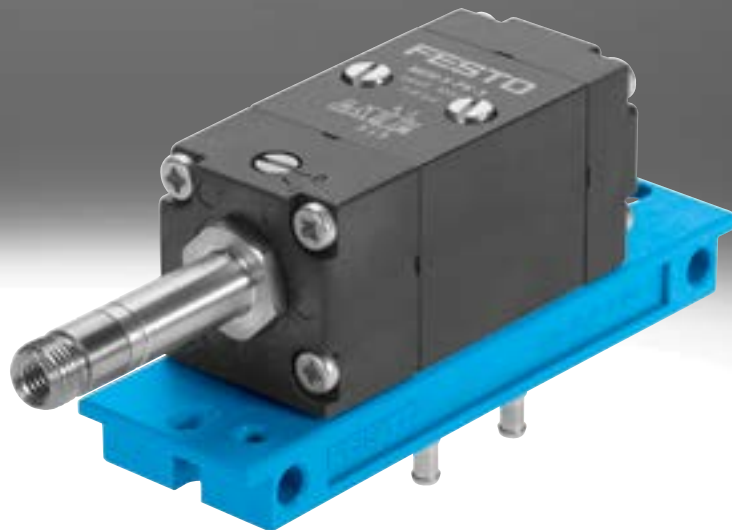



## M5 compact system

**FESTO**



### Key features



-  - Flow rate  
100 l/min

- Basis for compact pneumatic control systems
- M5 components with 2n sub-bases
- Control cabinet installation
- Easy to mount
- Fast replacement of components
- Barbed fitting 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 fittings for tubing NW 3.

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

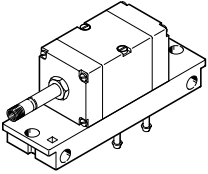
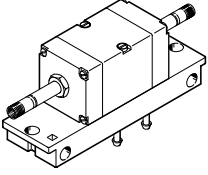
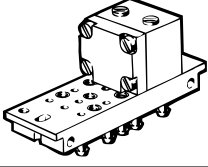
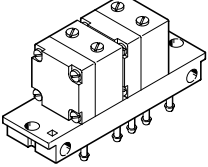
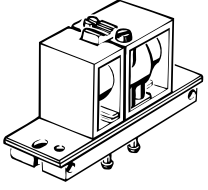
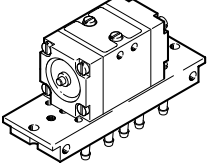
→ Internet: sv

### Mounting the components

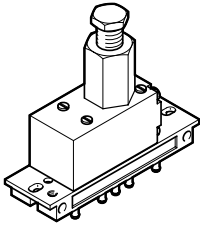
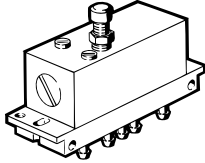
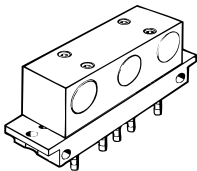
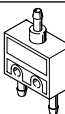
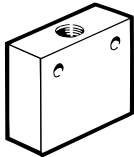
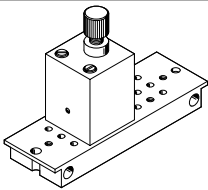
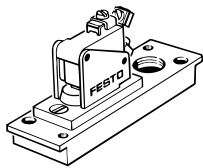
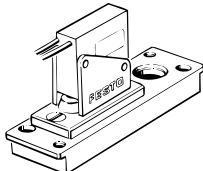
A maximum of 16 components of the M5 compact system with 2N sub-bases can be mounted on the mounting frame. At 480 mm, the length of the frame is designed for 19" housing to DIN 41 488. The strips can be shortened to adapt them to other installation conditions.

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

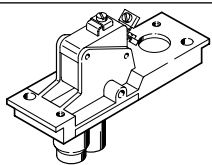
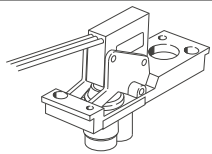
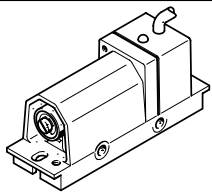
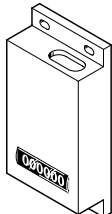
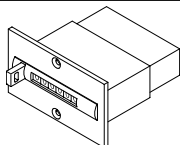
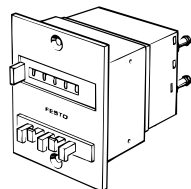
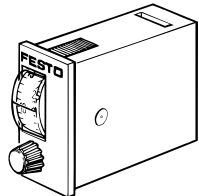
## Product range overview

Function	Version	Type	Description	Operating pressure [bar]	→ Page/Internet
Solenoid valves	<b>5/2-way valves</b>				
		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	<b>3/2-way valves</b>				
		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	Pneumatic double pilot valve for mounting frame 2N	-0.9 ... 8	9
	<b>5/2-way valves</b>				
		VL-5-PK-3	Mechanical spring return for mounting frame 2N	0 ... 8	9
J-5-PK-3		Pneumatic double pilot valve for mounting frame 2N	1 ... 8	9	
JD-5-PK-3		Pneumatic double pilot valve With dominant signal at 14 for mounting frame 2N	1 ... 8	9	

Product range overview

Function	Version	Type	Description	Operating pressure [bar]	→ Page/Internet
Pressure sequence valves	<b>Pressure sequence valves</b>				
		VD-3-PK-3	Opens and closes at set pressure for mounting frame 2N	1.8 ... 8	12
Time delay valves	<b>Time delay valves</b>				
		VZ-3-PK-3	With switch-on delay for mounting frame 2N	2.5 ... 8	14
VZO-3-PK-3		With switch-off delay for mounting frame 2N	2.5 ... 8	14	
Logic components	<b>AND/OR blocks</b>				
		OS-PK-3-6/3	3 OR gates for mounting frame 2N	1.6 ... 8	16
		ZK-PK-3-6/3	3 AND gates for mounting frame 2N	1.6 ... 8	16
		OS-PK-3	OR gate	1.6 ... 8	24
		ZK-PK-3	AND gate	1.6 ... 8	24
		OS-1/8-B	OR gate	1 ... 10	24
		ZK-1/8-B	AND gate	1 ... 10	24
		OS-1/4-B	OR gate	1 ... 10	24
		OS-1/2	OR gate	1 ... 10	24
	One-way flow control valves	<b>One-way flow control valves</b>			
		GRF-PK-3	for mounting frame 2N	0.5 ... 8	17
	GRF-PK-3x2	2 one-way flow control valves on one sub-base for mounting frame 2N	0.5 ... 8	17	
PE converters	<b>Pneumatic/electric pressure transducer</b>				
		PE-1/8-2N	for mounting frame 2N	0 ... 8	19
		PE-1/8-2N-SW	Splash-proof design for mounting frame 2N	0 ... 8	19

