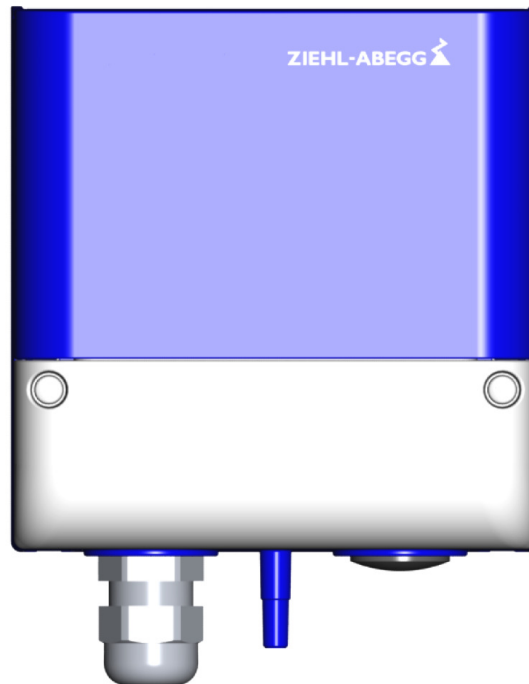


MPG-..V

**Differential-pressure sensors with switchable measuring ranges
for climate and clean-room application**

Operating Instructions



Keep for reference!

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1 General notes

1.1 Structure of the operating instructions

Before installation and start-up, read this manual carefully to ensure correct use!

We emphasize that these operating instructions apply to specific units only, and are in no way valid for the complete system!

Use these operating instructions to work safely with and on the device. They contain safety instructions that must be complied with as well as information that is required for failure-free operation of the device.

Keep these operating instructions together with the device. It must be ensured that all persons that are to work on the device can refer to the operating instructions at any time.

1.2 Exclusion of liability

To allow for future developments, construction methods and technical data given are subject to alteration. We do not accept any liability for possible errors or omissions in the information contained in data, illustrations or drawings provided.

We accept no liability for damage caused by misuse, incorrect use, improper use or as a consequence of unauthorized repairs or modifications.

2 Safety instructions



Attention!

- Mounting, electrical connection, and start-up operation may only be carried out by an electrical specialist in accordance with electrotechnical regulations (e.g. DIN EN 50110 or DIN EN 60204)!
- Persons entrusted with the planning, installation, commissioning and maintenance and servicing in connection with the device must have the corresponding qualifications and skills for these jobs. In addition, they must be knowledgeable about the safety regulations, EU directives, rules for the prevention of accidents and the corresponding national as well as regional and in-house regulations.
- It is strictly forbidden for work to be carried out on any components while they are connected to live voltage.
- The safe isolation from the supply must be checked using a two-pole voltage detector.
- The owner is obliged to ensure that the device is operated in perfect working order only.
- Inspect electrical equipment periodically: retighten loose connections – immediately replace damaged lines and cables.
- Never clean electrical equipment with water or similar liquids.
- A separate fault and performance monitoring-system with an alarm signal function is necessary in order to prevent personal injuries and material damages during malfunctions and in case the device fails. Substitute operation must be taken into consideration!

Intended use

These devices are intended exclusively for measured value acquisition of differential pressures (non-aggressive gases). Their operation is only permitted under observance of the specifications in these operating instructions.

Any other use above and beyond this will be considered as improper use. The manufacturer will not be liable for any damage resulting from this. The company using it bears the sole risk.

3 Product overview

3.1 Function

Differential-pressure sensors in proven ceramic-cantilever technology for climate and clean-room application.

The measured differential pressure (air and non-aggressive gases) is transformed into an output signal proportional to the measuring range (0...10 V).

The range from 50 Pa to 6000 Pa is covered with 3 types of device. With each type four measuring ranges over DIP switch are selectable.

The differential pressure sensor supplies a proportional output signal when the pressure at the "Plus"- connection exceeds the pressure at the "Minus"-connection.

3.2 Storage

- The device must be stored in its original packaging in a dry and weather-proof room.
- Avoid exposure to extreme heat and cold.
- Avoid over-long storage periods (we recommend a maximum of one year).

