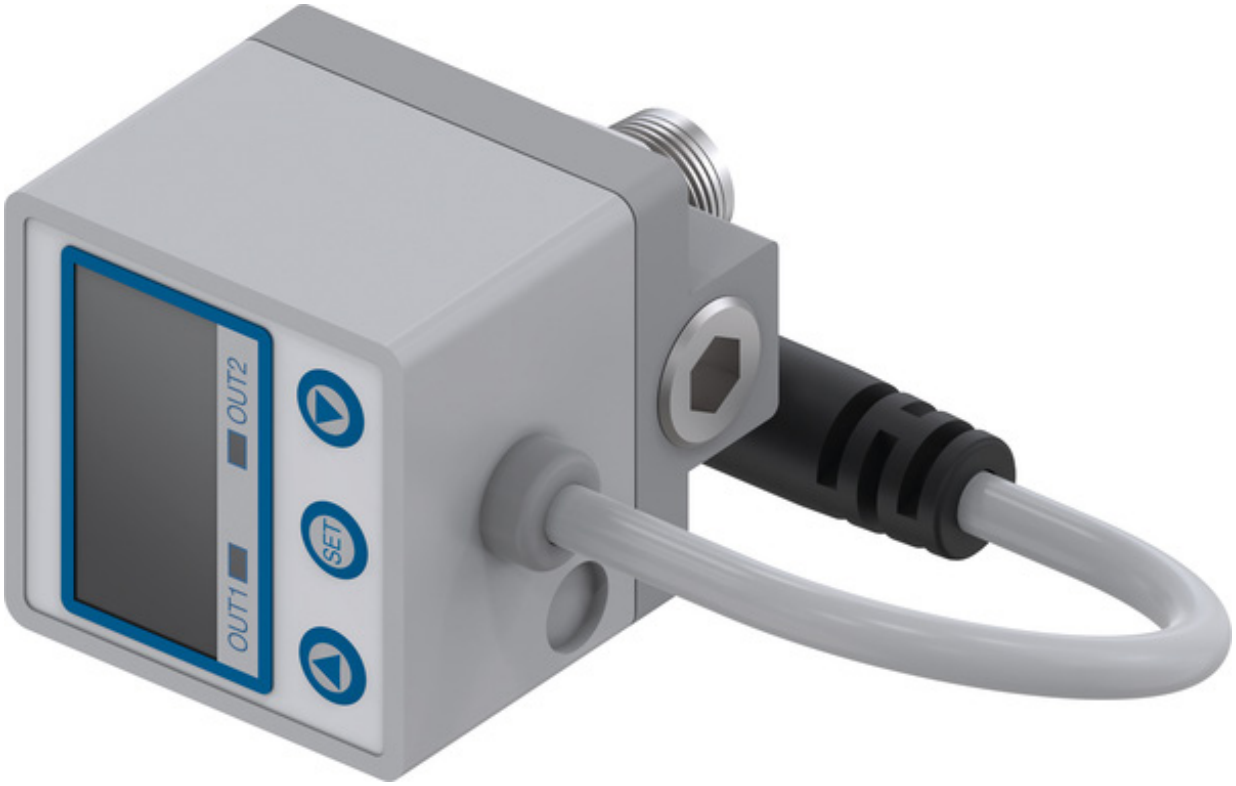

INSTALLATION AND OPERATING INSTRUCTIONS

Vacuum switch

ZSA

DDOC02401

THE KNOW-HOW FACTORY

Content

EN / 2026-01-09
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1 Introduction

1.1 Supporting documents

NOTICE

Read through the instructions before installing or working with the product.

The instructions contain important notices for your personal safety. They must be read and understood by all persons who work with or handle the product during any phase of the product lifetime.

The documents listed below are available for download on our website www.zimmer-group.com:

- Installation and operating instructions
- Catalogs, drawings, CAD data, performance data
- Information on accessories
- Technical data sheets
- General Terms and Conditions (GTCs), including warranty information.

