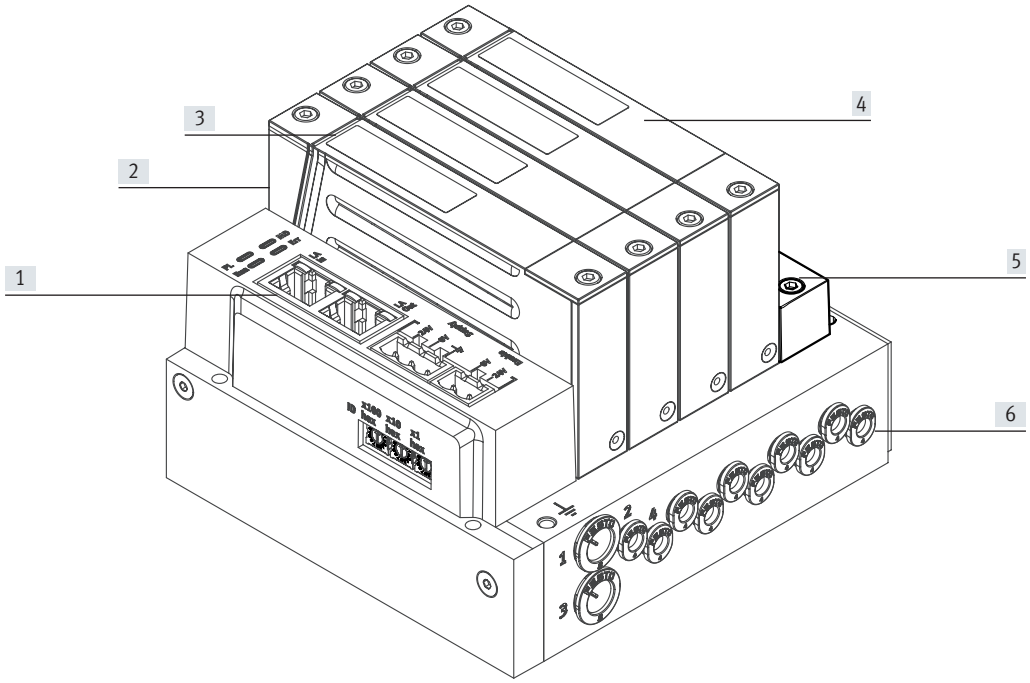
Valve terminal VTEP

Key features



[1] Simple electrical connections via EtherCAT®
[2] 16 mm grid dimension
[3] Simplified diagnostics thanks to LED status indication on the valve
[4] Two variants: VTEP-...-P- for pressure range 0 ... 0.6 MPa VTEP-...-PL- for pressure range -0.1 ... 0.1 MPa
[5] Flexible: 2 ... 10 ducts, 1 ... 5 valves
[6] Practical: Push-in tubing connectors integrated into the manifold sub-base

Innovative

- Very compact: 10 ducts on an overall width of less than 120 mm
- Extremely dynamic and precise control
- Pressure and vacuum control can be combined
- Very flexible thanks to customisable control parameters
- LinkedPorts as an easy method of controlling the combined ducts to increase the maximum flow rate
- Energy-saving mode for efficient process monitoring and early detection of system changes

Piezo technology

- No wear
- No tear
- No particle abrasion
- No heat generation
- Silent
- Low power consumption
- Low air consumption

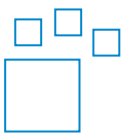
Reliable

- EtherCAT® communication interface
- Flow rate up to 42 l/min
- Fast troubleshooting with LEDs on the valves
- Easy to service thanks to replaceable valves
- Secure firmware updates via FoE ("Filetransfer over EtherCAT")
- With an internal setpoint profile generator, pressure profiles with increments in the ms range can be precisely realised, independent of the clock pulse of the higher-level control system

Easy to install

- Push-in connectors securely integrated
- Supplied quickly and reliably as a ready-to-install, tested unit
- Reduced selection, ordering, installation and commissioning costs

Ordering data – Product options



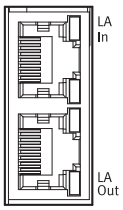
Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
➔ **www.festo.com/catalogue/...**
Enter the part number or the type.

