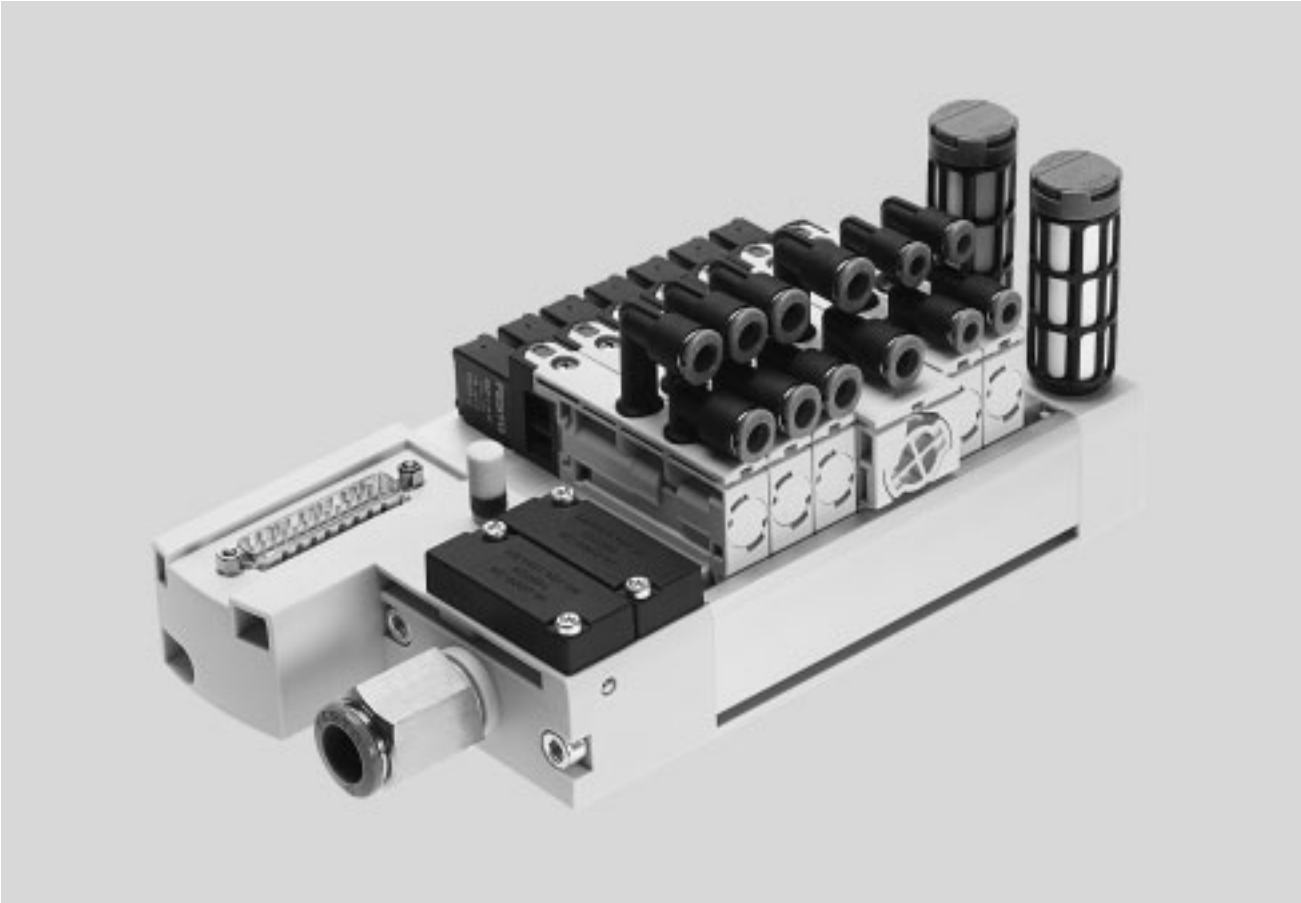
Valve terminals VTUB-12

FESTO

Valve terminals VTUB-12

Key features



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
- Suitable for use in dusty environments

Versatile

- Room for expansion with up to 35 valve positions on one valve terminal
- Flexibility of the pneumatic working ports provides a practical solution to different requirements
- Quick and easy replacement of fittings
- Optional manifold rail variant with LED signal status display
- Wall or H-rail mounting
- Subsequently expandable to up to 18 pressure zones
- Additional supply possible when an increased air rate is required

Reliable

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

Easy to mount

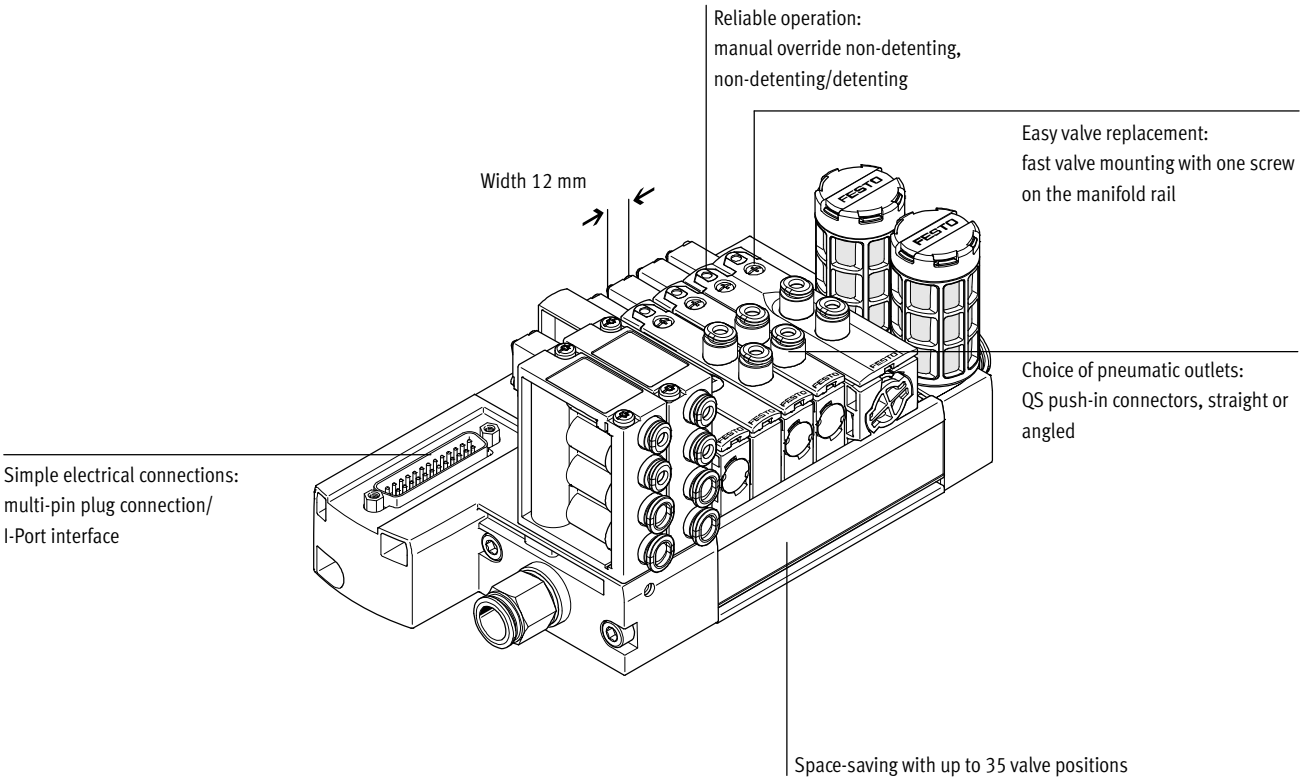
- Ready-to-install and tested unit
- Lower ordering, installation and commissioning costs
- Wall or H-rail mounting
- Quick and secure installation thanks to integrated QS push-in connectors
- Easy valve assembly with just one screw

Note

Ordering system for valve terminal VTUB-12
➔ Internet: vtub-12
Fieldbus CTEU
➔ Internet: cteu

Valve terminals VTUB-12

Key features



Equipment options

Valve functions

- 5/2-way valve, single solenoid
- 5/2-way valve, double solenoid
- 3/2-way valve, closed
- 3/2-way valve, open

Electrical connection options

Multi-pin plug

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

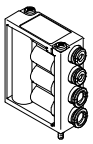
I-Port

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

Valve terminals VTUB-12

Key features

Pneumatic distributor



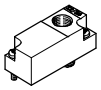
The pneumatic distributor supplies the operating pressure from port 1 to up to four other ports. The pneumatic distributor has integrated QS4- or QS6 connections.

Note

Number of pneumatic distributors that can be used

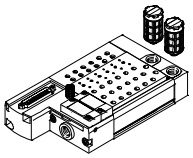
➔P. 36 Pilot air supply

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



The VTUB-12 is intended for use with internal 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

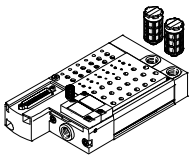


The manifold rail features a groove into which the semi in-line valves are latched and secured with just one screw.

The valve functions 3/2-way normally open or closed, 5/2-way single solenoid and 5/2-way double solenoid are available.

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

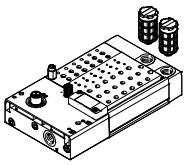
Manifold rail with optional LED signal status display



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

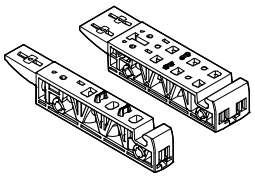


The manifold rail can be ordered with I-Port interface (code PT) and IO-Link (code LK) as a basis for fieldbus nodes (CTEU) or in IO-Link mode for direct connection to a higher-level IO-Link master.

Valve terminals VTUB-12

Key features

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 connecting cable NEBV and KMYZ and the adapter (M8x1) with corresponding connecting cable (➔ accessories, p. 36).

Blanking plate

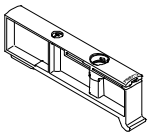
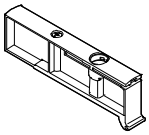


Plate without valve function for reserving valve positions on a valve terminal.

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

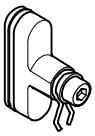
Power supply module



The power supply module occupies one valve position and can be used as an additional supply or for supplying a pressure zone.

The power supply module is attached to the manifold rail using one screw.

Separator for duct separation



Pressure zone separation can be realised in duct 1 in the manifold rail. Up to 18 pressure zones can be created on the valve terminal in this way.

There must be at least 2 valve positions between 2 separators.

Valve terminals VTUB-12

Key features

Integration of the I-Port interface/IO-Link

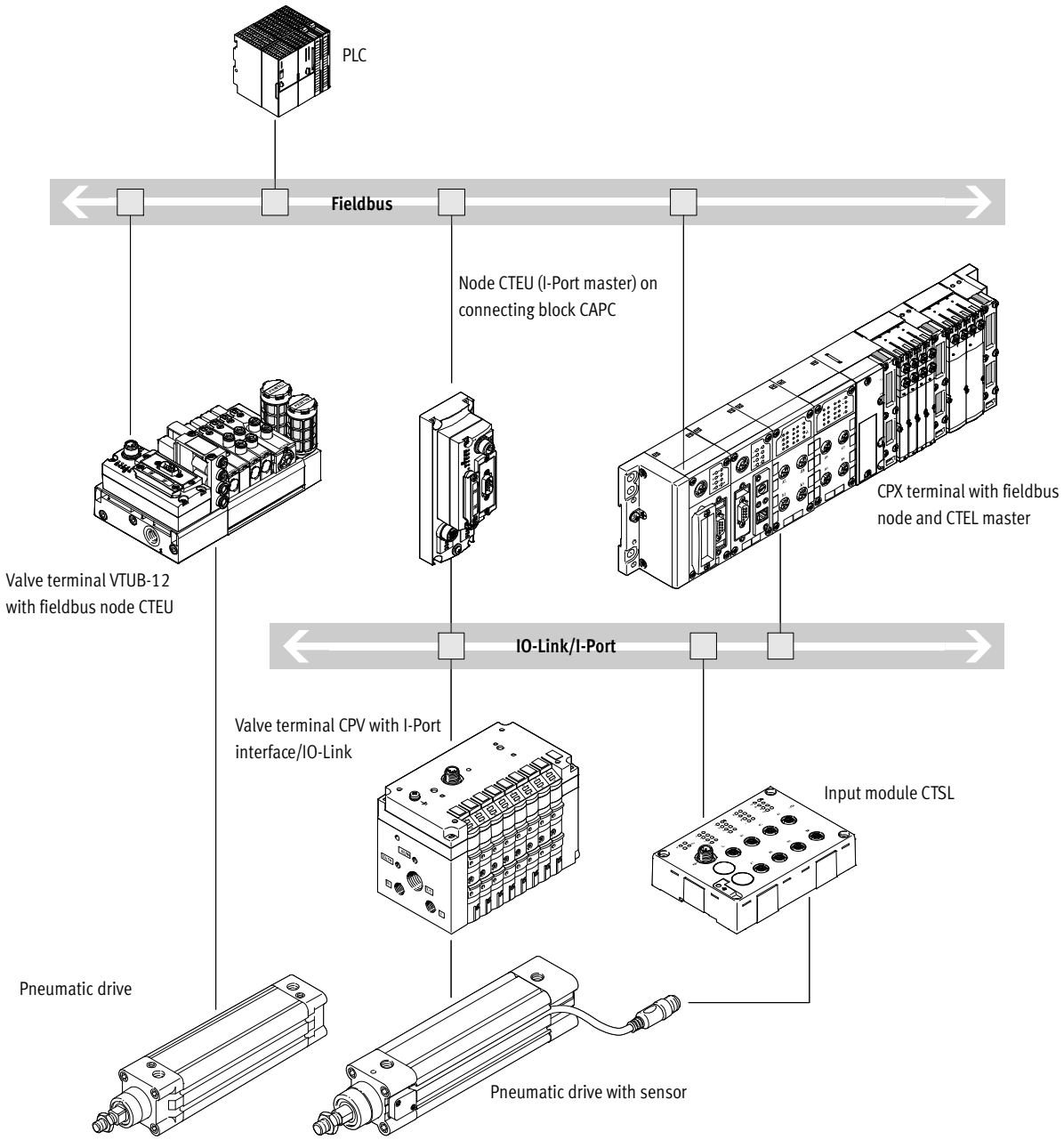
Different fieldbus nodes are used for integration into the control systems of various manufacturers.