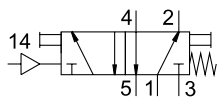
## Product range overview

Function	Version	Type	Description	Operating pressure [bar]	→ Page/Internet
PE converters	<b>Pneumatic/electric pressure transducer</b>				
		VPE-1/8-2N	Vacuum switch for mounting frame 2N	-0.95 ... 0	19
		VPE-1/8-2N-SW	Vacuum switch Splash-proof design for mounting frame 2N	-0.95 ... 0	19
	<b>Pneumatic/electric differential pressure switch</b>				
		PEN-M5	for mounting frame 2N	-1 ... 8	21
Pneumatic counters	<b>Adding counter</b>				
		PZA-A-B	Base mounting	2 ... 8	26
		PZA-E-C	Front panel mounting	2 ... 8	26
	<b>Preset counter</b>				
		PZV-E-C	Front panel mounting	2 ... 8	26
Pneumatic timers	<b>Pneumatic timers</b>				
		PZVT-3-C PZVT-30-C PZVT-12-C PZVT-300-C	Clamping frame	2 ... 6	31
PZVT-AUT		Automatic reset module	2 ... 6	31	

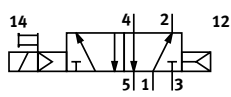
## Datasheet

### 5/2-way valves

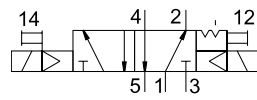
#### MFH-5-PK-3





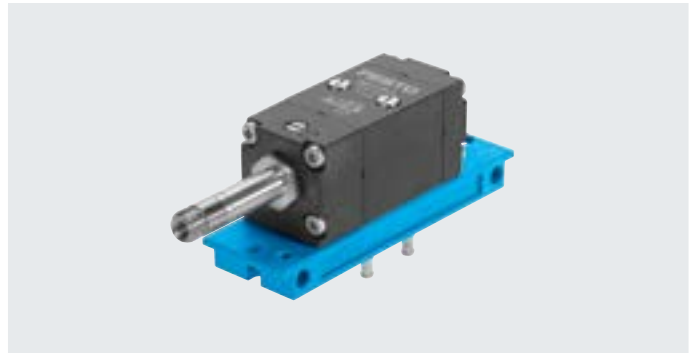
#### MFH-5-PK-3-L



#### 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 q <sub>nN</sub> [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

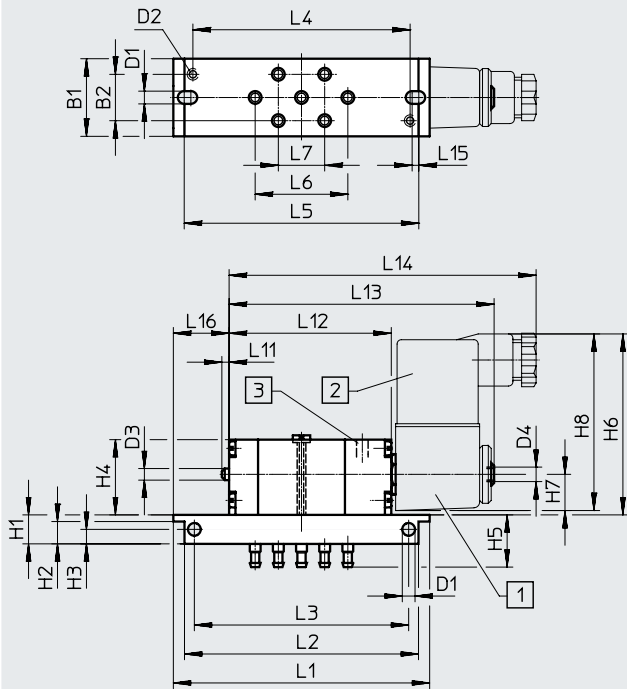
Materials	
Housing	Anodised aluminium
Sub-base	Anodised aluminium
Seals	NBR
Note on materials	RoHS-compliant

Datasheet

Dimensions – 5/2-way valves

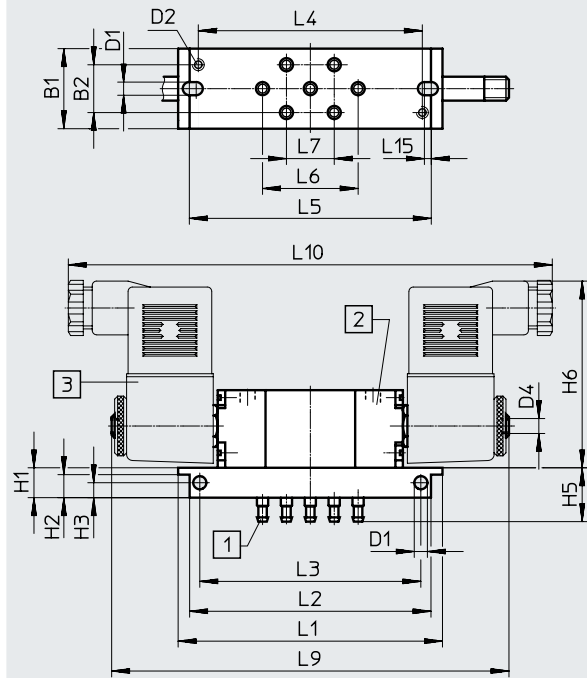
Download CAD data → [www.festo.com](http://www.festo.com)

MFH-5-PK-3(-L)



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

JMFH-5-PK-3

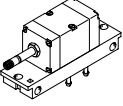
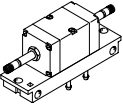
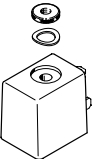
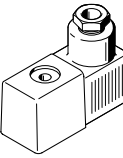
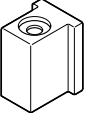
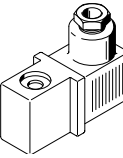


- [1] Barbed connector PK-3 for plastic tubing
- [2] Manual override
- [3] Rotatable solenoid coil

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	-	-	-	-		-

## Datasheet

Ordering data		Description	Part no.	Type		
<b>5/2-way valves</b>						
	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		
<b>Solenoid coil, plug to industry standard, type B</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		
		<b>Solenoid coil, plug to EN 175301, type A</b>				
			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 <sup>1)</sup> 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		

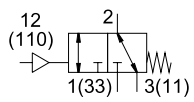
1) Additional information: [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...) → Support/Downloads.



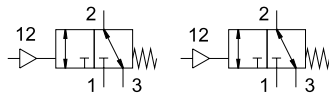
## Datasheet




### 3/2-way valves

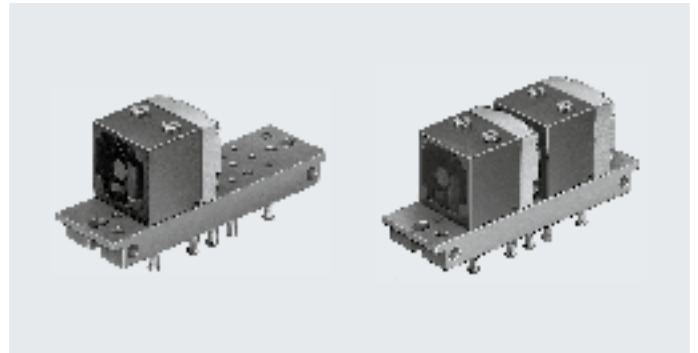
#### VL/O-3-PK-3



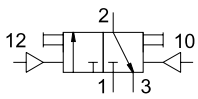
#### VL/O-3-PK-3x2






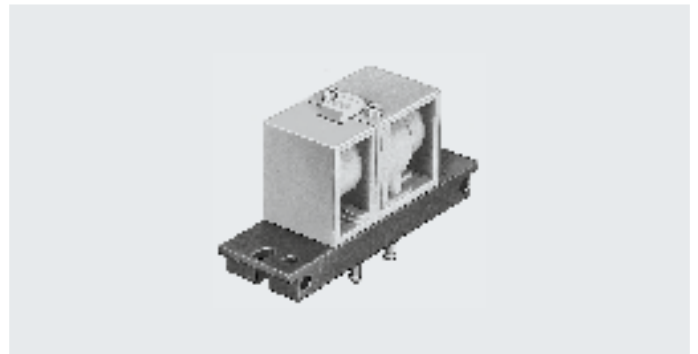
-  - Flow rate  
100 l/min
-  - Temperature range  
-10 ... +60°C
-  - Operating pressure  
0 ... 8 bar



