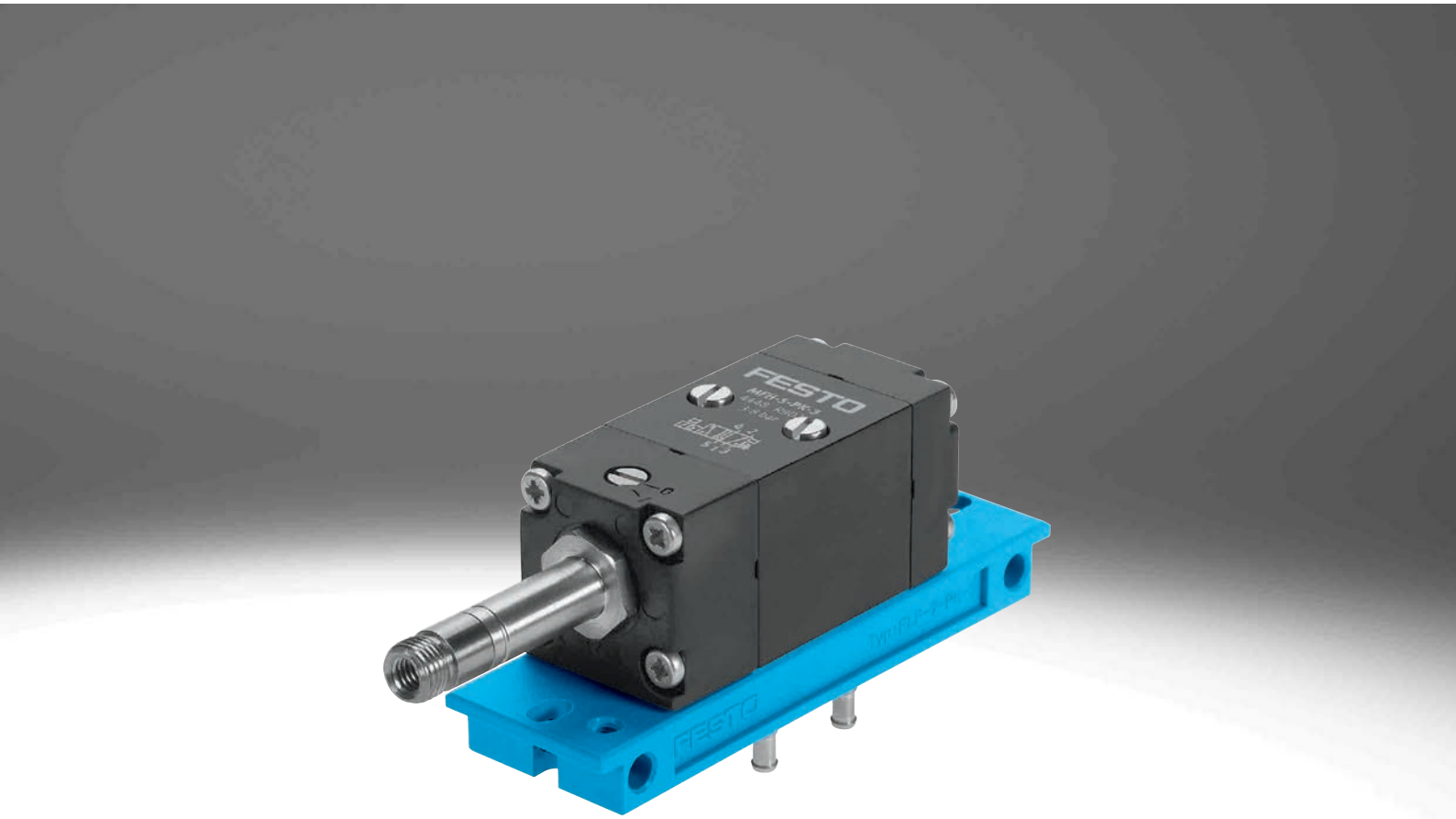
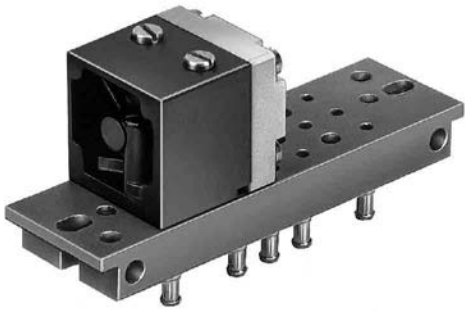
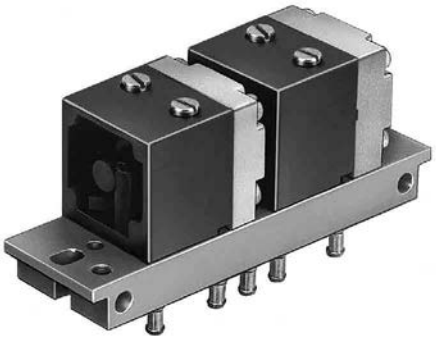
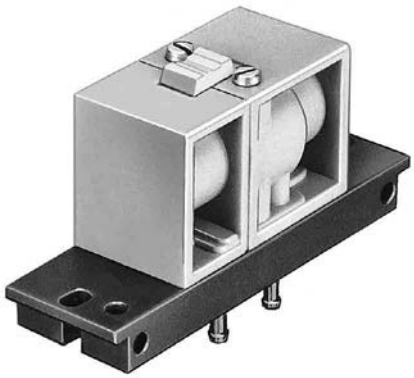
M5 compact system



Key features







- Flow rate 100 l/min

- Basis for compact pneumatic control systems
- M5 components with 2n sub-bases
- Control cabinet installation
- Easy mounting
- Fast replacement of components
- Barbed connector for plastic tubing NW 3

The M5 compact system is a complete system offering control components with all the functions required for pneumatic sequence control. It is based on the sub-bases 2n and barbed connectors for tubing NW 3.

Basic valves and actuator attachments for front-panel mounting as signal elements for basic functions START, STOP etc.

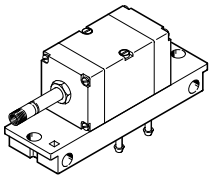
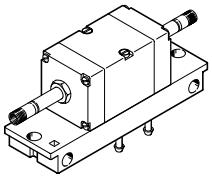
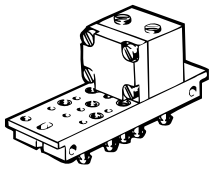
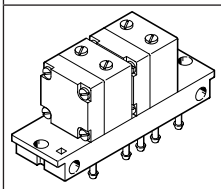
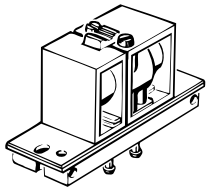
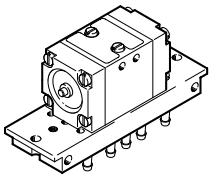
→ Internet: sv

Mounting the components

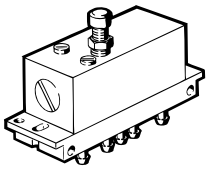
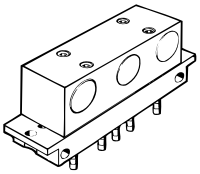
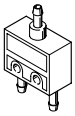
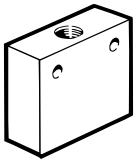
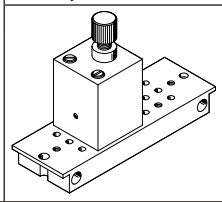
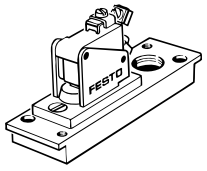
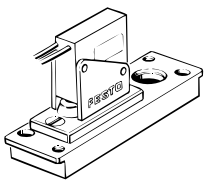
A maximum of 16 components of the M5 compact system with 2N sub-bases can be mounted on the mounting frame. At 480 mm, the length of the frame is designed for 19" housing to DIN 41 488. The rails can be shortened to adapt them to other installation conditions.

During mounting, the sub-bases or mounting plates of the components are slid into the guide slot of the mounting rail. These are then firmly clamped between the connecting components.

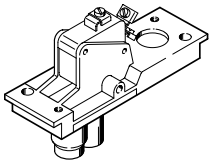
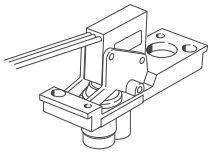
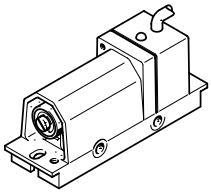
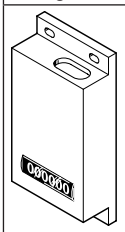
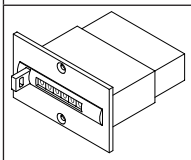
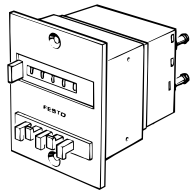
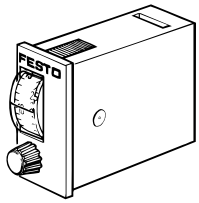
Product range overview

Function	Design	Type	Description	Operating pressure [bar]	→ Page/Internet
Solenoid valves	**5/2-way valves**				
		MFH-5-PK-3	Mechanical spring return For mounting frame 2N	3 ... 8	6
		MFH-5-PK-3-L	Pneumatic spring return For mounting frame 2N	1.5 ... 8	6
		JMFH-5-PK-3	Double solenoid valve For mounting frame 2N	2 ... 8	6
Pneumatic valves	**3/2-way valves**				
		VL/O-3-PK-3	Mechanical spring return For mounting frame 2N	0 ... 8	9
		VL/O-3-PK-3x2	2 pneumatic valves on one sub-base Mechanical spring return For mounting frame 2N	0 ... 8	9
		J-3-PK-3	Double pilot valve For mounting frame 2N	–0.9 ... 8	9
	5/2-way valves				
		VL-5-PK-3	Mechanical spring return For mounting frame 2N	0 ... 8	9
		J-5-PK-3	Double pilot valve For mounting frame 2N	1 ... 8	9
		JD-5-PK-3	Double pilot valve with dominant signal at 14 For mounting frame 2N	1 ... 8	9

