

# M5 Compact System

Key features

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Flow rate

100 l/min

- Forms the basis for compact pneumatic control systems
- M5 elements with 2n sub-bases
- Control cabinet installation
- Easy mounting
- Fast replacement of components
- Barbed fitting connection for 3 mm plastic tubing

The M5 Compact System is a complete system offering control components with all the functions required for pneumatic sequence controls. These all feature 2n sub-bases and barbed fitting connections for 3 mm plastic tubing.

For basic valves and actuators for panel mounting for use as signal components for basic functions such as START, STOP, etc.  
→ Internet: sv

# M5 Compact System

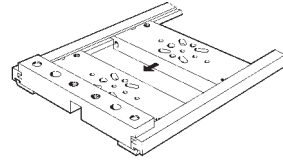
Key features

FESTO

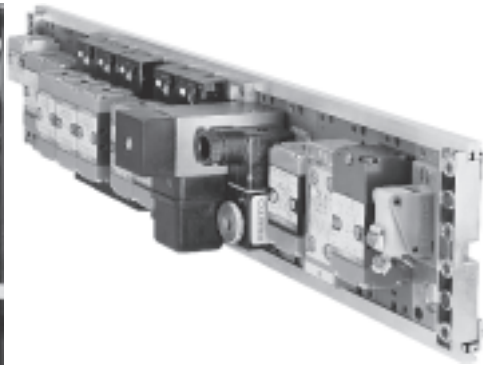
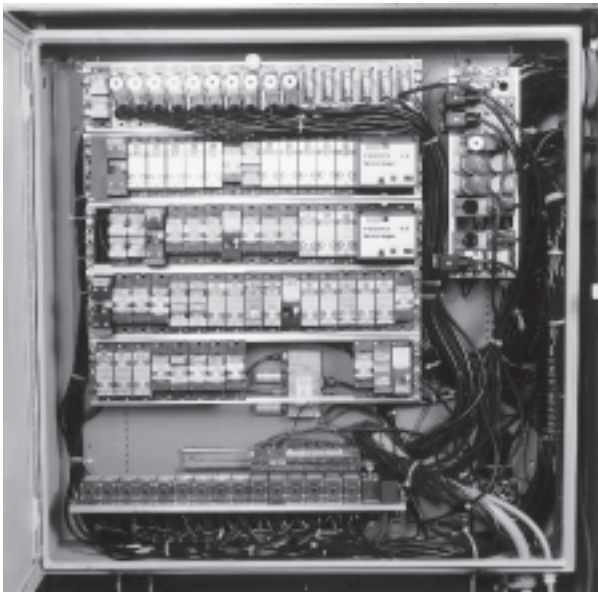
## Mounting the components

Each mounting frame can be used to mount up to 16 components of the M5 Compact System using 2N sub-bases. The frames are 480 mm long and have been designed for use with 19" housings to DIN 41 488. The rails can be shortened to allow for other types of installation.

Components are attached by sliding their sub-bases or mounting plates into the guide slot of the profile rails. The sub-bases or plates are then clamped between the cross bars.



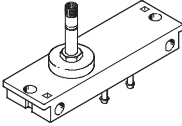
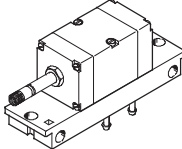
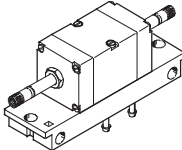
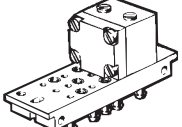
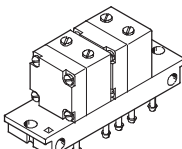
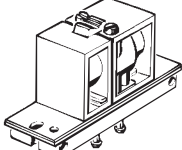
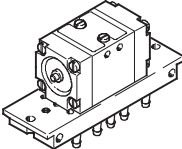
They can also be placed onto the frame and screwed down individually.



# M5 Compact System

Product range overview

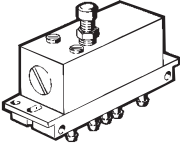
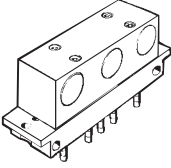
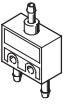
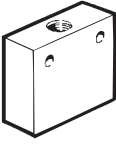
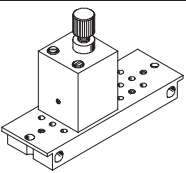
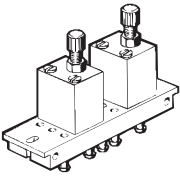
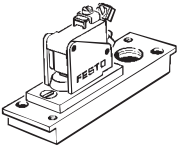
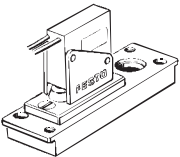
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Function	Version	Type	Brief description	Operating pressure [bar]	→ Page/Internet
Solenoid valves	<b>3/2-way valves</b>				
		MUFH-3-PK-3	Mechanical spring return for mounting frame 2N	0 ... 8	6
	<b>5/2-way valves</b>				
		MFH-5-PK-3	Mechanical spring 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	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	Double pilot valve for mounting frame 2N	1 ... 8	9
JD-5-PK-3		Double pilot valve with dominating signal at 14 for mounting frame 2N	1 ... 8	9	

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Product range overview

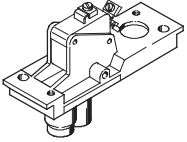
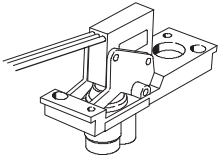
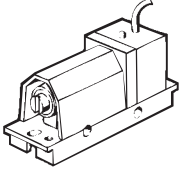
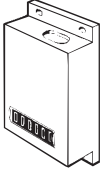
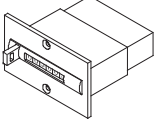
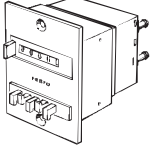
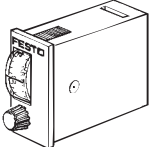
FESTO

Function	Version	Type	Brief description	Operating pressure [bar]	→ Page/Internet
Time delay valves	<b>Time delay valves</b>				
		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	<b>AND/OR blocks</b>				
		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
One-way flow control valves	<b>One-way flow control valves</b>				
		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
Pressure switches	<b>Pneumatic/electrical pressure transducers</b>				
		PE-1/8-2N	For mounting frame 2N	0 ... 8	16
		PE-1/8-2N-SW	Splash proof design for mounting frame 2N	0 ... 8	16

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Product range overview

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Function	Version	Type	Brief description	Operating pressure [bar]	→ Page/Internet
Pressure switches	<b>Pneumatic/electrical pressure transducers</b>				
		VPE-1/8-2N	Vacuum switch for mounting frame 2N	-0.95 ... 0	16
		VPE-1/8-2N-SW	Vacuum switch splash proof design for mounting frame 2N	-0.95 ... 0	16
	<b>Pneumatic/electrical differential pressure switch</b>				
		PEN-M5	Vacuum switch for mounting frame 2N	-0.95 ... 8	19
Pneumatic counters	<b>Adding counters</b>				
		PZA-A-B	Base mounting	2 ... 8	24
		PZA-E-C	Panel mounting	2 ... 8	24
	<b>Predetermining counter</b>				
		PZV-E-C	Panel mounting	2 ... 8	24
Pneumatic timer	<b>Pneumatic timer</b>				
		PZVT-3-C PZVT-30-C PZVT-12-C PZVT-300-C	Clamping frame	2 ... 6	30
PZVT-AUT		Automatic reset module	2 ... 6	30	

# Solenoid valves MUFH/MFH/JMFH, for mounting frame 2N

FESTO

Technical data

General technical data					
		3/2-way valves		5/2-way valves	
		MUFH-3-PK-3	MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
Constructional design		Poppet valve			
Type of mounting		Through-holes in sub-base or on mounting frame			
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:-:-]			
Pneumatic connection		1, 2: 3 mm; 3: M5		Barbed fitting for 3 mm tubing	
Nominal size [mm]		1.3		2.5	
Standard nominal flow rate 1 > 4 [l/min]		50		105	
Response time at 6 bar	On [ms]	15	10	14	–
	Off [ms]	22	22	22	–
	Change over [ms]	–	–	–	13
Materials		Housing: Anodised aluminium			
		Sub-base: Blue anodised aluminium			
		Seals: NBR			
Weight [g]		120	270	270	380

Operating and environmental conditions					
		3/2-way valves		5/2-way valves	
		MUFH-3-PK-3	MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
Operating pressure [bar]		0 ... 8		3 ... 8	
Ambient temperature [°C]		–5 ... +40		–5 ... +40	
Temperature of medium [°C]		–10 ... +60		–10 ... +60	

