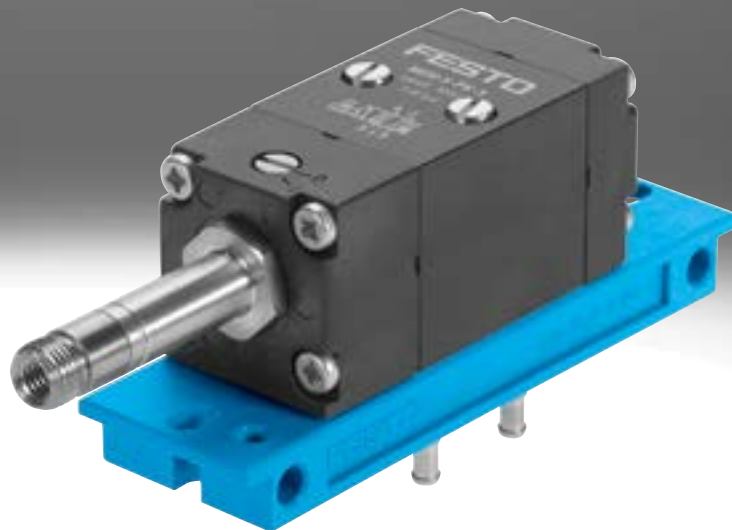



M5 compact system

FESTO



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.

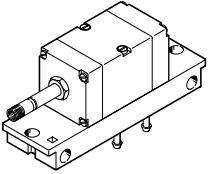
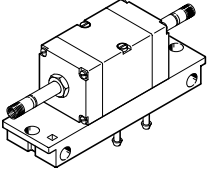
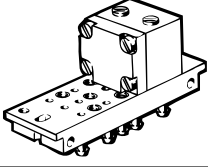
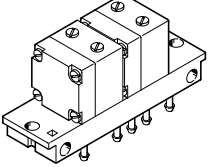
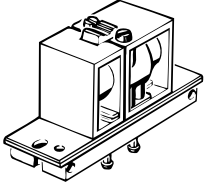
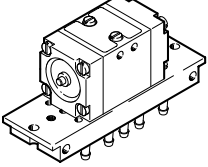
Basic valves and actuator attachments for front-panel mounting as signal elements for basic functions START, STOP etc.
→ Internet: sv

Mounting the components

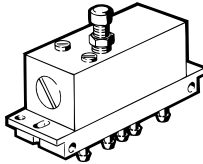
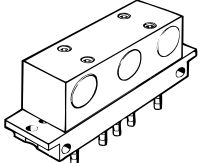
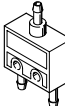
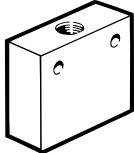
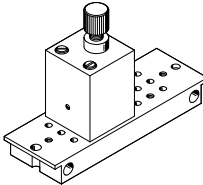
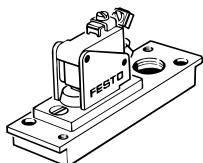
A maximum of 16 components of the M5 compact system with 2N sub-bases can be mounted on the mounting frame. At 480 mm, the length of the frame is designed for 19" housing to DIN 41 488. The rails can be shortened to adapt them to other installation conditions.

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.

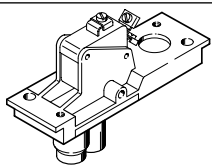
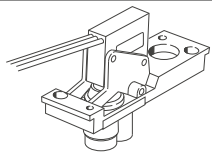
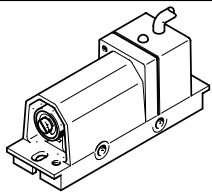
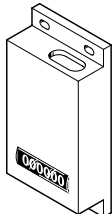
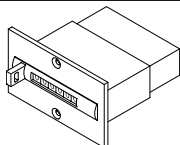
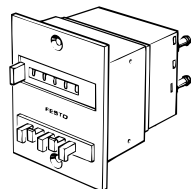
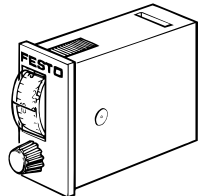
Product range overview

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		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		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		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		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	

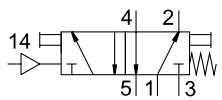
Product range overview

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	

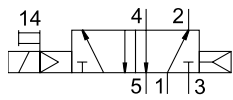
Data sheet

5/2-way valves

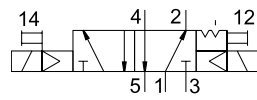
MFH-5-PK-3





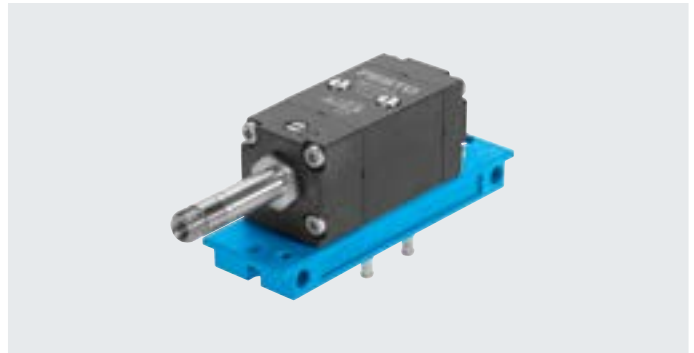
MFH-5-PK-3-L



JMFH-5-PK-3



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



General technical data			MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
Type			PK-1		
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 q _{nN}	[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			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

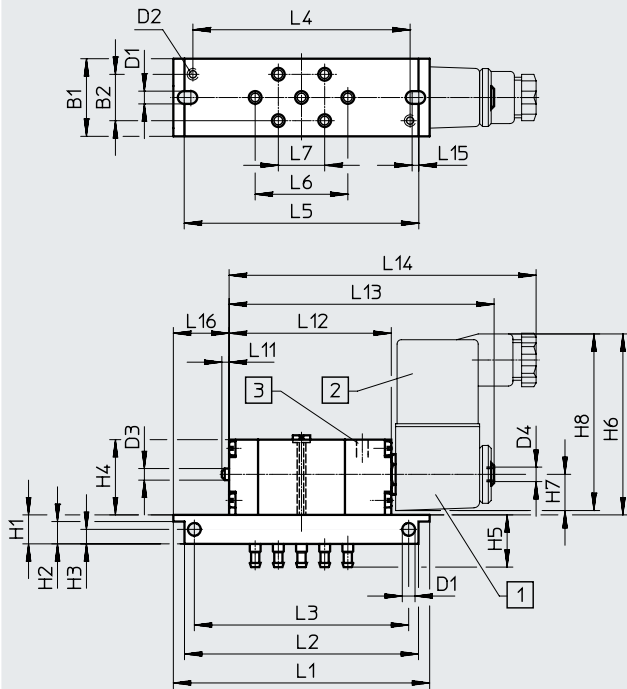
Materials	
Housing	Anodised aluminium
Sub-base	Anodised aluminium
Seals	NBR
Note on materials	RoHS-compliant