Part no.	Type
8176050	VTEP

Key features – Electrical/mechanical

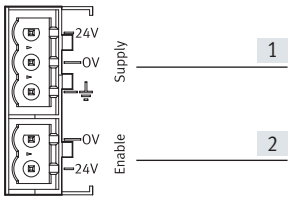
EtherCAT® connection



Communication with a higher-order PLC takes place via the integrated EtherCAT® interface. The interfaces support crossover detection (auto MDI/MDI-X). This means either patch cables or crossover cables can be used.

The supported “distributed clocks” function, for precise synchronisation of participants in an EtherCAT® network, enables applications that require simultaneously coordinated actions.

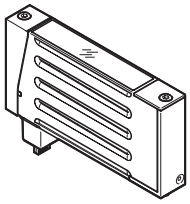
Power supply



The valve terminal has a connection for supplying power to the electronics and valves [1].

Connection [2] enables the supply voltage for the valves to be switched on or off separately.

Sub-base valve

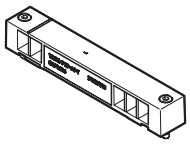


VTEP offers two different valves, one for high pressure and one for low pressure. The valves comprise four 2/2-way proportional valves connected to form a bridge circuit, two of which regulate the pressure in duct 2 and two of which regulate the pressure in duct 4.

Sensors monitor the degree of opening of the valves as well as the pressure in duct 2 and 4.
The valves are attached to the sub-base using two screws.
which means that they can be easily replaced. The sturdy mechanical structure of the sub-base ensures efficient, durable sealing.

Only valves of one pressure range/valve code (P, PL) can be combined on one valve terminal.
The valve code (e.g. P, PL) is located on the front of the valve below the LED display.

Cover plate

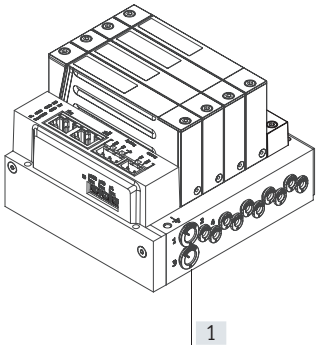


Cover plate (code B) without valve function, for reserving valve positions on a valve terminal.

The valve plate and cover plate are connected to the sub-base using two screws.

Cover plates can be replaced by valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged during this process.

Compressed air supply and exhaust



The valve terminal VTEP is pressurised via the ports [1] in the manifold sub-base.

All pneumatic ports are integrated into the manifold sub-base.

Key features – Display and operation

Display and operation

Status display, valve

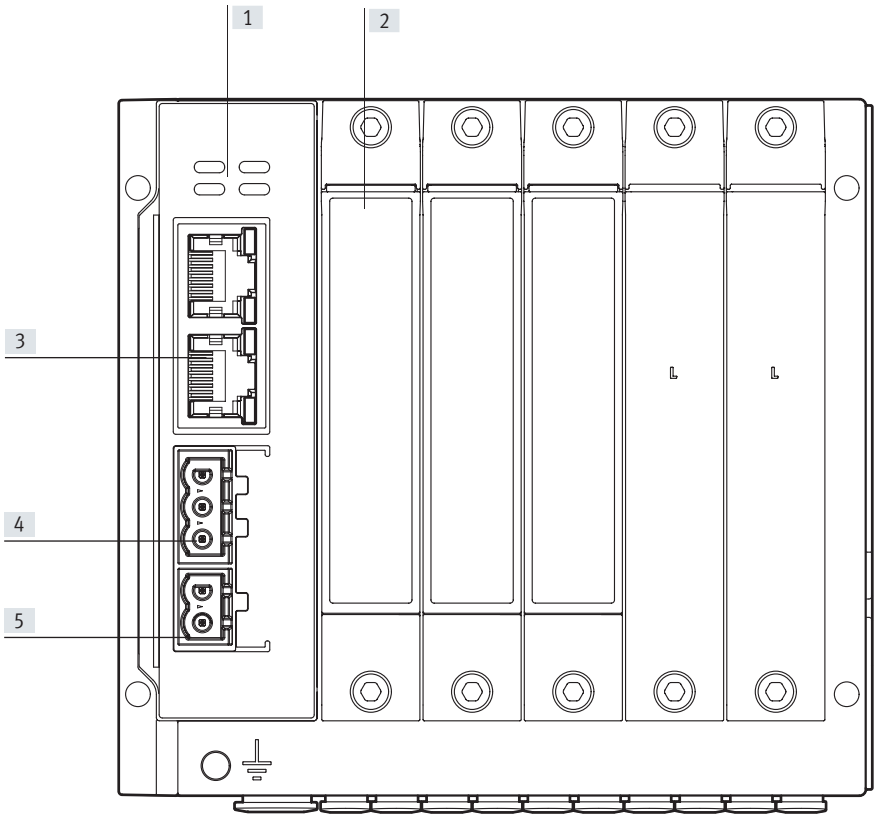
Each valve has an LED to indicate the valve status.

