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## 1. Information on This Operating Instruction

- The manual is aimed at specialists and semi-skilled personnel.
- Please read the instructions carefully before carrying out any operation and keep the specified order.
- Thoroughly read and understand the information in chapter 2 "Safety Instructions".

If you have any problems or questions, please contact your supplier or contact us directly at:



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### 1.1 Pictographs Used in This Manual

In this manual, pictographs are used as hazard warnings.

Particular information, instructions and restrictions designed for the prevention of personal or substantial property damage:



**WARNING!** Is used to warn you against an imminent danger that may result in personal injury or death.

**IMPORTANT!** Is used to warn you against a possibly hazardous situation that may result in personal, property or environmental damage.

**CAUTION!** Is used to draw your attention to important recommendations to be observed. Disregarding them may result in property damage.



**DANGER!** This symbol is used for hazards generated by electric current. Disregarding these safety instructions may result in serious or fatal injuries.



**DANGER OF EXPLOSION!** Indicates a potentially hazardous situation, which may result from existing explosive gases and dusts. Disregarding the safety instructions may result in explosions.



Passages in the text containing **explanations, information or advice** are highlighted with this pictograph.



The following symbol highlights **actions** you have to conduct or **instructions** that have to be strictly observed.

### 1.2 Exclusion of Liability

We accept no liability for any damage or malfunction resulting from incorrect installation, inappropriate use of the device or failure to follow the instructions in this manual as well as technical regulations.

## 2. Safety Instructions

Please read this operating instruction thoroughly before operating the electronic pressure switch.

Disregarding the containing warnings, especially the safety instructions, may result in danger for people, the environment, and the device and the system it is connected to.

The electronic pressure switch corresponds with the state of engineering at the time of printing. This concerns the accuracy, the operating mode and the safe operation of the device. In order to guarantee that the device operates safely, the operator must act competently and be conscious of safety issues.

The ARMANO Messtechnik GmbH provides support for the use of its products either personally or via relevant literature. The customer verifies that our product is fit for purpose based on our technical information. The customer performs customer and application specific tests to ensure that the product is suitable for the intended use. With this verification, all hazards and risks are transferred to our customers. Our warranty expires in case of inappropriate use.

#### **Qualified personnel:**

- The personnel that is charged for the installation, operation and maintenance of the instrument must hold a relevant qualification. This can be based on training or relevant tuition. The personnel must be aware of this manual and have access to it at all times.
- The electrical connection shall be carried out by a fully qualified electrician only.

#### **General safety instructions:**

- In all work, the existing national regulations for accident prevention and safety at the workplace must be complied with. Any internal regulations of the operator must also be complied with, even if these are not mentioned in this manual.
- Handle this highly sensitive electronic measuring device carefully, both in its packaged and unpackaged condition!
- Any changes or modifications to the device are not permissible.
- Do not throw or drop the device!
- To avoid damaging the membrane, please remove the packaging and, if applicable, the protection cap not until installation of the device! The protection cap must be stored!
- After disassembly, this protection cap must be reattached on the membrane immediately.
- Handle an unprotected membrane with extreme care; it can easily be damaged.

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- Do not exert any force when installing the devices to prevent damage to the device and the system!
- When installing outdoors or in humid environments, please note the following:
  - The device should be electrically connected immediately after installation to ensure that no moisture can ingress in the plug connector. Otherwise, the ingress of moisture must be prevented, e.g. by using a suitable protective cap (the degree of protection specified in the data sheet applies to the connected device).
  - Select an installation position that allows splash water and condensation to drain off. Ensure that sealing surfaces are not exposed to standing liquid.
  - For devices with cable gland or cable outlet, the outgoing cable must be routed downwards. If the cable needs to be routed upwards, this must be done in an initially downward curve.
  - Install the device in such a way that it is protected from direct sunlight. In the worst case, direct sunlight may result in the maximum permissible operating temperature being exceeded, which can then damage the device or affect its ability to function correctly. If the internal pressure in the device increases, this may also cause temporary measurement errors.
- During installation, ensure that the pressure connection is not subjected to any mechanical stresses higher than that permitted, as this could lead to a shift in the characteristic curve or result in damage. This especially applies to very small pressure ranges as well as to devices with a plastic pressure connection.
- For hydraulic systems, position the device in a way that the pressure connection points upwards (ventilation).
- Provide a cooling extension when used in steam pipes.
- If there is a risk that a device installed outdoors might be damaged by lightning strike or overvoltage, we recommend the provision of an overvoltage protection between the power supply unit/switch cabinet and the device.
- If the device is installed with the pressure connection facing upwards, make sure that no liquid runs down the housing. This could result in moisture and dirt blocking the gauge reference in the housing and cause malfunctions. If necessary, remove any dust and dirt from the edge of the screw fitting of the electrical connection.



