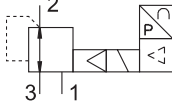
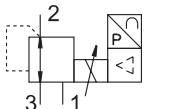


Proportional-pressure regulators MPPE/MPPES

FESTO

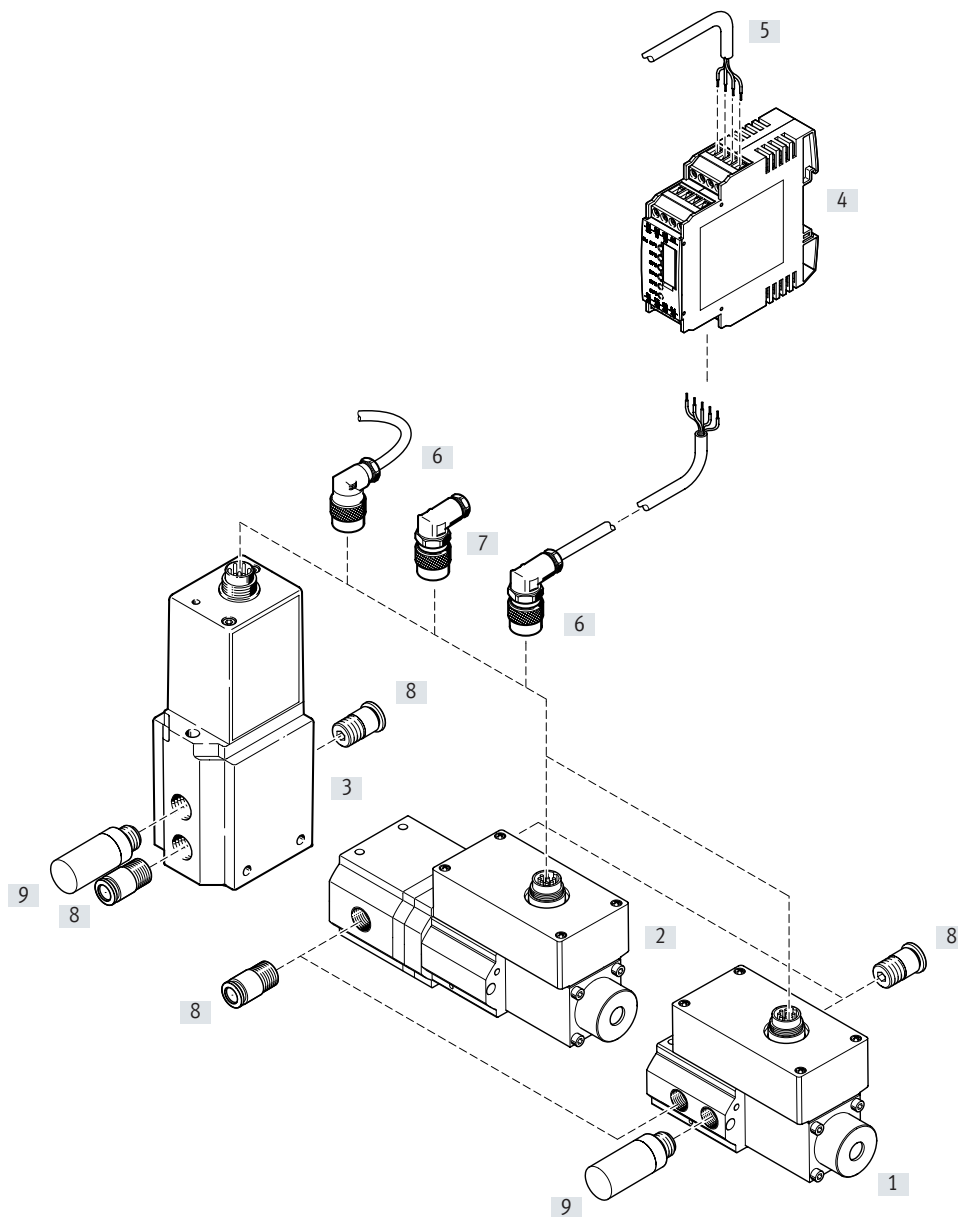


Product range overview

Function	Type	Circuit symbol	Design	Pneumatic connection 1	Nominal width for pressurisation/ exhaust [mm]	Pressure regulation range ¹⁾ [bar]	Setpoint input		→ Page/ Internet
							Voltage type	Current type	
							0 ...10 V	4 ...20 mA	
Proportional-pressure regulators	With switching valves								
	MPPE		Pilot-actuated valve	G1/8	5/5	0 ... 1	■	■	4
				G1/4	7/7	0 ... 2.5	■	■	
				G1/2	11/12	0 ... 6 0 ... 10	■	■	
	With proportional solenoid								
	MPPEs		Directly actuated valve	G1/8	3/2	0 ... 2 0 ... 6 0 ... 10	■	■	11
			Pilot-actuated valve	G1/4	7/7		■	■	
				G1/2	11/12		■	■	

