# On-off/soft-start valves MS-EM/EE/DL/DE, MS series





### Key features

#### Service unit components of the MS series

#### Solutions for every application

With its large product range, highly effective components and a wide choice of functions, the MS series from Festo offers a complete concept for compressed air preparation. It is suitable for simple standard applications as well as application-specific solutions with very high quality requirements. Available as individual components, pre-assembled combinations ex-stock, application-specific combinations or complete turnkey solutions. The five sizes in the MS series achieve maximum flow rates with low space requirements.

#### Freely combinable function modules

Pressure regulators, on/off and softstart valves with safety function, filters, pressure and flow sensors, dryers, sensors and lubricators can be assembled into a suitable solution for every task. With the modular structure the components can be combined as required. The simple connection system saves time because the entire combination doesn't need to be disassem-

bled when replacing individual modules.

Many of the components are also UL and ATEX certified.

#### CAD models and configurator

Convenient tools for planning and se-

lecting application-specific individual

devices and combinations. The product

configurator lets you configure custom-

ised solutions quickly and transfer the

order data without any hassle.

# Engineering tools

Selection tool for choosing the right combination of service unit components without oversizing, and with the right air purity class: → www.festo.com/engineering/ service unit

#### Air quality This program supports configurating an a Selection criteria: Applicati Filter combination is proposed based up

Saving energy



#### Integrated sensors

Pressure and flow sensors



- Maximum machine availability thanks to controlled processes
- Reliable compressed air preparation and supply for systems
- Integrated or stand-alone
- Easy to connect with M8/M12 plug





- Fast and reliable exhausting of systems up to Performance Level e, certified to EN ISO 13849-1
- Integrated soft-start function



Service unit combinations MSE6

- Fully automatic monitoring and regulation of the compressed air supply
- Automatic shut-off of the compressed air in stand-by mode
- Detection and notification of leakages
- Condition monitoring of relevant process data

#### Intelligent mix of sizes



- Optimum flow rate with a size that is up to 18% smaller
- Excellent energy efficiency
- Cost-optimised combinations save up to 30%!

Size differences								
Size		MS2	MS4	MS6	MS9	MS12		
Grid dimension	[mm]	25	40	62	90	124		
Connection sizes		M5, QS-6	G1/8, G1/4, G3/8	G1/4, G3/8, G1/2, G3/4	G1/2, G3/4, G1, G1 1/4, G1 1/2	G1, G1 1/4, G1 1/2, G2		
Standard nominal flow rate qnN <sup>1)</sup>	[l/min]	350	1800	6500	20000	22000		

1) Using pressure regulator MS-LR as an example

# Key features

### Note

#### Information

The next few pages provide a brief overview of the product range for the MS series service unit components.

#### Design of a service unit combination

The sequence of the individual components within a service unit combination is relevant for safety and functionality. The service unit components cannot be combined in any order in the flow direction. There are restrictions and rules. You can find detailed information and all the technical data in the documentation for the relevant service unit component.

The configurator for the service unit

of arranging individual service unit

MSB is a reliable and convenient way

components and ensures compliance

with the applicable rules. As a result,

you get a fully assembled unit, includ-

ing UL or ATEX certification, if neces-

When combining a unit from individu-

ally configured and ordered service

unit components, the points on the

right must be adhered to under all cir-

sary.

cumstances.

Accessories such as connecting plates or mounting brackets can be ordered either via the configurator or separately.

- Regulators MS-LFR/LR/LRP are only permissible in the flow direction with the same or decreasing pressure regulation range
- Filters MS-LFR/LF/LFM/LFX are only permissible in the flow direction with an increasing grade of filtration
- Lubricators MS-LOE are not permitted in the flow direction upstream of a filter MS-LFR/LFM/LF/LFX, water separator MS-LWS or membrane air dryer MS-LDM1
- A micro filter MS-LFM must be installed in the flow direction upstream of an activated carbon filter MS-LFX or membrane air dryer MS-LDM1
- A flow sensor SFAM cannot be installed directly downstream of a regulator MS-LFR/LR; a branching module MS-FRM must be positioned between them
- A soft-start/quick exhaust valve MS-SV must be the last service unit component in the flow direction

1

#### Product range for service unit components of the MS series

Туре	Description	Size Pneumatic connection						
			Push-in	Female threa	nale thread Connecting plate		Connecting plate with thr	ead
			connector	М	G	NPT	G	NPT
Combinations								
Service unit comb	inations MSB-FRC							Datasheets $\rightarrow$ Internet: msb
	Combinations of filter regu-	4	-	-	1/8, 1/4	-	-	-
	lator and lubricator	6	-	-	1/4, 3/8, 1/2	-	-	-
Service unit comb	inations MSB							Datasheets → Internet: msb
	7 combinations, predefined	4	-	-	1/4	-	-	-
		6	-	-	1/2	-	-	-
ALL L	Freely configurable combi-	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
	nations	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	-	-	3/4,1	3/4,1	1/2, 3/4, 1 1/4, 1 1/2	1/2, 3/4, 1 1/4, 1 1/2
T. m.								
Service unit comb	inations MSE6							Datasheets → Internet: mse6
	Combinations with fieldbus	6	-	-	-	-	1/2	-
	connection for measuring		_!				ų	
0	pressure, flow rate and con-							
	sumption							

# Service unit components MS series

# Key features

ӯре	Description	Size	Pneumatic of	connection					
			Push-in Female thread				Connecting plate with thread		
			connector	м	G	NPT	G	NPT	
ndividual de	vices								
ilter regulato	ors MS-LFR					[	Datasheets $\rightarrow$ Internet: ms2-lfr; m	154-lfr; ms6-lfr; ms9-lfr; ms12	
	Filter and pressure regula-	2	QS-6	M5	-	-	-	-	
	tor in a single device, grade	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8	
	of filtration 5 or 40 µm	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
		9	-	-	3/4,1	3/4,1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2	
ų.		12	-	-	-	-	1, 1 1/4, 1 1/2, 2	-	
ilter regulato	ors MS-LFR-B						Datasheets	→ Internet: ms4-lfr-b; ms6-l	
	Filter and pressure regula-	4	-	_	1/4	_	_	_	
	tor in a single device in pol-	6	-	-	1/4	-	_		
	ymer housing, grade of fil-	0	-	1-	1/2	-			
100	tration 5 or 40 µm								
ilters MS-LF							Datasheets → Internet	t: ms4-lf; ms6-lf; ms9-lf; ms1	
	Grade of filtration 5 or	4	_	_	1/8,1/4	_	1/8, 1/4, 3/8	1/8, 1/4, 3/8	
		4	_	_	1/0, 1/4	-			
	40 um	6			1/4 2/9 1/2	1			
1	40 µm	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
- [-]	40 µm	9	-	-	1/4, 3/8, 1/2 3/4, 1	- 3/4, 1	1/4, 3/8, 1/2, 3/4           1/2, 3/4, 1, 1 1/4, 1 1/2	1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2	
-1-	40 µm						1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
ine and micr	40 μm o filters MS-LFM	9		-			1/4, 3/8, 1/2, 3/4           1/2, 3/4, 1, 1 1/4, 1 1/2	1/4, 3/8, 1/2, 3/4       1/2, 3/4, 1, 1 1/4, 1 1/2       -	
ine and micr		9		-			1/4, 3/8, 1/2, 3/4           1/2, 3/4, 1, 1 1/4, 1 1/2           1, 1 1/4, 1 1/2, 2	1/4, 3/8, 1/2, 3/4       1/2, 3/4, 1, 1 1/4, 1 1/2       -	
ine and micr	o filters MS-LFM	9 12		-	3/4, 1		1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 1, 1 1/4, 1 1/2, 2 Datasheets → Internet: ms4-lt	1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - fm; ms6-lfm; ms9-lfm; ms12-	
ine and micr	o filters MS-LFM Grade of filtration 0.01 or	9 12 4	- - -	- - -	3/4, 1 - 1/8, 1/4	3/4, 1 - -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - fm; ms6-lfm; ms9-lfm; ms12- 1/8, 1/4, 3/8	
ine and micr	o filters MS-LFM Grade of filtration 0.01 or	9 12 4 6	- - -	- - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2	3/4, 1 - - -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/4, 3/8, 1/2, 3/4           1/2, 3/4, 1, 1 1/4, 1 1/2           -           fm; ms6-lfm; ms9-lfm; ms12-           1/8, 1/4, 3/8           1/4, 3/8, 1/2, 3/4	
-	o filters MS-LFM Grade of filtration 0.01 or 1 μm	9 12 4 6 9	- - - - - -	- - - - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1	3/4, 1 - - - 3/4, 1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - fm; ms6-lfm; ms9-lfm; ms12- 1/8, 1/4, 3/8 1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 -	
-	o filters MS-LFM Grade of filtration 0.01 or 1 μm bon filters MS-LFX	9 12 4 6 9 12	- - - - - -	- - - - - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 -	3/4, 1 - - 3/4, 1 -	1/4, $3/8$ , $1/2$ , $3/4$ $1/2$ , $3/4$ , $1$ , $11/4$ , $11/2$ $1, 11/4, 11/2, 2$ Datasheets → Internet: ms4-lt $1/8$ , $1/4$ , $3/8$ $1/4$ , $3/8$ , $1/2$ , $3/4$ $1/2$ , $3/4$ , $1$ , $11/4$ , $11/2$ $1, 11/4, 11/2, 2$ Datasheets → Internet: ms	1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - fm; ms6-lfm; ms9-lfm; ms12- 1/8, 1/4, 3/8 1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - 4-lfx; ms6-lfx; ms9-lfx; ms12	
- [-]	o filters MS-LFM Grade of filtration 0.01 or 1 μm bon filters MS-LFX For removing liquid and	9 12 4 6 9 12 4	- - - - - - -	- - - - - - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 - 1/8, 1/4	3/4, 1 - - 3/4, 1 - -	1/4, $3/8$ , $1/2$ , $3/4$ $1/2$ , $3/4$ , $1$ , $11/4$ , $11/2$ $1, 11/4$ , $11/2$ , $2$ Datasheets → Internet: ms4-lt $1/8$ , $1/4$ , $3/8$ $1/4$ , $3/8$ , $1/2$ , $3/4$ $1/2$ , $3/4$ , $1$ , $11/4$ , $11/2$ $1$ , $11/4$ , $11/2$ , $2$ Datasheets → Internet: ms $1/8$ , $1/4$ , $3/8$	1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - fm; ms6-lfm; ms9-lfm; ms12- 1/8, 1/4, 3/8 1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - 4-lfx; ms6-lfx; ms9-lfx; ms12	
-	o filters MS-LFM Grade of filtration 0.01 or 1 μm bon filters MS-LFX	9 12 4 6 9 12 4 6	- - - - - - - - - - -	- - - - - - - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 - 1/8, 1/4 1/8, 1/4 1/4, 3/8, 1/2	3/4, 1 - - 3/4, 1 - - - -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -         fm; ms6-lfm; ms9-lfm; ms12-         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -         4-lfx; ms6-lfx; ms9-lfx; ms12         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4	
-	o filters MS-LFM Grade of filtration 0.01 or 1 μm bon filters MS-LFX For removing liquid and	9 12 4 6 9 12 4 6 9 9	- - - - - - -	- - - - - - - - - - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 - 1/8, 1/4	3/4, 1 - - 3/4, 1 - -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - fm; ms6-lfm; ms9-lfm; ms12- 1/8, 1/4, 3/8 1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - 4-lfx; ms6-lfx; ms9-lfx; ms12	
- [-]	o filters MS-LFM Grade of filtration 0.01 or 1 μm bon filters MS-LFX For removing liquid and	9 12 4 6 9 12 4 6	- - - - - - - - - - -	- - - - - - - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 - 1/8, 1/4 1/8, 1/4 1/4, 3/8, 1/2	3/4, 1 - - 3/4, 1 - - - -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -         fm; ms6-lfm; ms9-lfm; ms12-         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -         4-lfx; ms6-lfx; ms9-lfx; ms12         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4	
Activated carl	o filters MS-LFM Grade of filtration 0.01 or 1 μm bon filters MS-LFX For removing liquid and gaseous oil particles	9 12 4 6 9 12 4 6 9 9	- - - - - - - - - - -	- - - - - - - - - - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 - 1/8, 1/4 1/8, 1/4 1/4, 3/8, 1/2	3/4, 1 - - 3/4, 1 - - - -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -         fm; ms6-lfm; ms9-lfm; ms12-         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -         4-lfx; ms6-lfx; ms9-lfx; ms12         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4	
Activated carl	o filters MS-LFM Grade of filtration 0.01 or 1 μm bon filters MS-LFX For removing liquid and gaseous oil particles	9 12 4 6 9 12 4 6 9 9	- - - - - - - - - - -	- - - - - - - - - - -	3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 - 1/8, 1/4 1/8, 1/4 1/4, 3/8, 1/2	3/4, 1 - - 3/4, 1 - - - -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -         fm; ms6-lfm; ms9-lfm; ms12-         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -         4-lfx; ms6-lfx; ms9-lfx; ms12-         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4         1/2, 3/4, 1, 1 1/4, 1 1/2         -	
-	o filters MS-LFM Grade of filtration 0.01 or 1 μm bon filters MS-LFX For removing liquid and gaseous oil particles tors MS-LWS	9       12       4       6       9       12       4       6       9       12	- - - - - - - - - - - - - - - -		3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 - 1/8, 1/4 1/4, 3/8, 1/2 3/4, 1 - 3/4, 1 -	3/4, 1 - - 3/4, 1 - - 3/4, 1 - - 3/4, 1 -	1/4, $3/8$ , $1/2$ , $3/4$ $1/2$ , $3/4$ , $1$ , $11/4$ , $11/2$ $1, 11/4$ , $11/2$ , $2$ Datasheets → Internet: ms4-lt $1/8$ , $1/4$ , $3/8$ $1/4$ , $3/8$ , $1/2$ , $3/4$ $1/2$ , $3/4$ , $1$ , $11/4$ , $11/2$ $1$ , $11/4$ , $11/2$ , $2$ Datasheets → Internet: ms $1/8$ , $1/4$ , $3/8$ $1/4$ , $3/8$ , $1/2$ , $3/4$ $1/2$ , $3/4$ , $1$ , $11/4$ , $11/2$ $1/4$ , $3/8$ , $1/2$ , $3/4$ $1/2$ , $3/4$ , $1$ , $11/4$ , $11/2$ $1$ , $11/4$ , $11/2$ , $2$ Datasheets → Internet	1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - fm; ms6-lfm; ms9-lfm; ms12- 1/8, 1/4, 3/8 1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - 4-lfx; ms6-lfx; ms9-lfx; ms12- 1/8, 1/4, 3/8 1/4, 3/8, 1/2, 3/4 1/2, 3/4, 1, 1 1/4, 1 1/2 - et: ms6-lws; ms9-lws; ms12-	

# Key features

	Description	Size	Pneumatic	connection					
			Push-in	Female thread			Connecting plate with thread		
			connector	м	G	NPT	G	NPT	
dividual devic	es								
ressure regula	tors MS-LR						Datasheets → Internet: ms2-lr	; ms4-lr; ms6-lr; ms9-lr; ms1	
	For setting the required op-	2	QS-6	M5	-	-	-	-	
	erating pressure,	4	-	_	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8	
-	4 pressure regulation rang-	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
۷ 🗵	es	9	-	-	3/4,1	3/4,1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2	
		12	-	-	-	-	1, 1 1/4, 1 1/2, 2	-	
essure regula	tors MS-LR-B					_	Datasheet	s → Internet: ms4-lr-b; ms6	
	For setting the required op-	4	-	-	1/4	-	-	_	
	erating pressure, in poly-	6	-	_	1/2	-	_	_	
essure regula	tors MS-LRB						Datashee	ets → Internet: ms4-lrb; ms6	
	For configuring a regulator	4	-	-	1/4	-	1/8, 1/4, 3/8	-	
1.1	manifold with independent	6	-	-	1/2	-	1/4, 3/8, 1/2, 3/4	-	
	pressure regulation ranges. Pressure output is to the front or rear.								
	ure regulators MS-LRP							Datachaota > Internet.ma	
cision press									
cision press	1	6	_	_	1/4.3/8.1/2	-	1	1	
ecision pressu	For precisely setting the re-	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
	1	6	-	_	1/4, 3/8, 1/2	-	1	1	
ecision press	For precisely setting the re- quired operating pressure,	6	-	-	1/4, 3/8, 1/2	-	1	1	
ecision press	For precisely setting the re- quired operating pressure, 4 pressure regulation rang-	6	-	_	1/4, 3/8, 1/2	-	1	- 1	
ecision pressu	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es,	6	-	-	1/4, 3/8, 1/2	-	1	1	
•	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis	6	-	-	1/4, 3/8, 1/2		1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
•	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar	6	-	-	1/4, 3/8, 1/2	- 	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
•	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar ure regulators MS-LRPB For configuring a regulator manifold with independent		-	-  -		-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
•	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar ure regulators MS-LRPB For configuring a regulator manifold with independent pressure regulation ranges.		-	-		-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
•	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar ure regulators MS-LRPB For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the		-			-  -	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
•	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar ure regulators MS-LRPB For configuring a regulator manifold with independent pressure regulation ranges.		-			-  -	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
ecision pressu	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar <b>ure regulators MS-LRPB</b> For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.		-	-		-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4 Datasheets → Internet: ms6- –	
ecision pressu	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar wre regulators MS-LRPB For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.		-	-  -	1/2	-  -	1/4, 3/8, 1/2, 3/4 1/4, 3/8, 1/2, 3/4 Datasheets → Internet: ms4-	1/4, 3/8, 1/2, 3/4 Datasheets → Internet: ms6- -	
ecision pressu	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar <b>ure regulators MS-LRPB</b> For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.	6	- -	- -	1/2		1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4         Datasheets → Internet: ms6-         -         loe; ms6-loe; ms9-loe; ms12         1/8, 1/4, 3/8	
ecision pressu	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar <b>ure regulators MS-LRPB</b> For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear. <b>LOE</b> Add a precisely adjustable	6	- -		1/2 1/8, 1/4 1/4, 3/8, 1/2	- -	1/4, 3/8, 1/2, 3/4         1/4, 3/8, 1/2, 3/4         1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4         Datasheets → Internet: ms6-         -         loe; ms6-loe; ms9-loe; ms12         1/8, 1/4, 3/8         1/4, 3/8, 1/2, 3/4	
	For precisely setting the re- quired operating pressure, 4 pressure regulation rang- es, pressure hysteresis 0.02 bar <b>ure regulators MS-LRPB</b> For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear. <b>LOE</b> Add a precisely adjustable amount of oil to the com-	6	- -	-	1/2		1/4, 3/8, 1/2, 3/4         1/4, 3/8, 1/2, 3/4         1/4, 3/8, 1/2, 3/4         Datasheets → Internet: ms4-1         1/8, 1/4, 3/8	Datasheets → Internet: ms6- - loe; ms6-loe; ms9-loe; ms12 1/8, 1/4, 3/8	

# Service unit components MS series

# Key features

	service unit components of th	1	1					
Туре	Description	Size	Pneumatic	1			Comparison alots with these	- 4
			Push-in connector	Female thread	G	NPT	Connecting plate with thre	NPT
			connector	IVI	9	NET	0	
Individual devices							Detectore lateration (	
	Manually actuated on/off	4	_	_	1/8, 1/4	_	1/8, 1/4, 3/8	em; ms6-em; ms9-em; ms12-em 1/8, 1/4, 3/8
	valve for pressurising and	6	_	-	1/8, 1/4	-	1/4, 3/8, 1/2, 3/4	1/8, 1/4, 3/8
	exhausting pneumatic sys-	9	-	-	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
	tems.	12	-	-	-		1, 1 1/4, 1 1/2, 2	-
		12					1, 1 1/4, 1 1/2, 2	
On/off valves MS	 							54-ee; ms6-ee; ms9-ee; ms12-ee
	Electrically actuated on/off	4	_	_	1/8, 1/4	_	1/8, 1/4, 3/8	1/8, 1/4, 3/8
	valve for pressurising and	6	-	_	1/4, 3/8, 1/2		1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	exhausting pneumatic sys-	9	_	_	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
	tems.	12	_		_	_	1, 1 1/4, 1 1/2, 2	_
		12					1, 1 1, 7, 1 1, 2, 2	
On/off valves MS	.FF.B						Datachoots	→ Internet: ms4-ee-b; ms6-ee-b
	Electrically actuated on/off	4	_	_	1/4	_	_	
S.E.	valve in polymer housing	6	_	-	1/4	-	_	
	for pressurising and ex-	-						
	hausting pneumatic sys-							
	tems.							
Soft-start valves I							Datachoote > In	iternet: ms4-dl; ms6-dl; ms12-dl
Solt-Start Valves I	Pneumatically actuated	4	_	_	1/8, 1/4	_	1/8, 1/4, 3/8	1/8, 1/4, 3/8
	soft-start valve for slowly	6	_	_	1/4, 3/8, 1/2	_	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	pressurising pneumatic	12		_	-		1, 1 1/4, 1 1/2, 2	
To The Same	systems.	12					1, 1 1/4, 1 1/2, 2	
C. A. startashard								
Soft-start valves I	-	1,			1/0 1/1		1	ernet: ms4-de; ms6-de; ms12-de
la 📕	Electrically actuated soft- start valve for slowly pres-	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
	surising pneumatic sys-	12	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4 1, 1 1/4, 1 1/2, 2	1/4, 3/8, 1/2, 3/4
	tems.	12	-	-		-	1, 1 1/4, 1 1/2, 2	
On/off valves MS	·EDE-B						Datasheets →	Internet: ms4-ede-b; ms6-ede-b
	Electrically actuated soft-	4	-	_	1/4	-	-	-
	start valve in polymer hous-	6	-	-	1/2	-	-	-
	ing for slowly pressurising			-1		1	1	
	and exhausting pneumatic							
	systems.							
Soft-start/quick e	xhaust valves MS-SV						Datash	eets → Internet: ms6-sv; ms9-sv
<u> </u>	For gradually increasing	6	-	-	1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	pressurisation and quick,	9	-	-	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
0]	safe pressure reduction in			-1	-	1	1	
	pneumatic piping systems.							
	Up to category 1, PL c.							
	Up to category 3, PL d.	6	_	_	1/2	_	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	Up to category 4, PL e in the	-			1/2		1/4, 5/0, 1/2, 5/4	1/4, 5/0, 1/2, 5/4
	case of optional extension.							
/~ BB								
	Up to category 4, PL e.	6	-	-	1/2	-	1/4, 3/8, 1/2, 3/4	-
							· ·	•
ÌH.								