### J-3-PK-3

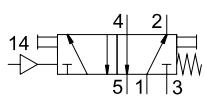


-  - Flow rate  
100 l/min
-  - Temperature range  
-10 ... +60°C
-  - Operating pressure  
-0.9 ... 8 bar

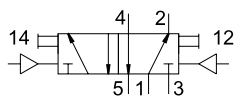


### 5/2-way valves

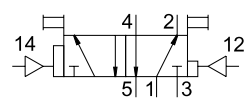
#### VL-5-PK-3





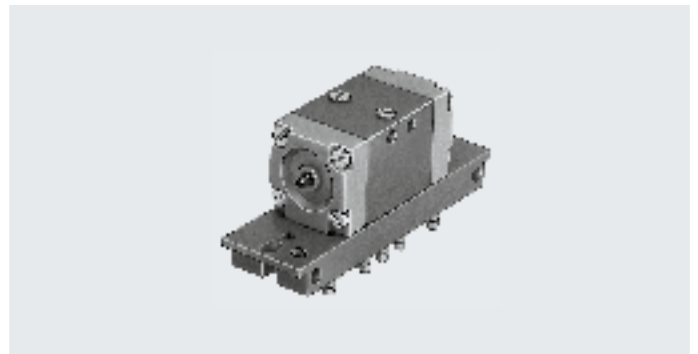
#### J-5-PK-3



#### JD-5-PK-3



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



## Datasheet

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 <sub>N</sub> [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 <sup>1)</sup>
Switching time [ms]	Off	50	50	–	22	–
	On	12	12	–	15	–
	Changeover	–	–	7	–	9
	Changeover (dominant)	–	–	–	–	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 (required for further operation)					
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

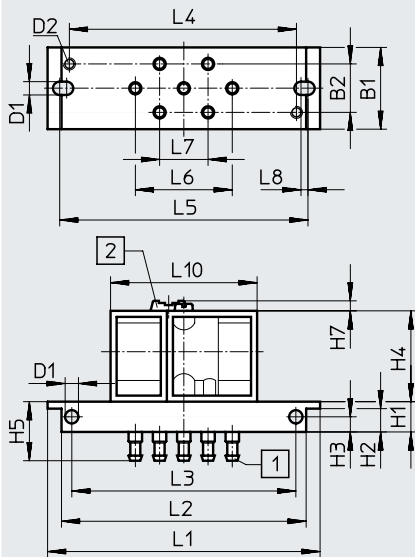
Materials						
Type	3/2-way valves			5/2-way valves		
	VL/O-3-PK-3	VL/O-3-PK-3x2	J-3-PK-3	VL-5-PK-3	J-5-PK-3	JD-5-PK-3
Housing	Plastic, die-cast zinc					
Sub-base	Brass, reinforced PPS					
Seals	NBR					
Note on materials	–	–	Contains paint-wetting impairment substances	RoHS-compliant	RoHS-compliant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

# Datasheet

## Dimensions

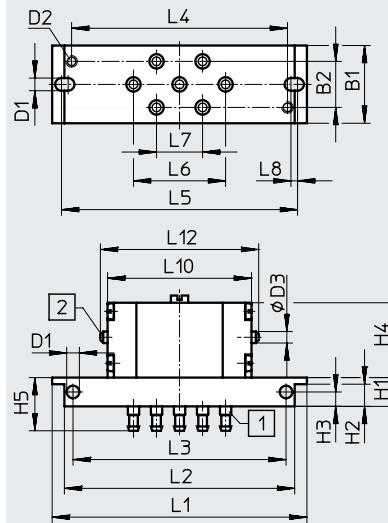
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J-3-PK-3



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

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



- [1] Barbed fitting 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

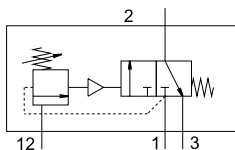
## Ordering data




Description	Part no.	Type
<b>3/2-way valves</b>		
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
<b>5/2-way valves</b>		
Monostable	4504	VL-5-PK-3
Bistable	4503	J-5-PK-3
Bistable, dominant <sup>1)</sup>	4901	JD-5-PK-3

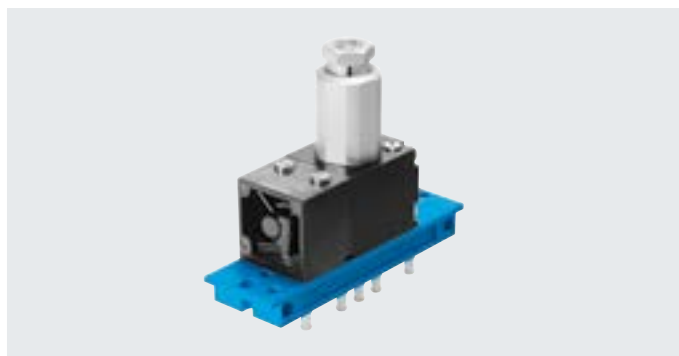
1) Dominant signal at 14

## Datasheet

VZ, with switch-on delay



-  - Flow rate  
100 l/min
-  - Temperature range  
-10 ... +60°C
-  - Operating pressure  
1.8 ... 8 bar



The pressure sequence valve is used when a pressure-dependent signal is required to switch a control system to the next step, e.g. if a minimum control pressure of cylinders is reached.

The pressure is set at the adjusting screw. As soon as the control signal has reached the set pressure, the attached 3/2-way valve is actuated.

Conversely, the valve switches back when the control signal falls below the set pressure.

### General technical data

Type	VD
Pneumatic connection	PK-3
Nominal width [mm]	2.5
Standard nominal flow rate q <sub>nN</sub> [l/min]	100
Type of mounting	Via through-hole
Weight [g]	220

### Operating and environmental conditions

Operating pressure [MPa]	0.18 ... 0.8
[bar]	1.8 ... 8
Operating/pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (required for further operation)
LABS (PWIS) conformity	VDMA24364-B1/B2-L
Corrosion resistance class CRC <sup>1)</sup>	0 - no corrosion stress
Temperature of medium [°C]	-10 ... +60

1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually unimportant standards-based parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

### Materials

Note on materials	RoHS-compliant
-------------------	----------------

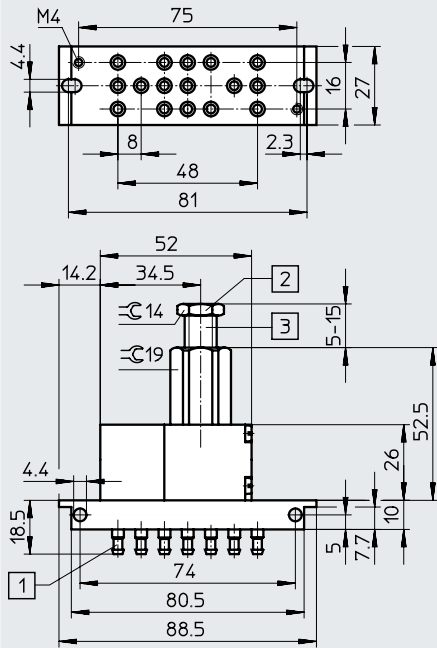
### Note

To avoid neutral switching status-es, care must be taken to ensure that pressure is applied to the supply port upstream of the pilot port.

