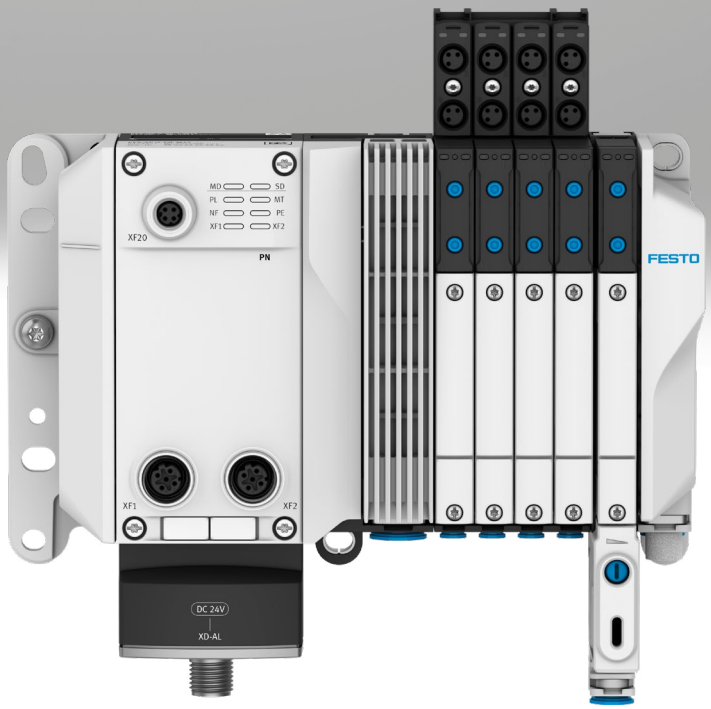
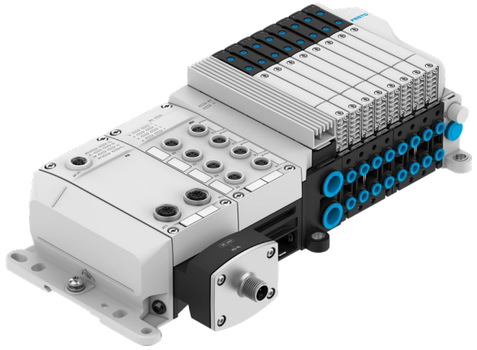
Valve terminal VTUX



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

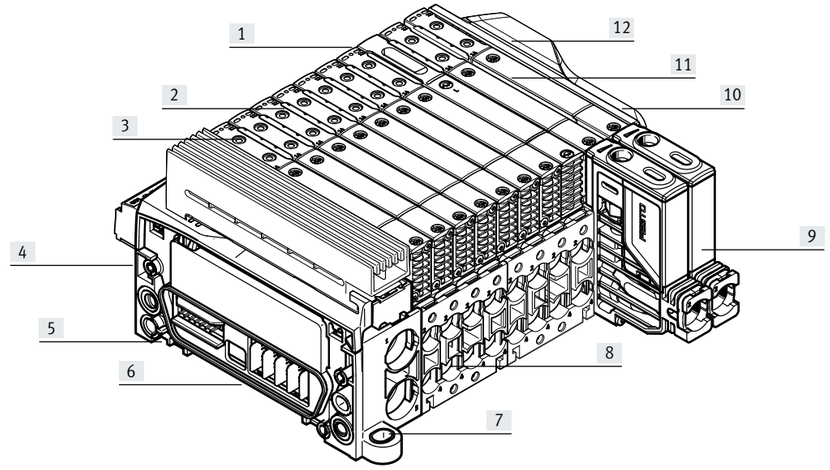
Ordering data – Product options

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/...**
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
8000870	VABX

Key features



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

Equipment options

Valve functions

- 5/2-way valve, single solenoid
- 5/2-way valve, double solenoid
- 2x 3/2-way valve, normally open
- 2x 3/2-way valve, normally closed
- 2x 3/2-way valve, 1x normally open, 1x closed
- 5/3-way valve, mid-position closed
- 5/3-way valve with holding function, for vacuum switching unit
- 5/4-way valve, exhausted
- 5/4-way valve with holding function, for vacuum generator

Special features

- Max. 32 valve positions/max. 32 solenoid coils with parallel communication
- Max. 64 valve positions with serial communication
- Any compressed air supply
- Pressures zones can be created
- Vacuum generation possible in the manifold sub-base
- Sensor connections/input modules directly on the valve
- Modular, individually extendable tie rods
- Single valves or combinations of four valves
- Freely selectable tubing size at each port

Key features

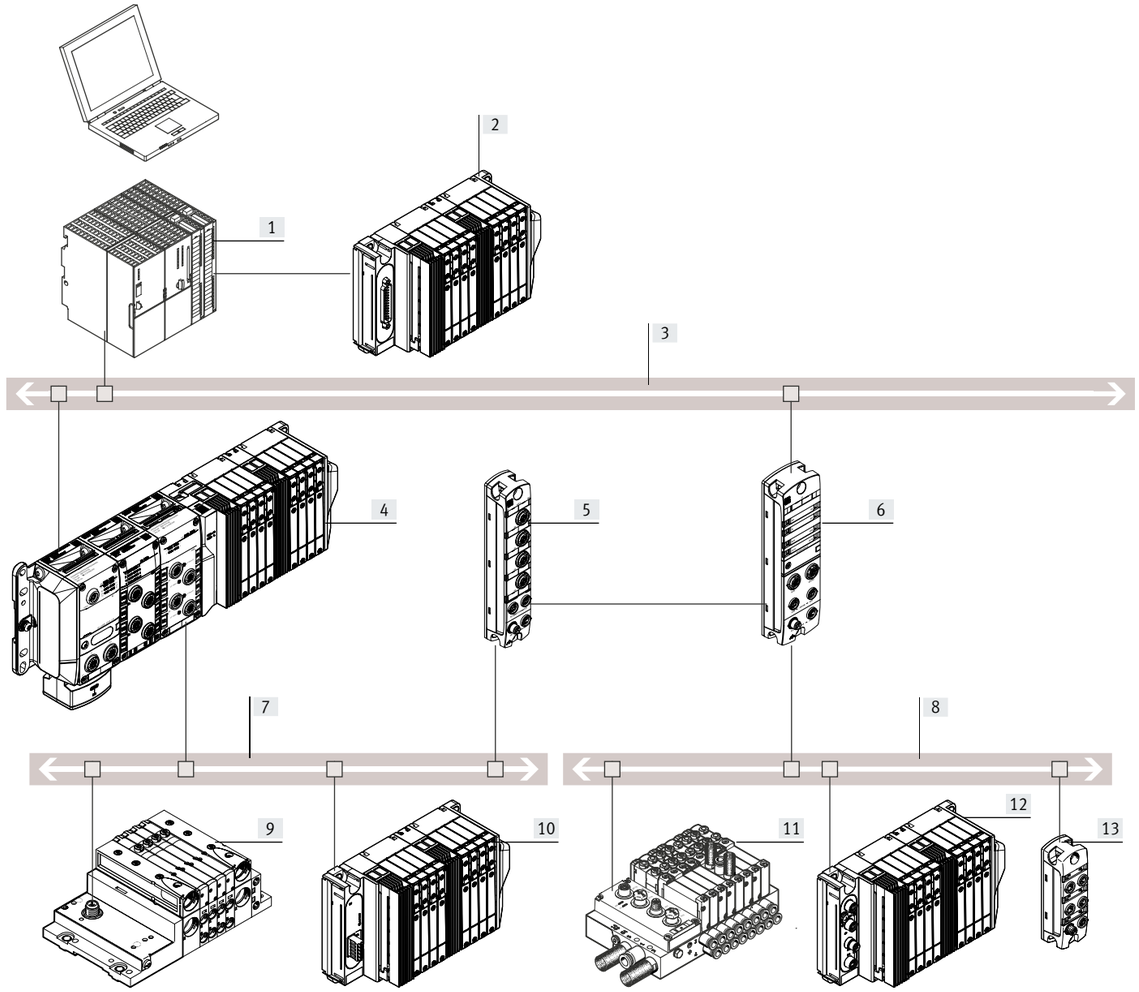
Control variants of the valve terminal VTUX

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 connection
[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 with an IO-Link® 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

Valve terminal selection

Online via: ➔ www.festo.com

Valve terminal configurator

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.

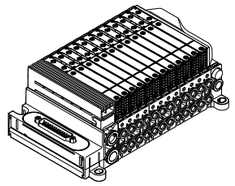
Order a valve terminal VTUX using the order code.

Ordering system for VTUX
➔ Internet: vtux
Ordering system for CPX-AP-I
➔ Internet: cpx-ap-i

2D/3D CAD data

You can request the CAD data for a valve terminal you have configured. To do this, 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.

Multi-pin plug connection

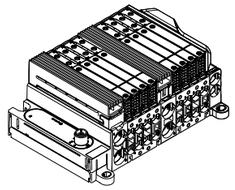


The signals are transmitted from the controller to the valve terminal via a pre-assembled or self-assembled multi-core cable to the multi-pin plug connection. This substantially reduces installation time.
Internal signal flow via parallel communication.

The valve terminal can be equipped with max. 32 solenoid coils. This corresponds to 2 to 32 valves.

Versions:
- Sub-D connection
  - Pre-assembled multi-pin cable
  - Multi-pin cable for self-assembly
  - Connection on top or at the side
- Ribbon cable connection
- Terminal strip connection

IO-Link®



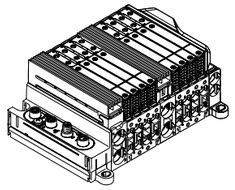
IO-Link® consists of a central master and the IO-Link® devices connected via special connecting cables. This permits a decentralised layout of the devices.

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.

Key features

Fieldbus connection from the remote I/O system CPX-AP-I



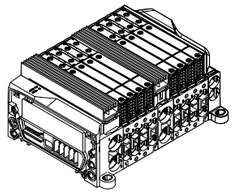
CPX-AP-I is a flexible, decentralised, compact and lightweight remote I/O system with a high protection rating IP65/IP67.
A remote I/O system CPX-AP-I comprises a bus interface and at least one other module. System communication between the modules takes place via connecting cables.

The process data is exchanged cyclically. The following module types are available:
- Bus interface
- Input modules
- Input/output modules
- Interface for valve terminal

The internal signal flow can be realised via serial or parallel communication.

Fieldbus protocols that can be combined with VTUX:
- PROFINET
- EtherNet/IP
- EtherCAT®

Fieldbus connection from the remote I/O system CPX-AP-A

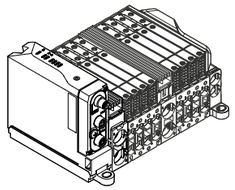


CPX-AP-A is a flexible, central, compact and lightweight remote I/O system with a high degree of protection to IP65/IP67.
A bus node directly mounted on the valve terminal VTUX manages communication with a higher-order PLC.

A compact unit, combining pneumatics, sensors and a bus interface, can be designed using directly linked input and output modules.
The internal signal flow can be realised via serial or parallel communication.

Fieldbus protocols:
- PROFINET
- EtherNet/IP
- EtherCAT®

Fieldbus connection via the left end plate



With the multiprotocol end plates the valve terminal VTUX can be connected directly to a fieldbus. Each of the end plates has an outgoing and an incoming bus interface for its own connection technology, but can be adapted to any of the fieldbus protocols.
The internal signal flow can only be realised via serial communication.

Connection technology:
- M8x1, D-coded
- M12x1, D-coded
- RJ45

Fieldbus protocols:
- CC-Link IE Field Basic
- EtherCAT®
- PROFINET
- EtherNet/IP
- Modbus TCP

Peripherals overview

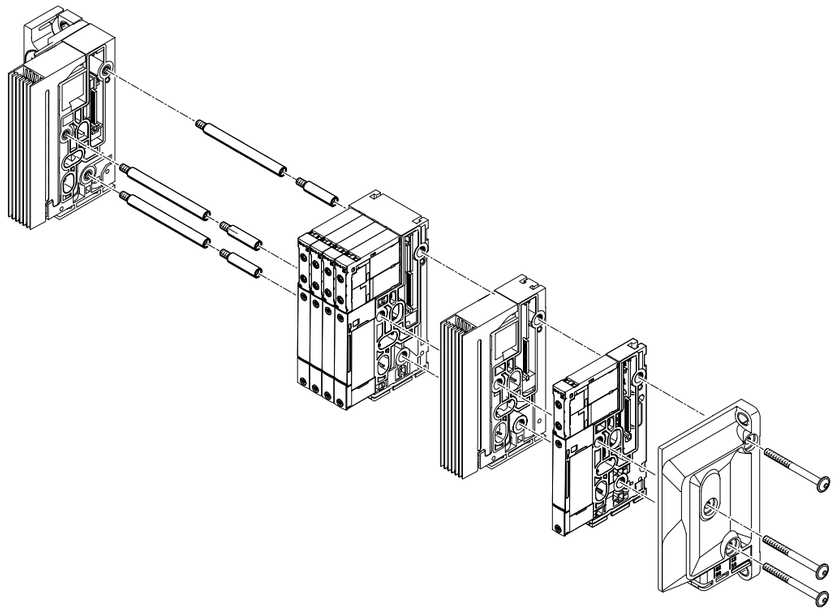
Modular pneumatic components

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.

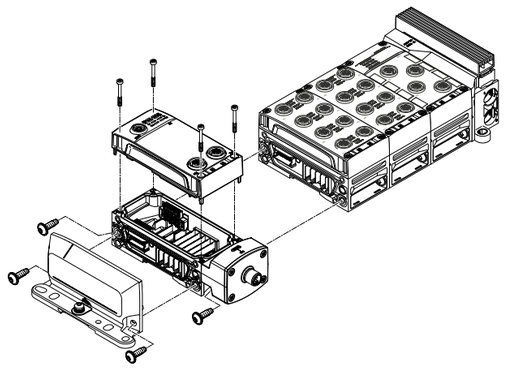
The manifold sub-bases are connected by a tie rod system. This comprises a tie rods and a screw set. The combination of tie rods and screw set is selected according to the chosen number of individual sub-bases.

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.

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.

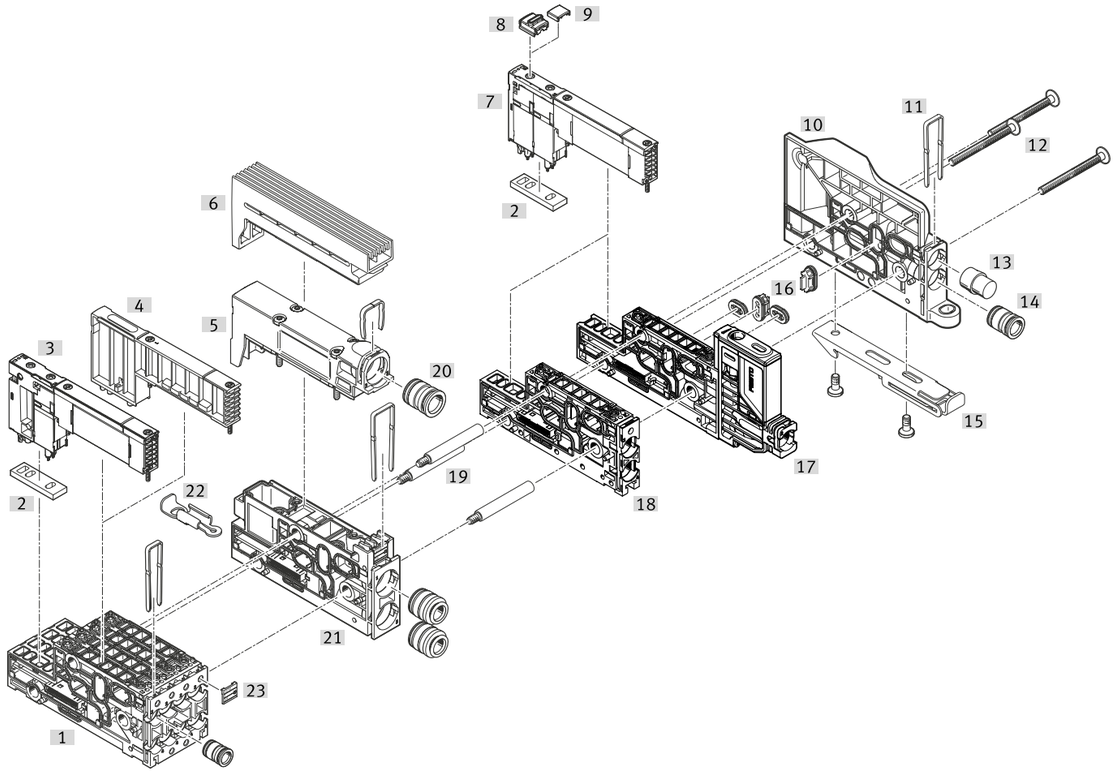
The I/O modules, connection blocks and bus nodes of the remote I/O system CPX-AP-A are mounted on the interlinking blocks using 4 screws and can be swapped or modified in almost any way.

Peripherals overview

Pneumatic components 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 wiht 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	98
[2]	Seal	–	–
[3]	Solenoid valve	Valve size 10 mm	97
[4]	Vacant position	Cover plate for one valve position	97
[5]	Plate	Exhaust plate for ducted exhaust air	100
[6]	Plate	Exhaust plate as flat plate silencer	100
[7]	Solenoid valve	Valve size 10 mm	97
[8]	Cover cap for manual override	Conversion from non-detenting to detenting	104
[9]	Cover cap for manual override	Conversion from non-detenting to concealed	104
[10]	Right end plate	End plate with ports 12/14, 82/84	101
[11]	Clamping clip for cartridge	–	–
[12]	Screw	Tie rod system, connects the manifold sub-bases	100
[13]	Silencer	With cartridge connection	104
[14]	Cartridge	For air supply and exhaust ports	104
[15]	Mounting	Clamp mounting for DIN rail mounting	100
[16]	Separator	Separator for pressure zone separation in duct 1 and duct 3, 5	100
[17]	Manifold sub-base	Manifold sub-base with one valve position for vacuum	98
[18]	Manifold sub-base	Manifold sub-base with one valve position	98
[19]	Tie rods	Threaded rod, clamps the manifold sub-bases between the end plates	100
[20]	Cartridge	For air supply and exhaust ports	104
[21]	Supply module	For compressed air supply/exhaust air	98
[22]	Mounting	Mounting bracket for wall mounting	100
[23]	Inscription label	For identifying the pressure zone separation	104

Peripherals overview

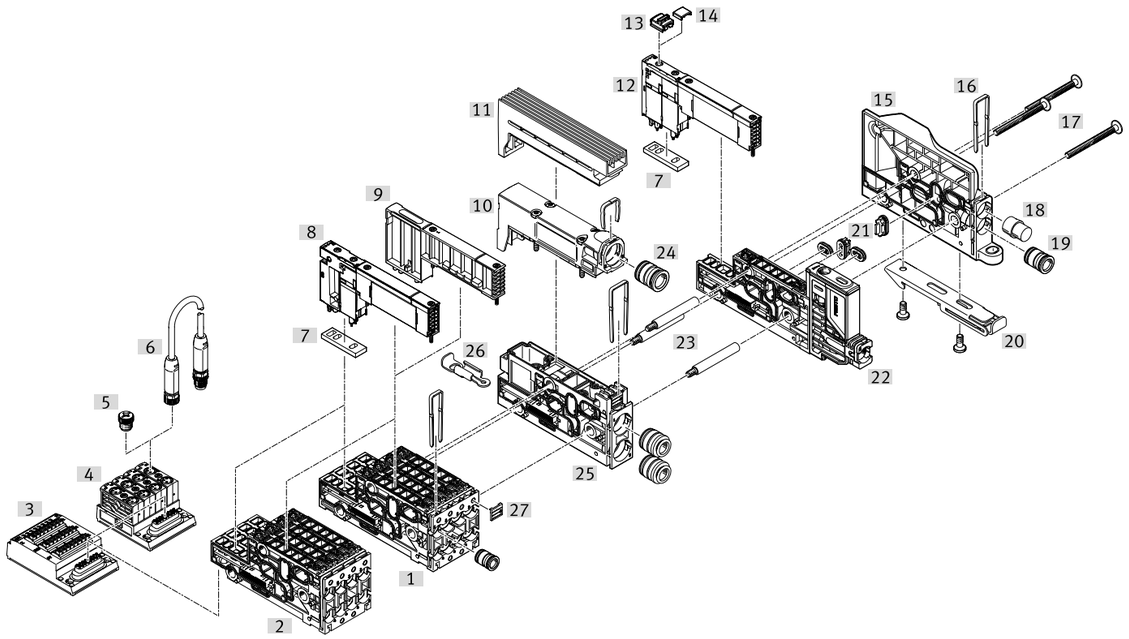
Pneumatic components of the valve terminal with serial communication

