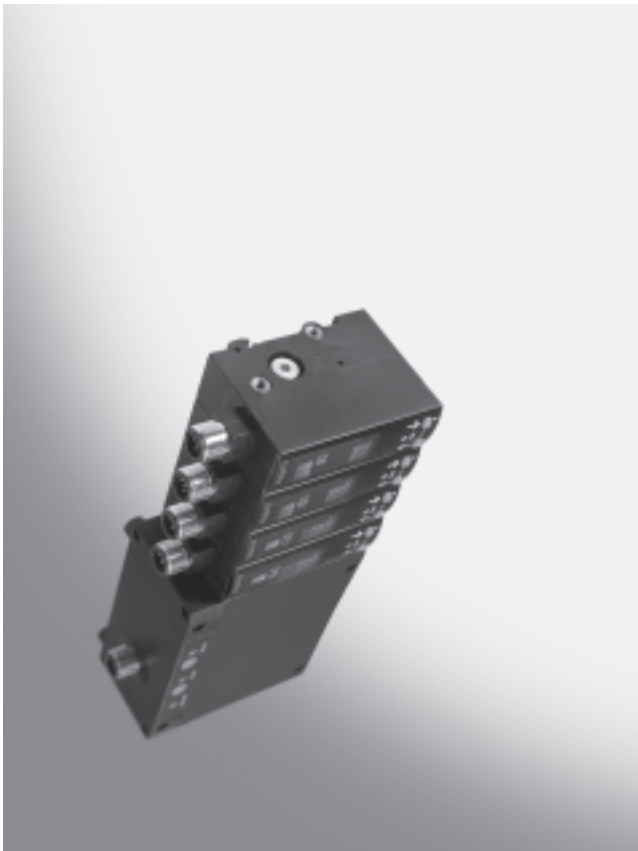


# Air gap sensors SOPA

Product range overview



- Sensing range 20 ... 200 µm
- Switch outputs PNP or NPN
- Integrated air jet function
- Two-colour LCD display

Detailed product information

➔ [www.festo.com/catalogue/sopa](http://www.festo.com/catalogue/sopa)

## Key features

General	Precise	Easy to use	Reliable and flexible
<p>Lightweight, compact and highly precise, this pneumatic solution offers impressive scope for integration: SOPA features a control module, compressed air regulation, measurement air switch-off and air jet function as well as up to four measuring modules. All in all, an attractively priced solution for low tolerances.</p>	<p>The air gap sensor SOPA senses exactly in the µm range whether the workpiece is lying flat or resting against other workpieces before clamping and whether the machining tool is exactly aligned on the spindle.</p>	<p>Lightweight, compact and simple into the bargain: thanks to parameterisation via teach-in or numerical setting using three buttons. Simple assembly and commissioning thanks to the inclusion of virtually unregulated compressed air and an integrated air jet function that needs no additional peripheral devices.</p>	<p>The multi-coloured LCD display with clear operating status indication ensures maximum reliability, while selectable monitoring points (1 to 4) and further functions make the application extremely flexible.</p>

# Air gap sensors SOPA

Type codes

SOPA		CM1	H	R1	H	Q6	2P	M12	E1
<b>Function</b>									
SOPA	Air gap sensor for contact and distance monitoring via LCD display								
<b>Modules</b>									
CM1	Control module with one sensor module								
CM2	Control module with two sensor modules, pneumatically interlinked								
CM3	Control module with three sensor modules, pneumatically interlinked								
CM4	Control module with four sensor modules, pneumatically interlinked								
M1	Sensor module								
<b>Manual override for control module</b>									
H	With manual override								
<b>Distance sensing range</b>									
R1	20 ... 200 µm								
<b>Type of mounting</b>									
H	H-rail mounting/through-hole								
W	Additional wall mounting								
<b>Pneumatic connection</b>									
Q6	Push-in connector QS-6								
<b>Electrical output</b>									
2P	2 switch outputs PNP								
2N	2 switch outputs NPN								
<b>Electrical connection</b>									
M12	Plug M12x1, A-coded								
<b>Electrical accessories</b>									
E1	Straight socket, cable 2.5 m								
E2	Straight socket, cable 5 m								
E3	Angled socket, cable 2.5 m								
E4	Angled socket, cable 5 m								

