

## Branching modules/Distributor blocks MS-FRM, MS series

**FESTO**



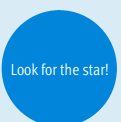
Festo core product range  
Covers 80% of your automation tasks

Worldwide:  
Superb:  
Easy:

Always in stock  
Festo quality at an attractive price  
Reduces procurement and storing complexity

★ Generally ready for shipping ex works in 24 hours  
Held in stock in 13 service centres worldwide  
More than 2200 product

★ Generally ready for shipping ex works in 5 days  
Assembled for you in 4 service centres worldwide  
Up to  $6 \times 10^{12}$  variants per product series



# MS series service unit components

Key features



## MS series service unit components

Solutions for every application

With its large product range, highly functional components and a wide choice of services, the MS series from Festo offers a complete concept for compressed air preparation. Suitable for simple standard applications as well as application-specific solutions to the highest quality standards.

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 minimum space requirements.

### Freely combinable function modules

Pressure regulators, on/off and soft-start valves with safety function, filter, pressure and flow sensors, dryers, sensors and lubricators. All these allow a suitable solution to be assembled for every task. Their modular structure means that the components

are freely combinable. A simple connection system saves time when replacing individual modules without dismantling the entire combination. What's more, many of the components are certified to UL and ATEX.

## CAD models and configurator

Convenient aids for planning and selecting application-specific individual devices and combinations. The product configurator lets you configure customised solutions quickly and transfer the order data with no hassle.

### Engineering tools

Selection tool for choosing the right service unit without oversizing, and with the right air quality class:

→ [www.festo.com/engineering/wartungseinheit](http://www.festo.com/engineering/wartungseinheit)



## Integrated sensors

Pressure and flow sensors



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

### Safety functions

Soft-start/quick exhaust valves  
MS6-SV/MS9-SV



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

### Energy savings

Service units MSE6



- Fully automatic monitoring and regulation of 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 up to 18% smaller size
- 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
Port 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

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**Note**  
Information

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

You can find detailed information and all of the technical data in the documentation for the corresponding service unit component.

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





**Structure of a service unit**

The order of the individual components within a service unit is relevant for safety and functionality. It is not possible to assemble the service unit components in any order in the flow direction. There are restrictions and rules.

The configurator for service unit MSB is a reliable and convenient way of arranging individual service unit components. This ensures that the applicable rules are complied with. As a result, you get a completely assembled combination with UL or ATEX certification if you need it. When arranging a combination of individually configured and ordered service unit components, the points on the right must be adhered to under all circumstances.

- Regulators MS-LFR/LR/LRP/LRE 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 upstream of an activated carbon filter MS-LFX or membrane air dryer MS-LDM1 in the flow direction
- 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






**Total product range for MS series service unit components**

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Combinations</b>								
<b>Service units MSB-FRC</b> <span style="float: right;">Technical data → Internet: msb</span>								
	Combinations of filter regulator and lubricator	4	-	-	1/8, 1/4	-	-	-
		6	-	-	1/4, 3/8, 1/2	-	-	-
<b>Service units MSB</b> <span style="float: right;">Technical data → Internet: msb</span>								
	7 combinations, predefined	4	-	-	1/4	-	-	-
		6	-	-	1/2	-	-	-
	Combinations freely configurable	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
<b>Service units MSE6</b> <span style="float: right;">Technical data → Internet: mse6</span>								
	Combinations with fieldbus connection for measuring pressure, flow rate and consumption	6	-	-	-	-	1/2	-

# MS series service unit components

Key features









Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Filter regulators MS-LFR</b>							Technical data → Internet: ms-lfr	
	Filter and pressure regulator in a single device, grade of filtration 5 or 40 µm	2	QS-6	M5	–	–	–	–
		4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>Filters MS-LF</b>							Technical data → Internet: ms-lf	
	Grade of filtration 5 or 40 µm	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>Fine and micro filters MS-LFM</b>							Technical data → Internet: ms-lfm	
	Grade of filtration 0.01 or 1 µm	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>Activated carbon filters MS-LFX</b>							Technical data → Internet: ms-lfx	
	For removing liquid and gaseous oil particles	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>Water separators MS-LWS</b>							Technical data → Internet: ms-lws	
	Remove condensed water from compressed air, maintenance-free	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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–

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Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Pressure regulators MS-LR</b> <span style="float: right;">Technical data → Internet: ms-lr</span>								
	For setting the required operating pressure, 4 pressure regulation ranges	2	QS-6	M5	–	–	–	–
		4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>Pressure regulators MS-LRB</b> <span style="float: right;">Technical data → Internet: ms-lrb</span>								
	For creating a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.	4	–	–	1/4	–	1/8, 1/4, 3/8	–
		6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–
<b>Precision pressure regulators MS-LRP</b> <span style="float: right;">Technical data → Internet: ms-lrp</span>								
	For precise setting of the required operating pressure, 4 pressure regulation ranges, 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
<b>Precision pressure regulators MS-LRPB</b> <span style="float: right;">Technical data → Internet: ms-lrpb</span>								
	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	–
<b>Electrical pressure regulators MS-LRE</b> <span style="float: right;">Technical data → Internet: ms-lre</span>								
	Electrically adjustable pressure regulator, 4 pressure regulation ranges	6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
<b>Lubricators MS-LOE</b> <span style="float: right;">Technical data → Internet: ms-loe</span>								
	Add a precisely adjustable amount of oil to the compressed air. The oil mist component is proportional to the compressed air flow rate.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–

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Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>On/off valves MS-EM</b> <span style="float: right;">Technical data → Internet: ms-em</span>								
	Manually operated on/off valve for pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>On/off valves MS-EE</b> <span style="float: right;">Technical data → Internet: ms-ee</span>								
	Solenoid actuated on/off valve for pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>Soft-start valves MS-DL</b> <span style="float: right;">Technical data → Internet: ms-dl</span>								
	Pneumatically actuated soft-start valve for slowly pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>Soft-start valves MS-DE</b> <span style="float: right;">Technical data → Internet: ms-de</span>								
	Solenoid actuated soft-start valve for slowly pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
<b>Soft-start/quick exhaust valves MS-SV</b> <span style="float: right;">Technical data → Internet: ms-sv</span>								
	For building up pressure gradually and reducing pressure quickly and safely in pneumatic piping systems. Up to category 1, PL c.	6	–	–	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
	Up to category 3, PL d. Up to category 4, PL e in the case of optional extension.	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.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–

# MS series service unit components


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Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Membrane air dryers MS-LDM1</b>							Technical data → Internet: ms-ldm	
	Wear-free membrane dryer with internal air consumption	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
<b>Branching modules MS-FRM</b>								
							Technical data → Internet: ms-frm	
	Compressed air distributor with 4 connections	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	-
		6	-	-	1/4, 3/8, 1/2	-	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
		12	-	-	-	-	1, 1 1/4, 1 1/2, 2	-
<b>Distributor blocks MS-FRM-FRZ</b>								
							Technical data → Internet: ms-frm-frz	
	Compressed air distributor with 4 connections and half the grid dimension width	4	-	-	-	-	-	-
		6	-	-	-	-	-	-
<b>Flow sensors SFAM</b>								
							Technical data → Internet: sfam	
	For absolute flow rate information and accumulated air consumption measurement	6	-	-	-	-	1/2	1/2
		9	-	-	-	-	1, 1 1/2	1, 1 1/2