The following protocols are supported with the compatible fieldbus node CTEU:

- CANopen
- DeviceNet
- EtherCAT
- CC-LINK
- PROFIBUS

Use of the connecting block CAPC permits decentralised installation of bus nodes CTEU on a further valve terminal or input modules with I-Port interfaces (➔ installation system CTEU/CTEL)

System overview, example



- Communication with higher-order controller via fieldbus
- Use fieldbus node CTEU compatible with the fieldbus protocol
- Up to 64 inputs/outputs (solenoid coils), depending on the valve terminal

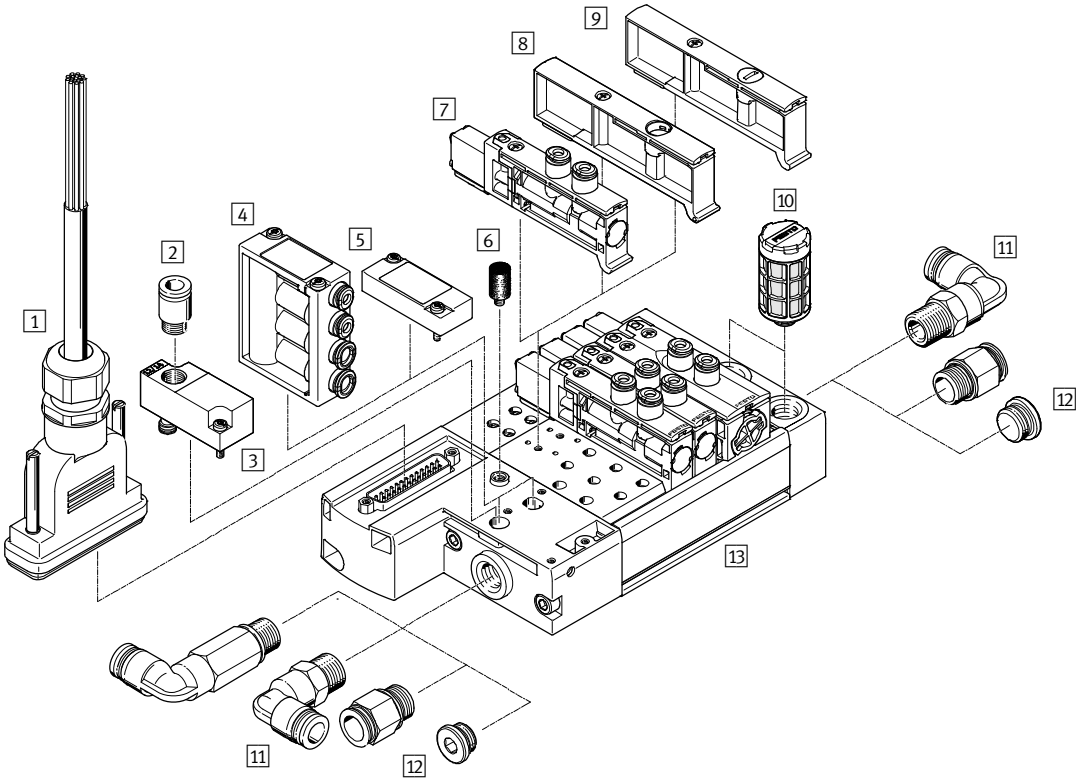
Overview – Valve terminal VTUB-12 with multi-pin plug connection, Sub-D

- 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 with 2 to max. 35 valve positions.

Each valve position can either be equipped with a valve, a power supply module 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. Up to 18 pressure zones are possible.



Accessories

			Brief description	➔ Page/Internet
1	Connecting cable	NEBV	For multi-pin plug connection, with Sub-D plug	38
2	Push-in fitting	QS	For connecting compressed air tubing with standard O.D.	39
3	Selector plate	VABF	Pilot control with external pilot air (optional)	37
4	Pneumatic distributor	VABF	For connecting additional distributors to the air supply (port 1)	36
5	Blanking plate	VABB	For vacant position (pneumatic distributor)	36
6	Silencer	U	For venting hole	39
7	Solenoid valve	VUVB-12	–	35
8	Power supply module	VABF	For supplying pressure zones or for additional air supply	36
9	Blanking plate	VABB	For vacant position (solenoid valve)	36
10	Silencer	U	For fitting in exhaust ports	39
11	Fittings	QS	For connecting compressed air tubing with standard O.D.	39
12	Blanking plug	B	For sealing the air supply port	37
13	Manifold rail	VABM	With multi-pin plug connection, for connecting max. 35 valves	35
–	Separator	VABD	For duct separation in duct 1, for creating pressure zones	37

Valve terminals VTUB-12

Peripherals overview

Overview – Valve terminal VTUB-12 with I-Port interface/IO-Link

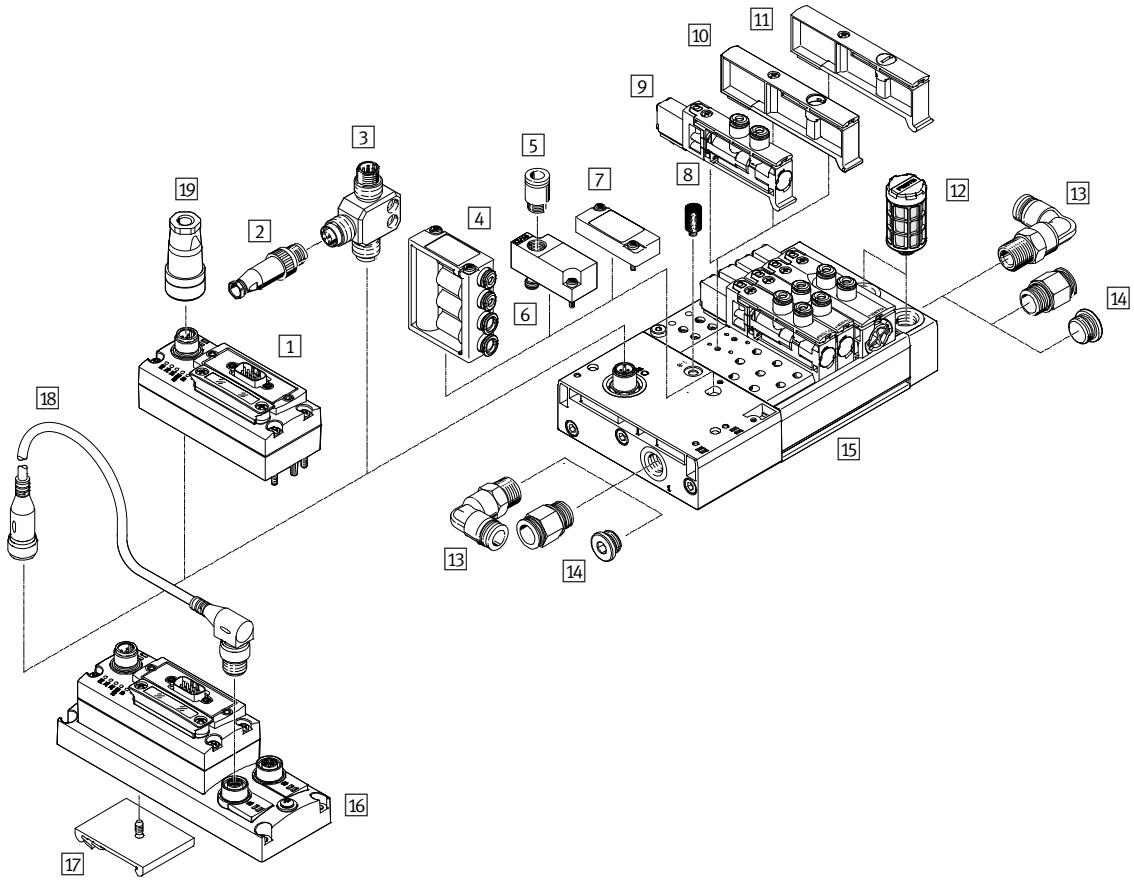
- Up to 35 valve positions/solenoid coils
- I-Port interface connection type, code: PT
- IO-Link connection type, code: LK

The electrical supply/transmission of communication data takes place via an M12 plug. The valve terminal can be equipped with 3 ... 35 valves. Up to 18 pressure zones are possible.

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

The following protocols are supported when using the associated fieldbus node CTEU:

- DeviceNet
- CANopen
- PROFIBUS DP
- EtherCAT
- CC-LINK



Accessories

			Brief description	➔ Page/Internet
1	Bus node	CTEU	–	40
2	Plug	SEA-M12	Straight, for T-adapter FB-TA	40
3	T-adapter	FB-TA	For IO-Link and load supply	40
4	Pneumatic distributor	VABF	For connecting additional distributors to the air supply (port 1)	36
5	Push-in fitting	QS	–	39
6	Selector plate	VABF	Pilot control with external pilot air (optional)	37
7	Blanking plate	VABB	For vacant position (pneumatic distributor)	36
8	Silencer	U	For venting hole	39
9	Solenoid valve	VUVB-12	–	35
10	Power supply module	VABF	For supplying pressure zones or for additional air supply	36
11	Blanking plate	VABB	For vacant position (solenoid valve)	36
12	Silencer	U	For fitting in exhaust ports	39
13	Fittings	QS	For connecting compressed air tubing with standard O.D.	39
14	Blanking plug	B	For sealing the air supply port	37
15	Manifold rail	VABM	With I-Port interface, for connecting max. 35 valves	36
16	Connecting block	CAPC-F1-E-M12	For connecting a second device with I-Port interface	41

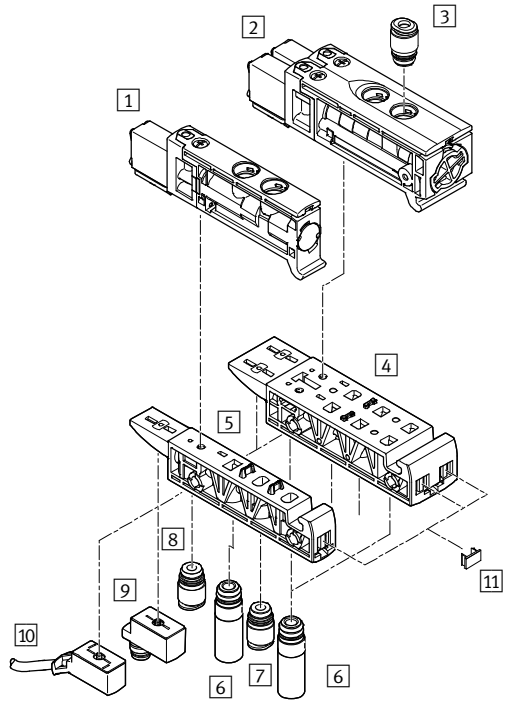
Accessories				
			Brief description	→ Page/Internet
17	H-rail mounting	CAFM-F1-H	For connecting block CAPC	41
18	Connecting cable	NEBU	–	41
19	Power supply socket	NTSD/FBSD	Power supply for fieldbus node CTEU	41
–	Separator	VABD	For duct separation in duct 1, for creating pressure zones	37

Sub-base for semi in-line valve

- Single design for single solenoid valves
- Double design for double solenoid valves

Electrical connection via connecting cable NEBV or KMYZ

and adapter (M8x1) with corresponding connecting cable.