Data sheet

Dimensions – 5/2-way valves

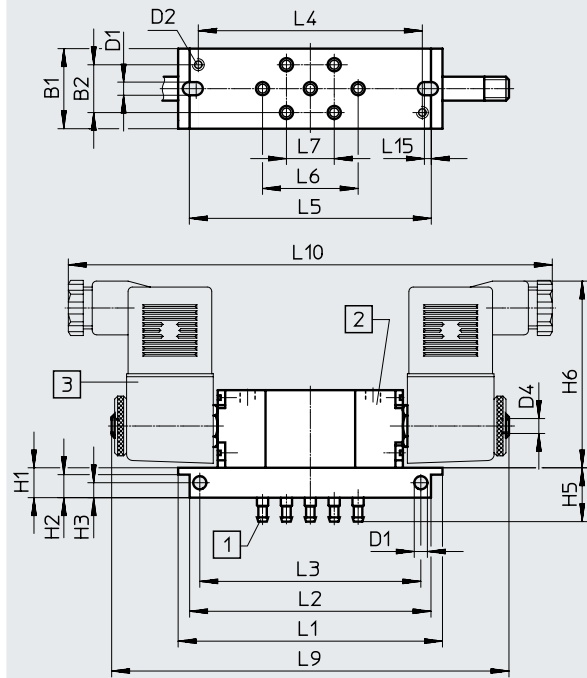
Download CAD data → www.festo.com

MFH-5-PK-3(-L)



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

JMFH-5-PK-3

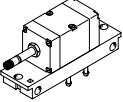
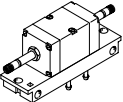
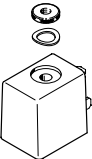
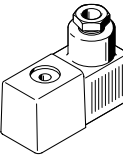
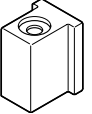
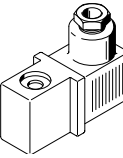


- [1] Barbed connector PK-3 for plastic tubing
- [2] Manual override
- [3] Rotatable solenoid coil

Type	B1	B2	D1 ∅	D2	D3 ∅	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

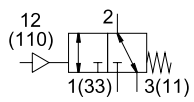
Ordering data		Description	Part no.	Type		
5/2-way valves						
	Monostable/single solenoid	Mechanical spring return	4448	MFH-5-PK-3		
		Pneumatic spring return	11546	MFH-5-PK-3-L		
	Double solenoid	–	4447	JMFH-5-PK-3		
Solenoid coil, plug to industry standard, type B						
	Without plug socket	12 V 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		
	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° Maritime classification ¹⁾ see certificate	24 V DC, 42 V AC	13264	MSFG-24/42-50/60-DS		
		110 V AC	13265	MSFW-110-50/60-DS		
		230 V AC	13266	MSFW-230-50/60-DS		

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

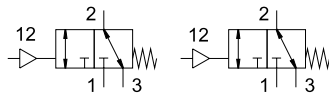
Data sheet




3/2-way valves

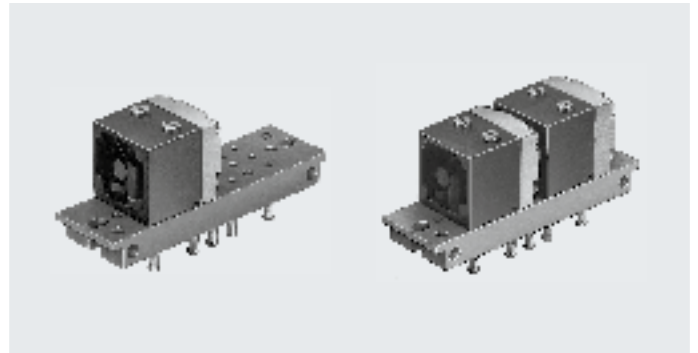
VL/O-3-PK-3



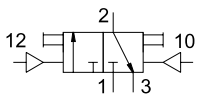
VL/O-3-PK-3x2






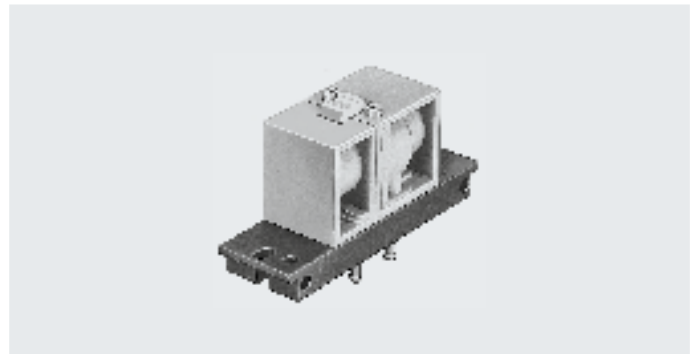
-  - Flow rate
100 l/min
-  - Temperature range
-10 ... +60°C
-  - Operating pressure
0 ... 8 bar



J-3-PK-3

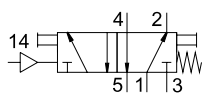


-  - Flow rate
100 l/min
-  - Temperature range
-10 ... +60°C
-  - Operating pressure
-0.9 ... 8 bar

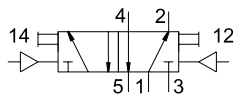


5/2-way valves

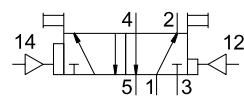
VL-5-PK-3





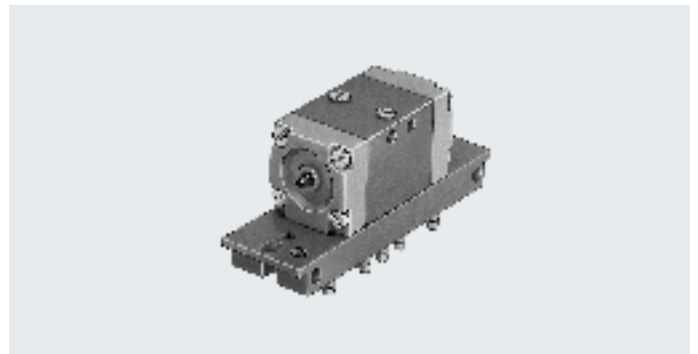
J-5-PK-3



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 q _N [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⁾
Switch- ing time	Off [ms]	50	50	–	22	–
	On [ms]	12	12	–	15	–
	Changeover [ms]	–	–	7	–	9
	Changeover (dominant) [ms]	–	–	–	–	–
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

