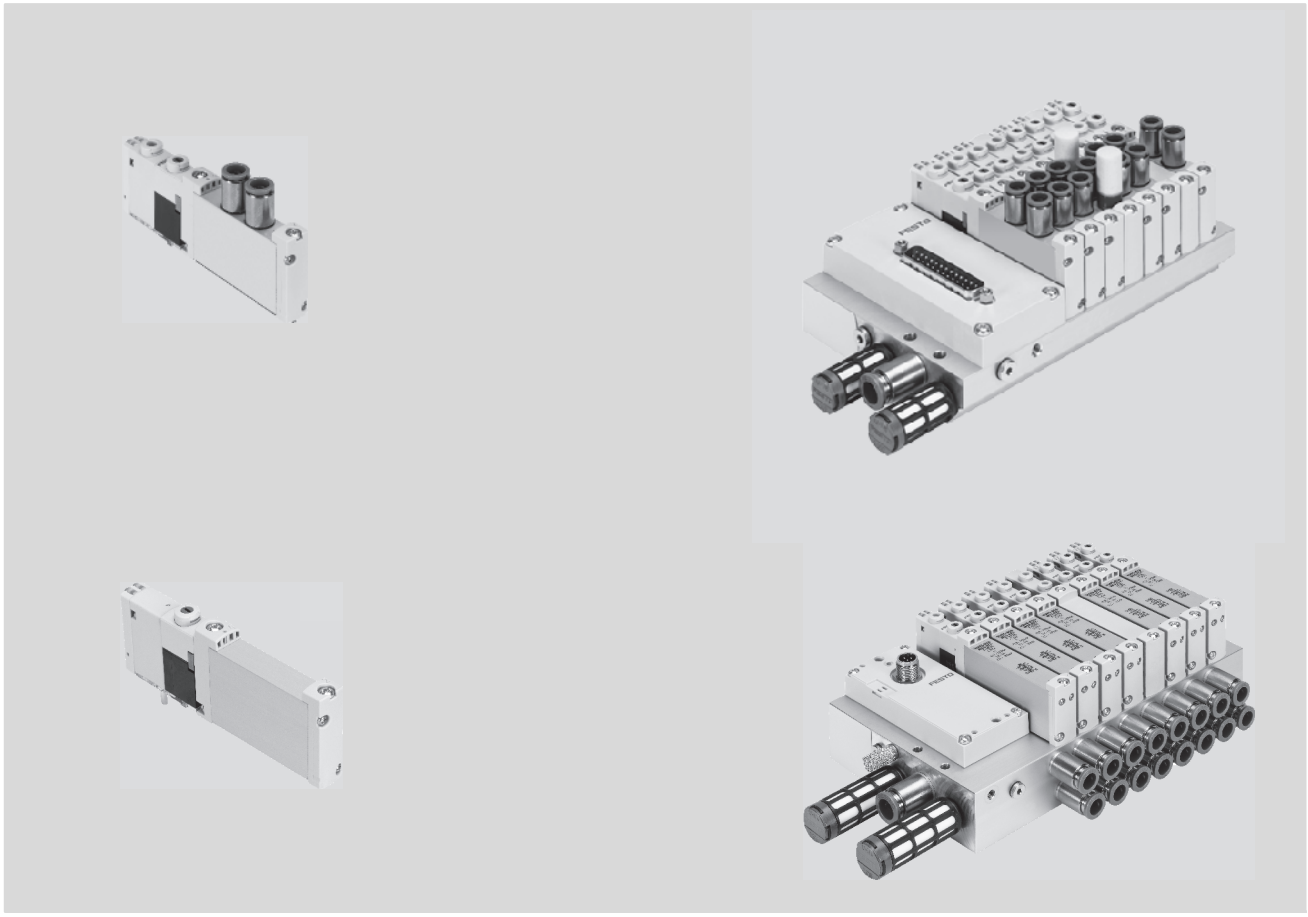
New
VTUG

Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features



Innovative

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

Versatile

- Choice of quick plug connectors
- Multiple pressure zones possible
- Sub-D variant and fieldbus connection rated to IP67
- Internal or external pilot air with the same manifold rail possible through the use of blanking plugs
- Sub-base valves with working lines underneath for installation in control cabinets

Reliable

- Sturdy and durable metal components
  - Valves
  - Manifold rails
- Fast troubleshooting thanks to LED display
- Choice of manual override: non-detenting, detenting or covered

Easy to mount

- Easy mounting thanks to captive screws and seal
- Connection technology easy to change via the E-box
- Inscription label holder for labelling

Valve terminal configurator — Download CAD data ➔ **www.festo.com**

A valve terminal configurator is available to help you select a suitable valve terminal VTUG. This makes it much easier to order the right product.

Valve terminals VTUG are ordered via an identcode. All valve terminals are supplied fully assembled and individually tested.

This reduces assembly and installation time to a minimum.

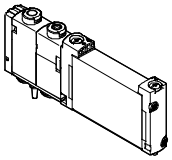
Ordering system for valve terminal VTUG
➔ Internet: vtug

Valve terminals VTUG with multi-pin plug and fieldbus connection

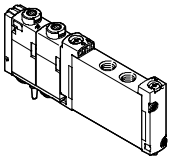
FESTO

Key features

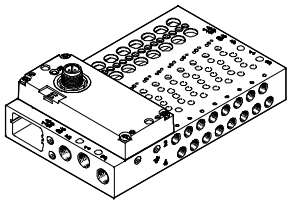
Sub-base and semi in-line valves



Sub-base valve
VUVG-B...1T1

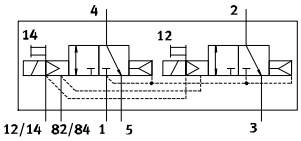


Semi in-line valve
VUVG-S...1T1

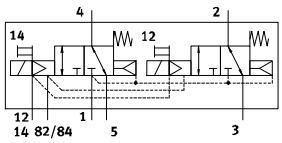


Valve terminal VTUG with variable electrical connection

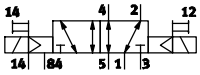
Functions



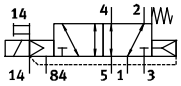
T32C-A: 2x3/2-way valve,
2x normally closed, with
pneumatic spring



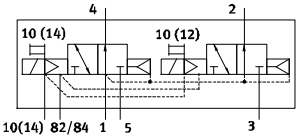
T32C-M: 2x3/2-way valve,
2x normally closed,
with mechanical spring



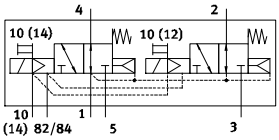
B52: 5/2-way double solenoid valve



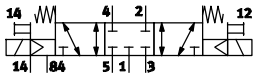
M52-R: 5/2-way valve, single solenoid, with
pneumatic/mechanical spring,
size 10



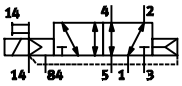
T32U-A: 2x3/2-way valve,
2x normally open,
with pneumatic spring



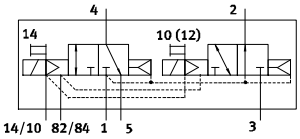
T32U-M: 2x3/2-way valve,
2x normally open,
with mechanical spring



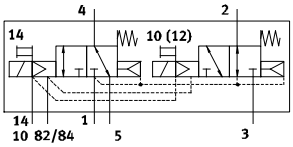
P53C: 5/3-way valve, mid-position closed



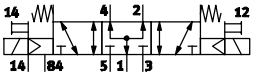
M52-A: 5/2-way valve, single solenoid,
with pneumatic spring,
size 14



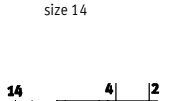
T32H-A: 2x3/2-way valve,
1x normally closed, 1x normally
open, with pneumatic spring



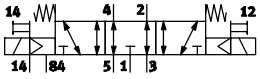
T32H-M: 2x3/2-way valve,
1x normally closed,
1x normally open,
with mechanical spring



P53U: 5/3-way valve, mid-position
pressurised



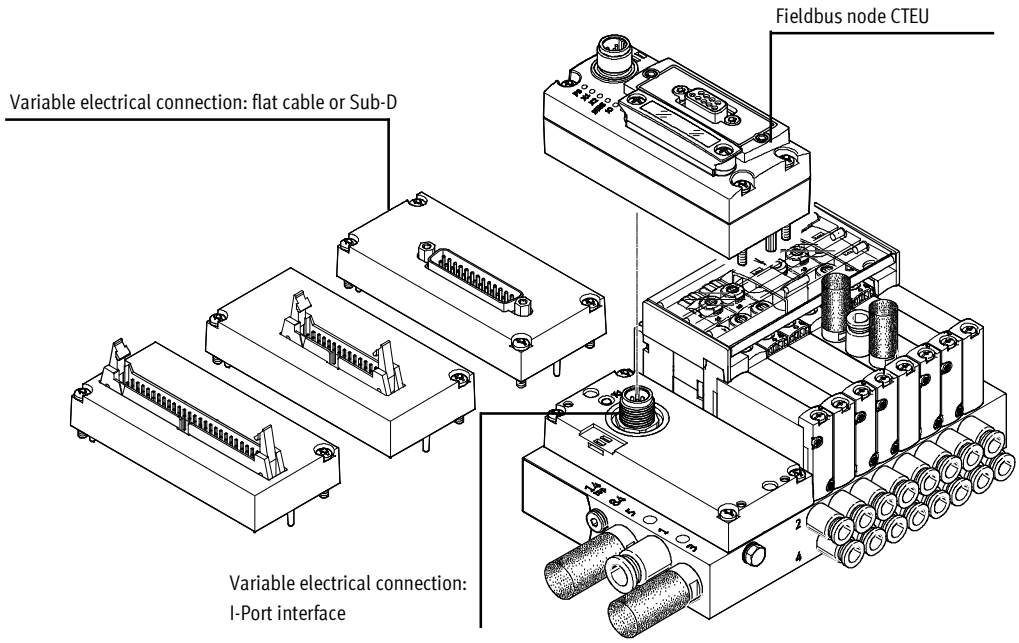
M52M-M: 5/2-way valve, single solenoid,
with mechanical spring



P53E: 5/3-way valve, mid-position
exhausted

Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features



Equipment options

Valve functions

- 2x3/2-way, 5/2-way, 5/3-way valves
- Reversible piston spool valves, up to 24 valve positions

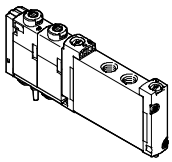
Electrical connection options

- IO-Link mode for direct connection to a higher-level IO-Link master
- Fieldbus node CTEU
- Variable multi-pin plug connection using Sub-D or flat cable

Valve terminals VTUG with multi-pin plug and fieldbus connection

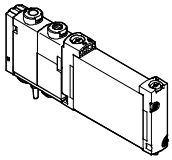
Key features

Basic valves VUVG



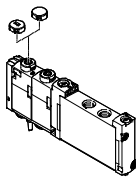
- Width 10 and 14 mm
- Semi in-line valves
- Sub-base valves
- 2x3/2-way, 5/2-way and 5/3-way valves

Valve functions



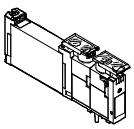
- 2x3/2-way valve, normally open, mechanical spring
- 2x3/2-way valve, normally open, pneumatic spring
- 2x3/2-way valve, normally closed, mechanical spring
- 2x3/2-way valve, normally closed, pneumatic spring
- 2x3/2-way valve, 1x normally closed, 1x normally open, pneumatic spring
- 2x3/2-way valve, 1x normally closed, 1x normally open, mechanical spring
- 5/2-way single solenoid valve, pneumatic/mechanical spring (size 10)
- 5/2-way single solenoid valve, mechanical spring
- 5/2-way single solenoid valve, pneumatic spring (size 14)
- 5/2-way double solenoid valve
- 5/3-way valve, mid-position pressurised
- 5/3-way valve, mid-position exhausted
- 5/3-way valve, mid-position closed

Cover caps for manual override



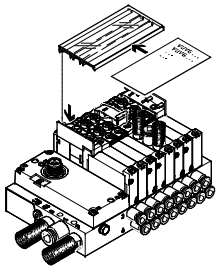
- Closed cover cap for covering the manual override
- Slotted cover cap for enabling only non-detenting operation of the manual override

Identification holder



- Identification holder ASLR-D-L1 for identifying the individual valves and as a cover for the manual overrides

Inscription label holder



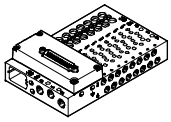
- Inscription label holder ASCF-H-L1-... for identifying the valves on the valve terminal VTUG

New
VTUG

Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features

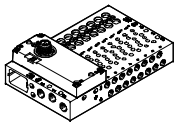
Multi-pin plug connection



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, which substantially reduces installation time. The valve terminal can be equipped with max. 48 solenoid coils.

Versions:
- Sub-D connection
- Flat cable

I-Port interface



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

Transmission of communication data and the power supply takes place via an M12 plug on the terminal.

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

Valve terminal configurator

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Ordering system for valve terminal VTUG
- Individual electrical connection
- Electrical multi-pin plug

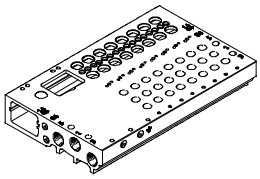
➔ Internet: vtug

Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features – Pneumatic components

FESTO

Manifold rail for semi in-line valves

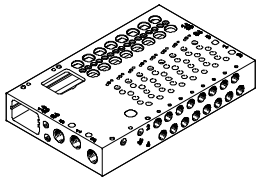


- For semi in-line valves, M5, M7, width 10 mm and G1/8, size 14 mm
- For 2x3/2-way, 5/2-way and 5/3-way valves
- 4 to 24 valve positions with electrical interlinking
- The semi in-line valves are always supplied with external pilot air. The pilot air is set via the manifold rail. A short and a long blanking plug are included with the manifold rail for this purpose

Note

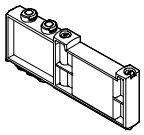
With more than nine valve positions, ensure sufficient compressed air supply and exhaust at both ends.

Manifold rail for sub-base valves



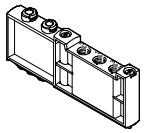
- For sub-base valves M5/M7, width 10 mm and G1/8, width 14 mm
- For 2x3/2-way, 5/2-way and 5/3-way valves
- 4 to 24 valve positions with electrical interlinking
- The sub-base valves are always supplied with external pilot air. The pilot air is set via the manifold rail. A short and a long blanking plug are included with the manifold rail for this purpose

Blanking plate for vacant position



- Vacant position cover

Supply plate



- For additional air supply and exhaust via a valve position

Separator for pressure zones

- For creating multiple pressure zones in a valve terminal

Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features – Pneumatic components

FESTO

Creating pressure zones and separating exhaust air

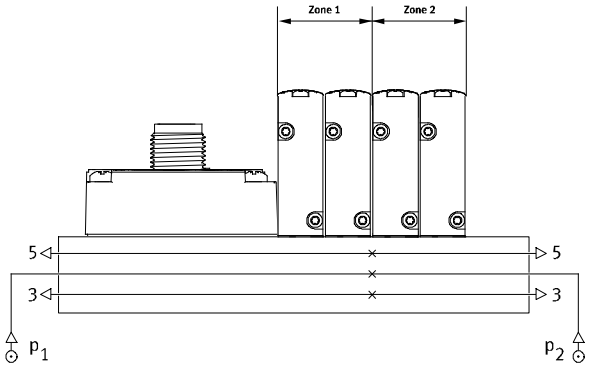
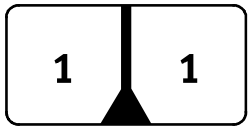
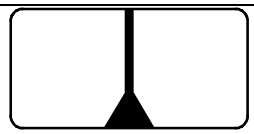
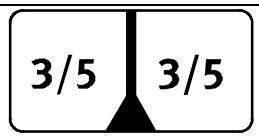
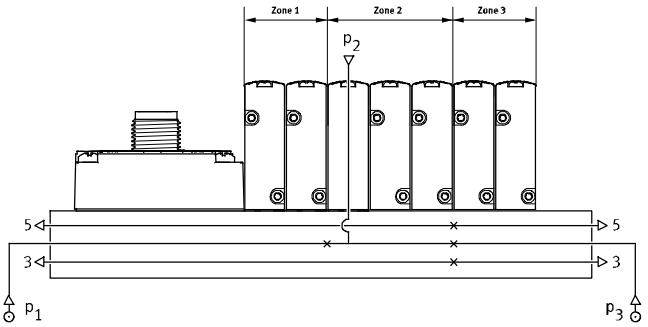
Compressed air is supplied and exhausted via the manifold rail and via supply plates.
The position of the supply plates and duct separations can be freely selected with the VTUG.