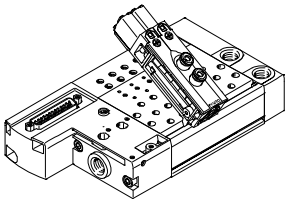


Accessories				
			Brief description	→ Page/Internet
1	Single solenoid valve	VUVB-12	–	35
2	Double solenoid valve	VUVB-12	–	35
3	Push-in fitting	QS	For port 2, 4: cartridge with push-in connector	39
4	Sub-base	VABS	Double design for individual double solenoid valve	36
5	Sub-base	VABS	Single design for individual single solenoid valve	36
6	Silencer	AMTC	For port 3, 5 (optional)	39
7	Push-in fitting	QS	For port 1: cartridge with push-in connector	39
8	Push-in fitting	QS	For port 12, 14: cartridge with push-in connector (optional)	39
9	Adapter	VAVE	M8x1 (optional), LED	40
10	Connecting cable	NEBV, KMYZ	Connecting cable (optional)	38
11	Inscription label holder	IBS-6x10	–	37

Valve terminals VTUB-12

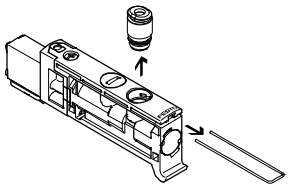
Key features – Pneumatic components

Wide range of pneumatic components



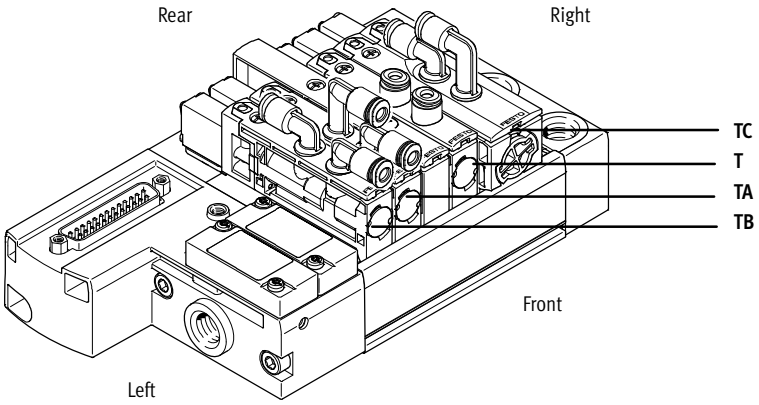
- The use of the same basic valves for the 3/2-way and 5/2-way valve function permits fast and flexible conversion and multiple use of parts.
- Flexible construction thanks to assembled and tested units or individual components as modules for individual configurations.
- Flow rates from 230 ... 400 l/min 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 (➔ 37).

Connection to 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)

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 interface 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.

Creating pressure zones

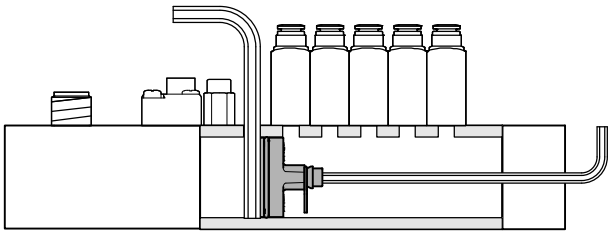
Up to 18 pressure zones can be created using the separator VABD–C8 ... if different working pressures are required. The separators are inserted at the required location in duct 1 in the manifold rail and screwed into place. The following rules apply:

- Two pressure zones can be realised without an additional power supply module (VABF-C8 ...) if there is a compressed air supply at both ends. Only one separator in duct 1 is required for this.
- A power supply module (VABF-C8 ...) is additionally required after the third pressure zone; this module occupies one valve position.
- There must be at least 2 valve positions between 2 separators.

Note

- Pressure zones can be freely configured with the VTUB-12.
- Duct separation does not result in any valve positions being lost; however, valve positions will be lost if an additional supply is required.
- If a valve terminal with duct separation is ordered via the configurator, the duct separation comes already labelled.
- Older manifold rails predating approx. mid-2013 cannot be retrofitted for the purpose of creating pressure zones.
- Further information on assembly ➔ Assembly instructions for VABD-C8-P1-D2

Duct separation



Description

Duct separation and creation of pressure zones

- Remove the end plate
- Insert an Allen key (size 4) from above at the required position in duct 1 in the manifold rail as a stop
- Using another Allen key, push separator VABD–C8 ... into duct 1 as far as it will go until it is in the appropriate position and then turn the Allen key to secure in place
- Fit the end plate
- Affix the enclosed symbol labels to the duct separation

Design

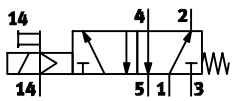
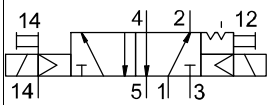
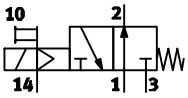
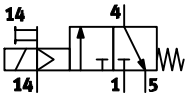
Valve replacement

The valves are attached to the aluminium manifold rail using one screw, which means that they can be easily replaced. Use of high-quality polymer guarantees minimum weight and maximum performance.

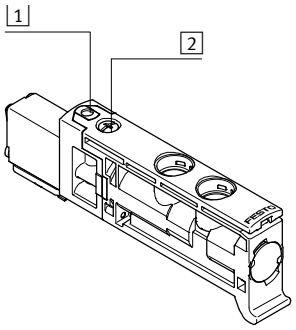
Expansion

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 • Mechanical spring return • Non-reversible • Not suitable for vacuum
J		–	■	5/2-way valve, double solenoid • Non-reversible • Not suitable for vacuum
N		■	–	3/2-way valve, single solenoid • Normally open • Mechanical spring return • Non-reversible • Not suitable for vacuum
K		■	–	3/2-way valve, single solenoid • Normally closed • Mechanical spring return • Non-reversible • Not suitable for vacuum

Display and operation

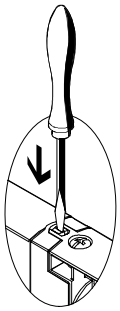


1 Manual override (non-detenting, non-detenting/detenting)
2 Screw for valve assembly

The manual override enables the valve to be switched without electronic control or power supply.

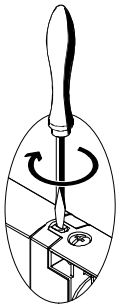
Manual override

Manual override with automatic reset (non-detenting)



Press in the stem of the manual override with a pointed object or screwdriver.
⇢ The valve is switched.
Remove the pointed object or screwdriver.
Spring force pushes the stem of the manual override back.
⇢ Valve returns to normal position.

Manual override with lock (non-detenting/detenting)



Press in the stem of the manual override with a pointed object or screwdriver until the valve switches and then turn the stem clockwise by 90° until the stop is reached.
⇢ The valve remains switched.
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 manual override back.
⇢ Valve returns to normal position.

Note

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

Valve terminals VTUB-12

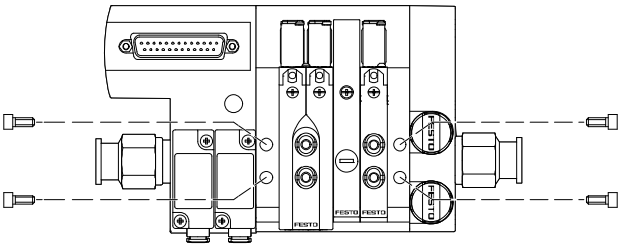
Key features – Assembly

Valve terminal assembly

Sturdy valve terminal assembly thanks to:

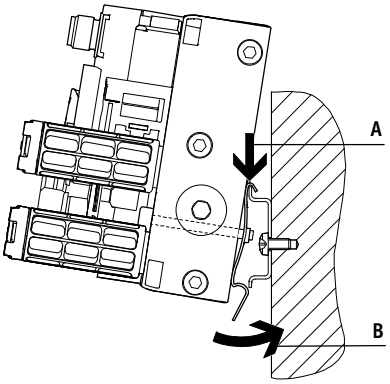
- Through-holes for wall mounting
- H-rail mounting

Wall mounting



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

H-rail mounting



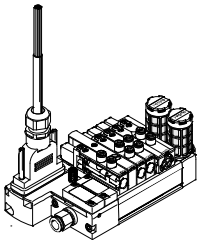
The H-rail mounting VAME-T-M5 consists of two mounting clips. These are attached to the manifold rail on the left and right (M5 screws). The lower through-holes on the manifold rail are used for this.

The valve terminal VTUB-12 prepared in this way is lowered onto the H-rail from above (arrow A) and clipped into the H-rail at the bottom (arrow B).

Note

- Note the max. tightening torque of 2 Nm (± 25%) for the screws for mounting the H-rail.
- Only horizontal H-rail mounting is permissible.
- Mounting only possible on H-rail TH 35-15 to EN 50022.
- Vibration/shock loads are not permissible with H-rail mounting.

Multi-pin plug connection

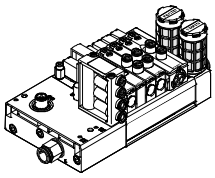


Control signals from the controller to the valve terminal are transmitted via a pre-assembled multi-core cable, which substantially reduces installation time.

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

Versions
- Sub-D connection

I-Port interface/IO-Link



IO-Link

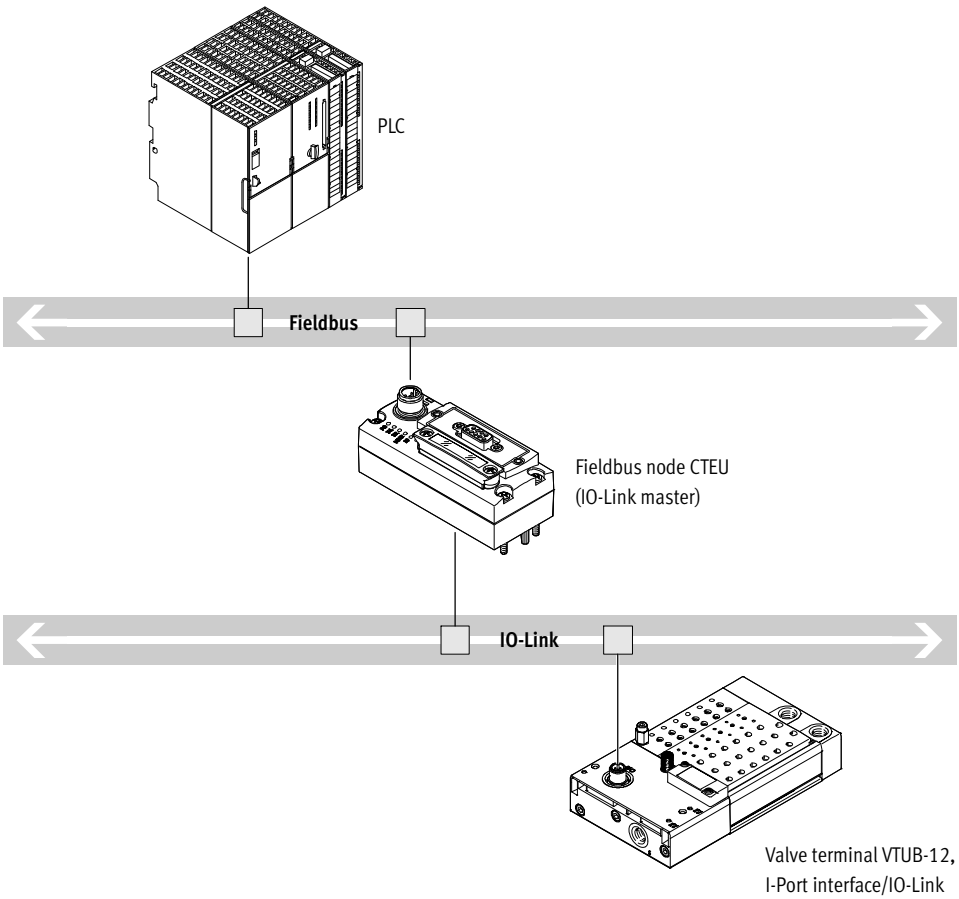
IO-Link is an interface that supplies data for communication in addition to the power supply.
An IO-Link system consists of an IO-Link master and IO-Link devices. The IO-Link master offers the interface to the higher-order controller (PLC) and controls communication with the connected IO-Link devices.