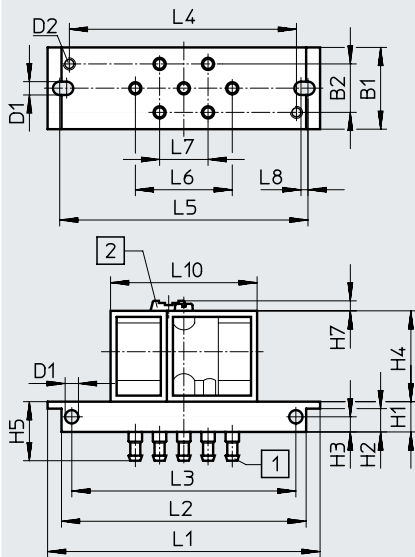
Materials						
Type	3/2-way valves			5/2-way valves		
	VL/O-3-PK-3	VL/O-3-PK-3x2	J-3-PK-3	VL-5-PK-3	J-5-PK-3	JD-5-PK-3
Housing	Plastic, die-cast zinc					
Sub-base	Brass, reinforced PPS					
Seals	NBR					
Note on materials	–	–	Contains paint-wetting impairment substances	RoHS-compliant	RoHS-compliant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

Data sheet

Dimensions

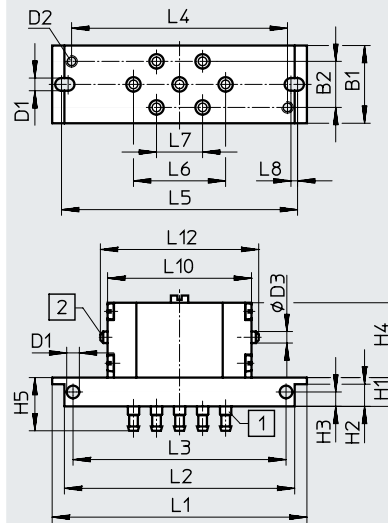
Download CAD data → www.festo.com

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 ∅	D2	D3 ∅	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

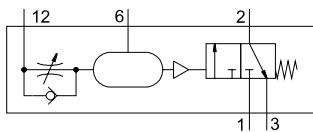
Ordering data

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

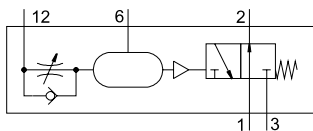
1) Dominant signal at 14




Data sheet

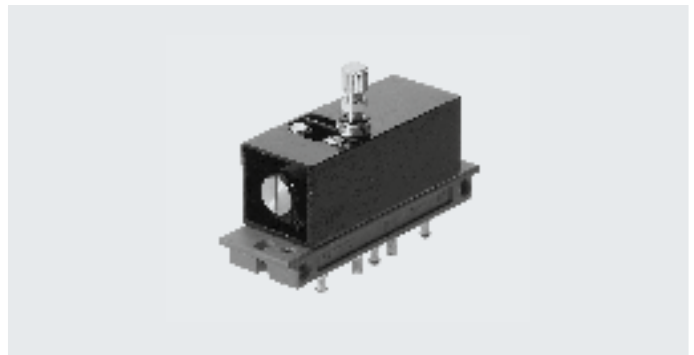
VZ, with switch-on delay



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		VZ	VZO
Type		VZ	VZO
Pneumatic connection		PK-3	
Nominal width	[mm]	2	
Standard nominal flow rate q _{nN}	[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	

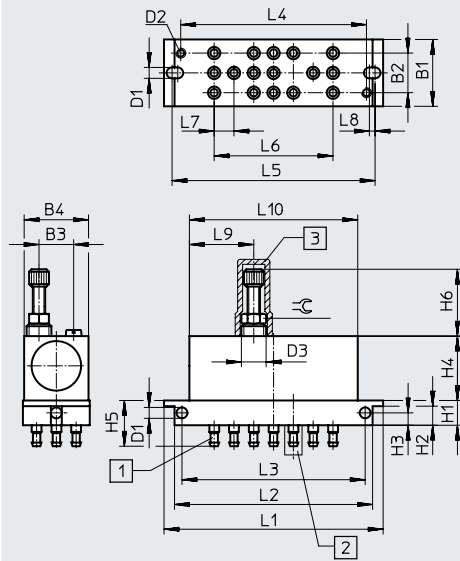
1) To achieve delay times that are longer than 5 s, an additional volume can be connected to the barbed connector 6 once the sealing cap has been removed. A 10 cm³ increase in volume will lengthen the time delay by approx. 5 s. Air reservoir VZS → Internet: vzs

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 ∅	D2	D3	H1	H2	H3	H4	H5
VZ	27	16	14	26	4.4	M4	M10x1	10	7.7	5	26	18.5
VZO												

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

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

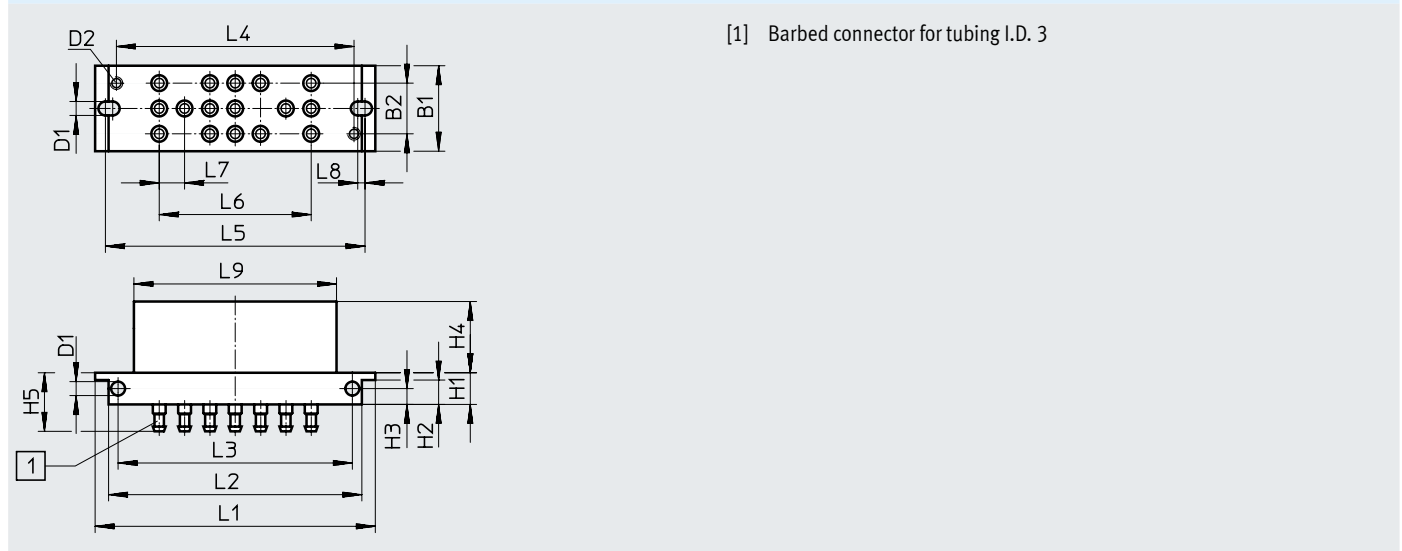
Description	Part no.	Type
Cover cap	6436	GRK-M5
Tamper-proof protective cap		

