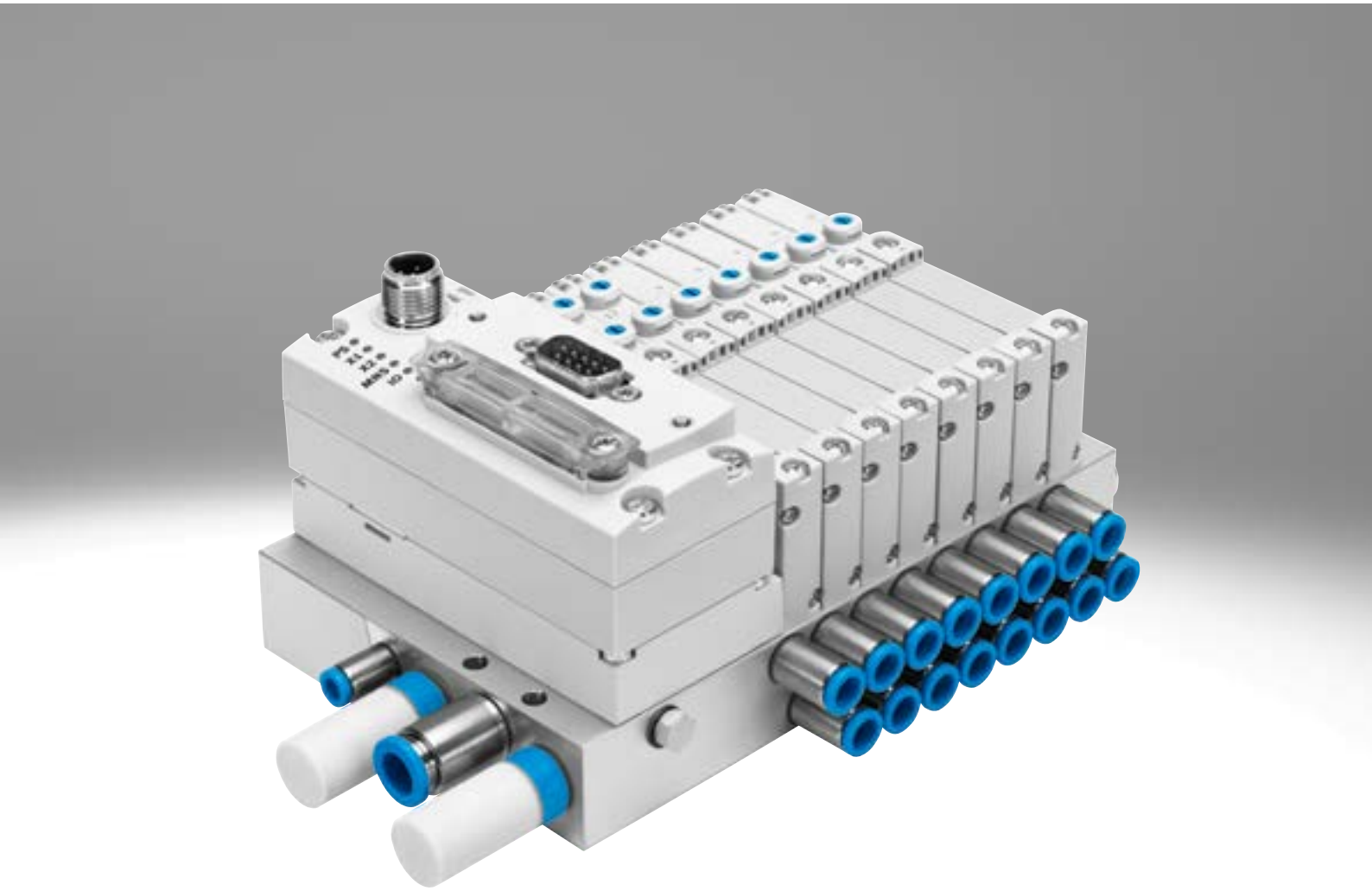
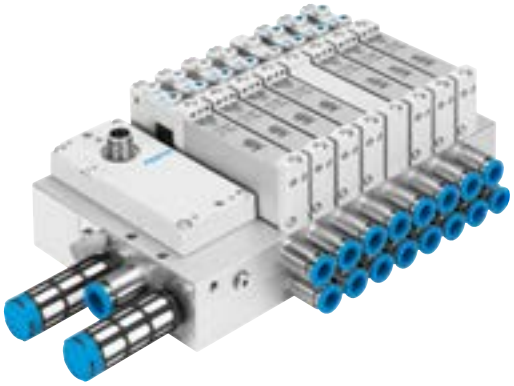
Solenoid valves VUVG-F1A/valve terminals VTUG-F1A

FESTO



Key features



Innovative

- Festo-specific I-Port interface for bus nodes (CTEU)
- IO-Link® mode for direct connection to a higher-level IO-Link master
- Flexible multi-pin plug connection using Sub-D or ribbon cable
- Reversible piston spool valves, up to 24 valve positions
- Reduced power consumption
- Excellent price/performance ratio

Versatile

- Choice of quick push-in connectors
- Multiple pressure zones possible
- Sub-D variant and fieldbus interface with protection to IP67
- Internal or external pilot air with the same manifold rail possible by using blanking plugs
- Sub-base valves with working ports underneath for installation in control cabinets

Reliable

- Sturdy and durable metal components
  – Valves
  – Manifold rails
- Fast troubleshooting thanks to LED indicator
- Manual override:
  choose from non-detenting, detenting or covered

Easy to install

- Easy to mount thanks to captive screws and seal
- Easy-to-change connection technology
- Inscription label holder for labelling

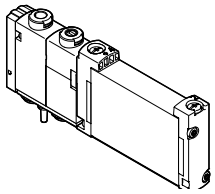
Ordering data – Product options

	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. 8143237	Type VTUG-F1A

Key features

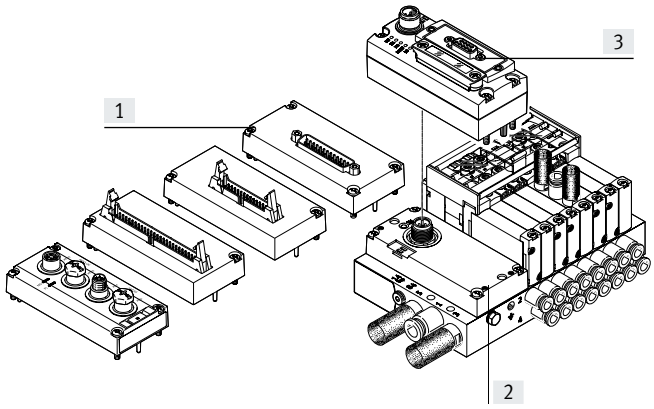
Sub-base valves for valve terminal VTUG-F1A

VUVG-B...1T1, sub-base valve



In the case of sub-base valves, the supply ports (1, 3 and 5) and the working ports (2, 4) are connected to the valve via pneumatic links (e.g. sub-base).

Overview – Valve terminal with multi-pin plug connection and fieldbus interface



Different electrical connections:

[1] Ribbon cable or Sub-D

[2] I-Port interface

[3] Bus node CTEU

Key features

Equipment options

Valve functions

- 2x 3/2-way, 3/2-way, 5/2-way, 5/3-way valves
- Reversible piston spool valves, up to 24 valve positions

Electrical connection options

- IO-Link® mode for direct connection to a higher-level IO-Link master
- Festo-specific I-Port interface for bus nodes (CTEU)
- Flexible multi-pin plug connection using Sub-D or ribbon cable

Basic valves VUVG-F1A

Size

- 10
- 14

Variants

- Sub-base valve

Valve functions

3/2-way valve

- Single solenoid
- Normally open
- Normally closed

2x 3/2-way valve

- Single solenoid
- Normally open
- Normally closed
- 1x normally closed, 1x normally open
- Mechanical spring
- Pneumatic spring

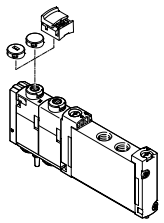
5/2-way valve

- Single solenoid
- Pneumatic/mechanical spring
- Mechanical spring
- Pneumatic spring
- Double solenoid valve

5/3-way valve

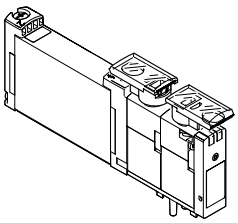
- Mid-position pressurised
- Mid-position exhausted
- Mid-position closed

Cover caps for manual override



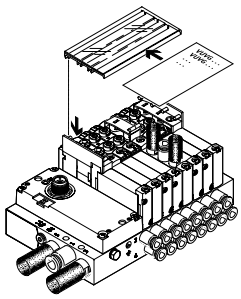
- Closed cover cap, covered manual override
- Slotted cover cap, non-detenting manual override
- Cover cap for detenting actuation without tools

Inscription label holders



Inscription label holders ASLR-D-L1 for identifying the valves and as a covering for the manual override.

Inscription label holders

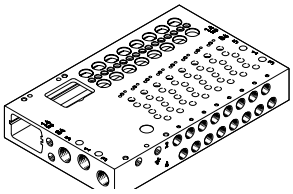


Inscription label holders ASCF-H-L1-... for identifying the valves on the valve terminal VTUG

Key features – Pneumatic components

Manifold rail

For sub-base valves



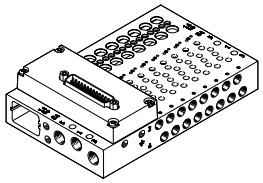
The sub-base valves are supplied with external pilot air. The pilot air is set via the manifold rail. The scope of delivery of the manifold rail includes a short and a long blanking plug for setting the pilot air.

- For sub-base valves M5/M7 (size 10), G1/8 (size 14)
- For 2x 3/2-way, 3/2-way, 5/2-way and 5/3-way valves
- 4 to 24 valve positions with electrical links

Key features

Electrical connection

Multi-pin plug connection

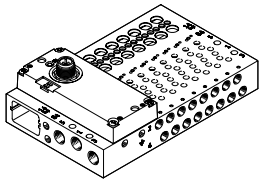


The signals are transmitted from the controller to the valve terminal via a pre-assembled or self-assembled multi-wire cable to the multi-pin plug connection.

This substantially reduces installation time compared to individually connected valves. The valve terminal can be equipped with max. 48 solenoid coils.

Versions:
- Sub-D connection
- Ribbon cable

I-Port interface

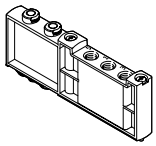


Festo-specific interface as a basis for bus nodes (CTEU) or in IO-Link® mode for
direct connection to a higher-order IO-Link master.

Communication and power supply take place via a common M12 interface.

Connection options:
- As I-Port interface for bus nodes (CTEU)
- In IO-Link® mode for direct connection to an IO-Link master

Supply plate

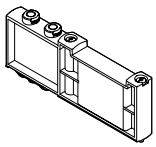


For additional air supply and exhaust via a valve position (ports for duct 1, 3 and 5).

Note

The supply plate VABF-L1-14-P3A4-G18-T1 can only be used with G fittings. R fittings are not permissible.

Cover plate for vacant position



Vacant position cover

Separator for pressure zones

For creating multiple pressure zones in a valve terminal

Key features – Pneumatic components

Creating pressure zones and separating exhaust air

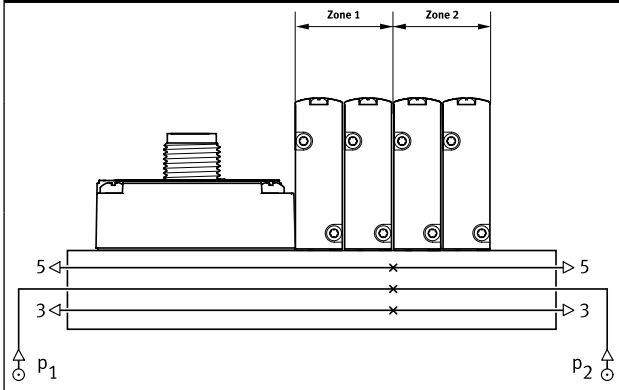
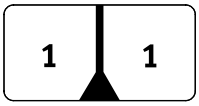
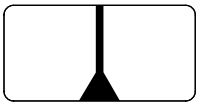
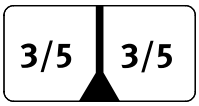
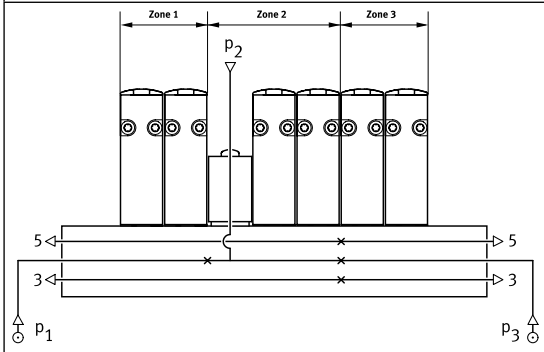
Compressed air is supplied and exhausted via the manifold rail and via supply plates.
The position of the supply plates and duct separations can be freely selected with the VTUG.

A pressure zone is created by separating the internal supply ducts using a separator.

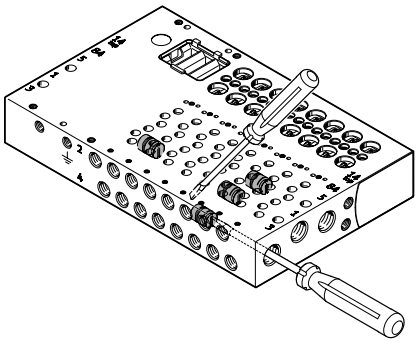
Pressure zone separation can be used for the following ducts:
- Duct 1
- Duct 3
- Duct 5

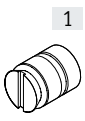
Note
- Use a separator if the exhaust air pressures are high
- Use at least one supply plate/air supply for each pressure zone
- Pressure zone separation is not possible in duct 12/14 (pilot air supply)

Duct separation

	Description
	The pressure zones can be freely configured with the VTUG. The following duct separations are possible: Duct 1 closed  Duct 1, 3, 5 closed  Duct 3, 5 closed 
	The number of pressure zones with the VTUG is limited by the number of valve positions on the manifold rail. Note that each supply plate occupies one valve position.

