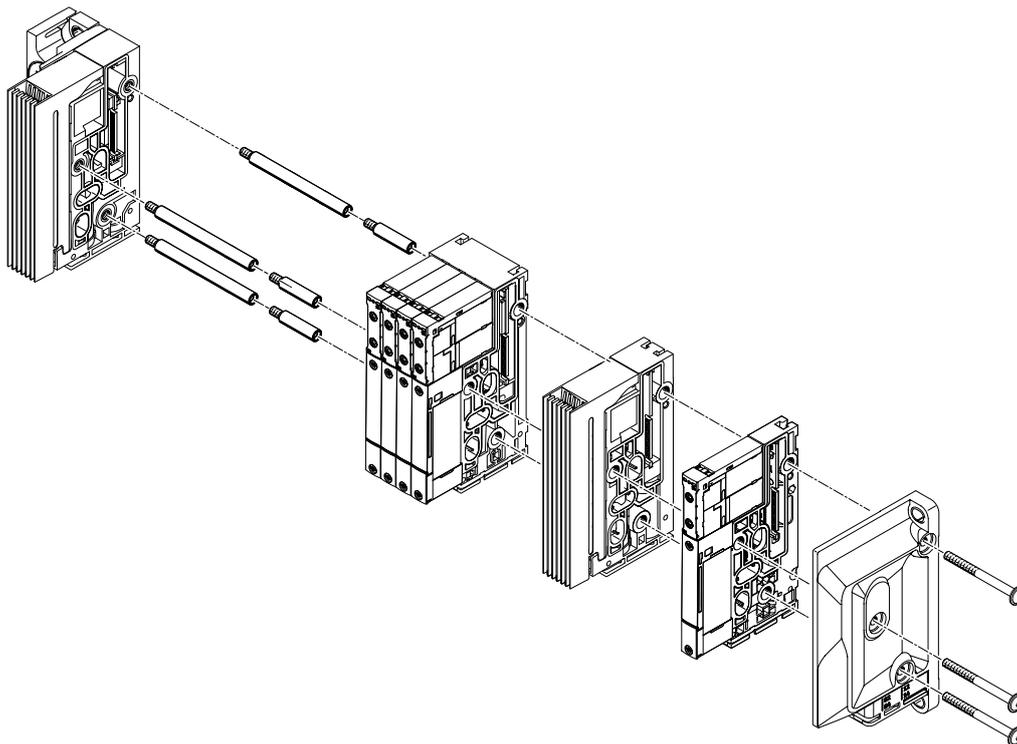
The manifold sub-bases form the support system for the valves.

They contain the electrical connections, the ducts for supplying compressed air to and exhausting the valve terminal as well as the working ports for the pneumatic drives for each valve.

The manifold sub-bases are connected by a tie rod system. This comprises a tie rods and a screw set. The combination of tie rods and screw set is selected according to the chosen number of individual sub-bases.

A valve terminal can be easily extended by adding individual manifold sub-bases or supply modules. This is done simply by inserting suitable tie rod extenders.

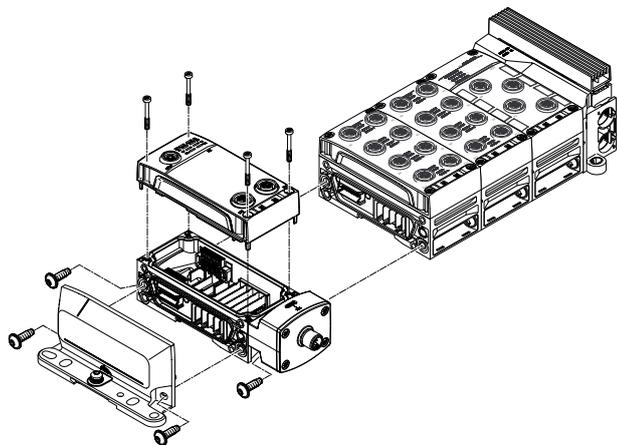
This ensures that the valve terminal can be rapidly and reliably extended.



**Note**  
The tie rod system for the valve terminal VTUX consists of at least two manifold sub-bases or one manifold sub-base and one supply module.

## Peripherals overview

### Modular electrical peripherals



The mechanical connection between the CPX-AP-A modules is created using angled fittings.

The remote I/O system CPX-AP-A can therefore be flexibly expanded at any time.

The advantages of polymer (low weight) and metal (sturdy, high EMC compatibility) are perfectly combined by using high-quality polymer materials.

The I/O modules, connection blocks and bus nodes of the remote I/O system CPX-AP-A are mounted on the interlinking blocks using 4 screws and can be swapped or modified in almost any way.

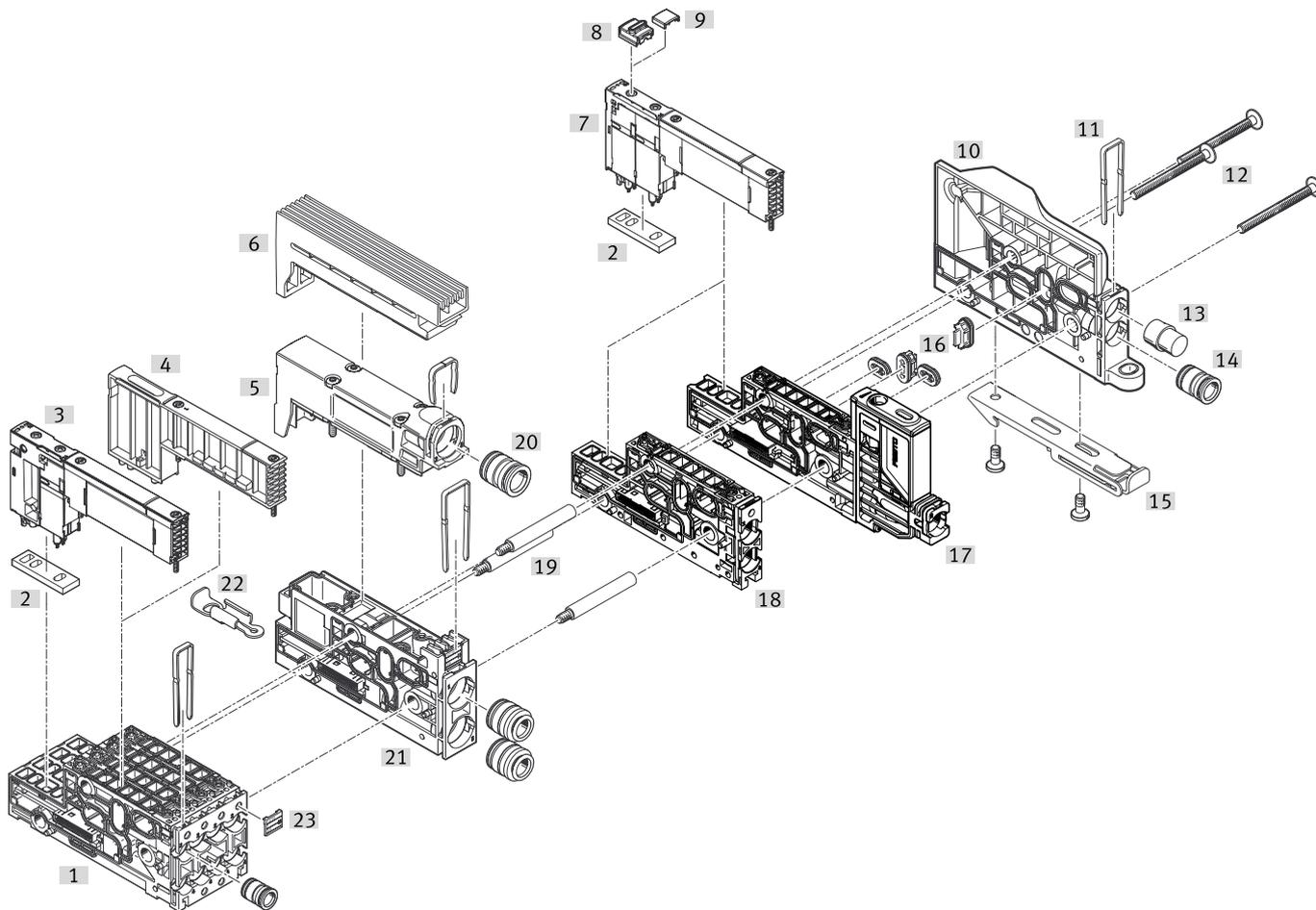
## Peripherals overview

### Pneumatics of the valve terminal with parallel communication

The manifold sub-bases are available individually with one valve position or with a grid of four valve positions.

The manifold sub-bases include the electrical links for:

- Valves with one solenoid coil or
- valves with two solenoid coils
- Valve positions with two solenoid coils occupy two addresses and can be equipped with any valve or a cover plate.
- Valve positions with one solenoid coil occupy a single address and can only be equipped with single solenoid valves or a cover plate.



## Peripherals overview

Pneumatic components of the valve terminal			
Designation	Brief description	→ Page/Internet	
[1]	Manifold sub-base	Manifold sub-base with four valve positions	75
[2]	Seal	–	–
[3]	Solenoid valve	Valve size 10 mm	75
[4]	Vacant position	Cover plate for one valve position	75
[5]	Plate	Exhaust plate for ducted exhaust air	76
[6]	Plate	Exhaust plate as flat plate silencer	76
[7]	Solenoid valve	Valve size 10 mm	75
[8]	Cover cap for manual override	Conversion from non-detenting to detenting	79
[9]	Cover cap for manual override	Conversion from non-detenting to concealed	79
[10]	End plate, right	End plate with ports 12/14, 82/84	77
[11]	Clamping clip for cartridge	–	–
[12]	Screw	Tie rod system, connects the manifold sub-bases	76
[13]	Silencer	With cartridge connection	79
[14]	Cartridge	For air supply and exhaust ports	79
[15]	Mounting	Clamp mounting for DIN rail mounting	76
[16]	Separator	Separator for pressure zone separation in duct 1 and duct 3, 5	76
[17]	Manifold sub-base	Manifold sub-base with one valve position for vacuum	75
[18]	Manifold sub-base	Manifold sub-base with one valve position	75
[19]	Tie rods	Threaded rod, clamps the manifold sub-bases between the end plates	76
[20]	Cartridge	For air supply and exhaust ports	79
[21]	Supply module	For compressed air supply/exhaust air	76
[22]	Mounting	Mounting bracket for wall mounting	76
[23]	Inscription labels	For identifying the pressure zone separation	79

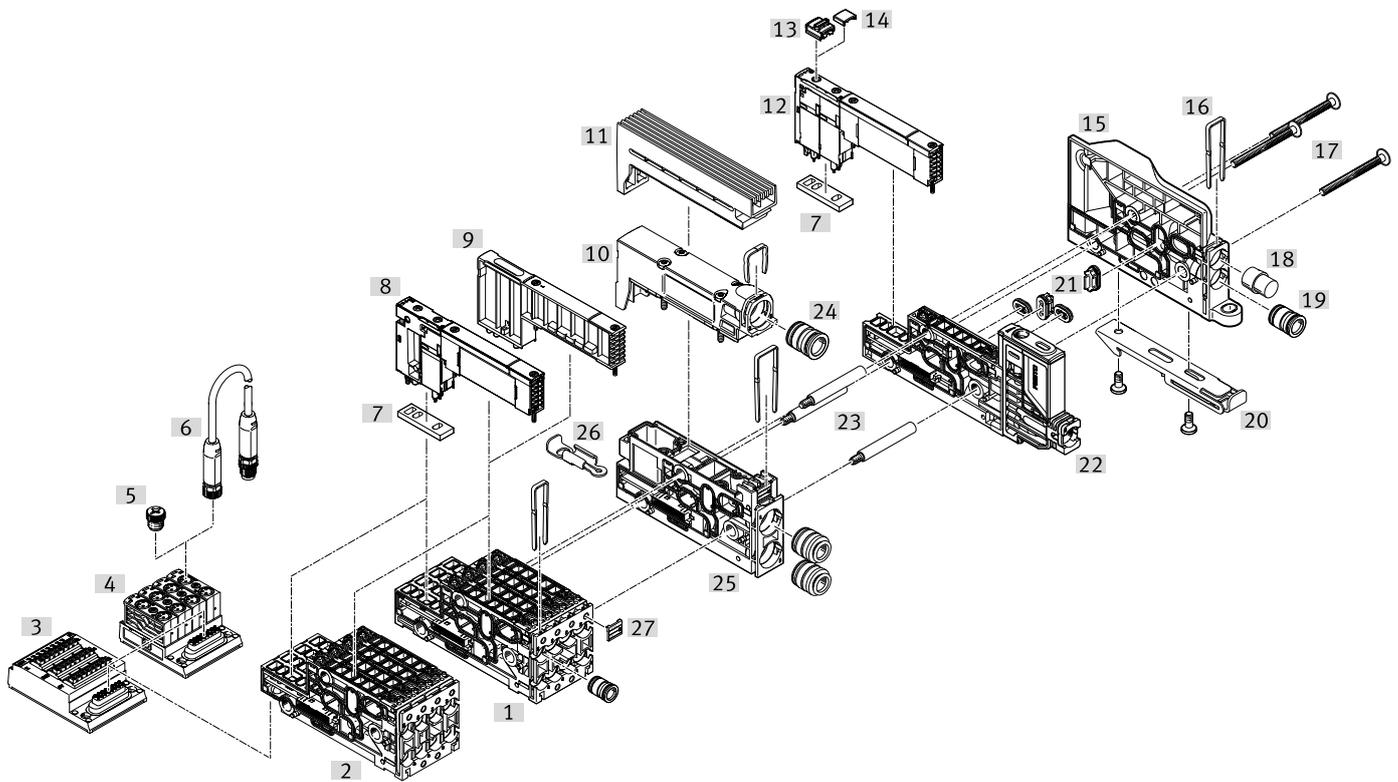
## Peripherals overview

### Pneumatics of the valve terminal with serial communication

The manifold sub-bases are available in a grid of four. Additional functions such as input modules are available.

The manifold sub-bases include the electrical links for:

- Valves with one solenoid coil or
- valves with two solenoid coils
- Valve positions with two solenoid coils occupy two addresses and can be equipped with any valve or a cover plate.
- Valve positions with one solenoid coil occupy a single address and can only be equipped with single solenoid valves or a cover plate.



## Peripherals overview

Pneumatic components of the valve terminal			
Designation	Brief description	→ Page/Internet	
[1]	Manifold sub-base	Manifold sub-base with four valve positions	75
[2]	Manifold sub-base	Manifold sub-base with four valve positions with connection for input module	75
[3]	Input module	Electrical connection, spring-loaded terminal	77
[4]	Input module	Electrical connection, socket M8	77
[5]	Cover cap	For electrical connections M8x1	79
[6]	Connecting cable	–	78
[7]	Seal	–	–
[8]	Solenoid valve	Valve size 10 mm	75
[9]	Vacant position	Cover plate for one valve position	75
[10]	Plate	Exhaust plate for ducted exhaust air	76
[11]	Plate	Exhaust plate as flat plate silencer	76
[12]	Solenoid valve	Valve size 10 mm	75
[13]	Cover cap for manual override	Conversion from non-detenting to detenting	79
[14]	Cover cap for manual override	Conversion from non-detenting to concealed	79
[15]	End plate, right	End plate with ports 12/14, 82/84	77
[16]	Clamping clip for cartridge	–	–
[17]	Screw	Tie rod system, connects the manifold sub-bases	76
[18]	Silencer	With cartridge connection	79
[19]	Cartridge	For air supply and exhaust ports	79
[20]	Mounting	Clamp mounting for DIN rail mounting	76
[21]	Separator	Separator for pressure zone separation in duct 1 and duct 3, 5	76
[22]	Manifold sub-base	Manifold sub-base with one valve position for vacuum	75
[23]	Tie rods	Threaded rod, clamps the manifold sub-bases between the end plates	76
[24]	Cartridge	For air supply and exhaust ports	79
[25]	Supply module	For compressed air supply/exhaust air	76
[26]	Mounting	Mounting bracket for wall mounting	76
[27]	Inscription labels	For identifying the pressure zone separation	79

## Peripherals overview

### Valve terminal with multi-pin plug connection:

Order code:

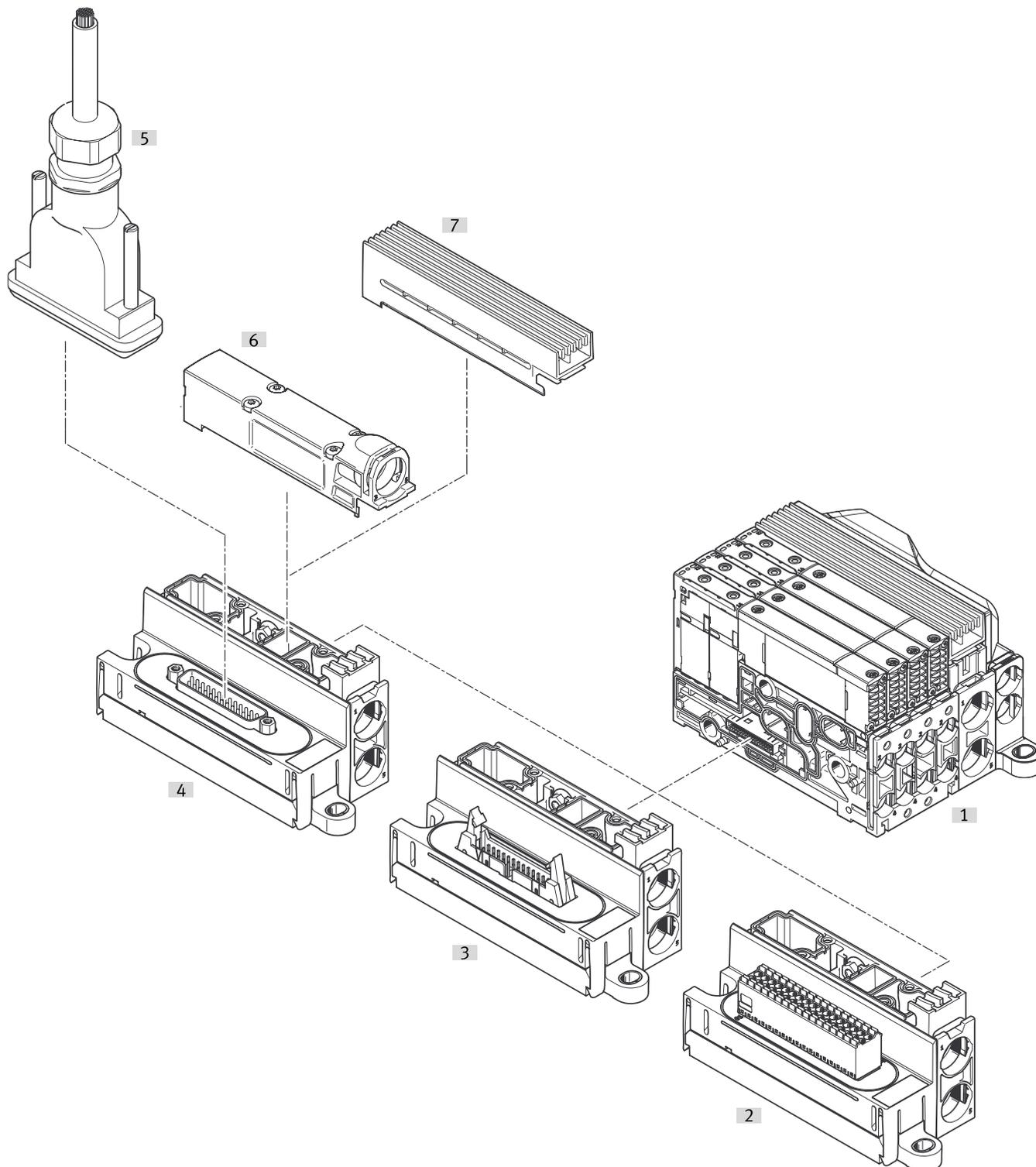
- VTUX-A-P-M... for pneumatics with parallel communication

Valve terminals VTUX with multi-pin plug connection can be expanded by up to 32 solenoid coils/valve positions.

The multi-pin plug connection can be ordered as a Sub-D connection (25- or 44-pin) or as a terminal strip (34-pin) or as a ribbon cable connection (26-pin).

The Sub-D multi-pin plug connection (25- and 44-pin) is available with degree of protection IP40 and IP65; the terminal strip and ribbon cable connection with IP40.

Pre-assembled cables of different lengths with degree of protection IP40 or IP65/67 are available as accessories for the Sub-D multi-pin plug connection (25- and 44-pin).



## Peripherals overview

Designation		Brief description	→ Page/Internet
[1]	Valve terminal VTUX	Pneumatic part	8
[2]	Multi-pin plug connection	Terminal strip	77
[3]	Multi-pin plug connection	For ribbon cable, 26-pin, IP40	77
[4]	Multi-pin plug connection	Sub-D, 25-pin	77
[5]	Connecting cable	Socket 25-pin, Sub-D, open cable end 25-pin	78
[6]	Plate	Exhaust plate for ducted exhaust air	76
[7]	Plate	Exhaust plate as flat plate silencer	76

## Peripherals overview

### Valve terminal with multi-pin plug connection:

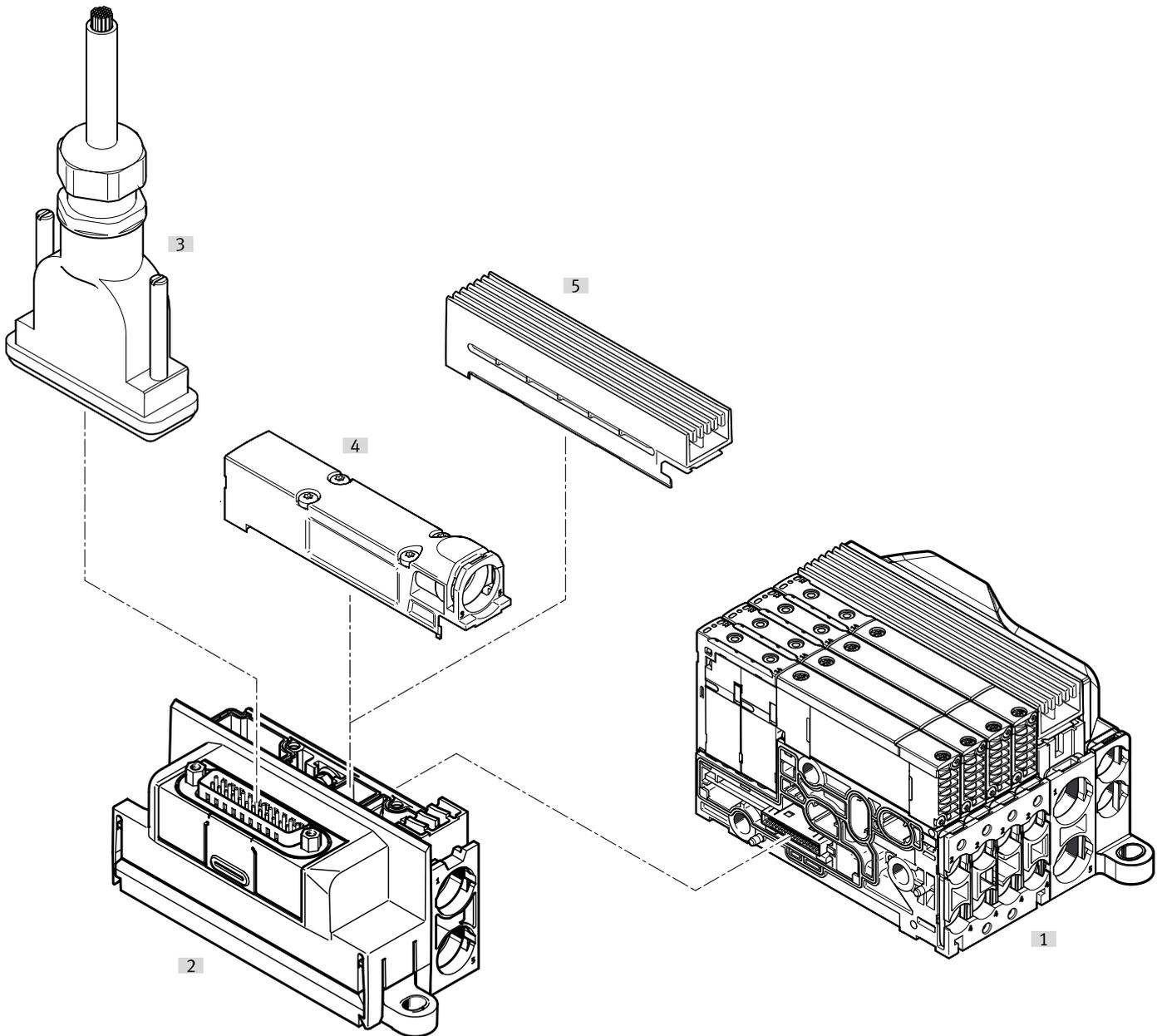
Order code:

- VTUX-A-P-M... for pneumatics with parallel communication

Valve terminals VTUX with a rotatable multi-pin plug connection can be expanded by up to 24 solenoid coils/valve positions.

The multi-pin connector can be ordered as a Sub-D connector (25-pin). The rotatable Sub-D multi-pin connector is available in protection class IP40.

Pre-assembled cables in various lengths are available as accessories for the rotatable Sub-D multi-pin connector.



## Peripherals overview

Designation		Brief description	→ Page/Internet
[1]	Valve terminal VTUX	Pneumatic part	8
[2]	Multi-pin plug connection	Sub-D, 25-pin, rotatable	77
[3]	Connecting cable	Socket 25-pin, Sub-D, open cable end 25-pin	78
[4]	Plate	Exhaust plate for ducted exhaust air	76
[5]	Plate	Exhaust plate as flat plate silencer	76

## Peripherals overview

### Valve terminal with fieldbus interface, remote I/O system CPX-AP-A

Order code:

- VTUX-A-P-APA-... for pneumatics with parallel communication
- VTUX-A-S-APA-... for pneumatics with serial communication
- CPX-AP-A-... for the electrical peripherals

Valve terminals with CPX-AP-A connection can be expanded with up to 32 solenoid coils/valve positions with parallel communication and with up to 64 valve positions with serial communication.

