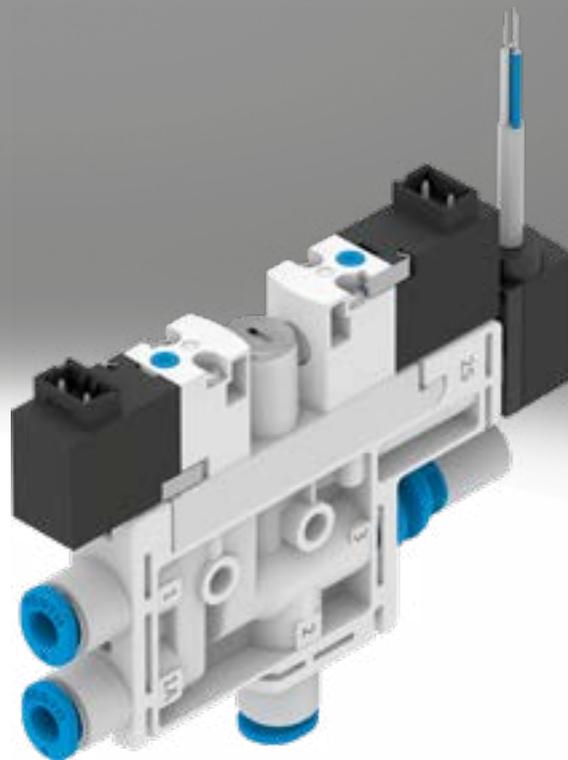


Vacuum generators OVEL

FESTO



Key features

At a glance

Rapid reduction of vacuum for safe placement of the workpiece by a solenoid valve to control the ejector pulse, optional

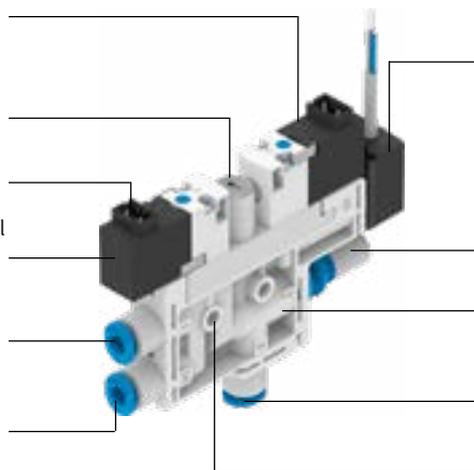
Flow control screw for regulating the ejector pulse

Electrical connection via H3 plug

Fast vacuum build-up using a solenoid valve to control the compressed air supply

Supply port, secured with clamp strap

Additional supply port for the separate supply of the ejector pulse, optional, secured with clamp strap



Pressure transmitter SPTE/pressure sensor SPAE to monitor the vacuum, optional, secured with clamp strap

Maintenance-free operation and reduced noise level by an open silencer, optional

Vacuum generator cartridge, secured with clamp strap

Vacuum port, secured with clamp strap

Housing with mounting holes

The compact vacuum generator

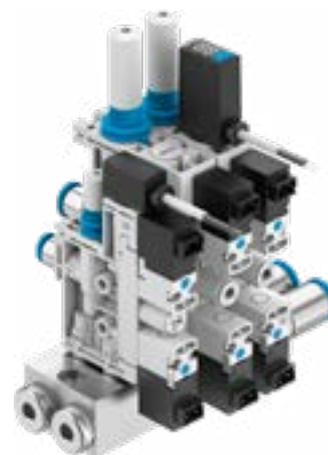
OVEL → page 3

- Low-cost, compact vacuum generator
- Lightweight
- Various performance levels and vacuum types
- Short switching times with integrated solenoid valves
 - Vacuum on/off
 - Ejector pulse
- Simple installation with H3 plugs and push-in fittings
- Straightforward mounting with retaining screws

- Low-noise operation due to integrated silencer
- Integrated filter
- Reduced contamination of the vacuum generator with open silencer
- Solenoid valves are switched by mechanical manual override
- Vacuum monitored by vacuum sensor
- Link up to 8 vacuum generators on a single common supply manifold.

OVTL → ovtl

The vacuum generator OVTL is a configurable module comprising vacuum generators OVEL, the common supply manifold OABM-P and connection accessories. All products are available from the factory fully assembled.



Functional principle OVEL

Vacuum ON/OFF

The compressed air supply is controlled by a solenoid valve. The solenoid valve can be supplied with the N/C (normally closed) switching

function, i.e. the vacuum is not generated until the vacuum generator is pressurised with compressed air and the solenoid valve has been switched.

Ejector pulse, optional

After the vacuum is switched off, an ejector pulse is activated and generated by a second solenoid valve to release the workpiece safely from the suction cup with connection and to purge the vacuum quickly.

The compressed air for the ejector pulse can be supplied either via the supply port or a separate port.

Vacuum sensor, optional

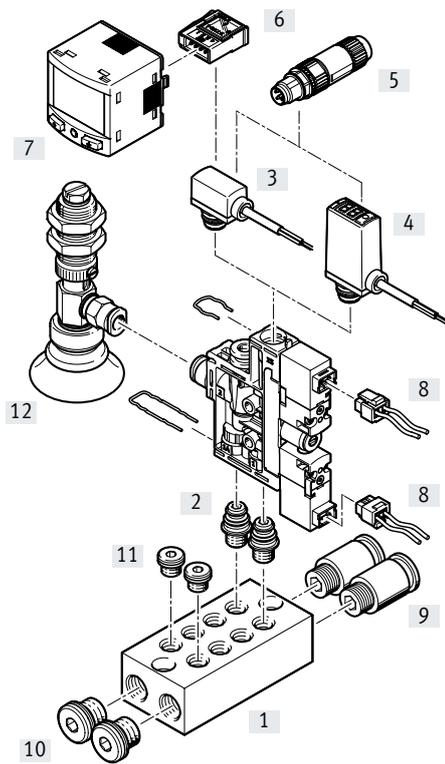
The set or taught-in setpoint value for the generated vacuum is monitored by a vacuum sensor.

If the setpoint value is reached or if it is not reached due to malfunctions (e.g. leakages, dropped workpiece), the vacuum sensor emits an electrical signal.

OVEL-...-V1B/V1V/B2B/B2V: Pressure transmitter SPTE with an analogue output (a page 17). Detection of analogue signals and conversion into digital signals with downstream signal converter SCDN with LCD display (a page 22).

OVEL-...-V1PNLK/B2PNLK: Pressure sensor SPAE with various switching outputs and LCD display, IO-Link® and teach-in function (a page 19).