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	

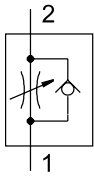
Dimensions Download CAD data → www.festo.com






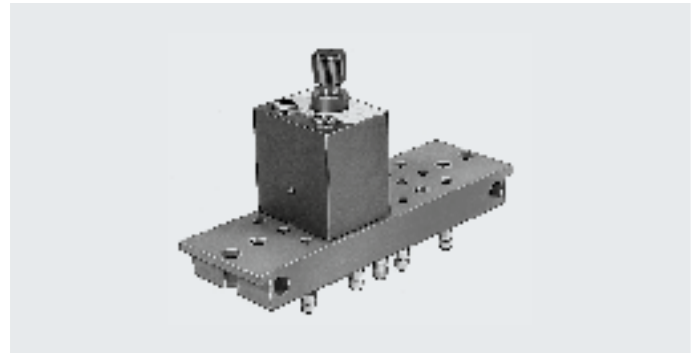
Type	B1	B2	D1 ø	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8	L9
OS/ZK	27	16	4.4	M4	10	7.7	5	22.5	18.5	88.5	80.8	74	75	81	48	8	2.3	64

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

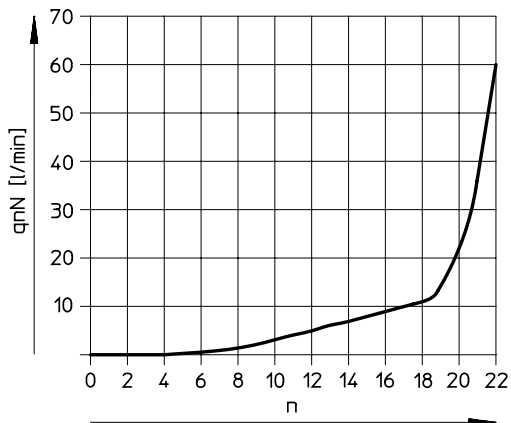


-  - Flow rate
45 l/min
-  - Temperature range
-10 ... +60°C
-  - Operating pressure
0.5 ... 8 bar



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 q_{nN}	[l/min]	45	
Adjusting element		Knurled screw	
Type of mounting		Via through-hole	
Mounting position		Any	
Weight	[g]	95	145

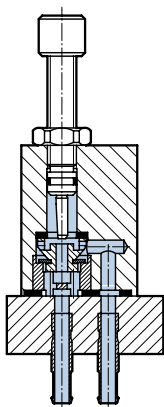
Operating and environmental conditions		
Operating pressure	[bar]	0.5 ... 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]
Note on the operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	-10 ... +60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

 Standard nominal flow rate q_{nN} at 6 bar > 5 bar as a function of spindle rotations n


Data sheet

Materials

Sectional view



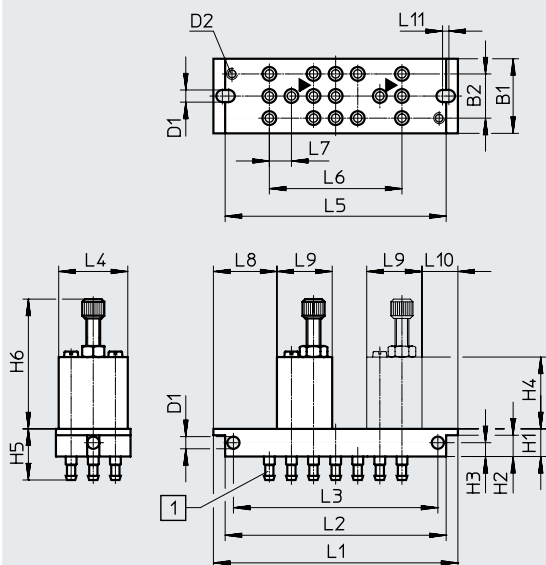
One-way flow control valve

[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 ∅	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	

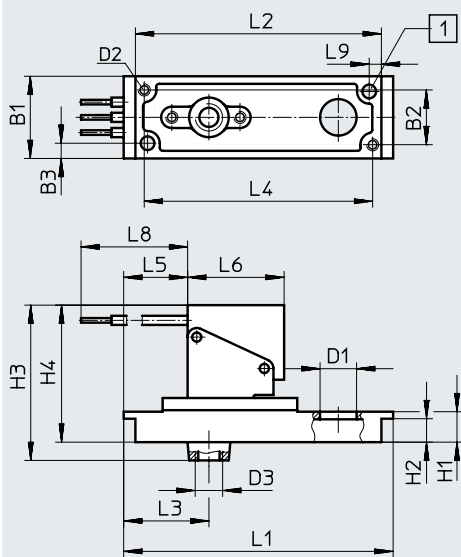
Max. permissible electrical load					
Direct voltage			Alternating voltage		
Voltage [V DC]	Resistance load [A]	Inductive load [A]	Voltage [V AC]	Resistance load [A]	Inductive load [A]
PE/VPE-1/8-2N-SW					
15	10	10	125	5	5
30	5	3	250	5	2
50	1	1			
75	0.75	0.25			
124	0.5	0.03			
250	0.25	0.02			

Data sheet

Dimensions

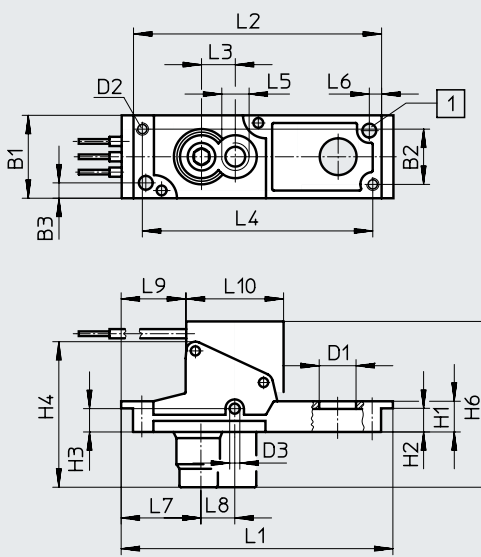
Download CAD data → www.festo.com

PE-1/8-2N-SW



[1] For thread M4

VPE-1/8-2N-SW



[1] For thread M4

Type	B1	B2	B3	D1 ∅	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.