# Branching modules MS4/MS6-FRM, MS series

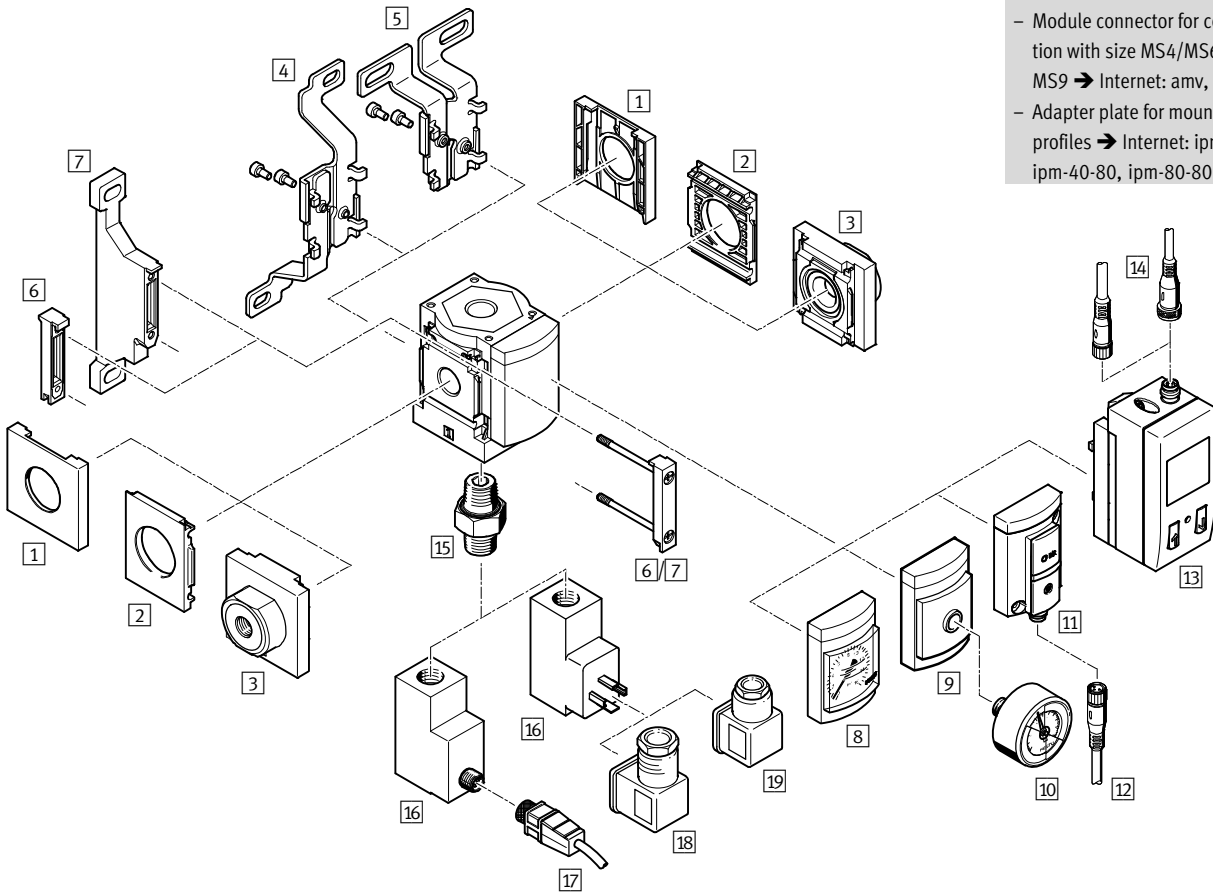
Peripherals overview

## Branching module MS4/MS6-FRM

-  - Note

Additional accessories:

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





## Branching modules MS4/MS6-FRM, MS series

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	–	■	–	ms4-end, ms6-end
2	Mounting plate MS4/6-AEND	■ <sup>1)</sup>	–	■ <sup>1)</sup>	–	ms4-aend, ms6-aend
3	Connecting plate-SET MS4/6-AG...	–	■ <sup>1)</sup>	–	■ <sup>1)</sup>	ms4-ag, ms6-ag
4	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	–	–	ms4-wbm
6	Module connector MS4/6-MV	–	■	■	■	ms4-mv, ms6-mv
7	Mounting bracket MS4/6-WP	■	■	■	■	ms4-wp, ms6-wp
	Mounting bracket (not illustrated) MS4/6-WPB/WPE/WPM	■	■	■	■	ms4-wp, ms6-wp
8	MS pressure gauge AG	■	■	■	■	16
9	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	16
10	Pressure gauge MA	■	■	■	■	35
11	Pressure sensor without display AD7 ... AD10	■	■	■	■	16
12	Connecting cable NEBU-M8...-LE3	■	■	■	■	35
13	Pressure sensor with display AD1 ... AD4	■	■	■	■	16
14	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	35
15	Double nipple ESK	■	■	■	■	36
16	Pressure switch PEV X/Y/M12	■	■	■	■	16
17	Connecting cable NEBU-M12...-LE4	■	■	■	■	35
18	Angled socket PEV-1/4-WD-LED...	■	■	■	■	36
19	Plug socket MSSD-C-4P	■	■	■	■	36

1) Module connector MS4/6-MV [6] or mounting bracket MS4/6-WP/WPB/WPE/WPM [7] is required for mounting.

# Branching modules MS4/MS6-FRM, MS series

Type codes

MS 4 - FRM - 1/4 - Y

**Series**

MS	Standard service unit
----	-----------------------

**Size**

4	Grid dimension 40 mm
6	Grid dimension 62 mm

**Service function**

FRM	Branching module
-----	------------------

**Pneumatic connection**

MS4	
1/8	Female thread G1/8
1/4	Female thread G1/4
MS6	
1/4	Female thread G1/4
3/8	Female thread G3/8
1/2	Female thread G1/2

**Non-return function/pressure switch**

	Standard
I	With integrated non-return function
Y	With pressure switch

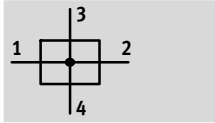
**Further variants can be ordered using the modular system → 16**

- Connecting plates
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Pressure switch
- Type of mounting
- EU certification
- UL certification
- Flow direction

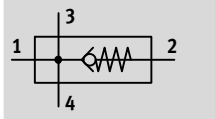
# Branching modules MS4/MS6-FRM, MS series




Technical data

Function  
Standard



With integrated non-return function



-  Flow rate  
1,200 ... 14,700 l/min
-  Temperature range  
-10 ... +60 °C
-  Operating pressure  
0 ... 20 bar



- Pneumatic manifold with 4 connections
- Can be used as an intermediate distributor for varying air qualities
- Attachment facility for auxiliary modules
- Outlet top and bottom
- An integrated non-return valve prevents the return flow e.g. of lubricated compressed air
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data		
Size	MS4	MS6
Pneumatic connection 1, 2	Female thread	G $\frac{1}{8}$ or G $\frac{1}{4}$
	Connecting plate AG...	G $\frac{1}{8}$ , G $\frac{1}{4}$ or G $\frac{3}{8}$
Pneumatic connection 3, 4	G $\frac{1}{4}$	G $\frac{1}{2}$
Design	Branching module	
	Branching module with non-return function	
Type of mounting	Via accessories	
	In-line installation	
Assembly position	Any <sup>1)</sup>	
Pressure display	Via pressure sensor for displaying output pressure via LCD display and electrical output	
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output	
	Via pressure gauge for displaying output pressure	
	Via pressure gauge with red/green scale for displaying output pressure	
	G $\frac{1}{4}$ prepared	
	G $\frac{1}{8}$ prepared	-

1) The branching module must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.  
 -  $\downarrow$  - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Standard nominal flow rate qnN <sup>1)</sup> [l/min]					
Size	MS4		MS6		
	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Standard					
In main flow direction 1 $\rightarrow$ 2	1,800	4,600	4,200	9,200	14,700
Outlet at top	1,600	1,500	6,000	4,700	4,400
Outlet at bottom	1,700	1,500	6,400	4,800	4,600
With non-return function					
In main flow direction 1 $\rightarrow$ 2	1,200	1,750	3,200	5,500	6,000
Outlet at top	500	500	2,700	2,900	3,100
Outlet at bottom	500	500	2,800	3,200	3,300

1) Measured at p<sub>1</sub> = 6 bar and p<sub>2</sub> = 5 bar, Δp = 1 bar

# Branching modules MS4/MS6-FRM, MS series

Technical data

Operating and environmental conditions						
Size	MS4			MS6		
Variant	Standard	Non-return function I	Pressure switch X/Y/M12	Standard	Non-return function I	Pressure switch X/Y/M12
Operating pressure [bar]	0 ... 14 (0 ... 10) <sup>1)</sup>	0 ... 10	0 ... 12 (0 ... 10) <sup>1)</sup>	0 ... 20 (0 ... 10) <sup>1)</sup>	0 ... 20 (0 ... 10) <sup>1)</sup>	0 ... 12 (0 ... 10) <sup>1)</sup>
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4] Inert gases					
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)					
Ambient temperature [°C]	-10 ... +60 (0 ... +50) <sup>2)</sup>					
Temperature of medium [°C]	-10 ... +60 (0 ... +50) <sup>2)</sup>					
Storage temperature [°C]	-10 ... +60					
Corrosion resistance class CRC <sup>3)</sup>	2					
Food-safe <sup>4)</sup>	See supplementary material information					
UL certification <sup>4)</sup>	cULus recognized (OL)					

1) Value in brackets applies to MS4/MS6-FRM with pressure sensor AD... or with UL certification.

2) Value in brackets applies to MS4/MS6-FRM with pressure sensor AD...