1) Pressure regulation range also on customer request

Peripherals overview



Accessories

		Type	Description	→ Page/Internet
[1]	Proportional-pressure regulator	MPPES	Directly actuated	12
[2]	Proportional-pressure regulator	MPPES	Indirectly actuated	12
[3]	Proportional-pressure regulator	MPPE	Indirectly actuated	5
[4]	Setpoint module	MPZ	For generating 6+1 analogue voltage signals	18
[5]	Digital input/output	–	For controlling the setpoint module	–
[6]	Plug socket with cable	KMPE-B	–	18
[7]	Angled plug socket	MPPE-3-B	–	18
[8]	Push-in fitting	QS	For connecting compressed air tubing	qs
[9]	Silencer	U	For mounting in exhaust ports	u

Type codes

001	Series	
MPPE	Proportional-pressure regulator	

002	Valve function	
3	3/3-way valve, normally closed	

003	Pneumatic connection	
G18	G1/8	
G14	G1/4	
G12	G1/2	

004	Upper pressure value of control range	
1H	1 bar	
10H	10 bar	
6H	6 bar	
2,5H	2.5 bar	

005	Setpoint input for individual valves	
A4	4 ... 20 mA	
V1	0 ... 10 V	

006	Generation	
B	Series B	

Data sheet

-  Flow rate
350 ... 8800 l/min

-  Voltage
18 ... 30 V DC

-  Pressure regulation ranges
0 ... 1 bar
0 ... 2.5 bar
0 ... 6 bar
0 ... 10 bar

Variants

- Setpoint input as analogue voltage signal 0 ... 10 V
- Setpoint input as analogue current signal 4 ... 20 mA

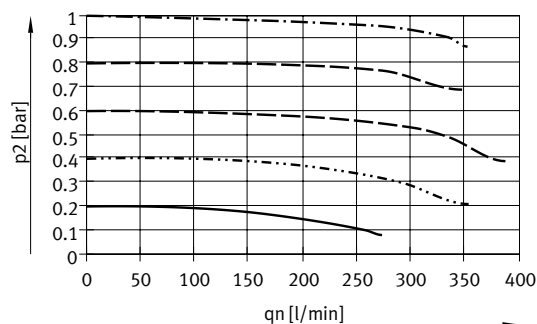


General technical data			G1/8	G1/4	G1/2
Pneumatic connection			G1/8	G1/4	G1/2
Design			Pilot-actuated piston regulator		
Valve function			3-way proportional-pressure regulator, closed		
Pneumatic connection 1, 2, 3			G1/8	G1/4	G1/2
Sealing principle			Soft		
Actuation type			Electrical		
Type of mounting			With through-hole		
Mounting position			Any		
Nominal width	Pressurisation	[mm]	5	7	11
	Exhaust	[mm]	5	7	12
Standard nominal flow rate			→ Graphs		
Product weight			710	920	2400

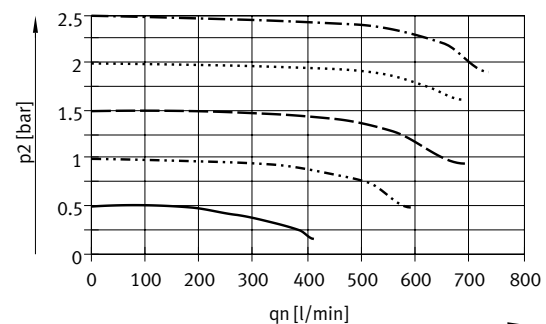
Flow rate q_n as a function of output pressure p_2