Datasheet

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)



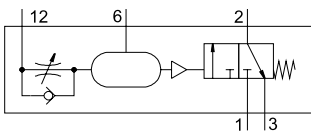
- [1] Barbed fitting PK-3 for plastic tubing
- [2] Locking screw
- [3] Pressure adjusting screw (1 graduation line ~ 1 bar)

Ordering data

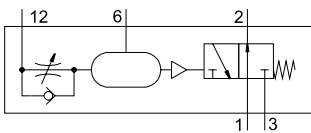
Type ID code	Part no.	Type
VD	9270	VD-3-PK-3




## Datasheet

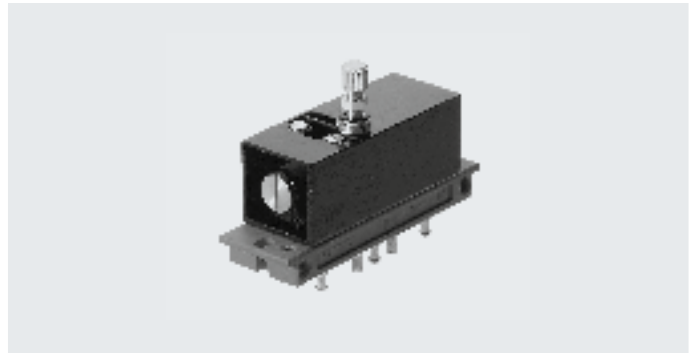
VZ, with switch-on delay



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 flow control valve with additional volume.

The delay in the valve actuation is dependent on the setting of the flow control valve.

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 <sub>nN</sub>	[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 function		Can be throttled	
Type of control		Direct	
Pilot air supply		External	
Flow direction		Not reversible	
Sealing principle		Soft	
Adjustable delay time <sup>1)</sup>	[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 cm<sup>3</sup> increase in volume will increase the time delay by approx. 5 s. Air reservoir VZS → Internet: vzs

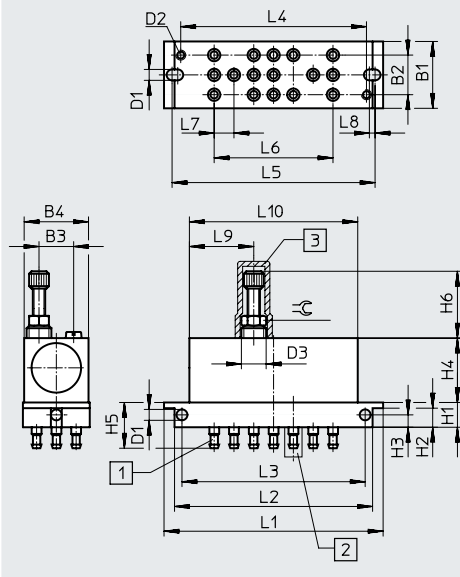
Operating and environmental conditions	
Operating pressure	[bar] 2.5 ... 8
Operating/pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation not possible
Note on forced checking procedure	Switching frequency min. 1/week
Ambient temperature	[°C] -10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

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

Datasheet

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)



- [1] Barbed fitting 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

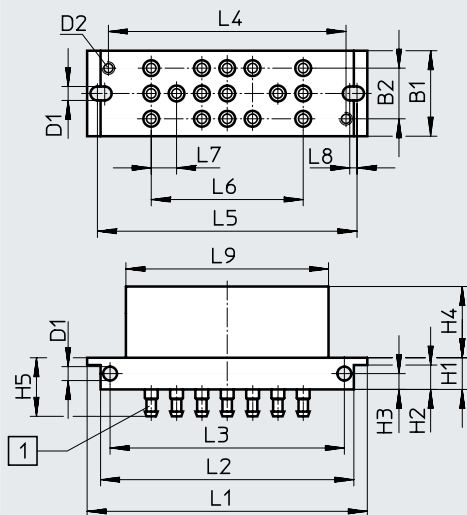
## Datasheet

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 (required for further operation)	
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](http://www.festo.com)



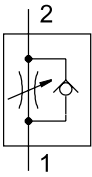
[1] Barbed connector for tubing I.D. 3




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

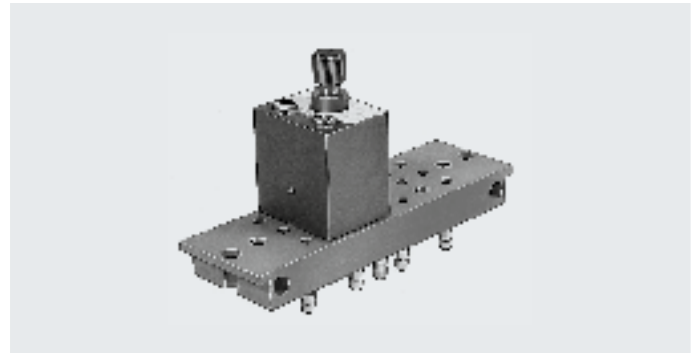
Ordering data		Part no.	Type
OR block (3 OR gates)		4232	OS-PK-3-6/3
AND block (3 AND gates)		4204	ZK-PK-3-6/3



## Datasheet

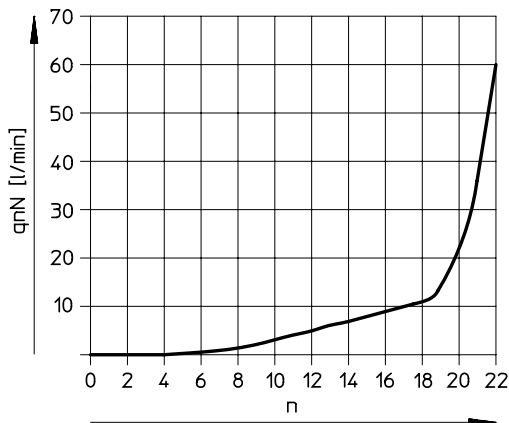


-  - Flow rate  
45 l/min
-  - Temperature range  
-10 ... +60°C
-  - Operating pressure  
0.5 ... 8 bar



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

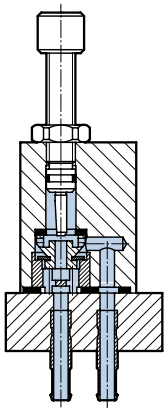
Operating and environmental conditions		
Operating pressure	[bar]	0.5 ... 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]
Note on the operating/ pilot medium		Lubricated operation possible (required for further operation)
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10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