One device with IO-Link (e.g. an IO-Link valve terminal from Festo) can be connected to each port on an IO-Link master.

I-Port

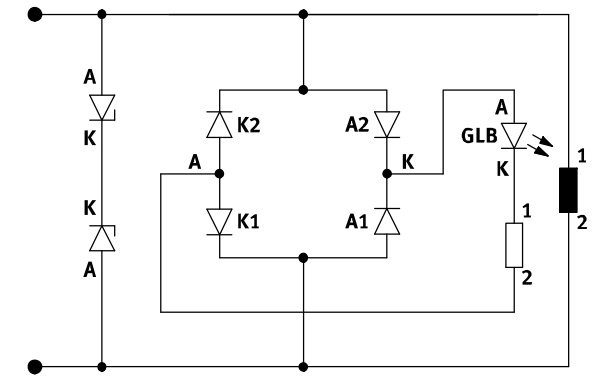
The Festo-specific I-Port interface based on IO-Link offers the following connection options:
- Directly at the fieldbus, by mounting a fieldbus node CTEU
- Connection to a higher-order I-Port master from Festo

Overview



Protective circuit

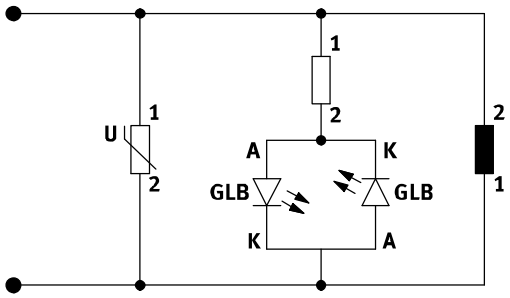
Manifold rail with LED signal status display, multi-pin plug, 2-20 valve positions



Note

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

Manifold rail with LED signal status display, multi-pin plug, 21-35 valve positions



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)

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

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 respectively.

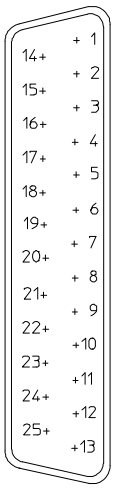
The valves are switched by means of positive or negative logic (positive switching or negative switching).
Mixed operation is not permitted.

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

Note

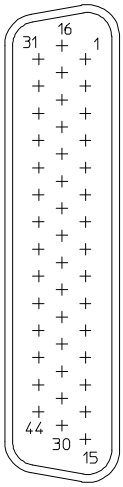
A double solenoid valve occupies two valve positions.
With 17 or more valve positions, the number of available valve positions for double solenoid valves decreases.

Pin allocation – Sub-D plug, 25-pin

	Pin	Address/coil	15-wire, NEBV-S1...25-K-...-LE15	25-wire, NEBV-S1...25-K-...-LE25
			Wire colour[1] of connecting cable	
	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	22	0 V/24 V	–	BN BU
The drawing shows the view onto the pins of the Sub-D plug.	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

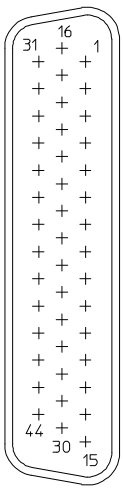
1) To IEC 757

Pin allocation – Sub-D plug, 44-pin

	NEBV-S1...44-K-...-LE39						
	Pin	Address	Wire colour[1)] Connecting cable		Pin	Address	Wire colour[1)] 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
- - Note	20	19	PK BN		42	0 V	GY BU
The drawing shows the view onto the pins of the Sub-D plug.	21	20	WH BU		43	0 V	PK BU
	22	21	BN BU		44	0 V	GY RD

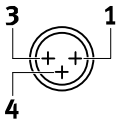
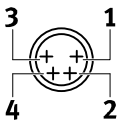
1) To IEC 757

Pin allocation – Sub-D plug, 44-pin

	NEBV-S1...44-K-...-LE44						
	Pin	Address	Wire colour[1)] Connecting cable		Pin	Address	Wire colour[1)] 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	35	YE BK
	15	14	WH YE		37	35	GY BU
	16	15	YE BN		38	37	PK BU
	17	16	WH GY		39	38	GY RD
	18	17	GY BN		40	39	PK RD
	19	18	WH PK		41	0 V	GY BK
- - Note	20	19	PK BN		42	0 V	PK BK
The drawing shows the view onto the pins of the Sub-D plug.	21	20	WH BU		43	0 V	BU BK
	22	21	BN BU		44	0 V	RD BK

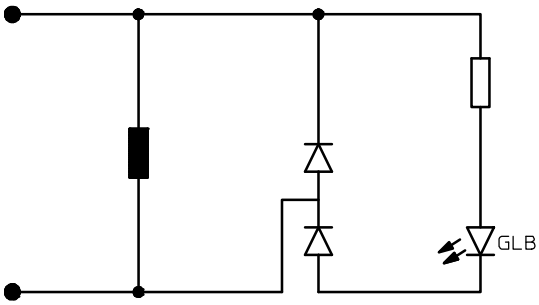
1) To IEC 757

Pin allocation – Adapter M8x1 with LED

	Pin	
Round plug, M8, 3-pin		
	VAVE-C8-1R8	
	1	Not used
	3	0 V
	4	24 V
Round plug, M8, 4-pin		
	VAVE-C8-1R1	
	1	Not used
	2	Not used
	3	0 V
	4	24 V

Protective circuit

Manifold rail with I-Port interface



I-Port interface/IO-Link

The valve terminal VTUB-12 can be connected as follows via the I-Port connection:
- 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 assignment applies in this case:
- Less significant valve position (address) for coil 14
- More significant valve position (address) for coil 12

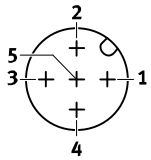
Addresses are allocated in ascending order without gaps, from left to right. The address allocation is independent of whether blanking plates or valves are used.

Note

More information on CTEU
➔ cteu

Additionally required IODD for IO-Link mode
➔ www.festo.com

Pin allocation – I-Port interface/IO-Link[1)]

	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) Plug, 5-pin, M12, A-coded

Equipment

Operate system equipment with unlubricated compressed air if possible. Festo valves and cylinders are designed so that, if used as intended, they will not require additional lubrication and will still achieve a long service life.
The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air. If possible, do not operate 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/m^3 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/m^3 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 VTUB-12

Technical data – Valve terminal VTUB-12 with multi-pin plug connection

Voltage
24 V DC

Pressure
+2.8 ... +8 bar

Temperature range
–5 ... +60 °C

General technical data						
Valve function			3/2C	3/2U	5/2-way, single solenoid	5/2-way, double solenoid
Design			Poppet valve with spring return			Poppet valve with self-holding function
Valve function			Closed	Open	Monostable	Bistable
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		35	17
Max. number of pressure zones			18			
Standard nominal flow rate	qnN	[l/min]	400			
Pneumatic connection		1, 3, 5	G¼			
		2, 4	QS-4 or QS-6			
		12, 14	G⅛			

Operating and environmental conditions						
Valve function			3/2C	3/2U	5/2-way, single solenoid	5/2-way, double solenoid
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)			
Operating pressure	Internal pilot air	[bar]	+2 ... +8	+2.8 ... +8		
	External pilot air	[bar]	0 ... +8			
Pilot pressure		[bar]	+2 ... +8	+2.8 ... +8		
Ambient temperature		[°C]	–5 ... +60			
Temperature of medium		[°C]	–5 ... +60			

Safety data		
CE marking (see declaration of conformity)		To EU EMC Directive
Max. positive test pulse with 0 signal	[µs]	0.8 ms
Max. negative test pulse with 1 signal	[µs]	0.3 ms
Resistance to shocks		Shock test with severity level 1 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6
Most reliable component		Yes

Product weight		
Approx. weight		[g]
Valves		
• 5/2-way single solenoid (code M), ducted solenoid exhaust		27.8
• 5/2-way double solenoid (code J), ducted solenoid exhaust		57.4
• 5/2-way single solenoid (code M), unducted solenoid exhaust		27.5
• 5/2-way double solenoid (code J), unducted solenoid exhaust		57.1
• 3/2-way closed (code K), ducted/unducted solenoid exhaust		26.3
• 3/2-way open (code N), unducted solenoid exhaust		28.1
• 3/2-way open (code N), ducted solenoid exhaust		29.4
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	1093
	18 valve positions	1195
• Multi-pin plug with Sub-D plug, 44-pin	20 valve positions	1296
	24 valve positions	1500
	28 valve positions	1704
	32 valve positions	1907
	35 valve positions	2060
Blanking plate for vacant position		13.8
Power supply module for pressure zones or additional supply		13.8
Separator for duct separation		9.8
Pneumatic distributor Q4, Q6, Q4-Q6		65.6, 59, 62.3
Blanking plate for pneumatic distributor		8.4
Selector plate		38.8
Sub-base for individual valve, single width		15
Sub-base for individual valve, double width		30

Electrical data		
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

Materials	
Manifold rail	Wrought aluminium alloy
Solenoid valve housing	PA reinforced
Solenoid valve seals	NBR, TPE-U
Solenoid valve piston spool	Wrought aluminium alloy
Blanking plate housing, additional supply housing	PA reinforced
Separator for duct separation	Beryllium bronze, brass
Pneumatic distributor, pneumatic distributor blanking plate	PA reinforced
Selector plate	Wrought aluminium alloy
Sub-base for individual valve	PA reinforced
Note on materials	RoHS-compliant
Note on materials, power supply module	RoHS-compliant, free of copper and PTFE

Valve terminals VTUB-12

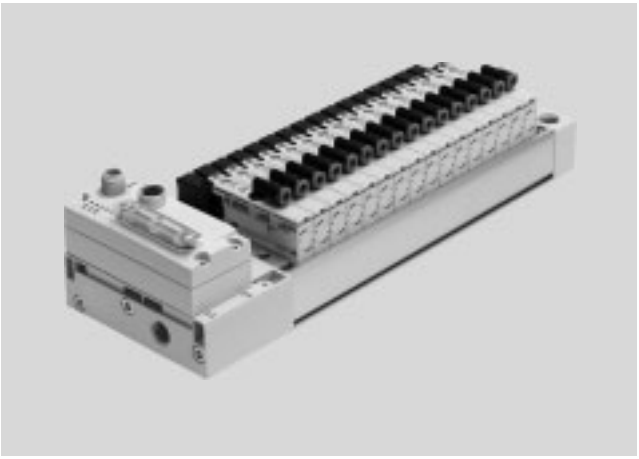
Technical data – Valve terminal VTUB-12 with I-Port interface, IO-Link

FESTO

Voltage
24 V DC

Pressure
+2.8 ... +8 bar

Temperature range
–5 ... +60 °C



General technical data						
Valve function			3/2C	3/2U	5/2-way, single solenoid	5/2-way, double solenoid
Design			Poppet valve with spring return			Poppet valve with self-holding function
Valve function			Closed	Open	Monostable	Bistable
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		35	17
Max. number of pressure zones			18			
Standard nominal flow rate	qnN	[l/min]	400			
Pneumatic connection		1, 3, 5	G¼			
		2, 4	QS-4 or QS-6			
		12, 14	G⅛			

Operating and environmental conditions						
Valve function			3/2C	3/2U	5/2-way, single solenoid	5/2-way, double solenoid
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)			
Operating pressure	Internal pilot air	[bar]	+2 ... +8	+2.8 ... +8		
	External pilot air	[bar]	0 ... +8			
Pilot pressure		[bar]	+2 ... +8	+2.8 ... +8		
Ambient temperature		[°C]	–5 ... +50			
Temperature of medium		[°C]	–5 ... +50			

Note

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

Safety data		
CE marking (see declaration of conformity)		To EU EMC Directive
Max. positive test pulse with 0 signal	[µs]	0.8 ms
Max. negative test pulse with 1 signal	[µs]	0.3 ms
Resistance to shocks		Shock test with severity level 1 in accordance with FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 1 in accordance with FN 942017-4 and EN 60068-2-6
Tried and tested component		Yes