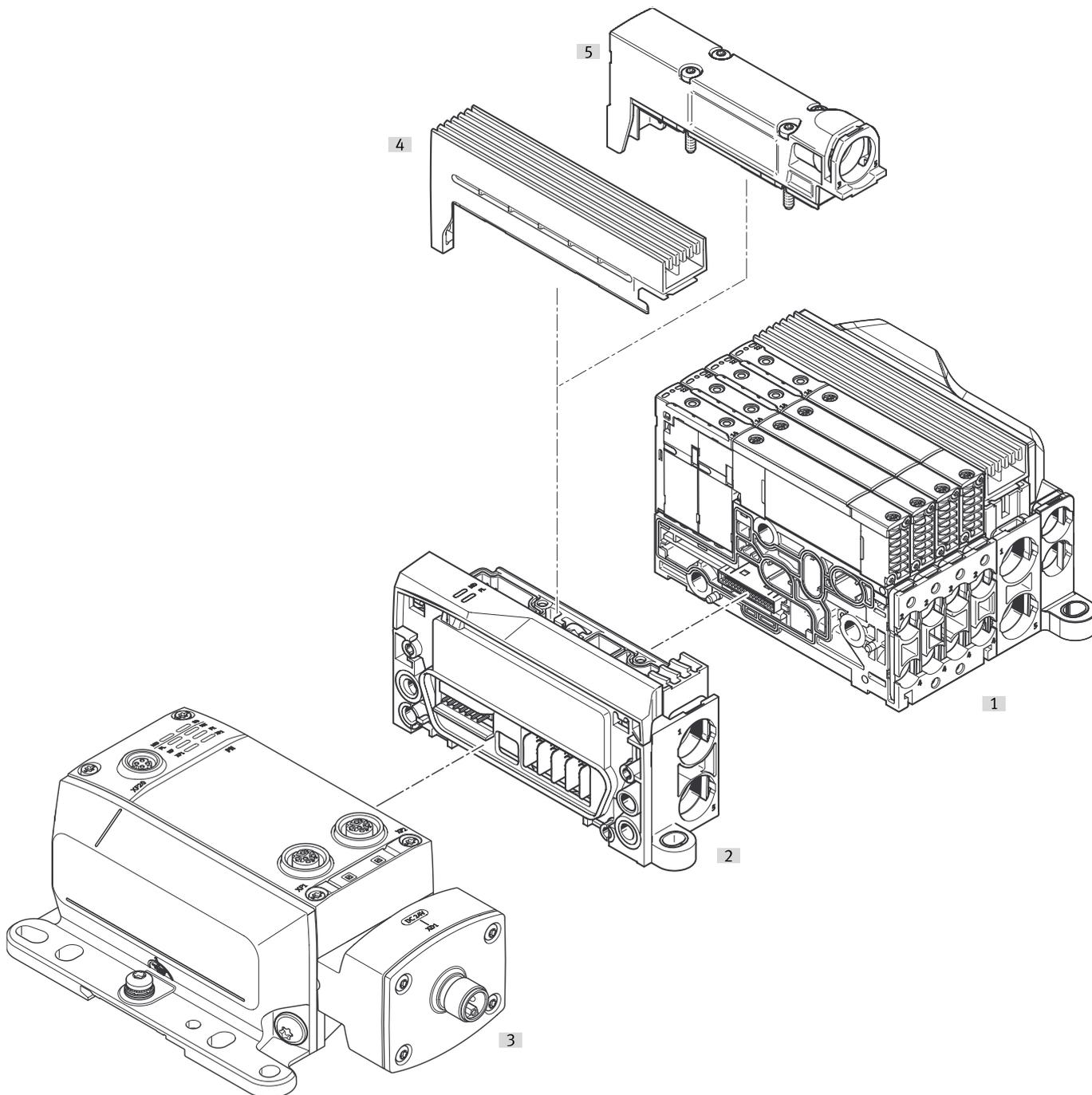
In combination with single-solenoid valves, up to 32 valve positions (parallel communication) or 64 valve positions (serial communication) can be fitted.

When used exclusively with valves having two solenoid coils (double-solenoid valves, 5/3-way valves, 2x 3/2-way valves), the maximum number of valve positions reduces to 16 with parallel communication.

Each valve position can be equipped with any valve or a cover plate. The rules for CPX-AP-A apply to the equipment that can be used with the electrical peripherals CPX-AP-A.

In general:

- Digital inputs/outputs
- Parameterisation of inputs and outputs
- Integrated, convenient diagnostics
- Preventive maintenance concepts



## Peripherals overview

Designation		Brief description	→ Page/Internet
[1]	Valve terminal VTUX	Pneumatic part	8
[2]	End plate, left	Pneumatic interface for remote I/O system CPX-AP-A	77
[3]	Remote I/O system CPX-AP-A	Electrical part of the remote I/O system CPX-AP-A	cpx-ap-a
[4]	Plate	Exhaust plate as flat plate silencer	76
[5]	Plate	Exhaust plate for ducted exhaust air	76

## Peripherals overview

### Valve terminal with interface to the remote I/O system CPX-AP-I

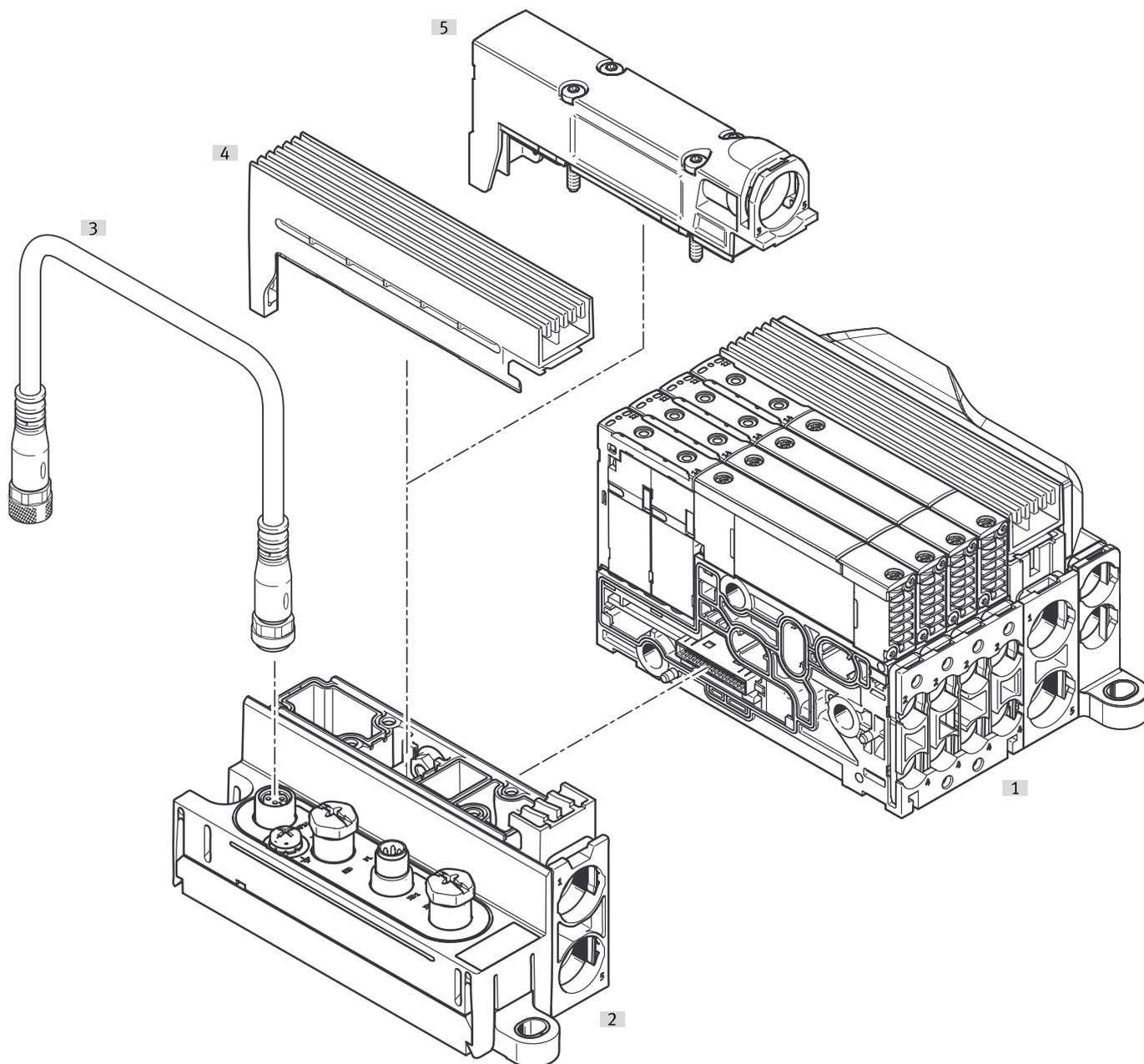
Order code:

- VTUX-A-P-API... Pneumatics with parallel communication
- VTUX-A-S-API... for pneumatics with serial communication
- CPX-AP-I components are to be ordered individually

Valve terminals with CPX-AP-I connection can be expanded with up to 32 solenoid coils/valve positions with parallel communication and with up to 64 valve positions with serial communication.  
In combination with single-solenoid valves, up to 32 valve positions (parallel communication) or 64 valve positions (serial communication) can be fitted.

When used exclusively with valves having two solenoid coils (double-solenoid valves, 5/3-way valves, 5/4-way valves, 2x 3/2-way valves), the maximum number of valve positions reduces to 16 with parallel communication.

Each valve position can be equipped with any valve or a cover plate.



## Peripherals overview

Designation		Brief description	→ Page/Internet
[1]	Valve terminal VTUX	Pneumatic part	8
[2]	End plate, left	End plate with interface to the remote I/O system CPX-AP-I and with interface for power supply	77
[3]	Connecting cable	Between two CPX-AP-I modules	cpx-ap-i
[4]	Plate	Exhaust plate as flat plate silencer	76
[5]	Plate	Exhaust plate for ducted exhaust air	76

## Peripherals overview

**Valve terminal with IO-Link® interface (and bus node)**

Order code:

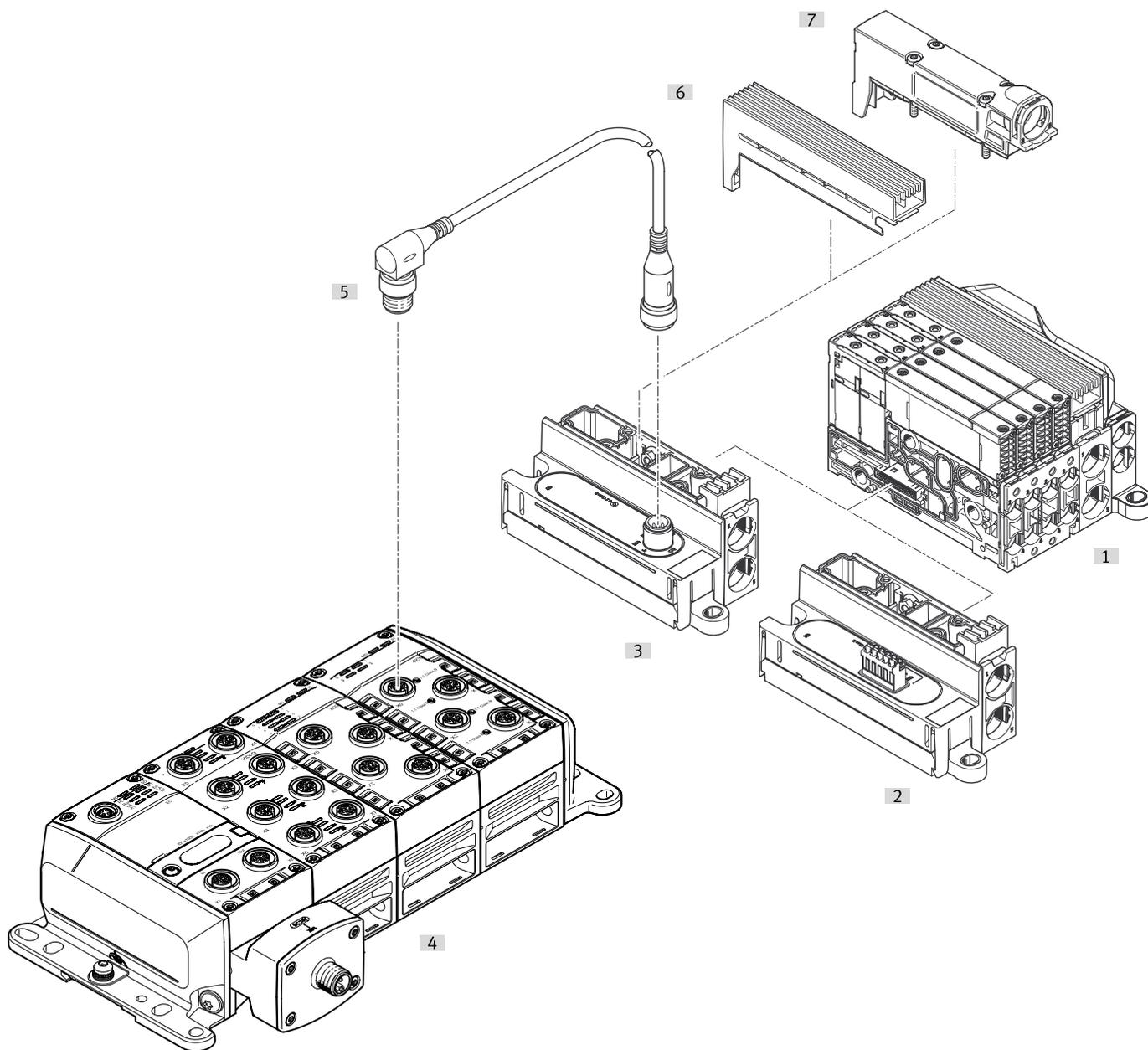
- VTUX-A-P-IO... for pneumatics with parallel communication
- CPX-AP-A... for the bus node

Valve terminals with IO-Link® interface can be expanded by up to 32 solenoid coils/valve positions.

Up to 32 valve positions can be equipped with single solenoid valves.

The maximum number of valve positions is reduced to 16 if only valves with two solenoid coils are used (double solenoid valves, 5/3-way valves, 5/4-way valves, 2x 3/2-way valves).

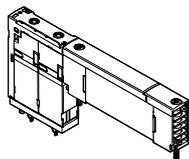
Each valve position can be equipped with any valve or a cover plate.



Designation	Brief description	→ Page/Internet
[1] Valve terminal VTUX	Pneumatic part	8
[2] End plate, left	End plate with IO-Link® interface, push-in electrical connection	77
[3] End plate, left	End plate with IO-Link® interface, electrical connection M12	77
[4] Remote I/O system CPX-AP-A	With bus nodes, input/output modules and IO-Link master for connecting devices with IO-Link interface	cpx-ap-a
[5] Connecting cable	Between two IO-Link® interfaces	nebu
[6] Plate	Exhaust plate as flat plate silencer	76
[7] Plate	Exhaust plate for ducted exhaust air	76

## Key features – Pneumatic components

### Sub-base valve



VTUX offers a comprehensive range of valve functions. The spool valves VTUX of width 10 mm offer a particularly high flow rate. They are used on manifold sub-bases of width 10 mm and 12 mm with a tubing connection up to 8 mm.

Valves of size 10 mm are a particularly effective option for compact valve terminals that also enable applications with outstanding flow rate performance when using 8 mm tubing connections.

This eliminates having to select and decide between different valve sizes and reduces the complexity for planned applications.

Mounting valves on manifold sub-bases offers a range of advantages.

The valves are secured using two screws and can be easily replaced. The 5/2-way and 3/2-way valves are designed to have a negative overlap. This thus enables the working ports to be exhausted in the de-energised state.

Pilot air (duct 12/14) is supplied via the manifold sub-bases, allowing it to be interrupted and exhausted.

All valves have pneumatic pilot control for optimising performance.

Irrespective of the valve function, there are sub-base valves with one solenoid coil (single solenoid) or with two solenoid coils (double solenoid or two single solenoid valves in one housing).

### Design

#### Replacing valves

The valves are attached to the sub-base using two screws. The tubing remains on the manifold sub-base, which prevents mix-ups during servicing.

which means that they can be easily replaced. The sturdy mechanical structure of the sub-base ensures efficient, durable sealing.

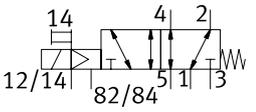
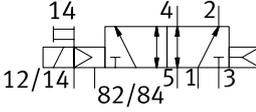
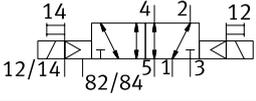
#### Extension

Cover plates for reserve positions can be replaced by valves at a later date.

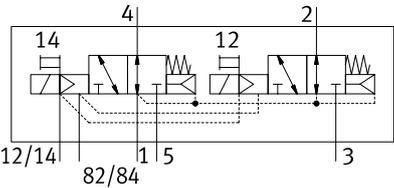
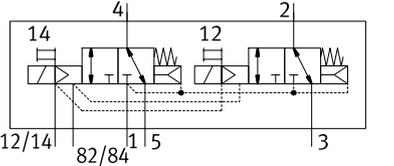
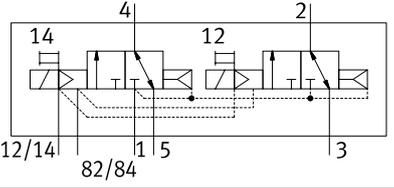
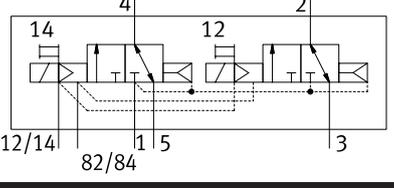
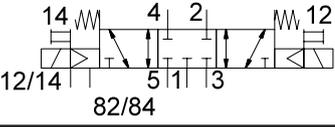
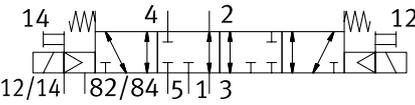
The dimensions, mounting points as well as the existing pneumatic installation do not change.

#### Note

A filter must be installed upstream of valves operated in vacuum mode. This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup).

5/2-way valve	Code	Assigned addresses	Description
Circuit symbol 	Position function 1-32: A	1	<ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Mechanical spring return</li> <li>• Reversible</li> <li>• Operating pressure -0.09 ... +0.7 MPa</li> </ul>
	Position function 1-32: M	1	<ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Pneumatic spring return</li> <li>• Operating pressure +0.2 ... +0.7 MPa</li> </ul>
	Position function 1-32: J	2	<ul style="list-style-type: none"> <li>• Double solenoid</li> <li>• Limited reversibility</li> <li>• Operating pressure -0.09 ... +0.7 MPa</li> </ul>

### Key features – Pneumatic components

2x 3/2-way valve			
Circuit symbol	Code	Assigned addresses	Description
 <p>14 4 2 12/14 82/84 1 5 3</p>	Position function 1-32: NS	2	<ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally open</li> <li>• Mechanical spring return</li> <li>• Reversible</li> <li>• Operating pressure 0 ... 0.7 MPa</li> </ul>
 <p>14 4 2 12/14 82/84 1 5 3</p>	Position function 1-32: K	2	<ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally closed</li> <li>• Mechanical spring return</li> <li>• Reversible</li> <li>• Operating pressure 0 ... 0.7 MPa</li> </ul>
 <p>14 4 2 12/14 82/84 1 5 3</p>	Position function 1-32: KC	2	<ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally closed</li> <li>• Pneumatic spring return</li> <li>• Operating pressure 0.15 ... 0.7 MPa</li> </ul>
 <p>14 4 2 12/14 82/84 1 5 3</p>	Position function 1-32: KV	2	<ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally closed</li> <li>• Pneumatic spring return</li> <li>• For manifold sub-base for vacuum</li> </ul>
5/3-way valve			
Circuit symbol	Code	Assigned addresses	Description
 <p>14 4 2 12/14 82/84 5 1 3</p>	Position function 1-32: G	2	<ul style="list-style-type: none"> <li>• Mid-position closed</li> <li>• Mechanical spring return</li> <li>• Reversible</li> <li>• Operating pressure -0.09 ... +0.7 MPa</li> </ul>
5/4-way valve			
Circuit symbol	Code	Assigned addresses	Description
 <p>14 4 2 12/14 82/84 5 1 3</p>	Position function 1-32: ND	2	<ul style="list-style-type: none"> <li>• Exhausted</li> <li>• Mechanical spring return</li> <li>• Reversible</li> <li>• Operating pressure -0.09 ... +0.7 MPa</li> </ul>

 **Note**

The valve functions of an exhausted and pressurised 5/3-way valve can be realised using the 3/2-way valves "normally closed" and "normally open", respectively, with mechanical spring return.

The negative overlap makes it possible to exhaust the working ports in the de-energised state.

## Key features – Pneumatic components

### Application areas 5/4-way valve

#### Smart Switching Lite

The 5/4-way valve allows the supply air to be switched off during movement, thus saving energy and improving cycle times. The cylinder end position is still reliably reached with the help of the expansion energy. The cylinder chambers can be individually pressurised and blocked. As the pressure in the end position is reduced, the subsequent movement can be carried out more dynamically.

Smart Switching Lite is the complete solution for valve and control logic (PLC module). The PLC module can be integrated into the existing control logic; it determines the required pressurisation time and detects when the end position has been reached via limit switches.

Appropriate application notes with further information are also available for the PLC modules.

#### Holding function for vacuum suction nozzle

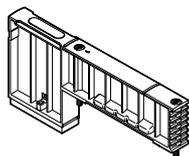
As soon as an emergency stop (switching off the load voltage) is triggered during vacuum generation, the vacuum suction nozzle remains in vacuum generation mode.

If the air saving function is active, it remains active.

Features and benefits:

- Special valve with locking function
- To save energy, one pulse is enough to switch the vacuum on and off
- Integrated air-saving function
- Integrated sensor for continuously measuring the total vacuum level
- Integrated power failure function

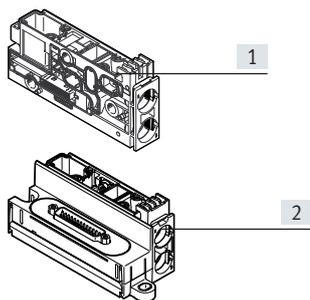
### Cover plate



Cover plate (code L) without valve function, for reserving valve positions on a valve terminal.

Valves and cover plates are attached to the manifold sub-base using two screws.

### Compressed air supply and exhaust



- [1] Supply module
- [2] Left end plate

The valve terminal VTUX can be supplied with compressed air at one or more points via the left end plate and/or via supply modules. The generously sized pneumatic system ensure that all components will offer good performance, even with large-scale extensions.

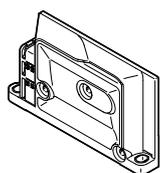
Exhausting (ducts 3 and 5) takes place either via silencers or ports for ducted exhaust air, via the supply modules or the left end plate.

There are two variants for exhausting:

- Exhaust air 3/5 via flat plate silencer
- Exhaust air 3/5 ducted

Ducts 3 and 5 are separate in the terminal and are only joined together in the supply module/left end plate. The pilot exhaust air (duct 82/84) is completely separate from ducts 3 and 5.

### Pilot air supply



The valve terminal VTUX is supplied with pilot air only via the right end plate.

The type of pilot air supply can be selected using a separator in duct 1 of the end plate:

- Internal (from duct 1) or
- External (from duct 12/14)

The actual control pressure required depends on the valves used on the terminal. Internal pilot air supply can be selected if the supply pressure of the terminal is correspondingly high. In this case, the pilot air supply is branched by an internal connection from duct 1 in the right end plate.

The operating pressure in the right pressure zone must be at least equal to the highest control pressure required for the entire valve terminal. Port 12/14 on the right end plate is sealed using a blanking plug.

#### - Note

If a gradual pressure build-up in the system using a soft-start valve is chosen, an external pilot air supply should be connected so that the pilot pressure applied during switch-on is already very high.

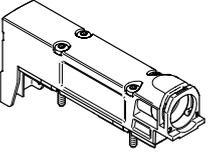
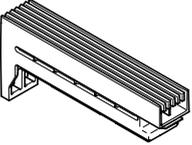
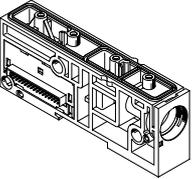
Key features – Pneumatic components

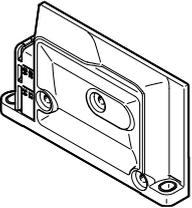
Compressed air supply and pilot air supply		
Illustration	Code	Information
<b>Right end plate, with supply ports</b>		
	Pilot air supply, via right end plate: -	Internal pilot air supply <ul style="list-style-type: none"> <li>• Pilot air is branched internally from port 1 in the right end plate</li> <li>• Port 12/14 in the right end plate is sealed using a blanking plug</li> <li>• Pilot exhaust air 82/84 via right end plate</li> <li>• For operating pressure in the range 0.25 ... 0.7 MPa</li> </ul>
	Pilot air supply, via right end plate: Z	External pilot air supply <ul style="list-style-type: none"> <li>• Pilot air supply (0.25 ... 0.7 MPa) is connected at port 12/14 on the right end plate</li> <li>• Port 1 in the right end plate is sealed using a separator</li> <li>• Pilot exhaust air 82/84 via right end plate</li> <li>• For operating pressure in the range -0.09 ... +0.7 MPa (suitable for vacuum)</li> </ul>
<b>Supply module, flat plate silencer</b>		
	Connection position type 1-64: U Position function 1-64: US	<ul style="list-style-type: none"> <li>• Exhaust air 3/5 via flat plate silencer</li> <li>• Pilot exhaust air 82/84 via right end plate</li> <li>• For operating pressure in the range -0.09 ... +0.7 MPa (suitable for vacuum)</li> </ul>
<b>Supply module, ducted exhaust air</b>		
	Connection position type 1-64: U Position function 1-64: UD	<ul style="list-style-type: none"> <li>• Exhaust air 3/5 via supply module</li> <li>• Pilot exhaust air 82/84 via right end plate</li> <li>• For operating pressure in the range -0.09 ... +0.7 MPa (suitable for vacuum)</li> </ul>

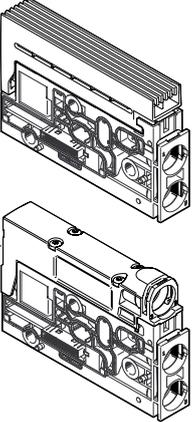
## Key features – Pneumatic components

Compressed air supply and pilot air supply		
Illustration	Code	Information
<b>Left end plate, flat plate silencer</b>		
	–	<ul style="list-style-type: none"> <li>• Exhaust air 3/5 via flat plate silencer</li> <li>• Pilot exhaust air 82/84 via right end plate</li> <li>• For operating pressure in the range <math>-0.09 \dots +0.7</math> MPa (suitable for vacuum)</li> </ul>
<b>Left end plate, ducted exhaust air</b>		
	–	<ul style="list-style-type: none"> <li>• Exhaust air 3/5 via supply module</li> <li>• Pilot exhaust air 82/84 via right end plate</li> <li>• For operating pressure in the range <math>-0.09 \dots +0.7</math> MPa (suitable for vacuum)</li> </ul>

Key features – Pneumatic components

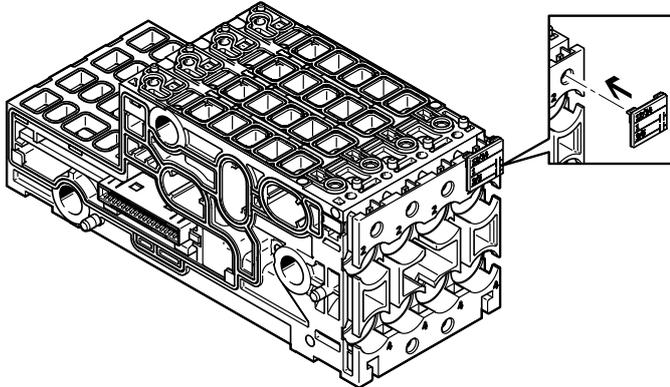
Supply module	Code	Type	Designation	Information
	Position function 1-64: UD	VABF-XA-12-M2	Exhaust plate for ducted exhaust air	Additional power supply modules can be used for larger terminals or to create pressure zones. Supply modules can be configured at any point upstream or downstream from the manifold sub-bases or also next to one another. Supply modules contain the following ports: <ul style="list-style-type: none"> <li>• Compressed air supply (duct 1)</li> <li>• Exhaust air (duct 3/5)</li> </ul> Depending on your order, the exhaust ducts are either ducted or vented via the flat plate silencer. The flat plate silencer is fixed on the manifold sub-base with a latching lug and can be removed without the need for tools.
	Position function 1-64: US	VABF-XA-12-M1	Flat plate silencer	
	Connection position type 1-64: U	VABX-A-P-BU	Supply module without cartridge	

Supply and exhaust ports	Code	Connection	Push-in fitting/cartridge		
<b>Right end plate with supply ports 12/14, 82/84</b>					
		12/14	Pilot air supply	Cartridge	Cartridge, straight
		82/84	Pilot exhaust air	Cartridge	

Supply module	Connection position type 1-64: U				
		1	Working air/vacuum supply	Cartridge	Cartridge, straight
		3/5	Exhaust air	Flat plate silencer	–
				Cartridge	Cartridge, straight

Key features – Pneumatic components

Creating pressure zones and separating exhaust air



VTUX offers a number of options for creating pressure zones if different working pressures are required. A pressure zone is created by separating the internal supply duct between any two manifold sub-bases. Every pressure zone must have its own compressed air supply. Compressed air can be supplied and exhausted via the left end plate and/or the supply modules.