Pressure zones are created by isolating the internal supply ducts between the manifold sub-bases by means of appropriate duct separation.

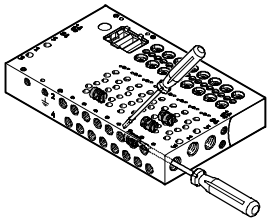
Pressure zone separation can be used for the following ducts:
- Duct 1
- Duct 3
- Duct 5

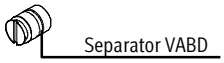
Note
- Use a separator if the exhaust air pressures are high
- Use at least one supply plate/supply for each pressure zone
- Pressure zone separation is not possible with pilot air supply (duct 12/14)

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 only limited by the number of valve positions on the manifold rail. Note that each supply plate occupies one valve position.

Separator VABD





Note

With the VTUG, several pressure zones can be created by mounting separators (VABD). The separators are mounted in the profile using a screwdriver.

Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features – Pneumatic components

Pilot air supply

Internal pilot air supply

Internal pilot air supply can be chosen with an operating pressure in the range 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.

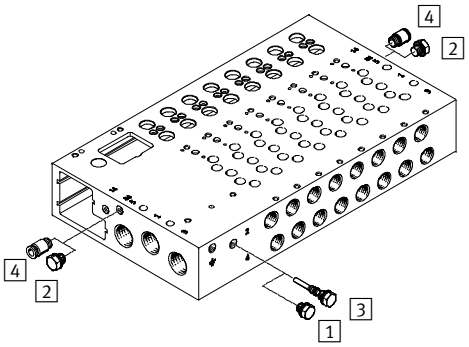
External pilot air supply

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

Pilot exhaust air port

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

Pilot air supply



1 Blanking plug, short, with internal pilot air
2 Blanking plug for duct 12/14 with internal pilot air
3 Blanking plug, long, with external pilot air
4 QS fitting for duct 12/14 with external pilot air

The manifold rails have an internal conduit between duct 12/14 and duct 1.
Internal or external pilot air supply is selected by inserting a blanking plug into this conduit.

Valve terminals VTUG with multi-pin plug and fieldbus connection

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 energy for the return movement is obtained from port 1.

Note

Pressure must be present at port 1.

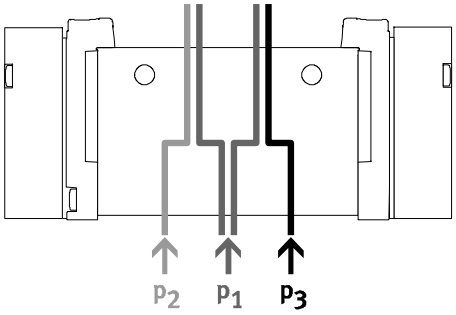
Vacuum operation is therefore only possible at port 3 and 5, not at port 1.

With external pilot air supply, vacuum can be connected at port 1, 3, 5 of the 5/2-way and 5/3-way valves.

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 deflector (internal pilot air)



- If two different pressures are required.

- Different pressures can be supplied at duct 1, 3 and 5.

Note

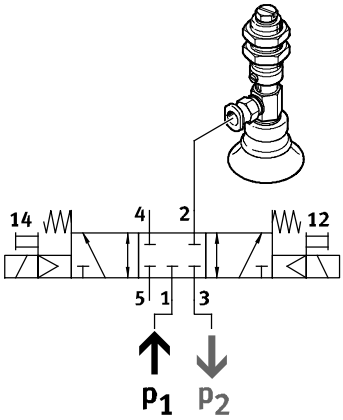
- With internal pilot air, the minimum pilot pressure must be adhered to in duct 1

- With 2x3/2-way valves without spring return, the minimum pilot pressure must always be adhered to in duct 1

Advantages

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

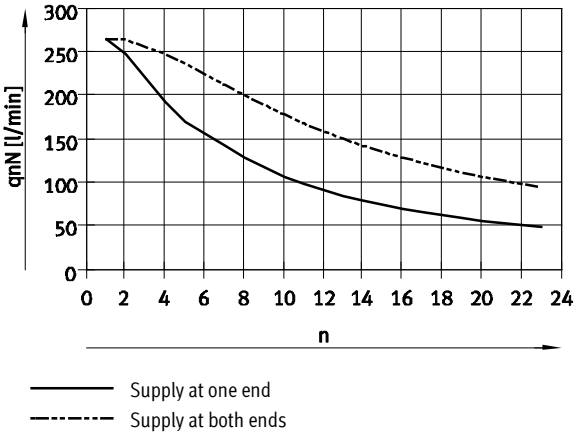
Vacuum, ejector pulse and normal position



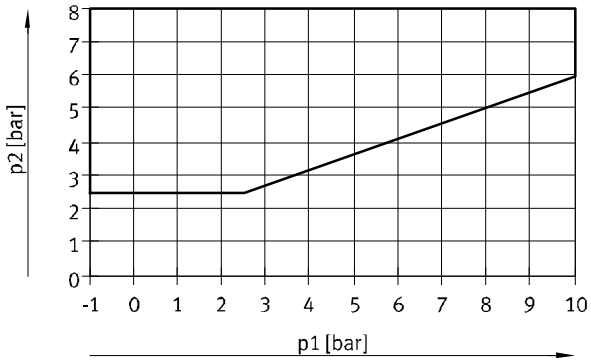
Vacuum, ejector pulse and normal position with internal pilot air can be achieved by connecting vacuum at duct 3 and pressure for the ejector pulse at duct 1.

Valve terminals VTUG with multi-pin plug and fieldbus connection

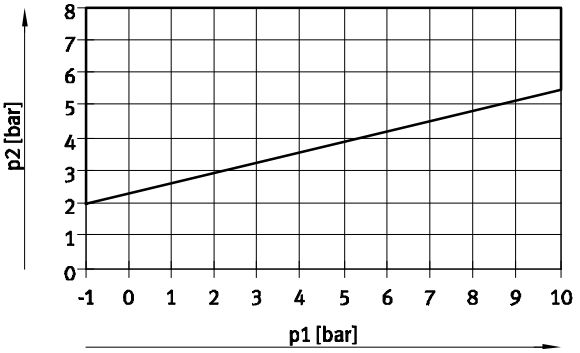
Standard nominal flow rate qnN with 5/2-way valve with multiple valves n switched simultaneously
Size 10



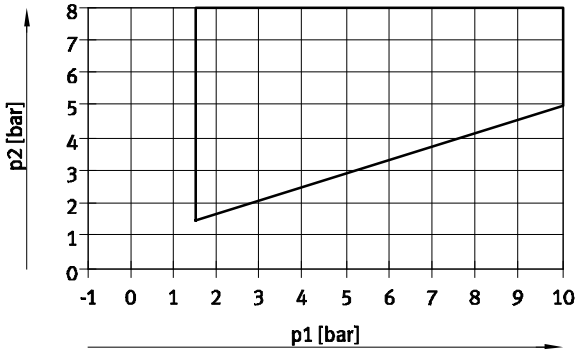
VUVG-...10-M52-RZT-.../VUVG-...14-M52-AZT-...,
pilot pressure p2 as a function of operating pressure p1



VUVG-...-T32-MZT, pilot pressure p2 as a function of operating pressure p1



VUVG-...-T32-AZT, pilot pressure p2 as a function of operating pressure p1



Valve terminals VTUG with multi-pin plug and fieldbus connection

Key features – Assembly

Valve terminal assembly

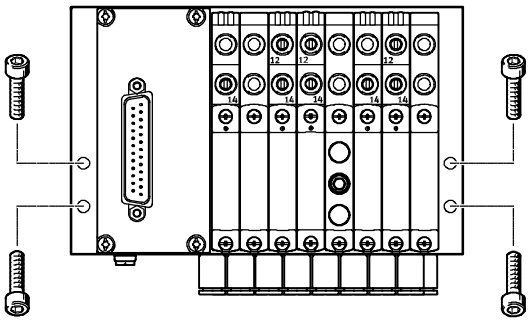
Sturdy terminal assembly thanks to:

- Four through-holes for wall mounting
- H-rail mounting

Note

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

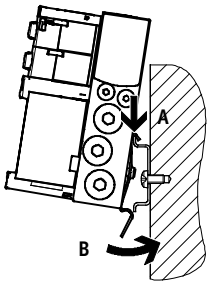
Wall mounting



The valve terminal VTUG is screwed onto the mounting surface using four M4 screws.

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

H-rail mounting



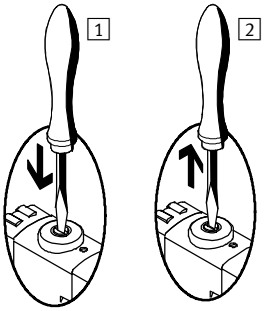
The valve terminal VTUG is attached to the H-rail (see arrow A).
The terminal is then swivelled around the H-rail and secured in place with the clamping component (see arrow B).

The manifold rails can be attached to an H-rail to DIN EN 60715-TH35 using the H-rail mounting kit VAME-T-M4.
The following screws must be used to attach the manifold rails:

- Size 10: M4x30 to DIN 912
- Size 14: M4x40 to DIN 912

Manual override (MO)

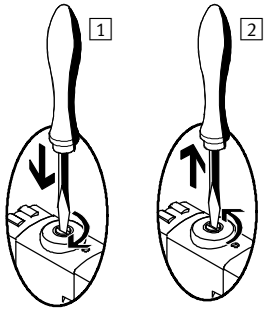
MO with automatic return, non-detenting



1 Press in the stem of the MO with a pointed object or screwdriver.
Pilot valve switches and actuates the main valve.

2 Remove the pointed object or screwdriver.
Spring force pushes the stem of the MO back.
Pilot valve returns to its initial position and so too the single solenoid main valve (not with double solenoid valve code J).

MO set via turning, non-detenting/detenting (standard version)

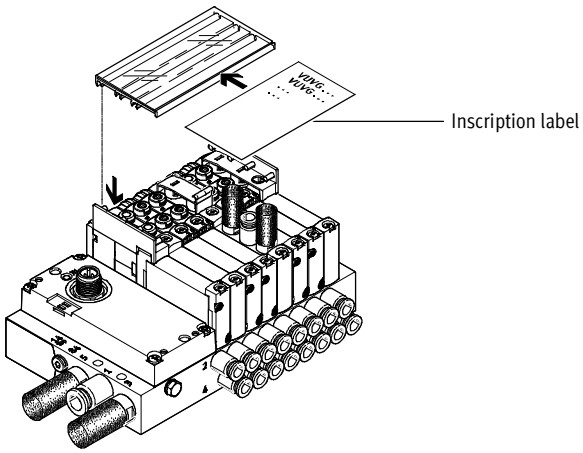


1 Press in the stem of the MO with a pointed object or screwdriver until the valve switches and then turn the stem clockwise by 90° until the stop is reached.
Valve remains switched.

2 Turn the stem anti-clockwise by 90° until the stop is reached and then remove the pointed object or screwdriver. Spring force pushes the stem of the MO back.
Valve returns to its initial position (not with double solenoid valve code J).

Inscription system

Inscription label holder

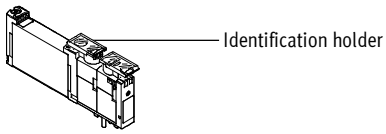


An inscription label holder ASCF-H-L1 (code TT) can be mounted for labelling the valves. The inscription label holder can be opened for inserting the inscription label and for actuating the manual override.
The inscription label holders are available in different sizes depending on the number of valves.

Note

The inscription label holder covers the manual override of the valves beneath it after mounting (manual override can only be actuated without detent). For this reason, the manual override for these valves must not be engaged/actuated when mounting the inscription label holder.

Identification holder



The identification holder ASLR-D-L1 (code TV) can alternatively be used to label the individual valves.
This identification holder is placed directly on the manual override.

Note

After mounting the holder, the manual override can only be actuated without detent. For this reason, the manual override must not be actuated/engaged when mounting the identification holder.

Valve terminals VTUG with multi-pin plug and fieldbus connection

Peripherals overview Semi in-line valves

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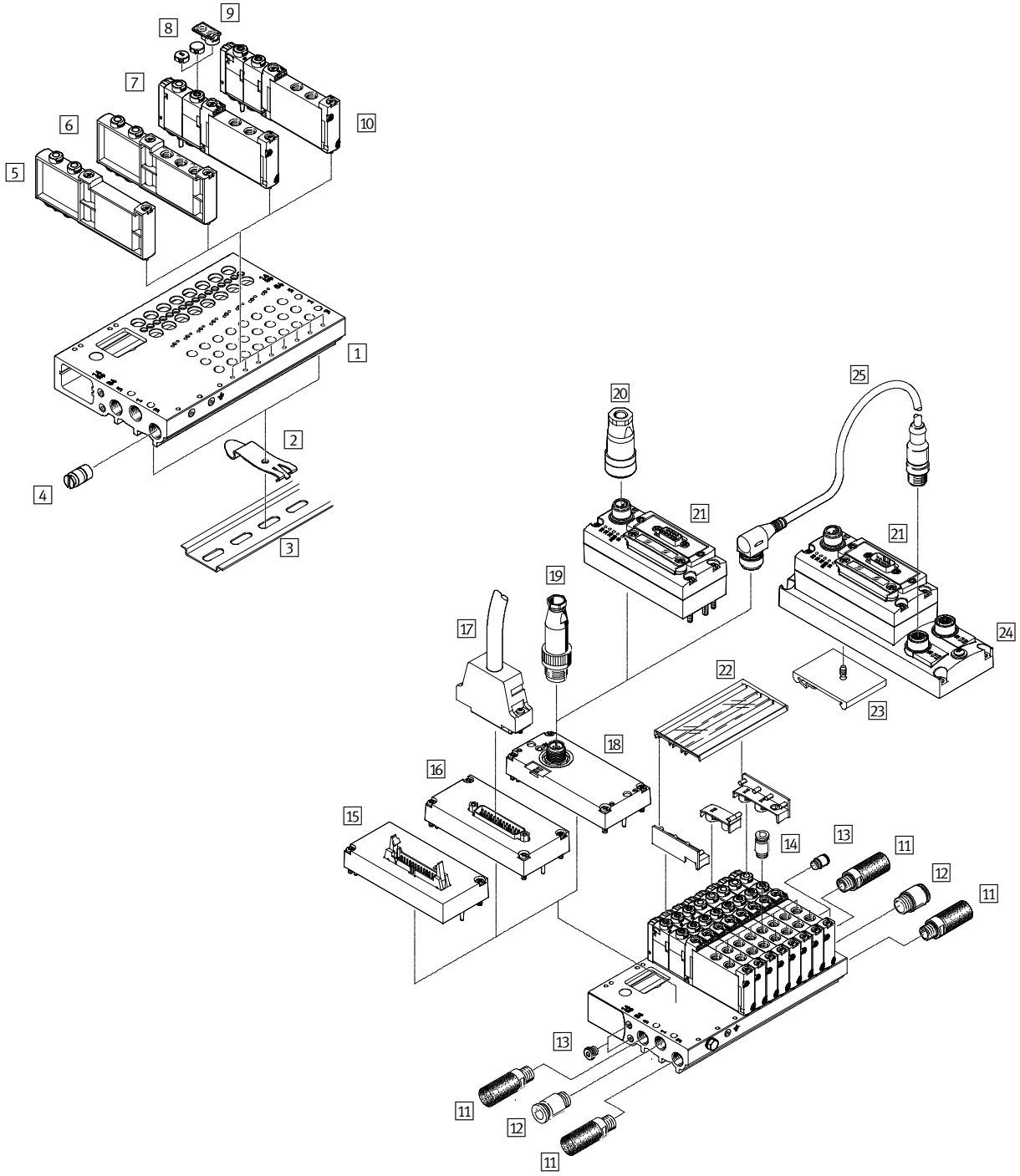
Valve terminal overview Semi in-line valves