Pneumatic connection G1/8

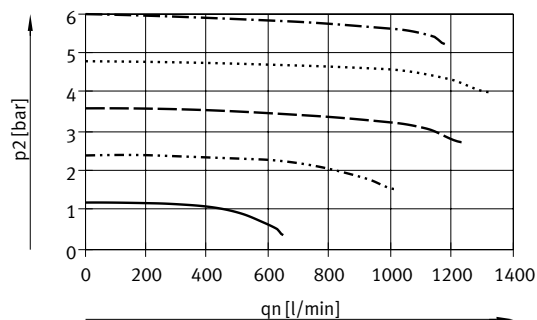
Pressure regulation range 0 ... 1 bar



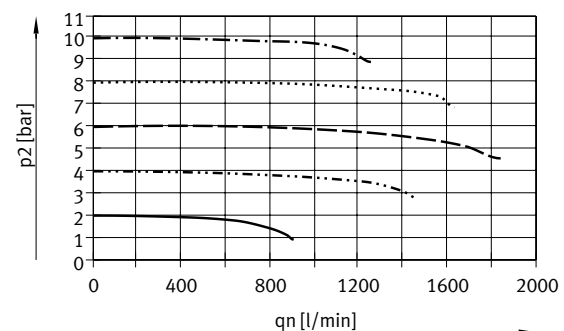
Pressure regulation range 0 ... 2.5 bar



Pressure regulation range 0 ... 6 bar



Pressure regulation range 0 ... 10 bar

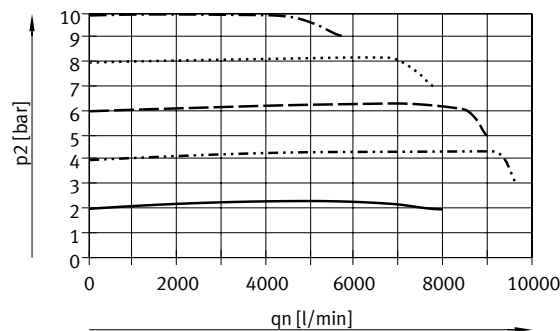


Data sheet

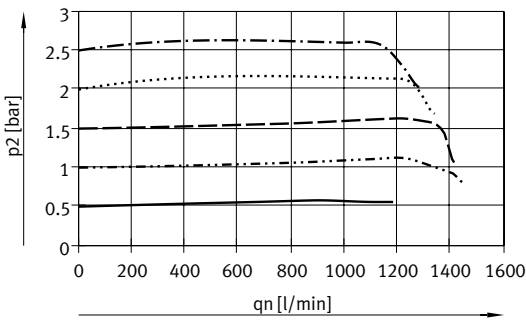
Flow rate q_n as a function of output pressure p_2

Pneumatic connection G1/4

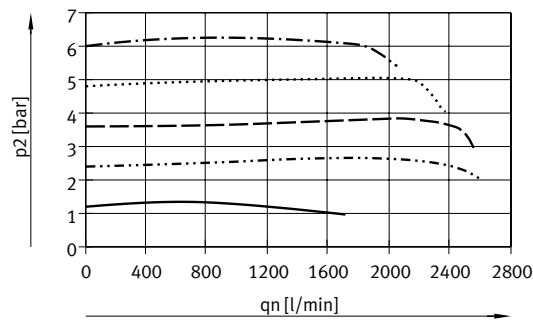
Pressure regulation range 0 ... 1 bar



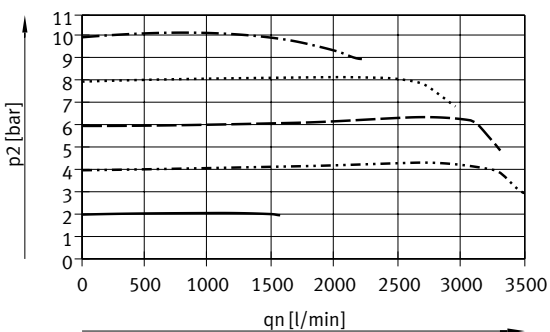
Pressure regulation range 0 ... 2.5 bar



Pressure regulation range 0 ... 6 bar



Pressure regulation range 0 ... 10 bar

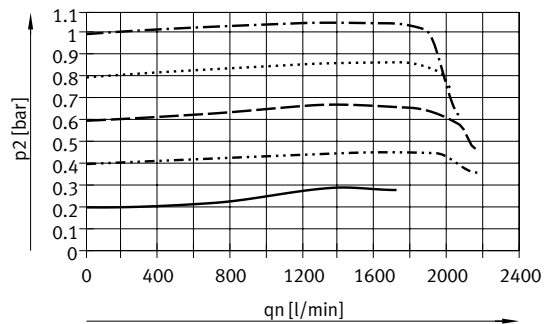


Data sheet

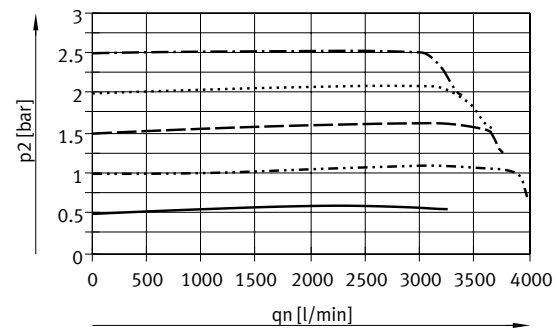
Flow rate q_n as a function of output pressure p_2