Separator VABD





[1] Separator VABD

Note

With the VTUG, several pressure zones can be created by mounting separators (VABD). The separators are inserted in the manifold rail using a slotted screwdriver.

Key features – Pneumatic components

Pilot air supply

Internal pilot air supply

Internal pilot air supply can be chosen with an operating pressure between 1.5 ... 8 bar, 2.5 ... 8 bar, or 3 ... 8 bar (depending on the valve used).

The pilot air supply is branched from duct 1 (compressed air supply) using an internal connection.

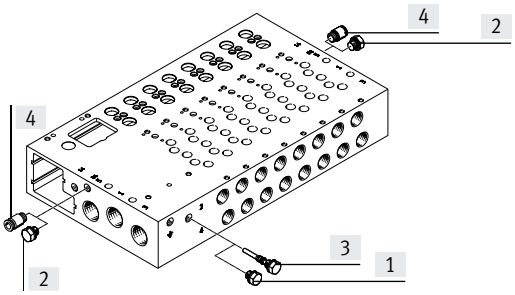
External pilot air supply

External pilot air supply is required for vacuum operation or operating pressures above 8 bar. The port for external pilot air supply (port 12/14) is located on the manifold rail.

Pilot exhaust air

The pilot air is exhausted via duct 82/84 of the manifold rail.

Pilot air supply



[1] Blanking plug, short, for internal pilot air
[2] Blanking plug for duct 12/14 with internal pilot air
[3] Blanking plug, long, for external pilot air
[4] Push-in fitting for duct 12/14 with external pilot air

The manifold rails have an internal connection between duct 12/14 and duct 1.
By inserting a blanking plug into this connection, it is possible to switch between internal and external pilot air.

Key features – Pneumatic components

Operation with different pressures

Vacuum operation

Points to note with 3/2-way valves with pneumatic spring return:
The 3/2-way valves are available in a design with two valves in one valve body and with pneumatic spring return. With these valves, the force for the return movement is obtained from port 1.

Vacuum operation is only possible at port 3 and 5, not at port 1.
With external pilot air supply, vacuum can be connected at port 1, 3, 5 of the 5/2-way and 5/3-way valves.

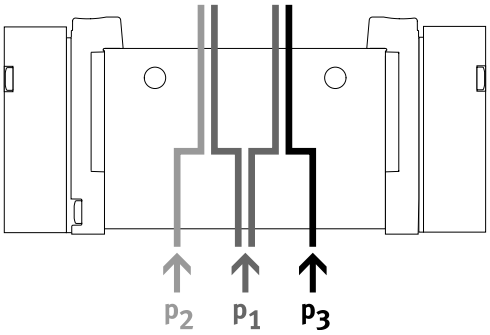
Vacuum operation is not possible when using the shut-off function (hot swap).

Note
Pressure must be present at port 1.

Reverse operation

The 3/2-way valves with pneumatic spring are not suitable for reverse operation, since at least the minimum pilot pressure must be present in duct 1.

Pressure divider (internal pilot air)

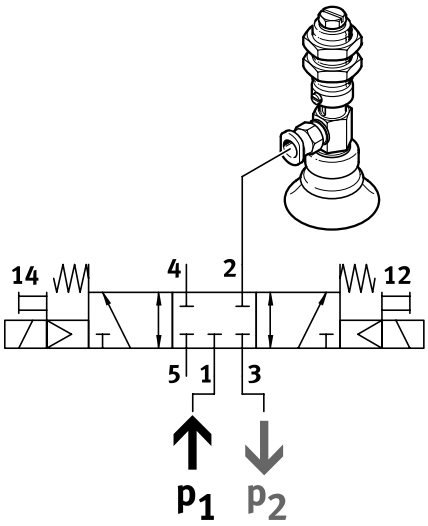


- Two different pressures are required
- Different pressures can be connected at duct 1, 3 and 5

Advantages
Any pressure or vacuum can be connected at duct 3 and 5 both with external and internal pilot air

Note
- With internal pilot air, adhere to the minimum pilot pressure in duct 1
- With 2x 3/2-way valves without spring return, to the to minimum pilot pressure in duct 1

Vacuum, ejector pulse and normal position

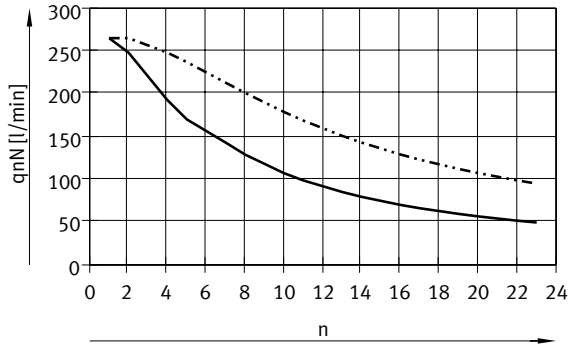


Vacuum, ejector pulse and normal position with internal pilot air can be achieved by connecting vacuum at duct 3 and pressure for the ejector pulse at duct 1.

Key features – Pneumatic components

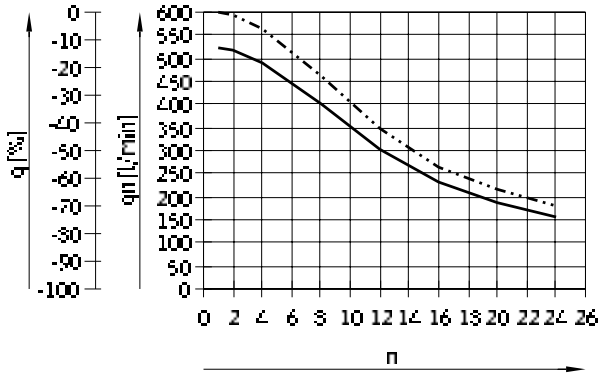
Standard nominal flow rate qnN as a function of the number of switched valves n

Size 10 mm, 5/2-way valves



Supply at one end
Supply at both ends

Size 14 mm

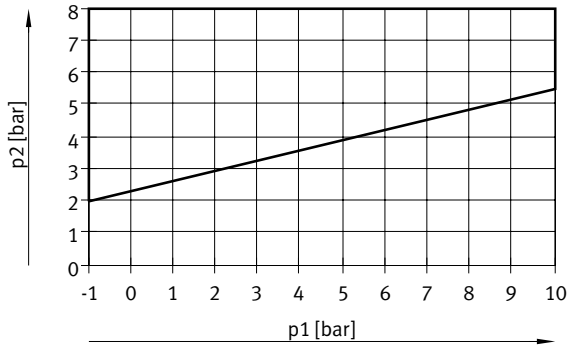


Standard flow rate qn per valve
Flow rate loss q

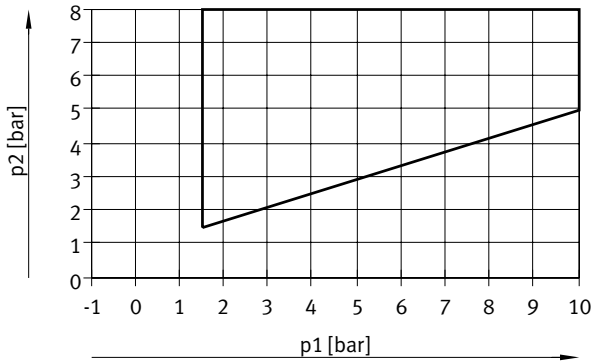
Key features – Pneumatic components

Pilot pressure p2 as a function of operating pressure p1

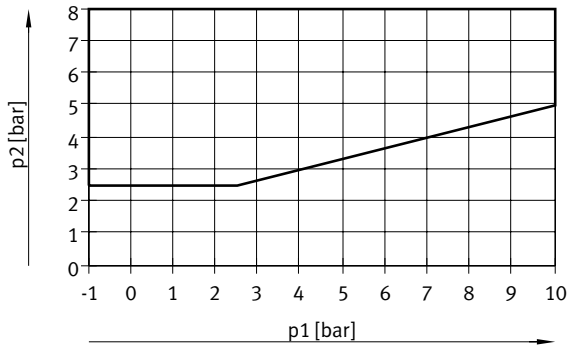
2x 3/2-way valve, mechanical spring return



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



3/2-way single solenoid valve and 5/2-way single solenoid valve



Key features – Mounting

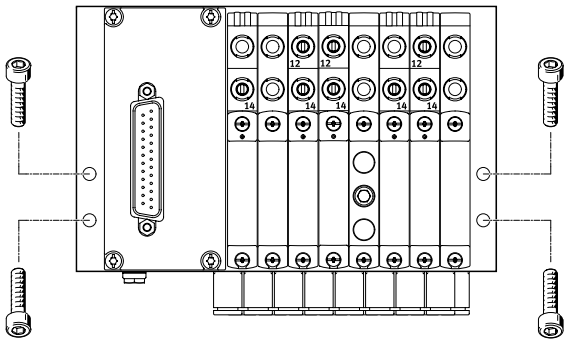
Valve terminal mounting

Sturdy terminal mounting via:
- Four through-holes for wall mounting
- H-rail mounting
- Mounting bracket

Note

Use the M5 thread provided on the manifold block for earthing the valve terminal.

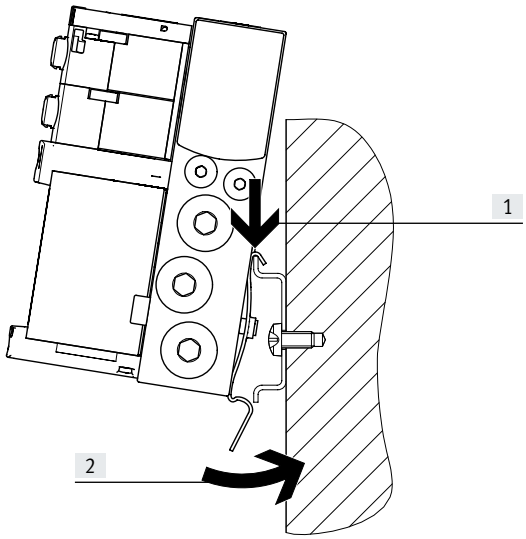
Wall mounting



Screw the valve terminal VTUG onto the mounting surface using four M4 screws.

The mounting holes are on the left and right side of the manifold rail.

H-rail mounting



Clip the valve terminal VTUG onto the H-rail (see arrow [1]).

Swivel the valve terminal onto the H-rail and secure in place with the clamping element (see arrow [2]).

Attach the manifold rails to a rail to EN 60715-TH35 using the H-rail mounting VAME-T-M4.
Use the following screws for mounting (to DIN 912):
- Size 10: M4x30
- Size 14: M4x40

Note

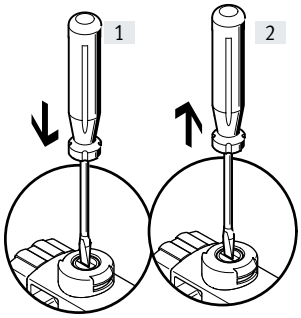
Permissible use of the H-rail:
- Manifold rail with outlet on the side or on top.
- H-rail exclusively for horizontal mounting.
- Vibration/shock loads are not permissible for this type of mounting.

Size 14:
- Use H-rail type TH35-7.5 for valve terminals with a maximum of 8 valve positions.
- Use H-rail type TH35-15 for mounting in accordance with the standard and for more than 8 valve positions.

Key features – Mounting

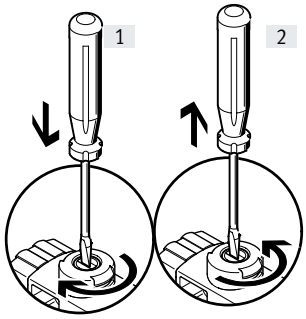
Manual override (MO)

MO with automatic return (non-detenting)



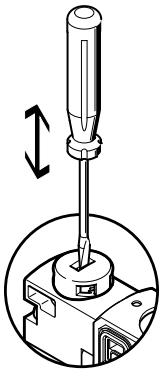
[1] Press in the plunger of the MO with a pointed object or screwdriver.
The pilot valve switches and actuates the main valve.
[2] Remove the pointed object or screwdriver.
The spring force pushes the plunger of the manual override back.
The pilot valve returns to its normal position as does the main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

MO with locking (detenting)



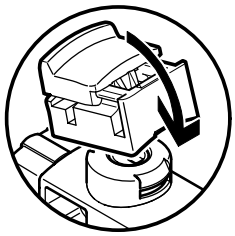
[1] Press in the plunger of the MO with a pointed object or screwdriver until the valve switches and then turn the plunger 90° clockwise until the stop is reached.
The valve remains actuated
[2] Turn the plunger 90° anti-clockwise until the stop is reached and then remove the pointed object or screwdriver. The spring force pushes the plunger of the manual override back.
The valve returns to its normal position (not with double solenoid valve code J).

MO non-detenting – with coded cover cap



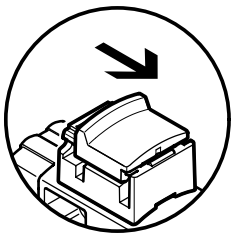
MO is actuated by pushing it with a pointed object or screwdriver and reset by spring force (detenting position prevented by coded cover cap).

