

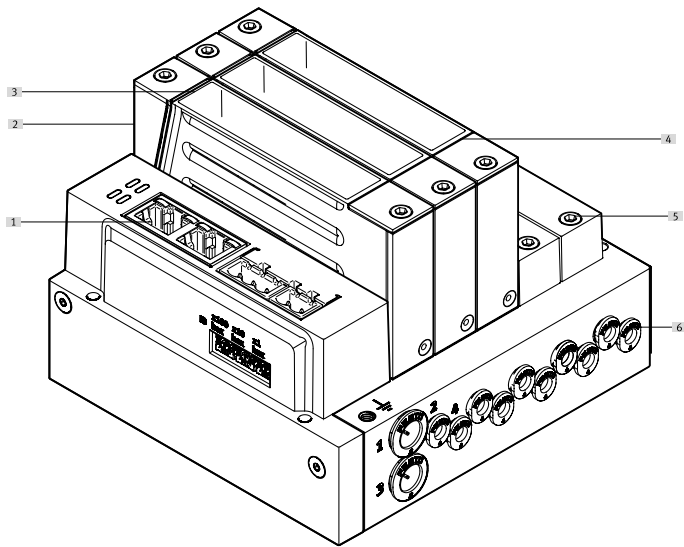
Valve terminal VTEP

FESTO



Characteristics

At a glance



Description:

- [1] Simple electrical connections: EtherCAT® connection
- [2] Grid dimension 16 mm
- [3] Simplify diagnostics: LED status indicator 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] Variable: 2 ...10 ducts, 1 ...5 valves
- [6] In practice: Push-in tubing connectors integrated into the manifold sub-base

Innovative:

- Extremely compact: 10 ducts on an overall width of less than 120 mm, LinkedPorts for easy actuation of combined ducts to increase maximum flow rate, flow rate up to 42 l/min
- Extremely dynamic and precise control, pressure and vacuum control can be combined
- Extremely flexible thanks to customisable control parameters, 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, lower air consumption

Operationally safe:

- EtherCAT® communication interface, secure firmware updates via FoE (File Transfer over EtherCAT®)
- Quick troubleshooting thanks to LED indication, service-friendly design with replaceable valves
- 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

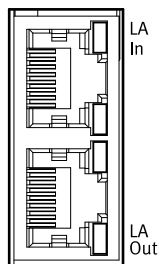
Easy to assemble:

- Push-in connectors securely integrated
- Fast and reliable delivery as a ready-to-install, assembled and tested unit, minimising the effort involved in selection, ordering, installation and commissioning.

Characteristics

Bus protocol/activation

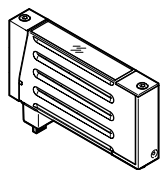
[EC] EtherCAT®



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.

Valve type

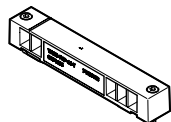
[B] Sub-base valve



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 metal 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 indicator.

Series

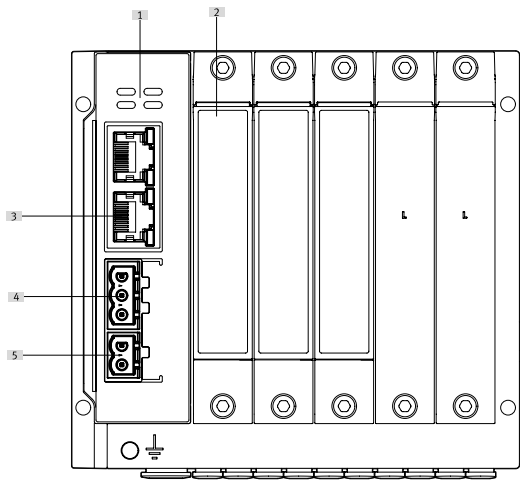
[VABB] Cover plate



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

Characteristics

Assembly instructions



Display and operation:

- [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 status indicator:

- Each valve has an LED to indicate the valve status.