Electrical data					
		3/2-way valves		5/2-way valves	
		MUFH-3-PK-3	MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
D.C. voltage					
Standard voltages [V]		12, 24			Solenoid coils
Special voltage [V]		12 ... 220			➔ Internet: msf
A.C. voltage					
Standard voltages [V]		24, 42, 110, 220 at 50 Hz or 50 and 60 Hz			Solenoid coils
Special voltage [V]		12 ... 240 at 50 or 60 Hz			➔ Internet: msf
Power consumption					
D.C. voltage [W]		4.5			
A.C. voltage [VA]		Hold: 6			
		Pull: 7.5			
Duty cycle		100%			
Protection class to EN 60 529		IP65 with plug socket			

# Solenoid valves MUFH/MFH/JMFH, for mounting frame 2N

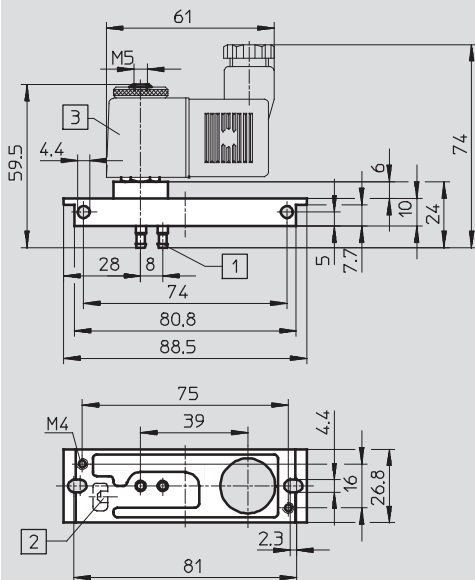
Technical data

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

3/2-way valves

MUFH-3-PK-3

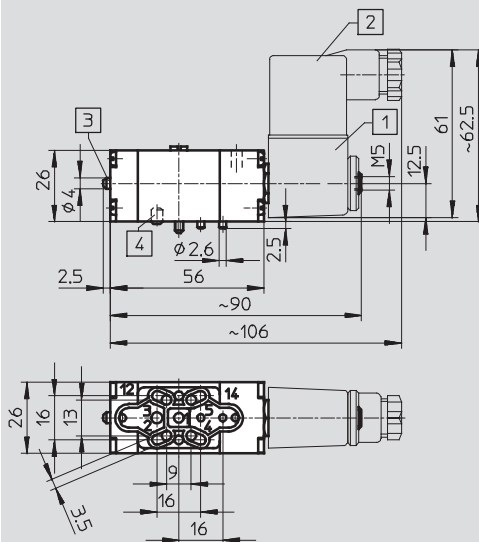


- 1 Barbed fitting for 3 mm plastic tubing
- 2 Manual override
- 3 Solenoid coil can be turned 360°

5/2-way valves

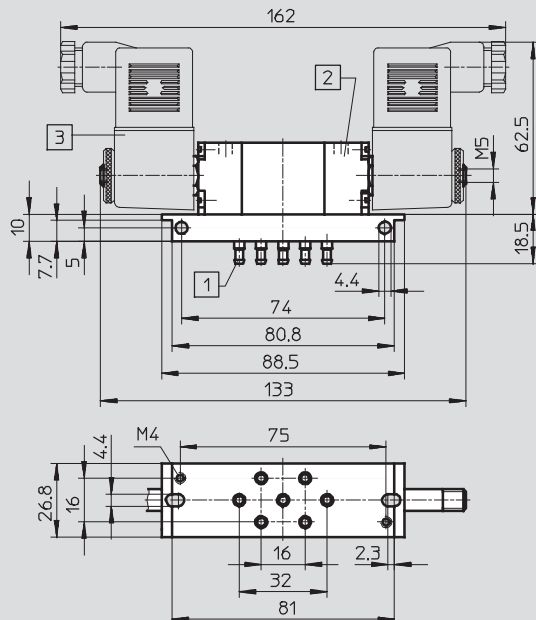
MFH-5-PK-3

MFH-5-PK-3-L



- 1 Rotatable solenoid coil
- 2 Plug can be repositioned by 180°
- 3 Manual override
- 4 Dowel pin

JMFH-5-PK-3

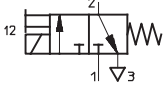
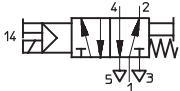
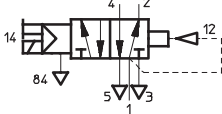
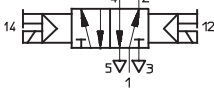


- 1 Barbed fitting for 3 mm plastic tubing
- 2 Manual override
- 3 Solenoid coil can be turned 360°

# Solenoid valves MUFH/MFH/JMFH, for mounting frame 2N

FESTO

Technical data

Ordering data		Part No.	Type
<b>3/2-way valves</b>			
Solenoid valve mechanical spring return		<b>6 705</b>	<b>MUFH-3-PK-3</b>
<b>5/2-way valves</b>			
Solenoid valve mechanical spring return		<b>4 448</b>	<b>MFH-5-PK-3</b>
Solenoid valve pneumatic spring return		<b>11 546</b>	<b>MFH-5-PK-3-L</b>
Double solenoid valve		<b>4 447</b>	<b>JMFH-5-PK-3</b>
<b>Accessories</b>			
Solenoid coils	➔ Internet: msf		



# Pneumatic valves VL/J, for mounting frame 2N

Technical data

General technical data						
		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	
Constructional design		Poppet valve	Piston spool valve	Poppet valve		
Type of mounting		2 through-holes in sub-base or on mounting frame				
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:-:-]				
Pneumatic connection		Barbed fitting for 3 mm plastic tubing				
Nominal size	[mm]	2.5				
Standard nominal flow rate 1 > 2	[l/min]	100		105		
Response time at 6 bar	On	[ms]	VL 10 VLO 13	–	15	
		[ms]	50	–	22	
	Change over	[ms]	–	with 10: 6 with 12: 8	–	9
		[ms]	–	–	–	with 14: 9 with 12: 25
Materials		Housing: Die-cast zinc, plastic				
		Sub-base: Plastic, brass				
		Seals: NBR				
Weights [g]						
1 valve on sub-base		110	75	130	130	
2 valves on sub-base		180	–	–	–	

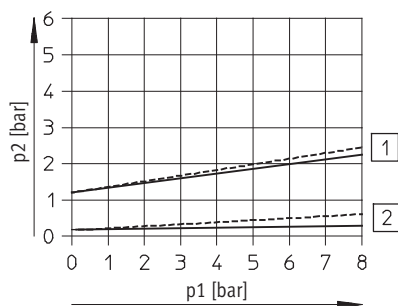
Operating and environmental conditions					
		3/2-way valves		5/2-way valves	
		VL/O-3-PK-3 VL/O-3-PK-3x2	J-3-PK-3	VL-5-PK-3	J-5-PK-3 JD-5-PK-3
Operating pressure	[bar]	0 ... 8	–0.9 ... +8	0 ... 8	1 ... 8
Pilot pressure	[bar]	See graph		See graph	
Ambient temperature	[°C]	–10 ... +60		–10 ... +60	0 ... +60

## Minimum pilot pressure p2 as a function of the operating pressure p1

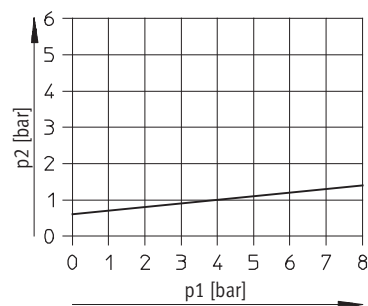
3/2-way valves

VL/O-3-PK-3

VL/O-3-PK-3x2



J-3-PK-3



- 1 No flow when not actuated VL
- 2 Flow when not actuated VLO

# Pneumatic valves VL/J, for mounting frame 2N

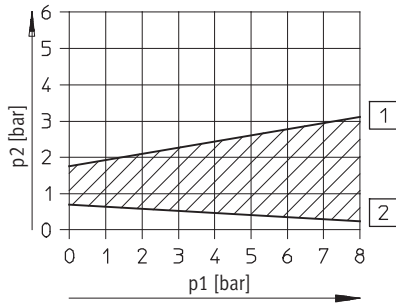
Technical data

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## Minimum pilot pressure p2 as a function of the operating pressure p1