Product range overview

Function	Design	Type	Description	Operating pressure [bar]	→ Page/Internet
Time delay valves	**Time delay valves**				
		VZ-3-PK-3	With switch-on delay For mounting frame 2N	2.5 ... 8	12
		VZO-3-PK-3	With switch-off delay For mounting frame 2N	2.5 ... 8	12
Logic components	**AND/OR blocks**				
		OS-PK-3-6/3	3 OR gates For mounting frame 2N	1.6 ... 8	14
		ZK-PK-3-6/3	3 AND gates For mounting frame 2N	1.6 ... 8	14
		OS-PK-3	OR gate	1.6 ... 8	22
		ZK-PK-3	AND gate	1.6 ... 8	22
		OS-1/8-B	OR gate	1 ... 10	22
		ZK-1/8-B	AND gate	1 ... 10	22
		OS-1/4-B	OR gate	1 ... 10	22
		OS-1/2	OR gate	1 ... 10	22
One-way flow control valves	**One-way flow control valves**				
		GRF-PK-3	For mounting frame 2N	0.5 ... 8	15
		GRF-PK-3x2	2 one-way flow control valves on one sub-base For mounting frame 2N	0.5 ... 8	15
PE converters	**Pneumatic/electric pressure transducer**				
		PE-1/8-2N	For mounting frame 2N	0 ... 8	17
		PE-1/8-2N-SW	Splash-proof design For mounting frame 2N	0 ... 8	17

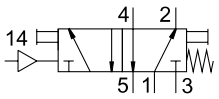
Product range overview

Function	Design	Type	Description	Operating pressure [bar]	→ Page/Internet
PE converters	**Pneumatic/electric pressure transducer**				
		VPE-1/8-2N	Vacuum switch For mounting frame 2N	–0.95 ... 0	17
		VPE-1/8-2N-SW	Vacuum switch splash-proof design For mounting frame 2N	–0.95 ... 0	17
	Pneumatic/electric differential pressure switches				
		PEN-M5	For mounting frame 2N	–1 ... 8	19
Pneumatic counters	**Adding counters**				
		PZA-A-B	Base mounting	2 ... 8	24
		PZA-E-C	Front panel mounting	2 ... 8	24
	Preset counters				
		PZV-E-C	Front panel mounting	2 ... 8	24
Pneumatic timers	**Pneumatic timers**				
		PZVT-3-C PZVT-30-C PZVT-12-C PZVT-300-C	Clamping frame	2 ... 6	29
		PZVT-AUT	Automatic reset module	2 ... 6	29

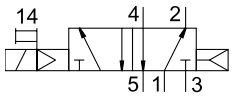
Data sheet

5/2-way valves

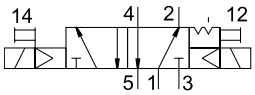
MFH-5-PK-3



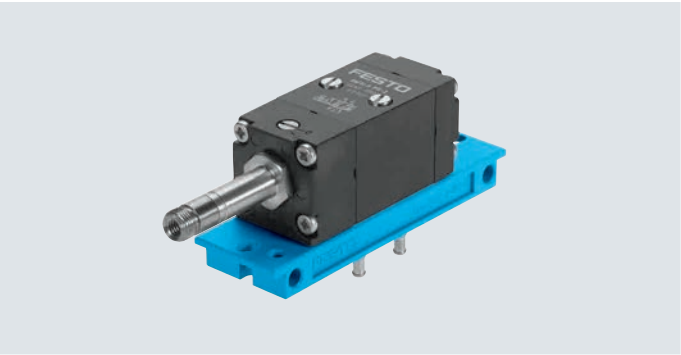
MFH-5-PK-3-L



JMFH-5-PK-3



- Flow rate 105 l/min
- Operating pressure 1.5 ... 8 bar



General technical data					
Type			MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
Pneumatic connection 1, 2			PK-1		
Pneumatic connection 3			PK-3		
Pneumatic connection 4, 5			PK-3		
Nominal width		[mm]	2.5		
Standard nominal flow rate qnN		[l/min]	105		
Design			Poppet seat		
Type of mounting			On sub-base		
			On mounting frame		
			Via through-hole		
Mounting position			Any		
Valve function			5/2-way valve, monostable	5/2-way valve, single solenoid	5/2-way valve, double solenoid
Sealing principle			Soft		
Switching time	Off	[ms]	22	22	–
	On	[ms]	10	14	–
	Changeover	[ms]	–	–	13
Weight		[g]	270	270	380

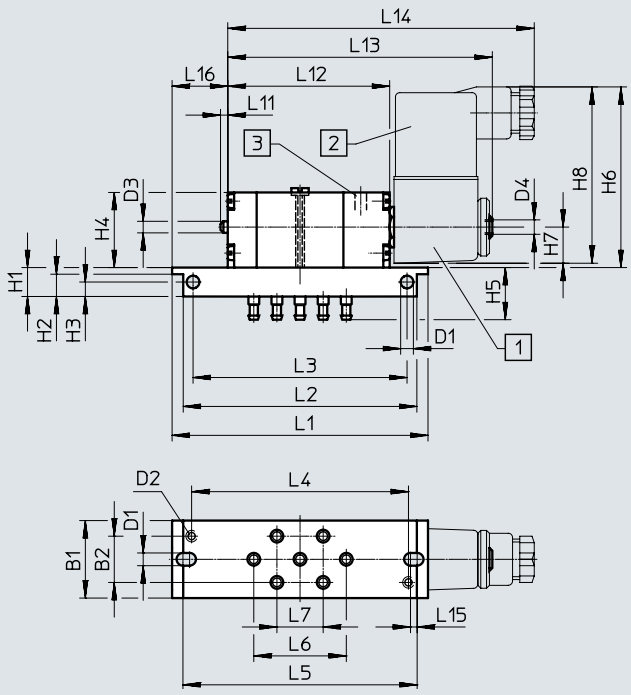
Operating and environmental conditions				
Type		MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
Operating pressure	[bar]	3 ... 8	1.5 ... 8	2 ... 8
Operating/pilot medium		Compressed air to ISO 8573-1:2010 [7:–:–]		
Ambient temperature	[°C]	–5 ... +40	–5 ... +40	0 ... +40
Temperature of medium	[°C]	–10 ... +60	–10 ... +60	0 ... +60

Materials	
Housing	Anodised aluminium
Sub-base	Anodised aluminium
Seals	NBR
Note on materials	RoHS-compliant

Data sheet

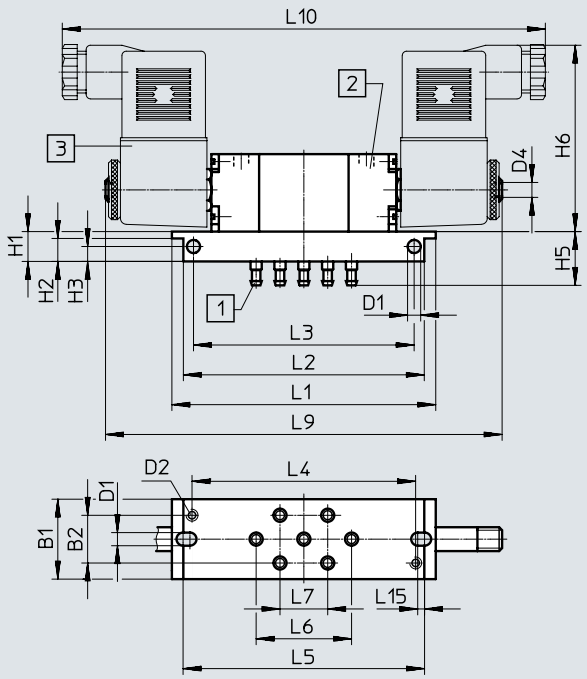
Dimensions – 5/2-way valves Download CAD data ➔ www.festo.com

MFH-5-PK-3(-L)



[1] Rotatable solenoid coil
[2] Plug can be repositioned by 180°
[3] Manual override

JMFH-5-PK-3



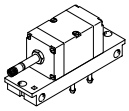
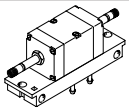
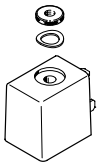
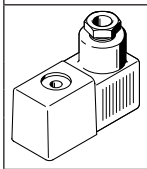
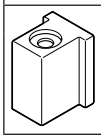
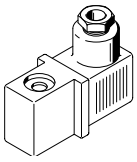
[1] Barbed connector PK-3 for plastic tubing
[2] Manual override
[3] Rotatable solenoid coil

Type	B1	B2	D1 Ø	D2	D3 Ø	D4	H1	H2	H3	H4	H5	H6	H7	H8
MFH	26.8	16	4.4	M4	4	M5	10	7.7	5	26	18.5	62.5	12.5	61
JMFH					–					–			–	–

Type	L1	L2	L3	L4	L5	L6	L7	L9	L10	L11	L12	L13	L14	L15	L16
MFH	88.5	80.8	74	75	81	32	16	–	–	2.5	56	~90	~106	2.3	19
JMFH								133	162	–	–	–	–		–

Data sheet

Ordering data

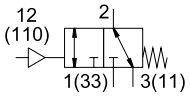
	Description		Part no.	Type
5/2-way valves				
	Monostable/single solenoid	Mechanical spring return	**4448**	**MFH-5-PK-3**
		Pneumatic spring return	**11546**	**MFH-5-PK-3-L**
	Double solenoid	–	**4447**	**JMFH-5-PK-3**
Solenoid coil, plug to industry standard, type B				
	Without plug socket	12 V DC	**34410**	**MSFG-12-OD**
		24 V DC, 42 V AC	**34411**	**MSFG-24/42-50/60-OD**
		42 V DC	**34413**	**MSFG-42-OD**
		24 V AC	**34415**	**MSFW-24-50/60-OD**
		48 V AC	**34418**	**MSFW-48-50/60-OD**
		110 V AC	**34420**	**MSFW-110-50/60-OD**
		230 V AC	**34422**	**MSFW-230-50/60-OD**
		240 V AC	**34424**	**MSFW-240-50/60-OD**
	With plug socket	12 V DC	**4526**	**MSFG-12**
		24 V DC, 42 V AC	**4527**	**MSFG-24/42-50/60**
		24 V AC	**4534**	**MSFW-24-50/60**
		110 V AC	**6720**	**MSFW-110-50/60**
		230 V AC	**4540**	**MSFW-230-50/60**
Solenoid coil, plug to EN 175301, type A				
	Without plug socket	24 V DC, 42 V AC	**34412**	**MSFG-24/42-50/60-DS-OD**
		230 V AC	**175118**	**MSFW-230-50/60-DS-OD**
	With plug socket, plug can be repositioned by 180°	24 V DC, 42 V AC	**13264**	**MSFG-24/42-50/60-DS**
		110 V AC	**13265**	**MSFW-110-50/60-DS**
	Maritime classification[1] see certificate	230 V AC	**13266**	**MSFW-230-50/60-DS**

1) Additional information: www.festo.com/catalogue/... → Support/Downloads.