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

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

4) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

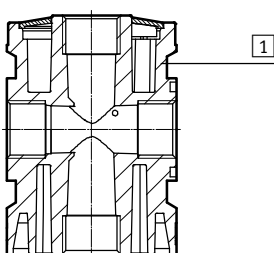
ATEX	
EU certification	EX4
ATEX category gas	II 2G
Ex-ignition protection type gas	Ex h IIC T6 Gb X
ATEX category dust	II 2D
EX-ignition protection type dust	Ex h IIIC T60°C Db X
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
CE mark (see declaration of conformity) <sup>1)</sup>	To EU Explosion Protection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

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

Weight [g]		
Size	MS4	MS6
Branching module	165	458
Branching module with non-return function I	160	400
Branching module with pressure sensor AD...	255	528
Branching module with pressure switch X/Y/M12	405	736

## Materials

Sectional view



Branching module	
1) Housing	Die-cast aluminium
Note on materials	RoHS-compliant
	Free of copper and PTFE (not with variants AG or AD...)

# Branching modules MS4/MS6-FRM, MS series

Technical data

## Dimensions – Basic version

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

With female thread, with cover plate



Type	B1	B2	B3	D1	D2	L1	L2	L3
MS4-FRM-1/8	40	21	54	G1/8	G1/4	60.4	27	58
MS4-FRM-1/4				G1/4				
MS6-FRM-1/4	62	31	76	G1/4	G1/2	87.2	39	84.5
MS6-FRM-3/8				G3/8				
MS6-FRM-1/2				G1/2				

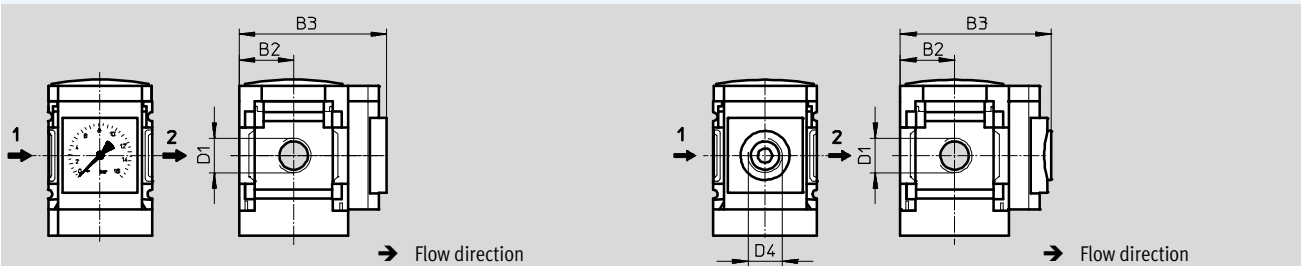
Note: This product conforms to ISO 1179-1 and to ISO 228-1

## Dimensions – Pressure gauge/pressure gauge alternatives

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

Integrated MS pressure gauge with standard scale AG or red-green scale RG, display unit [bar]

Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge



Type	B2	B3		D1	D4
		Standard	With integrated non-return function I		
MS4-FRM-1/8-...-AG	21	65		G1/8	-
MS4-FRM-1/4-...-AG				G1/4	
MS4-FRM-1/8-...-RG	21	66.5		G1/8	-
MS4-FRM-1/4-...-RG				G1/4	
MS4-FRM-1/8-...-A8	21	58.5		G1/8	G1/8
MS4-FRM-1/4-...-A8				G1/4	
MS4-FRM-1/8-...-A4	21	58.5		G1/8	G1/4
MS4-FRM-1/4-...-A4				G1/4	
MS6-FRM-1/4-...-AG	31	77	85	G1/4	-
MS6-FRM-3/8-...-AG				G3/8	
MS6-FRM-1/2-...-AG				G1/2	
MS6-FRM-1/4-...-RG	31	78.5	86.5	G1/4	-
MS6-FRM-3/8-...-RG				G3/8	
MS6-FRM-1/2-...-RG				G1/2	
MS6-FRM-1/4-...-A4	31	78.5		G1/4	G1/4
MS6-FRM-3/8-...-A4				G3/8	
MS6-FRM-1/2-...-A4				G1/2	

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

# Branching modules MS4/MS6-FRM, MS series

Technical data



**Dimensions – Pressure gauge/pressure gauge alternatives** Download CAD data → [www.festo.com](http://www.festo.com)  
 Pressure sensor with LCD display AD1 ... AD4 Technical data → Internet: sde1

Variant AD1:  
SDE1-D10-G2-MS-L-P1-M8 with 3-pin plug M8x1, 1 switch output PNP

Variant AD2:  
SDE1-D10-G2-MS-L-N1-M8 with 3-pin plug M8x1, 1 switch output NPN

Variant AD3:  
SDE1-D10-G2-MS-L-PI-M12 with 4-pin plug M12x1, 1 switch output PNP and 4 ... 20 mA analogue

Variant AD4:  
SDE1-D10-G2-MS-L-NI-M12 with 4-pin plug M12x1, 1 switch output NPN and 4 ... 20 mA analogue

→ Flow direction

Pressure sensor with operational status indicator AD7 ... AD10 Technical data → Internet: sde5

Variant AD7:  
SDE5-D10-O-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact

Variant AD8:  
SDE5-D10-C-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/C contact

Variant AD9:  
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

Variant AD10:  
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

→ Flow direction

Type	B2	B3	D1	D6	L5	L6
MS4-FRM-1/8-...-AD1/AD2	21	82.6	G1/8	M8x1	35.1	46.7
MS4-FRM-1/4-...-AD1/AD2			G1/4			
MS4-FRM-1/8-...-AD3/AD4	21	82.6	G1/8	M12x1	35.1	55.8
MS4-FRM-1/4-...-AD3/AD4			G1/4			
MS4-FRM-1/8-...-AD7/AD8/AD9/AD10	21	59	G1/8	M8x1	-	-
MS4-FRM-1/4-...-AD7/AD8/AD9/AD10			G1/4			
MS6-FRM-1/4-...-AD1/AD2	31	103	G1/4	M8x1	35.1	46.7
MS6-FRM-3/8-...-AD1/AD2			G3/8			
MS6-FRM-1/2-...-AD1/AD2			G1/2			
MS6-FRM-1/4-...-AD3/AD4	31	103	G1/4	M12x1	35.1	55.8
MS6-FRM-3/8-...-AD3/AD4			G3/8			
MS6-FRM-1/2-...-AD3/AD4			G1/2			
MS6-FRM-1/4-...-AD7/AD8/AD9/AD10	31	79	G1/4	M8x1	-	-
MS6-FRM-3/8-...-AD7/AD8/AD9/AD10			G3/8			
MS6-FRM-1/2-...-AD7/AD8/AD9/AD10			G1/2			

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

# Branching modules MS4/MS6-FRM, MS series

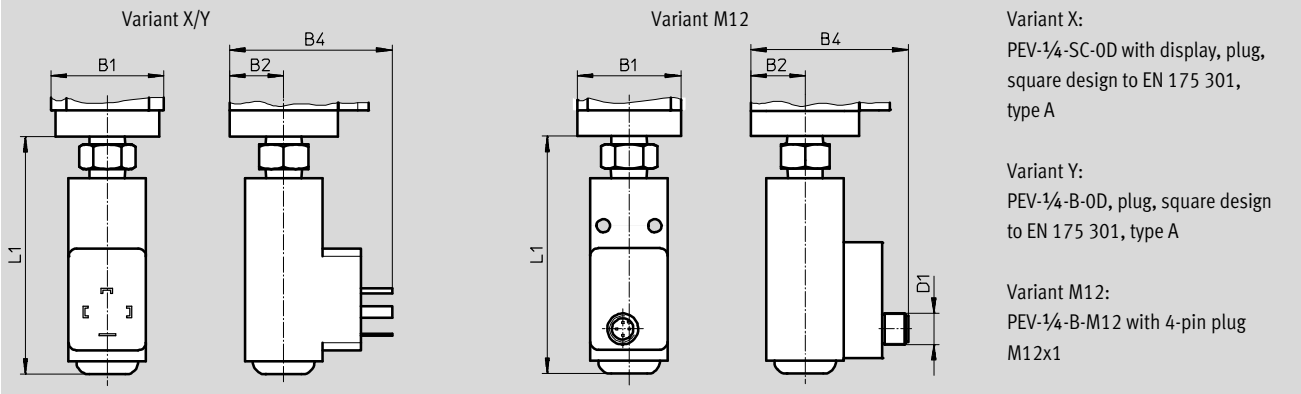
Technical data

## Dimensions – Pressure switch

Pressure switch with adjustable pressure switching point X/Y/M12

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

Technical data → Internet: pev-1/4



Variant X:  
PEV-1/4-SC-0D with display, plug, square design to EN 175 301, type A