Pneumatic connection G1/2

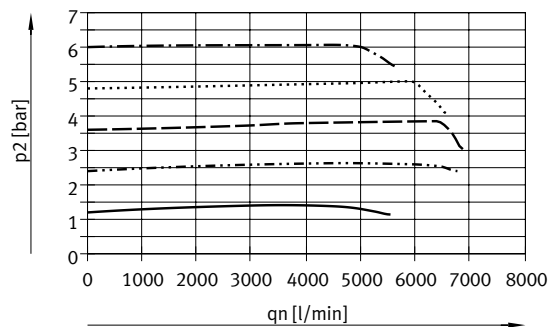
Pressure regulation range 0 ... 1 bar



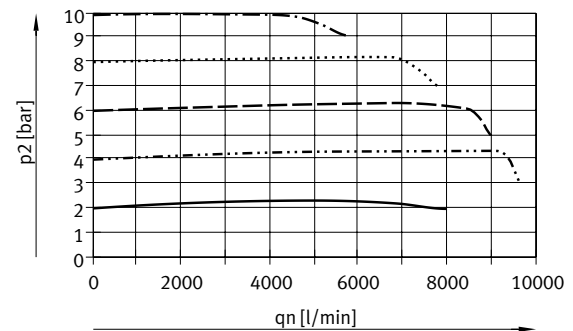
Pressure regulation range 0 ... 2.5 bar



Pressure regulation range 0 ... 10 bar



Pressure regulation range 0 ... 10 bar



Data sheet

Operating and environmental conditions						
Pressure regulation range		[bar]	0 ... 1	0 ... 2.5	0 ... 6	0 ... 10
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]			
			Inert gases			
Note on the operating/pilot medium		Basic type	Lubricated operation possible (in which case lubricated operation will always be required)			
Input pressure 1		[bar]	1.5 ... 2	3.5 ... 4.5	7 ... 8	11 ... 12
Max. pressure hysteresis		[mbar]	30	40	40	50
Ambient temperature		[°C]	0 ... 50			
Temperature of medium		[°C]	0 ... 60			
Corrosion resistance CRC ¹⁾			2 ¹⁾			
Certification			RCM			
CE marking (see declaration of conformity)			In accordance with EU EMC Directive ²⁾			
KC mark		Basic type	KC EMC			

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

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.

Electrical data							
Pressure regulation range			[bar]	0 ... 1	0 ... 2.5	0 ... 6	0 ... 10
Electrical connection				Plug, round design to DIN 45326, M16 x 0.75, 8-pin			
Operating voltage range		U _B	[V DC]	18 ... 30			
Residual ripple				10 %			
Setpoint input signal	Voltage	U _w	[V DC]	0 ... 10			
	Current	I _w	[mA]	4 ... 20			
Actual value output signal	Voltage	U _x	[V DC]	0 ... 10			
	Current	I _x	[mA]	4 ... 20			
Degree of protection				IP65			
Safety instructions				Safety position MPPE-B: If the setpoint cable (current) or the supply voltage cable breaks, the output pressure is maintained unregulated. Leakage will result in different deviations over time. In case of a setpoint cable break (voltage), the output pressure is set to 0 bar.			
Reverse polarity protection		Basic type		For all electrical connections			
Short circuit current rating		Basic type		For all electrical connections			
Reference voltage				10 V			

Pressure range						
Pressure regulation range		[bar]	0 ... 1	0 ... 2.5	0 ... 6	0 ... 10
Operating pressure	Basic type		≤ 2 bar	≤ 4.5	≤ 8	≤ 12
	Special adaptation type	[bar]	-	-	-	0 ... 10
Input pressure 1		[bar]	1.5 ... 2	3.5 ... 4.5	7 ... 8	11 ... 12
Max. pressure hysteresis		[bar]	0.03	0.04	0.04	0.05

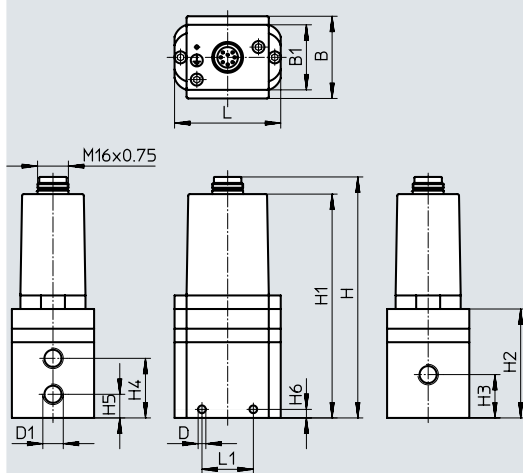
Switching times – Basic type						
Pressure regulation range		[bar]	0 ... 1	0 ... 2.5	0 ... 6	0 ... 10
Switching time on	G1/8	[ms]	95	140	100	125
	G1/4	[ms]	140	150	150	160
	G1/2	[ms]	70	85	170	140
Switching time off	G1/8	[ms]	165	250	190	220
	G1/4	[ms]	225	260	260	280
	G1/2	[ms]	500	205	510	535