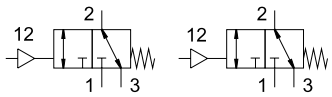
Data sheet

3/2-way valves

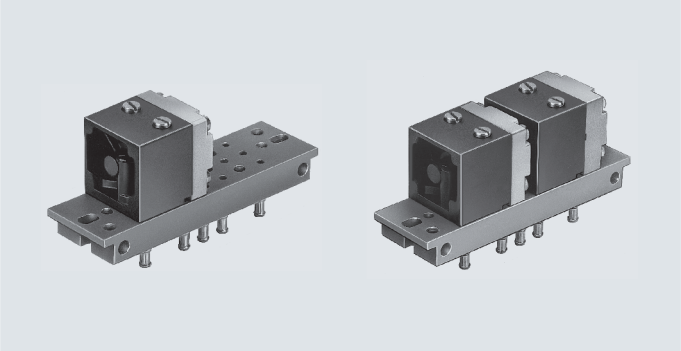
VL/O-3-PK-3



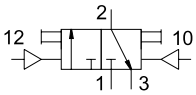
VL/O-3-PK-3x2



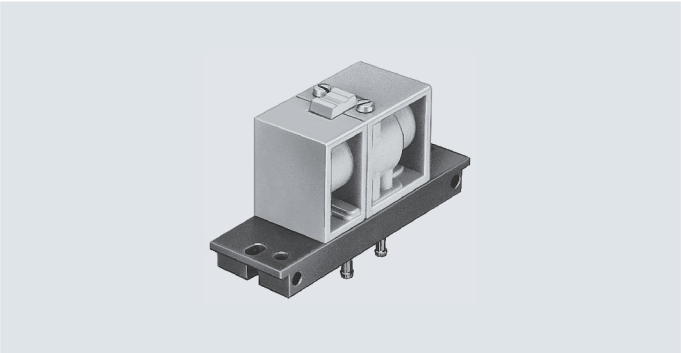
- Flow rate 100 l/min
- Temperature range −10 ... +60°C
- Operating pressure 0 ... 8 bar



J-3-PK-3

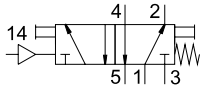


- Flow rate 100 l/min
- Temperature range −10 ... +60°C
- Operating pressure −0.9 ... 8 bar

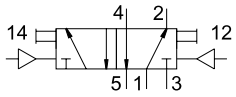


5/2-way valves

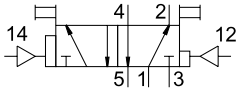
VL-5-PK-3



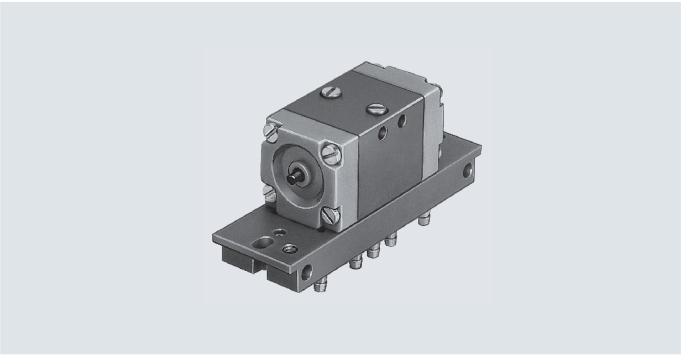
J-5-PK-3



JD-5-PK-3



- Flow rate 105 l/min
- Operating pressure 0 ... 8 bar



Data sheet

General technical data								
Type			3/2-way valves			5/2-way valves		
			VL/O-3-PK-3	VL/O-3-PK-3x2	J-3-PK-3	VL-5-PK-3	J-5-PK-3	JD-5-PK-3
Pneumatic connection 1 ... 5			PK-3					
Auxiliary pilot air connection 10			–	–	PK-3	–	–	–
Auxiliary pilot air connection 12			PK-3	PK-3	PK-3	–	PK-3	PK-3
Auxiliary pilot air connection 14			–	–	–	PK-3	PK-3	PK-3
Nominal width		[mm]	2.5					
Standard nominal flow rate qnN		[l/min]	100	100	100	105	105	105
Design			Poppet seat	Poppet seat	Piston spool	Poppet seat	Poppet seat	Poppet seat
Type of mounting			On sub-base					
			On mounting frame					
			Via through-hole					
Mounting position			Any					
Valve function			3/2-way valve, open, monostable	3/2-way valve, open, monostable	3/2-way valve, bistable	5/2-way valve, monostable	5/2-way valve, bistable	5/2-way valve, bistable, dominant[1]
Switching time	Off	[ms]	50	50	–	22	–	
	On	[ms]	12	12	–	15	–	
	Changeover	[ms]	–	–	7	–	9	9
	Changeover (dominant)	[ms]	–	–	–	–	–	25
Weight		[g]	110	180	75	130	130	130

1) Dominant signal at 14

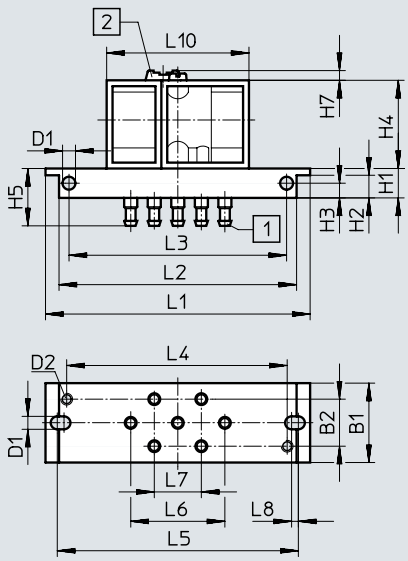
Operating and environmental conditions								
Type			3/2-way valves			5/2-way valves		
			VL/O-3-PK-3	VL/O-3-PK-3x2	J-3-PK-3	VL-5-PK-3	J-5-PK-3	JD-5-PK-3
Operating pressure		[bar]	0 ... 8	0 ... 8	–0.9 ... 8	0 ... 8	1 ... 8	1 ... 8
Pilot pressure		[bar]	See graph					
Operating/pilot medium			Compressed air to ISO 8573-1:2010 [7:–:–]					
Note on the operating/ pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)					
Ambient temperature		[°C]	–10 ... +60	–10 ... +60	–10 ... +60	–10 ... +60	0 ... +60	0 ... +60
Temperature of medium		[°C]	–10 ... +60	–10 ... +60	–10 ... +60	–10 ... +60	0 ... +60	0 ... +60

Materials								
Type			3/2-way valves			5/2-way valves		
			VL/O-3-PK-3	VL/O-3-PK-3x2	J-3-PK-3	VL-5-PK-3	J-5-PK-3	JD-5-PK-3
Housing			Plastic, die-cast zinc					
Sub-base			Brass, reinforced PPS					
Seals			NBR					
Note on materials			–	–	Contains paint-wetting impairment substances	RoHS-compliant	RoHS-compliant	RoHS-compliant

Data sheet

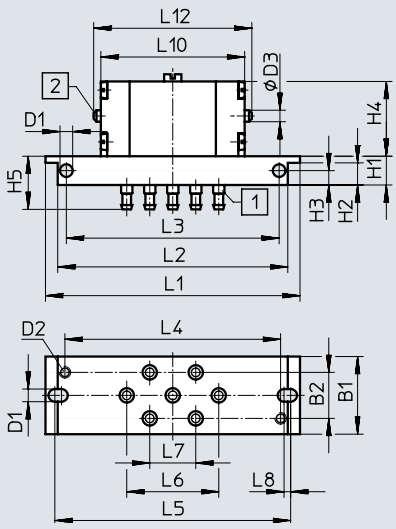
Dimensions Download CAD data ➔ www.festo.com

J-3-PK-3



[1] Barbed connector PK-3 for plastic tubing
[2] Manual override

VL-5-PK-3, J-5-PK-3, JD-5-PK-3



[1] Barbed connector PK-3 for plastic tubing
[2] Manual override

Type	B1	B2	D1 ø	D2	D3 ø	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8	L10	L12
J-3	27	16	4.4	M4	–	10	7.7	5	30	18.5	88.5	80.8	74	75	81	32	16	2.3	48.4	–
VL-5					4				26										50	55
J-5					4				26										50	55
JD-5					4				26										50	55

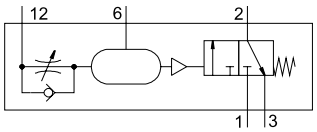
Ordering data

Description	Part no.	Type
3/2-way valves		
Open, monostable (1 valve)	**4233**	**VL/O-3-PK-3**
Open, monostable (2 valves)	**4245**	**VL/O-3-PK-3x2**
Bistable	**10772**	**J-3-PK-3**
5/2-way valves		
Monostable	**4504**	**VL-5-PK-3**
Bistable	**4503**	**J-5-PK-3**
Bistable, dominant[1)]	**4901**	**JD-5-PK-3**

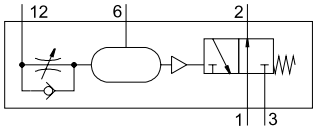
1) Dominant signal at 14

Data sheet

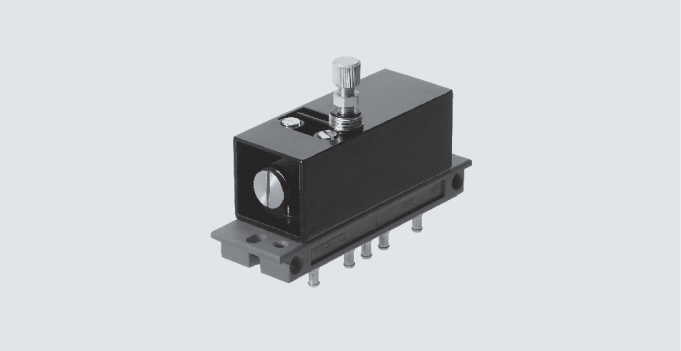
VZ, with switch-on delay



VZO, with switch-off delay



- Flow rate
  60 ... 90 l/min
- Temperature range
  –10 ... +60°C
- Operating pressure
  2.5 ... 8 bar



The time delay valve consists of a pneumatically actuated 3-way valve and an upstream throttle with additional volume.