# Key features

Гуре	Description	Size	Pneumatic o	connection						
			Push-in	Female thread			Connecting plate with thre	Connecting plate with thread		
			connector	М	G	NPT	G	NPT		
ndividual dev	ices									
Nembrane air	dryers MS-LDM1						Datasheets	→ Internet: ms4-ldm; ms6-ld		
•	Wear-free membrane dryer	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8		
	with internal air consump- tion	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4		
Branching mo	dules MS-FRM						Datasheets → Internet: ms4-fr	m. mc6 frm. mc0 frm. mc12 f		
	1	4	_	_	1/8, 1/4	-	1/8, 1/4, 3/8	in; inso-nin; insy-nin; insiz-n		
-	with 4 connections	6	-	-	1/8, 1/4	-	1/4, 3/8, 1/2, 3/4	-		
2		9	-	-	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2		
- TE		12	-	-	-	-	1, 1 1/4, 1 1/2, 2	-		
Distributor blo	ocks MS-FRM-FRZ						Datasheets → Ir	iternet: ms4-frm-frz; ms6-frm-		
	Compressed air distributors	4	-	-	-	-	-	-		
01	with 4 connections and half	6	-	-	-	-	-	-		
fie	the grid width									
low sensors S	SFAM							Datasheets → Internet: sfa		
	For absolute flow rate infor-	6	-	-	-	-	1/2	1/2		
	mation and cumulative air	9	-	-	-	-	1, 1 1/2	1, 1 1/2		
	consumption measurement									

# Peripherals overview



- Module connector for combination with size MS4/MS6 or size MS9
   → Internet: amv, rmv, armv
- Adapter for mounting on profiles
   → Internet: ipm-80, ipm-40-80, ipm-80-80

# Peripherals overview

		Order code	→ Page/Internet
[1]	On/off valve	MS4/6-EM1	12
	e ordered via the modular product system		
[3]	Mounting bracket	[WP]	18
	Mounting bracket (not shown)	[WPM]	
[4]	Mounting bracket	[WB]	
[5]	Mounting bracket	[WBM]	
[8]	Connecting plate SET <sup>1)</sup>	[AG]	
	Connecting plate SET <sup>1)</sup>	[AQ]	
[10]	Pressure sensor SDE5 with status indicator	[AD7], [AD8], [AD9], [AD10]	
[12]	Adapter for EN pressure gauge 1/8, 1/4	[A8], [A4]	
[16]	MS pressure gauge	[AG], [RG]	
[17]	Silencer	[S]	
Can b	e ordered as accessories		
[2]	Module connector	MS4/6-MV	ms4-mv, ms6-mv
[3]	Mounting bracket	MS4/6-WP	ms4-wp, ms6-wp
	Mounting bracket (not shown)	MS4/6-WPB/WPE/WPM	ms4-wp, ms6-wp
[4]	Mounting bracket	MS4/6-WB	ms4-wb, ms6-wb
[5]	Mounting bracket	MS4-WBM	ms4-wbm
[6]	Cover cap	MS4/6-END	ms4-end, ms6-end
[7]	Mounting plate <sup>2)</sup>	MS4/6-AEND	ms4-aend, ms6-aend
[8]	Connecting plate SET <sup>2)</sup>	MS4/6-AG	ms4-ag, ms6-ag
[9]	Padlock	LRVS-D	103
[11]	Connecting cable	NEBA-M8LE3	103
[13]	Pressure gauge	MA	103
[14]	Pressure sensor	SPAUT	102
[15]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103
[17]	Silencer	U	103

Module connector [2] is included in the scope of delivery.
 Module connector MS4/6-MV [2] or mounting bracket MS4/6-WP, WPB, WPE, WPM [3] is required for mounting.

# Type codes – MS4-EM1

001	Series	
MS	MS series	
002	Size	
4	Grid dimension 40 mm	
003	Function	
EM1	On/off valve, manual	
004	Pneumatic connection	
1/8	Female thread G1/8	
1/4	Female thread G1/4	
AGA	Sub-base G1/8	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AQK	Sub-base 1/8 NPT	
AQN	Sub-base 1/4 NPT	
AQP	Sub-base 3/8 NPT	
005	Silencer	
	None	
S	Silencer	
006	Pressure gauge alternatives	
	None	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge	
A8 AD7		
	Adapter for EN pressure gauge 1/8, without pressure gauge Pressure sensor with switching display, M8 plug, threshold val-	
AD7	Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold val-	
AD7 AD8	Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window com-	
AD7 AD8 AD9	Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O         Pressure sensor with operational status indicator, M8 plug,	

007	Alternative pressure gauge scale
	MS pressure gauge
PSI	psi
MPA	MPa
008	Type of mounting
	Without mounting bracket
WP	Mounting bracket basic design
WPM	Mounting bracket for hooking in service unit components
WB	Mounting centrally at rear (wall mounting top and bottom), con- necting plates not required
WBM	Mounting centrally at rear (wall mounting top), connecting plates not required
009	EU certification
	None
EX4	II 2GD
010	UL certification
	None
UL1	cULus ordinary location for Canada and USA
011	Flow direction
	Flow direction from left to right
Z	Flow direction from right to left
012	Special material properties
012	
012	None

# Type codes – MS6-EM1

001	Series	
MS6	MS-series, size 6	
002	Size	
6	Grid dimension 62 mm	
003	Function	-
EM1	On/off valve, manual	
004	Pneumatic connection	
1/4	Female thread G1/4	
3/8	Female thread G3/8	
1/2	Female thread G1/2	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
AQN	Sub-base 1/4 NPT	
AQP	Sub-base 3/8 NPT	
AQR	Sub-base 1/2 NPT	
AQS	Sub-base 3/4 NPT	
005	Silencer	
	None	
S	Silencer	
006	Pressure gauge alternatives	
	None	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O	
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C	
AD9	Pressure sensor with switching display, M8 plug, window com- parator, PNP, N/O	
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C	
AG	MS pressure gauge	
RG	Integrated pressure gauge, red/green scale	

007	Alternative pressure gauge scale	
	MS pressure gauge	
PSI	psi	
MPA	MPa	
008	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
WPM	Mounting bracket for hooking in service unit components	
WB	Mounting centrally at rear (wall mounting top and bottom), con- necting plates not required	
009	EU certification	
	None	
EX4	II 2GD	
010	UL certification	
	None	
UL1	cULus ordinary location for Canada and USA	
011	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	
012	Special material properties	
	None	
F1A	Recommended for production facilities for the manufacture of lithium-ion batteries	

# Datasheet

Function









• Manually actuated on/off valve for • A silencer can be connected to port pressurising and exhausting pneu-3 or the exhaust air can be ducted here

• When the valve is closed, the rotary knob can be secured with a padlock

- Optional pressure gauge
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General	technical	data

• The valve is switched by turning the

matic systems

rotary knob

Size	MS4	MS6
Pneumatic connection 1, 2		
Female thread	G1/8 or G1/4	G1/4, G3/8 or G1/2
Connecting plate [AG]	G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4
[AQ]	1/8 NPT, 1/4 NPT or 3/8 NPT	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT
Pneumatic connection 3	G1/4	G1/2
Design	Rotary switching valve	
Type of mounting	With accessories	
	In-line installation	
Mounting position	Any <sup>1)</sup>	
Pressure indication	Via pressure sensor for indicating the output pre	ssure and electrical output via LCD display
	Via pressure sensor for indicating the status of the	ne output pressure and the electrical output
	Via pressure gauge for displaying the output pres	ssure
	Via pressure gauge with red/green scale for indic	ating the output pressure
	Prepared for G1/8	-
	Prepared for G1/4	
Valve function	3/2-way valve, bistable	
Exhaust function	Cannot be throttled	
Switching position indication	Knob actuator direction = flow direction	
Type of actuation	Direct	
Flow direction	Not reversible	

1) The on/off valve must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.

Note: This product conforms to ISO 1179-1 and ISO 228-1. 4

#### Characteristic flow rate values Size MS4 MS6 G1/4 G3/8 G1/2 Pneumatic connection 1, 2 G1/8 G1/4 Standard nominal flow rate qnN<sup>1)</sup> [l/min] 1200 2200 3000 5500 8700 In main flow direction 1 $\rightarrow$ 2 1900 1700 6800 6600 6200 In relief direction 2 $\rightarrow$ 3 C value [l/s\*min] In main flow direction 1 $\rightarrow$ 2 4.6 9.0 10.7 21.2 30.8 b value 0.51 0.39 0.56 0.49 0.57 In main flow direction $1 \rightarrow 2$ 1) Measured at p1 = 6 bar and p2 = 5 bar, $\Delta p = 1$ bar.

I

# Datasheet

#### Operating and environmental conditions

Size		MS4	MS4		
On/off valve		Without pressure sensor	With pressure sensor	Without pressure sensor	With pressure sensor
Operating pressure	[MPa]	0 1.4 (0 1) <sup>1)</sup>	01	-	-
	[bar]	0 14 (0 10) <sup>1)</sup>	0 10	0 18 (0 10) <sup>1)</sup>	0 10
	[psi]	0 203 (0 145) <sup>1)</sup>	0 145	-	-
Operating medium		Compressed air to ISO 8573-1:	2010 [7:4:4]		
		Inert gases			
Note on the operating/pilot me	edium	Lubricated operation possible (	in which case lubricated operation	on will always be required)	
Ambient temperature	[°C]	-10 +60	0 +50	-10 +60	0 +50
Temperature of medium	[°C]	-10 +60	0 +50	-10 +60	0 +50
Corrosion resistance class CRC	2)	2 - Moderate corrosion stress			
Food-safe <sup>3)</sup>		See supplementary material inf	formation		
UL certification <sup>3)</sup>		c UL us - Recognized (OL)			

1) Value in brackets applies to MS4/MS6-EM1 with UL certification.

2) More information www.festo.com/x/topic/crc

3) More information: www.festo.com/catalogue/ms-em1 → Support/Downloads.

EX4
II 2G
Ex h IIC T6 Gb X
II 2D
Ex h IIIC T60°C Db X
$-10^{\circ}C \le Ta \le +60^{\circ}C$
EPL Db (GB)
EPL Gb (GB)
To EU Explosion Protection Directive (ATEX)
To UK EX instructions

1) More information: www.festo.com/catalogue/ms-em1 → Support/Downloads.

#### Weight [g]

WC1511 [5]		
Size	MS4	MS6
On/off valve	190	580
On/off valve with silencer	210	655

#### Materials

Sectional view



On/o	ffvalve	
[1]	Housing	Die-cast aluminium
[2]	Rotary piston	Reinforced PA
[3]	Slide	Reinforced PA
-	Seals	NBR, TPE-U(PU)
Note	on materials	RoHS-compliant
LABS	(PWIS) conformity	VDMA24364-B1/B2-L
Suita	ble for the production of Li-ion batteries <sup>1)</sup>	Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, circuit boards, cables, electrical plug connectors and coils

1) Applies for F1A products

#### - Note

Foreign particles can adhere to the product or form during installation.

Depending on the application, it may be necessary to purge the product with clean compressed air, to clean it after installation and to operate it with ducted exhaust air.

#### Dimensions – Basic version

Download CAD data → <u>www.festo.com</u>

With female thread, with cover plate











→ Flow direction

Туре	B1	B2	B3	B4	B5	B6	D1	D5	L1	L2	L4	L7
MS4												
MS4-EM1-1/8	40	21	Γ.	30	9	20	G1/8	G1/4	104	27	59	21
MS4-EM1-1/4	40	21	54	50	9	20	G1/4	61/4	104	27	59	21
MS6												
MS6-EM1-1/4							G1/4					
MS6-EM1-3/8	62	31	76	45	10	24	G3/8	G1/2	150.7	39	84.5	28.2
MS6-EM1-1/2							G1/2					

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



- [AG] Integrated MS pressure gauge with standard scale
- [RG] Integrated MS pressure gauge with red/green scale



→ Flow direction

Download CAD data → <u>www.festo.com</u>

- [A8] Adapter for EN pressure gauge 1/8, without pressure gauge
- [A4] Adapter for EN pressure gauge 1/4, without pressure gauge





→ Flow direction

Туре	B2	B3	D1	D4
MS4				
MS4-EM1-1/8AG	21	57	G1/8	
MS4-EM1-1/4AG	21	57	G1/4	-
MS4-EM1-1/8RG	21	58.5	G1/8	
MS4-EM1-1/4RG	21	20.5	G1/4	-
MS4-EM1-1/8A8	21	58.5	G1/8	G1/8
MS4-EM1-1/4A8	21	58.5	G1/4	61/8
MS4-EM1-1/8A4	21	58.5	G1/8	G1/4
MS4-EM1-1/4A4	21		G1/4	01/4
MS6				
MS6-EM1-1/4AG			G1/4	
MS6-EM1-3/8AG	31	77	G3/8	-
MS6-EM1-1/2AG			G1/2	
MS6-EM1-1/4RG			G1/4	
MS6-EM1-3/8RG	31	78.5	G3/8	-
MS6-EM1-1/2RG			G1/2	
MS6-EM1-1/4A4			G1/4	
MS6-EM1-3/8A4	31	78.5	G3/8	G1/4
MS6-EM1-1/2A4			G1/2	

#### Dimensions – Pressure sensor

[AD7], [AD8], [AD9], [AD10] Pressure sensor with status indicator



Download CAD data → <u>www.festo.com</u>

Datasheets → Internet: sde5

109

# Datasheet

Dimensions – Silencer		Download CAD data → <u>www.festo.com</u>
Туре	D2	L4
MS4-EM1S	20	49

28

#### Ordering data

MS6-EM1-...-S

0				
Size	Connection	Flow direction	Part no.	Туре
MS4	G1/4	From left to right	541258	MS4-EM1-1/4
MS6	G1/2	From left to right	541267	MS6-EM1-1/2
With silencer				
MS4	G1/4	From left to right	541259	MS4-EM1-1/4-S
MS6	G1/2	From left to right	541268	MS6-EM1-1/2-S

#### Ordering data

Size	Connection	Flow direction	Part no.	Туре
MS4	G1/8	From left to right	541262	MS4-EM1-1/8
	G1/4	From right to left	541261	MS4-EM1-1/4-Z
		From left to right	8183561	MS4-EM1-1/4-F1A <sup>1)</sup>
MS6	G1/4	From left to right	541271	MS6-EM1-1/4
	G3/8	From left to right	541275	MS6-EM1-3/8
	G1/2	From right to left	541270	MS6-EM1-1/2-Z
		From left to right	8183562	MS6-EM1-1/2-F1A <sup>1)</sup>
With silencer				
MS4	G1/8	From left to right	541263	MS4-EM1-1/8-S
	G1/4	From right to left	541260	MS4-EM1-1/4-S-Z
MS6	G1/4	From left to right	541272	MS6-EM1-1/4-S
	G3/8	From left to right	541276	MS6-EM1-3/8-S
	G1/2	From right to left	541269	MS6-EM1-1/2-S-Z

1) Recommended for production plants for manufacturing lithium-ion batteries

# Ordering data – Modular product system

Ordering table Grid dimension [mm]	40	62	Conditions	Code	Enter code
Module no.	541266	541279			
Series	Standard			MS	MS
Size	4	6			
Function	On/off valve, manual			-EM1	-EM1
Pneumatic connection	Female thread G1/8	-	[1]	-1/8	
	Female thread G1/4	Female thread G1/4	[1]	-1/4	
	-	Female thread G3/8	[1]	-3/8	
	-	Female thread G1/2	[1]	-1/2	
	Connecting plate G1/8	_		-AGA	
	Connecting plate G1/4	Connecting plate G1/4		-AGB	
	Connecting plate G3/8	Connecting plate G3/8		-AGC	
	-	Connecting plate G1/2		-AGD	
	-	Connecting plate G3/4		-AGE	
	-	Connecting plate G1		-AGF	
	Connecting plate 1/8 NPT	-	[1]	-AQK	
	Connecting plate 1/4 NPT	Connecting plate 1/4 NPT	[1]	-AQN	
	Connecting plate 3/8 NPT	Connecting plate 3/8 NPT	[1]	-AQP	
	-	Connecting plate 1/2 NPT	[1]	-AQR	
	-	Connecting plate 3/4 NPT	[1]	-AQS	
Rotary knob colour	Standard (black/blue)				
	Red			-R	
Silencer	None				
	Silencer			-S	
Pressure gauge/pressure gauge alter-	None				
natives	MS pressure gauge, bar			-AG	
	Adapter for EN pressure gauge 1/8, without	_		-A8	
	pressure gauge				
	Adapter for EN pressure gauge 1/4, without press	sure gauge		-A4	
	Integrated pressure gauge, red/green scale			-RG	
	Pressure sensor with status indicator, plug M8, t	hreshold value comparator, PNP, N/O contact	[1] [2]	-AD7	
	Pressure sensor with status indicator, plug M8, t	-	[1] [2] [1] [2]	-AD8	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/O contact			-AD9	
	Pressure sensor with status indicator, plug M8, w	vindow comparator, PNP, N/C contact	[1] [2]	-AD10	
Alternative pressure gauge scale	None				
	psi		[3]	-PSI	
	MPa		[4]	-MPA	

[1] 1/8; 1/4; 3/8; Not with EU EX4 certification. 1/2, AQK, AQN,

AQP, AQR, AQS,

AD7 ... AD10,

WPM

[2] AD7 ... AD10 [3] PSI Measuring range max. 10 bar.

Only in combination with pressure gauge AG.

[3] [4] MPA Only in combination with pressure gauge AG or RG.

# Ordering data – Modular product system

# Ordering table

Ordering table		Ι.	1	1	1-
Grid dimension [mm	] 40	62	Conditions	Code	Enter code
Type of mounting	Without mounting bracket				
	Mounting bracket standard design		[5]	-WP	
	Mounting bracket for hooking in service unit co	mponents	[1] [5]	-WPM	
	Mounting bracket centrally at rear (wall mountin quired	ng top and bottom), connecting plates not re-		-WB	
	Mounting bracket centrally at rear (wall mounting top), connecting plates not required	-		-WBM	
EU certification	None	·			
	II 2GD to EU Explosion Protection Directive (ATE	X)		-EX4	
UL certification	None				
	cULus, ordinary location for Canada and USA			-UL1	
Flow direction	Flow direction from left to right				
	Flow direction from right to left			-Z	

[1] 1/8; 1/4; 3/8; Not with EU EX4 certification.

AQP, AQR, AQS,

AD7 ... AD10, WPM

[5] WP, WPM Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS.

<sup>1/2,</sup> AQK, AQN,

# Peripherals overview



- Additional accessories:

- Module connector for combination with size MS4/MS6 or size MS9 → Internet: amv, rmv, armv
- Adapter for mounting on profiles → Internet: ipm-80, ipm-40-80, ipm-80-80

# Peripherals overview

Supply voltage [V24], [V24P], [10V24], [10V24C], [V110], [V230]



Supply voltage [10V24D], [10V24F], [10V24P]



#### | Mounting attachments and accessories

	iting attachments and accessories	Order code	→ Page/Internet
[1]	On/off valve	MS4/6-EE	24
Can b	e ordered via the modular product system		
[3]	Mounting bracket	[WP]	32
	Mounting bracket (not shown)	[WPM]	
[4]	Mounting bracket	[WB]	
[5]	Mounting bracket	[WBM]	
[8]	Connecting plate SET <sup>1)</sup>	[AG]	
	Connecting plate SET <sup>1)</sup>	[AQ]	
[9]	Pressure sensor SPAU with LCD display	[AD11], [AD12]	
[11]	Pressure sensor SDE5 with status indicator	[AD7], [AD8], [AD9], [AD10]	
[13]	Adapter for EN pressure gauge 1/8, 1/4	[A8], [A4]	
[16]	MS pressure gauge	[AG], [RG]	
[17]	Silencer	[S]	
Can b	e ordered as accessories		
[2]	Module connector	MS4/6-MV	ms4-mv, ms6-mv
[3]	Mounting bracket	MS4/6-WP	ms4-wp, ms6-wp
	Mounting bracket (not shown)	MS4/6-WPB/WPE/WPM	ms4-wp, ms6-wp
[4]	Mounting bracket	MS4/6-WB	ms4-wb, ms6-wb
[5]	Mounting bracket	MS4-WBM	ms4-wbm
[6]	Cover cap	MS4/6-END	ms4-end, ms6-end
[7]	Mounting plate <sup>2)</sup>	MS4/6-AEND	ms4-aend, ms6-aend
[8]	Connecting plate SET <sup>2)</sup>	MS4/6-AG	ms4-ag, ms6-ag
[10]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103
[12]	Connecting cable	NEBA-M8LE3	103
[14]	Pressure gauge	MA	103
[15]	Pressure sensor	SPAUT	102
[17]	Silencer	U	103
[18]	Illuminating seal	MEB-LD	102
[19]	Plug socket with cable	КМЕВ	102
[20]	Plug socket <sup>3)</sup>	MSSD-EB	102
[21]	Locking clip	CPV18-HV	102
[22]	Connecting cable	NEBA-M12G5	103
[23]	Connecting cable	NEBA-M12W5	103

Module connector [2] is included in the scope of delivery.
 Module connector MS4/6-MV [2] or mounting bracket MS4/6-WP, WPB, WPE, WPM [3] is required for mounting.
 For on/off valve MS...-V24P and MS...-V24-...-EX2, the plug socket is included in the scope of delivery.