Variant Y:  
PEV-1/4-B-0D, plug, square design to EN 175 301, type A

Variant M12:  
PEV-1/4-B-M12 with 4-pin plug M12x1

Type	B1	B2	B4	D1	L1
MS4-FRM-...-X/Y	40	21	63	–	92.3
MS4-FRM-...-M12	40	21	61	M12x1	92.3
MS6-FRM-...-X/Y	62	31	73	–	99.5
MS6-FRM-...-M12	62	31	71	M12x1	99.5

## ★ Core product range

Ordering data			
Size	Connection	Part No.	Type
MS6	G1/4	★ 529857	MS6-FRM-1/4
	G1/2	★ 529853	MS6-FRM-1/2

Ordering data			
Size	Connection	Part No.	Type
MS4	G1/8	529559	MS4-FRM-1/8
	G1/4	529555	MS4-FRM-1/4
MS6	G3/8	529861	MS6-FRM-3/8
With integrated non-return function			
MS4	G1/4	536966	MS4-FRM-1/4-I
MS6	G1/4	536967	MS6-FRM-1/4-I
	G1/2	536969	MS6-FRM-1/2-I
With pressure switch PEV-1/4-B-0D (variant Y)			
MS4	G1/4	529556	MS4-FRM-1/4-Y
MS6	G1/4	529858	MS6-FRM-1/4-Y
	G3/8	529862	MS6-FRM-3/8-Y
	G1/2	529854	MS6-FRM-1/2-Y

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

# Branching modules MS4/MS6-FRM, MS series

Ordering data – Modular products

**M** Mandatory data →

Module No.	Series	Size	Function	Pneumatic connection
527703 527676	MS	4 6	FRM	1/8, 1/4, 3/8, 1/2, AG...
<b>Order example</b>				
<b>527676</b>	<b>MS</b>	<b>6</b>	<b>- FRM</b>	<b>- 3/8</b>

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
<b>M</b> Module No.		<b>527703</b>	<b>527676</b>			
Series		Standard			<b>MS</b>	MS
Size		4	6		...	
Function		Branching module			<b>-FRM</b>	-FRM
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	-		<b>-AGA</b>	
		Connecting plate G1/4	Connecting plate G1/4		<b>-AGB</b>	
		Connecting plate G3/8	Connecting plate G3/8		<b>-AGC</b>	
		-	Connecting plate G1/2		<b>-AGD</b>	
	-	Connecting plate G3/4		<b>-AGE</b>		

1 1/8, 1/4, 3/8, 1/2, AD1 ... AD4, AD7 ... AD10, X, Y, M12, WPM  
Not with EU certification EX4

Transfer order code

	<b>MS</b>		-	<b>FRM</b>		-	
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# Branching modules MS4/MS6-FRM, MS series

Ordering data – Modular products

Options							
Auxiliary function	Pressure gauge/ pressure gauge alternatives	Alternative pressure gauge scale	Pressure switch	Type of mounting	EU certification	UL certification	Flow direction
I	AG, A8, A4, RG, AD1 ... AD4, AD7 ... AD10	PSI, MPA	X, Y, M12	WP, WPM, WB, WBM	EX4	UL1	Z
-	- AG	-	-	-	-	-	-

Ordering table							
Grid dimension	[mm]	40	62	Conditions	Code	Enter code	
0	Auxiliary function	With integrated non-return function				-I	
	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar				-AG	
		Adapter plate for EN pressure gauge 1/8, without pressure gauge			-	-A8	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4	
		Integrated pressure gauge, red-green scale				-RG	
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin			1 2	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin			1 2	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			1 2	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			1 2	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact			1 2	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact			1 2	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact			1 2	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact			1 2	-AD10	
		Alternative pressure gauge scale	psi			3	-PSI
	MPa			4	-MPA		
	Pressure switch	Pressure switch PEV with display, plug socket, EN 175301, type A, square			1 5	-X	
		Pressure switch PEV without display, plug socket, EN 175301, type A, square			1 5	-Y	
		Pressure switch PEV without display, plug socket, round, M12, 4-pin			1 5	-M12	
	Type of mounting	Mounting bracket standard design			6	-WP	
		Mounting bracket for attaching the service units			1 6	-WPM	
		Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required				-WB	
		Mounting bracket centrally at rear (wall mounting top), connecting plates not required			-	-WBM	
	EU certification	II 2GD to EU Explosion Protection Directive (ATEX)				-EX4	
	UL certification	cULus, ordinary location for Canada and USA				-UL1	
	Flow direction	Flow direction from right to left				-Z	

2 AD1 ... AD4, AD7 ... AD10

Measuring range max. 10 bar

3 PSI

Only in combination with pressure gauge AG

4 MPA

Only in combination with pressure gauge AG or RG

5 X, Y, M12

Max. permissible operating pressure P1 = 12 bar.

6 WP, WPM

Only with connecting plate AGA, AGB, AGC, AGD or AGE

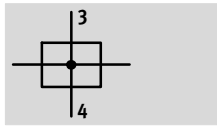
### Transfer order code

- [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

# Distributor blocks MS4/MS6-FRM-FRZ, MS series

## Technical data

### Function



- - Flow rate  
2,900 ... 14,600 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
0 ... 20 bar



### Note

The distributor block MS4/6-FRM-FRZ has a half grid dimension width.

- Pneumatic manifold with 4 connections
- Outlet top and bottom
- Can be used as an intermediate distributor for varying air qualities
- Can be used as an intermediate distributor between two pressure regulators with large rotary knob with pressure gauge on size MS4

General technical data		
Size	MS4	MS6
Pneumatic connection 3, 4	G $\frac{1}{4}$	G $\frac{1}{2}$
Design	Branching module	
Type of mounting	Via accessories	
	In-line installation	
Assembly position	Any	

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

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]		
Size	MS4	MS6
In main flow direction 1 $\rightarrow$ 2	4,050	14,600
Outlet at top	3,250	10,400
Outlet at bottom	2,900	9,850

1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar

Operating and environmental conditions		
Size	MS4	MS6
Operating pressure [bar]	0 ... 14 (0 ... 10) <sup>1)</sup>	0 ... 20 (0 ... 10) <sup>1)</sup>
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
	Inert gases	
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)	
Ambient temperature [°C]	-10 ... +60	
Temperature of medium [°C]	-10 ... +60	
Storage temperature [°C]	-10 ... +60	
Corrosion resistance class CRC <sup>2)</sup>	2	
UL certification <sup>3)</sup>	cULus recognized (OL)	

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

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

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

3) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

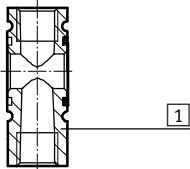
# Distributor blocks MS4/MS6-FRM-FRZ, MS series

Technical data

Weight [g]		
Size	MS4	MS6
Distributor block	60	163

## Materials

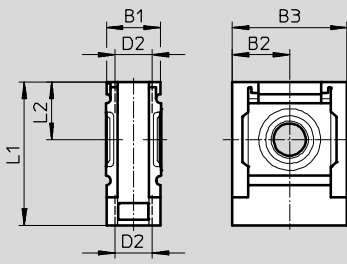
Sectional view



Distributor block	
1 Housing	Die-cast aluminium
Note on materials	RoHS-compliant
	Free of copper and PTFE

## Dimensions

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



Type	B1	B2	B3	D2	L1	L2
MS4-FRM-FRZ	20	21	42	G1/4	52.5	21
MS6-FRM-FRZ	31	31	62	G1/2	76.5	31

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

## ★ Core product range

Ordering data		
Size	Part No.	Type
MS4	★ 549336	MS4-FRM-FRZ
MS6	★ 549337	MS6-FRM-FRZ