⇨ Only the documents currently available on the website are valid.

In these instructions, “product” replaces the product designation on the title page.

1.2 Notes and illustrations in the instructions

DANGER

This notice warns of an imminent danger to the life and health of people. Ignoring these notices can lead to serious injury or even death.

► You absolutely must comply with the described measures for avoiding these dangers.

⇨ The warning symbols are assigned according to the type of danger.

WARNING

This notice warns of a situation that is potentially hazardous to personal health. Ignoring these notices can cause serious injury or damage to health.

► You absolutely must comply with the described measures for avoiding these dangers.

⇨ The warning symbols are assigned according to the type of danger.

CAUTION

This notice warns of a situation that is potentially hazardous to people. Ignoring these notices can cause minor, reversible injuries.

► You absolutely must comply with the described measures for avoiding these dangers.

⇨ The warning symbols are assigned according to the type of danger.

NOTICE

This notice warns of possible material or environmental damage. Ignoring these notices can result in damage to the product or the environment.

► You absolutely must comply with the described measures for avoiding these dangers.

⇨ The warning symbols are assigned according to the type of danger.

INFORMATION

This category contains useful tips for handling the product efficiently. Failure to observe these tips will not result in damage to the product. This information does not include any information relevant to health or workplace safety.

2 Safety notices

CAUTION

Risk of injury and material damage in case of non-compliance

- ► Do not use corrosive or flammable gases or liquids in conjunction with the product.
- ► Observe the maximum permitted pressure.
- ► Avoid vibrations and impacts.
  - ► Please note that internal components may be damaged by vibrations and impacts, even if the housing is undamaged.

3 Proper use

NOTICE

Material damage and malfunction in case of non-compliance

The product is only to be used in its original state with its original accessories, with no unauthorized changes and within the stipulated parameter limits and operating conditions.

Any other or secondary use is deemed improper.

- ► Operate the product only in compliance with the associated instructions.
- ► Operate the product only when it is in a technical condition that corresponds to the guaranteed parameters and operating conditions.
- ⇨ Zimmer Group GmbH accepts no liability for any damage caused by improper use. The operator bears sole responsibility.

- The product is used to measure and display the vacuum level.
- The product must not be operated in an environment that is subjected to vibrations and impacts.
- The product must not be operated in an environment that is subjected to corrosive gases, chemicals, seawater, water or steam.
- The product may only be operated within the prescribed pressure range.
- The product is intended for industrial use.
- The product is not suited for use in a potentially explosive atmosphere.

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4 Personnel qualification

WARNING

Injuries and material damage due to inadequate qualification

If inadequately qualified personnel perform work on the product, this can cause serious injuries and significant material damage.

- ▶ All work on the product must be performed by qualified personnel.
- ▶ Before working with the product, read the document in its entirety and make sure that you have understood everything.
- ▶ Observe country-specific accident prevention regulations and the general safety notices.

The following qualifications are a prerequisite for performing various types of work on the product.

4.1 Electricians

Electricians are able to perform work on electrical systems, can recognize and avoid possible dangers and know the relevant standards and provisions due to their technical training, knowledge and experience.

4.2 Specialists

Specialists are able to perform the assigned work, can recognize and avoid possible dangers and know the relevant standards and provisions due to their technical training, knowledge and experience.

4.3 Instructed personnel

Instructed personnel have been trained by the operating company on the tasks and possible dangers of improper behavior.

4.4 Service personnel

Service personnel are able to perform the assigned work and can recognize and avoid possible dangers due to their technical training, knowledge and experience.