# Type codes

001	Series	
MS	MS series	
002	Size	
4	Grid dimension 40 mm	
4		
003	Function	
EE	On/off valve, electric	
004	Pneumatic connection	
1/8	Female thread G1/8	
1/4	Female thread G1/4	
AGA	Sub-base G1/8	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AQK	Sub-base 1/8 NPT	
AQN	Sub-base 1/4 NPT	
AQP	Sub-base 3/8 NPT	
005	Supply voltage	
V230	230 V AC (connection pattern to EN 175301)	
10V24	24 V DC, 10 bar, connection pattern to EN 175301	
V110	110 V AC (connection pattern to EN 175301)	
10V24C	24 V DC, 10 bar (connection pattern to EN 175301) without manual override	
10V24D	24V DC, 10 bar, M12 (connection pattern according to IEC 61076-2-101) without manual override	
10V24F	24 V DC, 10 bar, M12 (connection pattern to IEC 61076-2-101). Non-detenting manual override on the pilot actuator	
10V24P	24 V DC, 10 bar, M12 (connection pattern to IEC 61076-2-101)	
V24	24 V DC (connection pattern to EN 175301)	
V24P	24 V DC plug, M12 socket adapter (connection pattern to IEC 61076-2-101)	
006	Silencer	
	None	
-		

007	Pressure gauge alternatives
	None
A4	Adapter for EN pressure gauge 1/4, without pressure gauge
A8	Adapter for EN pressure gauge 1/8, without pressure gauge
AD7	Pressure sensor with switching display, M8 plug, threshold val- ue comparator, PNP, N/O
AD8	Pressure sensor with switching display, M8 plug, threshold val- ue comparator, PNP, N/C
AD9	Pressure sensor with switching display, M8 plug, window com- parator, PNP, N/O
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 010 V, 15 V, 420 mA
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 010 V, 15 V, 420 mA
AG	MS pressure gauge
RG	Integrated pressure gauge, red/green scale
008	Alternative pressure gauge scale
	MS pressure gauge
PSI	psi
MPA	MPa
009	Type of mounting
	Without mounting bracket
WP	Mounting bracket basic design
WPM	Mounting bracket for hooking in service unit components
WB	Mounting centrally at rear (wall mounting top and bottom), con- necting plates not required
WBM	Mounting centrally at rear (wall mounting top), connecting plates not required
010	EU certification
	None
EX2	II 3GD
011	UL certification
	None
UL1	cULus ordinary location for Canada and USA
012	Flow direction
	Flow direction from left to right
Z	Flow direction from right to left

s

Silencer

# Type codes

001	Series	
MS	MS series	
002	Size	
6	Grid dimension 62 mm	
003	Function	
EE	On/off valve, electric	
EE	On/on valve, electric	
004	Pneumatic connection	
1/4	Female thread G1/4	
3/8	Female thread G3/8	
1/2	Female thread G1/2	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
AQN	Sub-base 1/4 NPT	
AQP	Sub-base 3/8 NPT	
AQR	Sub-base 1/2 NPT	
AQS	Sub-base 3/4 NPT	-
005	Supply voltage	
V230	230 V AC (connection pattern to EN 175301)	
10V24	24 V DC, 10 bar, connection pattern to EN 175301	
V110	110 V AC (connection pattern to EN 175301)	
10V24C	24 V DC, 10 bar (connection pattern to EN 175301) without	
	manual override	
10V24D	24V DC, 10 bar, M12 (connection pattern according to IEC 61076-2-101) without manual override	
10V24F	24 V DC, 10 bar, M12 (connection pattern to IEC 61076-2-101).	
	Non-detenting manual override on the pilot actuator	
10V24P	24 V DC, 10 bar, M12 (connection pattern to IEC 61076-2-101)	
V24	24 V DC (connection pattern to EN 175301)	
V24P	24 V DC plug, M12 socket adapter (connection pattern to IEC 61076-2-101)	
006	Silencer	
	None	
S	Silencer	

007	Pressure gauge alternatives	
	None	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge	
AD7	Pressure sensor with switching display, M8 plug, threshold val- ue comparator, PNP, N/O	
AD8	Pressure sensor with switching display, M8 plug, threshold val- ue comparator, PNP, N/C	
AD9	Pressure sensor with switching display, M8 plug, window com- parator, PNP, N/O	
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C	
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 010 V, 15 V, 420 mA	
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 010 V, 15 V, 420 mA	
AG	MS pressure gauge	
RG	Integrated pressure gauge, red/green scale	
008	Alternative pressure gauge scale	
	MS pressure gauge	
PSI	psi	
MPA	МРа	
009	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
WPM	Mounting bracket for hooking in service unit components	
WB	Mounting centrally at rear (wall mounting top and bottom), con- necting plates not required	
010	EU certification	
	None	
EX2	II 3GD	
011	UL certification	
	None	
UL1	cULus ordinary location for Canada and USA	
012	Flow direction	
	Flow direction from left to right	

### Datasheet





N Flow rate 1000 ... 7000 l/min





- www.festo.com
- Choice of three voltage ranges • Ducted exhaust is possible via a
  - threaded connection with silencer



• Manual override: non-detenting and detenting (variant 10V24/10V24F non-detenting only)

• Solenoid actuator can be reposi-

tioned by 180°

- Optional pressure sensor
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22

#### General technical data

matic systems

socket

• Electrically actuated on/off valve for

• With solenoid coil, without plug

pressurising and exhausting pneu-

Size		MS4	MS6		
Pneumatic connection 1	, 2				
Female thread		G1/8 or G1/4	G1/4, G3/8 or G1/2		
Connecting plate	[AG]	G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4		
	[AQ]	1/8 NPT, 1/4 NPT or 3/8 NPT	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT		
Pneumatic connection 3		G1/4	G1/2		
Design		Piston spool valve			
Lap		Overlap			
Type of mounting		With accessories			
		In-line installation			
Mounting position		Any <sup>1)</sup>			
Pressure indication		Via pressure sensor for indicating the output pressure a	nd electrical output via LCD display		
		Via pressure sensor for indicating the status of the output pressure and the electrical output			
		Via pressure gauge for displaying the output pressure			
		Via pressure gauge with red/green scale for indicating the output pressure			
		Prepared for G1/8			
		Prepared for G1/4			
Valve function		3/2-way valve, closed, single solenoid			
Exhaust function		Cannot be throttled			
Manual override		Electrical			
With supply volt-	[10V24], [10V24F]	Non-detenting			
age	[V24], [V24P], [10V24P], [V110], [V230]	Non-detenting/detenting			
	[10V24C], [10V24D]	None			
Actuation type					
Reset method		Mechanical spring			
Switching position indic	ation	With accessories			
Type of actuation		Piloted			
Pilot air supply		Internal			
Flow direction		Not reversible			

1) The on/off valve must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.

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

### Electrical data

Characteristic coil data		
With supply volt-	[V24], [V24P]	24 V DC: 1.5 W; permissible voltage fluctuations –25%/+10%
age	[10V24]	24 V DC: 1.8 W; permissible voltage fluctuations –15%/+10%
	[V110]	110 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; permissible voltage fluctuations ±10%
	[V230]	230 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; permissible voltage fluctuations –14%/+10%
Electrical connection		
With supply volt- age	[V24], [10V24], [10V24C], [V110], [V230]	Plug, square design to EN 175301-803, type C
	[V24P], [10V24D], [10V24F], [10V24P]	M12x1 to ISO 20401 in line with IEC 61076-2-101
Degree of protection for	solenoid coil	IP65
Duty cycle	[%]	100

#### Characteristic flow rate values

Size	MS4	MS4		MS6		
Pneumatic connection 1, 2	G1/8	G1/4	G1/4	G3/8	G1/2	
Standard nominal flow rate qnN <sup>1)</sup> [l/min]						
In main flow direction 1 $\rightarrow$ 2	1000	2000	2600	5500	7000	
In relief direction 2 $\rightarrow$ 3	1600	1600	7000	6200	5500	
C value [l/s*min]						
In main flow direction 1 $\rightarrow$ 2	4.5	9.5	11.0	22.0	29.0	
b value						
In main flow direction $1 \rightarrow 2$	0.5	0.44	0.5	0.5	0.4	

1) Measured at p1 = 6 bar and p2 = 5 bar,  $\Delta p = 1$  bar.

#### Operating and environmental conditions

Size	MS4				MS6				
On/off valve	Without pressure sensor			With pres- sure sensor	Without pressure sensor			With pres- sure sensor	
Supply voltage	[V110], [V230], [V24P], [V24]	[V24]	[V24P], [10V24]		[V110], [V230], [V24P], [V24]	[V24]	[V24P]	[10V24]	
Operating pressure [bar]	4 14	4 10			4 18	4 10			
Operating medium	Compressed a	ir to ISO 8573-1	:2010 [7:4:4]						
	Inert gases	Inert gases							
Note on the operating/pilot medium	Lubricated op	eration possible	(in which case	lubricated oper	ation will always	be required)			
Ambient temperature [°C]	-10 +60 -		-10 +50	0 +50	-10 +60	-10 +60		-10 +50	
Temperature of medium [°C]	-10 +60		-10 +50	0 0 +50 -10 +60 -10 +50			0 +50		
Corrosion resistance class CRC <sup>1)</sup>	2 - Moderate corrosion stress								
Food-safe <sup>2)</sup>	See suppleme	ntary material ir	nformation (exc	ept for solenoid	valve)				
UL certification <sup>2)</sup>	-	c UL us - Recog	nized (OL)		– c UL us - Recognized (OL)				
CE marking (see declaration of conformity) <sup>2)</sup>	To EU EMC Directive								
	To EU Low Voltage Directive								
	To EU RoHS Di	rective							
UKCA marking (see declaration of conformity) <sup>2</sup>	To UK instructions for EMC								
	To UK RoHS in:	To UK RoHS instructions							
	To UK regulation	To UK regulations for electrical equipment							
KC marking	-			KC EMC	-				KC EMC

1) More information www.festo.com/x/topic/crc

More information: www.festo.com/catalogue/ms-ee → Support/Downloads.

### Datasheet

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ATEX	
EU certification	[EX2]
ATEX category for gas	II 3G
Type of (ignition) protection for gas	Ex nA IIC T4 X Gc
ATEX category for dust	II 3D
Type of (ignition) protection for dust	Ex tc IIIC T105°C IP65 Dc X
Explosion ambient temperature	-10°C ≤ Ta ≤ +60 °C
CE marking (see declaration of conformity) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK EX instructions
Explosion protection certification outside the	EPL Dc (GB)
EU	EPL Gc (GB)

1) More information: www.festo.com/catalogue/ms-ee  $\rightarrow$  Support/Downloads.

### Weight [g]

Size	MS4	MS6			
On/off valve	273	740			
On/off valve with silencer	289	816			

#### Materials

Sectional view



On/o	ffvalve		
[1]	Housing	Die-cast aluminium	
[2]	Piston	NBR/aluminium	
[3]	Springs	High-alloy stainless steel	
[4]	End cover	PA	
[5]	Plate	PA	
[6]	Socket end connection	PA	
-	Seals	NBR	
Note	on materials	RoHS-compliant	
LABS	(PWIS) conformity	VDMA24364-B1/B2-L	

#### Manual override

[V24], [V24P], [V110], [V230] Supply voltage



- [4] Manual override: non-detenting (as supplied)
- [5] Spool
- [6] Cover



Note -

For detenting manual override, remove the grey cover [6] and push the spool [5] downwards.

[10V24], [10V24F], [10V24P] Supply voltage



[7] Detenting and non-detenting manual override. [10V24] and [10V24F] non-detenting only.

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# Datasheet

#### Dimensions – Basic version

With female thread, with cover plate [V24], [10V24], [10V24C], [V110], [V230] Supply voltage



ΒЗ

B2

1

2

- [1] Plug connection to EN 175301-803
- [2] Solenoid actuator can be repositioned by 180°, i.e. solenoid points to the front
  [3] PIN for solenoid actuators 110 V

and 230 V only



5





[4] Electrical connection M12x1 to
 ISO 20401 conforming to
 IEC 61076-2-101, 4-pin version
 for connecting cable NEBA-M12

1

0

0

→ Flow direction

Туре	B1	E	32	B3		B4	B5	B6	B7	D1	D5	D7
	[V24P] [ [V110] [ [V230] [	[10V24] [10V24C] [10V24D] [10V24F] [10V24P]	[V24] [V24P] [V110] [V230]	[10V24] [10V24C] [10V24D] [10V24F] [10V24P]								
MS4												
MS4-EE-1/8 MS4-EE-1/4	40	42	35	75	68	21	54	31	11	G1/8 G1/4	G1/4	M12x1
MS6												
MS6-EE-1/4								1		G1/4		
MS6-EE-3/8	62	52	45	97	90	31	76	31	11	G3/8 (	G1/2	M12x1
MS6-EE-1/2										G1/2		_
Туре			L1			L2	L3		L7		L8	L9
	[V24] [V110] [V230]		[V24-EX2	[10V24] [10V24C]	[10V24D] [10V24F] [10V24P]				[V24P]	[V24-EX2]		
MS4												
MS4-EE-1/8	142.8	156 <sup>1)</sup>	160 <sup>1)</sup>	140	145	59	100	8.6	221)	26 <sup>1)</sup>	37	26
MS4-EE-1/4	142.0	150-7	100-9	140	145	59	100	0.0	22-7	20-7	57	20
MS6												
MS6-EE-1/4												Τ
MS6-EE-3/8	186	199 <sup>1)</sup>	203 <sup>1)</sup>	183	188	84	143	8.6	22 <sup>1)</sup>	26 <sup>1)</sup>	37	27.5
MS6-EE-1/2												

1) Measured with plug socket MSSD-EB (included in the scope of delivery).

 $||\cdot||$  Note: This product conforms to ISO 1179-1 and ISO 228-1.



Туре		B2		B3	D1	D4
	[V24] [V24P] [V110] [V230]	[10V24] [10V24C] [10V24D] [10V24F] [10V24P]	[V24] [V24P] [V110] [V230]	[10V24] [10V24C] [10V24D] [10V24F] [10V24P]		
MS4						
MS4-EE-1/8AG MS4-EE-1/4AG	- 42	35	86	79	G1/8 G1/4	_
MS4-EE-1/8RG MS4-EE-1/4RG	- 42	35	87.5	80.5	G1/8 G1/4	_
MS4-EE-1/8A8 MS4-EE-1/4A8	- 42	35	79.5	72.5	G1/8 G1/4	G1/8
MS4-EE-1/8A4 MS4-EE-1/4A4	- 42	35	79.5	72.5	G1/8 G1/4	G1/4
MS6					1	
MS6-EE-1/4AG					G1/4	
MS6-EE-3/8AG MS6-EE-1/2AG	52	45	98	91	G3/8 G1/2	-
MS6-EE-1/4RG MS6-EE-3/8RG MS6-EE-1/2RG	52	45	99.5	92.5	G1/4 G3/8 G1/2	_
MS6-EE-1/4A8 MS6-EE-3/8A8	52	45	99.5	92.5	G1/2 G1/4 G3/8	G1/8
MS6-EE-1/2A8				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	G1/2	51/0
MS6-EE-1/4A4 MS6-EE-3/8A4	52	45	99.5	92.5	G1/4 G3/8	G1/4
MS6-EE-1/2A4					G1/2	

#### Dimensions – Pressure sensor

[AD7], [AD8], [AD9], [AD10] Pressure sensor with status indicator





→ Flow direction

#### [AD11], [AD12] Pressure sensor with LCD display





#### [AD7]:

SDE5-D10-O-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/O contact

#### [AD8]:

SDE5-D10-C-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/C contact

# Download CAD data → <u>www.festo.com</u> Datasheets → Internet: sde5

#### [AD9]:

SDE5-D10-O3-...-P-M8 with 1x 3-pin M8 plug, window comparator, 1 switching output PNP, N/O contact

#### [AD10]:

SDE5-D10-C3-...-P-M8 with 1x 3-pin M8 plug, window comparator, 1 switching output PNP, N/C contact

#### [AD11]:

SPAU-P10R-MS...-L-PNLK-M12D with 1x 4-pin M12 plug, A-coded, switching output 2x PNP or 2x NPN switchable and 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA analogue

#### Datasheets → Internet: spau

#### [AD12]:

SPAU-P10R-MS...-L-PNLK-M8D with 1x 4-pin M8 plug, A-coded, switching output 2x PNP or 2x NPN switchable and 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA analogue

Туре	B2	B3	B4	B5	B6	D6	L5	L6
MS4								
MS4AD7, AD8, AD9, AD10	21	59.1	-	~32	16	M8x1	-	-
MS4AD11	21	01.2	72.2		22	M12x1	41.2	20
MS4AD12	21	81.2	/ 3.3	52	32	M8x1	37.9	39
MS6								
MS6AD7, AD8, AD9, AD10	31	79.1	-	~51	16	M8x1	-	-
MS6AD11	21	101.9	59.1         -         ~32         16         M8x1           81.2         73.3         32         32         M12x1           79.1         -         ~51         16         M8x1	M12x1	41.2	20		
MS6AD12	- 31	101.8	93.7	51	32	M8x1	37.9	- 39

### Datasheet



MS4		
MS4-EES	20	55
MS4-EESEX2	19	50.7
		*
MS6		
MS6-EES	28	108
MS6-EESEX2	43	80

Ordering data

Undering data						
Size	Connection	Supply voltage	Flow direction	Part no.	Туре	
MS4	G1/4	24 V DC	From left to right	542578	MS4-EE-1/4-10V24	
MS6	G1/2	24 V DC	From left to right	542582	MS6-EE-1/2-10V24	
With silencer						
MS4	G1/4	24 V DC	From left to right	542598	MS4-EE-1/4-10V24-S	
MS6	G1/2	24 V DC	From left to right	542602	MS6-EE-1/2-10V24-S	

#### Ordering data

Size	Connection	Supply voltage	Flow direction	Part no.	Туре
MS4	G1/8	24 V DC	From left to right	542580	MS4-EE-1/8-10V24
	G1/4	24 V DC	From right to left	542579	MS4-EE-1/4-10V24-Z
		110 V AC	From left to right	529535	MS4-EE-1/4-V110
		230 V AC	From left to right	529537	MS4-EE-1/4-V230
MS6	G1/4	24 V DC	From left to right	542584	MS6-EE-1/4-10V24
	G3/8	24 V DC	From left to right	542586	MS6-EE-3/8-10V24
	G1/2	24 V DC	From right to left	542583	MS6-EE-1/2-10V24-Z
		110 V AC	From left to right	529823	MS6-EE-1/2-V110
		230 V AC	From left to right	529825	MS6-EE-1/2-V230
With silencer					
MS4	G1/8	24 V DC	From left to right	542600	MS4-EE-1/8-10V24-S
	G1/4	24 V DC	From right to left	542599	MS4-EE-1/4-10V24-S-Z
		110 V AC	From left to right	538719	MS4-EE-1/4-V110-S
MS6	G1/4	24 V DC	From left to right	542604	MS6-EE-1/4-10V24-S
	G3/8	24 V DC	From left to right	542606	MS6-EE-3/8-10V24-S
	G1/2	24 V DC	From right to left	542603	MS6-EE-1/2-10V24-S-Z
		110 V AC	From left to right	538731	MS6-EE-1/2-V110-S

# Ordering data – Modular product system

Ordering table						1-	
Grid dimension	[mm]	40	62	Conditions	Code	Er	
Module no.		527709	527682				
Series		Standard			MS	Ν	
Size		4	6				
Function		On/off valve, electric			-EE	-6	
Pneumatic connection		Female thread G1/8	-	[1]	-1/8		
		Female thread G1/4	Female thread G1/4	[1]	-1/4		
		-	Female thread G3/8	[1]	-3/8		
		-	Female thread G1/2	[1]	-1/2		
		Connecting plate G1/8	-		-AGA		
		Connecting plate G1/4	Connecting plate G1/4		-AGB		
		Connecting plate G3/8	Connecting plate G3/8		-AGC		
		-	Connecting plate G1/2		-AGD		
		-	Connecting plate G3/4		-AGE		
		-	Connecting plate G1		-AGF		
		Connecting plate 1/8 NPT	-	[1]	-AQK		
		Connecting plate 1/4 NPT	Connecting plate 1/4 NPT	[1]	-AQN		
		Connecting plate 3/8 NPT	Connecting plate 3/8 NPT	[1]	-AQP		
		-	Connecting plate 1/2 NPT	[1]	-AQR		
		-	Connecting plate 3/4 NPT	[1]	-AQS		
Supply voltage		24 V DC (plug pattern to EN 175301)	·		-V24		
		4 14 bar					
		24 V DC, M12x1 to ISO 20401 in line	[1]	-V24P			
		4 14 bar	4 18 bar				
		24 V DC (plug pattern to EN 175301),	[1] [2]	-10V24			
		manual override non-detenting					
		24 V DC (plug pattern to EN 175301),	4 10 bar,	[1] [2]	-10V24C		
		no manual override					
		24 V DC, M12x1 to ISO 20401 in line	[1] [2]	-10V24D			
		no manual override					
		24 V DC, M12x1 to ISO 20401 in line	[1] [2]	-10V24F			
		non-detenting	[1] [2]	-10V24P			
		24 V DC, M12x1 to ISO 20401 in line non-detenting/detenting	[1] [2]	-107245			
		110 V AC (plug pattern to EN 175301)		[1]	-V110		
		4 14 bar	4 18 bar				
		230 V AC (plug pattern to EN 175301)	1	[1]	-V230		
		4 14 bar	4 18 bar				

[1] 1/8; 1/4; 3/8; Not with EU EX2 certification.
1/2, AQK, AQN,
AQP, AQR, AQS,
V24P, 10V24,
10V24C, 10V24D,
10V24F, 10V24P,
V110, V230,
AD7 ... AD12,
WPM

[2] 10V24, 10V24C, Max. operating pressure: 10 bar.
 10V24D, 10V24F,
 10V24P

# Ordering data – Modular product system

### Ordering table

Ordering table Grid dimension [mr	1] 40	62	Conditions	Code	Enter code
Silencer	None				code
	Silencer		[3]	-S	
Pressure gauge/pressure gauge alter-	None		1-1	-	
natives	MS pressure gauge, bar			-AG	
	Adapter for EN pressure gauge 1/8, without pres	ssure gauge		-A8	
	Adapter for EN pressure gauge 1/4, without pres			-A4	
	Integrated pressure gauge, red/green scale			-RG	
	Pressure sensor with status indicator, plug M8,	[1] [4]	-AD7		
	Pressure sensor with status indicator, plug M8,	threshold value comparator, PNP, N/C contact	[1] [4]	-AD8	
	Pressure sensor with status indicator, plug M8,	[1] [4]	-AD9		
	Pressure sensor with status indicator, plug M8,	[1] [4]	-AD10		
	Pressure sensor with LCD display, plug M12, 4-p	[1] [4]	-AD11		
	4 20 mA				
	Pressure sensor with LCD display, plug M8, 4-pi	n, IO-Link <sup>®</sup> , PNP, NPN, 0 10 V, 1 5 V,	[1] [4]	-AD12	
	4 20 mA				
Alternative pressure gauge scale	None				
	psi	[5]	-PSI		
	МРа		[6]	-MPA	
Type of mounting	Without mounting bracket				
	Mounting bracket standard design	[7]	-WP		
	Mounting bracket for hooking in service unit con	[1] [7]	-WPM		
	Mounting bracket centrally at rear (wall mountin quired		-WB		
	Mounting bracket centrally at rear (wall		-WBM		
	mounting top), connecting plates not required				
EU certification	None				
	II 3GD to EU Explosion Protection Directive (ATEX	0		-EX2	
UL certification	None				
	cULus, ordinary location for Canada and USA		[8]	-UL1	
Flow direction	Flow direction from left to right				
	Flow direction from right to left			-Z	

[1] 1/8; 1/4; 3/8; Not with EU EX2 certification.