Status display, valve terminal

The valve terminal has displays for:

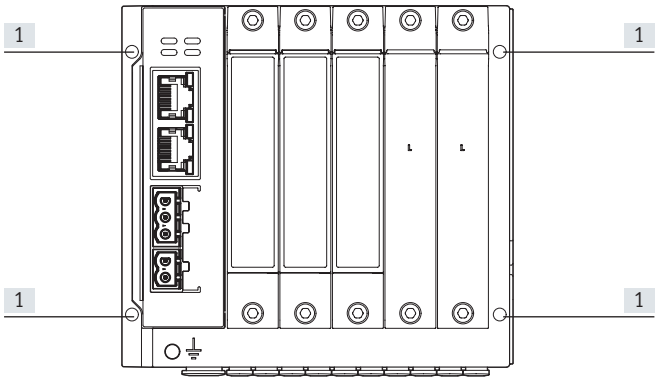
- Module diagnostics
- Load voltage
- EtherCAT® status
- Network status

Display and operating components



[1] LED status indicators for the valve terminal
[2] LED indication on the valve
[3] Ethernet interface
[4] Power supply connection
[5] Switching input for valve supply

Valve terminal mounting



The manifold sub-base has four through-holes [1] for mounting the valve terminal.

Datasheet – Valve terminal VTEP

- Flow rate
  up to 42 l/min

- Valve width
  16 mm

- Voltage
  24 V DC

- Variant VTEP-...-P- for pressure range 0 ... 0.6 MPa
- Variant VTEP-...-PL- for pressure range -0.1 ... 0.1 MPa

General technical data

	VTEP-...-P-	VTEP-...-PL-
Application note	The product is suitable for industrial purposes only. In residential areas, measures for radio interference suppression may have to be taken. For indoor use only	
Valve terminal design	Fixed grid	
Grid dimension	16 mm	
Max. number of valve positions	5	
Max. no. of pressure zones	1	
Valve function	3-way proportional-pressure regulator, closed	
Actuation type	Electrical	
Setpoint value input	Digital	
Sealing principle	Soft	
Standard flow rate (standardised to DIN 1343)	42 l/min	18 l/min
Flow direction	Not reversible	
Suitable for vacuum	Yes	
Display type	LED	
Linearity	0.3% FS	0.2
Hysteresis	0.4% FS	
Reproducibility	0.4% FS	0.3
Overall accuracy	0.5% FS	0.4% FS
Dimensions W x L x H	119 mm x 110 mm x 82 mm 71 mm x 110 mm x 82 mm 87 mm x 110 mm x 82 mm	

Approx. product weight

VTEP with 2 valve positions (without valves or cover plates)	421 g
VTEP with 3 valve positions (without valves or cover plates)	494 g
VTEP with 5 valve positions (without valves or cover plates)	640 g
Valve VEVP	86 g
Cover plate	15 g
VTEP with 2 valve positions (including 2 valves)	593 g
VTEP with 3 valve positions (including 3 valves)	752 g
VTEP with 5 valve positions (including 5 valves)	1070 g

Datasheet – Valve terminal VTEP

Technical data – Fieldbus interface	
Fieldbus interface, type of connection	2 x socket
Fieldbus interface, connection technology	RJ45
Fieldbus interface, protocol	EtherCAT®