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 wiht 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	98
[2]	Manifold sub-base	Manifold sub-base with four valve positions with connection for input module	98
[3]	Input module	Electrical connection: spring-loaded terminal	102
[4]	Input module	Electrical connection socket M8	102
[5]	Cover cap	For electrical connections M8x1	104
[6]	Connecting cable	–	103
[7]	Seal	–	–
[8]	Solenoid valve	Valve size 10 mm	97
[9]	Vacant position	Cover plate for one valve position	97
[10]	Plate	Exhaust plate for ducted exhaust air	100
[11]	Plate	Exhaust plate as flat plate silencer	100
[12]	Solenoid valve	Valve size 10 mm	97
[13]	Cover cap for manual override	Conversion from non-detenting to detenting	104
[14]	Cover cap for manual override	Conversion from non-detenting to concealed	104
[15]	Right end plate	End plate with ports 12/14, 82/84	101
[16]	Clamping clip for cartridge	–	–
[17]	Screw	Tie rod system, connects the manifold sub-bases	100
[18]	Silencer	With cartridge connection	104
[19]	Cartridge	For air supply and exhaust ports	104
[20]	Mounting	Clamp mounting for DIN rail mounting	100
[21]	Separator	Separator for pressure zone separation in duct 1 and duct 3, 5	100
[22]	Manifold sub-base	Manifold sub-base with one valve position for vacuum	98
[23]	Tie rods	Threaded rod, clamps the manifold sub-bases between the end plates	100
[24]	Cartridge	For air supply and exhaust ports	104
[25]	Supply module	For compressed air supply/exhaust air	98
[26]	Mounting	Mounting bracket for wall mounting	100
[27]	Inscription label	For identifying the pressure zone separation	104

Peripherals overview

Valve terminal with multi-pin plug connection:

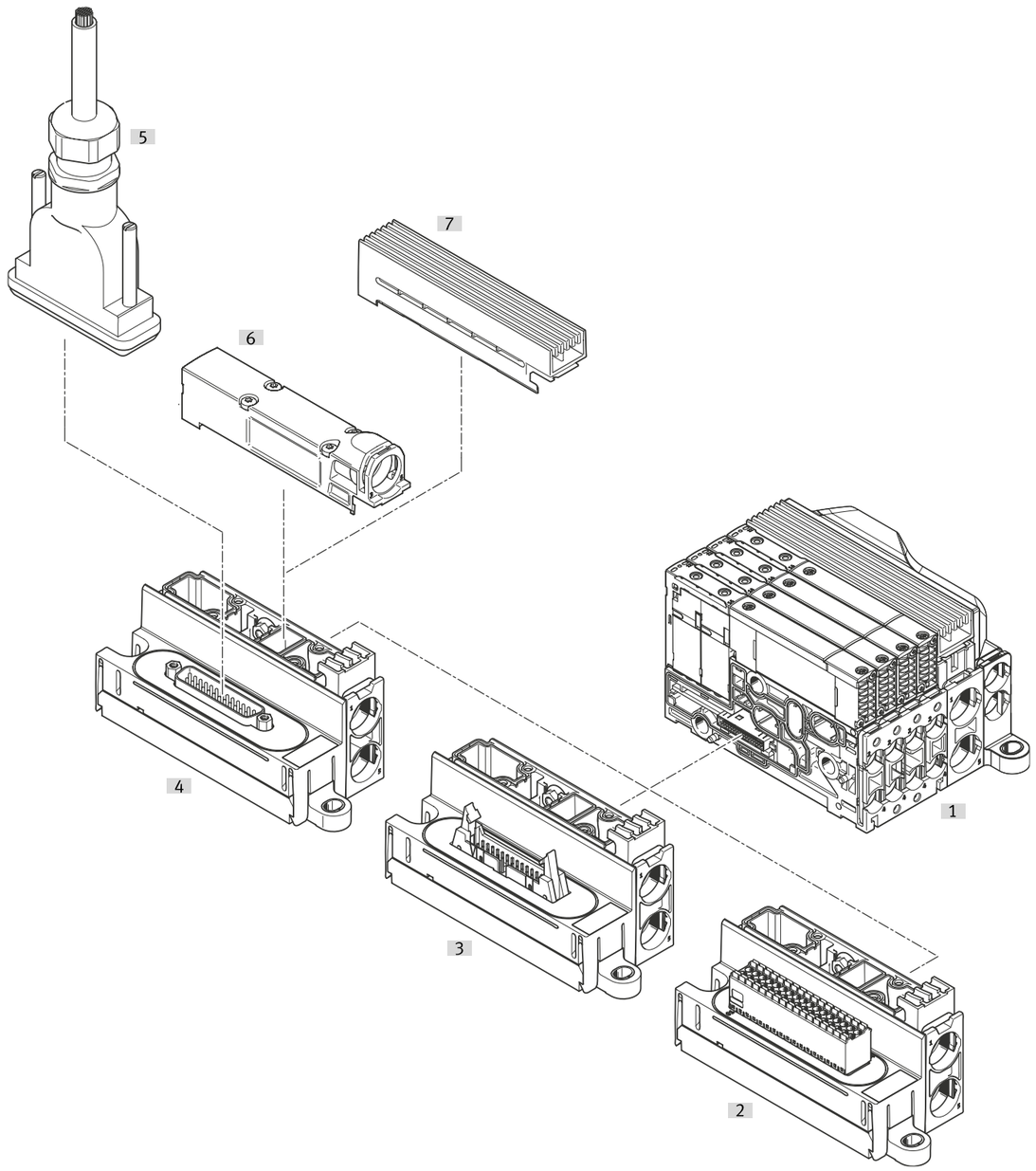
Order code:
- VTUX-A-P-M... for pneumatic components with parallel communication

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 with IP40 and the ribbon cable connection with IP20.

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	101
[3]	Multi-pin plug connection	For ribbon cable, 26-pin, IP20	101
[4]	Multi-pin plug connection	Sub-D, 25-pin	101
[5]	Connecting cable	Socket 25-pin, Sub-D, open cable end 25-pin	103
[6]	Plate	Exhaust plate for ducted exhaust air	100
[7]	Plate	Exhaust plate as flat plate silencer	100

Peripherals overview

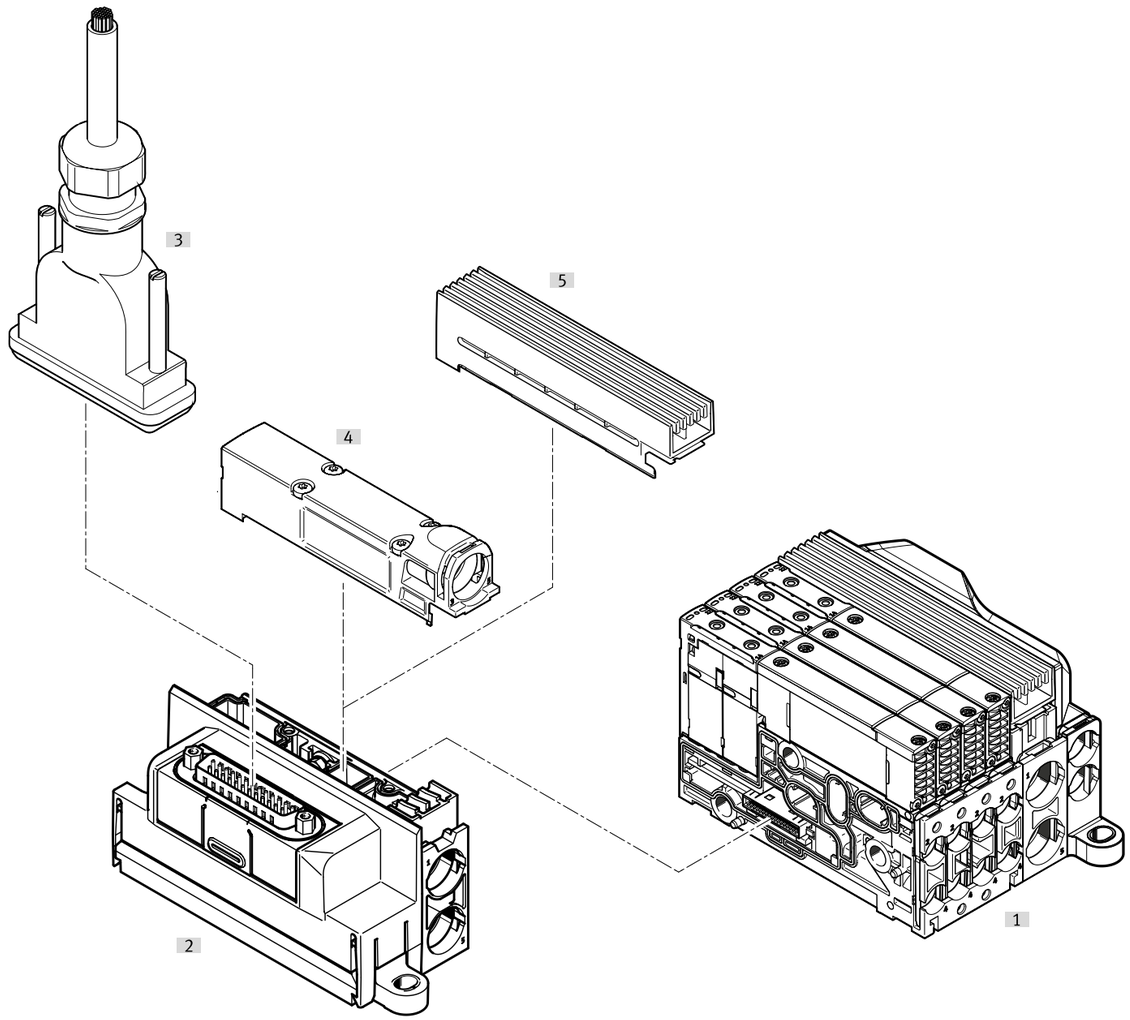
Valve terminal with multi-pin plug connection:

Order code:
- VTUX-A-P-M... for pneumatic components 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 connection (25-pin). The rotatable Sub-D multi-pin connection is available in degree of protection IP40.

Pre-assembled cables of different lengths are available as accessories for the rotatable Sub-D multi-pin connection.



Peripherals overview

Designation		Brief description	➔ Page/Internet
[1]	Valve terminal VTUX	Pneumatic part	8
[2]	Multi-pin plug connection	Sub-D, 25-pin, rotatable	101
[3]	Connecting cable	Socket 25-pin, Sub-D, open cable end 25-pin	103
[4]	Plate	Exhaust plate for ducted exhaust air	100
[5]	Plate	Exhaust plate as flat plate silencer	100

Peripherals overview

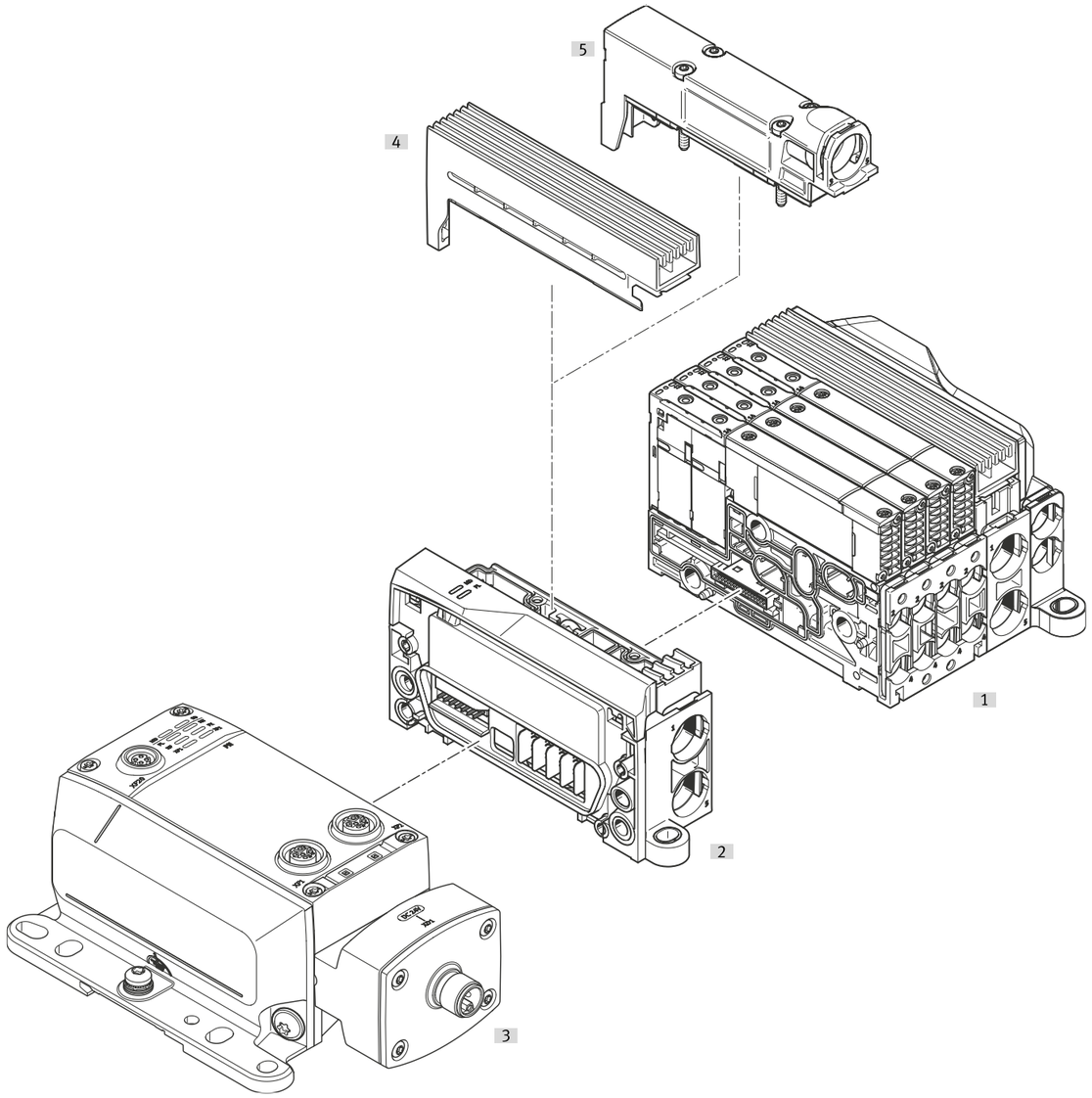
Valve terminal with fieldbus connection, remote I/O system CPX-AP-A

Order code:
- VTUX-A-P-APA-... for pneumatic components with parallel communication
- VTUX-A-S-APA-... for pneumatic components 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]	Left end plate	Pneumatic interface for remote I/O system CPX-AP-A	101
[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	100
[5]	Plate	Exhaust plate for ducted exhaust air	100

Peripherals overview

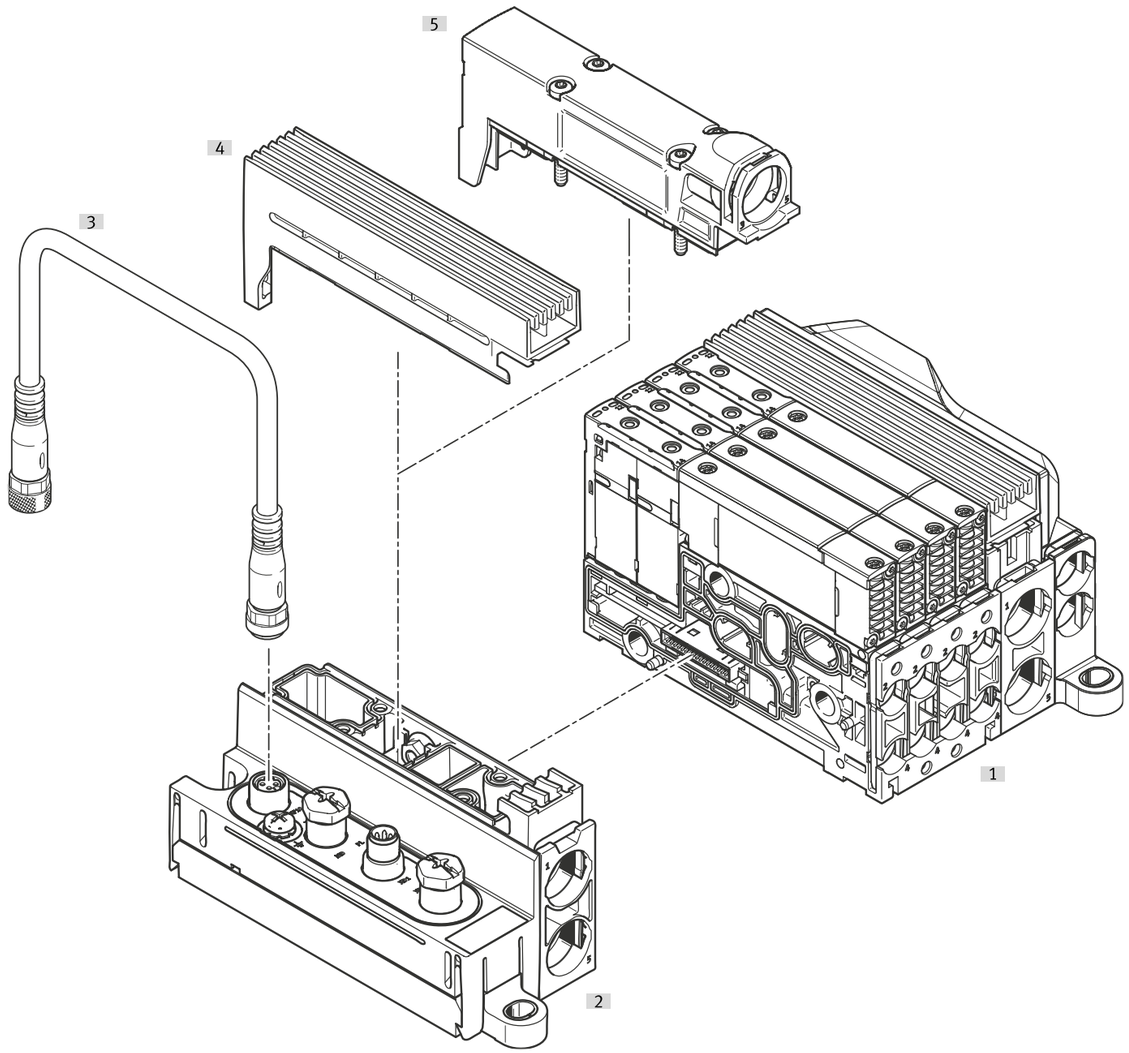
Valve terminal with interface to the remote I/O system CPX-AP-I

Order code:
- VTUX-A-P-API... Pneumatic components with parallel communication
- VTUX-A-S-API-... for pneumatic components 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]	Left end plate	End plate with interface to the remote I/O system CPX-AP-I and with interface for power supply	101
[3]	Connecting cable	Between two CPX-AP-I modules	cpx-ap-i
[4]	Plate	Exhaust plate as flat plate silencer	100
[5]	Plate	Exhaust plate for ducted exhaust air	100

Peripherals overview

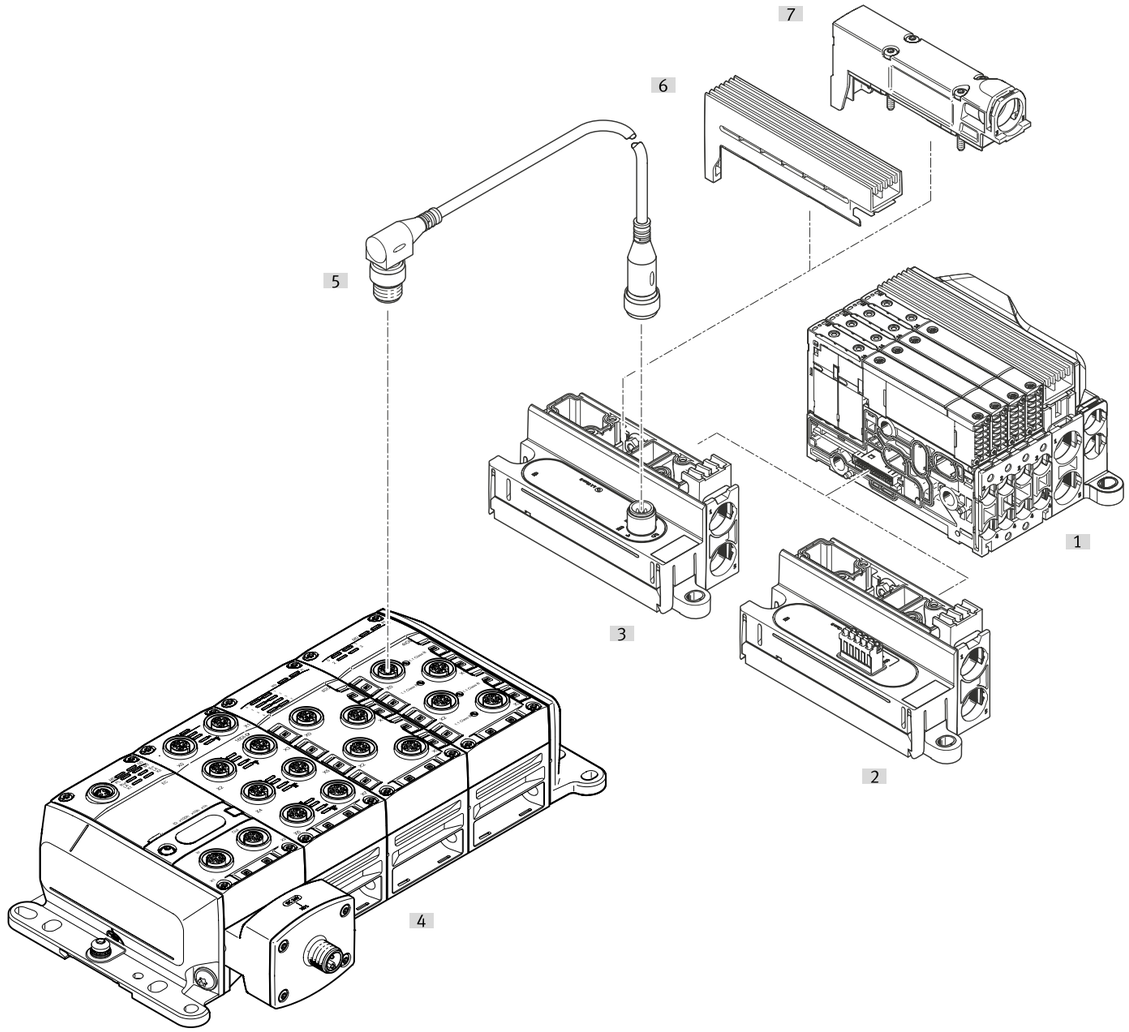
Valve terminal with IO-Link® interface (and bus node)

Order code:
- VTUX-A-P-IO... for pneumatic components 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.