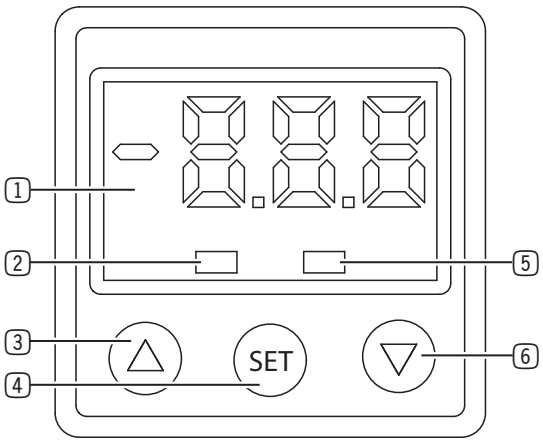
4.5 Additional qualifications

Personnel who work with the product must be familiar with the valid safety regulations and laws as well as the standards, guidelines and laws listed in this document.

Personnel who work with the product must have facility-issued authorization to commission, program, configure, operate, maintain and also decommission this product.

5 Product description

5.1 Vacuum switch



1 Display
2 Green LED *OUT 1*
3 *Up arrow* button
4 *Setting* button
5 Red LED *OUT 2*
6 *Down arrow* button

6 Technical data

INFORMATION

► You can find the information in the technical data sheet on our website.

7 Accessories/scope of delivery

INFORMATION

If any accessories not sold or authorized by Zimmer Group GmbH are used, the function of the product cannot be guaranteed. The accessories from Zimmer Group GmbH are specifically tailored to the individual products.

► For information on optional accessories and those included in the scope of delivery, refer to our website.

8 Storage

► Visually inspect all components.
► Clean all components until all contamination has been removed.
► Remove potential corrosion spots properly.
► Seal electrical connections with suitable covers.
► Seal pneumatic connections with suitable covers.
► Observe the following points when storing the product for longer periods of time:
  ► Monitor the relative air humidity in the storage area.
  ► Keep the storage location as dust-free and dry as possible.
  ► Observe the temperature range and avoid temperature fluctuations.
  ► Avoid wind, drafts and formation of condensation.
  ► Avoid direct sunlight.

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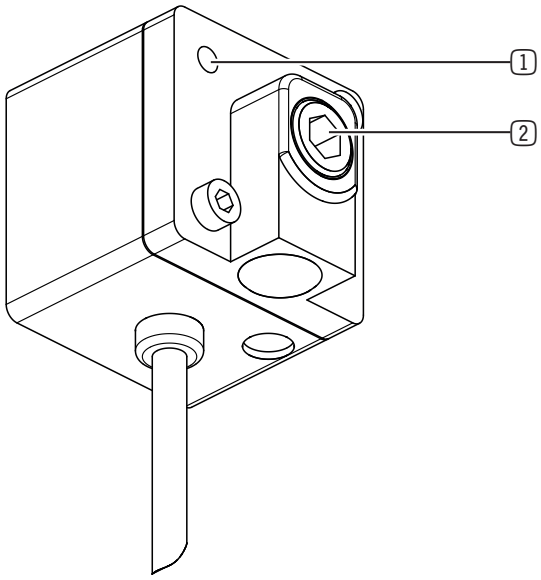
9 Installation

9.1 Installing the product

► Fasten the product with mounting screws or fit a threaded adapter instead of the grub screw.



1 Threaded hole

2 Grub screw

9.2 Pin assignment

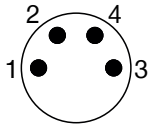
NOTICE

Material damage in case of non-compliance

► Switch off the power supply before connecting the cable.

► Do not lay sensor cables parallel to power supply cables or high-voltage cables.

► Please note that interference and malfunctions may occur when used in the same circuit.