5/2-way valves

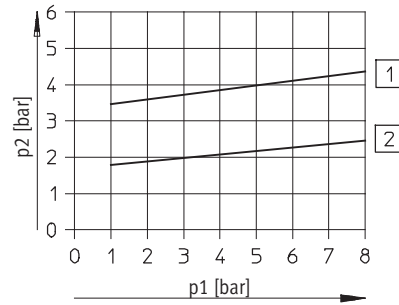
VL-5-PK-3



- 1 Switch-on pressure
- 2 Switch-off pressure

J-5-PK-3

JD-5-PK-3



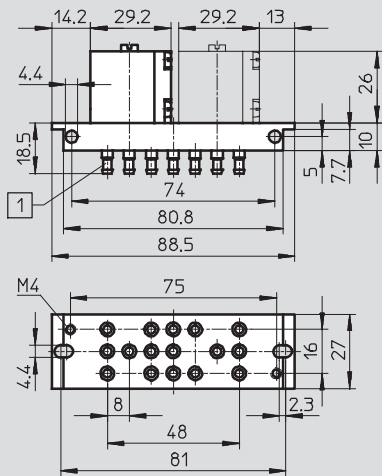
- 1 JD-5-PK-3
- 2 J-5-PK-3

## Dimensions

3/2-way valves

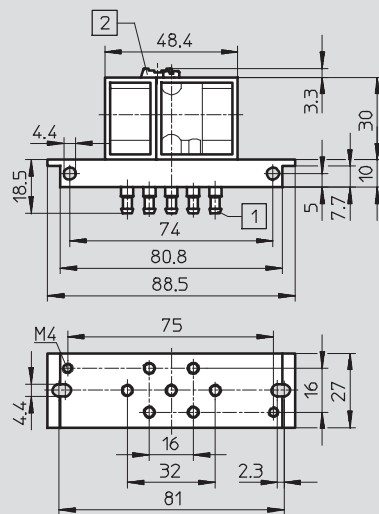
VL/O-3-PK-3

VL/O-3-PK-3x2



- 1 Barbed fitting for 3 mm plastic tubing

J-3-PK-3



- 1 Barbed fitting for 3 mm plastic tubing
- 2 Manual override

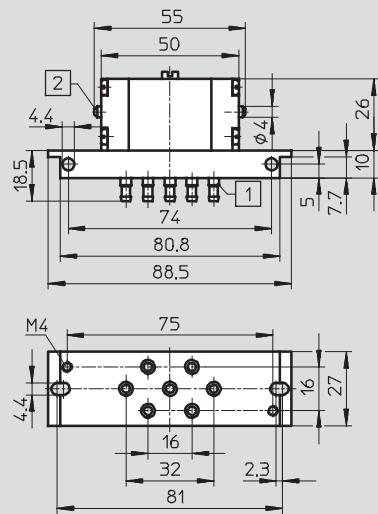
Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

5/2-way valves

VL-5-PK-3

J-5-PK-3

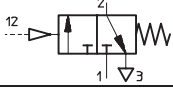
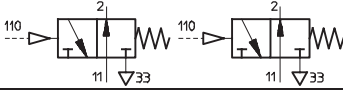
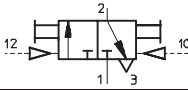
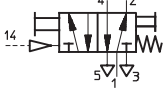
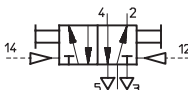
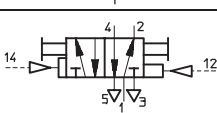
JD-5-PK-3



- 1 Barbed fitting for 3 mm plastic tubing
- 2 Manual override

# Pneumatic valves VL/J, for mounting frame 2N

Technical data

Ordering data		Part No.	Type
<b>3/2-way valves</b>			
Pneumatic valve mechanical spring return		4 233	VL/O-3-PK-3
2 pneumatic valves on one sub-base mechanical spring return		4 245	VL/O-3-PK-3x2
Double pilot valve		10 772	J-3-PK-3
<b>5/2-way valves</b>			
Pneumatic valve mechanical spring return		4 504	VL-5-PK-3
Double pilot valve		4 503	J-5-PK-3
Double pilot valve with dominating signal at 14		4 901	JD-5-PK-3

# Time delay valves VZ/VZO, for mounting frame 2N

Technical data

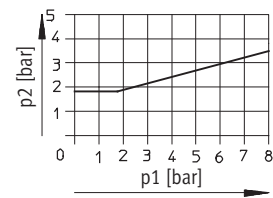
General technical data		
	With switch-on delay VZ-3-PK-3	With switch-off delay VZO-3-PK-3
Pneumatic connection	PK-3	
Design	Poppet valve with spring return	
Actuation type	Pneumatic	
Type of mounting	Front panel mounting On mounting frame	
Nominal size [mm]	2	
Standard nominal flow rate 1 > 2 [l/min]	90	60
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	
Housing material	Die-cast zinc	
Weight [g]	150	

1) To achieve delay times longer than 5 s, remove the end cap from connection fitting 6 and connect an additional reservoir to this. An increase in reservoir size of 10 cm<sup>3</sup> will increase the delay time by approx. 5 s.  
Air reservoir VZS → Internet: vzs

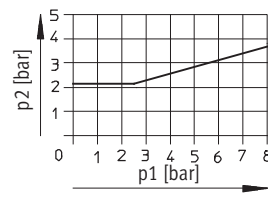
Operating and environmental conditions		
Operating pressure [bar]	2.5 ... 8	
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium	Operation with lubricated medium not possible	
Ambient temperature [°C]	-10 ... +60	

## Minimum pilot pressure p2 as a function of operating pressure p1

VZ-3-PK-3



VZO-3-PK-3

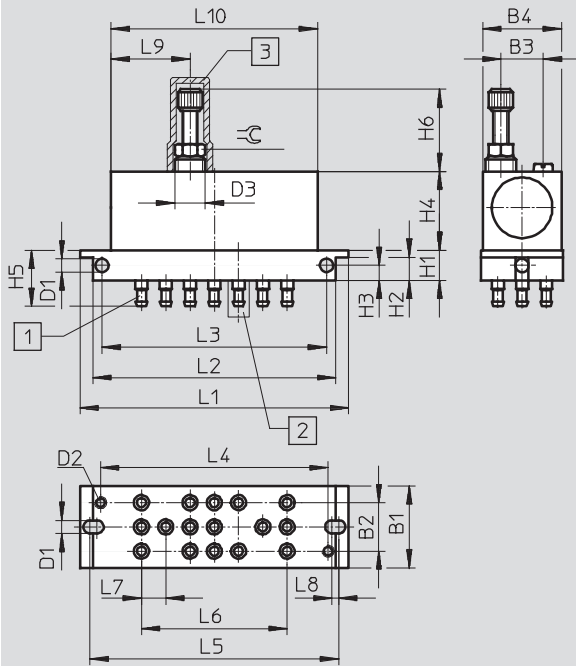


# Time delay valves VZ/VZO, for mounting frame 2N

Technical data

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



- 1 Barbed connector for plastic tubing PK-3
- 2 Port 6 with end cap for additional reservoir
- 3 Tamper-proof cap

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

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

## Ordering data

	Part No.	Type
Switch-on delay 	5755	VZ-3-PK-3
Switch-off delay 	5754	VZO-3-PK-3
<b>Accessories</b>		
Tamper-proof cap	6436	GRK-M5

# AND/OR blocks OS/ZK, for mounting frame 2N



Technical data

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

Operating and environmental conditions		
Operating pressure [bar]	1.6 ... 8	
Ambient temperature [°C]	-10 ... +60	
Medium temperature [°C]	-10 ... +60	

## Dimensions Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

1 Barbed fitting for 3 mm tubing I.D.

Ordering data		Part No.	Type
OR block (3 OR gates)		4 232	OS-PK-3-6/3
AND block (3 AND gates)		4 204	ZK-PK-3-6/3

# One-way flow control valves GRF, for mounting frame 2N

Technical data

General technical data		
	GRF-PK-3	GRF-PK-3x2
Type of mounting	Through-holes in sub-base or on mounting frame	
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:-:-]	
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)	
Pneumatic connection	[mm]	Barbed fitting for 3 mm plastic tubing
Nominal size [mm]		
in direction of flow control	1.5	
against the direction of flow control	2	
Standard nominal flow rate [l/min]		
in direction of flow control	0 ... 45	
against the direction of flow control	45	
Materials		
	Housing: Aluminium	
	Sub-base: Plastic	
	Seals: NBR	
Weight	[g]	90
		145

Operating and environmental conditions		
Operating pressure	[bar]	0.5 ... 8
Ambient temperature	[°C]	-10 ... +60

**Dimensions** Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

1 Barbed fitting for 3 mm plastic tubing

Ordering data		Part No.	Type
One-way flow control valve		4 565	GRF-PK-3
2 one-way flow control valves on one sub-base		4 566	GRF-PK-3x2

# PE converters PE/VPE, for mounting frame 2N

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Technical data

General technical data				
	PE converter		Vacuum switch	
	PE-1/8-2N	PE-1/8-2N-SW	VPE-1/8-2N	VPE-1/8-2N-SW
Constructional design	Pneumatically actuated electrical micro switch to EN 60 947-5-1			
Type of mounting	On mounting frame 2N Via through-holes			
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)			
Pneumatic connection	G1/8			
Electrical connection	Screw connector	3 separate sheathed connector wires, moulded, 0.5 m long	Screw connector	3 separate sheathed connector wires, moulded, 0.5 m long
Materials	Housing: Die-cast aluminium, polyamide Diaphragm: Polyurethane			
Weight [g]	55	65	32	45

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

Operating and environmental conditions				
	PE converter		Vacuum switch	
	PE-1/8-2N	PE-1/8-2N-SW	VPE-1/8-2N	VPE-1/8-2N-SW
Operating pressure [bar]	0 ... 8		0 ... -0.95	
Switch-on pressure [bar]	2		-0.25 ... ±0.05	
Switch-off pressure [bar]	0.5		≤ 0.1	
Ambient temperature [°C]	-10 ... +60			0 ... +40

Electrical data				
	PE converter		Vacuum switch	
	PE-1/8-2N	PE-1/8-2N-SW	VPE-1/8-2N	VPE-1/8-2N-SW
Rated operating voltage [V AC]	250			
Rated operating voltage [V DC]	250			
Switching capacity	See separate table			
Utilisation category	AC 12/DC 12 (ohmic load) AC 14/DC 13 (inductive load)			
CE marking symbol (see conformity declaration)	As per EU low voltage directive			
Certification	CCC			
Protection class to EN 60 529	IP00	IP67	IP00	IP67

Test symbols for PE, VPE-1/8-2N: VDE, SEMKO, ÖVE, SEV, UL, CSA, (CEE).