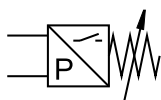
Ordering data



	Part no.	Type
PE converter, splash-proof	7862	PE-1/8-2N-SW
Vacuum switch, splash-proof	12595	VPE-1/8-2N-SW

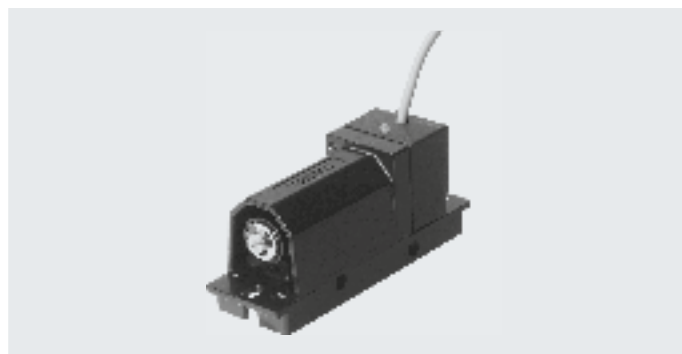
Accessories

Protective cap for protection against accidental contact	165614	SPE-B
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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

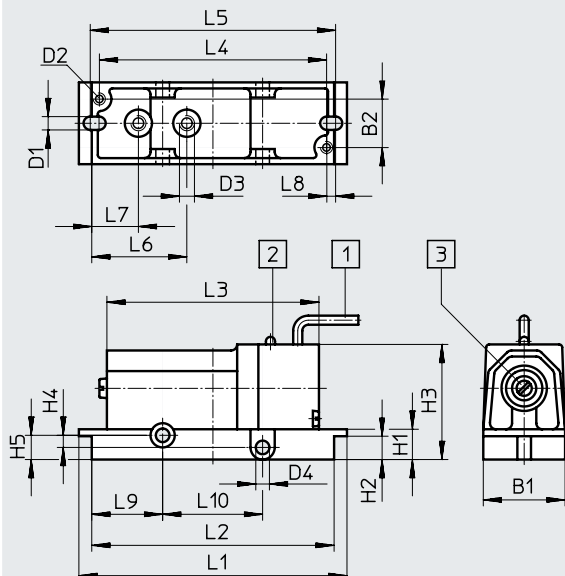
Data sheet

Display/operation

Switching status indication	Yellow LED
-----------------------------	------------

Dimensions

Download CAD data → www.festo.com

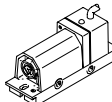


- [1] Cable: 3 x 0.14 mm², 2.5 m long
- [2] Yellow LED
- [3] Pressure threshold setting

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

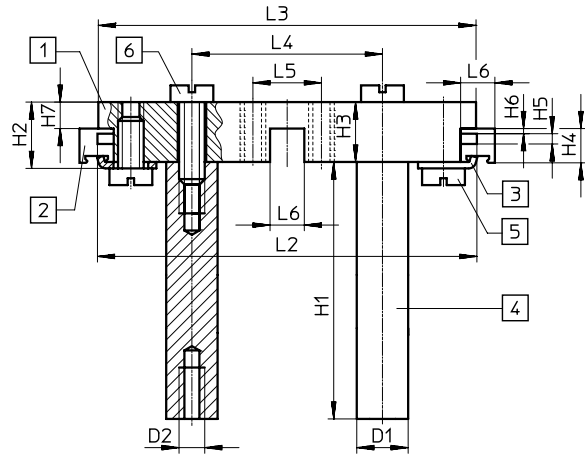
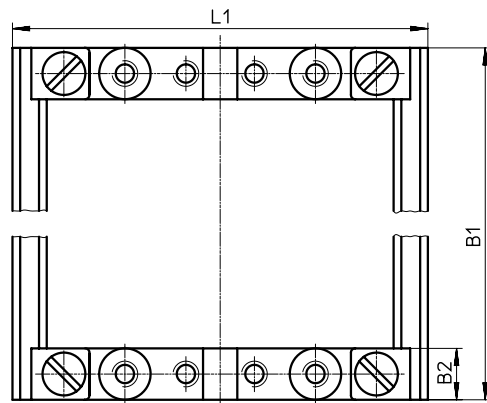
Mounting frame NRRQ-2N

Scope of delivery

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



- [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

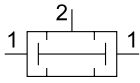


Type	B1	B2	D1 ∅	D2	H1	H2	H3	H4	H5	H6	H7	L1	L2	L3	L4	L5	L6
NRRQ	480	12	12	M6	60	15.5	14	8	2.4	1.2	6.2	97	88.6	88.2	44.5	16	8

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

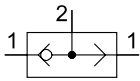
Data sheet

AND gate ZK

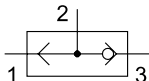


OR gate OS

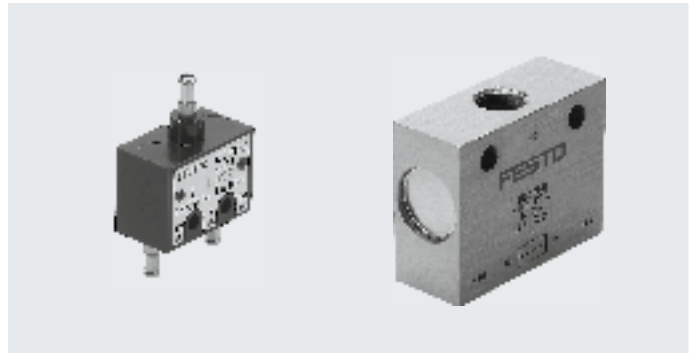
OS-PK-3
OS-1/8 / 1/4-B



OS-1/2



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

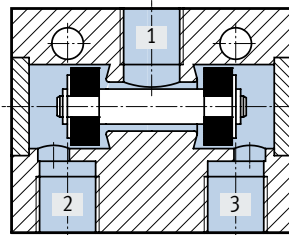


Valve function

AND function

For an AND gate, all input signals must be active at the same time in order to execute a function.