Technical data – Electrical connection 1	
Electrical connection 1, function	Power supply
Electrical connection 1, connection type	Socket
Electrical connection 1, connection technology	Terminal strip
Electrical connection 1, number of pins/cores	3
Electrical connection 1, conductor cross section	0.2 ... 1.5 mm²

Technical data – Electrical connection 2	
Electrical connection 2, function	Digital input
Electrical connection 2, connection type	Socket
Electrical connection 2, connection technology	Terminal strip
Electrical connection 2, number of pins/cores	2
Electrical connection 2, conductor cross section	0.2 ... 1.5 mm²

Technical data – Electrics	
Nominal operating voltage DC	24 V
Operating voltage range DC	20.4 ... 27.6 V
Overvoltage category	II
Max. electrical power consumption	6 W
Buffer time in case of voltage failure of logic supply	10 ms
Residual ripple	± 10%
Pollution degree	2
Reverse polarity protection	For all electrical connections
Protection against direct and indirect contact	PELV

Pneumatic connections	
Pneumatic port 1	For tubing O.D. 8 mm
Pneumatic port 2	For tubing O.D. 4 mm
Pneumatic port 3	For tubing O.D. 8 mm
Pneumatic port 4	For tubing O.D. 4 mm

Materials	
Seal material	NBR
Note on materials	RoHs-compliant
LABS (PWIS) conformity	VDMA24364-Zone III
Suitable for the production of Li-ion batteries	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)
Material fire test	UL94 HB

Datasheet – Valve terminal VTEP

Pressure specifications

	VTEP-...-P-	VTEP-...-PL-
Operating pressure	0.7 MPa	0.2 MPa
	7 bar	2 bar
	101.5 psi	29 psi
Note on the operating pressure	Recommended input pressure 1 to achieve the specified flow	
Input pressure 1	0 ... 0.7 MPa	0 ... 0.2 MPa
	0 ... 7 bar	0 ... 2 bar
	29 ... 101.5 psi	29 ... 29 psi
Input pressure 3	0 MPa	-0.1 ... 0 MPa
	0 bar	-1 ... 0 bar
	0 psi	-14.5 ... 87 psi
Pressure regulation range	0 ... 0.6 MPa	-0.1 ... 0.1 MPa
	0 ... 6 bar	-1 ... 1 bar
	0 ... 87 psi	-14.5 ... 14.5 psi
Note on pressure regulation range	Effective pressure control range between 10 hPa above input pressure 3 and 10 hPa below input pressure 1. Recommended pressure control range between 50 hPa above input pressure 3 and 1000 hPa below input pressure 1.	
Burst pressure	2.1 MPa	2.1 MPa
	21 bar	21 bar
	304.5 psi	304.5 psi

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4], inert gases, oxygen
Note on the operating/pilot medium	Lubricated operation not possible
	Condensation in the valve not allowed
	If the operating medium contains concentrated oxygen, sufficient pressurisation with ambient air must be ensured to avoid increased oxygen concentrations in the environment
	Maximum particle size 40 µm
Ambient temperature	5 ... 50 °C
Temperature of medium	5 ... 50 °C
Storage temperature	-20 ... 60 °C
Relative humidity	5 - 85%, non-condensing
Corrosion resistance class CRC [1]	2 - Moderate corrosion stress
Nominal operating altitude	< 3000 m above sea level
Climatic category	3K22 to EN 60721
Vibration resistant	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
CE marking (see declaration of conformity) [2]	To EU EMC Directive To EU RoHS Directive
UKCA marking (see declaration of conformity) [3]	To UK EMC regulations To UK RoHS regulations
KC marking	KC EMC
Certification	RCM
Degree of protection	IP20

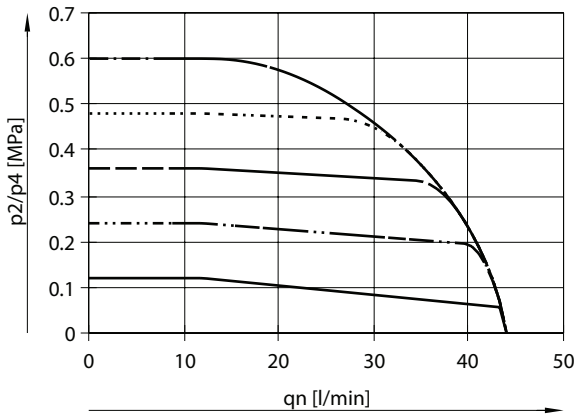
1) More information www.festo.com/x/topic/crc

2) More information www.festo.com/catalogue/... Support/Downloads.