Accessories			
	Type	Brief description	➔ Page/Internet
1 Manifold rail	VABM-L1-...	For 4 to 10, 12, 14, 16, 20 and 24 valve positions	97
2 H-rail mounting	VAME-T-M4	2 pieces for fitting the valve terminal on an H-rail	119
3 H-rail	NRH-35-2000	For mounting the valve terminal	119
4 Separator	VABD-...	For creating pressure zones	119
5 Blanking plate	VABB-L1-...	For covering an unused valve position	119
6 Supply plate	VABF-L1-...	For air supply port 1 and outlet port 3 and 5	119
7 Solenoid valve	VUVG-...	Semi in-line valve, 5/2-way single solenoid	72/76

Valve terminals VTUG with multi-pin plug and fieldbus connection

Peripherals overview Semi in-line valves

Accessories			
	Type	Brief description	→ Page/Internet
8 Cover cap	VMPA-HB...-B	Cover cap for manual override	119
9 Identification holder	ASLR-D-L1	For inscription label and covering the mounting screw/manual override	120
10 Solenoid valve	VUVG-...	Semi in-line valve, 2x3/2-way, 5/2-way double solenoid and 5/3-way valve	72/76
11 Silencer	U-...	For outlet port 3 and 5	118
12 Push-in fitting	QS-...	Push-in fitting for air supply port 1	118
13 Blanking plug	B-...	For internal/external pilot air	118
14 Push-in fitting	QS-...	For port 2/4	118
15 Electrical interface	VAEM-L1-S-M3-...	Flat cable	103
16 Electrical interface	VAEM-L1-S-M1-...	Sub-D	103
17 Connecting cable	NEBV-...	Sub-D cable	103
18 I-Port interface	VAEM-L1-S-...-PT	IO-Link	106
19 Plug	SEA-M12-5GS-PG7	Straight plug for I-Port interface/IO-Link	106
20 Fieldbus	CTEU-...	Fieldbus node	109/114
21 Power supply socket	NTSD	Power supply for fieldbus node CTEU	113
22 Inscription label holder	ASCF-H-L1	For identifying valves	120
23 H-rail	CAFM-F1-H	For E-box CAPC	108
24 E-box	CAPC-F1-E-M12	For connecting a second device with I-Port interface	108
25 Connecting cable	NEBU	–	nebu

Valve terminals VTUG with multi-pin plug and fieldbus connection

Peripherals overview Sub-base valves

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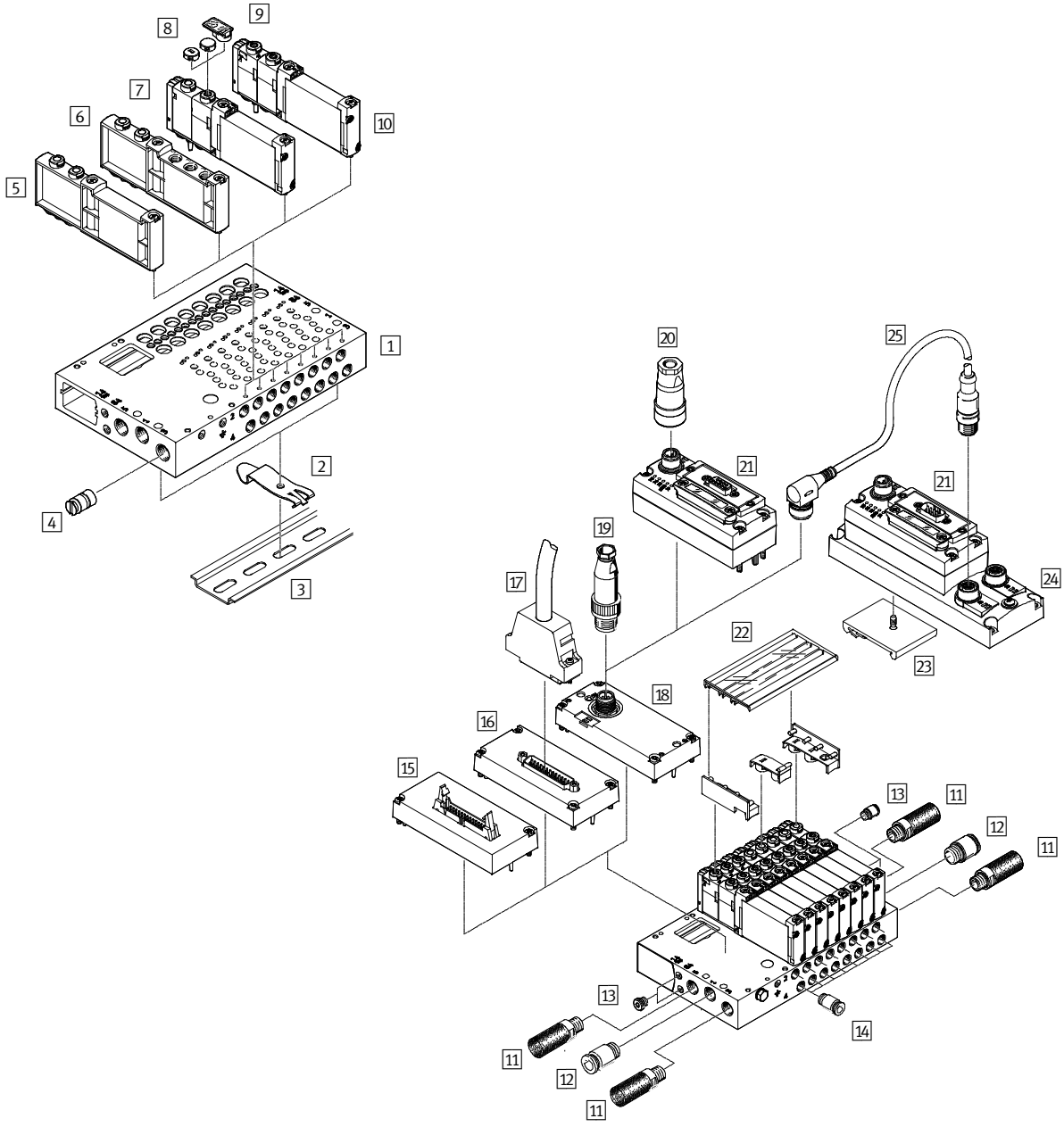
Valve terminal overview Sub-base valves



Accessories

		Type	Brief description	➔ Page/Internet
1	Manifold rail	VABM-L1-...	For 4 to 10, 12, 14, 16, 20 and 24 valve positions	97
2	H-rail mounting	VAME-T-M4	2 pieces for fitting the valve terminal on an H-rail	119
3	H-rail	NRH-35-2000	For mounting the valve terminal	119
4	Separator	VABD-...	For creating pressure zones	119
5	Blanking plate	VABB-L1-...	For covering an unused valve position	119
6	Supply plate	VABF-L1-...	For air supply port 1 and outlet port 3 and 5	119
7	Solenoid valve	VUVG- ...	Sub-base valve, 5/2-way single solenoid	80/84
8	Cover cap	VMPA-HB...-B	Cover cap for manual override	119
9	Identification holder	ASLR-D-L1	For inscription label and covering the mounting screw/manual override	120

Valve terminals VTUG with multi-pin plug and fieldbus connection

Peripherals overview Sub-base valves

Accessories			
	Type	Brief description	→ Page/Internet
10 Solenoid valve	VUVG- ...	Sub-base valve, 2x3/2-way, 5/2-way double solenoid and 5/3-way valve	80/84
11 Silencer	U...	For outlet port 3 and 5	118
12 Push-in fitting	QS...	Push-in fitting for air supply port 1	118
13 Blanking plug	B-...	For internal/external pilot air	118
14 Push-in fitting	QS...	For port 2/4	118
15 Electrical interface	VAEM-L1-S-M3-...	Flat cable	103
16 Electrical interface	VAEM-L1-S-M1-...	Sub-D	103
17 Connecting cable	NEBV-...	Sub-D cable	103
18 I-Port interface	VAEM-L1-S-...-PT	IO-Link	106
19 Plug	SEA-M12-5GS-PG7	Straight plug for I-Port interface/IO-Link	106
20 CTEU	CTEU-...	Fieldbus node	109/114
21 Power supply socket	NTSD	Power supply for fieldbus node CTEU	113
22 Inscription label holder	ASCF-H-L1	For identifying valves	120
23 H-rail	CAFM-F1-H	For E-box CAPC	108
24 E-box	CAPC-F1-E-M12	For connecting a second device with I-Port interface	108
25 Connecting cable	NEBU	–	nebu

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Technical data Semi in-line valves M5/M7

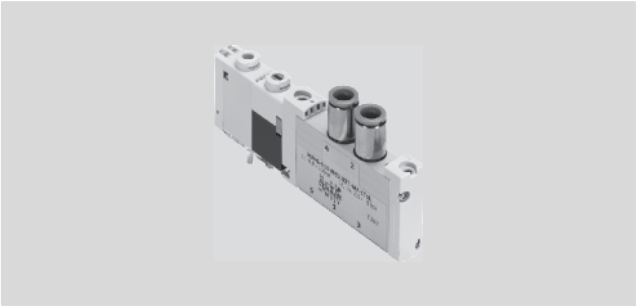
Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Circuit symbol ➔ page 57

Width 10 mm

Flow rate
130 ... 330 l/min

Voltage
24 V DC



General technical data													
Valve function			T32-A			T32-M			M52-R	B52	M52-M	P53		
Normal position			C[1]	U[2]	H[4]	C[1]	U[2]	H[4]	–	–		C[1]	U[2]	E[3]
Stable position			Monostable							Bistable	Monostable			
Pneumatic spring reset method			Yes			No			Yes[5]	–	No	–		
Mechanical spring reset method			No			Yes			Yes[5]	–	Yes	–		
Vacuum operation at port 1			No			With external pilot air								
Design			Piston spool valve											
Sealing principle			Soft											
Actuation type			Electric											
Type of control			Piloted											
Pilot air supply			External											
Exhaust function			With flow control											
Manual override			Choice of non-detenting/detenting (standard), non-detenting or covered											
Type of mounting			On manifold rail											
Mounting position			Any											
Switching position display			LED											
Standard nominal flow rate M5 front		[l/min]	150			130			220			210		
Standard nominal flow rate M7 front		[l/min]	160			140			330			280		
Width		[mm]	10											
Port 1, 3, 5			On manifold rail											
Port 2, 4	VUVG-S10-...-M5		M5											
Port 2, 4	VUVG-S10-...-M7		M7											
Port 12, 14			On manifold rail											
Product weight		[g]	59						53	60	53	58		
Corrosion resistance class		CRC	2[6]											

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H = 2x3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Technical data Semi in-line valves M5/M7

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[3]	M52-R[2]	B52	M52-M[3]	P53
Operating medium			Compressed air in accordance with ISO 8573-1:2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	1.5 ... 10	–0.9 ... 10			–0.9 ... 8	–0.9 ... 10
Pilot pressure[4]		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +60					
Temperature of medium		[°C]	–5 ... +60					

1) Pneumatic spring
2) Mixed, pneumatic/mechanical spring
3) Mechanical spring
4) Minimum pilot pressure 50% of operating pressure

Electrical data		
Electrical connection		Via manifold rail
Operating voltage	[V DC]	24 ±10%
Power consumption per valve solenoid	[W]	1/0.4 (after 25 ms)
Duty cycle	[%]	100
Protection class to EN 60529		IP40 as standard (optionally with feature "S8"[1] IP67 with Sub-D and IO-Link interface)

1) S8= protection to IP67 for electrics

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

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

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

Valve terminals VTUG with multi-pin plug and fieldbus connection

Technical data Semi in-line valves M5/M7

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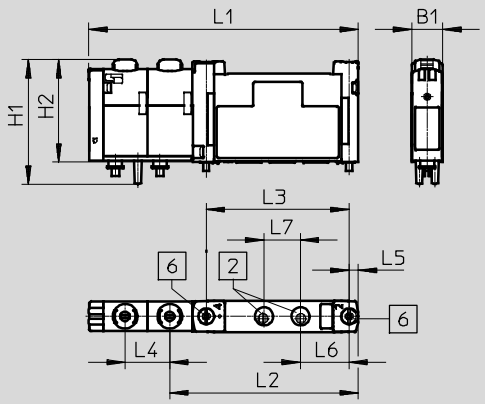
Dimensions Semi in-line valves M5/M7



2 Ports 2 and 4 M5/M7

6 Mounting screw

Type										
	B1	H1	H2	L1	L2	L3	L4	L5	L6	L7
VUVG-S10-...-M5-1T1L	10.3	40.9	33.6	88.6	62	47	14.7	3	16	12
VUVG-S10-...-M7-1T1L										

Valve terminals VTUG with multi-pin plug and fieldbus connection

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Order code Semi in-line valves M5/M7

VUVG	–		10	–		–			–		–			

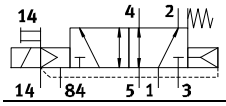
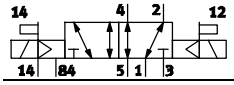
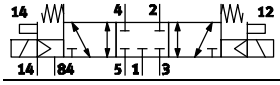
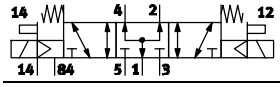
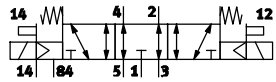
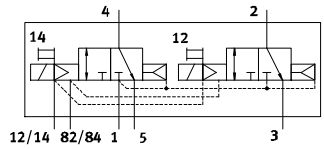
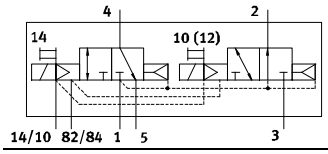
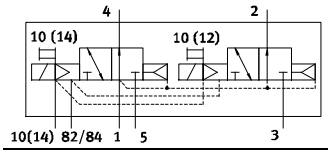
Valve design

Semi in-line valves	**S**

Width

10 mm	**10**

Valve functions

	**M52**
	**B52**
	**P53C**
	**P53U**
	**P53E**
	**T32C**
	**T32H**
	**T32U**

Display

L	LED

Electrical connection

T1	Plug-in

Nominal operating voltage

1	24 V DC

Pneumatic connection

M5	M5
M7	M7
Q3	Push-in connector 3 mm
Q4	Push-in connector 4 mm
Q4H	Push-in connector 4 mm/M7
Q6	Push-in connector 6 mm
Q6H	Push-in connector 6 mm/M7
T14	Push-in connector 1/4"
T14H	Push-in connector 1/4", M7
T18	Push-in connector 1/8"
T316	Push-in connector 3/16"
T316H	Push-in connector 3/16", M7
T532	Push-in connector 5/3"

Manual override

H	Non-detenting
S	Covered
T	Non-detenting, detenting

Pilot air

Z	External

Reset method

A	Pneumatic spring for 2x3/2-way
M	Mechanical spring for M52 and 2x3/2-way
R	Pneu./mech. spring for M52
–	With B52 and P53

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Technical data Semi in-line valves G1/8

Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Circuit symbol ➔ page 57

Width 14 mm

Flow rate
520 ... 630 l/min

Voltage
24 V DC

General technical data													
Valve function		T32-A			T32-M			M52-A	B52	M52-M	P53		
Normal position		C[1]	U[2]	H[4]	C[1]	U[2]	H[4]	–	–		C[1]	U[2]	E[3]
Stable position		Monostable							Bistable	Monostable			
Pneumatic spring reset method		Yes			No			Yes	–	No	–		
Mechanical spring reset method		No			Yes			No	–	Yes	–		
Vacuum operation at port 1		No			With external pilot air								
Design		Piston spool valve											
Sealing principle		Soft											
Actuation type		Electric											
Type of control		Piloted											
Pilot air supply		External											
Exhaust function		With flow control											
Manual override		Choice of non-detenting/detenting (standard), non-detenting or covered											
Type of mounting		On manifold rail											
Mounting position		Any											
Switching position display		LED											
Standard nominal flow rate G⅛ front	[l/min]	610			520			620	630	620	590		
Width	[mm]	14											
Port 1, 3, 5		On manifold rail											
Port 2, 4		G⅛											
Port 12, 14		On manifold rail											
Product weight	[g]	102			100			91	98	89	95		
Corrosion resistance class	CRC	2[6]											

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H = 2x3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Technical data Semi in-line valves G1/8

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[2]	M52-A[1]	B52	M52-M[2]	P53
Operating medium			Compressed air in accordance with ISO 8573-1:2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	1.5 ... 10	–0.9 ... 10			–0.9 ... 8	–0.9 ... 10
Pilot pressure[3]		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +60					
Temperature of medium		[°C]	–5 ... +60					

1) Pneumatic spring
2) Mechanical spring
3) Minimum pilot pressure 50% of operating pressure

Electrical data		
Electrical connection		Via sub-base
Operating voltage	[V DC]	24 ±10%
Power	[W]	1/0.4 (after 25 ms)
Duty cycle	[%]	100
Protection class to EN 60529		IP67

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

Valve switching times [ms]							
Valve function		T32-A[1]	T32-M[2]	M52-A[1]	B52	M 52-M[2]	P53
Switching time on	[ms]	10	13	13	–	10	15
Switching time off	[ms]	29	21	26	–	38	42
Changeover time	[ms]	–	–	–	9	–	25

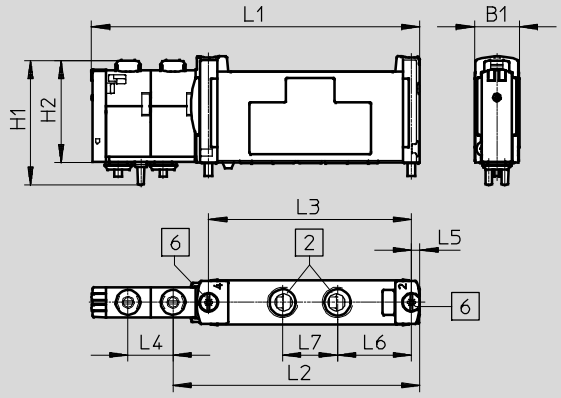
1) Pneumatic spring
2) Mechanical spring

Valve terminals VTUG with multi-pin plug and fieldbus connection

Technical data Semi in-line valves G1/8

FESTO

Dimensions Semi in-line valves G1/8



2 Ports 2 and 4 G⅛

6 Mounting screw

Type										
	B1	H1	H2	L1	L2	L3	L4	L5	L6	L7
VUVG-S14-...-G18-1T1L	14.7	40.9	33.5	107.6	81	66.5	14.7	2.8	24.3	18

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Order code Semi in-line valves G1/8

VUVG	–		14	–		–			–		–			

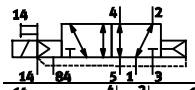
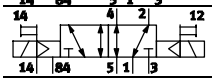
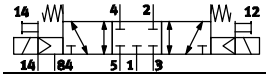
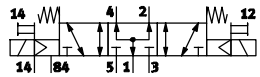
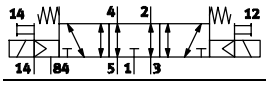
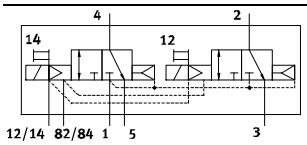
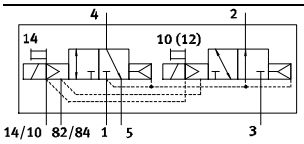
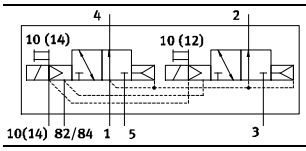
Valve design

Semi in-line valves	S

Width

14 mm	14

Valve functions

	M52
	B52
	P53C
	P53U
	P53E
	T32C
	T32H
	T32U

Pneumatic connection

G18	G1/8
T14	Push-in connector 1/4"
T516	Push-in connector 5/16"
Q4	Push-in connector 4 mm
Q6	Push-in connector 6 mm
Q8	Push-in connector 8 mm/G1/8

Manual override

H	Non-detenting
S	Covered
T	Non-detenting, detenting

Pilot air

Z	External

Reset method

A	Pneumatic spring for M52 and 2x3/2-way
M	Mechanical spring for M52 and 2x3/2-way
–	With B52 and P53

Display

L	LED

Electrical connection

T1	Plug-in

Nominal operating voltage

1	

Valve terminals VTUG with multi-pin plug and fieldbus connection

Technical data – Sub-base valves M5/M7

FESTO

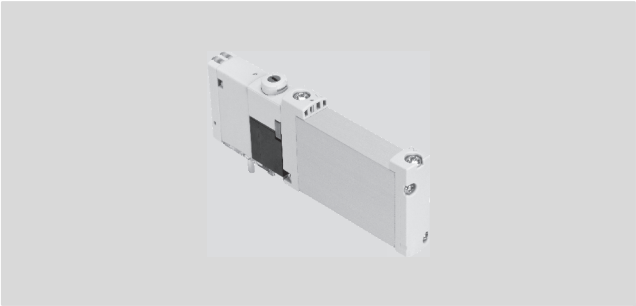
Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Circuit symbol ➔ page 57

Width 10 mm

Flow rate
130 ... 300 l/min

Voltage
24 V DC



General technical data													
Valve function		T32-A			T32-M			M52-R	B52	M52-M	P5/3		
Normal position		C[1]	U[2]	H[4]	C[1]	U[2]	H[4]	–	–		C[1]	U[2]	E[3]
Stable position		Monostable							Bistable	Monostable			
Pneumatic spring reset method		Yes			No			Yes[5]	–	No	–		
Mechanical spring reset method		No			Yes			Yes[5]	–	Yes	–		
Vacuum operation at port 1		No			With external pilot air								
Design		Piston spool valve											
Sealing principle		Soft											
Actuation type		Electric											
Type of control		Piloted											
Pilot air supply		External											
Exhaust function		With flow control											
Manual override		Choice of non-detenting/detenting (standard), non-detenting or covered											
Type of mounting		On manifold rail											
Mounting position		Any											
Switching position display		LED											
Standard nominal flow rate M5, front	[l/min]	150			130			210			200		
Standard nominal flow rate M7, front	[l/min]	160			140			270			250		
Standard nominal flow rate M7, underneath	[l/min]	160			140			300			260		
Width	[mm]	10											
Port 1, 3, 5		On manifold rail											
Port 2, 4		M5/M7											
Port 12, 14		On manifold rail											
Product weight	[g]	59						53	60	53	58		
Corrosion resistance class	CRC	2[6]											

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H=2x3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Technical data – Sub-base valves M5/M7

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[3]	M52-R[2]	B52	M52-M[3]	P53
Operating medium			Compressed air in accordance with ISO 8573-1:2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
	External	[bar]	1.5 ... 10	–0.9 ...10			–0.9 ... 8	–0.9 ... 10
Pilot pressure[4]		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +60					
Temperature of medium		[°C]	–5 ... +60					

1) Pneumatic spring
2) Mixed, pneumatic/mechanical spring
3) Mechanical spring
4) Minimum pilot pressure 50% of operating pressure

Electrical data		
Electrical connection		Via manifold rail
Operating voltage	[V DC]	24 ±10%
Power consumption per valve solenoid	[W]	1/0.4 (after 25 ms)
Duty cycle	[%]	100
Protection class to EN 60529		IP40 as standard (optionally with feature "S8"[1] IP67 with Sub-D and IO-Link interface)

1) S8= protection to IP67 for electrics

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

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

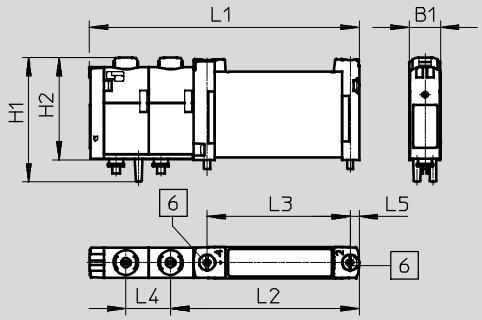
1) Mixed, pneumatic/mechanical spring
2) Pneumatic spring
3) Mechanical spring

Valve terminals VTUG with multi-pin plug and fieldbus connection

Technical data – Sub-base valves M5/M7

FESTO

Dimensions – Sub-base valves M5/M7



6 Mounting screw

Type								
	B1	H1	H2	L1	L2	L3	L4	L5
VUVG-B10-...-F-1T1L	10.3	40.9	33.6	88.6	62	47	14.7	3

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Order code Sub-base valves M5/M7

VUVG	–		10	–		–			–		–			

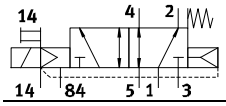
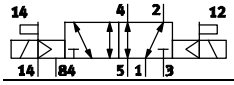
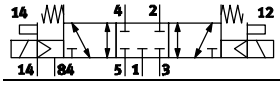
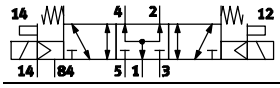
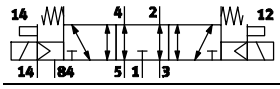
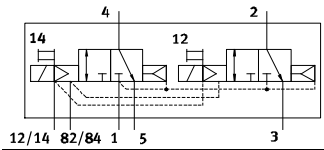
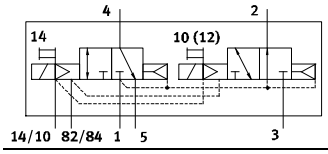
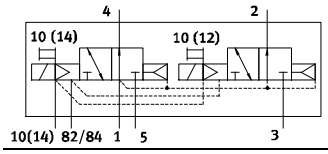
Valve design

Sub-base valves	**B**

Width

10 mm	**10**

Valve functions

	**M52**
	**B52**
	**P53C**
	**P53U**
	**P53E**
	**T32C**
	**T32H**
	**T32U**

			–		–									

Display

L	LED

Electrical connection

T1	Plug-in

Nominal operating voltage

1	24 V DC

Pneumatic connection

F	Flange/sub-base

Manual override

H	Non-detenting
S	Covered
T	Non-detenting, detenting

Pilot air

Z	External

Reset method

A	Pneumatic spring for 2x3/2-way
M	Mechanical spring for M52 and 2x3/2-way
R	Pneu./mech. spring for M52
–	With B52 and P53

Valve terminals VTUG with multi-pin plug and fieldbus connection

Technical data Sub-base valves G1/8

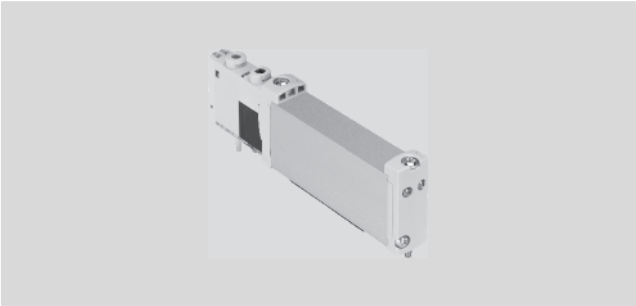
Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

Circuit symbol ➔ page 57

Width 14 mm

Flow rate
440 ... 560 l/min

Voltage
24 V DC



General technical data													
Valve function		T32-A			T32-M			M52-A	B52	M52-M	P53		
Normal position		C[1]	U[2]	H[4]	C[1]	U[2]	H[4]	–	–		C[1]	U[2]	E[3]
Stable position		Monostable							Bistable	Monostable			
Pneumatic spring reset method		Yes			No			Yes	–	No	–		
Mechanical spring reset method		No			Yes			No	–	Yes	–		
Vacuum operation at port 1		No			With external pilot air								
Design		Piston spool valve											
Sealing principle		Soft											
Actuation type		Electric											
Type of control		Piloted											
Pilot air supply		External											
Exhaust function		With flow control											
Manual override		Choice of non-detenting/detenting (standard), non-detenting or covered											
Type of mounting		On manifold rail											
Mounting position		Any											
Switching position display		LED											
Standard nominal flow rate G18 front	[l/min]	490			440			500	510	500	470		
Standard nominal flow rate G18 underneath	[l/min]	530			470			550	560	550	510		
Width	[mm]	14											
Port 1, 3, 5		On manifold rail											
Port 2, 4		G1⁄8											
Port 12, 14		On manifold rail											
Product weight	[g]	102			100			91	98	89	95		
Corrosion resistance class	CRC	2[6]											

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H = 2x3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Technical data Sub-base valves G1/8

Operating and environmental conditions								
Valve function			T32-A[1]	T32-M[2]	M52-A[1]	B52	M52-M[2]	P53
Operating medium			Compressed air in accordance with ISO 8573-1:2010 [7:4:4]					
Operating pressure	Internal	[bar]	1.5 ...8	2 ... 8	2.5 ... 8	1.5 ...8	3 ... 8	
	External	[bar]	1.5 ... 10	–0.9 ...10			–0.9 ...8	–0.9 ...10
Pilot pressure[3]		[bar]	1.5 ... 8	2 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8	
Ambient temperature		[°C]	–5 ... +60					
Temperature of medium		[°C]	–5 ... +60					

1) Pneumatic spring
2) Mechanical spring
3) Minimum pilot pressure 50% of operating pressure

Electrical data		
Electrical connection		Via sub-base
Operating voltage	[V DC]	24 ±10%
Power	[W]	1/0.4 (after 25 ms)
Duty cycle	[%]	100
Protection class to EN 60529		IP67

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

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

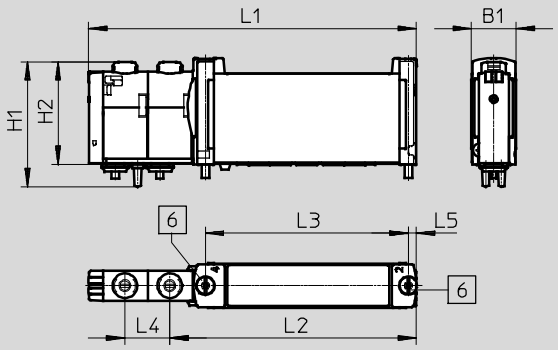
1) Pneumatic spring
2) Mechanical spring

Valve terminals VTUG with multi-pin plug and fieldbus connection

Technical data Sub-base valves G1/8

FESTO

Dimensions Sub-base valves G1/8



6 Mounting screw

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

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Order code Sub-base valves G1/8

VUVG	–		14	–		–			–		–			

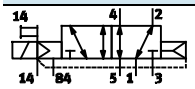
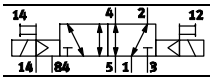
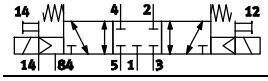
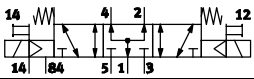
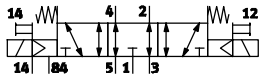
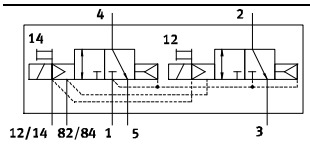
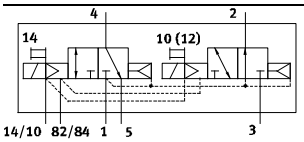
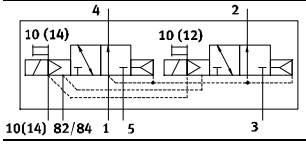
Valve design

