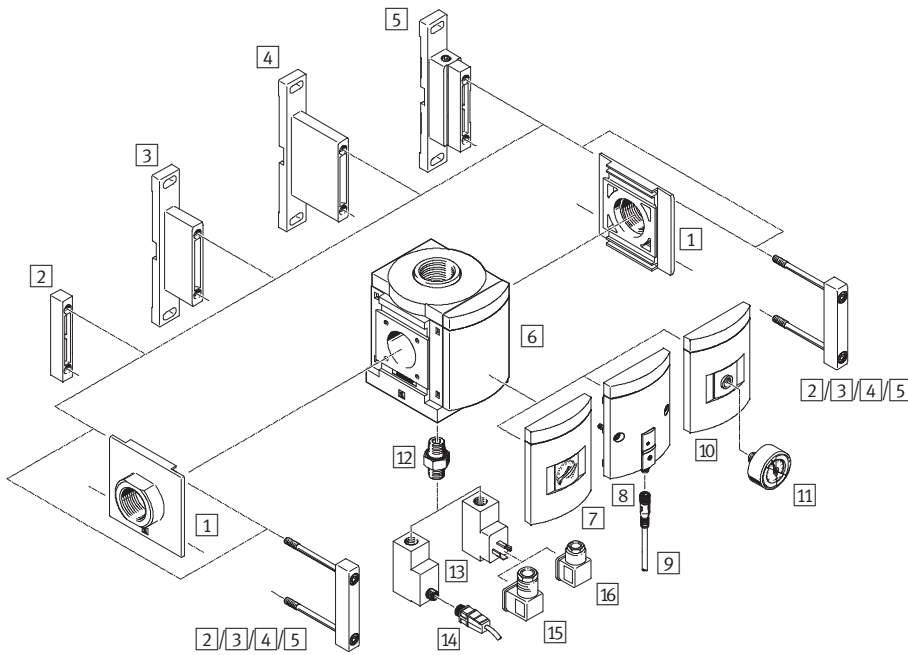



Branching modules MS-FRM, MS series, NPT



Branching modules MS9-FRM, MS series, NPT

Peripherals overview

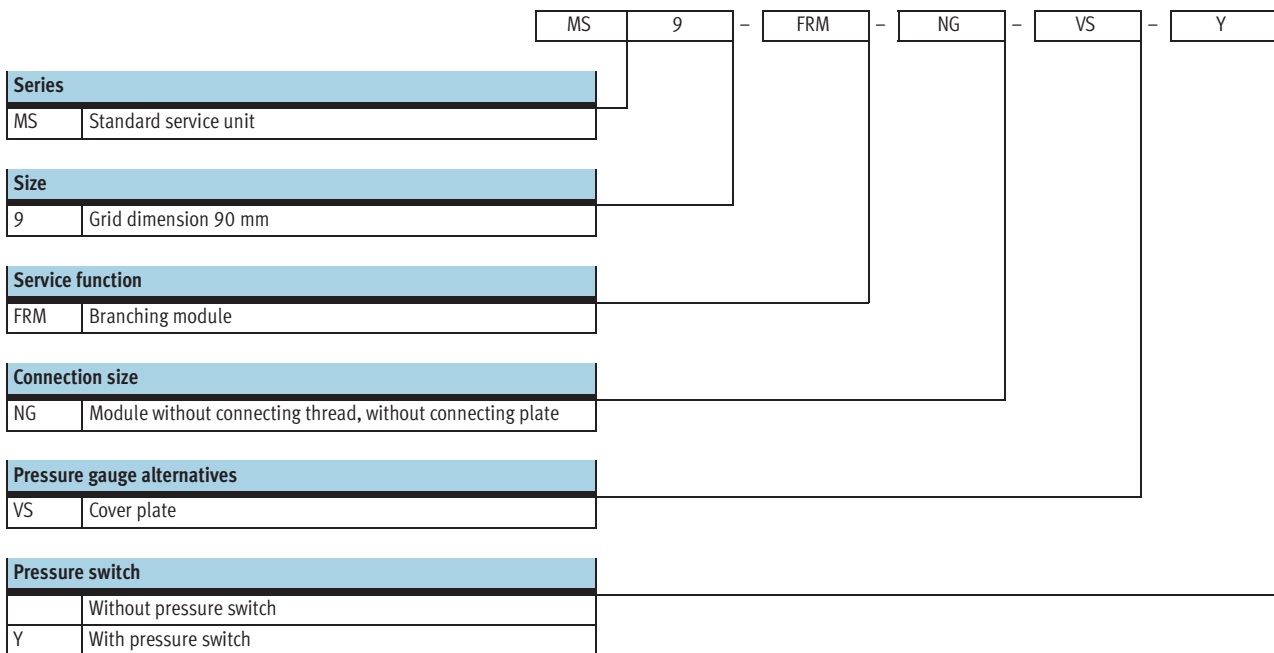


 Note
 Additional accessories:
 – Module connector for combination with size MS6, MS9 or MS12
 → Internet: rmv, armv