The position of the supply modules and the pressure zone separation can be freely chosen with the valve terminal VTUX.

The separators for pressure zone separation are integrated into the terminal at the factory as specified in your order.

Their position is marked using corresponding inscription labels. Duct separation takes place between two manifold sub-bases.

Creating pressure zones

Manifold sub-bases with separator for pressure zone separation  
Illustrated examples

Illustrated examples	Coding	Code	Information			
	<table border="1"> <tr><td>12/14</td></tr> <tr><td>1</td></tr> <tr><td>3/5</td></tr> </table>	12/14	1	3/5	Duct separation 1 - 64: TT	<ul style="list-style-type: none"> <li>[1] Duct 82/84</li> <li>[2] Duct 3</li> <li>[3] Duct 1, separated</li> <li>[4] Duct 12/14</li> <li>[5] Duct 5</li> </ul>
12/14						
1						
3/5						
	<table border="1"> <tr><td>12/14</td></tr> <tr><td>1</td></tr> <tr><td>3/5</td></tr> </table>	12/14	1	3/5	Duct separation 1 - 64: TR	<ul style="list-style-type: none"> <li>[1] Duct 82/84</li> <li>[2] Duct 3, separated</li> <li>[3] Duct 1</li> <li>[4] Duct 12/14</li> <li>[5] Duct 5, separated</li> </ul>
12/14						
1						
3/5						
	<table border="1"> <tr><td>12/14</td></tr> <tr><td>1</td></tr> <tr><td>3/5</td></tr> </table>	12/14	1	3/5	Duct separation 1 - 64: TS	<ul style="list-style-type: none"> <li>[1] Duct 82/84</li> <li>[2] Duct 3, separated</li> <li>[3] Duct 1, separated</li> <li>[4] Duct 12/14</li> <li>[5] Duct 5, separated</li> </ul>
12/14						
1						
3/5						

## Key features – Pneumatic components

### Examples: Compressed air supply and pilot air supply

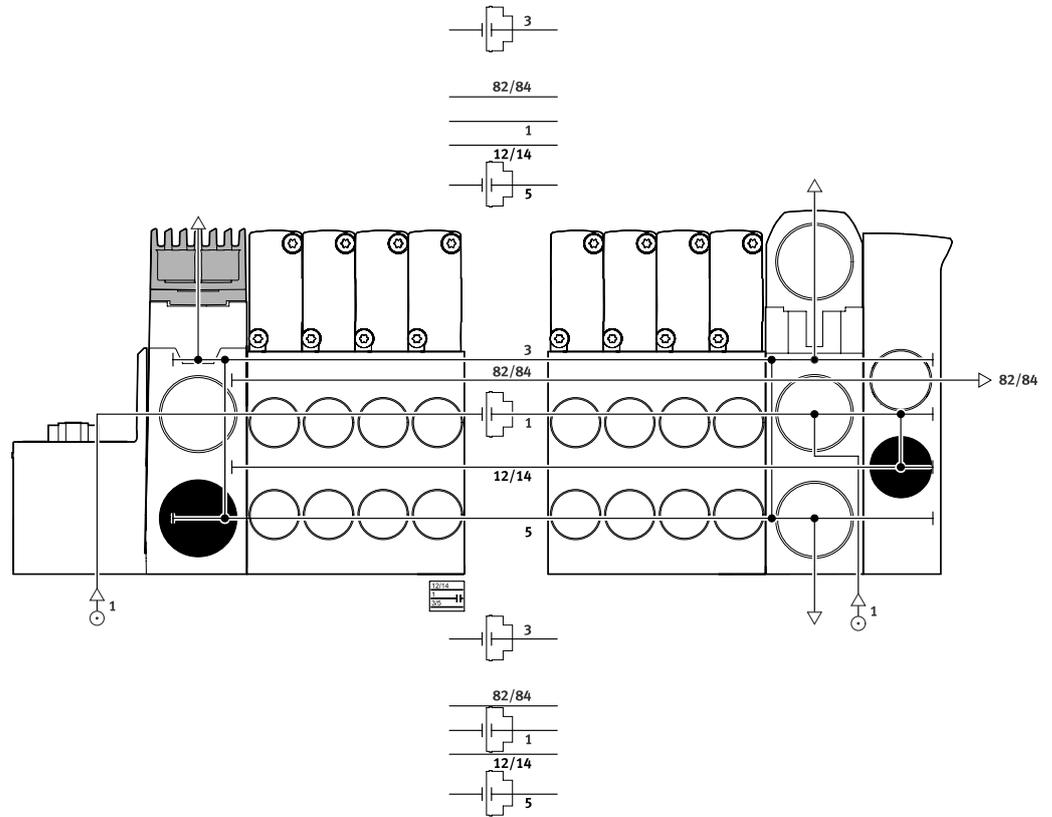
#### Internal pilot air supply

The diagram on the right shows an example of the configuration and connection of the air supply with internal pilot air supply.

The exhaust air (duct 3/5) is exhausted via supply modules.

The pilot exhaust air (duct 82/84) is discharged via the right end plate.

Special separators are used to create pressure zones.



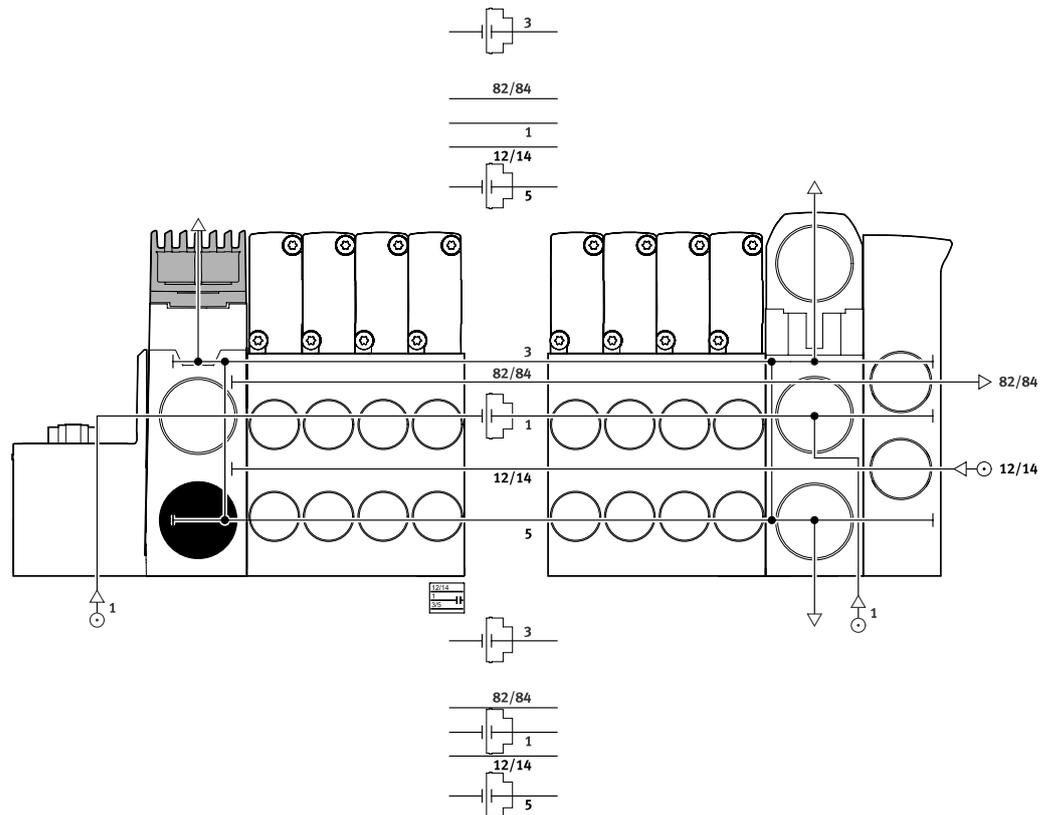
#### External pilot air supply

The diagram on the right shows an example of the configuration and connection of the compressed air supply with external pilot air supply. Port 12/14 on the right end plate is equipped with a fitting for this.

The exhaust air (duct 3/5) is exhausted via supply modules.

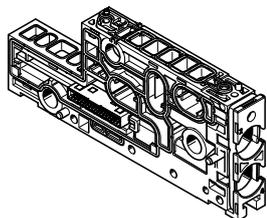
The pilot exhaust air (duct 82/84) is discharged via the right end plate.

Special separators are used to create pressure zones.



## Key features – Pneumatic components

### Manifold sub-base



VTUX is based on a modular system which consists of manifold sub-bases and valves. The manifold sub-bases are joined together using tie rods and thus form the support system for the valves.

They contain the ducts for supplying compressed air to and exhausting from the valve terminal as well as the working ports for the pneumatic drives for each valve.

The tie rod used to join the manifold sub-bases together consists of a threaded rod and screw.

The manifold sub-bases are available in variants for one or for four valves. The threaded rod/screw combination is selected according to the number and width of the individual manifold sub-bases.

To add further manifold sub-bases, simply loosen the tie rod and adapt using extenders.

There are no restrictions on how extensions. A tie rod could be constructed almost entirely using extenders. The electrical connections for the valve terminal are also integrated into the manifold sub-bases.

Manifold sub-base variants	Code	Type	Information
	-	VABX-A-P-BV-AH-F VABX-A-P-BV-AH-A	<ul style="list-style-type: none"> <li>• One valve position</li> <li>• Without cartridge</li> <li>• Width 10.55 mm</li> </ul>
		VABX-A-P-BV-BH-G VABX-A-P-BV-BH-B	<ul style="list-style-type: none"> <li>• One valve position</li> <li>• Without cartridge</li> <li>• Width 12.55 mm</li> </ul>
	-	VABX-A-P-BV-AH-RVFFFF VABX-A-P-BV-AH-RVAAAA VABX-A-S-BV-AH-RVAAAA	<ul style="list-style-type: none"> <li>• Four valve positions</li> <li>• Without cartridge</li> <li>• Width 42.05 mm</li> </ul>
		VABX-A-P-BV-BH-RVGGGG VABX-A-P-BV-BH-RVBBBB VABX-A-S-BV-BH-RVBBBB	<ul style="list-style-type: none"> <li>• Four valve positions</li> <li>• Without cartridge</li> <li>• Width 50.05 mm</li> </ul>
	-	VABX-A-S-BV-AH-RVOXJAAAA	<ul style="list-style-type: none"> <li>• Four valve positions</li> <li>• Space for input module</li> <li>• Without cartridge</li> <li>• Width 42.05 mm</li> </ul>
		VABX-A-S-BV-BH-RVOXJBBBB	<ul style="list-style-type: none"> <li>• Four valve positions</li> <li>• Space for input module</li> <li>• Without cartridge</li> <li>• Width 50.05 mm</li> </ul>
	VB	VABX-A-P-VE-VB010H VABX-A-S-VE-VB010H	<ul style="list-style-type: none"> <li>• One valve position for 2x 3/2-way valve, normally closed (can only be ordered via configurator)</li> <li>• With integrated vacuum generator</li> <li>• Without cartridge</li> <li>• Width 12.55 mm</li> </ul>

## Key features – Mounting

### Valve terminal mounting

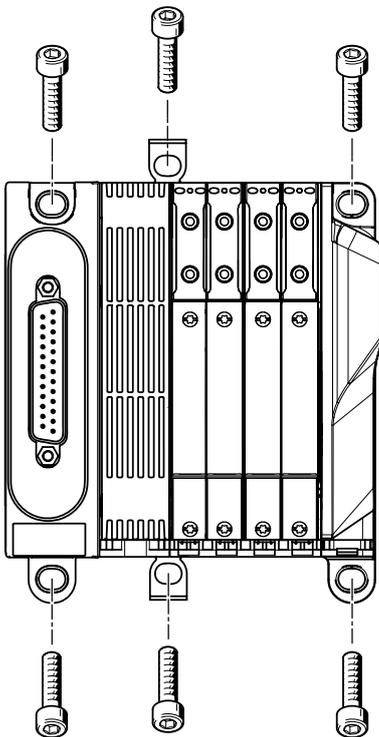
Sturdy terminal mounting via:

- Four through-holes for wall mounting
- Additional mounting brackets
- DIN rail mounting

 **Note**

For valve terminals with manifold sub-bases for vacuum, the mounting position must be selected so that the integrated silencer is protected against the ingress of water and any water that has penetrated can drain away again.

### Wall mounting



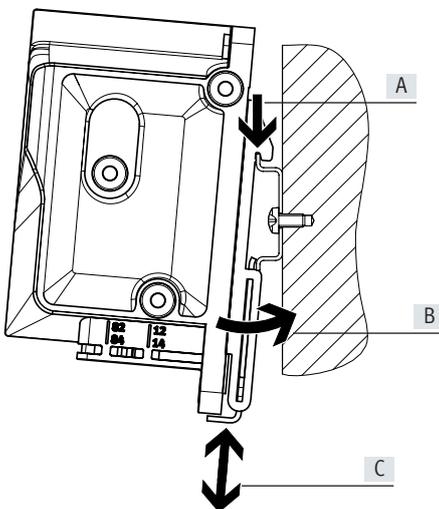
The valve terminal VTUX is screwed onto the mounting surface using four M4 or M6 screws. The mounting holes are on the multi-pin plug connection and on the right end plate.

Optional mounting brackets are also available.

 **Note**

For wall mounting, in addition to the mounting holes in the end plates, mounting brackets for wall mounting should be fitted every 20 cm.

### DIN rail mounting



The valve terminal VTUX is attached to the DIN rail (see arrow A). The valve terminal VTUX is then swivelled onto the DIN rail (see arrow B). As a third step, the valve terminal VTUX is fitted on the DIN rail by moving the slide on the DIN rail mounting (see arrow C).

The clamp fastening for DIN rail mounting enables the valve terminal to be mounted on DIN rails in accordance with EN 60715.

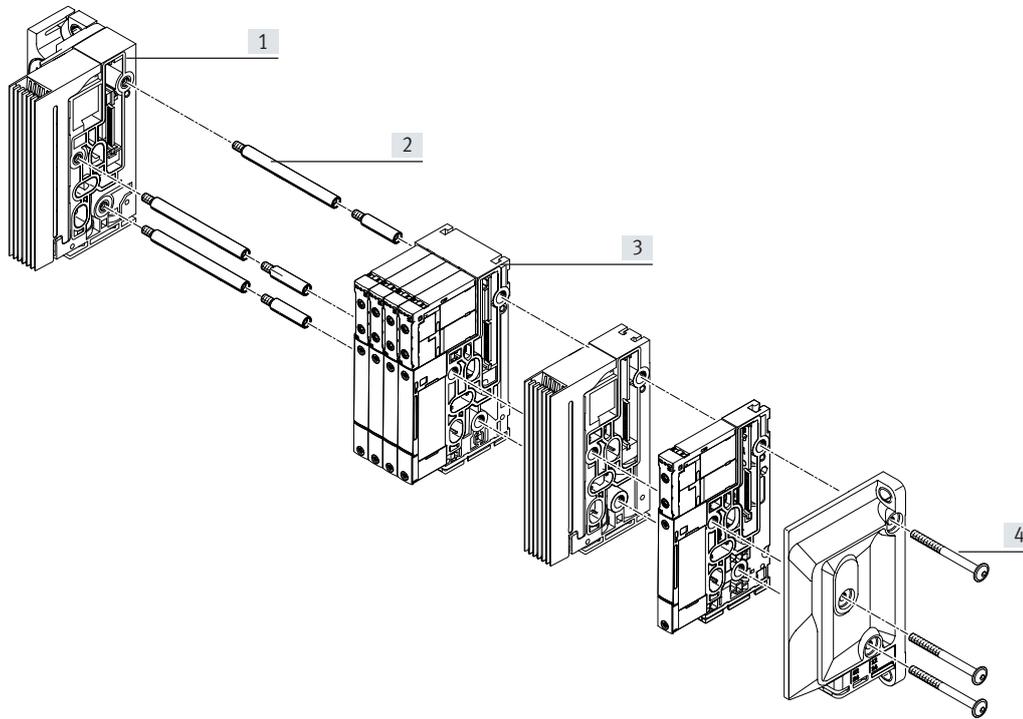
 **Note**

The clamping kit locks the valve terminal in a horizontal mounting position.

## Key features – Mounting

### Tie rods

#### Configuration



- [1] Left end plate
- [2] Tie rod sections
- [3] Manifold sub-bases
- [4] Tie rod screws

#### Operating mode

The tie rod on the VTUX is made up of two parts:

- Threaded rods
- Screw

This enables valve terminals of any length to be created. It takes just four steps to assemble the tie rod and the valve terminal:

- Screw the threaded rods into the left end plate
- Push the sub-bases and supply modules onto the threaded rods
- Push on the right end plate and secure using the screws

The tie rod enables the valve terminal to be extended at a later date. This is done by loosening the tie rod screws and disassembling the relevant components. The additional sub-base or the additional supply module is inserted at the required location. The previously disassembled components are then re-assembled.

To compensate for the change in length, the tie rod must be extended by the increase in length. To do this, threaded rods of a suitable length are screwed in place. To determine which components are required, the online spare parts catalogue includes information on how to use the spare parts and a conversion guide.

### Tie rod – Components and design

#### Tie rod (threaded rod)



The threaded rod is used to create a cost-optimised fixed-grid tie rod. The combination of a threaded rod and screw offers the optimum compensation of tolerances (by compressing the seals between the manifold sub-bases).

The valve terminal can be extended almost infinitely at any time using additional threaded rod sections. The threaded rod sections are inserted between the existing threaded rod and are available in different lengths, in each case matched to the manifold sub-bases and supply modules.

#### Screw



The entire valve terminal is clamped via the tie rod using the screw. Tolerances that occur, for example when the seals are compressed between the manifold sub-bases during assembly, are compensated by the interaction of the screw and the threaded rod.

Ensure that no more than 65 seals, i.e. 64 manifold sub-bases and supply modules, are combined in one valve terminal.

Key features – Mounting

Ordering data – Tie rods											
Reference length [mm]	Part no.		Part no.		Part no.		Part no.		Part no.		
L = sum of the widths of the manifold sub-bases and supply modules	Tie rods										Screw
21.00 ... 23.00	=	-	+	-	+	-	+	-	+	-	+ 1 8191748
25.00 ... 29.60		1 8191756		-		-		-		-	1 8191747
31.50 ... 38.80		1 8191757		-		-		-		-	1 8191747
40.00 ... 63.30		1 8191758		-		-		-		-	1 8191748
63.40 ... 86.20		1 8191761		-		-		-		-	1 8191748
86.30 ... 109.10		1 8191762		-		-		-		-	1 8191748
109.20 ... 131.80		1 8191763		-		-		-		-	1 8191748
131.90 ... 154.30		1 8191764		-		-		-		-	1 8191748
154.40 ... 173.70		1 8191765		-		-		-		-	1 8191748
173.80 ... 193.20		1 8191766		-		-		-		-	1 8191748
193.30 ... 212.70		1 8191767		-		-		-		-	1 8191748
212.80 ... 231.20		1 8191767	1	8191756		-		-		-	1 8191748
231.30 ... 249.90		1 8191767	1	8191758		-		-		-	1 8191748
250.00 ... 252.60		1 8191766	1	8191761		-		-		-	1 8191748
252.70 ... 255.60		1 8191765	1	8191762		-		-		-	1 8191748
255.70 ... 272.40		1 8191767	1	8191761		-		-		-	1 8191748
272.50 ... 275.10		1 8191766	1	8191762		-		-		-	1 8191748
275.20 ... 278.10		1 8191765	1	8191763		-		-		-	1 8191748
278.20 ... 294.60		1 8191767	1	8191762		-		-		-	1 8191748
294.70 ... 297.60		1 8191766	1	8191763		-		-		-	1 8191748
297.70 ... 300.60		1 8191765	1	8191764		-		-		-	1 8191748
300.70 ... 317.10		1 8191767	1	8191763		-		-		-	1 8191748
317.20 ... 320.10		1 8191766	1	8191764		-		-		-	1 8191748
320.20 ... 331.70		1 8191767	1	8191762	1	8191758		-		-	1 8191748
331.80 ... 339.50		1 8191767	1	8191764		-		-		-	1 8191748
339.60 ... 354.20		1 8191767	1	8191763	1	8191758		-		-	1 8191748
354.30 ... 359.00		1 8191767	1	8191765		-		-		-	1 8191748
359.10 ... 368.00		1 8191767	1	8191764	1	8191757		-		-	1 8191748
368.10 ... 378.50		1 8191767	1	8191766		-		-		-	1 8191748
378.60 ... 387.70		1 8191767	1	8191765	1	8191757		-		-	1 8191748
387.80 ... 398.20		2 8191767		-		-		-		-	1 8191748
398.30 ... 407.20		1 8191767	1	8191766	1	8191757		-		-	1 8191748
407.30 ... 416.80		2 8191767		-	1	8191756		-		-	1 8191748
416.90 ... 426.70		2 8191767	1	8191757		-		-		-	1 8191748
426.80 ... 435.10		2 8191767	1	8191758		-		-		-	1 8191748
435.20 ... 438.10		1 8191767	1	8191766	1	8191761		-		-	1 8191748
438.20 ... 440.90		1 8191767	1	8191765	1	8191762		-		-	1 8191748
441.00 ... 443.90		1 8191767	1	8191764	1	8191763		-		-	1 8191748
444.00 ... 446.90		1 8191766	2	8191764		-		-		-	1 8191748
447.00 ... 457.60		2 8191767	1	8191761		-		-		-	1 8191748
457.70 ... 460.60		1 8191767	1	8191766	1	8191762		-		-	1 8191748
460.70 ... 463.40		1 8191767	1	8191765	1	8191763		-		-	1 8191748
463.50 ... 466.40		1 8191767	2	8191764		-		-		-	1 8191748
466.50 ... 472.30		2 8191767	2	8191758		-		-		-	1 8191748
472.40 ... 480.10		2 8191767	1	8191762		-		-		-	1 8191748
480.20 ... 482.90		1 8191767	1	8191766	1	8191763		-		-	1 8191748
483.00 ... 485.80		1 8191767	1	8191765	1	8191764		-		-	1 8191748

### Key features – Mounting

Ordering data – Tie rods												
Reference length [mm]	Part no.			Part no.			Part no.			Part no.		
L = sum of the widths of the manifold sub-bases and supply modules	Tie rods									Screw		
485.90 ... 494.50	=	2	8191767	+	1	8191761	+	1	8191758	+	1	8191748
494.60 ... 502.60		2	8191767		1	8191763			-		1	8191748
502.70 ... 505.30		1	8191767		1	8191766		1	8191764		1	8191748
505.40 ... 508.60		2	8191767		1	8191762		1	8191757		1	8191748
508.70 ... 517.00		2	8191767		1	8191762		1	8191758		1	8191748
517.10 ... 524.90		2	8191767		1	8191764			-		1	8191748
525.00 ... 531.10		2	8191767		1	8191763		1	8191757		1	8191748
531.20 ... 539.50		2	8191767		1	8191763		1	8191758		1	8191748
539.60 ... 544.50		2	8191767		1	8191765			-		1	8191748
544.60 ... 553.50		2	8191767		1	8191764		1	8191757		1	8191748
553.60 ... 562.00		2	8191767		1	8191764		1	8191758		1	8191748
562.10 ... 564.00		2	8191767		1	8191766			-		1	8191748
564.10 ... 565.00		1	8191767		1	8191766		1	8191764	1	8191761	8191748
565.10 ... 573.00		2	8191767		1	8191765		1	8191757		1	8191748
573.10 ... 579.50		2	8191767		1	8191766		1	8191755		1	8191748
580.60 ... 583.50		3	8191767			-			-		1	8191748
583.60 ... 584.50		2	8191767		1	8191764		1	8191761		1	8191748
584.60 ... 587.50		1	8191767		1	8191766		1	8191764	1	8191762	8191748
587.60 ... 592.50		2	8191767		1	8191766		1	8191757		1	8191748
592.60 ... 598.90		3	8191767		1	8191755			-		1	8191748
599.00 ... 602.00		3	8191767		1	8191756			-		1	8191748
602.10 ... 603.90		2	8191767		1	8191765		1	8191761		1	8191748
604.00 ... 606.90		2	8191767		1	8191764		1	8191762		1	8191748
607.00 ... 612.00		3	8191767		1	8191757			-		1	8191748
612.10 ... 612.70		1	8191767		1	8191765		2	8191764		1	8191748
612.80 ... 618.60		2	8191767		1	8191765		2	8191758		1	8191748
618.70 ... 620.40		3	8191767		1	8191758			-		1	8191748
620.50 ... 623.40		2	8191767		1	8191766		1	8191761		1	8191748
623.50 ... 626.40		2	8191767		1	8191765		1	8191762		1	8191748
626.50 ... 629.40		2	8191767		1	8191764		1	8191763		1	8191748
629.50 ... 632.20		1	8191767		1	8191766		2	8191764		1	8191748
632.30 ... 638.10		2	8191767		1	8191766		2	8191758		1	8191748
638.20 ... 642.90		3	8191767		1	8191761			-		1	8191748
643.00 ... 645.90		2	8191767		1	8191766		1	8191762		1	8191748
646.00 ... 648.90		2	8191767		1	8191765		1	8191763		1	8191748
649.00 ... 651.60		2	8191767		2	8191764			-		1	8191748
651.70 ... 651.90		2	8191767		1	8191766		1	8191761	1	8191757	8191748
652.00 ... 655.10		2	8191767		1	8191765		1	8191762	1	8191757	8191748
655.20 ... 657.60		3	8191767		2	8191758			-		1	8191748
657.70 ... 661.40		3	8191767		1	8191761		1	8191756		1	8191748
661.50 ... 665.40		3	8191767		1	8191762			-		1	8191748
665.50 ... 668.40		2	8191767		1	8191766		1	8191763		1	8191748
668.50 ... 671.40		2	8191767		1	8191765		1	8191764		1	8191748
671.50 ... 671.60		3	8191767		1	8191761		1	8191757		1	8191748
671.70 ... 671.90		2	8191767		1	8191766		1	8191762	1	8191757	8191748

## Key features – Display and operation

### Display and operation

#### Signal status indication

Every solenoid coil is assigned to an LED that indicates its signal status.