MO detenting without tools – mounting



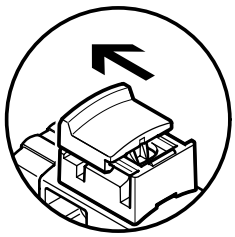
Turn MO to clip it onto the pilot valve. The cap for the MO can then be operated (detenting) without tools.

MO detenting without tools – actuation



Sliding the cap for the MO with latch in the direction of the arrow results in:
- Cap locks into the end position
- The pilot valve switches and actuates the main valve.

MO detenting without tools – actuation

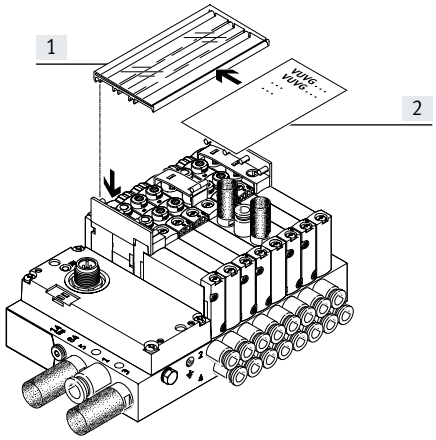


Sliding the cap for the MO with latch in the direction of the arrow results in:
- Cap locks into the end position
- The spring force pushes the plunger of the manual override back.
- The pilot valve returns to its normal position as does the main single solenoid valve (not the case with double solenoid valve code J).

Key features – Mounting

Inscription system

Inscription label holders



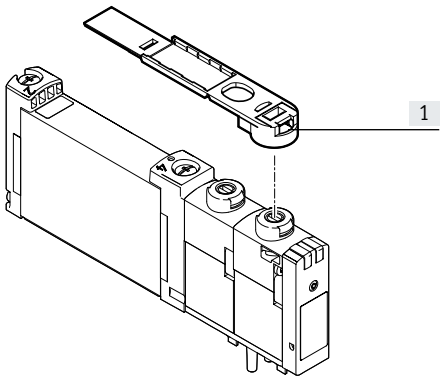
[1] Inscription label holders ASCF-H-L1 (code TT)
[2] Inscription field

Mount the inscription label holders to label the valves. Open the inscription label holder to insert the inscription label and actuate the manual override. The inscription label holders are available in different sizes depending on the number of valve positions.

Note

Do not engage the manual override before mounting the inscription label holder.
When mounted, the retaining bracket for the inscription label holder covers the manual override of the valves beneath it.
The manual override for the two valves under the retainers of the inscription label holder can then only be operated as non-detenting.

Inscription label holders



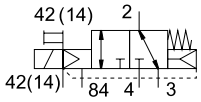
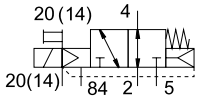
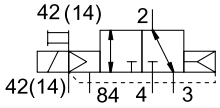
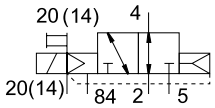
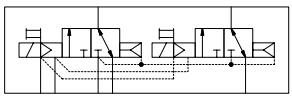
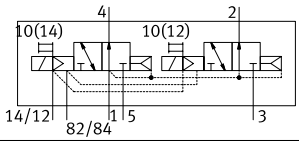
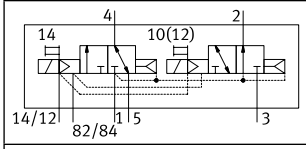
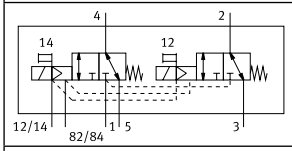
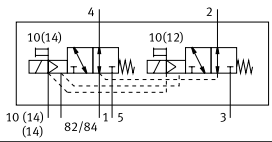
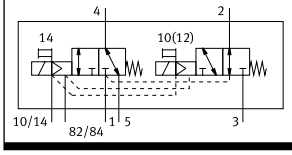
[1] Inscription label holders ASLR-D-L1 (code TV)

Use inscription label holders ASLR-D-L1 (code TV) to label individual valves.
The inscription label holder is placed directly on the manual override.

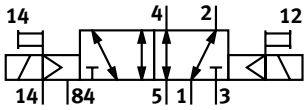
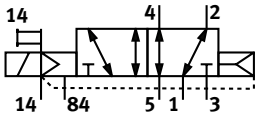
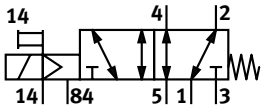
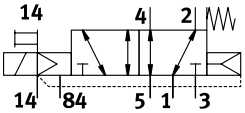
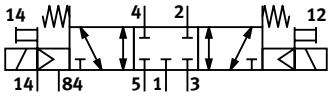
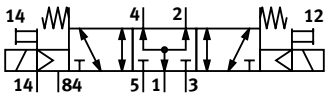
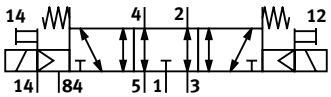
Note

Do not engage the manual override before mounting the inscription label holder.
After the retaining brackets are fitted, the manual override can only be operated as non-detenting.

Overview of valve functions

Valve	Valve code	Description	Size	
			M5/M7	G1/8
3/2-way valve, pneumatic/mechanical spring				
	M32C-R	Normally closed	■	–
	M32U-R	Normally open	■	–
3/2-way valve, pneumatic spring				
	M32C-A	Normally closed	–	■
	M32U-A	Normally open	–	■
2x 3/2-way valve, pneumatic spring				
	T32C-A	Normally closed	■	■
	T32U-A	Normally open	■	■
	T32H-A	1x normally open, 1x normally closed	■	■
2x 3/2-way valve, mechanical spring				
	T32C-M	Normally closed	■	■
	T32U-M	Normally open	■	■
	T32H-M	1x normally open, 1x normally closed	■	■

Overview of valve functions

Valve	Valve code	Description	Size	
			M5/M7	G1/8
5/2-way valve, double solenoid				
	B52	External pilot air supply	■	■
5/2-way valve, single solenoid				
	M52-A	Pneumatic spring	–	■
	M52-M	Mechanical spring	■	■
	M52-R	Pneumatic/mechanical spring	■	–
5/3-way valve				
	P53C	Mid-position closed	■	■
	P53U	Mid-position pressurised	■	■
	P53E	Mid-position exhausted	■	■

Type codes -F1A

001	Series	
VTUG	Valve terminal	

002	Size	
10	Size 10	
14	Size 14	

003	Valve control	
M	Multi-pin	
V	Interface for fieldbus module	

004	Multi-pin plug connection type	
SD	Sub-D plug	

005	Circuitry	
R	Holding current reduction with integrated protective circuit	

006	Bus protocol/activation	
	None	
AP	CPX-AP interface	
LK	IO-Link®	
PT	I-Port interface	

007	Valve type	
B	Sub-base valve	

008	Nominal operating voltage	
1	24 V DC	

009	Manual override	
H	Non-detenting	
S	Covered	
T	Non-detenting, detenting with accessories	
Y	Detenting	

010	Pilot air	
	Internal	
Z	External	

011	Number of pins	
	None	
25	25-pin	
44	44-pin	

012	Pin allocation	
	Standard	
V20	For 12 double solenoid/bistable or 24 single solenoid/monostable valves	
V21	For 18 double solenoid/bistable and 6 single solenoid/monostable valves	
V22	For 10 double solenoid/bistable valves	
V23	For 8 double solenoid/bistable and 4 single solenoid/monostable valves	
V24	For 4 double solenoid/bistable and 12 single solenoid/monostable valves	
V25	For 20 single solenoid/monostable valves	

013	Compressed air supply connection	
Q6	Push-in connector 6 mm	
Q8	Push-in connector 8 mm	
Q10	Push-in connector 10 mm	
Q12	Push-in connector 12 mm	
G18	G1/8	
G14	G1/4	

014	Compressed air supply connection position	
	Both sides	
L	Left	
R	Right	

015	Exhaust connection	
DQ	Push-in fitting	
DT	Thread	
UC	Silencer	

016	Exhaust connection position	
	Both sides	
L	Left	
R	Right	

017	Valve connection	
C	Blanking plug	
G18	G1/8	
M5	M5	
M7	M7	
Q4	Push-in connector 4 mm	
QH4	Push-in connector 4 mm, with connecting thread M7	
Q6	Push-in connector 6 mm	
QH6	Push-in connector 6 mm, with connecting thread M7	
Q8	Push-in connector 8 mm	

018	Push-in connection type	
S	Screwed	

019	Position function	
A	5/2 or 4/2-way valve, single solenoid/monostable, mechanical spring	
B	5/3- or 4/3-way valve, mid-position pressurised	
E	5/3 or 4/3-way valve, mid-position exhausted	
G	5/3 or 4/3-way valve, mid-position closed	
H	2x3/2-way valve, 1x normally closed, 1x normally open, pneumatic spring	
J	4/2 or 5/2-way double pilot valve	
K	1x3/2 or 2x3/2-way valve, normally closed, pneumatic spring	
L	Vacant position	
M	4/2 or 5/2-way valve, single solenoid/monostable, pneumatic spring	
N	1x3/2 or 2x3/2-way valve, normally open, pneumatic spring	
P	5/2-way valve, single solenoid/monostable, pneumatic/mechanical spring	
S	Additional power supply	
VH	2x3/2-way valve, 1x normally closed, 1x normally open, mechanical spring	
VK	2x3/2-way valve, normally closed, mechanical spring	
VN	2x3/2-way valve, normally open, mechanical spring	

Type codes -F1A

020	Working port, duct 2	
	As selected	
CC	Blanking plug	
QG18	G1/8	
QM5	M5	
QM7	M7	
Q4	Push-in connector, 4 mm	
QH4	Push-in connector 4 mm, with connecting thread M7	
Q6	Push-in connector 6 mm	
QH6	Push-in connector 6 mm, with connecting thread M7	
Q8	Push-in connector 8 mm	

021	Working port, duct 4	
	As selected	
XCC	Blanking plug	
XQG18	G1/8	
XQM5	M5	
XQM7	M7	
XQ4	Push-in connector 4 mm	
XQH4	Push-in connector 4 mm, with connecting thread M7	
XQ6	Push-in connector 6 mm	
XQH6	Push-in connector 6 mm, with connecting thread M7	
XQ8	Push-in connector 8 mm	

022	Special material properties	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	

023	Certification	
	None	
NA4X	NEMA 4X	

024	Accessories for IO-Link®	
	None	
XM	T-adapter, M12, 5-pin, for IO-Link® and load supply	

025	Accessories for IO-Link®, separate load supply	
	None	
XN	Straight plug, M12, 5-pin	

026	Electrical accessories	
	None	
M1	Connecting cable, multi-pin, 2.5 m	
M2	Connecting cable, multi-pin, 5 m	
M3	Connecting cable, multi-pin, 10 m	
MA1	Connecting cable, multi-pin, angled, 2.5 m	
MA2	Connecting cable, multi-pin, angled, 5 m	
MA3	Connecting cable, multi-pin, angled, 10 m	

027	Inscription label holder for valves	
	None	
TV	Transparent, valve	
TT	Transparent, valve terminal	

028	Copper content	
	Standard	
F	Free of copper	

Datasheet – Sub-base valve M5/M7

Function
3/2C, 3/2U
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Size 10 mm

Flow rate
130 ... 300 l/min

Voltage
24 V DC

Circuit diagrams ➔ page 15

General technical data															
Valve function	T32-A			T32-M			M32-R		M52-R	B52	M52-M	P53			
Normal position	C[1]	U[2]	H[4]	C[1]	U[2]	H[4]	C[1]	U[2]	–	–	–	C[1]	U[2]	E[3]	
Stable position	Monostable									Bistable	Monostable				
Pneumatic spring return	Yes			No			No		Yes[5]	–	No	–			
Mechanical spring return	No			Yes			Yes		Yes[5]	–	Yes	Yes			
Vacuum operation at port 1	No			With external pilot air											
Design	Piston spool														
Sealing principle	Soft														
Actuation type	Electrical														
Type of control	Piloted														
Pilot air supply	External														
Exhaust air function	Can be throttled														
Manual override	Choice of non-detenting, covered, non-detenting/detenting or detenting														
Type of mounting	On manifold rail														
Mounting position	Any														
Overlap	Positive overlap													Indeterminate overlap	
Signal status indication	LED														
Standard nominal flow rate M5/M7 [l/min]	160			140			140		300		260	260			
Flow rate on manifold rail M5, front [l/min]	150			130			130		220		220	200			
Flow rate on manifold rail M7, front [l/min]	160			140			140		270		240	250			
Flow rate on manifold rail M7, underneath [l/min]	160			140			140		300		260	260			
Size [mm]	10														
Connection 1, 3, 5, 12/14, 82/84	On manifold rail														
Connection 2, 4	On manifold rail														
Product weight [g]	59						53			60	53	58			
Certification	c UL us - Recognized (OL)														
	RCM														
CE marking (see declaration of conformity)[6]	To EU EMC Directive														
Corrosion resistance class CRC[7]	2														

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) 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.
7) More information: www.festo.com/x/topic/crc

Datasheet – Sub-base valve M5/M7

Operating and environmental conditions									
Valve function			T32-A[1]	T32-M[2]	M32-R[3]	M52-R[3]	B52	M52-M[2]	P53
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]						
Operating pressure	Internal pilot air supply	[MPa]	0.15 ... 0.8	0.2 ... 0.8	0.15 ... 0.8			0.3 ... 0.8	
		[bar]	1.5 ... 8	2 ... 8	1.5 ... 8			3 ... 8	
	External pilot air supply	[MPa]	0.15 ... 1	–0.09 ... 1				–0.09 ... 0.8	–0.09 ... 1
		[bar]	1.5 ... 10	–0.9 ... 10				–0.9 ... 8	–0.9 ... 10
Pilot pressure[4]		[MPa]	0.15 ... 0.8	0.2 ... 0.8	0.15 ... 0.8			0.3 ... 0.8	
		[bar]	1.5 ... 8	2 ... 8	1.5 ... 8			3 ... 8	
Ambient temperature		[°C]	–5 ... +60						
Temperature of medium		[°C]	–5 ... +60						
LABS (PWIS) conformity	Valve terminal VTUG-...		VDMA24364-B1/B2-L						
	Valve terminal VTUG-F1A		VDMA24364 zone III						