Pin	Color	Function	Explanation	Plug, M8
1	Brown	PWR	24V DC supply voltage	
2	White	OUT 2	Digital input 2	
3	Blue	GND	0V DC supply voltage	
4	Black	OUT 1	Digital input 1	

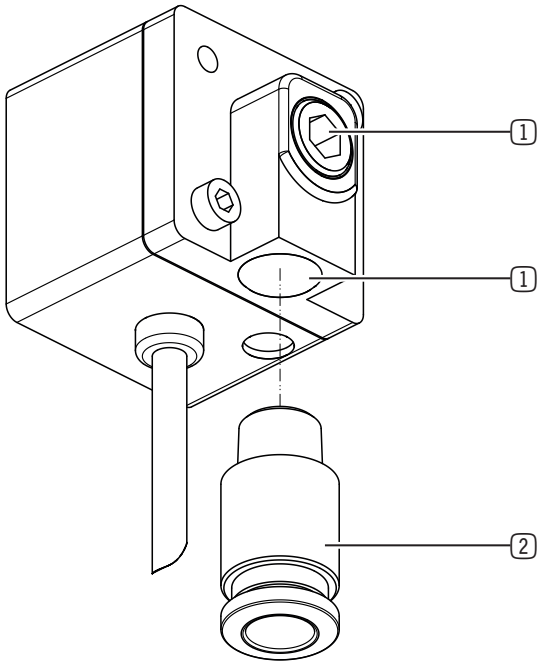
9.3 Installing the pneumatic system

NOTICE

Material damage in case of non-compliance

- ▶ You can find the information in the technical data sheet on our website.
- ▶ The authorized connections that are available can be found in the accessories list on our website. The necessary ordering information can also be found there.
- ▶ Seal unused pneumatic connections with suitable dummy plugs.
- ▶ Keep the supply lines as short as possible and ensure a sufficiently large cross-section.
- ▶ Make sure that the hoses cannot be pinched.

- ▶ Install the screw fitting on one of the pneumatic connections.
- ▶ Close off unused connections using pressure-resistant closures.
  - ▶ Use a sealing tape to prevent compressed air from escaping.
- ▶ Install the pneumatic hose.