Sub-base valves	B

Width

14 mm	14

Valve functions

	M52
	B52
	P53C
	P53U
	P53E
	T32C
	T32H
	T32U

Pneumatic connection

F	Flange/sub-base

Manual override

H	Non-detenting
S	Covered
T	Non-detenting, detenting

Pilot air

Z	External

Reset method

A	Pneumatic spring for M52 and 2x3/2-way
M	Mechanical spring for M52 and 2x3/2-way
–	With B52 and P53

Nominal operating voltage

1	

Electrical connection

T1	Plug-in

Display

L	LED

Valve terminals VTUG with multi-pin plug and fieldbus connection

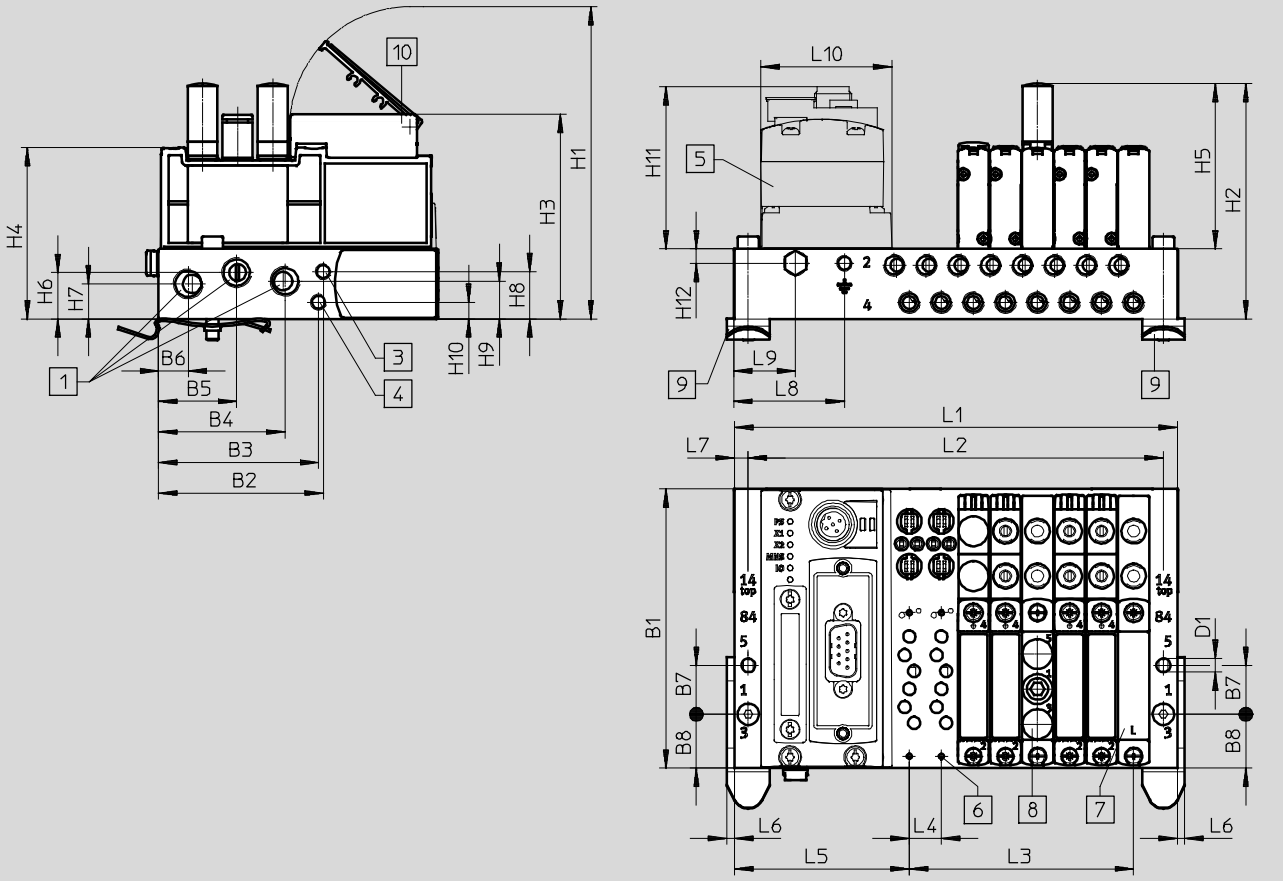
Technical data Manifold rails VABM

General technical data			
Manifold rail		Size 10	Size 14
Type code		VABM	
Grid dimension	[mm]	10.5	16
Mounting position		Any	
Connection type		Semi in-line/sub-base	
Max. number of valve positions		24	
Pneumatic interfaces			
Port 12/14		M5	
Port 82/84		M5	
Port 2, 4		M5/M7	G⅛
Port 1, 3, 5		G⅛	G¼
Storage temperature	[°C]	–20 ... 60	

Information on materials	
Manifold rail material	Wrought aluminium alloy
Note on materials	RoHS-compliant

Dimensions– Example of a valve terminal with I-Port interface, outlet on top

Download CAD data ➔ **www.festo.com**



1 Ports 1, 3 and 5: G⅛/G¼ (at both ends)
3 Ports 12/14: M5 (at both ends)
4 Ports 82/84: M5 (at both ends)
5 CTEU-CANopen
6 For mounting valves/blanking plates/supply plates on manifold block: M2/M2.5
7 Blanking plate
8 Supply plate, ports 1, 3 and 5: M7/G⅛
9 H-rail mounting
10 Inscription label holder

Valve terminals VTUG with multi-pin plug and fieldbus connection

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Technical data Manifold rails VABM

Type	No. 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	No. 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	No. 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

Type	No. 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	No. 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

Valve terminals VTUG with multi-pin plug and fieldbus connection

Technical data Manifold rails VABM

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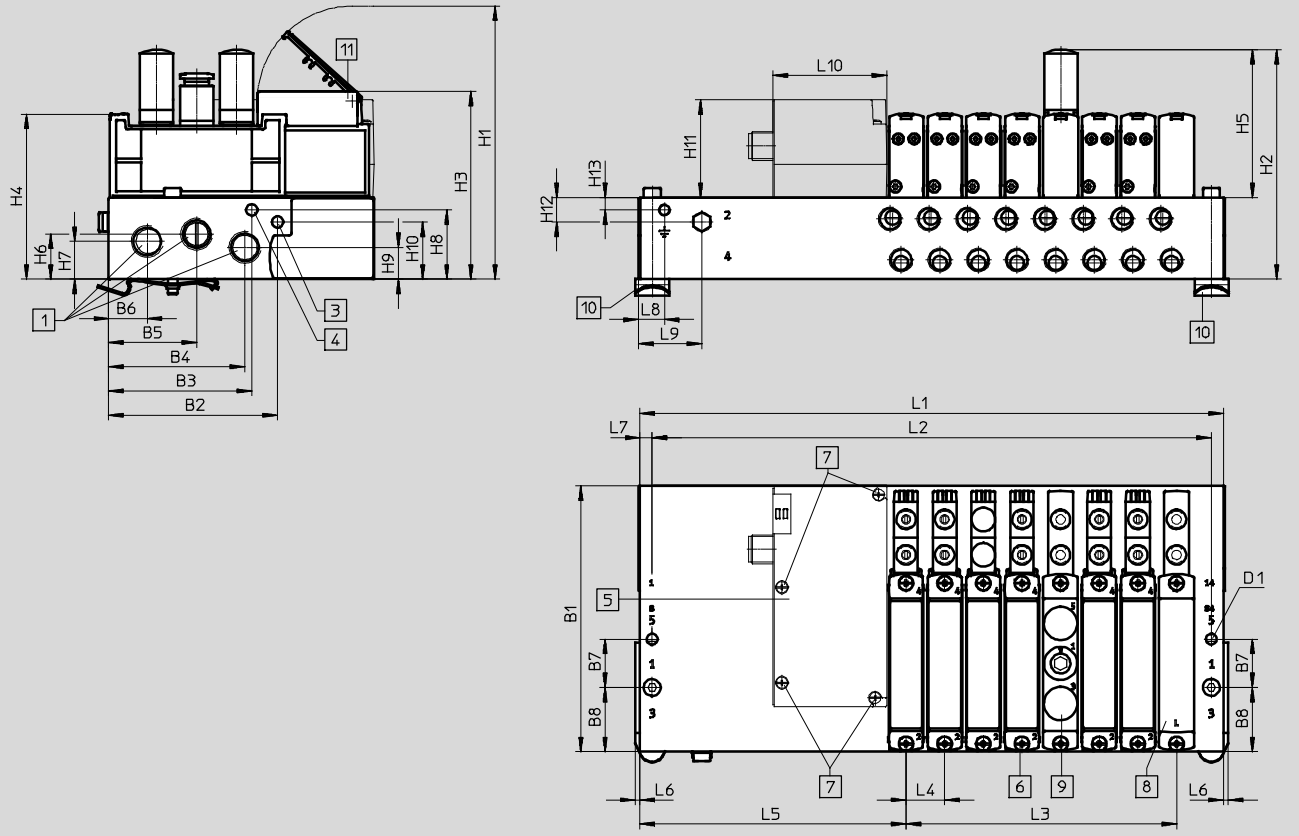
Dimensions – Example of a valve terminal with I-Port interface, outlet on side

Download CAD data ➔ **www.festo.com**



1 Ports 1, 3 and 5: G1⁄8/G1⁄4 (at both ends)
3 Ports 12/14: M5 (at both ends)
4 Ports 82/84: M5 (at both ends)
5 Electrical connection for I-Port interface/IO-Link
6 Mounting screw
7 Electrical interface – mounting on manifold block: M3
8 Blanking plate
9 Supply plate, ports 1, 3 and 5: M7/G1⁄8
10 H-rail mounting
11 Inscription label holder

Type	No. 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	No. of valve positions	Size 10										
		H9	H10	H11	H12	H13	L4	L5	L6	L7	L8	L9	L10
VABM	4-24	12.4	5.5	40.8	10.1	5.1	10.5	106.8	2.5	4.5	36	75	47.1

Type	No. 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

Type	No. of valve positions	Size 14										
		H9	H10	H11	H12	H13	L4	L5	L6	L7	L8	L9	L10
VABM	4-24	13.2	23.7	40.8	10.1	5.1	16	110.1	2	5	10	75	47.1

Valve terminals VTUG with multi-pin plug and fieldbus connection

Technical data Manifold rails VABM

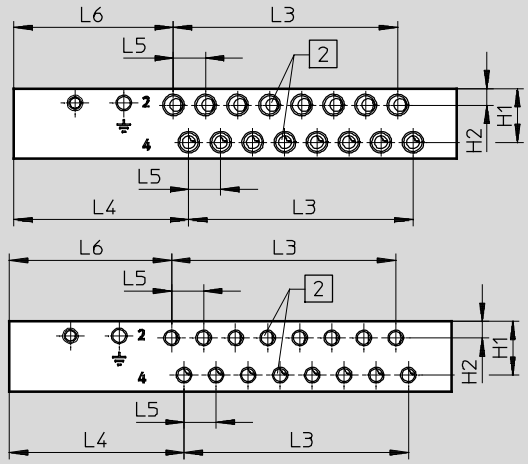
Type	No. of valve positions	Size 10			Size 14		
		L1	L2	L3	L1	L2	L3
VABM	4	152.5	143.5	31.5	177.5	167.5	48
	5	163	154	42	193.5	183.5	64
	6	173.5	164.5	52.5	209.5	199.5	80
	7	184	175	63	225.5	215.5	96
	8	194.5	185.5	73.5	241.5	231.5	112
	9	205	196	84	257.5	247.5	128
	10	215.5	206.5	94.5	273.5	263.5	144
	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	321	311.5	199.5	433.5	423.5	304
	24	362.5	353.5	241.5	497.5	487.5	368

Valve terminals VTUG with multi-pin plug and fieldbus connection

Dimensions Example of a valve terminal

Dimensions – Front manifold rail Download CAD data ➔ **www.festo.com**

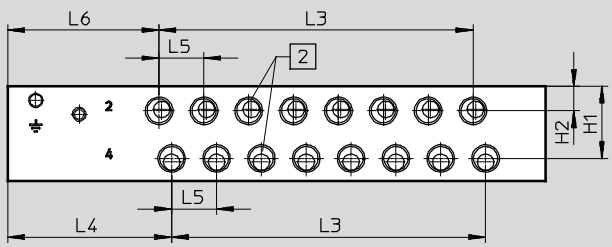
Size 10, I-Port interface, outlet on top



2 Ports 2 and 4: M7

2 Ports 2/4: M5

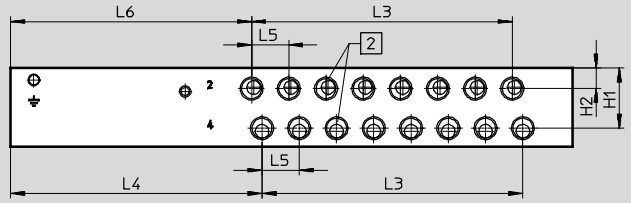
Size 14, I-Port interface, outlet on top



2 Ports 2/4: G1/8

Dimensions – Front manifold rail Download CAD data ➔ **www.festo.com**

Size 10/14, I-Port interface, outlet on side



2 Ports 2 and 4: M5, M7, G1/8

Type	Manifold rail with I-Port interface, outlet on top				
	H1	H2	L4	L5	L6
Connection M7	17.6	5.4	57.3	10.5	52.3
Connection M5					53.2
Connection G1/8	25.8	8.8	58.5	16	54

Type	Manifold rail with I-Port interface, outlet on side				
	H1	H2	L4	L5	L6
Connection M7	17.6	5.4	106.8	10.5	101.8
Connection M5					102.7
Connection G1/8	25.8	8.8	108	16	103.5

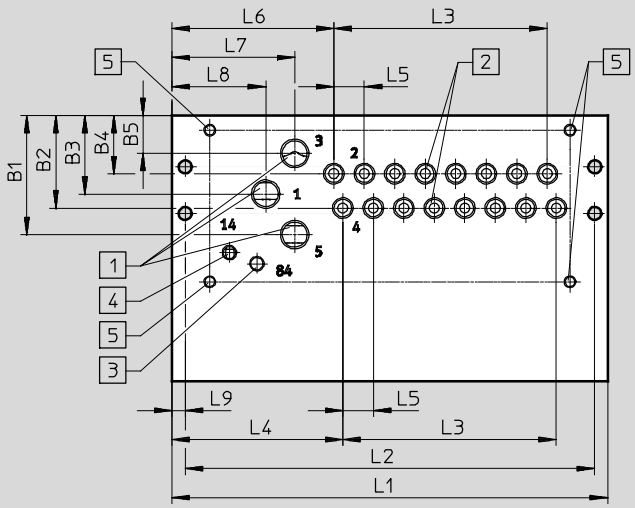
Type	No. of valve positions	Size 10	Size 14
		L3	L3
VABM	4	31.5	48
	5	42	64
	6	52.5	80
	7	63	96
	8	73.5	112
	9	84	128
	10	94.5	144
	12	115.5	176
	16	157.5	240
	20	199.5	304
	24	241.5	368

Valve terminals VTUG with multi-pin plug and fieldbus connection

Dimensions Example of control cabinet installation

Dimensions – Manifold rail, outlet underneath, control cabinet installation

Download CAD data ➔ **www.festo.com**



Note

Dimensions of the manifold rail with I-Port interface, outlet on side for control cabinet installation (➔94)