1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring
4) See graphs on page 11

Electrical data			
Electrical connection			Via E-box
Operating voltage		[V DC]	24 ±10%
Power consumption per valve solenoid		[W]	1/0.4 (after 25 ms)
Duty cycle		[%]	100
Max. switching frequency		[Hz]	3
Protection rating to EN 60529[1]	Individual valve		IP65, IP67
	Valve terminal VTUG-F1A		IP40

1) Depending on the configuration selected

Safety characteristics		
Max. positive test pulse with logic 0	[µs]	1600
Max. negative test pulse with logic 1	[µs]	3000
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistant		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Datasheet – Sub-base valve M5/M7

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Valve switching times

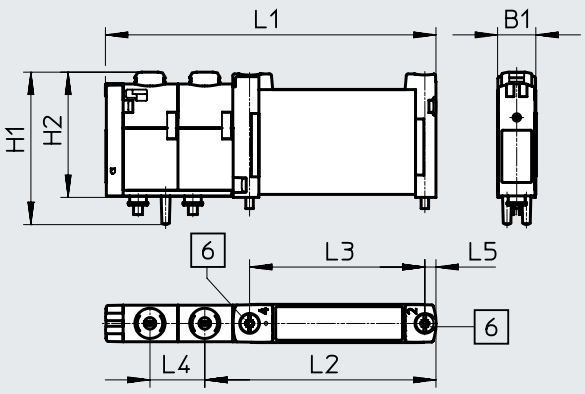
Valve function		T32-A[1]	T32-M[2]	M32-R[3]	M52-R[3]	B52	M52-M[2]	P53
Switching time on	[ms]	8	10	9	9	–	12	12
Switching time off	[ms]	20	20	17	21	–	30	38
Switching time changeover	[ms]	–	–	–	–	9	–	16

1) Pneumatic spring
2) Mechanical spring
3) Mixed, pneumatic/mechanical spring

Datasheet – Sub-base valve M5/M7

Dimensions Download CAD data ➔ www.festo.com

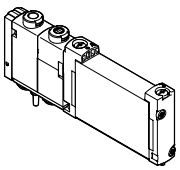
Sub-base valve M5/M7



[6] Retaining screw

Type	B1	H1	H2	L1	L2	L3	L4	L5
VUVG-B10-...-F1T1L-F1A	10.3	40.7	33	88.6	62	47	14.7	3

Ordering data

	Description		Part no.	Type
Sub-base valve M5/M7				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring return	**8150399**	**VUVG-B10-T32C-AZT-F-1T1L-F1A**
		Normally open, pneumatic spring return	**8141516**	**VUVG-B10-T32U-AZT-F-1T1L-F1A**
		1x normally open, 1x normally closed, pneumatic spring return	**8141517**	**VUVG-B10-T32H-AZT-F-1T1L-F1A**
		Normally closed, mechanical spring return	**8141518**	**VUVG-B10-T32C-MZT-F-1T1L-F1A**
		Normally open, mechanical spring return	**8141519**	**VUVG-B10-T32U-MZT-F-1T1L-F1A**
		1x normally open, 1x normally closed, mechanical spring return	**8141520**	**VUVG-B10-T32H-MZT-F-1T1L-F1A**
	5/2-way valve, single solenoid			
	External pilot air supply	Mechanical spring return	**8150460**	**VUVG-B10-M52-MZT-F-1T1L-F1A**
		Pneumatic/mechanical spring return	**8150397**	**VUVG-B10-M52-RZT-F-1T1L-F1A**
	5/2-way valve, double solenoid			
	External pilot air supply		**8150398**	**VUVG-B10-B52-ZT-F-1T1L-F1A**
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring return	**8141521**	**VUVG-B10-P53C-ZT-F-1T1L-F1A**
		Mid-position pressurised, mechanical spring return	**8141523**	**VUVG-B10-P53U-ZT-F-1T1L-F1A**
		Mid-position exhausted, mechanical spring return	**8141522**	**VUVG-B10-P53E-ZT-F-1T1L-F1A**

Datasheet – Sub-base valve G1/8

Function
3/2C, 3/2U
2x 3/2C, 2x 3/2U, 2x 3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Size 14 mm

Flow rate
350 ... 560 l/min

Voltage
24 V DC

Circuit diagrams ➔ page 15

General technical data															
Valve function		T32-A			T32-M			M32-A		M52-A	B52	M52-M	P53		
Normal position		C[1]	U[2]	H[4]	C[1]	U[2]	H[4]	C[1]	U[2]	–	–	–	C[1]	U[2]	E[3]
Stable position		Monostable									Bistable	Monostable			
Pneumatic spring return		Yes			No			Yes		Yes	–	No	–		
Mechanical spring return		No			Yes			No		No	–	Yes	Yes		
Vacuum operation at port 1		No			With external pilot air										
Design		Piston spool													
Sealing principle		Soft													
Actuation type		Electrical													
Type of control		Piloted													
Pilot air supply		External													
Exhaust air function		Can be throttled													
Manual override		Choice of non-detenting, covered, non-detenting/detenting or detenting													
Type of mounting		On manifold rail													
Overlap		Positive overlap													
Mounting position		Any													
Signal status indication		LED													
Standard nominal flow rate G1/8	[l/min]	530			470			350		550	560	550	510		
Flow rate on manifold rail G1/8, front	[l/min]	490			440			320		500	510	500	470		
Flow rate on manifold rail G1/8, underneath	[l/min]	530			470			350		550	560	550	510		
Size	[mm]	14													
Connection	1, 3, 5, 12/14, 82/84	On manifold rail													
	2, 4	On manifold rail													
Product weight	[g]	102			100			91			98	89	95		
Certification		c UL us - Recognized (OL)													
		RCM													
CE marking (see declaration of conformity)[5]		To EU EMC Directive													
Corrosion resistance class CRC[6]		2													

1) C=Normally closed/mid-position closed
2) U=Normally open/mid-position pressurised
3) E=Mid-position exhausted
4) H=2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) 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.
6) More information: www.festo.com/x/topic/crc

Datasheet – Sub-base valve G1/8

Operating and environmental conditions									
Valve function			T32-A[1]	T32-M[2]	M32-A[1]	M52-A[1]	B52	M52-M[2]	P53
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]						
Operating pressure	Internal pilot air supply	[MPa]	0.15 ... 0.8	0.2 ... 0.8	0.15 ... 0.8			0.3 ... 0.8	
		[bar]	1.5 ... 8	2 ... 8	1.5 ... 8			3 ... 8	
	External pilot air supply	[MPa]	0.15 ... 1	–0.09 ... 1				–0.09 ... 0.8	–0.09 ... 1
		[bar]	1.5 ... 10	–0.9 ... 10				–0.9 ... 8	–0.9 ... 10
Pilot pressure[3]		[MPa]	0.15 ... 0.8	0.2 ... 0.8	0.15 ... 0.8			0.3 ... 0.8	
		[bar]	1.5 ... 8	2 ... 8	1.5 ... 8			3 ... 8	
Ambient temperature		[°C]	–5 ... +60						
Temperature of medium		[°C]	–5 ... +60						
LABS (PWIS) conformity	Valve terminal VTUG-...		VDMA24364-B1/B2-L						
	Valve terminal VTUG-F1A		VDMA24364 zone III						

1) Pneumatic spring
2) Mechanical spring
3) See graphs on page 11

Electrical data			
Electrical connection			Via E-box
Operating voltage		[V DC]	24 ±10%
Power		[W]	1/0.4 (after 25 ms)
Duty cycle		[%]	100
Max. switching frequency		[Hz]	3
Protection rating to EN 60529[1]	Individual valve		IP67/IP65
	Valve terminal VTUG-F1A		IP40

1) Depending on the configuration selected

Safety characteristics		
Max. positive test pulse with logic 0	[µs]	1600
Max. negative test pulse with logic 1	[µs]	3000
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistant		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Datasheet – Sub-base valve G1/8

Information on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Valve switching times

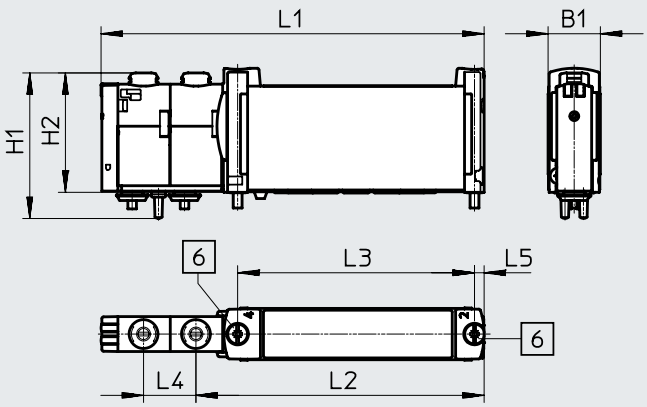
Valve function		T32-A[1]	T32-M[2]	M32-A[1]	M52-A[1]	B52	M52-M[2]	P53
Switching time on	[ms]	10	13	13	13	–	10	15
Switching time off	[ms]	29	21	20	26	–	38	42
Switching time changeover	[ms]	–	–	–	–	9	–	25

1) Pneumatic spring
2) Mechanical spring

Datasheet – Sub-base valve G1/8

Dimensions Download CAD data ➔ www.festo.com

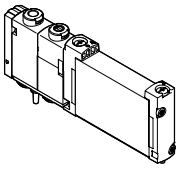
Sub-base valve G1/8



[6] Retaining screw

Type	B1	H1	H2	L1	L2	L3	L4	L5
VUVG-B14-...-F-1T1L-F1A	14.7	40.9	33.5	107.6	81	66.5	15.1	2.8

Ordering data

	Description		Part no.	Type
Sub-base valve G1/8				
	**2x 3/2-way valve**			
	External pilot air supply	Normally closed, pneumatic spring return	**8150402**	**VUVG-B14-T32C-AZT-F-1T1L-F1A**
		Normally open, pneumatic spring return	**8141527**	**VUVG-B14-T32U-AZT-F-1T1L-F1A**
		1x normally open, 1x normally closed, pneumatic spring return	**8141528**	**VUVG-B14-T32H-AZT-F-1T1L-F1A**
		Normally closed, mechanical spring return	**8141529**	**VUVG-B14-T32C-MZT-F-1T1L-F1A**
		Normally open, mechanical spring return	**8141530**	**VUVG-B14-T32U-MZT-F-1T1L-F1A**
		1x normally open, 1x normally closed, mechanical spring return	**8141531**	**VUVG-B14-T32H-MZT-F-1T1L-F1A**
	5/2-way valve, single solenoid			
	External pilot air supply	Pneumatic spring return	**8150400**	**VUVG-B14-M52-AZT-F-1T1L-F1A**
		Mechanical spring return	**8150461**	**VUVG-B14-M52-MZT-F-1T1L-F1A**
	5/2-way valve, double solenoid			
	External pilot air supply		**8150401**	**VUVG-B14-B52-ZT-F-1T1L-F1A**
	5/3-way valve			
	External pilot air supply	Mid-position closed, mechanical spring return	**8141532**	**VUVG-B14-P53C-ZT-F-1T1L-F1A**
		Mid-position pressurised, mechanical spring return	**8141534**	**VUVG-B14-P53U-ZT-F-1T1L-F1A**
		Mid-position exhausted, mechanical spring return	**8141533**	**VUVG-B14-P53E-ZT-F-1T1L-F1A**

Datasheet – Manifold rail VABM

General technical data				
Manifold rail			Size 10	Size 14
Short type code			VABM	
Grid dimension		[mm]	10.5	16
Mounting position			Any	
Connection type			Semi in-line/sub-base	
Max. no. of valve positions			24	
Connection	12/14		M5	M5
	82/84		M5	M5
	2, 4		M5 (VABM-L1-10W-...-GR)	G1/8
			M7 (VABM-L1-10HW-...-GR)	
	1, 3, 5		G1/8	–
Storage temperature		[°C]	–20 ... 60	
Certification			c UL us - Recognized (OL)	
CE marking (see declaration of conformity)[1]			To EU EMC Directive	
Corrosion resistance class CRC[2]			2	
LABS (PWIS) conformity			VDMA24364-B1/B2-L	

1) 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.