# Air gap sensors SOPA

Technical data

Technical data			
Type	SOPA-M1-...	SOPA-CM...-...-H...	SOPA-CM...-...-W...
Sensing range	[µm]	20 ... 200	
Repetition accuracy of switching point <sup>1)</sup>		± 2.5 µm: sensing range 30 µm to 150 µm ± 5µm: sensing range 20 µm to 200 µm	
Setting options		Teach-in via display and buttons	
Protection against manipulation		Electronic lock	
Type of display		Multi-coloured illuminated LCD	
Type of mounting		Alternatively: Via H-rail Via through-holes Via wall/surface bracket <sup>2)</sup>	Alternatively: Via H-rail Via through-holes Via wall/surface bracket <sup>3)</sup>
Sensing principle		Pneumatic	
Pneumatic connection		QS-6	
Operating voltage range	[V DC]	15 ... 30	–
Operating voltage	[V DC]	–	24
Max. output current	[mA]	100	
Electrical connection		Plug M12x1, 5-pin, round design to EN 60947-5-2	
Protection against short circuit		Pulsed	
Protection against polarity reversal		For all electrical connections	
Protection class		IP65 to IEC 60529	

1) Under constant operating conditions (temperature and supply pressure) and nominal measuring nozzle diameter (2 mm).

2) Adapter plate SXE3 must be ordered separately as an accessory → 6.

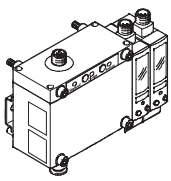
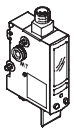
3) 2 adapter plates SXE3-W included in scope of delivery.

Operating and environmental conditions			
Type	SOPA-M1-...	SOPA-CM...-...-H...	SOPA-CM...-...-W...
Operating pressure	[bar]	–	4 ... 7
Supply pressure	[bar]	0.8 ... 1.6	–
Operating medium		Filtered compressed air, grade of filtration 40µm, lubricated or unlubricated	
Ambient temperature	[°C]	0 ... 50	
CE mark (see declaration of conformity)		In accordance with EU EMC directive	
Certification		C tick	

Materials	
Housing	Reinforced polyamide
Note on materials	Free of copper and PTFE Conforms to RoHS

# Air gap sensors SOPA

Technical data

Ordering data						
Version	Type of mounting	Number of sensor modules	Switch output PNP		Switch output NPN	
			Part No.	Type	Part No.	Type
<b>Control module with sensor modules</b>						
	Via H-rail	1	552 130	SOPA-CM1H-R1-HQ6-2P-M12	552 134	SOPA-CM1H-R1-HQ6-2N-M12
		2	552 131	SOPA-CM2H-R1-HQ6-2P-M12	552 135	SOPA-CM2H-R1-HQ6-2N-M12
		3	552 132	SOPA-CM3H-R1-HQ6-2P-M12	552 136	SOPA-CM3H-R1-HQ6-2N-M12
		4	552 133	SOPA-CM4H-R1-HQ6-2P-M12	552 137	SOPA-CM4H-R1-HQ6-2N-M12
	Via wall/surface bracket <sup>1)</sup>	1	552 138	SOPA-CM1H-R1-WQ6-2P-M12	552 142	SOPA-CM1H-R1-WQ6-2N-M12
		2	552 139	SOPA-CM2H-R1-WQ6-2P-M12	552 143	SOPA-CM2H-R1-WQ6-2N-M12
		3	552 140	SOPA-CM3H-R1-WQ6-2P-M12	552 144	SOPA-CM3H-R1-WQ6-2N-M12
		4	552 141	SOPA-CM4H-R1-WQ6-2P-M12	552 145	SOPA-CM4H-R1-WQ6-2N-M12
<b>Individual sensor module</b>						
	Via H-rail	1	552 146	SOPA-M1-R1-HQ6-2P-M12	552 147	SOPA-M1-R1-HQ6-2N-M12

1) 2 adapter plates SXE3-W included in scope of delivery.