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


## Datasheet

### Materials

Sectional view

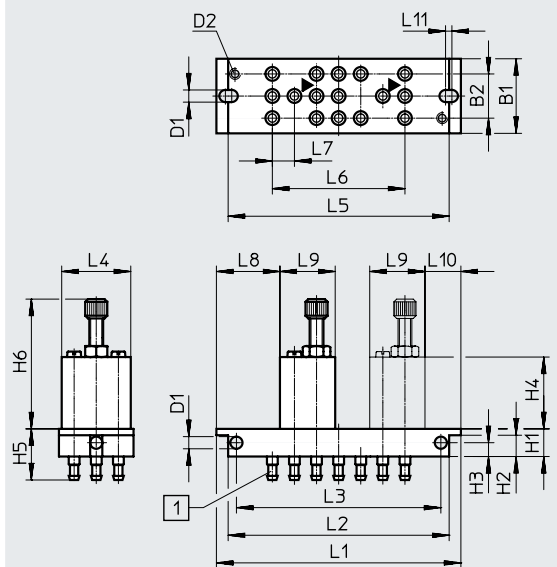


One-way flow control valve

[1]	Adjusting screw	Brass
[2]	Housing	Wrought aluminium alloy
[3]	Sub-base	PA
-	Seals	NBR

### Dimensions

Download CAD data → [www.festo.com](http://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

## Datasheet

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	
<b>Materials</b>				
Housing	Die-cast aluminium, PA, steel		PA, POM, steel, VMQ	
Diaphragm	TPE-U(PU)		CR	
Switching 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 (required for further operation)			
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			-
Switch 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	

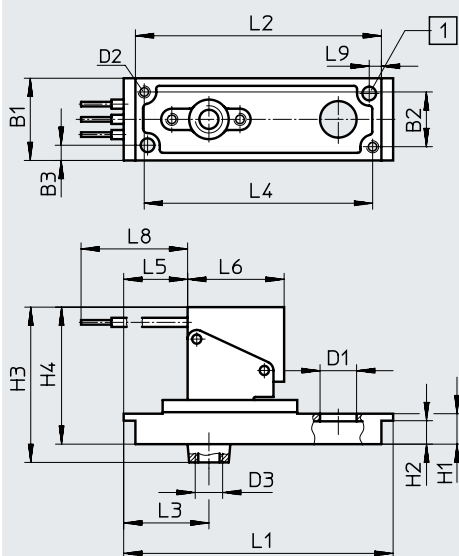
Max. permissible electrical load					
DC voltage			Alternating voltage		
Voltage [V DC]	Resistance load [A]	Inductive load [A]	Voltage [V AC]	Resistance load [A]	Inductive load [A]
<b>PE/VPE-1/8-2N-SW</b>					
15	10	10	125	5	5
30	5	3	250	5	2
50	1	1			
75	0.75	0.25			
124	0.5	0.03			
250	0.25	0.02			

## Datasheet

### Dimensions

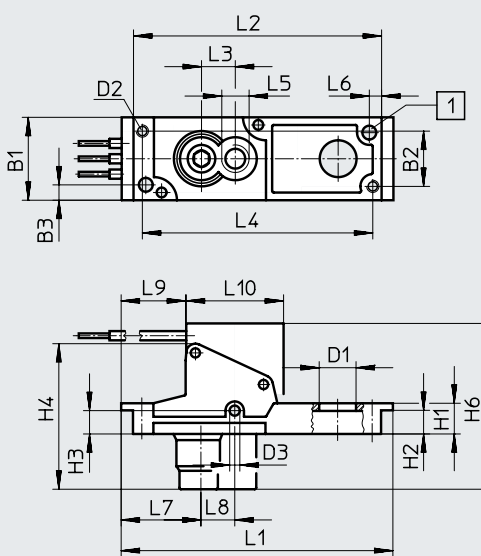
Download CAD data → [www.festo.com](http://www.festo.com)

PE-1/8-2N-SW



[1] For thread M4

VPE-1/8-2N-SW



[1] For thread M4

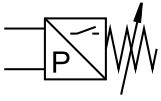
Type	B1	B2	B3	D1 ∅	D2	D3	H1	H2	H3	H4	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
PE	27	18	5	12	M4	3.3	10	7.7	51	45	–	88.5	80.8	28	75	21	31.7	–	500	4	–
VPE						G1/8			7.6	47.4	54			11		G1/8	4	26	11	21	31.7



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

### Ordering data

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

## Datasheet



-  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 <sup>1)</sup>
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/...](http://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 (required for further operation)
Temperature of medium [°C]	-20 ... +60
Ambient temperature [°C]	-20 ... +60

**Switching output**

Switching output	PNP
Switching element function	N/O contact
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

**Mechanical systems**

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

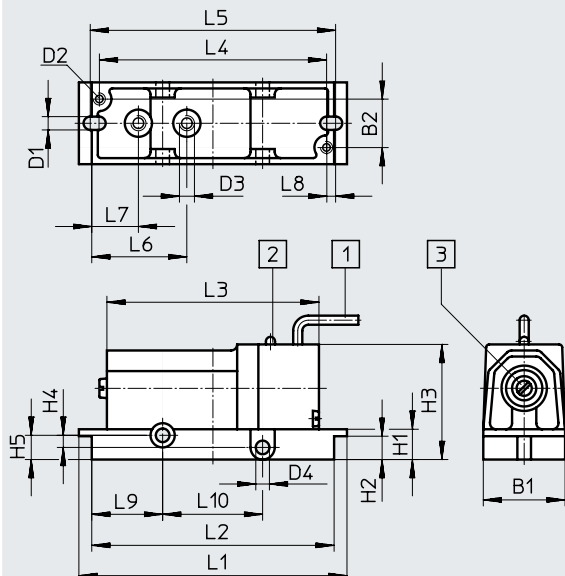
# Datasheet

## Display/operation

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

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

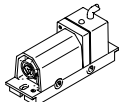


- [1] Cable: 3x0.14 mm<sup>2</sup>, 2.5 m long
- [2] Yellow LED
- [3] Pressure threshold setting

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	<b>8625</b>	<b>PEN-M5</b>

## Accessories

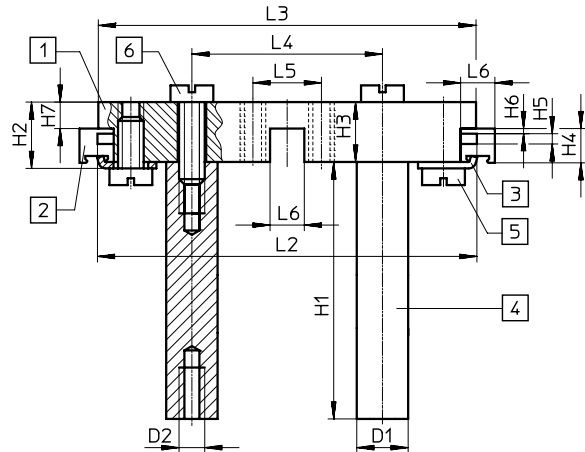
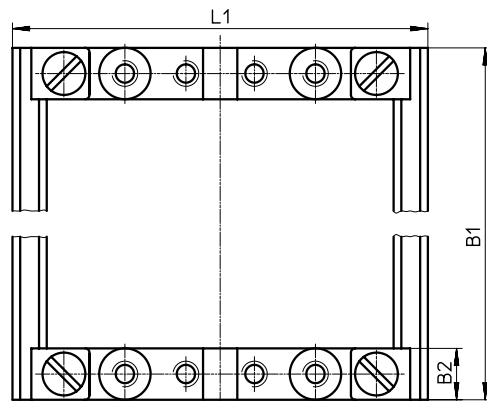
### Mounting frame NRRQ-2N