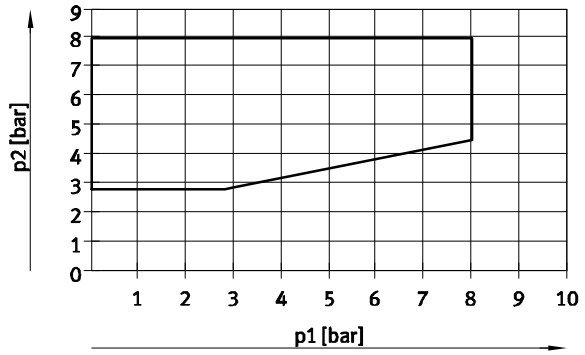
Product weight		
Approx. weight		[g]
Valves		
• 5/2-way single solenoid (code M), ducted solenoid exhaust		27.8
• 5/2-way double solenoid (code J), ducted solenoid exhaust		57.4
• 5/2-way single solenoid (code M), unducted solenoid exhaust		27.5
• 5/2-way double solenoid (code J), unducted solenoid exhaust		57.1
• 3/2-way closed (code K), ducted/unducted solenoid exhaust		26.3
• 3/2-way open (code N), unducted solenoid exhaust		28.1
• 3/2-way open (code N), ducted solenoid exhaust		29.4
• 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	1040
	16 valve positions	1145
	18 valve positions	1251
	20 valve positions	1358
	24 valve positions	1562
	28 valve positions	1775
	32 valve positions	1982
	35 valve positions	2138
Blanking plate for vacant position		13.8
Power supply module for pressure zones or additional supply		13.8
Separator for duct separation		9.8
Pneumatic distributor Q4, Q6, Q4-Q6		65.6, 59, 62.3
Blanking plate for pneumatic distributor		8.4
Selector plate		38.8
Sub-base for individual valve, single width		15
Sub-base for individual valve, double width		30

Electrical data			
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

Materials	
Manifold rail	Wrought aluminium alloy
Solenoid valve housing	PA reinforced
Solenoid valve seals	NBR, TPE-U
Solenoid valve piston spool	Wrought aluminium alloy
Blanking plate housing, additional supply housing	PA reinforced
Separator for duct separation	Beryllium bronze, brass
Pneumatic distributor, pneumatic distributor blanking plate	PA reinforced
Selector plate	Wrought aluminium alloy
Sub-base for individual valve	PA reinforced
Note on materials	RoHS-compliant

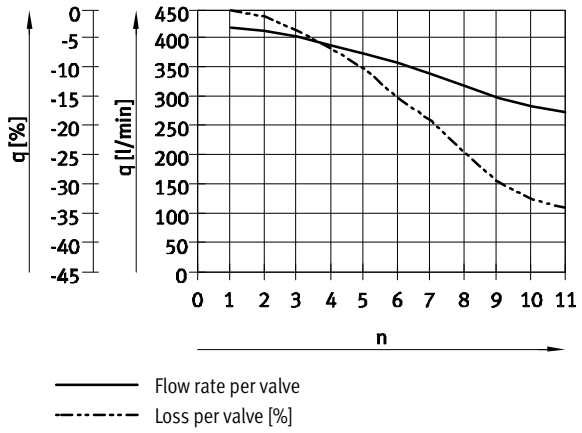
Valve switching times [ms]			
Valve function	3/2-way	5/2-way, single solenoid	5/2-way, double solenoid
On	6	6	–
Off	14	14	–
Changeover	–	–	10

Pilot pressure as a function of operating pressure (operating pressure with external pilot air), pilot pressure 5/2 and 3/2U



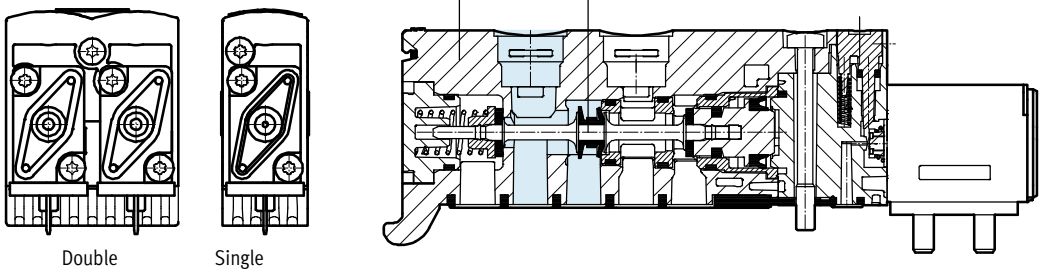
Pilot pressure as a function of operating pressure (operating pressure with external pilot air), pilot pressure 3/2C

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



Materials

Sectional view – Valves



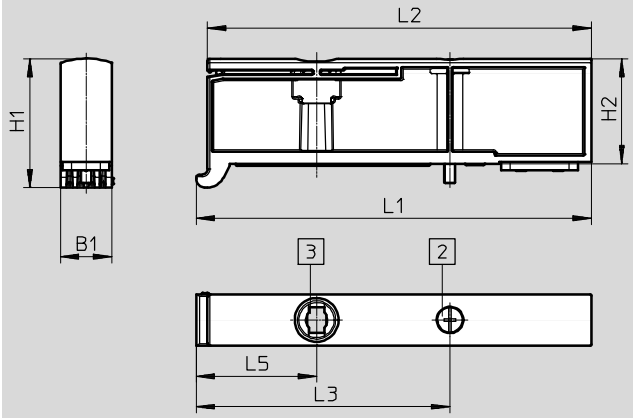
Double solenoid

Single solenoid

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

Dimensions – Power supply module

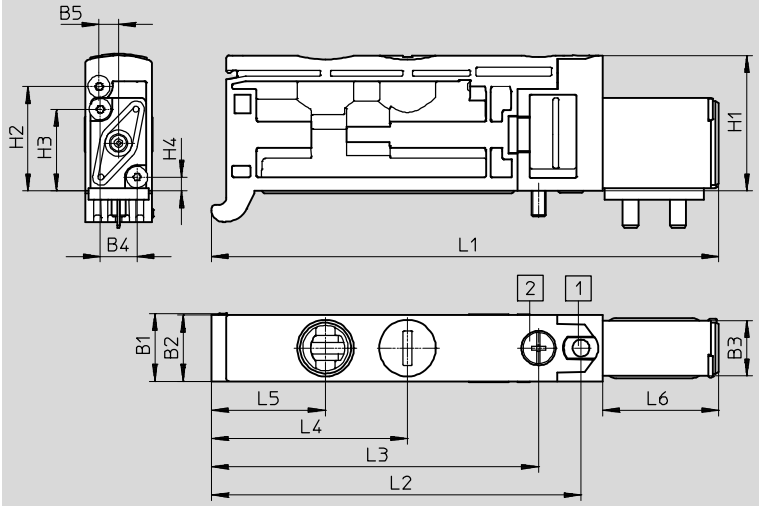
Download CAD data ➔ **www.festo.com**



2 M2.5 mounting screw
3 Push-in connector QSP…10…-

Type	B1	H1	H2	L1	L2	L3	L5
VABF-C8-12-P3A5-QX	11.7	29.4	23.9	89.9	87.3	57.8	27.1

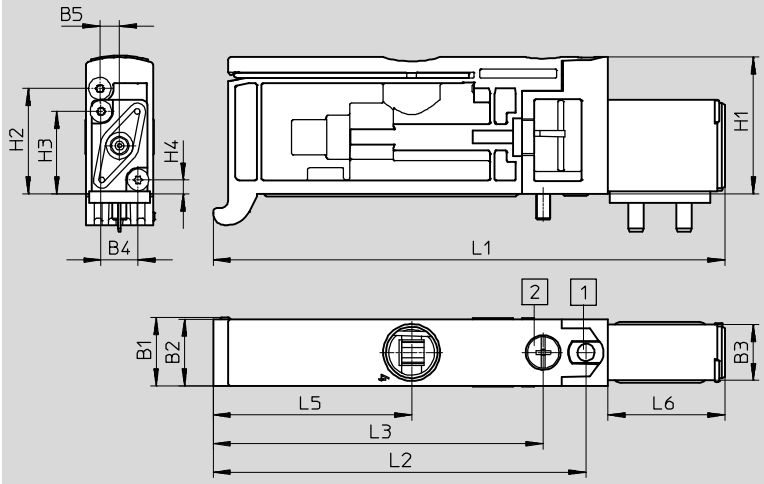
Dimensions – 3/2-way valve, single solenoid, normally open Download CAD data ➔ **www.festo.com**



1 Manual override non-detenting or non-detenting/detenting
2 M2.5 mounting screw

Type	B1	B2	B3	B4	B5	H1	H2	H3	H4	L1	L2	L3	L4	L5	L6
VUVB-ST12-M32U-...-QX-1T1	12	11.7	9.8	6.5	3.5	24	18.4	14.5	2.5	89.6	65.3	57.8	34.7	20.2	20.5
VUVB-ST12-M32U-...-QX-D-1T1										89.9					20.8

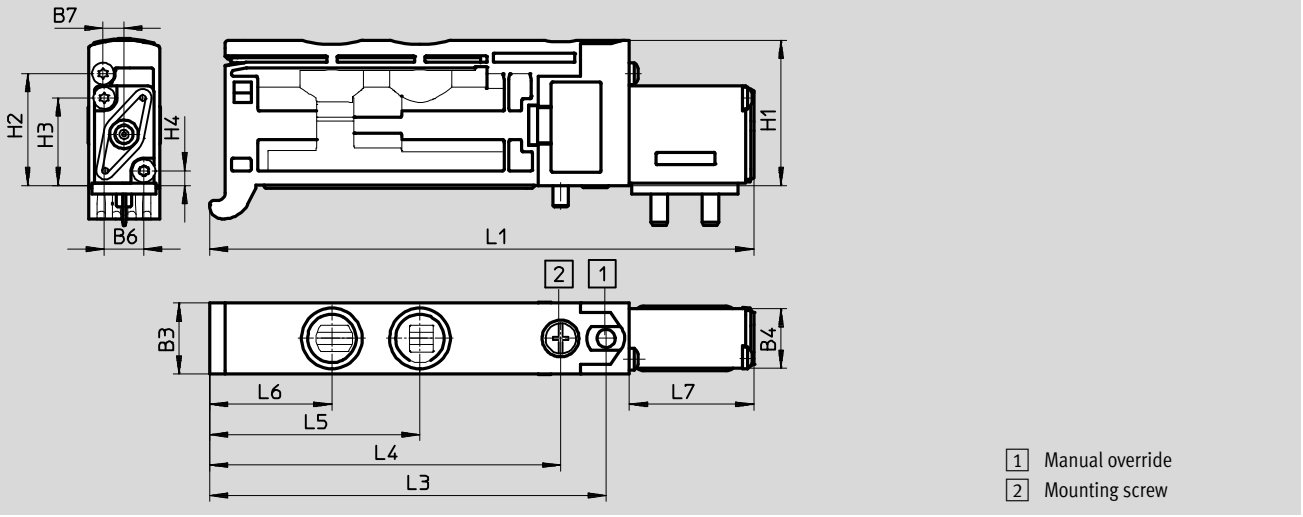
Dimensions – 3/2-way valve, single solenoid, normally closed Download CAD data ➔ **www.festo.com**



1 Manual override non-detenting or non-detenting/detenting
2 M2.5 mounting screw

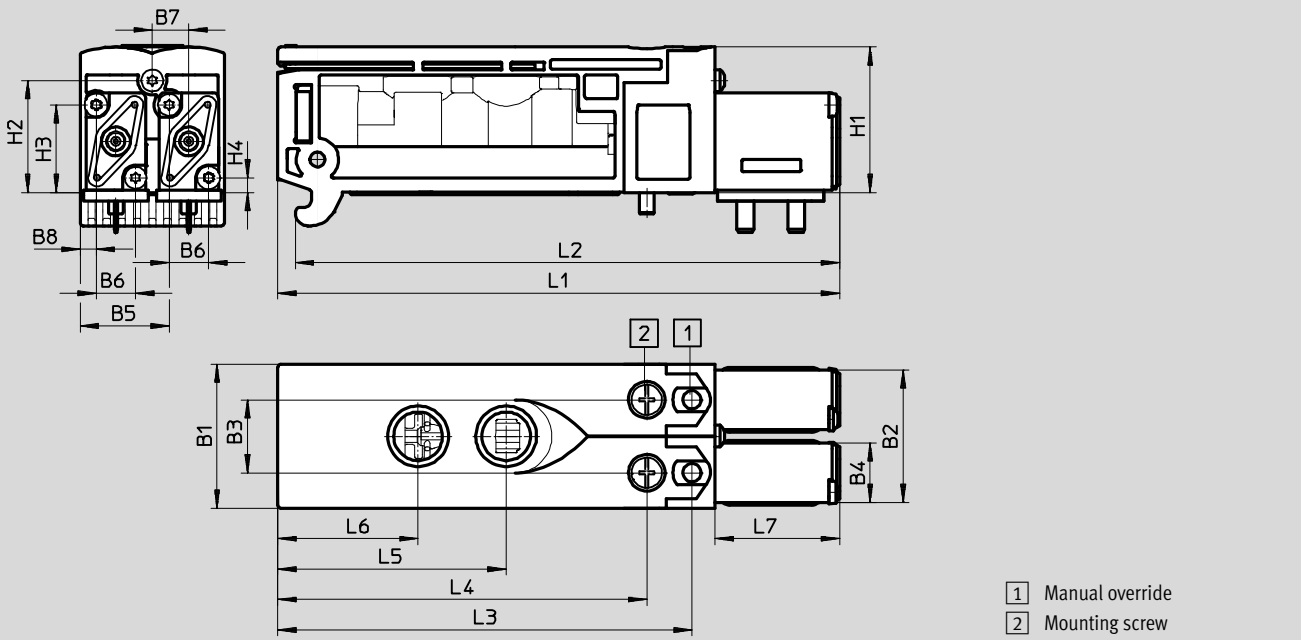
Type	B1	B2	B3	B4	B5	H1	H2	H3	H4	L1	L2	L3	L5	L6
VUVB-ST12-M32C-...-QX-1T1	12	11.7	9.8	6.5	3.5	24	18.5	14.5	2.5	89.6	65.3	57.8	34.8	20.5
VUVB-ST12-M32C-...-QX-D-1T1										89.9				20.8