Max. permissible electrical load					
D.C. voltage			A.C. voltage		
Voltage [V DC]	Resistive load [A]	Inductive load [A]	Voltage [V AC]	Resistive load [A]	Inductive load [A]
PE/VPE-1/8-2N					
12	6	6	250	6	2
24	6	6	250	6	2
60	1	0.5			
110	0.5	0.2			
220	0.25	0.1			
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			



# PE converters PE/VPE, for mounting frame 2N

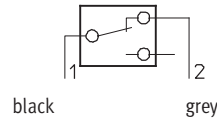
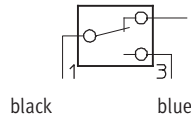
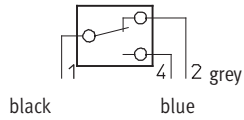
Technical data

## Terminal allocation

Changeover switch

Normally open contact

Normally closed contact



## Dimensions

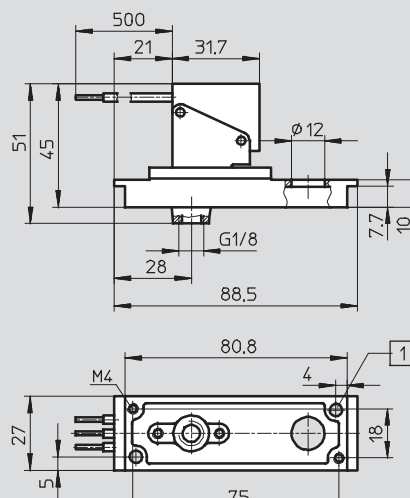
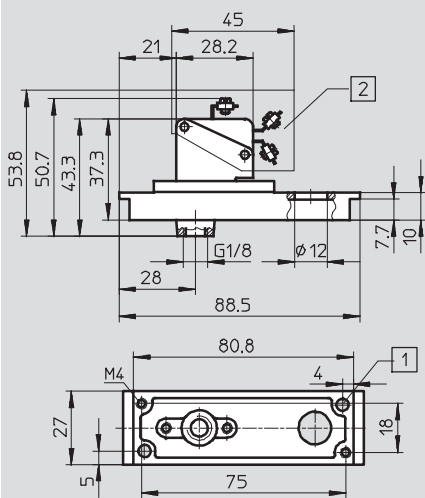
Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

PE converter

PE-1/8-2N

PE-1/8-2N-SW

splash proof design



- 1 For M4 thread
- 2 Protective cap SPE-B

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

- 1 For M4 thread

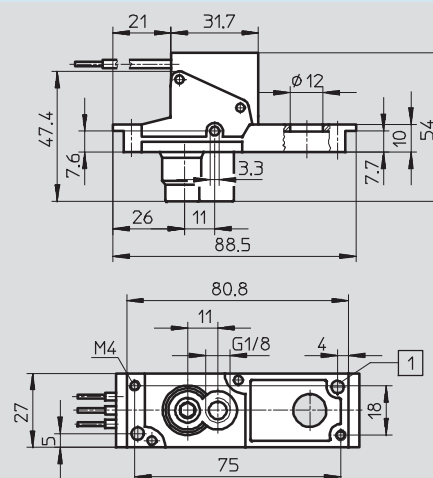
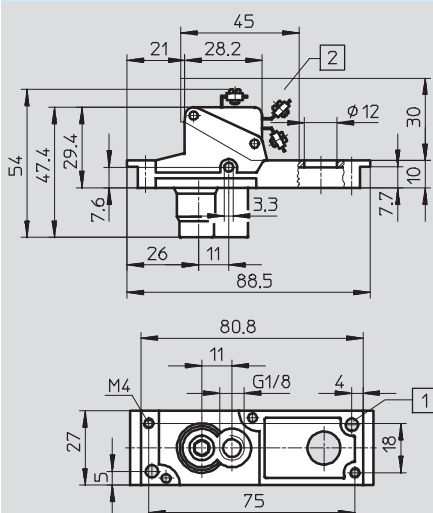
Note: This product conforms to ISO 1179-1 and ISO 228-1

Vacuum switch

VPE-1/8-2N

VPE-1/8-2N-SW

splash proof design



- 1 For M4 thread
- 2 Protective cap SPE-B

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

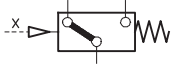
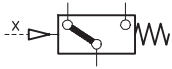
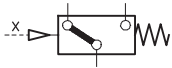
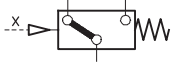
- 1 For M4 thread

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

## PE converters PE/VPE, for mounting frame 2N

FESTO

Technical data

Ordering data		Part No.	Type
PE converter		7 860	PE-1/8-2N
PE converter splash proof design		7 862	PE-1/8-2N-SW
Vacuum switch		12 594	VPE-1/8-2N
Vacuum switch splash proof design		12 595	VPE-1/8-2N-SW
Accessories			
Protective cap for protection against accidental contact		165 614	SPE-B

# PE converters PEN-M5, for mounting frame 2N

Technical data

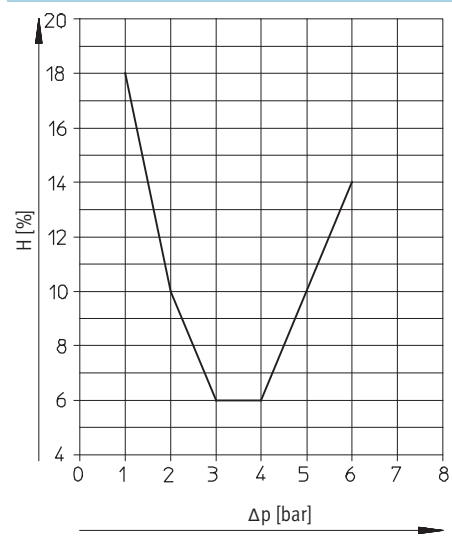
General technical data	
Constructional design	Pneumatic/electrical differential pressure switch
Type of mounting	On mounting frame 2N
	Via through-holes
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Pneumatic connection	M5
Electrical connection	2.5 m cable 3x0.14 mm <sup>2</sup>
Switch output	Contactless switching output (normally open function)
Max. switching frequency [Hz]	70
Materials	Housing: Die-cast zinc
Note on material	Free of copper, PTFE and silicone
Weight [g]	240

Operating and environmental conditions	
Operating pressure [bar]	-0.95 ... +8 bar
Threshold value setting range [bar]	-0.8 ... +8 bar
Ambient temperature [bar]	-20 ... +60 °C

Electrical data	
Operating voltage range [V DC]	12 ... 30
Switching status display	Yes
Adjustable hysteresis	→ Graph 19
Max. output current [mA]	350
Protection against short circuit	Yes
Protection against polarity reversal	Yes
CE mark (see declaration of conformity) <sup>1)</sup>	To EU EMC Directive
Certification	C-Tick
Protection class to EN 60 529	IP67

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: [www.festo.com](http://www.festo.com) → Support → User documentation.  
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

## Hysteresis H as a function of the differential pressure Δp



# PE converters PEN-M5, for mounting frame 2N

Technical data

FESTO

**Dimensions** Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

1 Connecting cable 3x0.14 mm<sup>2</sup>, 2.5 m long  
 2 Light emitting diode (LED)  
 3 Pressure adjustment screw

Colour coding:  
 BN = Positive terminal  
 BU = Negative terminal  
 BK = Load output  
 The switch is polarity-safe

Ordering data	
PE converter	Part No. Type <b>8 625 PEN-M5</b>
Accessories	
Mounting bracket for mounting sub-bases on the frame	<b>11 571 NRW-9/1,5-B</b>
Socket head screw (2 included in scope of delivery)	<b>204 021 DIN 84-M4X12-4.8</b>