1/2, AQK, AQN, AQP, AQR, AQS, V24P, 10V24, 10V24C, 10V24D, 10V24F, 10V24P, V110, V230, AD7 ... AD12, WPM S [3] Max. operating pressure 10 bar in combination with EU EX2 certification. [5] [4] [5] [6] AD7 ... AD12 PSI MPA Measuring range max. 10 bar. Only in combination with pressure gauge AG.

Only in combination with pressure gauge AG or RG. Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS. [7] WP, WPM

[8] Not with supply voltage V110, V230. UL1

# Peripherals overview



Adapter for mounting on profiles
 → Internet: ipm-80, ipm-40-80,
 ipm-80-80

# Peripherals overview

		Order code	→ Page/Internet
[1]	Soft-start valve	MS4/6-DL	38
Can b	e ordered via the modular product system		
[3]	Mounting bracket	[WP]	44
	Mounting bracket (not shown)	[WPM]	
[4]	Mounting bracket	[WB]	
[5]	Mounting bracket	[WBM]	
[8]	Connecting plate SET <sup>1)</sup>	[AG]	
	Connecting plate SET <sup>1)</sup>	[AQ]	
[9]	Pressure sensor SPAU with LCD display	[AD11], [AD12]	
[11]	Pressure sensor SDE5 with status indicator	[AD7], [AD8], [AD9], [AD10]	
[13]	Adapter for EN pressure gauge 1/8, 1/4	[A8], [A4]	
[16]	MS pressure gauge	[AG], [RG]	
Can b	e ordered as accessories		
[2]	Module connector	MS4/6-MV	ms4-mv, ms6-mv
[3]	Mounting bracket	MS4/6-WP	ms4-wp, ms6-wp
	Mounting bracket (not shown)	MS4/6-WPB/WPE/WPM	ms4-wp, ms6-wp
[4]	Mounting bracket	MS4/6-WB	ms4-wb, ms6-wb
[5]	Mounting bracket	MS4-WBM	ms4-wbm
[6]	Cover cap	MS4/6-END	ms4-end, ms6-end
[7]	Mounting plate <sup>2)</sup>	MS4/6-AEND	ms4-aend, ms6-aend
[8]	Connecting plate SET <sup>2)</sup>	MS4/6-AG	ms4-ag, ms6-ag
[10]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103
[12]	Connecting cable	NEBA-M8LE3	103
[14]	Pressure gauge	MA	103
[15]	Pressure sensor	SPAUT	102

Module connector [2] is included in the scope of delivery.
 Module connector MS4/6-MV [2] or mounting bracket MS4/6-WP, WPB, WPE, WPM [3] is required for mounting.

# Soft-start valves MS4/MS6-DL, MS series

# Type codes

001	Series	
MS	MS series	
002	Size	
002		
4	Grid dimension 40 mm	
003	Function	-
DL	Soft-start valve, pneumatic	
004	Pneumatic connection	
1/8	Female thread G1/8	
1/4	Female thread G1/4	
AGA	Sub-base G1/8	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
005	Pressure gauge alternatives	
	None	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge	
A8 A8M	Adapter for EN pressure gauge 1/8, without pressure gauge Adapter for EN pressure gauge 1/8, with precision pressure gauge	
	Adapter for EN pressure gauge 1/8, with precision pressure	
A8M	Adapter for EN pressure gauge 1/8, with precision pressure gauge         Pressure sensor with switching display, M8 plug, threshold val-	
A8M AD7	Adapter for EN pressure gauge 1/8, with precision pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold val-	
A8M AD7 AD8	Adapter for EN pressure gauge 1/8, with precision pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window com-	
A8M AD7 AD8 AD9	Adapter for EN pressure gauge 1/8, with precision pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O         Pressure sensor with operational status indicator, M8 plug,	
A8M AD7 AD8 AD9 AD10	Adapter for EN pressure gauge 1/8, with precision pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/C         Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C         Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C         Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®,	
A8M AD7 AD8 AD9 AD10 AD11	Adapter for EN pressure gauge 1/8, with precision pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/C         Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C         Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C         Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 010 V, 15 V, 420 mA         Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®,	

006	Alternative pressure gauge scale						
	MS pressure gauge						
PSI	psi						
MPA	MPa						
007	Type of mounting						
	Without mounting bracket						
WP	Mounting bracket basic design						
WPM	Mounting bracket for hooking in service unit components						
WB	Mounting centrally at rear (wall mounting top and bottom), con- necting plates not required						
WBM	Mounting centrally at rear (wall mounting top), connecting plates not required						
008	EU certification						
	None						
EX2	II 3GD to EU Explosion Protection Directive (ATEX)						
EX4	II 2GD						
009	UL certification						
	None						
UL1	cULus ordinary location for Canada and USA						
010	Flow direction						
	Flow direction from left to right						
Z	Flow direction from right to left						
# Type codes

001	Series	
MS	MS series	
002	Size	
6	Grid dimension 62 mm	
003	Function	
DL	Soft-start valve, pneumatic	
004	Pneumatic connection	
1/4	Female thread G1/4	
3/8	Female thread G3/8	
1/2	Female thread G1/2	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
005	Pressure gauge alternatives	
	None	
	itolic .	1
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
A4 A8		
	Adapter for EN pressure gauge 1/4, without pressure gauge	
A8	Adapter for EN pressure gauge 1/4, without pressure gauge           Adapter for EN pressure gauge 1/8, without pressure gauge           Pressure sensor with switching display, M8 plug, threshold val-	
A8 AD7	Adapter for EN pressure gauge 1/4, without pressure gauge         Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window com-	
A8 AD7 AD8	Adapter for EN pressure gauge 1/4, without pressure gauge         Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C	
A8 AD7 AD8 AD9	Adapter for EN pressure gauge 1/4, without pressure gauge         Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O         Pressure sensor with operational status indicator, M8 plug,	
A8 AD7 AD8 AD9 AD10	Adapter for EN pressure gauge 1/4, without pressure gauge         Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O         Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C         Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®,	
A8 AD7 AD8 AD9 AD10 AD11	Adapter for EN pressure gauge 1/4, without pressure gauge         Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C         Pressure sensor with switching display, M8 plug, window comparator, PNP, N/C         Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C         Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C         Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 010 V, 15 V, 420 mA         Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®,	

006	Alternative pressure gauge scale	
	MS pressure gauge	
PSI	psi	
MPA	MPa	
007	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
WPM	Mounting bracket for hooking in service unit components	
WB	Mounting centrally at rear (wall mounting top and bottom), con-	
	necting plates not required	
008	EU certification	
	None	
EX2	II 3GD to EU Explosion Protection Directive (ATEX)	
EX4	II 2GD	
009	UL certification	
	None	
UL1	cULus ordinary location for Canada and USA	
010	Flow direction	
	Flow direction from left to right	
	now direction nom ten to right	

## Datasheet

#### Function



The duration of the pressure build-up is set using the restrictor attached to the valve cap.

The output pressure p2 rises slowly in accordance with the restrictor setting. The main seat opens when the switch-through pressure is reached.

# General technical data

Flow rate
 1000 ... 6450 l/min



- Operating pressure
   4 ... 18 bar
- Pneumatically actuated soft-start valve for slowly pressurising and exhausting pneumatic systems (for use with on/off valves EM1 and EE)



- The drives move slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- Main seat opening at approx. 50% of operating pressure
- Adjustable switching time delay
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

Size	MS4	MS6				
Pneumatic connection 1, 2						
Female thread	G1/8 or G1/4	G1/4, G3/8 or G1/2				
Connecting plate [AG]	G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4				
[AQ]	1/8 NPT, 1/4 NPT or 3/8 NPT	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT				
Design	Piston seat	·				
Type of mounting	With accessories					
	In-line installation					
Mounting position	Any <sup>1)</sup>					
Pressure indication	Via pressure sensor for indicating the output pre	Via pressure sensor for indicating the output pressure and electrical output via LCD display				
	Via pressure sensor for indicating the status of the	Via pressure sensor for indicating the status of the output pressure and the electrical output				
	Via pressure gauge for displaying the output pres	Via pressure gauge for displaying the output pressure				
	Via pressure gauge with red/green scale for indicating the output pressure					
	Prepared for G1/8	Prepared for G1/8				
	Prepared for G1/4					
Valve function	2/2-way valve	2/2-way valve				
Exhaust function	Can be throttled	Can be throttled				
Reset method	Mechanical spring	Mechanical spring				
Type of actuation	Direct	Direct				
Pilot air supply	External	External				
Flow direction	Not reversible	Not reversible				

1) The soft-start valve must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.

 $||\cdot||$  Note: This product conforms to ISO 1179-1 and ISO 228-1.

Characteristic flow rate values						
Size	MS4	MS4		MS6		
Pneumatic connection 1, 2	G1/8	G1/4	G1/4	G3/8	G1/2	
Standard nominal flow rate qnN <sup>1)</sup> [l/min	1]					
In main flow direction 1 $\rightarrow$ 2	1000	2000	2800	5050	6450	
In relief direction 2 $\rightarrow$ 1	1000	2000	2800	5050	6400	
C value [l/s*min]						
In main flow direction 1 $\rightarrow$ 2	4.6	9.6	11.22	21.05	28.97	
b value						
In main flow direction 1 $\rightarrow$ 2	0.5	0.45	0.54	0.48	0.39	

1) Measured at p1 = 6 bar and p2 = 5 bar,  $\Delta p = 1$  bar.

#### Operating and environmental conditions

Size Soft-start valve		MS4	MS4				
		Without pressure sensor	With pressure sensor	Without pressure sensor	With pressure sensor		
Operating pressure [bar]		4 14 (4 10) <sup>1)</sup> 4 10 4 18 (4 10) <sup>1)</sup>		4 10			
Operating medium		Compressed air to ISO 8573-1	Compressed air to ISO 8573-1:2010 [7:4:4]				
		Inert gases					
Note on the operating/pilot me	dium	Lubricated operation possible (in which case lubricated operation will always be required)					
Ambient temperature	[°C]	-10 +60	0 +50	-10 +60	0 +50		
Temperature of medium [°C]		-10 +60	0 +50	-10 +60	0 +50		
Corrosion resistance class CRC	2)	2 - Moderate corrosion stress					
Food-safe <sup>3)</sup>		See supplementary material information					
UL certification <sup>3)</sup>		c UL us - Recognized (OL)	c UL us - Recognized (OL)				

1) Value in brackets applies to MS4/MS6-DL with UL certification.

2) More information www.festo.com/x/topic/crc

3) More information: www.festo.com/catalogue/ms-dl  $\rightarrow$  Support/Downloads.

ATEX	
EU certification	EX4
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion ambient temperature	-10°C ≤ Ta ≤ +60 °C
Explosion protection certification outside the	EPL Db (GB)
EU	EPL Gb (GB)
CE marking (see declaration of conformity) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK EX instructions

1) More information: www.festo.com/catalogue/ms-dl  $\rightarrow$  Support/Downloads.

## Datasheet

Weight [g]						
Size	MS4	MS6				
Soft-start valve	213	650				

#### Materials

#### Sectional view

	A CARACTER A	4	Soft-start valve	
		3	[1] Housing	Die-cast aluminium
			[2] Floor	PET
			[3] End cover	PA
1			[4] Plate	PA
			[5] Seat	Aluminium
			[6] Springs	Spring steel
		5	– Seals	NBR
			Note on materials	RoHS-compliant
2		6	LABS (PWIS) conformity	VDMA24364-B1/B2-L

Switching point – Pressure p as a function of time t MS4





- [1] Tolerance range
- [2] Switching point
- [3] Filling time is adjustable via a restrictor

# - 🌡 - Note

The +20%/-10% switching point tolerance refers to the operating pressure p1. Example: A switching point from 1.6 bar to 2.8 bar is permissible at an operating pressure of 4 bar.

## 📲 - Note

The +20%/-20% switching point tolerance refers to the operating pressure p1. Example: A switching point from 1.2 bar to 2.8 bar is permissible at an operating pressure of 4 bar.



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

#### Dimensions – Pressure gauges/pressure gauge alternatives

- [AG] Integrated MS pressure gauge with standard scale
- $[\mathsf{RG}] \quad \mathsf{Integrated} \ \mathsf{MS} \ \mathsf{pressure} \ \mathsf{gauge} \ \mathsf{with} \ \mathsf{red}/\mathsf{green} \ \mathsf{scale}$





### Download CAD data → <u>www.festo.com</u>

- [A8] Adapter for EN pressure gauge 1/8, without pressure gauge
- $\left[ \text{A4} \right] \quad \text{Adapter for EN pressure gauge 1/4, without pressure gauge}$





→ Flow direction

Туре	B2	B3	D4
MS4			
MS4AG	21	57	_
MS4RG	21	58.5	-
MS4A8	21	58.5	G1/8
MS4A4	21	58.5	G1/4
MS6			
MS6AG	31	77	_
MS6RG	31	78.5	_
MS6A8	31	78.5	G1/8
MS6A4	31	78.5	G1/4

### Dimensions – Pressure sensor

[AD7], [AD8], [AD9], [AD10] Pressure sensor with status indicator



[AD11], [AD12] Pressure sensor with LCD display





## [AD7]:

SDE5-D10-O-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/O contact

#### [AD8]:

SDE5-D10-C-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/C contact

#### [AD11]:

SPAU-P10R-MS...-L-PNLK-M12D with 1x 4-pin M12 plug, A-coded, switching output 2x PNP or 2x NPN switchable and 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA analogue

#### Download CAD data → <u>www.festo.com</u> Datasheets → Internet: sde5

#### [AD9]:

SDE5-D10-O3-...-P-M8 with 1x 3-pin M8 plug, window comparator, 1 switching output PNP, N/O contact

#### [AD10]:

SDE5-D10-C3-...-P-M8 with 1x 3-pin M8 plug, window comparator, 1 switching output PNP, N/C contact

#### $\mathsf{Datasheets} \twoheadrightarrow \mathsf{Internet:} \mathsf{spau}$

### [AD12]:

SPAU-P10R-MS...-L-PNLK-M8D with 1x 4-pin M8 plug, A-coded, switching output 2x PNP or 2x NPN switchable and 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA analogue

	→ Flow direct							
Туре	B2	B3	B4	B5	B6	D6	L5	L6
MS4								
MS4AD7, AD8, AD9, AD10	21	59.1	-	~32	16	M8x1	-	-
MS4AD11	21	81.2	73.3	32	22	M12x1	41.2	20
MS4AD12		81.2	/ 5.5	32	32	M8x1	37.9	39
MS6								
MS6AD7, AD8, AD9, AD10	31	79.1	-	~51	16	M8x1	-	-
MS6AD11	21	101.8	02.7	51	22	M12x1	41.2	20
MS6AD12	31	101.8	93.7	51	32	M8x1	37.9	39

## Ordering data

Size	Connection	Flow direction	Part no.	Туре
MS4	G1/4	From left to right	529531	MS4-DL-1/4
MS6	G1/2	From left to right	529817	MS6-DL-1/2
M56	61/2	From left to right	529817	MS6-DL-1/2
Ordering data				

Size	Connection	Flow direction	Part no.	Туре
MS4	G1/8	From left to right	529533	MS4-DL-1/8
	G1/4	From right to left	529532	MS4-DL-1/4-Z
MS6	G1/4	From left to right	529819	MS6-DL-1/4
	G3/8	From left to right	529821	MS6-DL-3/8
	G1/2	From right to left	529818	MS6-DL-1/2-Z

# Ordering data – Modular product system

Grid dimension [mr	n] 40	62	Conditions	Code	Enter code
Module no.	527711	527684			
Series	Standard			MS	MS
Size	4	6			
Function	Soft-start valve, pneumatic			-DL	-DL
Pneumatic connection	Female thread G1/8	-	[1]	-1/8	
	Female thread G1/4	Female thread G1/4	[1]	-1/4	
	-	Female thread G3/8	[1]	-3/8	
	-	Female thread G1/2	[1]	-1/2	1
	Connecting plate G1/8	-		-AGA	
	Connecting plate G1/4	Connecting plate G1/4		-AGB	
	Connecting plate G3/8	Connecting plate G3/8		-AGC	
	-	Connecting plate G1/2		-AGD	
	-	Connecting plate G3/4		-AGE	
	-	Connecting plate G1		-AGF	
	Connecting plate 1/8 NPT	-	[1]	-AQK	
	Connecting plate 1/4 NPT	Connecting plate 1/4 NPT	[1]	-AQN	
	Connecting plate 3/8 NPT	Connecting plate 3/8 NPT	[1]	-AQP	
	-	Connecting plate 1/2 NPT	[1]	-AQR	
	-	Connecting plate 3/4 NPT	[1]	-AQS	
Pressure gauge/pressure gauge alter-	None	· · · · ·			
natives	MS pressure gauge, bar			-AG	
	Adapter for EN pressure gauge 1/8, w	vithout pressure gauge		-A8	
	Adapter for EN pressure gauge 1/4, w	vithout pressure gauge		-A4	
	Integrated pressure gauge, red/greer	n scale		-RG	
	Pressure sensor with status indicator	r, plug M8, threshold value comparator, PNP, N/O contact	[1] [2]	-AD7	
	Pressure sensor with status indicator	r, plug M8, threshold value comparator, PNP, N/C contact	[1] [2]	-AD8	
	Pressure sensor with status indicator	r, plug M8, window comparator, PNP, N/O contact	[1] [2]	-AD9	
	Pressure sensor with status indicator	r, plug M8, window comparator, PNP, N/C contact	[1] [2]	-AD10	
	Pressure sensor with LCD display, plu	ıg M12, 4-pin, IO-Link <sup>®</sup> , PNP, NPN, 0 10 V, 1 5 V,	[1] [2]	-AD11	
	4 20 mA				
	Pressure sensor with LCD display, plu 4 20 mA	ıg M8, 4-pin, IO-Link <sup>®</sup> , PNP, NPN, 0 10 V, 1 5 V,	[1] [2]	-AD12	
Alternative pressure gauge scale	None				
Automative pressure sause scale	psi		[3]	-PSI	
	MPa		[4]	-MPA	

[1] 1/8; 1/4; 3/8; Not with EU EX4 certification.

1/2, AQK, AQN, AQP, AQR, AQS,

AD7 ... AD12,

WPM

[2] AD7 ... AD12 [3] PSI [4] MPA

Measuring range max. 10 bar. Only in combination with pressure gauge AG. Only in combination with pressure gauge AG or RG.

# Ordering data – Modular product system

## Ordering table

Ordering table		Ι.	1	1	1-
Grid dimension [mm	] 40	62	Conditions	Code	Enter code
Type of mounting	Without mounting bracket				
	Mounting bracket standard design		[5]	-WP	
	Mounting bracket for hooking in service unit co	mponents	[1] [5]	-WPM	
	Mounting bracket centrally at rear (wall mountin quired	ng top and bottom), connecting plates not re-		-WB	
	Mounting bracket centrally at rear (wall mounting top), connecting plates not required	-		-WBM	
EU certification	None	·			
	II 2GD to EU Explosion Protection Directive (ATE	X)		-EX4	
UL certification	None				
	cULus, ordinary location for Canada and USA			-UL1	
Flow direction	Flow direction from left to right				
	Flow direction from right to left			-Z	

[1] 1/8; 1/4; 3/8; Not with EU EX4 certification.

AQP, AQR, AQS,

AD7 ... AD12, WPM

[5] WP, WPM Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS.