Dimensions – 5/2-way valve, single solenoid Download CAD data ➔ **www.festo.com**



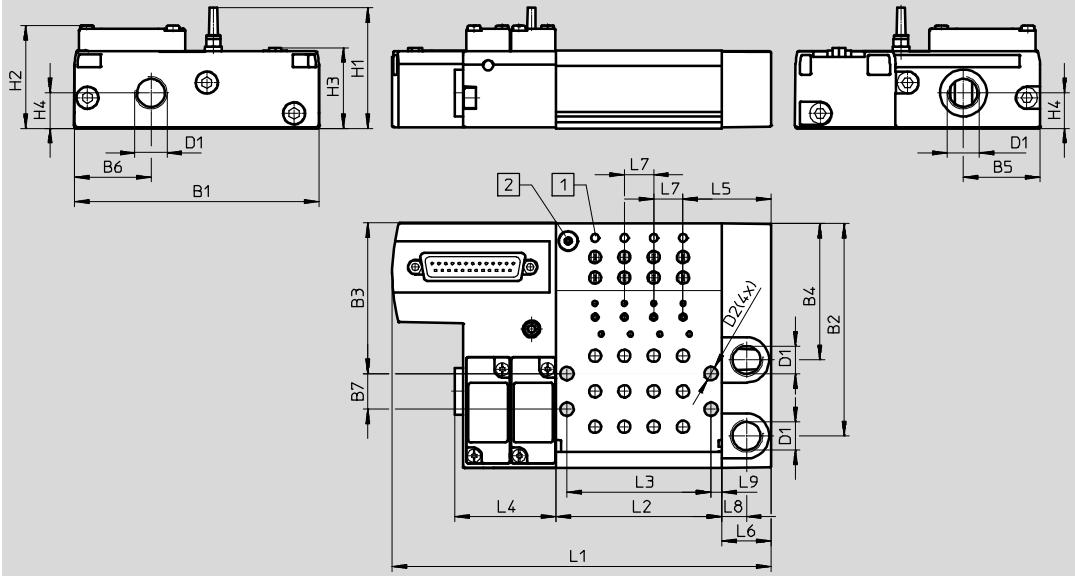
Type	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	L1	L2	L3	L4	L5	L6	L7
VUVB-ST12-M52-MZH-QX-1T1	–	–	12	9.8	–	6.5	3.5	24	18.5	14.5	2.5	89.6	–	65.3	57.8	34.7	20.2	20.5
VUVB-ST12-M52-MZH-QX-D-1T1												89.9						20.8

Dimensions – 5/2-way valve, double solenoid Download CAD data ➔ **www.festo.com**



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

Dimensions – Manifold rail with multi-pin plug Download CAD data ➔ **www.festo.com**



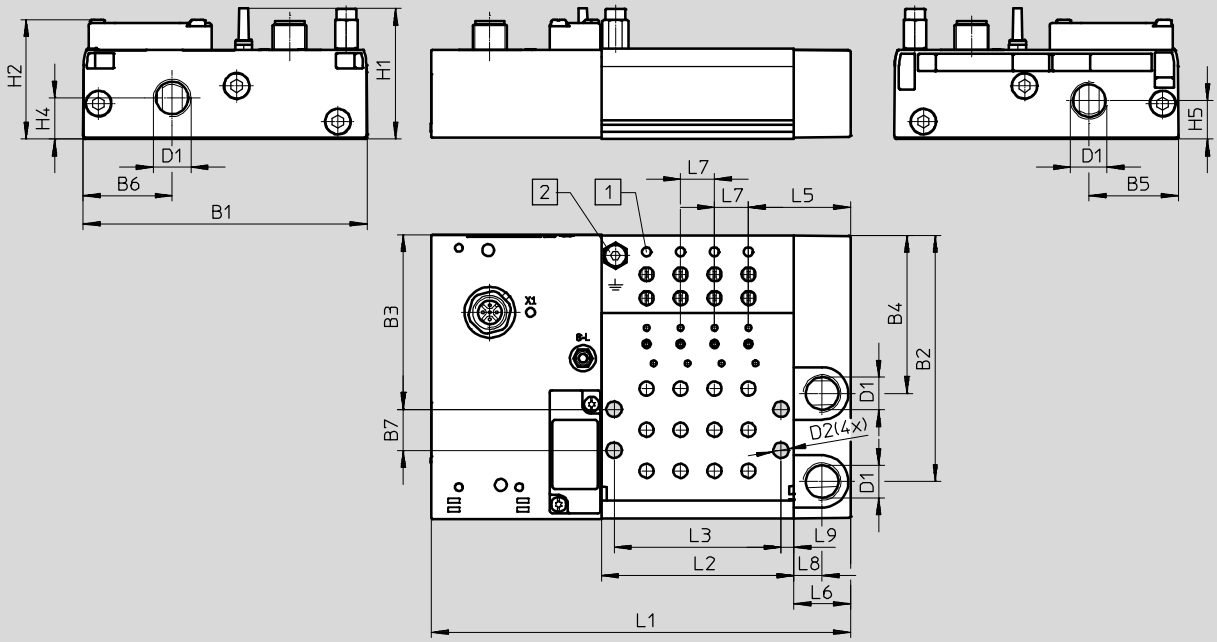
1 LED signal status display (optional)
2 M4 earthing screw

n Number of valve positions (2 ... 35)

Type	B1	B2	B3	B4	B5	B6	B7	D1	D2	H1	H2	H3	H4
VABM-C8-12E	100	87	61.5	55.9	31.5	31.5	14.5	G¼	5.5	49.3	42.2	33	14.5

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9
VABM-C8-12E	(nx12)+107	(nx12)+20	(nx12)+11	41.5	36	20	12	10	4.5

Dimensions – Manifold rail with I-Port interface Download CAD data ➔ **www.festo.com**



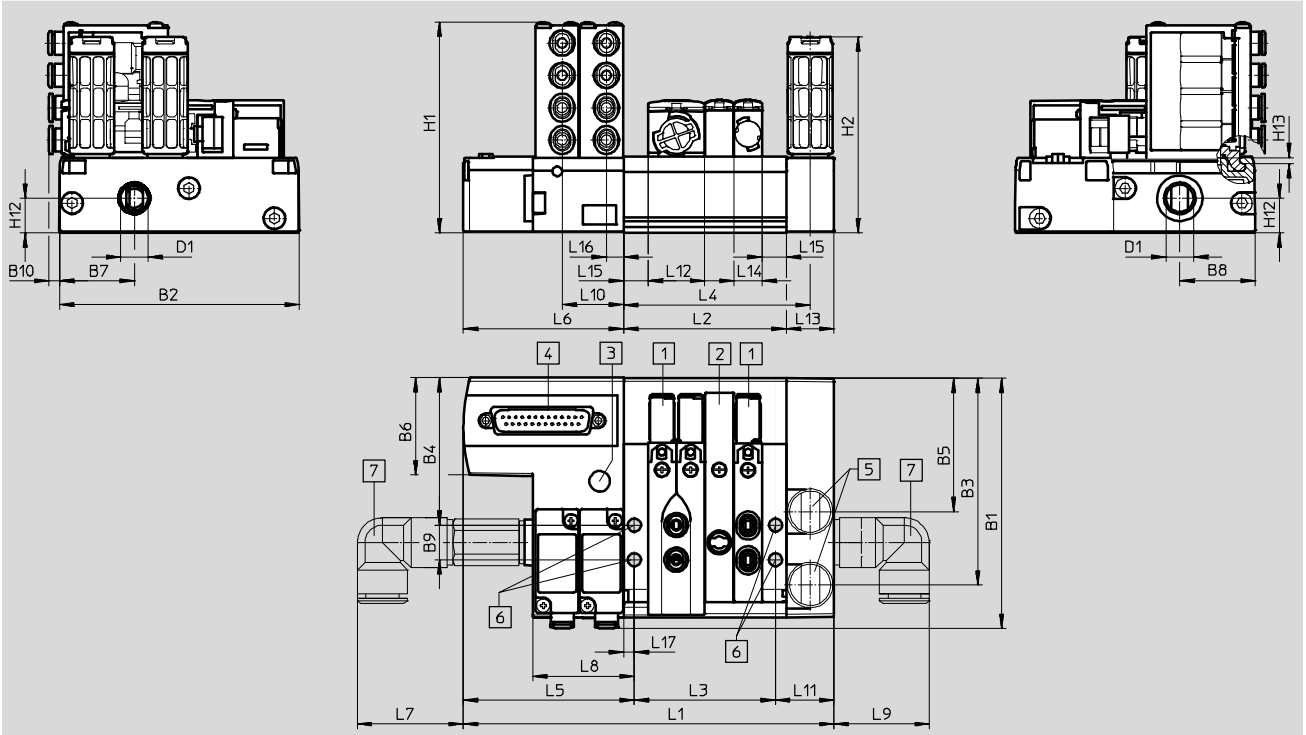
1 LED signal status display
2 M4 earthing screw
n Number of valve positions (3 … 35)

Type	B1	B2	B3	B4	B5	B6	B7	D1	D2-Ø-	H1	H2	H4	H5
VTUB-12	100	87	61.5	55.9	31.5	31.5	14.5	G¼	5.5	46.1	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

Dimensions – Valve terminal Download CAD data ➔ **www.festo.com**

With electrical multi-pin plug



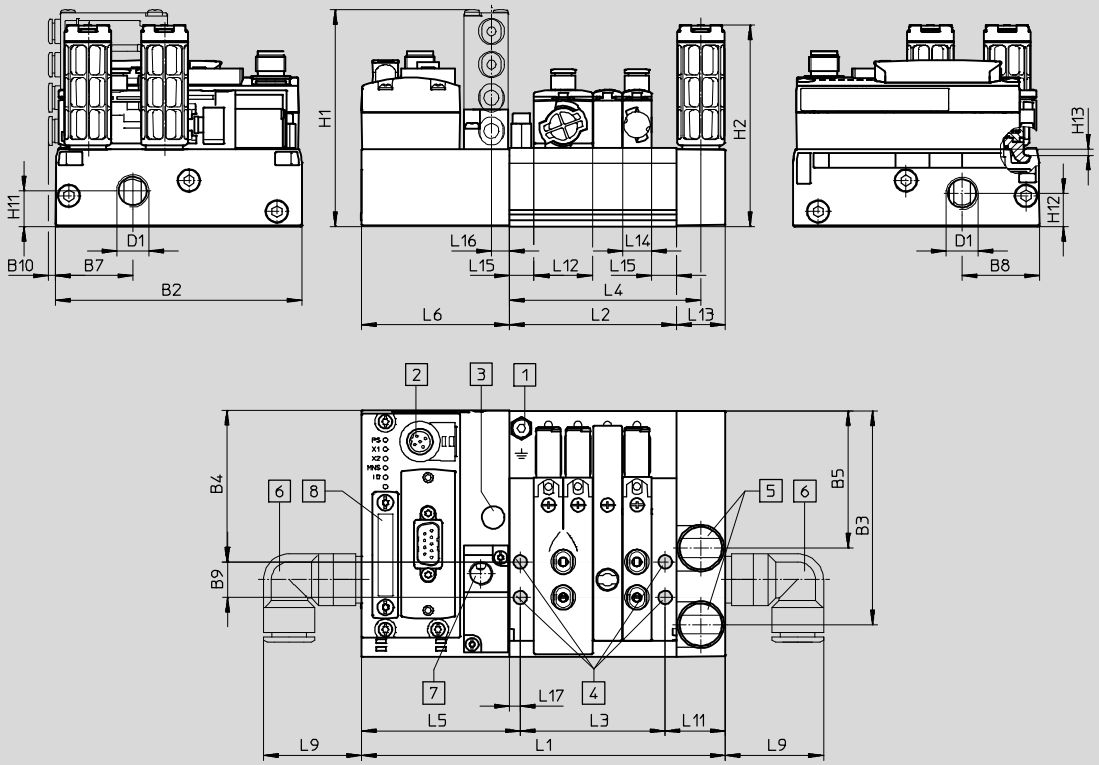
1 5/2-way valve
2 Blanking plate for vacant position
3 Silencer, threaded connection M5
4 Sub-D plug, 25-pin or 44-pin with 21 or more solenoid coils
5 Silencer, threaded connection G¼
6 Hole for wall mounting, ∅ 5.5 mm
7 Fittings for air supply port
n Number of valve positions (2 ... 35)