2) More information: www.festo.com/x/topic/crc

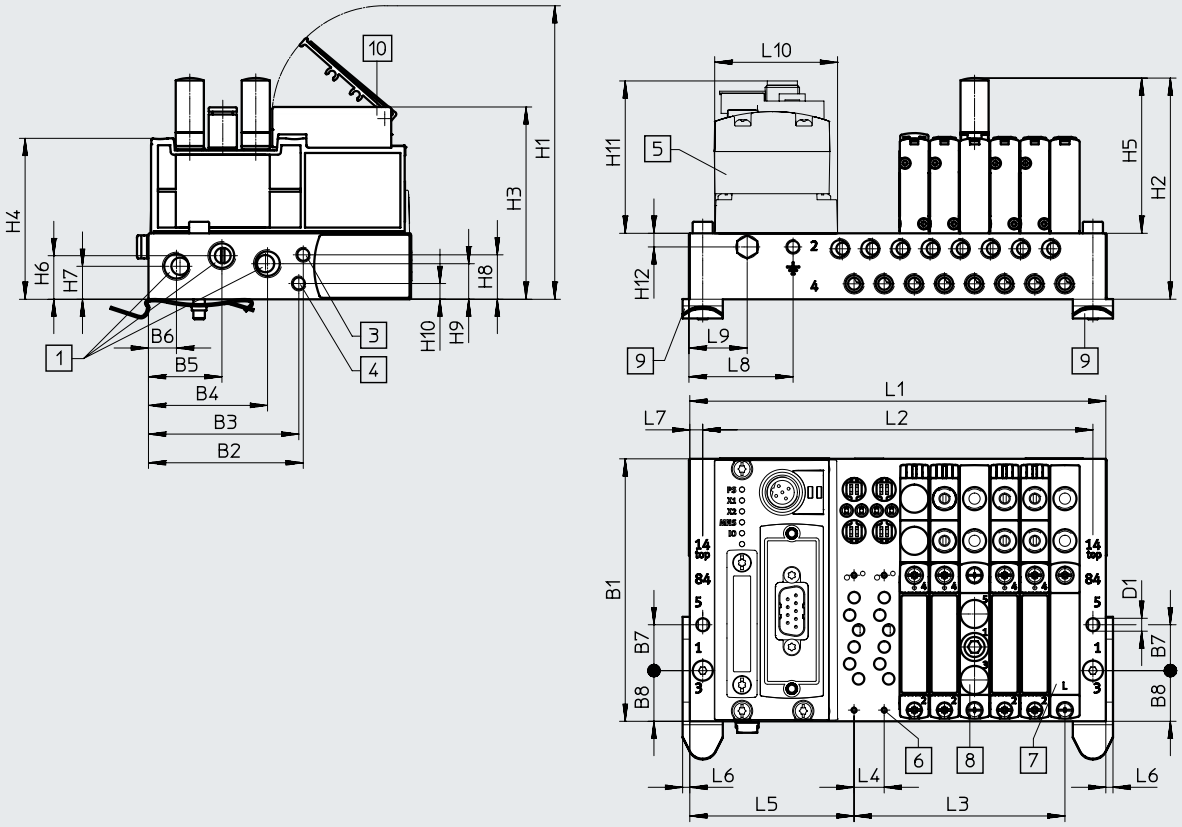
Weight [g]											
Valve positions	4	5	6	7	8	9	10	12	16	20	24
VABM-L1-10G-G18-...	329	363	397	431	465	499	533	601	737	873	1009
VABM-L1-10HW-G18-...	388	426	464	502	540	578	616	692	844	996	1148
VABM-L1-14G-G14-...	879	990	1101	1212	1323	1434	1545	1767	2211	2655	3099
VABM-L1-14W-G14-...	839	940	1041	1142	1243	1344	1445	1647	2051	2455	2859
VABM-L1-18G-G38-...	1461	1661	1861	2061	2261	2461	2661	3061	3861	4661	5461
VABM-L1-18W-G38-...	1369	1546	1723	1900	2077	2254	2431	2785	3493	4201	4909

Materials	
Manifold rail	Wrought aluminium alloy
Note on materials	RoHS-compliant

Datasheet – Manifold rail VABM

Dimensions – Example of valve terminal with I-Port interface Download CAD data ➔ www.festo.com

Outlet orientation of electrical components on top



[1] Ports 1, 3 and 5: size 10: G1/8 (at both ends)
[3] Port 12/14: size 10 and 14: M5 (at both ends)
[4] Port 82/84: size 10 and 14: M5 (at both ends)
[5] CTEU-CANopen
[6] Valves/cover plates/supply plates – mounting on manifold block: size 10: M2, size 14: M2.5
[7] Cover plate
[8] Supply plate, ports 1, 3 and 5: size 10: M7, size 14: G1/8
[9] H-rail mounting
[10] Inscription label holder

Type	Number of valve positions	Size 10																
		B1	B2	B3	B4	B5	B6	B7	B8	D1 ⌀	H1	H2	H3	H4	H5	H6	H7	H8
VABM	4-24	91.5	54	52.4	41.5	25.6	9.8	16	17.7	4.5	102.3	77.1	67	56.1	54.1	15.2	11.5	15.5

Type	Number of valve positions	Size 10									
		H9	H10	H11	H12	L4	L5	L6	L7	L8	L9	L10
VABM	4-24	12.4	5.5	54.8	4.8	10.5	57.3	2.5	4.5	36	20	42.5

Type	Number of valve positions	Size 14																
		B1	B2	B3	B4	B5	B6	B7	B8	D1 ⌀	H1	H2	H3	H4	H5	H6	H7	H8
VABM	4-24	110	70	59.3	56.5	36.5	16	20	26.5	4.5	113.1	95.1	77.7	68.6	61.3	18.7	15.7	28.7

Datasheet – Manifold rail VABM

Type	Number of valve positions	Size 14										
		H9	H10	H11	H12	L4	L5	L6	L7	L8	L9	L10
VABM	4-24	13.2	23.7	54.8	5.1	16	60.6	2	5	10	25.5	42.5

Type	Number of valve positions	Size 10			Size 14		
		L1	L2	L3	L1	L2	L3
VABM	4	103	94	31.5	128	118	48
	5	113.5	104.5	42	144	134	64
	6	124	115	52.5	160	150	80
	7	134.5	125.5	63	176	166	96
	8	145	136	73.5	192	182	112
	9	155.5	146.5	84	208	198	128
	10	166	157	94.5	224	214	144
	12	187	178	115.5	256	246	176
	16	229	220	157.5	320	310	240
	20	271	262	199.5	384	374	304
	24	313	304	241.5	448	438	368

Datasheet – Manifold rail VABM

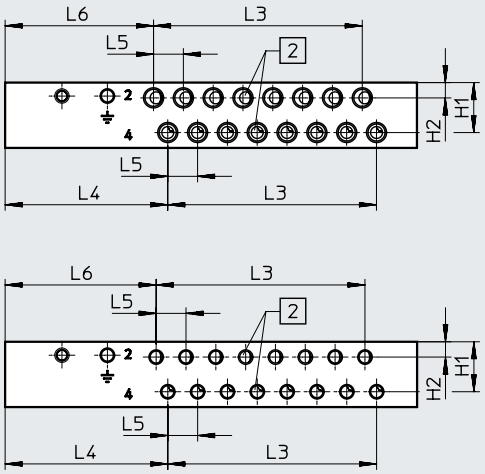
Number of valve positions	L1	L2	L3
VABM-L1-10HWS1-G18-4-GR	116.2	84	31.5
VABM-L1-10HWS1-G18-8-GR	158.2	126	73.5
VABM-L1-10HWS2-G18-8-GR	184	168	73.5
VABM-L1-10HWS2-G18-12-GR	226	210	115.5
VABM-L1-10HWS2-G18-16-GR	268	252	157.5
VABM-L1-10HWS2-G18-24-GR	352	336	241.5
VABM-L1-10HWS2-H-G18-8-GR	184	168	73.5
VABM-L1-10HWS2-H-G18-12-GR	226	210	115.5
VABM-L1-10HWS2-H-G18-16-GR	268	252	157.5
VABM-L1-10HWS2-H-G18-24-GR	352	336	241.5
VABM-L1-14HWS1-G14-4-GR	135	64	48
VABM-L1-14HWS1-G14-8-GR	199	128	112
VABM-L1-14HWS2-G14-8-GR	234	192	112
VABM-L1-14HWS2-G14-12-GR	298	256	176
VABM-L1-14HWS2-G14-16-GR	362	320	240
VABM-L1-14HWS2-G14-24-GR	490	448	368
VABM-L1-14HWS2-H-G14-8-GR	234	192	112
VABM-L1-14HWS2-H-G14-12-GR	298	256	176
VABM-L1-14HWS2-H-G14-16-GR	362	320	240
VABM-L1-14HWS2-H-G14-24-GR	490	448	368

Datasheet – Manifold rail VABM

Dimensions – Manifold rail outlet orientation at the front

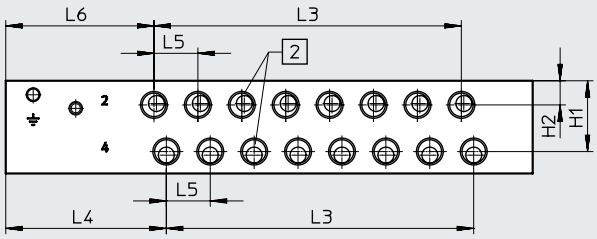
Download CAD data ➔ www.festo.com

Size 10, I-Port interface on top



[2] Port 2 and 4

Size 14, I-Port interface on top



[2] Port 2 and 4

Size	Port 2 and 4	Manifold rail with I-Port interface on top				
		H1	H2	L4	L5	L6
10	M7 thread	17.6	5.4	57.3	10.5	52.3
	M5 thread					53.2
14	G1/8 thread	25.8	8.8	58.5	16	54

Datasheet – Manifold rail VABM

Type	Number of valve positions	Size 10	Size 14
		L3	L3
VABM	4	31.5	48
	5	42	64
	6	52.5	80
	7	63	96
	8	73.5	112
	9	84	128
	10	94.5	144
	12	115.5	176
	16	157.5	240
	20	199.5	304
	24	241.5	368

Datasheet – Manifold rail VABM

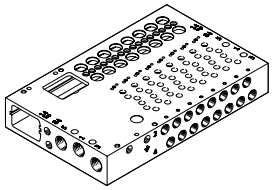
Type	Manifold rail with I-Port interface, size 10										
	B1	B2	B3	B4	B5	L4	L5	L6	L7	L8	L9
VABM	41	31.8	27	20	13	108.3	10.5	105.2	91.8	81.8	4.5

Type	Manifold rail with I-Port interface, size 14										
	B1	B2	B3	B4	B5	L4	L5	L6	L7	L8	L9
VABM	53.5	45.1	35.2	27.8	17	108	16	108	92.5	82.5	5

Type	Number of valve positions	Manifold rail with I-Port interface Size 10			Manifold rail with I-Port interface Size 14		
		L1 +5	L2 +5	L3	L1	L2	L3
VABM	4	152.5	143.5	31.5	177.5	167.5	48
	5	163	154	42	193.5	183.5	64
	6	173.5	164.5	52.5	209.5	199.5	80
	7	184	175	63	225.5	215.5	96
	8	194.5	185.5	73.5	241.5	231.5	112
	9	205	196	84	257.5	247.5	128
	10	215.5	206.5	94.5	273.5	263.5	144
	12	236.5	227.5	115.5	305.5	295.5	176
	16	278.5	269.5	157.5	369.5	359.5	240
	20	320.5	311.5	199.5	433.5	423.5	304
	24	362.5	353.5	241.5	497.5	487.5	368

Ordering data

Ordering data

	Description		Part no.	Type
Manifold rail for sub-base valve				
	**Size 10 mm**			
	Ports 2, 4 at the front	4 valve positions	**573434**	**VABM-L1-10HW-G18-4-GR**
		5 valve positions	**573435**	**VABM-L1-10HW-G18-5-GR**
		6 valve positions	**573436**	**VABM-L1-10HW-G18-6-GR**
		7 valve positions	**573437**	**VABM-L1-10HW-G18-7-GR**
		8 valve positions	**573438**	**VABM-L1-10HW-G18-8-GR**
		9 valve positions	**573439**	**VABM-L1-10HW-G18-9-GR**
		10 valve positions	**573440**	**VABM-L1-10HW-G18-10-GR**
		12 valve positions	**573441**	**VABM-L1-10HW-G18-12-GR**
		16 valve positions	**573442**	**VABM-L1-10HW-G18-16-GR**
		20 valve positions	**573443**	**VABM-L1-10HW-G18-20-GR**
		24 valve positions	**573444**	**VABM-L1-10HW-G18-24-GR**
		8 double solenoid + 8 single solenoid valves	**573930**	**VABM-L1-10HW-G18-16-M-GR**
		4 double solenoid + 16 single solenoid valves	**573931**	**VABM-L1-10HW-G18-20-M-GR**
		24 single solenoid valves	**573932**	**VABM-L1-10HW-G18-24-M-GR**
	Size 14 mm			
	Ports 2, 4 at the front	4 valve positions	**573500**	**VABM-L1-14W-G14-4-GR**
		5 valve positions	**573501**	**VABM-L1-14W-G14-5-GR**
		6 valve positions	**573502**	**VABM-L1-14W-G14-6-GR**
		7 valve positions	**573503**	**VABM-L1-14W-G14-7-GR**
		8 valve positions	**573504**	**VABM-L1-14W-G14-8-GR**
		9 valve positions	**573505**	**VABM-L1-14W-G14-9-GR**
		10 valve positions	**573506**	**VABM-L1-14W-G14-10-GR**
		12 valve positions	**573507**	**VABM-L1-14W-G14-12-GR**
		16 valve positions	**573508**	**VABM-L1-14W-G14-16-GR**
		20 valve positions	**573509**	**VABM-L1-14W-G14-20-GR**
		24 valve positions	**573510**	**VABM-L1-14W-G14-24-GR**
		8 double solenoid + 8 single solenoid valves	**573936**	**VABM-L1-14W-G14-16-M-GR**
		4 double solenoid + 16 single solenoid valves	**573937**	**VABM-L1-14W-G14-20-M-GR**
		24 single solenoid valves	**573938**	**VABM-L1-14W-G14-24-M-GR**

Datasheet – Multi-pin plug connection

The following multi-pin plug connections are available for the valve terminal VTUG:
- Sub-D (25-pin)
- Sub-D (44-pin)
- Ribbon cable (26-pin)
- Ribbon cable (50-pin)

Electrical multi-pin

Each pin on the multi-pin plug can actuate exactly one solenoid coil.

If the maximum configurable number of valve positions is 24, this means that 48 valve functions can be addressed.
The valves can be switched using positive or negative logic (positive switching or negative switching).