# Air gap sensors SOPA

Ordering data – Modular products

[M] Mandatory data		[O] Options		[M] Mandatory data		[O] Options	
Module No.	Function	Control module override	Distance sensing range	Pneumatic connection	Electrical connection	Electrical accessories	
549 902	<b>Modules</b> SOPA    CM1 CM2 CM3 CM4 M1	H	<b>Type of mounting</b> R1        H W	<b>Electrical output</b> Q6        2P 2N	M12	E1 E2 E3 E4	
<b>Ordering example</b> 549 902	SOPA - M1		- R1 - H	Q6 - 2P - M12		+ E3	

Ordering table			Condi- tions	Code	Enter code
[M] Module No.	549 902				
Function	Air gap sensor for contact and distance monitoring with LCD display			SOPA	SOPA
Modules	Control module with one sensor module			-CM1	
	Control module with two sensor modules, pneumatically interlinked			-CM2	
	Control module with three sensor modules, pneumatically interlinked			-CM3	
	Control module with four sensor modules, pneumatically interlinked			-CM4	
	Sensor module			-M1	
[O] Control module override	With manual override for control module	[1]		H	
[M] Distance sensing range [µm]	20 ... 200			-R1	-R1
Type of mounting	H-rail mounting/through-hole			-H	
	Additional wall mounting			-W	
Pneumatic connection	Push-in connector 6 mm			Q6	Q6
Electrical output	2 switch outputs PNP			-2P	
	2 switch outputs NPN			-2N	
Electrical connection	Plug M12, A-coded			-M12	-M12
[O] Electrical accessories	Straight socket, cable 2.5 m			+E1	
	Straight socket, cable 5 m			+E2	
	Angled socket, cable 2.5 m			+E3	
	Angled socket, cable 5 m			+E4	

[1] H Not with module M1 (sensor module)

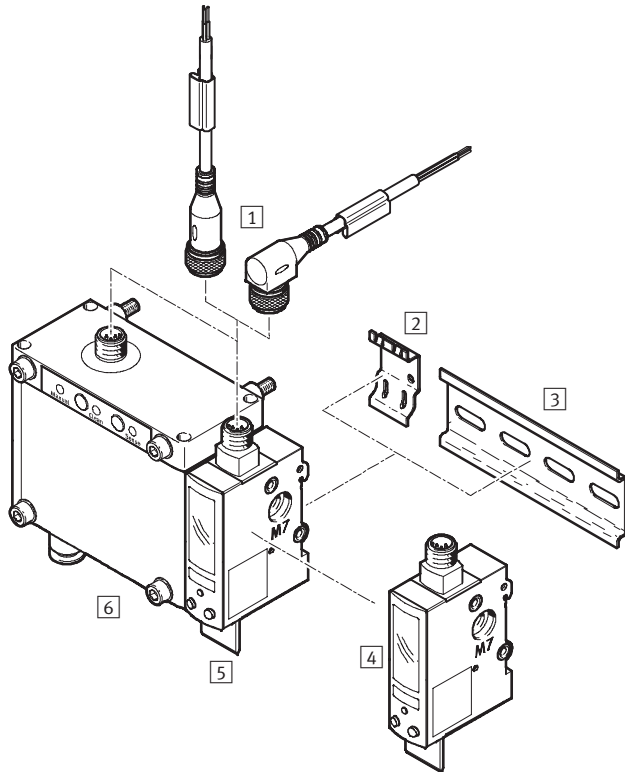
**Transfer order code**

549 902	SOPA	-		-	R1	-		-	Q6	-		-	M12	+	
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# Air gap sensors SOPA

Peripherals overview, sample applications

## Peripherals overview





### Accessories


1	Connecting cable for switch output
2	Adapter plate SXE3-W (2 included in scope of delivery with SOPA-...-W-...)
3	Mounting rail to DIN EN 60715
4	Sensor module SOPA-M1-...
5	Inscription label holder SXE3 (included in scope of delivery)
6	Control module with one sensor module SOPA-CM1-...

### Ordering data – Connecting cables M12x1

Technical data → Internet: nebu

	Number of wires	Cable length [m]	Part No.	Type
<b>Straight socket</b>				
	4	2.5	550 326	NEBU-M12G5-K-2.5-LE4
		5	541 328	NEBU-M12G5-K-5-LE4
<b>Angled socket</b>				
	4	2.5	550 325	NEBU-M12W5-K-2.5-LE4
		5	541 329	NEBU-M12W5-K-5-LE4

### Ordering data – Adapter plate

	Part No.	Type
	540 214	SXE3-W