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17
VTUB-12	(nx12)+107 ± 1.5	(nx12)+20	(nx12)+11	78	71.5	67	32.4 ± 1	42.5	40 ± 1	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 ± 2	100.4 ± 1.1	86.5	61.5	55.9	40.5	31.5	31.5	14.5	2.8	G¼	88.2 ± 1	82 ± 1	14.5	2.5

Dimensions – Valve terminal Download CAD data ➔ **www.festo.com**

With I-Port interface, fieldbus node CTEU

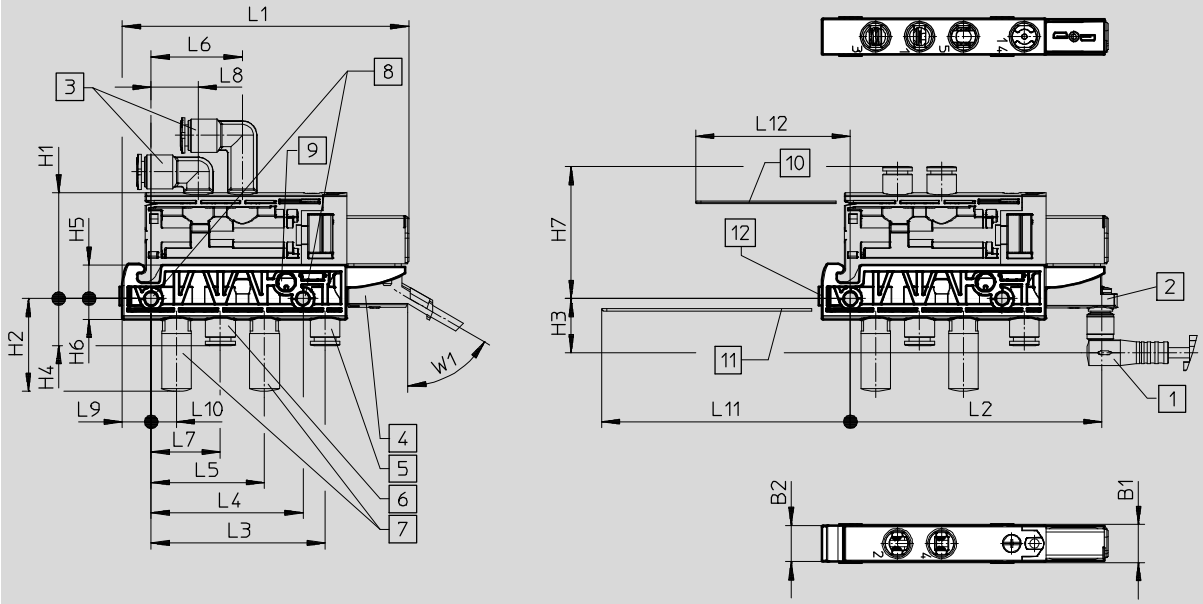


1 M4 earthing screw
2 M12 plug, 5-pin
3 Silencer, threaded connection M5
4 Holes for mounting ∅ 5.5
5 Silencer, threaded connection G1/4
6 Fittings for air supply port
7 External pilot air port 12/14, G1/8
8 Bus node CTEU
n Number of valve positions (3 … 35)

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	G1/4	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

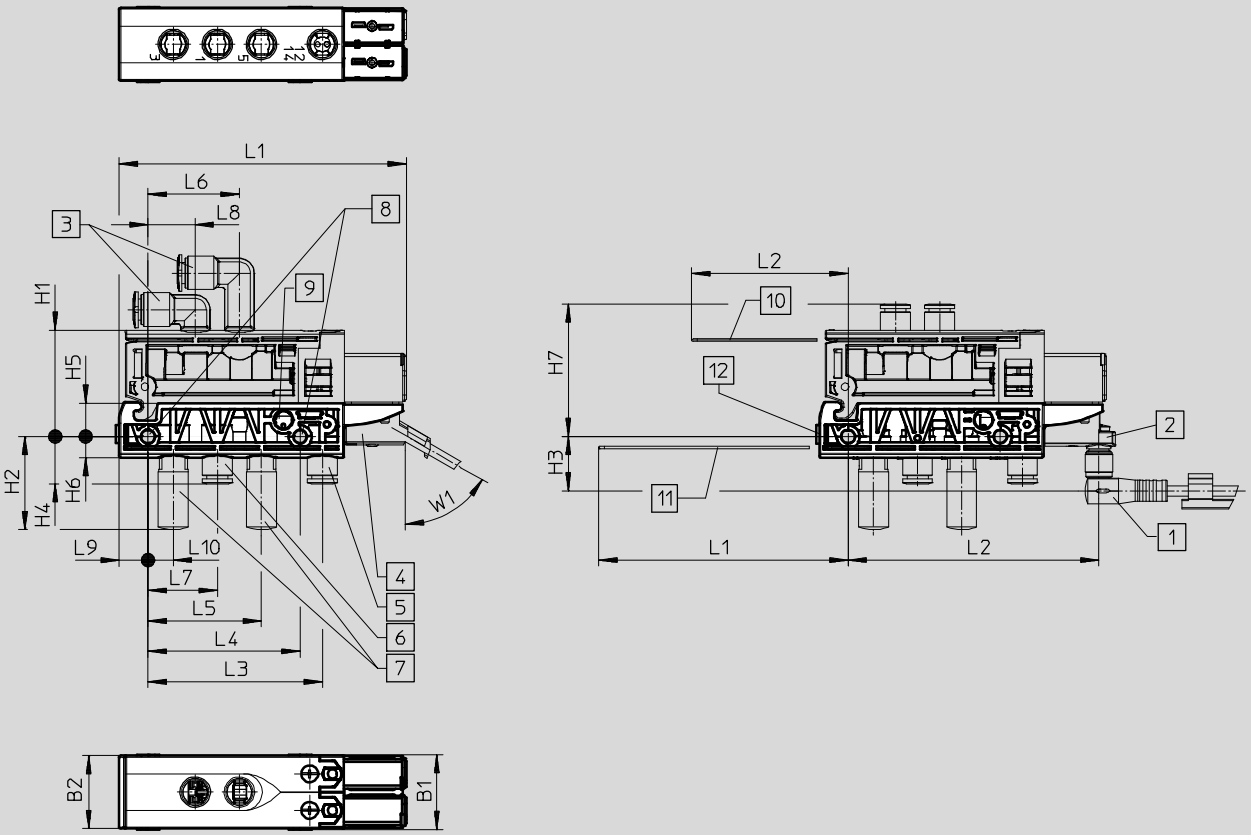
Dimensions – Sub-base for semi in-line valve (single solenoid) Download CAD data ➔ **www.festo.com**



1 Connecting cable (optional)
2 Adapter M8x1 (optional)
3 Port 2, 4: cartridge with push-in connector
4 Connecting cable NEBV or 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 IBS6x10 (not included in the scope of delivery)

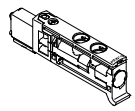
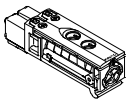
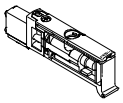
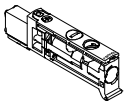
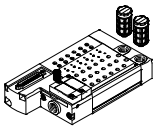
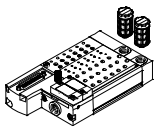
Type	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	W1
VABS-C8-12XB-QX-B	12.6	11.9	34.9	30.6	17.9	15.5	11	6.9	94.5	82.9	57.3	50	37.3	30	22.8	15.5	9.5	8.3	82	51	60°
VABS-C8-12XB-QX																					

Dimensions – Sub-base for semi in-line valve (double solenoid) Download CAD data ➔ **www.festo.com**

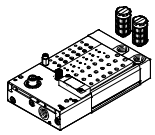
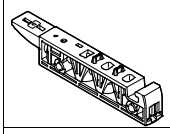
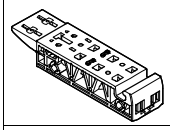
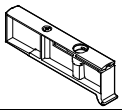


1 Connecting cable (optional)
2 Adapter M8x1 (optional)
3 Port 2, 4: cartridge with push-in connector
4 Connecting cable NEBV or KMYZ (optional)
5 Port 12, 14: cartridge with push-in connector (optional)
6 Port 1: cartridge with push-in connector
7 Port 3, 5: silencer AMTC-P-PC10 (optional)
8 Holes for 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 IBS6x10 (not included in the scope of delivery)

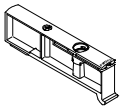
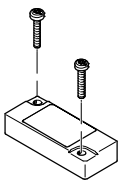
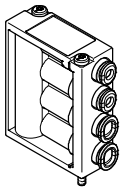
Type	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	W1
VABS-C8-12XB-QX-B	24.6	23.9	34.9	30.6	17.9	15.5	11	6.9	94.5	82.9	57.3	50	37.3	30	22.8	15.5	9.5	8.3	82	51	60°
VABS-C8-12XB-QX																					

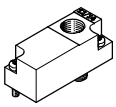
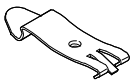
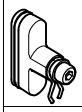
Ordering data					
	Code	Valve function	Solenoid exhaust air	Part No.	Type
Solenoid valves					
	M	5/2-way valve, single solenoid, manual override non-detenting	Unducted	**557649**	**VUVB-ST12-M52-MZH-QX-1T1**
			Ducted	**558369**	**VUVB-ST12-M52-MZH-QX-D-1T1**
		5/2-way valve, single solenoid, manual 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**
	K	3/2-way valve, single solenoid, closed, manual override non-detenting	Unducted	**575997**	**VUVB-ST12-M32C-MZH-QX-1T1**
			Ducted	**575998**	**VUVB-ST12-M32C-MZH-QX-D-1T1**
		3/2-way valve, single solenoid, closed, manual override non-detenting/detenting	Unducted	**576001**	**VUVB-ST12-M32C-MZD-QX-1T1**
			Ducted	**576002**	**VUVB-ST12-M32C-MZD-QX-D-1T1**
	N	3/2-way valve, single solenoid, open, manual override non-detenting	Unducted	**575999**	**VUVB-ST12-M32U-MZH-QX-1T1**
			Ducted	**576000**	**VUVB-ST12-M32U-MZH-QX-D-1T1**
		3/2-way valve, single solenoid, open, manual override non-detenting/detenting	Unducted	**576003**	**VUVB-ST12-M32U-MZD-QX-1T1**
			Ducted	**576004**	**VUVB-ST12-M32U-MZD-QX-D-1T1**
Manifold rail					
	–	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**

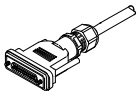
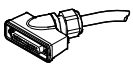
Ordering data

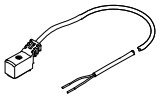
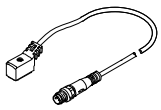
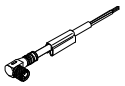
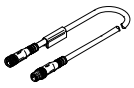
	Code	Description	Valve positions	Part No.	Type
Manifold rail					
	PT/LK	Manifold rail with I-Port interface	4	**1247975**	**VABM-C8-12E-G14-4-PT-L**
			6	**1247976**	**VABM-C8-12E-G14-6-PT-L**
			8	**1247977**	**VABM-C8-12E-G14-8-PT-L**
			10	**1247978**	**VABM-C8-12E-G14-10-PT-L**
			12	**1247979**	**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**
Sub-base for individual valve					
	–	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**
Power supply module					
	S	For additional air supply or for supplying pressure zones (operating pressure 0 ... +8 bar), pneumatic connection prepared for cartridge	1	**1894888**	**VABF-C8-12-P3A5-QX**