<sup>1/2,</sup> AQK, AQN,

# Peripherals overview



## - Note

Additional accessories:

- Module connector for combination with size MS4/MS6 or size MS9
   → Internet: amv, rmv, armv
- Adapter for mounting on profiles
   → Internet: ipm-80, ipm-40-80, ipm-80-80

# Peripherals overview

Supply voltage [V24], [10V24], [V110], [V230]





Supply voltage

[10V24P

Mounting attachments and accessories

		Order code	→ Page/Internet
[1]	Soft-start valve	MS4/6-DE	50
Can b	e ordered via the modular product system		
[3]	Mounting bracket	[WP]	56
	Mounting bracket (not shown)	[WPM]	
[4]	Mounting bracket	[WB]	
[5]	Mounting bracket	[WBM]	
[8]	Connecting plate SET <sup>1)</sup>	[AG]	
	Connecting plate SET <sup>1)</sup>	[AQ]	
[9]	Pressure sensor SDE5 with status indicator	[AD7], [AD8], [AD9], [AD10]	
[11]	Adapter for EN pressure gauge 1/8, 1/4	[A8], [A4]	
[15]	MS pressure gauge	[AG], [RG]	
Can b	e ordered as accessories		
[2]	Module connector	MS4/6-MV	ms4-mv, ms6-mv
[3]	Mounting bracket	MS4/6-WP	ms4-wp, ms6-wp
	Mounting bracket (not shown)	MS4/6-WPB/WPE/WPM	ms4-wp, ms6-wp
[4]	Mounting bracket	MS4/6-WB	ms4-wb, ms6-wb
[5]	Mounting bracket	MS4-WBM	ms4-wbm
[6]	Cover cap	MS4/6-END	ms4-end, ms6-end
[7]	Mounting plate <sup>2)</sup>	MS4/6-AEND	ms4-aend, ms6-aend
[8]	Connecting plate SET <sup>2)</sup>	MS4/6-AG	ms4-ag, ms6-ag
[13]	Pressure sensor	SPAUT	102
[12]	Pressure gauge	MA	103
[10]	Connecting cable	NEBA-M8LE3	103
[14]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103
[16]	Illuminating seal	MEB-LD	102
[17]	Plug socket with cable	КМЕВ	102
[18]	Plug socket <sup>3)</sup>	MSSD-EB	102
[19]	Locking clip	CPV18-HV	102
[20]	Connecting cable	NEBA-M12G5	103
[21]	Connecting cable	NEBA-M12W5	103

Module connector [2] is included in the scope of delivery.
 Module connector MS4/6-MV [2] or mounting bracket MS4/6-WP, WPB, WPE, WPM [3] is required for mounting.
 For soft-start valve MS...-V24-...-EX2, the plug socket is included in the scope of delivery.

1

# Type codes

1		
001	Series	
MS4	MS series, size 4	
002	Size	_
4	Grid dimension 40 mm	
003	Function	
DE	Soft-start valve, electric	
004	Pneumatic connection	
1/8	Female thread G1/8	
1/4	Female thread G1/4	
AGA	Sub-base G1/8	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
005	Supply voltage	
10V24	24 V DC, 10 bar, connection pattern to EN 175301	
10124	· · · · · · · · · · · · · · · · · · ·	
10V24 10V24P	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)	
	24 V DC, 10 bar, M12 plug socket adapter (connection pattern	
10V24P	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)	
10V24P V110	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)110 V AC (connection pattern to EN 175301)	
10V24P V110 V230	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)110 V AC (connection pattern to EN 175301)230 V AC (connection pattern to EN 175301)	
10V24P V110 V230 V24	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)110 V AC (connection pattern to EN 175301)230 V AC (connection pattern to EN 175301)24 V DC (connection pattern to EN 175301)	
10V24P V110 V230 V24	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)         110 V AC (connection pattern to EN 175301)         230 V AC (connection pattern to EN 175301)         24 V DC (connection pattern to EN 175301)         Pressure gauge alternatives	
10V24P V110 V230 V24 006	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)         110 V AC (connection pattern to EN 175301)         230 V AC (connection pattern to EN 175301)         24 V DC (connection pattern to EN 175301)         Pressure gauge alternatives         None	
10V24P V110 V230 V24 006 A4	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)         110 V AC (connection pattern to EN 175301)         230 V AC (connection pattern to EN 175301)         24 V DC (connection pattern to EN 175301)         Pressure gauge alternatives         None         Adapter for EN pressure gauge 1/4, without pressure gauge	
10V24P V110 V230 V24 006 A4 A8	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)         110 V AC (connection pattern to EN 175301)         230 V AC (connection pattern to EN 175301)         24 V DC (connection pattern to EN 175301)         24 V DC (connection pattern to EN 175301)         Pressure gauge alternatives         None         Adapter for EN pressure gauge 1/4, without pressure gauge         Adapter for EN pressure gauge 1/8, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold val-	
10V24P V110 V230 V24 006 A4 A8 AD7	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)         110 V AC (connection pattern to EN 175301)         230 V AC (connection pattern to EN 175301)         24 V DC (connection pattern to EN 175301)         24 V DC (connection pattern to EN 175301)         Pressure gauge alternatives         None         Adapter for EN pressure gauge 1/4, without pressure gauge         Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O         Pressure sensor with switching display, M8 plug, threshold value	

Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C

Integrated pressure gauge, red/green scale

MS pressure gauge

007	Alternative pressure gauge scale
	MS pressure gauge
PSI	psi
MPA	МРа
008	Type of mounting
	Without mounting bracket
WP	Mounting bracket basic design
WPM	Mounting bracket for hooking in service unit components
WB	Mounting centrally at rear (wall mounting top and bottom), con- necting plates not required
WBM	Mounting centrally at rear (wall mounting top), connecting plates not required
009	EU certification
	None
EX2	II 3GD to EU Explosion Protection Directive (ATEX)
010	UL certification
	None
UL1	cULus ordinary location for Canada and USA
011	Flow direction
	Flow direction from left to right
Z	Flow direction from right to left

AD10

AG

RG

# Type codes

001	Series	
MS	MS series	
002	Size	
6	Grid dimension 62 mm	
003	Function	
DE	Soft-start valve, electric	
004	Pneumatic connection	
1/4	Female thread G1/4	
3/8	Female thread G3/8	
1/2	Female thread G1/2	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
005	Supply voltage	
10V24	24 V DC, 10 bar, connection pattern to EN 175301	
10V24P	24 V DC, 10 bar, M12 plug socket adapter (connection pattern to EN 60947-5-2)	
V110	110 V AC (connection pattern to EN 175301)	
V230	230 V AC (connection pattern to EN 175301)	
V24	24 V DC (connection pattern to EN 175301)	

006	Pressure gauge alternatives
	None
A4	Adapter for EN pressure gauge 1/4, without pressure gauge
AD7	Pressure sensor with switching display, M8 plug, threshold val-
	ue comparator, PNP, N/O
AD8	Pressure sensor with switching display, M8 plug, threshold val-
	ue comparator, PNP, N/C
AD9	Pressure sensor with switching display, M8 plug, window com-
1040	parator, PNP, N/O
AD10	Pressure sensor with operational status indicator, M8 plug,
AC	window comparator, PNP, N/C
AG	MS pressure gauge
RG	Integrated pressure gauge, red/green scale
007	Alternative pressure gauge scale
	MS pressure gauge
PSI	psi
MPA	МРа
008	Type of mounting
	Without mounting bracket
WP	Mounting bracket basic design
WPM	Mounting bracket for hooking in service unit components
WB	Mounting centrally at rear (wall mounting top and bottom), con-
	necting plates not required
009	EU certification
	None
EX2	II 3GD to EU Explosion Protection Directive (ATEX)
010	UL certification
010	
	None
UL1	cULus ordinary location for Canada and USA
011	Flow direction
	The discretion formula for a stall a
	Flow direction from left to right

## Datasheet

#### Function



The duration of the pressure build-up is set using the restrictor attached to the valve cap.

The output pressure p2 rises slowly in accordance with the restrictor setting. While the solenoid valve is not actuated, only the flow rate of the flow control valve is available. The main seat is only opened when the solenoid valve is energised.

- Flow rate
   1000 ... 6450 l/min
- Temperature range
   -10 ... +60 °C
- Operating pressure
   4 ... 18 bar
- www.festo.com

When the solenoid valve is switched off, the main seat is closed and only the flow rate of the flow control valve is available.

When exhausting a system, the solenoid valve should remain switched on; this increases the volume flow from 2 to 1 and shortens the exhaust time. For this, a quick exhaust valve must be connected upstream.



- Electrically actuated soft-start valve for slowly pressurising and exhausting pneumatic installations
- The drives move slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- With solenoid coil, without plug socket
- Choice of three voltage ranges
- The switching pressure can be precisely controlled with a solenoid valve
- Adjustable switching time delay
- Manual override: non-detenting and detenting (variant 10V24 non-detenting only)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22

Size		MS4	MS6	
Pneumatic connection 1	1,2			
Female thread		G1/8 or G1/4	G1/4, G3/8 or G1/2	
Connecting plate	[AG]	G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4	
[AQ]		1/8 NPT, 1/4 NPT or 3/8 NPT	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT	
Design		Piston seat		
Type of mounting		With accessories		
		In-line installation		
Mounting position		Any <sup>1)</sup>		
Pressure indication		Via pressure sensor for indicating the output pre	essure and electrical output via LCD display	
		Via pressure sensor for indicating the status of t	he output pressure and the electrical output	
		Via pressure gauge for displaying the output pre	ssure	
		Via pressure gauge with red/green scale for indi	cating the output pressure	
		Prepared for G1/8	-	
		Prepared for G1/4		
Valve function		2/2-way valve		
Manual override				
With supply volt-	[10V24]	Non-detenting		
age	[V24], [10V24P], [V110], [V230]	Non-detenting/detenting		
Type of mounting		Electrical		
Reset method		Mechanical spring		
Signal status display		With accessories		
Switching status indica	tion	With accessories		
Type of actuation		Piloted		
Pilot air supply		Internal		
Flow direction		Not reversible		

1) The soft-start valve must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.

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

Characteristic coil data							
With supply volt-	[V24]	24 V DC: 1.5 W; permissible voltage fluctuations –25%/+10%					
age	[10V24], [10V24P]	24 V DC: 1.8 W; permissi	24 V DC: 1.8 W; permissible voltage fluctuations –15%/+10%				
	[V110]	110 V AC: 50/60 Hz; pick	-up power 3.0 VA; holding powe	r 2.4 VA; permissible voltage	fluctuations ±10%		
	[V230]	230 V AC: 50/60 Hz; pick	up power 3.0 VA; holding powe	r 2.4 VA; permissible voltage	fluctuations -14%/+10	%	
Electrical connection							
With supply volt- age	[V24], [10V24], [V110], [V230]	Plug, square design to EN 175301-803, type C					
	[10V24P]	M12x1 to IEC 61076-2-1	01				
		M12x1 to ISO 20401 in l	ine with IEC 61076-2-101				
Degree of protection for	colonoid coil	IP65					
Degree of protection for	Solenoid Coll	1P65					
	[%]	100					
Duty cycle	[%]						
Duty cycle Characteristic flow rate	[%]			MS6			
Duty cycle Characteristic flow rate Size	[%]	100	G1/4	MS6 G1/4	G3/8	G1/2	
Duty cycle Characteristic flow rate Size Pneumatic connection	[%] e values 1, 2	100 MS4	G1/4		G3/8	G1/2	
Duty cycle Characteristic flow rate Size Pneumatic connection Standard nominal flow	[%] e values 1, 2 r rate qnN <sup>1)</sup> [l/min]	100 MS4	G1/4 2000		G3/8 5050	G1/2 6450	
Characteristic flow rate Size Pneumatic connection Standard nominal flow In main flow direction 1 In relief direction 2 →	[%] e values 1, 2 rate qnN <sup>1</sup> [l/min] .→ 2	MS4 G1/8		G1/4	· · ·		
Duty cycle Characteristic flow rate Size Pneumatic connection Standard nominal flow In main flow direction 1	[%] e values 1, 2 rate qnN <sup>1</sup> [l/min] .→ 2	MS4 G1/8 1000	2000	G1/4 2700	5050	6450	
Duty cycle Characteristic flow rate Size Pneumatic connection Standard nominal flow In main flow direction 1 In relief direction 2 →	[%] e values 1, 2 $rate qnN^1 [l/min]$ $\rightarrow 2$ $1^{2}$	MS4 G1/8 1000	2000	G1/4 2700	5050	6450	
Duty cycle Characteristic flow rate Size Pneumatic connection Standard nominal flow In main flow direction 1 In relief direction 2 → C value [l/s*min]	[%] e values 1, 2 $rate qnN^1 [l/min]$ $\rightarrow 2$ $1^{2}$	MS4 G1/8 1000 1000	2000 2000	G1/4 2700 2600	5050	6450 6400	

1) Measured at p1 = 6 bar and p2 = 5 bar,  $\Delta p = 1$  bar.

2) With energised solenoid valve.

#### Operating and environmental conditions

operating and environmental conditions								
Size	MS4				MS6			
Soft-start valve	Without pressure	Without pressure sensor		With pressure	Without pressur	Without pressure sensor		With pressure
				sensor				sensor
Supply voltage	[V110], [V230],	[V24]	[10V24]		[V110], [V230],	[V24]	[10V24]	
	[V24]				[V24]			
Operating pressure [bar]	4 14	4 10			4 18	4 10		
Operating medium	Compressed air	to ISO 8573-1:20	10 [7:4:4]					
	Inert gases							
Note on the operating/pilot medium	Lubricated opera	ation possible (in	which case lubric	ated operation wi	ll always be requir	ed)		
Ambient temperature [°C]	-10 +60		-10 +50	0 +50	-10 +60	-10 +60 -10 +50		0 +50
Temperature of medium [°C]	-10 +60		-10 +50	0 +50	-10 +60		-10 +50	0 +50
Corrosion resistance class CRC <sup>1)</sup>	2 - Moderate cor	rosion stress						
Food-safe <sup>2)</sup>	See supplement	ary material infor	mation (except for	solenoid valve)				
UL certification <sup>2)</sup>	-	c UL us - Recogn	ized (OL)		-	c UL us - Recogn	ized (OL)	
CE marking (see declaration of conformity) <sup>2)</sup>	To EU EMC Direct	tive						
	To EU Low Voltag	e Directive						
	To EU RoHS Dire	ctive						
UKCA marking (see declaration of conformity) <sup>2)</sup>	To UK instruction	is for EMC						
	To UK RoHS instr							
	To UK regulation	s for electrical eq	uipment				_	
KC marking	-			KC EMC	-			KC EMC

1) More information www.festo.com/x/topic/crc

2) More information: www.festo.com/catalogue/ms-de → Support/Downloads.

## Datasheet

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ATEX	
EU certification	[EX2]
ATEX category for gas	II 3G
Type of (ignition) protection for gas	Ex nA IIC T4 X Gc
ATEX category for dust	II 3D
Type of (ignition) protection for dust	Ex tc IIIC T105°C IP65 Dc X
Explosion ambient temperature	-10°C ≤ Ta ≤ +60 °C
CE marking (see declaration of conformity) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK EX instructions
Explosion protection certification outside the	EPL Dc (GB)
EU	EPL Gc (GB)

1) More information: www.festo.com/catalogue/ms-de  $\rightarrow$  Support/Downloads.

### Weight [g]

weight [g]		
Size	MS4	MS6
Soft-start valve	263	680

#### Materials

Sectional view



	Soft-s	tart valve	
	[1]	Housing	Die-cast aluminium
4	[2]	Floor	PET
	[3]	Valve tappet	Aluminium
5	[4]	End cover	PA
1	[5]	Plate	РА
1	[6]	Seat	Aluminium
	[7]	Springs	Spring steel
6	-	Seals	NBR
7	Note o	on materials	RoHS-compliant
_	LABS	(PWIS) conformity	VDMA24364-B1/B2-L

#### Manual override

[V24], [V110], [V230] Supply voltage





- [4] Manual override: non-detenting (as supplied)
- [5] Spool
- [6] Cover

Note -

For detenting manual override, remove the grey cover [6] and push the spool [5] downwards.

### [10V24], [10V24P] Supply voltage



[7] Manual override: non-detenting and detenting ([10V24] non-detenting only)

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Download CAD data → <u>www.festo.com</u>

## Datasheet

### **Dimensions – Basic version**

With female thread, with cover plate





[1] Plug connection to EN 175301-803

[2] Solenoid actuator can be repositioned by 180°, i.e. solenoid points to the front





[4] Electrical connection M12x1 to ISO 20401 conforming to IEC 61076-2-101, 4-pin version for connecting cable NEBA-M12

Flow direction →

Туре	B1	В	2		B3	B4	B5	D1
		[V24] [V110] [V230]	[10V24] [10V24P]	[V24] [V110] [V230]	[10V2 [10V2			
MS4								
MS4-DE-1/8	40	42.2	34.9	75.2	67.	9 21	54	G1/8
MS4-DE-1/4	40	42.2	54.9	75.2	07.	9 21	54	G1/4
MS6								
MS6-DE-1/4								G1/4
MS6-DE-3/8	62	52	44	97	89	31	76	G3/8
MS6-DE-1/2								G1/2
Tura		14		I	10	1 17		
Туре	D/0/1	L1	[4.0]/2/	D	L2	L7	L8	L9
	[V24] [V110]	[10V24]	[10V24	IP]				
	[V110] [V230]							
MS4								
MS4-DE-1/8	115 /	112.0	117	_	24 5	0.4	26.7	2(1
MS4-DE-1/4	115.4	112.9	117.8	5	31.5	8.6	36.7	26.1
MS6								
MS6-DE-1/4								
MS6-DE-3/8	149	147	152		46	8.6	37	26
MS6-DE-1/2								

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



n

- [AG] Integrated MS pressure gauge with standard scale
- [RG] Integrated MS pressure gauge with red/green scale





Flow direction

→





2

Œ

D4



→ Flow direction

Туре	В	2	В	3	D1	D4
	[V24] [V110] [V230]	[10V24] [10V24P]	[V24] [V110] [V230]	[10V24] [10V24P]		
MS4						
MS4-DE-1/8AG	42.2	34.9	78.2	70.9	G1/8	_
MS4-DE-1/4AG	42.2	54.9	/ 8.2	70.9	G1/4	-
MS4-DE-1/8RG	42.2	34.9	79.7	72.4	G1/8	_
MS4-DE-1/4RG	42.2	54.9	/ 9./	72.4	G1/4	-
MS4-DE-1/8A8	42.2	34.9	79.7	72.4	G1/8	G1/8
MS4-DE-1/4A8	42.2	54.9	/ 3./	/ 2.4	G1/4	01/8
MS4-DE-1/8A4	42.2	34.9	79.7	72.4	G1/8	G1/4
MS4-DE-1/4A4	42.2	54.9	19.1	72.4	G1/4	01/4
MS6	· · · · · · · · · · · · · · · · · · ·	-				-
MS6-DE-1/4AG					G1/4	
MS6-DE-3/8AG	52	44	98	90	G3/8	-
MS6-DE-1/2AG					G1/2	
MS6-DE-1/4RG					G1/4	
MS6-DE-3/8RG	52	44	99.5	91.5	G3/8	-
MS6-DE-1/2RG	]				G1/2	
MS6-DE-1/4A4					G1/4	
MS6-DE-3/8A4	52	44	99.5	91.5	G3/8	G1/4
MS6-DE-1/2A4	]				G1/2	

1

### Dimensions – Pressure sensor

[AD7], [AD8], [AD9], [AD10] Pressure sensor with status indicator





Flow direction

→

#### [AD7]:

SDE5-D10-O-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/O contact

#### [AD8]:

SDE5-D10-C-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/C contact

#### Download CAD data → <u>www.festo.com</u> Datasheets → Internet: sde5

#### [AD9]:

SDE5-D10-O3-...-P-M8 with 1x 3-pin M8 plug, window comparator, 1 switching output PNP, N/O contact

#### [AD10]:

SDE5-D10-C3-...-P-M8 with 1x 3-pin M8 plug, window comparator, 1 switching output PNP, N/C contact

Туре	B2	B3	B4	B5	B6	D6	L5	L6
MS4								
MS4AD7, AD8, AD9, AD10	21	59.1	-	~32	16	M8x1	-	-
MS6								
MS6AD7, AD8, AD9, AD10	31	79.1	-	~51	16	M8x1	-	-

#### Ordering data

	1	1	1	1	1
Size	Connection	Supply voltage	Flow direction	Part no.	Туре
MS4	G1/4	24 V DC	From left to right	542558	MS4-DE-1/4-10V24
		110 V AC	From left to right	529519	MS4-DE-1/4-V110
		230 V AC	From left to right	529521	MS4-DE-1/4-V230
MS6	G1/4	24 V DC	From left to right	542564	MS6-DE-1/4-10V24
	G3/8	24 V DC	From left to right	542566	MS6-DE-3/8-10V24
	G1/2	24 V DC	From left to right	542562	MS6-DE-1/2-10V24
		110 V AC	From left to right	529799	MS6-DE-1/2-V110
		230 V AC	From left to right	529801	MS6-DE-1/2-V230

# Ordering data – Modular product system

Grid dimension	[mm] 40	62	Conditions	Code	Enter
					code
Module no.	527713	527686			
Series	Standard			MS	MS
Size	4	6			
Function	Soft-start valve, electric			-DE	-DE
Pneumatic connection	Female thread G1/8	-	[1]	-1/8	
	Female thread G1/4	Female thread G1/4	[1]	-1/4	
	-	Female thread G3/8	[1]	-3/8	
	-	Female thread G1/2	[1]	-1/2	
	Connecting plate G1/8	-		-AGA	
	Connecting plate G1/4	Connecting plate G1/4		-AGB	
	Connecting plate G3/8	Connecting plate G3/8		-AGC	
	-	Connecting plate G1/2		-AGD	
	-	Connecting plate G3/4		-AGE	
	-	Connecting plate G1		-AGF	
	Connecting plate 1/8 NPT	-	[1]	-AQK	
	Connecting plate 1/4 NPT	Connecting plate 1/4 NPT	[1]	-AQN	
	Connecting plate 3/8 NPT	Connecting plate 3/8 NPT	[1]	-AQP	
	-	Connecting plate 1/2 NPT	[1]	-AQR	
	-	Connecting plate 3/4 NPT	[1]	-AQS	
Supply voltage	24 V DC (plug pattern to EN 175301)			-V24	
	4 14 bar	4 18 bar			
	24 V DC (plug pattern to EN 175301)		[1] [2]	-10V24	
	4 10 bar	4 10 bar			
	24 V DC, M12 to IEC 61076-2-101		[1] [2]	-10V24P	
	4 10 bar	4 10 bar			
	110 V AC (plug pattern to EN 175301)		[1]	-V110	
	4 14 bar	4 18 bar			
	230 V AC (plug pattern to EN 175301)		[1]	-V230	
	4 14 bar	4 18 bar			

[1] 1/8; 1/4; 3/8; Not with EU EX2 certification.

1/2, AQK, AQN,

AQP, AQR, AQS,

10V24, 10V24P,

V110, V230, AD7 ... AD10,

WPM

[2] 10V24, 10V24P Max. operating pressure: 10 bar.