Scope of delivery

2 x connecting component NRV-2N	4 x socket head screw
2 x profile strip 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

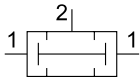


Type	B1	B2	D1 ∅	D2	H1	H2	H3	H4	H5	H6	H7	L1	L2	L3	L4	L5	L6
NRRQ	480	12	12	M6	60	15.5	14	8	2.4	1.2	6.2	97	88.6	88.2	44.5	16	8

Mounting frame	Part no.	Type
Mounting frame 2N complete For 16 components	9365	NRRQ-2N
<b>Accessories</b>		
Mounting bracket For mounting 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

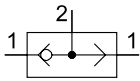
Datasheet

AND gate ZK

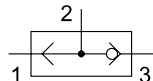


OR gate OS

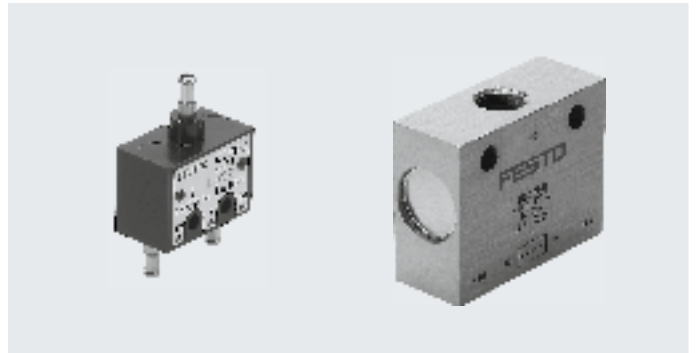
OS-PK-3  
OS-1/8 / 1/4-B



OS-1/2



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

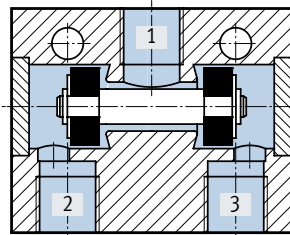


Valve function

AND function

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

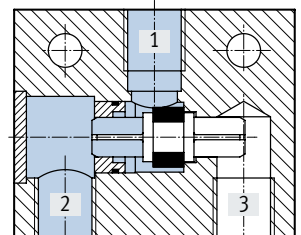
The AND gate ZK has two inputs [2], [3] and one output [1]. Output [1] is only pressurised if pressure is supplied to both inputs at the same time. If different pressures are present at the inputs, the lower pressure is fed to the output [1].



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]. 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 <sub>nN</sub> [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 (required for further operation)					
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					

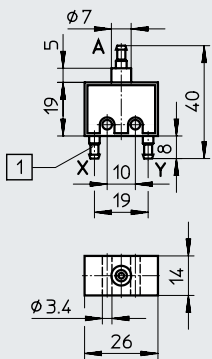


## Datasheet

## Dimensions

ZK-PK-3

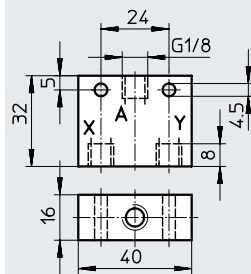
OS-PK-3



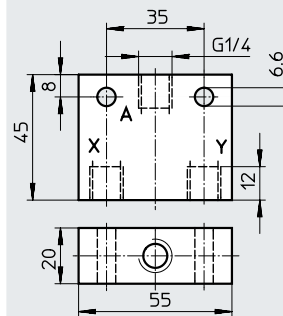
[1] Barbed connector PK-3

ZK-1/8-B

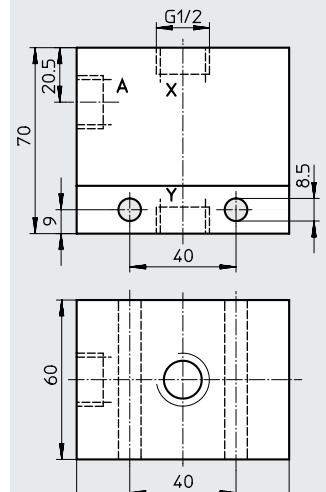
OS-1/8-B



OS-1/4-B

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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 counter

- Base mounting
- Front panel mounting

Adding counters have 6 digits and count upwards, i.e. the 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. It can also be reset pneumatically using a compressed air signal. While it is being reset, no counting signal can be received or be present.

### Preset counter

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

The counter counts pneumatic signals backwards from a preset 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 preset value at the same time. Once the number has been preset, it is retained for future resetting of the counter.

## Datasheet

General technical data			
Type	Adding counter		Preset counter
	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 <sup>1)</sup>	6-digit	6-digit	5-digit
Reset	Manual button or pneumatic signal		
<b>Response pressure</b>			
Actuator [bar]	0.6 ±0.2	> 0.8	0.6 ±0.2
Reset [bar]	0.6 ±0.2	2	–
<b>Drop-off pressure</b>			
Actuator [bar]	0.2 ±0.1	< 0.15	0.2 ±0.1
Reset [bar]	0.15 ±0.1	< 0.15	0.15 ±0.1
<b>Min. pulse length</b>			
Actuator [ms]	10	8	10
Reset [ms]	180	150	180
<b>Min. pause period</b>			
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

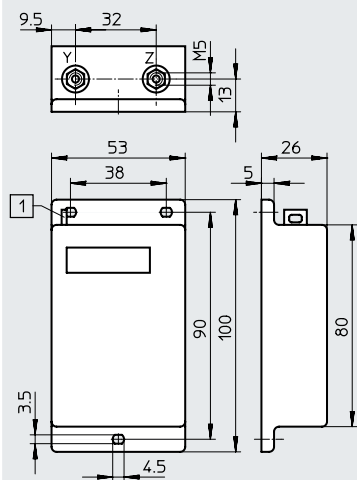
Operating and environmental conditions			
Type	Adding counter		Preset counter
	PZA-A-B	PZA-E-C	PZV-E-C
Operating pressure [bar]	2 ... 8		
Min. reset pressure [bar]	2	–	–
Ambient temperature [°C]	–10 ... +60	0 ... +60	

# Datasheet

## Dimensions

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### Adding counters – Base mounting PZA-A-B