Peripherals overview



Mounting attachments and accessories		OVEL-...PQ	OVEL-...P	→ Page/Internet
[1]	Common supply manifold OABM-P	-	■	13
[2]	Mounting kit OABM-MK	-	■	15
[3]	Pressure transmitter SPTE	■	■	17
[4]	Pressure sensor SPAЕ	■	■	19
[5]	Plug NECU-S-M8G3/M12G3	■	■	22
[6]	Plug NECU-S-ECG4	■	■	22
[7]	Signal converter SCDN	■	■	22
[8]	Plug socket with cable NEBV	■	■	22
[9]	Push-in fitting QS	-	■	22
[10]	Blanking plug B-1/8	-	■	22
[11]	Blanking plug B-M7	-	■	22
[12]	Suction gripper ESG	■	■	esg
-	Holder for suction cup with connector ESH	■	■	esh
-	Suction cup with connection ESS	■	■	ess
-	Vacuum filter OAFF	■	■	16

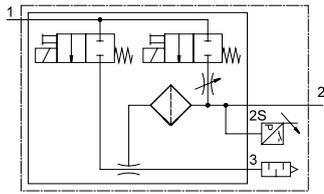
Type codes

001	Series	
OVEL	Vacuum suction nozzle, electropneumatic	
002	Vacuum generation	
5	Laval nozzle 0.45 mm	
7	Laval nozzle 0.7 mm	
10	Laval nozzle 0.95 mm	
003	Vacuum type	
H	High vacuum	
L	High suction rate	
004	Size	
10	10	
15	15	
005	Supply air connection	
P	For P linking	
PQ	QS connections, metric	
006	Vacuum connection	
VM7	M7	
VQ3	Push-in connector 3 mm	
VQ4	Push-in connector 4 mm	
VQ6	Push-in connector 6 mm	
007	Exhaust connection	
RQ	QS connections, metric	
UA	Open silencer UO	
UC	Closed silencer UC	

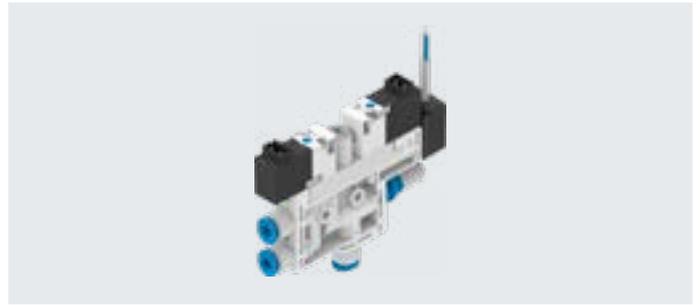
008	Ejector pulse connection	
	Via supply air connection	
Z	Additional connection	
009	Vacuum valve	
C	Normally closed	
010	Additional function	
	Without ejector pulse	
A	Electric ejector pulse	
011	Pressure measuring range vacuum sensor	
	Without vacuum sensor	
V1	0 ... -1 bar	
B2	-1 ... 1 bar	
012	Output signal vacuum sensor	
	Without vacuum sensor	
B	1 ... 5 V	
V	0 ... 10 V	
PNLK	PNP or NPN or IO-Link®	
013	Electrical connection	
H3	Connection pattern H, vertical plug	
014	Robot connection	
	None	
RA1	Universal robots	

 **Note**
The ordering data include possible combinations.

Datasheet



- Function
N/C, normally closed:
- With/without ejector pulse
 - Push-in connectors
 - Open silencer
 - With/without vacuum sensor
 - Prepared for common supply manifold



General technical data		OVEL-5-H	OVEL-5-L	OVEL-7-H	OVEL-7-L	OVEL-10-H/L
Type						
Nominal width of Laval nozzle	[mm]	0.45		0.7		0.95
Grid dimension	[mm]	10		15		15
Grade of filtration	[µm]	40				
Mounting position		Any				
Type of mounting		With through-hole On manifold rail				
Pneumatic port 1	OVEL-...-P	Common line via manifold rail				
	OVEL-...-PQ-VQ3	For tubing O.D. 3 mm	–			–
	OVEL-...-PQ	For tubing O.D. 4 mm		For tubing O.D. 4 mm	For tubing O.D. 6 mm	For tubing O.D. 6 mm
Vacuum port	OVEL-...-VQ3	For tubing O.D. 3 mm		–		–
	OVEL-...-VQ4	For tubing O.D. 4 mm		For tubing O.D. 4 mm	–	–
	OVEL-...-VQ6	–		–	For tubing O.D. 6 mm	For tubing O.D. 6 mm
Pneumatic port 3	OVEL-...-UA	Open silencer				
	OVEL-...-RQ	For tubing O.D. 4 mm		For tubing O.D. 6 mm		For tubing O.D. 6 mm
Connection for ejector pulse ¹⁾	OVEL-...-ZA	Corresponds to the selected size of pneumatic port 1				

1) If there is no ejector pulse or the ejector pulse is generated via pneumatic port 1, the additional port for the ejector pulse is sealed with a blanking plug.

Technical data – design		OVEL-...-UA	OVEL-...-RQ
Type			
Design		T-shape	
Ejector characteristic	OVEL-...-H	High vacuum/standard	
	OVEL-...-L	High suction rate/standard	
Silencer design		Open	–
Integrated function		Electric on/off valve	
		Filters	
		Open silencer	
	OVEL-...-A	Ejector pulse, electrical	
	OVEL-...-A	Flow control valve	
	OVEL-...-V1B/V1V/B2B/B2V	Pressure transmitter	
	OVEL-...-V1PNLK/B2PNLK	Pressure sensor	
Valve function		Closed	
Manual override		Non-detenting	

Datasheet

Operating and environmental conditions		
Operating pressure	[bar]	2 ... 7
Nominal operating pressure	[bar]	4
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium		Lubricated operation not possible
Ambient temperature	[°C]	0 ... +50
Temperature of medium	[°C]	0 ... +50
Corrosion resistance class CRC ¹⁾		2
CE marking (see declaration of conformity) ²⁾		To EU EMC Directive
Degree of protection		IP40

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
- 2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp d Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Performance data – high vacuum				
Type		OVEL-5-H	OVEL-7-H	OVEL-10-H
Max. vacuum	[%]	89	92	92
Operating pressure for max. vacuum	[bar]	4.2	4.5	3.8
Operating pressure for max. suction rate	[bar]	3	4	4
Max. suction rate with respect to atmosphere	[l/min]	4	17	21
Pressurisation time at nominal operating pressure 4 bar (for 1 l volume) ¹⁾	[s]	2	1.2	1
Sound pressure level at p1 = 4 bar	[db(A)]	64	61	68

- 1) Time required to reduce the vacuum to a residual vacuum of –0.05 bar

Performance data – high suction rate				
Type		OVEL-5-L	OVEL-7-L	OVEL-10-L
Operating pressure for max. suction rate	[bar]	5	5	6
Max. suction rate with respect to atmosphere	[l/min]	11	33	45
Pressurisation time at nominal operating pressure 4 bar (for 1 l volume) ¹⁾	[s]	0.8	0.4	0.4
Sound pressure level at p1 = 4 bar	[db(A)]	52	64	67