### Risk of death due to electric shock

Always install the device in a unpressurised and currentless state!

### Risk of death in case of improper installation

The installation must be carried out by appropriately qualified personnel only, who have read and understood the operating instruction.



**CAUTION!** A device with gauge reference in the housing (small orifice next to the electrical connection) must be mounted in such a way that the gauge reference required for the measurement is protected from dirt and moisture. If the pressure switch is exposed to liquid, the air pressure compensation by the gauge reference will be blocked. In this state, a precise measurement is not possible and the pressure switch may be damaged.



### Safety instructions oxygen:



**DANGER OF EXPLOSION** in case of improper use of instruments suitable for oxygen applications! To ensure safe use, the following aspects have to be observed:

- Ensure that your instrument was ordered and supplied as special version for oxygen applications.
- When being despatched, the device is packed in a plastic bag to protect it from contaminations. In addition, any skin contact must be avoided during unpacking and installation, so that no grease residues remain on the device!
- During installation, the applicable regulations concerning explosion protection have to be regarded. Please check, whether an approval as intrinsically safe equipment is required in addition to the suitability for oxygen (The device delivered has no ATEX approval!).
- Please regard that the entire system must comply with the requirements of the BAM (Federal Institute for Materials Research and Testing), DIN 19 247.
- For oxygen applications >25 bar, pressure switch versions without sealing are recommended.
- Pressure switches with sealing rings made of 70 EPDM 281: permissible maximum values: 15 bar/+60 °C and 10 bar/+60 °C to +90 °C (BAM approval).
- Pressure switches with sealing rings made of FKM (Vi 567): permissible maximum values: 25 bar/ 150 °C (BAM approval).

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### 3. Device Description

The electronic pressure switch PS 400 is a successful combination of pressure switch in a field housing and digital display. The pressure switch has been specially designed for numerous applications in various industrial sectors, e.g. plant engineering or environmental engineering.

As standard, the PS 400 offers a rotatable display module and a PNP switching output, mounted in a rotatable field housing.

Additional optional versions, such as a second switching output as well as an analogue output, are available as well.

#### Nameplate and sticker:

The nameplate is located on the pressure switch. It provides the most important technical data and information. The program version of the operating software (e.g. P07) is visible in the display for approx. 1 second after switching on the device. Please have this information ready in case of queries.

		<b>ARMANO</b> Messtechnik GmbH
<b>PS400</b>		Prod.-No.: 23456789
Instr.-No.:	203251234	<u>Connector Pinout:</u>
Input:	0...1 bar	1: +Ub    Shield: Case
Output:	4...20 mA/2-wire	3: 0V/Signal
Supply:	13...36 VDC	4: SP1



Figure 1: nameplate

 Do not remove the nameplate from the device!

#### Scope of delivery:

Please check whether all listed parts are included in the scope of delivery without any damage and whether they have been delivered according to your order:

- Electronic pressure switch PS 400
- For mechanical connections DIN 3852:
  - O-ring (pre-assembled)
- Operating instruction

### 3.1 Intended Use

The electronic pressure switch PS 400 is suitable for measuring and monitoring vacuum, positive pressures and absolute pressures of liquid and gaseous media for pressure ranges from 0 – 100 mbar to 0 – 600 bar.



#### WARNING!

Risk of death due to unintended use!