# Mounting frames 2N

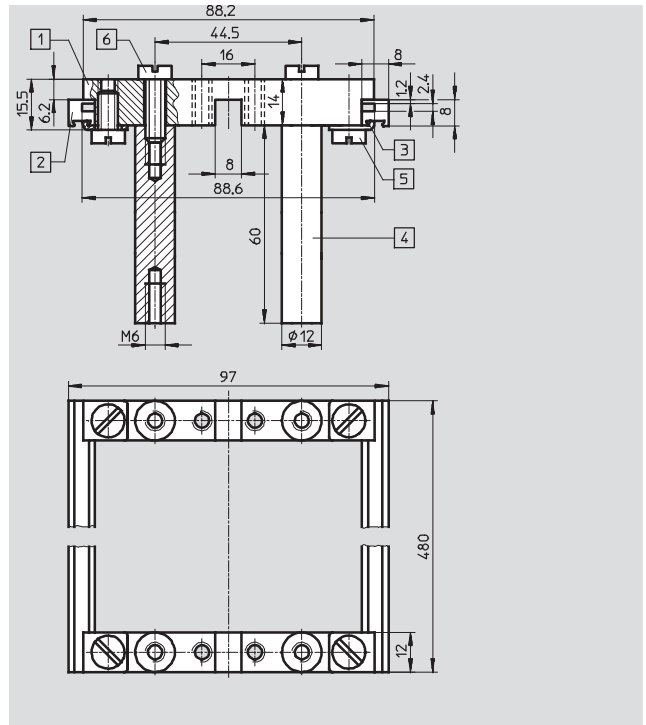
Accessories

FESTO

## Mounting frame NRRQ-2N

### Scope of delivery

- 2 x connecting piece NRV-2N
- 2 x mounting rail NRQ-8-480
- 4 x mounting bracket NRW-12/3
- 4 x threaded spacer NRB-12/60
- 4 x slotted head screw  
DIN 84-M6X18-4.8
- 4 x slotted head screw  
DIN 84-M6X12-4.8
- 4 x mounting bracket NRW-9/1,5-B
- 4 x slotted head screw  
DIN 84-M4X10-4.8



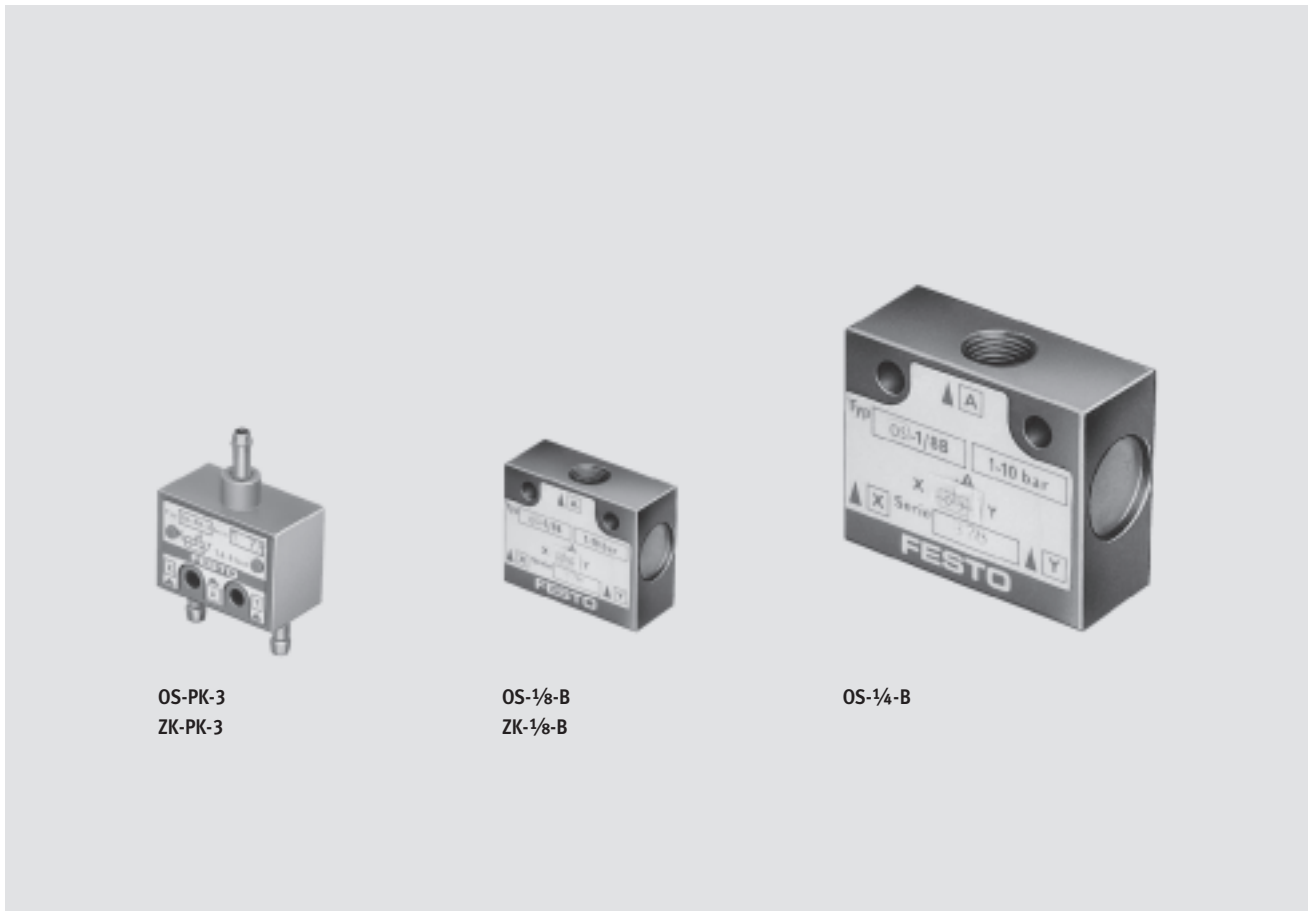
- 1 Connecting piece NRV-2N
- 2 Mounting rail NRQ-8-480
- 3 Mounting bracket NRW-12/3
- 4 Threaded spacer NRB-12/60
- 5 Slotted head screw  
DIN 84-M6X18-4.8
- 6 Slotted head screw  
DIN 84-M6X12-4.8

Mounting frame	Part No.	Type
Mounting frame 2N complete for 16 components	9 365	NRRQ-2N
<b>Accessories</b>		
Mounting bracket for mounting sub-bases on the frame	11 571	NRW-9/1,5-B
Slotted head screw (2 included in scope of delivery)	204 021	DIN 84-M4X12-4.8

# AND/OR blocks OS/ZK

Key features

FESTO



OS-PK-3  
ZK-PK-3

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

OS-1/4-B

Flow rate

120 ... 1170 l/min

- Barbed fitting for 3 mm tubing
- G $\frac{1}{8}$ , G $\frac{1}{4}$
- OR function
- AND function

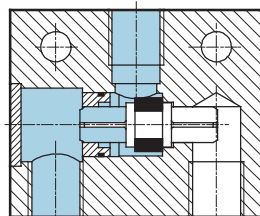
## OR function

The OR gate has two inputs (X and Y) and one output (A). The valve automatically blocks the input which is not pressurised. If both inputs are pressurised simultaneously at different levels, the higher pressure is fed to the output A.

An OR valve (or shuttle valve) is used to allow a function to be executed from either of 2 different places.

An output signal is present whenever at least one of 2 signal inputs is activated.

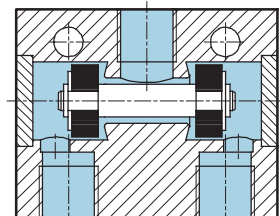
OS-1/4-B



## AND function

The AND gate has two inputs (X and Y) and one output (A), which is pressurised only as long as pressure is present at both inputs. If different pressures are present at the inputs, the lower pressure is fed to output A. An AND valve (or dual-pressure valve) is used in cases where at least 2 signals are required to be present before a function is executed. A signal is present at output A only when both signal inputs are activated.

ZK-1/8-B



# AND/OR blocks OS/ZK

Technical data

FESTO

General technical data					
Type	OS-PK-3	OS-1/8-B	OS-1/4-B	ZK-PK-3	ZK-1/8-B
Valve function	OR function			AND function	
Nominal size [mm]	2.4	4	6.5	2.4	4.5
Mounting position	Any				
Type of mounting	Via through-holes				
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [-:-:-]	Compressed air in accordance with ISO 8573-1:2010 [7:-:-:-]			
Note on operating/pilot medium	-	Operation with lubricated medium possible (in which case lubricated operation will always be required)			
Pneumatic connection	PK-3 for 3 mm tubing I.D.	G1/8	G1/4	PK-3 for 3 mm tubing I.D.	G1/8
Standard nominal flow rate [l/min]	120	500	1170	120	500
Weight [g]	9	45	110	10	45
Information on housing materials	POM	Wrought aluminium alloy	Wrought aluminium alloy	POM, brass	Wrought aluminium alloy, anodised
Information on seals materials	NBR	NBR	NBR	NBR	NBR

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

Operating and environmental conditions					
Type	OS-PK-3	OS-1/8-B	OS-1/4-B	ZK-PK-3	ZK-1/8-B
Operating pressure [bar]	1.6 ... 8	1 ... 10	1 ... 10	1.6 ... 8	1 ... 10
Ambient temperature [°C]	-10 ... +60				
Medium temperature [°C]	-10 ... +60				

### Dimensions

OS-PK-3  
ZK-PK-3

1 Barbed fitting for 3 mm tubing I.D.

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

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

OS-1/4-B

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

[Download CAD Data → www.festo.com/us/cad](http://www.festo.com/us/cad)

Ordering data			
		Connection	Part No. Type
OR gate		Barbed fitting for 3 mm tubing I.D.	6 684 OS-PK-3
		G1/8	6 681 OS-1/8-B
		G1/4	6 682 OS-1/4-B
AND gate		Barbed fitting for 3 mm tubing I.D.	6 685 ZK-PK-3
		G1/8	6 680 ZK-1/8-B

# Counters PZA/PZV

Key features

FESTO



## Adding counter

- Surface mounting
- Panel mounting

Adding counters have 6-digit displays and count upwards, i.e. incoming signals are added. When the counter is reset, 000 000 appears. A pneumatic signal increments the counter by a half step, and the first half of the digit appears. After completion of the signal, the second half-step increment occurs and the digit becomes fully visible. The counter can be reset manually by means of a button. It can also be reset by means of a pneumatic signal. A counting signal may not arrive or be present during the resetting procedure.