3.3 Disposal / recycling

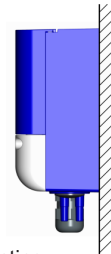


Disposal must be carried out professionally and in an environmentally friendly way in accordance with the respective national legal stipulations.

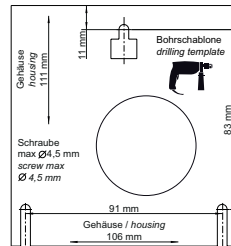
- ▷ Separate the materials by type and in an environmentally friendly way.
- ▷ If necessary, commission a specialist company with the waste disposal.

4 Mounting

- Before installation remove the device from the packing and check for any possible shipping damage!
- Assemble the device on a clean and stable base. Do not distort during assembly! Use the appropriate mounting devices for proper installation of the unit!
- Use the templates printed on the device packing to mark the fastening bore holes.
- The pressure measuring depends on position, therefore the mounting must be made vertical and as possible on a vibration-free place (cable inlet and pressure connections down).
- The pressure line's connection should be with plastic-hose (in building), inside diameter 4 / 5 mm. For a firm hold of the hose, its inside diameter must be 1 mm smaller than the outside diameter of the hose nozzle (step spigot 5 / 6 mm).
- Remove the connection cover for mounting, electrical connection and setting of the measuring range. Close the lid again carefully before start-up (tightening torque of the lid screws 1.1 Nm).

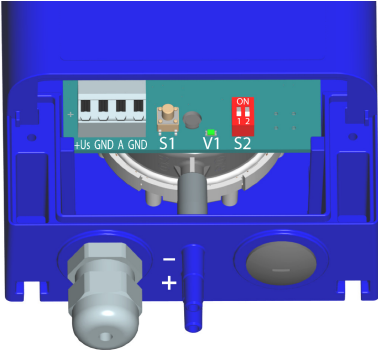


Vertical mounting



Drilling template on packing

5 Connection and operating elements

	+Us / GND	Supply voltage
	A / GND	Output signal 0...10 V
	S1	Zero point button
	V1	Status LED
	S2	DIP switch measuring range
	-	"Minus"- connection in area with lower pressure
	+	"Plus"- connection in area with higher pressure



Danger due to electric current

- Make sure that the supply voltage lies within the allowable tolerance specifications (☞ Technical data and the nameplate is fixed to the side of the device).
- Only PELV current sources which ensure safe electrical isolation of the operating voltage in accordance with IEC/DIN EN 60204-1 must be used.
- There is no potential isolation between supply voltage and output signal.
- Pay attention to maintain sufficient distance from powerlines and motor wires to prevent interferences.
- The length of the cable for the output signal may be max. 30 m; it must be shielded from 20 m! When using a shielded cable the shield must be connected (as short and with as low an induction as possible!) to the PE conductor on one side at the signal input (of the evaluation unit).

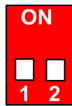
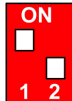
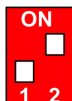

State LED V1

- LED flashes every 2 seconds: Normal operation
- LED lights constantly for 3 seconds: Zero point calibration is performed
- LED flickers permanently: Sensor defective

6 Select measuring range

The DIP switches of “S2” are set to the respective highest measuring range at the factory, i.e. both DIP switches are down (1 + 2 = “OFF”).

As small as possible a measuring range must be chosen for maximum accuracy at maximum resolution of the output signal (☞ Technical data / accuracy).

Type	S2	MPG-200V	MPG-1000V	MPG-6000V
Measuring range 1		0...200 Pa <i>(0...0.8 in.wg)</i>	0...1000 Pa <i>(0...4.0 in.wg)</i>	0...6000 Pa <i>(0...24.0 in.wg)</i>
Measuring range 2		0...150 Pa <i>(0...0.6 in.wg)</i>	0...500 Pa <i>(0...2.0 in.wg)</i>	0...4000 Pa <i>(0...16.0 in.wg)</i>
Measuring range 3		0...100 Pa <i>(0...0.4 in.wg)</i>	0...300 Pa <i>(0...1.2 in.wg)</i>	0...3000 Pa <i>(0...12.0 in.wg)</i>
Measuring range 4		0...50 Pa <i>(0...0.2 in.wg)</i>	0...200 Pa <i>(0...0.8 in.wg)</i>	0...2000 Pa <i>(0...8.0 in.wg)</i>

7 Zero point calibration

If the sensor sends an output signal > 0 V in the pressureless state, a zero point calibration is possible with the button “S1”.

