

Valve terminals type 23 VTUB-12

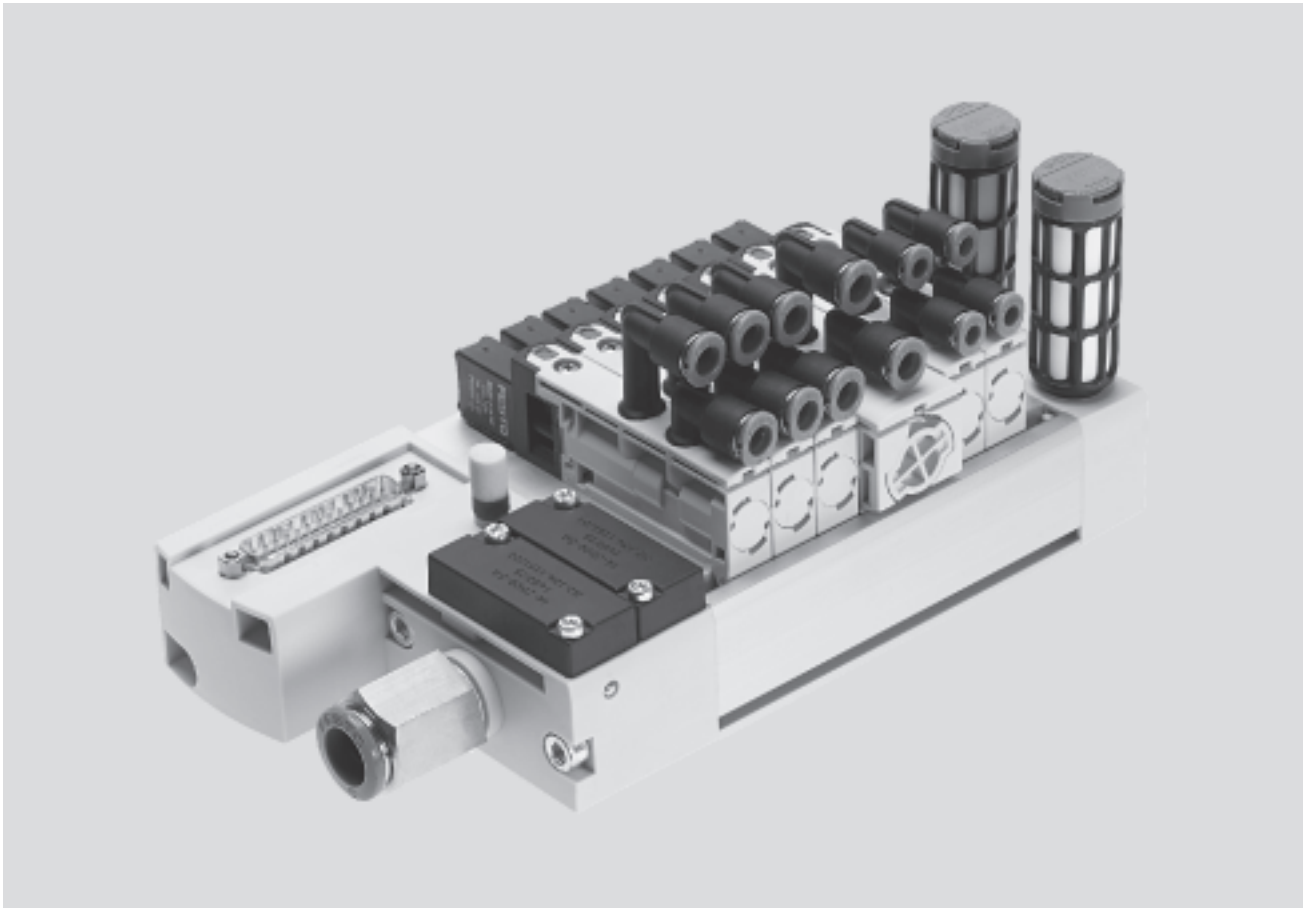
FESTO



Valve terminals type 23 VTUB-12

Key features

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Innovative

- Cost-effective I-Port interface for fieldbus nodes (CTEU)
- IO-Link mode for direct connection to a higher-level IO-Link master
- Lower installation costs thanks to multi-pin plug connection
- Valve terminal for a wide range of pneumatic applications
- Minimal space requirement
- Great flexibility during planning, assembly and operation
- Pneumatic distributor integrated on the valve terminal
- Use in dusty environments

Versatile

- Room for expansion with up to 35 valve positions on one valve terminal
- Flexibility of the pneumatic working lines provides a practical solution to different requirements
- Quick and easy replacement of fittings
- Optional manifold rail variant with LED signal status display

Reliable

- Manual override
- Durable
- Sturdy thanks to the polymer housing and metal manifold rail

Easy to mount

- Ready-to-install and tested unit
- Lower ordering, installation and commissioning costs
- Quick and secure installation thanks to integrated QS push-in connectors
- Easy valve assembly with just one screw

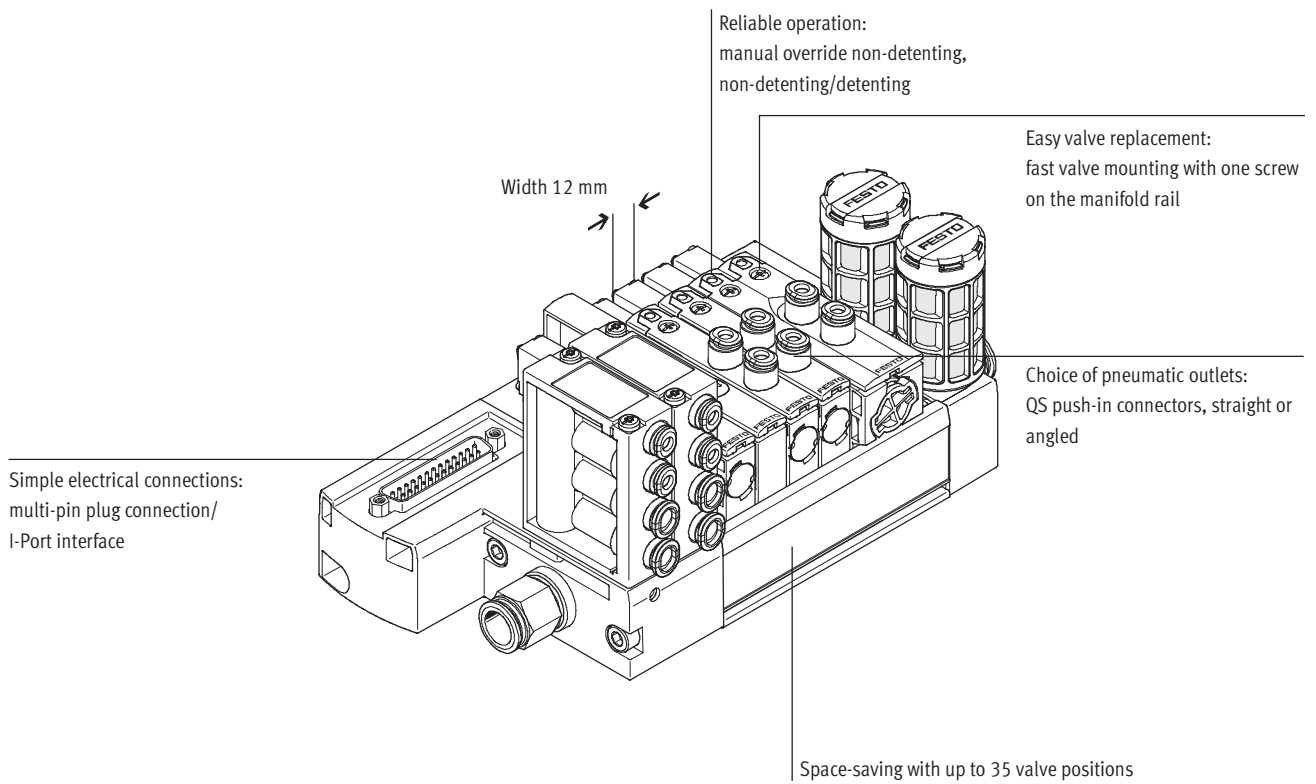
Note

Ordering system for valve terminal type 23 VTUB-12
→ Internet: vtub-12
Fieldbus CTEU
→ Internet: cteu

Valve terminals type 23 VTUB-12

Key features

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Equipment options

Valve functions

- 5/2-way valve, single solenoid
- 5/2-way valve, double solenoid
- 3/2-way valve can be created from a 5/2-way valve using blanking plugs

Electrical connection options

Multi-pin plug

- Sub-D, 25-pin
- Sub-D, 44-pin
- 2 ... 35 valve positions/
max. 35 solenoid coils

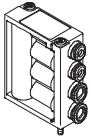
I-Port

- Fieldbus connection (CTEU)
- IO-Link mode
- 3 ... 35 valve positions/
max. 35 solenoid coils

Valve terminals type 23 VTUB-12

Key features

Pneumatic distributor

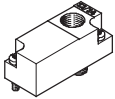


The pneumatic distributor supplies the operating pressure from port 1 to up to four other ports. The pneumatic

distributor has integrated QS4 or QS6 connections.

Note
Number of pneumatic distributors that can be used
→ Page 8 Pilot air supply

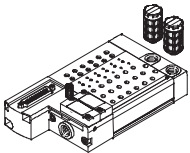
Selector plate/pilot control with external pilot air (optional)



The VTUB-12 is intended for use with pilot air. It can be operated with external pilot air by mounting the selector plate

VABF-C8-12-P6-...-Z instead of the blanking plate. The pilot air is then supplied via port 12/14 on the selector plate.

Manifold rail with multi-pin plug connection

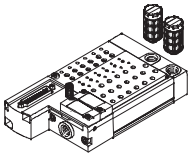


The manifold rail features a groove into which the semi in-line valves are latched and secured with just one screw. The valve functions 5/2-way single solenoid and 5/2-way double solenoid are available.

The valve functions 3/2-way, normally closed, and 3/2-way, normally open, can be created using blanking plugs.

The valves can be supplied as semi in-line valves with cartridges QSP for tubing diameters 4 and 6 mm.

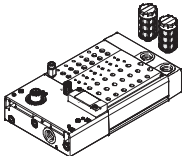
Manifold rail with optional LED signal status display



The manifold rail with multi-pin plug can optionally be ordered with LEDs (code L).

These indicate the signal states of the solenoid coils.

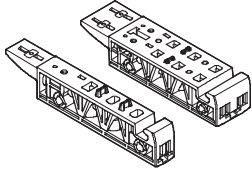
Manifold rail with I-Port interface



The manifold rail can be ordered with I-Port interface (code PT) and IO-Link (code LK) as a basis for fieldbus

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

Sub-base for semi in-line valve



The valve VUVB-12 can be operated as an individual valve using an individual sub-base (single width for single solenoid valves or

double width for double solenoid valves). The power is supplied via the plug socket with cable KMYZ and the adapter (M8x1)

with corresponding connecting cable (→ accessories, p. 31)

Blanking plate

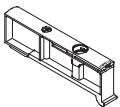


Plate without valve function for reserving valve positions on a valve terminal.

Valves and blanking plates are attached to the manifold rail using one screw.

Blanking plug



For sealing the working lines (port 2 or 4) on the valve. The valve function of a 3/2-way valve, normally open, can be created by

sealing port 4 of a single solenoid 5/2-way valve.

The valve function of a 3/2-way valve, normally closed, can be created by sealing port 2 of a single solenoid 5/2-way valve.