- Indicator 12 shows the signal status of the coil for duct 2
- Indicator 14 shows the signal status of the coil for duct 4

The valve terminal with serial communication also has an LED for extended diagnostic information.

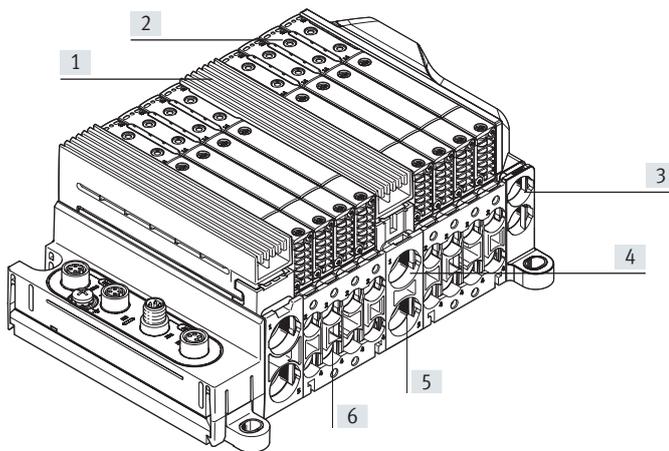
#### Manual override

The manual override (MO) enables the valve to be switched when not electrically activated or energised. The valve is switched by pushing the manual override.

Alternatives:

- A cover cap (code HR or as an accessory) can be used to operate the manual override in detenting mode.
- A cover cap (code HV or as an accessory) can prevent the manual override from being accidentally activated.

### Pneumatic connection and control elements



- [1] Flat plate silencer, duct 3/5
- [2] Manual override (for each pilot solenoid, non-detenting or non-detenting/de-tenting)
- [3] Ports 12/14 for external pilot air supply and 82/84 for pilot exhaust air in the right end plate
- [4] Supply port, duct 1
- [5] Ducted exhaust air, duct 3/5
- [6] Working ports, ducts 2 and 4, for each valve position

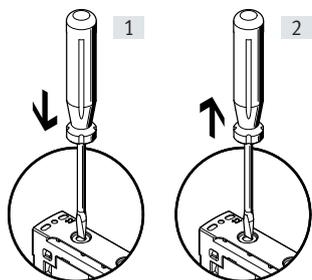
#### Note

A manually actuated valve (using the manual override) cannot be reset electrically. Conversely, an electrically actuated valve cannot be reset using the manual override.

## Key features – Display and operation

### Manual override

#### Manual override with automatic return (non-detenting)



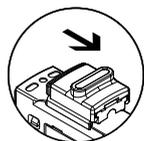
- [1] Press in the plunger of the manual override with a pointed object or screwdriver.  
The pilot valve switches and actuates the main valve.
- [2] Remove the pointed object or screwdriver.  
The spring force pushes the plunger of the manual override back.  
The pilot valve returns to the normal position as does the single solenoid main valve (this is not the case with a double solenoid valve).

#### Cover cap for manual override, mounting

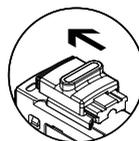


Clip the covering onto the pilot valve.

#### Manual override with cover cap, detenting without accessories, actuation



- Moving the slider of the cover cap in the direction of the arrow results in:
- The slide locks into the end position
  - The pilot valve switches and actuates the main valve



- Moving the slider of the cover cap in the direction of the arrow results in:
- The slide locks into the end position
  - The spring force pushes the plunger of the manual override back.
  - The pilot valve returns to the normal position as does the single solenoid main valve (this is not the case with a double solenoid valve).

## Key features – Electrical components

### Internal communication

#### Parallel communication

Parallel communication is the classic type of multi-pin. Each valve coil is assigned a signalling line within the valve terminal.

When controlled via IO-Link® or the remote I/O system CPX-AP-A, the bus signal is split internally into individual channels for the valve coils.

When operated using the remote I/O system CPX-AP-A or CPX-AP-I, the VTUX valve terminal is displayed as a single module (32 addresses).

#### Benefits:

- Robust and easy-to-understand control
- Troubleshooting and diagnostics with simple tools directly on the valve terminal

#### Limitations:

- Number of controllable valve coils is limited
- No diagnostic functions directly on the valve

#### Serial communication

Serial communication significantly expands the internal communication. This is the infrastructure for highly integrated technology modules and enables bidirectional exchange of data and information between the valve and the PLC.

Significantly more valve coils can be controlled and extensive diagnostic functions are possible.

For operation on the remote I/O system CPX-AP-A or CPX-AP-I, each manifold sub-base is displayed as a single module (with a customised number of addresses).

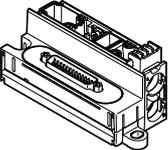
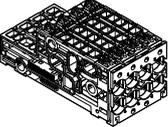
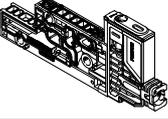
#### Benefits:

- The number of controllable valve coils is not limited by the communication bandwidth
- Diagnostic functions and, if necessary, sensors directly on the valve
- Troubleshooting and diagnostics also possible remotely via the controller

#### Limitations:

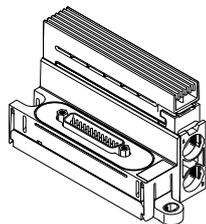
- Manifold sub-bases for four valves available only
- No multi-pin plug connection available
- No IO-Link® connection available

### Performance of parallel and serial communication

Feature		Parallel communication	Serial communication
<b>Connection to the higher-level control system</b>			
	Electrical multi-pin plug connection	■	–
	Direct connection to the remote I/O system CPX-AP-A	■	■
	Connection to the remote I/O system CPX-AP-I	■	■
	Connection to IO-Link®	■	–
<b>Internal structure</b>			
	Manifold sub-bases with one valve position	■	–
	Manifold sub-bases with four valve positions	■	■
	Pressure zone separation	■	■
	Max. number of valve positions	32	64
<b>Special functions</b>			
	Manifold sub-base with vacuum generator	■	■
	Manifold sub-base with input modules (2 inputs per valve position)	–	■

## Key features – Electrical components

### Electrical connection – Left end plate



The electrical connection from the valves to a higher-order controller is in the left end plate of the VTUX.

Switching between the various connection options is easy: simply swap the left end plate. The pneumatic connections remain unaffected.

The valves are switched by positive or negative logic (PNP or NPN). Mixed operation is not permitted.

### Guidelines on addressing for valves/solenoid coils

The addresses are numbered from left to right in ascending order. The following applies for individual valve positions: address  $x$  for coil 14 and address  $x+1$  for coil 12.

Every manifold sub-base occupies a specific number of addresses/pins:

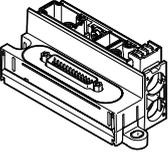
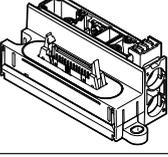
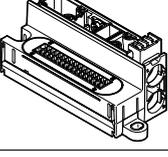
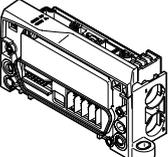
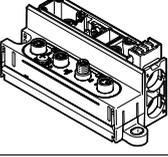
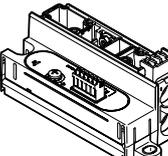
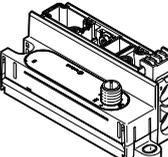
- Manifold sub-base for a valve with one solenoid coil: 1
- Manifold sub-base for a valve with two solenoid coils: 2
- Manifold sub-base for four valves with one solenoid coil: 4
- Manifold sub-base for four valves with two solenoid coils: 8



#### Note

If a valve with one solenoid coil is mounted on a position for a valve with two solenoid coils, the second address (for coil 12) is also occupied and cannot be used.

## Key features – Electrical components

Variants of the left end plate						
	Code	Type	Communication type	Max. number of addresses	Degree of protection	Information
<b>Electrical multi-pin plug connection</b>						
	Electrical connection: MS1	VABX-A-P-EL-E12-MS1	Parallel	24	IP40	Electrical connection: Sub-D, 25-pin
	Electrical connection: MS1T	VABX-A-P-EL-E12-MS1T	Parallel	24	IP40	Electrical connection: Sub-D, 25-pin
	Electrical connection: MS3	VABX-A-P-EL-E12-MS3	Parallel	32	IP40	Electrical connection: Sub-D, 44-pin
	Electrical connection: MS6	VABX-A-P-EL-E12-MS6	Parallel	24	IP65	Electrical connection: Sub-D, 25-pin
	Electrical connection: MS8	VABX-A-P-EL-E12-MS8	Parallel	32	IP65	Electrical connection: Sub-D, 44-pin
	Electrical connection: MF1	VABX-A-P-EL-E12-MF1	Parallel	24	IP20	Electrical connection: ribbon cable, 26-pin
	Electrical connection: MC	VABX-A-P-EL-E12-MC	Parallel	32	IP40	Electrical connection: terminal strip, 34-pin
<b>Fieldbus interface / remote I/O system CPX-AP-A</b>						
	Electrical connection: APA	VABX-A-P-EL-E12-APA	Parallel	32	IP65	Electrical connection: CPX-AP-A interface
		VABX-A-S-EL-E12-APA	Serial	–	IP65	
<b>Interface to the remote I/O system CPX-AP-I</b>						
	Electrical connection: API	VABX-A-P-EL-E12-API	Parallel	32	IP65	Electrical connection <ul style="list-style-type: none"> <li>• 2x socket, M8x1, D-coded, 4-pin, AP-COM</li> <li>• M8x1, A-coded, 4-pin for power supply</li> </ul>
		VABX-A-S-EL-E12-API	Serial	–	IP65	
<b>IO-Link® interface</b>						
	Electrical connection: IOL	VABX-A-P-EL-E12-IOL	Parallel	32	IP40	Electrical connection: Push-in, IO-Link®
	Electrical connection: IOS	VABX-A-P-EL-E12-IOS	Parallel	32	IP65	Electrical connection: M12, IO-Link®

## Key features – Electrical components

### Fieldbus interface / remote I/O system CPX-AP-A

The pneumatic interface (left end plate) serves as an adapter between the two current feeds. All functions and features of the remote I/O system CPX-AP-A are valid in combination with the CPX-AP-I interface.

This means that:

- The valves are supplied via the system supply of the remote I/O system CPX-AP-A

- The valves can optionally be actuated or switched off separately from the outputs

 **Note**  
More information can be found at:  
→ Internet: cpx-ap-a

### Remote I/O system CPX-AP-I

All functions and features of the CPX-AP-I are valid in combination with the remote I/O system CPX-AP-I:

- Power supply via the connection in the left end plate of the VTUX

- Power supply together with other modules or individually for the valve terminal
- Valves actuated via the communication cable from the preceding module

- Cable length of up to 50 m between the modules
- Up to 80 individual modules/valve terminals per bus interface

 **Note**  
More information can be found at:  
→ Internet: cpx-ap-i

### IO-Link®

The IO-Link® interface enables the valve terminal VTUX to be connected to the following systems:

- Remote I/O systems CPX-AP-I and CPX-AP-A from Festo
- Automation system CPX-E from Festo
- CPX terminal
- Control system CECC
- IO-Link master

The maximum distance between the IO-Link master and valve terminal with IO-Link® interface is 20 m.

The 5-pin connecting cables transmit the power supply for the valves; the power supply for the internal valve terminal electronics and the control signals are separate from this.

 **Note**  
More information can be found at:  
→ Internet: cpx-ap-a

### Instructions for use

#### Operating materials

Operate your system with unlubricated compressed air, if possible. Festo valves and cylinders are designed so that, if used as intended, they will not require additional lubrication and will still achieve a long service life. The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air. If possible, do not operate the entire system with lubricated compressed air. The lubricators should, where possible, always be installed directly upstream of the actuator requiring them.

Incorrect additional oil and too high an oil content in the compressed air reduce the service life of the valve terminal. Use Festo special oil OFSW-32 or the alternatives listed in the Festo catalogue (as specified in DIN 51524 HLP32; basic oil viscosity 32 CST at 40 °C).

#### Bio-oils

When using bio-oils (oils synthesised on the basis of synthetic or native esters, e.g. rapeseed oil methyl esters), the residual oil content of max. 0.1 mg/m<sup>3</sup> must not be exceeded (see ISO 8573-1 Class 2).

#### Mineral oils

When using mineral oils (e.g. HLP oils to DIN 51524 Part 1 to 3) or corresponding oils based on poly alpha olefins (PAO), the residual oil content of max 5 mg/m<sup>3</sup> must not be exceeded (see ISO 8573-1 Class 4). A higher residual oil content is not permitted, regardless of the compressor oil, because the permanent lubrication would otherwise be flushed out over a period of time.

Datasheet – Valve terminal VTUX

-  - Flow rate  
up to 690 l/min
-  - Valve width  
10 mm
-  - Voltage  
24 V DC



General technical data		Parallel communication	Serial communication
Valve terminal design		Modular and expandable	Modular and expandable
Actuation type		Electrical	Electrical
Nominal operating voltage	[V DC]	24	24
Permissible voltage fluctuations	[%]	±10	±10
Max. number of valve positions		32	64
Max. no. of pressure zones		16	16
Valve size	[mm]	10	10
Type of control		Piloted	Piloted
Valve function		2x3/2-way, single solenoid, closed	2x3/2-way, single solenoid, closed
		2x3/2-way, single solenoid, open	2x3/2-way, single solenoid, open
		5/2-way, single solenoid	5/2-way, single solenoid
		5/2-way, double solenoid	5/2-way, double solenoid
		5/3-way, closed	5/3-way, closed
		5/4-way, closed, 2 or 4 exhausted	5/4-way, closed, 2 or 4 exhausted
Design		Piston spool	Piston spool
Sealing principle		Soft	Soft
Type of mounting sub-base		With through-hole	With through-hole
Type of mounting		Tie rods	Tie rods
Pilot air supply		Internal or external	Internal or external
Suitable for vacuum		Yes	Yes
Exhaust air function		Can be throttled	Can be throttled
Nominal flow rate standardised according to ISO 8778	[l/min]	470 ... 690	470 ... 690
Grid dimension	[mm]	10.55 ... 12.55	10.55 ... 12.55

Pneumatic connections	1	2	3	4	5	12/14	82/84
QS-4	-	■	-	■	-	■	■
QS-6	-	■	-	■	-	■	■
QS-8	■	■	■	■	■	■	■
QS-10	■	-	■	-	■	-	-
QS-12	■	-	■	-	■	-	-
QS-1/8	-	■	-	■	-	-	-
QS-5/32	-	■	-	■	-	-	-
QS-1/4	-	■	-	■	-	■	■
QS-5/16	■	■	■	■	■	■	■
QS-3/8	■	-	■	-	■	-	-
For 10 mm cartridge	-	■	-	■	-	-	-
For 12 mm cartridge	-	■	-	■	-	■	■
For 15 mm cartridge	■	-	■	-	■	-	-
Silencer	-	-	■	-	■	-	■
Blanking plug	■	■	■	■	■	■	-

## Datasheet – Valve terminal VTUX

Operating and environmental conditions		Parallel communication	Serial communication
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] → 39	
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4] → 39	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[MPa]	-0.1 ... +0.7	
	[bar]	-1 ... +7	
Operating pressure for valve terminal with internal pilot air supply	[MPa]	0.15 ... 0.7	
	[bar]	1.5 ... 7	
	[psi]	21.75 ... 101.5	
Pilot pressure	[MPa]	0.15 ... 0.7	
	[bar]	1.5 ... 7	
Ambient temperature	[°C]	-5 ... +50	
Storage temperature	[°C]	-20 ... +70	
Nominal operating altitude	[m]	≤ 2000 NHN	
Maximum setup altitude	[m]	3500	
Corrosion resistance class CRC <sup>1)</sup>		1	
CE marking (see declaration of conformity)		To EU EMC Directive <sup>2)</sup>	
		in accordance with EU RoHS Directive <sup>2)</sup>	
UKCA marking (see declaration of conformity)		To UK EMC regulations <sup>2)</sup>	
		To UK RoHS regulations <sup>2)</sup>	
KC marking		KC EMC	
Certification		RCM	
		c UL us - Listed (OL)	
Certificate-issuing authority		UL E322346	
Vibration resistant		Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	
Shock resistance		Shock test with severity level 1 to FN 942017-5 and EN 60068-2-27	
Continuous shock resistance to DIN/IEC 68, Part 2 - 82		Tested to severity level 1	
Degree of protection		IP20, IP40, IP65	IP20, IP40, IP65
	Fieldbus interface from the remote I/O system CPX-AP-A	IP40, IP65	IP20, IP40, IP65

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

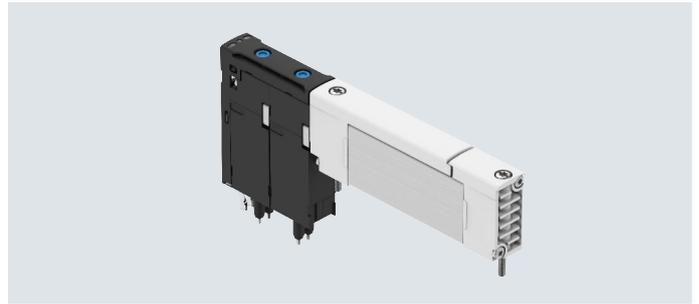
2) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Materials	
Seals	NBR
	HNBR
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-C1-L
Food-safe	NSF H1

Datasheet – Valves of size 10 mm

-  - Flow rate  
up to 730 l/min
-  - Valve size  
10 mm
-  - Voltage  
24 V DC



**General technical data**

Valve size	10 mm
Design	Piston spool with sealing ring
Actuation type	Electrical
Type of control	Piloted
Electrical connection	Plug-in
Pilot air supply	External
Sealing principle	Soft
Exhaust air function	Can be throttled
Manual override	Non-detenting
Signal status indication	Yes
Mounting position	Any
Type of mounting	On sub-base
Max. tightening torque for valve mounting	[Nm] 0.375
Width	[mm] 10.35

**Pneumatic connections**

Pneumatic connection	1	Sub-base
	3	Sub-base
	5	Sub-base
	2	Sub-base
	4	Sub-base
Pilot air connection	12/14	Sub-base
Pilot exhaust air port	82/84	Sub-base

**Electrical data**

Electrical connection	Plug-in
Characteristic coil data	24 V DC; 0.35 W
Permissible voltage fluctuations	[%] ±10
Duty cycle	[%] 100

## Datasheet – Valves of size 10 mm

Technical data – Valves								
Code for position function 1-64	A	M	J	NS	K	KC, KV	G	ND
Valve function	5/2-way, single solenoid		5/2-way, double solenoid	2x3/2-way, single solenoid, open	2x3/2-way, single solenoid, closed		5/3-way, closed	5/4-way, exhausted
Reset method	Mechanical spring	Pneumatic spring	–	Mechanical spring	Mechanical spring	Pneumatic spring	Mechanical spring	Mechanical spring
Overlap	Negative overlap						Positive overlap	Positive overlap
Flow direction	Reversible	Not reversible	Reversible with restrictions	Reversible	Reversible	Not reversible	Reversible	Reversible
Suitable for vacuum	Yes	No	Yes	No	No	No	Yes	No
Nominal width [mm]	4.2	4.2	4.2	3.6	3.8	3.8	3.5	3.4
Switching time on [ms]	8	10	–	14	14	12	10	17
Switching time off [ms]	32	18	–	17	17	22	48	17
Switching time changeover [ms]	–	–	9	–	–	–	–	–
Switching time changeover when exhausting in duct 2 or 4 [ms]	–	–	–	–	–	–	–	7
Switching time changeover when pressurising in duct 2 or 4 [ms]	–	–	–	–	–	–	–	18
Maximum switching frequency [Hz]	3	5	5	3	3	5	3	3
Nominal flow rate standardised according to ISO 8778 [l/min]	730	730	730	555	600	600	510	500
Nominal flow rate standardised to ISO 8778; exhaust 2→3 [l/min]	700	700	700	545	650	650	465	450
b value	0.36	0.36	0.36	0.41	0.34	0.34	0.4	0.39
C value [l/sbar]	2.76	2.76	2.76	2.02	2.3	2.3	1.88	1.86
Operating pressure [MPa]	–0.09 ... +0.7	0.2 ... 0.7	–0.09 ... +0.7	0.0 ... 0.7	0.0 ... 0.7	0.15 ... 0.7	–0.09 ... +0.7	0.0 ... 0.7
[bar]	–0.9 ... +7	2 ... 7	–0.9 ... +7	0 ... 7	0 ... 7	1.5 ... 7	–0.9 ... +7	0 ... 7
Pilot pressure [MPa]	0.25 ... 0.7	0.2 ... 0.7	0.15 ... 0.7	0.2 ... 0.7	0.2 ... 0.7	0.15 ... 0.7	0.25 ... 0.7	0.2 ... 0.7
[bar]	2.5 ... 7	2 ... 7	1.5 ... 7	2 ... 7	2 ... 7	1.5 ... 7	2.5 ... 7	2 ... 7
Product weight [g]	43.4	43.3	51.9	52.6	52.6	52	53.2	52.2

## Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] → 39
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4] → 39
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required) Ester oil < 0.1mg/m <sup>3</sup> , according to ISO 8573-1:2010 [:::2]
Ambient temperature [°C]	–5 ... +50
Temperature of medium [°C]	–5 ... +50
Storage temperature [°C]	–20 ... +70
Relative humidity [%]	5 ... 95
Corrosion resistance class CRC <sup>1)</sup>	1
Maximum positive test pulse with logic 0 [µs]	1400
Maximum negative test pulse with logic 1 [µs]	800
Vibration resistant	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
Shock resistance	Shock test with severity level 1 to FN 942017-5 and EN 60068-2-27
Degree of protection	IP65

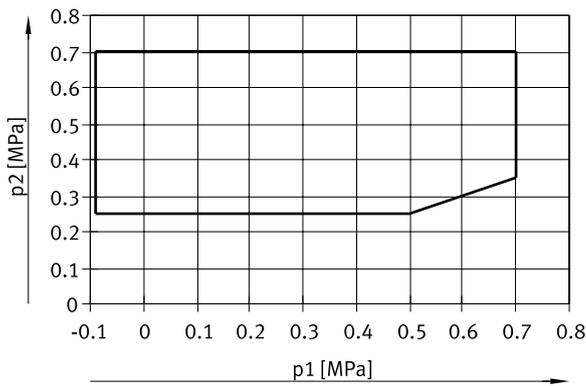
1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

Datasheet – Valves of size 10 mm

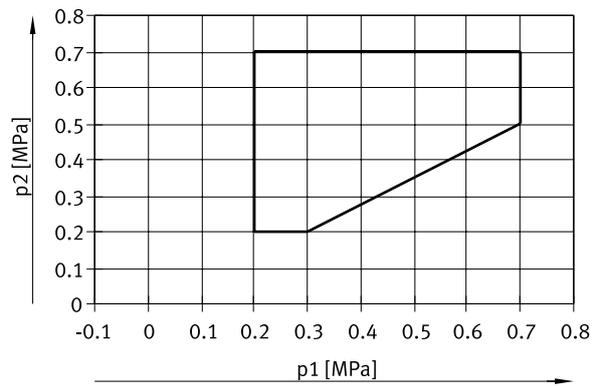
Materials	
Housing	Anodised wrought aluminium alloy
Spring	High-alloy stainless steel
Piston spool	POM
Screws	Stainless steel
Seals	HNBR
Dynamic seals	HNBR
Note on materials	RoHs-compliant
LABS (PWIS) conformity	VDMA24364-Zone III
Food-safe	NSF H1

**Pilot pressure p2 as a function of working pressure p1**

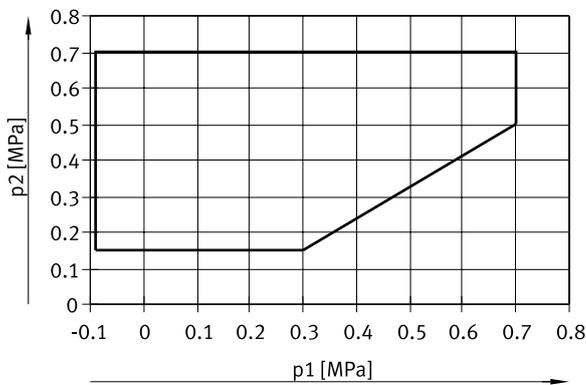
For 5/2-way valve, single solenoid, mechanical spring return



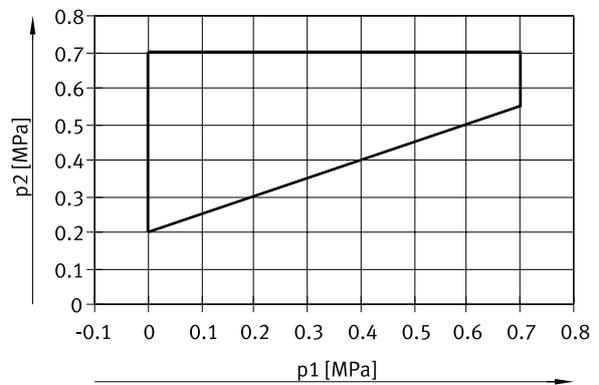
For 5/2-way valve, single solenoid, pneumatic spring return



For 5/2-way valve, double solenoid



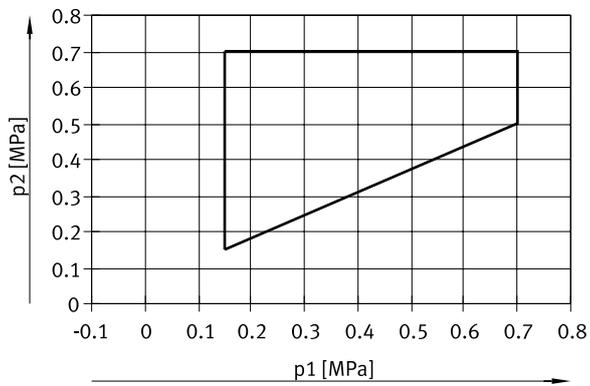
For 2x 3/2-way valve, mechanical spring return



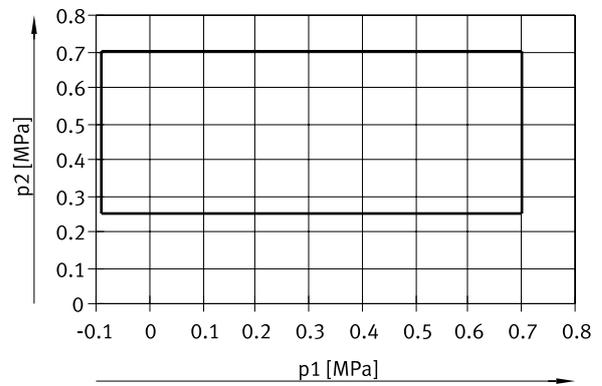
## Datasheet – Valves of size 10 mm

**Pilot pressure  $p_2$  as a function of working pressure  $p_1$** 

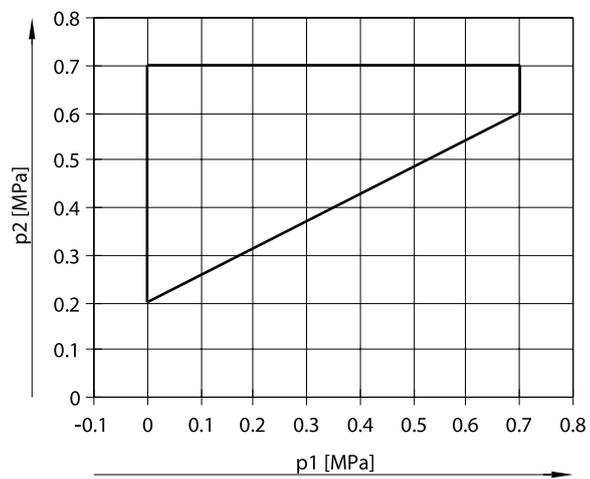
For 2x 3/2-way valve, pneumatic spring return



For 5/3-way valve, normally closed



For 5/4-way valve, exhausted



## Datasheet – Left end plate with IO-Link®

Festo-specific, standardised interface for direct connection via a cable to an IO-Link master.