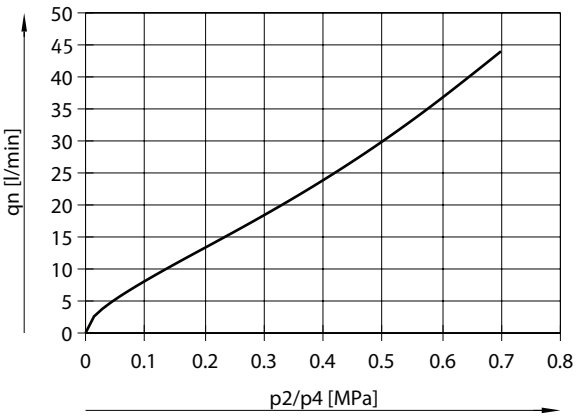
3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – Valve terminal VTEP

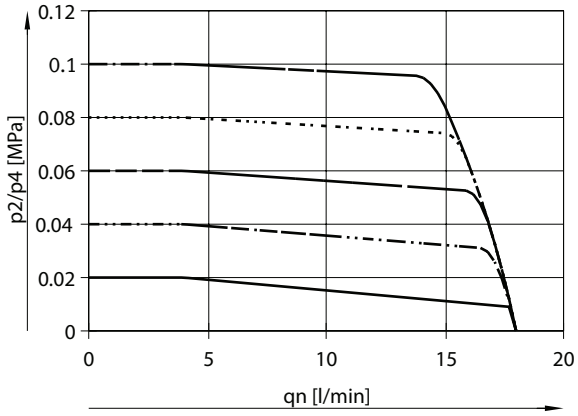
Flow rate VTEP-...-P-, duct 1 (0.7 MPa) to 2/4



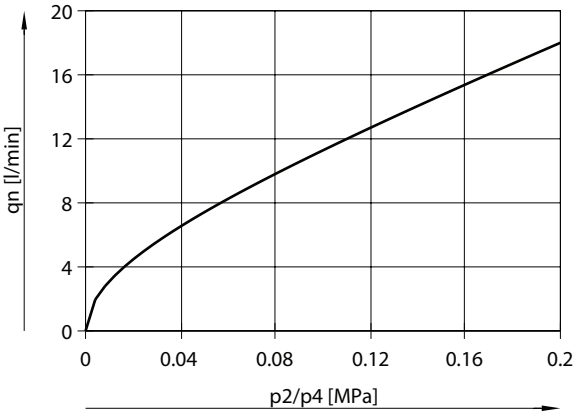
Flow rate VTEP-...-P-, duct 2/4 to 3 (0 MPa)



Flow rate VTEP-...-PL-, duct 1 (0.2 MPa) to 2/4



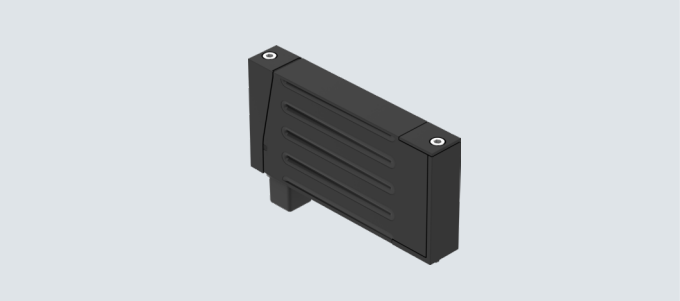
Flow rate VTEP-...-PL-, duct 2/4 to 3 (0 MPa)



Datasheet – Valves VEVP

- Grid dimension
  16 mm

- Voltage
  24 V DC



General technical data	
Grid dimension	16 mm
Nominal width	1.2 mm
Design	Sub-base valve
Valve function	3-way proportional-pressure regulator, closed
Actuation type	Electrical
Sealing principle	Soft
Flow direction	Not reversible
Suitable for vacuum	Yes
Product weight	85.5 g