- 1) Time required to reduce the vacuum to a residual vacuum of –0.05 bar

Datasheet

Technical data – electrical connection			
Type		OVEV without ejector pulse	OVEV with ejector pulse
Solenoid valve			
Electrical connection input,	Function	Vacuum generation	
		–	Ejector pulse
	Connection type	Plug	
	Connection technology	Plug pattern H	
	Number of pins/wires	2	
	Plug pattern		
Type of mounting	Snap-locking		
Operating voltage range	[V DC]	21.6 ... 26.4	
Duty cycle	[%]	100	
Characteristic coil data, 24 V DC	[W]	1.0	
Vacuum sensor			
Electrical connection output,	Function	Sensor	
	Connection type	Cable	
	Connection technology	Open end	
	Number of pins/wires	3	
Cable diameter	[mm]	2.9 ±0.1	
Cable length	[m]	2.5	
Nominal conductor cross section	[mm ²]	0.14	
Cable characteristic		Suitable for energy chains	

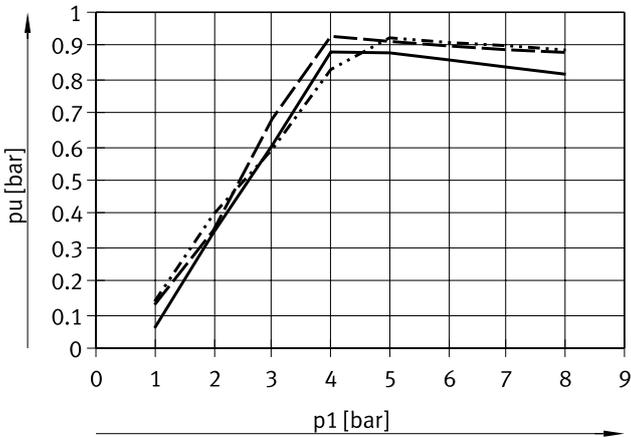
Technical data – vacuum sensor								
Type		OVEV...-V1B	OVEV...-V1V	OVEV...-B2B	OVEV...-B2V	OVEV...-V1PNLK	OVEV...-B2PNLK	
Mechanical system								
Measurement method		Piezoresistive pressure sensor			Piezoresistive pressure sensor with display			
Pressure measuring range	[bar]	–1 ... 0		–1 ... 1		–1 ... 0	–1 ... 1	
Setting options		–					Teach-in	
							IO-Link®	
							Via display and buttons	
Display type		–					LED display, 2-digit	
Electrical								
Operating voltage range, sensor	[V DC]	10 ... 30	18 ... 30	10 ... 30	18 ... 30	18 ... 30		
Switching output		–					PNP/NPN, switchable	
Switching element function		–					N/C or N/O, switchable	
Switching function		–					Freely programmable	
Analogue output	[V]	1 ... 5	0 ... 10	1 ... 5	0 ... 10	–		

Materials	
Housing	PA-reinforced
Silencer	PE
Jet nozzle	Wrought aluminium alloy
Female nozzle	POM
Filters	POM
Adjusting screw	Steel
Connecting thread	POM
Screws	Steel
Cable sheath	PVC (colour: grey)
Seals	NBR
Note on materials	RoHS-compliant

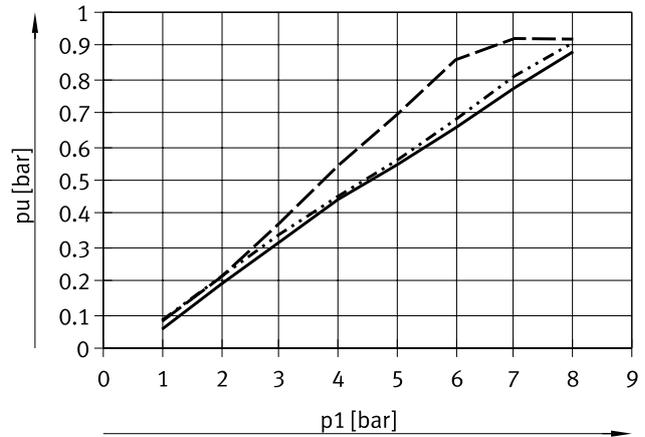
Datasheet

Vacuum p_u as a function of operating pressure p_1

High vacuum



High suction rate

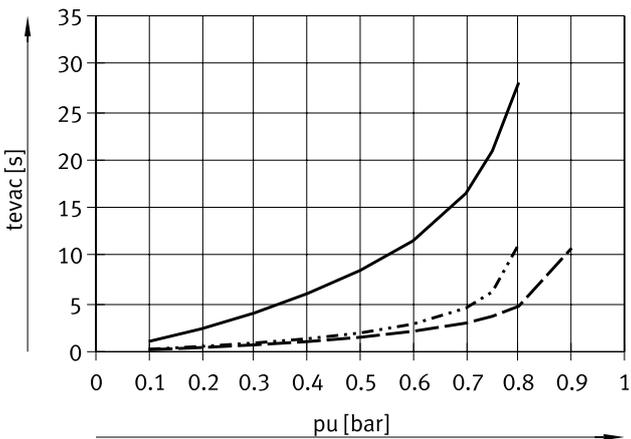


- OVEL-5-H
- OVEL-7-H
- - - OVEL-10-H

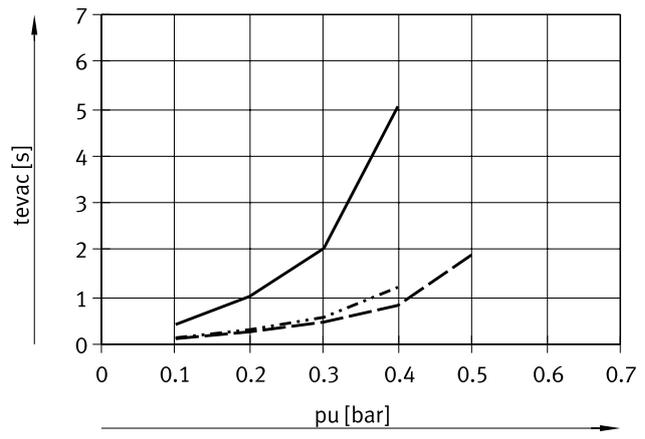
- OVEL-5-L
- OVEL-7-L
- - - OVEL-10-L

Evacuation time t_{evac} as a function of vacuum p_u for 1 l volume at 4 bar operating pressure