### 4. Technical Data

<b>Process connection</b>	
• material	stainless steel 316L (1.4404)
• connection thread	G 1/4" (DIN 3852)
<b>Measuring cell/sensor</b>	stainless steel 316L
<b>Sensor sealing</b>	FKM
<b>Case</b>	field housing stainless steel 316L, degree of protection IP67
<b>Indication / LED display</b>	4 digits, 7 segment indication visible area: 37.2 x 11 mm (1.46 x 0.43") digit height 10 mm (0.39")
<b>Supply voltage</b>	U <sub>B</sub> = 13...36 V DC
<b>Output signal</b>	4...20 mA / 2-wire + PNP switching output auxiliary energy: 0.05 % FS load impedance: ≤0.1 % FS response time: < 12 ms
<b>Measurement accuracy</b>	≤±0.25 % FSO
<b>Repeatability</b>	≤±0.1 % FSO
<b>Operating temperature</b>	-40 / + 85 °C (-40 / +185 °F)
<b>Medium temperature</b>	-40 / +125 °C (-40 / +257 °F)
<b>Storage temperature</b>	-40 / +100 °C (-40 / +212 °F)

### Pressure Ranges/Overload Capability in bar:

Vacuum	Positive pressure	Absolute pressure	Overload	Burst pressure
-1 / 0	-	-	5	7.5
-	0 – 0.1	-	0	1.5
-	0 – 0.16	-	1	1.5
-	0 – 0.25	-	1	1.5
-	0 – 0.4	0 – 0.4	2	3
-	0 – 0.6	0 – 0.6	5	7.5
-	0 – 1.0	0 – 1.0	5	7.5
-	0 – 1.6	0 – 1.6	10	15
-	0 – 2.5	0 – 2.5	10	15
-	0 – 4	0 – 4	20	25
-	0 – 6	0 – 6	40	50
-	0 – 10	0 – 10	40	50
-	0 – 16	0 – 16	80	120
-	0 – 25	0 – 25	80	120
-	0 – 40	0 – 40	105	210
-	0 – 60	0 – 60	210	420
-	0 – 100	0 – 100	210	420
-	0 – 160	0 – 160	600	1000
-	0 – 250	0 – 250	1000	1250
-	0 – 400	0 – 400	1000	1250
-	0 – 600	0 – 600	1000	1250

PN ≥ 1 bar: vacuum resistance unrestricted

## 5. Mounting

### 5.1 General Installation Steps

- Carefully remove the device from its packaging and dispose of it properly.
- Proceed as described in the following installation steps according to the connection variant.

### 5.2 Mounting Steps for Connections According to DIN 3852



**IMPORTANT!** Do **not** use any additional sealing material such as tow, hemp or Teflon tape!

- Make sure that the O-ring is seated undamaged in the designated groove.
- Ensure that the sealing face of the mating part has a flawless surface (R<sub>z</sub> 3.2).
- Screw the device into the mounting thread by hand.
- If you have a device with a knurled ring, it has to be screwed in by hand only.
- Devices with a wrench flat have to be tightened with a spanner  
(G ¼": approx. 5 Nm; G ½": approx. 10 Nm;  
G ¾": approx. 15 Nm; G 1": approx. 20 Nm).
- **The specified tightening torques must not be exceeded!**

### 5.3 Mounting Steps for Connections According to DIN EN 837

- Use a suitable sealing, depending on the medium and the pressure to be measured (e.g. a copper seal).
- Ensure that the sealing face of the mating part has a flawless surface (R<sub>z</sub> 6.3).
- Screw the device into the mounting thread by hand.
- Then, tighten the device with a spanner  
(for G ¼": approx. 20 Nm; for G ½": approx. 50 Nm).
- **The specified tightening torques must not be exceeded!**

### 5.4 Mounting Steps for NPT Connections

- An additional sealant, e.g. PTFE tape, can be used for sealing.
- Screw the device into the mounting thread by hand.
- Then, tighten the device with a spanner  
(for ¼" NPT: approx. 30 Nm;  
for ½" NPT: approx. 70 Nm).
- **The specified tightening torques must not be exceeded!**

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### 5.5 Positioning of the Display Module

The display and operating module is continuously rotatable so as to guarantee easy readability even in unusual mounting positions. Proceed as follows to change the position:

- Unscrew the housing cover by hand.
- Turn the display and operating module carefully by hand into the desired position. The module is equipped with a rotational limiter.
- Before reassembling the cover, check the O-ring and sealing surface on the housing for damage and replace them if necessary!
- Then screw on the cover by hand and make sure that the housing is tightly closed again.



