

Pressure and vacuum switch SDE5

Quicker to install



FESTO

The monitoring specialist
in a compressed air
system

Info 307 →→

SDE5 – the monitoring specialist

FESTO



Operational reliability for increased system productivity

The SDE5 is the cost-effective alternative for simple, quick monitoring.

The intelligent miniature pressure switch provides immediate information regarding the currently applied pressure. It is an equally effective device for object detection via back pressure as it is for pressure, regulation and vacuum detection. The SDE5 – the new member of the SDE family.

The monitoring specialist in a compressed air system

The intelligent configurable pressure switch is easy to install and safe.

Minimal assembly times

thanks to integrated QS fittings, at one or both ends, M8 plug or free cable end, dovetailing wall bracket.

Extremely attractive pricing

Highly flexible

thanks to selectable output functions such as a hysteresis or window comparator.

Quick and reliable switching-point adjustment

at the touch of a button thanks to the straightforward “teach-in” function.

High operational safety

thanks to its durable piezoresistive pressure-sensor technology, clearly visible LED, compact and sturdy design.



Step 1



Step 2



Step 3

**Optimized system pressure =
minimised cost pressure**

Anyone who monitors pressure in a pneumatic system can certainly be sure to be more than equipped to deal with cost and competitive pressures.

You can definitely count on the SDE5 to provide you with significant advantages –

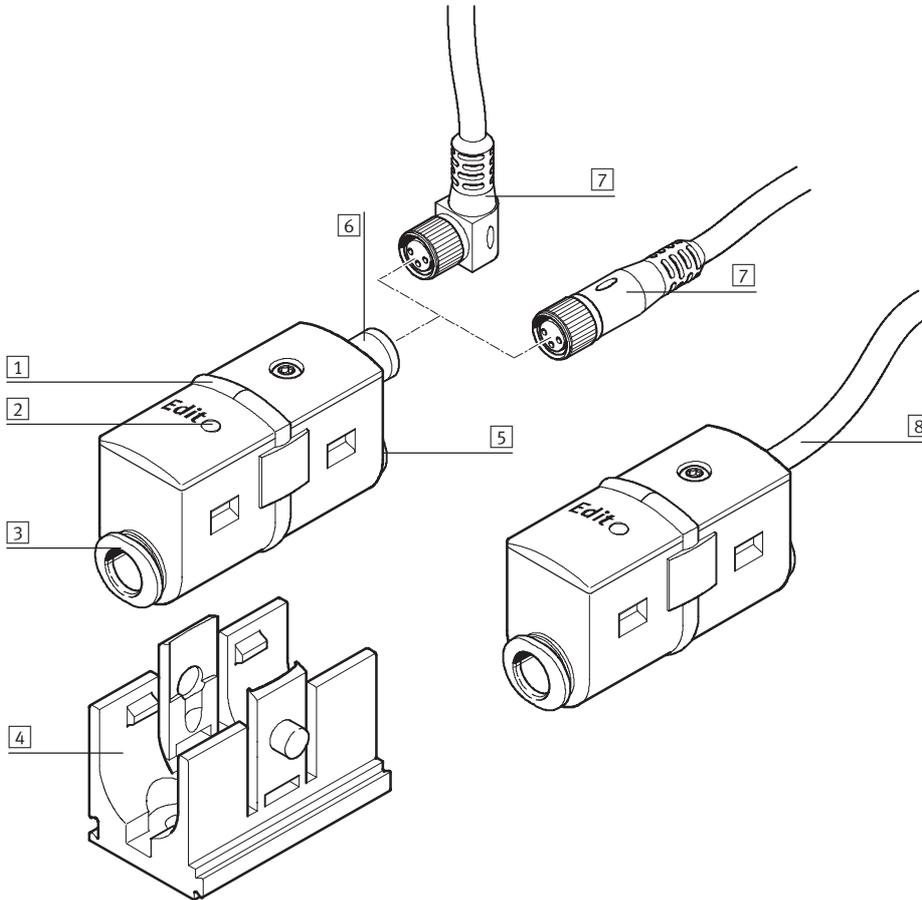
whatever the case.
Try it for yourself!