Valve terminals type 23 VTUB-12

Peripherals overview

Overview – Valve terminal type 23 VTUB-12

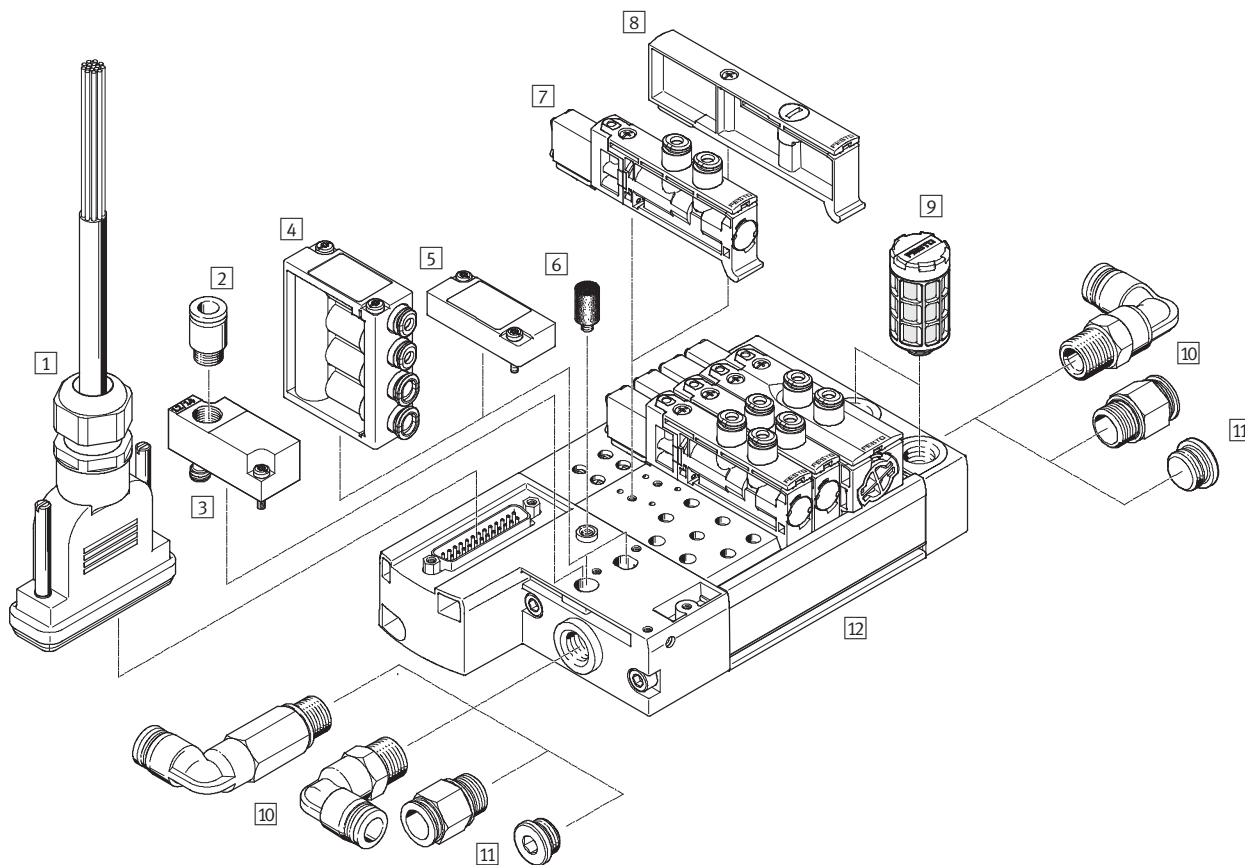
Valve terminal with electrical multi-pin plug connection

- Up to 20 valve positions/solenoid coils, 25-pin Sub-D multi-pin plug connection, code: M
- From 21 valve positions/solenoid coils, 44-pin Sub-D multi-pin plug connection, code: M

Valve terminals with electrical multi-pin plug connection are available in gradations from 2 to max. 35 valve positions.

Each valve position can either be equipped with a valve or a blanking plate. Double solenoid valves occupy two valve positions.

A maximum of 35 solenoid coils can be actuated via the electrical multi-pin plug connection.



Accessories			Brief description	→ Page/Internet
1	Connecting cable	NEBV	Connecting cable for multi-pin plug connection, with Sub-D plug	34
2	Push-in fitting	QS	For connecting compressed air tubing with standard O.D.	32
3	Selector plate	VABF	Pilot control with external pilot air (optional)	31
4	Pneumatic distributor	VABF	For connecting additional distributors to the air supply (port 1)	31
5	Blanking plate	VABB	Blanking plate for vacant position (pneumatic distributor)	31
6	Silencer	U	For venting hole	32
7	Single solenoid valve	VUVB-12	–	30
8	Blanking plate	VABB	Blanking plate for vacant position (solenoid valve)	31
9	Silencer	U	For fitting in exhaust ports	32
10	Fittings	QS	For connecting compressed air tubing with standard O.D.	32
11	Blanking plug	B	For sealing the air supply port	31
12	Manifold rail	VABM	With multi-pin plug connection, for connecting max. 35 valves	30

Valve terminals type 23 VTUB-12

Peripherals overview

Overview – Valve terminal type 23 VTUB-12

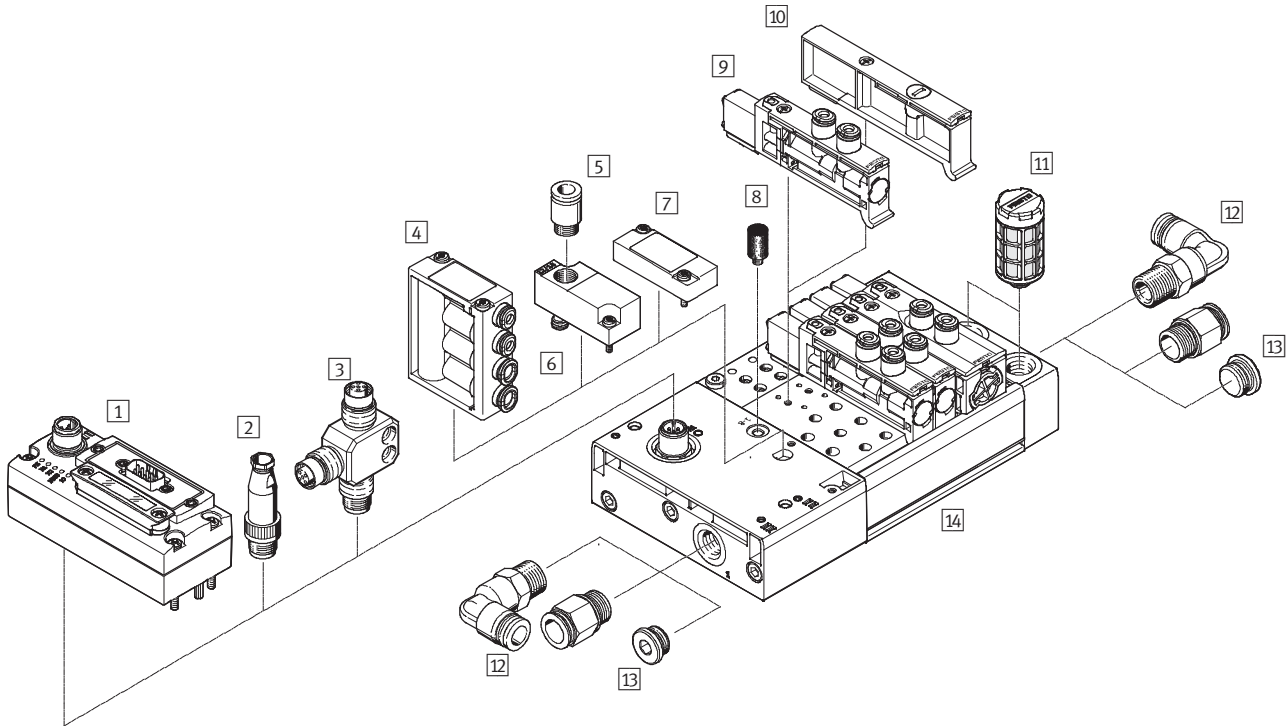
Valve terminal with I-Port interface

Valve terminals with electrical supply and transmission of communication data via M12 plugs on the valve terminal (I-Port connection,

code PT/LK) are available in gradations from 3 to max. 35 valve positions.

Each valve position can either be equipped with a valve or a blanking plate.

Double solenoid valves occupy two valve positions.



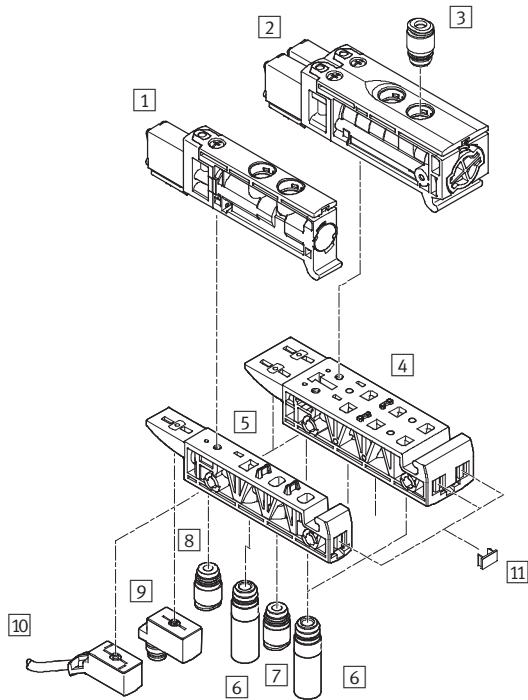
Accessories		Brief description	→ Page/Internet	
1	Bus node	CTEU	–	cteu
2	Plug	SEA	For IO-Link and load supply	34
3	T-adaptor	FB	For IO-Link and load supply (in combination with plug SEA for separate load supply)	34
4	Pneumatic distributor	VABF	For connecting additional distributors to the air supply (port 1)	31
5	Push-in fitting	QS	–	30
6	Selector plate	VABF	Pilot control with external pilot air (optional)	31
7	Blanking plate	VABB	Blanking plate for vacant position (pneumatic distributor)	31
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13	Blanking plug	B	For sealing the air supply port	31
14	Manifold rail	VABM	With I-Port interface, for connecting max. 35 valves	30

Valve terminals type 23 VTUB-12

Peripherals overview

Sub-base for semi in-line valve

- Single design for single solenoid valves
 - Double design for double solenoid valves
- Electrical connection via plug socket with cable KMYZ and adapter (M8x1) with corresponding connecting cable.

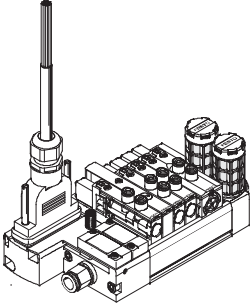


Accessories		Brief description		→ Page/Internet
1	Single solenoid valve	VUVB-12	–	30
2	Double solenoid valve	VUVB-12	–	30
3	Push-in fitting	QS	For port 2, 4: Cartridge with push-in connector	32
4	Sub-base	VABS	Double design for double solenoid individual valve	31
5	Sub-base	VABS	Single design for single solenoid individual valve	31
6	Silencer	AMTC	For port 3, 5 (optional)	32
7	Push-in fitting	QS	For port 1: Cartridge with push-in connector	32
8	Push-in fitting	QS	For port 12, 14: Cartridge with push-in connector (optional)	32
9	Adapter	VAVE	M8x1 (optional), LED	34
10	Plug socket with cable	KMYZ	Connecting cable (optional)	33
11	Inscription label holder	IBS-6x10	–	31

Valve terminals type 23 VTUB-12

Key features

Multi-pin plug connection



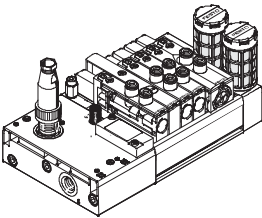
Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-core cable, which substantially reduces installation time.