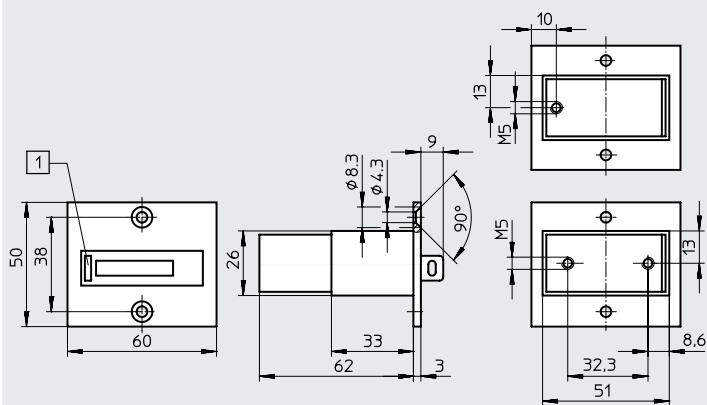


[1] Reset button

Z = Count signal

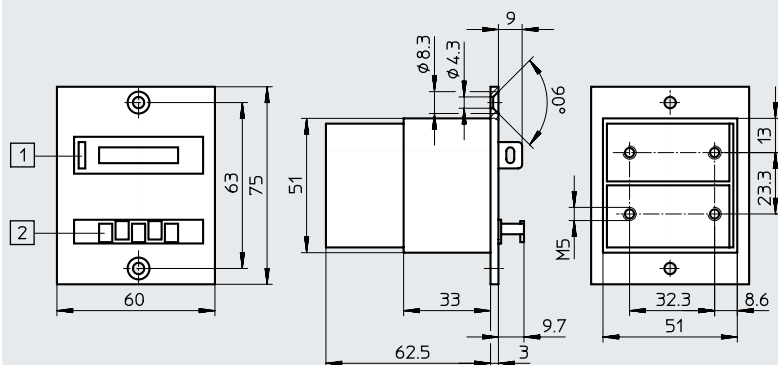
Y = Reset signal

### 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 preset number is reset once again 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 resetting process, no count pulses can be received or be present.

## Datasheet

Ordering data		Part no.	Type
Adding counter	Base mounting	<b>14992</b>	<b>PZA-A-B</b>
	Front panel mounting	<b>8606</b>	<b>PZA-E-C</b>
Preset counter	Base mounting	<b>15608</b>	<b>PZV-E-C</b>

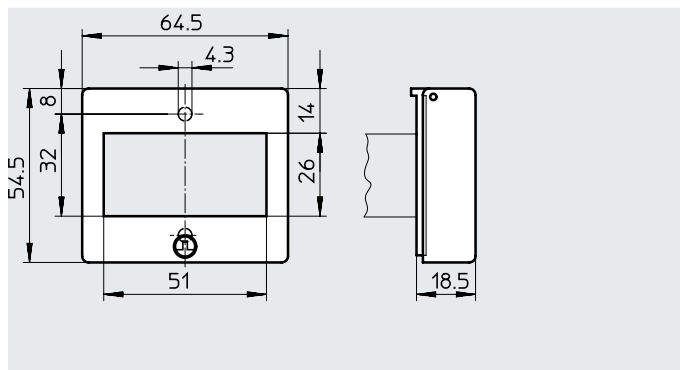
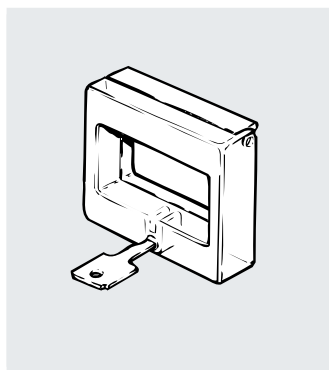
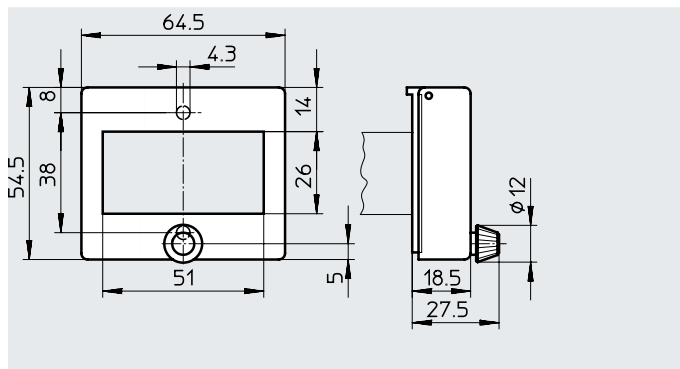
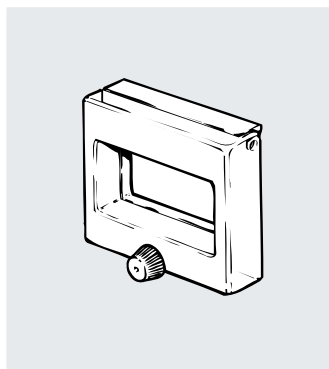
## Accessories

### 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

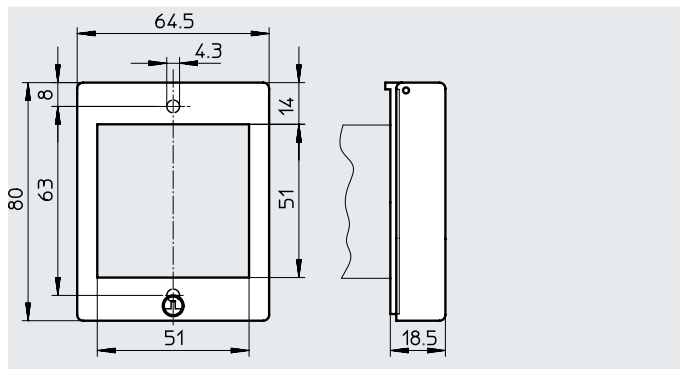
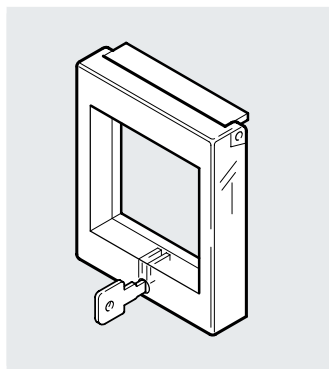
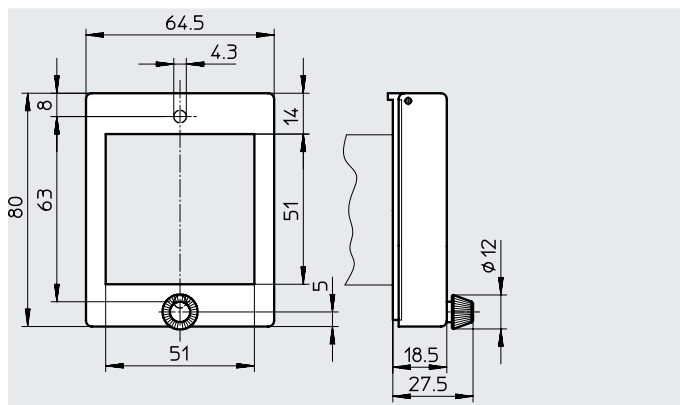
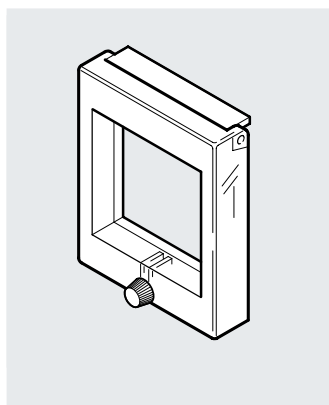
	Part no.	Type
Protective cap with rotary knob	14662	PZ-SK-1
Protective cap with lock	13965	PZ-SS-1

### 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 a specific length for control purposes.

The timer 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.