	Advantages for designers	Advantages for purchasers
1. Multitude of integrated functions and variants	<ul style="list-style-type: none"> Broad range of variants: the right pressure switch for every application 4-way monitoring option 	<ul style="list-style-type: none"> Significant cost savings because you only pay for the functions you actually need Increased production reliability thanks to trouble-free operating sequences
2. Simple, clear-cut monitoring	<ul style="list-style-type: none"> Increased functional reliability thanks to simple, dependable pressure monitoring in pneumatic systems 	<ul style="list-style-type: none"> Reduced follow-up costs and greater time savings thanks to longer maintenance intervals and reduced changeover times
3. Commissioning and servicing made easy	<ul style="list-style-type: none"> Festo plug and work® Simple teach-in programming Reduced costs thanks to simple installation Modular system for optimum configuration 	<ul style="list-style-type: none"> Increased system productivity and reduced down-times Significantly reduced training expenditure for service personnel thanks to intuitive operation

Pressure switch SDE5

Key features at a glance

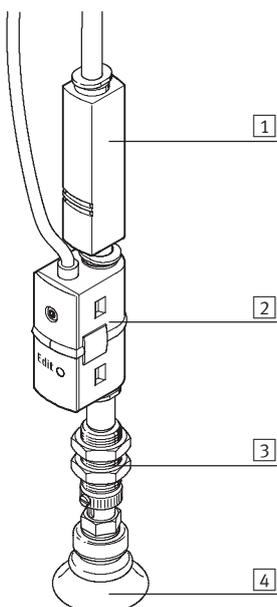
Function overview



- 1 Yellow LED display, visible from all sides
- 2 Programming pushbutton
- 3 Pneumatic connection
- 4 Clip-in, dovetailing bracket for wall-mounting (included in the scope of delivery)
- 5 Pneumatic connection or blanking plug
- 6 Plug M8x1
- 7 Cable with socket SIM-M8 (must be ordered separately → 12 or via the modular system → 11)
- 8 Free cable end

Application example

Separation of parts by checking the applied vacuum



- 1 Vacuum generator VN
- 2 Pressure switch SDE5
- 3 Suction cup holder HCL
- 4 Suction cup ESS

Two pressures must be programmed (taught-in) for this application:

- Teach-in pressure 1: Part gripped
- Teach-in pressure 2: Part not gripped

Operating mode 1 of the SDE5 calculates the average of the stored teach-in pressures:

If the applied vacuum is below the average, the workpiece is regarded as gripped and the SDE5 registers it as an acceptable part.

If the applied vacuum is above the average, the workpiece is regarded as not fully gripped and is rejected as unacceptable.

Other applications:

- Pressure monitoring (pressure present?)
- Regulator monitoring (pressure in desired range?)
- Detection of objects by means of back pressure monitoring

Pressure switch SDE5

Type code

SDE5 - D2 - 0 - Q6 - P - M8 - G5 - - -

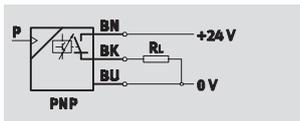
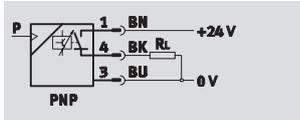
Type	
SDE5	Pressure switch
Pressure measuring range	
V1	-1 ... 0 bar
D2	0 ... 2 bar
D10	0 ... 10 bar
Switching function	
FP	Freely programmable
Threshold comparator with fixed hysteresis, 1 teach-in pressure	
O	Normally open contact
C	Normally closed contact
Threshold comparator with fixed hysteresis, 2 teach-in pressures	
O1	Normally open contact
C1	Normally closed contact
Threshold comparator with variable hysteresis, 2 teach-in pressures	
O2	Normally open contact
C2	Normally closed contact
Window comparator with fixed hysteresis, 2 teach-in pressures	
O3	Normally open contact
C3	Normally closed contact
Pneumatic connection	
Push-in connector at both ends	
Q3	For tubing OD 3 mm
Q4	For tubing OD 4 mm
Q6	For tubing OD 6 mm
Push-in connector at one end	
Q3E	For tubing OD 3 mm
Q4E	For tubing OD 4 mm
Q6E	For tubing OD 6 mm
Electrical output	
P	1 switch output PNP (positive switching)
Electrical connection	
K	2.5 m cable
M8	3-pin M8 plug
Connecting cable	
SIM cable with straight connection socket	
G	2.5 m long
G5	5 m long
SIM cable with angled connection socket	
W	2.5 m long
W5	5 m long
Teach-in point 1 permanently set	
...X	Permanent factory setting as per customer's requirement, required switching pressure [bar]
Teach-in point 2 permanently set	
...Y	Permanent factory setting as per customer's requirement, required switching pressure [bar]