This valve terminal can be equipped with 2 ... 35 valves.

Versions

- Sub-D connection

I-Port interface/IO-Link



The electrical supply/transmission of communication data takes place via an M12 plug on the valve terminal (I-Port interface).

Versions:

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

This valve terminal can be equipped with 3 ... 35 valves.

Pilot air supply

Internal

The port for the pneumatic main supply is located on the left-hand sub-base (multi-pin plug connection/I-Port interface).

The internal pilot air (duct 12/14) is branched from duct 1 in the left-hand sub-base.

The air is branched using a pneumatic distributor or a blanking plate on the left-hand pneumatic distributor port. The multi-pin plug connection provides two pneumatic distributor ports and the I-Port provides one.

External

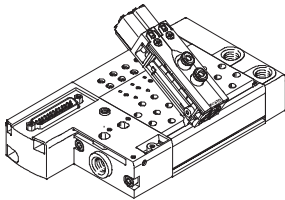
External pilot air is supplied via the selector plate on the left-hand pneumatic distributor port. It enables the pilot air and main supply to the valve terminal to be separated.

The multi-pin plug connection provides one pneumatic distributor port and the I-Port interface does not provide any.

Valve terminals type 23 VTUB-12

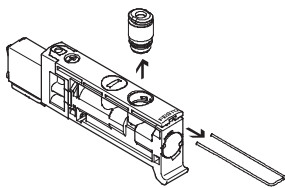
Key features – Pneumatic components

Wide range of pneumatic components



- The use of the same basic valves for the 3/2-way and 5/2-way valve function permits fast and flexible conversion and multiple use of parts.
- Flexible construction thanks to assembled and tested units or single components as modules for individual configurations.
- Flow rates from 230 ... 400 l/min depending on the valve used and appropriate QS connections.

Changing fittings on port 2/4

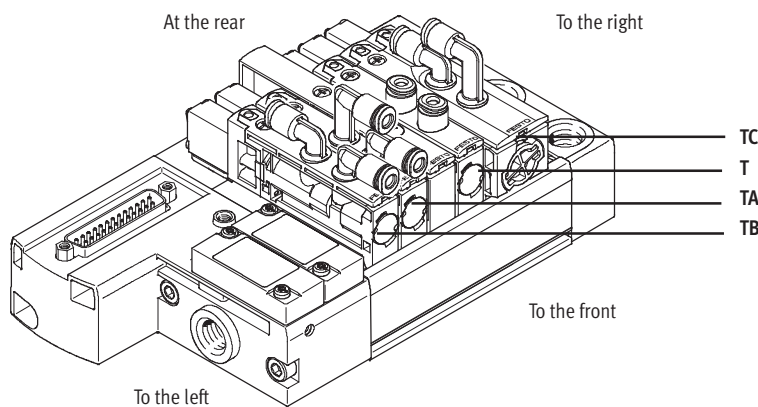


The cartridges (port 2/4) can be changed quickly and easily by removing the spring clip. The ports can be sealed by inserting a blanking plug (→ 31).

3/2-way function

- The function of a 3/2-way valve, normally closed, can be created by sealing port 2 of the 5/2-way single solenoid valve.
- The function of a 3/2-way valve, normally open, can be created by sealing port 4 of the 5/2-way single solenoid valve.

Connection to the valve



Connection positions on the valve:

- T (on top, straight)
- TA (on top, angled outlet to the front)
- TB (on top, angled outlet to the front/rear)
- TC (on top, angled outlet to the rear)

Connection sizes:

- Push-in connector 4 mm (code P4)
- Push-in connector 6 mm (code P6)

Valve terminals type 23 VTUB-12

Key features – Pneumatic components

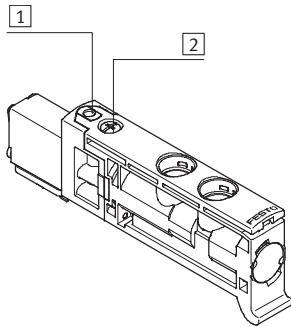
Design		Expansion	
Valve replacement	The valves are attached to the aluminium manifold rail using one screw, which means that they can be easily replaced. Use of high-quality plastics guarantees minimum weight and maximum performance.	Blanking plates can be replaced by valves at a later date. The dimensions, mounting points and the pneumatic	installation already carried out do not change.

Valve function				
Code	Circuit symbol	Width		Description
		12 mm	24 mm	
M		■	–	5/2-way valve, single solenoid <ul style="list-style-type: none"> • Mechanical spring return • Non-reversible • Not suitable for vacuum
J		–	■	5/2-way valve, double solenoid <ul style="list-style-type: none"> • Non-reversible • Not suitable for vacuum
N		■	–	3/2-way valve, single solenoid <ul style="list-style-type: none"> • Normally open • Mechanical spring return • Non-reversible • Not suitable for vacuum • Created from a 5/2-way single solenoid valve by sealing port 4
K		■	–	3/2-way valve, single solenoid <ul style="list-style-type: none"> • Normally closed • Mechanical spring return • Non-reversible • Not suitable for vacuum • Created from a 5/2-way single solenoid valve by sealing port 2

Valve terminals type 23 VTUB-12

Key features – Display and operation

Display and operation

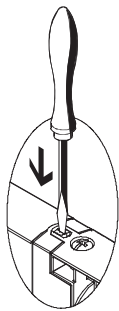


- 1 Manual override (non-detenting, non-detenting/detenting)
- 2 Screw for valve assembly

The manual override (MO) enables the valve to be activated without electronic control or power supply.

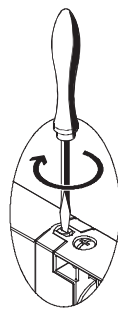
Manual override (MO)

MO with automatic return (non-detenting)



Press in the stem of the MO with a pointed object or screwdriver.
 → Valve is then actuated.
 Remove the pointed object or screwdriver.
 Spring force pushes the stem of the MO back.
 → Valve returns to normal position.

MO set via turning (non-detenting/detenting)

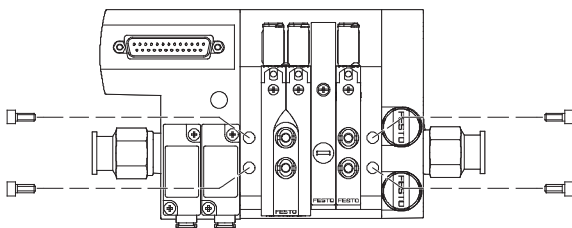


Press in the stem of the MO using a screwdriver until the valve switches and then turn the stem clockwise by 90° until the stop is reached.
 → Valve remains in switching position.
 Turn the stem anti-clockwise by 90° until the stop is reached and then remove the screwdriver. Spring force pushes the stem of the MO back.
 → Valve returns to normal position.

Note

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

Mounting – Valve terminal



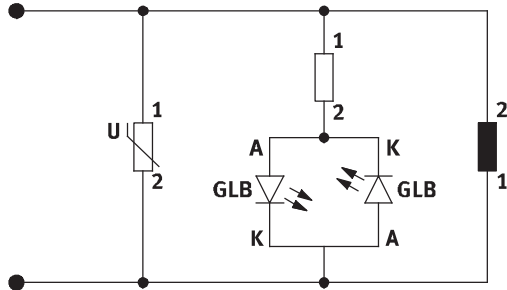
Sturdy terminal mounting thanks for four through-holes for wall mounting (M5 screws).

Valve terminals type 23 VTUB-12

Key features – Electrical components

Protective circuit

Manifold rail with LED signal status display, multi-pin plug connection



Note

The electrical protective circuit only relates to the optional LED variant with the multi-pin plug connection.

Electrical multi-pin plug connection

The following multi-pin plug connections are available for the valve terminal VTUB-12:

- Sub-D multi-pin plug connection (25-pin)
- Sub-D multi-pin plug connection (44-pin)

If fewer than 44 addresses are used for the valve terminal, the remaining pins are left free. Pins 22 ... 25 or 41 ... 44 are reserved for the neutral conductor or 24 V.

The valves are switched by means of positive or negative logic (positive switching or negative switching).

Mixed operation is not permitted.

Each pin on the multi-pin plug can actuate exactly one solenoid coil. If the maximum configurable number of valve positions is 35, this means that 35 valves can be addressed with one solenoid coil (single solenoid).

Note

A double solenoid valve occupies two valve positions. With 17 or more valve positions, the number of available valve positions for double solenoid valves decreases.

Pins 1 ... 44 are used for addresses 0 ... 43 in order.

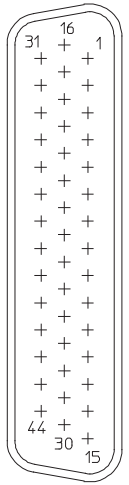
Pin allocation – Sub-D plug, 25-pin

	Pin	Address/coil	Wire colour ¹⁾ of connecting cable	
			15-wire, NEBV-S1...25-K-...-LE15	25-wire, NEBV-S1...25-K-...-LE25
	1	0	WH	WH
	2	1	BN	BN
	3	2	GN	GN
	4	3	YE	YE
	5	4	GY	GY
	6	5	PK	PK
	7	6	BU	BU
	8	7	RD	RD
	9	8	BK	BK
	10	9	VT	VT
	11	10	GY PK	GY PK
	12	11	RD BU	RD BU
	13	12	–	GN WH
	14	13	–	BN GN
	15	14	–	YE WH
	16	15	–	BN YE
	17	16	–	GY WH
	18	17	–	BN GY
	19	18	–	WH PK
	20	19	–	BN PK
21	–	–	BU WH	
Note The drawing shows the view on the pins of the Sub-D plug.	22	0 V/24 V	–	BN BU
	23	0 V/24 V	GN WH	RD WH
	24	0 V/24 V	BN GN	BN RD
	25	0 V/24 V	YE WH	BK WH

1) To IEC 757

Valve terminals type 23 VTUB-12

Key features – Electrical components

Pin allocation – Sub-D plug, 44-pin							
NEBV-S1...44-K...-LE39							
							
Pin	Address/coil	Wire colour ¹⁾ of connecting cable		Pin	Address/coil	Wire colour ¹⁾ of connecting cable	
1	0	WH		23	22	WH RD	
2	1	BN		24	23	BN RD	
3	2	GN		25	24	WH BK	
4	3	YE		26	25	BN BK	
5	4	GY		27	26	GY GN	
6	5	PK		28	27	YE GY	
7	6	BU		29	28	PK GN	
8	7	RD		30	29	YE PK	
9	8	BK		31	30	GN BU	
10	9	VT		32	31	YE BU	
11	10	GY PK		33	32	GN RD	
12	11	RD BU		34	33	YE RD	
13	12	WH GN		35	34	GN BK	
14	13	BN GN		36	–	–	
15	14	WH YE		37	–	–	
16	15	YE BN		38	–	–	
17	16	WH GY		39	–	–	
18	17	GY BN		40	–	–	
19	18	WH PK		41	0 V	YE BK	
20	19	PK BN		42	0 V	GY BU	
21	20	WH BU		43	0 V	PK BU	
22	21	BN BU		44	0 V	GY RD	

Note
The drawing shows the view on the pins of the Sub-D plug.