Switching times – Special adaptation type					
Pressure regulation range		[bar]	0 ... 10		
Switching time on	G1/8	[ms]	140		
	G1/4	[ms]	160		
	G1/2	[ms]	170		
Switching time off	G1/8	[ms]	220		
	G1/4	[ms]	280		
	G1/2	[ms]	535		

Data sheet

Information on materials		
Housing		Wrought aluminium alloy
Diaphragm		NBR
Note on materials	Basic type	RoHS-compliant

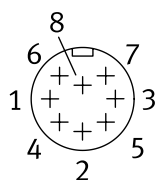
Dimensions

Download CAD data → www.festo.com

Connection D1	B	B1	∅D	H	H1	H2	H3	H4	H5	H6	L	L1
G1/8	38	-	4.5	129.1	100	60.2	18.8	26.8	9.3	4	62	34
G1/4	48	38	4.5	170.2	140.7	63.6	25.3	34.8	13.8	5	62	30
G1/2	76	38	7	227.1	194.6	117.5	53	74	32	18	86	50

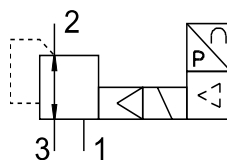
Connections

Terminal allocation



- 1 $X_{\text{ext,in}}$
- 2 GND
- 3 GND
- 4 W_{in} (setpoint input)
- 5 $10 V_{\text{OUT}}$
- 6 X_{out} (actual value output)
- 7 24 V DC (supply voltage)
- 8 GND

Switching function



Data sheet

Ordering data					
Pneumatic connection	Pressure regulation range	Voltage type 0 ... 10 V		Current type 4 ... 20 mA	
1, 2, 3	[bar]	Part no.	Type	Part no.	Type
Basic type					
G1/8	0 ... 1	161160	MPPE-3-1/8-1-010-B	161163	MPPE-3-1/8-1-420-B
	0 ... 2.5	164315	MPPE-3-1/8-2.5-010-B	164316	MPPE-3-1/8-2.5-420-B
	0 ... 6	161161	MPPE-3-1/8-6-010-B	161164	MPPE-3-1/8-6-420-B
	0 ... 10	161162	MPPE-3-1/8-10-010-B	161165	MPPE-3-1/8-10-420-B
G1/4	0 ... 1	161166	MPPE-3-1/4-1-010-B	161169	MPPE-3-1/4-1-420-B
	0 ... 2.5	164317	MPPE-3-1/4-2.5-010-B	164318	MPPE-3-1/4-2.5-420-B
	0 ... 6	161167	MPPE-3-1/4-6-010-B	161170	MPPE-3-1/4-6-420-B
	0 ... 10	161168	MPPE-3-1/4-10-010-B	161171	MPPE-3-1/4-10-420-B
G1/2	0 ... 1	161172	MPPE-3-1/2-1-010-B	161175	MPPE-3-1/2-1-420-B
	0 ... 2.5	164319	MPPE-3-1/2-2.5-010-B	164320	MPPE-3-1/2-2.5-420-B
	0 ... 6	161173	MPPE-3-1/2-6-010-B	161176	MPPE-3-1/2-6-420-B
	0 ... 10	161174	MPPE-3-1/2-10-010-B	161177	MPPE-3-1/2-10-420-B
Special adaptation type ¹⁾					
G1/8	0 ... 10	164330	MPPE-3-1/8- -B ¹⁾	164330	MPPE-3-1/8- -B ¹⁾
G1/4	0 ... 10	164331	MPPE-3-1/4- -B ¹⁾	164331	MPPE-3-1/4- -B ¹⁾
G1/2	0 ... 10	164332	MPPE-3-1/2- -B ¹⁾	164332	MPPE-3-1/2- -B ¹⁾

1) The special adaptation type allows a lower pressure PU to be assigned to the setpoint value 0 V or 4 mA and an upper pressure PO to be assigned to the setpoint value 10 V or 20 mA.

Type codes

001	Series	
MPPES	Proportional pressure regulator with proportional solenoid	
002	Valve function	
1	3/2-way valve, normally closed	
003	Pneumatic connection	
G18	G1/8	
G14	G1/4	
G12	G1/2	

004	Upper pressure value of control range	
2H	2 bar	
10H	10 bar	
6H	6 bar	
005	Setpoint input for individual valves	
A4	4 ... 20 mA	
V1	0 ... 10 V	

Data sheet

Flow rate
230 ... 8500 l/min

Voltage
18 ... 30 V DC

Pressure regulation ranges
0 ... 2 bar
0 ... 6 bar
0 ... 10 bar

Variants

- Setpoint input as analogue voltage signal 0 ... 10 V
- Setpoint input as analogue current signal 4 ... 20 mA