Mounting attachments and accessories					
		Individual component		Combination	→ Page/Internet
		Without connecting thread	With connecting thread NPT3/4-14 or NPT1-11½		
1	Connecting plate 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	■	■	■	8
7	MS pressure gauge AG	■	■	■	8
8	Pressure sensor without display AD7 ... AD10	■	■	■	8
9	Connecting cable NEBU-M8...-LE3	■	■	■	10
10	Adapter plate for EN pressure gauge ¼ A4	■	■	■	8
11	Pressure gauge MA	■	■	■	10
12	Double nipple (included in the scope of delivery) ESK	■	■	■	–
13	Pressure switch PEV X/Y/M12	■	■	■	8
14	Connecting cable NEBU-M12...-LE4	■	■	■	10
15	Angled socket PEV-¼-WD-LED-...	■	■	■	11
16	Plug socket MSSD-C-4P	■	■	■	11

Branching modules MS9-FRM, MS series, NPT

Type codes



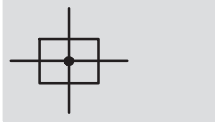
Additional variants can be ordered using the modular system → 8




- Connecting plates
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Pressure switch
- Type of mounting
- Alternative flow direction

Branching modules MS9-FRM, MS series, NPT

Technical data

Function



-  - Flow rate
10,000 ... 50,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0 ... 20 bar



- 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 pressure sensor

General technical data				
Pneumatic connection 1, 2	NPT $\frac{3}{4}$ -14	NPT1-11 $\frac{1}{2}$	NPT $\frac{1}{2}$ -14 ... NPT1 $\frac{1}{2}$ -11 $\frac{1}{2}$ (with connecting plate AQ...)	- (without connecting thread NG)
Pneumatic connection 3, 4	NPT1-11 $\frac{1}{2}$			
Design	Branching module			
Type of mounting	Via accessories In-line installation			
Mounting position	Any ¹⁾			
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 G $\frac{1}{4}$ prepared			

1) The branching module must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.

Standard nominal flow rate q_{nN^1} [l/min]					
Pneumatic connection	Connecting plate AQR	Thread NPT $\frac{3}{4}$ -14 or connecting plate AQS	Thread NPT1-11 $\frac{1}{2}$ or connecting plate AQT	Connecting plate AQU	Connecting plate AQV
In main flow direction 1 \rightarrow 2	10,000	25,000	45,000	47,000	50,000
Outlet at top	13,000				
Outlet at bottom	13,000				

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

Branching modules MS9-FRM, MS series, NPT

Technical data

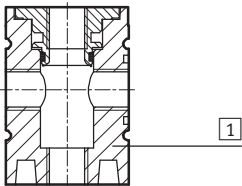
Operating and environmental conditions			
Variant	Standard	Pressure switch X/Y/M12	Pressure sensor AD...
Operating pressure [bar]	0 ... 20	0 ... 12	0 ... 10
Operating medium	Air quality class 5:7:- to DIN ISO 8573-1		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
Ambient 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 ¹⁾	2		

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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

Materials

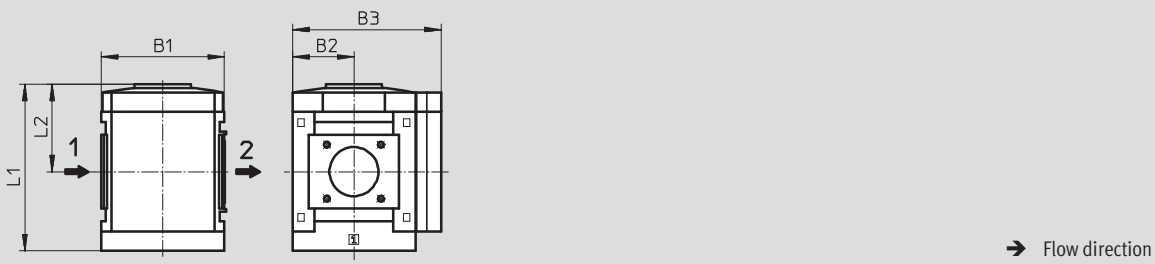
Sectional view



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)