#### CAUTION!

Make sure that moisture cannot enter the device! The seals and sealing surfaces must not be soiled, as soiling can cause a reduction in the degree of protection depending on the application and location, which can lead to device failure or irreparable damage to the device.

### 5.6 Electrical Installation



#### Risk of death due to electric shock

Install the device in a currentless state!



**WARNING!** The supply has to comply with protection class II (protective insulation)!



**WARNING!** The pressure switch shall be supplied with limited energy (according to UL 61010) or NEC Class 2 power supply.

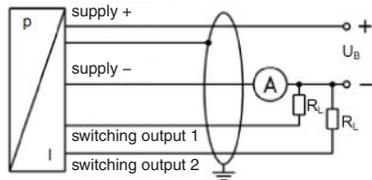
Electrically connect the instrument according to the specifications given on the nameplate, in the pin assignment table below and on the wiring diagram.

#### Pin Assignment Table

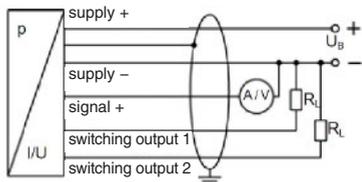
Electrical connections	M 12x1 metal (5-pin)
Supply +	1
Supply -	3
3-wire, signal +	2
Communication/switching output	
Output 1	4
Output 2	5
Shield	sensor/case

#### Wiring diagram

##### 2-wire system (current)



##### 3-wire system (current/voltage)



If possible, use a shielded and twisted multicore cable for the electrical connection.

### 6. Commissioning



Before commissioning, check for proper installation and for any visible defects of the device.

Commissioning shall only be carried out by qualified personnel, who read and understood this manual!



**WARNING!** The device has to be operated within the specifications only! (Please refer to the technical data in the data sheet.)

### 7. Operation

#### 7.1 Operating and Indicating Elements

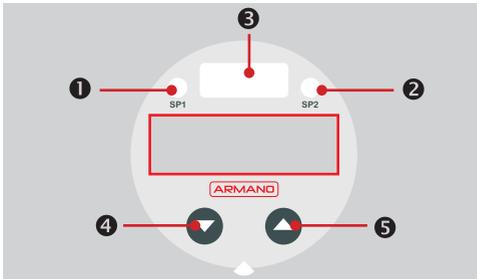


Figure 2: keypad for devices with 2 switching outputs

- ❶ LED switching output 1
- ❷ LED switching output 2
- ❸ Unit
- ❹ ▼ button
- ❺ ▲ button

Depending on the version, the device is equipped with up to two LEDs, which are allocated to the respective switching outputs. The LEDs will light up when the respective set point has been reached and the switching output is active. The indication of the measured value as well as the configuration of the individual parameters is menu-driven via the 7 segment display.

#### 7.2 Configuration

The menu system is self-contained allowing you to scroll both forward and backward through the individual set-up menus to access the desired setting point. All settings are permanently stored in an EEPROM and are therefore still available even after disconnecting from the supply voltage. The structure of the menu systems is the same for all device versions, regardless of the number of switching points. However, the redundant menu items are omitted. The following depictions and the menu description represent all possible menu items. For instruments with 3-wire output 4...20 mA and 0...20 mA, the menus ZP and EP have a special function. The menu DP is not applicable, because the decimal point is already permanently set during production.



Please follow the descriptions strictly and note that changes of the adjustable parameters (switch-on point, switch-off point etc.) only become effective after pushing both buttons simultaneously and after leaving the menu item.



#### **CAUTION!**

For the configuration of the device, the housing cover has to be unscrewed. Make sure that moisture cannot enter the device during configuration! The seals and sealing surfaces must not be soiled, as soiling can cause a reduction in the degree of protection depending on the application and location, which can lead to device failure or irreparable damage to the device. Immediately after the configuration, the housing cover has to be screwed on by hand.

#### 7.3 Password System

To prevent unauthorised persons from configuring the device, it is possible to lock the device. Referring to this, please see menu 1 of the menu list.