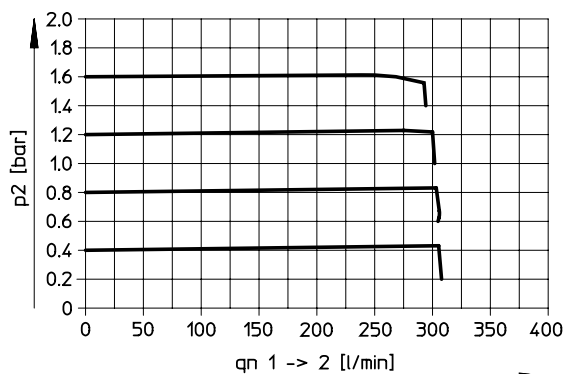


General technical data					
Pneumatic connection			G1/8	G1/4	G1/2
Design			Directly actuated piston regulator	Pilot-actuated piston regulator	
Valve function			3-way proportional-pressure regulator, closed		
Pneumatic connection 1, 2, 3			G1/8	G1/4	G1/2
Sealing principle			Soft		
Actuation type			Electrical		
Type of mounting			With through-hole		
Mounting position			Any		
Nominal width	Pressurisation	[mm]	3	7	11
	Exhaust	[mm]	2	7	12
Standard nominal flow rate		[l/min]	→ Graphs		
Product weight		[g]	915	1310	2670

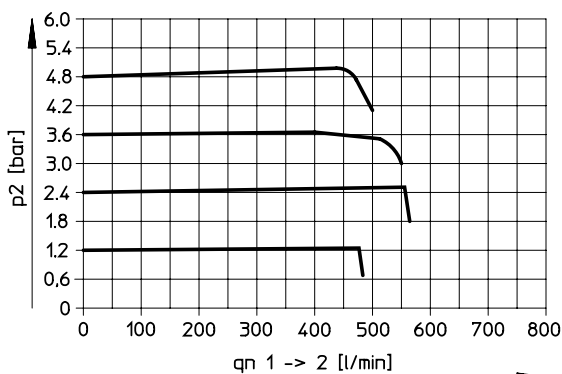
Flow rate q_n as a function of output pressure p_2

Pneumatic connection G1/8

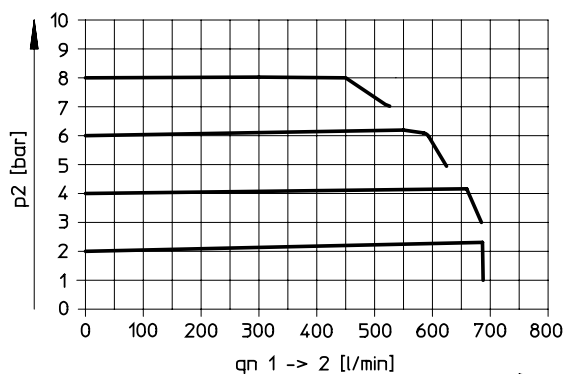
Pressure regulation range 0 ... 2 bar



Pressure regulation range 0 ... 6 bar



Pressure regulation range 0 ... 10 bar

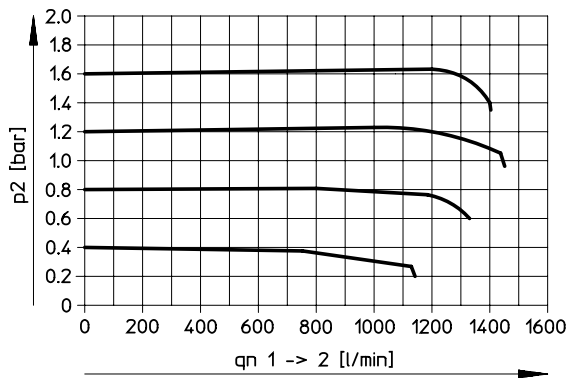


Data sheet

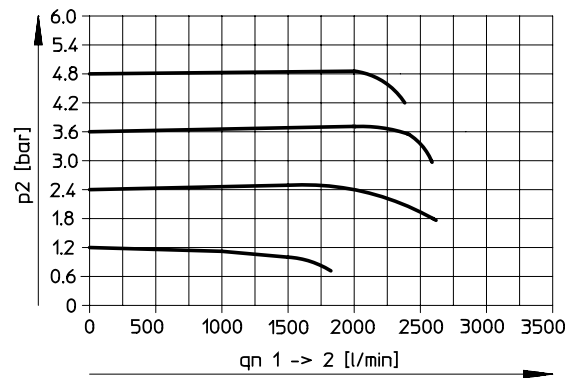
Flow rate q_n as a function of output pressure p_2