Technical data – Electrics	
Nominal operating voltage DC	24 V

Pneumatic connections	
Pneumatic port 1	Flange
Pneumatic port 2	Flange
Pneumatic port 3	Flange
Pneumatic port 4	Flange

Materials	
Housing material	PA66-GF30, TPE-U(PU)
Seal material	NBR
Note on materials	RoHs-compliant
LABS (PWIS) conformity	VDMA24364-Zone III
Suitable for the production of Li-ion batteries	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)

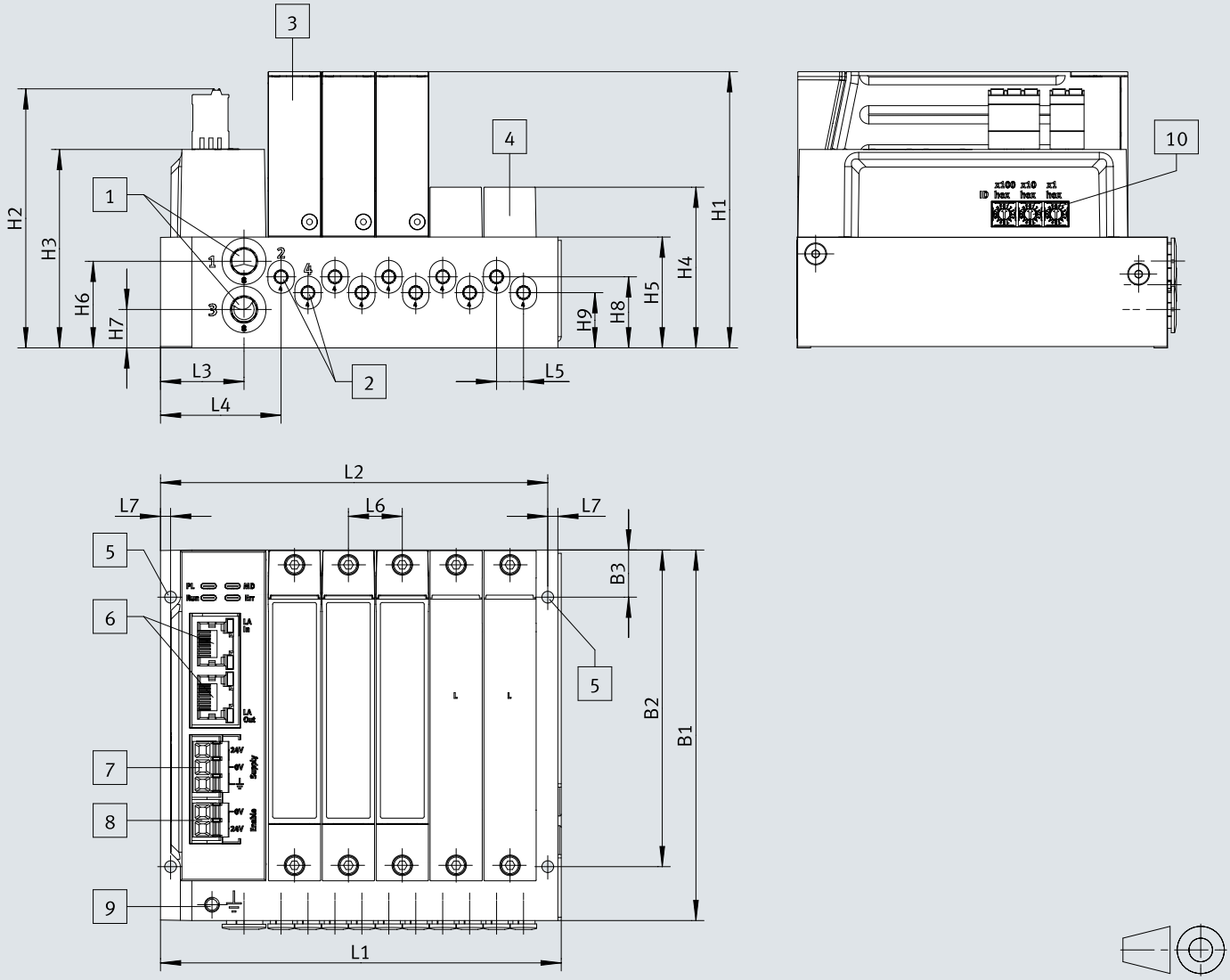
Pressure specifications – Valves VEVP		
Pressure range[1)]	0 ... 3 bar	0 ... 7 bar
Operating pressure	0.2 MPa	0.7 MPa
Operating pressure	2 bar	7 bar
Operating pressure	29 psi	101.5 psi
Standard flow rate (standardised to DIN 1343)	18 l/min	42 l/min
[1)] Note on the operating pressure	Corresponds to the maximum pressure range between pneumatic port 1 and port 3	