### 7.4 Configuration Example of the Analogue Output for 3-wire Devices

For 3-wire devices (4...20 mA and 0...20 mA), the analogue output can be configured with the menus ZP and EP. In the following, the function of these menus shall be illustrated using an example: Assuming you have a pressure switch with a nominal pressure range 0 – 400 bar with analogue signal 4...20 mA/3-wire. The following signal behaviour is set ex works:

0 bar = 4.00 mA  
 200 bar = 12.00 mA  
 400 bar = 20 mA

If you change the value in menu ZP from 0 to 20 and the value in menu EP from 400 to 300, the following signal behaviour will be set:

20 bar = 4.00 mA  
 160 bar = 12.00 mA  
 300 bar = 20 mA

 The values of the menus ZP and EP can be set up to a ratio of 1:6 of the nominal pressure range.

### 7.5 Description of Hysteresis Mode and Comparison Mode

To invert the respective mode, you have to interchange the values for the switch-on and switch-off points.

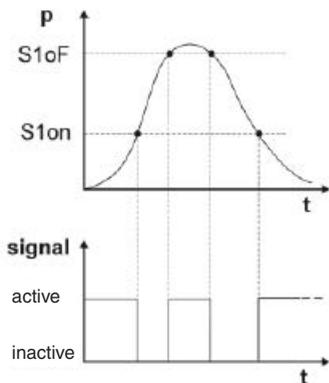


Figure 3: comparison mode

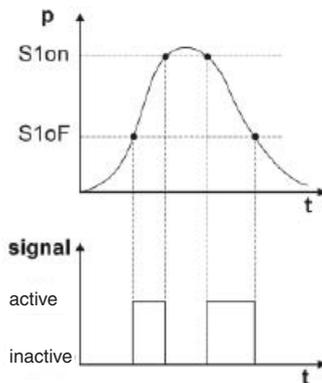


Figure 4: comparison mode inverted

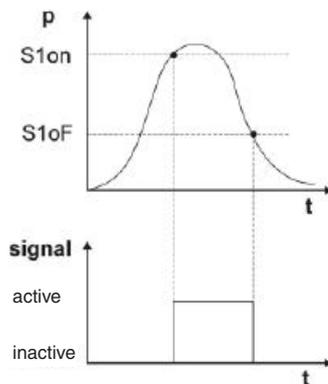


Figure 5: hysteresis mode

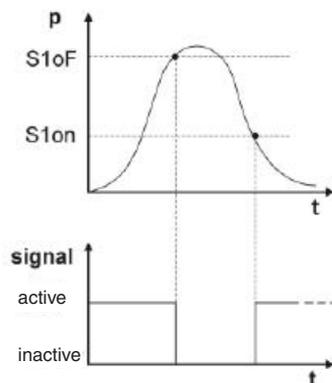


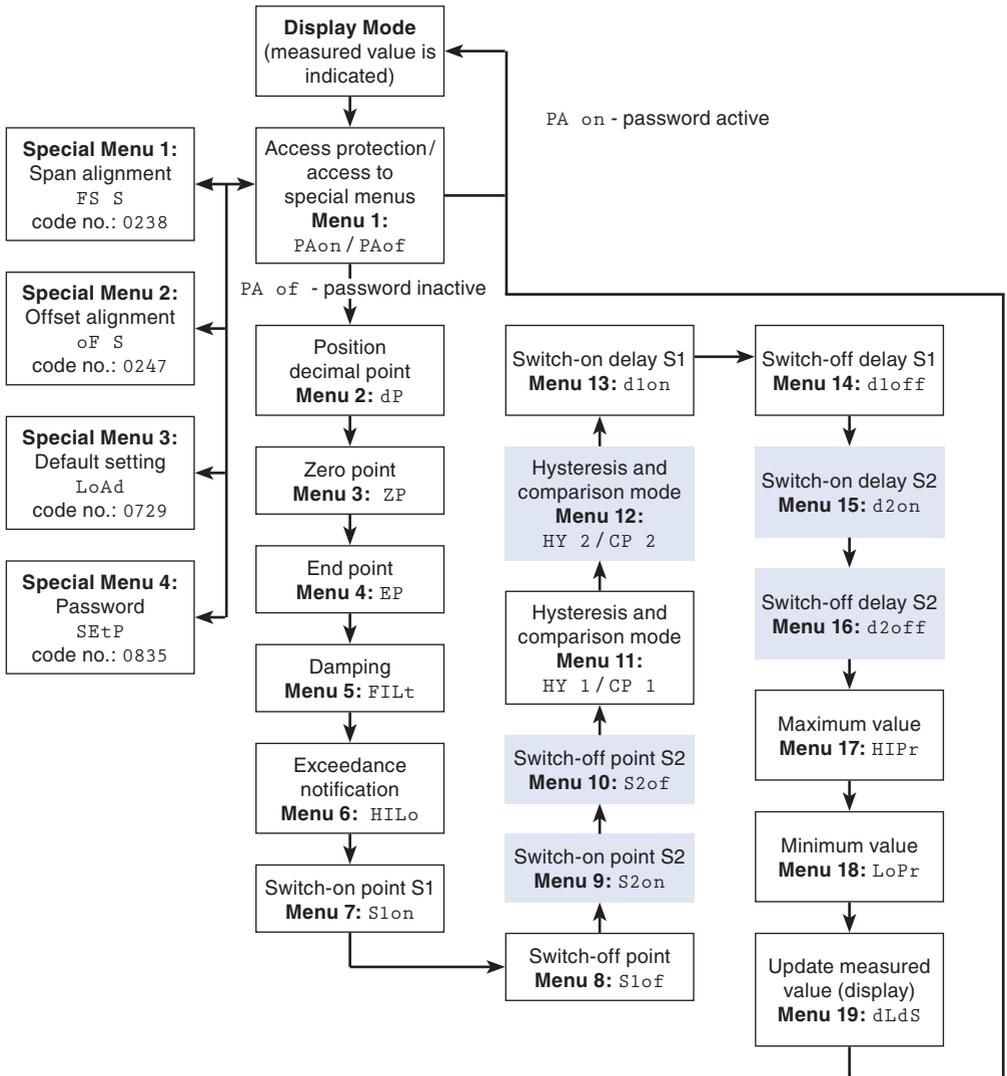
Figure 6: hysteresis mode inverted

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### 7.6 Structure of the Menu System