High vacuum



High suction rate

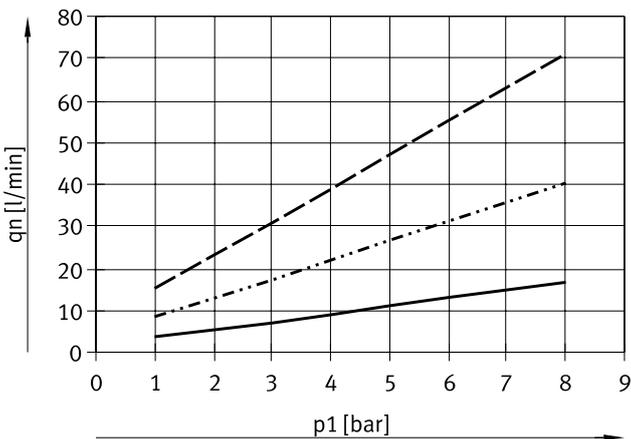


- OVEL-5-H
- OVEL-7-H
- - - OVEL-10-H

- OVEL-5-L
- OVEL-7-L
- - - OVEL-10-L

Air consumption q_n as a function of operating pressure p_1

High vacuum/high suction rate



- OVEL-5
- OVEL-7
- - - OVEL-10

Datasheet

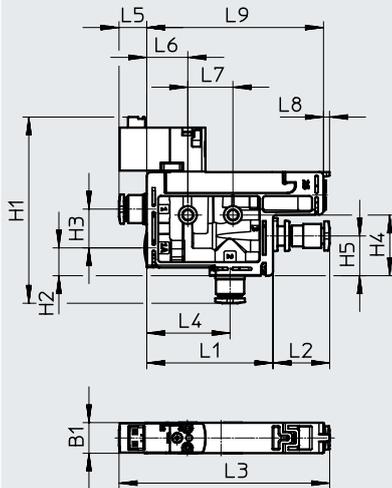
Dimensions

Download CAD data → www.festo.com

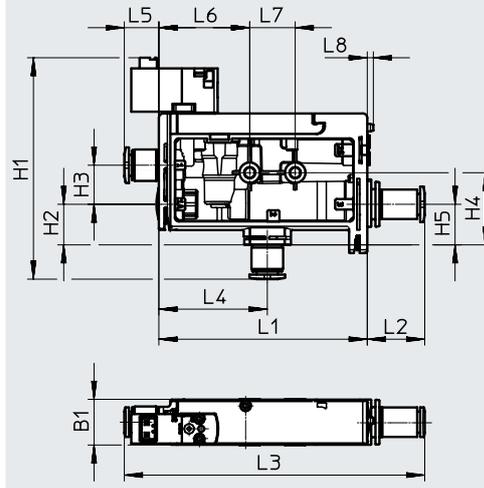
[] Without ejector pulse and vacuum sensor

[RQ] Push-in connector on pneumatic port 3

OVEL-5



OVEL-7/10

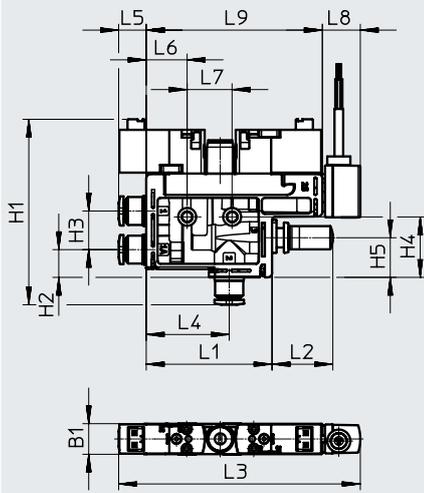


[A] With ejector pulse

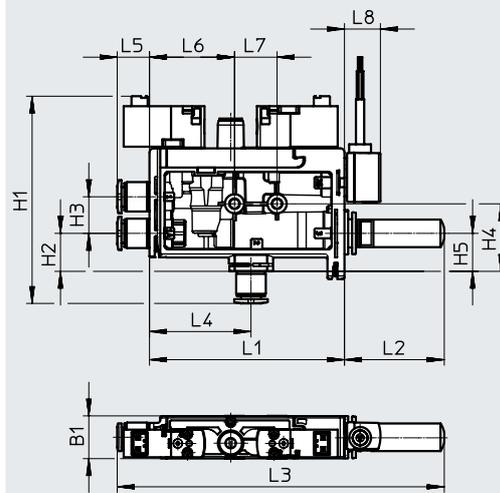
[UA] Open silencer on pneumatic port 3

[V1B]/[V1V]/[B2B]/[B2V]/[V1PNLK]/[B2PNLK] Vacuum sensor

OVEL-5



OVEL-7/10



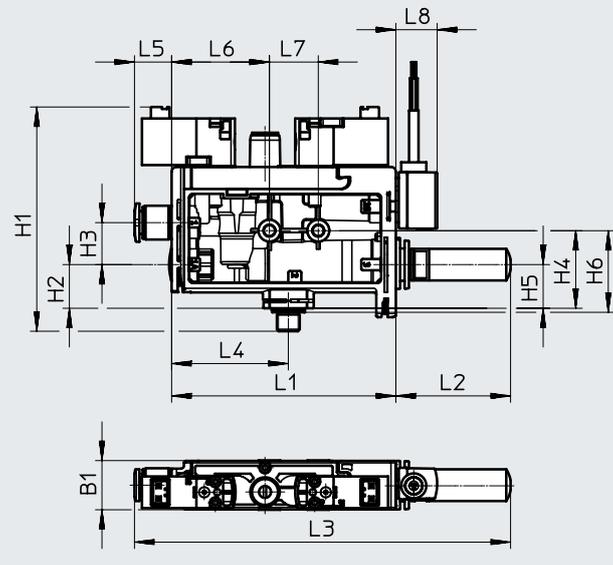
Type	B1 ±0.3	H1 ±0.8	H2 ±0.5	H3 ±0.5	H4 ±0.2	H5 ±0.5	L1 ±0.8	L2 ±0.8		L3 ±2		L4 ±0.5	L5 ±0.5	L6 ±0.2	L7 ±0.2	L8 ±0.8	L9 ±0.8	
								[RQ]	[UA]	[RQ]	[UA]							
OVEL-5										70	71						2	
OVEL-5-...-V1B/V1V/B2B/B2V	10.3	62	9.4	13	20.4	13	42	19	20.2	81	81	27.7	9.4	13.7	15		13	59
OVEL-5-...-V1PNLK/B2PNLK										99	99						31	
OVEL-7-H										97	114						2	
OVEL-7-H-...-V1B/V1V/B2B/B2V	15.2	72	13.5	13	24	13.5	68.8	19	35.5	97	114	35.8	9.4	30	15		13	-
OVEL-7-H-...-V1PNLK/B2PNLK										109	114						31	
OVEL-7-L										99	116						2	
OVEL-7-L-...-V1B/V1V/B2B/B2V	15.2	74	13.5	13	24	13.5	68.8	19	35.5	99	116	35.8	11.4	30	15		13	-
OVEL-7-L-...-V1PNLK/B2PNLK										111	116						31	
OVEL-10										99	116						2	
OVEL-10-...-V1B/V1V/B2B/B2V	15.2	74	13.5	13	24	13.5	68.8	19	35.5	99	116	35.8	11.4	30	15		13	-
OVEL-10-...-V1PNLK/B2PNLK										111	116						31	