Mixed operation is generally not possible; however, an exception is made for the V22 ... V25 variants with 25-pin Sub-D. With these variants, a specific range of valve positions (e.g. Com 16...19) is supplied with common voltage.

This allows these ranges to be switched with positive or negative logic and valve groups to be switched off independently of the other ranges.
Mixed operation within a range is not permitted.

Note

A double solenoid valve occupies one valve position and two pins on the multi-pin plug. This means that the number of double solenoid valves per manifold rail is limited.
(Pin allocation ➔ page 36)

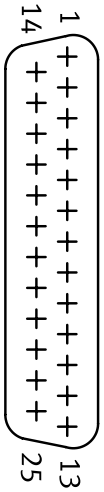
General technical data

Type	VAEM-L1-S-M1-25	VAEM-L1-S-M1-44	VAEM-L1-S-M3-26	VAEM-L1-S-M3-50
Number of pins	25-pin	44-pin	26-pin	50-pin
Electrical connection	Sub-D plug		Ribbon cable plug	
Max. no. of valve positions	24		24	
Protection rating to EN 60529	IP67		IP40	
Material	PA		PA	
Note on materials	RoHS-compliant		RoHS-compliant	
Certification	c UL us - Recognized (OL)			
CE marking (see declaration of conformity)[1]	To EU EMC Directive			
Corrosion resistance class CRC[2]	2			
LABS (PWIS) conformity	VDMA24364-B1/B2-L			
Weight [g]	53		45	48

1) For information about the area of use, see the EC 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.
2) More information: www.festo.com/x/topic/crc

Datasheet – Multi-pin plug connection

Pin allocation – Sub-D plug, 25-pin



Pin	Wire colour[1]	M1-25 (V20)								M1-25V1 (V22)	
		12x double solenoid		8x double solenoid 8x single solenoid		4x double solenoid 16x single solenoid		24x single solenoid			
1	WH	VP0	14	VP0	14	VP0	14	VP0	14	VP0	14
2	BN	VP0	12	VP0	12	VP0	12	VP23	14	VP0	12
3	GN	VP1	14	VP1	14	VP1	14	VP1	14	VP1	14
4	YE	VP1	12	VP1	12	VP1	12	VP22	14	VP1	12
5	GY	VP2	14	VP2	14	VP2	14	VP2	14	VP2	14
6	PK	VP2	12	VP2	12	VP2	12	VP21	14	VP2	12
7	BU	VP3	14	VP3	14	VP3	14	VP3	14	VP3	14
8	RD	VP3	12	VP3	12	VP3	12	VP20	14	VP3	12
9	BK	VP4	14	VP4	14	VP4	14	VP4	14	VP4	14
10	VT	VP4	12	VP4	12	VP19	14	VP19	14	VP4	12
11	GY PK	VP5	14	VP5	14	VP5	14	VP5	14	VP5	14
12	RD BU	VP5	12	VP5	12	VP18	14	VP18	14	VP5	12
13	GN WH	VP6	14	VP6	14	VP6	14	VP6	14	VP6	14
14	BN GN	VP6	12	VP6	12	VP17	14	VP17	14	VP6	12
15	YE WH	VP7	14	VP7	14	VP7	14	VP7	14	VP7	14
16	BN YE	VP7	12	VP7	12	VP16	14	VP16	14	VP7	12
17	GY WH	VP8	14	VP8	14	VP8	14	VP8	14	VP8	14
18	BN GY	VP8	12	VP15	14	VP15	14	VP15	14	VP8	12
19	WH PK	VP9	14	VP9	14	VP9	14	VP9	14	VP9	14
20	BN PK	VP9	12	VP14	14	VP14	14	VP14	14	VP9	12
21	BU WH	VP10	14	VP10	14	VP10	14	VP10	14	Com 16...19	
22	BN BU	VP10	12	VP13	14	VP13	14	VP13	14	Com 12...15	
23	RD WH	VP11	14	VP11	14	VP11	14	VP11	14	Com 8...11	
24	BN RD	VP11	12	VP12	14	VP12	14	VP12	14	Com 4...7	
25	BK WH	Com		Com		Com	Com	Com		Com 0...3	

1) According to IEC 60757

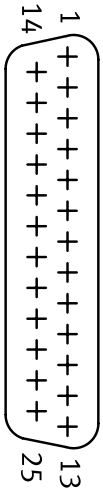
VP Valve position

Note

A grey field means that a double solenoid valve can be used. Only single solenoid valves can be used for fields with a white background.

Datasheet – Multi-pin plug connection

Pin allocation – Sub-D plug, 25-pin



Pin	Wire colour[1]	M1-25V2 (V23)		M1-25V3 (V24)		M1-25V4 (V25)	
1	WH	VP0	14	VP0	14	VP0	14
2	BN	VP0	12	VP0	12	VP1	14
3	GN	VP1	14	VP1	14	VP2	14
4	YE	VP1	12	VP1	12	VP3	14
5	GY	VP2	14	VP2	14	VP4	14
6	PK	VP2	12	VP2	12	VP5	14
7	BU	VP3	14	VP3	14	VP6	14
8	RD	VP3	12	VP3	12	VP7	14
9	BK	VP4	14	VP4	14	VP8	14
10	VT	VP4	12	VP5	14	VP9	14
11	GY PK	VP5	14	VP6	14	VP10	14
12	RD BU	VP5	12	VP7	14	VP11	14
13	GN WH	VP6	14	VP8	14	VP12	14
14	BN GN	VP6	12	VP9	14	VP13	14
15	YE WH	VP7	14	VP10	14	VP14	14
16	BN YE	VP7	12	VP11	14	VP15	14
17	GY WH	VP8	14	VP12	14	VP16	14
18	BN GY	VP9	14	VP13	14	VP17	14
19	WH PK	VP10	14	VP14	14	VP18	14
20	BN PK	VP11	14	VP15	14	VP19	14
21	BU WH	Com 16...19		Com 16...19		Com 16...19	
22	BN BU	Com 12...15		Com 12...15		Com 12...15	
23	RD WH	Com 8...11		Com 8...11		Com 8...11	
24	BN RD	Com 4...7		Com 4...7		Com 4...7	
25	BK WH	Com 0...3		Com 0...3		Com 0...3	
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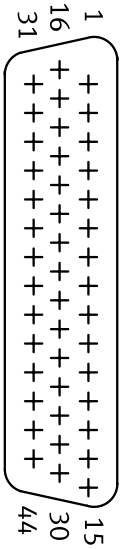
Pin allocation – Sub-D plug, 44-pin



Pin	Wire colour[1]	M1-44 (V21)	
		18x double solenoid, 6x single solenoid	
1	WH	VP0	14
2	BN	VP0	12
3	GN	VP1	14
4	YE	VP1	12
5	GY	VP2	14
6	PK	VP2	12
7	BU	VP3	14
8	RD	VP3	12
9	BK	VP4	14
10	VT	VP4	12
11	GY PK	VP5	14
12	RD BU	VP5	12
13	GN WH	VP6	14
14	BN GN	VP6	12
15	YE WH	VP7	14
16	BN YE	VP7	12
17	GY WH	VP8	14
18	BN GY	VP8	12
19	WH PK	VP9	14
20	BN PK	VP9	12
21	BU WH	VP10	14
22	BN BU	VP10	12
23	RD WH	VP11	14
24	BN RD	VP11	12
25	BK WH	VP12	14
26	BK BN	VP12	12
27	GN GY	VP13	14
28	YE GY	VP13	12
29	GN PK	VP14	14
30	YE PK	VP14	12
31	GN BU	VP15	14
32	YE BU	VP15	12
33	RD GN	VP16	14
34	RD YE	VP16	12
35	BK GN	VP17	14
36	BK YE	VP17	12
37	BU GY	VP18	14
38	BU PK	VP19	14
39	RD GY	VP20	14
40	RD PK	VP21	14
41	BK GY	VP22	14
42	BK PK	VP23	14
43	BK BU	com	
44	BK RD		

1) According to IEC 60757

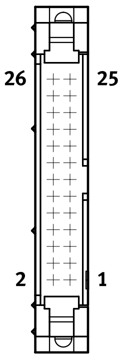
VP Valve position

Note

A grey field means that a double solenoid valve can be used. Only single solenoid valves can be used for fields with a white background.

Datasheet – Multi-pin plug connection

Pin allocation – Ribbon cable, 26-pin



Pin	M3-26 (V20)							
	12x double solenoid		8x double solenoid 8x single solenoid		4x double solenoid 16x single solenoid		24x single solenoid	
1	VP0	14	VP0	14	VP0	14	VP0	14
2	VP0	12	VP0	12	VP0	12	VP23	14
3	VP1	14	VP1	14	VP1	14	VP1	14
4	VP1	12	VP1	12	VP1	12	VP22	14
5	VP2	14	VP2	14	VP2	14	VP2	14
6	VP2	12	VP2	12	VP2	12	VP21	14
7	VP3	14	VP3	14	VP3	14	VP3	14
8	VP3	12	VP3	12	VP3	12	VP20	14
9	VP4	14	VP4	14	VP4	14	VP4	14
10	VP4	12	VP4	12	VP19	14	VP19	14
11	VP5	14	VP5	14	VP5	14	VP5	14
12	VP5	12	VP5	12	VP18	14	VP18	14
13	VP6	14	VP6	14	VP6	14	VP6	14
14	VP6	12	VP6	12	VP17	14	VP17	14
15	VP7	14	VP7	14	VP7	14	VP7	14
16	VP7	12	VP7	12	VP16	14	VP16	14
17	VP8	14	VP8	14	VP8	14	VP8	14
18	VP8	12	VP15	14	VP15	14	VP15	14
19	VP9	14	VP9	14	VP9	14	VP9	14
20	VP9	12	VP14	14	VP14	14	VP14	14
21	VP10	14	VP10	14	VP10	14	VP10	14
22	VP10	12	VP13	14	VP13	14	VP13	14
23	VP11	14	VP11	14	VP11	14	VP11	14
24	VP11	12	VP12	14	VP12	14	VP12	14
25	Com		Com		Com	Com	Com	
26	Com		Com		Com		Com	
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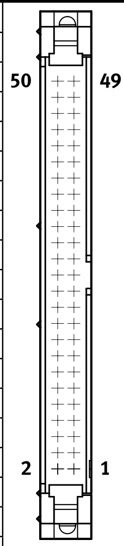
Note

A grey field means that a double solenoid valve can be used.
Only single solenoid valves can be used for fields with a white background.

Pin allocation – Ribbon cable, 50-pin



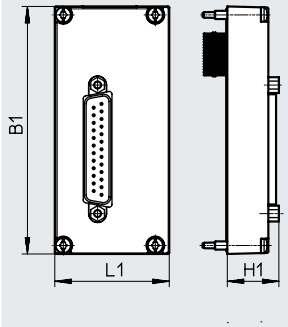
Pin	M3-50 (V26)	
1	VP0	14
2	VP0	12
3	VP1	14
4	VP1	12
5	VP2	14
6	VP2	12
7	VP3	14
8	VP3	12
9	VP4	14
10	VP4	12
11	VP5	14
12	VP5	12
13	VP6	14
14	VP6	12
15	VP7	14
16	VP7	12
17	VP8	14
18	VP8	12
19	VP9	14
20	VP9	12
21	VP10	14
22	VP10	12
23	VP11	14
24	VP11	12
25	VP12	14
26	VP12	12
27	VP13	14
28	VP13	12
29	VP14	14
30	VP14	12
31	VP15	14
32	VP15	12
33	VP16	14
34	VP16	12
35	VP17	14
36	VP17	12
37	VP18	14
38	VP18	12
39	VP19	14
40	VP19	12
41	VP20	14
42	VP20	12
43	VP21	14
44	VP21	12
45	VP22	14
46	VP22	12
47	VP23	14
48	VP23	12
49	Com	
50		

VP Valve position

Datasheet – Multi-pin plug connection

Dimensions Download CAD data ➔ www.festo.com

Multi-pin plug connection, Sub-D



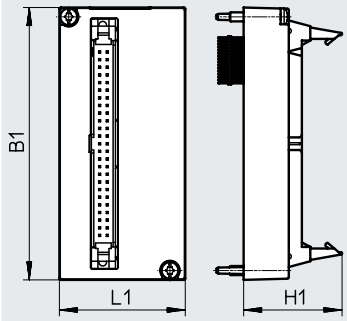
Note

Dimensions of the manifold rail with electrical connection
(➔ Page 28)

Type	B1	L1	H1
VAEM-L1-S-M1-...	90.5	41.9	18.9

Dimensions Download CAD data ➔ www.festo.com

Multi-pin plug connection, ribbon cable



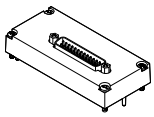
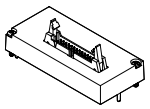
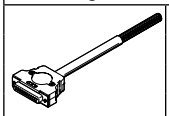
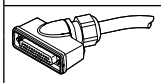
Note

Dimensions of the manifold rail with electrical connection
(➔ Page 28)

Type	B1	L1	H1
VAEM-L1-S-M3-...	90.5	41.9	32.7

Accessories – Multi-pin plug connection

Ordering data

	Description			Part no.	Type
Electrical interface, Sub-D					
	25-pin		For variant M1-25 (V20)	**573445**	**VAEM-L1-S-M1-25**
			For variant M1-25V1 (V22)	**573447**	**VAEM-L1-S-M1-25V1**
			For variant M1-25V2 (V23)	**573448**	**VAEM-L1-S-M1-25V2**
			For variant M1-25V3 (V24)	**573449**	**VAEM-L1-S-M1-25V3**
			For variant M1-25V4 (V25)	**573450**	**VAEM-L1-S-M1-25V4**
	44-pin		For variant M1-44 (V21)	**573446**	**VAEM-L1-S-M1-44**
Electrical interface, ribbon cable plug					
	26-pin		For variant M3-26 (V20)	**573452**	**VAEM-L1-S-M3-26**
	50-pin		For variant M3-50 (V26)	**573451**	**VAEM-L1-S-M3-50**
Connecting cable for multi-pin plug					
	Sub-D socket, straight	• 25-pin, up to 24 coils, IP40 • Open cable end, 25-core	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**
		• 44-pin, up to 42 coils, IP40 • Open cable end, 44-core	2.5 m	**575113**	**NEBV-S1G44-K-2.5-N-LE44-S6**
			5 m	**575114**	**NEBV-S1G44-K-5-N-LE44-S6**
			10 m	**575115**	**NEBV-S1G44-K-10-N-LE44-S6**
	Sub-D socket, angled	• 25-pin, up to 24 coils, IP65 • Open cable end, 25-core	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**
		• 44-pin, up to 42 coils, IP65 • Open cable end, 44-core	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**

Datasheet – I-Port interface/IO-Link®

Festo-specific, standardised interface for direct connection to the fieldbus by mounting the bus node CTEU or to an IO-Link master via a cable (in IO-Link mode).