Peripherals overview

Designation		Brief description	➔ Page/Internet
[1]	Valve terminal VTUX	Pneumatic part	8
[2]	Left end plate	End plate with IO-Link® interface, push-in electrical connection	101
[3]	Left end plate	End plate with IO-Link® interface, electrical connection M12	101
[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	100
[7]	Plate	Exhaust plate for ducted exhaust air	100

Peripherals overview

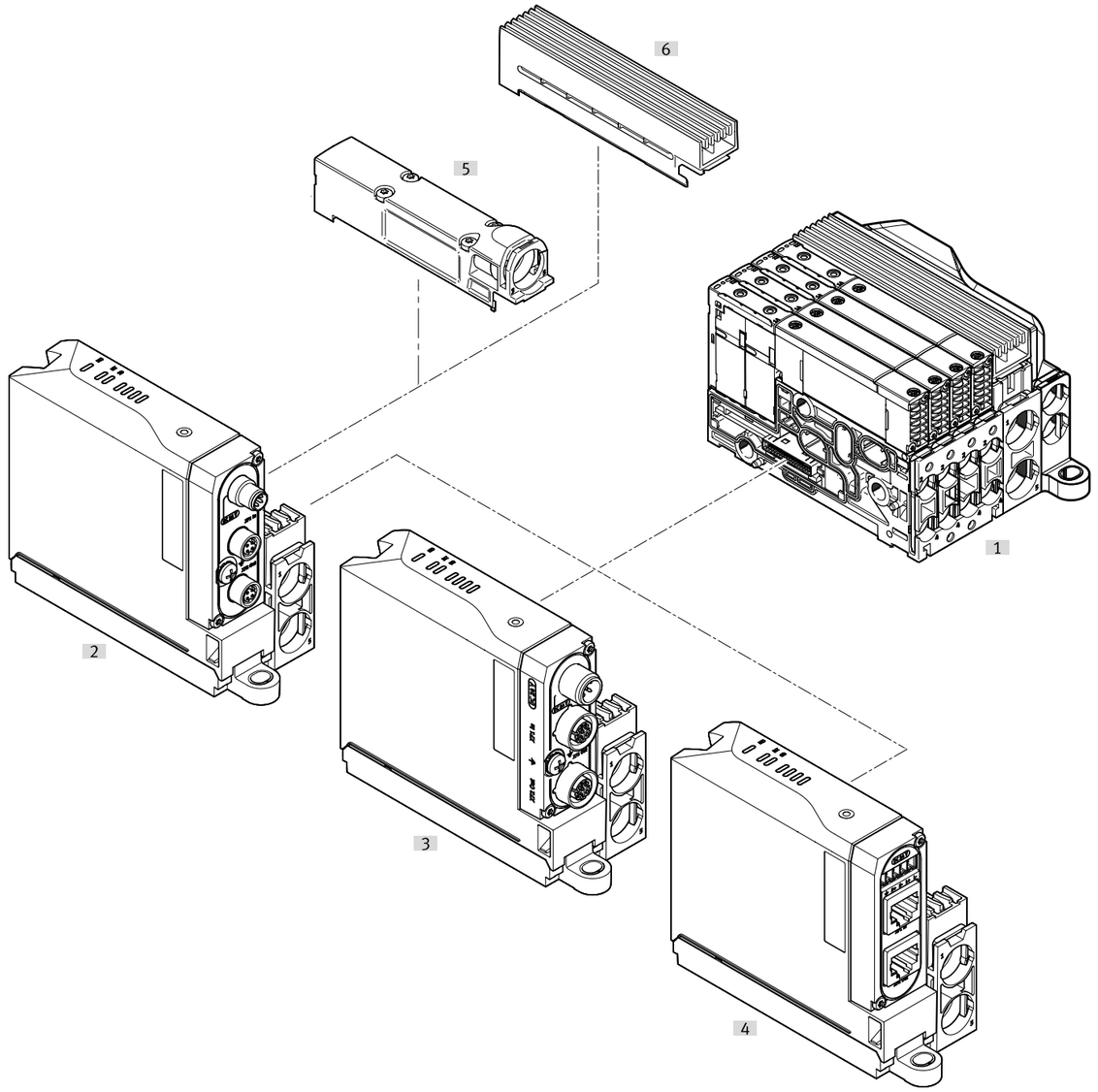
Valve terminal with IO-Link® interface (and bus node)

Order code:
- VTUX-A-P-IO... for pneumatic components 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.

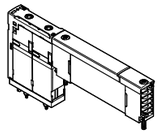


Peripherals overview

Designation		Brief description	➔ Page/Internet
[1]	Valve terminal VTUX	Pneumatic part	8
[2]	Left end plate	Multiprotocol end plate with connection technology M8x1, D-coded	101
[3]	Left end plate	Multiprotocol end plate with connection technology M12x1, D-coded	101
[4]	Left end plate	Multiprotocol end plate with connection technology RJ45	101
[5]	Plate	Exhaust plate for ducted exhaust air	100
[6]	Plate	Exhaust plate as flat plate silencer	100

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

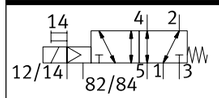
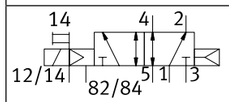
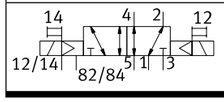
Cover plates can be replaced by valves at a later date.

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

Note

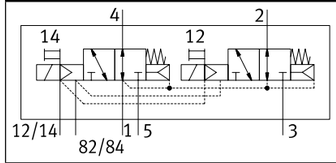
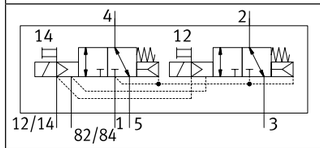
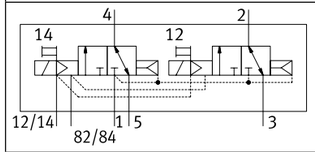
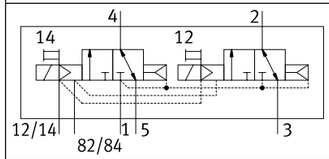
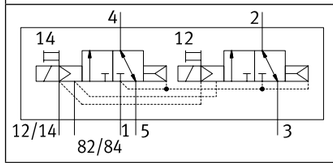
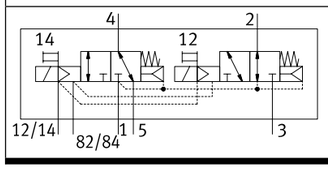
A filter must be installed upstream of valves operated in vacuum mode. This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup).

5/2-way valve

Circuit symbol	Code	Assigned addresses	Description
	Position function: A	1	• Single solenoid • mechanical spring return • Reversible • Operating pressure –0.09 ... +0.7 MPa
	Position function: M	1	• Single solenoid • pneumatic spring return • Operating pressure +0.2 ... +0.7 MPa
	Position function: J	2	• Double solenoid • Limited reversibility • Operating pressure –0.09 ... +0.7 MPa

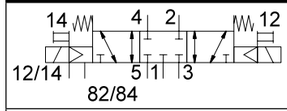
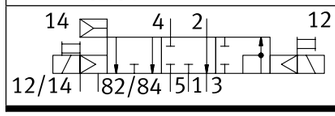
Key features – Pneumatic components

2x 3/2-way valve

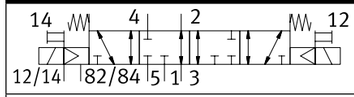
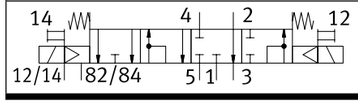
Circuit symbol	Code	Assigned addresses	Description
	Position function: NS	2	• Single solenoid • normally open • mechanical spring return • Reversible • Operating pressure 0 ... 0.7 MPa
	Position function: K	2	• Single solenoid • Normally closed • Mechanical spring return • Reversible • Operating pressure 0 ... 0.7 MPa
	Position function: –	2	• Single solenoid • Normally closed • Mechanical spring return • Reversible • Operating pressure 0 ... 0.7 MPa
	Position function: KC	2	• Single solenoid • Normally closed • pneumatic spring return • Operating pressure 0.15 ... 0.7 MPa
	Position function: KV	2	• Single solenoid • Normally closed • pneumatic spring return • For manifold sub-base for vacuum
	Position function: NG	2	• Single solenoid • 1x normally open, 1x normally closed, • mechanical spring return

Key features – Pneumatic components

5/3-way valve

Circuit symbol	Code	Assigned addresses	Description
	Position function: G	2	• Mid-position closed • mechanical spring return • Reversible • Operating pressure –0.09 ... +0.7 MPa
	Position function: NL	2	• With holding function, for vacuum switching unit • mechanical spring return • Not reversible • Operating pressure 0.2 ... +0.7 MPa

5/4-way valve

Circuit symbol	Code	Assigned addresses	Description
	Position function: ND	2	• Exhausted • mechanical spring return • Reversible • Operating pressure –0.09 ... +0.7 MPa
	Position function: NQ	2	• For vacuum generator • mechanical spring return • Not reversible • Operating pressure –0.09 ... +0.7 MPa

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

Description

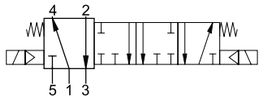
The 5/4-way valve (position function code: ND) allows the supply air to be switched off during movement, thus saving energy and improving cycle times. The cylinder end position is still reliably reached by using the expansion energy. The cylinder chambers can be individually pressurised and blocked.

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).

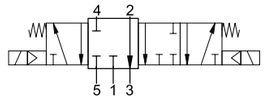
The PLC module can be integrated into the existing control logic; it determines the required pressurisation time and detects when the end position has been reached via limit switches.

Appropriate application notes with further information are also available for the PLC modules.
The application notes can be downloaded from the Support Portal:
➔ Internet: vtux
In the Downloads/Expert Knowledge section.

Cylinder advances

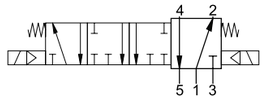


- Solenoid coil is active, pilot control switches
- The cylinder begins its movement with full pressure and maximum force.

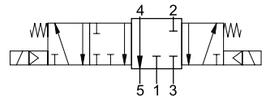


- Solenoid coil is switched off
- The cylinder is moved by the trapped air volume until it reaches its end position
- Pressure drops continuously
- The end position is reached using the minimum required pressure
- Cushioning can be minimised because of the reduced pressure, or is not required at all

Cylinder retracts

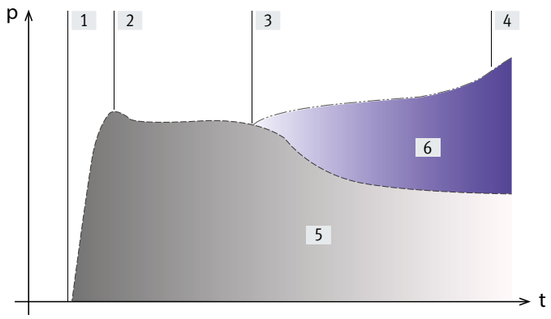


- Solenoid coil is active, pilot control switches
- The cylinder begins its movement with full pressure and maximum force.
- As the pressure in the end position is lower, the movement starts more dynamically and consumes less energy



- Solenoid coil is switched off
- The cylinder is moved by the trapped air volume until it reaches its end position
- Pressure drops continuously
- The end position is reached using the minimum required pressure
- Cushioning can be minimised because of the reduced pressure, or is not required at all

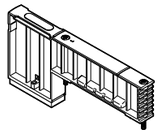
Cylinder advances



[1] The pilot control receives the switching signal
[2] The cylinder starts its movement at full pressure.
[3] The pilot control is switched off; the cylinder movement is now only triggered by the trapped air volume
[4] The end position is reached
[5] Energy use with Smart Switching Lite
[6] Additional energy consumption without Smart Switching Lite (achievable energy savings)

Key features – Pneumatic components

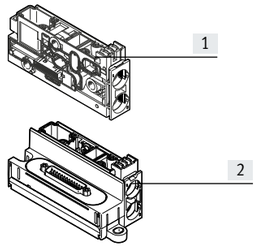
Cover plate



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



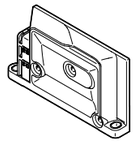
[1] Supply module
[2] Left end plate

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.

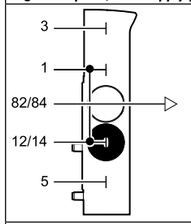
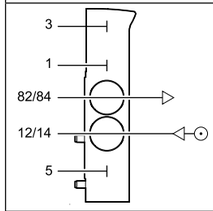
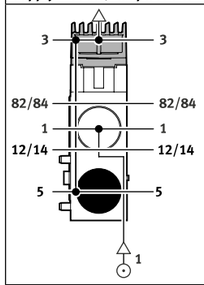
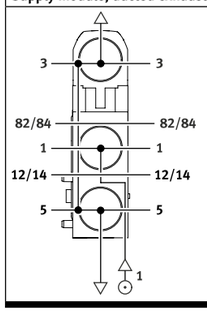
The operating pressure in the right pressure zone must be at least equal to the highest control pressure required for the entire valve terminal. Port 12/14 on the right end plate is sealed using a blanking plug.

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.

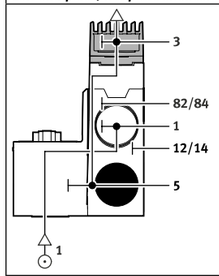
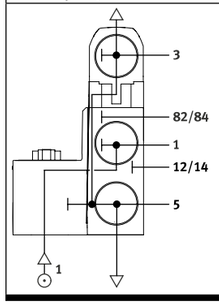
Key features – Pneumatic components

Compressed air supply and pilot air supply

Illustration	Code	Note
Right end plate, with supply ports		
	Pilot air supply, via right end plate: –	Internal pilot air supply • Pilot air is branched internally from port 1 in the right end plate • Port 12/14 in the right end plate is sealed using a blanking plug • Pilot exhaust air 82/84 via right end plate • For operating pressure in the range 0.25 ... 0.7 MPa
	Pilot air supply, via right end plate: Z	External pilot air supply • Pilot air supply (0.25 ... 0.7 MPa) is connected at port 12/14 on the right end plate • Port 1 in the right end plate is sealed using a separator • Pilot exhaust air 82/84 via right end plate • For operating pressure in the range –0.09 ... +0.7 MPa (suitable for vacuum)
Supply module, flat plate silencer		
	Connection position type: U Position function: US	• Exhaust air 3/5 via flat plate silencer • Pilot exhaust air 82/84 via right end plate • For operating pressure in the range –0.09 ... +0.7 MPa (suitable for vacuum)
Supply module, ducted exhaust air		
	Connection position type: U Position function: UD	• Exhaust air 3/5 via supply module • Pilot exhaust air 82/84 via right end plate • For operating pressure in the range –0.09 ... +0.7 MPa (suitable for vacuum)

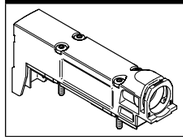
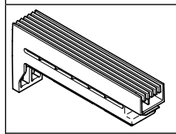
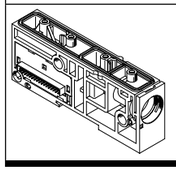
Key features – Pneumatic components

Compressed air supply and pilot air supply

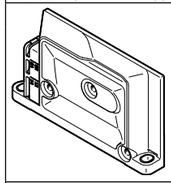
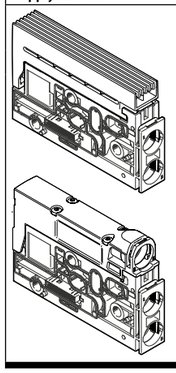
Illustration	Code	Note
Left end plate, flat plate silencer		
	–	• Exhaust air 3/5 via flat plate silencer • Pilot exhaust air 82/84 via right end plate • For operating pressure in the range –0.09 ... +0.7 MPa (suitable for vacuum)
Left end plate, ducted exhaust air		
	–	• Exhaust air 3/5 via supply module • Pilot exhaust air 82/84 via right end plate • For operating pressure in the range –0.09 ... +0.7 MPa (suitable for vacuum)

Key features – Pneumatic components

Supply module

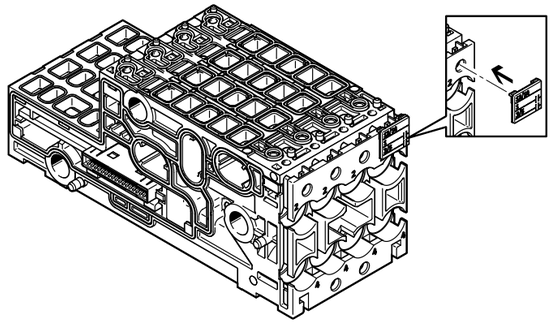
	Code	Type	Designation	Note
	Position function: UD	VABF-XA-12-M2	Exhaust plate for ducted exhaust air	Additional power supply modules can be used for larger terminals or to create pressure zones. Supply modules can be configured at any point upstream or downstream from the manifold sub-bases or also next to one another. Supply modules contain the following ports: • Compressed air supply (duct 1) • Exhaust air (duct 3/5) 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 hook and can be removed without the need for tools.
	Position function: US	VABF-XA-12-M1	Flat plate silencer	
	Connection position type: U	VABX-A-P-BU	Supply module without cartridge	

Supply and exhaust ports

	Code	Connection			Push-in fitting/cartridge
Right end plate with supply ports 12/14, 82/84					
		12/14	Pilot air supply	Cartridge	Cartridge, straight
		82/84	Pilot exhaust air	Cartridge	
Supply module					
	Connection position type: 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

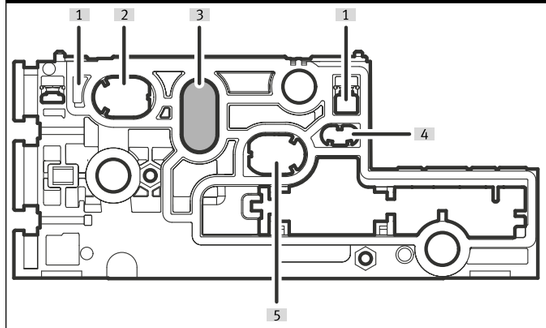
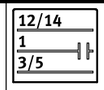
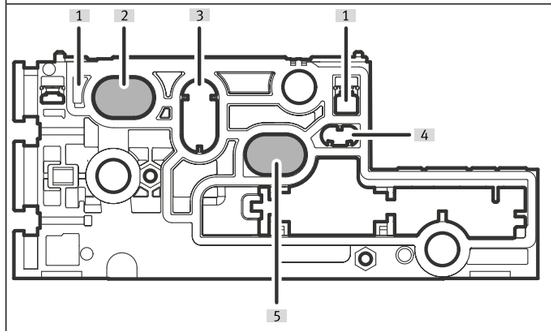
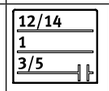
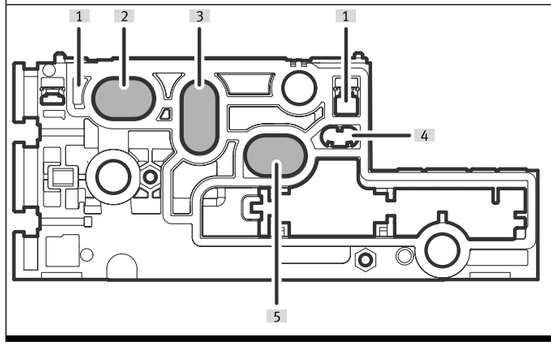
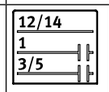