Dimensions – Basic version

Without connecting thread NG Download CAD data → www.festo.com



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

Branching modules MS9-FRM, MS series, NPT

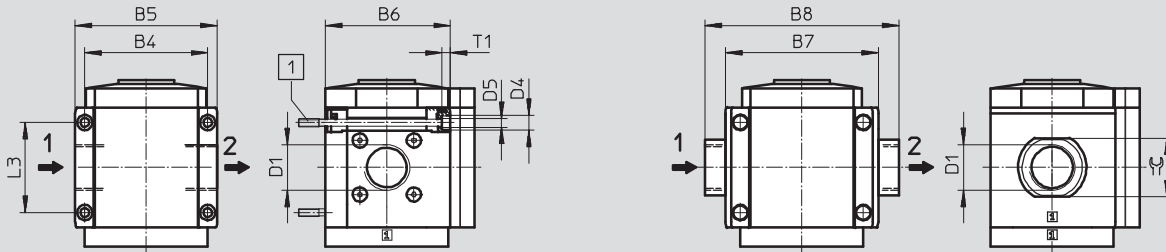
Technical data

Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

With connecting thread N $\frac{3}{4}$ or N1

With connecting plate AQ...



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

→ Flow direction

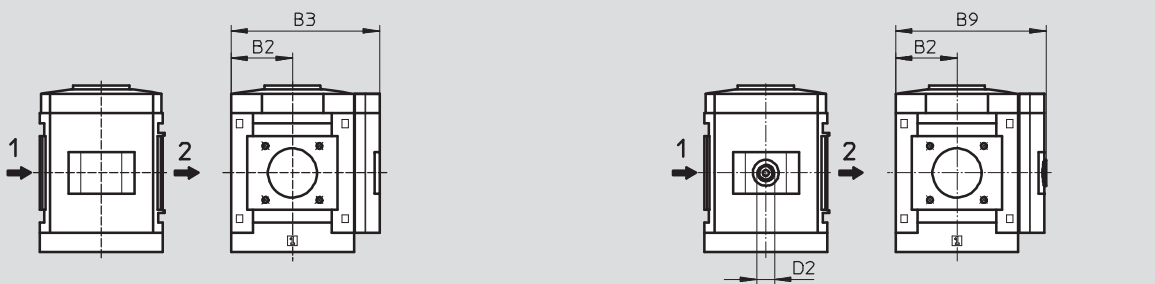
Type	B4	B5	B6	B7	B8	D1	D4	D5	L3	T1	⌀
MS9-FRM-N $\frac{3}{4}$	90	104	91.5	-	-	NPT $\frac{3}{4}$ -14	11	6.5	66	6	-
MS9-FRM-N1						NPT1-11 $\frac{1}{2}$					
MS9-FRM-AQR	-	-	-	112	132	NPT $\frac{1}{2}$ -14	-	-	-	-	30
MS9-FRM-AQS					132	NPT $\frac{3}{4}$ -14					36
MS9-FRM-AQT					142	NPT1-11 $\frac{1}{2}$					41
MS9-FRM-AQU					162	NPT1 $\frac{1}{4}$ -11 $\frac{1}{2}$					50
MS9-FRM-AQV					176	NPT1 $\frac{1}{2}$ -11 $\frac{1}{2}$					55

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

Adapter plate A4 for EN pressure gauge $\frac{1}{4}$, without pressure gauge



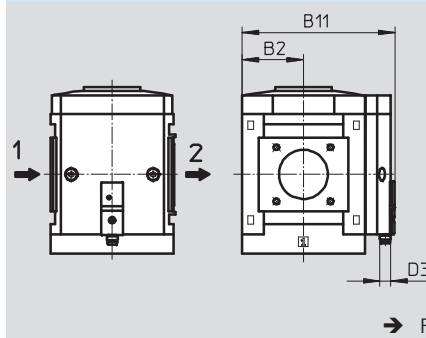
→ Flow direction

Type	B2	B3	B9	D2
MS9-FRM-...-AG/RG	45	109	-	-
MS9-FRM-...-A4		-	110	G $\frac{1}{4}$

Branching modules MS9-FRM, MS series, NPT

Technical data

Dimensions – Pressure gauge alternatives Download CAD data → www.festo.com
 Pressure sensor without LCD display (operational status indicator only) 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