1) To IEC 757

Pin allocation – Adapter M8x1 with LED		
Pin		
Round plug, M8, 3-pin		
VAVE-C8-1R8		
1		n.c.
3		0V
4		24V
Round plug, M8, 4-pin		
VAVE-C8-1R1		
1		n.c.
2		n.c.
3		0V
4		24V

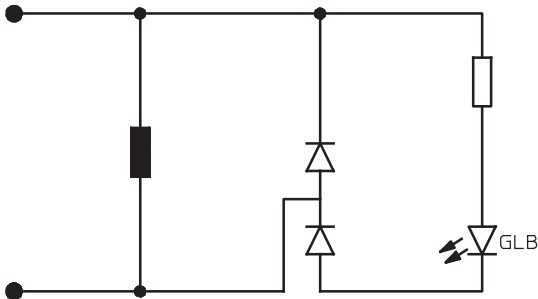
1) To DIN EN 61076-2-101

Valve terminals type 23 VTUB-12

Key features – Electrical components

Protective circuit

Manifold rail with I-Port interface



I-Port interface

The valve terminal VTUB-12 can be connected as follows via the I-Port:

- Directly to the fieldbus by mounting the CTEU bus node on the valve terminal
- To an IO-Link master (in IO-Link mode) via a cable

Up to 35 solenoid coils can be actuated. A valve position always occupies one address. The following allocation applies in this case:

- Less significant valve position (address) for coil 14
- More significant valve position (address) for coil 12

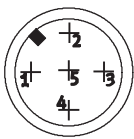
Addresses are allocated in ascending order without gaps, from left to right. The address allocation is independent of whether blanking plates or valves are used.

Note

More information on CTEU
→ cteu

Additionally required IO-Link for IO-Link mode
→ www.festo.com

Pin allocation of the I-Port/IO-Link cable¹⁾

	Pin	Allocation
	1	24 V electronics (logic voltage)
	2	24 V valves (load voltage)
	3	0 V electronics (logic)
	4	COM I-Port communication signal
	5	0 V valves (load)

1) 5-pin socket, M12, A-coded

Valve terminals type 23 VTUB-12

Key features – Instructions for use

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Equipment

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

Incorrect additional oil and too high an oil content in the compressed air reduce the service life of the valve terminal.

Use Festo special oil OFSW-32 or the alternatives listed in the Festo catalogue (as specified in DIN 51524 HLP32; basic oil viscosity 32 CST at 40 °C).

Bio-oils

When using bio-oils (oils which are based on synthetic or native ester, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m³ must not be exceeded (see ISO 8573-1 Class 2).

Mineral oils

When using mineral oils (e.g. HLP oils to DIN 51524, parts 1 to 3) or similar oils based on poly-alpha-olefins (PAO), the maximum residual oil content of 5 mg/m³ must not be exceeded (see ISO 8573-1 Class 4). A higher residual oil content irrespective of the compressor oil cannot be permitted, as the basic lubricant would be flushed out over time.

Valve terminals type 23 VTUB-12

FESTO

Technical data

Voltage

24 V DC

Pressure

+2.8 ... +8 bar

Temperature range

-5 ... +60 °C



General technical data			
Valve function		Single solenoid	Double solenoid
Design		Poppet valve with spring return	Poppet valve with self-holding function
Sealing principle		Soft	
Actuation type		Electric	
Reset method		Mechanical spring	-
Type of control		Piloted	
Pilot air supply		Internal	
		External	
Direction of flow		Non-reversible	
Exhaust function		No flow control	
Manual override		Non-detenting, non-detenting/detenting	
Type of mounting		Via through-hole	
Width	[mm]	12	24
Nominal size	[mm]	4	
Max. number of valve positions		35	17
Max. number of pressure zones		1	
Standard nominal flow rate	qnN	[l/min]	400
Pneumatic connection		1, 3	G $\frac{1}{4}$
		2, 4	QS-4 or QS-6
		12, 14	G $\frac{1}{8}$

Operating and environmental conditions			
Operating medium		Dried and filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Operating pressure	Internal pilot air	[bar]	+2.8 ... +8
	External pilot air	[bar]	
Ambient temperature	Multi-pin plug connection	[°C]	-5 ... +60
	I-Port interface	[°C]	-5 ... +50
Temperature of medium	Multi-pin plug connection	[°C]	-5 ... +60
	I-Port interface	[°C]	-5 ... +50
Note on materials		RoHS-compliant	
CE marking		To EU EMC Directive	

Note

The CE marking for the valve terminal with I-Port interface applies up to a maximum length of the connecting cable of 30 m.

Valve terminals type 23 VTUB-12

Technical data

Product weight			
Approx. weight		[g]	
Valves			
• Single solenoid (code M), ducted solenoid exhaust		27.8	
• Double solenoid (code J), ducted solenoid exhaust		57.4	
• Single solenoid (code M), unducted solenoid exhaust		27.5	
• Double solenoid (code J), unducted solenoid exhaust		57.1	
Blanking plate for vacant position		13.8	
Manifold rail			
• Multi-pin plug with Sub-D plug, 25-pin	2 valve positions	382	
	4 valve positions	484	
	6 valve positions	585	
	8 valve positions	687	
	10 valve positions	788	
	12 valve positions	890	
	14 valve positions	992	
	16 valve positions	1,093	
	18 valve positions	1,195	
	20 valve positions	1,296	
• Multi-pin plug with Sub-D plug, 44-pin	24 valve positions	1,500	
	28 valve positions	1,704	
	32 valve positions	1,907	
	35 valve positions	2,060	
	• I-Port interface with M12 plug	4 valve positions	521
		6 valve positions	627
		8 valve positions	727
10 valve positions		834	
12 valve positions		940	
14 valve positions		1,040	
16 valve positions		1,145	
18 valve positions		1,251	
20 valve positions		1,358	
24 valve positions		1,562	
28 valve positions	1,775		
32 valve positions	1,982		
35 valve positions	2,138		

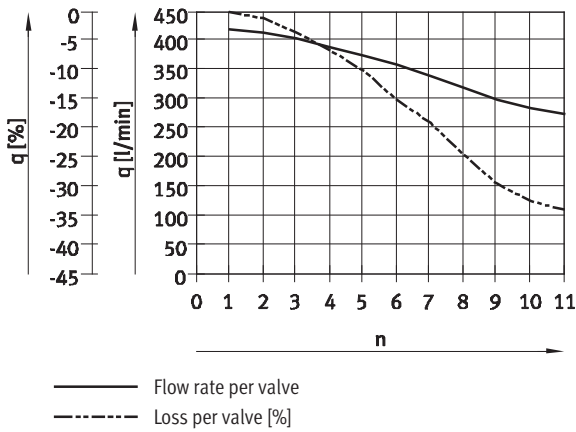
Electrical data			
		Multi-pin plug	I-Port interface
Nominal operating voltage	[V DC]	24, reverse polarity protected	
Permissible voltage fluctuations		±10%	
Electrical power consumption per solenoid coil	[W]	1	
Protection class to EN 60529		IP65	
Duty cycle	[%]	100	
Intrinsic current consumption, logic supply	[mA]	–	30
Intrinsic current consumption, valve supply	[mA]	–	30
Max. cable length	[m]	–	20
Min. cable cross section	[mm ²]	–	1
Baud rate	COM3	[kbps]	230.4
	COM2	[kbps]	38.4

Valve terminals type 23 VTUB-12

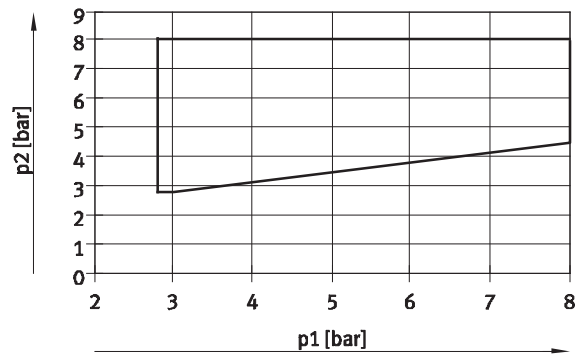
Technical data

Valve switching times [ms]			
Valve function	3/2-way	5/2-way, single solenoid	5/2-way, double solenoid
On	6	6	–
Off	14	14	–
Changeover	–	–	10

Flow rate q per valve with multiple (n) valves switched simultaneously (tolerance $\pm 20\%$)

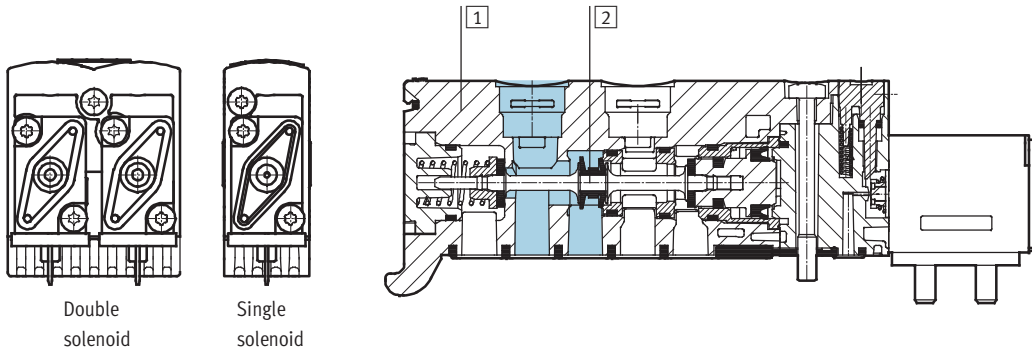


Pilot pressure as a function of operating pressure



Materials

Sectional view – Valves



1	Housing	PA, reinforced
2	Piston spool	Wrought aluminium alloy
–	Seals	NBR, PUR
–	Manifold rail with multi-pin plug	Wrought aluminium alloy
–	Power supply module	PA, reinforced
–	Blanking plate for vacant position	PA, reinforced
–	Selector plate	Wrought aluminium alloy