VTUX offers a number of options for creating pressure zones if different working pressures are required.
A pressure zone is created by separating the internal supply duct between any two manifold sub-bases. Every pressure zone must have its own compressed air supply.
Compressed air can be supplied and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

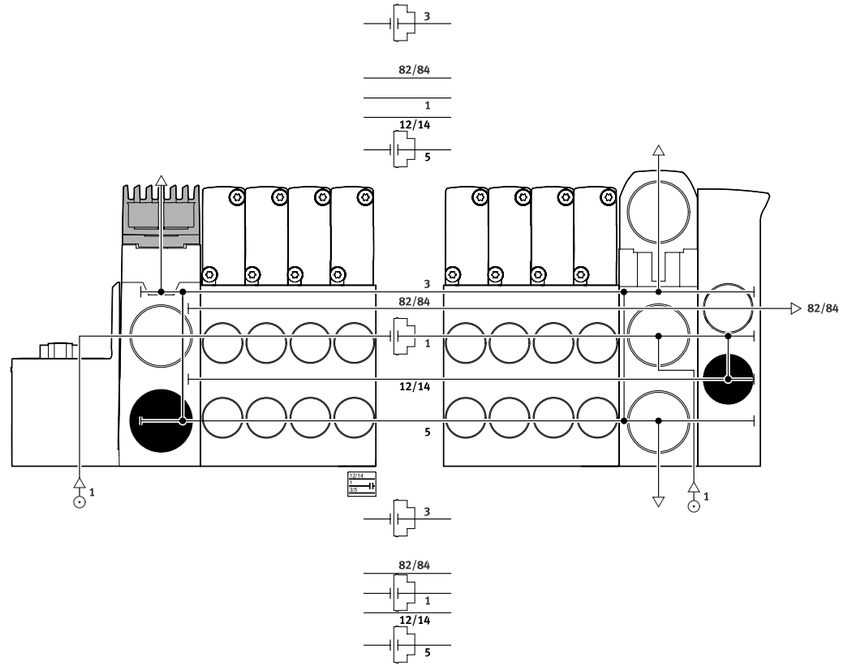
Manifold sub-bases with separator for pressure zone separation Illustrated examples	Coding	Code	Note
		Duct separation 1 - 64: TT	[1] Duct 82/84 [2] Duct 3 [3] Duct 1, separated [4] Duct 12/14 [5] Duct 5
		Duct separation 1 - 64: TR	[1] Duct 82/84 [2] Duct 3, separated [3] Duct 1 [4] Duct 12/14 [5] Duct 5, separated
		Duct separation 1 - 64: TS	[1] Duct 82/84 [2] Duct 3, separated [3] Duct 1, separated [4] Duct 12/14 [5] Duct 5, separated

Key features – Pneumatic components

Examples: Compressed air supply and pilot air supply

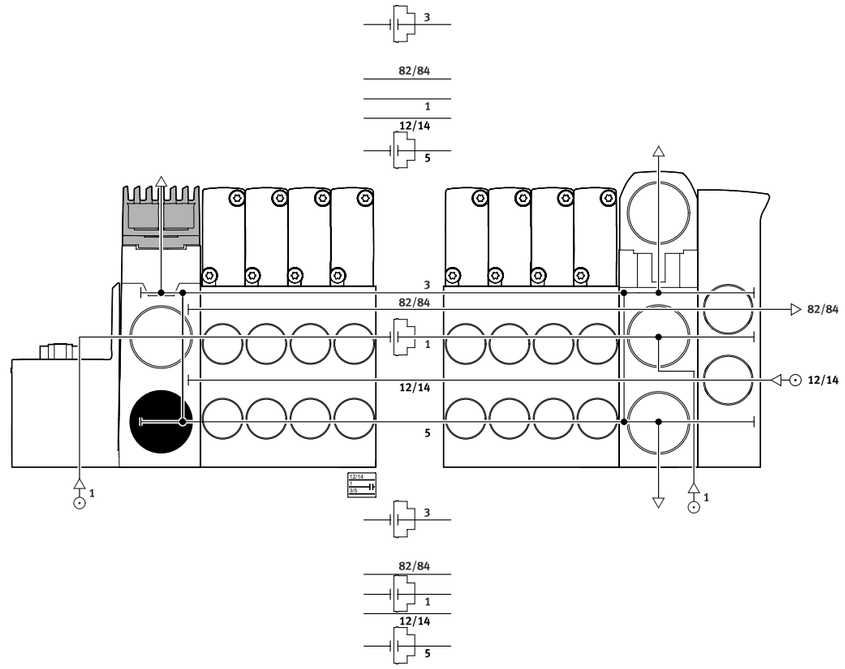
Internal pilot air supply

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.



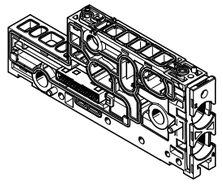
External pilot air supply

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

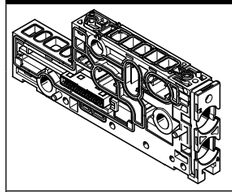
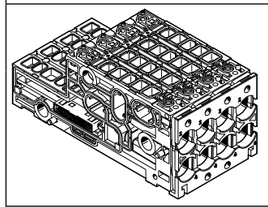
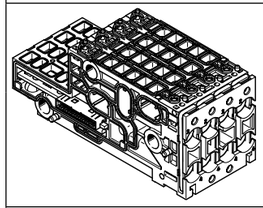
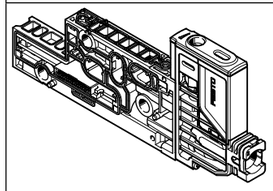


VTUX is based on a modular system which consists of manifold sub-bases and valves. The manifold sub-bases are joined together using tie rods and thus form the support system for the valves.
They contain the ducts for supplying compressed air to and exhausting from the valve terminal as well as the working 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	Note
	–	VABX-A-P-BV-AH-F VABX-A-P-BV-AH-A	• One valve position • Without cartridge • Width 10.55 mm
		VABX-A-P-BV-BH-G VABX-A-P-BV-BH-B	• One valve position • Without cartridge • Width 12.55 mm
	–	VABX-A-P-BV-AH-RVFFFF VABX-A-P-BV-AH-RVAAAA VABX-A-S-BV-AH-RVAAAA	• Four valve positions • Without cartridge • Width 42.05 mm
		VABX-A-P-BV-BH-RVGGGG VABX-A-P-BV-BH-RVBBBB VABX-A-S-BV-BH-RVBBBB	• Four valve positions • Without cartridge • Width 50.05 mm
	–	VABX-A-S-BV-AH-RV0XJAAAA	• Four valve positions • Space for input module • Without cartridge • Width 42.05 mm
		VABX-A-S-BV-BH-RV0XJBBBB	• Four valve positions • Space for input module • Without cartridge • Width 50.05 mm
	VB	VABX-AP-VP-BH-VH VABX-A-P-VE-BH-VB07H VABX-A-P-VE-BH-VB07L VABX-A-P-VE-BH-VB010H VABX-A-P-VE-BH-VB010L VABX-AS-VP-BH-VH VABX-A-S-VE-BH-VB07H VABX-A-S-VE-BH-VB07L VABX-A-S-VE-BH-VB010H VABX-A-S-VE-BH-VB010L	• A valve position for a special 2x 3/2-way valve, 5/3-way valve or 5/4-way valve (can only be ordered via the configurator) • With integrated vacuum generator or for switching external vacuum • Without cartridge • Width 12.55 mm

Key features – Mounting

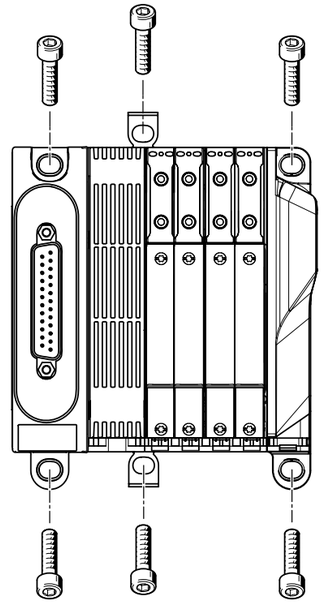
Valve terminal mounting

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.

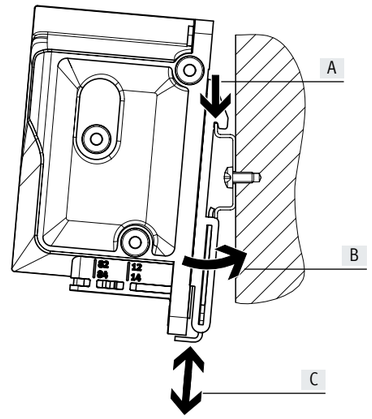
Wall mounting



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).

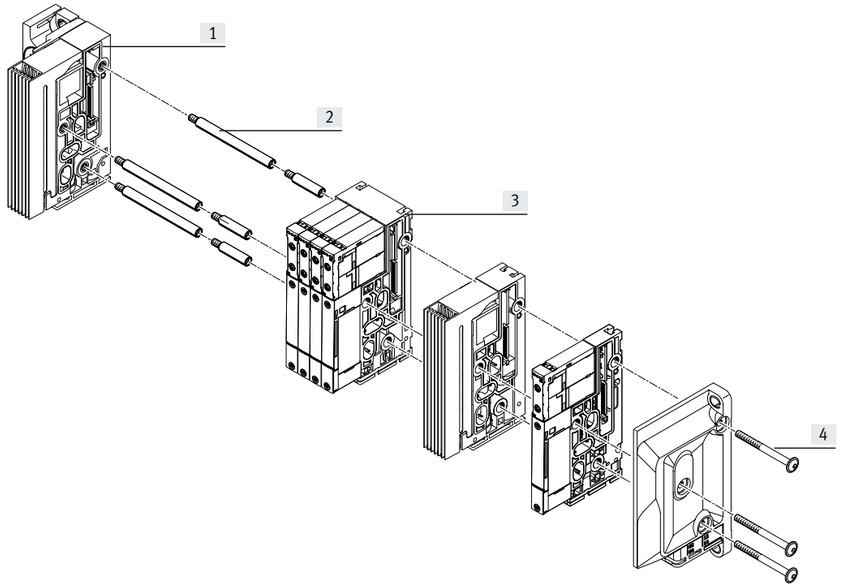
The clamp fastening for DIN rail mounting enables the valve terminal to be mounted on DIN rails in accordance with EN 60715.

Note
The clamp fastening 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.			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**		1	**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**		1	**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**		1	**8191748**
652.00 ... 655.10		2	**8191767**		1	**8191765**		1	**8191762**		1	**8191757**		1	**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**		1	**8191748**

Key features – Display and operation

Indicators 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.

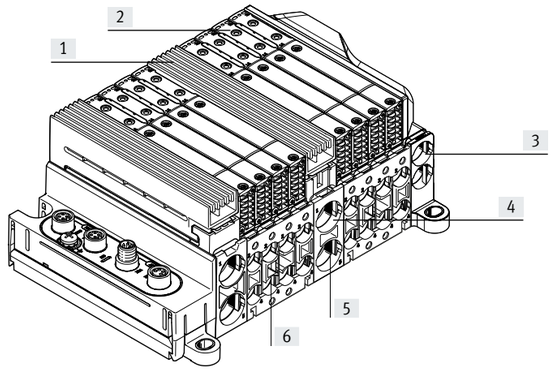
Manual override

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/detenting)
[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

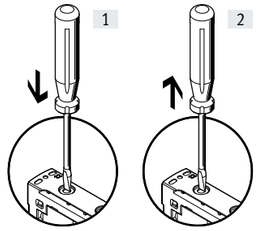
Note

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

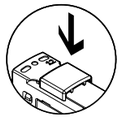
Manual override with automatic return (non-detenting)



[1] Press in the plunger of the manual override with a pointed object or screwdriver.
The pilot valve switches and actuates the main valve.

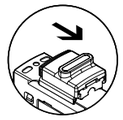
[2] Remove the pointed object or screwdriver.
The spring force pushes the plunger of the manual override back.
The pilot valve returns to the normal position as does the single solenoid main valve (this is not the case with a double solenoid valve).

Cover cap for manual override, mounting

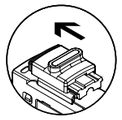


Clip the covering onto the pilot valve.

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.

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

Advantages:
- 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

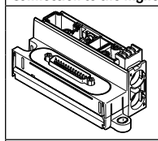
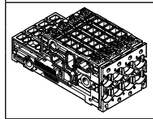
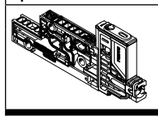
Serial communication significantly expands the internal communication.
This is the infrastructure for highly integrated technology modules and enables bidirectional exchange of data and information between the valve and the PLC.
Significantly more valve coils can be controlled and extensive diagnostic functions are possible.

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

Advantages:
- 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

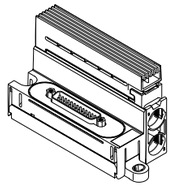
Limitations:
- Manifold sub-bases for four valves available only
- No multi-pin plug connection available
- No IO-Link® connection available

Performance of parallel and serial communication

	Feature	Parallel communication	Serial communication
Connection to the higher-level control system			
	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®	■	–
	Direct fieldbus connection via multiprotocol end plates	–	■
Internal structure			
	Manifold sub-bases with one valve position	■	–
	Manifold sub-bases with four valve positions	■	■
	Pressure zone separation	■	■
	Max. number of valve positions	32	64
Special functions			
	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

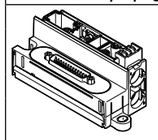
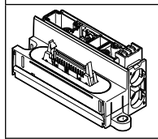
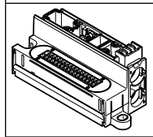
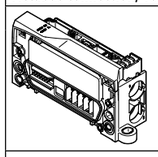
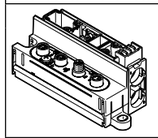
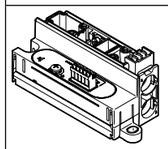
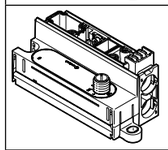
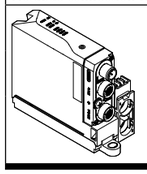
The addresses are numbered from left to right in ascending order. The following applies for individual valve positions: address x for coil 14 and address x+1 for coil 12.

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	Note
Electrical multi-pin plug connection						
	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
Fieldbus connection/ remote I/O system CPX-AP-A						
	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	
Interface to the remote I/O system CPX-AP-I						
	Electrical connection: API	VABX-A-P-EL-E12-API	Parallel	32	IP65	Electrical connection • 2x socket, M8x1, D-coded, 4-pin, AP-COM • M8x1, A-coded, 4-pin for power supply
		VABX-A-S-EL-E12-API	Serial	–	IP65	
IO-Link® interface						
	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®
Fieldbus connection via multiprotocol end plate						
	Electrical connection: CTED	VABX-AS-EL-E12-CTED-MPM8-SHUH-XL	Serial	128	IP65	Electrical connection: M8x1, D-coded
		VABX-AS-EL-E12-CTED-MPM12-SHUH-XL				Electrical connection: M12x1, D-coded
		VABX-AS-EL-E12-CTED-MPRJ45-SHUH-XL			IP20	Electrical connection: RJ45

Key features – Electrical components

Fieldbus connection/ 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/m3 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/m3 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

Width of the valves
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. number 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
		2x3/2-way, single solenoid, open/closed	2x3/2-way, single solenoid, open/closed
		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
		5/3-way valve with holding function, for vacuum switching unit	5/3-way valve with holding function, for vacuum switching unit
		5/4-way, closed, 2 or 4 exhausted	5/4-way, closed, 2 or 4 exhausted
		5/4-way valve with holding function, for vacuum generator	5/4-way valve with holding function, for vacuum generator
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 ports							
Pneumatic port	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

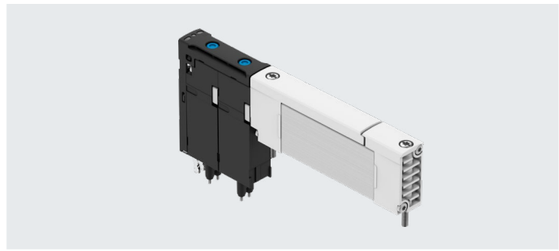
Operating and environmental conditions			
		Parallel communication	Serial communication
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] a 44	
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4] a 44	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated 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 pressure1)	[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[2]		1	
CE marking (see declaration of conformity)		To EU EMC Directive[3]	
		To EU RoHS Directive[3]	
UKCA marking (see declaration of conformity)		To UK EMC regulations[3]	
		To UK RoHS regulations[3]	
KC marking		KC EMC	
Certification		RCM Mark	
		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 connection from the remote I/O system CPX-AP-A	IP40, IP65	IP20, IP40, IP65

1) See pilot pressure graphs on page 50.
2) More information www.festo.com/x/topic/crc
3) For information about the area of use, see the EC declaration of conformity at: 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]	0.345
Width	[mm]	10.35

Pneumatic ports		
Pneumatic port	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 values		24 V DC: 0.35 W
Permissible voltage fluctuations	[%]	±10
Duty cycle	[%]	100

Datasheet – Valves of size 10 mm

Technical data – 3/2-way valves					
Code for position function 1-64		NS	K, –	KC, KV	NG
Valve function		2x3/2-way, single solenoid, open	2x3/2-way, single solenoid, closed		2x3/2-way, single solenoid, open/closed
Reset method		Mechanical spring	Mechanical spring	Pneumatic spring	Mechanical spring
Overlap		Negative overlap			
Flow direction		Reversible	Reversible	Not reversible	Reversible
Suitable for vacuum		No	No	No	No
Nominal width	[mm]	3.6	3.8	3.8	3.6
Switching time on	[ms]	14	14	12	14
Switching time off	[ms]	17	17	22	17
Switching time changeover	[ms]	–	–	–	–
Switching time changeover when exhausting via duct 2 or 4	[ms]	–	–	–	–
Switching time changeover when pressurising in duct 2 or 4	[ms]	–	–	–	–
Maximum switching frequency	[Hz]	3	3	5	3
Nominal flow rate standardised according to ISO 8778	[l/min]	555	600	600	555
Nominal flow rate standardised to ISO 8778; exhaust 2➔3	[l/min]	545	650	650	545
b value		0.41	0.34	0.34	0.34
C value	[l/sbar]	2.02	2.3	2.3	2.02
Operating pressure	[MPa]	0.0 ... 0.7	0.0 ... 0.7	0.15 ... 0.7	0.0 ... 0.7
	[bar]	0 ... 7	0 ... 7	1.5 ... 7	0 ... 7
Pilot pressure1)	[MPa]	0.2 ... 0.7	0.2 ... 0.7	0.15 ... 0.7	0.2 ... 0.7
	[bar]	2 ... 7	2 ... 7	1.5 ... 7	2 ... 7
Product weight	[g]	52.6	52.6	52	52.6

1) See pilot pressure graphs on page 50.

Technical data – 5/2-way valves				
Code for position function 1-64		A	M	J
Valve function		5/2-way, single solenoid		5/2-way, double solenoid
Reset method		Mechanical spring	Pneumatic spring	–
Overlap		Negative overlap		
Flow direction		Reversible	Not reversible	Reversible with restrictions
Suitable for vacuum		Yes	No	Yes
Nominal width	[mm]	4.2	4.2	4.2
Switching time on	[ms]	8	10	–
Switching time off	[ms]	32	18	–
Switching time changeover	[ms]	–	–	9
Switching time changeover when exhausting via duct 2 or 4	[ms]	–	–	–
Switching time changeover when pressurising in duct 2 or 4	[ms]	–	–	–
Maximum switching frequency	[Hz]	3	5	5
Nominal flow rate standardised according to ISO 8778	[l/min]	690	690	690
Nominal flow rate standardised to ISO 8778; exhaust 2➔3	[l/min]	700	700	700
b value		0.36	0.36	0.36
C value	[l/sbar]	2.76	2.76	2.76
Operating pressure	[MPa]	–0.09 ... +0.7	0.2 ... 0.7	–0.09 ... +0.7
	[bar]	–0.9 ... +7	2 ... 7	–0.9 ... +7
Pilot pressure1)	[MPa]	0.25 ... 0.7	0.2 ... 0.7	0.15 ... 0.7
	[bar]	2.5 ... 7	2 ... 7	1.5 ... 7
Product weight	[g]	43.4	43.3	51.9

1) See pilot pressure graphs on page 50.