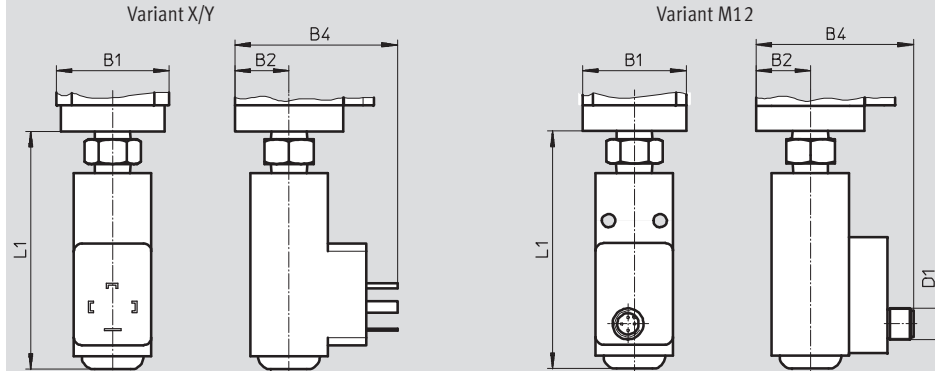
Variant AD9:
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

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

Dimensions – Pressure switch Download CAD data → www.festo.com
 Pressure switch with adjustable pressure switching point X/Y/M12 Technical data → Internet: pev-1/4



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

Variant Y:
PEV-1/4-B-OD, plug, square design to DIN 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	Connection	Standard		With pressure switch PEV-1/4-B-OD (variant Y)	
		Part No.	Type	Part No.	Type
MS9	–	564148	MS9-FRM-NG-VS ¹⁾	564150	MS9-FRM-NG-VS-Y ¹⁾

1) Free of copper and PTFE

Branching modules MS9-FRM, MS series, NPT

Ordering data – Modular products

M Mandatory data →

Module No.	Series	Size	Function	Connection size
562534	MS	9	FRM	N $\frac{3}{4}$, N1, AQR, AQS, AQT, AQU, AQV, NG
Ordering example				
562534	MS	9	- FRM	- AQS

Ordering table		Grid dimension	[mm]	90	Condi- tions	Code	Enter code
M	Module No.	562534					
	Series	Standard				MS	MS
	Size	9				9	9
	Function	Branching module				-FRM	-FRM
	Connection size	Thread N $\frac{3}{4}$				-N$\frac{3}{4}$	
		Thread N1				-N1	
		Connecting plate N $\frac{1}{2}$				-AQR	
		Connecting plate N $\frac{3}{4}$				-AQS	
		Connecting plate N1				-AQT	
		Connecting plate N1 $\frac{1}{4}$				-AQU	
		Connecting plate N1 $\frac{1}{2}$				-AQV	
		Module without connecting thread, without connecting plate				-NG	

Transfer order code

562534	MS	9	-	FRM	-	
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Branching modules MS9-FRM, MS series, NPT

Ordering data – Modular products

Mandatory data		Options		
Pressure gauge/pressure gauge alternatives AG, VS, A4, RG, AD7 ... AD10	Alternative pressure gauge scale PSI, MPA, BAR	Pressure switch X, Y, M12	Type of mounting WP, WPM, WPB	Alternative flow direction Z
- VS				

Ordering table						
Grid dimension	[mm]		Condi-tions	Code	Enter code	
M	Pressure gauge/pressure gauge alternatives	MS pressure gauge		-AG		
		Cover plate		-VS		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4		
		Integrated pressure gauge, red/green scale	1	-RG		
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O contact	2	-AD7		
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact	2	-AD8		
		Pressure sensor without display, plug M8, window comparator, PNP, N/O contact	2	-AD9		
		Pressure sensor without display, plug M8, window comparator, PNP, N/C contact	2	-AD10		
		Alternative pressure gauge scale	PSI	3		-PSI
			MPa	3		-MPA
Bar	3		-BAR			
O	Pressure switch	Pressure switch PEV with display, plug socket, EN175301, type A, cube	4	-X		
		Pressure switch PEV without display, plug socket, EN 175301, type A, cube	4	-Y		
		Pressure switch PEV without display, plug socket, round, M12, 4-pin	4	-M12		
Type of mounting	Mounting bracket	5	-WP			
	Mounting bracket	5	-WPM			
	Mounting bracket for large wall gap	5	-WPB			
Alternative flow direction	Flow direction from right to left			-Z		