Valve terminals with IO-Link® interface can be expanded by up to 32 solenoid coils/valve positions.

Up to 32 valve positions can be equipped with single solenoid valves.



### IO-Link® for valve terminal VTUX

The IO-Link® interface enables the valve terminal VTUX to be connected to an IO-Link® network.

The maximum distance between the IO-Link master and the valve terminal with IO-Link® interface is 20 m.

The 5-pin connecting cables transmit the power supply for the valves; the power supply for the internal valve terminal electronics and the control signals are separate from this.

The built-in LED is used as a status indicator for diagnostics and maintenance.

General technical data		Push-in	M12
Electrical connection			
Size		1	
		2	
Types of communication		IO-Link®	
Protocol		IO-Link®	
Electrical control		IO-Link®	
Valve terminal design		Valve sizes can be mixed	
Compatible with		Valve terminal VTUX-A-P	
Max. number of solenoid coils		32	
Diagnostics via LED		Connection status (Outputs) Power supply load	
Connection position		On the side	
Cable outlet		Straight	
Type of mounting		With through-hole for M5 screw	
Type of mounting sub-base		With through-hole	
Max. tightening torque for wall mounting	[Nm]	6	
Dimensions W x L x H	[mm]	45.6 x 117.4 x 53.9	
Product weight	[g]	124.4	127.4

### Pneumatic connections

Pneumatic connection	1	For 15 mm cartridge
	5	For 15 mm cartridge

## Datasheet – Left end plate with IO-Link®

Technical data – Electrical components		
Electrical connection	Push-in	M12
Connection cross section [mm <sup>2</sup> ]	0.2 ... 1.5	–
Reverse polarity protection	Yes	
Fuse protection (short circuit)	Internal electronic fuse per channel	
Electrical isolation of outputs between channel - internal communication	Yes	
Galvanic isolation between the supply voltages electronics/sensors and load/valves	Yes	
Nominal operating voltage DC for electronics/sensors [V]	24	
Nominal operating voltage DC load [V]	24	
Note on the operating voltage	SELV/PELV power supply units required Note voltage drop	
Permissible voltage fluctuations, electronics/sensors [%]	±25	
Permissible voltage fluctuations, load [%]	±10	
Intrinsic current consumption at nominal operating voltage, electronics/sensors [mA]	Typically 10	
Intrinsic current consumption at nominal operating voltage, load [mA]	Typically 15	
Power consumption at 24 V DC [mW]	240	
Max. power supply [A]	2 x 4 (external fuse required)	
Pollution degree	2	

Technical data – IO-Link®		
IO-Link®, protocol version [mm <sup>2</sup> ]	Device V 1.1	
IO-Link®, communication mode	COM3.	
IO-Link®, port class	B	
IO-Link®, process data width OUT [byte]	4	
IO-Link®, minimum cycle time [µs]	500	
Max. cable length [m]	20	

Datasheet – Left end plate with IO-Link®

Operating and environmental conditions		
Electrical connection	Push-in	M12
Ambient temperature [°C]	-5 ... 50	
Storage temperature [°C]	-20 ... 70	
Relative humidity [%]	5 ... 95	
Nominal operating altitude [m]	≤ 2000 NHN	
Maximum setup altitude [m]	3500	
Corrosion resistance class CRC <sup>1)</sup>	2	
CE marking (see declaration of conformity) <sup>2)</sup>	To EU EMC Directive	
	To EU RoHS Directive	
UKCA marking (see declaration of conformity) <sup>2)</sup>	To UK EMC regulations	
	To UK RoHS regulations	
KC marking	KC EMC	
Certification	RCM	
Vibration resistant	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Degree of protection to EN 60529	IP40	IP65

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

2) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Materials	
Sub-base	Reinforced PA
Cover	Reinforced PA
Seals	NBR
Film	Polyester
Sleeve	High-alloy stainless steel
Clip	High-alloy stainless steel
Nut	High-alloy stainless steel
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

## Datasheet – Manifold sub-bases for parallel communication

–  – Valve size  
10 mm



General technical data				
Type	VABX-A-P-BV-AH	VABX-A-P-BV-BH	VABX-A-P-BV-AH-R	VABX-A-P-BV-BH-R
Size	1	2	1	2
Integrated function	With electrical interlinking module			
Compatible with	Valve terminal VTUX-A-P	Valve terminal VTUX-A-P	Valve terminal VTUX-A-P	Valve terminal VTUX-A-P
Maximum number of valve positions	1	1	4	4
Flow direction	Reversible	Reversible	Reversible	Reversible
Suitable for vacuum	Yes	Yes	Yes	Yes
Nominal flow rate standardised according to ISO 8778 [l/min]	470	690	470	690
Pneumatic connection 2	For 10 mm cartridge	For 12 mm cartridge	For 10 mm cartridge	For 12 mm cartridge
Pneumatic connection 4	For 10 mm cartridge	For 12 mm cartridge	For 10 mm cartridge	For 12 mm cartridge
Type of mounting	Tie rods	Tie rods	Tie rods	Tie rods
Type of mounting sub-base	With through-hole	With through-hole	With through-hole	With through-hole
Grid dimension [mm]	10.55	12.55	10.55	12.55
Dimensions W x L x H [mm]	10.55 x 104.3 x 43.1	12.55 x 104.3 x 43.1	42.05 x 104.3 x 43.1	50.05 x 104.3 x 43.1
Product weight [g]	31.2	36.2	115.7	136.2

Technical data – Electrical components	
Electrical control	Multi-pin plug
Pollution degree	2

Operating and environmental conditions		
Ambient temperature [°C]		–5 ... 50
Storage temperature [°C]		–20 ... 70
Relative humidity [%]		5 ... 95
Corrosion resistance class CRC <sup>1)</sup>		2
CE marking (see declaration of conformity <sup>2)</sup> )	To EU EMC Directive	
	To EU RoHS Directive	
KC marking		KC EMC
Certification		RCM
Vibration resistant		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Degree of protection to EN 60529		IP65

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

2) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Materials	Materials	
	For one valve	For four valves
Sub-base	Reinforced PA	Reinforced PA
Seals	NBR	NBR
Retaining bracket	–	POM
Clip	High-alloy stainless steel	High-alloy stainless steel
Nut	High-alloy stainless steel	High-alloy stainless steel
Note on materials	RoHS-compliant	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L	VDMA24364-B1/B2-L

Datasheet – Manifold sub-bases for serial communication

–  – Valve size  
10 mm



General technical data		
Type	VABX-A-S-BV-AH-RV	VABX-A-S-BV-BH-RV
Size	1	2
Integrated function	With electrical interlinking module	With electrical interlinking module
Compatible with	Valve terminal VTUX-A-S	Valve terminal VTUX-A-S
Maximum number of valve positions	4	4
Flow direction	Reversible	Reversible
Suitable for vacuum	Yes	Yes
Nominal flow rate standardised according to ISO 8778 [l/min]	470	690
Pneumatic connection 2	For 10 mm cartridge	For 12 mm cartridge
Pneumatic connection 4	For 10 mm cartridge	For 12 mm cartridge
Type of mounting	Tie rods	Tie rods
Type of mounting sub-base	With through-hole	With through-hole
Grid dimension [mm]	10.55	12.55
Dimensions W x L x H [mm]	42.05 x 104.3 x 43.1	50.05 x 104.3 x 43.1
Product weight [g]	120.7	141.2

Technical data – Control		
	Without input module	With input module
Electrical control	AP interface	
Communication interface, protocol	AP	
Max. number of inputs	–	8
Max. address volume for outputs [byte]	1	1
Diagnostics via LED	Diagnostics per channel	
	Diagnostics per module	
Diagnostics via internal communication	Load switch-off	
	Logic supply overvoltage PS	
	Load supply overvoltage PL	
	Logic supply undervoltage PS	
Electrical isolation of outputs between channel - internal communication	Yes	
	Galvanic isolation between the supply voltages electronics/sensors and load/valves	
	Yes	

## Datasheet – Manifold sub-bases for serial communication

Technical data – Electrical components	
Nominal operating voltage DC for electronics/sensors [V]	24
Nominal operating voltage DC load [V]	24
Permissible voltage fluctuations, electronics/sensors [%]	±25
Permissible voltage fluctuations, load [%]	±10
Note on the operating voltage	SELV/PELV power supply units required Note voltage drop
Power failure buffering [ms]	10
Intrinsic current consumption at nominal operating voltage, electronics/sensors [mA]	Typically 24
Intrinsic current consumption at nominal operating voltage, load [mA]	Typically 7
Power consumption at 24 V DC [mW]	740
Overvoltage category	II
Fuse protection (short circuit)	Internal electronic fuse per channel
Inductive protective circuit	Integrated
Reverse polarity protection	Yes
Pollution degree	2

Operating and environmental conditions		Without input module	With input module
Ambient temperature [°C]		-5 ... 50	
Storage temperature [°C]		-20 ... 70	
Relative humidity [%]		5 ... 95	
Max. setup altitude [m]		–	3500
Nominal operating altitude		< 3000 m NHN	≤ 2000 m NHN
Corrosion resistance class CRC <sup>1)</sup>		1	
CE marking (see declaration of conformity) <sup>2)</sup>		To EU EMC Directive	
		To EU RoHS Directive	
KC marking		KC EMC	
Certification		RCM	
Vibration resistant		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Degree of protection to EN 60529		IP65	IP20, IP65

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

2) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Materials		Without input module	With input module
Sub-base		Reinforced PA	
Seals		NBR	
Retaining bracket		POM	
Sleeve		High-alloy stainless steel	
Clip		High-alloy stainless steel	
Nut		High-alloy stainless steel	
Note on materials		RoHS-compliant	
LABS (PWIS) conformity		VDMA24364-B1/B2-L	VDMA24364-B2-L

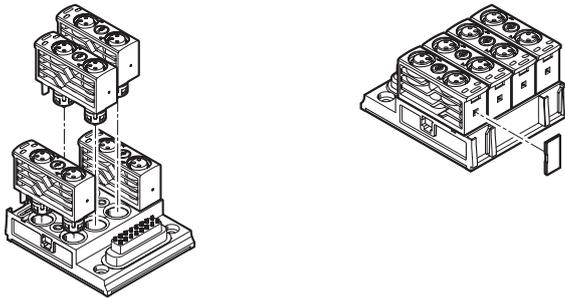
## Datasheet – Input modules for manifold sub-bases

 Voltage  
24 V DC

The digital input modules provide 8 digital inputs in accordance with IEC 61131-2, types 1 and 3 for connecting digital sensors.  
The input modules have LEDs to indicate the signal status.



### Configuration



On the input module with electrical connection M8, two M8 connections are mounted as a unit using a screw connection. This makes it easy to disconnect both connections from the module at the same time.

When assembled, the entire installation is particularly space-saving. The units also allow inscription labels to be attached.

General technical data		Electrical connection, spring-loaded terminal	Electrical connection, socket M8
Max. number of modules		6	
Number of inputs		8	
Max. number of inputs		8	
Diagnostics via internal communication		Short circuit/overload Power OUT PL	
Electrical isolation of inputs between channels		No	
Dimensions W x L x H	[mm]	41.8 x 60.5 x 20.9	41.8 x 49.0 x 27.2
Product weight	[g]	32	42

Technical data – Inputs		Electrical connection, spring-loaded terminal	Electrical connection, socket M8
Electrical connection 1, function		Digital input	Digital input
Electrical connection		Spring-loaded terminal	M8
Electrical connection 1, connection type		Terminal strip	Socket
Electrical connection 1, number of pins/cores		3	3
Electrical connection 1, assigned pins/cores		24	24
Electrical connection 1, type of mounting		Screw-type lock	Screw-type lock
Electrical connection 1, tightening torque [Nm]		0.7	0.7
Max. tightening torque for plug [Nm]		–	0.6
Electrical connection for input, conductor cross-section [mm <sup>2</sup> ]		0.2 ... 1.5	–
Electrical connection for output, note on conductor cross-section		0.09-1.5 flex. without wire end sleeve	–
Electrical connection for input, AWG conductor cross-section		AWG28 ... AWG16	–
Input debounce time [ms]		3	3
Switching level		Signal 1: ≥ 11 V	Signal 1: ≥ 11 V
Voltage drop of sensor supply [V]		<1	<1
Max. cable length		30 m inputs	30 m inputs
Input characteristics		According to EN 61131-2	According to EN 61131-2

## Datasheet – Input modules for manifold sub-bases

Technical data – Electrical components		Electrical connection, spring-loaded terminal	Electrical connection, socket M8
Nominal operating voltage DC for electronics/sensors [V]		24	
Permissible voltage fluctuations, electronics/sensors [%]		±25	
Permissible voltage fluctuations, load [%]		±10	
Note on the operating voltage		SELV/PELV power supply units required Note voltage drop	
Power failure buffering [ms]		10	
Intrinsic current consumption at nominal operating voltage, electronics/sensors [mA]		Typically 4	
Max. total current of inputs per module [A]		0.2	
Overvoltage category		II	
Fuse protection (short circuit)		Internal electronic fuse per module	
Behaviour after end of overload of the sensor supply		Automatic return (default)	
Pollution degree		2	

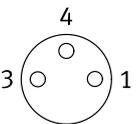
Operating and environmental conditions		Electrical connection, spring-loaded terminal	Electrical connection, socket M8
Ambient temperature [°C]		–5 ... 50	
Storage temperature [°C]		–20 ... 70	
Relative humidity [%]		5 ... 95	
Nominal operating altitude		≤ 2000 m NHN	
Corrosion resistance class CRC <sup>1)</sup>		0	1
CE marking (see declaration of conformity) <sup>2)</sup>		To EU EMC Directive To EU RoHS Directive	
KC marking		KC EMC	
Certification		RCM	
Vibration resistant		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Degree of protection		IP20	IP65
Note on degree of protection		–	In mounted state

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

2) For information about the area of use, see the declaration of conformity at: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

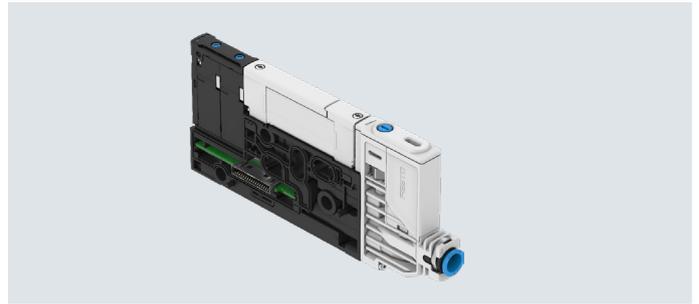
Materials		Electrical connection, spring-loaded terminal	Electrical connection, socket M8
Plug housing		PA	PA
Film		Polyester	Polyester
Seals		–	NBR
O-ring		–	NBR
Note on materials		RoHS-compliant	
LABS (PWIS) conformity		VDMA24364-B2-L	VDMA24364-B2-L

Pin assignment of sensor connections, electrical connection socket M8			
Terminal assignment	Pin	Signal	Designation
	1	24 V	Operating voltage 24 V
	3	0 V	Operating voltage 0 V
	4	Ix*	Sensor signal

\* Ix = Input x

## Datasheet – Manifold sub-base for vacuum

-  - Valve size  
10 mm
-  - Maximum vacuum  
93 kPa



### Operating mode

#### Description

Vacuum generation for a single valve position can be integrated on the VTUX. No further installations are required.

The vacuum is generated within the manifold sub-base according to the Venturi principle and is available at port 2.

By using a 2x 3/2-way valve, the ejector or pulse function is available at the same time.

With the integrated check valve, vacuum can be held in an energy-saving way.

The pilot air for the valve is supplied via duct 1 of the manifold sub-base. This also applies if there is also an external pilot air supply for the valve terminal.

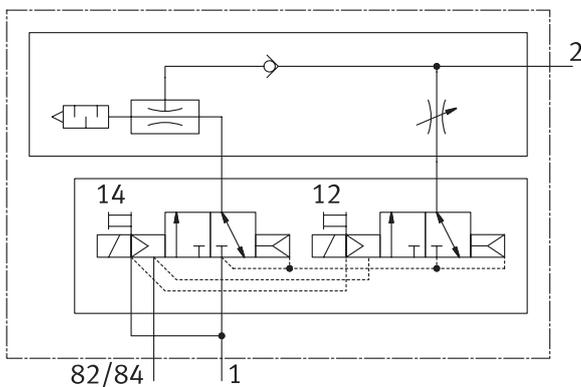
The manifold sub-base for vacuum comprises:

- Adjusting screw for setting the ejector pulse
- Integrated check valve for energy-saving vacuum maintenance
- Integrated silencer
- The corresponding valve must be ordered separately via the configurator

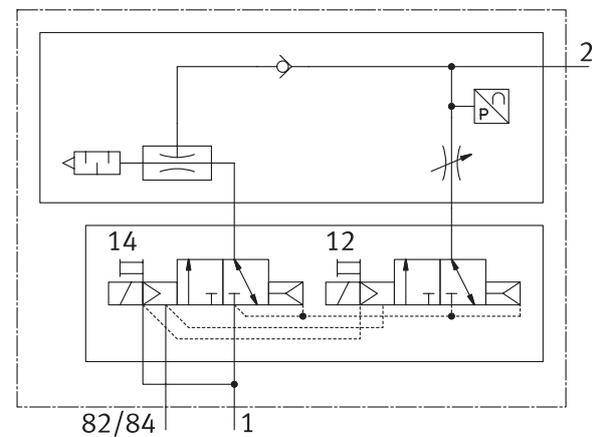
Additional functions are available for the version with serial links:

- Pressure sensor
- Air saving function
- Condition monitoring

#### Manifold sub-base for vacuum with multi-pin electrical control



#### Manifold sub-base for vacuum with AP interface electrical control



## Datasheet – Manifold sub-base for vacuum

Combination of manifold sub-bases for vacuum and power supply modules			
Ambient temperature	Power supply modules	Number of manifold sub-bases for vacuum per valve terminal	
Max. 50 °C	None	4	The integrated vacuum generation places high demands on the valve terminal VTUX. Good heat dissipation is therefore required. Avoid mounting the valve terminal on highly insulating surfaces (e.g. wood or plastic).
	After 4 manifold sub-bases for vacuum	Any	
Max. 40 °C	None	7	
	After 4 manifold sub-bases for vacuum	Any	

### Examples of possible configurations at a maximum ambient temperature of 50°C

4 manifold sub-base without intermediate supply



8 manifold sub-bases with intermediate supply



13 manifold sub-base with intermediate supply



 **Note**

The vacuum connection has no filter function. A filter must therefore be installed upstream if contamination of the intake air is expected. This prevents any foreign matter getting in (e.g. when operating a suction cup).

Datasheet – Manifold sub-base for vacuum

General technical data		
Type	VABX-A-P	VABX-A-S
Electrical control	Multi-pin plug	AP interface
Communication interface, protocol	–	AP-COM
Compatible with	Valve terminal VTUX-A-P	Valve terminal VTUX-A-S
Maximum number of valve positions	1	
Max. no. of solenoid coils	2	
Integrated function	Ejector pulse, electrical	Ejector pulse, electrical
	Ejector pulse valve, electric	Ejector pulse valve, electric
	Flow restrictor	Flow restrictor
	On/off valve, electric	On/off valve, electric
	Check valve	Check valve
	Open silencer	Open silencer
	With electrical interlinking module	With electrical interlinking module
	–	Pressure sensor
	–	Pressure transmitter
–	Air-saving function, electric	
Mounting position	Any	
Type of mounting	Tie rods	
Dimensions W x L x H [mm]	12.55 x 150.8 x 68.8	
Length [mm]	150.8	
Grid dimension [mm]	12.55	
Valve size [mm]	10	
Product weight [g]	65	68

Pneumatic connections		
Pneumatic connection	2	For tubing O.D. 4 mm
		For tubing O.D. 6 mm
		For tubing O.D. 8 mm
		For tubing O.D. 5/32"
		For tubing O.D. 1/4"
		For tubing O.D. 5/16"

Minimum connection sizes				
Type	VABX-VB07H	VABX-VB07L	VABX-VB010H	VABX-VB010L
Tubing length up to 0.5 m	Tubing O.D. 6 mm		Tubing O.D. 6 mm	 <b>Note</b> Tubing sizes smaller than those specified reduce the performance of the vacuum generator.
	Tubing O.D. 1/4"		Tubing O.D. 1/4"	
Tubing length up to 2.0 m	Tubing O.D. 6 mm		Tubing O.D. 8 mm	
	Tubing O.D. 1/4"		Tubing O.D. 5/16"	
Recommended connection size	Tubing O.D. 8 mm		Tubing O.D. 8 mm	

Technical data – Valves		
Type	VABX-A-P	VABX-A-S
Valve function	2x3/2-way, single solenoid, closed	
Type of control	Piloted	
Actuation type	Electrical	
Pilot air supply	Internal	
Sealing principle	Soft	
Display type	LED	LED
Signal status indication	Yellow LED, valve control	Blue LED for valve control
		LED changes to green for "Vacuum reached"

## Datasheet – Manifold sub-base for vacuum

Technical data – Electrical components		VABX-A-P	VABX-A-S
Type			
Reverse polarity protection		Yes	
Inductive protective circuit		Integrated	Integrated
Nominal operating voltage DC [V]		24	–
Nominal operating voltage DC for electronics/sensors [V]		–	24
Nominal operating voltage DC load [V]		–	24
Note on the operating voltage		SELV/PELV power supply units required Note voltage drop	SELV/PELV power supply units required Note voltage drop
Permissible voltage fluctuations [%]		±10	–
Permissible voltage fluctuations, electronics/sensors [%]		–	±10
Permissible voltage fluctuations, load [%]		–	±10
Intrinsic current consumption at nominal operating voltage [mA]		Typically 2	–
Intrinsic current consumption at nominal operating voltage, electronics/sensors [mA]		–	Typically 27
Intrinsic current consumption at nominal operating voltage, load [mA]		–	Typically 2.5
Power consumption at 24 V DC [W]		–	0.65
Power failure buffering [ms]		–	10
Electrical isolation of outputs between channel - internal communication		–	Yes
Galvanic isolation between the supply voltages electronics/sensors and load/valves		–	Yes
Diagnostics via internal communication		–	Load switch-off Electronics/sensors overvoltage Electronics/sensors undervoltage

Technical data – Vacuum				
Type	VABX-VB07H	VABX-VB07L	VABX-VB010H	VABX-VB010L
Ejector characteristics	High vacuum	High suction rate	High vacuum	High suction rate
Adjusting element	Slotted head screw			
Silencer design	Open			
Nominal width of Laval nozzle [mm]	0.7	0.7	0.95	0.95
Maximum vacuum [kPa]	93	–	93	–
Max. suction volume flow against atmosphere [l/min]	18	33.7	24	45
Pressurisation time at nominal operating pressure [s]	0.37	0.34	0.39	0.42

Technical data - Pressure sensor		VABX-A-S
Type		
Measured variable		Relative pressure
Measuring principle		Piezoresistive
Pressure measuring range [kPa]		–100 ... +100
[bar]		–1 ... +1
[psi]		–14.5 ... +14.5
Accuracy in ± % FS [%]		3 FS
Reproducibility, switching value FS [%]		1

## Datasheet – Manifold sub-base for vacuum

Operating and environmental conditions		VABX-VB07H	VABX-VB07L	VABX-VB010H	VABX-VB010L
Type					
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] → 39			
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:-] → 39			
Note on the operating/pilot medium		Ester oil < 0.1mg/m <sup>3</sup> , according to ISO 8573-1:2010 [:-:2] Lubricated operation not possible			
Operating pressure	[MPa]	0.2 ... 0.7			
	[bar]	2 ... 7			
	[psi]	29 ... 101.5			
Nominal operating pressure	[MPa]	0.6			
	[bar]	6			
	[psi]	87			
Operating pressure for max. vacuum	[MPa]	0.44	–	0.38	–
	[bar]	4.4	–	3.8	–
	[psi]	63.8	–	55.1	–
Operating pressure for max. suction rate	[MPa]	0.3	0.6	0.4	0.6
	[bar]	3	6	4	6
	[psi]	43.5	87	58	87
Pilot pressure	[MPa]	0.2 ... 0.7			
	[bar]	2 ... 7			
	[psi]	29 ... 101.5			
Ambient temperature	[°C]	–5 ... +50			
Storage temperature	[°C]	–20 ... +70			
Relative humidity	[%]	5 ... 95			
Maximum setup altitude	[m]	2000			
Nominal operating altitude		≤ 2000 m NHN			
Corrosion resistance class CRC <sup>1)</sup>		2			
CE marking (see declaration of conformity)		To EU EMC Directive <sup>2)</sup>			
		in accordance with EU RoHS Directive <sup>2)</sup>			
UKCA marking (see declaration of conformity)		To UK EMC regulations <sup>2)</sup>			
KC marking		KC EMC			
Certification		RCM			
Vibration resistant		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6			
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27			
Degree of protection		IP65			
Note on degree of protection		In mounted state			

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)2) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/...d/Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).