# Ordering data – Modular product system

Ordering table				
Grid dimension [r	m] 40 62	Conditions		Enter
			C	code
Pressure gauge/pressure gauge alte				
natives	MS pressure gauge, bar		-AG	
	Adapter for EN pressure gauge 1/8, without – pressure gauge		-A8	
	Adapter for EN pressure gauge 1/4, without pressure gauge	e	-A4	
	Integrated pressure gauge, red/green scale		-RG	
	Pressure sensor with status indicator, plug M8, threshold	value comparator, PNP, N/O contact [1] [3]	-AD7	
	Pressure sensor with status indicator, plug M8, threshold	value comparator, PNP, N/C contact [1] [3]	-AD8	
	Pressure sensor with status indicator, plug M8, window co	mparator, PNP, N/O contact [1] [3]	-AD9	
	Pressure sensor with status indicator, plug M8, window co	mparator, PNP, N/C contact [1] [3]	-AD10	
Alternative pressure gauge scale	None			
	psi	[4]	-PSI	
	МРа	[5]	-MPA	
Type of mounting	Without mounting bracket			
	Mounting bracket standard design	[6]	-WP	
	Mounting bracket for hooking in service unit components	[1] [6]	-WPM	
	Mounting bracket centrally at rear (wall mounting top and quired	bottom), connecting plates not re-	-WB	
	Mounting bracket centrally at rear (wall – mounting top), connecting plates not required		-WBM	
EU certification	None			
	II 3GD to EU Explosion Protection Directive (ATEX)		-EX2	
UL certification	None			
	cULus, ordinary location for Canada and USA	[7]	-UL1	
Flow direction	Flow direction from left to right			
	Flow direction from right to left		-Z	

[1] 1/8; 1/4; 3/8; Not with EU EX2 certification.

1/2, AQK, AQN, AQP, AQR, AQS, 10V24, 10V24P, V110, V230,

AD7 ... AD10,

WPM

[3] AD7 ... AD10 Measuring range max. 10 bar.

PSI Only in combination with pressure gauge AG.

[4] [5] MPA Only in combination with pressure gauge AG or RG.

WP, WPM Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS.

[6] [7] UL1 Not with supply voltage V110, V230.

# Peripherals overview



- Module connector for combination with size MS6, MS9 or MS12
  - → Internet: rmv, armv

# Peripherals overview

Moun	ting attachments and accessories		
		Order code	→ Page/Internet
[1]	On/off valve	MS9-EM	61
Can b	e ordered via the modular product system		
[3]	Mounting bracket <sup>2)</sup>	[WP]	66
[4]	Mounting bracket <sup>2)</sup>	[WPB]	
[5]	Mounting bracket	[WPM]	
[7]	Connecting plate SET <sup>1)</sup>	[AG]	
	Connecting plate SET <sup>1)</sup>	[AQ]	
[8]	Cover plate	[VS]	
[9]	Adapter for EN pressure gauge 1/4	[A4]	
[13]	MS pressure gauge	[AG], [RG]	
[14]	Silencer	[S]	
Can b	e ordered as accessories		
[2]	Module connector	MS9-MV	ms9-mv
[3]	Mounting bracket <sup>2)</sup>	MS9-WP	ms9-wp
[4]	Mounting bracket <sup>2)</sup>	MS9-WPB	ms9-wp
[5]	Mounting bracket	MS9-WPM	ms9-wp
[6]	Padlock	LRVS-D	103
[7]	Connecting plate SET	MS9-AG	ms9-ag
	Connecting plate SET	MS9-AQ	ms9-aq
[10]	Pressure gauge	MA	103
[11]	Pressure sensor	SPAUT-R14M	102
[12]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103
[14]	Silencer	U	103

1) Module connector [2] is included in the scope of delivery.

2) The screws for the wall bracket on the rear are partially covered by the housing of this service unit component. Depending on the configuration of the service unit combination, the screws will no longer be accessible. The mounting bracket MS9-WPM is therefore recommended for wall mounting. It can be used to attach a fully assembled combination to the pre-mounted wall bracket.

# Type codes

001	Series	
MS	MS series	
002	Size	
9	Grid dimension 90 mm	
003	Function	
EM	On/off valve, manual	
004	Pneumatic connection	
3/4	Female thread G3/4	
1	Female thread G1	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
AGF	Sub-base G1	
AGG	Connecting plate G1 1/4	
AGH	Connecting plate G1 1/2	
N3/4	Female thread 3/4 NPT	
N1	Female thread 1 NPT	
AQR	Sub-base 1/2 NPT	
AQS	Sub-base 3/4 NPT	
AQT	Sub-base 1 NPT	
AQU	Sub-base 1 1/4 NPT	
AQV	Sub-base 1 1/2 NPT	
G	Module without connecting thread, without sub-base	
NG	Module without connecting thread, without sub-base (inch)	
005	Silencer	
	None	
S	Silencer	1

006	Pressure gauge alternatives
	None
AG	MS pressure gauge
VS	Cover plate
A8	Adapter for EN pressure gauge 1/8, without pressure gauge
A4	Adapter for EN pressure gauge 1/4, without pressure gauge
RG	Integrated pressure gauge, red/green scale
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C
AD9	Pressure sensor with switching display, M8 plug, window com- parator, PNP, N/O
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C
007	Alternative pressure gauge scale
	MS pressure gauge
PSI	psi
BAR	bar
MPA	MPa
008	Valve function
	Standard
2	2/2-way valve
009	Type of mounting
	Without mounting bracket
WP	Mounting bracket basic design
WPB	Mounting bracket for large wall gap
WPM	Mounting bracket for hooking in service unit components
010	UL certification
	None
UL1	cULus ordinary location for Canada and USA
011	Flow direction
	Flow direction from left to right
7	

Flow direction from right to left

Z

2/2-way valve, bistable



3/2-way valve, bistable



- Manually actuated on/off valve for pressurising and exhausting pneumatic systems
- Ducted exhaust is possible via a threaded connection with silencer

#### General technical data

Flow rate
 8000 ... 18000 l/min

Temperature range
 -10 ... +60 °C

Operating pressure
 0 ... 20 bar

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- The switching position is immediately recognisable
- Actuation is prevented by locking the rotary knob



- Commercially available padlock can be used for security
- Optional pressure gauge
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

Pneumatic connection 1,	, 2	
Female thread		G3/4, G1, 3/4 NPT or 1 NPT
Connecting plate	[AG]	G1/2, G3/4, G1, G1 1/4 or G1 1/2
	[AQ]	1/2 NPT, 3/4 NPT, 1 NPT, 1 1/4 NPT or 1 1/2 NPT
Module without	[G], [NG]	-
connecting		
thread/connecting plate		
Pneumatic connection 3		
Pneumatic con-	[3/4], [1],	G1
nection 1, 2	[AG], [G]	
	[N3/4], [N1], [AQ],	G1 with silencer [S]
	[NG]	1 NPT without silencer [S]
Design		Piston spool valve
Lap		Overlap
Type of mounting		With accessories
		In-line installation
Mounting position		Any <sup>1)</sup>
Actuator lock		Rotary knob with latch
Pressure indication		Via pressure sensor for indicating the status of the output pressure and the electrical output
		Via pressure gauge for displaying the output pressure
		Via pressure gauge with red/green scale for indicating the output pressure
		Prepared for G1/4
Valve function		2/2-way valve, bistable
		3/2-way valve, bistable
Exhaust function		Cannot be throttled
Reset method		Force-pilot actuated
Type of actuation		Direct
Sealing principle		Soft

1) The on/off valve must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.

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

## Characteristic flow rate values

Characteristic flow rate values								
Pneumatic connection 1, 2	Female thread		Connecting pla	ite				None
	[3/4], [N3/4]	[1], [N1]	[AGD], [AQR]	[AGE], [AQS]	[AGF], [AQT]	[AGG], [AQU]	[AGH], [AQV]	[G], [NG]
Standard nominal flow rate qnN <sup>1)</sup> [l/m	nin]							
In main flow direction $1 \rightarrow 2$	14500	18000	8000	14000	18000	18000	18000	18000
In relief direction 2 $\rightarrow$ 3	14900	14100	16500	14400	13800	13200	13200	14100
C value [l/s*min]								
In main flow direction $1 \rightarrow 2$	59.59	76.90	32.75	57.50	75.65	75.51	75.17	-
In relief direction 2 $\rightarrow$ 3	55.11	53.54	56.22	54.07	52.73	51.06	51.36	-
b value								
In main flow direction 1 $\rightarrow$ 2	0.41	0.37	0.45	0.39	0.38	0.39	0.38	-
In relief direction 2 $\rightarrow$ 3	0.50	0.48	0.60	0.49	0.47	0.45	0.44	-

1) Measured at p1 = 6 bar and p2 = 5 bar,  $\Delta p = 1$  bar.

#### Operating and environmental conditions

Operating and environmental co	Operating and environmental conditions						
		Without pressure sensor	Pressure sensor				
Operating pressure	[bar]	020	010				
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)					
Ambient temperature	[°C]	-10 +60	0 +50				
Temperature of medium	[°C]	-10 +60	0+50				
Corrosion resistance class CRC <sup>1)</sup>		2 - Moderate corrosion stress					
Noise level	[dB (A)]	93 <sup>2)</sup> with silencer					
UL certification <sup>3)</sup>		c UL us - Recognized (OL)					

1) More information www.festo.com/x/topic/crc

Exhaust at 10 bar at a distance of 1 m.
 More information: www.festo.com/catalogue/ms9-em → Support/Downloads.

### ATEX

ATEX	
EU certification	[EX4]
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion ambient temperature	-10°C ≤ Ta ≤ +60 °C
CE marking (see declaration of conformity) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)

1) More information: www.festo.com/catalogue/ms9-em  $\rightarrow$  Support/Downloads.

#### Weight [g]

Weight [g]	
On/off valve	2200
On/off valve with silencer	2400

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## Datasheet

## Materials

Sectional view



	On/off valve	
	[1] Housing	Die-cast aluminium
	[2] Piston spool	POM
	– Seals	NBR
1	Note on materials	RoHS-compliant
2	LABS (PWIS) conformity	VDMA24364-B1/B2-L

Silencer

[EX4] EU certification

#### Dimensions – Basic version

[G], [NG] Module without connecting thread, without connecting plate

- [VS] Cover plate
- [] 3/2-way valve
- [2] 2/2-way valve







2

[S]

→ Flow direction

Туре	B1	B2	B3	D5	L1	L2	L3	L	6
								[S]	[S]+[EX4]
MS9-EM-G, NG-VS	90	45	109	G1	242	159	23	189	138
MS9-EM-G, NG-VS-2	90	45	109	01	242	159	30	-	-

### Dimensions – Female thread/connecting plate







 Retaining screw M6xmin. 90 to DIN 912 (not in the scope of delivery) for wall mounting without mounting bracket → Flow direction

[3] Earthing screw M4x8 (only with MS9-...-EX4)

Туре	B4	B5	B6	B	7 [EX4]	B8	D1	D6	D7	L4	L7 [EX4]	T1	-C
MS9-EM-3/4		4.0.4					G3/4		<i></i>				
MS9-EM-1	90	104	91.5	-	-	-	G1	11	6.5	66	-	6	-
MS9-EM-AGD						132	G1/2						30
MS9-EM-AGE						132	G3/4						36
MS9-EM-AGF	_	-	-	112	122	142	G1	-	-	-	35	-	41
MS9-EM-AGG						162	G1 1/4						50
MS9-EM-AGH	1					176	G1 1/2	1					55
MS9-EM-N3/4	00	10/	01.5				3/4 NPT	11	65				
MS9-EM-N1	90	104	91.5	-	-	-	1 NPT	11	6.5	66	-	6	-
MS9-EM-AQR						132	1/2 NPT						30
MS9-EM-AQS						132	3/4 NPT						36
MS9-EM-AQT	1 –	-	-	112	-	142	1 NPT	_	-	-	-	-	41
MS9-EM-AQU	1					162	1 1/4 NPT	1					50
MS9-EM-AQV	1					176	1 1/2 NPT	1					55

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

Download CAD data → <u>www.festo.com</u>

Download CAD data → www.festo.com

## Datasheet

#### **Dimensions – Pressure gauges/adapters**

- [AG] Integrated MS pressure gauge with standard scale
- $[RG] \quad Integrated \ MS \ pressure \ gauge \ with \ red/green \ scale$



→ Flow direction





→ Flow direction

Туре	B2	B3	B9	D2
MS9-EMAG, RG	4.5	109	-	-
MS9-EMA4	45	-	110	G1/4

#### Dimensions – Pressure sensor

[AD7], [AD8], [AD9], [AD10] Pressure sensor with status indicator



#### [AD7]:

SDE5-D10-O-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/O contact

#### [AD8]:

SDE5-D10-C-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/C contact Download CAD data → <u>www.festo.com</u> Datasheets → Internet: sde5

#### [AD9]:

SDE5-D10-O3-...-P-M8 with 1x 3-pin M8 plug, window comparator, 1 switching output PNP, N/O contact

#### [AD10]:

SDE5-D10-C3-...-P-M8 with 1x 3-pin M8 plug, window comparator, 1 switching output PNP, N/C contact

Туре	B2	B11	D4
MS9-EMAD7, AD8, AD9, AD10	45	112	M8

#### Ordering data

3/2-way valve, silencer, cover plate

Ľ	J/2-way valve, shencel, cover plate							
S	Size	Connection 1, 2	Connection 3	Flow direction	Part no.	Туре		
Ν	NS9	Without connecting	G thread	From left to right	562952	MS9-EM-G-S-VS		
		thread	G thread	From left to right	562954	MS9-EM-NG-S-VS		

# Ordering data – Modular product system

Grid dimension [mn	ı] 90	Conditions	Code	Ent
				cod
Module no.	562178			
Series	Standard		MS	MS
Size	9		9	9
Function	On/off valve, manual		-EM	-EN
Pneumatic connection	Female thread G3/4	[1]	-3/4	
	Female thread G1	[1]	-1	
	Connecting plate G1/2		-AGD	
	Connecting plate G3/4		-AGE	
	Connecting plate G1		-AGF	
	Connecting plate G1 1/4		-AGG	
	Connecting plate G1 1/2		-AGH	
	Female thread 3/4 NPT	[1]	-N3/4	
	Female thread 1 NPT	[1]	-N1	
	Connecting plate 1/2 NPT	[1]	-AQR	
	Connecting plate 3/4 NPT	[1]	-AQS	
	Connecting plate 1 NPT	[1]	-AQT	
	Connecting plate 1 1/4 NPT	[1]	-AQU	
	Connecting plate 1 1/2 NPT	[1]	-AQV	
	Module without connecting thread, without connecting plate	[1]	-G	
	Module without connecting thread, without connecting plate (connection 3 in NPT)	[1]	-NG	
Rotary knob colour	Standard (black/blue)			
	Red		-R	
Silencer	None			
	Silencer		-S	
Pressure gauge/adapter	MS pressure gauge, bar		-AG	
	Cover plate		-VS	
	Adapter for EN pressure gauge 1/4, without pressure gauge		-A4	
	Integrated pressure gauge, red/green scale	[2]	-RG	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/O contact	[1] [3]	-AD7	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/C contact	[1] [3]	-AD8	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/O contact	[1] [3]	-AD9	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/C contact	[1] [3]	-AD10	
Alternative pressure gauge scale	None	[4]		
	psi	[5]	-PSI	
	MPa	[5]	-MPA	
	bar	[5]	-BAR	
Valve function	Standard (3/2-way valve)			
	2/2-way valve	[6]	-2	
Type of mounting	Without mounting bracket			
	Mounting bracket standard design	[7]	-WP	
	Mounting bracket for hooking in service unit components	[1] [7]	-WPM	
	Mounting bracket for large wall gap	[7]	-WPB	
EU certification	None	1		
	II 2GD to EU Explosion Protection Directive (ATEX)		-EX4	
UL certification	None			$\vdash$
	cULus, ordinary location for Canada and USA		-UL1	
Flow direction	Flow direction from left to right			
	Flow direction from right to left	1	-Z	

AQR, AQS, AQT, AQU, AQV, G, NG, AD7 ... AD10, WPM [2] RG [3] AD7 ... AD10 [4] – [5] PSI, MPA, BAR Not with alternative pressure gauge scale PSI, PSI scale is only used as an auxiliary scale. Measuring range max. 10 bar. Not with pressure gauge AG, RG.

- Not with adapter VS, A4, AD7, AD8, AD9, AD10.
- [6] 2 [7] WP, WPM, WPB Not with silencer S.
- Not with pneumatic connection G, NG.

# Peripherals overview



## - 🗍 - Note

Additional accessories:

 Module connector for combination with size MS6, MS9 or MS12
 → Internet: rmv, armv

# Peripherals overview



### Mounting attachments and accessories

Mounting attachments and accessories						
		Order code	→ Page/Internet			
[1]	On/off valve	MS9-EE	71			
Can b	e ordered via the modular product system					
[3]	Mounting bracket <sup>2)</sup>	[WP]	76			
[4]	Mounting bracket <sup>2)</sup>	[WPB]				
[5]	Mounting bracket	[WPM]				
6]	Connecting plate SET <sup>1)</sup>	[AG]				
	Connecting plate SET <sup>1)</sup>	[AQ]				
8]	Adapter for EN pressure gauge 1/4	[A4]				
7]	Cover plate	[VS]				
12]	Pressure sensor SDE5 with status indicator	[AD7]				
[14]	MS pressure gauge	[AG], [RG]				
[15]	Silencer	[S]				
Can b	e ordered as accessories					
[2]	Module connector	MS9-MV	ms9-mv			
3]	Mounting bracket <sup>2)</sup>	MS9-WP	ms9-wp			
4]	Mounting bracket <sup>2)</sup>	MS9-WPB	ms9-wp			
5]	Mounting bracket	MS9-WPM	ms9-wp			
6]	Connecting plate SET	MS9-AG	ms9-ag			
	Connecting plate SET	MS9-AQ	ms9-aq			
9]	Pressure gauge	MA	103			
10]	Pressure sensor	SPAUT-R14M	102			
[11]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103			
13]	Connecting cable	NEBA-M8LE3	103			
15]	Silencer	U	103			
16]	Illuminating seal	MC-LD	102			
17]	Connecting cable	КМС	102			
18]	Plug socket	MSSD-C	102			
19]	Connecting cable	NEBA-M12G5	103			
20]	Connecting cable	NEBA-M12W5	103			
21]	Sensor socket	NECB-M12G4-C2	103			
22]	Angled plug socket	NECB-M12W4-C2	103			

1) Module connector [2] is included in the scope of delivery.

2) The screws for the wall bracket on the rear are partially covered by the housing of this service unit component. Depending on the configuration of the service unit combination, the screws will no longer be accessible. The mounting bracket MS9-WPM is therefore recommended for wall mounting. It can be used to attach a fully assembled combination to the pre-mounted wall bracket.

# Type codes

001	Series	007	Pressure gauge alternatives
MS	MS series		None
	· · ·	AG	MS pressure gauge
002	Size	VS	Cover plate
9	Grid dimension 90 mm	A8	Adapter for EN pressure gauge 1/8, without pressure gauge
		A4	Adapter for EN pressure gauge 1/4, without pressure gauge
003	Function	RG	Integrated pressure gauge, red/green scale
EE	On/off valve, electric	AD7	Pressure sensor with switching display, M8 plug, threshold val- ue comparator, PNP, N/O
004	Pneumatic connection		
3/4	Female thread G3/4	008	Alternative pressure gauge scale
1	Female thread G1		MS pressure gauge
AGD	Sub-base G1/2	PSI	psi
AGE	Sub-base G3/4	BAR	bar
AGF	Sub-base G1	MPA	МРа
AGG	Connecting plate G1 1/4		
AGH	Connecting plate G1 1/2	009	Valve function
N3/4	Female thread 3/4 NPT		Standard
N1	Female thread 1 NPT	2	2/2-way valve
AQR	Sub-base 1/2 NPT		le e s
AQS	Sub-base 3/4 NPT	010	Type of mounting
AQT	Sub-base 1 NPT		Without mounting bracket
AQU	Sub-base 1 1/4 NPT	WP	Mounting bracket basic design
AQV	Sub-base 1 1/2 NPT	WPB	Mounting bracket for large wall gap
G	Module without connecting thread, without sub-base	WPM	Mounting bracket for hooking in service unit components
NG	Module without connecting thread, without sub-base (inch)	011	EU certification
005	Supply voltage		None
V110	110 V AC (connection pattern to EN 175301)	EX2	II 3GD
V24	24 V DC (connection pattern to EN 175301)		
V230	230 V AC (connection pattern to EN 175301)	012	UL certification
V24P	24 V DC plug (connection pattern M12 to DESINA)		None
		UL1	cULus ordinary location for Canada and USA
006	Silencer		
	None	013	Flow direction
S	Silencer		Flow direction from left to right
		Z	Flow direction from right to left

2/2-way valve, closed, single solenoid



3/2-way valve, closed, single solenoid



- N - Flow rate 8000 ... 18000 l/min

Temperature range
 –10 ... +60 °C

- de - Operating pressure 3.5 ... 16 bar

- www.festo.com

- Electrically actuated on/off valve for pressurising and exhausting pneumatic systems
- Ducted exhaust is possible via a threaded connection with silencer



- With solenoid coil, without plug socket
- Choice of three voltage ranges
- Detenting and non-detenting manual override
- Optional pressure gauge
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22 (plug socket MSSD-C-24V-EX included in scope of delivery)

#### General technical data

Pneumatic connection 1,	2	
Female thread		G3/4, G1, 3/4 NPT or 1 NPT
Connecting plate	[AG]	G1/2, G3/4, G1, G1 1/4 or G1 1/2
	[AQ]	1/2 NPT, 3/4 NPT, 1 NPT, 1 1/4 NPT or 1 1/2 NPT
Module without	[G, NG]	-
connecting		
thread/connecting		
plate		
Pneumatic connection 3		
Pneumatic con-	[3/4], [1]/	G1
nection 1, 2	[AG], [G]	
	[N3/4], [N1], [AQ],	G1 with silencer [S]
	[NG]	
	[N3/4], [N1], [AQ]]	1 NPT without silencer [S]
Design		Piston spool valve
Lap		Overlap
Type of mounting		With accessories
		In-line installation
Mounting position		Any
Pressure indication		Via pressure sensor for indicating the status of the output pressure and the electrical output
		Via pressure gauge for displaying the output pressure
		Via pressure gauge with red/green scale for indicating the output pressure
		Prepared for G1/4
Valve function		2/2-way valve, closed, single solenoid
		3/2-way valve, closed, single solenoid
Exhaust function		Cannot be throttled
Manual override		Non-detenting/detenting
Reset method		Mechanical spring
Type of actuation		Piloted
Pilot air supply		Internal
Sealing principle		Soft

 $\|\cdot\|$  Note: This product conforms to ISO 1179-1 and ISO 228-1.