Datasheet

Dimensions

Download CAD data → www.festo.com

Vacuum generators for UR-Plus gripper

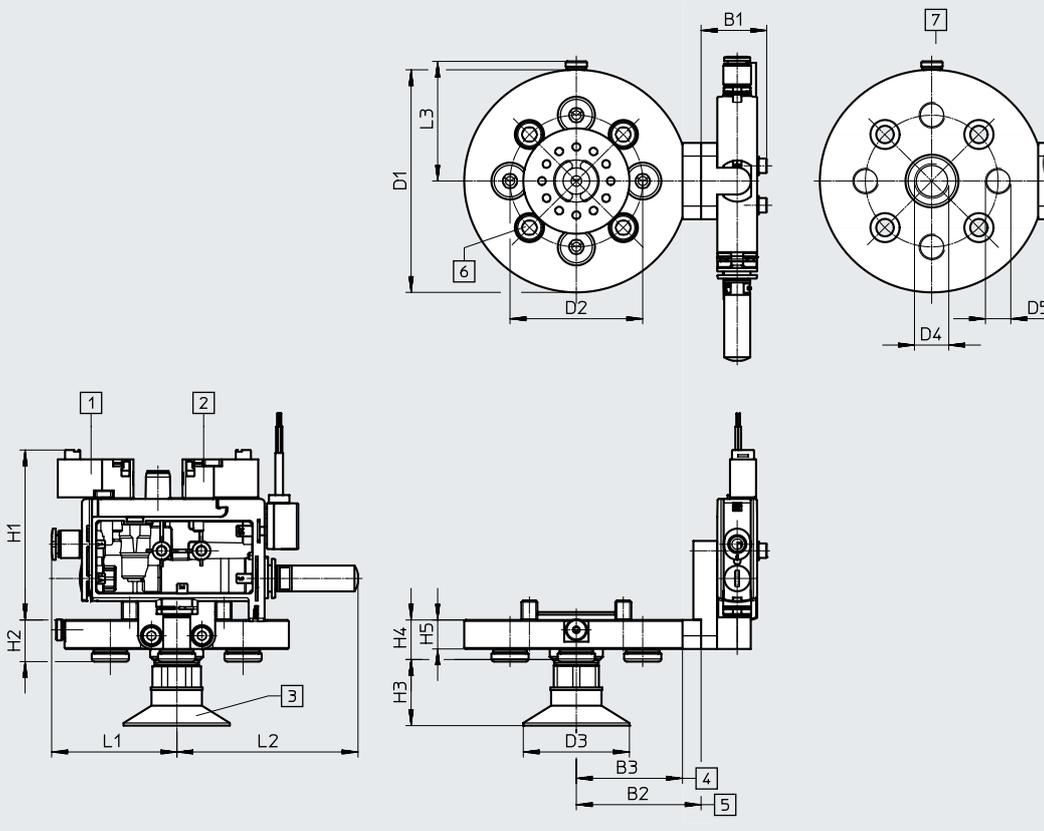


Type	B1	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8
OVEL-10-...-VM7-UA-CA-V1V-H3	±0.3	±0.8	±0.5	±0.5	±0.2	±0.5	±0.2	±0.8	±0.8	±2	±0.5	±0.5	±0.2	±0.2	±0.8

Dimensions

Download CAD data → www.festo.com

Suction gripper kit for robots



- [1] Vacuum valve
- [2] Ejector valve
- [3] Suction cup with connection VAS-40-1/4-NBR
- [4] Without distance piece
- [5] With distance piece
- [6] Socket head screw M6x10
- [7] Without suction cup C and blanking plug

Type	B1	B2	B3	D1 ∅	D2 ∅	D3 ∅	D4	D5	H1	H2	H3	H4	H5	L1	L2	L3
OVEL-10-...-VM7-UA-CA-V1V-H3-RA1	24.7	47	40	84.5	50	40	G1/4	G1/8	64.5	15.8	25.1	15	11	47.2	68.2	45.5

Datasheet

Ordering data – high vacuum							
Pressure measuring range of vacuum sensor [bar]	Vacuum sensor output signal	Exhaust port	Nominal width of Laval nozzle [mm]	Weight [g]	Part no.	Type	
Vacuum generators, for P-linkage							
-1 ... 0	PNP or NPN or IO-Link®	UC	0.45	75	8141086	OVEL-5-H-10-P-VQ4-UC-C-A-V1PNLK-H3	
			0.7	92	8141087	OVEL-7-H-15-P-VQ4-UC-C-A-V1PNLK-H3	
			0.95	93	8141089	OVEL-10-H-15-P-VQ6-UC-C-A-V1PNLK-H3	
-	-	UC	0.45	40	8141094	OVEL-5-H-10-P-VQ4-UC-C-A-H3	
			0.7	57	8141095	OVEL-7-H-15-P-VQ4-UC-C-A-H3	
			0.95	58	8141097	OVEL-10-H-15-P-VQ6-UC-C-A-H3	
Vacuum generators, for metric QS connections							
-1 ... 0	1 ... 5 V	UA	0.45	71	8049046	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1B-H3	
			0.7	88	8049047	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1B-H3	
			0.95	89	8049048	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1B-H3	
	0 ... 10 V	UA	0.45	71	8049049	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1V-H3	
			0.7	88	8049050	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1V-H3	
			0.95	89	8049051	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1V-H3	
	PNP or NPN or IO-Link®	UA	0.45	74	8049052	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1PNLK-H3	
			0.7	91	8049053	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1PNLK-H3	
			UC	0.7	91	8141092	OVEL-7-H-15-PQ-VQ4-UC-C-A-V1PNLK-H3
			UA	0.95	92	8049054	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1PNLK-H3
			UC	0.95	92	8141093	OVEL-10-H-15-PQ-VQ6-UC-C-A-V1PNLK-H3
	-1 ... 1	0 ... 10 V	UA	0.45	71	8069567	OVEL-5-H-10-PQ-VQ4-UA-C-A-B2V-H3
0.7				88	8069568	OVEL-7-H-15-PQ-VQ4-UA-C-A-B2V-H3	
0.95				88	8069569	OVEL-10-H-15-PQ-VQ6-UA-C-A-B2V-H3	
PNP or NPN or IO-Link®		UA	0.45	74	8069570	OVEL-5-H-10-PQ-VQ4-UA-C-A-B2PNLK-H3	
			0.7	91	8069571	OVEL-7-H-15-PQ-VQ4-UA-C-A-B2PNLK-H3	
			0.95	91	8069572	OVEL-10-H-15-PQ-VQ6-UA-C-A-B2PNLK-H3	
-	-	UC	0.45	39	8141099	OVEL-5-H-10-PQ-VQ4-UC-C-A-H3	
			0.7	56	8141100	OVEL-7-H-15-PQ-VQ4-UC-C-A-H3	
			0.95	57	8142126	OVEL-10-H-15-PQ-VQ6-UC-C-A-H3	
Vacuum generators for UR-Plus gripper							
-1 ... 0	0 ... 10 V	UA	0.95	88	8129122	OVEL-10-H-15-PQ-VM7-UA-C-A-V1V-H3	
Suction gripper kit for robots							
-1 ... 0	0 ... 10 V	UA	0.95	300	8121043	OVEL-10-H-15-PQ-VM7-UA-C-A-V1V-H3-RA1	