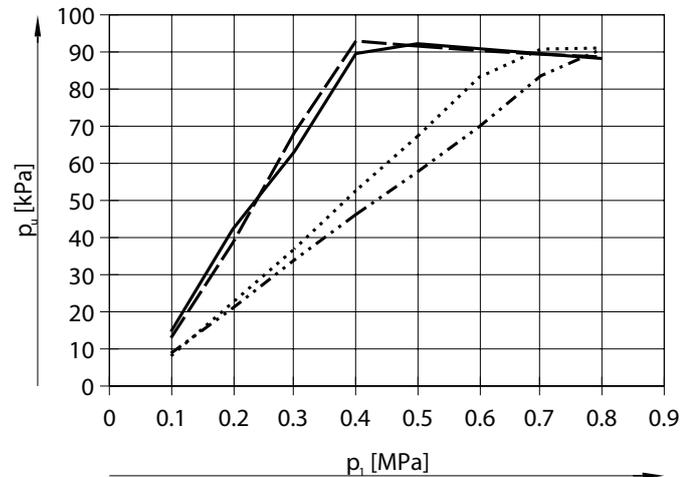
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

**Materials**

Sub-base	Reinforced PA
Cover	Reinforced PA
Housing	Reinforced PA
Adjusting screw	Reinforced PA
Silencer	PP; PU foam
Seals	HNBR; NBR
O-ring	HNBR; NBR
Clip	High-alloy stainless steel
Nut	High-alloy stainless steel
Screws	High-alloy stainless steel
Film	Polyester
Sleeve	Wrought aluminium alloy
Female nozzle	POM
Jet nozzle	Wrought aluminium alloy
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-C1-L

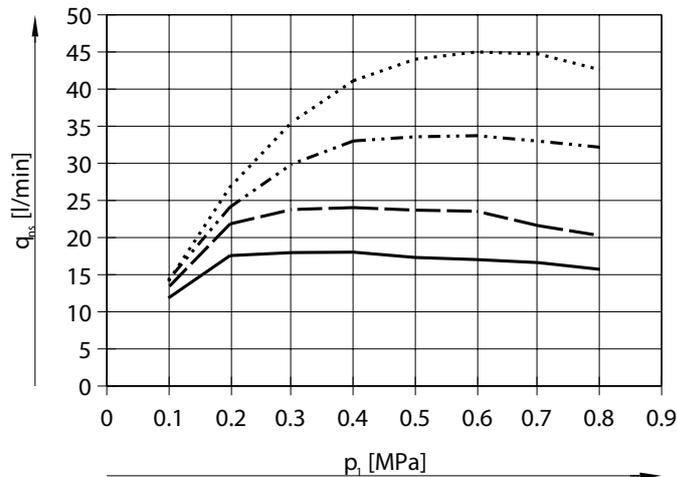
Datasheet – Manifold sub-base for vacuum

Vacuum  $p_u$  as a function of working pressure  $p_1$



- VABX-VB07H
- - - VABX-VB010H
- · - · VABX-VB07L
- VABX-VB010L

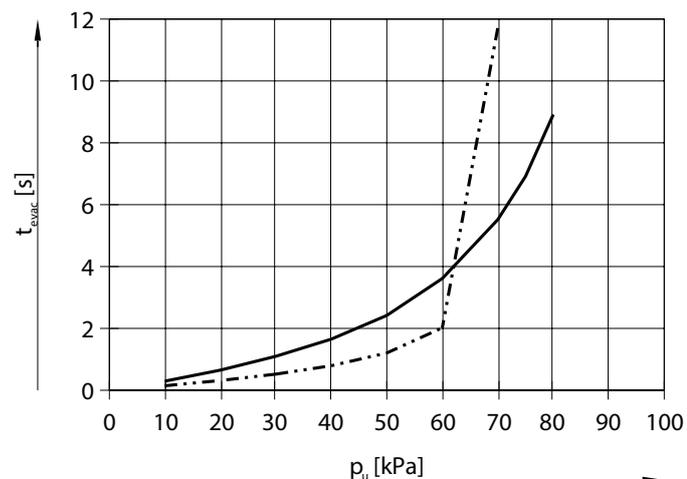
Suction volume flow  $q_{vs}$  as a function of working pressure  $p_1$



- VABX-VB07H
- - - VABX-VB010H
- · - · VABX-VB07L
- VABX-VB010L

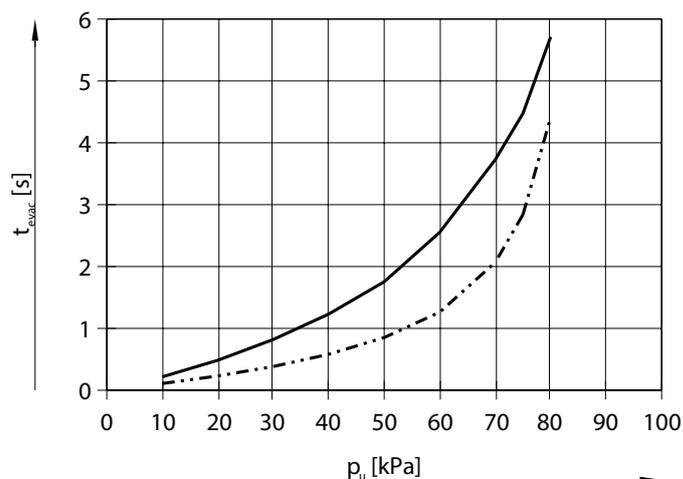
Evacuation time  $t_{evac}$  as a function of vacuum  $p_u$  at 0.6 bar operating pressure

Nominal width of Laval nozzle 0.7 mm



- VABX-VB07H
- · - · VABX-VB07L

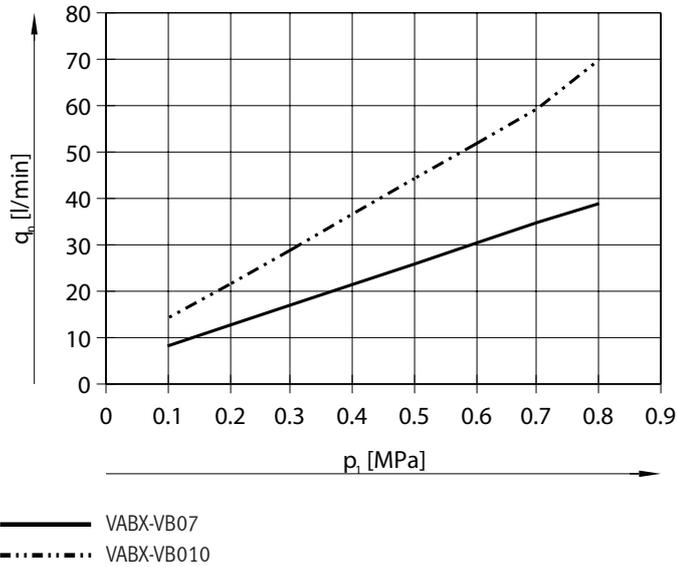
Nominal width of Laval nozzle 0.95 mm



- VABX-VB010H
- · - · VABX-VB010L

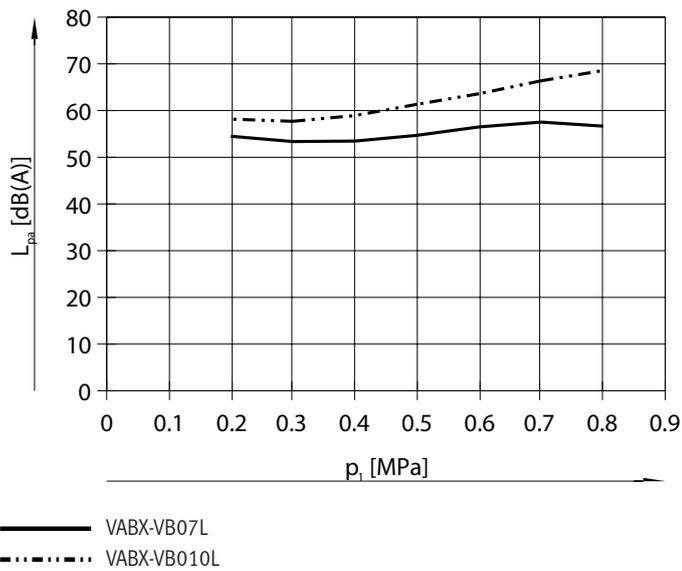
Datasheet – Manifold sub-base for vacuum

Compressed air consumption  $q_n$  as a function of working pressure  $p_1$

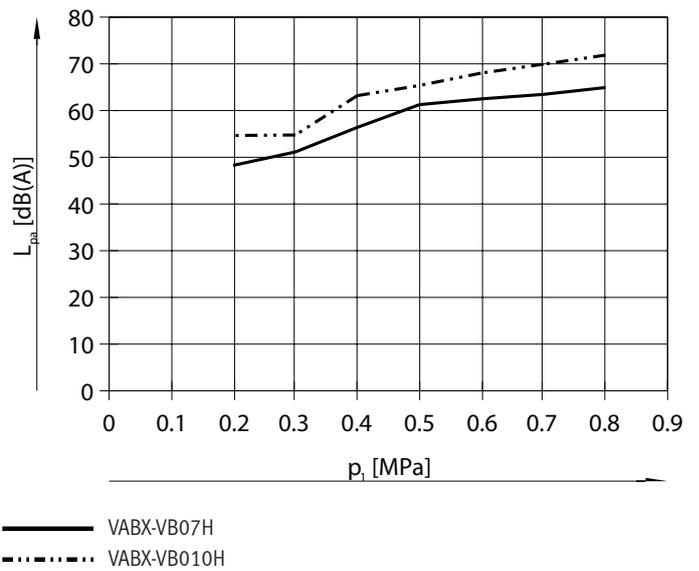


Sound pressure  $L_{pa}$  as a function of working pressure  $p_1$ , port 2 closed

Low suction volume flow



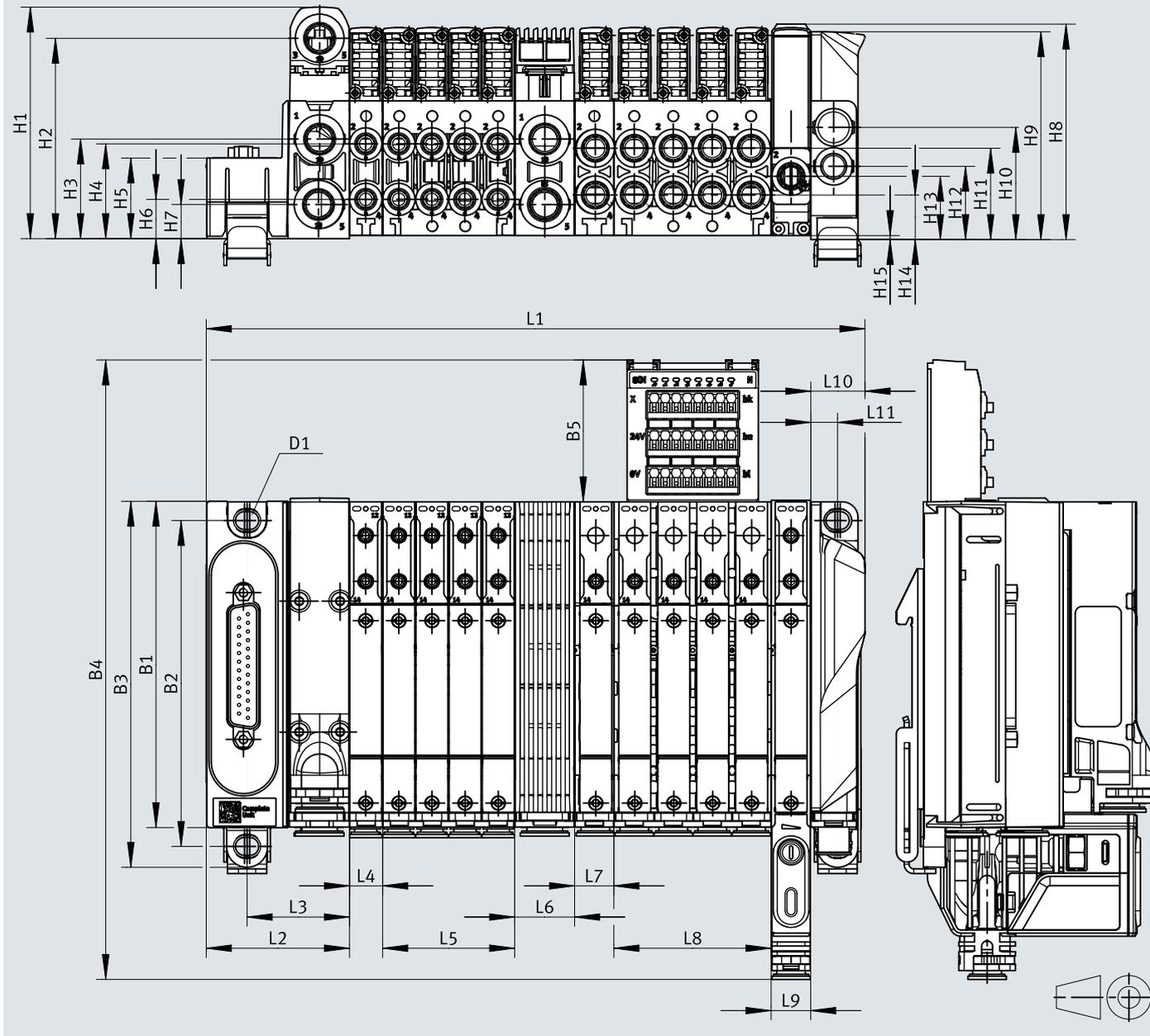
High suction rate



Datasheet

Dimensions – Valve terminal VTUX

Download CAD data → [www.festo.com](http://www.festo.com)



Type	B1	B2	B3	B4	B5	D1
VTUX	104.6	104.5	117.4	195.8	45.5	M5

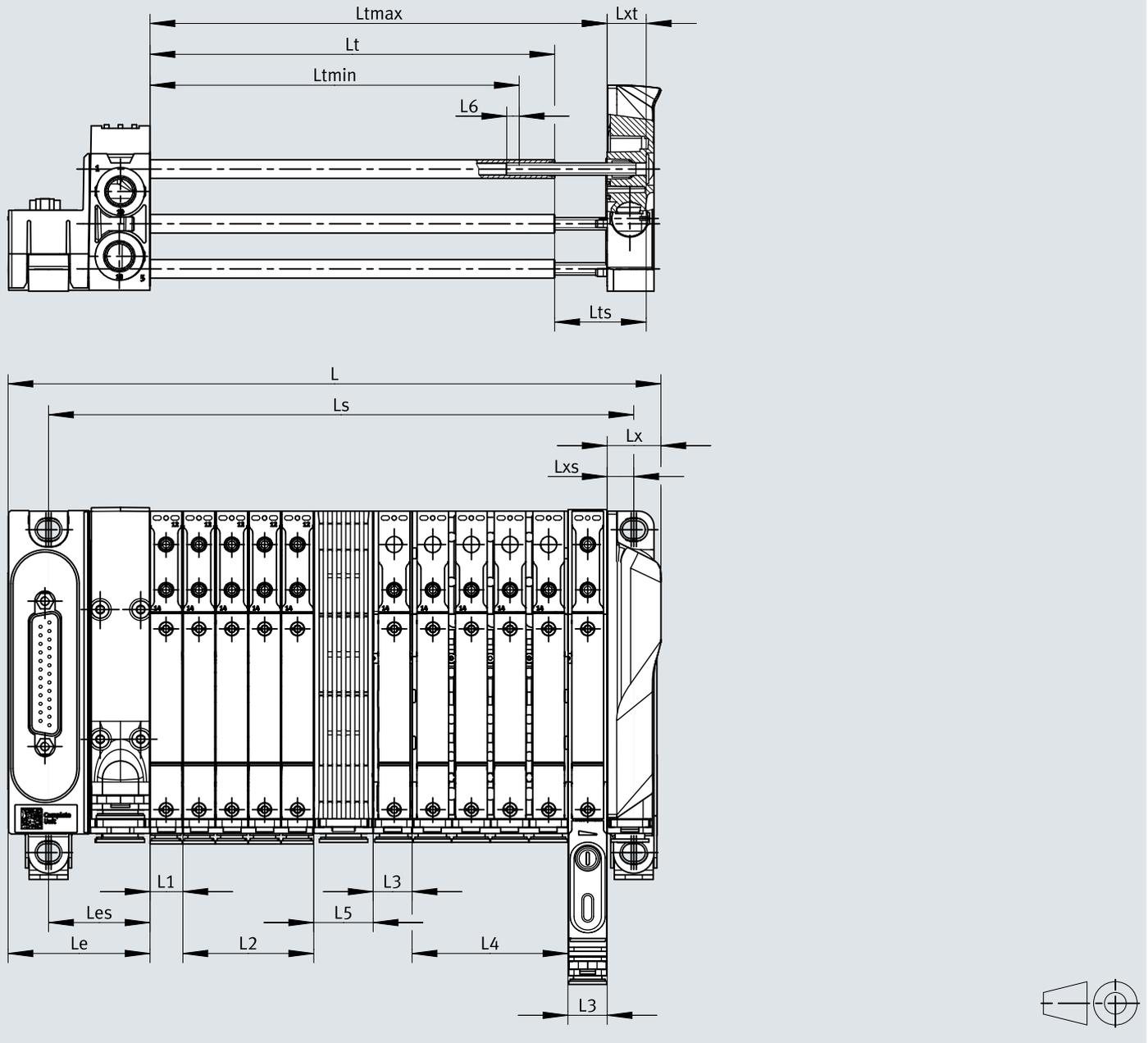
Type	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15
VTUX	73.1	63.1	32.25	30.7	26.25	12.9	11.25	69.1	66.65	36	29.3	23.5	20.3	14.3	1.3

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
VTUX	209.7	45.6	32.6	10.55	42.05	19.05	12.55	50.05	12.55	17.3	8.55

Datasheet

Dimensions – Valve terminal VTUX, tie rod system

Download CAD data → [www.festo.com](http://www.festo.com)



Type	L1	L2	L3	L4	L5	L6	Le	Les	Lx	Lxs	Lxt	Lts
VABX-A-P-EL-E12-MS1	10.55	42.05	12.55	50.05	19.05	4	45.6	32.6	17.3	8.55	12.55	–
VABX-A-P-EL-E12-MS1T							49.9					–
VABX-A-P-EL-E12-MS3							45.6					–
VABX-A-P-EL-E12-MF1												–
VABX-A-P-EL-E12-MC												–
VABX-A-P-EL-E12-MS6												–
VABX-A-P-EL-E12-MS8												–
VABX-A-P-EL-E12-APA							35.2	25.5				–
VABX-A-S-EL-E12-APA												–
VABX-A-P-EL-E12-API							45.6	32.6				–
VABX-A-S-EL-E12-API												–
VAME-XA-S-M4-30	–	–	–	–	–	–	–	–	–	–	–	30
VAME-XA-S-M4-45	–	–	–	–	–	–	–	–	–	–	–	45

## Datasheet

Type	L <sup>1)</sup>	L <sub>S</sub> <sup>1)</sup>
VTUX	$L_e + L_8 + m \times L_1 + n \times L_2 + o \times L_5 + p \times L_3 + q \times L_4 + L_x$	$L_e + m \times L_1 + n \times L_2 + o \times L_5 + p \times L_3 + q \times L_4 + L_x$

- 1) m = Number of manifold sub-bases for one valve, size 1  
 n = Number of manifold sub-bases for four valves, size 1  
 o = Number of power supply modules  
 p = Number of manifold sub-bases for one valve, size 2/manifold sub-bases for vacuum  
 q = Number of manifold sub-bases for four valves, size 2  
 o, p, q = Number of manifold sub-bases/valve positions

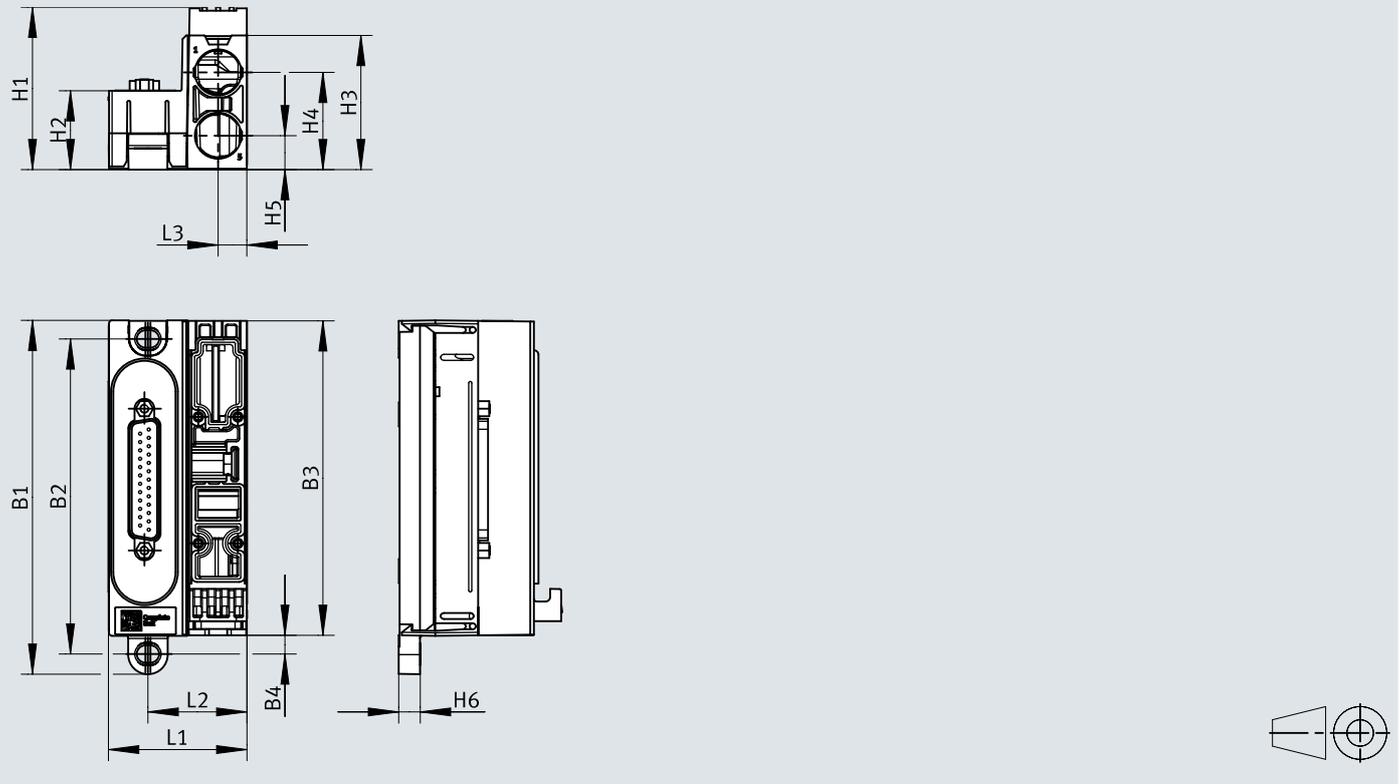
Type	L <sub>tmax</sub> <sup>1)</sup>	L <sub>tmin</sub> <sup>1)</sup>	L <sub>tol</sub> <sup>1)</sup>
VTUX	$m \times L_1 + n \times L_2 + o \times L_5 + p \times L_3 + q \times L_4$	$m \times L_1 + n \times L_2 + o \times L_5 + p \times L_3 + q \times L_4 + (L_{xt} - L_{ts}) + 4 + L_{tol}$	$(m + n + o + p + q + 1) \times 0.2$

- 1) m = Number of manifold sub-bases for one valve, size 1  
 n = Number of manifold sub-bases for four valves, size 1  
 o = Number of power supply modules  
 p = Number of manifold sub-bases for one valve, size 2/manifold sub-bases for vacuum  
 q = Number of manifold sub-bases for four valves, size 2  
 o, p, q = Number of manifold sub-bases/valve positions

Datasheet

Dimensions – Left end plate, electrical connection for multi-pin plug connection, IP40

Download CAD data → [www.festo.com](http://www.festo.com)