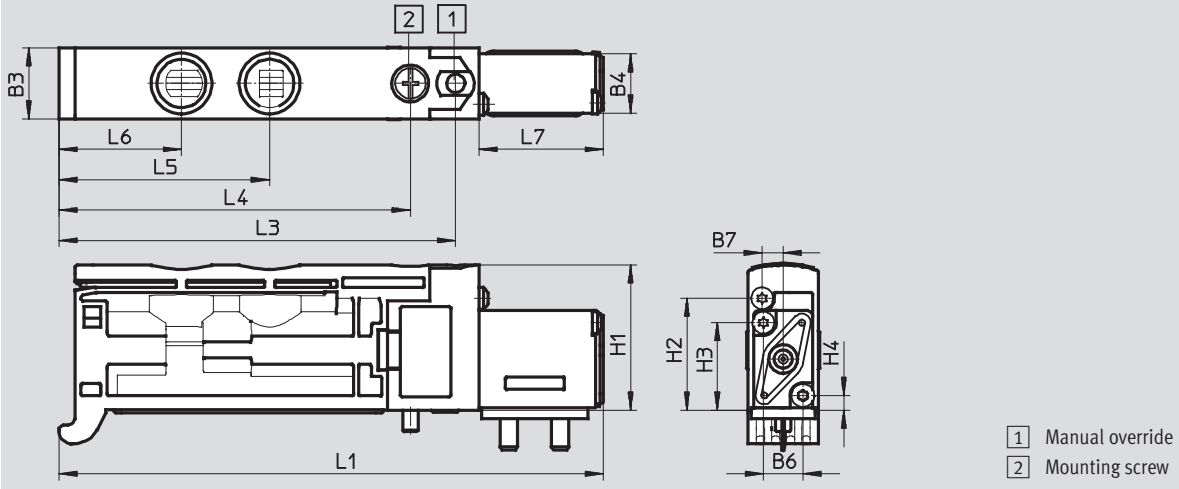
Valve terminals type 23 VTUB-12

Technical data

FESTO

Dimensions – 5/2-way valve, single solenoid

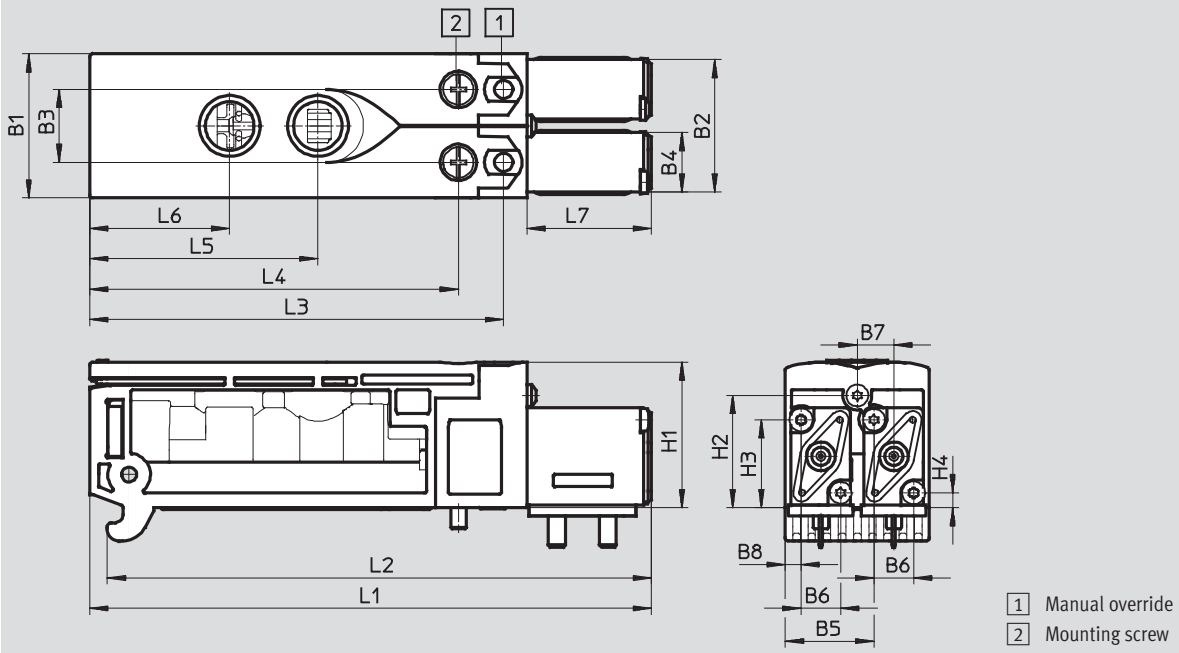
Download CAD Data → www.festo.com/us/cad



Type	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	L1	L2	L3	L4	L5	L6	L7
VUVB-ST12-M52-MZH-QX-1T1	-	-	12	9.8	-	6.5	3.5	24	18.5	14.5	2.5	89.6	-	65.3	57.8	34.7	20.2	20.5
VUVB-ST12-M52-MZH-QX-D-1T1												89.9						20.8

Dimensions – 5/2-way valve, double solenoid

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Type	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	L1	L2	L3	L4	L5	L6	L7
VUVB-ST12-B52-ZH-QX-1T1	23.7	21.8	12	9.8	14.6	6.5	6	24	18.5	14.5	2.5	92.4	89.5	68.1	60.7	37.6	23.1	20.5
VUVB-ST12-B52-ZH-QX-D-1T1												92.7	89.8					20.8

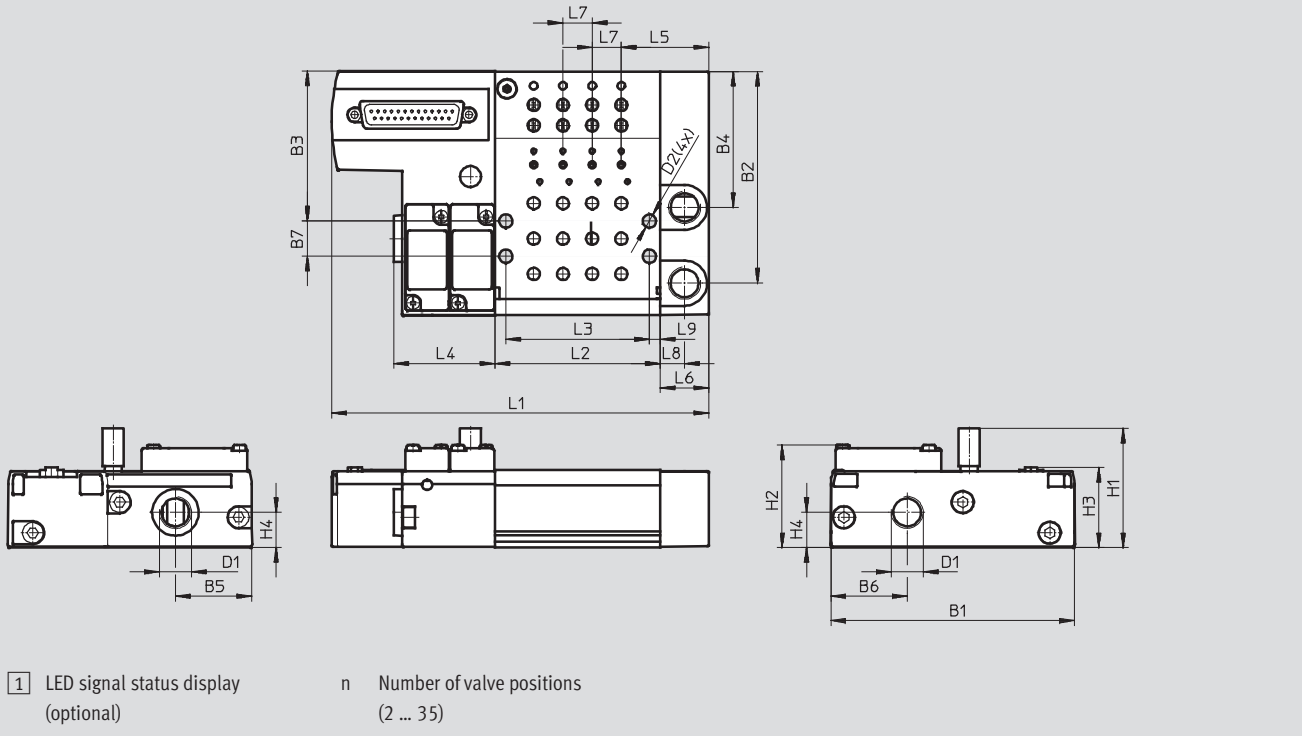
Valve terminals type 23 VTUB-12

Technical data

FESTO

Dimensions – Manifold rail with multi-pin plug

Download CAD Data → www.festo.com/us/cad



Type	B1	B2	B3	B4	B5	B6	B7	D1	D2	H1	H2	H3	H4
VABM-C8-12E	100	87	61.4	55.9	31.5	31.3	14.5	G1/4	5.5	49	42.2	33	14.5

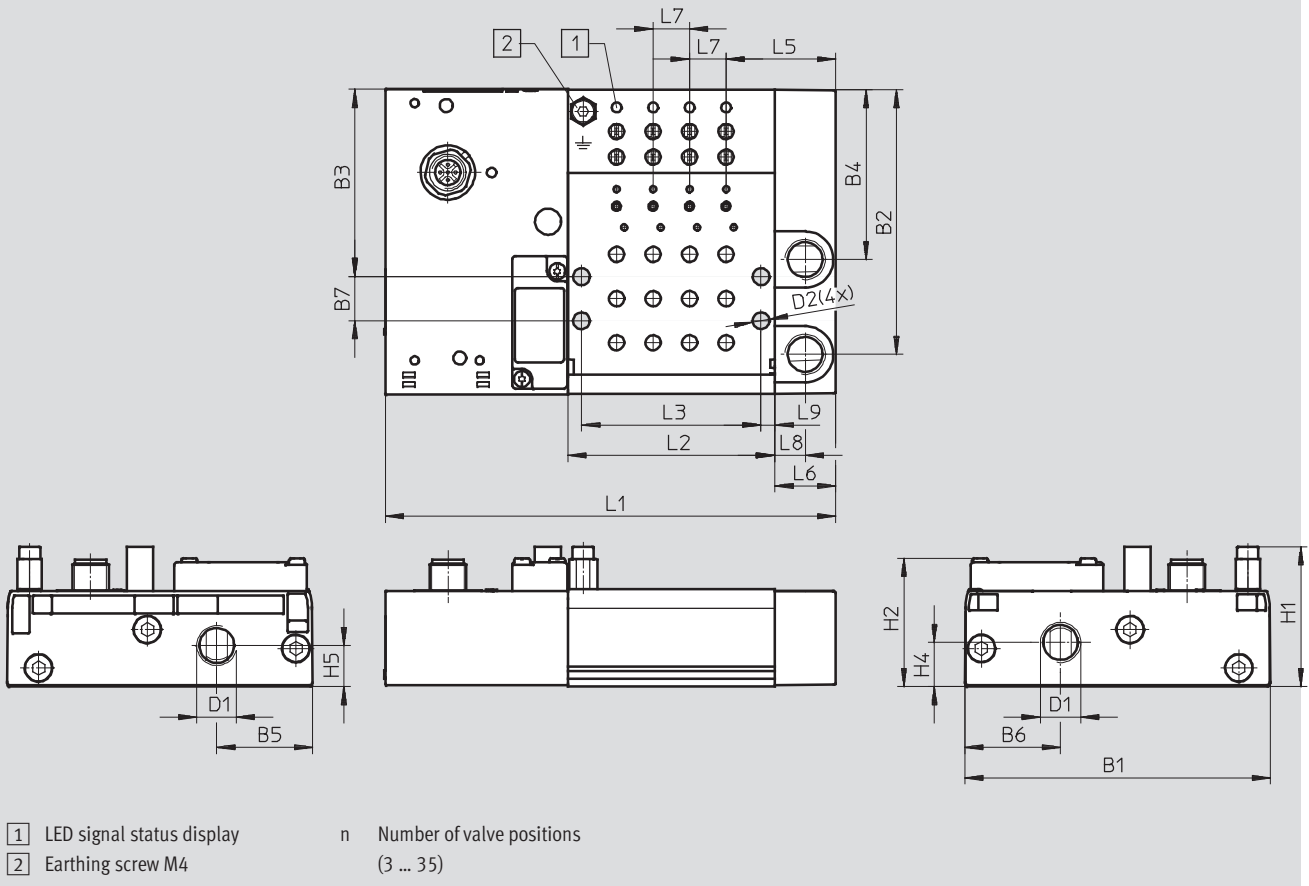
Type	L1	L2	L3	L4	L5	L6	L7	L8	L9
VABM-C8-12E	$(n \times 12) + 107$	$(n \times 12) + 20$	$(n \times 12) + 11$	41.5	36	20	12	10	4.5