Pressure switches SDE5

Technical data



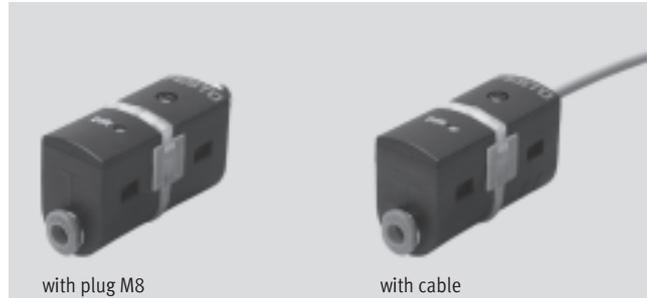
Function



Voltage
15 ... 30 V DC

Pressure
-1 ... +10 bar

Temperature range
0 ... 50°C



with plug M8

with cable

General technical data	
Mechanical	
Pneumatic connection	Push-in connector at one or both ends, QS-3, QS-4 or QS-6
Method of measurement	Piezoresistive pressure switch
Measured variable	Relative pressure
Reproducibility of switching value	±0.3% of the measuring range final value
Hysteresis FS	2%
Electrical connection	Plug M8x1, round design to EN 60947-5-2, 3-pin 3-core cable, 2.5 m long
Type of mounting	Via accessories
Assembly position	Any ¹⁾
Electrical	
Operating voltage range [V DC]	15 ... 30
Max. output current [mA]	100
Protection against short circuit	Pulsed
Protection against polarity reversal	For all electrical connections
Switching output	PNP
Switching function	→ Table 7
Switching element function	NO contact, NC contact or switchable
Type of display	Yellow LED, visible from all sides
CE marking symbol (see conformity declaration)	As per EU EMC directive

1) The collection of condensate in the sensor should be prevented.

Operating and environmental conditions			
Pressure measuring range [bar]	-1 ... 0	0 ... 2	0 ... 10
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40µm		
Threshold value setting range	0 ... 100%		
Ambient temperature [°C]	0 ... 50		
Temperature of medium [°C]	0 ... 50		
Corrosion resistance class CRC ¹⁾	2		
Protection class to EN 60 529	IP 40		
Certification	c UL us - Recognized (OL)		

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. 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.

Weights [g]	
With plug M8x1, without wall bracket	19
With cable, without wall bracket	47
Wall bracket	5.5

Pressure switches SDE5

Technical data



Switching functions	NO switching element (normally open)	NC switching element (normally closed)
Operating mode Mode 0 Threshold value with fixed hysteresis, 1 teach-in pressure		
Mode 1 Threshold value with fixed hysteresis, 2 teach-in pressures		
Mode 2 Threshold value with variable hysteresis, 2 teach-in pressures		
Mode 3 Window comparator with fixed hysteresis, 2 teach-in pressures		

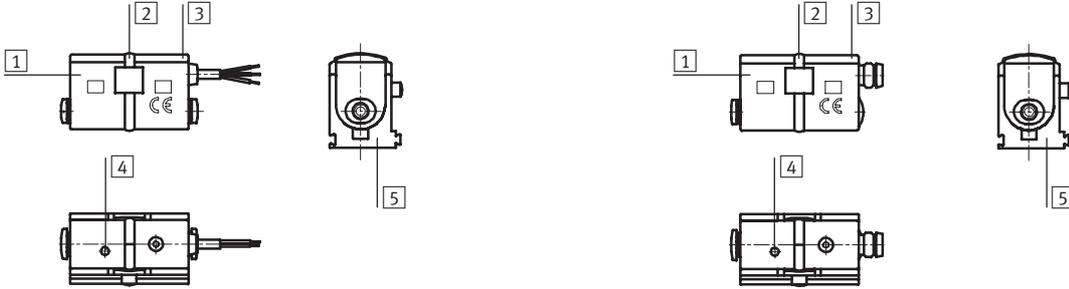
- A Binary output signal
- p Pressure
- SP Switching point
- TP Teach-in pressure
- Hy Hysteresis

Pressure switches SDE5

Technical data



Materials

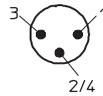
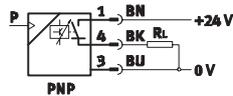


Pressure switches

1	Housing	Polyacetate, reinforced
2	Fibre optic display	Polyamide
3	Cover	Polyphenylene sulphide, reinforced
4	Pushbutton	Silicone rubber
5	Wall bracket	Polypropylene

Terminal allocation

Variant with plug M8x1

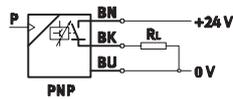


1 = brown
2/4 = black
3 = blue

- Note

The colours specified are for cables with socket SIM-...