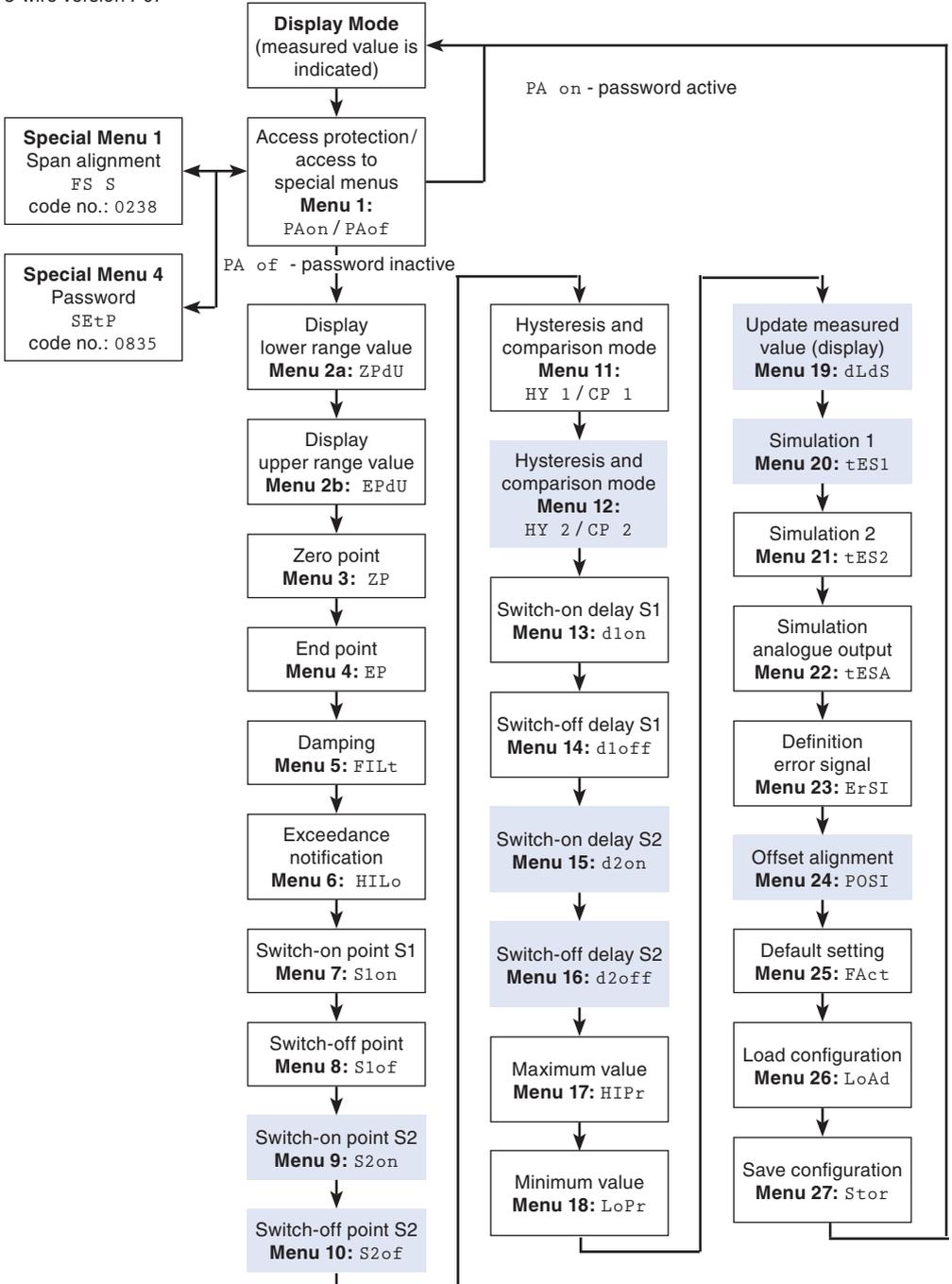
2-wire version P07



# Operating Instructions

## Electronic Pressure Switch PS 400

3-wire version P07



### 7.7 Menu List

Button Functions	
▲	to scroll the menu system (forward) or to increase the display value; you can also access the operating mode by pressing this button (starting with menu 1)
▼	to scroll the menu system (backward) or to decrease the display value; you can also access the operating mode by pressing this button (starting with the last menu)
▲▼	press both buttons simultaneously to confirm the menu items and the set values



To increase the counting rate when setting the values: press and hold the respective button for more than 5 seconds

#### Configuration process:

- Set the desired menu item with the ▲/▼ buttons
- Activate the set menu item by pushing both buttons simultaneously
- Set the desired value or select one of the offered settings with the ▲/▼ buttons
- Save/confirm a set value/selected setting and exit the menu item by pushing both buttons simultaneously

The device is configured according to VDMA 24574-1.

PAon	<b>Menu 1 – access protection</b>
PAof	PAon ⇨ password active ⇨ to deactivate: set password PAof ⇨ password inactive ⇨ to activate: set password Default setting for the password is “0005”; ⇨ special menu 4 – setting the password.
dP	<b>Menu 2 – setting decimal point position</b> (for 2-wire system only) For 3-wire devices with 4...20 mA and 0...20 mA output, the decimal point was set during production.
ZPdU	<b>Menu 2a – indication of lower range value according to order</b> (for 3-wire system only) No configuration possible.