Ordering data – Modular product system

Ordering table		Conditions	Code	Enter code
Type	OVEL			
Module no.	8049045			
Vacuum generator	Vacuum generator, electropneumatic		OVEL	OVEL
Nominal width of Laval nozzle [mm]	0.45		-5	
	0.7		-7	
	0.95		-10	
Ejector characteristic	High vacuum		-H	
	High suction rate		-L	
Housing size/width [mm]	10	[1]	-10	
	15	[2]	-15	
Pneumatic port 1	For pneumatic ports via manifold rail		-P	
	Push-in connectors, metric		-PQ	
Vacuum port	Push-in connector 3 mm	[3]	-VQ3	
	Push-in connector 4 mm	[4]	-VQ4	
	Push-in connector 6 mm	[5]	-VQ6	
Pneumatic port 3	Push-in connectors, metric		-RQ	
	Open silencer		-UA	
	Silencer closed	[8]	-UC	
Ejector pulse connection	Via pneumatic connection 1			
	Additional connection (as pneumatic connection 1)		-Z	
Vacuum valve	Normally closed		-C	-C
Additional function	Without ejector pulse			
	Ejector pulse, electrical	[6]	-A	
Pressure measuring range of vacuum sensor	Without vacuum sensor			
	-1 ... 0 bar		-V1	
	-1 ... 1 bar		-B2	
Vacuum sensor output signal	Without vacuum sensor			
	1 ... 5 V	[7]	B	
	0 ... 10 V	[7]	V	
	PNP or NPN or IO-Link®	[7]	PNLK	
Electrical connection	Plug pattern H, vertical plug		-H3	-H3

- [1] 10 Not with Laval nozzle nominal width 7, 10.
- [2] 15 Not with Laval nozzle nominal width 5.
- [3] VQ3 Only with Laval nozzle nominal width 5.
- [4] VQ4 Only with Laval nozzle nominal width 5 or Laval nozzle nominal width 7 in combination with ejector characteristic H.
- [5] VQ6 Only with Laval nozzle nominal width 10 or Laval nozzle nominal width 7 in combination with ejector characteristic L.
- [6] A Mandatory information in combination with ejector pulse port Z.
- [7] B, V, PNLK Mandatory information in combination with vacuum sensor pressure measuring range B2, V1.
- [8] UC Only with vacuum type H, high vacuum

Accessories

Common supply manifold OABM-P

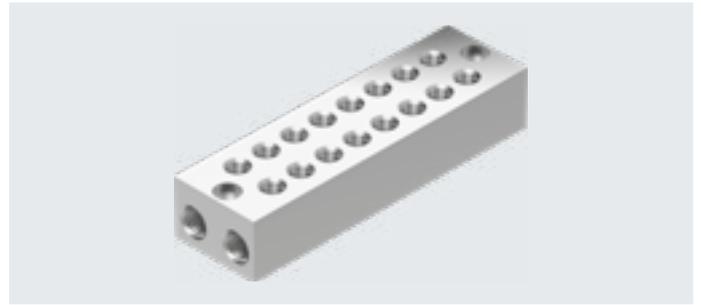
For vacuum generator
OVEL-...-P

- Up to 8 vacuum generators OVEL on a common supply manifold
- Common compressed air supply via common supply manifold



Note

On the common supply manifold vacuum generators with an additional port for the ejector pulse (OVEL-...-Z-C-A) cannot be combined with vacuum generators without an additional port (OVEL-...-C-A).



General technical data

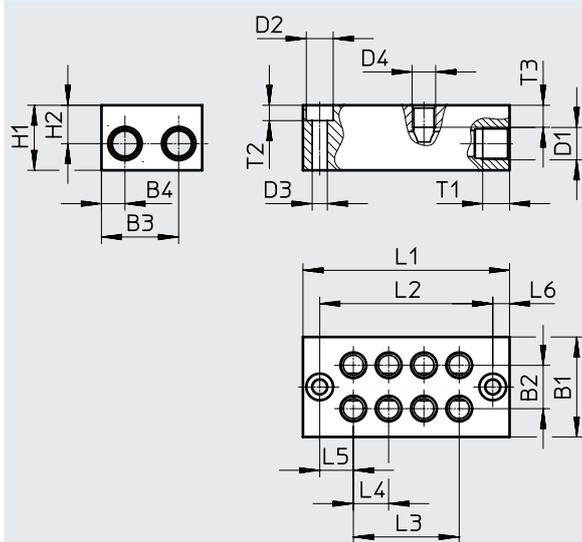
Pneumatic port 1	G1/8
Type of mounting	With through-hole

Materials

Sub-base	Wrought aluminium alloy
Note on materials	RoHS-compliant

Dimensions

Download CAD data → www.festo.com



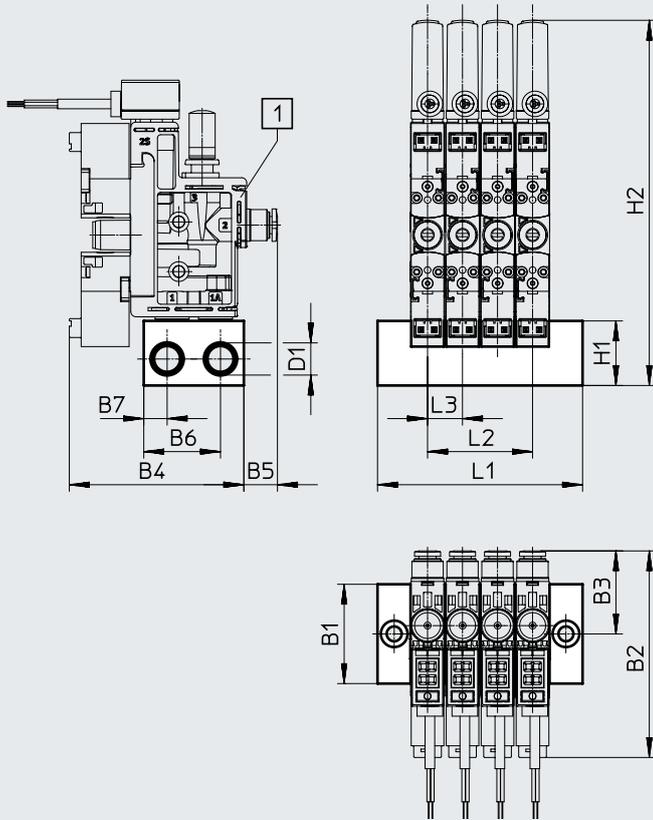
Type	B1	B2	B3	B4	D1	D2 ø	D3 ø	D4	H1	H2
OABM-P-G3-10-2	30	13	23	7	G1/8	8	4.5	M7	19.5	11.5
OABM-P-G3-10-4										
OABM-P-G3-10-8										
OABM-P-G3-15-2	30	13	23	7	G1/8	8	4.5	M7	19.5	11.5
OABM-P-G3-15-4										
OABM-P-G3-15-8										

Type	L1	L2	L3	L4	L5	L6	T1	T2	T3
OABM-P-G3-10-2	40.5	30.5	10.5	10.5	10	5	8	4.6	6.6
OABM-P-G3-10-4	61.5	51.5	31.5						
OABM-P-G3-10-8	103.5	93.5	73.5						
OABM-P-G3-15-2	51.5	41.5	15.5	15.5	13	5	8	4.6	6.6
OABM-P-G3-15-4	82.5	72.5	46.5						
OABM-P-G3-15-8	144.5	134.5	108.5						

Accessories

Dimensions

Download CAD data → www.festo.com



 **Note**

Combined allocation with OVEL-5 and OVEL-7/-10 is possible only with common supply manifolds OABM-...-15.