Variant with cable

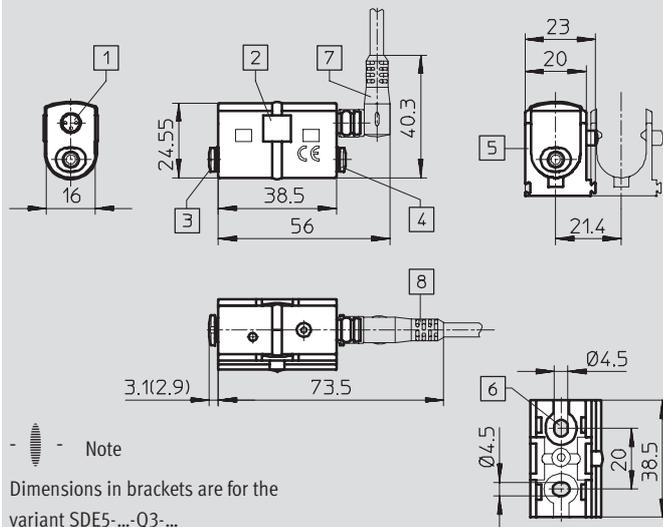


BN = brown
BK = black
BU = blue

Dimensions

Download CAD data → www.festo.com/en/engineering

Variant with plug M8x1



- Note

Dimensions in brackets are for the variant SDE5-...-Q3-...

- 1 Plug M8x1, 3-pin
- 2 Yellow LED display, visible from all sides
- 3 Pneumatic connection QS-3, QS-4 or QS-6
- 4 Pneumatic connection QS-3, QS-4 or QS-6 or blanking plug with SDE5-...-Q...E-...
- 5 Bracket for wall mounting
- 6 Through-hole for mounting screw
- 7 Angled connection socket SIM-M8-3WD
- 8 Straight connection socket SIM-M8-3GD

Pressure switches SDE5

Technical data



Dimensions

Variant with cable

1 PUR cable, 3-core, 2.5 m long
 2 Yellow LED display, visible from all sides
 3 Pneumatic connection QS-3, QS-4 or QS-6
 4 Pneumatic connection QS-3, QS-4 or QS-6 or blanking plug with SDE5-...-Q...E-...
 5 Bracket for wall mounting
 6 Through-hole for mounting screw

Note
 Dimensions in brackets are for the variant SDE5-...-Q3-...

Ordering data – Threshold value with fixed hysteresis, 1 teach-in pressure

Pressure measuring range	Pneumatic connection		For tubing O.D. [mm]			Electrical connection		Part No.	Type	
	At one end	At both ends	3	4	6	Plug M8x1	Cable			
NO contact										
-1 ... 0 bar	■	-	■	-	-	■	-	527 459	SDE5-V1-O-Q3E-P-M8	
	■	-	-	■	-	■	-	527 460	SDE5-V1-O-Q4E-P-M8	
	■	-	-	-	■	■	-	527 461	SDE5-V1-O-Q6E-P-M8	
	-	■	■	-	-	■	-	527 456	SDE5-V1-O-Q3-P-M8	
	-	■	-	■	-	-	■	-	527 457	SDE5-V1-O-Q4-P-M8
	-	■	-	-	-	■	■	-	527 458	SDE5-V1-O-Q6-P-M8
0 ... 2 bar	■	-	-	-	■	-	■	542 888	SDE5-D2-O-Q6E-P-K	
0 ... 10 bar	■	-	■	-	-	■	-	527 465	SDE5-D10-O-Q3E-P-M8	
	■	-	-	■	-	■	-	527 466	SDE5-D10-O-Q4E-P-M8	
	■	-	-	-	■	■	-	527 467	SDE5-D10-O-Q6E-P-M8	
	-	■	■	-	-	■	-	527 462	SDE5-D10-O-Q3-P-M8	
	-	■	-	■	-	■	-	527 463	SDE5-D10-O-Q4-P-M8	
	-	■	-	-	-	■	■	-	527 464	SDE5-D10-O-Q6-P-M8
	■	-	-	-	-	■	■	542 890	SDE5-D10-O-Q6E-P-K	
NC contact										
0 ... 10 bar	■	-	-	■	-	■	-	542 889	SDE5-D10-C-Q4E-P-M8	
	■	-	-	-	■	■	-	542 894	SDE5-D10-C-Q6E-P-M8	
	■	-	-	-	-	■	■	542 895	SDE5-D10-C-Q6E-P-K	