The directional control valve is activated with a delay depending on the setting of the throttle.

It is reset via a mechanical spring.

General technical data			
Type		VZ	VZO
Pneumatic connection		PK-3	
Nominal width	[mm]	2	
Standard nominal flow rate qnN	[l/min]	90	60
Design		Poppet valve with spring return	
Actuation type		Pneumatic	
Type of mounting		Front panel mounting	
		On mounting frame	
Mounting position		Any	
Valve function		3/2-way valve, closed, monostable	3/2-way valve, open, monostable
Overlap		Negative overlap	
Manual override		None	
Exhaust air function		Can be throttled	
Type of control		Direct	
Pilot air supply		External	
Flow direction		Not reversible	
Sealing principle		Soft	
Adjustable delay time[1)]	[s]	0.25 ... 5	
Pause period for reset	[ms]	≥ 55	≥ 50
Repetition accuracy of time setting	[s]	±0.5	
Weight	[g]	150	

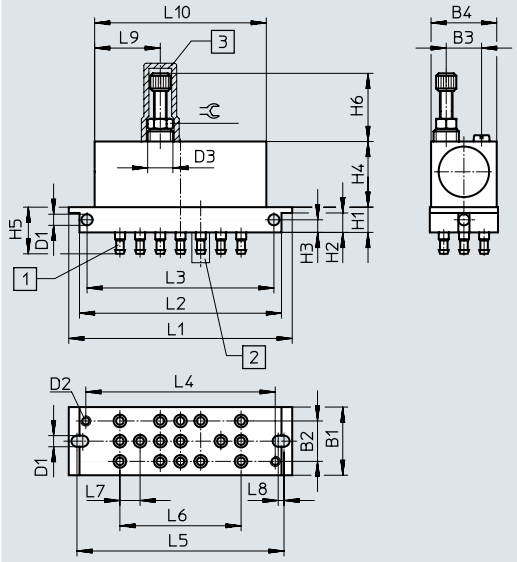
1) To achieve delay times that are longer than 5 s, an additional volume can be connected to the barbed connector 6 once the sealing cap has been removed. A 10 cm³ increase in volume will lengthen the time delay by approx. 5 s. Air reservoir VZS → Internet: vzs

Operating and environmental conditions		
Operating pressure	[bar]	2.5 ... 8
Operating/pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/ pilot medium		Lubricated operation not possible
Note on forced checking procedure		Switching frequency min. 1/week
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60

Materials	
Housing	Die-cast zinc
Seals	NBR
Note on materials	RoHS-compliant

Data sheet

Dimensions Download CAD data ➔ www.festo.com



[1] Barbed connector PK-3 for plastic tubing
[2] Connection 6 with end cap, for additional volume
[3] Protective cap

Type	B1	B2	B3	B4	D1 ø	D2	D3	H1	H2	H3	H4	H5
VZ VZO	27	16	14	26	4.4	M4	M10x1	10	7.7	5	26	18.5

Type	H6 min.	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	⌀
VZ VZO	27	88.5	80.8	74	75	81	48	8	2.3	26	68	8

Ordering data

Description	Part no.	Type
With switch-on delay	**5755**	**VZ-3-PK-3**
With switch-off delay	**5754**	**VZO-3-PK-3**

Ordering data – Accessories

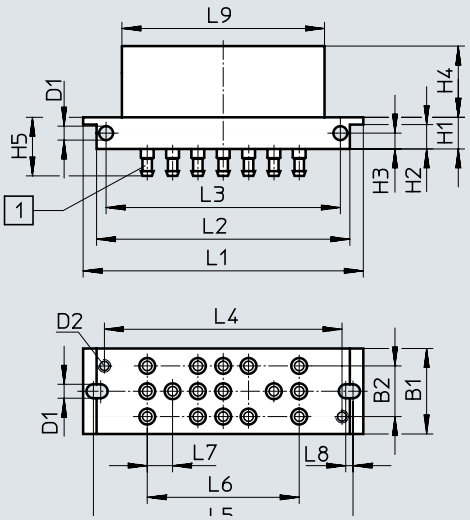
Description		Part no.	Type
Cover cap	Tamper-proof protective cap	**6436**	**GRK-M5**

Data sheet

General technical data			
		OS-PK-3-6/3	ZK-PK-3-6/3
Valve function		OR function	AND function
Nominal width	[mm]	2.5	2.5
Mounting position		Any	
Type of mounting		With through-hole, front panel mounting, on mounting frame	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Pneumatic connection	[mm]	PK-3 for tubing I.D. 3	
Standard nominal flow rate	[l/min]	100	
Information on materials: Housing		POM	POM
Information on materials: Seals		NBR	NBR
Weight	[g]	90	85

Operating and environmental conditions		
Operating pressure	[bar]	1.6 ... 8
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60

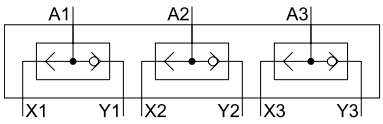
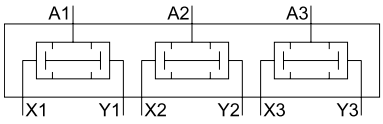
Dimensions Download CAD data ➔ www.festo.com



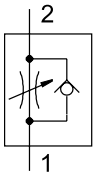
[1] Barbed connector for tubing I.D. 3

Type	B1	B2	D1 ø	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8	L9
OS/ZK	27	16	4.4	M4	10	7.7	5	22.5	18.5	88.5	80.8	74	75	81	48	8	2.3	64

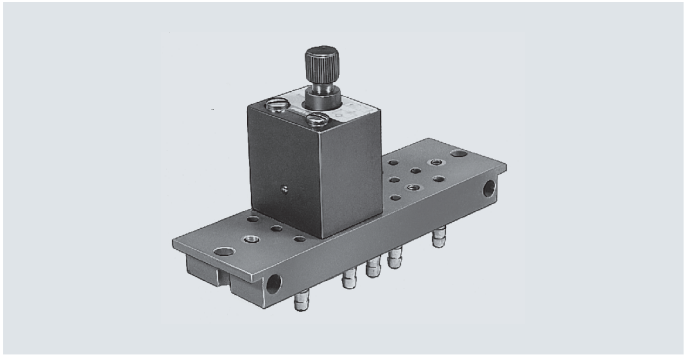
Ordering data

		Part no.	Type
OR block (3 OR gates)		**4232**	**OS-PK-3-6/3**
AND block (3 AND gates)		**4204**	**ZK-PK-3-6/3**

Data sheet



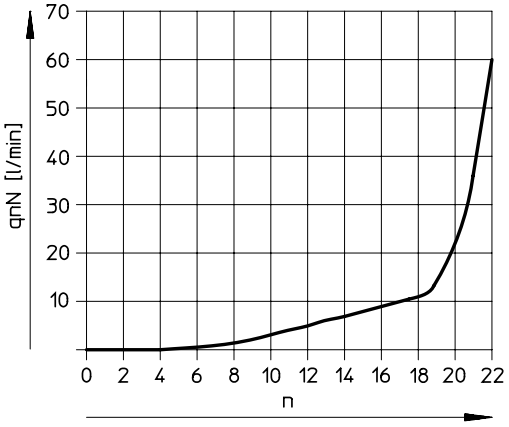
- Flow rate
  45 l/min
- Temperature range
  –10 ... +60°C
- Operating pressure
  0.5 ... 8 bar



General technical data			
		GRF-PK-3	GRF-PK-3X2
Valve function		One-way flow control function	
Pneumatic connection 2		PK-3	
Pneumatic connection 1		PK-3	
Standard nominal flow rate qnN	[l/min]	45	
Adjusting element		Knurled screw	
Type of mounting		Via through-hole	
Mounting position		Any	
Weight	[g]	95	145

Operating and environmental conditions		
Operating pressure	[bar]	0.5 ... 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]
Note on the operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60

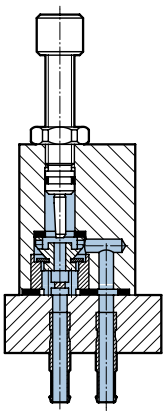
Standard nominal flow rate qnN at 6 bar › 5 bar as a function of spindle rotations n



Data sheet

Materials

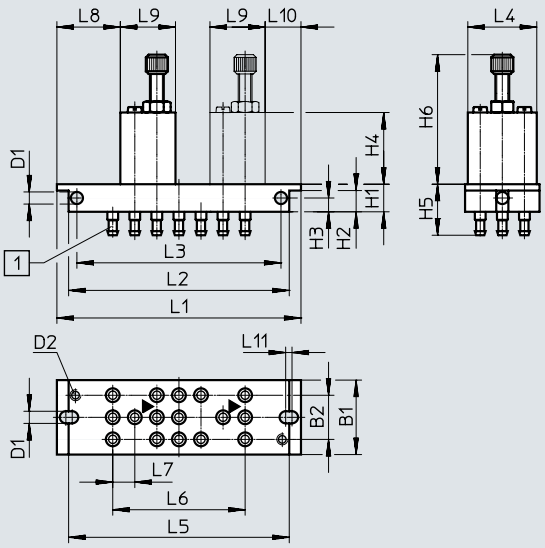
Sectional view



One-way flow control valve		
[1]	Adjusting screw	Brass
[2]	Housing	Wrought aluminium alloy
[3]	Sub-base	PA
–	Seals	NBR

Dimensions

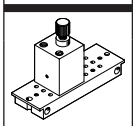
Download CAD data ➔ www.festo.com



[1] Barbed connector PK-3

Type	B1	B2	D1 ø	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
GRF	27	16	4.4	M4	10	7.7	5	26	18.5	≤ 47	88.5	80.8	74	25	80	48	8	23	20	13	2.3

Ordering data

	Number of one-way flow control valves	Part no.	Type
	1	**4565**	**GRF-PK-3**
	2	**4566**	**GRF-PK-3X2**

Data sheet

General technical data			
		PE converters	Vacuum switch
		PE-1/8-2N-SW	VPE-1/8-2N-SW
Measurement method		Pneumatic/electric pressure transducer	
Measured variable		Relative pressure	
Type of mounting		On mounting frame 2N	
		Via through-hole	
Mounting position		Any	
Pneumatic connection		G1/8	
Electrical connection		3 connector leads	3 connector leads
Materials			
Housing		Die-cast aluminium, PA, steel	PA, POM, steel, VMQ
Diaphragm		TPE-U(PU)	CR
Switch contact		Silver	Silver
Electrical connection		Tin-plated	Tin-plated
Cable sheath		PVC	–
Weight	[g]	65	45