Datasheet – Valves of size 10 mm

Technical data – 5/2-way valves					
Code for position function 1-64		G	NL	ND	NQ
Valve function		5/3-way, closed	5/3 with holding function, for vacuum switching unit	5/4-way, exhausted	5/4-way valve with holding function, for vacuum generator
Reset method		Mechanical spring	Mechanical spring	Mechanical spring	Mechanical spring
Overlap		Positive overlap	–	Positive overlap	–
Flow direction		Reversible	Not reversible	Reversible	Not reversible
Suitable for vacuum		Yes	Yes	No	Yes
Nominal width	[mm]	3.5	3	3.4	2.7
Switching time on	[ms]	10	14	17	12
Switching time off	[ms]	48	19	17	40
Switching time changeover	[ms]	–	14	–	12
Switching time changeover when exhausting via duct 2 or 4	[ms]	–	–	7	–
Switching time changeover when pressurising in duct 2 or 4	[ms]	–	–	18	–
Maximum switching frequency	[Hz]	3	3	3	3
Nominal flow rate standardised according to ISO 8778	[l/min]	510	400	500	340
Nominal flow rate standardised to ISO 8778; exhaust 2➔3	[l/min]	465	–	450	–
b value		0.4	0.48	0.39	0.44
C value	[l/sbar]	1.88	1.39	1.86	1.2
Operating pressure	[MPa]	–0.09 ... +0.7	0.2 ... 0.7	0.0 ... 0.7	–0.09 ... +0.7
	[bar]	–0.9 ... +7	2 ... 7	0 ... 7	–0.9 ... +7
Pilot pressure1)	[MPa]	0.25 ... 0.7	0.2 ... 0.7	0.2 ... 0.7	0.25 ... 0.7
	[bar]	2.5 ... 7	2 ... 7	2 ... 7	2.5 ... 7
Product weight	[g]	53.2	54.1	52.2	53.6

1) See pilot pressure graphs on page 50.

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] a 44
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4] a 44
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
		Ester oil < 0.1mg/m³, 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[1)]		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

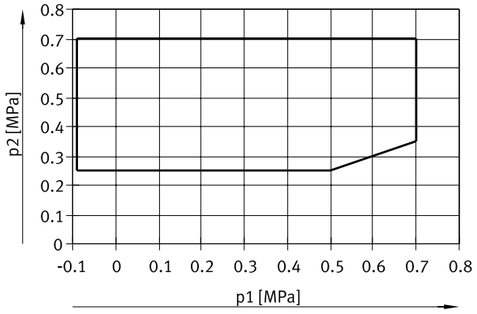
1) More information www.festo.com/x/topic/crc

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

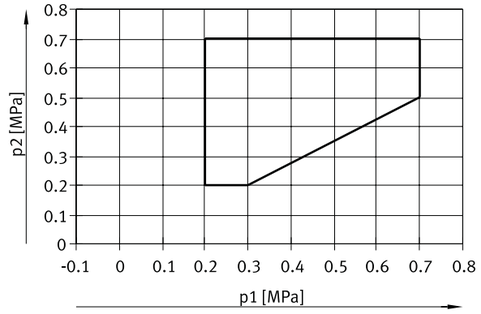
Datasheet – Valves of size 10 mm

Pilot pressure p2 as a function of working pressure p1

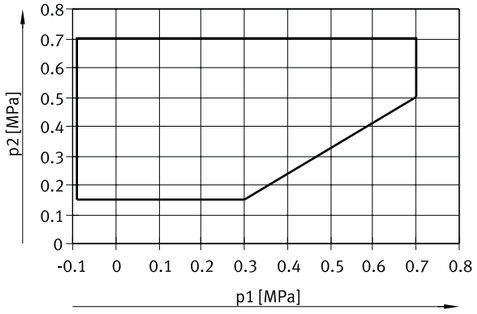
For 5/2-way valve, single solenoid, mechanical spring return



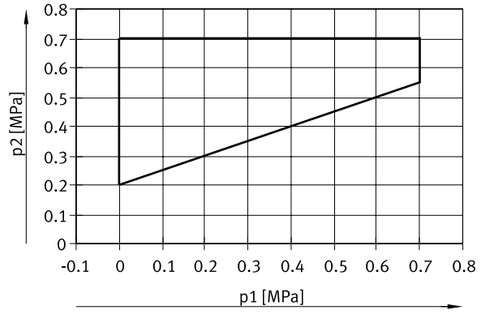
For 5/2-way valve, single solenoid, pneumatic spring return



For 5/2-way valve, double solenoid



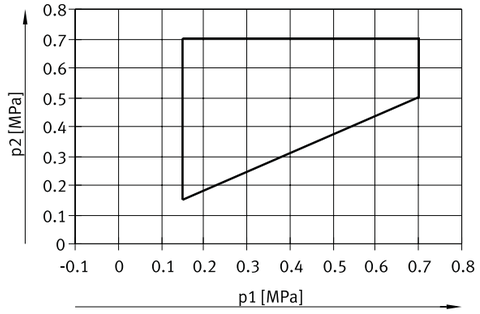
For 2x 3/2-way valve, mechanical spring return



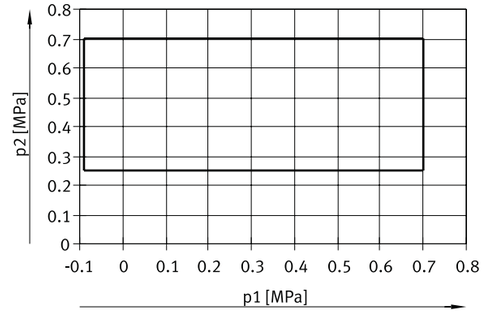
Datasheet – Valves of size 10 mm

Pilot pressure p2 as a function of working pressure p1

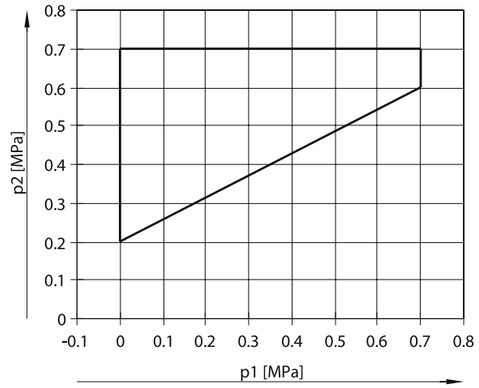
For 2x 3/2-way valve, pneumatic spring return



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

Electrical connection		Push-in	M12
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 ports

Pneumatic port	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	[mm²]	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	
Electrical isolation between the supply voltages for 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	[mm²]	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[1]		2	
CE marking (see declaration of conformity)[2]		To EU EMC Directive	
		To EU RoHS Directive	
UKCA marking (see declaration of conformity)[2]		To UK EMC regulations	
		To UK RoHS regulations	
KC marking		KC EMC	
Certification		RCM Mark	
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

2) For information about the area of use, see the declaration of conformity at: 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 – Left end plate with multiprotocol interface

Multiprotocol interface for controlling the valve terminal VTUX via CC-Link IE Field Basic, EtherCAT®, PROFINET, EtherNet/IP or Modbus TCP.

Valve terminals with multi-protocol interface can be expanded by up to 128 solenoid coils/valve positions. Up to 128 valve positions can be equipped with single solenoid valves.

Multiprotocol interface of the valve terminal VTUX

The multiprotocol interface enables the valve terminal VTUX to be controlled via different communication protocols such as CC-Link IE Field Basic, EtherCAT®, PROFINET, EtherNet/IP or Modbus TCP.

The type of protocol used is set at the interface according to the relevant requirements.

The maximum distance between the higher-level controller and the valve terminal with multiprotocol interface is 50 m.

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

General technical data		
Size		1
		2
Protocol		CC-Link IE Field Basic
		EtherCAT®
		PROFINET
		EtherNet/IP
		Modbus TCP
Electrical control		AP interface
Valve terminal design		Valve sizes can be mixed
Compatible with		Valve terminal VTUX-A-S
Max. number of solenoid coils		128
Diagnostics via LED		Diagnostics per module
Diagnostics via internal communication		Logic supply overvoltage PS
		Logic supply undervoltage PS
Max. cable length	[m]	100

Pneumatic ports		
Pneumatic port	1	For 15 mm cartridge
	5	For 15 mm cartridge

Technical data – Mechanical components				
Communication interface, connection technology		M8x1, D-coded	M12x1, D-coded	RJ45
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]	26 x 104 x 92		
Product weight	[g]	233	240	227

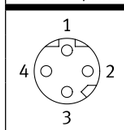
Datasheet – Left end plate with multiprotocol interface

Technical data – Electrical components		
Reverse polarity protection		Yes
Inductive protective circuit		Integrated
Overvoltage category		II
Protection against direct and indirect contact		PELV, SELV
Electrical isolation of outputs between channel - internal communication		Yes
Electrical isolation between the supply voltages for 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
Undervoltage load/valves (diagnostic message)	[V]	≤21.1
Power failure buffering	[ms]	10
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 50
Power consumption at 24 V DC	[W]	1.2
Max. power supply	[A]	2 x 4 (external fuse required)
Pollution degree		2

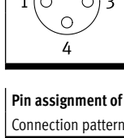
Datasheet – Left end plate with multiprotocol interface

Communication interface			
Communication interface, connection technology	M8x1, D-coded	M12x1, D-coded	RJ45
Protocol	CC-Link IE Field Basic		
	EtherCAT®		
	PROFINET		
	EtherNet/IP		
	Modbus TCP		
Function	System communication XF10 IN / XF20 OUT		
Connection type	2 x socket		
Connection technology	M8x1, D-coded to EN 61076-2-114	M12x1, D-coded to EN 61076-2-101	RJ45
Number of pins/cores	4	4	4
Shielding	Yes		

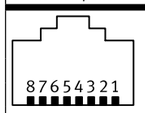
Pin assignment of communication interface – Connection technology M8x1

Connection pattern	Pin	Signal	Designation
	1	TX+	Transmitted data+
	2	RX+	Received data+
	3	TX–	Transmitted data–
	4	RX–	Received data–

Pin assignment of communication interface – Connection technology M12x1

Connection pattern	Pin	Signal	Designation
	1	TX+	Transmitted data+
	2	RX+	Received data+
	3	TX–	Transmitted data–
	4	RX–	Received data–

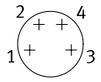
Pin assignment of communication interface – Connection technology RJ45

Connection pattern	Pin	Signal	Designation
	1	TX+	Transmitted data+
	2	TX–	Transmitted data–
	3	RX+	Received data+
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RX–	Received data–
	7	n.c.	Not connected
	8	n.c.	Not connected

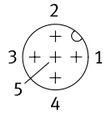
Datasheet – Left end plate with multiprotocol interface

Power supply			
Communication interface, connection technology	M8x1, D-coded	M12x1, D-coded	RJ45
Function	Incoming electronics/sensors and load		
Connection type	Plug		
Connection technology	M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101	Pin header, 5-pin
Number of pins/cores	4	5	5

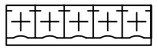
Pin assignment of power supply – Connection technology M8x1

Connection pattern	Pin	Signal	Designation
	1	24 V	Operating voltage 24 V electronics/sensors
	2	0 V	Operating voltage 0 V electronics/sensors
	3	0 V	Operating voltage 0 V load
	4	24 V	Operating voltage 24 V load

Pin assignment of power supply – Connection technology M12x1

Connection pattern	Pin	Signal	Designation
	1	24 V	Operating voltage 24 V electronics/sensors
	2	24 V	Operating voltage 24 V load
	3	0 V	Operating voltage 0 V electronics/sensors
	4	0 V	Operating voltage 0 V load
	5	FE	Functional earth

Pin assignment of power supply – Connection technology terminal strip

Connection pattern	Pin	Signal	Designation
	1	FE	Functional earth
	2	24 V	Operating voltage 24 V electronics/sensors
	3	0 V	Operating voltage 0 V electronics/sensors
	4	24 V	Operating voltage 24 V load
	5	0 V	Operating voltage 0 V electronics/sensors

Datasheet – Left end plate with multiprotocol interface

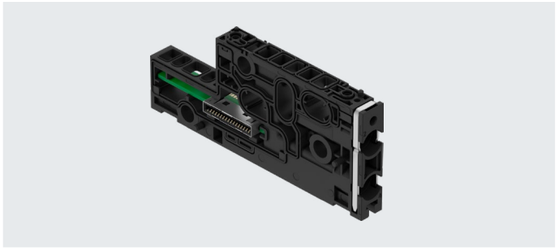
Operating and environmental conditions				
Communication interface, connection technology		M8x1, D-coded	M12x1, D-coded	RJ45
Ambient temperature	[°C]	–5 ... 50		
Storage temperature	[°C]	–20 ... 70		
Relative humidity	[%]	5 ... 95		
Nominal operating altitude	[m]	≤ 2000 NHN		
Maximum setup altitude	[m]	3500		
Corrosion resistance class CRC[1]		2		
CE marking (see declaration of conformity)[2]		To EU EMC Directive		
		To EU RoHS Directive		
UKCA marking (see declaration of conformity)[2]		To UK EMC regulations		
		To UK RoHS regulations		
KC marking		KC EMC		
Certification		RCM Mark		
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	IP65	IP20
Note on degree of protection		Unused connections sealed	Unused connections sealed	–

1) More information www.festo.com/x/topic/crc
2) For information about the area of use, see the declaration of conformity at: 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			
Communication interface, connection technology	M8x1, D-coded	M12x1, D-coded	RJ45
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	With electrical interlinking module	With electrical interlinking module	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 port 2		For 10 mm cartridge	For 12 mm cartridge	For 10 mm cartridge	For 12 mm cartridge
Pneumatic port 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[1]		2
CE marking (see declaration of conformity)[2]		To EU EMC Directive
		To EU RoHS Directive
KC marking		KC EMC
Certification		RCM Mark
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
2) For information about the area of use, see the declaration of conformity at: 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		
	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 port 2		For 10 mm cartridge	For 12 mm cartridge
Pneumatic port 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	
		Load supply undervoltage PL	
Electrical isolation of outputs between channel - internal communication		Yes	
Electrical isolation between the supply voltages for 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[1]		1	
CE marking (see declaration of conformity)[2]		To EU EMC Directive	
		To EU RoHS Directive	
KC marking		KC EMC	
Certification		RCM Mark	
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

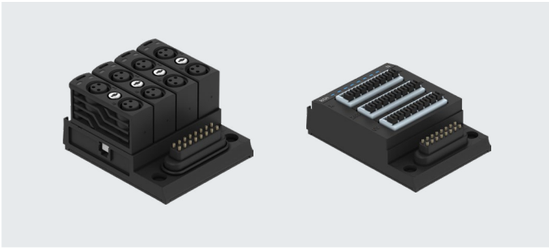
1) More information www.festo.com/x/topic/crc
2) For information about the area of use, see the declaration of conformity at: www.festo.com/catalogue/... ➔ Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures 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

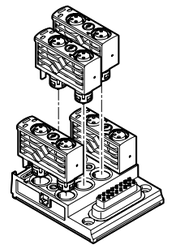
Datasheet – Input modules for manifold sub-bases

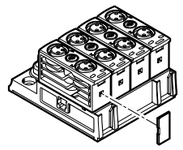
- Voltage
  24 V DC

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.

Extremely compact plug connectors (e.g. connecting cables NEBA) are also required so that all M8 connectors can be used
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

Datasheet – Input modules for manifold sub-bases

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, assgined 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	[mm²]	0.2 ... 1.5	–
Electrical connection for output, note on conductor cross-section		0.09-1.5 flex. without wire ferrule.	–
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
Characteristic curve of inputs		To EN 61131-2	To EN 61131-2

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	

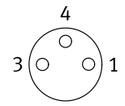
Datasheet – Input modules for manifold sub-bases

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[1]		0	1
CE marking (see declaration of conformity)[2]		To EU EMC Directive	
		To EU RoHS Directive	
KC marking		KC EMC	
Certification		RCM Mark	
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
2) For information about the area of use, see the declaration of conformity at: 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	RoHs-compliant
LABS (PWIS) conformity	VDMA24364-B2-L	VDMA24364-B2-L

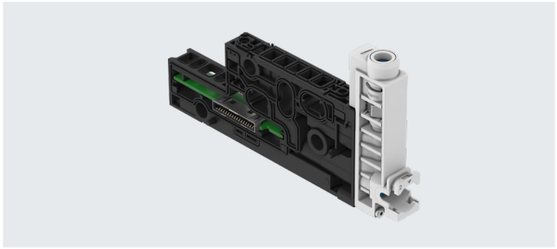
Pin assignment of sensor connections, electrical connection socket M8

Connection pattern	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 external vacuum

Valve size
10 mm



Operating mode

Description

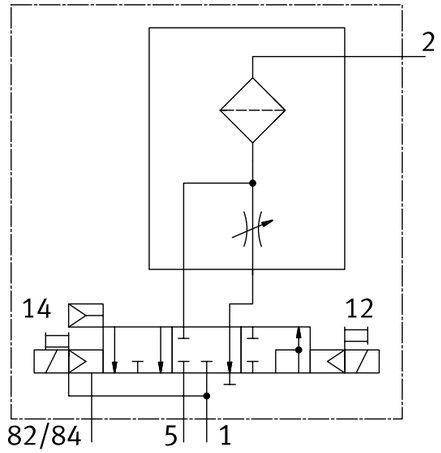
With the manifold sub-base for external vacuum and the suitable valve VUVX the externally supplied vacuum as well as the ejector pulse can be switched.
The vacuum is supplied at duct 5, duct 3 is non-functional, and pressure for the ejector pulse is present at duct 1.

The vacuum itself and the ejector pulse are provided at duct 2.
The manifold sub-base for external vacuum can be operated in combination with switching valves on a valve terminal with appropriate pressure zone separation in ducts 3 and 5.

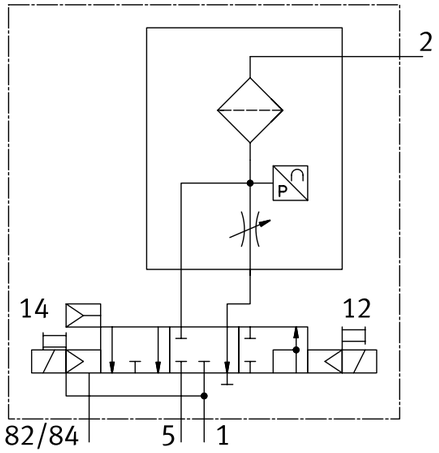
The manifold sub-base for vacuum comprises:
- Adjusting screw for setting the ejector pulse
- Integrated replaceable filter in duct 2
- The corresponding valve must be ordered separately via the configurator

Additional functions are available for the version with serial links:
- Pressure sensor
- Display module
- Condition monitoring

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



Manifold sub-base for vacuum with AP interface electrical control



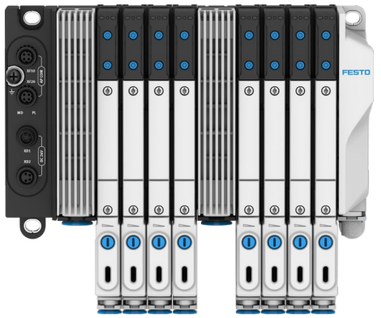
Datasheet – Manifold sub-base for external vacuum

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 manifold sub-bases for vacuum place 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	

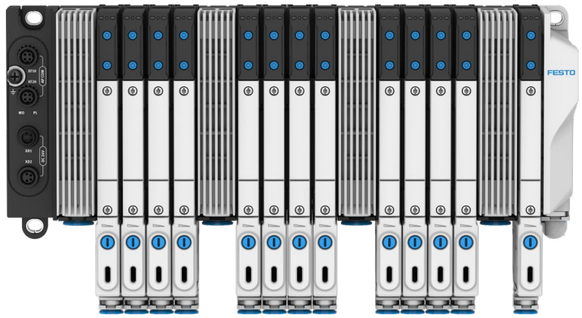
Examples of possible configurations at a maximum ambient temperature of 50 °C

4 manifold sub-base without intermediate supply

8 manifold sub-bases with intermediate supply



13 manifold sub-base with intermediate supply



Note

The manifold sub-bases for external vacuum have an internal filter. This filter must be checked regularly and replaced if it is contaminated in order to ensure it continues to function correctly. It is recommended to install an additional external filter in case of serious contamination.