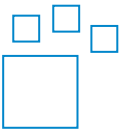
Status indicators for valve terminal:

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

Valve terminal mounting:

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

Ordering data - modular system



Configurable product

This product and all its product options can be ordered online via the configurator.

Diagrams



The diagrams shown in this document are also available online. These can be used to display precise values. You can find the diagrams via the following link:

Datasheet

General technical data, valve terminal

Function	Pressure regulation, Pressure control (low pressure)
Instructions on use	The product is suitable for industrial purposes only. Measures to eliminate radio interference may be required in residential areas. For indoor use only
Valve terminal structure	Fixed grid
Grid dimension	16 mm
Max. number of valve positions	5
Max. number of pressure zones	1
Valve function	3-way proportional-pressure regulator, closed
Type of actuation	Electrical
Setpoint value input	Digital
Sealing principle	Soft
Standard flow rate (standardised to DIN 1343)	18 ... 42 l/min
Flow direction	Non-reversible
Suitability for vacuum	Yes
Display type	LED
Linearity	0.2 ... 0.3 %FS
Hysteresis	0.4 %FS
Reproducibility	0.3 ... 0.4 %FS
Total accuracy	0.4%FS 0.5%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

Technical data – Fieldbus interface

Field bus, connection type	2x socket
Field bus, connection system	RJ45
Field bus, protocol	EtherCAT®

Technical data – Electrical connection 1, valve terminal

Electrical connection 1, function	Power supply
Electrical connection 1, connection type	Socket
Electrical connection 1, connector system	Terminal strip
Electrical connection 1, number of connections/cores	3
Electrical connection 1, conductor cross section	0.2 ... 1.5 mm ²

Technical data – Electrical connection 2, valve terminal

Electrical connection 2, function	Digital input
Electrical connection 2, connection type	Socket
Electrical connection 2, connector system	Terminal strip
Electrical connection 2, number of connections/cores	2
Electrical connection 2, conductor cross section	0.2 ... 1.5 mm ²

Datasheet

Technical data – Electrical, valve terminal

Nominal operating voltage DC	24 V
Operational voltage range DC	20.4 ... 27.6 V
Overvoltage category	II
Max. electrical power consumption	6 W
Buffer time for 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 connection, port 1	For tubing outer diameter of 8 mm
Pneumatic connection, port 2	For tubing outside diameter of 4 mm
Pneumatic connection, port 3	For tubing O.D. 8 mm
Pneumatic connection, port 4	For tubing O.D. 4 mm

Materials, valve terminal

Material seals	NBR
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364 zone III
Suitability for the production of Li-ion batteries	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)
Cleanroom suitability, measured according to ISO 14644-14	Class 3 according to ISO 14644-1
Fire test material	UL94 HB

Pressure specifications

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

Datasheet

Operating and environmental conditions

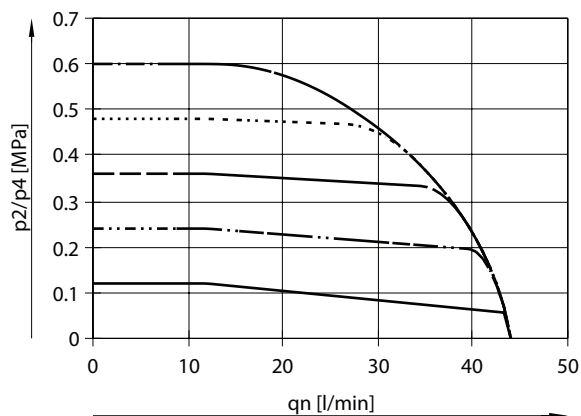
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gas Oxygen
Note on operating and pilot medium	Lubricated operation not possible Condensation in the valve not allowed If the operating medium contains concentrated oxygen, sufficient pressurisation with ambient air must be guaranteed in order to avoid increased oxygen concentrations in the environment Maximum particle size 40 µm
Ambient temperature	5 ... 50°C
Media temperature	5 ... 50°C
Storage temperature	-20 ... 60°C
Relative air humidity	5 - 85% Non-condensing
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress
Nominal altitude of use	< 3000 m NHN
Climatic category	3K22 in accordance with EN 60721
Environmental conditions	Interior dry
Vibration resistance	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 mark (see declaration of conformity) ²⁾	To EU EMC Directive In accordance with EU RoHS Directive
UKCA marking (see declaration of conformity) ³⁾	To UK instructions for EMC To UK RoHS instructions
KC mark	KC-EMV
Approval	RCM c UL us - Listed (Oil)
Degree of protection	IP20