I-Port interface/IO-Link®

Versions:
- I-Port interface for bus nodes (CTEU)
- IO-Link® mode for direct connection to a higher-level IO-Link master

The following protocols are supported in connection with the associated CTEU bus node:
- CANopen
- DeviceNet
- PROFIBUS
- CC-LINK
- EtherCAT
- AS-Interface
- PROFINET
- EtherNet/IP
- VARAN
- Festo installation system CPI

The electrical supply/transmission of communication takes place via an M12 plug.

The valve terminal can be equipped with 4 ... 24 (double solenoid) valves.

General technical data

Types of communication			IO-Link®
Electrical connection			• M12 plug, 5-pin • A-coded • Metal thread for shielding
Baud rates	COM3	[kbps]	230.4
	COM2	[kbps]	38.4
Intrinsic current consumption, logic supply PS		[mA]	30
Intrinsic current consumption, valve supply PL		[mA]	30
Max. number of solenoid coils	VAEM-L1-S-8-PT		16
	VAEM-L1-S-16-PT		32
	VAEM-L1-S-24-PT		48
Max. no. of valve positions	VAEM-L1-S-8-PT		8
	VAEM-L1-S-16-PT		16
	VAEM-L1-S-24-PT		24
Ambient temperature		[°C]	–5 ... +50
Product weight	Outlet on top	[g]	49
	Outlet on the side	[g]	100
Protection rating to EN 60529			IP67
Certification			c UL us - Recognized (OL)
CE marking (see declaration of conformity)[1)]			To EU EMC Directive
Corrosion resistance class CRC[2)]			2
LABS (PWIS) conformity			VDMA24364-B1/B2-L

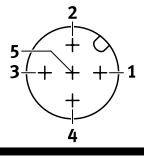
1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference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

Datasheet – I-Port interface/IO-Link®

Status LED X1

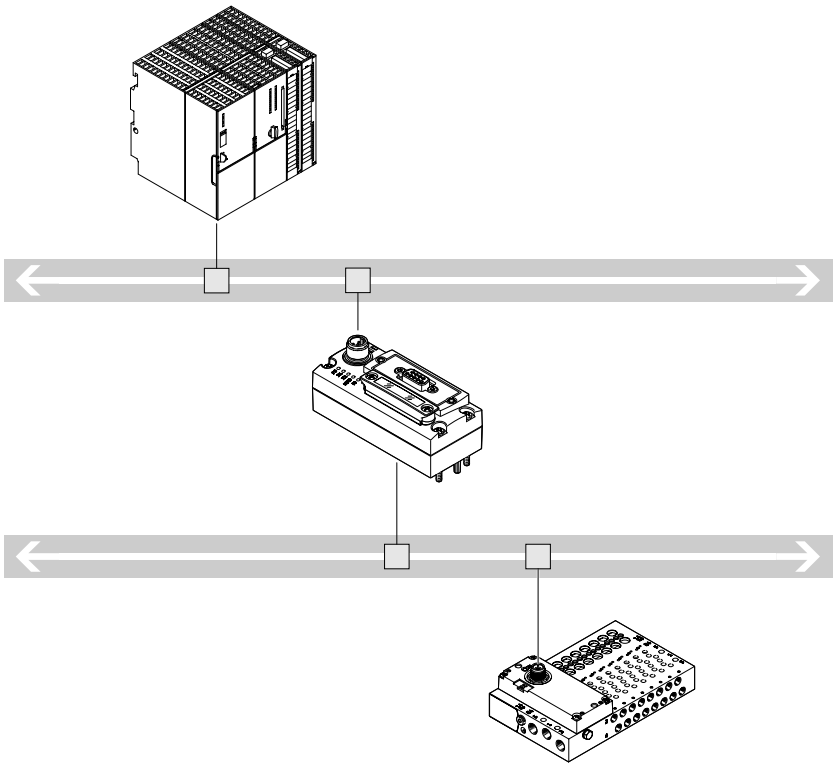
	Meaning (up to Rev. 07)	Meaning (from Rev. 08)
Illuminated green	Normal operating status	Data communication faulty
Flashes green	Data communication faulty	Normal operating status
Flashes alternately between red/ green	24 V load voltage supply faulty	-
Flashes red	Device error	
Illuminated red	24 V load voltage supply and data communication faulty	24 V load voltage supply faulty. Data communication may be faulty
Off	No 24 V operating voltage supply or undervoltage	

Pin allocation – I-Port interface/IO-Link®



Pin	Allocation	Description
1	$24V_{EL/SEN}$	Operating voltage supply (electronics, sensors/inputs)
2	$24V_{VAL/OUT}$	Load voltage supply (valves/outputs)
3	$0V_{EL/SEN}$	Operating voltage supply (electronics, sensors/inputs)
4	C/Q	Data communication
5	$0V_{VAL/OUT}$	Load voltage supply (valves/outputs)

System overview – IO-Link®

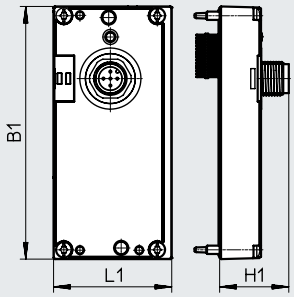


- Communication with the higher-order controller via fieldbus
- Use a bus node CTEU compatible with the fieldbus protocol
- Up to 64 inputs/outputs (solenoid coils), depending on the valve terminal
- No preprocessing

Datasheet – I-Port interface/IO-Link®

Dimensions Download CAD data ➔ www.festo.com

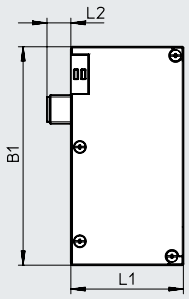
I-Port interface, outlet on top



Note

Dimensions of the manifold rail with electrical connection ➔ page 28

I-Port interface, outlet on side



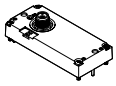
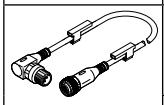
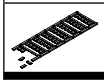
Note

Dimensions of the manifold rail with electrical connection ➔ page 28

Type	Outlet on top			Outlet on the side		
	B1	L1	H1	B1	L1	L2
VAEM-L1-S-...	91	42.5	25	91.5	47.1	10

Datasheet – I-Port interface/IO-Link®

Ordering data

	Description		Part no.	Type
Electrical interface for I-Port interface/IO-Link®, outlet on top				
	Actuation of up to 8 double solenoid valve positions		**573384**	**VAEM-L1-S-8-PT**
	Actuation of up to 16 double solenoid valve positions		**573939**	**VAEM-L1-S-16-PT**
	Actuation of up to 24 double solenoid valve positions		**573940**	**VAEM-L1-S-24-PT**
Connection technology for IO-Link®				
	T-adapter M12, 5-pin for IO-Link® and load supply		**171175**	**FB-TA-M12-5POL**
	Straight plug, M12, 5-pin, for T adapter FB-TA		**175487**	**SEA-M12-5GS-PG7**
	Y-distributor with cable on controller side, M12x1 A-coded, for IO-Link®	Cable length 1 m	**8091516**	**NEDU-L1R2-M12G5-M12LE-1R**
	M12x1 A-coded, for IO-Link®, straight cable outlet	Cable length 0.5 m	**8000208**	**NEBU-M12G5-K-0.5-M12G4**
	M12x1 A-coded, for IO-Link®, straight cable outlet	Cable length 5 m	**574321**	**NEBU-M12G5-E-5-Q8N-M12G5**
	M12x1 A-coded, for IO-Link®, straight cable outlet	Cable length 7.5 m	**574322**	**NEBU-M12G5-E-7.5-Q8N-M12G5**
	M12x1 A-coded, for IO-Link®, straight cable outlet	Cable length 0.5 m	**8003617**	**NEBU-M12G5-K-0.5-M12W5**
	M12x1 A-coded, for IO-Link®, straight cable outlet	Cable length 2 m	**8003618**	**NEBU-M12G5-K-2-M12W5**
	M12x1 A-coded, for IO-Link®, angled cable outlet	Cable length 0.5 m	**570733**	**NEBU-M12W5-K-0.5-M12W5**
	M12x1 A-coded, for IO-Link®, angled cable outlet	Cable length 2 m	**570734**	**NEBU-M12W5-K-2-M12W5**
Inscription label for I-Port interface/IO-Link®				
	40 pieces in frame		**565306**	**ASLR-C-E4**

Datasheet – CAPC

Function
The electrical connection block CAPC enables the decentralised installation of bus nodes CTEU on a valve terminal or input modules with I-Port interface.

Area of application
- M12 connection technology (two interfaces)
- Enables the installation of valve terminals or other devices over a distance of 20 metres
- Accessory CAFM enables the connection block to be installed on an H-rail

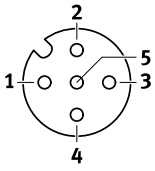
General technical data		
Type		CAPC-F1-E-M12
Dimensions W x L x H	[mm]	50 x 148 x 28
Fieldbus interface		2x M12 socket, 5-pin
Operating voltage range	[V DC]	18 ... 30
Max. power supply	[A]	2
Nominal operating voltage	[V DC]	24
Product weight	[g]	85
Cable length	[m]	20

Materials	
Housing	Reinforced PA
Note on materials	RoHS-compliant

Operating and environmental conditions		
Protection rating to EN 60529		IP65, IP67
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Corrosion resistance class CRC[1)]		2
CE marking (see declaration of conformity)[2)]		To EU EMC Directive
LABS (PWIS) conformity		VDMA24364-B2-L

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/... ➔ 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.

Pin allocation – Power supply/IO-Link® interfaces

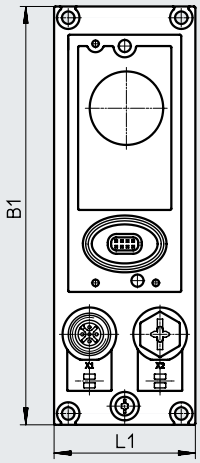


Pin	Allocation	Description
1	$24V_{EL/SEN}$	Operating voltage supply (electronics, sensors/inputs)
2	$24V_{VAL/OUT}$	Load voltage supply (valves/outputs)
3	$0V_{EL/SEN}$	Operating voltage supply (electronics, sensors/inputs)
4	C/Q	Data communication
5	$0V_{VAL/OUT}$	Load voltage supply (valves/outputs)
	Housing, FE	Functional earth

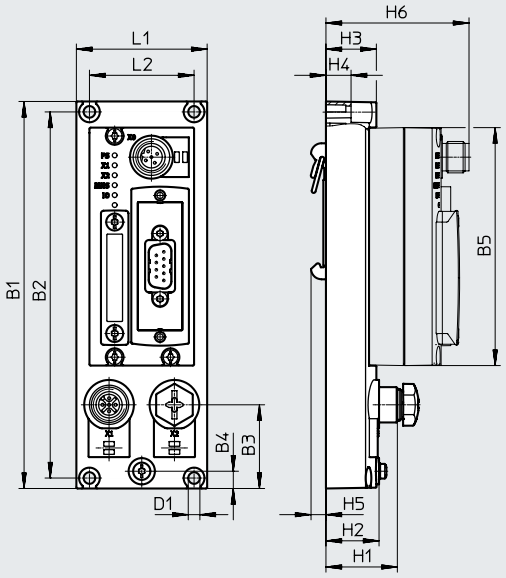
Datasheet – CAPC

Dimensions Download CAD data ➔ www.festo.com

CAPC

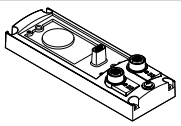
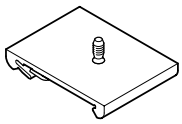


CAPC with mounted bus node CTEU-CO



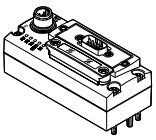
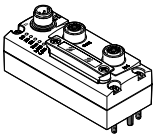
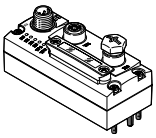
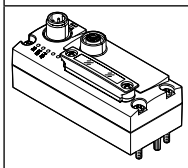
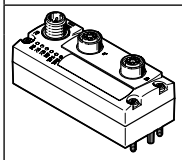
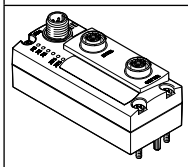
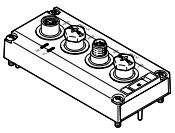
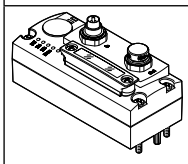
Type	B1	B2	B3	B4	B5	D1ø	H1	H2	H3	H4	H5	H6	L1	L2
CAPC	148	140	32	6.6	91	4.4	27.3	20.3	19.3	9.6	5.7	54.8	50	40