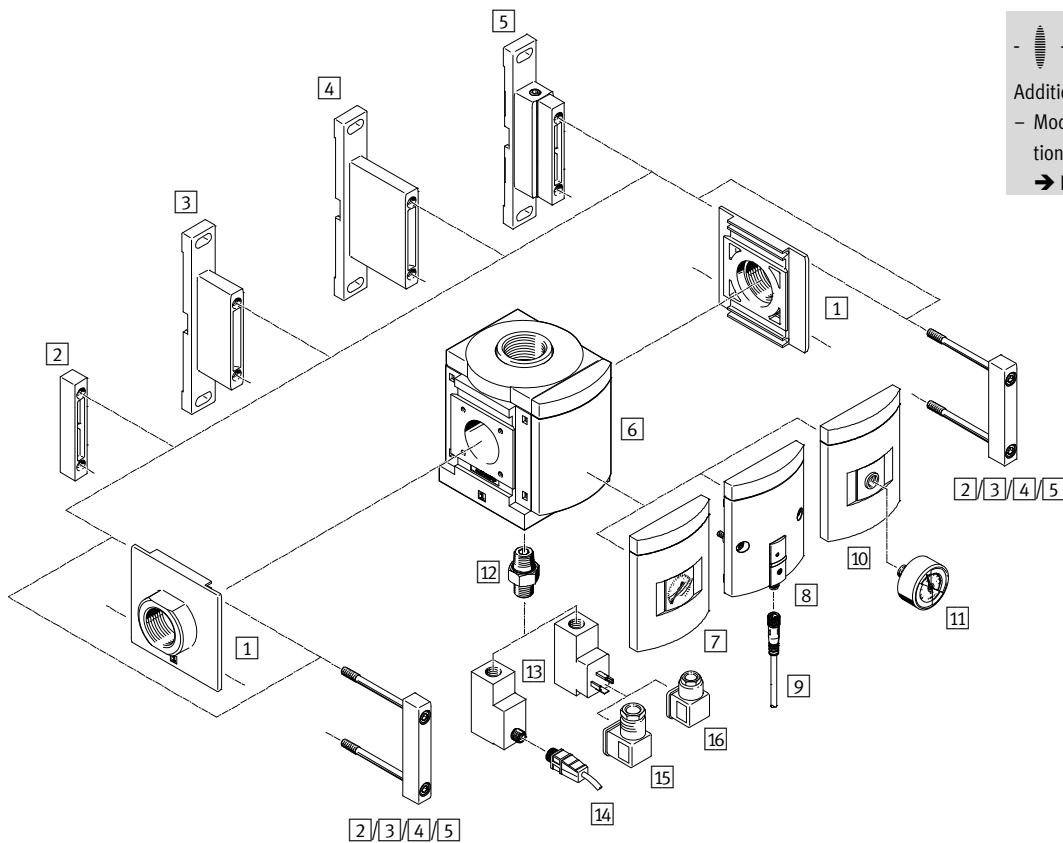
Festo core product range


- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

# Branching modules MS9-FRM, MS series

Peripherals overview

FESTO



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

## Branching modules MS9-FRM, MS series

Peripherals overview

Mounting attachments and accessories					
		Individual component		Combination Module without connect- ing thread, without connecting plate G/NG	→ Page/ Internet
		With female thread 3/4/1/N3/4/N1	With connecting plate AG.../AQ...		
			Without EU certification EX4	With EU certification EX4	
1	Connecting plate-SET MS9-AG...	-	■	■	ms9-ag
	Connecting plate-SET MS9-AQ...	-	■	-	ms9-aq
2	Module connector MS9-MV	-	-	-	ms9-mv
3	Mounting bracket MS9-WP	■	■	■	ms9-wp
4	Mounting bracket MS9-WPB	■	■	■	ms9-wp
5	Mounting bracket MS9-WPM	■	■	-	ms9-wp
6	Cover plate VS	■	■	■	28
7	MS pressure gauge AG	■	■	■	28
8	Pressure sensor without display AD7 ... AD10	■	■	-	28
9	Connecting cable NEBU-M8...-LE3	■	■	-	35
10	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	28
11	Pressure gauge MA	■	■	■	35
12	Double nipple (included in the scope of delivery) ESK	■	■	-	-
13	Pressure switch PEV X/Y/M12	■	■	-	28
14	Connecting cable NEBU-M12...-LE4	■	■	-	35
15	Angled socket PEV-1/4-WD-LED-...	■	■	-	36
16	Plug socket MSSD-C-4P	■	■	-	36

# Branching modules MS9-FRM, MS series

Type codes

FESTO

MS		9	-	FRM	-	G	-	VS	-	Y
<b>Series</b>										
MS	Standard service unit									
<b>Size</b>										
9	Grid dimension 90 mm									
<b>Service function</b>										
FRM	Branching module									
<b>Pneumatic connection</b>										
G	Module without connecting thread, without connecting plate									
NG	Module without connecting thread, without connecting plate (pneumatic connections 3 and 4 in NPT)									
<b>Pressure gauge alternatives</b>										
VS	Cover plate									
<b>Pressure switch</b>										
	Without pressure switch									
Y	With pressure switch									

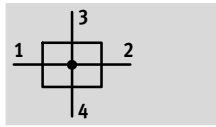
## Additional variants can be ordered using the modular system → 28

- Pneumatic connection
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Pressure switch
- Type of mounting
- EU certification
- UL certification
- Flow direction

# Branching modules MS9-FRM, MS series

Technical data

Function



- - Flow rate  
10,000 ... 50,000 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
0 ... 20 bar
- - [www.festo.com](http://www.festo.com)



- Pneumatic manifold with 4 connections
- Attachment facility for auxiliary modules
- Outlet at top and bottom
- Can be used as an intermediate distributor for varying air qualities
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22
- Optional pressure sensor

General technical data	
Pneumatic connection 1, 2	
Female thread	G3/4, G1, NPT3/4 or NPT1
Connecting plate AG...	G1/2, G3/4, G1, G1 1/4 or G1 1/2
Connecting plate AQ...	NPT1 1/2, NPT3/4, NPT1, NPT1 1/4 or NPT1 1/2
Module without connecting thread/plate G/NG	-
Pneumatic connection 3, 4	G1 (pneumatic connection 1, 2: 3/4/1/AG.../G) NPT1-1 1/2 (pneumatic connection 1, 2: N3/4/N1/AQ.../NG)
Design	Branching module
Type of mounting	Via accessories In-line installation Front panel mounting
Mounting position	Any <sup>1)</sup>
Pressure display	Via pressure sensor for displaying output pressure via operational status indicator and electrical output Via pressure gauge for displaying output pressure Via pressure gauge with red/green scale for displaying output pressure G1/4 prepared

1) The branching module 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 to ISO 228-1

Standard nominal flow rate q <sub>nN</sub> <sup>1)</sup> [l/min]					
Pneumatic connection	Connecting plate AGD/AQR	Female thread G3/4/NPT3/4, connecting plate AGE/AQS	Female thread G1/NPT1, connecting plate AGF/AQT	Connecting plate AGG/AQU	Connecting plate AGH/AQV
In main flow direction 1 → 2	10,000	25,000	45,000	47,000	50,000
Outlet at top	13,000				
Outlet at bottom	13,000				

1) Measured at p<sub>1</sub> = 6 bar and p<sub>2</sub> = 5 bar, Δp = 1 bar

# Branching modules MS9-FRM, MS series

Technical data

Operating and environmental conditions			
Variant	Standard	Pressure switch X/Y/M12	Pressure sensor AD...
Operating pressure [bar]	0 ... 20	0 ... 12	0 ... 10
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Operation with lubricated medium possible		
Ambient temperature [°C]	-10 ... +60	-10 ... +60	0 ... +50
Temperature of medium [°C]	-10 ... +60	-10 ... +60	0 ... +50
Storage temperature [°C]	-10 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class CRC <sup>1)</sup>	2		
UL certification <sup>2)</sup>	cULus recognized (OL)		

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

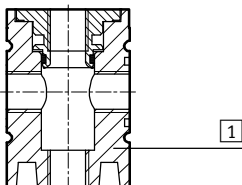
ATEX	
EU certification	EX4
ATEX category gas	II 2G
Ex-ignition protection type gas	Ex h IIC T6 Gb X
ATEX category dust	II 2D
EX-ignition protection type dust	Ex h IIIC T60°C Db X
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
CE mark (see declaration of conformity) <sup>1)</sup>	To EU Explosion Protection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

- 1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

Weight [g]	
Branching module	1,000
Branching module with pressure switch X/Y/M12	1,100

## Materials

Sectional view



Branching module		
1	Housing	Die-cast aluminium
-	Cover	PA reinforced
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
Note on materials		RoHS-compliant
		Free of copper and PTFE (not with variant AG)