- | | | | |
|------------------------|--|-----------------------|---|
| 1 RG | Not with alternative pressure gauge scale PSI, PSI scale serves only as an auxiliary scale | 4 X, Y, M12 | Max. permissible operating pressure P1 = 12 bar |
| 2 AD7 ... AD10 | Measuring range max. 10 bar | 5 WP, WPM, WPB | Not with module NG |
| 3 PSI, MPA, BAR | Not with pressure gauge alternatives VS, A4, AD7, AD8, AD9, AD10 | | |

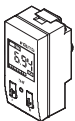
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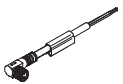
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Branching modules MS-FRM, MS series, NPT

Accessories

Ordering data – Pressure gauge MA						
	Nominal size	Pneumatic connection	Display range		Part No.	Type
			[bar]	[psi]		
	Pressure gauge MA, DIN EN 837-1					Technical data → Internet: ma
	40	G1/4	0 ... 16	0 ... 232	183901	MA-40-16-G1/4-EN
	Pressure gauge MA, DIN EN 837-1, with red-green range					Technical data → 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 – Pressure sensor SDE1						Technical data → Internet: sde1
	Pneumatic connection	Electrical output	Electrical connection	Display	Part No.	Type
Pressure sensor SDE1 for direct mounting on the service unit with pressure gauge connection (adapter plate for pneumatic connection included in scope of delivery), pressure measurement range 0 ... 10 bar, relative pressure measurement						
	Male thread R1/8	1 switching output PNP	M8x1, 3-pin	LCD	192026	SDE1-D10-G2-R18-C-P1-M8
			M8x1, 3-pin	Illuminated LCD	529970	SDE1-D10-G2-R18-L-P1-M8
			M12x1, 3-pin	Illuminated LCD	534064	SDE1-D10-G2-R18-L-P1-M12
		2 switching outputs PNP	M8x1, 4-pin	LCD	192027	SDE1-D10-G2-R18-C-P2-M8
			M8x1, 4-pin	Illuminated LCD	529971	SDE1-D10-G2-R18-L-P2-M8
			1 switching output PNP and 0 ... 10 V analogue	M8x1, 4-pin	LCD	529958
	M8x1, 4-pin	Illuminated LCD		529972	SDE1-D10-G2-R18-L-PU-M8	
	Male thread R1/4	1 switching output PNP	M8x1, 3-pin	LCD	192028	SDE1-D10-G2-R14-C-P1-M8
			M8x1, 3-pin	Illuminated LCD	529967	SDE1-D10-G2-R14-L-P1-M8
			M12x1, 3-pin	Illuminated LCD	534157	SDE1-D10-G2-R14-L-P1-M12
		2 switching outputs PNP	M8x1, 4-pin	LCD	192029	SDE1-D10-G2-R14-C-P2-M8
			M8x1, 4-pin	Illuminated LCD	529968	SDE1-D10-G2-R14-L-P2-M8
		1 switching output PNP and 0 ... 10 V analogue	M8x1, 4-pin	LCD	529957	SDE1-D10-G2-R14-C-PU-M8
			M8x1, 4-pin	Illuminated LCD	529969	SDE1-D10-G2-R14-L-PU-M8


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	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
		4	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5	541343	NEBU-M8G4-K-5-LE4
	M8x1, angled socket	3	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5	541341	NEBU-M8W3-K-5-LE3
		4	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5	541345	NEBU-M8W4-K-5-LE4


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	541363	NEBU-M12G5-K-2.5-LE3
			5	541364	NEBU-M12G5-K-5-LE3
		4	2.5	550326	NEBU-M12G5-K-2.5-LE4
			5	541328	NEBU-M12G5-K-5-LE4
	M12x1, angled socket	3	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5	541370	NEBU-M12W5-K-5-LE3
		4	2.5	550325	NEBU-M12W5-K-2.5-LE4
			5	541329	NEBU-M12W5-K-5-LE4


Branching modules MS-FRM, MS series, NPT

FESTO

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	164274	PEV-1/4-WD-LED-24
		≤ 230 V AC ≤ 180 V DC	4-pin	Yellow LED	164275	PEV-1/4-WD-LED-230

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	171157	MSSD-C-4P

Ordering data – Double nipple ESK					
	Description	Pneumatic connection		Part No.	Type
	Adjustable for angular compensation • For retrofitting pressure switch PEV to branching module MS-FRM	R1/4	R1/4	151521	ESK-1/4-1/4
			R1/2	534153	ESK-1/4-1/2