## Datasheet

#### Electrical data Characteristic coil data With supply volt-[V24], [V24P] 24 V DC: 4.5 W, permissible voltage fluctuations ±10% 110 V AC: 50 Hz, pick-up power 11.5 W, holding power 8.9 W, permissible voltage fluctuations ±10% age [V110] 110 V AC: 60 Hz, pick-up power 9.5 W, holding power 6.2 W, permissible voltage fluctuations ±10% [V230] 230 V AC: 50 Hz, pick-up power 11.5 W, holding power 9.1 W, permissible voltage fluctuations ±10% 230 V AC: 60 Hz, pick-up power 9.5 W, holding power 6.4 W, permissible voltage fluctuations ±10% Electrical connection With supply volt-[V24], [V110], Plug, square design to EN 175301-803, type A [V230] age [V24P] M12 plug, 4-pin to DESINA Degree of protection for solenoid coil IP65 Duty cycle [%] 100

#### Characteristic flow rate values

Pneumatic connection	Female thread		Connecting plate					None
	G3/4/3/4 NPT	G1/1 NPT	AGD/AQR	AGE/AQS	AGF/AQT	AGG/AQU	AGH/AQV	G, NG
Standard nominal flow rate qnN <sup>1)</sup> [l/n	nin]							
In main flow direction 1 $\rightarrow$ 2	14500	18000	8000	14000	18000	18000	18000	18000
In relief direction 2 $\rightarrow$ 3	14900	14100	16500	14400	13800	13200	13200	14100
C value [l/s*min]								
In main flow direction 1 → 2	59.59	76.90	32.75	57.50	75.65	75.51	75.17	-
In relief direction 2 $\rightarrow$ 3	55.11	53.54	56.22	54.07	52.73	51.06	51.36	-
b value								
In main flow direction 1 → 2	0.41	0.37	0.45	0.39	0.38	0.39	0.38	-
In relief direction $2 \rightarrow 3$	0.50	0.48	0.60	0.49	0.47	0.45	0.44	-

1) Measured at p1 = 6 bar and p2 = 5 bar,  $\Delta p = 1$  bar.

#### Operating and environmental conditions

Operating pressure	[bar]	3.5 16
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/		Lubricated operation possible (in which case lubricated operation will always be required)
pilot medium		
Ambient temperature	[°C]	-10 +60
Temperature of medium	[°C]	-10 +60
Corrosion resistance class CRC <sup>1)</sup>		2 - Moderate corrosion stress
Noise level	[dB (A)]	93 <sup>2)</sup> with silencer
UL certification <sup>3)</sup>		c UL us - Recognized (OL)
CE marking (see declaration of conformity) <sup>3)</sup>		To EU Low Voltage Directive
UKCA marking (see declaration of conformity) <sup>3)</sup>		To UK regulations for electrical equipment

1) More information www.festo.com/x/topic/crc

2) Exhaust at 10 bar at a distance of 1 m.

3) More information: www.festo.com/catalogue/ms9-ee  $\rightarrow$  Support/Downloads.

## ATEX

EU certification	EX2
ATEX category for gas	II 3G
Type of (ignition) protection for gas	Ex nA IIC T5 X Gc
ATEX category for dust	II 3D
Type of (ignition) protection for dust	Ex tc IIIC T85°C X Dc IP65
Explosion ambient temperature	-10°C ≤ Ta ≤ +50 °C
Explosion protection certification outside the	EPL Db (GB)
EU	EPL Gb (GB)
CE marking (see declaration of conformity) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK regulations for explosions

1) More information: www.festo.com/catalogue/ms9-ee → Support/Downloads.

L
## Weight [g]

On/off valve	2100
On/off valve with silencer S	2300

#### Materials

Sectional view



On/off valve		
[1] Housing	Die-cast aluminium	
[2] Piston spool	POM	
– Seals	NBR	
Note on materials	RoHS-compliant	
LABS (PWIS) conformity	VDMA24364-B1/B2-L	

Dimensions – Basic version [G], [NG] Module without connecting thread, with [VS] Cover plate	nout connecting plate		[S]	Si	lencer	Download CA	AD data →	www.fe	<u>sto.com</u>
[V24], [V110], [V230] Supply voltage . B3		[V24P] Supply	voltage						
			2			2 () 3 () () () () () () () () () () () () ()	1 = Coni 2 = Coni 3 = com 4 = Sign	nected to (–)	
			3						
			$\bigoplus$						
EN 175301-803 DE NE	ng connection M12, 4-pin to SINA for connecting cable BA-M12 Inual override	D				→ Flow d	irection		
Type B1	B2 B3 D2	D5	L1	L2		3 3/2-way valve	L4	L5	L6
MS9-EE-G, NG-V24, V110, V230 MS9-EE-G, NG-V24P 90	45 109 <u>-</u> M12x1	- G1	161	83	30	23	36 39	12 10	189

### Dimensions – Female thread/connecting plate









[3] Earthing screw M4x8 (only with MS9-...-EX2)

 $\rightarrow$  Flow direction

[1]	Retaining screw M6xmin. 90 to
	DIN 912 (not in the scope of de-
	livery) for wall mounting without
	mounting bracket

→ Flow direction

Туре	B4	B5	B6	В	7	B8	D1	D6	D7	L6	L7	T1	=©
					EX2						EX2		
MS9-EE-3/4	90	104	91.5		_		G3/4	- 11	6.5	66	_	6	
MS9-EE-1	90	104	91.5	_	_	-	G1		0.5	00	_	0	-
MS9-EE-AGD						132	G1/2						30
MS9-EE-AGE						132	G3/4	]					36
MS9-EE-AGF	-	-	-	112	122	142	G1	] –	-	-	35	-	41
MS9-EE-AGG						162	G1 1/4						50
MS9-EE-AGH	]					176	G1 1/2	]					55
MS9-EE-N3/4	90	104	91.5				3/4 NPT	11	6.5	66		6	
MS9-EE-N1	90	104	91.5	-	-	-	1 NPT		0.5	00	-	0	-
MS9-EE-AQR						132	1/2 NPT						30
MS9-EE-AQS	]					132	3/4 NPT	1					36
MS9-EE-AQT	_	-	-	112	-	142	1 NPT	] _	-	-	-	-	41
MS9-EE-AQU	]					162	1 1/4 NPT	]					50
MS9-EE-AQV						176	1 1/2 NPT	1					55

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



#### Dimensions – Pressure gauges/pressure gauge alternatives



### [AD7]:

SDE5-D10-O-...-P-M8 with 1x 3-pin M8 plug, threshold value comparator, 1 switching output PNP, N/O contact

> Flow direction →

Download CAD data → <u>www.festo.com</u>

Туре	B2	B11	D4
MS9-EEAD7	45	112	M8x1

#### Ordering data

oracing auta							
3/2-way valve, with silencer, supply voltage 24	V DC						
Size	Part no.	Туре					
Cover plate							
MS9	562940	MS9-EE-G-V24-S-VS					
Pneumatic connection 3 in NPT, cover plate							
MS9	562946	MS9-EE-NG-V24-S-VS					

## Ordering data – Modular product system

Grid dimension [mm]	90	Conditions	Code	Enter code
Module no.	562177			
Series	Standard		MS	MS
Size	9		9	9
Function	On/off valve, electric		-EE	-EE
Pneumatic connection	Female thread G3/4	[1]	-3/4	
	Female thread G1	[1]	-1	
	Connecting plate G1/2		-AGD	
	Connecting plate G3/4		-AGE	
	Connecting plate G1		-AGF	
	Connecting plate G1 1/4		-AGG	
	Connecting plate G1 1/2		-AGH	
	Female thread 3/4 NPT	[1]	-N3/4	
	Female thread 1 NPT	[1]	-N1	
	Connecting plate 1/2 NPT	[1]	-AQR	
	Connecting plate 3/4 NPT	[1]	-AQS	
	Connecting plate 1 NPT	[1]	-AQT	
	Connecting plate 1 1/4 NPT	[1]	-AQU	
	Connecting plate 1 1/2 NPT	[1]	-AQV	
	Module without connecting thread, without connecting plate	[1]	-G	
	Module without connecting thread, without connecting plate (connection 3 in NPT)	[1]	-NG	
Supply voltage	24 V DC (plug pattern to EN 175301), 16 bar		-V24	
	24 V DC plug (plug pattern M12 to DESINA), 16 bar	[1]	-V24P	
	110 V AC (plug pattern to EN 175301), 16 bar	[1]	-V110	
	230 V AC (plug pattern to EN 175301), 16 bar	[1]	-V230	

[1] 3/4; 1, N3/4, N1, Not with EU EX2 certification.

AQR, AQS, AQT, AQU, AQV, G, NG,

V24P, V110, V230, AD7,

WPM

## Ordering data – Modular product system

### Ordering table

Ordering table Grid dimension	[mm]	90	Conditions	Code	Enter code
Silencer		Silencer		-S	
Pressure gauge/pres	sure gauge alter-	MS pressure gauge, bar		-AG	
natives		Cover plate		-VS	
		Adapter for EN pressure gauge 1/4, without pressure gauge		-A4	
		Integrated pressure gauge, red/green scale	[2]	-RG	
		Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/O contact	[1] [3]	-AD7	
Alternative pressure	gauge scale	psi	[4]	-PSI	
		МРа	[4]	-MPA	
		bar	[4]	-BAR	
Valve function		Standard (3/2-way valve)		-	
		2/2-way valve	[5]	-2	
Type of mounting		Mounting bracket standard design	[6]	-WP	
		Mounting bracket for hooking in service unit components	[1] [6]	-WPM	
		Mounting bracket for large wall gap	[6]	-WPB	
EU certification		II 3GD to EU Explosion Protection Directive (ATEX)		-EX2	
UL certification		cULus, ordinary location for Canada and USA	[7]	-UL1	
Flow direction		Flow direction from right to left		-Z	

[1] 3/4; 1, N3/4, N1, Not with EU EX2 certification.

AQR, AQS, AQT, AQU, AQV, G, NG, V24P, V110, V230, AD7, WPM AD7

[2] RG Not with alternative pressure gauge scale PSI, PSI scale is only used as an auxiliary scale.

[3] Measuring range max. 10 bar.

PSI, MPA, BAR Not with adapter VS, A4, AD7.

2 Not with silencer S.

[4] [5] [6] [7] WP, WPM, WPB Not with pneumatic connection G, NG.

Not with supply voltage V110, V230. UL1

## On/off valves MS12-EM, MS series

## Peripherals overview

## On/off valve MS12-EM



#### Mounting attachments and accessories

Moun	ting attachments and accessories		
		Order code	→ Page/Internet
[1]	On/off valve	MS12-EM	80
Can b	e ordered via the modular product system		
[3]	Mounting bracket	[WP]	83
[5]	Connecting plate SET <sup>1)</sup>	[AG]	
[6]	Adapter for EN pressure gauge 1/4	[A4]	
[10]	MS pressure gauge	[AG]	
[11]	Silencer	[S]	
Can b	e ordered as accessories		
[2]	Padlock	LRVS-D	103
[3]	Mounting bracket	MS12-WP	ms12-wp
[4]	Module connector	MS12-MV	ms12-mv
[5]	Connecting plate SET	MS12-AG	ms12-ag
[7]	Pressure gauge	MA	103
[8]	Pressure sensor	SPAUT-R14M	102
[9]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103
[11]	Silencer	U	103

1) Module connector [4] is included in the scope of delivery.

# Type codes

001	Series	
MS	MS series	
002	Size	
12	Grid dimension 124 mm	
003	Function	
EM	On/off valve, manual	
004	Pneumatic connection	
AGF	Sub-base G1	
AGG	Connecting plate G1 1/4	
AGH	Connecting plate G1 1/2	
AGI	Sub-base G2	
G	Module without connecting thread, without sub-base	
005	Silencer	
	None	
S	Silencer	

006	Pressure gauge alternatives	_
	None	
AG	MS pressure gauge	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
007	Alternative pressure gauge scale	
	MS pressure gauge	
PSI	psi	
MPA	MPa	
008	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
009	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

### On/off valves MS12-EM, MS series

## Datasheet

#### Function:



- N Flow rate 25000 ... 32000 l/min
  - Temperature range
     -10 ... +60 °C
  - Operating pressure
     0 ... 20 bar





- Manually actuated on/off valve for pressurising and exhausting pneumatic systems
- Ducted exhaust is possible via a threaded connection with silencer
- The switching position is immediately recognisable
- Actuation is prevented by locking the rotary knob
- Commercially available padlock can be used for security

#### General technical data

Pneumatic connection 1, 2		
Connecting plate	[AG]	G1, G1 1/4, G1 1/2 or G2
Module without connecting thread/connecting plate	[G]	-
Pneumatic connection 3		G1
Design		Piston spool valve
Lap		Overlap
Type of mounting		With accessories
		In-line installation
Mounting position		Any
Valve function		3/2-way valve, bistable
Exhaust function		Cannot be throttled
Switching position indication		Knob actuator direction = flow direction
Type of actuation		Direct
Flow direction		Not reversible

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

#### Standard nominal flow rate qnN<sup>1</sup> [l/min]

,	
In main flow direction 1 $\rightarrow$ 2	25000 32000
In relief direction 2 $\rightarrow$ 3	13000

1) Measured at p1 = 6 bar and  $\Delta p = 1$  bar.

#### Operating and environmental conditions

Operating pressure [bar]		020	
Operating medium		Compressed air to ISO 8573-1:2010 [-:-:-]	
Ambient temperature	[°C]	-10+60	
Temperature of medium	[°C]	-10+60	
Corrosion resistance class	CRC <sup>1)</sup>	2 - Moderate corrosion stress	

1) More information www.festo.com/x/topic/crc

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## Datasheet

## Weight [g]

0 101	
On/off valve	3900
On/off valve with silencer S	4000

#### Materials

Sectional view



On/off	valve	
[1]	Housing	Die-cast aluminium
[2]	Top cover	Aluminium
[3]	Bottom cover	Aluminium
[4]	Valve tappet	Stainless steel, POM, NBR
-	Springs	Steel
-	Covers/cover plates	PA
-	Seals	NBR
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
LABS (	PWIS) conformity	VDMA24364-B1/B2-L

#### **Dimensions – Basic version**

Module without connecting thread, without connecting plate G, with cover plate



### On/off valves MS12-EM, MS series

### Datasheet



Туре	D2 Ø	L4
MS12-EMS	47.8	165.5

#### **Dimensions – Pressure gauges/pressure gauge alternatives**

[AG] Integrated MS pressure gauge with standard scale, display unit [bar]

→









Туре	В3	B4	D4
MS12-EMAG	61	148	-
MS12-EMA4	61	148	G1/4

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

Ordering data		
Size	Part no.	Туре
MS12	541495	MS12-EM-G

## On/off valves MS12-EM, MS series

Enter code

MS 12 -EM

## Ordering data – Modular product system

Ordering table Grid dimension [mm]	124	Conditions	Code
Module no.	535031		
Series	Standard		MS
Size	12		12
Function	On/off valve, manual		-EM
Pneumatic connection	Connecting plate G1		-AGF
	Connecting plate G1 1/4		-AGG
	Connecting plate G1 1/2		-AGH
	Connecting plate G2		-AGI
	Module without connecting thread, without connecting plate		-G
Silencer	Silencer		-S
Pressure gauge/pressure gauge alter-	MS pressure gauge, bar		-AG
natives	Adapter for EN pressure gauge 1/4, without pressure gauge		-A4
Alternative pressure gauge scale	psi	[1]	-PSI
	МРа	[1]	-MPA
Type of mounting	Mounting bracket standard design	[2]	-WP
Flow direction	Flow direction from right to left		-Z

 PSI, MPA
 WP Only with pressure gauge AG

Only with connecting plate AGF, AGG, AGH or AGI.

### On/off valves MS12-EE, MS series

## Peripherals overview

## On/off valve MS12-EE



#### Mounting attachments and accessories

Moun	ting attachments and accessories		
		Order code	→ Page/Internet
[1]	On/off valve	MS12-EE	86
Can b	e ordered via the modular product system		
[6]	Mounting bracket	[WP]	89
[8]	Connecting plate SET <sup>1)</sup>	[AG]	
[9]	Adapter for EN pressure gauge 1/4	[A4]	
[13]	MS pressure gauge	[AG]	
[14]	Silencer	[S]	
Can b	e ordered as accessories		
[2]	Connecting cable	NEBA-M12LE4	103
[3]	Illuminating seal	MC-LD	102
[4]	Connecting cable	КМС	102
[5]	Plug socket	MSSD-C	102
[6]	Mounting bracket	MS12-WP	ms12-wp
[7]	Module connector	MS12-MV	ms12-mv
[8]	Connecting plate SET	MS12-AG	ms12-ag
[10]	Pressure gauge	MA	103
[11]	Pressure sensor	SPAUT-R14M	102
[12]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103
[14]	Silencer	U	103

1) Module connector [7] is included in the scope of delivery.

# Type codes

001	Series	006
MS	MS series	
002	Size	S
12	Grid dimension 124 mm	007
003	Function	AG
EE	On/off valve, electric	A4
004	Pneumatic connection	008
AGF	Sub-base G1	
AGG	Connecting plate G1 1/4	PSI
AGH	Connecting plate G1 1/2	MPA
AGI	Sub-base G2	
G	Module without connecting thread, without sub-base	009
005	Supply voltage	WP
V110	110 V AC (connection pattern to EN 175301)	
V230	230 V AC (connection pattern to EN 175301)	010
V24	24 V DC (connection pattern to EN 175301)	
V24P	24 V DC plug (connection pattern M12 to DESINA)	Z

006	Silencer	
	None	
S	Silencer	
007	Pressure gauge alternatives	
	None	
AG	MS pressure gauge	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
008	Alternative pressure gauge scale	-
	MS pressure gauge	
PSI	psi	
MPA	МРа	
009	Type of mounting	_
	Without mounting bracket	
WP	Mounting bracket basic design	
010	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

## On/off valves MS12-EE, MS series

## Datasheet



- N Flow rate 25000 ... 32000 l/min
  - Temperature range
     -10 ... +50 °C
  - Operating pressure
     3 ... 16 bar





- Electrically actuated on/off valve for pressurising and exhausting pneumatic systems
- With solenoid coil, without plug socket
- Choice of three voltage ranges
- Ducted exhaust is possible via a threaded connection with silencer
- Detenting and non-detenting manual override

#### General technical data

Pneumatic connection 1, 2		
Connecting plate	[AG]	G1, G1 1/4, G1 1/2 or G2
Module without connecting thread/connecting plate	[G]	-
Pneumatic connection 3		G1
Design		Piston spool valve
Lap		Overlap
Type of mounting		With accessories
		In-line installation
Mounting position		Any
Valve function		3/2-way valve, single solenoid, closed
Exhaust function		Cannot be throttled
Reset method		Mechanical spring
Switching position indication		With accessories
		LED (with variant V24P)
Type of actuation		Piloted
Pilot air supply		Internal
Flow direction		Not reversible

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

#### Electrical data

Characteristic coil data		
With supply volt-	[V24], [V24P]	24 V DC: 4.5 W, permissible voltage fluctuations ±10%
age	[V110]	110 V AC: 50 Hz, pick-up power 11.5 W, holding power 8.9 W, permissible voltage fluctuations ±10%
		110 V AC: 60 Hz, pick-up power 9.5 W, holding power 6.2 W, permissible voltage fluctuations ±10%
	[V230]	230 V AC: 50 Hz, pick-up power 11.5 W, holding power 9.1 W, permissible voltage fluctuations ±10%
		230 V AC: 60 Hz, pick-up power 9.5 W, holding power 6.4 W, permissible voltage fluctuations ±10%
Electrical connection		
With supply volt-	[V24], [V110],	Plug, square design to EN 175301-803, type A
age	[V230]	
	[V24P]	M12 plug, 4-pin to DESINA
Degree of protection	on for solenoid coil	IP65
Duty cycle	[%]	100

#### Standard nominal flow rate qnN<sup>1</sup> [l/min]

In main flow direction 1 $\rightarrow$ 2	25000 32000
In relief direction 2 $\rightarrow$ 3	8900

1) Measured at p1 = 6 bar and  $\Delta p = 1$  bar.

### Operating and environmental conditions

Operating and environmental	conditions	
Operating pressure	[bar]	316
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
		Inert gases
Note on the operating/pilot me	dium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	-10 +50
Temperature of medium	[°C]	-10 +50
Corrosion resistance class	CRC <sup>1)</sup>	2 - Moderate corrosion stress

1) More information www.festo.com/x/topic/crc

#### Weight [g]

On/off valve	3800
On/off valve with silencer S	3900

#### Materials

#### Sectional view



On/of	ff valve	
[1]	Housing	Die-cast aluminium
[2]	Top cover	Aluminium
[3]	Bottom cover	Aluminium
[4]	Valve tappet	Stainless steel, POM, NBR
[5]	Springs	Steel
-	Covers/cover plates	PA
-	Seals	NBR
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
LABS	(PWIS) conformity	VDMA24364-B1/B2-L

#### **Dimensions – Basic version**

[G] Module without connecting thread, without connecting plate, with cover plate

#### [V24], [V110], [V230] Supply voltage



[1] Plug connection to EN 175301-803



[2] Plug connection M12, 4-pin to DESINA for connecting cable NEBA-M12



[V24P] Supply voltage

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Flow direction →

Туре	B1	B2	B3	B4	L1	L2	L3	L4	L5	D5
MS12-EE-G-V24, V110, V230	124	122	61	148	237	130	162	35.7	12.3	G1
MS12-EE-G-V24P								36	10	

### On/off valves MS12-EE, MS series

### Datasheet



#### Dimensions – Pressure gauges/pressure gauge alternatives

[AG] Integrated MS pressure gauge with standard scale, display unit [bar]









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Subject to change – 2025/03

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Туре	B3	Β4	D4
MS12-EEAG	61	148	-
MS12-EEA4	61	148	G1/4

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

#### Ordering data

Size	Supply voltage 2	ply voltage 24 V DC		
	Part no.	Туре		
MS12	541496	MS12-EE-G-V24		

→Internet: www.festo.com/catalogue/...