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Operating and environmental conditions			
		PE converters	Vacuum switch
		PE-1/8-2N-SW	VPE-1/8-2N-SW
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[MPa]	0 ... 0.8	–0.095 ... 0
	[bar]	0 ... 8	–0.95 ... 0
Switch-on point	[bar]	2	–0.25
Switch-off point	[bar]	0.5	≤ 0.1
Ambient temperature	[°C]	0 ... +60	
Temperature of medium	[°C]	0 ... +60	

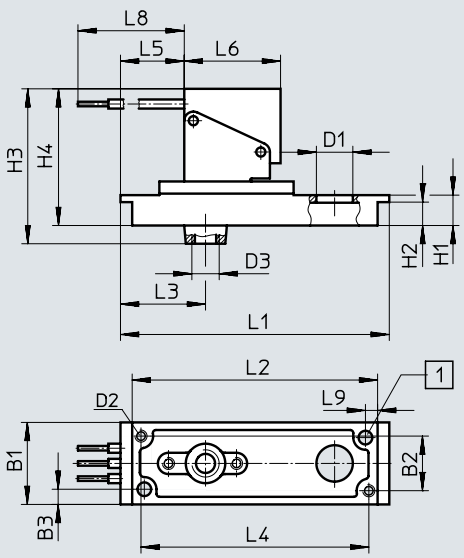
Electrical data			
		PE converters	Vacuum switch
		PE-1/8-2N-SW	VPE-1/8-2N-SW
Operating voltage range AC	[V AC]	12 ... 250	
Operating voltage range DC	[V DC]	12 ... 250	
Switching element function		Changeover switch	
Switching output		Contacting	–
Switching function		Threshold value with fixed hysteresis	–
Minimum load current	[mA]	100	
Max. switching frequency	[Hz]	1	
CE marking (see declaration of conformity)		To EU Low Voltage Directive	
Certification		CCC	
Degree of protection		IP67	IP67

Max. permissible electrical load					
Direct voltage			Alternating voltage		
Voltage [V DC]	Resistance load [A]	Inductive load [A]	Voltage [V AC]	Resistance load [A]	Inductive load [A]
PE/VPE-1/8-2N-SW					
15	10	10	125	5	5
30	5	3	250	5	2
50	1	1			
75	0.75	0.25			
124	0.5	0.03			
250	0.25	0.02			

Data sheet

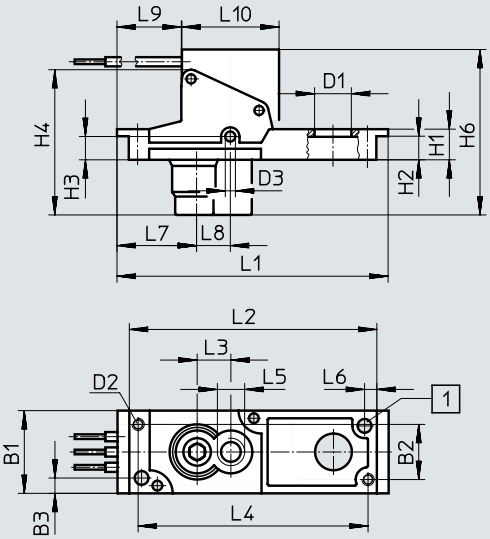
Dimensions Download CAD data ➔ www.festo.com

PE-1/8-2N-SW



[1] For thread M4

VPE-1/8-2N-SW



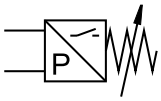
[1] For thread M4

Type	B1	B2	B3	D1 ø	D2	D3	H1	H2	H3	H4	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
PE	27	18	5	12	M4	3.3	10	7.7	51	45	–	88.5	80.8	28	75	21	31.7	–	500	4	–
VPE						G1/8			7.6	47.4	54			11		G1/8	4	26	11	21	31.7

Note: This product conforms to ISO 1179-1 and ISO 228-1.

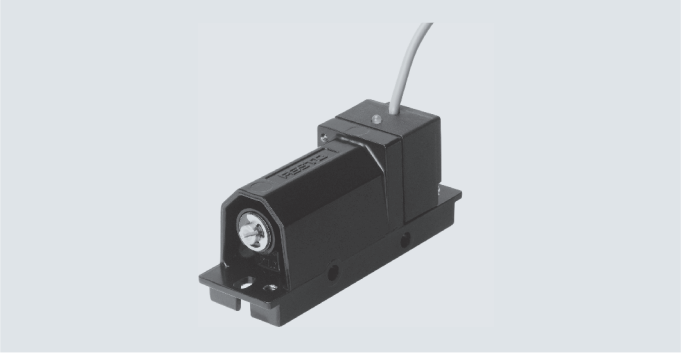
Ordering data	Part no.	Type
PE converter, splash-proof	**7862**	**PE-1/8-2N-SW**
Vacuum switch, splash-proof	**12595**	**VPE-1/8-2N-SW**
Accessories		
Protective cap for protection against accidental contact	**165614**	**SPE-B**

Data sheet



Temperature range
–20 ... +60°C

Operating pressure
–1 ... +8 bar



General technical data	
Certification	RCM
CE marking (see declaration of conformity)	To EU EMC Directive[1)]
Note on materials	RoHS-compliant
	Free of copper and PTFE
Degree of protection	IP67

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Input signal/measuring element		
Measured variable		Relative pressure (overpressure: connection to P1/vacuum: connection to P2)
		Differential pressure (connection P1 and P2, condition: P1 ≥ P2)
Measurement method		Pneumatic/electric differential pressure switch
Operating pressure	[bar]	–1 ... +8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Temperature of medium	[°C]	–20 ... +60
Ambient temperature	[°C]	–20 ... +60

Switching output		
Switching output		PNP
Switching element function		N/O
Threshold value setting range	[bar]	–0.8 ... +8
Max. switching frequency	[Hz]	70
Max. output current	[mA]	350

Output, additional data		
Short circuit current rating		Yes

Electronics		
Operating voltage range	[V DC]	12 ... 30

Electromechanics		
Electrical connection		Cable, 3-wire, open end
Cable length	[m]	2.5

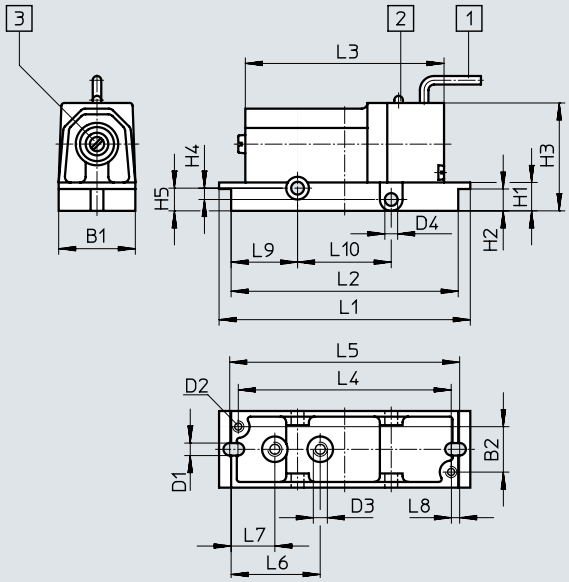
Mechanics		
Type of mounting		On mounting frame 2N
		Via through-hole
Mounting position		Any
Pneumatic connection		M5
Information on materials: Housing		Die-cast zinc
Weight	[g]	240

Data sheet

Display/operation	
Switching status indication	Yellow LED

Dimensions

Download CAD data ➔ www.festo.com

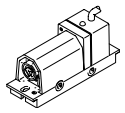


[1] Cable: 3 x 0.14 mm², 2.5 m long
[2] Yellow LED
[3] Pressure threshold setting

Colour coding:
BN = 24 V
BU = 0 V
BK = switching output
The switch is protected against polarity reversal

Type	B1	B2	D1 ⌀	D2	D3	D4 ⌀	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
PEN-M5	27	16	4.4	M4	M5	4.5	10	7.7	37	3	8	88.5	80.8	70	75	81	31.4	15.4	2.9	23.4	33

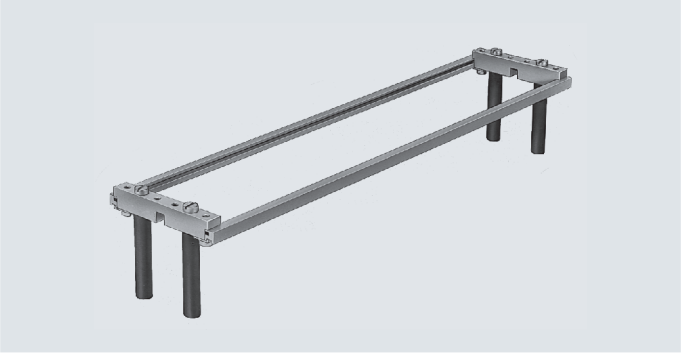
Ordering data

		Part no.	Type
	M5	**8625**	**PEN-M5**

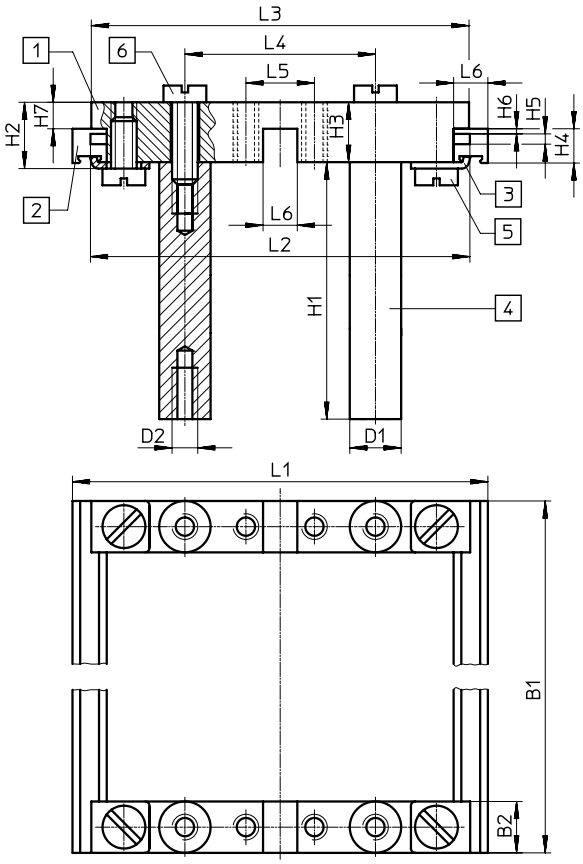
Accessories

Mounting frame NRRQ-2N

Scope of delivery
- 2 x connecting component NRV-2N
- 2 x mounting rail NRQ-8-480
- 4 x mounting bracket NRW-12/3
- 4 x bolt NRB-12/60
- 4 x socket head screw DIN 84-M6X18-4.8
- 4 x socket head screw DIN 84-M6X12-4.8
- 4 x mounting bracket NRW-9/1.5-B
- 4 x socket head screw DIN 84-M4X10-4.8