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

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

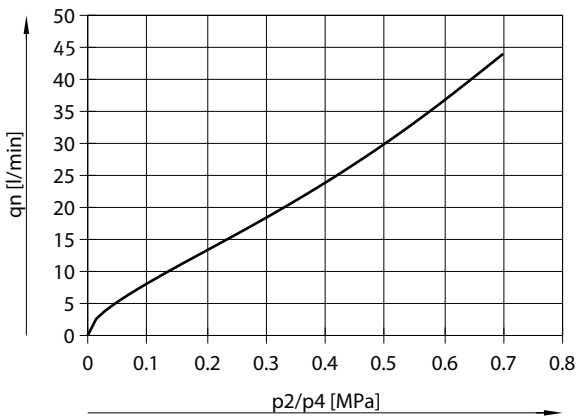
3) More information www.festo.com/catalogue/... Support/Downloads.

Flow rate VTEP-...-P-, duct 1 to 2/4

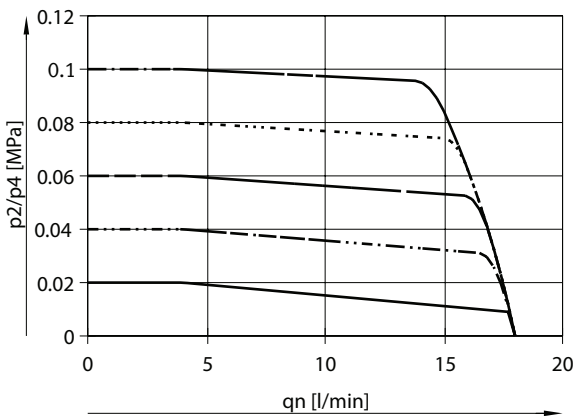


Datasheet

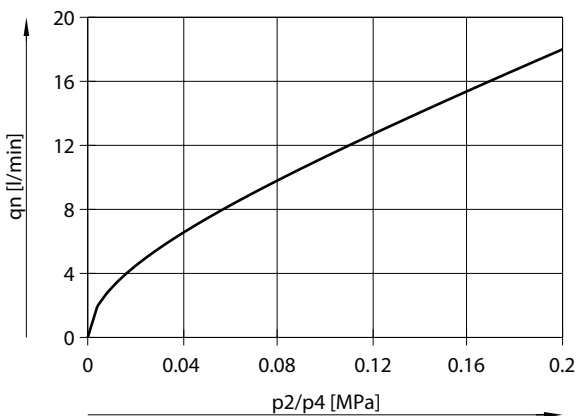
Flow rate VTEP-...-P-, duct 2/4 to 3



Flow rate VTEP-...-PL-, duct 1 to 2/4



Flow rate VTEP-...-PL-, duct 2/4 to 3



Datasheet

General technical data – Valves VEEP

Grid dimension	16 mm
Nominal size	1.2 mm
Design	Sub-base valve
Valve function	3-way proportional-pressure regulator, closed
Type of actuation	Electrical
Sealing principle	Soft
Flow direction	Non-reversible
Suitability for vacuum	Yes
Product weight	85.5 g

Technical data – Electrical, valves VEEP

Nominal operating voltage DC	24 V
------------------------------	------

Pneumatic connections – Valves VEEP

Pneumatic connection, port 1	Flange
Pneumatic connection, port 2	Flange
Pneumatic connection, port 3	Flange
Pneumatic connection, port 4	Flange