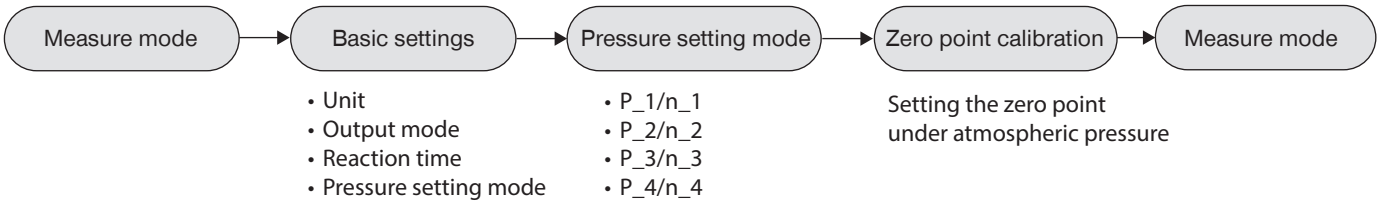


1 Pneumatic connection

2 Screw fitting

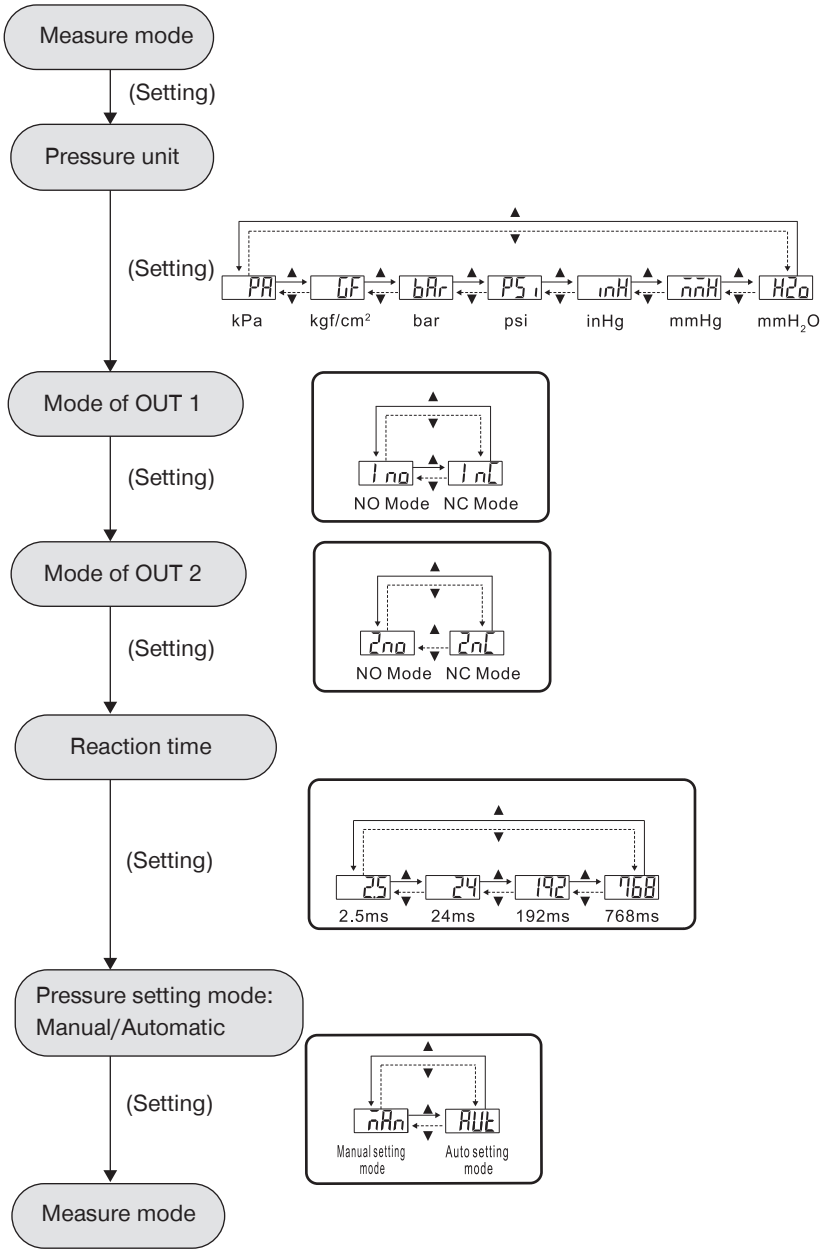
10 Commissioning

10.1 Overview of the adjustment steps



10.2 Basic setting mode

- ▶ Press the *Setting* button for at least 3 seconds.
- ⇨ The display shows the current pressure unit.
- ▶ Use the *Up arrow* and *Down arrow* buttons to select a pressure unit.
- ▶ To confirm the selection, press the *Setting* button.
- ⇨ The display shows the current output signal type for OUT1.
- ▶ Use the *Up arrow* and *Down arrow* buttons to select between NO (Normal open mode) and NC (Normal close mode).
- ▶ To confirm the selection, press the *Setting* button.
- ⇨ The display shows the current output signal type for OUT2.
- ▶ Use the *Up arrow* and *Down arrow* buttons to select between NO (Normal open mode) and NC (Normal close mode).
- ▶ To confirm the selection, press the *Setting* button.
- ▶ Press the *Setting* button 3 times to access the *Reaction time* menu.
- ▶ Use the *Up arrow* and *Down arrow* buttons to select the reaction time.
- ▶ To confirm the selection, press the *Setting* button.
- ▶ Press the *Setting* button 4 times to access the menu for automatic/manual mode.
- ▶ Use the *Up arrow* and *Down arrow* buttons to select one of the two modes.
- ▶ To confirm the selection, press the *Setting* button.