Note
 Additional wall brackets can be reordered using the embossed part number.

Pressure switches SDE5

Technical data

Ordering data – Threshold value with fixed hysteresis, 2 teach-in pressures									
Pressure measuring range	Pneumatic connection		For tubing O.D. [mm]			Electrical connection		Part No.	Type
	At one end	At both ends	3	4	6	Plug M8x1	Cable		
NO contact									
-1 ... 0 bar	-	■	-	-	■	■	-	542 886	SDE5-V1-01-Q6-P-M8

Ordering data – Threshold value with variable hysteresis, 2 teach-in pressures									
Pressure measuring range	Pneumatic connection		For tubing O.D. [mm]			Electrical connection		Part No.	Type
	At one end	At both ends	3	4	6	Plug M8x1	Cable		
NO contact									
0 ... 10 bar	■	-	-	-	■	■	-	542 891	SDE5-D10-02-Q6E-P-M8
	-	■	-	-	■	■	-	542 892	SDE5-D10-02-Q6-P-M8

Ordering data – Window comparator with fixed hysteresis, 2 teach-in pressures									
Pressure measuring range	Pneumatic connection		For tubing O.D. [mm]			Electrical connection		Part No.	Type
	At one end	At both ends	3	4	6	Plug M8x1	Cable		
NO contact									
0 ... 10 bar	■	-	-	-	■	-	■	542 893	SDE5-D10-03-Q6E-P-K
NC contact									
0 ... 10 bar	■	-	-	-	■	-	■	542 896	SDE5-D10-C3-Q6E-P-K

Ordering data – Freely programmable									
Pressure measuring range	Pneumatic connection		For tubing O.D. [mm]			Electrical connection		Part No.	Type
	At one end	At both ends	3	4	6	Plug M8x1	Cable		
NO contact									
-1 ... 0 bar	-	■	-	-	■	■	-	542 887	SDE5-V1-FP-Q6-P-M8
0 ... 10 bar	■	-	-	■	■	■	-	542 900	SDE5-D10-FP-Q4E-P-M8
	■	-	-	-	■	■	-	542 897	SDE5-D10-FP-Q6E-P-M8
	-	■	-	-	■	■	-	542 898	SDE5-D10-FP-Q6-P-M8
	■	-	-	■	-	-	■	542 901	SDE5-D10-FP-Q4E-P-K
	■	-	-	-	■	-	■	542 899	SDE5-D10-FP-Q6-P-K

- Note
Additional wall brackets can be reordered using the embossed part number.

Pressure switch SDE5

Ordering data – Modular products



M Mandatory data							O Options		
Module No.	Sensor function	Pressure range	Switching function	Pneumatic connection	Electrical output	Electrical connection	Connecting cable	Teach-in point 1 permanently set	Teach-in point 2 permanently set
529 027	SDE5	V1 D2 D10	FP O C O1 C1 O2 C2 O3 C3	Q3 Q4 Q6 Q3E Q4E Q6E	P	K M8	G W G5 W5	...X	...Y
Ordering example									
529 027	SDE5	- D10	- O2	- Q6	- P	- M8	- G5	- 5,5X	- 5,5Y