Materials – valves VEEP

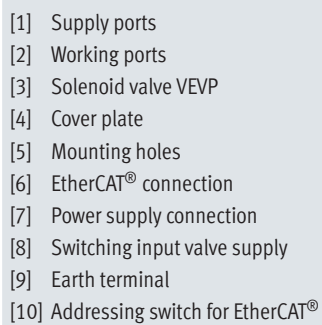
Material housing	PA66-GF30 TPE-U(PU)
Material seals	NBR
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364 zone III
Suitability for the production of Li-ion batteries	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)
Cleanroom suitability, measured according to ISO 14644-14	Class 3 according to ISO 14644-1

Pressure specifications – Valves VEEP

Pressure range	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

Operating and environmental conditions – Valves VEEP

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gas Oxygen
Note on operating and 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 guaranteed in order to avoid increased oxygen concentrations in the environment Maximum particle size 40 µm
Ambient temperature	5 ... 50°C
Media temperature	5 ... 50°C
Storage temperature	-20 ... 70°C
Relative air humidity	5 - 85% Non-condensing
Climatic category	3K22 in accordance with EN 60721
Vibration resistance	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

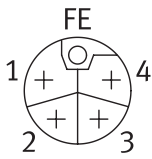
Download CAD data www.festo.com

	1)	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					

- 1) Number of valve positions

Ordering data

Ordering data – Piezo valve, individual					
	Valve function	Operating pressure	Standard flow rate (standardised to DIN 1343)	Part no.	Type
	3-way proportional-pressure regulator, closed	0.2 MPa	18 l/min	8184037	VEVP-XA-4-B-T33C-F-D22-2
		0.7 MPa	42 l/min	8184034	VEVP-XA-4-B-T33C-F-D31-2

Ordering data – Valve terminal				
	Valve function	Field bus, protocol	Part no.	Type
	3-way proportional-pressure regulator, closed	EtherCAT®	8176050	VTEP-

Accessories

Accessories – Cover plate for vacant position

	Short type code	Grid dimension	Product weight	Part no.	Type
	VABB	16 mm	14.9 g	8154656	VABB-P19-16-T

Accessories – Cabinet through-feed

	Electrical connection 1	Electrical connection 2	Part no.	Type
	Straight socket, M12x1, 4-pin, D-coded	Straight socket, M12x1, 4-pin, D-coded	8040459	NEFU-D12G4-D12DG4
		Angled socket, RJ45, 4-pin	8040457	NEFU-D12G4-R3DW4

Accessories – Plug

	Electrical connection 1, connector system	Electrical connection 1, type of mounting	Part no.	Type
	RJ45	Push-pull with interlock against unintentional pulling	5195384	NECC-M-S-R3G8PP-HX-PN

Accessories – Connecting cable

	Electrical connection 1, connector system	Electrical connection 1, number of connections/cores	Electrical connection 2, connector system	Cable length	Part no.	Type
	RJ45	8	RJ45	0.2 m	8082383	NEBC-R3G8-KS-0.2-N-S-R3G8-ET
	RJ45 to IEC 60603-7-3		RJ45 to IEC 60603-7-3	1 m	8040455	NEBC-R3G4-ES-1-S-R3G4-ET

Accessories – release tool

	Size	Size of pack	Part no.	Type
	For tubing O.D. 4 mm, For tubing O.D. 6 mm, For tubing O.D. 8 mm, For tubing O.D. 10 mm	1	8214270	NPAT-QX-T-V1

Accessories – Inline filter

	Nominal size	Grade of filtration	Part no.	Type
	4 mm	10 µm	8212637	OAFA-C-Q4-E-F
		40 µm	8212638	OAFA-C-Q4-E-E
	8 mm	10 µm	8212643	OAFA-C-Q8-E-F
		40 µm	8212644	OAFA-C-Q8-E-E