[1] Connecting component NRV-2N
[2] Mounting rail NRQ-8-480
[3] Mounting bracket NRW-12/3
[4] Bolt NRB-12/60
[5] Socket head screw DIN 84-M6X18-4.8
[6] Socket head screw DIN 84-M6X12-4.8

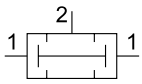


Type	B1	B2	D1 ⌀	D2	H1	H2	H3	H4	H5	H6	H7	L1	L2	L3	L4	L5	L6
NRRQ	480	12	12	M6	60	15.5	14	8	2.4	1.2	6.2	97	88.6	88.2	44.5	16	8

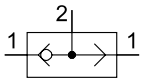
Mounting frame	Part no.	Type
Mounting frame 2N complete for 16 components	**9365**	**NRRQ-2N**
Accessories		
Mounting bracket for mounting of sub-bases on the frame	**11571**	**NRW-9/1.5-B**
Socket head screw (2 included in the scope of delivery)	**204021**	**DIN 84-M4X12-4.8**

Data sheet

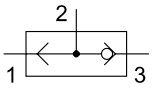
AND gate ZK



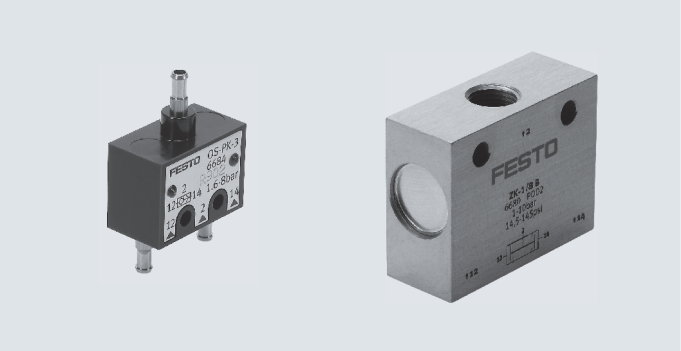
OR gate OS
OS-PK-3
OS-1/8 / 1/4-B



OS-1/2



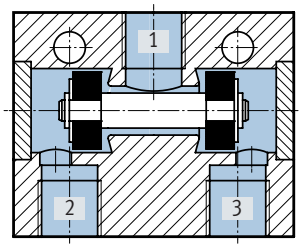
- Flow rate
  120 ... 5000 l/min
- Temperature range
  –10 ... +60°C
- Operating pressure
  1 ... 10 bar



Valve function

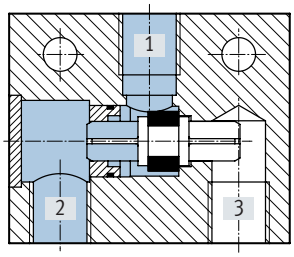
AND function

For an AND gate, all input signals must be active at the same time in order to execute a function.
The AND gate ZK has two inputs [2], [3] and one output [1]. The output [1] is only pressurised if pressure is supplied to both inputs at the same time. If different pressures are present at the inputs, the lower pressure is fed to the output [1].



OR function

For an OR gate, at least one of all the input signals must be active in order to execute a function.
The OR gate OS has two inputs [2], [3] and one output [1]. The output [1] is pressurised if pressure is supplied to at least one of the two inputs. The valve automatically blocks the input which is not pressurised. If both inputs are simultaneously supplied with different pressures, the higher pressure is fed to the output [1].



General technical data

Valve function		AND function		OR function			
Type		ZK-PK-3	ZK-1/8-B	OS-PK-3	OS-1/8-B	OS-1/4-B	OS-1/4-B
Pneumatic connection		PK-3	G1/8	PK-3	G1/8	G1/4	G1/2
Nominal width	[mm]	2.4	4.5	2.4	4	6.5	12
Standard nominal flow rate qnN	[l/min]	120	550	120	500	1170	5000
Weight	[g]	10	45	9	45	110	814
Type of mounting		Via through-hole					
Mounting position		Any					

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Operating and environmental conditions

Type		ZK-PK-3	ZK-1/8-B	OS-PK-3	OS-1/8-B	OS-1/4-B	OS-1/2
Operating pressure	[bar]	1.6 ... 8	1 ... 10	1.6 ... 8	1 ... 10	1 ... 10	1 ... 10
Operating/pilot medium		Compressed air to ISO 8573-1:2010 [7:–:–]					
Note on the operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)					
Ambient temperature	[°C]	–10 ... +60					
Temperature of medium	[°C]	–10 ... +60					

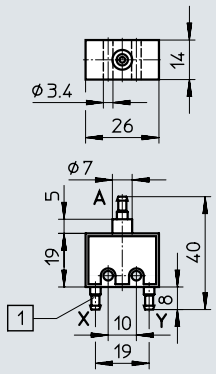
Materials

Type	ZK-PK-3	ZK-1/8-B	OS-PK-3	OS-1/8-B	OS-1/4-B	OS-1/2
Housing	Brass, POM	Anodised wrought aluminium alloy	POM	Wrought aluminium alloy		
Seals	NBR					
Note on materials	RoHS-compliant					

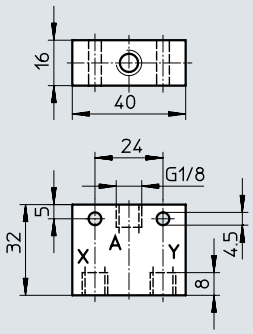
Data sheet

Dimensions Download CAD data ➔ www.festo.com

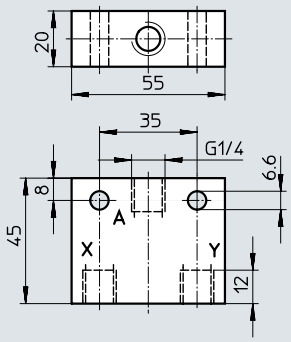
ZK-PK-3
OS-PK-3



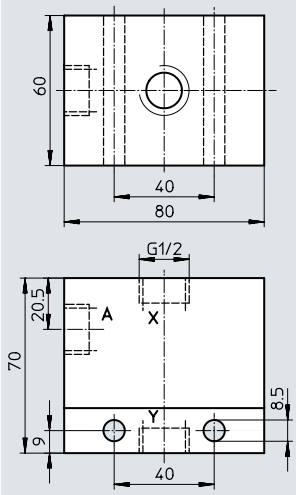
ZK-1/8-B
OS-1/8-B



OS-1/4-B



OS-1/2



[1] Barbed connector PK-3

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Ordering data

Valve function	Pneumatic connection	Part no.	Type
AND function	PK-3	**6685**	**ZK-PK-3**
	G1/8	**6680**	**ZK-1/8-B**
OR function	PK-3	**6684**	**OS-PK-3**
	G1/8	**6681**	**OS-1/8-B**
	G1/4	**6682**	**OS-1/4-B**
	G1/2	**3427**	**OS-1/2**

Key features

Adding counters

- Base mounting
- Front panel mounting

Adding counters have 6 digits and count upwards, i.e. relevant signals are added. If it is reset, the number 000 000 appears.
A pneumatic signal switches the counter by half a step, so the first half of the number is visible. At the end of the signal, with the 2nd half-step, the number is completely visible.
The counter can be reset manually by pressing a button. In addition, pneumatic resetting is possible via a pneumatic signal. During the reset process, no count signal can be received or be present.

Preset counters

- Subtraction counting mode
- Manual and pneumatic reset
- Protective cap

The counter counts pneumatic signals backwards from a predetermined number. Once the zero position is reached, the counter gives a pneumatic output signal. This output signal remains until the counter is reset.
The counter is preset by pressing the reset button and entering the predetermined value at the same time. Once predetermined, the number is retained for future resetting of the counter.

Data sheet

General technical data				
Type		Adding counters		Preset counters
		PZA-A-B	PZA-E-C	PZV-E-C
Design		Mechanical counter with pneumatic actuator		
Type of mounting		3 through-holes in the housing	Front panel mounting	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/ pilot medium		Lubricated operation not possible		
Pneumatic connection		M5		
Display[1]		6-digit	6-digit	5-digit
Reset		Manual button or pneumatic signal		
Response pressure				
Actuator	[bar]	0.6 ±0.2	> 0.8	0.6 ±0.2
Reset	[bar]	0.6 ±0.2	2	–
Drop-off pressure				
Actuator	[bar]	0.2 ±0.1	< 0.15	0.2 ±0.1
Reset	[bar]	0.15 ±0.1	< 0.15	0.15 ±0.1
Min. pulse length				
Actuator	[ms]	10	8	10
Reset	[ms]	180	150	180
Min. pause period				
Actuator	[ms]	15	10	15
Reset	[ms]	50	50	50
Materials		Housing: Plastic		
		Seals: Chloroprene		
Weight	[g]	155	70	150

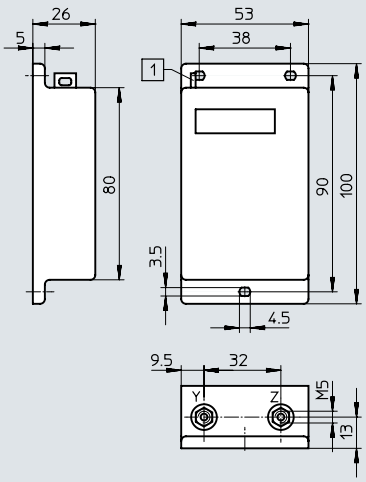
1) Digit size 4.5 mm

Operating and environmental conditions				
Type		Adding counters		Preset counters
		PZA-A-B	PZA-E-C	PZV-E-C
Operating pressure	[bar]	2 ... 8		
Min. reset pressure	[bar]	2	–	–
Ambient temperature	[°C]	–10 ... +60	0 ... +60	