Datasheet – Manifold sub-base for external 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
		Filter	Filter
		With electrical interlinking module	With electrical interlinking module
		–	Pressure sensor
		–	Pressure transmitter
Mounting position		Any	
Type of mounting		Tie rods	
Dimensions W x L x H	[mm]	12.55 x 127.6 x 68.8	
Width	[mm]	12.5	
Width	[mm]	12.55	
Length	[mm]	127.6	
Grid dimension	[mm]	12.55	
Valve size	[mm]	10	
Product weight	[g]	52.7	56.4

Pneumatic ports		
Pneumatic port	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"

Technical data – Valves		
Type	VABX-A-P	VABX-A-S
Valve function	5/3-way, pressurised 1 to 2, 4 to 5 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	Yes

Datasheet – Manifold sub-base for external vacuum

Technical data – Electrical components			
Type		VABX-A-P	VABX-A-S
Reverse polarity protection		Yes	Yes
Inductive protective circuit		Integrated	–
Nominal operating voltage DC	[V]	24	–
Nominal operating voltage DC for electronics/sensors	[V]	–	24
Nominal operating voltage DC load	[V]	24	24
Note on the operating voltage		–	SELV/PELV power supply units required
		–	Note voltage drop
Permissible voltage fluctuations	[%]	±10	–
Permissible voltage fluctuations, electronics/sensors	[%]	–	±10
Permissible voltage fluctuations, load	[%]	±10	±10
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
Electrical isolation between the supply voltages for electronics/sensors and load/valves		–	Yes
Diagnostics via internal communication		–	Load switch-off
			Electronics/sensors overvoltage
			Electronics/sensors undervoltage

Technical data – Vacuum	
Adjusting element	Slotted head screw
Silencer design	Open

Technical data - Pressure sensor		
Measured variable		Relative pressure
Measuring principle		Piezoresistive
Pressure measuring range	[MPa]	–0.1 ... +0.1
	[bar]	–1 ... +1
	[psi]	–14.5 ... +14.5
Accuracy in ± % FS	[%]	3 FS
Reproducibility, switching value FS	[%]	1

Datasheet – Manifold sub-base for external vacuum

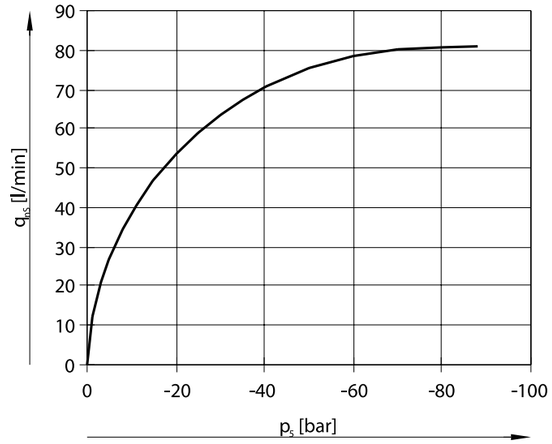
Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] a 44
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:-] → 44
Note on the operating/pilot medium		Ester oil < 0.1mg/m³, according to ISO 8573-1:2010 [-:-:2]
		Lubricated operation not possible
Grade of filtration	[µm]	40
Operating pressure	[MPa]	0.2 ... 0.7
	[bar]	2 ... 7
Nominal operating pressure	[MPa]	0.6
	[bar]	6
	[psi]	87
Pilot pressure	[MPa]	0.2 ... 0.7
	[bar]	2 ... 7
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[1]		2
CE marking (see declaration of conformity)		To EU EMC Directive[2]
		To EU RoHS Directive[2]
UKCA marking (see declaration of conformity)		To UK EMC regulations[2]
KC marking		KC EMC
Certification		RCM Mark
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
2) For information about the area of use, see the EC declaration of conformity at: 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.

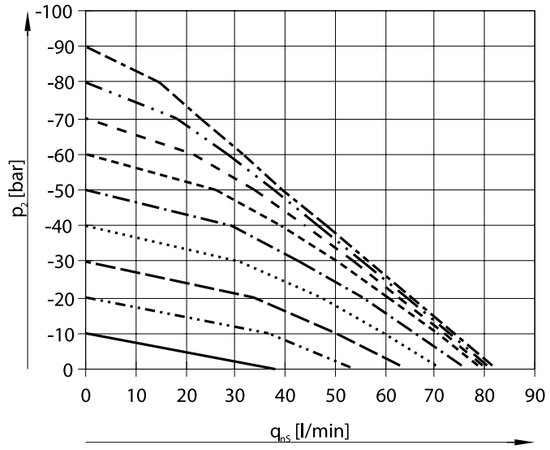
Materials	
Sub-base	Reinforced PA
Housing	Reinforced PA
Adjusting screw	Reinforced PA
Seals	HNBR; NBR
O-ring	HNBR; NBR
Clip	High-alloy stainless steel
Nut	High-alloy stainless steel
Screws	High-alloy stainless steel
Film	Polyester
Sleeve	Reinforced PA
Filter	Fabric; PA; PE; POM
Note on materials	RoHs-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Manifold sub-base for external vacuum

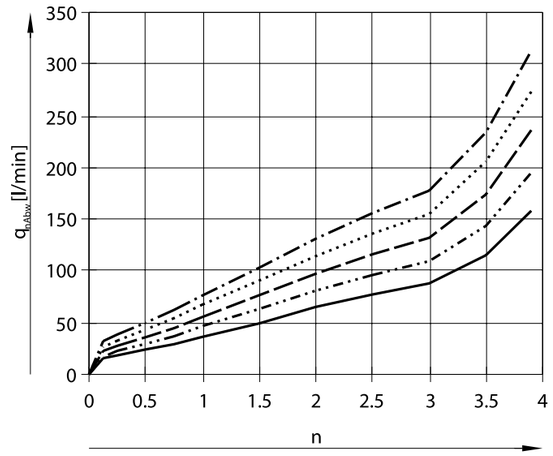
Suction volume flow qnS as a function of working pressure p5



Suction volume flow qnS as a function of vacuum p2



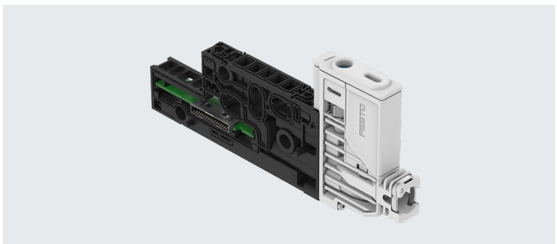
Flow rate of the ejector pulse as a function of operating pressure p1 and the number of turns of the adjusting screw n



Datasheet – Manifold sub-base for internal vacuum generation

Valve size
10 mm

Maximum vacuum
93 kPa



Operating mode

Description

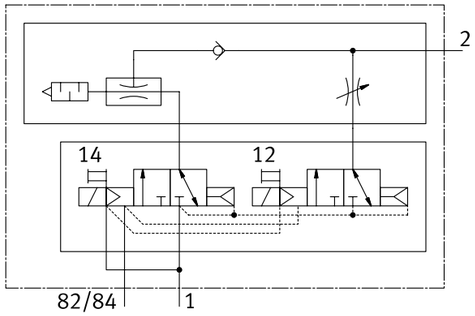
Vacuum generation for a single valve position can be integrated on the VTUX. No further installations are required.
The vacuum is generated within the manifold sub-base according to the Venturi principle and is available at port 2.
Various valve types are available, all of which can simultaneously provide the function of the ejector impulse.

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.

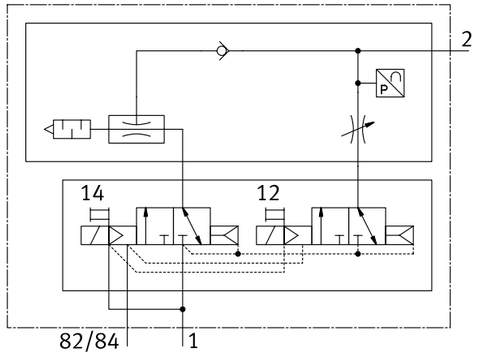
The manifold sub-base for vacuum comprises:
- Adjusting screw for setting the ejector pulse
- Integrated check valve for energy-saving vacuum maintenance
- Integrated silencer
- The corresponding valve must be ordered separately via the configurator

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 internal vacuum generation

Combination of manifold sub-bases for vacuum and power supply modules

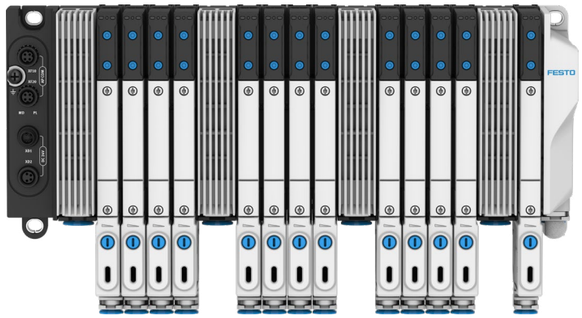
Ambient temperature	Power supply modules	Number of manifold sub-bases for vacuum per valve terminal	
Max. 50 °C	None	4	The integrated vacuum generation places high demands on the valve terminal VTUX. Good heat dissipation is therefore required. Avoid mounting the valve terminal on highly insulating surfaces (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 internal vacuum generation

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	
Width	[mm]	12.5	
Width	[mm]	12.55	
Length	[mm]	150.8	
Grid dimension	[mm]	12.55	
Valve size	[mm]	10	
Product weight	[g]	65	68

Pneumatic ports

Pneumatic port	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	
	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	

Note

Tubing sizes smaller than those specified reduce the performance of the vacuum generator.

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	Yes

Datasheet – Manifold sub-base for internal vacuum generation

Technical data – Electrical components

Type		VABX-A-P	VABX-A-S
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	SELV/PELV power supply units required
		Note voltage drop	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
Electrical isolation between the supply voltages for 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 rate with respect to 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

Type		VABX-A-S
Measured variable		Relative pressure
Measuring principle		Piezoresistive
Pressure measuring range	[kPa]	–0.1 ... +0.1
	[bar]	–1 ... +1
	[psi]	–14.5 ... +14.5
Accuracy in ± % FS	[%]	3 FS
Reproducibility, switching value FS	[%]	1

Datasheet – Manifold sub-base for internal vacuum generation

Operating and environmental conditions					
Type		VABX-VB07H	VABX-VB07L	VABX-VB010H	VABX-VB010L
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] a 44			
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:-] → 44			
Note on the operating/pilot medium		Ester oil < 0.1mg/m³, according to ISO 8573-1:2010 [-:-:2]			
		Lubricated operation not possible			
Operating pressure	[MPa]	0.2 ... 0.7			
	[bar]	2 ... 7			
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			
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[1]		2			
CE marking (see declaration of conformity)		To EU EMC Directive[2]			
		To EU RoHS Directive[2]			
UKCA marking (see declaration of conformity)		To UK EMC regulations[2]			
KC marking		KC EMC			
Certification		RCM Mark			
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			

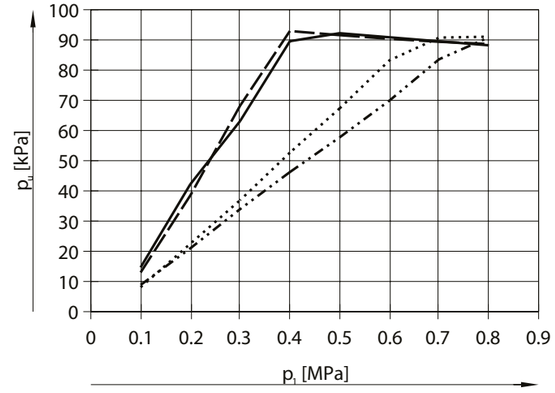
1) More information www.festo.com/x/topic/crc

2) For information about the area of use, see the EC declaration of conformity at: 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.

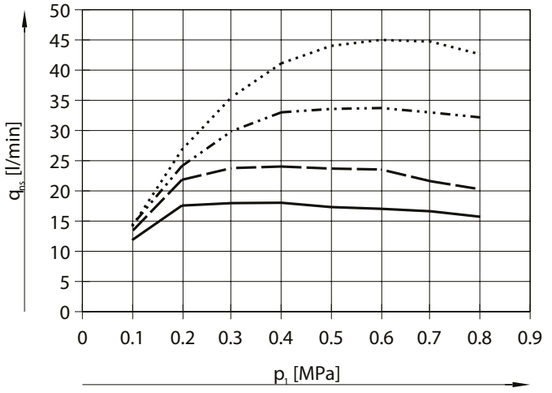
Materials				
Type	VABX-VB07H	VABX-VB07L	VABX-VB010H	VABX-VB010L
Sub-base	Reinforced PA			
Cover	Reinforced PA			
Housing	Reinforced PA			
Adjusting screw	Reinforced PA			
Silencer	PP; PU foam			
Seals	HNBR; NBR			
O-ring	HNBR; NBR			
Clip	High-alloy stainless steel			
Nut	High-alloy stainless steel			
Screws	High-alloy stainless steel			
Film	Polyester			
Sleeve	Reinforced PA	Reinforced PA	Wrought aluminium alloy	Reinforced PA
Female nozzle	POM			
Jet nozzle	Wrought aluminium alloy			
Note on materials	RoHs-compliant			
LABS (PWIS) conformity	VDMA24364-C1-L			

Datasheet – Manifold sub-base for internal vacuum generation

Vacuum pu as a function of working pressure p1

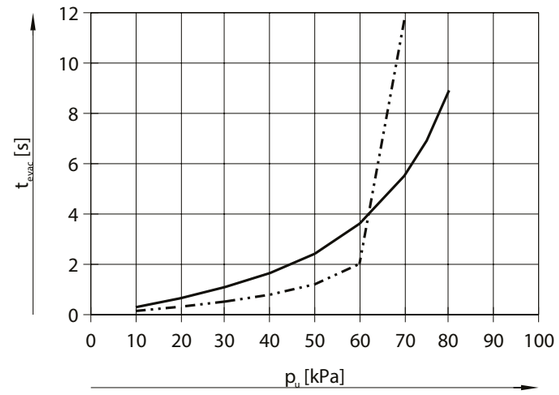


Suction volume flow qnS as a function of working pressure p1

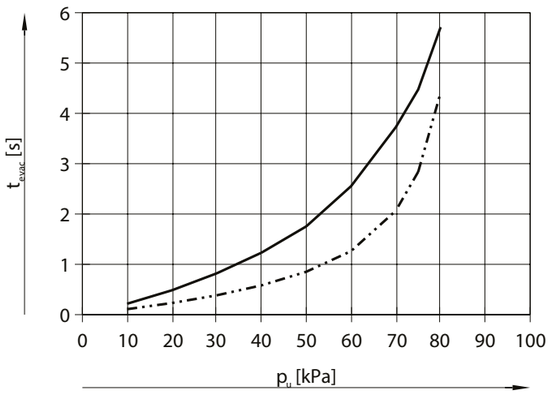


Evacuation time tevac as a function of vacuum pu at 0.6 bar operating pressure

Nominal width of Laval nozzle 0.7 mm

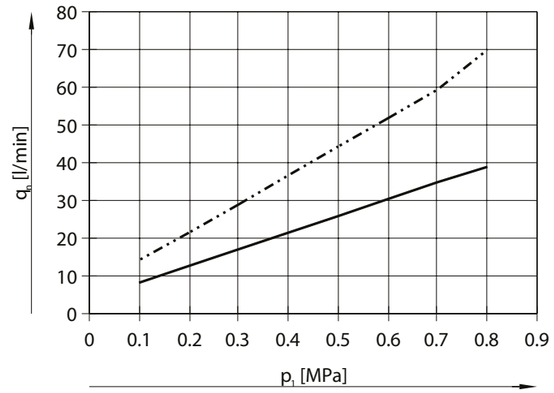


Nominal width of Laval nozzle 0.95 mm



Datasheet – Manifold sub-base for internal vacuum generation

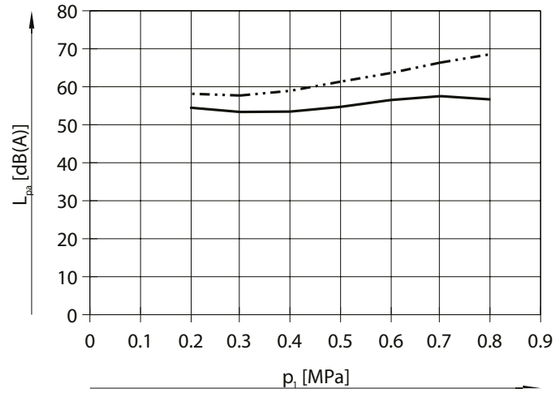
Compressed air consumption qn as a function of working pressure p1



VABX-VB07
VABX-VB010

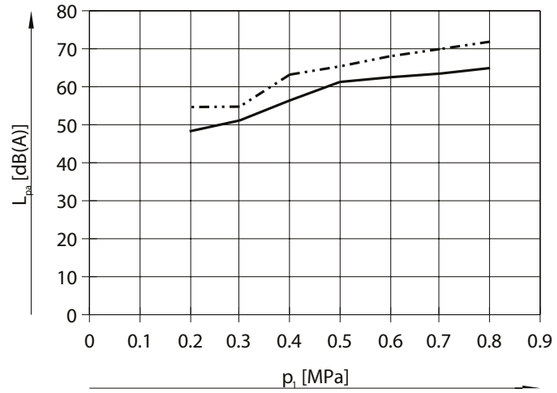
Sound pressure LpA as a function of working pressure p1, port 2 closed

Low suction volume flow



VABX-VB07L
VABX-VB010L

High suction rate

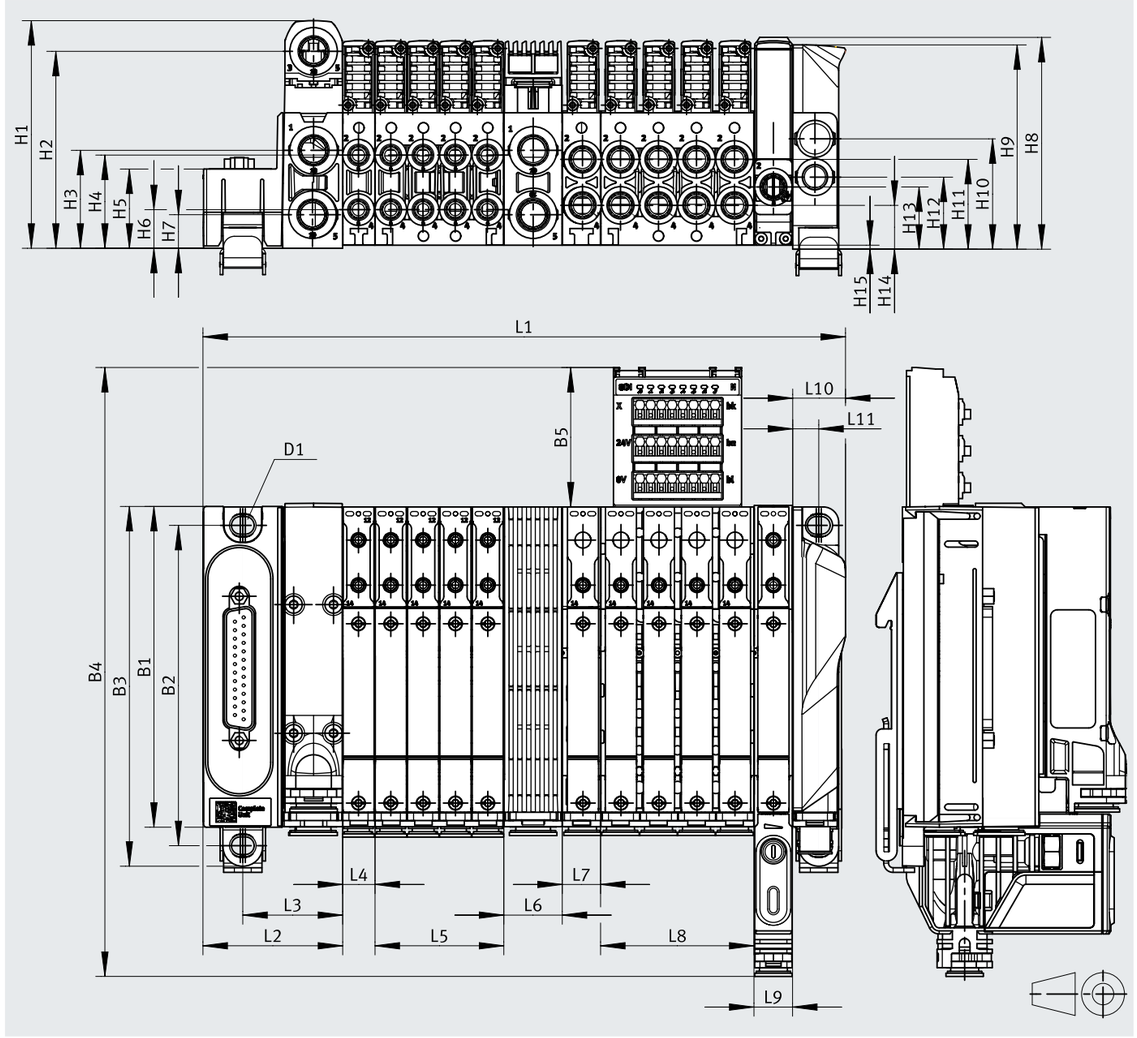


VABX-VB07H
VABX-VB010H

Datasheet

Dimensions – Valve terminal VTUX

Download CAD data ➔ www.festo.com



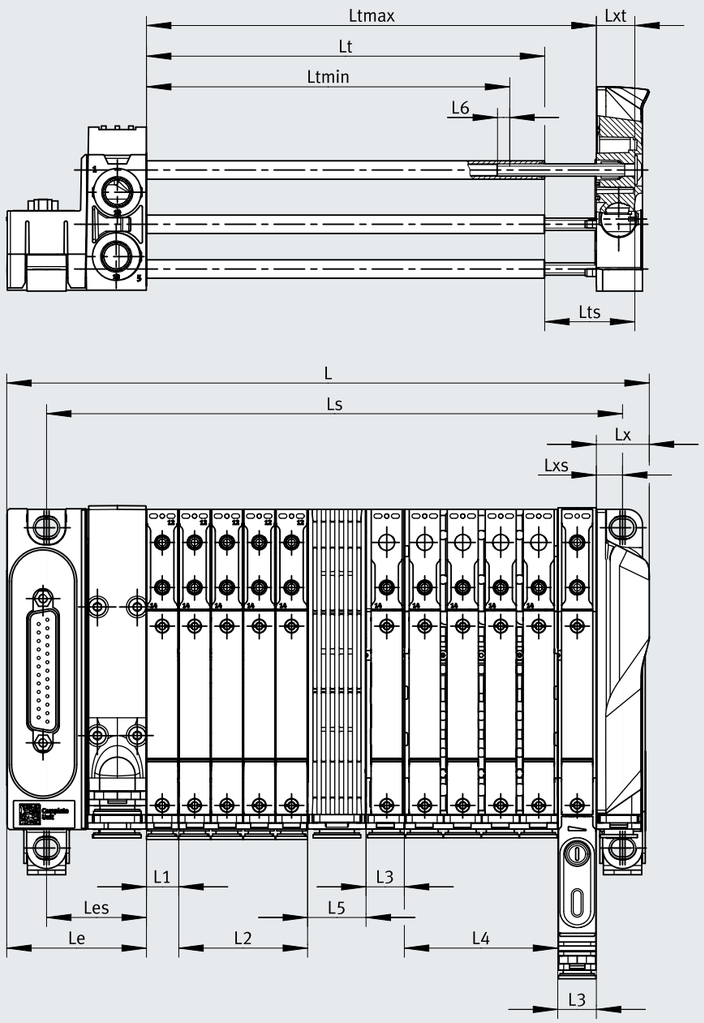
Type	B1	B2	B3	B4	B5	D1
VTUX	104.6	104.5	117.4	195.8	45.5	M5