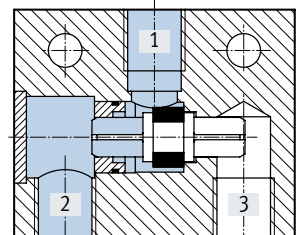
The AND gate ZK has two inputs [2], [3] and one output [1]. The output [1] is only pressurised if pressure is supplied to both inputs at the same time. If different pressures are present at the inputs, the lower pressure is fed to the output [1].



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 Type	AND function		OR function			
	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 q _{nN} [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

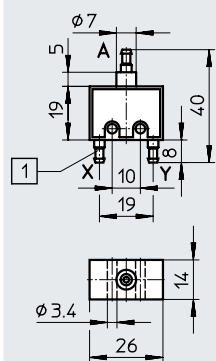
Type	ZK-PK-3	ZK-1/8-B	OS-PK-3	OS-1/8-B	OS-1/4-B	OS-1/2
Housing	Brass, POM	Anodised wrought aluminium alloy	POM	Wrought aluminium alloy		
Seals	NBR					
Note on materials	RoHS-compliant					

Data sheet

Dimensions

ZK-PK-3

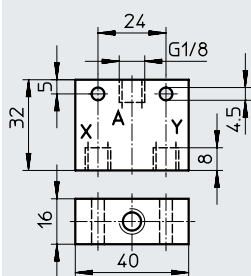
OS-PK-3



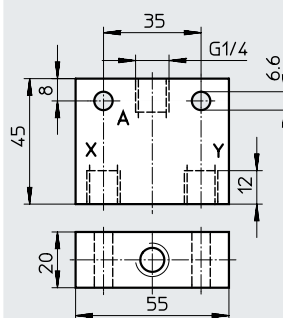
[1] Barbed connector PK-3

ZK-1/8-B

OS-1/8-B

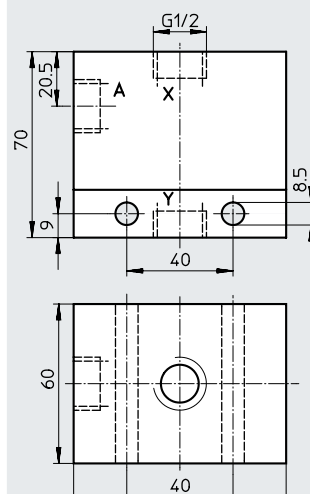


OS-1/4-B



Download CAD data → www.festo.com

OS-1/2



† 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

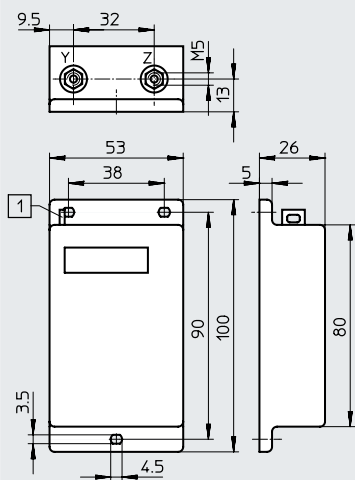
Operating and environmental conditions			
Type	Adding counters		Preset counters
	PZA-A-B	PZA-E-C	PZV-E-C
Operating pressure [bar]	2 ... 8		
Min. reset pressure [bar]	2	–	–
Ambient temperature [°C]	–10 ... +60		0 ... +60