Pneumatic connection G1/4

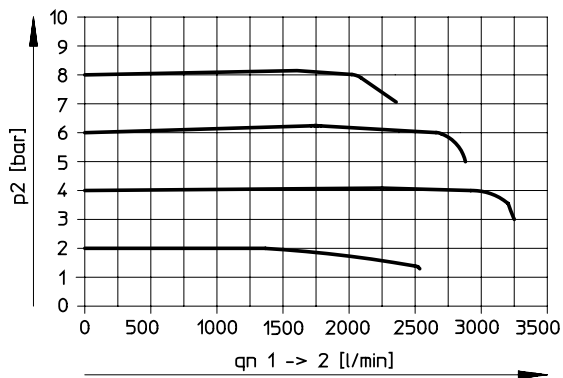
Pressure regulation range 0 ... 2 bar



Pressure regulation range 0 ... 6 bar



Pressure regulation range 0 ... 10 bar

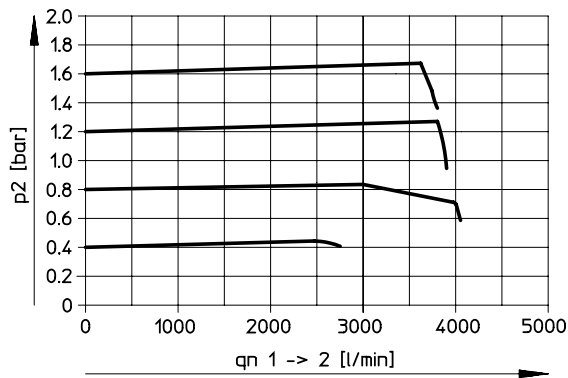


Data sheet

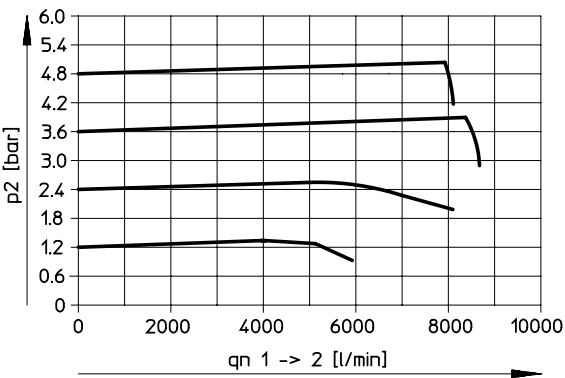
Flow rate q_n as a function of output pressure p_2

Pneumatic connection G1/2

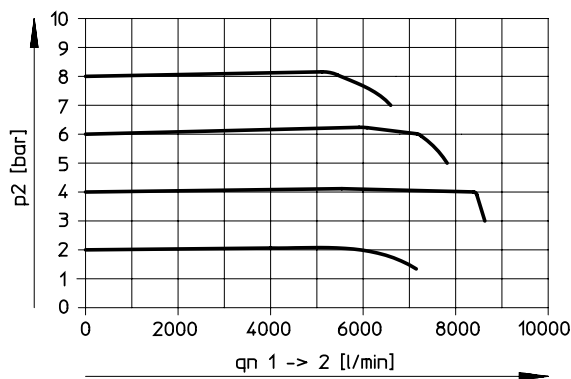
Pressure regulation range 0 ... 2 bar



Pressure regulation range 0 ... 6 bar



Pressure regulation range 0 ... 10 bar



Data sheet

Operating and environmental conditions						
Pressure regulation range			[bar]	0 ... 2	0 ... 6	0 ... 10
Operating medium				Compressed air to ISO 8573-1:2010 [7:4:4]		
				Inert gases		
Note on the operating/pilot medium				Lubricated operation possible (in which case lubricated operation will always be required)		
Input pressure 1			[bar]	3 ... 4	7 ... 8	11 ... 12
Max. pressure hysteresis	1/8"	[mbar]	10			
	1/4"	[mbar]	50			
	1/2"	[mbar]	50			
Ambient temperature			[°C]	0 ... 50		
Temperature of medium			[°C]	0 ... 60		
Corrosion resistance CRC ¹⁾				2 ¹⁾		
Certification				RCM		
CE marking (see declaration of conformity)				In accordance with EU EMC Directive ²⁾		
KC mark				KC EMC		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

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.

Electrical data						
Pressure regulation range			[bar]	0 ... 2	0 ... 6	0 ... 10
Electrical connection				Plug, round design to DIN 45326, M16 x 0.75, 8-pin		
Operating voltage range		U _B	[V DC]	18 ... 30		
Residual ripple				10 %		
Setpoint input signal	Voltage	U _w	[V DC]	0 ... 10		
	Current	I _w	[mA]	4 ... 20		
Actual value output signal	Voltage	U _x	[V DC]	0 ... 10		
	Current	I _x	[mA]	4 ... 20		
Degree of protection				IP65		
Safety instructions				Safety position MPPES-B: If the setpoint cable (voltage and current variant) and the supply voltage cable break, the output pressure changes to 0 bar.		
Reverse polarity protection				For all electrical connections		
Short circuit current rating				For all electrical connections		