## Predetermining counter

- Subtracting counting mode
- Manual and pneumatic reset
- Protective cover

Predetermining counters count pneumatic signals backwards from a preset number. When zero is reached, the counter generates a pneumatic output signal. This output signal persists until the counter is reset. The counter is preset by pressing the reset button and simultaneously keying in the preset value. This value is retained when the counter is reset.



# Counters PZA/PZV

Technical data

FESTO

General technical data				
Type	Adding counter		Predetermining counter	
	PZA-A-B	PZA-E-C	PZV-E-C	
Constructional design	Mechanical counter with pneumatic drive			
Type of mounting	3 through-holes in housing	Panel mounting		
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium	Operation with lubricated medium not possible			
Pneumatic connection				
Display <sup>1)</sup>	6-digit	6-digit	5-digit	
Reset	Pushbutton or pneumatic signal			
Response pressure				
Drive	[bar]	0.6 ±0.2	> 0.8	0.6 ±0.2
Reset	[bar]	0.6 ±0.2	2	–
Drop-off pressure				
Drive	[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				
Drive	[ms]	10	8	10
Reset	[ms]	180	150	180
Min. pause period				
Drive	[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		Predetermining 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	

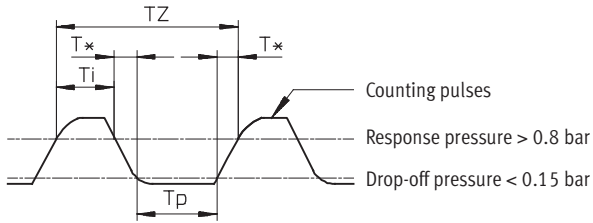
# Counters PZA/PZV

Technical data

FESTO

## Counting rate

Adding counter PZA-E-C



$$\text{Max. pulse rate} = \frac{1}{T_z}$$

$$T_z = T_i + T_p + T^*$$

$$T_z = T_i + T^*$$

$T_i$  = Min. pulse length

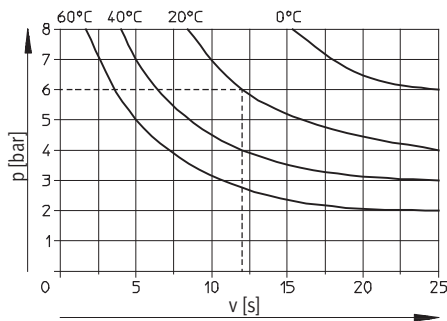
$T_p$  = Min. pause period

$T_z$  = Time for counting pulse

$T^*$  = Depends on pressure and tubing length (values must be determined empirically)

## Counting speed $v$ as a function of the operating pressure $p$

Predetermining counter PZV-E-C



**Intermittent operation**  
The counter operates non-continuously. The counting rate is constant right down to zero contact (high rate possible). A reset then follows.

**Continuous operation**  
The counter operates continuously at a constant rate. The interval between 2 counting signals is longer than the required reset time.

# Counters PZA/PZV

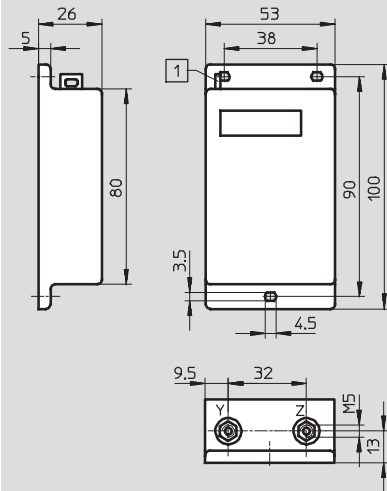
Technical data

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

### Adding counter

#### Surface mounting PZA-A-B

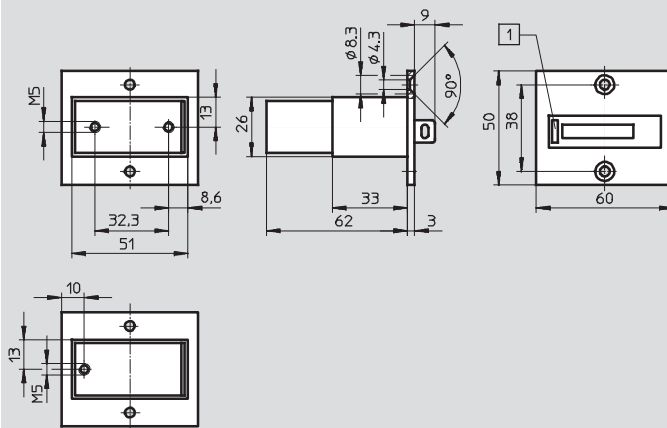


1 Reset button

Z = Counting signal

Y = Reset signal

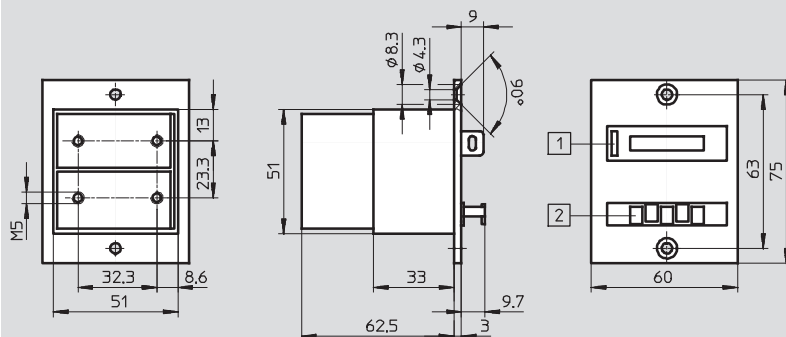
### Panel mounting PZA-E-C



1 Reset button

### Predetermining counter

#### Surface mounting PZV-E-C



1 Reset button

2 Preselect buttons

The preset number is restored using the reset button or by a pneumatic signal to the reset port.

#### Note


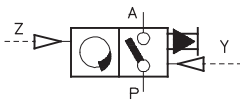
The output signal must not be used to reset the counter. No counting

signal may arrive or be present during the resetting procedure.

# Counters PZA/PZV

Technical data

FESTO

Ordering data			Part No.	Type
Adding counter	Surface mounting		14 992	PZA-A-B
	Panel mounting		8 606	PZA-E-C
Predetermining counter	Surface mounting		15 608	PZV-E-C

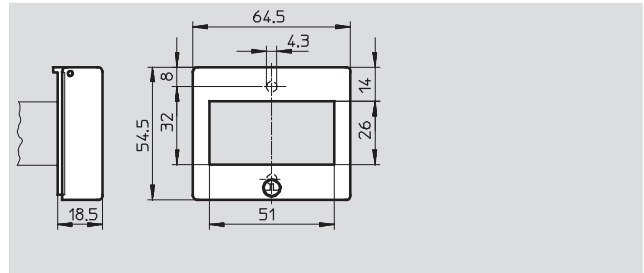
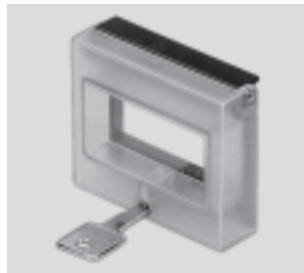
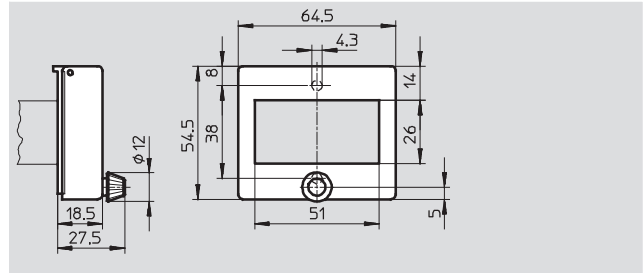
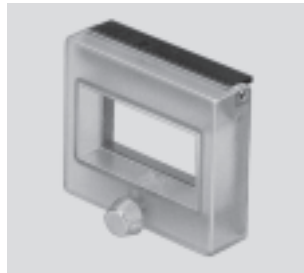
# Counters PZA/PZV