This may be necessary, for example, in case of heavy thermal fluctuations in the sensor environment or non-vertical mounting.

Procedure

1. Pull off the pressurised hoses.
2. Connect voltage supply (U_S and GND).
3. Keep button S1 pressed for 3 seconds and then release it.

- ✓ The LED V1 lights permanently for 3 seconds until zero point calibration is completed then it flashes again every 2 seconds.
- ✓ Measure the output signal, nominal = 0 V. Re-connect the pressurised hoses.

8 Check sensor function

1. Connect the voltage supply (+U_S / GND), disconnect output 0 ... 10 V (A / GND).
2. Remove pressure hoses and measure output signal, nominal = 0 V.
3. Create pressure at the "+" connection against the "-" connection (e.g. by **carefully** blowing in), measure the output signal (0...10 V $\hat{=}$ measuring range).
4. If the sensor works, reconnect the pressure hoses and check these if necessary.

9 Enclosure

9.1 Technical data

Type	MPG-200V	MPG-1000V	MPG-6000V
Part-No.	384057	384058	384059
Voltage supply	10...24 V DC (+20 %) Protected against reverse polarity		
Output signal	0...10 V (characteristic linear)		

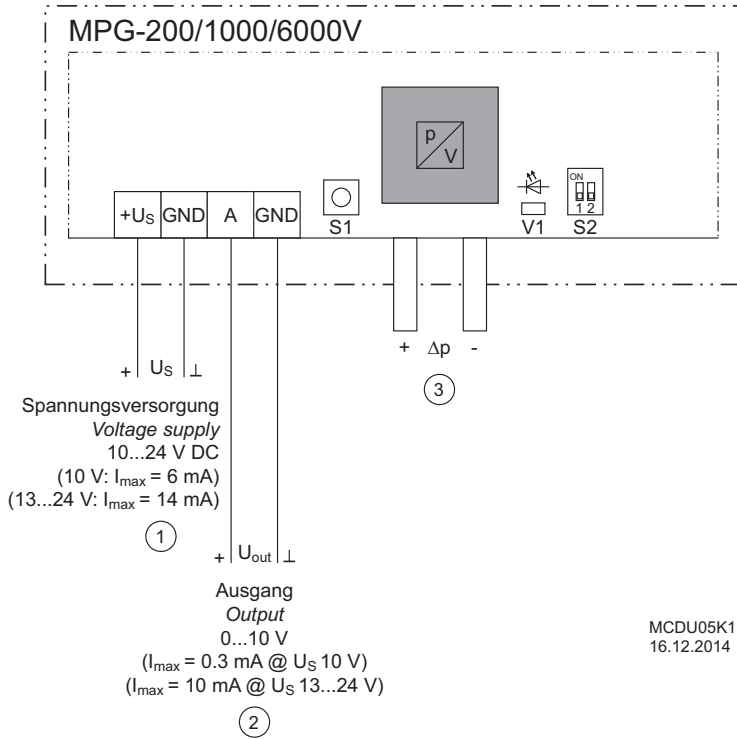
	@ U _S 10 V DC	@ U _S 13...24 V DC
Max. load output 0...10 V (short-circuit-proof)	0.3 mA	10 mA
Max. current consumption ca.	6 mA	14 mA