Use mounting kit OABM-MK for mounting the OVEL on the common supply manifold.

Min. tightening torque: 0.3 Nm

Max. tightening torque: 3.3 Nm

[1] Vacuum generator OVEL-5/7/10

Type		B1	B2	B3	B4	B5	B6	B7	D1	H1	H2	L1	L2	L3
OABM-P-G3-10-2	With OVEL-5	30	62	25	52	10	23	7	G1/8	19.5	110	40.5	10.5	10.5
OABM-P-G3-10-4												61.5	31.5	
OABM-P-G3-10-8												103.5	73.5	
OABM-P-G3-15-2	With OVEL-7/10	30	74	31	57	16	23	7	G1/8	19.5	125	51.5	15.5	15.5
OABM-P-G3-15-4												82.5	46.5	
OABM-P-G3-15-8												144.5	108.5	

Ordering data

Common supply manifold	Number of device positions	CRC ¹⁾	Weight [g]	Part no.	Type
For OVEL-5	2	2	45.2	8049141	OABM-P-G3-10-2
	4	2	69.6	8049142	OABM-P-G3-10-4
	8	2	118.6	8049143	OABM-P-G3-10-8
For OVEL-5/7/10	2	2	59.6	8049144	OABM-P-G3-15-2
	4	2	97.1	8049145	OABM-P-G3-15-4
	8	2	172	8049146	OABM-P-G3-15-8

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

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

Mounting kit OABM-MK

For common supply manifold OABM-P



General technical data					
Type of mounting	Fixing clips Can be screwed onto manifold rail				
Min. tightening torque	[Nm]	0.3			
Max. tightening torque	[Nm]	3.3			
Materials					
Hollow bolt	Wrought aluminium alloy				
Seals	NBR				
Note on materials	RoHS-compliant				
Ordering data					
		CRC ¹⁾	Weight [g]	Part no.	Type
For common supply manifold OABM-P		2	7	8065850	OABM-MK-G3

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

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

Vacuum filter OAFF



General technical data		
Type of mounting		Push-on
		Latching
Grade of filtration	[µm]	40
Ejector pulse suitability	[bar]	≤7

Operating and environmental conditions		
Operating pressure	[bar]	-0.95
Operating medium		Atmospheric air based on ISO 8573-1:2010 [7:--:-]

Materials		
Type	OAFF-G3-5	OAFF-G3-7
Housing	POM	
Filters	Fabric, PA	
Seals	-	NBR
Note on materials	RoHS-compliant	

Ordering data				
	Weight [g]	Part no.	Type	PJ ¹⁾
For vacuum generator OVEL-5	1	8068944	OAFF-G3-5	10
For vacuum generator OVEL-7/10	1.5	8068945	OAFF-G3-7	10

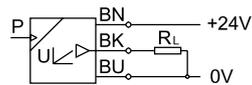
1) Packaging unit

Accessories

Pressure transmitter SPTE

(Order code in modular product system: OVEL-...-V1B/V1V/B2B/B2V, OVTL-...-V)

- Pressure measuring ranges
–1 ... 0 bar or –1 ... 1 bar
- Analogue outputs 1 ... 5 V or
0 ... 10 V



Detection of analogue signals and conversion into digital signals with downstream signal converter SCDN with LCD display (a page 22).



General technical data	
Certification	RCM c UL us - Recognized (OL)
CE mark (see declaration of conformity) ¹⁾	To EU EMC Directive
Note on materials	RoHS-compliant

- 1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp d Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Input signal/measuring element		SPTE-V1R	SPTE-B2R
Type			
Measured variable		Relative pressure	
Measurement method		Piezoresistive pressure sensor	
Pressure measuring range start value [bar]		0	–1
Pressure measuring range end value [bar]		–1	1
Max. overload pressure [bar]		5	5
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible	
Temperature of medium [°C]		0 ... 50	
Ambient temperature [°C]		0 ... 50	

Output, general		
Accuracy \pm FS ¹⁾ [%]		3 (at room temperature of approx. 23°C) 4 (in ambient temperature range 0 ... 50 °C)
Repetition accuracy \pm FS ¹⁾ [%]		0.3
Temperature coefficient \pm FS/K ¹⁾ [%]		0.05

- 1) % FS = % of the measuring range (full scale)

Analogue output		SPTE-...-V-2.5K	SPTE-...-B-2.5K
Type			
Analogue output [V]		0 ... 10	1 ... 5
Rise time [ms]		1	
Min. load resistance of voltage output [kΩ]		15	

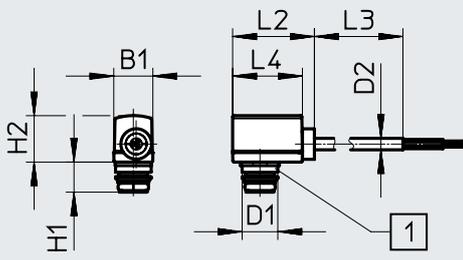
Accessories

Output, additional data	
Short circuit current rating	For all electrical connections
Electronics	
Type	SPTe-...-V-2.5K SPTe-...-B-2.5K
Operating voltage range DC [V]	18 ... 30 10 ... 30
Reverse polarity protection	For all electrical connections
Electromechanical system	
Electrical connection	Cable, 3-wire, open end
Cable length [m]	2.5
Mechanical system	
Type of mounting	Pin-type connection
Mounting position	Any
Pneumatic port	Cartridge 10 mm
Product weight [g]	35
Information on materials: Housing	PA-reinforced
Immission/emission	
Degree of protection	IP40
Corrosion resistance class CRC ¹⁾	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Dimensions

Download CAD data → www.festo.com



[1] Supply port: pin-type cartridge
10 mm

Type	B1	D1 ∅	D2 ∅	H1	H2	L2	L3	L4
SPTe-...-PC10	9.8	8.9	2.9	7.6	11.7	20.5	2500	17.5

Ordering data

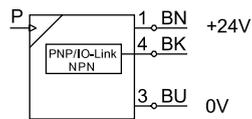
Pneumatic port	Electrical connection	Pressure measuring range [bar]	Analogue output [V]	Order code in the modular product system		Part no.	Type
				OVEL	OVTL		
Cartridge 10 mm	Cable, 3-wire, open end	-1 ... 0	0 ... 10	V1V	V	8025974	SPTe-V1R-PC10-V-2.5K
			1 ... 5	V1B	-	8025975	SPTe-V1R-PC10-B-2.5K
		-1 ... 1	0 ... 10	B2V	-	8025976	SPTe-B2R-PC10-V-2.5K
			1 ... 5	B2B	-	8025977	SPTe-B2R-PC10-B-2.5K