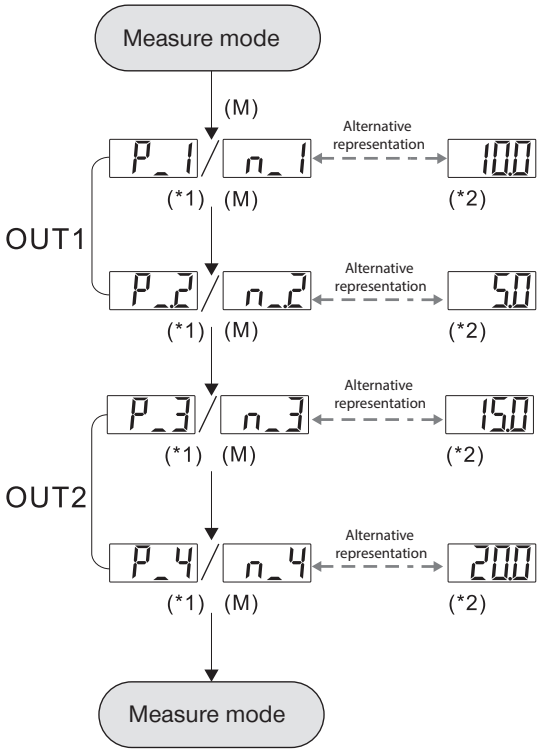


10.3 Pressure setting mode

10.3.1 Manual mode

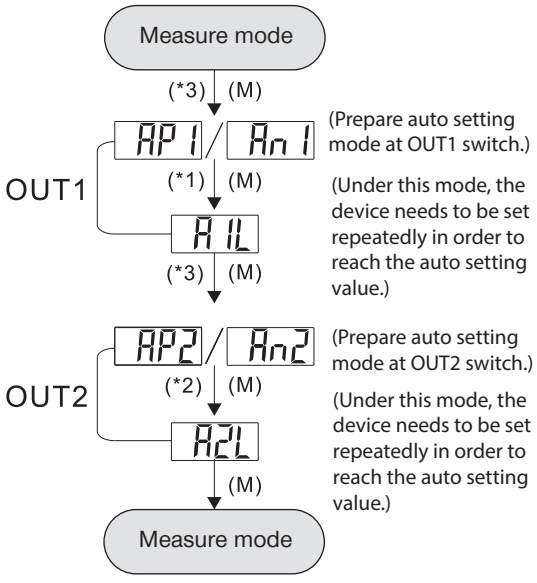
- The display shows (P_*) in Normal open mode and (n_*) in Normal close mode.

▶ Press the *Up arrow* button to increase the pressure level.
▶ Press the *Down arrow* button to reduce the pressure value.
▶ To confirm the selection, press the *Setting* button.



10.3.2 Automatic mode

▶ If no setting of the OUT1 pressure value is required, press the *Up arrow* and *Down arrow* buttons at the same time to access (AP2)/ (An2).
▶ If no setting of the OUT2 pressure value is required, press the *Up arrow* and *Down arrow* buttons at the same time to access the measurement mode.
▶ The display shows (AP*) in Normal open mode and (An*) in Normal close mode.



Calculation of setting value:

A = max. pressure value under auto setting mode
B = min. pressure value under auto setting mode

$$P1_{(n1)} / P3_{(n3)} = A - \frac{A-B}{4}$$

$$P2_{(n2)} / P4_{(n4)} = B + \frac{A-B}{4}$$

10.4 Setting the output signal type

10.4.1 Hysteresis mode

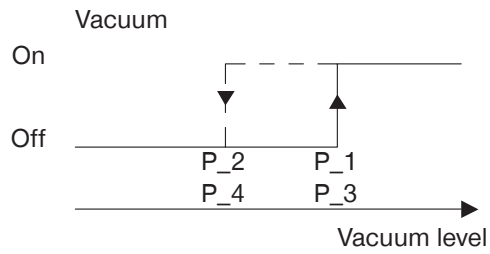
INFORMATION

If the hysteresis is set to less than two digits and the input and switching values are very close to each other, the output signal may flutter.