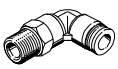
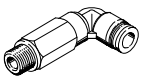
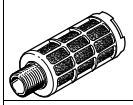
Ordering data

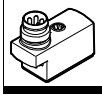
	Code	Description	Part No.	Type
Blanking plate				
	L	Blanking plate for vacant valve position	**562461**	**VABB-C8-12-ET**
	–	Blanking plate for pneumatic distributor position	**562460**	**VABB-C8-12-A**
Pneumatic distributor				
	AL	Push-in connector 4 mm	**562457**	**VABF-C8-12-V1P4-Q4**
	BL	Push-in connector 6 mm	**562458**	**VABF-C8-12-V1P4-Q6**
	CL	Push-in connector 4 and 6 mm	**562459**	**VABF-C8-12-V1P4-Q4-Q6**

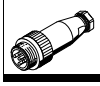
Ordering data					
	Code	Description	Packaging unit	Part No.	Type
Selector plate					
	SL	Pneumatic connection G1/8	1 piece	**1210305**	**VABF-C8-12-P6-G18-Z**
H-rail mounting					
	H	For mounting the valve terminal VTUB-12 on a standard H-rail TH 35-15 to EN 50022. (Use the following screws for mounting: M5x40 to DIN 912, 2 pieces)	2 pieces	**2636436**	**VAME-T-M5**
Separator					
	SP	For creating pressure zones (duct separation in duct 1)	1 piece	**1877936**	**VABD-C8-P1**
Blanking plug					
	–	Connection ∅ 10 mm	1 piece	**562243**	**QSPC10**
	–	For thread G¼	10 pieces	**3569**	**B-¼**
Inscription labels					
	–	Inscription labels 6x10mm, 64 pieces, in frames	1 piece	**18576**	**IBS-6x10**

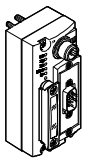
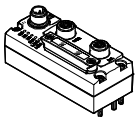
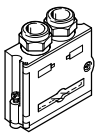
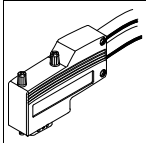
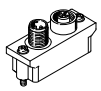
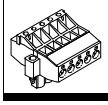
Ordering data					
	Code	Description	Cable length [m]	Part No.	Type
Connecting cable for multi-pin plug					
	M1	• Sub-D socket, straight, 15-pin, up to 12 coils, IP65/IP67 • Open cable end, 15-wire	2.5	**538222**	**NEBV-S1G25-K-2.5-N-LE15**
	M2		5	**538223**	**NEBV-S1G25-K-5-N-LE15**
	M3		10	**538224**	**NEBV-S1G25-K-10-N-LE15**
	M1	• Sub-D socket, straight, 25-pin, up to 20 coils, IP65/IP67 • Open cable end, 25-wire	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 socket, straight, 44-pin, up to 35 coils, IP65/IP67 • Open cable end, 40-wire	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**
	M1L	• Sub-D socket, straight, 25-pin, up to 20 coils, IP40 • Open cable end, 25-wire	2.5	**575417**	**NEBV-S1G25-K-2.5-N-LE25-S6**
	M2L		5	**575418**	**NEBV-S1G25-K-5-N-LE25-S6**
	M3L		10	**575419**	**NEBV-S1G25-K-10-N-LE25-S6**
	M1L	• Socket Sub-D, straight, 44-pin, up to 35 coils, IP40 • Open cable end, 44-wire	2.5	**575113**	**NEBV-S1G44-K-2.5-N-LE44-S6**
	M2L		5	**575114**	**NEBV-S1G44-K-5-N-LE44-S6**
	M3L		10	**575115**	**NEBV-S1G44-K-10-N-LE44-S6**
	MA1	• Sub-D socket, angled, 25-pin, up to 20 coils, IP65/IP67 • Open cable end, 25-wire	2.5	**575423**	**NEBV-S1WA25-K-2.5-N-LE25-S9**
	MA2		5	**575424**	**NEBV-S1WA25-K-5-N-LE25-S9**
	MA3		10	**575425**	**NEBV-S1WA25-K-10-N-LE25-S9**
	MA1	• Sub-D socket, angled, 44-pin, up to 35 coils, IP65/IP67 • Open cable end, 44-wire	2.5	**575420**	**NEBV-S1WA44-K-2.5-N-LE44-S9**
	MA2		5	**575421**	**NEBV-S1WA44-K-5-N-LE44-S9**
	MA3		10	**575422**	**NEBV-S1WA44-K-10-N-LE44-S9**

Ordering data				
	Description	Cable length [m]	Part No.	Type
Connecting cable for individual valve				
	• Angled socket, port pattern ZC, 2-pin, with LED • Open cable end, 2-wire • Reduction of retaining current, protective circuit • IP65	2.5	**8047679**	**NEBV-Z4WA2L-R-E-2.5-N-LE2-S1**
		5	**8047680**	**NEBV-Z4WA2L-R-E-5-N-LE2-S1**
		10	**8047678**	**NEBV-Z4WA2L-R-E-10-N-LE2-S1**
	• Angled socket, port pattern ZC, 2-pin, with LED • Straight plug, M8x1, 3-pin • Reduction of retaining current, protective circuit • IP65	0.5	**8047683**	**NEBV-Z4WA2L-R-E-0.5-N-M8G3-S1**
		2.5	**8047684**	**NEBV-Z4WA2L-R-E-2.5-N-M8G3-S1**
	• Angled socket, square design, 2-pin • Open cable end, 2-wire, no LED • IP50	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**

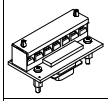
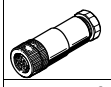
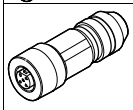
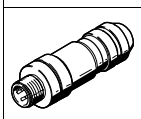
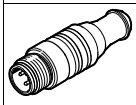
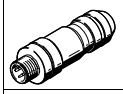
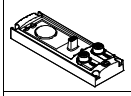
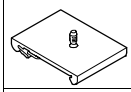
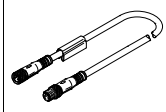
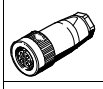
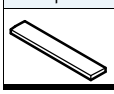
Ordering data					
	Description	Tubing O.D.	Packaging unit	Part No.	Type
Push-in fitting					Technical data ➔ Internet: quick star
	With sealing ring Connection G¼	8 mm	10 pieces	**186099**	**QS-G¼-8**
		10 mm	10 pieces	**186101**	**QS-G¼-10**
		12 mm	10 pieces	**186350**	**QS-G¼-12**
Push-in L-fitting					Technical data ➔ Internet: quick star
	With sealing ring Connection G¼	8 mm	10 pieces	**186120**	**QSL-G¼-8**
		10 mm	10 pieces	**186122**	**QSL-G¼-10**
		12 mm	10 pieces	**186351**	**QSL-G¼-12**
Push-in L-fitting, long					Technical data ➔ Internet: quick star
	With sealing ring Connection G¼	8 mm	10 pieces	**186131**	**QSLL-G¼-8**
		10 mm	10 pieces	**186133**	**QSLL-G¼-10**
		12 mm	10 pieces	**132596**	**QSLL-G¼-12**
Cartridge with push-in connector					
	Straight Connection ∅ 10 mm	4 mm	10 pieces	**172972**	**QSP10-4**
		6 mm	10 pieces	**172973**	**QSP10-6**
	L-shape Connection ∅ 10 mm	4 mm	10 pieces	**132601**	**QSPLK10-4**
		6 mm	10 pieces	**132602**	**QSPLK10-6**
	L-shape, long Connection ∅ 10 mm	4 mm	10 pieces	**132603**	**QSPLLK10-4**
		6 mm	10 pieces	**132604**	**QSPLLK10-6**
Silencer					Technical data ➔ Internet: u
	For thread G¼		1 piece	**2316**	**U-¼**
	For individual sub-base, QSP10		1 piece	**1224460**	**AMTC-P-P10**

Ordering data				
	Code	Description	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**

Ordering data – I-Port interface/IO-Link				
	Code	Description	Part No.	Type
Connection technology for IO-Link				
	XM	T-adapter M12, 5-pin, for IO-Link and load supply	**171175**	**FB-TA-M12-5POL**
	XN	Straight plug, M12, 5-pin for T-adapter FB-TA	**175487**	**SEA-M12-5GS-PG7**

Ordering data – CTEU				
			Part No.	Type
Bus node				
	–	CANopen fieldbus node	**570038**	**CTEU-CO**
	–	DeviceNet fieldbus node	**570039**	**CTEU-DN**
	–	CC-Link fieldbus node	**1544198**	**CTEU-CC**
	–	PROFIBUS fieldbus node	**570040**	**CTEU-PB**
	–	EtherCAT fieldbus node	**572556**	**CTEU-EC**
Bus connection				
	–	Sub-D plug, straight, for DeviceNet/CANopen	**532219**	**FBS-SUB-9-BU-2x5POL-B**
	–	Sub-D plug, straight, for CC-Link	**532220**	**FBS-SUB-9-GS-2x4POL-B**
	–	Sub-D plug, straight, for PROFIBUS	**532216**	**FFBS-SUB-9-GS-DP-B**
	–	Sub-D plug, angled, for CANopen, 9-pin	**533783**	**FBS-SUB-9-WS-CO-K**
	–	Sub-D plug, angled, for PROFIBUS, 9-pin	**533780**	**FBS-SUB-9-WS-PB-K**
	–	M12x1, 5-pin, A-coded, for DeviceNet/CANopen	**525632**	**FBA-2-M12-5POL**
	–	M12x1, 5-pin, B-coded, for PROFIBUS	**533118**	**FBA-2-M12-5POL-RK**
	–	For 5-pin terminal strip for DeviceNet/CANopen	**525634**	**FBA-1-SL-5POL**
	–	Terminal strip, 5-pin, for DeviceNet/CANopen	**525635**	**FBSD-KL-2x5POL**

Ordering data – CTEU

			Part No.	Type
Bus connection				
	Screw terminal for CC-Link		**197962**	**FBA-1-KL-5POL**
	Fieldbus socket, M12x1, 5-pin, for DeviceNet/CANopen		**18324**	**FBSD-GD-9-5POL**
	Plug, M12x1, 5-pin, for DeviceNet/CANopen		**175380**	**FBS-M12-5GS-PG9**
	Straight socket, M12x1, 5-pin, for assembling a connecting cable compatible with FBA-2-M12-5POL-RK for PROFIBUS		**1067905**	**NECU-M-B12G5-C2-PB**
	Straight plug, M12x1, 5-pin, for assembling a connecting cable compatible with FBA-2-M12-5POL-RK for PROFIBUS		**1066354**	**NECU-M-S-B12G5-C2-PB**
	Terminating resistor, M12, B-coded for PROFIBUS		**1072128**	**CACR-S-B12G5-220-PB**
	Plug M12x1, 4-pin, D-coded for EtherCAT		**543109**	**NECU-M-S-D12G4-C2-ET**
Connecting block				
	For connecting a second device with I-Port interface		**570042**	**CAPC-F1-E-M12**
H-rail mounting				
	For connecting block CAPC		**570043**	**CAFM-F1-H**
Connecting cables		Cable length [m]		
	• Straight socket, M12x1, 5-pin • Straight plug, M12x1, 5-pin • Nominal conductor cross section 1 mm²	5	**574321**	**NEBU-M12G5-E-5-Q8N-M12G5**
		7.5	**574322**	**NEBU-M12G5-E-7.5-Q8N-M12G5**
		10	**574323**	**NEBU-M12G5-E-10-Q8N-M12G5**
	• Angled socket, M12x1, 5-pin • Angled plug, M12x1, 5-pin	0.5	**570733**	**NEBU-M12W5-K-0.5-M12W5**
		2	**570734**	**NEBU-M12W5-K-2-M12W5**
	• Straight socket, M12x1, 5-pin • Angled plug, M12x1, 5-pin	0.5	**8003617**	**NEBU-M12G5-K-0.5-M12W5**
		2	**8003618**	**NEBU-M12G5-K-2-M12W5**
Plug socket				
	For power supply, M12x1, 5-pin, B-coded for CANopen/DeviceNet		**538999**	**NTSD-GD-9-M12-5POL-RK**
	For power supply, M12x1, 5-pin for CC-Link, PROFIBUS, EtherCAT		**18324**	**FBSD-GD-9-5POL**
Inscription label				
	For bus node		**565306**	**ASLR-C-E4**