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



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[1)]	Ls[1)]
VTUX	Le + L8 + m x L1 + n x L2 + o x L5 + p x L3 + q x L4 + Lx	Les + m x L1 + n x L2 + o x L5 + p x L3 + q x L4 + Lxs

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

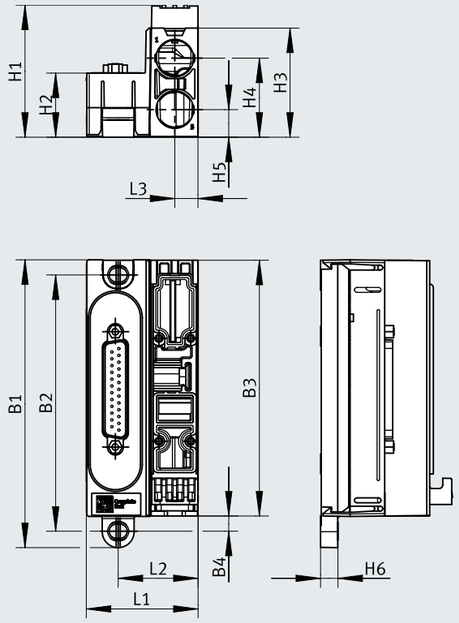
Type	Ltmax[1)]	Ltmin[1)]	Ltol[1)]
VTUX	m x L1 + n x L2 + o x L5 + p x L3 + q x L4	m x L1 + n x L2 + o x L5 + p x L3 + q x L4 + (Lxt - Lts) + 4 + Ltol	(m + n + o + p + q + 1) x 0.2

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 interface for multi-pin plug connection

Download CAD data ➔ www.festo.com

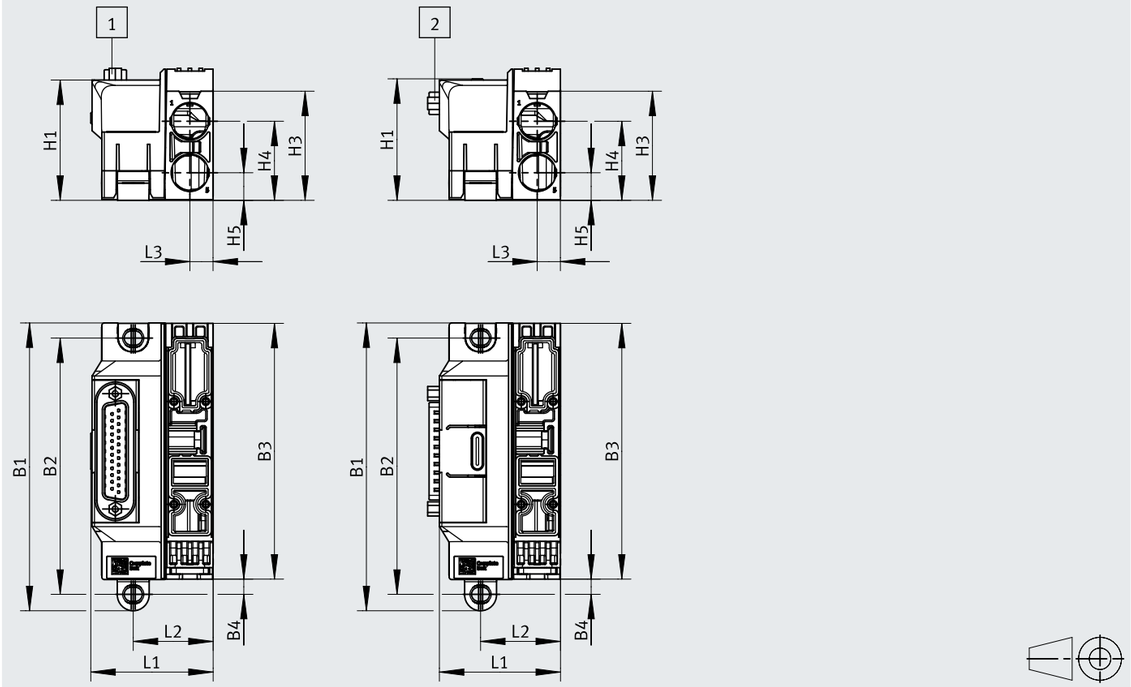


Type	B1	B2	B3	B4	H1	H2	H3	H4	H5	H6	L1	L2	L3
VABX-AP-EL-E12	117.4	104.5	104.3	6.2	53.9	26.15	44.5	32.25	11.25	7.1	45.6	32.6	9.5

Datasheet

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

Download CAD data ➔ www.festo.com



[1] Connection on top

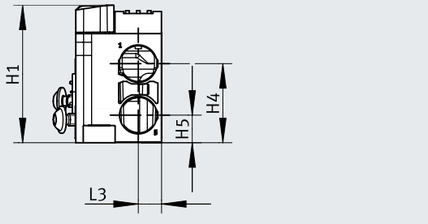
[2] Connection on the side

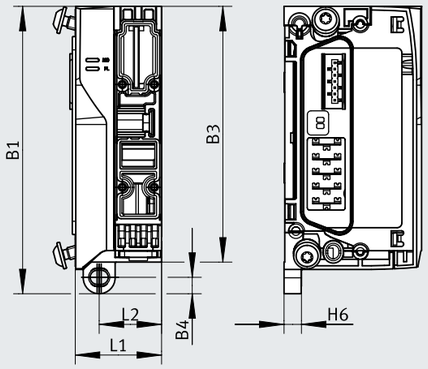
	B1	B2	B3	B4	H1	H3	H4	H5	L1	L2	L3
Connection on top	117.4	104.5	104.3	6.2	49.05	44.5	32.25	11.25	19.9	32.6	9.5
Connection at the side					49.55				49.4		

Datasheet

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

Download CAD data ➔ www.festo.com



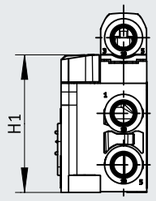


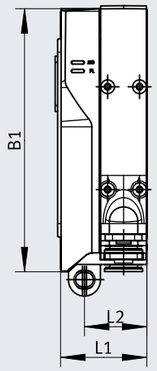
Type	B1	B3	B4	H1	H4	H5	H6	L1	L2	L3
VABX-A-P-EL-E12-APA	117.2	104.3	6.7	56.1	32.25	11.25	7.1	35.2	25.45	9.5

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



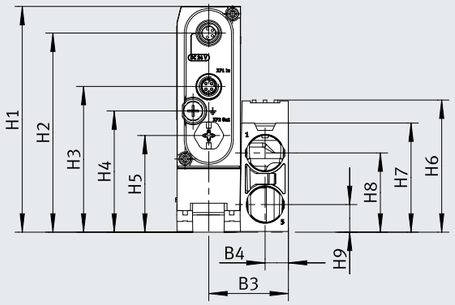


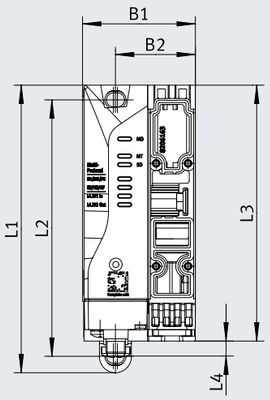
Type	B1	H1	L1	L2
VABX-A-P-EL-E12-APA	107.3	56.1	35.2	25.5

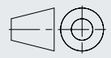
Datasheet

Dimensions – Left end plate, multiprotocol end plate with connection technology M8x1

Download CAD data ➔ www.festo.com







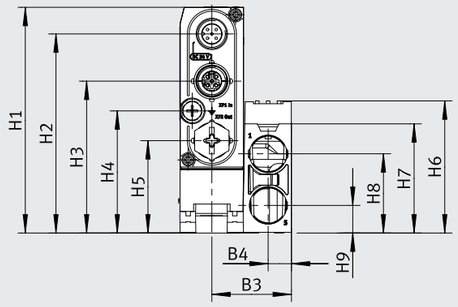
Type	B1	B2	B3	B4	H1	H2	H3	H4	H5	H6	H7	H8	H9
VABX-A-S-EL-E12-CTED-MPM8	46	32.6	32.45	9.5	92	81.15	59.4	49.4	39.4	53.85	44.5	32.25	11.25

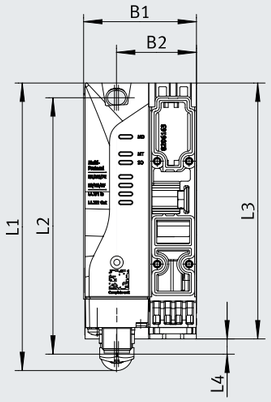
Type	L1	L2	L3	L4
VABX-A-S-EL-E12-CTED-MPM8	117.2	104.5	104.3	6.2

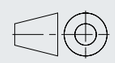
Datasheet

Dimensions – Left end plate, multiprotocol end plate with connection technology M12x1

Download CAD data ➔ www.festo.com







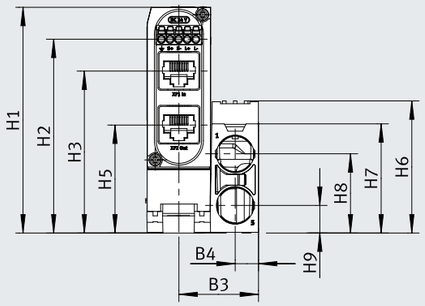
Type	B1	B2	B3	B4	H1	H2	H3	H4	H5	H6	H7	H8	H9
VABX-A-S-EL-E12-CTED-MPM12	46	32.6	32.45	9.5	92	81.15	61.9	49.8	37.65	53.85	44.5	32.25	11.25

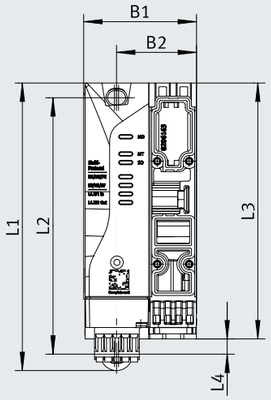
Type	L1	L2	L3	L4
VABX-A-S-EL-E12-CTED-MPM12	117.2	104.5	104.3	6.2

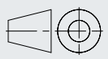
Datasheet

Dimensions – Left end plate, multiprotocol end plate with connection technology RJ45

Download CAD data ➔ www.festo.com







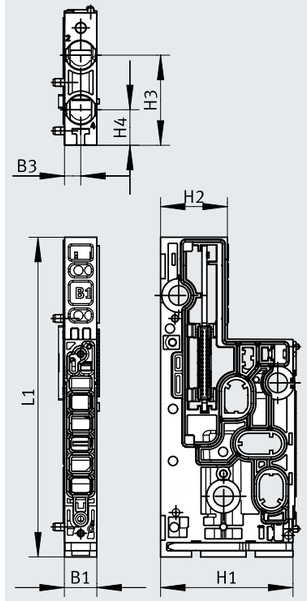
Type	B1	B2	B3	B4	H1	H2	H3	H5	H6	H7	H8	H9
VABX-A-S-EL-E12-CTED-MPRJ45	46	32.6	32.45	9.5	92	79	66	44	53.85	44.5	32.25	11.25

Type	L1	L2	L3	L4
VABX-A-S-EL-E12-CTED-MPRJ45	117.2	104.5	104.3	6.2

Datasheet

Dimensions – Manifold sub-base for one valve

Download CAD data ➔ www.festo.com

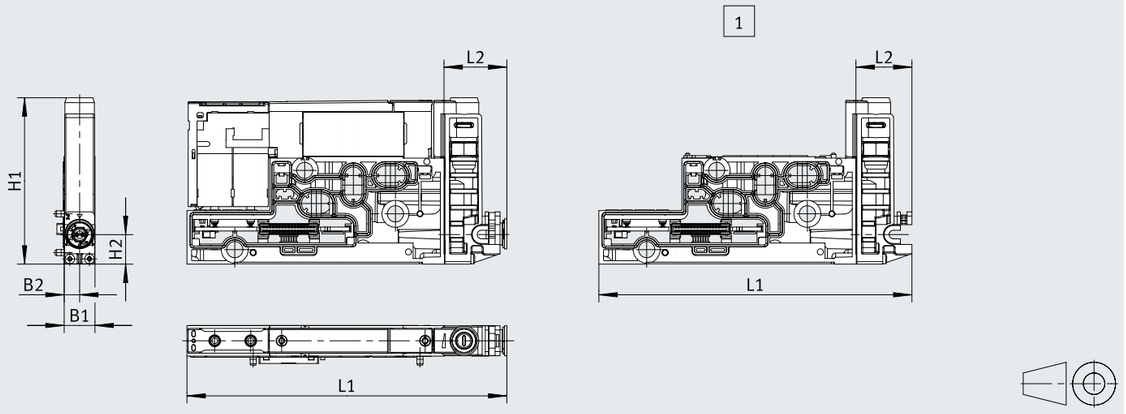


Type	B1	B3	H1	H2	H3	H4	L1
VABX-A-P-BV-AH	10.55	5.3	43.2	21.8	29.4	11.6	104.3
VABX-A-P-BV-BH	12.55	6.3	43.2	21.8	28	13	104.3

Datasheet

Dimensions – Manifold sub-base for external vacuum, without vacuum display module

Download CAD data ➔ www.festo.com

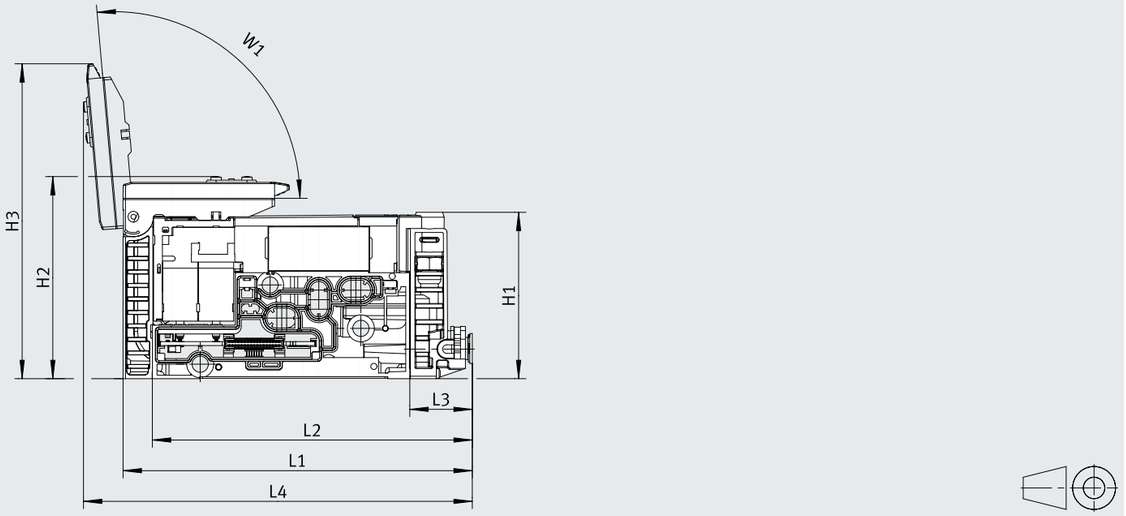


[1] Without cartridge

		B1	B2	H1	H2	L1	L2
VABX-A-P-VP-BH	With cartridge	12.55	6.3	67.8	12	130.4	25.5
	Without cartridge					127.6	22.7
VABX-A-S-VP-BH	With cartridge	12.55	6.3	67.8	12	130.4	25.5
	Without cartridge					127.6	22.7

Dimensions – Manifold sub-base for external vacuum, with vacuum display module

Download CAD data ➔ www.festo.com

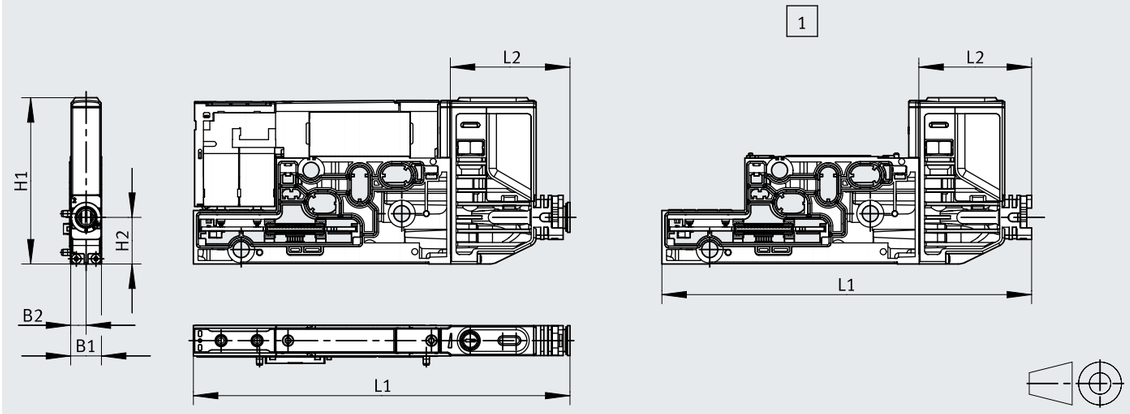


	H1	H2	H3	L1	L2	L3	L4	W1
VABX-A-S-VP-BH	67.8	82.4	128.3	142.4	130.4	25.5	158.5	max. 95°

Datasheet

Dimensions – Manifold sub-base for internal vacuum generation, without vacuum display module

Download CAD data ➔ www.festo.com

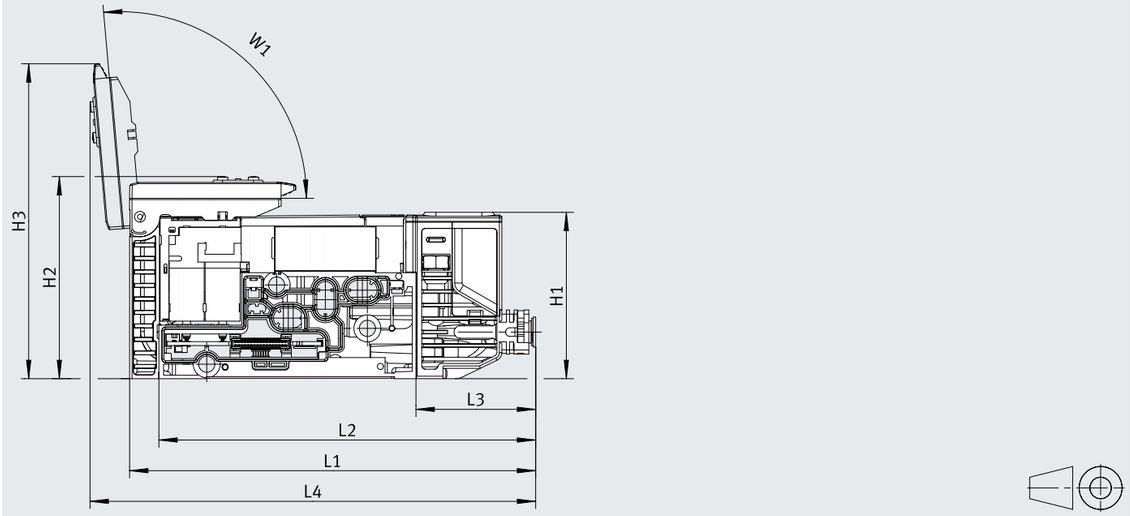


[1] Without cartridge

		B1	B2	H1	H2	L1	L2
VABX-A-P-VE-BH	With cartridge	12.55	6.3	67.8	19	153.6	48.8
	Without cartridge					150.8	46
VABX-A-S-VE-BH	With cartridge	12.55	6.3	67.8	19	153.6	48.8
	Without cartridge					150.8	46