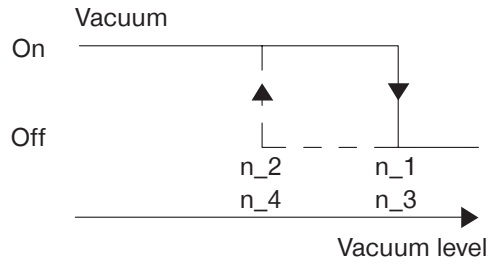
In this mode, the output signal switches as soon as the set switch point (P1/P3) is reached and remains in this state until the switch-back point (P2/P4) is undershot or exceeded.

This prevents the output signal from constantly changing when there are small pressure fluctuations.

NO



NC

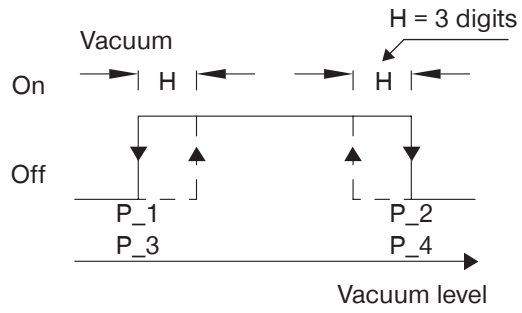


10.4.2 Window mode

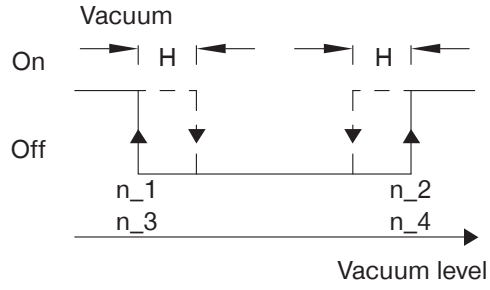
In this mode, the sensor monitors a pressure range between two limit values. Within this range, the output signal can be on or off, depending on the selected switching mode.

This mode is particularly suitable for monitoring whether the pressure is within a defined tolerance window.

NO



NC



10.5 Zero point calibration

- ▶ Make sure that you are in measurement mode.
- ▶ Press the *Up arrow* and *Down arrow* buttons at the same time until *00* is displayed.
- ▶ Release both buttons again.
- ⇨ The zero point has been set.

10.6 Displaying the maximum pressure value

- ▶ Make sure that you are in measurement mode.
- ▶ Press the *Up arrow* button for 2 seconds.
- ⇨ The maximum pressure value is determined and displayed.
- ▶ Press the *Up arrow* button for 2 seconds to return to measurement mode.

10.7 Displaying the minimum pressure value

- ▶ Make sure that you are in measurement mode.
- ▶ Press the *Down arrow* button for 2 seconds.
- ⇨ The minimum pressure value is determined and displayed.
- ▶ Press the *Down arrow* button for 2 seconds to return to measurement mode.

10.8 Activating/deactivating the key lock

- ▶ Press the *Setting* button for at least 5 seconds.
- ▶ Use the *Up arrow* and *Down arrow* buttons to select one of the two modes:
  - UnL: Deactivates the key lock
  - LoL: Activates the key lock
- ▶ To confirm the selection, press the *Setting* button.

10.9 Changing the pressure unit label

- ▶ If the pressure unit does not say kPa or MPa, remove the current label and apply the appropriate label to your selection to ensure that no setting errors occur.
- ▶ If you are using the pressure unit mmH_2O, multiply the displayed value by 100.