EPdU	<b>Menu 2a – indication of upper range value according to order</b> (for 3-wire system only) No configuration possible.
ZP	<b>Menus 3 and 4 – setting zero point/end point</b>
EP	The correct values were set during production; a subsequent configuration for 2-wire devices is only necessary in case of deviating indication requirements (e.g. 0...100 %). Exception for 3-wire devices with 4...20 mA and 0...20 mA output: the configuration causes a change of the analogue output, whereas the display value remains unchanged (zero and end point can only be set within the pressure range limits, according to nameplate); ⇨ “7.4 Configuration Example of the Analogue Output for 3-wire Devices”.
FILt	<b>Menu 5 – setting damping (filter)</b> To achieve a constant indication with highly fluctuating measuring values: set the time constant of a simulated analogue low-pass filter (adjustable from 0.3 to 30 sec).
HILo	<b>Menu 6 – activating exceedance notification</b> Set “on” or “off”.
S1on	<b>Menus 7 and 9 – setting switch-on points</b> Set the respective values for the activation of the switching outputs 1 (S1on) or 2 (S2on).
S1of	<b>Menus 8 and 10 – setting switch-off points</b> Set the respective values for the activation of the switching outputs 1 (S1of) or 2 (S2of).
HY 1	<b>Menus 11 and 12 – selection hysteresis or comparison mode</b>
CP 1	Set hysteresis mode (HY 1 / 2) or comparison mode (CP 1 / 2) for the respective switching outputs 1 or 2 (no. corresponds to the switching output); ⇨ “7.5 Description of Hysteresis Mode and Comparison Mode”.
d1on	<b>Menus 13 and 15 – setting switch-on delays</b> Set the respective values for the switch-on delay after reaching the switch-on points 1 (d1on) or 2 (d2on) (adjustable from 0 to 100 sec).