## On/off valves MS12-EE, MS series

## Ordering data – Modular product system

Grid dimension [mm]	124	Conditions	Code	Enter
Module no.	535032			code
Series	Standard		MS	MS
Size	12		12	12
Function	On/off valve, electric		-EE	-EE
Pneumatic connection	Connecting plate G1		-AGF	
	Connecting plate G1 1/4		-AGG	
	Connecting plate G1 1/2		-AGH	
	Connecting plate G2		-AGI	
	Module without connecting thread, without connecting plate		-G	
Supply voltage	24 V DC (plug pattern to EN 175301), 16 bar		-V24	
	24 V DC plug (plug pattern M12 to DESINA), 16 bar		-V24P	
	110 V AC (plug pattern to EN 175301), 16 bar		-V110	
	230 V AC (plug pattern to EN 175301), 16 bar		-V230	
Silencer	Silencer		-S	
Pressure gauge/pressure gauge alter-	MS pressure gauge, bar		-AG	
natives	Adapter for EN pressure gauge 1/4, without pressure gauge		-A4	
Alternative pressure gauge scale	psi	[1]	-PSI	
	MPa	[1]	-MPA	
Type of mounting	Mounting bracket standard design	[2]	-WP	
Flow direction	Flow direction from right to left		-Z	

 PSI, MPA
 WP Only with pressure gauge AG Only with connecting plate AGF, AGG, AGH or AGI.

## Peripherals overview

### Soft-start valve MS12-DL



#### Mounting attachments and accessories

Mour	ting attachments and accessories		
		Order code	→ Page/Internet
[1]	Soft-start valve	MS12-DL	92
Can b	e ordered via the modular product system		
[2]	Mounting bracket	[WP]	95
[4]	Connecting plate SET <sup>1)</sup>	[AG]	
[5]	Adapter for EN pressure gauge 1/4	[A4]	
[9]	MS pressure gauge	[AG]	
Can b	e ordered as accessories		
[2]	Mounting bracket	MS12-WP	ms12-wp
[3]	Module connector	MS12-MV	ms12-mv
[4]	Connecting plate SET	MS12-AG	ms12-ag
[6]	Pressure gauge	MA	103
[7]	Pressure sensor	SPAUT-R14M	102
[8]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103

1) Module connector [3] is included in the scope of delivery.

# Type codes

001	Series	
MS	MS series	
002	Size	
12	Grid dimension 124 mm	
003	Function	
DL	Soft-start valve, pneumatic	
004	Pneumatic connection	
AGF	Sub-base G1	
AGG	Connecting plate G1 1/4	
1		
AGH	Connecting plate G1 1/2	
AGH AGI	Connecting plate G1 1/2 Sub-base G2	
AGI	Sub-base G2	
AGI G	Sub-base G2 Module without connecting thread, without sub-base	
AGI G	Sub-base G2         Module without connecting thread, without sub-base         Pressure gauge alternatives	

006	Alternative pressure gauge scale	-
	MS pressure gauge	
PSI	psi	
MPA	МРа	
007	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
008	UL certification	
	None	
UL1	cULus ordinary location for Canada and USA	
009	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

## Datasheet

Function:





- Temperature range
   -10 ... +60 °C
- Operating pressure
   2 ... 20 bar

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The duration of the pressure build-up is set using the restrictor attached to the valve cap.

The output pressure p2 rises slowly in accordance with the restrictor setting. The main seat opens when the switch-through pressure is reached.

- Pneumatically actuated soft-start valve for slowly pressurising and exhausting pneumatic systems (for use with on/off valves EM and EE)
- The drives move slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- Main seat opening at approx. 50% of operating pressure
- Adjustable switching time delay

#### General technical data

Pneumatic connection 1, 2		
Connecting plate	[AG]	G1, G1 1/4, G1 1/2 or G2
Module without connecting thread/connecting plate	[G]	-
Design		Piston seat
Type of mounting		With accessories
		In-line installation
Mounting position		Any
Valve function		2/2-way valve
Exhaust function		Can be throttled
Reset method		Mechanical spring
Type of actuation		Direct
Pilot air supply		Internal
Flow direction		Not reversible

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

#### Standard nominal flow rate qnN<sup>1</sup> [l/min]

In main flow direction 1 $\rightarrow$ 2	25000 42000
In relief direction 2 $\rightarrow$ 1	25000 42000

1) Measured at p1 = 6 bar and p2 = 5 bar,  $\Delta p = 1$  bar.

### Operating and environmental conditions

Operating pressure	[bar]	220
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]
Ambient temperature	[°C]	-10 +60
Temperature of medium	[°C]	-10 +60
Corrosion resistance class	CRC <sup>1)</sup>	2

1) More information www.festo.com/x/topic/crc

#### Weight [g]

Soft-start valve

Materials Sectional view

# 2 1 4 3 5

Soft-	Soft-start valve	
[1]	Housing	Die-cast aluminium
[2]	Top cover	Aluminium
[3]	Bottom cover	Aluminium
[4]	Valve tappet	Aluminium, NBR
[5]	Springs	Steel
-	Covers/cover plates	PA
-	Seals	NBR
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
LABS	(PWIS) conformity	VDMA24364-B1/B2-L

#### Switching point – Pressure p as a function of time t



3600

## - 🕴 - Note

The +25%/-20% switching point tolerance refers to the operating pressure p1. Example: A switching point from 1.2 bar to 3.0 bar is permissible at an operating pressure of 4 bar.

- [1] Tolerance range
- [2] Switching point
- [3] Filling time is adjustable via a restrictor

#### **Dimensions – Basic version**

[G] Module without connecting thread, without connecting plate, with cover plate

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[A4]

#### Dimensions – Pressure gauges/pressure gauge alternatives

[AG] Integrated MS pressure gauge with standard scale, display unit [bar]









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Adapter for EN pressure gauge 1/4, without pressure gauge

Flow direction	
----------------	--

Туре	В3	B4	D4
MS12-DLAG	61	148	-
MS12-DLA4	61	148	G1/4

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

Ordering data		
Size	Part no.	Туре
MS12	541497	MS12-DL-G

## Ordering data – Modular product system

Ordering table				
Grid dimension [mm]	124	Conditions	Code	Enter code
Module no.	535033			
Series	Standard		MS	MS
Size	12		12	12
Function	Soft-start valve, pneumatic		-DL	-DL
Pneumatic connection	Connecting plate G1		-AGF	
	Connecting plate G1 1/4		-AGG	
	Connecting plate G1 1/2		-AGH	
	Connecting plate G2		-AGI	
	Module without connecting thread, without connecting plate		-G	
Pressure gauge/pressure gauge alter-	MS pressure gauge, bar		-AG	
natives	Adapter for EN pressure gauge 1/4, without pressure gauge		-A4	
Alternative pressure gauge scale	psi	[1]	-PSI	
	MPa	[1]	-MPA	
Type of mounting	Mounting bracket standard design	[2]	-WP	
Flow direction	Flow direction from right to left		-Z	

 PSI, MPA
 WP Only with pressure gauge AG Only with connecting plate AGF, AGG, AGH or AGI.

## Peripherals overview

### Soft-start valve MS12-DE



#### Mounting attachments and accessories

Mounting attachments and accessories				
		Order code	→ Page/Internet	
[1]	Soft-start valve	MS12-DE	98	
Can b	e ordered via the modular product system			
[6]	Mounting bracket	[WP]	101	
[8]	Connecting plate SET <sup>1)</sup>	[AG]		
[9]	Adapter for EN pressure gauge 1/4	[A4]		
[13]	MS pressure gauge	[AG]		
Can b	e ordered as accessories			
[2]	Connecting cable	NEBA-M12LE4	103	
[3]	Illuminating seal	MC-LD	102	
[4]	Connecting cable	КМС	102	
[5]	Plug socket	MSSD-C	102	
[6]	Mounting bracket	MS12-WP	ms12-wp	
[7]	Module connector	MS12-MV	ms12-mv	
[8]	Connecting plate SET	MS12-AG	ms12-ag	
[10]	Pressure gauge	MA	103	
[11]	Pressure sensor	SPAUT-R14M	102	
[12]	Connecting cable	NEBA-M8LE4, NEBA-M12LE4	103	

1) Module connector [7] is included in the scope of delivery.

# Type codes

001	Series	
MS	MS series	
002	Size	
12	Grid dimension 124 mm	
003	Function	
DE	Soft-start valve, electric	
004	Pneumatic connection	
AGF	Sub-base G1	
AGG	Connecting plate G1 1/4	
AGH	Connecting plate G1 1/2	
AGI	Sub-base G2	
G	Module without connecting thread, without sub-base	
005	Supply voltage	
V110	110 V AC (connection pattern to EN 175301)	
V230	230 V AC (connection pattern to EN 175301)	
V24	24 V DC (connection pattern to EN 175301)	
V24P	24 V DC plug (connection pattern M12 to DESINA)	

006	Pressure gauge alternatives			
	None			
AG	MS pressure gauge			
A4	Adapter for EN pressure gauge 1/4, without pressure gauge			
007	Alternative pressure gauge scale			
	MS pressure gauge			
PSI	psi			
MPA	МРа			
008	Type of mounting			
	Without mounting bracket			
WP	Mounting bracket basic design			
009	Flow direction			
	Flow direction from left to right			
Z	Flow direction from right to left			

## Datasheet

Function:



The duration of the pressure build-up is set using the restrictor attached to the valve cap.

The output pressure p2 rises slowly in accordance with the restrictor setting. While the solenoid valve is not actuated, only the flow rate of the flow control valve is available. The main seat is only opened when the solenoid valve is energised.

### General technical data

Pneumatic connection 1, 2	-			
Connecting plate [AG]		G1, G1 1/4, G1 1/2 or G2		
Module without connecting thread/connecting plate	[G]	-		
Pneumatic connection 3		G1		
Design		Piston seat		
Type of mounting		With accessories		
		In-line installation		
Mounting position		Any		
Valve function		2/2-way valve		
Exhaust function		Can be throttled		
Reset method		Mechanical spring		
Signal status display		With accessories		
		LED (with variant V24P)		
Type of actuation		Piloted		
Pilot air supply		Internal		
Flow direction		Not reversible		

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

#### Electrical data

Characteristic coil data						
With supply volt-	[V24]	24 V DC: 8.4 W				
age		42 V AC: 50 Hz, pick-up power 14 VA, holding power 10 VA				
		42 V AC: 60 Hz, pick-up power 12 VA, holding power 7 VA				
	[V24P]	24 V DC				
	[V110]	110 V AC				
[V230]		230 V AC				
Electrical connection						
With supply volt-	[V24], [V110],	Plug, square design to EN 175301-803, type A				
age	[V230]					
	[V24P]	M12 plug, 4-pin to DESINA				
Degree of protection	on for solenoid coil	IP65				
Duty cycle [%]		100				

- Flow rate
   25000 ... 42000 l/min
- Temperature range -10 ... +50 °C
- Operating pressure
   3 ... 16 bar



When the solenoid valve is switched off, the main seat is closed and only the flow rate of the flow control valve is available.

When exhausting a system, the solenoid valve should remain switched on; this increases the volume flow from 2

to 1 and shortens the exhaust time.

- Electrically actuated soft-start valve
- for slowly pressurising and exhausting pneumatic systems
- The drives move slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- With solenoid coil, without plug socket
- The switching pressure can be precisely controlled with a solenoid valve
- Adjustable switching time delay
- Choice of three voltage ranges
- Detenting and non-detenting manual override

#### Standard nominal flow rate qnN<sup>1</sup> [l/min]

In main flow direction 1 $\rightarrow$ 2	25000 42000
In relief direction 2 $\rightarrow$ 1 <sup>2)</sup>	25000 42000

1) Measured at p1 = 6 bar and p2 = 5 bar,  $\Delta p = 1$  bar.

2) With energised solenoid valve.

#### Operating and environmental conditions

Operating pressure [b	bar]	316
Operating medium		Compressed air to ISO 8573-1:2010 [-:-:-]
Ambient temperature [°	°C]	-10 +50
Temperature of medium [°	°C]	-10 +50
CE marking (see declaration of conformity) <sup>1)</sup>		To EU Low Voltage Directive
UKCA marking (see declaration of conformity) <sup>1)</sup>		To UK regulations for electrical equipment
Corrosion resistance class CF	RC <sup>2)</sup>	2 - Moderate corrosion stress

1) More information: www.festo.com/catalogue/ms12-de → Support/Downloads.

3800

2) More information www.festo.com/x/topic/crc

#### Weight [g]

Soft-start va	lve

#### Materials

Sectional view



#### Soft-start valve [1] Housing Die-cast aluminium Aluminium [2] Top cover Aluminium [3] Bottom cover Aluminium, NBR [4] Valve tappet Steel [5] Springs PA Covers/cover plates \_ NBR Seals Connecting plate, module connector, mounting bracket Die-cast aluminium LABS (PWIS) conformity VDMA24364-B1/B2-L

### **Dimensions – Basic version**

[G] Module without connecting thread, without connecting plate, with cover plate





- [1] Plug connection to EN 175301-803
- [2] Plug connection M12, 4-pin to DESINA for connecting cable NEBA-M12



Flow direction **→** 

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Туре	B1	B2	B3	B4	L1	L2	L3	L4	L5
MS12-DE-G-V24, V110, V230	124	100	(1	148	22(	130	162	35.7	12.3
MS12-DE-G-V24P	124	122	61	148	226	130	162	36	10

#### Dimensions - Pressure gauges/pressure gauge alternatives

[AG] Integrated MS pressure gauge with standard scale, display unit [bar]





#### Download CAD data → <u>www.festo.com</u>

[A4] Adapter for EN pressure gauge 1/4, without pressure gauge





Туре	B3	B4	D4
MS12-DEAG	61	148	_
MS12-DEA4	61	148	G1/4

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

#### Ordering data

Ordering data					
Size	Supply voltage 24 V DC				
	Part no.	Туре			
MS12	541498	MS12-DE-G-V24			

## Ordering data – Modular product system

Grid dimension [mm]	124	Conditions	Code	Enter code
Module no.	535034			
Series	Standard		MS	MS
Size	12		12	12
Function	Soft-start valve, electric		-DE	-DE
Pneumatic connection	Connecting plate G1		-AGF	
	Connecting plate G1 1/4		-AGG	
	Connecting plate G1 1/2		-AGH	
	Connecting plate G2		-AGI	
	Module without connecting thread, without connecting plate		-G	
Supply voltage	24 V DC (plug pattern to EN 175301), 16 bar		-V24	
	24 V DC plug (plug pattern M12 to DESINA), 16 bar		-V24P	
	110 V AC (plug pattern to EN 175301), 16 bar		-V110	
	230 V AC (plug pattern to EN 175301), 16 bar		-V230	
Pressure gauge/pressure gauge alter-	MS pressure gauge, bar		-AG	
natives	Adapter for EN pressure gauge 1/4, without pressure gauge		-A4	
Alternative pressure gauge scale	psi	[1]	-PSI	
	MPa	[1]	-MPA	
Type of mounting	Mounting bracket standard design	[2]	-WP	
Flow direction	Flow direction from right to left		-Z	

[1] PSI, MPA [2] WP Only with pressure gauge AG Only with connecting plate AGF, AGG, AGH or AGI.

2025/03 – Subject to change

## Accessories

### Ordering data – Plug socket MSSD

Ordering data – Plug socket MSSD     Datasheets → Intern									
		Description		Electrical con- nection	Cable fitting	Part no.	Туре		
		For MS4/6-EE/DE	-	3-pin	Pg7	151687	MSSD-EB		
				3-pin	M12	539712	MSSD-EB-M12		
			For use in explo- sion protection are- as	3-pin	M12x1,5	570367	MSSD-EB-M12-24VDC-SD-EX		
		For MS9-EE,	-	3-pin	Pg9	34583	MSSD-C		
		For MS12-EE/DE		3-pin	M16	539709	MSSD-C-M16		

#### Ordering data – Plug socket with cable KMEB/Connecting cable KMC

Ordering data – Plug	g socket with cable KM	IEB/Connecting cable	кмс				Datasheets $\rightarrow$ Internet: kmeb, kmc
	Description	Operating voltage	Electrical con- nection	Switching status indication	Cable length [m]	Part no.	Туре
	For MS4/6-EE/DE	24 V DC	2-pin	LED	2.5	547268	KMEB-3-24-2.5-LED
					5	547269	KMEB-3-24-5-LED
				-	2.5	547270	KMEB-3-24-2.5
$\diamond$					5	547271	KMEB-3-24-5
			3-pin	LED	2.5	151688	KMEB-1-24-2.5-LED
					5	151689	KMEB-1-24-5-LED
					10	193457	KMEB-1-24-10-LED
		230 V AC	3-pin	-	2.5	151690	KMEB-1-230AC-2.5
					5	151691	KMEB-1-230AC-5
	For MS9-EE,	24 V DC	3-pin	LED	2.5	30931	KMC-1-24DC-2.5-LED
•	For MS12-EE/DE				5	30933	KMC-1-24DC-5-LED
					10	193459	KMC-1-24-10-LED
		230 V AC	3-pin	-	2.5	30932	KMC-1-230AC-2.5
					5	30934	KMC-1-230AC-5

Ordering data – Illum	dering data – Illuminating seal MEB-LD/MC-LD							
	Description	Operating voltage range	Part no.	Туре				
	For plug socket with cable KMEB and plug	12 24 V DC	151717	MEB-LD-12-24DC				
	socket MSSD-EB	230 V DC/AC ±10%	151718	MEB-LD-230AC				
	For connecting cable KMC and plug socket	12 24 V DC	19145	MC-LD-12-24DC				
	MSSD-C	230 V DC/AC ±10%	19146	MC-LD-230AC				

Ordering data – Loci	Datasheets → Internet:	cpv18-hv			
	Description		Part no.	Туре	PU <sup>1)</sup>
	For MS4/6-EE/DEV24	Cover for the manual override, the clip pre- vents actuation	530056	CPV18-HV	10

[1] Packaging unit

Ordering data –	Ordering data –							
	Pneumatic connec-	Display type	Switching output	Electrical connection	Part no.	Туре		
	tion							
For direct mounting	For direct mounting on the adapter with connecting thread 1/8 or 1/4, pressure measuring range 0 10 bar, relative pressure measurement							
	Male thread R1/8	Illuminated LCD	2x PNP or 2x NPN	M8x1, 4-pin	8001203	SPAU-P10R-T-R18M-L-PNLK-PNVBA-M8D		
			switchable	M12x1, 4-pin	8001206	SPAU-P10R-T-R18M-L-PNLK-PNVBA-M12D		
	Male thread R1/4			M8x1,4-pin	8001209	SPAU-P10R-T-R14M-L-PNLK-PNVBA-M8D		
				M12x1, 4-pin	8001208	SPAU-P10R-T-R14M-L-PNLK-PNVBA-M12D		

## On-off/soft-start valves MS-EM/EE/DL/DE, MS series

## Accessories

Ordering data – Con	Ordering data – Connecting cable NEBA-M8						
	Electrical connection	Number of cores	Cable length [m]	Part no.	Туре		
	M8x1, straight socket	3	2,5	8078223	NEBA-M8G3-U-2.5-N-LE3		
			5	8078224	NEBA-M8G3-U-5-N-LE3		
	M8x1, angled socket	3	2,5	8078230	NEBA-M8W3-U-2.5-N-LE3		
			5	8078231	NEBA-M8W3-U-5-N-LE3		
Ordering data – Connecting cable NEBA-M12 Datasheets →							
	Electrical connection	Number of cores	Cable length [m]	Part no.	Туре		
		,	25	0070200			

	M12x1, straight socket	4	2,5	8078239	NEBA-M12G5-U-2.5-N-LE4
			5	8078240	NEBA-M12G5-U-5-N-LE4
-	M12x1, angled socket	4	2,5	8078248	NEBA-M12W5-U-2.5-N-LE4
			5	8078249	NEBA-M12W5-U-5-N-LE4

Ordering data – Sens	or socket NECB		Datasheets $\rightarrow$ Internet: necb
	Electrical connection	Part no.	Туре
OPELB	M12x1, A-coded to IEC 61076-2-101	8162290	NECB-M12G4-C2

Ordering data – Angle	ed plug socket NECB		Datasheets $\rightarrow$ Internet: necb
	Electrical connection	Part no.	Туре
۶ <u>۲</u>	M12x1, A-coded to IEC 61076-2-101	8162292	NECB-M12W4-C2

Order	Ordering data – Silencer U							
		Description	Pneumatic connection	Part no.	Туре			
		For MS4-EM1/EE	G1/4	6842	U-1/4-B			
		For MS6-EM1/EE	G1/2	6844	U-1/2-B			
6		For MS9/12-EM/EE	G1	151990	U-1-B			

#### Ordering data – Pressure gauge MA

Nominal size	Pneumatic connection	Display range	Display range		Туре	
		[bar]	[psi]			
Pressure gauge MA,	Pressure gauge MA, EN 837-1				Datasheets → Internet: ma	
40	R1/4	0 16	0 232	187080	MA-40-16-R1/4-EN	
	G1/4	0 16	0 232	183901	MA-40-16-G1/4-EN	
Pressure gauge MA,	Pressure gauge MA, EN 837-1, with red/green range				Datasheets → Internet: ma	
40	R1/8	0 16	-	525726	MA-40-16-R1/8-E-RG	
50	R1/4	0 16	-	525729	MA-50-16-R1/4-E-RG	

### Ordering data – Padlock LRVS-D

<b>9</b>	Weight [g]	Part no.	Туре
	120	193786	LRVS-D