Accessories

FESTO

## Protective cover with rotary knob PZ-SK-1 with lock PZ-SS-1

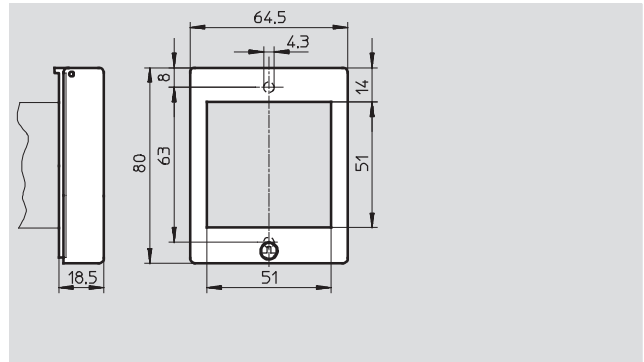
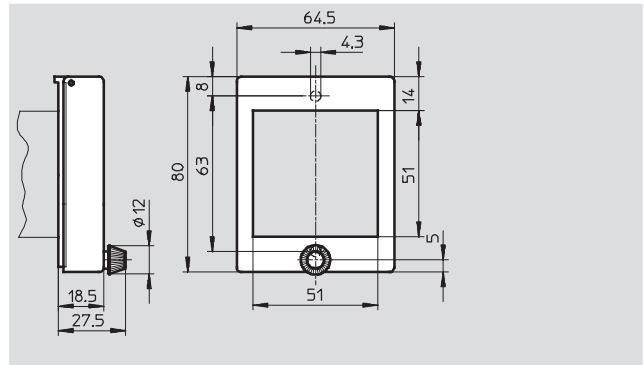
Protective cover for adding counter to protect against entry of dirt and water on the front panel



Ordering data		
	Part No.	Type
Protective cover with rotary knob	14 662	PZ-SK-1
Protective cover with lock	13 965	PZ-SS-1

## Protective cover with rotary knob PZ-SK-2 with lock PZ-SS-2

Protective cover for predetermining counter to protect against entry of dirt and water on the front panel

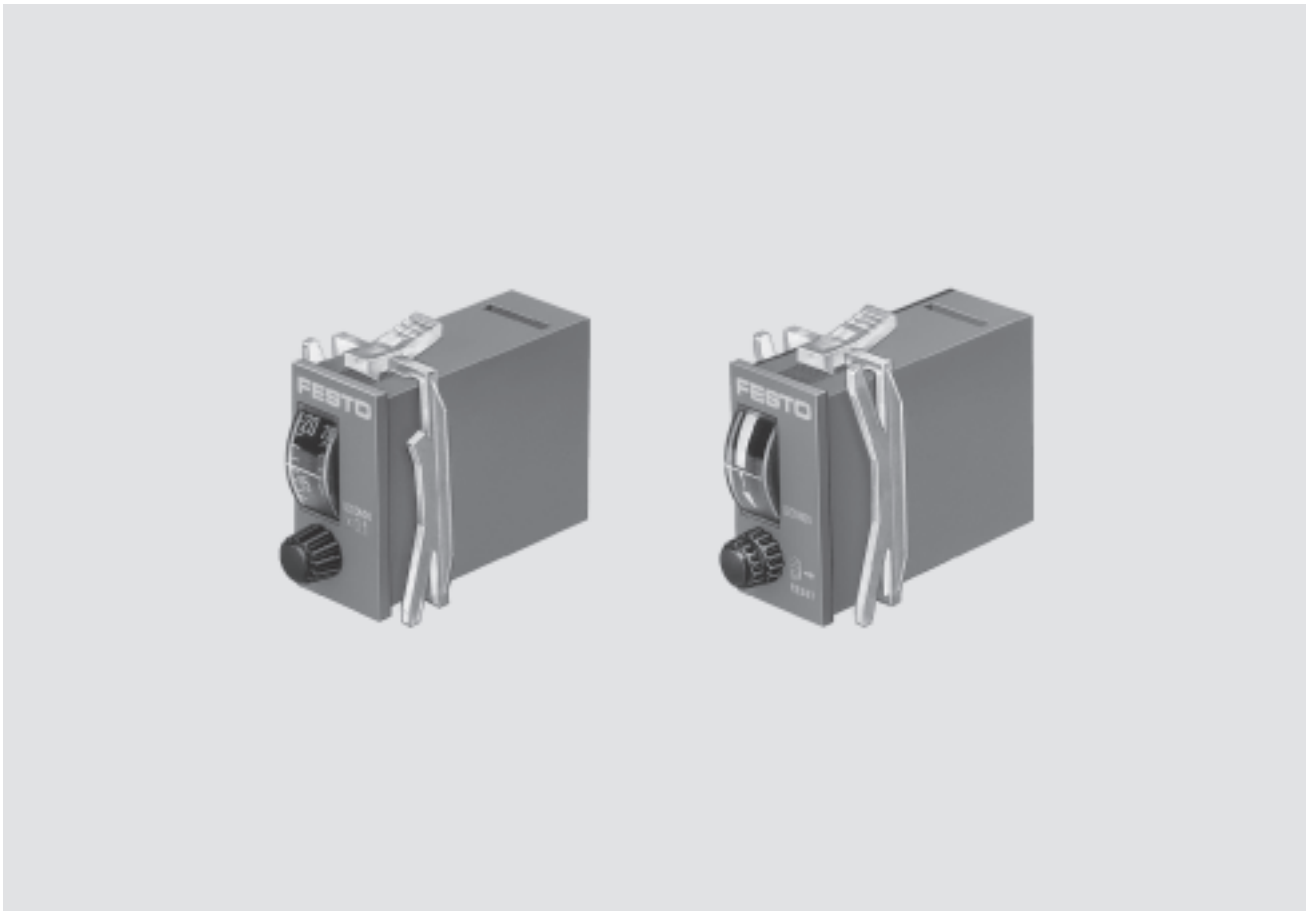


Ordering data		
	Part No.	Type
Protective cover with rotary knob	14 663	PZ-SK-2
Protective cover with lock	13 966	PZ-SS-2

# Timers PZVT

Key features

FESTO



		Pneumatic timer PZVT	Automatic reset module PZVT-AUT
<ul style="list-style-type: none"><li>• Adjustable delay times<ul style="list-style-type: none"><li>– 0.2 ... 3 s</li><li>– 2 ... 30 s</li><li>– 8 ... 120 s</li><li>– 20 ... 300 s</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Panel mounting</li><li>• Mounting on H-rail to EN 60715</li><li>• Protective cover</li></ul>	<p>The timer switches input pressure applied to port 1 through to port 2 after the preset delay time has expired.</p>	<p>The reset module is used to automatically reset timers of type PZVT-...-SEC at the end of a preset time and to generate an output signal of defined duration for control system purposes.</p> <p>The timer can be reset manually by pulling the setting knob on the reset module. This allows the simple creation of pneumatic timer controls with automatically repeating time intervals.</p>

# Timers PZVT

Technical data

FESTO

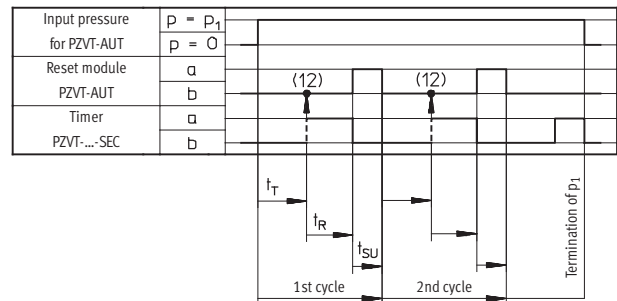
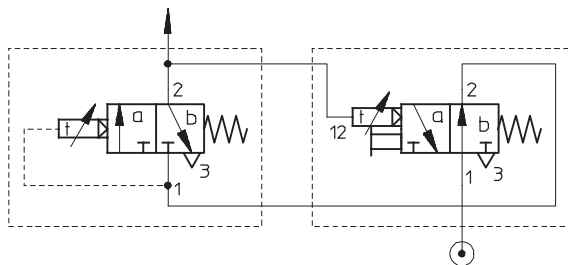
General technical data					
Type	Timer				Reset module
	PZVT-3-SEC	PZVT-30-SEC	PZVT-120-SEC	PZVT-300-SEC	PZVT-AUT
Constructional design	Mechanical sequence counter with pneumatic drive				
Type of mounting	Panel mounting				
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium	Operation with lubricated medium not possible				
Pneumatic connection	Female thread M5				
Standard nominal flow rate [l/min]	50				
Adjustable delay times [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				
Protection class	IP54 to IEC 60529 with protective cover and panel frame				
Weight [g]	45				50
Material of housing	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