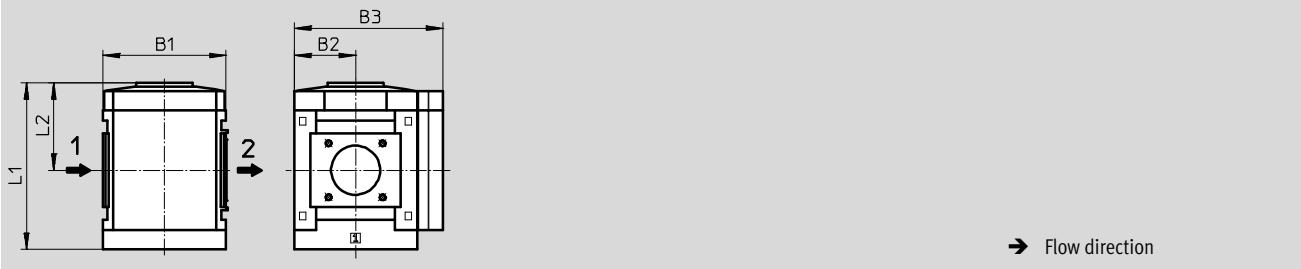
# Branching modules MS9-FRM, MS series

Technical data

## Dimensions – Basic version

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

Module without connecting thread, without connecting plate G/NG, with cover plate VS



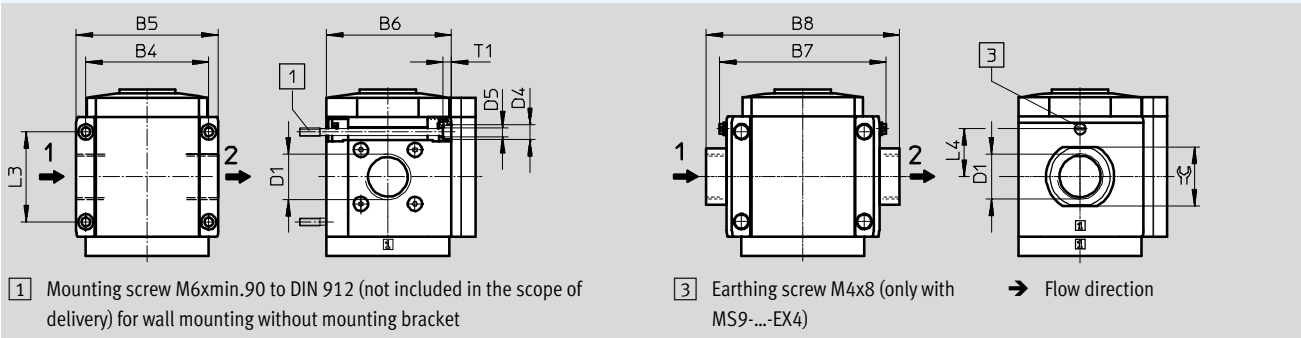
Type	B1	B2	B3	L1	L2
MS9-FRM-G/NG	90	45	109	122	64

## Dimensions – Connecting thread/connecting plate

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

With female thread 3/4/1/N3/4/N1

With connecting plate AG.../AQ...



1 Mounting screw M6xmin.90 to DIN 912 (not included in the scope of delivery) for wall mounting without mounting bracket

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

Type	B4	B5	B6	B7		B8	D1	D4	D5	L3	L4		T1	≙
					EX4							EX4		
MS9-FRM-3/4	90	104	91.5	-	-	-	G3/4	11	6.5	66	-	6	-	-
MS9-FRM-1							G1							
MS9-FRM-AGD	-	-	-	112	122	-	G1/2	-	-	-	35	-	-	30
MS9-FRM-AGE							G3/4							36
MS9-FRM-AGF							G1							41
MS9-FRM-AGG							G1 1/4							50
MS9-FRM-AGH							G1 1/2							55
MS9-FRM-N3/4	90	104	91.5	-	-	-	NPT3/4-14	11	6.5	66	-	6	-	-
MS9-FRM-N1							NPT1-11 1/2							
MS9-FRM-AQR	-	-	-	112	-	-	NPT1/2-14	-	-	-	-	-	-	30
MS9-FRM-AQS							NPT3/4-14							36
MS9-FRM-AQT							NPT1-11 1/2							41
MS9-FRM-AQU							NPT1 1/4-11 1/2							50
MS9-FRM-AQV							NPT1 1/2-11 1/2							55

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

# Branching modules MS9-FRM, MS series

Technical data

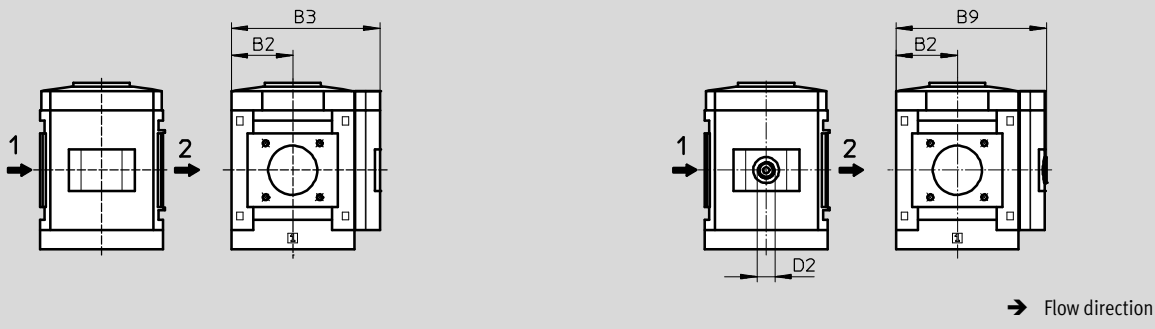
**FESTO**

## Dimensions – Pressure gauge/pressure gauge alternatives

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

Integrated MS pressure gauge with standard scale AG or red/green scale RG

Adapter plate A4 for EN pressure gauge 1/4, without pressure gauge



Type	B2	B3	B9	D2
MS9-FRM-...-AG/RG	45	109	-	-
MS9-FRM-...-A4		-	110	G <sup>1</sup> / <sub>4</sub>

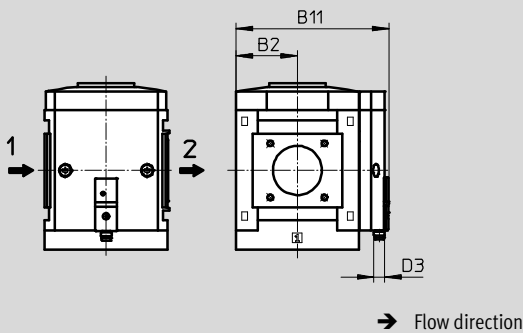
– † – Note: This product conforms to ISO 1179-1 and to ISO 228-1

## Dimensions – Pressure gauge/pressure gauge alternatives

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

Pressure sensor with operational status indicator AD7 ... AD10

Technical data → Internet: [sde5](http://sde5)



Variant AD7:  
SDE5-D10-O-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact

Variant AD9:  
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

Variant AD8:  
SDE5-D10-C-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/C contact

Variant AD10:  
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

Type	B2	B11	D3
MS9-FRM-...-AD7/AD8/AD9/AD10	45	112	M8

# Branching modules MS9-FRM, MS series

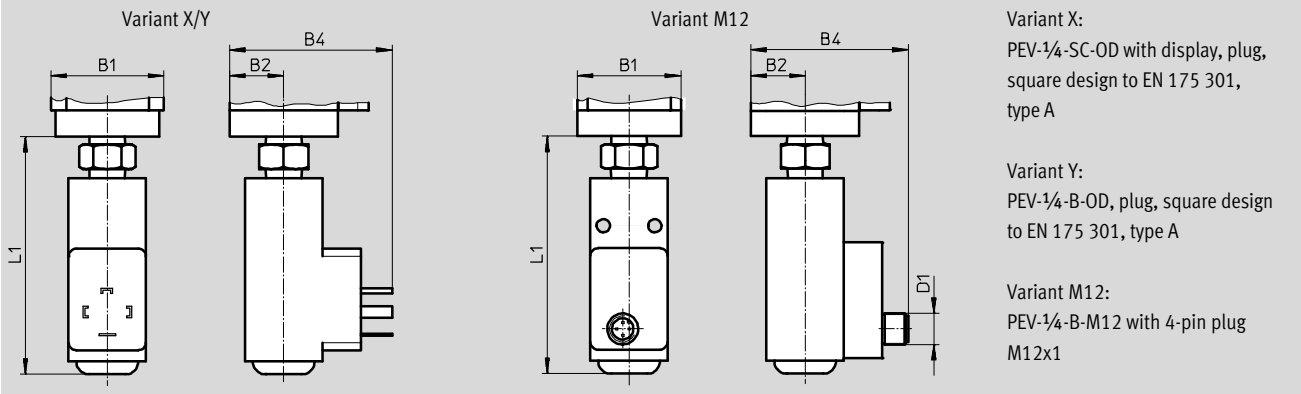
Technical data

## Dimensions – Pressure switch

Pressure switch with adjustable pressure switching point X/Y/M12

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

Technical data → Internet: pev-1/4



Variant X:  
PEV-1/4-SC-OD with display, plug, square design to EN 175 301, type A