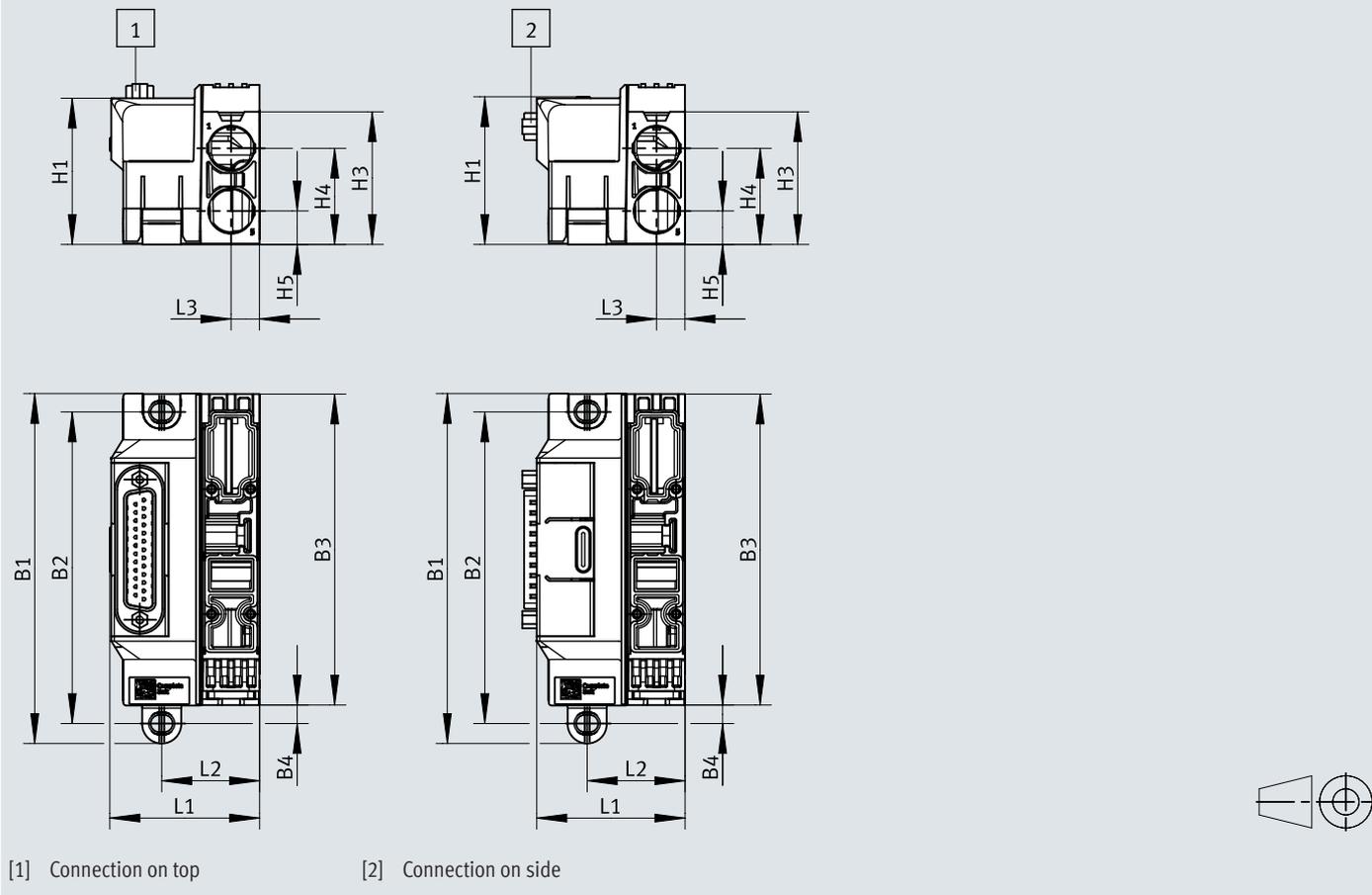


Type	B1	B2	B3	B4	H1	H2	H3	H4	H5	H6	L1	L2	L3
VABX-AP-EL-E12	117.4	104.5	104.3	6.2	53.9	26.15	44.5	32.25	11.25	7.1	45.6	32.6	9.5

Datasheet

Dimensions – Left end plate, electrical connection for multi-pin plug connection, IP65

Download CAD data → [www.festo.com](http://www.festo.com)

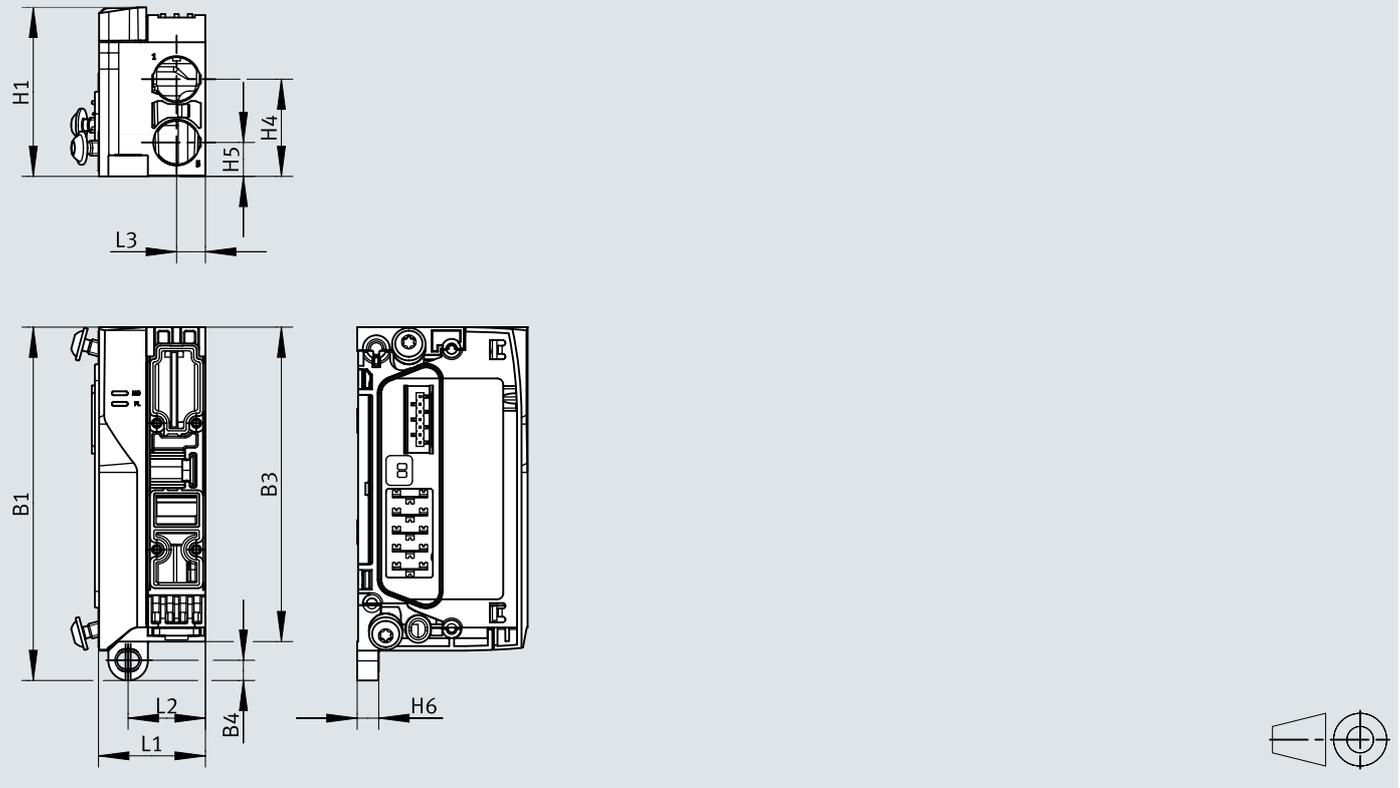


	B1	B2	B3	B4	H1	H3	H4	H5	L1	L2	L3
Connection on top	117.4	104.5	104.3	6.2	49.05	44.5	32.25	11.25	19.9	32.6	9.5
Connection at the side					49.55				49.4		

Datasheet

Dimensions – Left end plate, pneumatic interface for remote I/O system CPX-AP-A, with silencer

Download CAD data → [www.festo.com](http://www.festo.com)

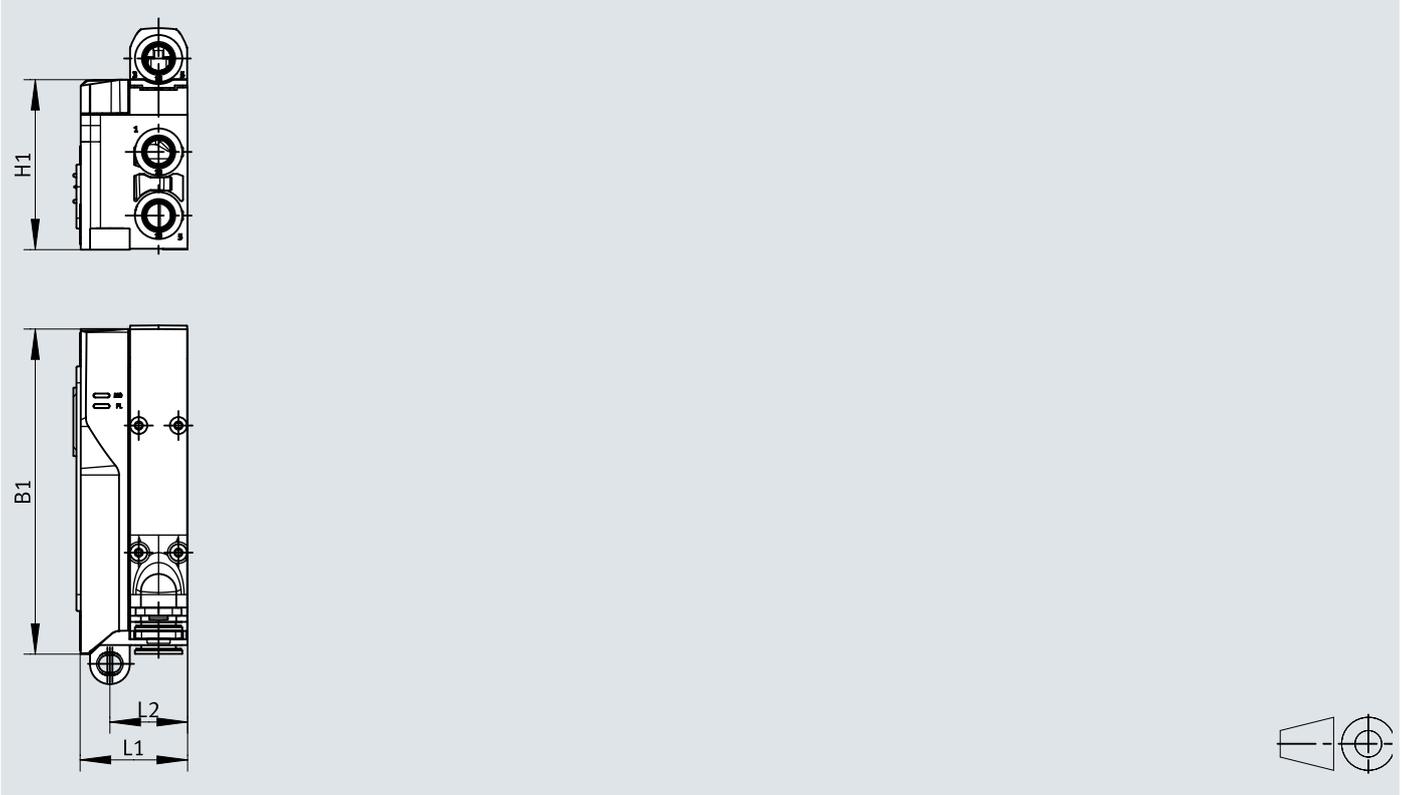


Type	B1	B3	B4	H1	H4	H5	H6	L1	L2	L3
VABX-A-P-EL-E12-APA	117.2	104.3	6.7	56.1	32.25	11.25	7.1	35.2	25.45	9.5

Datasheet

Dimensions – Left end plate, pneumatic interface for remote I/O system CPX-AP-A, with ducted exhaust air

Download CAD data → [www.festo.com](http://www.festo.com)

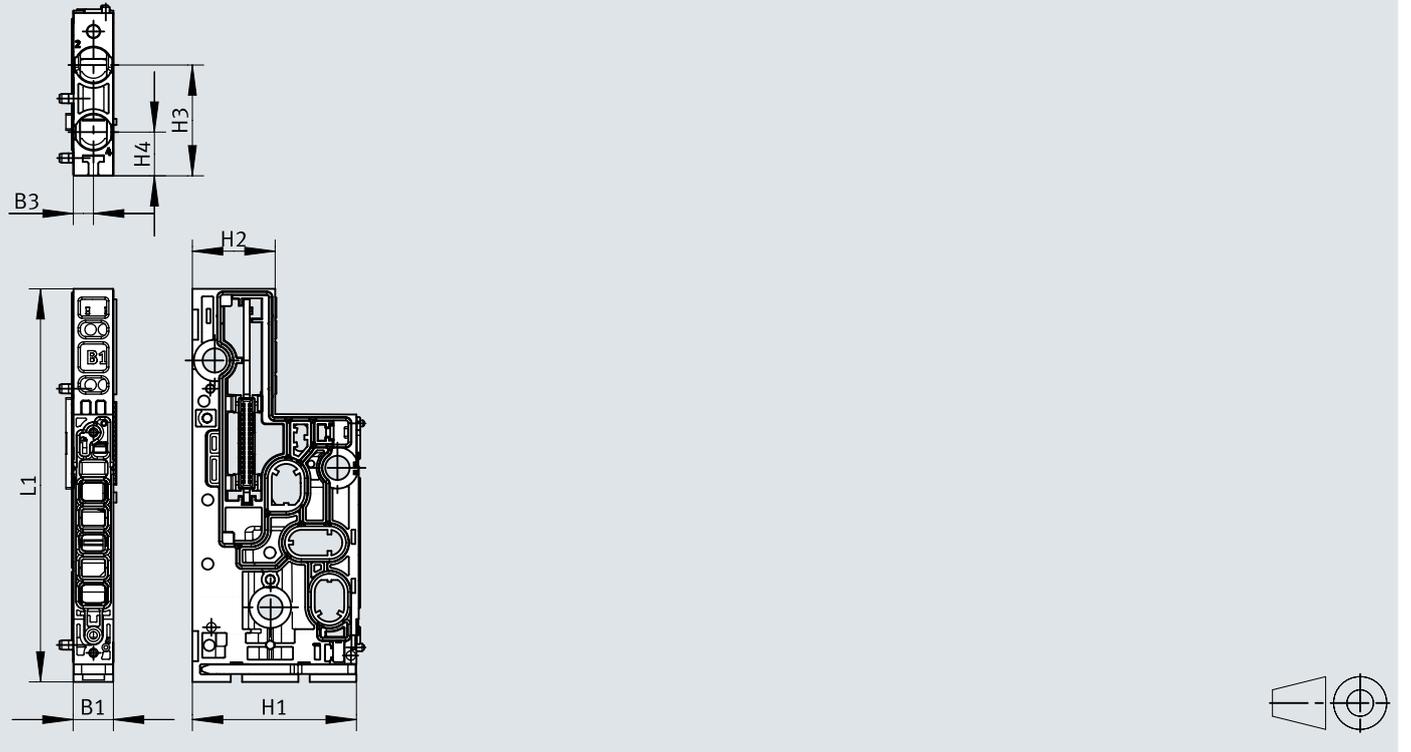


Type	B1	H1	L1	L2
VABX-A-P-EL-E12-APA	107.3	56.1	35.2	25.5

Datasheet

Dimensions – Manifold sub-base for one valve

Download CAD data → [www.festo.com](http://www.festo.com)

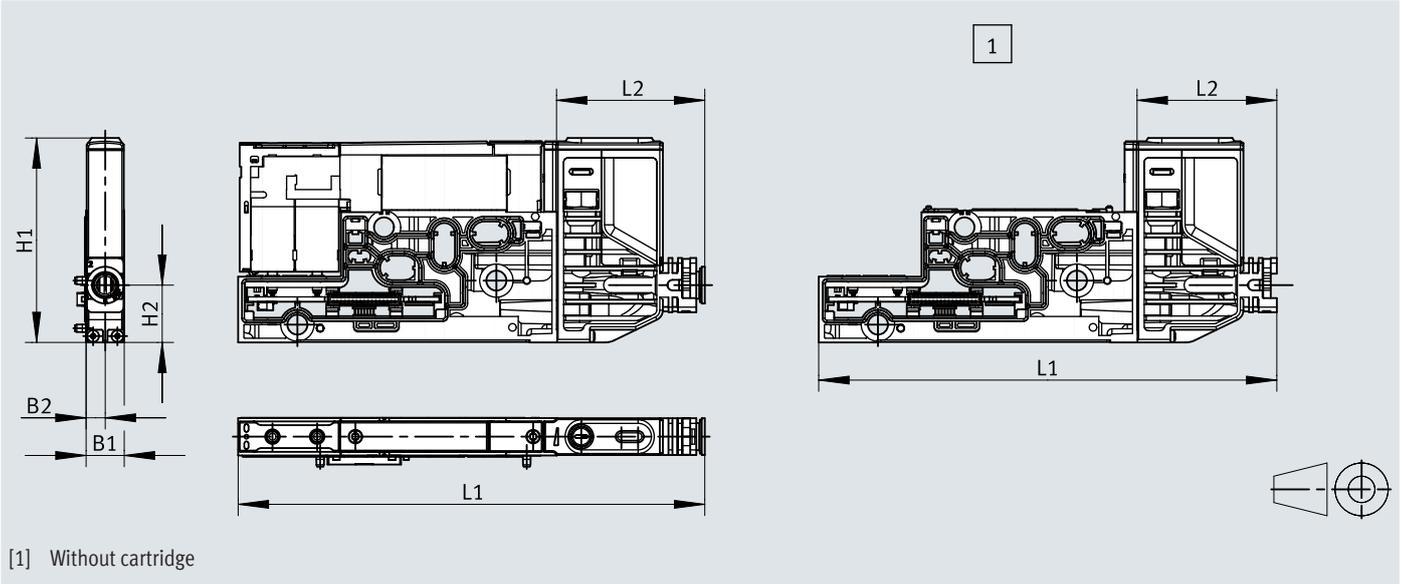


Type	B1	B3	H1	H2	H3	H4	L1
VABX-A-P-BV-AH	10.55	5.3	43.2	21.8	29.4	11.6	104.3
VABX-A-P-BV-BH	12.55	6.3	43.2	21.8	28	13	104.3

Datasheet

Dimensions – Manifold sub-base for vacuum VABX

Download CAD data → [www.festo.com](http://www.festo.com)

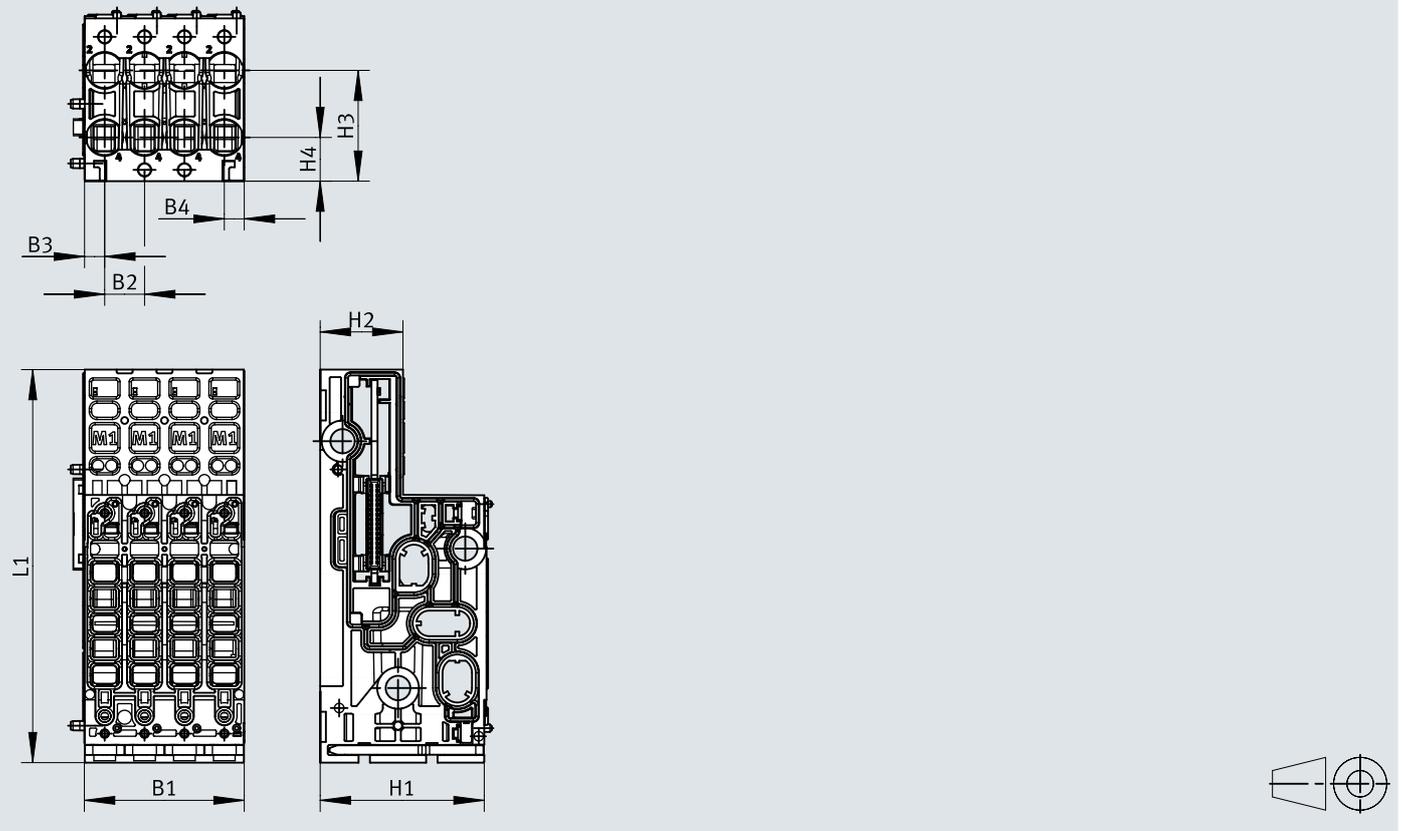


	B1	B2	H1	H2	L1	L2
With cartridge	12.55	6.3	67.8	19	153.6	48.8
Without cartridge					150.8	46

Datasheet

Dimensions – Manifold sub-base for four valves, without connection for input module

Download CAD data → [www.festo.com](http://www.festo.com)

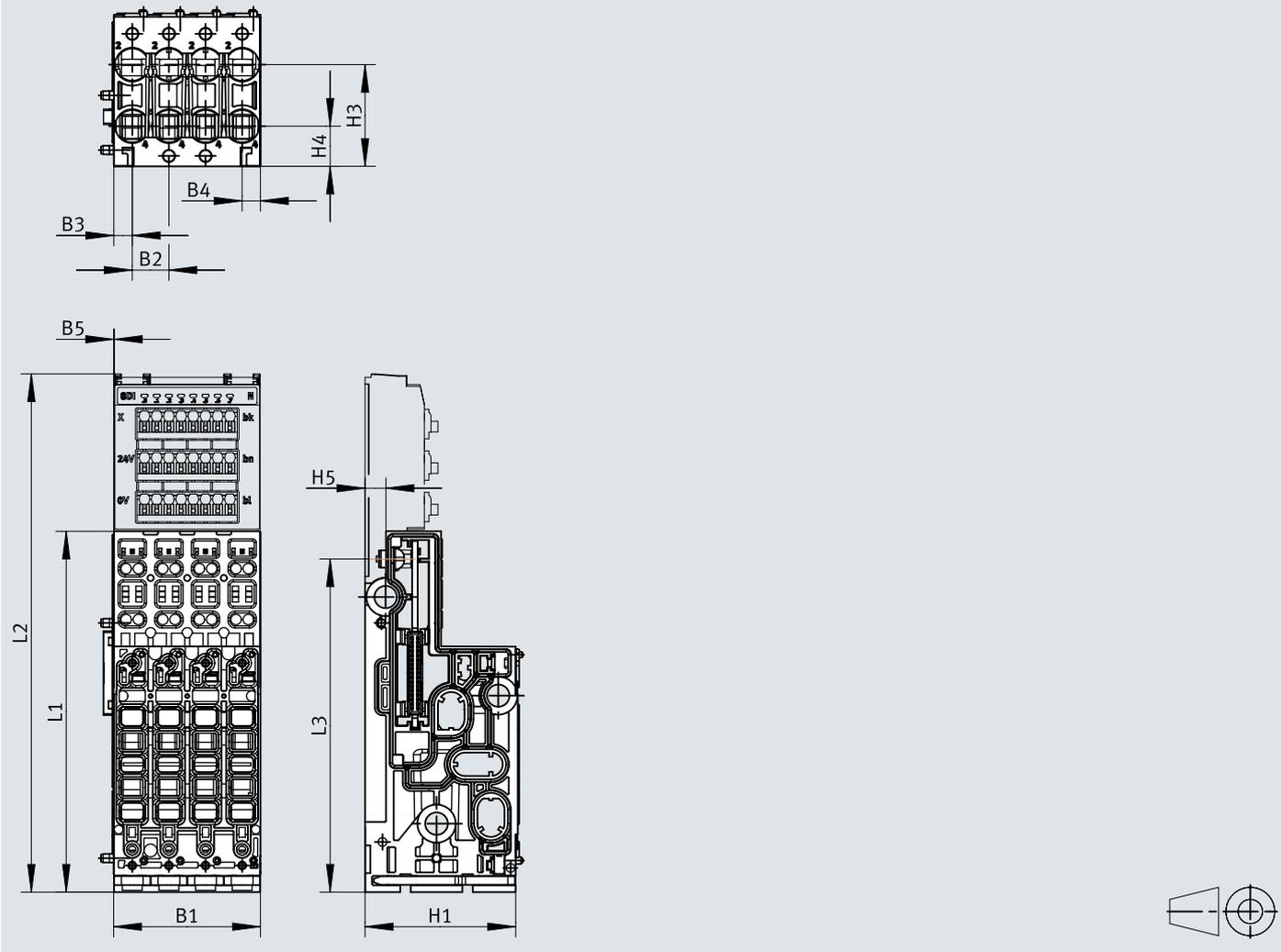


Type	B1	B2	B3	B4	H1	H2	H3	H4	L1
VABX-A-P-BV-AH	42.05	10.5	5.3	5.25	43.2	21.8	29.4	11.6	104.3
VABX-A-S-BV-AH									
VABX-A-P-BV-BH	50.05	12.4	6.45	6.4	43.2	21.8	28	13	104.3
VABX-A-S-BV-BH									

Datasheet

Dimensions – Manifold sub-base for four valves, with connection for input module

Download CAD data → [www.festo.com](http://www.festo.com)

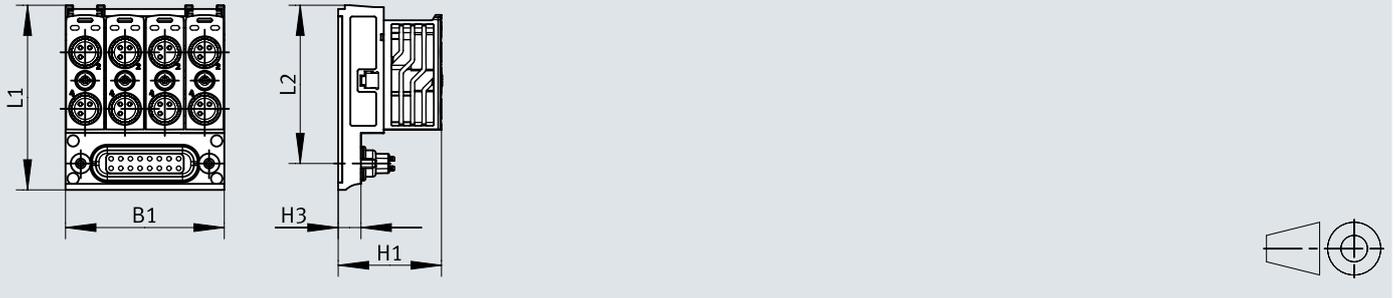


Type	B1	B2	B3	B4	B5	H1	H3	H4	H5	L1	L2	L3
VABX-A-S-BV-AH	42.05	10.5	5.3	5.25	0.2	43.2	29.4	11.6	6	104.3	149.8	96.3
VABX-A-S-BV-BH	50.05	12.4	6.45	6.4	4.2	43.2	28	13	6	104.3	149.8	96.3