[1] Ports 1, 3 and 5: G⅛/G¼ (at both ends)

[2] Ports 2 and 4: M5/M7/G⅛ (at both ends)

[3] Ports 12/14: M5 (at both ends)

[4] Ports 82/84: M5 (at both ends)

[5] Mountings, connection direction underneath: M4x8

Type	Manifold rail with I-Port interface, outlet on top, size 10										
	B1	B2	B3	B4	B5	L4	L5	L6	L7	L8	L9
VABM	41	31.8	27	20	13	58.8	10.5	55.7	42.3	32.3	4.5

Type	Manifold rail with I-Port interface, outlet on top, size 14										
	B1	B2	B3	B4	B5	L4	L5	L6	L7	L8	L9
VABM	53.5	45.1	35.2	27.8	17	58.5	16	58.5	43	33	5

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

Valve terminals VTUG with multi-pin plug and fieldbus connection

Dimensions

Type	Manifold rail with I-Port interface, outlet on side, 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

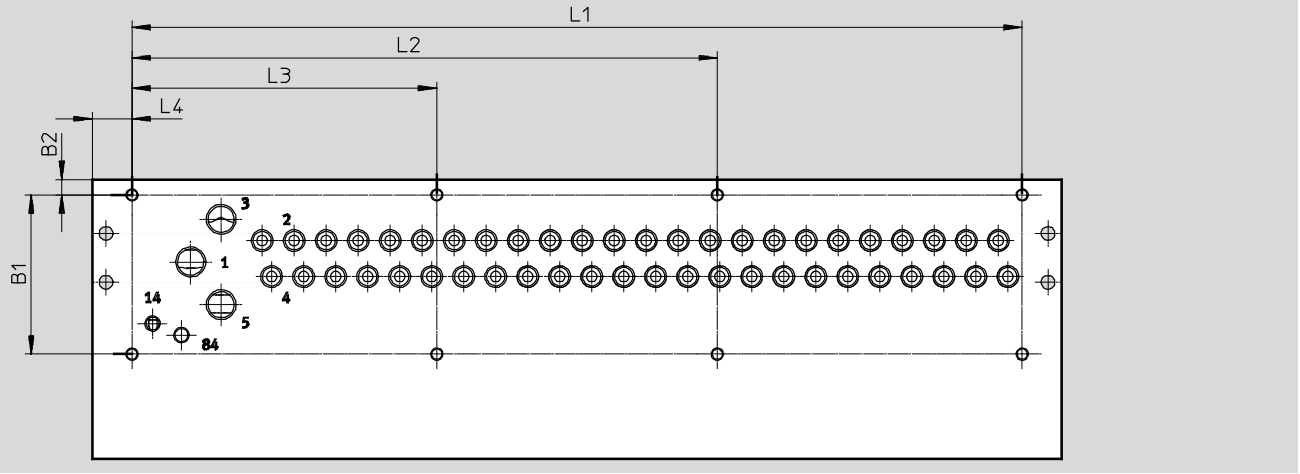
Type	Manifold rail with I-Port interface, outlet on side, size 14										
	B1	B2	B3	B4	B5	L4	L5	L6	L7	L8	L9
VABM	53.5	45.1	35.2	27.8	17	108	16	108	92.5	82.5	5

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

Valve terminals VTUG with multi-pin plug and fieldbus connection

Dimensions

Dimensions – Mounting holes, size 10 Download CAD data ➔ **www.festo.com**

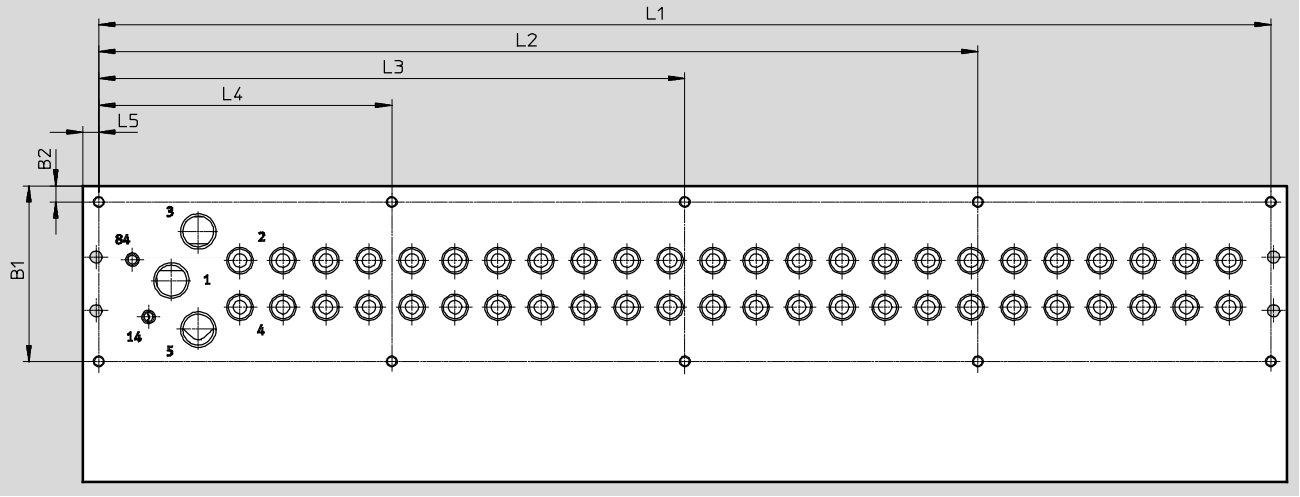


Type								
		B1	B2	L1	L2	L3	L4	I-Port interface, outlet on side L4
VABM-L1-10...-G18-4	Up to 8 valves	52.2	5	82	–	–	13	62.5
VABM-L1-10...-G18-5				92.5	–	–		
VABM-L1-10...-G18-6				103	–	–		
VABM-L1-10...-G18-7				113.5	–	–		
VABM-L1-10...-G18-8				124	–	–		
VABM-L1-10...-G18-9	Up to 20 valves			134.5	–	67.25		
VABM-L1-10...-G18-10				145	–	72.5		
VABM-L1-10...-G18-12				166	–	83		
VABM-L1-10...-G18-16				208	–	104		
VABM-L1-10...-G18-20				250	–	125		
VABM-L1-10...-G18-24	24 valves			292	192	100		

Valve terminals VTUG with multi-pin plug and fieldbus connection

Dimensions

Dimensions – Mounting holes, size 14 Download CAD data ➔ **www.festo.com**



Type		B1	B2	L1	L2	L3	L4	L5	I-Port interface, outlet on side L4
VABM-L1-14...-G14-4	Up to 8 valves	59.3	6	116	–	–	–	6	55.5
VABM-L1-14...-G14-5				132	–	–	–		
VABM-L1-14...-G14-6				148	–	–	–		
VABM-L1-14...-G14-7				164	–	–	–		
VABM-L1-14...-G14-8	8 to 10 valves			180	–	–	90		
VABM-L1-14...-G14-9				196	–	–	98		
VABM-L1-14...-G14-10				212	–	–	106		
VABM-L1-14...-G14-12	12 valves and 16 valves			244	–	162	82		
VABM-L1-14...-G14-16				308	–	204	104		
VABM-L1-14...-G14-20	20 valves and 24 valves			372	279	186	93		
VABM-L1-14...-G14-24				436	327	218	109		

Valve terminals VTUG with multi-pin plug and fieldbus connection

FESTO

Order code Manifold rails

VABM	–		–					–			–						

Designation

Manifold rail	**L1**

Size

Size 10	**10**
Size 14	**14**

Version

Standard	**–**
High flow rate	**H**

Connection type

Semi in-line	**G**
Sub-base	**W**

Connection direction

Side	**–**
Underneath	**B**

Pneumatic connection

G1/8	**G18**
G1/4	**G14**

Outlet direction of electrical components

–	Top

Circuitry

–	None
R	Holding current reduction with protective circuit

Electrical connection

–	None
G	Preparation for electrical connection

Connection for valve function

–	5/2-way
M	5/2-way, single solenoid

Valve positions

4	4 valve positions
5	5 valve positions
6	6 valve positions
7	7 valve positions
8	8 valve positions
9	9 valve positions
10	10 valve positions
12	12 valve positions
16	16 valve positions
20	20 valve positions
24	24 valve positions

Valve terminals VTUG with multi-pin plug connection

Technical data 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)
- Flat cable (26-pin)
- Flat cable (50-pin)

Electrical multi-pin plug

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 up to 48 valve functions can be addressed.
The valves can be switched by means of positive or negative logic (positive switching or negative switching).

Mixed operation is generally not possible, however an exception is made for certain variants (V22 ... 25) with 25-pin Sub-D. In this case, 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 99)

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		Flat cable plug	
Max. number of valve positions	24		24	
Protection class to EN 60529	IP67		IP40	
Material	Polyamide		Polyamide	
Note on materials	RoHS-compliant		RoHS-compliant	
Weight	53		45	48

Valve terminals VTUG with multi-pin plug connection

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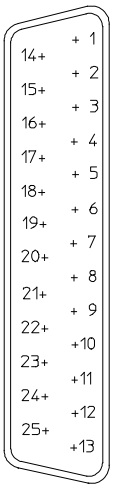
Technical data Multi-pin plug connection

Pin allocation – Sub-D plug, 25-pin

	M1-25 (V20)								
	Pin	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
Note A grey field means that a double solenoid valve can be used, while a white field means that only single solenoid valves can be used.	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	

VP Valve position

Valve terminals VTUG with multi-pin plug connection

FESTO

Technical data Multi-pin plug connection

Pin allocation – Sub-D plug, 25-pin

Pin	M1-25V1 (V22)		M1-25V2 (V23)		M1-25V3 (V24)		M1-25V4 (V25)	
1	VP0	14	VP0	14	VP0	14	VP0	14
2	VP0	12	VP0	12	VP0	12	VP1	14
3	VP1	14	VP1	14	VP1	14	VP2	14
4	VP1	12	VP1	12	VP1	12	VP3	14
5	VP2	14	VP2	14	VP2	14	VP4	14
6	VP2	12	VP2	12	VP2	12	VP5	14
7	VP3	14	VP3	14	VP3	14	VP6	14
8	VP3	12	VP3	12	VP3	12	VP7	14
9	VP4	14	VP4	14	VP4	14	VP8	14
10	VP4	12	VP4	12	VP5	14	VP9	14
11	VP5	14	VP5	14	VP6	14	VP10	14
12	VP5	12	VP5	12	VP7	14	VP11	14
13	VP6	14	VP6	14	VP8	14	VP12	14
14	VP6	12	VP6	12	VP9	14	VP13	14
15	VP7	14	VP7	14	VP10	14	VP14	14
16	VP7	12	VP7	12	VP11	14	VP15	14
17	VP8	14	VP8	14	VP12	14	VP16	14
18	VP8	12	VP9	14	VP13	14	VP17	14
19	VP9	14	VP10	14	VP14	14	VP18	14
20	VP9	12	VP11	14	VP15	14	VP19	14
21	Com 16 … 19		Com 16 … 19		Com 16 … 19		Com 16 … 19	
22	Com 12 … 15		Com 12 … 15		Com 12 … 15		Com 12 … 15	
23	Com 8 … 11		Com 8 … 11		Com 8 … 11		Com 8 … 11	
24	Com 4 … 7		Com 4 … 7		Com 4 … 7		Com 4 … 7	
25	Com 0 … 3		Com 0 … 3		Com 0 … 3		Com 0 … 3	
–								
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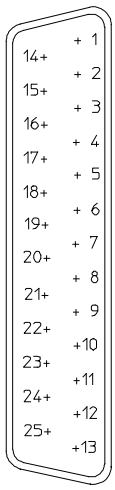
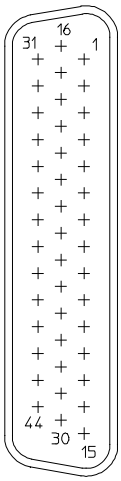
Pin allocation – Sub-D plug, 44-pin

Pin	M1-44 (V21)	
	18x double solenoid, 6x single solenoid	
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	VP19	14
39	VP20	14
40	VP21	14
41	VP22	14
42	VP23	14
43	com	
44		





Note

A grey field means that a double solenoid valve can be used, while a white field means that only single solenoid valves can be used.

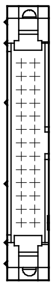
VP Valve position

Valve terminals VTUG with multi-pin plug connection

FESTO

Technical data Multi-pin plug connection

Pin allocation – Flat cable, 26-pin



M3-26 (V20)

Pin	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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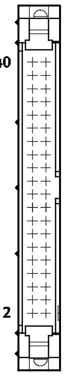
Note

A grey field means that a double solenoid valve can be used, while a white field means that only single solenoid valves can be used.

Pin allocation – Flat cable, 50-pin



M3-50 (V26)

Pin		
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		

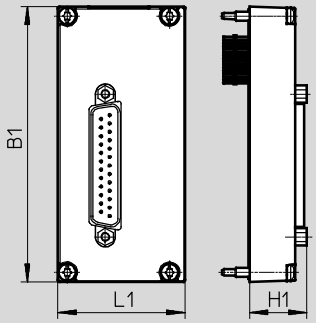
VP Valve position

Valve terminals VTUG with multi-pin plug connection

Technical data Multi-pin plug connection

Dimensions Download CAD data ➔ **www.festo.com**

Multi-pin plug connection, Sub-D



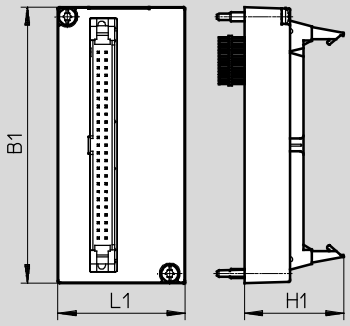
Note

Dimensions of the manifold rail with electrical connection (➔ 88)

Type			
	B1	L1	H1
VAEM-L1-S-M3-...	90.5	41.9	18.9

Dimensions Download CAD data ➔ **www.festo.com**

Multi-pin plug connection, flat cable plug



Note

Dimensions of the manifold rail with electrical connection (➔88)

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

Valve terminals VTUG with multi-pin plug connection

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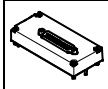
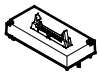
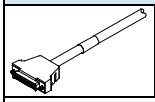
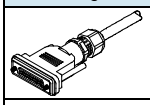
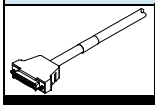
Accessories Multi-pin plug connection

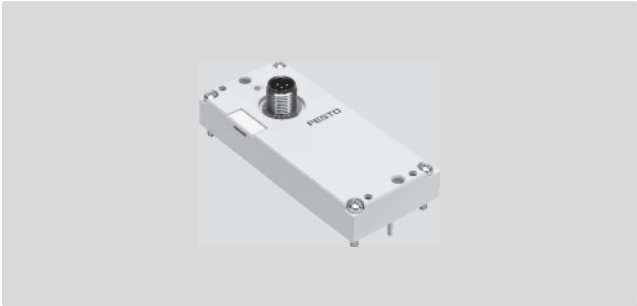
Ordering data Multi-pin plug connection			
	Description		Type
Sub-D electrical interface			
	25-pin	For variant M1-25 (V20)	**VAEM-L1-S-M1-25**
		For variant M1-25V1 (V22)	**VAEM-L1-S-M1-25V1**
		For variant M1-25V2 (V23)	**VAEM-L1-S-M1-25V2**
		For variant M1-25V3 (V24)	**VAEM-L1-S-M1-25V3**
		For variant M1-25V4 (V25)	**VAEM-L1-S-M1-25V4**
	44-pin	For variant M1-44 (V21)	**VAEM-L1-S-M1-44**
Flat cable plug electrical interface			
	26-pin	For variant M3-26 (V20)	**VAEM-L1-S-M3-26**
	50-pin	For variant M3-50 (V26)	**VAEM-L1-S-M3-50**
Connecting cable for multi-pin plug, 25-pin, IP40		Cable length [m]	Technical data ➔ Internet: kmp
	Sub-D, 25-wire, straight socket, up to 20 coils	2.5	**KMP6-25P-20-2,5**
		5	**KMP6-25P-20-5**
		10	**KMP6-25P-20-10**
Connecting cable for multi-pin plug, 25-pin, IP67			Technical data ➔ Internet: nebv
	Sub-D, 25-wire, straight socket, up to 20 coils	2.5	**NEBV-S1G25-K2.5-N-LE25**
		5	**NEBV-S1G25-K5-N-LE25**
		10	**NEBV-S1G25-K10-N-LE25**
Connecting cable for multi-pin plug, 44-pin, IP40			Technical data ➔ Internet: nebv
	Sub-D, 44-wire, straight socket, up to 35 coils	2.5	**NEBV-S1G44-K-2.5-N-LE44-S6**
		5	**NEBV-S1G44-K-5-N-LE44-S6**
		10	**NEBV-S1G44-K-10-N-LE44-S6**