Variant Y:  
PEV-1/4-B-OD, plug, square design to EN 175 301, type A

Variant M12:  
PEV-1/4-B-M12 with 4-pin plug M12x1

Type	B1	B2	B4	D1	L1
MS9-FRM-...-X/Y	90	45	87	–	105
MS9-FRM-...-M12	90	45	85	M12x1	105

## Ordering data

Size	Standard		With pressure switch PEV-1/4-B-OD (variant Y)	
	Part No.	Type	Part No.	Type
Cover plate				
MS9	564145	MS9-FRM-G-VS	564147	MS9-FRM-G-VS-Y
Pneumatic connections 3 and 4 in NPT, cover plate				
MS9	564148	MS9-FRM-NG-VS	564150	MS9-FRM-NG-VS-Y

# Branching modules MS9-FRM, MS series

Ordering data – Modular products

**M** Mandatory data →

Module No.	Series	Size	Function	Pneumatic connection
562534	MS	9	FRM	¾, 1, AG..., N¾, N1, AQ..., G, NG
<b>Ordering example</b>				
<b>562534</b>	<b>MS</b>	<b>9</b>	<b>- FRM</b>	<b>- AGE</b>

**Ordering table**

Grid dimension	[mm]	90	Condi- tions	Code	Enter code
<b>M</b> Module No.	<b>562534</b>				
Series	Standard			<b>MS</b>	MS
Size	9			<b>9</b>	9
Function	Branching module			<b>-FRM</b>	-FRM
Pneumatic connection	Female thread G¾		1	-¾	
	Female thread G1		1	-1	
	Connecting plate G½			-AGD	
	Connecting plate G¾			-AGE	
	Connecting plate G1			-AGF	
	Connecting plate G1¼			-AGG	
	Connecting plate G1½			-AGH	
	Female thread NPT¾		1	-N¾	
	Female thread NPT1		1	-N1	
	Connecting plate NPT½		1	-AQR	
	Connecting plate NPT¾		1	-AQS	
	Connecting plate NPT1		1	-AQT	
	Connecting plate NPT1¼		1	-AQU	
	Connecting plate NPT1½		1	-AQV	
	Module without connecting thread, without connecting plate		1	-G	
	Module without connecting thread, without connecting plate (pneumatic connections 3 and 4 in NPT)		1	-NG	

1 ¾, 1, N¾, N1, AQR, AQS, AQT, AQU, AQV, G, NG, AD7, AD8, AD9, AD10, X, Y, M12,  
WPM

Not with EU certification EX4

Transfer order code

562534 MS 9 - FRM -

# Branching modules MS9-FRM, MS series

Ordering data – Modular products

<b>M</b>	<b>O Options</b>					
<b>Pressure gauge/ pressure gauge alternatives</b>	<b>Alternative pressure gauge scale</b>	<b>Pressure switch</b>	<b>Type of mounting</b>	<b>EU certification</b>	<b>UL certification</b>	<b>Flow direction</b>
AG, VS, A4, RG, AD7 ... AD10	PSI, MPA, BAR	X, Y, M12	WP, WPM, WPB	EX4	UL1	Z
- <b>VS</b>	-	-	-	-	-	-

Ordering table		Grid dimension [mm]	90	Conditions	Code	Enter code
<b>M</b>	Pressure gauge/pressure gauge alternatives	MS pressure gauge			<b>-AG</b>	
		Cover plate			<b>-VS</b>	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge			<b>-A4</b>	
		Integrated pressure gauge, red/green scale		2	<b>-RG</b>	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact		1 3	<b>-AD7</b>	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact		1 3	<b>-AD8</b>	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact		1 3	<b>-AD9</b>	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact		1 3	<b>-AD10</b>	
<b>O</b>	Alternative pressure gauge scale	psi		4	<b>-PSI</b>	
		MPa		4	<b>-MPA</b>	
		bar		4	<b>-BAR</b>	
	Pressure switch	Pressure switch PEV with display, plug socket, EN175301, type A, cube		1 5	<b>-X</b>	
		Pressure switch PEV without display, plug socket, EN 175301, type A, cube		1 5	<b>-Y</b>	
		Pressure switch PEV without display, plug socket, round, M12, 4-pin		1 5	<b>-M12</b>	
	Type of mounting	Mounting bracket standard design		6	<b>-WP</b>	
		Mounting bracket for attaching the service units		1 6	<b>-WPM</b>	
		Mounting bracket for large wall gap		6	<b>-WPB</b>	
	EU certification	II 2GD to EU Explosion Protection Directive (ATEX)			<b>-EX4</b>	
UL certification	cULus, ordinary location for Canada and USA			<b>-UL1</b>		
Flow direction	Flow direction from right to left			<b>-Z</b>		

1 3/4, 1, N3/4, N1, AQR, AQS, AQT, AQU, AQV, G, NG, AD7, AD8, AD9, AD10, X, Y, M12, WPM

5 X, Y, M12

Max. permissible operating pressure P1 = 12 bar

6 WP, WPM, WPB

Not with pneumatic connection G/NG

2 RG

Not with EU certification EX4

Not with alternative pressure gauge scale PSI,

PSI scale serves only as an auxiliary scale

3 AD7 ... AD10

Measuring range max. 10 bar

4 PSI, MPA, BAR

Not with pressure gauge alternatives VS, A4, AD7, AD8, AD9, AD10

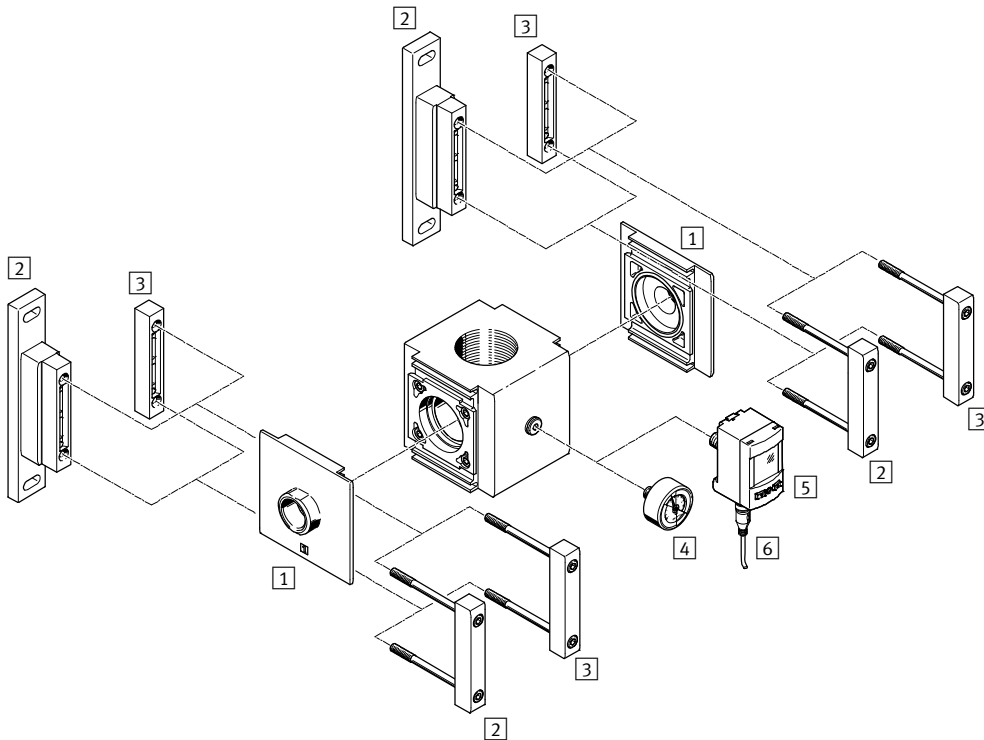
Transfer order code


- [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

# Branching modules MS12-FRM, MS series

Peripherals overview

## Branching modules MS12-FRM



-  - Note  
 Additional accessories:  
 - Module connector for combination with size MS9 → Internet: armv

Mounting attachments and accessories		→ Page/Internet
1	Connecting plate-SET MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	Pressure gauge MA	35
5	Pressure sensor SPAU	35
6	Connecting cable NEBU-M8...-LE4/NEBU-M12...-LE4	35

## Branching modules MS12-FRM, MS series

Type codes

		MS	12	-	FRM	-	G
<b>Series</b>							
MS	Standard service unit						
<b>Size</b>							
12	Grid dimension 124 mm						
<b>Service function</b>							
FRM	Branching module						
<b>Connection size</b>							
G	Module without connecting thread, without connecting plate Connecting plates → Accessories						

Further variants can be ordered using the modular system → 34

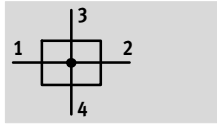
- Connecting plates
- Type of mounting




# Branching modules MS12-FRM, MS series

Technical data

FESTO

Function




-  - Flow rate  
25,000 ... 42,000 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Operating pressure  
0 ... 20 bar



- Pneumatic manifold with 4 connections
- Attachment facility for auxiliary modules
- Outlet top and bottom
- Can be used as an intermediate distributor for varying air qualities

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	-
Pneumatic connection 3	G2
Pneumatic connection 4	G1
Design	Branching module
Type of mounting	Via accessories
	In-line installation
Assembly position	Any

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

Standard nominal flow rate $q_{nN}^1$ [l/min]	
In main flow direction 1 $\rightarrow$ 2	25,000 ... 42,000

1) Dependent on connecting plate AG... selected  
Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar

Operating and environmental conditions		
Operating pressure	[bar]	0 ... 20
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [-:-:-]
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Storage temperature	[°C]	-10 ... +60
Corrosion resistance	CRC <sup>1)</sup>	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.