Dimensions – Manifold sub-base for internal vacuum generation, with vacuum display module

Download CAD data ➔ www.festo.com

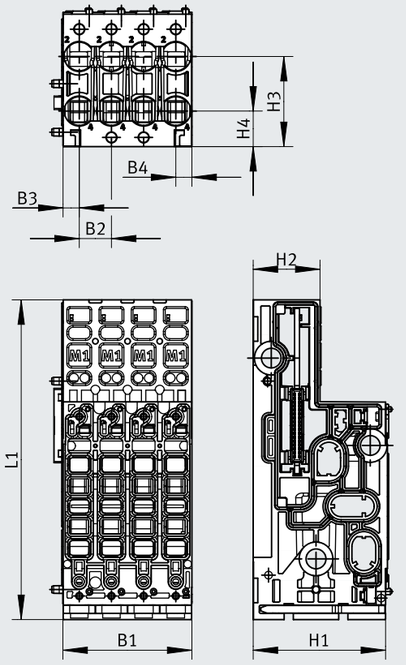


	H1	H2	H3	L1	L2	L3	L4	W1
VABX-A-S-VE-BH	67.8	82.4	128.3	165.6	153.6	48.8	181.7	max. 95°

Datasheet

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

Download CAD data ➔ www.festo.com

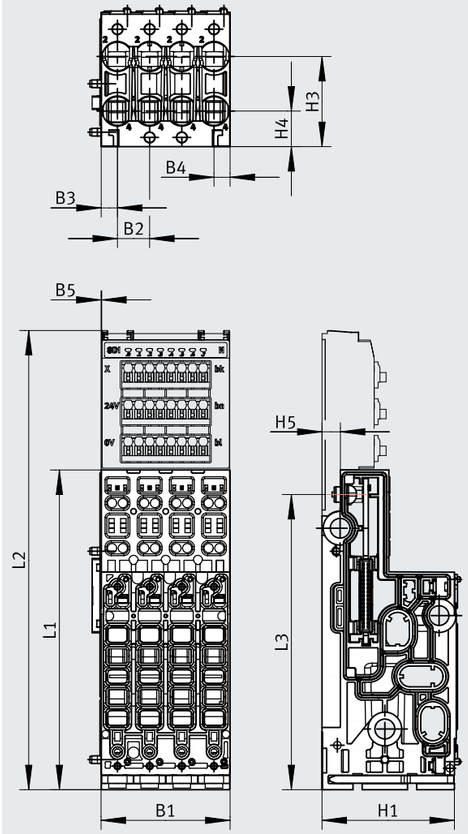


Type	B1	B2	B3	B4	H1	H2	H3	H4	L1
VABX-A-P-BV-AH	42.05	10.5	5.3	5.25	43.2	21.8	29.4	11.6	104.3
VABX-A-S-BV-AH									
VABX-A-P-BV-BH	50.05	12.4	6.45	6.4	43.2	21.8	28	13	104.3
VABX-A-S-BV-BH									

Datasheet

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

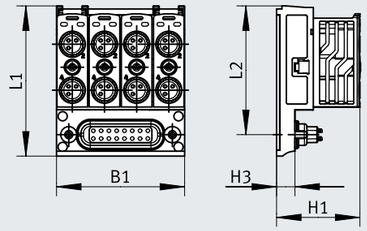
Download CAD data ➔ www.festo.com



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

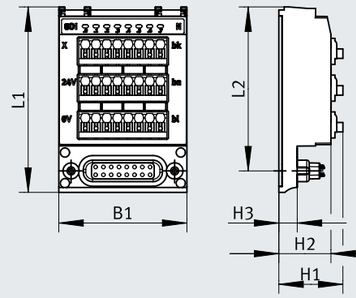
Datasheet

Dimensions – Input module, electrical connection socket M8 Download CAD data ➔ www.festo.com



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					

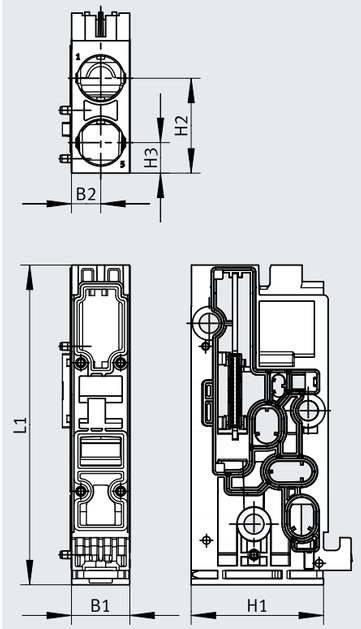
Dimensions – Input module – Electrical connection spring-loaded terminal Download CAD data ➔ www.festo.com



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

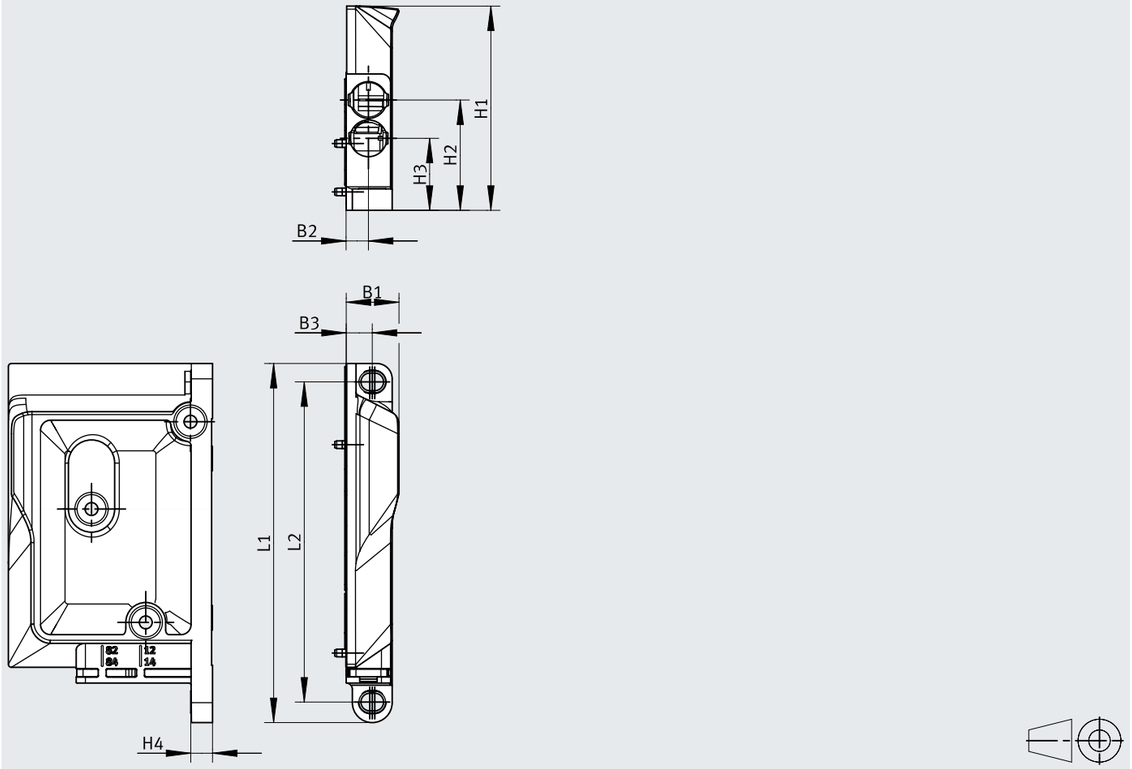
Dimensions – Power supply module Download CAD data ➔ www.festo.com



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

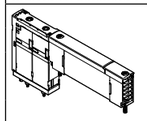
Dimensions – Right end plate Download CAD data ➔ www.festo.com



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

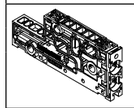
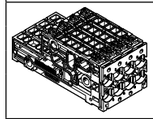
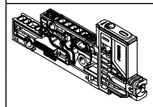
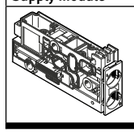
Accessories

Ordering data

	Code	Valve function	Part no.	Type
Individual solenoid valve – Valve size 10 mm				
	**5/2-way valve**			
	Position function: A	Single solenoid, mechanical spring return	**8187057**	**VUVX-BK10-M52-MZH-F-1T1L**
	Position function: M	Single solenoid, pneumatic spring return	**8187056**	**VUVX-BK10-M52-A1ZH-F-1T1L**
	Position function: J	Double solenoid	**8187059**	**VUVX-BK10-B52-ZH-F-1T1L**
	2x 3/2-way valve			
	Position function: NS	Normally open, mechanical spring return	**8187063**	**VUVX-BK10-T32U-MZH-F-1T1L**
	Position function: K	Normally closed, mechanical spring return	**8187061**	**VUVX-BK10-T32C-MZH-F-1T1L**
	Position function: –	Normally closed, mechanical spring return	**8229210**	**VUVX-BK10-T32CV-A1ZH-F-1T1L**
	Position function: KC	Normally closed, pneumatic spring return	**8187060**	**VUVX-BK10-T32C-A1ZH-F-1T1L**
	Position function: NG	1x normally open, 1x normally closed, mechanical spring return	**8187065**	**VUVX-BK10-T32H-MZH-F-1T1L**
	5/3-way valve			
	Position function: G	Mid-position closed	**8187066**	**VUVX-BK10-P53C-MZH-F-1T1L**
	Position function: NL	With holding function, for vacuum switching unit	**8229212**	**VUVX-BK10-P53CD-A1ZH-F-1T1L**
	5/4-way valve			
	Position function: ND	Exhausted	**8187067**	**VUVX-BK10-P54E-MZH-F-1T1L**
	Position function: NQ	With holding function, for vacuum generator	**8229211**	**VUVX-BK10-P54CV-MZH-F-1T1L**
Vacant position – Valve size 10 mm				
	Position function: L	Cover plate for one valve position	**8163948**	**VABB-XA-10-T**

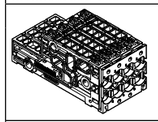
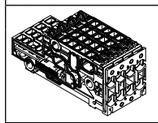
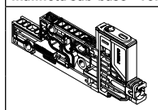
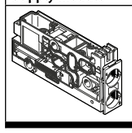
Accessories

Ordering data – Manifold sub-base for valve terminal VTUX-A-P

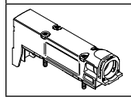
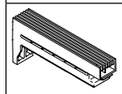
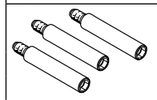
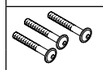
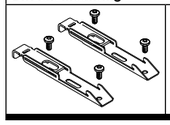
	Code	Description			Part no.	Type
Manifold sub-base – For one valve						
	–	Maximum number of solenoid coils 1		Size 1	**8188458**	**VABX-A-P-BV-AH-F**
				Size 2	**8188462**	**VABX-A-P-BV-BH-G**
		Maximum number of solenoid coils 2		Size 1	**8188459**	**VABX-A-P-BV-AH-A**
				Size 2	**8188463**	**VABX-A-P-BV-BH-B**
Manifold sub-base – For four valves, without connection for input module						
	–	Maximum number of solenoid coils 4		Size 1	**8188460**	**VABX-A-P-BV-AH-RVFFFF**
				Size 2	**8188464**	**VABX-A-P-BV-BH-RVGGGG**
		Maximum number of solenoid coils 8		Size 1	**8188461**	**VABX-A-P-BV-AH-RVAAAA**
				Size 2	**8188465**	**VABX-A-P-BV-BH-RVBBBB**
Manifold sub-base – For vacuum						
	VB	Valve function: 5/3 pressurised, 1 to 2, 4 to 5 closed		Valve size 10 mm	**8227840**	**VABX-AP-VP-BH-VH**
		Valve function: 2x3/2-way, single solenoid, closed	High vacuum	Nominal width of Laval nozzle 0.7 mm	**8233483**	**VABX-A-P-VE-BH-VB07H**
				Nominal width of Laval nozzle 0.95 mm	**8213837**	**VABX-A-P-VE-BH-VB010H**
			High suction rate	Nominal width of Laval nozzle 0.7 mm	**8233485**	**VABX-A-P-VE-BH-VB07L**
				Nominal width of Laval nozzle 0.95 mm	**8233481**	**VABX-A-P-VE-BH-VB010L**
Supply module						
	Connection position type: 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**

Accessories

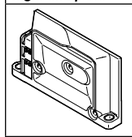
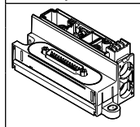
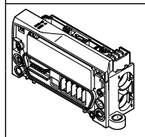
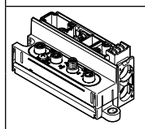
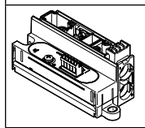
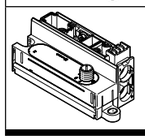
Ordering data– Manifold sub-base for valve terminal VTUX-A-S

	Code	Description			Part no.	Type
Manifold sub-base – For four valves, without connection for input module						
	–	Maximum number of solenoid coils 8		Size 1	**8188466**	**VABX-A-S-BV-AH-RVAAAA**
				Size 2	**8188467**	**VABX-A-S-BV-BH-RVBBBB**
Manifold sub-base – For four valves, with connection for input module						
	Sub-base block, additional function 1-64: 0XJ	Maximum number of solenoid coils 8		Size 1	**8196628**	**VABX-A-S-BV-AH-RV0XJAAAA**
				Size 2	**8196629**	**VABX-A-S-BV-BH-RV0XJBBBB**
Manifold sub-base – For vacuum						
	VB	Valve function: 5/3 pressurised, 1 to 2, 4 to 5 closed		Valve size 10 mm	**8227839**	**VABX-AS-VP-BH-VH**
		Valve function: 2x3/2-way, single solenoid, closed	High vacuum	Nominal width of Laval nozzle 0.7 mm	**8233482**	**VABX-A-S-VE-BH-VB07H**
				Nominal width of Laval nozzle 0.95 mm	**8213836**	**VABX-A-S-VE-BH-VB010H**
			High suction rate	Nominal width of Laval nozzle 0.7 mm	**8233484**	**VABX-A-S-VE-BH-VB07L**
				Nominal width of Laval nozzle 0.95 mm	**8233480**	**VABX-A-S-VE-BH-VB010L**
Supply module						
	Connection position type: U	Manifold sub-base with ports for ducts 1 and 3/5, no plate, no cartridge		–	**8191789**	**VABX-A-S-BU-12-SHUH-U**

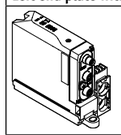
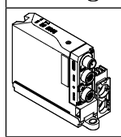
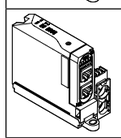
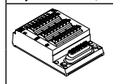
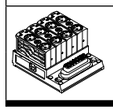
Accessories

Ordering data						
	Code	Description		Pack size	Part no.	Type
Plate						
	Position function: UD	Plate for ducted exhaust air, without cartridge, for mounting on supply module			**8191794**	**VABF-XA-12-M2-QX**
	Position function: US	Exhaust plate, for mounting on supply module			**8191741**	**VABF-XA-12-M1-C**
Tie rods						
	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**
			170 mm	3	**8191766**	**VAME-XA-Z-170**
			190 mm	3	**8191767**	**VAME-XA-Z-190**
	–	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**
Separator						
	–	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**
Wall mounting						
	–	Mounting bracket Wall brackets should be mounted on the valve terminal every 20 cm.		2	**8191739**	**VAME-XA-W**
DIN rail mounting						
	Mounting accessories: H	Clamp mounting for DIN rail mounting		2	**8191782**	**VAME-XA-H**

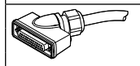
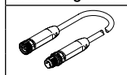
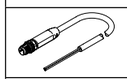
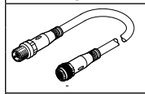
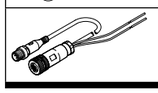
Accessories

Ordering data					
	Code	Description		Part no.	Type
Right end plate					
	–	With mounting holes for wall mounting		**8191781**	**VABX-A-ER-E12-JHTH-XR**
Left end plate					
	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				**8206421**	**VABX-A-P-EL-E12-MS1T-SHUH-XL**
	Electrical connection: MS3			Sub-D, 44-pin, maximum 32 valve coils	**8188449**	**VABX-A-P-EL-E12-MS3-SHUH-XL**
	Electrical connection: MC			Terminal strip, 34-pin, maximum 32 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	Ribbon cable, 26-pin, maximum 24 valve coils	**8188451**	**VABX-A-P-EL-E12-MF1-SHUH-XL**
	Electrical connection: MS6	Electrical interface for multi-pin plug connection, IP65	Compatible with valve terminal VTUX-A-P	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**

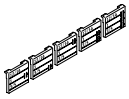
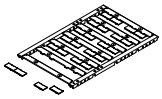
Accessories

Ordering data						
	Code	Description			Part no.	Type
Left end plate with multiprotocol interface						
	Electrical connection: CTED	Nodes with CC-Link IE Field Basic, EtherCAT®, PROFINET, EtherNet/IP, Modbus TCP, IP65	Compatible with valve terminal VTUX-A-S	M8x1 D-coded, maximum 128 valve coils	**8208386**	**VABX-AS-EL-E12-CTED-MPM8-SHUH-XL**
	Electrical connection: CTED	Nodes with CC-Link IE Field Basic, EtherCAT®, PROFINET, EtherNet/IP, Modbus TCP, IP65	Compatible with valve terminal VTUX-A-S	M12x1 D-coded, maximum 128 valve coils	**8208382**	**VABX-AS-EL-E12-CTED-MPM12-SHUH-XL**
	Electrical connection: CTED	Nodes with CC-Link IE Field Basic, EtherCAT®, PROFINET, EtherNet/IP, Modbus TCP, IP20	Compatible with valve terminal VTUX-A-S	RJ45, maximum 128 valve coils	**8208384**	**VABX-AS-EL-E12-CTED-MPRJ45-SHUH-XL**
Input module, compatible with valve terminal VTUX-A-S						
	Sub-base block, additional function 1-64: 04J	Electrical connection: spring-loaded terminal		NPN (negative switching)	**8196630**	**VAEM-XA-E-8E-N-K2**
	Sub-base block, additional function 1-64: 03J			PNP (positive switching)	**8196631**	**VAEM-XA-E-8E-P-K2**
	Sub-base block, additional function 1-64: 02J	Electrical connection socket M8		NPN (negative switching)	**8196632**	**VAEM-XA-E-8E-N-V**
	Sub-base block, additional function 1-64: 01J			PNP (positive switching)	**8196633**	**VAEM-XA-E-8E-P-V**

Accessories

Ordering data							
	Code	Description				Part no.	Type
Connecting cable for multi-pin plug connection, Sub-D							
	–	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**
Connecting cable – Round plug							
	–	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**
Straight plug, for IO-Link®							
	–	Straight plug, M12x1, 5-pin, A-coded	Screw terminal			**8162296**	**NECB-S-M12G5-C2**
Connecting cable, for IO-Link®							
	–	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**
Distributor, for IO-Link®							
	–	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
Cartridge							
	–	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**
			5/16"	0.92	10	**8184513**	**NPQX-D-PC12-T516-P10**
		Cartridge 15 mm, connection for tubing O.D.	8 mm	1.9	10	**8174169**	**NPQX-D-PC15-Q8-P10**
			10 mm	1.64	10	**8174170**	**NPQX-D-PC15-Q10-P10**
			12 mm	11.5	2	**8225231**	**NPQX-D-PC15-Q12-P2**
			5/16"	1.9	10	**8184515**	**NPQX-D-PC15-T516-P10**
			3/8"	10	10	**8189810**	**NPQX-D-PC19-T38-P10**
Silencer							
	–	Silencer		0.7	1	**8191740**	**AMTX-P-PC12**
Blanking plug							
	–	Cartridge		1	10	**8191749**	**NPQX-P-PC10**
				0.8	10	**8191750**	**NPQX-P-PC12**
				1.6	10	**8191751**	**NPQX-P-PC15**
Cover cap							
	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**
Inscription labels							
	–	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**