



VCM type series

Negative pressure switches (vacuum switches)

FEMA negative pressure switches detect the pressure difference relative to atmospheric pressure. All data relating to the setting range and thus also the scale divisions on the switching devices are to be understood as the difference in pressure between the relevant atmospheric pressure and the set switching pressure.

The "zero" reference point on the scale of the unit corresponds to the relevant atmospheric pressure. A minus sign before the pressure value signifies negative pressure below the relevant atmospheric pressure.

Technical data

Pressure connection

External thread G 1/2 (pressure gauge connection) according to DIN 16 288 and internal thread G 1/4 according to ISO 228 Part 1.

Switching device

Robust housing (200) made of seawater-resistant diecast aluminium GD Al Si 12.

Degree of protection

IP 54, in vertical position.
IP 65, for EEx-d version.

Pressure sensor materials

VNM 111 and VNM 301: Metal bellows: 1.4571
Sensor housing: 1.4104
VCM 095, 101 and 301: Metal bellows of Cu Zn
Sensor housing of CuZn
VCM 4156: Perbunan diaphragm sensor housing: 1.4301

Mounting position

Vertically upright and horizontal.
VCM 4156 vertically upright.

Ambient temp. at switching device

-25...+70 °C
For EEx-d versions: -15...+60 °C

Max. medium temperature

The maximum medium temperature at the pressure sensor must not exceed the permitted ambient temperature at the switching device. Temperatures may reach 85°C for short periods (not EEx-d). Higher medium temperatures are possible provided the above limit values for the switching device are ensured by suitable measures (e.g. siphon).

Mounting

Directly on the pressure line (pressure gauge-connection) or on a flat surface with two 4 mm Ø screws.

Switching pressure

Adjustable from outside with screwdriver.

Switching differential

Not adjustable with VCM and Ex-VCM types.
Adjustable with VCM-203 type.
For values see Product Summary.

Contact arrangement

Single-pole changeover switch.

Switching capacity	250 VAC		250 VDC		24 VDC	
	(ohm)	(ind)	(ohm)	(ohm)	(ohm)	(ohm)
Normal	8 A	5 A	0.3 A	8 A	8 A	8 A
EEx-d	3 A	2 A	0.03 A	3 A	3 A	3 A

Product Summary

Type	Setting range	Switching differential (mean values)	Max. permissible pressure	Dimensioned drawing
Switching differential not adjustable				
VCM 4156	-15...+6 mbar	2 mbar	1 bar	1 + 11
VCM 301	-250...+100 mbar	25 mbar	1.5 bar	1 + 13
VNM 301	-250...+100 mbar	45 mbar	3 bar	1 + 15
VCM 101	-1*...+0.1 bar	45 mbar	3 bar	1 + 14
VCM 095	-0.9...+0.5 bar	50 mbar	3 bar	1 + 14
VNM 111	-1*...+0.1 bar	50 mbar	6 bar	1 + 15
Switching differential adjustable				
VCM 301-203	-250...+100 mbar	30-200 mbar	1.5 bar	1 + 13
VNM 301-203	-250...+100 mbar	70-500 mbar	3 bar	1 + 15
VCM 101-203	-1*...+0.1 bar	80-350 mbar	3 bar	1 + 14
VCM 095-203	-0.9...+0.5 bar	90-400 mbar	3 bar	1 + 14
VNM 111-203	-1*...+0.1 bar	90-650 mbar	6 bar	1 + 15
Ex version, (housing 700), explosion protection EEx-d				
Ex-VCM 4156	-15...+6 mbar	2 mbar	1 bar	3 + 11
Ex-VCM 301	-250...+100 mbar	25 mbar	1.5 bar	3 + 13
Ex-VNM 301	-250...+100 mbar	45 mbar	3 bar	3 + 15
Ex-VCM 101	-1*...+0.1 bar	45 mbar	3 bar	3 + 14
Ex-VCM 095	-0.9...+0.5 bar	50 mbar	3 bar	3 + 14
Ex-VNM 111	-1*...+0.1 bar	50 mbar	6 bar	3 + 15

* At very high vacuums, close to the theoretical maximum of -1 bar, the switch may not be usable in view of the special conditions of vacuum engineering. However, the pressure switch itself will not be damaged at maximum vacuum.

For additional functions refer to ZF data sheet.

For smaller pressure ranges see also HCD and DPS data sheets.

Calibration

The **VCM** and **VNM** series are calibrated for falling pressure. This means that the adjustable switching pressure on the scale corresponds to the switching point at falling pressure. The reset point is higher by the amount of the switching differential. (See also page 30, 1. Calibration at lower switching point).