Datasheet

Dimensions – Input module, electrical connection socket M8

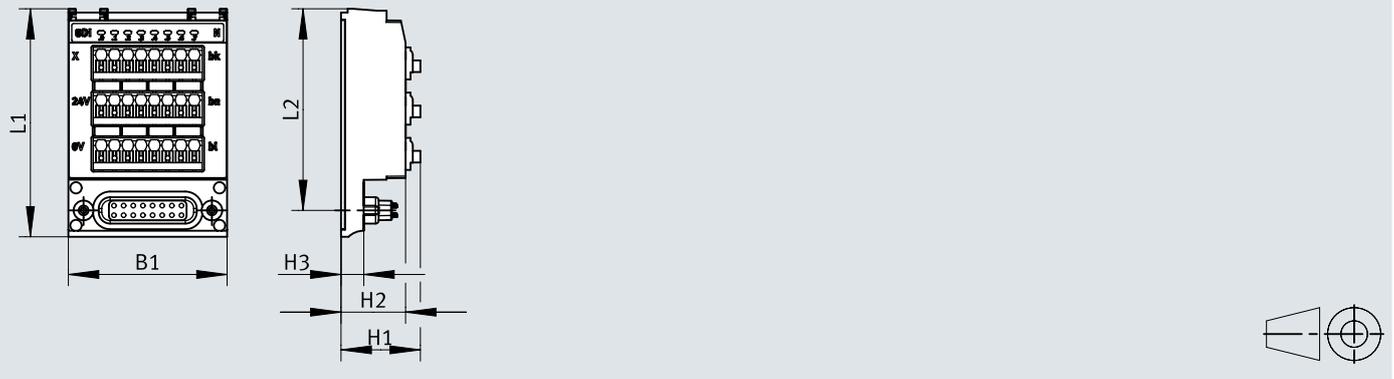
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Type	B1	H1	H3	L1	L2
VAEM-XA-E-8E-N-V	41.8	27.2	6	49	42
VAEM-XA-E-8E-P-V					

Dimensions – Input module – Electrical connection spring-loaded terminal

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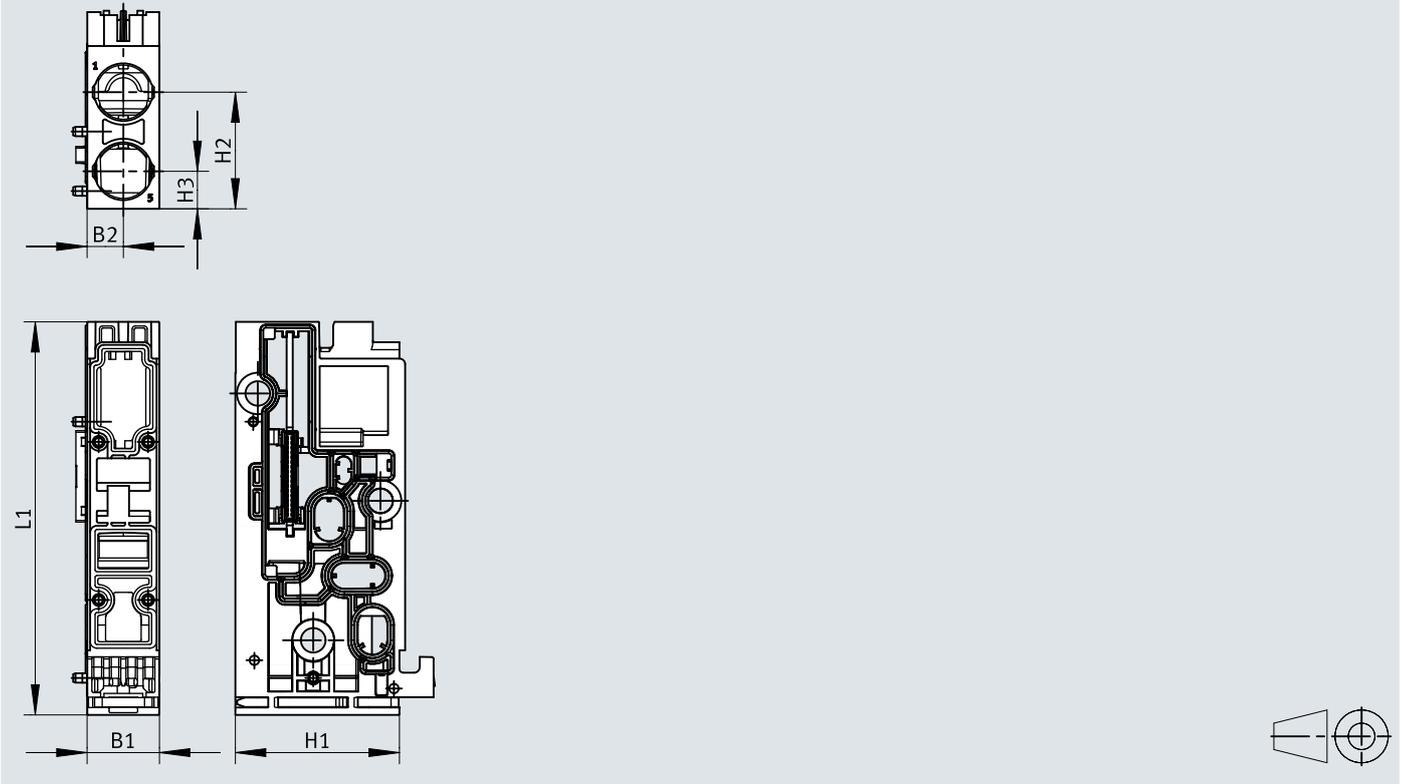


Type	B1	H1	H2	H3	L1	L2
VAEM-XA-E-8E-N-K2	41.8	20.9	17	6	60.5	53.5
VAEM-XA-E-8E-P-K2						

Datasheet

Dimensions – Power supply module

Download CAD data → [www.festo.com](http://www.festo.com)

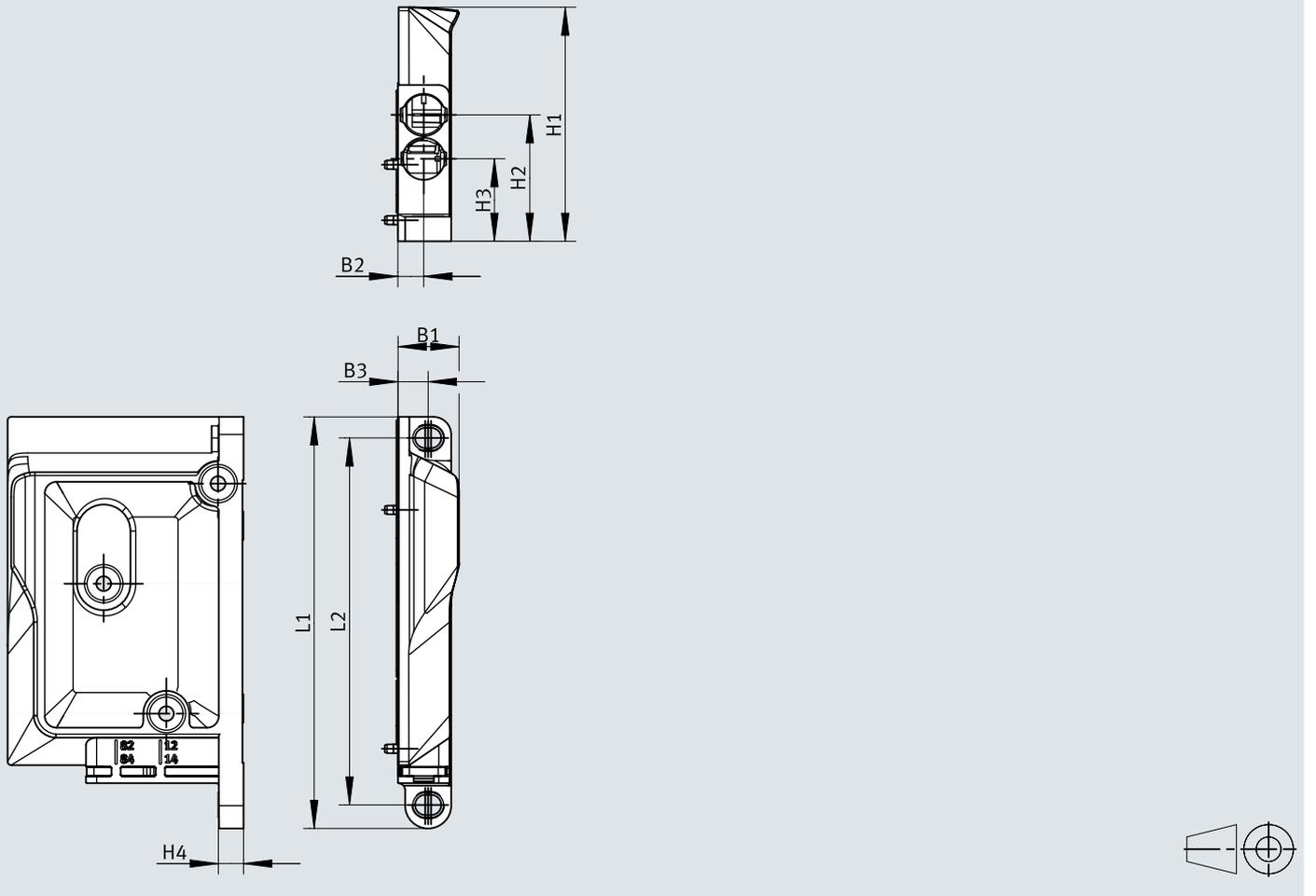


Type	B1	B2	H1	H2	H3	L1
VABX-A-P-BU	19.05	9.55	43.2	30.95	9.95	104.3
VABX-A-S-BU						

Datasheet

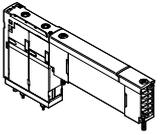
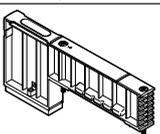
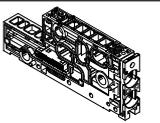
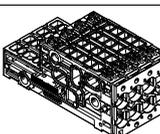
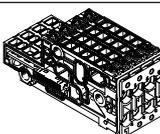
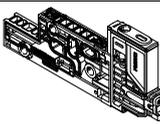
Dimensions – Right end plate, electrical connection for multi-pin plug connection, IP40

Download CAD data → [www.festo.com](http://www.festo.com)

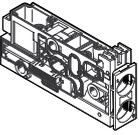
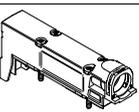
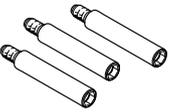
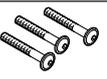
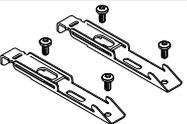


Type	B1	B2	B3	H1	H2	H3	H4	L1	L2
VABX-A-ER	17.3	7.3	8.55	66.65	36	23.5	7.1	117.2	104.5

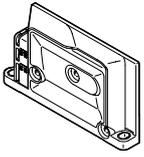
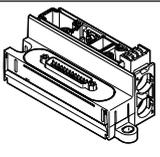
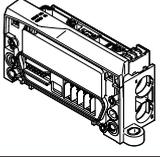
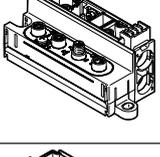
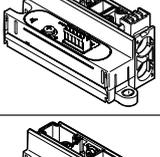
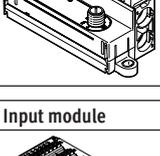
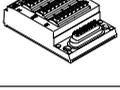
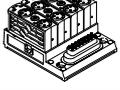
## Accessories

Ordering data		Code	Valve function	Part no.	Type	
<b>Individual solenoid valve – Valve size 10 mm</b>						
	<b>5/2-way valve</b>					
	Position function 1-64: A	Single solenoid, mechanical spring return	8187057	VUVX-BK10-M52-MZH-F-1T1L		
	Position function 1-64: M	Single solenoid, pneumatic spring return	8187056	VUVX-BK10-M52-A1ZH-F-1T1L		
	Position function 1-64: J	Double solenoid	8187059	VUVX-BK10-B52-ZH-F-1T1L		
	<b>2x 3/2-way valve</b>					
	Position function 1-64: NS	Normally open, mechanical spring return	8187063	VUVX-BK10-T32U-MZH-F-1T1L		
	Position function 1-64: K	Normally closed, mechanical spring return	8187061	VUVX-BK10-T32C-MZH-F-1T1L		
	Position function 1-64: KC	Normally closed, pneumatic spring return	8187060	VUVX-BK10-T32C-A1ZH-F-1T1L		
	<b>5/3-way valve</b>					
	Position function 1-64: G	Mid-position closed	8187066	VUVX-BK10-P53C-MZH-F-1T1L		
<b>5/4-way valve</b>						
Position function 1-64: ND	Exhausted	8187067	VUVX-BK10-P54E-MZH-F-1T1L			
<b>Vacant position – Valve size 10 mm</b>						
	Position function 1-64: L	Cover plate for one valve position	8163948	VABB-XA-10-T		
<b>Manifold sub-base – For one valve</b>						
	–	Compatible with valve terminal VTUX-A-P	Maximum number of solenoid coils 1	Size 1	8188458	VABX-A-P-BV-AH-F
				Size 2	8188462	VABX-A-P-BV-BH-G
			Maximum number of solenoid coils 2	Size 1	8188459	VABX-A-P-BV-AH-A
				Size 2	8188463	VABX-A-P-BV-BH-B
<b>Manifold sub-base – For four valves, without connection for input module</b>						
	–	Compatible with valve terminal VTUX-A-P	Maximum number of solenoid coils 4	Size 1	8188460	VABX-A-P-BV-AH-RVFFF
				Size 2	8188464	VABX-A-P-BV-BH-RVGGG
			Maximum number of solenoid coils 8	Size 1	8188461	VABX-A-P-BV-AH-RVAAA
				Size 2	8188465	VABX-A-P-BV-BH-RVBBS
		Compatible with valve terminal VTUX-A-S	Maximum number of solenoid coils 8	Size 1	8188466	VABX-A-S-BV-AH-RVAAA
				Size 2	8188467	VABX-A-S-BV-BH-RVBBS
<b>Manifold sub-base – For four valves, with connection for input module</b>						
	Sub-base block, additional function 1-64: 0XJ	Compatible with valve terminal VTUX-A-S	Maximum number of solenoid coils 8	Size 1	8196628	VABX-A-S-BV-AH-RV0XJAAA
				Size 2	8196629	VABX-A-S-BV-BH-RV0XJBS
<b>Manifold sub-base for vacuum</b>						
	VB	Compatible with valve terminal VTUX-A-P	Valve function 2x3/2-way, closed, single solenoid	Valve size 10 mm	8213837	VABX-A-P-VE-VB010H
		Compatible with valve terminal VTUX-A-S			8213836	VABX-A-S-VE-VB010H

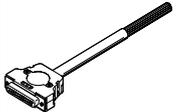
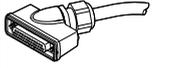
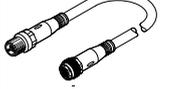
Accessories

Ordering data		Code	Description	Pack size	Part no.	Type
<b>Supply module</b>						
	Connection position type 1-64: U	Manifold sub-base with ports for ducts 1 and 3/5, no plate, no cartridge	Compatible with valve terminal VTUX-A-P	–	8191788	VABX-A-P-BU-12-SHUH-U
			Compatible with valve terminal VTUX-A-S	–	8191789	VABX-A-S-BU-12-SHUH-U
<b>Plate</b>						
	Position function 1-64: UD	Plate for ducted exhaust air, without cartridge, for mounting on supply module			8191794	VABF-XA-12-M2-QX
	Position function 1-64: US	Exhaust plate, for mounting on supply module			8191741	VABF-XA-12-M1-C
<b>Tie rods</b>						
	Tie rod: –	Threaded rod for tie rod, internal hex, spanner size 4 The threaded rod/screw combination is selected based on the number and width of the individual sub-bases.	10 mm	3	8191752	VAME-XA-Z-10
			12 mm	3	8191753	VAME-XA-Z-12
			15 mm	3	8191754	VAME-XA-Z-16
			17 mm	3	8191755	VAME-XA-Z-17
			19 mm	3	8191756	VAME-XA-Z-19
			29 mm	3	8191757	VAME-XA-Z-29
			38 mm	3	8191758	VAME-XA-Z-38
			42 mm	3	8191759	VAME-XA-Z-42
			50 mm	3	8191760	VAME-XA-Z-50
			61 mm	3	8191761	VAME-XA-Z-61
			84 mm	3	8191762	VAME-XA-Z-84
			107 mm	3	8191763	VAME-XA-Z-107
			130 mm	3	8191764	VAME-XA-Z-130
			150 mm	3	8191765	VAME-XA-Z-150
	–	M4 screw with internal hex, spanner size 2.5, for tie rod	30 mm	3	8191747	VAME-XA-S-M4-30
			45 mm	3	8191748	VAME-XA-S-M4-45
<b>Separator</b>						
	–	Separator for pressure zone separation in duct 1		1	8191736	VABD-XA-12-P1
	–	Separator for pressure zone separation in duct 3/5		2	8191737	VABD-XA-12-P2
<b>Wall mounting</b>						
	–	Mounting bracket Wall brackets should be mounted on the valve terminal every 20 cm.		2	8191739	VAME-XA-W
<b>DIN rail mounting</b>						
	Mounting accessories: H	Clamp mounting for DIN rail mounting		2	8191782	VAME-XA-H

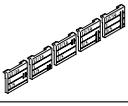
Accessories

Ordering data		Code	Description	Part no.	Type		
<b>Right end plate</b>							
	-	With mounting holes for wall mounting		8191781	VABX-A-ER-E12-JHTH-XR		
<b>Left end plate</b>							
	Electrical connection: MS1	Electrical interface for multi-pin plug connection, IP40	Compatible with valve terminal VTUX-A-P	Sub-D, 25-pin, maximum 24 valve coils	8188447	VABX-A-P-EL-E12-MS1-SHUH-XL	
	Electrical connection: MS1T			Sub-D, 44-pin, maximum 32 valve coils	8206421	VABX-A-P-EL-E12-MS1T-SHUH-XL	
	Electrical connection: MS3			Terminal strip, 34-pin, maximum 32 valve coils	8188449	VABX-A-P-EL-E12-MS3-SHUH-XL	
	Electrical connection: MC			Ribbon cable, 26-pin, maximum 24 valve coils	8188452	VABX-A-P-EL-E12-MC-SHUH-XL	
	Electrical connection: MF1			Electrical interface for multi-pin plug connection, IP20	Compatible with valve terminal VTUX-A-P	8188451	VABX-A-P-EL-E12-MF1-SHUH-XL
	Electrical connection: MS6			Electrical interface for multi-pin plug connection, IP65	Sub-D, 25-pin, maximum 24 valve coils	8188448	VABX-A-P-EL-E12-MS6-SHUH-XL
	Electrical connection: MS8				Sub-D, 44-pin, maximum 32 valve coils	8188450	VABX-A-P-EL-E12-MS8-SHUH-XL
	Electrical connection: APA	Pneumatic interface for remote I/O system CPX-AP-A, IP65	Compatible with valve terminal VTUX-A-P	Maximum 32 valve coils	8189594	VABX-A-P-EL-E12-APA-SHUH-XL	
			Compatible with valve terminal VTUX-A-S	Maximum 128 valve coils	8189595	VABX-A-S-EL-E12-APA-SHUH-XL	
	Electrical connection: API	Pneumatic interface for remote I/O system CPX-AP-I, IP65	Compatible with valve terminal VTUX-A-P	Maximum 32 valve coils	8189592	VABX-A-P-EL-E12-API-SHUH-XL	
			Compatible with valve terminal VTUX-A-S	Maximum 128 valve coils	8189593	VABX-A-S-EL-E12-API-SHUH-XL	
	Electrical connection: IOL	Node with IO-Link®, IP40	Compatible with valve terminal VTUX-A-P	Push-in, maximum 32 valve coils	8189591	VABX-A-P-EL-E12-IOL-SHUH-XL	
	Electrical connection: IOS	Node with IO-Link®, IP65	Compatible with valve terminal VTUX-A-P	M12, maximum 32 valve coils	8189590	VABX-A-P-EL-E12-IOS-SHUH-XL	
<b>Input module</b>							
	Sub-bases, block additional function 1-64: 04J	Electrical connection, spring-loaded terminal		NPN (negative switching)	8196630	VAEM-XA-E-8E-N-K2	
	Sub-bases, block additional function 1-64: 03J			PNP (positive switching)	8196631	VAEM-XA-E-8E-P-K2	
	Sub-bases, block additional function 1-64: 02J	Electrical connection, socket M8		NPN (negative switching)	8196632	VAEM-XA-E-8E-N-V	
	Sub-bases, block additional function 1-64: 01J			PNP (positive switching)	8196633	VAEM-XA-E-8E-P-V	

Accessories

Ordering data		Code	Description	Part no.	Type	
<b>Connecting cable for multi-pin plug connection, Sub-D</b>						
	-	Socket, 25-pin, straight, open cable end 25-pin	IP65/IP67	2.5 m	538225	NEBV-S1G25-K-2.5-N-LE25
				5 m	538226	NEBV-S1G25-K-5-N-LE25
				10 m	538227	NEBV-S1G25-K-10-N-LE25
			IP40	2.5 m	575417	NEBV-S1G25-K-2.5-N-LE25-S6
				5 m	575418	NEBV-S1G25-K-5-N-LE25-S6
				10 m	575419	NEBV-S1G25-K-10-N-LE25-S6
	-	Socket, 25-pin, angled, open cable end, 25-pin	IP65/IP67	2.5 m	575423	NEBV-S1WA25-K-2.5-N-LE25-S9
				5 m	575424	NEBV-S1WA25-K-5-N-LE25-S9
				10 m	575425	NEBV-S1WA25-K-10-N-LE25-S9
		Socket, 44-pin, angled, open cable end, 44-pin	2.5 m	575420	NEBV-S1WA44-K-2.5-N-LE44-S9	
			5 m	575421	NEBV-S1WA44-K-5-N-LE44-S9	
			10 m	575422	NEBV-S1WA44-K-10-N-LE44-S9	
<b>Connecting cable – Round plug</b>						
	-	Straight plug, M8x1 A-coded to EN 61076-2-104, straight socket, M8x1 A-coded to EN 61076-2-104	3-pin	0.5 m	8078282	NEBA-M8G3-U-0.5-N-M8G3
				1 m	8078283	NEBA-M8G3-U-1-N-M8G3
				1.5 m	8078284	NEBA-M8G3-U-1.5-N-M8G3
				2 m	8078285	NEBA-M8G3-U-2-N-M8G3
				2.5 m	8078286	NEBA-M8G3-U-2.5-N-M8G3
				5 m	8078287	NEBA-M8G3-U-5-N-M8G3
				10 m	8078288	NEBA-M8G3-U-10-N-M8G3
	-	Straight plug, M8x1, A-coded to EN 61076-2-104, open end	3-pin	2.5 m	8078270	NEBA-LE3-U-2.5-N-M8G3
				5 m	8078271	NEBA-LE3-U-5-N-M8G3
<b>Straight plug, for IO-Link®</b>						
	-	Straight plug, M12x1, 5-pin, A-coded	Screw terminal		8162296	NECB-S-M12G5-C2
<b>Connecting cable, for IO-Link®</b>						
	-	Suitable for energy chains	Straight – angled	5 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
				7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
				10 m	574323	NEBU-M12G5-E-10-Q8N-M12G5
<b>Distributor, for IO-Link®</b>						
	-	T-adapter M12, 5-pin			171175	FB-TA-M12-5POL
	-	Y-distributor with cable on controller side, M12x1 A-coded			8091516	NEDU-L1R2-M12G5-M12LE-1R

## Accessories

Ordering data		Code	Description	Weight [g]	Pack size	Part no.	Type
<b>Cartridge</b>							
	–	Cartridge 10 mm, connection for tubing O.D.	4 mm	0.9	10	8174164	NPQX-D-PC10-Q4-P10
			6 mm	0.72	10	8174165	NPQX-D-PC10-Q6-P10
			1/8"	2	10	8184511	NPQX-D-PC10-T18-P10
			5/32"	0.9	10	8184509	NPQX-D-PC10-T532-P10
			1/4"	2.15	10	8184510	NPQX-D-PC10-T14-P10
	–	Cartridge 12 mm, connection for tubing O.D.	4 mm	1.24	10	8174166	NPQX-D-PC12-Q4-P10
			6 mm	1.2	10	8174167	NPQX-D-PC12-Q6-P10
			8 mm	0.92	10	8174168	NPQX-D-PC12-Q8-P10
			5/32"	1.24	10	8184512	NPQX-D-PC12-T532-P10
			1/4"	2.6	10	8184514	NPQX-D-PC12-T14-P10
	–	Cartridge 15 mm, connection for tubing O.D.	5/16"	0.92	10	8184513	NPQX-D-PC12-T516-P10
			8 mm	1.9	10	8174169	NPQX-D-PC15-Q8-P10
			10 mm	1.64	10	8174170	NPQX-D-PC15-Q10-P10
			12 mm	7.6	10	8174171	NPQX-D-PC19-Q12-P10
			5/16"	1.9	10	8184515	NPQX-D-PC15-T516-P10
		3/8"	10	10	8189810	NPQX-D-PC10-T38-P10	
<b>Silencer</b>							
	–	Silencer		0.7	1	8191740	AMTX-P-PC12
<b>Blanking plug</b>							
	–	Cartridge		1	10	8191749	NPQX-P-PC10
				0.8	10	8191750	NPQX-P-PC12
				1.6	10	8191751	NPQX-P-PC15
<b>Cover cap</b>							
	Manual override: HV	Cover cap for manual override	Concealed	10		8198864	VAMC-XA-CS
	Manual override: HR		Detenting	10		8198865	VAMC-XA-CD
	IP cover caps pre-assembled: AK	Cover cap for electrical connections M8x1			8	8196625	NEAU-AK-M8
<b>Inscription labels</b>							
	–	Inscription label for marking pressure zone separation	Duct 1 separated	5		8191742	ASLR-C-XA-TT
			Duct 3/5 separated	5		8191743	ASLR-C-XA-TR
			Duct 1, 3/5 separated	5		8191745	ASLR-C-XA-TS
	–	Inscription label 6x12.5 mm for input modules			24	8087174	ASLR-L-X4-612-P240