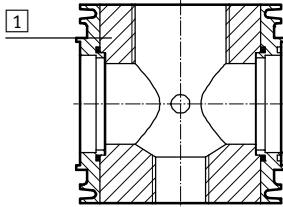
# Branching modules MS12-FRM, MS series

Technical data

Weights [g]	
Branching module	3,000

## Materials

Sectional view



Branching module	
1 Body	Die-cast aluminium
- Seals	NBR
- Connecting plate, module connector, mounting bracket	Die-cast aluminium
Note on materials	Free of copper and PTFE

## Dimensions – Basic version

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

Without connecting thread G

1 G $\frac{1}{4}$  Female thread in body, sealed with cover plate by default

→ Flow direction

Type	B1	B2	B3	D2	D3	D4	L1	L2
MS12-FRM-G	124	124	134	G2	G1	G $\frac{1}{4}$	122	61

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

Ordering data		
Size	Part No.	Type
MS12	541681	MS12-FRM-G

# Branching modules MS12-FRM, MS series

Ordering data – Modular products

M Mandatory data				O Options		
Module No.	Series	Size	Function	Pneumatic connection	Type of mounting	
535035	MS	12	FRM	AG..., G	WP	
<b>Order example</b>						
<b>535035</b>	<b>MS</b>	<b>12</b>	<b>- FRM</b>	<b>- AGF</b>	<b>- WP</b>	

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535035			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	Branching module		-FRM	-FRM
	Pneumatic connection	Connecting plate G1		-AGF	
		Connecting plate G1¼		-AGG	
		Connecting plate G1½		-AGH	
		Connecting plate G2		-AGI	
		Module without connecting thread, without connecting plate		-G	
O	Type of mounting	Mounting bracket standard design	1	-WP	

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


Transfer order code


535035	MS	12	- FRM	-		-	
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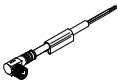
## Branching modules/distributor blocks MS-FRM, MS series

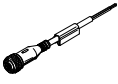

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Accessories

Ordering data – Pressure gauge MA							Technical data → Internet: ma	
	Nominal size	Pneumatic connection	Display range		Part No.	Type		
			[bar]	[psi]				
	Pressure gauge MA, EN 837-1							
	40	R $\frac{1}{4}$	0 ... 16	0 ... 232	<b>187080</b>	<b>MA-40-16-R<math>\frac{1}{4}</math>-EN</b>		
		G $\frac{1}{4}$	0 ... 16	0 ... 232	<b>183901</b>	<b>MA-40-16-G<math>\frac{1}{4}</math>-EN</b>		
	Pressure gauge MA, EN 837-1, with red-green range							
40	R $\frac{1}{8}$	0 ... 16	–	<b>525726</b>	<b>MA-40-16-R<math>\frac{1}{8}</math>-E-RG</b>			
50	R $\frac{1}{4}$	0 ... 16	–	<b>525729</b>	<b>MA-50-16-R<math>\frac{1}{4}</math>-E-RG</b>			

Ordering data – Pressure sensor SPAU						Technical data → Internet: spau		
	Pneumatic connection	Switching output	Display type	Electrical connection	Part No.	Type		
Pressure sensor SPAU for direct mounting on the service unit with pressure gauge connection (adapter for pneumatic connection included in scope of delivery), pressure measuring range 0 ... 10 bar, relative pressure measurement								
	Male thread R $\frac{1}{8}$	2x PNP or 2x NPN, switch- able	Illuminated LCD	M8x1, 4-pin	<b>8001203</b>	<b>SPAU-P10R-T-R18M-L-PNLK-PNVBA-M8D</b>		
				M12x1, 4-pin	<b>8001206</b>	<b>SPAU-P10R-T-R18M-L-PNLK-PNVBA-M12D</b>		
	Male thread R $\frac{1}{4}$			M8x1, 4-pin	<b>8001209</b>	<b>SPAU-P10R-T-R14M-L-PNLK-PNVBA-M8D</b>		
				M12x1, 4-pin	<b>8001208</b>	<b>SPAU-P10R-T-R14M-L-PNLK-PNVBA-M12D</b>		

Ordering data – Connecting cable NEBU-M8					Technical data → Internet: nebu		
	Electrical connection	Number of wires	Cable length [m]	Part No.	Type		
	M8x1, straight socket	3	2.5	★ <b>541333</b>	<b>NEBU-M8G3-K-2.5-LE3</b>		
			5	★ <b>541334</b>	<b>NEBU-M8G3-K-5-LE3</b>		
		4	2.5	<b>541342</b>	<b>NEBU-M8G4-K-2.5-LE4</b>		
			5	<b>541343</b>	<b>NEBU-M8G4-K-5-LE4</b>		
	M8x1, angled socket	3	2.5	★ <b>541338</b>	<b>NEBU-M8W3-K-2.5-LE3</b>		
			5	★ <b>541341</b>	<b>NEBU-M8W3-K-5-LE3</b>		
		4	2.5	<b>541344</b>	<b>NEBU-M8W4-K-2.5-LE4</b>		
			5	<b>541345</b>	<b>NEBU-M8W4-K-5-LE4</b>		

Ordering data – Connecting cable NEBU-M12					Technical data → Internet: nebu		
	Electrical connection	Number of wires	Cable length [m]	Part No.	Type		
	M12x1, straight socket	3	2.5	★ <b>541363</b>	<b>NEBU-M12G5-K-2.5-LE3</b>		
			5	★ <b>541364</b>	<b>NEBU-M12G5-K-5-LE3</b>		
		4	2.5	★ <b>550326</b>	<b>NEBU-M12G5-K-2.5-LE4</b>		
			5	★ <b>541328</b>	<b>NEBU-M12G5-K-5-LE4</b>		
	M12x1, angled socket	3	2.5	<b>541367</b>	<b>NEBU-M12W5-K-2.5-LE3</b>		
			5	<b>541370</b>	<b>NEBU-M12W5-K-5-LE3</b>		
		4	2.5	<b>550325</b>	<b>NEBU-M12W5-K-2.5-LE4</b>		
			5	<b>541329</b>	<b>NEBU-M12W5-K-5-LE4</b>		


Festo core product range


- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days


## Branching modules/distributor blocks MS-FRM, MS series

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Accessories

Ordering data – Angled socket PEV						Technical data → Internet: pev-1/4
	Description	Operating voltage range	Electrical connection	Switching status display	Part No.	Type
	For PEV-1/4-...-OD	15 ... 30 V DC	4-pin	Yellow LED	<b>164274</b>	<b>PEV-1/4-WD-LED-24</b>
		≤ 230 V AC ≤ 180 V DC	4-pin	Yellow LED	<b>164275</b>	<b>PEV-1/4-WD-LED-230</b>

Ordering data – Plug socket MSSD						Technical data → Internet: mssd-c-4p
	Description	Operating voltage range	Electrical connection	Type of mounting: cable connection	Part No.	Type
	For PEV-1/4-...-OD	≤ 250 V AC/DC	3-pin	Clamping screws	<b>171157</b>	<b>MSSD-C-4P</b>

Ordering data – Double nipple ESK					
	Description	Pneumatic connection		Part No.	Type
	For retrofitting pressure switch PEV to branching module MS-FRM	R1/4	R1/4	<b>151521</b>	<b>ESK-1/4-1/4</b>
			R1/2	<b>534153</b>	<b>ESK-1/4-1/2</b>