Pa	kPa	MPa	kgf/cm^2	mmHg	psi	bar	inHg	mmH_2O
1	0,001	0.000001	0.000010197	0.00750062	0.000145038	0.00001	0.0002593	0.101968
1000.000	1	0.001000	0.010197	7.500616	0.145038	0.010000	0.2953	101.9689
1,000,000	1000	1	10.197	7500.616	145.038	10	295.2998	101968.9
98066.5	98.0665	0.0980665	1	735.559	14.2233	0.980665	28.95979	10000.20
133.32	0.13332	0.000133	0.0013595	1	0.019336	0.0013332	0.039370	13.5954
6895	6.895	0.006895	0.07031	51.7157	1	0.06895	2.036074	703.07
100,000.0	100.0000	0.100000	1.01972	750.062	14.5038	1	29.52998	10196.89
3386.388	3.386388	0.003386	0.034530	25.40000	0.491141	0.033863	1	345.324
9.80665	0.00980	-	0.000099	0.0735578	0.00142	0.000098	0.002895	1

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11 Error diagnosis

Error	Possible cause	Measure
Er 1 (OUT1)	The load current is over 80 mA.	▶ Switch off the product. ▶ Check the cause of the overload current. ▶ If necessary, reduce the load current to below 80 mA. ▶ Restart the product.
Er 2 (OUT2)	The load current is over 80 mA.	
Er 3	The ambient pressure was higher than ±3% FS (Full Scale) when the zero point was set.	▶ Adjust the inlet pressure to the ambient pressure. ▶ Set the zero point again. ▶ For more information, refer to section "10.5 Nullpunktkalibrierung".
---	The applied pressure exceeds the upper limit of the pressure setting.	▶ Set the applied pressure within the permitted range.
----	The applied pressure falls below the lower limit of the pressure setting.	
Er 4	Internal error	▶ Switch off the product. ▶ Restart the product. ▶ Check whether the error persists. ▶ Please contact Customer Service.
Er 6	Internal error	
Er 7	Internal error	
Er 8	Internal error	

12 Maintenance

▶ Note that the product could become damaged under the following circumstances:
- Dirty environment
- Improper use and use that does not comply with the performance data
- Permissible temperature range not observed

▶ Visually check the product regularly for damage and dirt.

▶ Have maintenance work that requires disassembly of the product performed by customer service only.

⇨ Dismantling and reassembling the product without authorization may result in complications, as special installation equipment is required in some cases. Zimmer Group GmbH accepts no liability for any resulting malfunctions or damage.

13 Decommissioning/disposal

INFORMATION

When the product reaches the end of its operational phase, it can be completely disassembled and disposed of.

▶ Disconnect the product completely from the power supply.

▶ Dispose of the components properly according to the material groups.

▶ Comply with the locally applicable environmental and disposal regulations.

14 RoHS

In terms of the EU Directive 2011/65/EU

Name and address of the manufacturer:

Zimmer Group GmbH

Am Glockenloch 2
77866 Rheinau, Germany
+49 7844 9138 0
info@zimmer-group.com
www.zimmer-group.com

We hereby declare that the incomplete machine described below

Product designation: Vacuum switch

Type designation: ZSA

conforms to the requirements of the directive in its design and the version we put on the market.

Nicolas Steiger	Rheinau, Germany, 2026-01-09	
Authorized representative for compiling the relevant technical documents	(Place and date of issue)	Martin Zimmer (Legally binding signature) Managing Partner

15 Declaration of Conformity

In terms of the EC Directive 2014/30/EU on electromagnetic compatibility

Name and address of the manufacturer:

Zimmer Group GmbH

Am Glockenloch 2
77866 Rheinau, Germany
+49 7844 9138 0
info@zimmer-group.com
www.zimmer-group.com

We hereby declare that the products described below

Product designation:	Vacuum switch
Type designation:	ZSA

conforms to the requirements of the Electromagnetic Compatibility Directive 2014/30/EU in their design and the version we put on the market.

The following harmonized standards have been used:

DIN EN ISO 12100	Safety of machinery – General principles for design – Risk assessment and risk reduction
DIN EN 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments

A full list of applied standards can be obtained from the manufacturer.

Nicolas Steiger	Rheinau, Germany, 2026-01-09	
Authorized representative for compiling the relevant technical documents	(Place and date of issue)	Martin Zimmer (Legally binding signature) Managing Partner