



Air Gap Sensors SOPA

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

Key features			
General	Precise	Easy to use	Reliable and flexible
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.	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.	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.	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.

Air gap sensors SOPA

Type codes

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		SOPA	-	CM1	H	-	R1	-	H	Q6	-	2P	-	M12	-	E1														
Function																														
SOPA	Air gap sensor for contact and distance monitoring via LCD display																													
Modules																														
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																													
Manual override for control module																														
H	With manual override																													
Distance sensing range																														
R1	20 ... 200 µm																													
Type of mounting																														
H	H-rail mounting/through-hole																													
W	Additional wall mounting																													
Pneumatic connection																														
Q6	Push-in connector QS-6																													
Electrical output																														
2P	2 switch outputs PNP																													
2N	2 switch outputs NPN																													
Electrical connection																														
M12	Plug M12x1, A-coded																													
Electrical accessories																														
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 ¹⁾		± 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 ²⁾	Alternatively: Via H-rail Via through-holes Via wall/surface bracket ³⁾
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 SKE3 must be ordered separately as an accessory → 184.

3) 2 adapter plates SKE3-W included in scope of delivery.

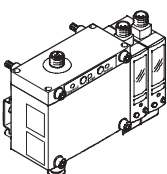
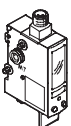
Operating and environmental conditions		
Type	SOPA-M1-...	SOPA-CM...-...
Operating pressure [bar]	–	4 ... 7
Supply pressure [bar]	0.8 ... 1.6	–
Operating medium	Filtered compressed air, grade of filtration 40µm, lubricated or unlubricated	
Ambient temperature [°C]	0 ... 50	
CE mark (see declaration of 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

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Ordering data						
Version	Type of mounting	Number of sensor modules	Switch output PNP		Switch output NPN	
			Part No.	Type	Part No.	Type
Control module with sensor modules						
	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 ¹⁾	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
Individual sensor module						
	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	<div>Modules</div> <div>SOPA CM1 CM2 CM3 CM4 M1</div>	H	<div>Type of mounting</div> <div>R1 H W</div>	<div>Electrical output</div> <div>Q6 2P 2N</div>	M12	E1 E2 E3 E4	
Ordering example							
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

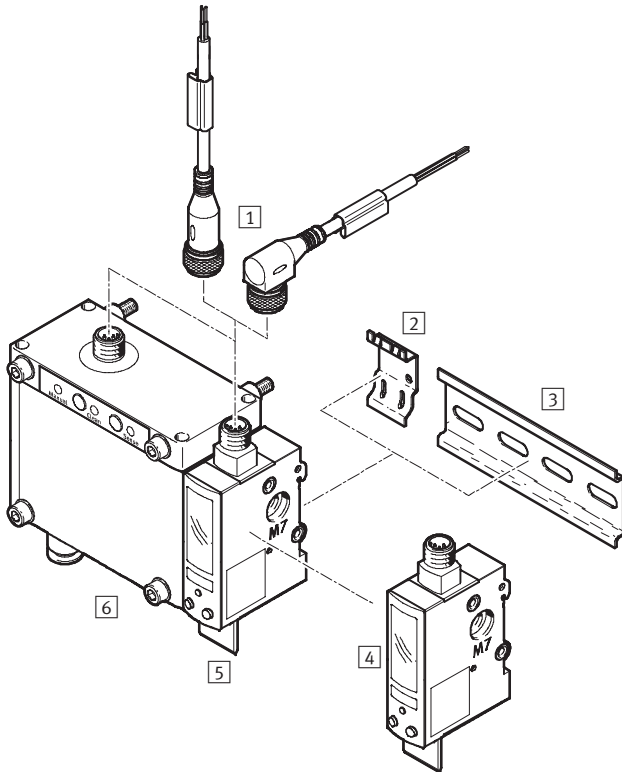
549 902 SOPA - [] - R1 - [] Q6 - [] - M12 + []

Air gap sensors SOPA

Peripherals overview, sample applications

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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

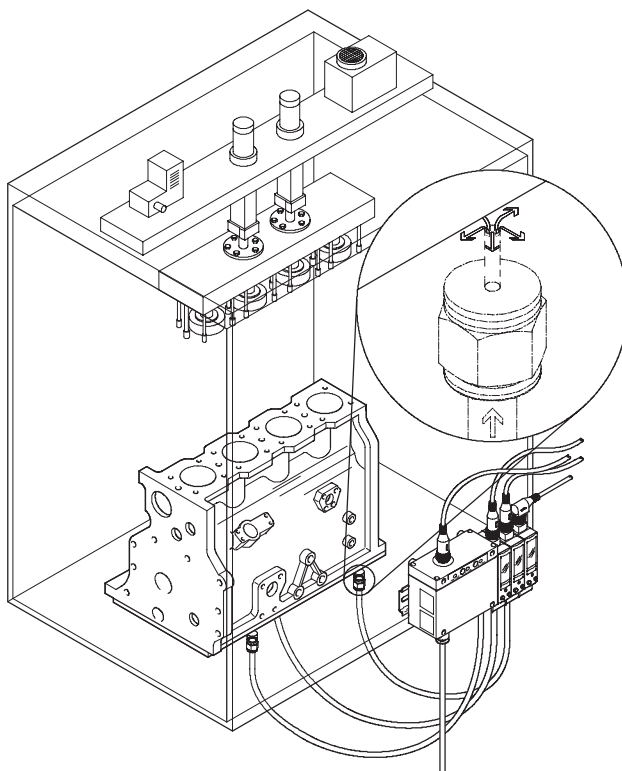
Technical data → 264

	Number of wires	Cable length [m]	Part No.	Type
Straight socket				
	4	2.5	550 326	NEBU-M12G5-K-2.5-LE4
	5		541 328	NEBU-M12G5-K-5-LE4
Angled socket				
	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

Application example



- Air gap sensor SOPA for contact monitoring (illustration: typical arrangement with 3 monitoring points, nozzle diameter from 0.8 ... 2 mm) within the engine manufacturing arm of the autom-

tive industry. Simply put, the air gap sensor checks whether the engine components to be machined are lying flat and not resting against adjacent components down to gaps of < 50 µm.

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