Data sheet

Dimensions Download CAD data ➔ www.festo.com

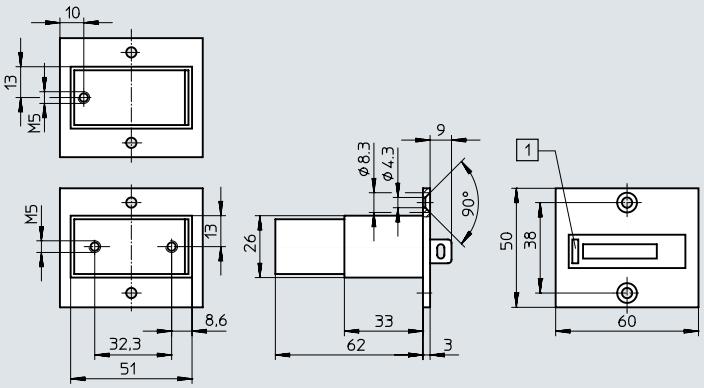
Adding counters – Base mounting PZA-A-B



[1] Reset button

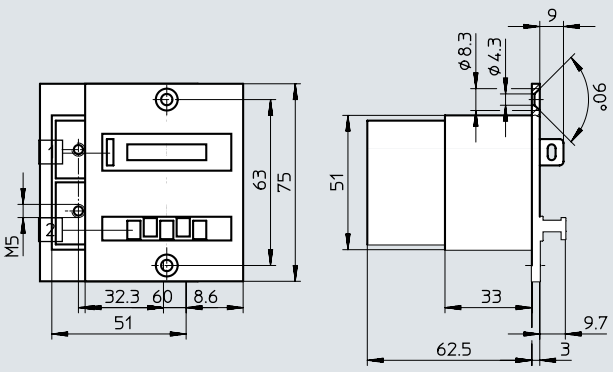
Z = Count signal
Y = Reset signal

Adding counters – Front panel mounting PZA-E-C



[1] Reset button

Preset counters – Base mounting PZV-E-C



[1] Reset button
[2] Presetting buttons

The predetermined number is reset once more using the reset button or via a pneumatic signal to the reset connection.

Note: The output signal must not be used to reset the counter. During the reset process, no count pulses can be received or be present.

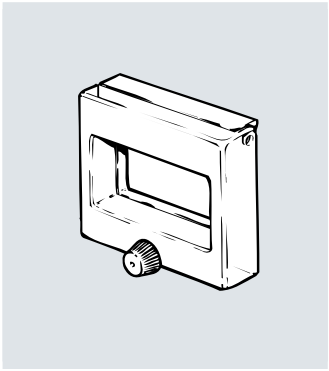
Data sheet

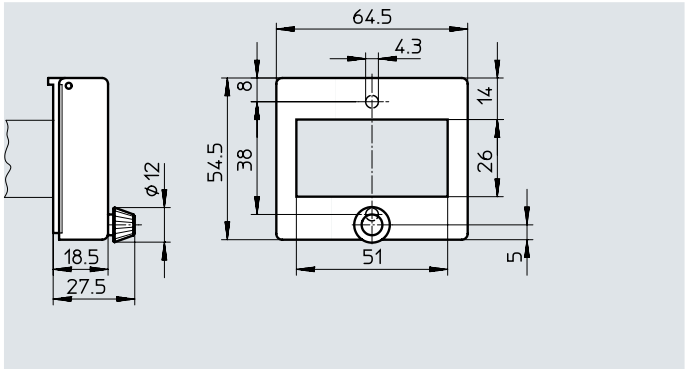
Ordering data

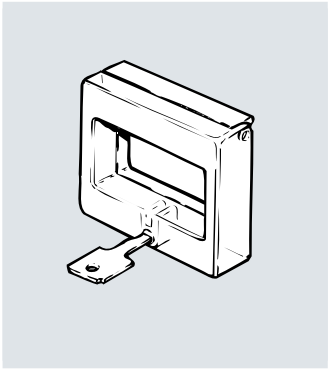
		Part no.	Type
Adding counters	Base mounting	**14992**	**PZA-A-B**
	Front panel mounting	**8606**	**PZA-E-C**
Preset counters	Base mounting	**15608**	**PZV-E-C**

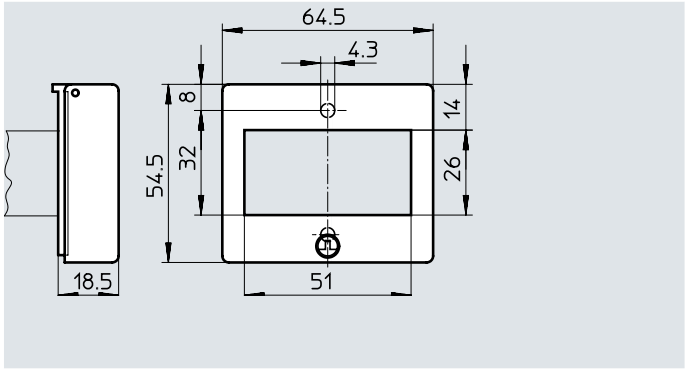
Accessories

Protective cap
With rotary knob PZ-SK-1
With lock PZ-SS-1
Protective cap for adding counters to prevent the ingress of dirt and spray at the front





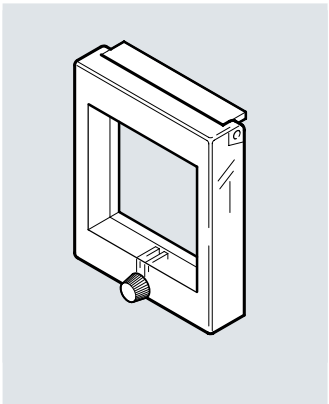


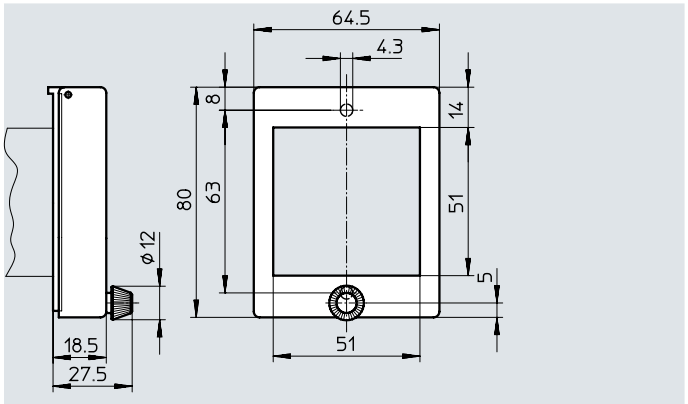


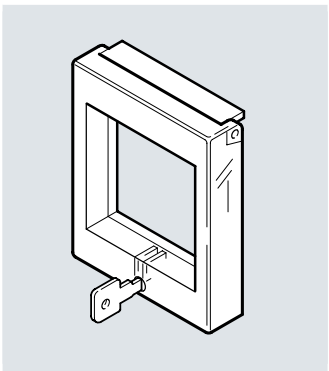
Ordering data

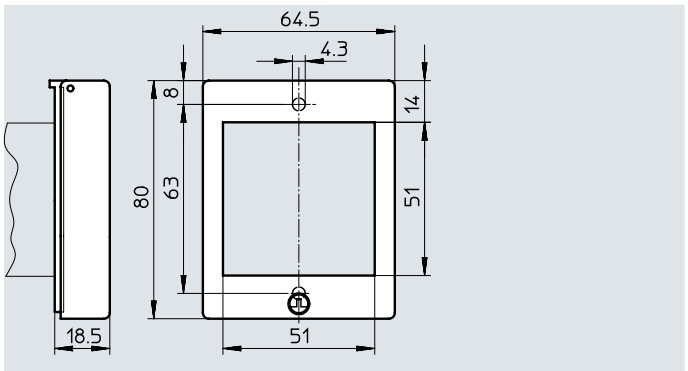
	Part no.	Type
Protective cap with rotary knob	**14662**	**PZ-SK-1**
Protective cap with lock	**13965**	**PZ-SS-1**

Protective cap
With rotary knob PZ-SK-2
With lock PZ-SS-2
Protective cap for preset counters to prevent the ingress of dirt and spray at the front





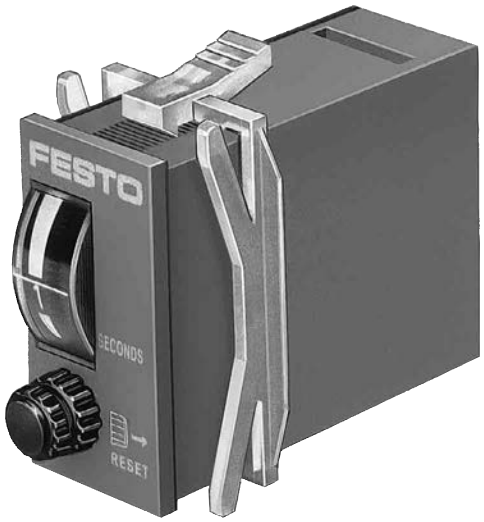




Ordering data

	Part no.	Type
Protective cap with rotary knob	**14663**	**PZ-SK-2**
Protective cap with lock	**13966**	**PZ-SS-2**

Key features



General

- Adjustable delay time
  - 0.2 ... 3 s
  - 2 ... 30 s
  - 8 ... 120 s
  - 20 ... 300 s
- Front panel mounting
- H rail mounting to EN 60715
- Protective cap

Pneumatic timer PZVT

The timer switches the input pressure applied to connection 1 to connection 2 after the set time delay has expired.

Automatic reset module PZVT-AUT

The reset module is used to automatically reset timers of type PZVT-...-SEC once the preset time has expired and to generate an output signal of defined length for control purposes.

The time can be reset manually by pulling the adjusting knob on the reset module. This makes it very easy to implement pneumatic time control processes with automatically repeating time intervals.