Valve terminals VTUG, IO-Link interface

Technical data IO-Link interface

FESTO

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 fieldbus nodes (CTEU)
- IO-Link mode for direct connection to a higher-level IO-Link master

The following protocols are supported in combination with the associated CTEU node:
- CANopen
- DeviceNet
- Profibus
- CC-Link
- EtherCAT

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

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

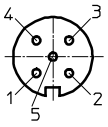
General technical data

Communication types			IO-Link
Electrical connection			• M12 plug, 5-pin • A-coded • Metal thread for screening
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. number 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
Protection class to EN 60529			IP67

LED display

	Colour	Status	Function
Status LED X1	Red/green	Off	No 24 V logic
		Static green	Everything OK
		Flashing green	Communication error (in the I-Port or IO-Link protocol)
		Flashing red/green	Load supply fault (undervoltage or no load supply)
		Static red	Load supply fault and communication error

Pin allocation I-Port interface/IO-Link

	Pin	Designation corresponds to IO-Link
	1	Supply PS (+24 V)
	2	Load supply PL (+24 V)
	3	Supply PS (0 V)
	4	Communication signal C/Q
	5	Load supply PL (0 V)

Valve terminals VTUG, IO-Link interface

Technical data I-Port interface/IO-Link

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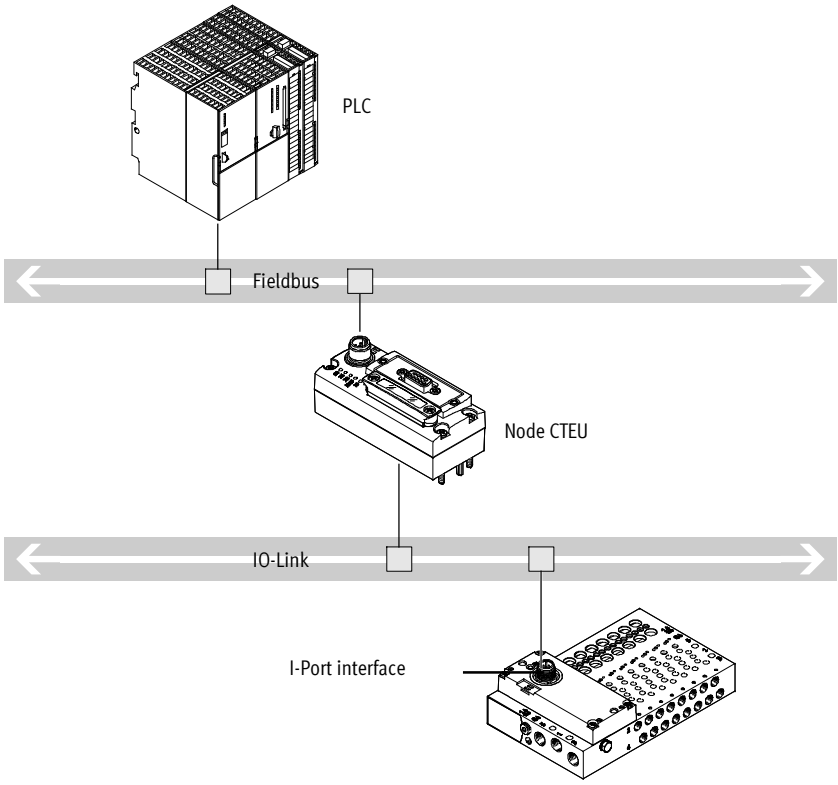
System overview IO-Link



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

Valve terminals VTUG, IO-Link interface

Technical data I-Port interface/IO-Link

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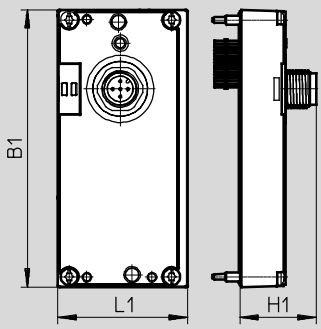
Dimensions Download CAD data ➔ **www.festo.com**

I-Port interface, outlet on top

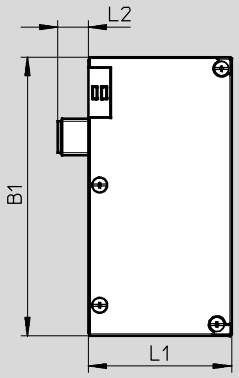


Note

Dimensions of the manifold rail with electrical connection
(➔ 88)

Dimensions Download CAD data ➔ **www.festo.com**

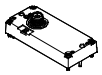
I-Port interface, outlet on side



Note

Dimensions of the manifold rail with electrical connection
(➔ 88)

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

Ordering data I-Port interface/IO-Link		
	Description	Type
Electrical interface for I-Port interface/IO-Link, outlet on top		
	Actuation of up to 8 double solenoid valve positions	**VAEM-L1-S-8-PT**
	Actuation of up to 16 double solenoid valve positions	**VAEM-L1-S-16-PT**
	Actuation of up to 24 double solenoid valve positions	**VAEM-L1-S-24-PT**
Electrical interface for I-Port interface/IO-Link, outlet on side		
	Actuation of up to 8 double solenoid valve positions	**VAEM-L1-S-8-PTL**
	Actuation of up to 16 double solenoid valve positions	**VAEM-L1-S-16-PTL**
	Actuation of up to 24 double solenoid valve positions	**VAEM-L1-S-24-PTL**
Connection technology for I/O-Link		
	T-adapter M12, 5-pin for IO-Link and load supply	**FB-TA-M12-5POL**
Straight plug, for I-Port/IO-Link		
	Straight plug, M12, 5-pin (in combination with adapter for separate load supply)	**SEA-M12-5GS-PG7**
Inscription label for I-Port/IO-Link		
	40 pieces in frame	**ASLR-C-E4**

Valve terminals VTUG, decentralised adapter CAPC

Technical data CAPC

Function

The E-box CAPC enables the decentralised installation of fieldbus nodes CTEU on a valve terminal or input modules with I-Port interface.

Application

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

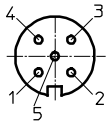
General technical data		
Type		**CAPC-F1-E-M12**
Dimensions W x L x H	[mm]	50 x 148 x 28
Fieldbus interface		2x M12 socket, 5-pin
Operating voltage range	[V DC]	18 ... 30
Max. power supply	[A]	2
Nominal operating voltage	[V DC]	24
Product weight	[g]	85
Cable length	[m]	20

Materials	
Housing	PA reinforced
Note on materials	RoHS-compliant

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

1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com → Support → User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Pin allocation Power supply/IO-Link interfaces			
	Pin	Designation	Function
	1	Supply PS (+24 V)	Power supply for system +24 V
	2	Load supply PL (+24 V)	Power supply for load +24 V
	3	Supply PS (0 V)	Power supply for system +24 V
	4	Communication signal C/Q	Communication signal C/Q
	5	Load supply PL (0 V)	Power supply for load 0 V
		Metal thread for FE	Functional earth

Valve terminals VTUG, decentralised adapter CAPC

Technical data CAPC

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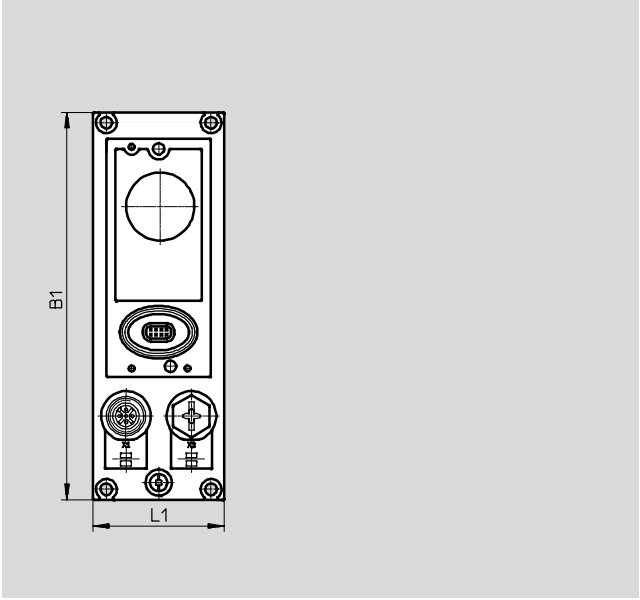
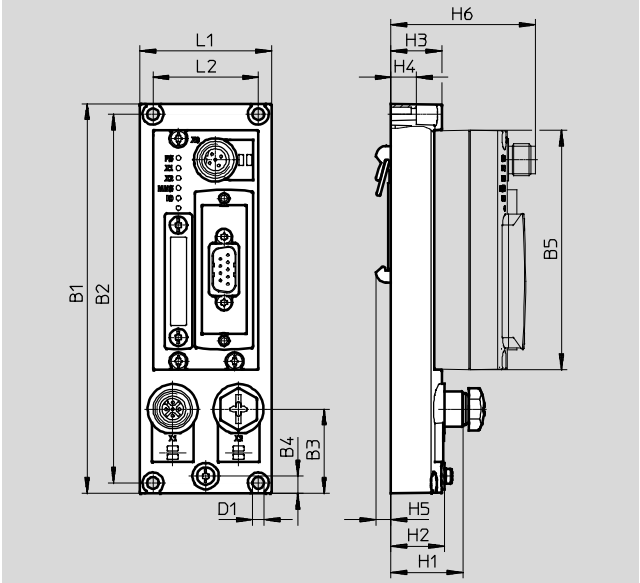
Dimensions Download CAD data ➔ **www.festo.com**

CAPC

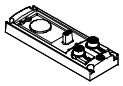
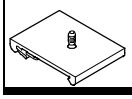


CAPC with mounted fieldbus node CTEU-CO



Type														
CAPC	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	H5	H6	L1	L2
	148	140	32	6.6	91	4.4	27.3	20.3	19.3	9.6	5.7	54.8	50	40

Accessories CAPC

Ordering data		Part No.	Type
E-box			
	–	**570042**	**CAPC-F1-E-M12**
H-rail mounting			
	–	**570043**	**CAFM-F1-H**

Valve terminals VTUG, CANopen fieldbus node

Technical data CTEU-CO

The bus node handles communication between the valve terminal and a higher-level CANopen® master.

The module has basic diagnostic functions. It has 5 integrated LEDs for on-site display. Up to 8 byte inputs and 8 byte outputs are typically transmitted in the cyclic process image.

Application

Fieldbus connection

The bus connection is established via a 9-pin Sub-D plug (pin) as per the CAN in Automation (CiA) specification DS 102 with additional 24 V CAN transceiver supply (option as per DS 102).

The bus connector plug (with protection class IP65/IP67 from Festo or IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable.

There are 4 contacts each available for the conductors (CAN_L/CAN_H and 24 V/0 V optional) of the incoming and outgoing bus cables.

The fieldbus parameters and the basic device parameter settings are set on the bus node via DIL switches.

Implementation

Protocol chip used:
- CAN transceiver 82C251

Baud rates supported:
- 125 kbps
- 250 kbps
- 500 kbps
- 1 Mbps

Max. CANopen cable length (trunk cable):
- 40 m at 1 Mbps
- 100 m at 500 kbps
- 250 m at 250 kbps
- 500 m at 125 kbps

Max. branch line length (drop cable):
- 0.30 m at 1 Mbps
- 0.75 m at 500 kbps
- 2.00 m at 250 kbps
- 3.75 m at 125 kbps

The following variants can be realised using an adapter:
- 2x Micro Style M12, protection class IP65, 5-pin, socket and pin
- Open Style plug, protection class IP20, 5-pin, pin

Valve terminals VTUG, CANopen fieldbus node

Technical data CTEU-CO

General technical data			
Fieldbus interface			• Sub-D socket, 9-pin • Sub-D plug, for self-assembly • 2x M12x1, 5-pin • Terminal strip, 5-pin
Protocol			CANopen
Baud rates	COM3	[kbps]	125; 250; 500; 1,000
Internal cycle time			1 ms per 1 byte of user data
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 120
Max. power supply		[A]	4
Parameterisation			Diagnostic behaviour Fail state
Max. address capacity, inputs			8 byte
Max. address capacity, outputs			8 byte
Additional functions			• Emergency message • Acyclic data access via "SDO"
Operating elements			DIL switch
Configuration support			EDS files
Device-specific diagnostics			• System diagnostics • Undervoltage • Communication error
LED display	Fieldbus-specific		• MNS: Network status • IO: I/O status
	Product-specific		• PS: Operating voltage for electronics and load supply • X1: System status of module at I-Port 1 • X2: System status of module at I-Port 2
Protection class to EN 60529			IP65/67
CE marking			To EU EMC Directive
Note on materials			RoHS-compliant
Housing materials			• PC • PA reinforced
Product weight		[g]	90
Temperature range	Ambient	[°C]	-5 ... 50
	Storage	[°C]	-20 ... +70
Max. number of solenoid coils			
	VAEM-L1-S-8-PT		16
	VAEM-L1-S-16-PT		32
	VAEM-L1-S-24-PT		48
Max. number of valve positions			
	VAEM-L1-S-8-PT		8
	VAEM-L1-S-16-PT		16
	VAEM-L1-S-24-PT		24
Residual ripple		[V]	4
Product weight		[g]	49

Valve terminals VTUG, CANopen fieldbus node

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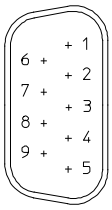
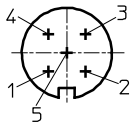
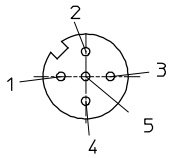
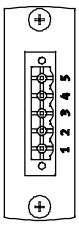
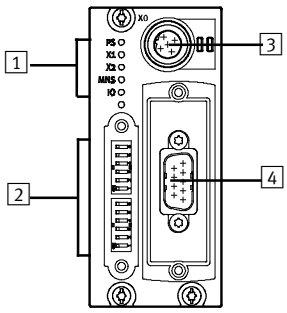
Technical data CTEU-CO

Pin allocation CANopen interface

Pin allocation	Pin	Signal	Designation
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	Received/transmitted data low
	3	CAN_GND	0 V CAN interface
	4	n.c.	Not connected
	5	CAN_Shld	Optional screened connection
	6	GND	Ground (connected to pin 3)
	7	CAN_H	Received/transmitted data high
	8	n.c.	Not connected
	9	CAN_V+	24 V DC supply for CAN interface
	Housing	Screen	Connection to FE
Micro Style bus connection (M12)			
Incoming 	1	Screen	Connection to FE
	2	CAN_V+	24 V DC supply for CAN interface
	3	CAN_GND	0 V CAN interface
	4	CAN_H	Received/transmitted data high
	5	CAN_L	Received/transmitted data low
Outgoing 	1	Screen	Connection to FE
	2	CAN_V+	24 V DC supply for CAN interface
	3	CAN_GND	0 V CAN interface
	4	CAN_H	Received/transmitted data high
	5	CAN_L	Received/transmitted data low
Open Style bus connection			
	1	CAN_GND	0 V CAN interface
	2	CAN_L	Received/transmitted data low
	3	Screen	Connection to FE
	4	CAN_H	Received/transmitted data high
	5	CAN_V+	24 V DC supply for CAN interface