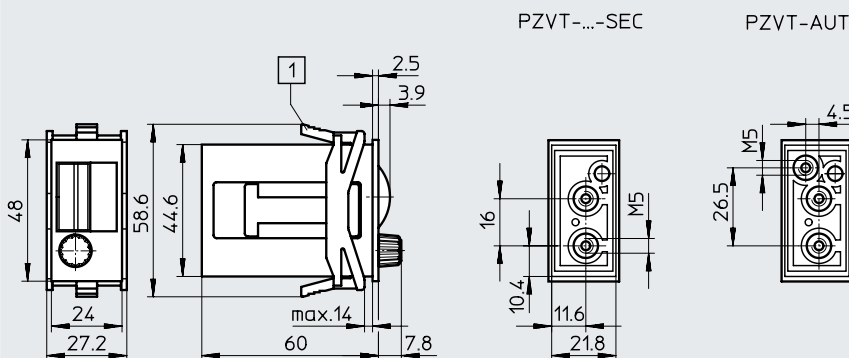
## Datasheet

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 drive					
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

### Dimensions

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[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



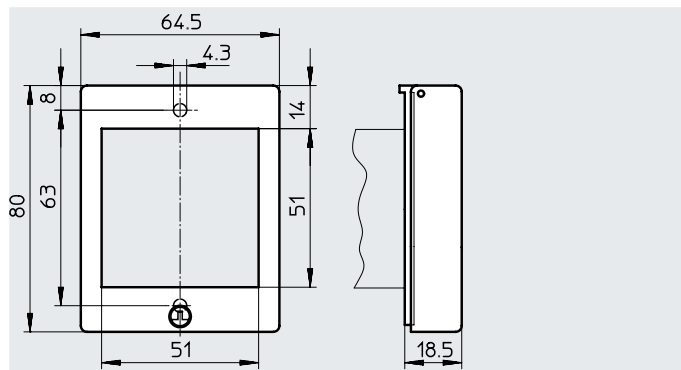
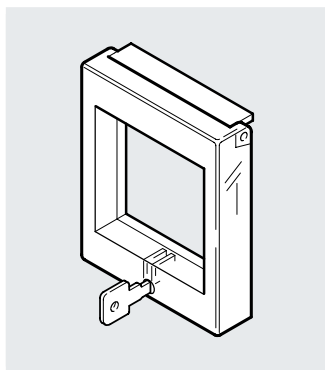
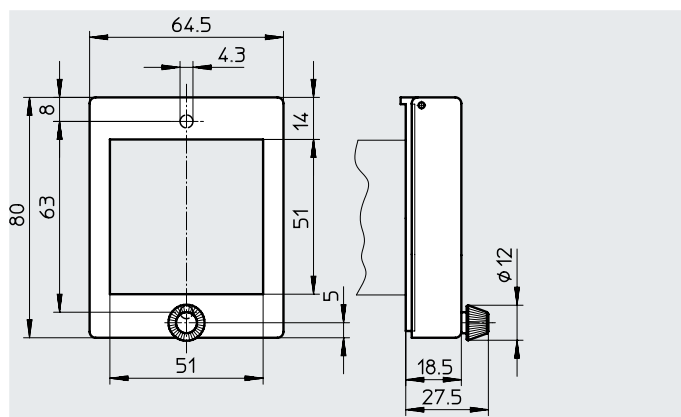
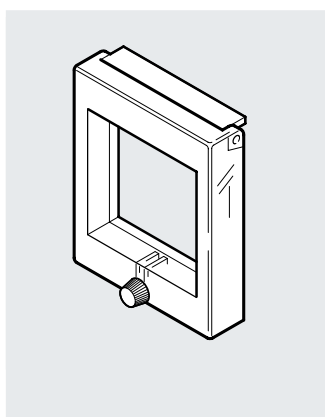
## Accessories

### 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

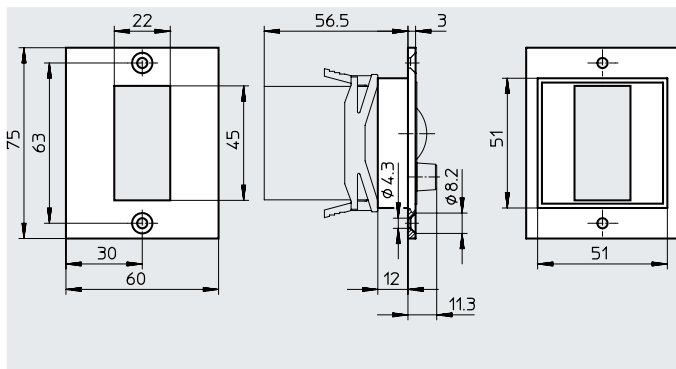
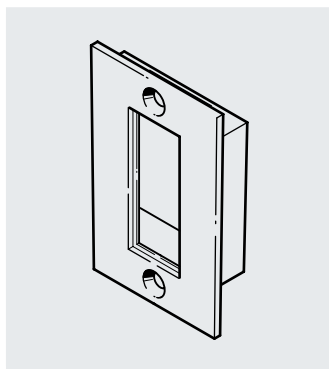
	Part no.	Type
Protective cap with rotary knob	14663	PZ-SK-2
Protective cap with lock	13966	PZ-SS-2

## Accessories

### Panel frame

For front panel mounting

Note on materials: RoHS-compliant

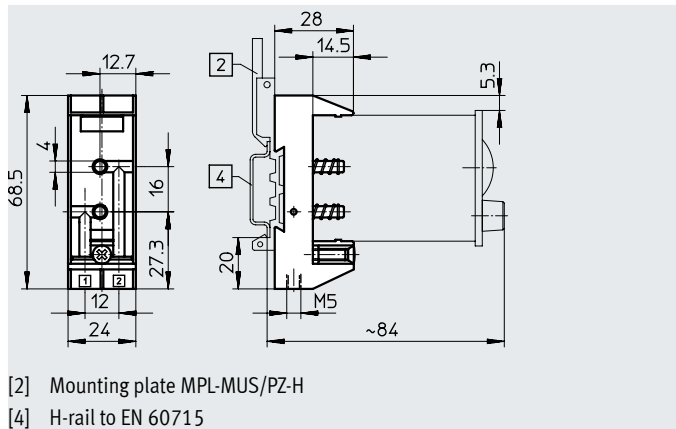
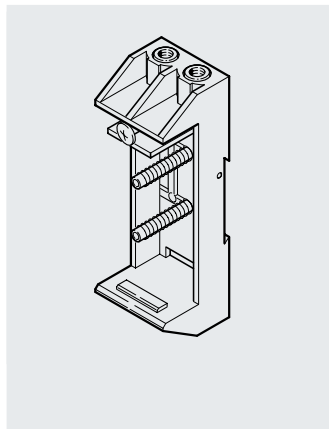


#### Ordering data

	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

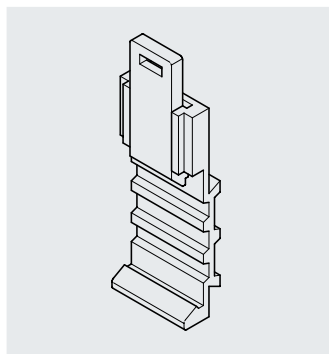
#### Ordering data

	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.