Pressure range					
Pressure regulation range		[bar]	0 ... 2	0 ... 6	0 ... 10
Operating pressure			≤ 4	≤ 8	≤ 12 bar
Input pressure 1		[bar]	3 ... 4	7 ... 8	11 ... 12
Max. pressure hysteresis	Basic type	[bar]	0.01 ... 0.05	0.01 ... 0.05	0.05
	Special adaptation type	[bar]	-		0.01

Switching times – Basic type					
Pressure regulation range		[bar]	0 ... 2	0 ... 6	0 ... 10
Switching time on	G1/8	[ms]	220	210	200
	G1/4	[ms]	200	200	200
	G1/2	[ms]	220	230	230
Switching time off	G1/8	[ms]	410	280	220
	G1/4	[ms]	890	640	360
	G1/2	[ms]	1000	660	450

Switching times – Special adaptation type			
Pressure regulation range		[bar]	0 ... 10
Switching time on	G1/8	[ms]	220
	G1/4	[ms]	200
	G1/2	[ms]	230
Switching time off	G1/8	[ms]	410
	G1/4	[ms]	890
	G1/2	[ms]	1000

Data sheet

Information on materials	
Housing	Wrought aluminium alloy
Diaphragm	NBR
Note on materials	RoHS-compliant

Dimensions

Download CAD data → www.festo.com

MPPES-3-1/8-...

MPPES-3-1/4-...
MPPES-3-1/2-...

MPPES-3-1/4-...
MPPES-3-1/2-...

MPPES-3-1/8-...

Connection D1	B	B1	ø D	H	H1	H2	H3	H4	H5	H6	L	L1
G1/8	77.1	67.1	4.4	116.5	100	55	34	45	23	4	62	34
G1/4	82.1	72.1	4.5	170.2	153.7	63.7	25.3	34.8	13.8	5	62	30
G1/2	96.1	86.1	7	227.1	210.6	120.6	53	74	32	18	86	50

Connections

Terminal allocation

Switching function

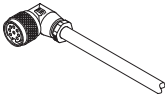
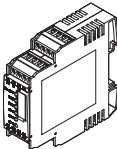
MPPES-3-1/8-...
MPPES-3-1/4-.../MPPES-3-1/2-...

Data sheet

Ordering data					
Pneumatic connection	Pressure regulation range	Voltage type 0 ... 10 V		Current type 4 ... 20 mA	
1, 2, 3	[bar]	Part no.	Type	Part no.	Type
Basic type					
G1/8	0 ... 2	187350	MPPES-3-1/8-2-010	187351	MPPES-3-1/8-2-420
	0 ... 6	187352	MPPES-3-1/8-6-010	187353	MPPES-3-1/8-6-420
	0 ... 10	187348	MPPES-3-1/8-10-010	187349	MPPES-3-1/8-10-420
G1/4	0 ... 2	187335	MPPES-3-1/4-2-010	187336	MPPES-3-1/4-2-420
	0 ... 6	187337	MPPES-3-1/4-6-010	187338	MPPES-3-1/4-6-420
	0 ... 10	187333	MPPES-3-1/4-10-010	187334	MPPES-3-1/4-10-420
G1/2	0 ... 2	187328	MPPES-3-1/2-2-010	187329	MPPES-3-1/2-2-420
	0 ... 6	187330	MPPES-3-1/2-6-010	187331	MPPES-3-1/2-6-420
	0 ... 10	187326	MPPES-3-1/2-10-010	187327	MPPES-3-1/2-10-420
Special adaptation type ¹⁾					
G1/8	0 ... 10	187347	MPPES-3-1/8-PU-PO-010	187762	MPPES-3-1/8-PU-PO-420
G1/4	0 ... 10	187339	MPPES-3-1/4-PU-PO-010	187744	MPPES-3-1/4-PU-PO-420
G1/2	0 ... 10	187332	MPPES-3-1/2-PU-PO-010	187735	MPPES-3-1/2-PU-PO-420

1) The special adaptation type allows a lower pressure PU to be assigned to the setpoint value 0 V or 4 mA and an upper pressure PO to be assigned to the setpoint value 10 V or 20 mA.

Accessories

Ordering data				
	Description	Cable length [m]	Part no.	Type
Plug socket with cable		Data sheets → Internet: kmppe-b		
	- Angled socket, M16x0.75, 8-pin - Open end, 8-wire	2.5	161879	KMPPE-B-2.5
		5	161878	KMPPE-B-5
Angled plug socket		Data sheets → Internet: mppe		
	- Angled socket, M16x0.75, 8-pin - Soldered connection, 8-pin	–	161839	MPPE-3-B
Setpoint module		Data sheets → Internet: mpz		
	Setpoint module for generating 6 + 1 analogue voltage signals	–	546224	MPZ-1-24DC-SGH-6-SW

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