Data sheet

Dimensions

Download CAD data → www.festo.com

Adding counters – Base mounting PZA-A-B

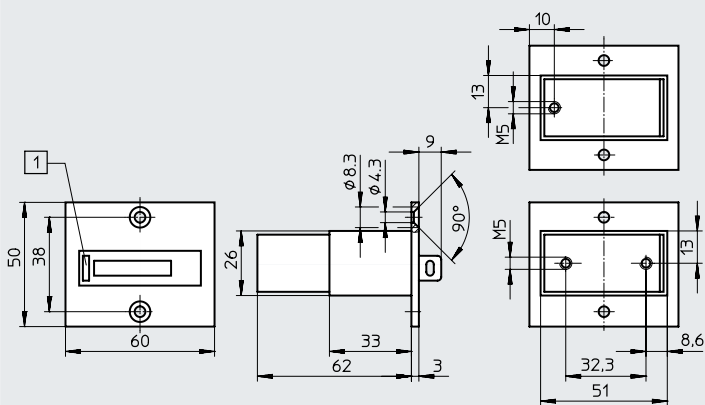


[1] Reset button

Z = Count signal

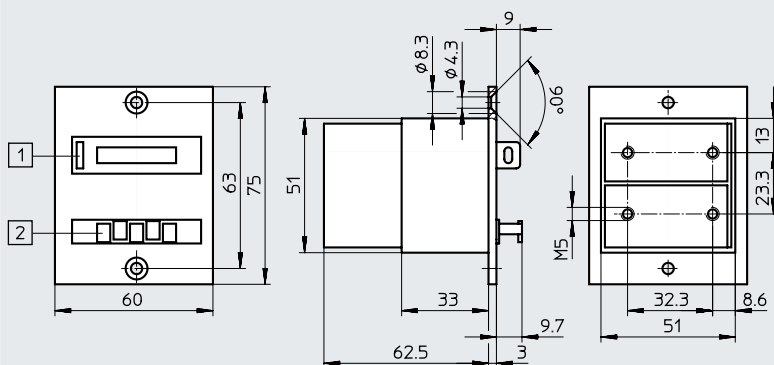
Y = Reset signal

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

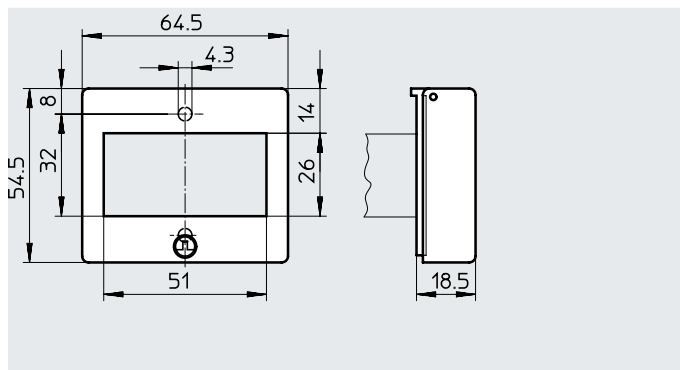
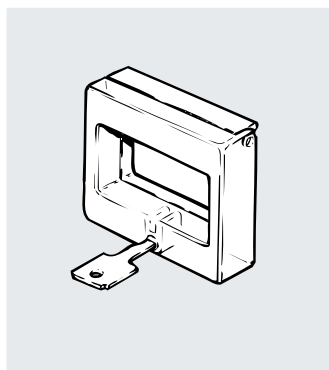
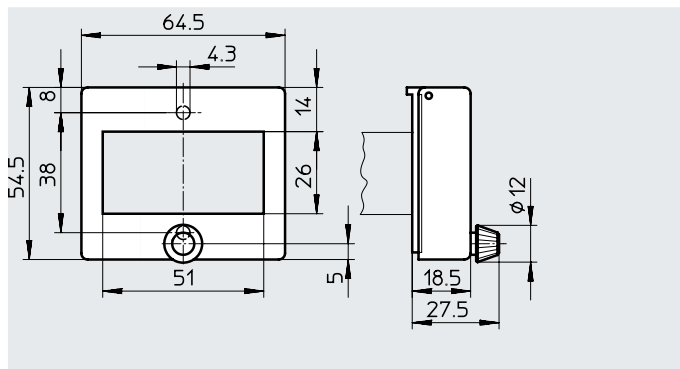
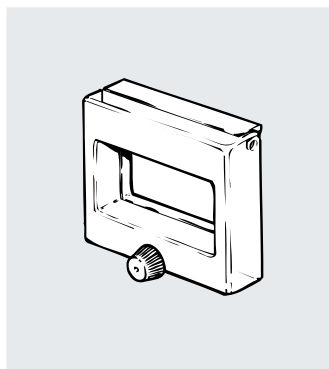
Accessories

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

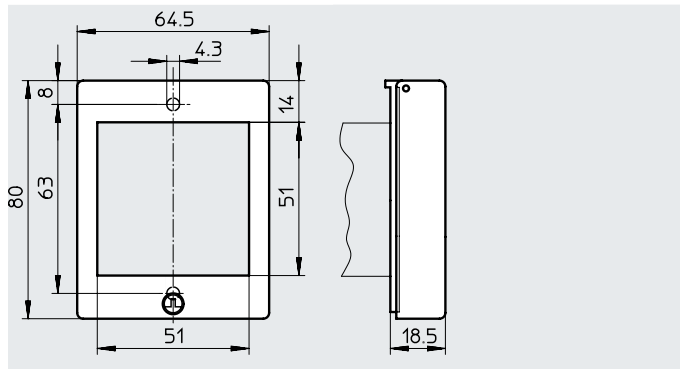
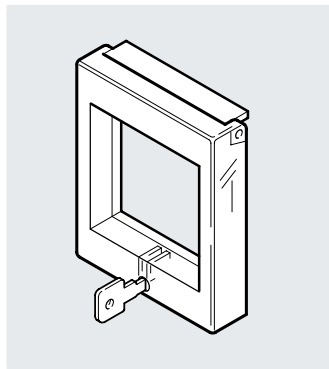
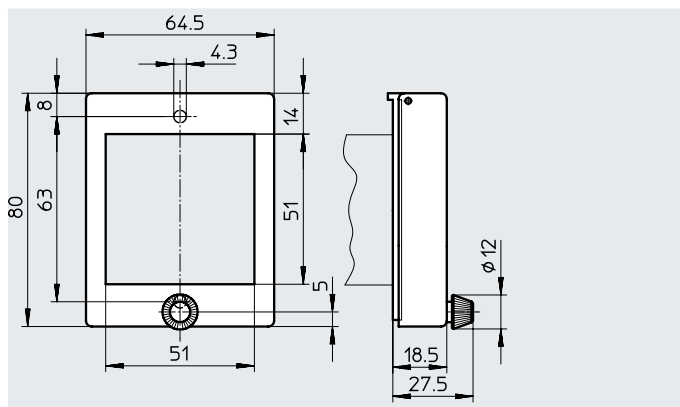
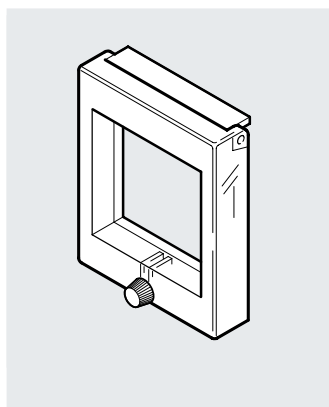
	Part no.	Type
Protective cap with rotary knob	14662	PZ-SK-1
Protective cap with lock	13965	PZ-SS-1

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

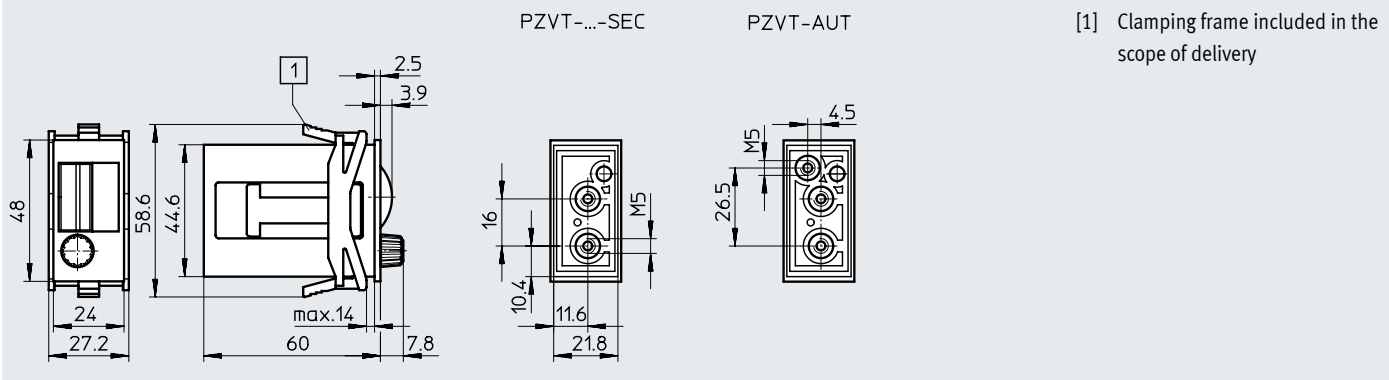
General technical data						
Type	Timer				Reset module	
	PZVT-3-SEC	PZVT-30-SEC	PZVT-120-SEC	PZVT-300-SEC	PZVT-AUT	
Design	Mechanical sequence counter with pneumatic actuator					
Type of mounting	Front panel mounting					
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]					
Note on the operating/ 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			
Ambient temperature	[°C]	–10 ... +60			
					≤ 0.3
					–15 ... +60