Accessories

Pressure sensor SPAE

(Order code in the modular product system: OVEL-...-V1PNLK/B2PNLK, OVTL-...-PNLK)

- Pressure measuring ranges
–1 ... 0 bar or –1 ... 1 bar
- Switching output PNP/NPN, switchable
- IO-Link®
- LCD display
- Teach-in function



General technical data	
Certification	RCM c UL us - Recognized (OL)
CE mark (see declaration of conformity) ¹⁾	To EU EMC Directive
Note on materials	RoHS-compliant

- 1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp d Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Input signal/measuring element		SPA-EV1R	SPA-EB2R
Type			
Measured variable		Relative pressure	
Measurement method		Piezoresistive pressure sensor	
Pressure measuring range start value	[bar]	0	–1
Pressure measuring range end value	[bar]	–1	1
Max. overload pressure	[bar]	5	5
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible	
Temperature of medium	[°C]	0 ... 50	
Ambient temperature	[°C]	0 ... 50	

Signal processing	
Resolution ADC	10 bits

Output, general		
Accuracy ±FS ¹⁾	[%]	1.5 (at room temperature of approx. 23°C) 2.5 (in ambient temperature range 0 ... 50 °C)
Repetition accuracy ±FS ¹⁾	[%]	0.3
Temperature coefficient ±FS/K ¹⁾	[%]	0.05

- 1) % FS = % of the measuring range (full scale)

Switching output	
Switching output	PNP/NPN, switchable
Switching function	Freely programmable
Switching element function	N/C or N/O, switchable
Max. output current	[mA] 100

Accessories

Measured value display		
Display range start value	[% FS]	0
Display range end value	[% FS]	99
Output, additional data		
Short circuit current rating		For all electrical connections
Communication interface		
Protocol		IO-Link®
IO-Link®, protocol version		Device V 1.1
IO-Link®, profile		Smart sensor profile
IO-Link®, function classes		Binary data channel (BDC)
		Diagnostics
		Identification
		Process data variable (PDV)
		Teach channel
IO-Link®, communication mode		COM2 (38.4 kBd)
IO-Link®, SIO mode support		Yes
IO-Link®, port class		A
IO-Link®, process data width OUT		0 byte
IO-Link®, process data width IN		2 bytes
IO-Link®, process data contents IN		2 bit BDC (pressure monitoring)
		14 bit PDV (pressure measured value)
IO-Link®, minimum cycle time	[ms]	3
IO-Link®, data memory required		0.5 KB
Electronics		
Operating voltage range DC	[V]	18 ... 30
Reverse polarity protection		For all electrical connections
Electromechanical system		
Electrical connection		Cable, 3-wire, open end
Cable length	[m]	2.5
Mechanical system		
Type of mounting		Pin-type connection
Mounting position		Any
Pneumatic port		Cartridge 10 mm
Product weight	[g]	40
Information on materials: Housing		PA-reinforced
Display/operation		
Display type		LED display, 2-digit
Displayable units		% FS
Switching status indication		yellow LED
Setting options		Via display and keys, teach-in, IO-Link®
Threshold value setting range	[%]	1 ... 98
Protection against tampering		PIN code

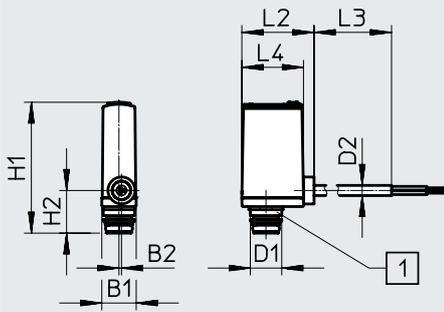
Accessories

Immission/emission	
Degree of protection	IP40
Corrosion resistance class CRC ¹⁾	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Dimensions

Download CAD data → www.festo.com



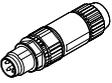
[1] Supply port: pin-type cartridge
 10 mm

Type	B1	B2	D1 ∅	D2 ∅	H1	H2	L2	L3	L4
SPAE-...-PC10	9.8	0.7	8.9	2.9	~37.5	12.2	20.5	2500	17.5

Ordering data

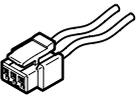
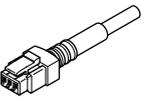
Pneumatic port	Electrical connection	Pressure measuring range [bar]	Order code in the modular product system		Part no.	Type
			OVEL	OVTL		
Cartridge 10 mm	Cable, 3-wire, open end	-1 ... 0	V1PNLK	PNLK	8025978	SPAE-V1R-PC10-PNLK-2.5K
		-1 ... 1	B2PNLK	-	8025979	SPAE-B2R-PC10-PNLK-2.5K

Accessories

Ordering data – Plug NECU-S-M8G3/M12G3			Datasheets Internet: necu	
	Electrical connection	Part no.	Type	
	Plug M8x1, 3-pin, straight, insulation displacement connector	562024	NECU-S-M8G3-HX	
	Plug M12x1, A-coded, 3-pin, straight, insulation displacement connector	562027	NECU-S-M12G3-HX	

Ordering data – Plug NECU-S-ECG4			Datasheets Internet: necu	
	Electrical connection	Part no.	Type	
	Plug, square design, 4-pin, straight, insulation displacement connector	570922	NECU-S-ECG4-HX-Q3	

Ordering data – Signal converter SCDN			Datasheets Internet: scdn	
	Measured variable	Part no.	Type	
	Voltage	8035555	SCDN-2V-EC4-PNLK-L1	

Ordering data – Plug socket with cable NEBV				Datasheets Internet: nebv	
	Electrical connection	Cable length [m]	Part no.	Type	
	Socket, 2-pin Plug pattern H	Flying leads	0.5	566654	NEBV-H1G2-KN-0.5-N-LE2
		Open end	1	566655	NEBV-H1G2-KN-1-N-LE2
			2.5	566656	NEBV-H1G2-KN-2.5-N-LE2
			5	566657	NEBV-H1G2-KN-5-N-LE2
	Socket, 2-pin Plug pattern H	Cable	0.5	566658	NEBV-H1G2-P-0.5-N-LE2
			1	566659	NEBV-H1G2-P-1-N-LE2
			2.5	566660	NEBV-H1G2-P-2.5-N-LE2
			5	566661	NEBV-H1G2-P-5-N-LE2

Ordering data – Blanking plug B				PU ¹⁾	
	Pneumatic port	Part no.	Type		
	M7	174309	B-M7	10	
	G1/8	3568	B-1/8	10	

1) Packaging unit.

Ordering data – Push-in fitting QS					PU ¹⁾
	Pneumatic port		Part no.	Type	
	G1/8	Tubing O.D. 8 mm	186098	QS-G1/8-8	10
	G1/8	Tubing O.D. 8 mm	186109	QS-G1/8-8-l	10

1) Packaging unit.