Pressure connections "+, -"	Hose connectors d = 5 / 6 mm (0.20 / 0.24 inch)
Housing	PC (polycarbonate) Fire protection classification UL94V0
Use position	vertical (measuring depends on position)
Protection class	IP54 according EN 60529
Weight	approx. 210 g (0.46 lb)
Permissible temperature range for operation	-10...70 °C (14...158 °F)
Permissible temperature range for storage and transport	-30...70 °C (-22... 158 °F)
Permissible rel. humidity	85 % no condensation
One-sided permissible overload	0.1 bar (80 in.wg)
Burst prssure	at room temperature: 0.2 bar (80 in.wg) at 70 °C (158 °F): 0.15 bar (60 in.wg)
Maximum cross section of terminals	1.5 mm ² / AWG16
Interference emission	according EN 61000-6-3 (domestic household applications)
Interference immunity	according EN 61000-6-2 (industrial applications)

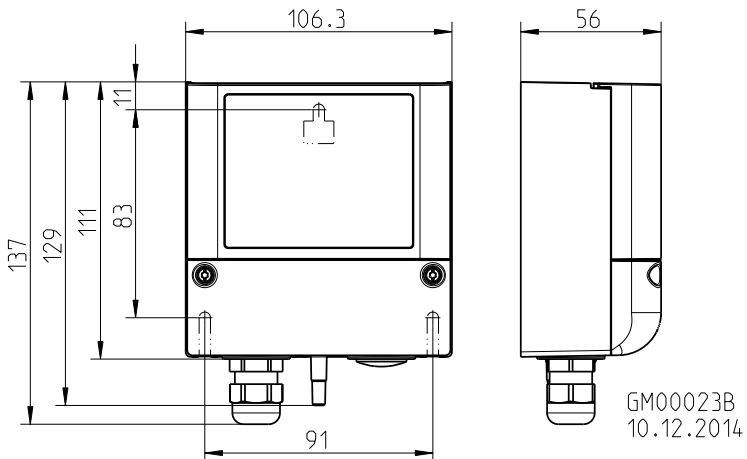
Accuracy				
Type		MPG-200V	MPG-1000V	MPG-6000V
Measuring rang max.		0...200 Pa <i>(0...0.8 in.wg)</i>	0...1000 Pa <i>(0...4.0 in.wg)</i>	0...6000 Pa <i>(0...24.0 in.wg)</i>
Tolerance zero point max. ^{*)}	%	+/- 0.9	+/- 0.9	+/- 0.9
Tolerance full scale max.	%	+/- 1.3	+/- 1.3	+/- 0.7
Resolution	%	0.1	0.1	0.1
Total of linearity, hysteresis and repeatability max.	%	1,0	0.6	0.6
Long term stability according to DIN EN 60770	%	+/-1.0	+/- 1.0	+/- 1.0
Temperature coefficient typical	% / 10K	+/- 0.2	+/- 0.2	+/- 0.2
Temperature coefficient max.	% / 10K	+/- 0.4	+/- 0.4	+/- 0.4
Temperature coefficient sensitivity typical	% / 10K	+/- 0.3	+/- 0.2	+/- 0.2
Temperature coefficient sensitivity max.	% / 10K	+/- 0.6	+/- 0.4	+/- 0.4
The accuracy data are percentages and refer to the maximum possible measuring range of the respective type.				
Test conditions: 25 °C, 45 % RH, voltage supply 12 VDC				

*) Calibration is possible to reduce the zero point error  zero point calibration

9.2 Connection diagram



9.3 Dimensions [mm]



9.4 Manufacturer reference

Our products are manufactured in accordance with the relevant international regulations. If you have any questions concerning the use of our products or plan special uses, please contact:


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74653 Künzelsau
Telephone: +49 (0) 7940 16-0
Telefax: +49 (0) 7940 16-504
info@ziehl-abegg.de
http://www.ziehl-abegg.com

9.5 Service information

If you have any technical questions while commissioning or regarding malfunctions, please contact our technical support for control systems - ventilation technology.

phone: +49 (0) 7940 16-800

Email: electronic4fans@ziehl-abegg.com

Our worldwide contacts are available in our subsidiaries for deliveries outside of Germany.  www.ziehl-abegg.com.

If you make returns for inspections or repairs we need certain information in order to facilitate focused trouble shooting and fast repair. Please use our repair tickets for this. It is provided to you after you have consulted our support department.

In addition, you can download it from our homepage. Download - Ventilation Technology - Topic: Control Engineering - Document type: General documents.