Valve terminals type 23 VTUB-12

Technical data

Dimensions – Manifold rail with I-Port interface

Download CAD Data → www.festo.com/us/cad



Type	B1	B2	B3	B4	B5	B6	B7	D1	D2- σ	H1	H2	H4	H5
VTUB-12	100	87	61.5	55.9	31.5	31.3	14.5	G $\frac{1}{4}$	5.5	48	42.2	14.5	13.5

Type	L1	L2	L3	L5	L6	L7	L8	L9
VTUB-12	(nx12)+100	(nx12)+20	(nx12)+11	36	20	12	10	4.5

Valve terminals type 23 VTUB-12

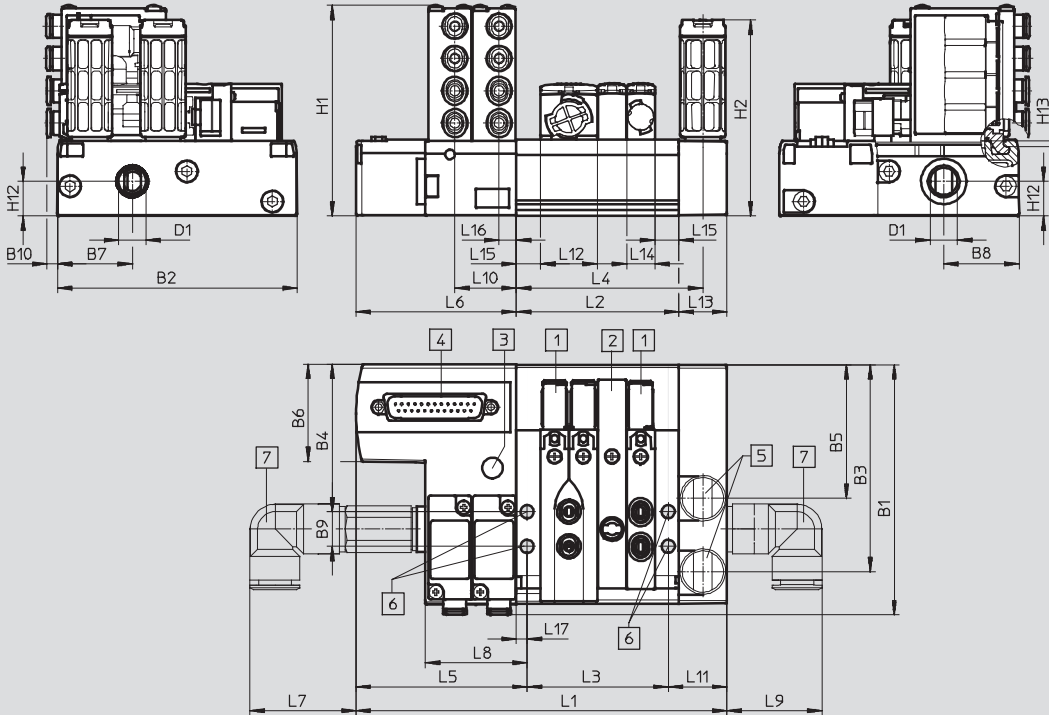
Technical data

FESTO

Dimensions – Valve terminal

Download CAD Data → www.festo.com/us/cad

With electrical multi-pin plug



- 1 5/2-way valve
- 2 Blanking plate for vacant position
- 3 Silencer/threaded connection M5
- 4 Sub-D plug, 25-pin or 44-pin with 21 or more solenoid coils
- 5 Silencer/threaded connection G $\frac{1}{4}$
- 6 Hole for wall mounting, \varnothing 5.5 mm
- 7 Fittings for air supply port
n Number of valve positions (2 ... 35)

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17
VTUB-12	$(n \times 12) + 107$	$(n \times 12) + 20$	$(n \times 12) + 11$	78	71.5	67	44.3	42.5	40	25.7	24.5	23.7	20	11.7	10.2	7.2	4.5

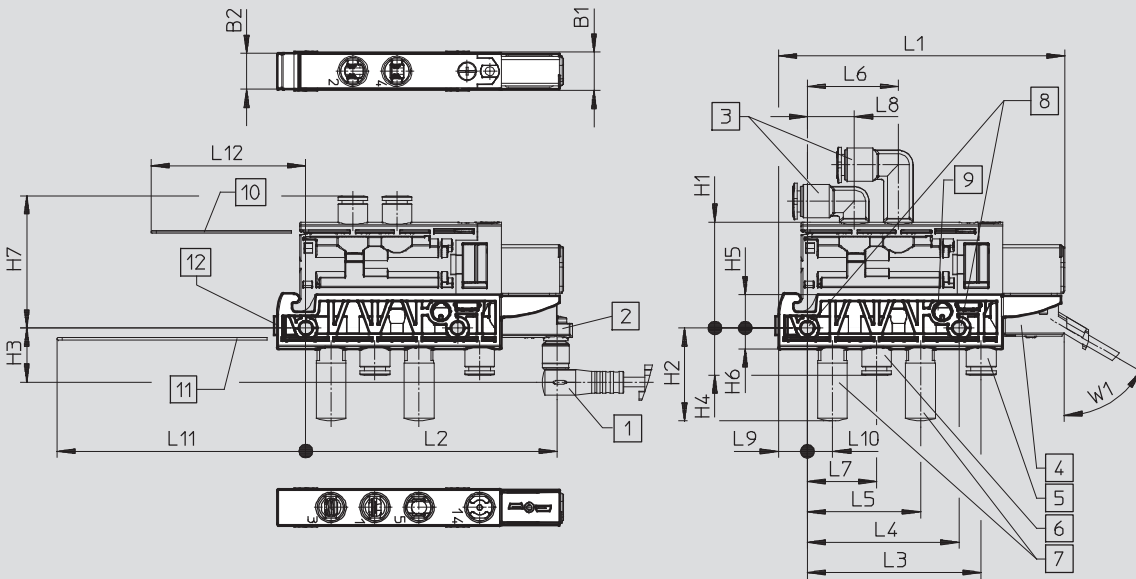
Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	D1	H1	H2	H12	H13
VTUB-12	103	100	86.5	61.5	55.9	40.5	31.3	31.5	14.5	3	G $\frac{1}{4}$	88.2	82	14.5	2.5

Valve terminals type 23 VTUB-12

Technical data

Dimensions – Sub-base for semi in-line valve (single solenoid)

Download CAD Data → www.festo.com/us/cad



- 1** Connecting cable (optional)
- 2** Adapter M8x1 (optional)
- 3** Port 2, 4: Cartridge with push-in connector
- 4** Plug socket with cable KMYZ (optional)
- 5** Port 12, 14: Cartridge with push-in connector (optional)
- 6** Port 1: Cartridge with push-in connector
- 7** Port 3, 5: Silencer AMTC-P-PC10 (optional)
- 8** Holes for M4 mounting
- 9** Exhaust port 82/84
- 10** Mounting space for spring clips for solenoid valve
- 11** Mounting space for spring clips for sub-base
- 12** Slot for inscription label IBS-6x10 (not included in the scope of delivery)

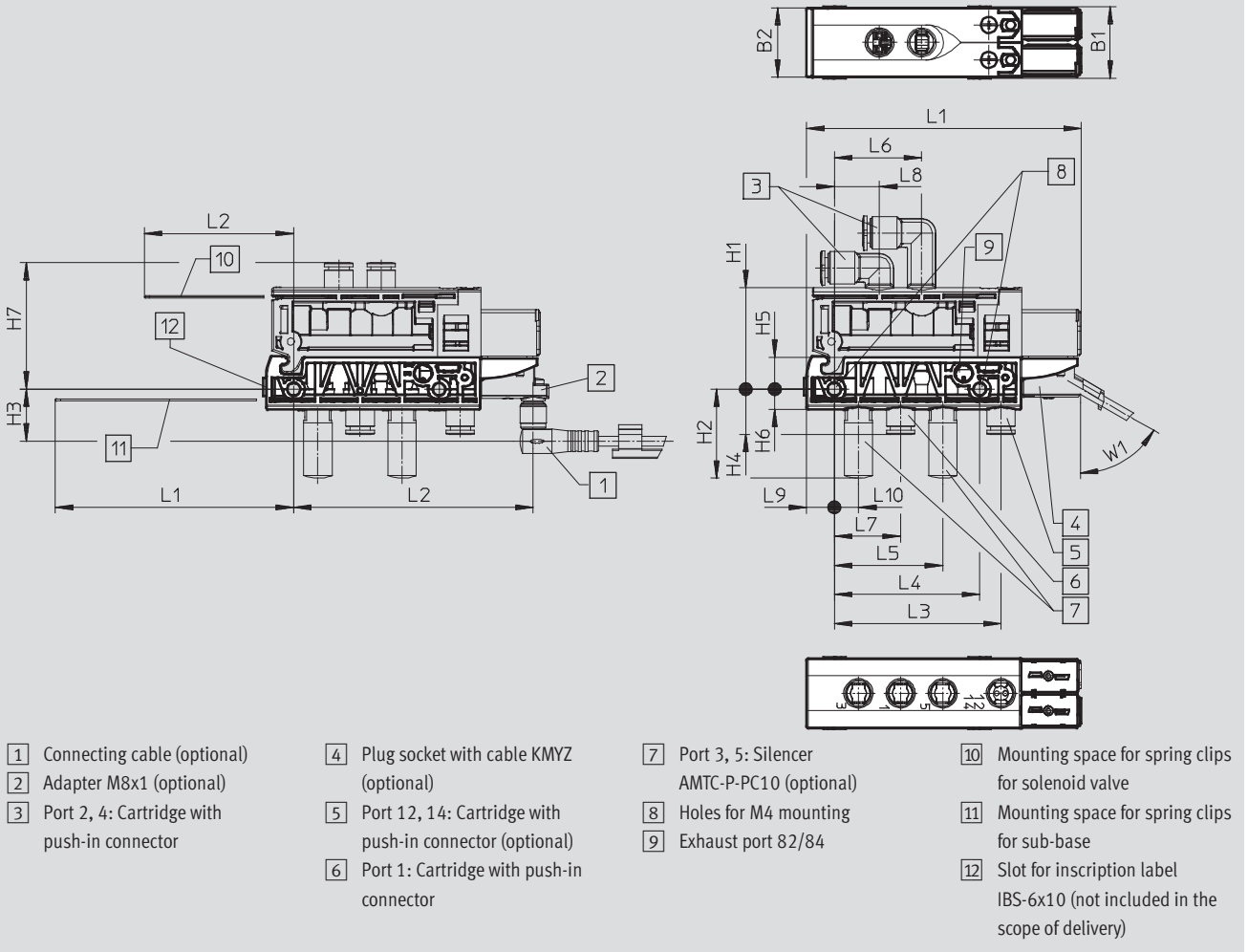
Type	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	W1
VABS-C8-12XB-QX-B	12.6	11.9	34.9	30.6	17.9	15.5	11	6.9	94.5	82.9	57.3	50	37.3	30	22.8	15.5	9.5	8.3	82	51	60°
VABS-C8-12XB-QX																					

Valve terminals type 23 VTUB-12

Technical data

Dimensions – Sub-base for semi in-line valve (double solenoid)

Download CAD Data → www.festo.com/us/cad



Type	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	W1
VABS-C8-12XB-QX-B	24.6	23.9	34.9	30.6	17.9	15.5	11	6.9	94.5	82.9	57.3	50	37.3	30	22.8	15.5	9.5	8.3	82	51	60°
VABS-C8-12XB-QX																					