Data sheet

General technical data

Type		Timer				Reset module
		PZVT-3-SEC	PZVT-30-SEC	PZVT-120-SEC	PZVT-300-SEC	PZVT-AUT
Design		Mechanical sequence counter with pneumatic actuator				
Type of mounting		Front panel mounting				
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on the operating/ pilot medium		Lubricated operation not possible				
Pneumatic connection		Female thread M5				
Standard nominal flow rate	[l/min]	50				
Adjustable delay time	[s]	0.2 ... 3	2 ... 30	8 ... 120	20 ... 300	0.2 ... 2
Repetition accuracy	[s]	±0.1	±0.3	±1.2	±3	±0.3
Setting accuracy	[s]	±0.3	±0.6	±3	±6	–
Pause period for reset	[ms]	≥ 200				
Degree of protection		IP54 to IEC 60529 with protective cover and panel frame				
Weight	[g]	45				50
Housing material		ABS				
Note on materials		RoHS-compliant				

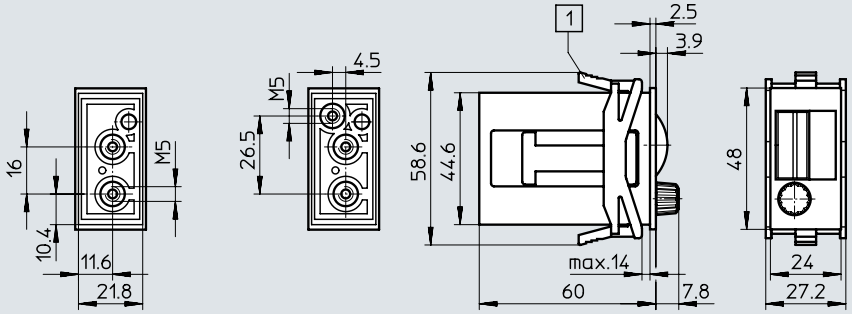
Operating and environmental conditions

Type		PZVT-3-SEC	PZVT-30-SEC	PZVT-120-SEC	PZVT-300-SEC	PZVT-AUT
Operating pressure	[bar]	2 ... 6				
Switch-on pressure	[bar]	≥ 1.6				
Switch-off pressure	[bar]	≤0.1				≤0.3
Ambient temperature	[°C]	–10 ... +60				–15 ... +60

Data sheet

Dimensions Download CAD data ➔ www.festo.com

PZVT-...-SEC PZVT-AUT



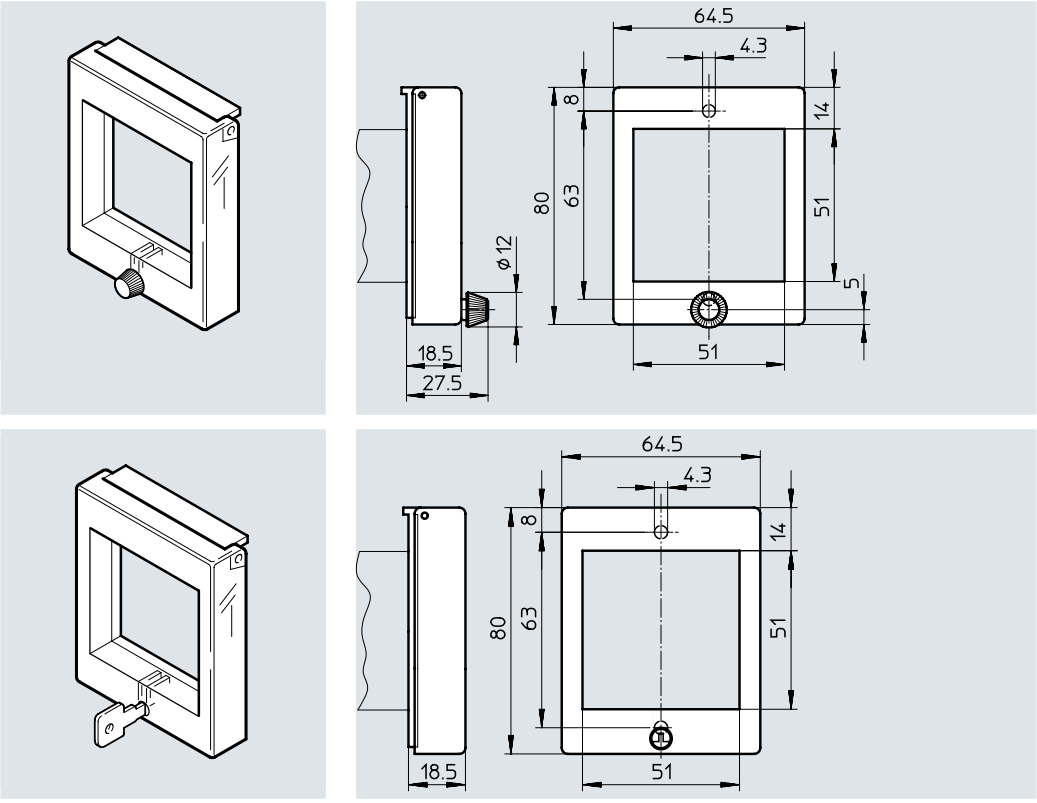
[1] Clamping frame included in the scope of delivery

Ordering data

	Adjustable delay time [s]	Part no.	Type
Timer	0.2 ... 3	**158495**	**PZVT-3-SEC**
	2 ... 30	**150238**	**PZVT-30-SEC**
	8 ... 120	**177616**	**PZVT-120-SEC**
	20 ... 300	**150239**	**PZVT-300-SEC**
Reset module	0.2 ... 2	**158496**	**PZVT-AUT**

Accessories

Protective cap
With rotary knob PZ-SK-2
With lock PZ-SS-2
Protective cap for preset counters to prevent the ingress of dirt and spray at the front



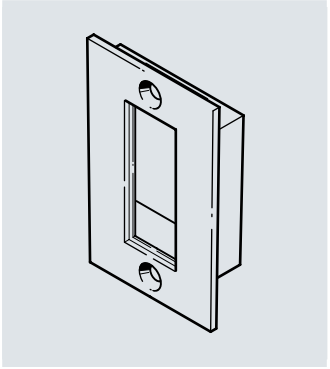
Ordering data

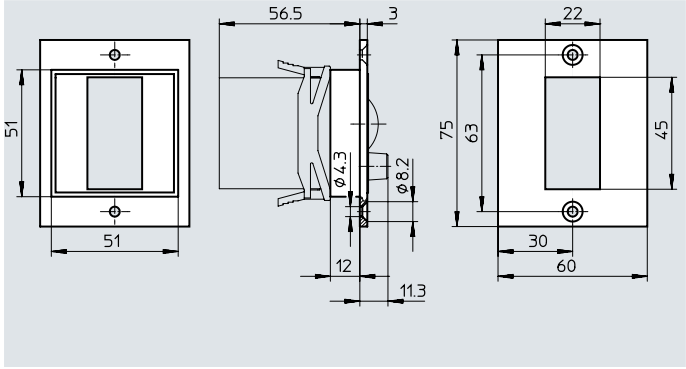
	Part no.	Type
Protective cap with rotary knob	**14663**	**PZ-SK-2**
Protective cap with lock	**13966**	**PZ-SS-2**

Accessories

Panel frame
For front panel mounting

Note on materials: RoHS-compliant

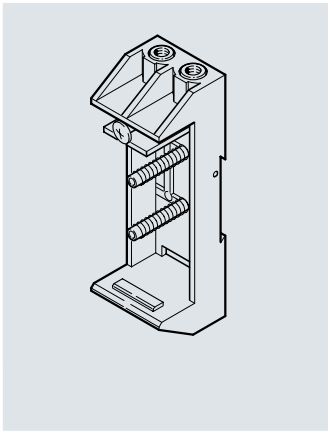


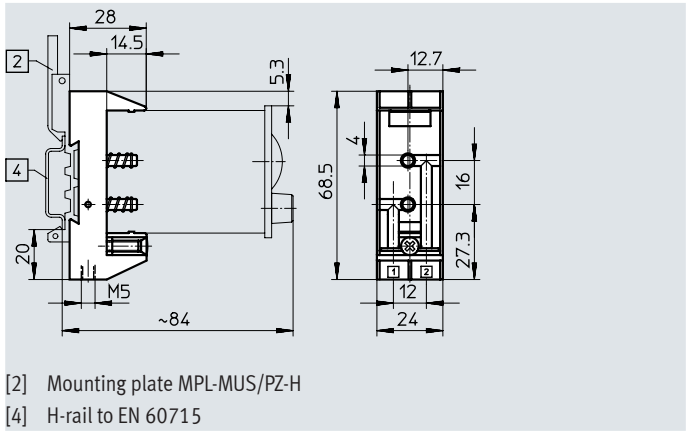


Ordering data

	Part no.	Type
Panel frame	**150241**	**PZVT-FR**

Base PZVT-S-DIN
For mounting on H-rail to EN 60715





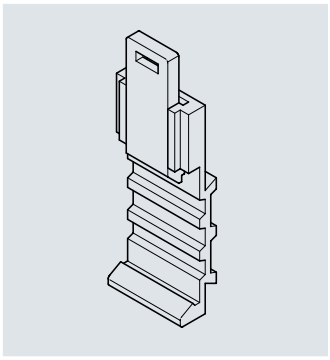
[2] Mounting plate MPL-MUS/PZ-H
[4] H-rail to EN 60715

Ordering data

	Part no.	Type
Base	**150240**	**PZVT-S-DIN**

Note: The base PZVT-S-DIN cannot be used for the reset module PZVT-AUT.

Mounting plate MPL-MUS/PZ-H
For H rail to EN 60715



Ordering data

	Part no.	Type
Mounting plate for H-rail	**19135**	**MPL-MUS/PZ-H**

Ordering data

	Part no.	Type
Base	**150240**	**PZVT-S-DIN**

Note: The base PZVT-S-DIN cannot be used for the reset module PZVT-AUT.

Festo - Your Partner in Automation

1 Festo Inc.

5300 Explorer Drive
Mississauga, ON L4W 5G4
Canada

Festo Customer Interaction Center
Tel: 1 877 463 3786
Fax: 1 877 393 3786
Email: customer.service.ca@festo.com

2 Festo Pneumatic

Av. Ceylán 3,
Col. Tequesquináhuac
54020 Tlalnepantla,
Estado de México

Multinational Contact Center
01 800 337 8669

ventas.mexico@festo.com

3 Festo Corporation

1377 Motor Parkway
Suite 310
Islandia, NY 11749

4 Regional Service Center

7777 Columbia Road
Mason, OH 45040

Festo Customer Interaction Center
1 800 993 3786
1 800 963 3786
customer.service.us@festo.com

Connect with us

www.festo.com/socialmedia

www.festo.com

Subject to change