Connection and display components



1 Status LEDs (operating status/diagnostics)
2 DIL switches
3 Power supply for bus node and connected devices (valve terminal)
4 Fieldbus connection (Sub-D plug)

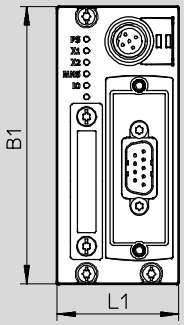
Valve terminals VTUG, CANopen fieldbus node

Technical data CTEU-CO

FESTO

Dimensions Download CAD data ➔ **www.festo.com**

Fieldbus node CTEU-CO



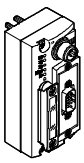
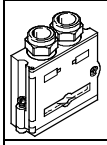
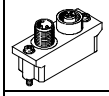
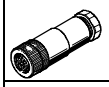
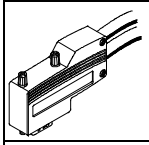
Note

Dimensions of the manifold rail with electrical connection
(➔ 88)

Type		
CTEU-CO	B1	L1
	91	40

Valve terminals VTUG, CANopen fieldbus node

Technical data CTEU-CO

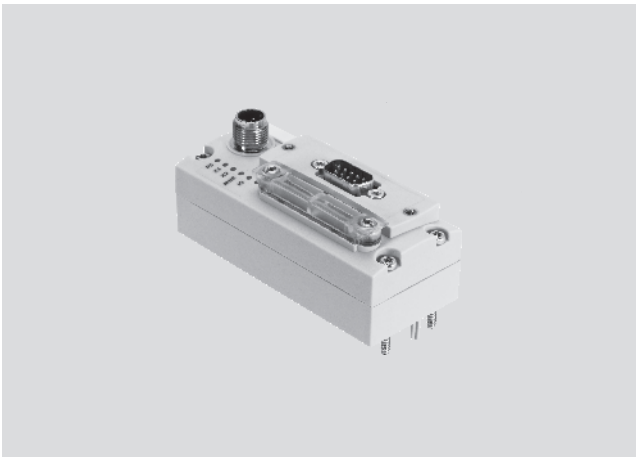
Ordering dataCTEU		
		Type
Bus node		
	CANopen bus node	**CTEU-CO**
Bus connection		
	Sub-D plug for DeviceNet/CANopen	**FBS-SUB-9-BU-2x5POL-B**
	Micro Style bus connection, 2xM12, 5-pin	**FBA-2-M12-5POL**
	Fieldbus socket for Micro Style connection, M12, 5-pin	**FBSD-GD-9-5POL**
	Plug for Micro Style connection, M12, 5-pin	**FBS-M12-5GS-PG9**
	Open Style bus connection for 5-pin terminal strip	**FBA-1-SL-5POL**
	Terminal strip for Open Style connection, 5-pin	**FBSD-KL-2x5POL**
	Plug for CAN bus interface, Sub-D, angled, 9-pin	**FBS-SUB-9-WS-CO-K**
Plug socket		
	For power supply, M12, 5-pin, B-coded	**NTSD-GD-9-M12-5POL-RK**
Inscription label		
	For bus nodes	**ASLR-C-E4**

Valve terminals VTUG, DeviceNet fieldbus node

Technical data CTEU-DN

The bus node handles communication between the valve terminal and a higher-level DeviceNet® master.

The module has basic diagnostic functions. It has 5 integrated LEDs for on-site display. Up to 8 byte inputs and 8 byte outputs are typically transmitted in the cyclic process image.



Application

Fieldbus connection

The bus connection is established via a 9-pin Sub-D socket with a typical allocation (to EN 50170).

The bus connector plug (with protection class IP65/IP67 from Festo or IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable.

The fieldbus parameters and the basic device parameter settings are set on the bus node via DIL switches.

Implementation

Protocol chip used:
- CAN transceiver 82C251

Baud rates supported:
- 125 kbps
- 250 kbps
- 500 kbps

Max. DeviceNet cable length (trunk cable):
- 100 m at 500 kbps
- 250 m at 250 kbps
- 500 m at 125 kbps

Max. branch line length (drop cable):
- 6 m at 500 kbps
- 6 m at 250 kbps
- 6 m at 125 kbps

The following variants can be realised using an adapter:
- 2x Micro Style M12, protection class IP65, 5-pin, socket and pin
- Open Style plug, protection class IP20, 5-pin, pin

Valve terminals VTUG, DeviceNet fieldbus node

Technical data CTEU-DN

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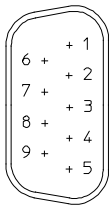
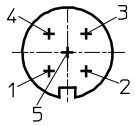
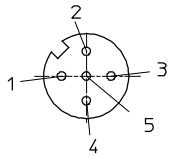
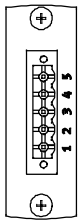
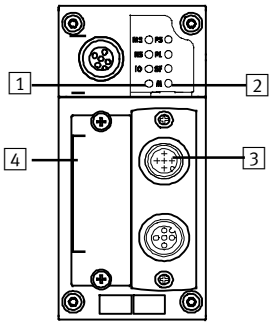
General technical data			
Fieldbus interface			Sub-D socket, 9-pin
Protocol			DeviceNet
Baud rates		[kbps]	125, 250, 500 and 1,000
Internal cycle time			1 ms per 1 byte of user data
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 ... 30
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 120
Max. power supply		[A]	4
Parameterisation			Failsafe and idle response
Max. address capacity, inputs			8 byte[1)]
Max. address capacity, outputs			8 byte[1)]
Additional functions			• Acyclic data access via "Explicit Message" • Quickconnect • System status can be displayed using process data
Operating elements			DIL switch
Configuration support			EDS files
Device-specific diagnostics			• System diagnostics • Undervoltage • Communication error
LED display	Fieldbus-specific		• MNS: Network status • IO: I/O status
	Product-specific		• PS: Operating voltage for electronics and load supply • X1: System status of module at I-Port 1 • X2: System status of module at I-Port 2
Protection class to EN 60529			IP65/67
CE marking			To EU EMC Directive
Note on materials			RoHS-compliant
Housing materials			• PC • PA reinforced
Product weight		[g]	90
Temperature range	Ambient	[°C]	-5 ... 50
	Storage	[°C]	-20 ... 70
Dimensions W x L x H		[mm]	40 x 91 x 50

Valve terminals VTUG, DeviceNet fieldbus node

Technical data CTEU-DN

Pin allocation DeviceNet interface			
Pin allocation	Pin	Signal	Designation
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	Received/transmitted data low
	3	CAN_GND	0 V CAN interface (connected to pin 6)
	4	n.c.	Not connected
	5	CAN_Shld	Optional screened connection
	6	GND	Optional CAN ground (connected to pin 3)
	7	CAN_H	Received/transmitted data high
	8	n.c.	Not connected
	9	CAN_V+	24 V DC supply for CAN interface
Micro Style bus connection (M12)			
Incoming	1	Screen	Connection to FE
	2	CAN_V+	24 V DC supply for CAN interface
	3	CAN_GND	0 V CAN interface
	4	CAN_H	Received/transmitted data high
	5	CAN_L	Received/transmitted data low
Outgoing	1	Screen	Connection to FE
	2	CAN_V+	24 V DC supply for CAN interface
	3	CAN_GND	0 V CAN interface
	4	CAN_H	Received/transmitted data high
	5	CAN_L	Received/transmitted data low
Open Style bus connection			
	1	CAN_GND	0 V CAN interface
	2	CAN_L	Received/transmitted data low
	3	Screen	Connection to FE
	4	CAN_H	Received/transmitted data high
	5	CAN_V+	24 V DC supply for CAN interface

Connection and display components	
	1 Status LEDs (operating status/diagnostics) 2 DIL switch group 3 Power supply for bus node and connected devices (valve terminal) 4 Fieldbus connection (Sub-D plug)

Valve terminals VTUG, DeviceNet fieldbus node

Technical data CTEU-DN

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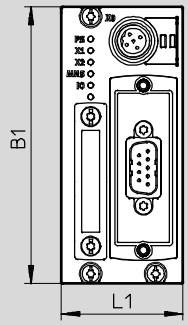
Dimensions Download CAD data ➔ **www.festo.com**

Fieldbus node CTEU-DN

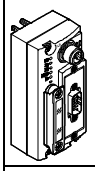
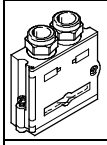
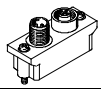
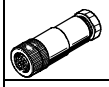
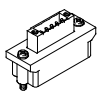
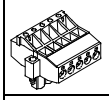


Note

Dimensions of the manifold rail with electrical connection
(➔ 88)

Type		
CTEU-DN	L1	B1
	91	40

Ordering data CTEU-DeviceNet

		Type
Bus node		
	DeviceNet bus node	**CTEU-DN**
Bus connection		
	Sub-D plug	**FBS-SUB-9-BU-2x5POL-B**
	Micro Style bus connection, 2xM12, 5-pin	**FBA-2-M12-5POL**
	Fieldbus socket for Micro Style connection, M12, 5-pin	**FBSD-GD-9-5POL**
	Plug for Micro Style connection, M12, 5-pin	**FBS-M12-5GS-PG9**
	Open Style bus connection	**FBA-1-SL-5POL**
	Terminal strip for Open Style connection, 5-pin	**FBSD-KL-2x5POL**
Plug socket		
	For power supply	**NTSD-GD-9-M12-5POL-RK**

Valve terminals VTUG with multi-pin plug and fieldbus connection

Accessories Valve terminal

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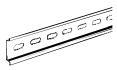
Ordering data		
	Description	Type
Silencer		Technical data ➔ Internet: u
	For thread M5	**U-M5**
		UC-M5
	For thread M7	**UC-M7**
	For thread G⅛	**U-1/8-50**
		UC-1/8
	For thread G¼	**U-1/4-20**
		UC-1/4-20
Fittings		Technical data ➔ Internet: qs
	For tubing Ø 3 mm	**QSM-M5-3-I-R-100**
	For tubing Ø 4 mm	**QSM-M5-4-I-R-100**
	For tubing Ø 4 mm	**QSM-M5-4-I-R-100**
	For tubing Ø 6 mm	**QSM-M7-6-I-R-100**
	For tubing Ø 3 mm	**QSM-M5-3-I**
	For tubing Ø 4 mm	**QSM-M5-4-I**
	For tubing Ø 4 mm	**QSM-M7-4-I**
	For tubing Ø 4 mm	**QS-G1/8-4-I**
	For tubing Ø 6 mm	**QS-G1/8-6-I**
	For tubing Ø 8 mm	**QS-G1/8-8-I**
	For tubing Ø 8 mm	**QS-B-1/4-8-I-20**
	For tubing Ø 10 mm	**QS-B-1/4-10-I-20**
	For tubing Ø 12 mm	**QS-B-1/4-12-I-20**
	For tubing Ø 10 mm	**QS-B-1/8-10-I-20**
	For tubing Ø 6 mm	**QSL-G1/8-6**
	For tubing Ø 8 mm	**QSL-G1/8-8**
	For tubing Ø 12 mm	**QSL-B-1/4-8-20**
	For tubing Ø 10 mm	**QSL-B-1/4-10-20**
	For tubing Ø 12 mm	**QSL-B-1/4-12-20**
	For tubing Ø 10 mm	**QSL-B-1/8-10-20**
	For tubing Ø 6 mm	**QSLL-G1/8-6**
	For tubing Ø 8 mm	**QSLL-G1/8-8**
	For tubing Ø 6 mm	**QSML-G1/8-6-20**
	For tubing Ø 3 mm	**QSML-M5-3**
	For tubing Ø 4 mm	**QSML-M5-4**
	For tubing Ø 4 mm	**QSML-M7-4**
	For tubing Ø 3 mm	**QSMLL-M5-3**
	For tubing Ø 4 mm	**QSMLL-M5-4**
	For tubing Ø 4 mm	**QSMLL-M7-4**
Blanking plug		Technical data ➔ Internet: b
	For thread M5	**B-M5-B**
	For thread M7	**B-M7**
	For thread G⅛	**B-1/8**
	For thread G¼	**B-1/4**

Valve terminals VTUG with multi-pin plug and fieldbus connection

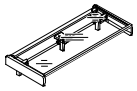
Accessories Valve terminal

FESTO

Ordering data			
	Description		Type
Blanking plate			
	Vacant position 10 mm		**VABB-L1-10-T**
	Vacant position 14 mm		**VABB-L1-14-T**
Supply plate			
	Supply ports 1, 3, 5 10 mm		**VABF-L1-10-P3A4-M7-T1**
	Supply ports 1, 3, 5 14 mm		**VABF-L1-14-P3A4-G18-T1**
Separator			
	Separator for sub-base manifold rail 10		**VABD-6-B**
	Separator for semi in-line manifold rail 10		**VABD-8-B**
	Separator for all manifold rails 14		**VABD-10-B**
H-rail			Technical data ➔ Internet: nrh
	To EN 60715, 35 x 7.5 (WxH)	2 m	**NRH-35-2000**
H-rail mounting			Technical data ➔ Internet: vame
	Use the following screws for mounting: Size 10: M4x30 to DIN 912 Size 14: M4x40 to DIN 912	2 pieces	**VAME-T-M4**
Cover cap for manual override			Technical data ➔ Internet: vmpa
	Covered	10 pieces	**VMPA-HBV-B**
	Non-detenting		**VMPA-HBT-B**

Valve terminals VTUG with multi-pin plug and fieldbus connection

Accessories Valve terminal

Ordering data			
	Description		Type
Inscription label holder			Technical data ➔ Internet: aslr
	Holder for an inscription label and cover for mounting screw and manual override	10 pieces	**ASLR-D-L1**
Inscription label holder for valve terminal			
	For 4 valve positions, size 10		**ASCF-H-L1-10-4V**
	For 5 valve positions, size 10		**ASCF-H-L1-10-5V**
	For 6 valve positions, size 10		**ASCF-H-L1-10-6V**
	For 7 valve positions, size 10		**ASCF-H-L1-10-7V**
	For 8 valve positions, size 10		**ASCF-H-L1-10-8V**
	For 9 valve positions, size 10		**ASCF-H-L1-10-9V**
	For 10 valve positions, size 10		**ASCF-H-L1-10-10V**
	For 12 valve positions, size 10		**ASCF-H-L1-10-12V**
	For 16 valve positions, size 10		**ASCF-H-L1-10-16V**
	For 20 valve positions, size 10		**ASCF-H-L1-10-20V**
	For 24 valve positions, size 10		**ASCF-H-L1-10-24V**
	For 4 valve positions, size 14		**ASCF-H-L1-14-4V**
	For 5 valve positions, size 14		**ASCF-H-L1-14-5V**
	For 6 valve positions, size 14		**ASCF-H-L1-14-6V**
	For 7 valve positions, size 14		**ASCF-H-L1-14-7V**
	For 8 valve positions, size 14		**ASCF-H-L1-14-8V**
	For 9 valve positions, size 14		**ASCF-H-L1-14-9V**
	For 10 valve positions, size 14		**ASCF-H-L1-14-10V**
	For 12 valve positions, size 14		**ASCF-H-L1-14-12V**
	For 16 valve positions, size 14		**ASCF-H-L1-14-16V**
	For 20 valve positions, size 14		**ASCF-H-L1-14-20V**
	For 24 valve positions, size 14		**ASCF-H-L1-14-24V**