## Example of application

PZVT-...-SEC

PZVT-AUT



- 1 = Supply port
- 2 = Working or outlet line
- 3 = Exhausts
- 12 = Pilot line

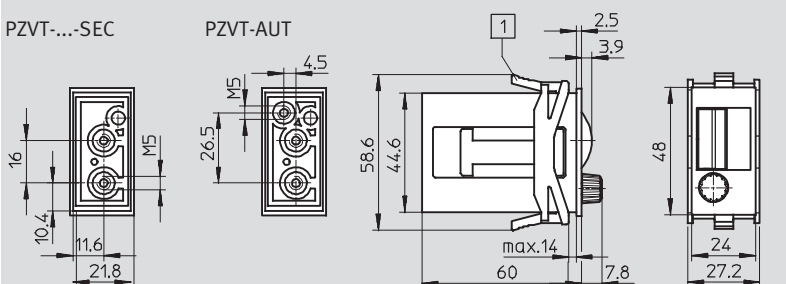
- $t_T$  = Time preset range for timer type PZVT-...-SEC
- $t_R$  = Switching delay time for reset module PZVT-AUT (0.2 ... 2 s)
- $t_{SU}$  = Signal interruption period for reset module PZVT-AUT (≥ 300 ms)

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

PZVT-...-SEC

PZVT-AUT

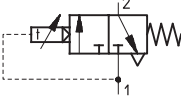
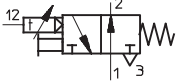


- 1 Clamping frame included in scope of delivery

# Timers PZVT

Technical data

FESTO

Ordering data			Part No.	Type
Timer	0.2 ... 3 s		158 495	PZVT-3-SEC
	2 ... 30 s		150 238	PZVT-30-SEC
	8 ... 120 s		177 616	PZVT-120-SEC
	20 ... 300 s		150 239	PZVT-300-SEC
Reset module	0.2 ... 2 s		158 496	PZVT-AUT

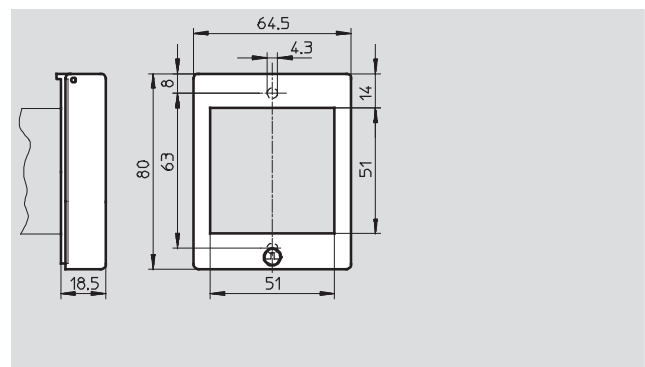
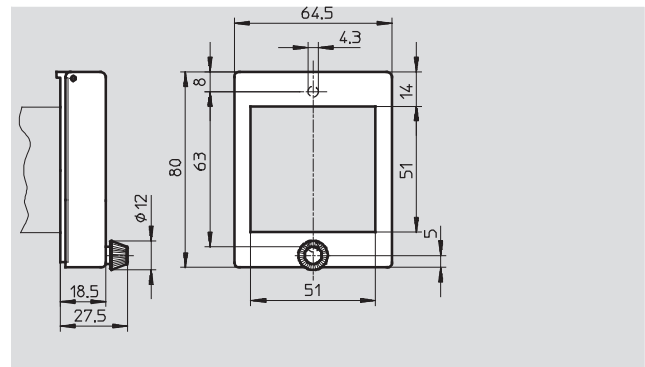


# Timers PZVT

Accessories

## Protective cover with rotary knob PZ-SK-2 with lock PZ-SS-2

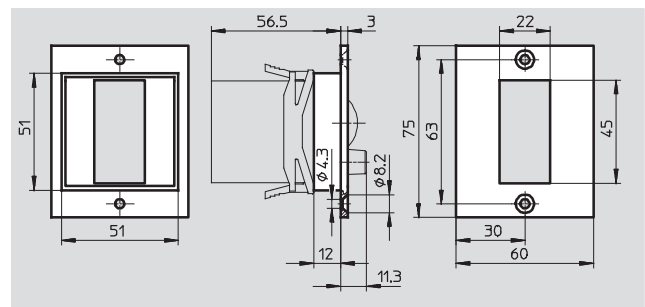
Protective cover for timers to protect against entry of dirt and water on the front panel



Ordering data		
	Part No.	Type
Protective cover with rotary knob	14 663	PZ-SK-2
Protective cover with lock	13 966	PZ-SS-2

## Panel frame PZVT-FR for panel mounting

Note on materials: RoHS-compliant



Ordering data		
	Part No.	Type
Panel frame	150 241	PZVT-FR

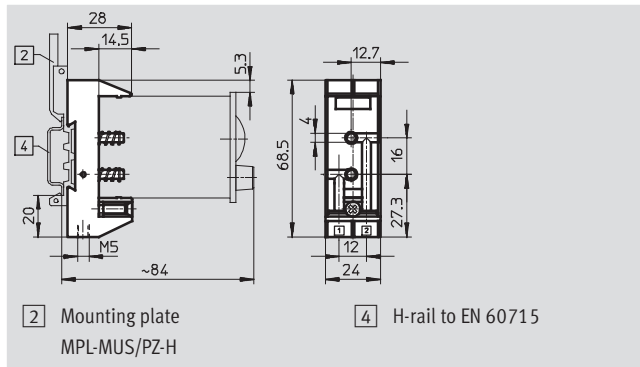
# Timers PZVT

Accessories



## 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

### Note

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

### Ordering data

	Part No.	Type
Base	150 240	PZVT-S-DIN

## Mounting plate MPL-MUS/PZ-H

for H-rail to EN 60715



### Ordering data

	Part No.	Type
Mounting plate for H-rail	19 135	MPL-MUS/PZ-H

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# Festo North America

## Festo Regional Contact Center

5300 Explorer Drive  
Mississauga, Ontario L4W 5G4  
Canada

### USA Customers:

For ordering assistance,

**Call:** 1.800.99.FESTO (1.800.993.3786)

**Fax:** 1.800.96.FESTO (1.800.963.3786)

**Email:** [customer.service@us.festo.com](mailto:customer.service@us.festo.com)

For technical support,

**Call:** 1.866.GO.FESTO (1.866.463.3786)

**Fax:** 1.800.96.FESTO (1.800.963.3786)

**Email:** [product.support@us.festo.com](mailto:product.support@us.festo.com)

### Canadian Customers:

**Call:** 1.877.GO.FESTO (1.877.463.3786)

**Fax:** 1.877.FX.FESTO (1.877.393.3786)

**Email:** [festo.canada@ca.festo.com](mailto:festo.canada@ca.festo.com)

---

## USA Headquarters

Festo Corporation  
395 Moreland Road  
P.O. Box 18023  
Hauppauge, NY 11788, USA  
[www.festo.com/us](http://www.festo.com/us)

---

## USA Sales Offices

### Appleton

North 922 Tower View Drive, Suite N  
Greenville, WI 54942, USA

### Boston

120 Presidential Way, Suite 330  
Woburn, MA 01801, USA

### Chicago

1441 East Business Center Drive  
Mt. Prospect, IL 60056, USA

### Dallas

1825 Lakeway Drive, Suite 600  
Lewisville, TX 75057, USA

### Detroit – Automotive Engineering Center

2601 Cambridge Court, Suite 320  
Auburn Hills, MI 48326, USA

### New York

395 Moreland Road  
Hauppauge, NY 11788, USA

### Silicon Valley

4935 Southfront Road, Suite F  
Livermore, CA 94550, USA

## United States



**USA Headquarters, East:** Festo Corp., 395 Moreland Road, Hauppauge, NY 11788

Phone: 1.631.435.0800; Fax: 1.631.435.8026;

Email: [info@festo-usa.com](mailto:info@festo-usa.com)

[www.festo.com/us](http://www.festo.com/us)

## Canada



**Headquarters:** Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4

Phone: 1.905.624.9000; Fax: 1.905.624.9001;

Email: [festo.canada@ca.festo.com](mailto:festo.canada@ca.festo.com)

[www.festo.ca](http://www.festo.ca)

## Mexico



**Headquarters:** Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquahuac,  
54020 Tlalneantla, Edo. de México

Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;

Email: [festo.mexico@mx.festo.com](mailto:festo.mexico@mx.festo.com)

[www.festo.com/mx](http://www.festo.com/mx)

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## Central USA

Festo Corporation  
1441 East Business  
Center Drive  
Mt. Prospect, IL 60056, USA  
Phone: 1.847.759.2600  
Fax: 1.847.768.9480



## Western USA

Festo Corporation  
4935 Southfront Road,  
Suite F  
Livermore, CA 94550, USA  
Phone: 1.925.371.1099  
Fax: 1.925.245.1286



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