Ordering table							
Size	5	Conditions		Code		Enter code	
M Module No.	529 027					529 027	
Sensor function	Pressure switch			SDE5		SDE5	
Pressure range	Pressure range 0 ... -1 bar (relative)			-V1			
	Pressure range 0 ... 2 bar (relative)			-D2			
	Pressure range 0 ... 10 bar (relative)			-D10			
Switching function	Freely programmable, NO contact, NC contact			-FP			
	Threshold value with fixed hysteresis, 1 teach-in point, NO contact			-O			
	Threshold value with fixed hysteresis, 1 teach-in point, NC contact			-C			
	Threshold value with fixed hysteresis, 2 teach-in points, NO contact			-O1			
	Threshold value with fixed hysteresis, 2 teach-in points, NC contact			-C1			
	Threshold value with variable hysteresis, NO contact			-O2			
	Threshold value with variable hysteresis, NC contact			-C2			
	Window comparator with fixed hysteresis, NO contact			-O3			
	Window comparator with fixed hysteresis, NC contact			-C3			
Pneumatic connection	QS3 connection at both ends			-Q3			
	QS4 connection at both ends			-Q4			
	QS6 connection at both ends			-Q6			
	QS3 connection at one end			-Q3E			
	QS4 connection at one end			-Q4E			
	QS6 connection at one end			-Q6E			
Electrical output	1 switch output PNP			-P		-P	
Electrical connection	Cable 2.5 m			-K			
	M8 plug, 3-pin			-M8			
O Connecting cable (accessory)	2.5 m SIM cable with straight connection socket		1	-G			
	2.5 m SIM cable with angled connection socket		1	-W			
	5.0 m SIM cable with straight connection socket		1	-G5			
	5.0 m SIM cable with angled connection socket		1	-W5			
Teach-in point 1 permanently set [bar]	0 ... 10 (required switching pressure)		2	...X			
Teach-in point 2 permanently set [bar]	0 ... 10 (required switching pressure)		2 3	...Y			

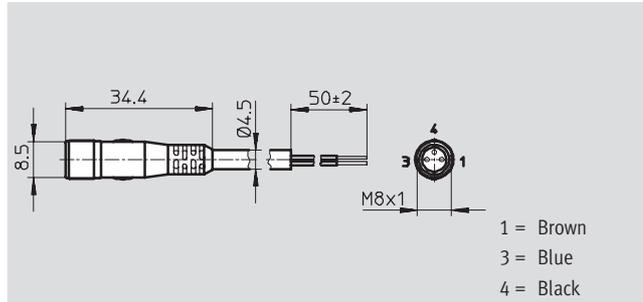
- 1 **G, W, G5, W5** Only in combination with M8
 2 **X, Y** Not in combination with FP, O1, C1
 3 **Y** Not in combination with O, C
 Must be evaluated if O2, C2, O3, C3, and X or Y was selected
 Only one decimal place permissible in combination with D10

Pressure switch SDE5

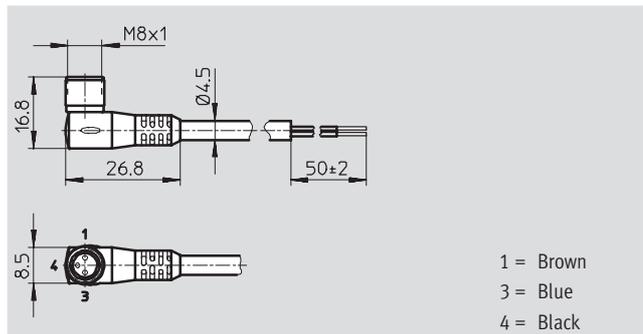
Accessories



Socket with cable
SIM-M8-3GD-...-PU



Socket with cable
SIM-M8-3WD-...-PU



Technical data		SIM-M8-...-2,5-PU	SIM-M8-...-5-PU	SIM-M8-...-10-PU
Cable length	[m]	2.5	5	10
Cable diameter	[mm]	4.5		
Constructional design		3x0.25 mm ²		
Cable ends		Open end		
Current-carrying capacity	[A]	2.8 A		
Operating voltage		45 V AC / 70 V DC		
Protection class to EN 60 529		IP 67		
Ambient temperature				
Fixed cable installation	[°C]	-40 ... 70		
Flexible cable installation	[°C]	-5 ... 70		
Materials				
Housing		PUR		
Cable sheath		PUR		

Ordering data		Straight		Angled	
Plug outlet		Part No.	Type	Part No.	Type
Cable length	2.5 m	159 420	SIM-M8-3GD-2,5-PU	159 422	SIM-M8-3WD-2,5-PU
	5 m	159 421	SIM-M8-3GD-5-PU	159 423	SIM-M8-3WD-5-PU
	10 m	192 964	SIM-M8-3GD-10-PU	192 965	SIM-M8-3WD-10-PU

- Note
Further cables with socket
→ www.festo.com

What must be observed when using Festo components?