Valve terminals type 23 VTUB-12

Technical data – Bus node 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) 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 kB
- 250 kB
- 500 kB
- 1 MB

Max. CANopen line 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 m at 250 kbps
- 3.75 m at 125 kbps

The following variants can be realised using an adapter:

- 2 x micro style M12, protection class IP65, 5-pin, socket and pin
- Open Style plug, protection class IP20, 5-pin, pin

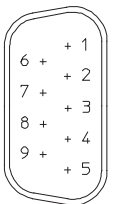
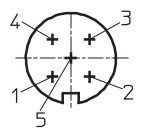
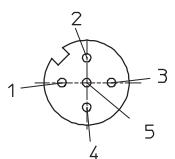
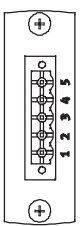
Valve terminals type 23 VTUB-12

Technical data – Bus node CTEU-CO

General technical data			
Fieldbus interface		<ul style="list-style-type: none"> • Sub-D socket, 9-pin • Sub-D plug, for self-assembly • 2x M12x1, 5-pin • 5-pin terminal strip 	
Protocol		CANopen	
Baud rate	[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		Diagnostic behaviour Fail state	
Max. address capacity, inputs		8 byte	
Max. address capacity, outputs		8 byte	
Additional functions		<ul style="list-style-type: none"> • Emergency message • Acyclic data access via "SDO" 	
Operating elements		DIL switch	
Configuration support		EDS files	
Device-specific diagnostics		<ul style="list-style-type: none"> • System diagnostics • Undervoltage • Communication errors 	
LED display	Fieldbus-specific		<ul style="list-style-type: none"> • MNS: Network status • IO: I/O status
	Product-specific		<ul style="list-style-type: none"> • 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		IP 65/67	
CE marking		To EU EMC Directive	
Note on materials		RoHS-compliant	
Housing materials		<ul style="list-style-type: none"> • PC • PA, reinforced 	
Product weight		[g]	90
Temperature range	Ambient temperature		[°C] -5 ... +50
	Storage		[°C] -20 ... +70
Dimensions W x L x H		[mm]	40 x 91 x 50

Valve terminals type 23 VTUB-12

Technical data – Bus node CTEU-CO

Pin allocation of the 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 ¹⁾
	7	CAN_H	Received/transmitted data high
	8	n.c.	Not connected
	9	CAN_V+	24 V DC supply CAN interface
	Housing	Screen	Connection to FE (functional earth)
Bus connection Micro Style (M12)			
Incoming 	1	Screen	Connection to FE (functional earth)
	2	CAN_V+	24 V DC supply 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 (functional earth)
	2	CAN_V+	24 V DC supply CAN interface
	3	CAN_GND	0 V CAN interface
	4	CAN_H	Received/transmitted data high
	5	CAN_L	Received/transmitted data low
Bus connection Open Style			
	1	CAN_GND	0 V CAN interface
	2	CAN_L	Received/transmitted data low
	3	Screen	Connection to FE (functional earth)
	4	CAN_H	Received/transmitted data high
	5	CAN_V+	24 V DC supply CAN interface

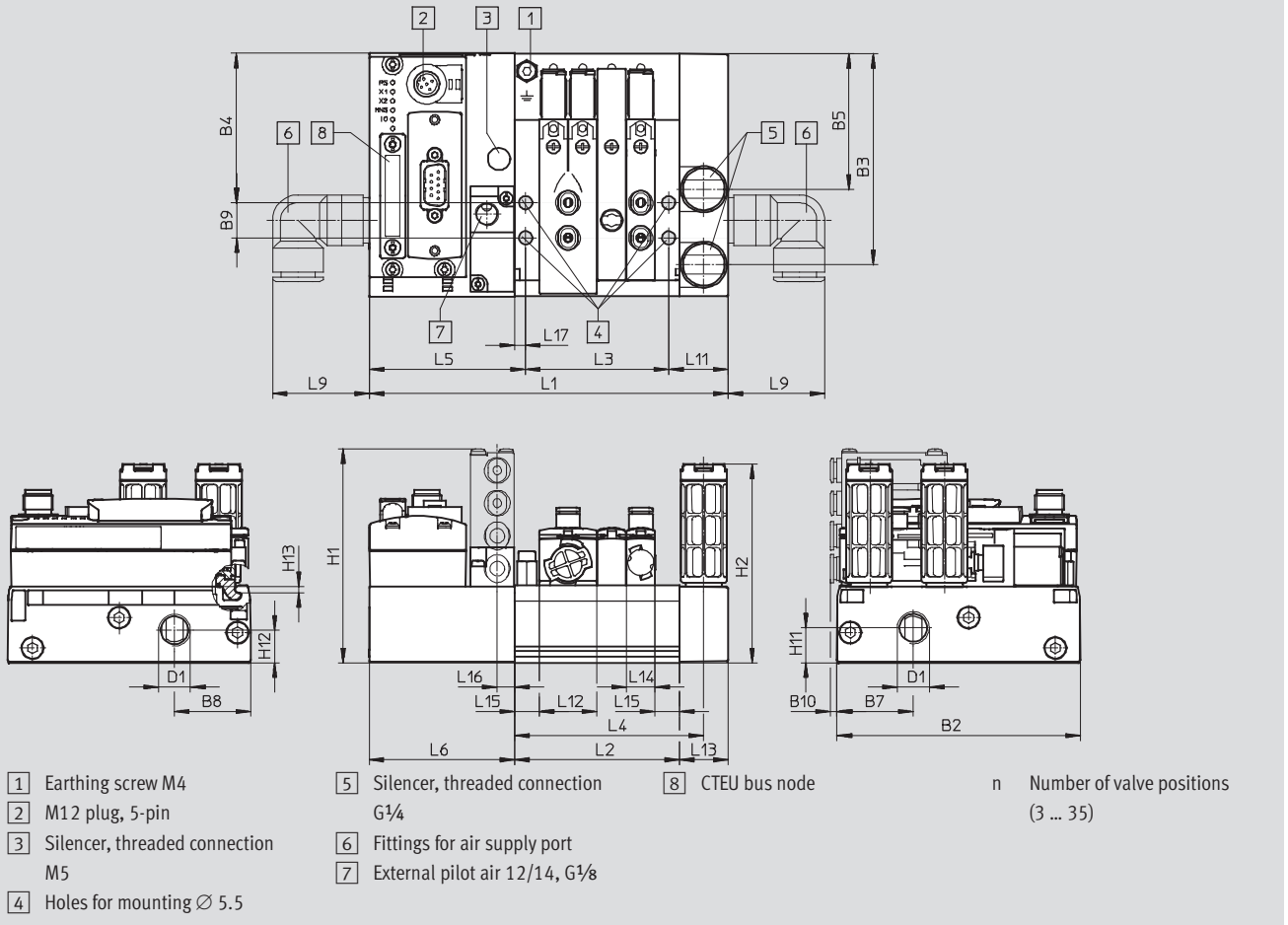
1) Connected internally via Pin 3

Valve terminals type 23 VTUB-12

Technical data – Bus node CTEU-CO

Dimensions – Valve terminal with CTEU-CO

Download CAD Data → www.festo.com/us/cad

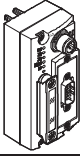
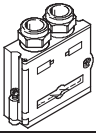
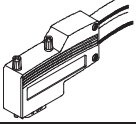





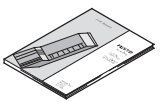


Type	B2	B3	B4	B5	B7	B8	B9	B10	D1	H1	H2	H11	H12	H13
VTUB-12	100	87	61.5	55.9	31.3	31.5	14.5	3	G $\frac{1}{4}$	88.2	82	14.5	13.5	2.5

Type	L1	L2	L3	L4	L5	L6	L9	L11	L12	L13	L14	L15	L16	L17
VTUB-12	(nx12)+100	(nx12)+20	(nx12)+11	78	64.5	60	40	24.5	23.7	20	11.7	10.2	7.2	4.5

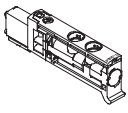
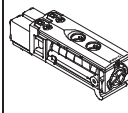
Valve terminals type 23 VTUB-12

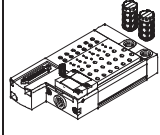
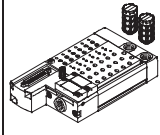
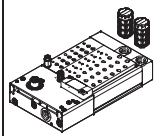
Accessories – Bus node CTEU-CO

Ordering data			
Designation		Part No.	Type
Bus node			
	CANopen bus node	570038	CTEU-CO
Bus connection			
	Sub-D plug	532219	FBS-SUB-9-BU-2x5POL-B
	Sub-D plug, angled	533783	FBS-SUB-9-WS-CO-K
	Micro Style bus connection, 2xM12, 5-pin	525632	FBA-2-M12-5POL
	Fieldbus socket for Micro Style connection, M12, 5-pin	18324	FBSD-GD-9-5POL
	Plug for Micro Style connection, M12, 5-pin	175380	FBS-M12-5GS-PG9
	Open Style bus connection	525634	FBA-1-SL-5POL
	Terminal strip for Open Style connection, 5-pin	525635	FBSD-KL-2x5POL
Plug socket			
	For voltage supply	538999	NTSD-GD-9-M12-5POL-RK
Manual			
	Manual – Bus node CTEU-CO	German	573767 P.BE-CTEU-CO-FUNCT+MAINT
		English	573768 P.BE-CTEU-CO-FUNCT+MAINT
		Spanish	573769 P.BE-CTEU-CO-FUNCT+MAINT
		French	573770 P.BE-CTEU-CO-FUNCT+MAINT
		Italian	573771 P.BE-CTEU-CO-FUNCT+MAINT
		Chinese	573774 P.BE-CTEU-CO-FUNCT+MAINT

Valve terminals type 23 VTUB-12

Accessories

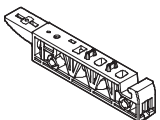
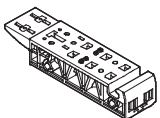
Ordering data – Solenoid valves					
	Code	Valve function	Solenoid exhaust air	Part No.	Type
	M	5/2-way valve, single solenoid, manual override non-detenting	Unducted	557649	VUVB-ST12-M52-MZH-QX-1T1
			Ducted	558369	VUVB-ST12-M52-MZH-QX-D-1T1
		5/2-way valve, single solenoid, manual override non-detenting/detenting	Unducted	570908	VUVB-ST12-M52-MZD-QX-1T1
			Ducted	570909	VUVB-ST12-M52-MZD-QX-D-1T1
	J	5/2-way valve, double solenoid, manual override non-detenting	Unducted	557650	VUVB-ST12-B52-ZH-QX-1T1
			Ducted	558370	VUVB-ST12-B52-ZH-QX-D-1T1
		5/2-way valve, double solenoid, manual override non-detenting/detenting	Unducted	570910	VUVB-ST12-B52-ZD-QX-1T1
			Ducted	570911	VUVB-ST12-B52-ZD-QX-D-1T1

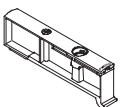
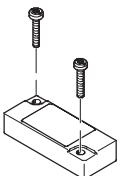
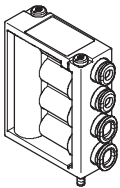
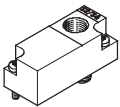