Datasheet – Valves VEVP

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
	Inert gases
	Oxygen
Note on the operating/pilot medium	Lubricated operation not possible
	Condensation in the valve not allowed
	If the operating medium contains concentrated oxygen, sufficient pressurisation with ambient air must be ensured to avoid increased oxygen concentrations in the environment
	Maximum particle size 40 µm
Ambient temperature	5 ... 50 °C
Temperature of medium	5 ... 50 °C
Storage temperature	-20 ... 70 °C
Relative humidity	5 - 85%, non-condensing
Climatic category	3K22 to EN 60721
Vibration resistant	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Degree of protection	IP65

Datasheet

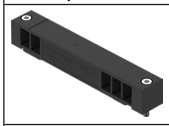
Dimensions Download CAD data ➔ www.festo.com



[1] Supply ports
[2] Working ports
[3] Solenoid valve VEVP
[4] Cover plate
[5] Mounting holes
[6] EtherCAT® connection
[7] Power supply connection
[8] Switching input for valve supply
[9] Earth connection
[10] Addressing switch for EtherCAT®

Type	Number of valve positions	B1	B2	B3	H1	H2	H3	H4	H5	H6	H7	H8	H9	L1	L2	L3	L4	L5	L6	L7
VTEP	2	110	94	14	82	76.9	25.9	47.7	32.9	25.7	11.4	21.1	16.4	71	67	24.8	35.8	8	16	3
	3													87	83					
	5													119	115					

Accessories

Ordering data						
	Code				Part no.	Type
Piezo valve, individual						
	Function P	Operating pressure 0.7 MPa	Standard flow rate 42 l/min		**8184034**	**VEVP-XA-4-B-T33C-F-D31-2**
	Function: PL	Operating pressure 0.2 MPa	Standard flow rate 18 l/min		**8184037**	**VEVP-XA-4-B-T33C-F-D22-2**
Vacant position						
	Valve type 1-5: B	Cover plate for one valve position			**8154656**	**VABB-P19-16-T**
Control cabinet through-feed						
	–	Straight socket, 4-pin, M12x1, D-coded	Straight socket, 4-pin, M12x1, D-coded		**8040459**	**NEFU-D12G4-D12DG4**
			Angled socket, 8-pin, RJ45		**8040457**	**NEFU-D12G4-R3DW4**
Plug						
	–	Plug RJ45, 8-pin	Push-pull with locking mechanism against unintentional pulling		**5195384**	**NECC-M-S-R3G8PP-HX-PN**
Connecting cable						
	–	Straight plug, RJ45, 8-pin	Straight plug, RJ45, 8-pin	0.2 m	**8082383**	**NEBC-R3G8-KS-0.2-N-S-R3G8-ET**
				1 m	**8040455**	**NEBC-R3G4-ES-1-S-R3G4-ET**
Release tool						
	–	For tubing O.D. 4 mm, 6 mm, 8 mm and 10 mm		Pack size 1	**8214270**	**NPAT-QX-T-V1**
Inline filter						
	–	Nominal width 4 mm		Grade of filtration 40 µm	**8212637**	**OAFA-C-Q4-E-F**
				Grade of filtration 10 µm	**8212638**	**OAFA-C-Q4-E-E**
		Nominal width 8 mm		Grade of filtration 40 µm	**8212643**	**OAFA-C-Q8-E-F**
				Grade of filtration 10 µm	**8212644**	**OAFA-C-Q8-E-E**