Specified limit values for technical data and any specific instructions must be adhered to by the user in order to ensure recommended operating conditions.

When pneumatic components are used, the user shall ensure that they are operated using correctly prepared compressed air without aggressive media.

When Festo components are used in safety-oriented applications, the user shall ensure that all applicable

national and local safety laws and regulations, for example the machine directive, together with the relevant references to standards are observed. Unauthorised conversions or modifications to products and systems from Festo involve a safety risk and are thus not permissible.

Festo does not accept any liability for resulting damages.

You should contact Festo's advisors if one of the following apply to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.

All technical data applies at the time of going to print.

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Products and services – everything from a single source

Products incorporating new ideas are created when enthusiasm for technology and efficiency come together. Tailor-made service goes without saying when the customer is the focus of attention.



Pneumatic and electrical drives

- Pneumatic cylinders
- Semi-rotary drives
- Handling modules
- Servopneumatic positioning systems
- Electromechanical drives
- Positioning controllers and controllers



Valves and valve terminals

- Standard valves
- Universal and application-optimised valves
- Manually and mechanically actuated valves
- Shut-off, pressure control and flow control valves
- Proportional valves
- Safety valves

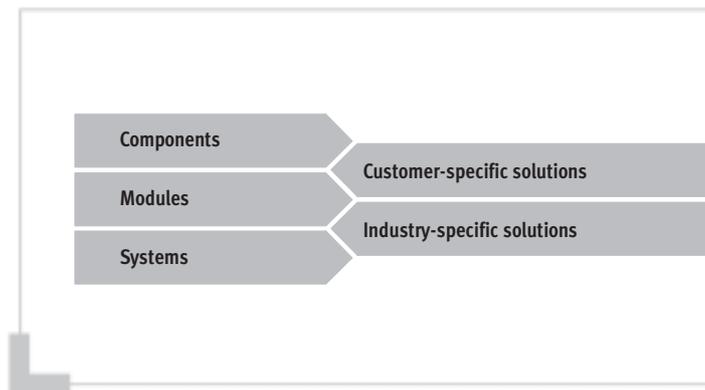
Fieldbus systems/ electrical peripherals

- Fieldbus Direct
- Installation system CP/CPI
- Modular electrical terminal CPX



Compressed air preparation

- Service unit combinations
- Filter regulators
- Filters
- Pressure regulators
- Lubricators
- On-off and soft-start valves
- Dryers
- Pressure amplifiers
- Accessories for compressed air preparation



Services from Festo to increase your productivity – across the entire value creation sequence



Engineering – for greater speed in the development process

- CAD models
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- FluidDRAW®
- More than 1,000 technical consultants and project engineers worldwide
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Supply chain – for greater speed in the procurement process

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- Euro special manufacturing service
- Logistics optimisation



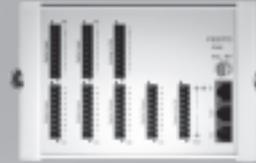
Gripping and vacuum technology

- Vacuum generators
- Vacuum grippers
- Vacuum security valves
- Vacuum accessories
- Standard grippers
- Micro grippers
- Precision grippers
- Heavy-duty grippers



Sensors and monitoring units

- Proximity sensors
- Pressure and flow sensors
- Display and operating units
- Inductive and optical proximity sensors
- Displacement encoders for positioning cylinders
- Optical orientation detection and quality inspection



Controllers/bus systems

- Pneumatic and electropneumatic controllers
- Programmable logic controllers
- Fieldbus systems and accessories
- Timers/counters
- Software for visualisation and data acquisition
- Display and operating units



Accessories

- Pipes
- Tubing
- Pipe connectors and fittings
- Electrical connection technology
- Silencers
- Reservoirs
- Air guns

All in all, 100% product and service quality

A customer-oriented range with unlimited flexibility: Components combine to produce ready-to-install modules and systems. Included in this are special designs – since at Festo, most industry-specific products and customer-specific solutions are based on the 23,000 plus catalogue products. Combined with the services for the entire value creation sequence, the end result is unbeatable economy.



Assembly – for greater speed in the assembly/commissioning process

- Prepack
- Preassembly
- Turnkey pneumatics
- Handling solutions



Operation – for greater speed in the operational process

- Spare parts service
- Energy saving service
- Compressed air consumption analysis
- Compressed air quality analysis
- Customer service