Ordering data – Manifold rail						
	Code	Description	Valve positions	Part No.	Type	
	-	Multi-pin plug with Sub-D plug, 25-pin	2	557651	VABM-C8-12E-G14-2-M1	
			4	557653	VABM-C8-12E-G14-4-M1	
			6	557655	VABM-C8-12E-G14-6-M1	
			8	557657	VABM-C8-12E-G14-8-M1	
			10	557659	VABM-C8-12E-G14-10-M1	
			12	557661	VABM-C8-12E-G14-12-M1	
			14	557663	VABM-C8-12E-G14-14-M1	
			16	557665	VABM-C8-12E-G14-16-M1	
			18	557667	VABM-C8-12E-G14-18-M1	
			20	557669	VABM-C8-12E-G14-20-M1	
			Multi-pin plug with Sub-D plug, 44-pin	24	557673	VABM-C8-12E-G14-24-M1
				28	557677	VABM-C8-12E-G14-28-M1
				32	557681	VABM-C8-12E-G14-32-M1
				35	557684	VABM-C8-12E-G14-35-M1
	L	Multi-pin plug with Sub-D plug, 25-pin, LED signal status display		2	1361863	VABM-C8-12E-G14-2-M1-L
			4	1361865	VABM-C8-12E-G14-4-M1-L	
			6	1361867	VABM-C8-12E-G14-6-M1-L	
			8	1361868	VABM-C8-12E-G14-8-M1-L	
			10	1361869	VABM-C8-12E-G14-10-M1-L	
			12	1361870	VABM-C8-12E-G14-12-M1-L	
			14	1361871	VABM-C8-12E-G14-14-M1-L	
			16	1361873	VABM-C8-12E-G14-16-M1-L	
			18	1361874	VABM-C8-12E-G14-18-M1-L	
			20	1361875	VABM-C8-12E-G14-20-M1-L	
			Multi-pin plug with Sub-D plug, 44-pin, LED signal status display	24	1361876	VABM-C8-12E-G14-24-M1-L
				28	1361877	VABM-C8-12E-G14-28-M1-L
				32	1361878	VABM-C8-12E-G14-32-M1-L
				35	1361879	VABM-C8-12E-G14-35-M1-L
	PT/LK	Manifold rail with I-Port interface		4	1247975	VABM-C8-12E-G14-4-PT-L
			6	1247976	VABM-C8-12E-G14-6-PT-L	
			8	1247977	VABM-C8-12E-G14-8-PT-L	
			10	1247978	VABM-C8-12E-G14-10-PT-L	
			12	1247979	VABM-C8-12E-G14-12-PT-L	
			14	1247980	VABM-C8-12E-G14-14-PT-L	
			16	1247981	VABM-C8-12E-G14-16-PT-L	
			18	1247982	VABM-C8-12E-G14-18-PT-L	
			20	1247983	VABM-C8-12E-G14-20-PT-L	
			24	1247984	VABM-C8-12E-G14-24-PT-L	
			28	1247985	VABM-C8-12E-G14-28-PT-L	
			32	1247986	VABM-C8-12E-G14-32-PT-L	
			35	1247987	VABM-C8-12E-G14-35-PT-L	

Valve terminals type 23 VTUB-12

Accessories

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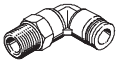
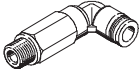






Ordering data – Sub-base for semi in-line valves					
	Code	Description	Valve positions	Part No.	Type
	–	Internal pilot air supply	1 (M52/M32)	1236025	VABS-C8-12XB-QX-B
	–	External pilot air supply	1 (M52/M32)	1236027	VABS-C8-12XB-QX
	–	Internal pilot air supply	1 (B52)	1236028	VABS-C8-12XB-QX-DB
	–	External pilot air supply	1 (B52)	1236029	VABS-C8-12XB-QX-D

Ordering data					
	Code	Description		Part No.	Type
Blanking plate					
	L	Blanking plate for vacant valve position		562461	VABB-C8-12-ET
	–	Blanking plate for pneumatic distributor position		562460	VABB-C8-12-A
Pneumatic distributor					
	AL	Push-in connector 4 mm		562457	VABF-C8-12-V1P4-Q4
	BL	Push-in connector 6 mm		562458	VABF-C8-12-V1P4-Q6
	CL	Push-in connector 4 and 6 mm		562459	VABF-C8-12-V1P4-Q4-Q6
Selector plate					
	SL	Pneumatic connection G1/8		1210305	VABF-C8-12-P6-G18-Z
Blanking plug					
		Connection Ø 10 mm		562243	QSPC10
	–	For thread G¼, 10 pieces		3569	B-¼
Inscription labels					
	–	Inscription labels 6x10 mm, 64 pieces, in frames		18576	IBS-6x10

Valve terminals type 23 VTUB-12

Accessories

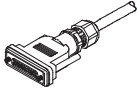



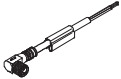
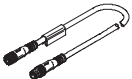
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Ordering data						
	Code	Description	Tubing O.D.	Packaging unit	Part No.	Type
Push-in fitting						Technical data → Internet: quick star
	-	With sealing ring connection G $\frac{1}{4}$	8 mm	10 pieces	186099	QS-G$\frac{1}{4}$-8
	-		10 mm	10 pieces	186101	QS-G$\frac{1}{4}$-10
	-		12 mm	10 pieces	186350	QS-G$\frac{1}{4}$-12
Push-in L-fitting						Technical data → Internet: quick star
	-	With sealing ring connection G $\frac{1}{4}$	8 mm	10 pieces	186120	QSL-G$\frac{1}{4}$-8
	-		10 mm	10 pieces	186122	QSL-G$\frac{1}{4}$-10
	-		12 mm	10 pieces	186351	QSL-G$\frac{1}{4}$-12
Push-in L-fitting, long						Technical data → Internet: quick star
	-	With sealing ring connection G $\frac{1}{4}$	8 mm	10 pieces	186131	QSL-G$\frac{1}{4}$-8
	-		10 mm	10 pieces	186133	QSL-G$\frac{1}{4}$-10
	-		12 mm	10 pieces	132596	QSL-G$\frac{1}{4}$-12
Cartridge with push-in connector						
	-	Straight connection \varnothing 10 mm	4 mm	10 pieces	172972	QSP10-4
	-		6 mm	10 pieces	172973	QSP10-6
	-	L-shaped connection \varnothing 10 mm	4 mm	10 pieces	132601	QSPLK10-4
	-		6 mm	10 pieces	132602	QSPLK10-6
	-	Extra-long L-shaped connection \varnothing 10 mm	4 mm	10 pieces	132603	QSPLLK10-4
	-		6 mm	10 pieces	132604	QSPLLK10-6
Silencer						Technical data → Internet: u
	-	For thread M5		1 piece	4645	U-M5
	-	For thread G $\frac{1}{4}$		1 piece	2316	U-$\frac{1}{4}$
	-	For individual sub-base, QSP10		1 piece	1224460	AMTC-P-P10

Valve terminals type 23 VTUB-12

Accessories




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Ordering data						
	Code	Description	Cable length [m]	Part No.	Type	
Connecting cable for multi-pin plug						
	M1	Sub-D, 25-pin, straight socket, up to 12 coils, IP65	2.5	538222	NEBV-S1G25-K-2,5-N-LE15	
	M2		5	538223	NEBV-S1G25-K-5-N-LE15	
	M3		10	538224	NEBV-S1G25-K-10-N-LE15	
	M1	Sub-D, 25-pin, straight socket, up to 20 coils, IP65	2.5	538225	NEBV-S1G25-K-2,5-N-LE25	
	M2		5	538226	NEBV-S1G25-K-5-N-LE25	
	M3		10	538227	NEBV-S1G25-K-10-N-LE25	
	M1	Sub-D, 44-pin, straight socket, up to 35 coils, IP65	2.5	565289	NEBV-S1G44-K-2.5-N-LE39	
	M2		5	565290	NEBV-S1G44-K-5-N-LE39	
	M3		10	565291	NEBV-S1G44-K-10-N-LE39	
Plug socket with cable for individual valve						
	-	Angled socket, square design, 2-pin, cable open at one end, 2-wire, with LED, IP65	2.5	193687	KMYZ-9-24-2,5-LED-PUR-B	
	-		5	193689	KMYZ-9-24-5-LED-PUR-B	
	-		10	196063	KMYZ-9-24-10-LED-PUR-B	
	-	Angled socket, square design, 2-pin, straight plug, M8x1, 3-pin, with LED, IP65	0.5	196064	KMYZ-9-24-M8-0,5-LED-B	
	-		2.5	196065	KMYZ-9-24-M8-2,5-LED-B	
	-	Angled socket, square design, 2-pin, cable open at one end, 2-wire, without LED, IP40	0.5	193690	KMYZ-4-24-0,5-B	
	-		2.5	193691	KMYZ-4-24-2,5-B	
Connecting cable						
	Open cable end, 3-wire					
	-	Socket M8x1, straight, 3-pin	2.5	541333	NEBU-M8G3-K-2.5-LE3	
	-		5	541334	NEBU-M8G3-K-5-LE3	
	-		10	541332	NEBU-M8G3-K-10-LE3	
	-		2.5	159420	SIM-M8-3GD-2,5-PU	
	-		5	159421	SIM-M8-3GD-5-PU	
	-		10	192964	SIM-M8-3GD-10-PU	
	-	Socket M8x1, angled, 3-pin	2.5	541338	NEBU-M8W3-K-2.5-LE3	
	-		5	541341	NEBU-M8W3-K-5-LE3	
	-		10	541335	NEBU-M8W3-K-10-LE3	
	-		2.5	159422	SIM-M8-3WD-2,5-PU	
	-		5	159423	SIM-M8-3WD-5-PU	
	-		10	192965	SIM-M8-3WD-10-PU	
	Open cable end, 4-wire					
	-	Socket M8x1, straight, 4-pin	2.5	541342	NEBU-M8G4-K-2.5-LE4	
	-		5	541343	NEBU-M8G4-K-5-LE4	
	-		2.5	158960	SIM-M8-4GD-2,5-PU	
	-		5	158961	SIM-M8-4GD-5-PU	
-	Socket M8x1, angled, 4-pin	2.5	541344	NEBU-M8W4-K-2.5-LE4		
-		5	541345	NEBU-M8W4-K-5-LE4		
-		2.5	158962	SIM-M8-4WD-2,5-PU		
-		5	158963	SIM-M8-4WD-5-PU		
	Straight plug, 3-pin					
	-	Socket M8x1, straight, 3-pin	0.5	541346	NEBU-M8G3-K-0.5-M8G3	
	-		1	541347	NEBU-M8G3-K-1-M8G3	
	-		2.5	541348	NEBU-M8G3-K-2.5-M8G3	
	-		5	541349	NEBU-M8G3-K-5-M8G3	
	-		10	569844	NEBU-M8G3-K-10-M8G3	
	Straight plug, 4-pin					
	-	Socket M8x1, straight, 3-pin	2.5	554037	NEBU-M8G3-K-2.5-M8G4	
	-	Socket M8x1, straight, 4-pin	2.5	554035	NEBU-M8G4-K-2.5-M8G4	

Valve terminals type 23 VTUB-12

Accessories



Ordering data					
	Code	Description	Cable length [m]	Part No.	Type
Adapter M8x1					
	-	Plug M8x1, 3-pin, with LED	-	571686	VAVE-C8-1R8
	-	Plug M8x1, 4-pin, with LED	-	573194	VAVE-C8-1R1
Connection technology for IO-Link					
	XM	T-adapter M12, 5-pin	2.5	171175	FB-TA-M12-5POL
	XN	Straight plug, M12, 5-pin (in combination with adapter for separate load supply)	2.5	175487	SEA-M12-5GS-PG7

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