Ordering data

		Part no.	Type
Electrical connection block			
	For connecting a second device with I-Port interface	**570042**	**CAPC-F1-E-M12**
H-rail mounting			
	For electrical connection block CAPC	**570043**	**CAFM-F1-H**

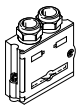
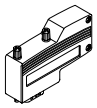
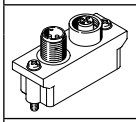
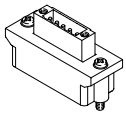
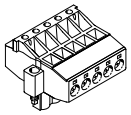
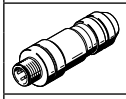
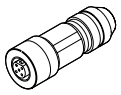
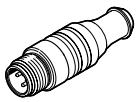
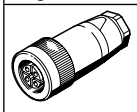
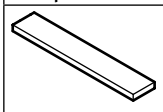
Accessories – Valve terminal

Ordering data – CTEU

	Description		Part no.	Type
Bus node				
	CANopen bus node		**570038**	**CTEU-CO**
	CC-Link bus node		**1544198**	**CTEU-CC**
	PROFIBUS bus node		**570040**	**CTEU-PB**
			8107588	**CTEU-PB-EX1C**
	DeviceNet bus node		**570039**	**CTEU-DN**
	EtherCAT bus node		**572556**	**CTEU-EC**
	EtherNet/IP bus node		**2798071**	**CTEU-EP**
			8107591	**CTEU-EP-EX1C**
	AS-Interface bus node		**572555**	**CTEU-AS**
	PROFINET RT bus node		**2201471**	**CTEU-PN**
			8107589	**CTEU-PN-EX1C**
	VARAN bus node		**8087559**	**CTEU-VN**
Electrical interface				
	For direct integration of the valve terminal into the decentralised IO system CPX-API	12 valve positions	**8081922**	**VAEM-L1-S-12-AP**
		24 valve positions	**8081923**	**VAEM-L1-S-24-AP**
	For direct integration of the valve terminal into the decentralised CPI installation system from Festo		**2149714**	**CTEU-CP**

Accessories – Valve terminal

Ordering data – CTEU

	Description		Part no.	Type
Bus connection				
	Sub-D plug, straight	For CANopen	**532219**	**FBS-SUB-9-BU-2x5POL-B**
		For CC Link	**532220**	**FBS-SUB-9-GS-2x4POL-B**
		For PROFIBUS	**532216**	**FBS-SUB-9-GS-DP-B**
	Sub-D plug, angled, 9-pin	For CANopen	**533783**	**FBS-SUB-9-WS-CO-K**
		For PROFIBUS	**533780**	**FBS-SUB-9-WS-PB-K**
	M12x1, 5-pin	A-coded, for CANopen	**525632**	**FBA-2-M12-5POL**
		B-coded, for PROFIBUS	**533118**	**FBA-2-M12-5POL-RK**
	For 5-pin terminal strip for CANopen		**525634**	**FBA-1-SL-5POL**
	Terminal strip, 5-pin, for DeviceNet/CANopen		**525635**	**FBSD-KL-2x5POL**
	Plug, straight, M12x1	5-pin, for CANopen	**175380**	**FBS-M12-5GS-PG9**
		4-pin, D-coded for EtherCAT	**543109**	**NECU-M-S-D12G4-C2-ET**
		5-pin, compatible with FBA-2-M12-5POL-RK for PROFIBUS	**1066354**	**NECU-M-S-B12G5-C2-PB**
	Straight socket, M12x1, 5-pin, for assembling a connecting cable compatible with FBA-2-M12-5POL-RK for PROFIBUS		**1067905**	**NECU-M-B12G5-C2-PB**
	Terminating resistor, M12, B-coded for PROFIBUS		**1072128**	**CACR-S-B12G5-220-PB**
Plug socket				
	For power supply, M12x1, 5-pin, B-coded for CANopen/DeviceNet		**538999**	**NTSD-GD-9-M12-5POL-RK**
	For power supply, M12x1, 5-pin for CC-Link, PROFIBUS, EtherCAT		**18324**	**FBSD-GD-9-5POL**
Inscription label				
	For bus node		**565306**	**ASLR-C-E4**

Accessories – Valve terminal

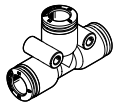
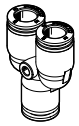
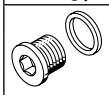
Ordering data

	Description		Part no.	Type	PU[1]
Push-in fitting, straight					Datasheets → Internet: npqe
	M3 thread	For tubing Ø 4 mm	**8158773**	**NPQE-DK-M3-Q4-F1A-P10**	**10**
	M5 thread	For tubing Ø 4 mm	**8144595**	**NPQE-DK-M5-Q4-F1A-P10**	**10**
		For tubing Ø 6 mm	**8144596**	**NPQE-DK-M5-Q6-F1A-P10**	**10**
	M7 thread	For tubing Ø 4 mm	**8144597**	**NPQE-DK-M7-Q4-F1A-P10**	**10**
		For tubing Ø 6 mm	**8144598**	**NPQE-DK-M7-Q6-F1A-P10**	**10**
	G1/8 thread	For tubing Ø 4 mm	**8144599**	**NPQE-DK-G18-Q4-F1A-P10**	**10**
		For tubing Ø 6 mm	**8144600**	**NPQE-DK-G18-Q6-F1A-P10**	**10**
		For tubing Ø 8 mm	**8144601**	**NPQE-DK-G18-Q8-F1A-P10**	**10**
		For tubing Ø 10 mm	**8144602**	**NPQE-DK-G18-Q10-F1A-P10**	**10**
	G1/4 thread	For tubing Ø 6 mm	**8144603**	**NPQE-DK-G14-Q6-F1A-P10**	**10**
		For tubing Ø 8 mm	**8144604**	**NPQE-DK-G14-Q8-F1A-P10**	**10**
		For tubing Ø 10 mm	**8144605**	**NPQE-DK-G14-Q10-F1A-P10**	**10**
		For tubing Ø 12 mm	**8144606**	**NPQE-DK-G14-Q12-F1A-P10**	**10**
Push-in fitting, L-shaped					
	M3 thread	For tubing Ø 4 mm	**8158774**	**NPQE-L-M3-Q4-F1A-P10**	**10**
	M5 thread	For tubing Ø 4 mm	**8158775**	**NPQE-L-M5-Q4-F1A-P10**	**10**
		For tubing Ø 6 mm	**8158776**	**NPQE-L-M5-Q6-F1A-P10**	**10**
	M7 thread	For tubing Ø 4 mm	**8158777**	**NPQE-L-M7-Q4-F1A-P10**	**10**
		For tubing Ø 6 mm	**8158778**	**NPQE-L-M7-Q4-F1A-P10**	**10**
	R1/4 thread	For tubing Ø 6 mm	**8158783**	**NPQE-L-R14-Q6-F1A-P10**	**10**
		For tubing Ø 8 mm	**8158784**	**NPQE-L-R14-Q8-F1A-P10**	**10**
		For tubing Ø 10 mm	**8158785**	**NPQE-L-R14-Q10-F1A-P10**	**10**
		For tubing Ø 12 mm	**8158786**	**NPQE-L-R14-Q12-F1A-P10**	**10**
	R1/8 thread	For tubing Ø 4 mm	**8158779**	**NPQE-L-R18-Q4-F1A-P10**	**10**
		For tubing Ø 6 mm	**8158780**	**NPQE-L-R18-Q6-F1A-P10**	**10**
		For tubing Ø 8 mm	**8158781**	**NPQE-L-R18-Q8-F1A-P10**	**10**
		For tubing Ø 10 mm	**8158782**	**NPQE-L-R18-Q10-F1A-P10**	**10**
Push-in connector, straight					Datasheets → Internet: npqe
	Pneumatic port 1 for tubing Ø 4mm	Pneumatic port 2 for tubing Ø 4mm	**8158787**	**NPQE-D-Q4-E-F1A-P10**	**10**
	Pneumatic port 1 for tubing Ø 4mm	Pneumatic port 2 for tubing Ø 6mm	**8158788**	**NPQE-D-Q6-Q4-F1A-P10**	**10**
	Pneumatic port 1 for tubing Ø 6mm	Pneumatic port 2 for tubing Ø 6mm	**8158789**	**NPQE-D-Q6-E-F1A-P10**	**10**
	Pneumatic port 1 for tubing Ø 8mm	Pneumatic port 2 for tubing Ø 6mm	**8158790**	**NPQE-D-Q8-Q6-F1A-P10**	**10**
	Pneumatic port 1 for tubing Ø 8mm	Pneumatic port 2 for tubing Ø 8mm	**8158791**	**NPQE-D-Q8-E-F1A-P10**	**10**
	Pneumatic port 1 for tubing Ø 10mm	Pneumatic port 2 for tubing Ø 8mm	**8158792**	**NPQE-D-Q10-Q8-F1A-P10**	**10**
	Pneumatic port 1 for tubing Ø 10mm	Pneumatic port 2 for tubing Ø 10mm	**8158793**	**NPQE-D-Q10-E-F1A-P10**	**10**
	Pneumatic port 1 for tubing Ø 12mm	Pneumatic port 2 for tubing Ø 10mm	**8158794**	**NPQE-D-Q12-Q10-F1A-P10**	**10**
	Pneumatic port 1 for tubing Ø 12mm	Pneumatic port 2 for tubing Ø 12mm	**8158795**	**NPQE-D-Q12-E-F1A-P10**	**10**
Push-in connector, L-shape					Datasheets → Internet: npqe
	For tubing Ø 4 mm		**8158796**	**NPQE-L-Q4-E-F1A-P10**	**10**
	For tubing Ø 6 mm		**8158797**	**NPQE-L-Q6-E-F1A-P10**	**10**
	For tubing Ø 8 mm		**8158798**	**NPQE-L-Q8-E-F1A-P10**	**10**
	For tubing Ø 10 mm		**8158799**	**NPQE-L-Q10-E-F1A-P10**	**10**

1) Packaging unit.

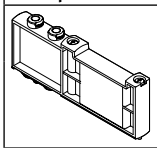
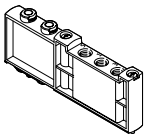
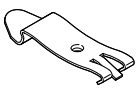
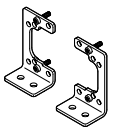
Accessories – Valve terminal

Ordering data

	Description	Part no.	Type	PU[1]
Push-in connector, T-shape				Datasheets → Internet: npqe
	For tubing Ø 4 mm	**8158800**	**NPQE-T-Q4-E-F1A-P10**	**10**
	For tubing Ø 6 mm	**8158801**	**NPQE-T-Q6-E-F1A-P10**	**10**
	For tubing Ø 8 mm	**8158802**	**NPQE-T-Q8-E-F1A-P10**	**10**
	For tubing Ø 10 mm	**8158803**	**NPQE-T-Q10-E-F1A-P10**	**10**
Push-in connector, Y-shape				Datasheets → Internet: npqe
	For tubing Ø 4 mm	**8158804**	**NPQE-Y-Q4-E-F1A-P10**	**10**
	For tubing Ø 6 mm	**8158805**	**NPQE-Y-Q6-E-F1A-P10**	**10**
	For tubing Ø 8 mm	**8158806**	**NPQE-Y-Q8-E-F1A-P10**	**10**
	For tubing Ø 10 mm	**8158807**	**NPQE-Y-Q10-E-F1A-P10**	**10**
Blanking plug				Datasheets → Internet: b
	M5 thread	**8142288**	**B-M5-F1A**	**1**
	M7 thread	**8144525**	**B-M7-F1A**	**1**
	G1/8 thread	**8142289**	**B-1/8-F1A**	**1**
	G1/4 thread	**8142290**	**B-1/4-F1A**	**1**

1) Packaging unit.

Accessories – Valve terminal

Ordering data						
	Description			Part no.	Type	PU[1]
Cover plate						
	Vacant position width 10 mm	Recommended for production facilities for manufacturing lithium-ion batteries		**8141537**	**VABB-L1-10-T-F1A**	**1**
	Vacant position width 14 mm	Recommended for production facilities for manufacturing lithium-ion batteries		**8141538**	**VABB-L1-14-T-F1A**	**1**
Supply plate						
	Supply ports 1, 3, 5, width 10 mm	Recommended for production facilities for manufacturing lithium-ion batteries		**8141539**	**VABF-L1-10-P3A4-M7-T1-F1A**	**1**
	Supply ports 1, 3, 5, width 14 mm	Recommended for production facilities for manufacturing lithium-ion batteries		**8141540**	**VABF-L1-14-P3A4-G18-T1-F1A**	**1**
Separator						
	For manifold rail, size 10, M5/M7	For sub-base valves	Recommended for production facilities for manufacturing lithium-ion batteries	**8145478**	**VABD-6-B-F1A**	**1**
		For semi in-line valves		**8145479**	**VABD-8-B-F1A**	**1**
	For all manifold rails, size 14		Recommended for production facilities for manufacturing lithium-ion batteries	**8145480**	**VABD-10-B-F1A**	**1**
	For all manifold rails, size 18		Recommended for production facilities for manufacturing lithium-ion batteries	**8145481**	**VABD-12-B-F1A**	**1**
H-rail mounting					Datasheets → Internet: vame	
	Use the following screws for mounting: Size 10: DIN 912: M4x30 Size 14: DIN 912: M4x40		Recommended for production facilities for manufacturing lithium-ion batteries	**8142649**	**VAME-T-M4-F1A**	
Mounting bracket					Datasheets → Internet: vame	
	Mounting bracket, right and left, with screw set for sub-base valve (control cabinet installation). Mounting is possible only with VTUG in size 10 and 14.			**8154010**	**VAME-L1-Q**	

1) Packaging unit.