Data sheet

Dimensions

Download CAD data → www.festo.com



[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

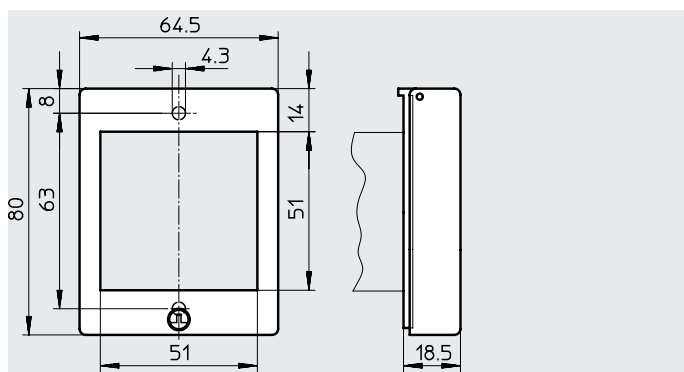
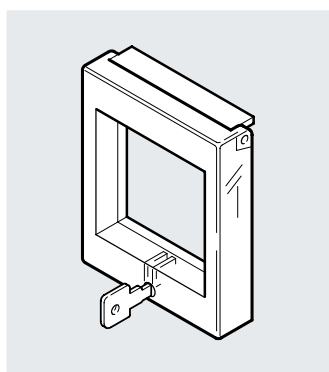
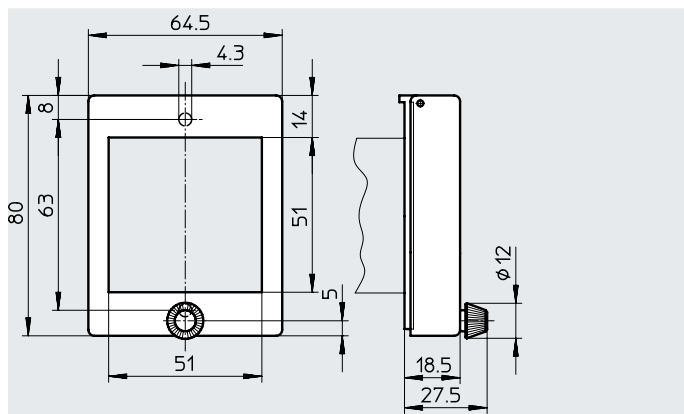
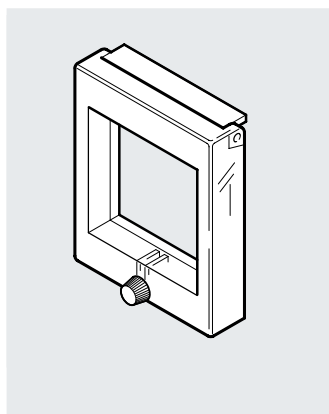
Accessories

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

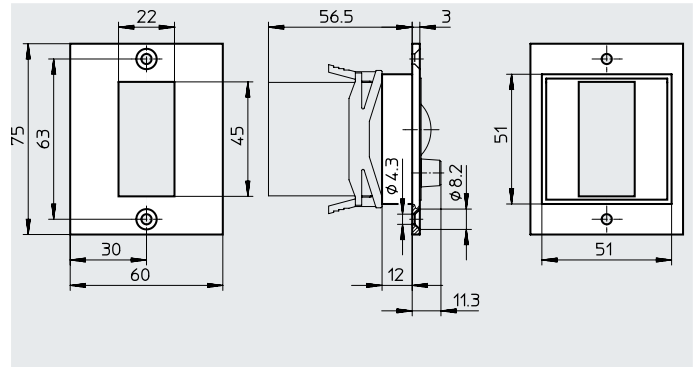
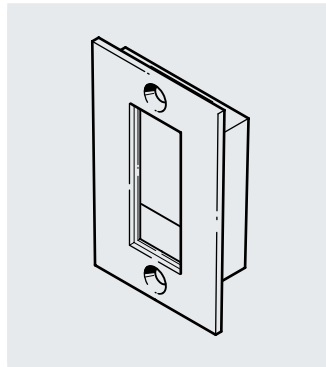
	Part no.	Type
Protective cap with rotary knob	14663	PZ-SK-2
Protective cap with lock	13966	PZ-SS-2

Accessories

Panel frame

For front panel mounting

Note on materials: RoHS-compliant

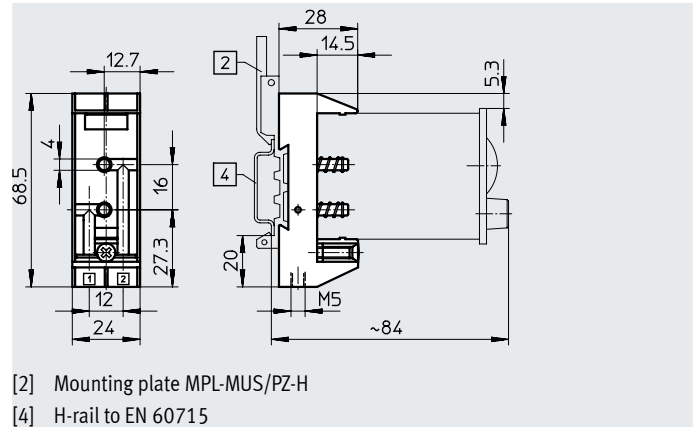
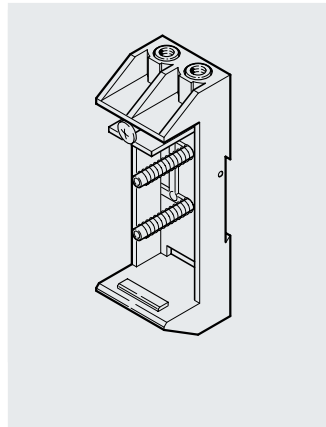


Ordering data

	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

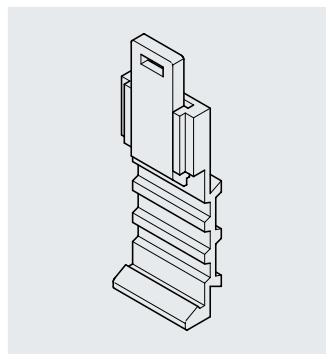
Ordering data

	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.