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d1oFf	<p><b>Menus 14 and 16 – setting switch-off delays</b> Set the respective values for the switch-off delay after reaching the switch-off points 1 (d1oF) or 2 (d2oF) (adjustable from 0 to 100 sec).</p>
HIPr LoPr	<p><b>Menus 17 and 18 – maximum/minimum pressure indication</b> Indication of maximum pressure (HIPr) or minimum pressure (LoPr) that was applied during the measurement; (if the power supply is interrupted, the value is lost). To delete the values, press both buttons again within one second.</p>
dLdS	<p><b>Menu 19 – updating measured value (display)</b> Set the length of the update cycles for the measuring value in the display (adjustable from 0.0 to 10 sec).</p>
tES1	<p><b>Menus 20 and 21 – simulating switching outputs (for 3-wire system only)</b> With the ▲/▼ buttons, the switching outputs 1 (tES1) and 2 (tES2) can be activated or deactivated.</p>
tESA	<p><b>Menu 22 – simulating analogue output (for 3-wire system only)</b> For the simulation, the following settings are available: “oi 4” (4 mA or 2 V), “oi12” (12 mA or 6 V) and “oi20” (20 mA or 10 V)</p>
ErSI	<p><b>Menu 23 – defining error signal (for 3-wire system only)</b> Set the desired error signal (which is displayed in case of a defect); available settings are “OFF” (no error signal detection), “C 0” (0 mA or 0 V), “C L0” (3.5 mA or 1.75 V) and “C HI” (23 mA or 11.5 V). ⇒ The error signal is only displayed if menu 6 is set to “on”.</p>
POSI	<p><b>Menu 24 – offset alignment/position correction (for 3-wire system only)</b> Confirm menu item “POSI”; when offset ≠ ambient pressure, pressurisation is necessary, depending on installation position (pressure reference must correspond to the lower range value); press both buttons simultaneously; “oF I” appears in the display; confirm this with both buttons; then, “Pr o2” appears in the display; confirm this with both buttons; then, “o” appears in the display; with the ▲/▼ buttons, a desired value can be entered now, which corresponds to the percentage value of the pressure range, e.g. for pressure range -1/+15 bar: 5 must be entered, this corresponds to 5 % (-0.2 bar) of the pressure range; confirm the entered value by pressing both buttons simultaneously; “oF5” appears in the display; apply the correct pressure stable (in the example -0.2 bar) and confirm this with both buttons. If the value is not displayed accurately, this procedure must be repeated. ⇒ A position correction is necessary if the installation position deviates from the factory calibration (otherwise slight signal deviations may occur, causing incorrect display values). ⇒ The analogue output signal (for devices with analogue output) remains unaffected by this change. When shifting the offset, the range value (Full Scale) is shifted in parallel.</p>
FAct	<p><b>Menu 25 – loading default settings (for 3-wire system only)</b> Press both buttons simultaneously again after selecting the menu item to load the default settings ⇒ all changes made are reset (password is reset to “0005”).</p>
LoAd	<p><b>Menu 26 – loading configuration (for 3-wire system only)</b> Set the desired number 1 to 5 to load the device configurations (stored in menu 27).</p>
Stor	<p><b>Menu 27 – saving configuration (for 3-wire system only)</b> Set the desired number 1 to 5 to save the current device configuration.</p>

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**Special menus** (to access the special menus, select menu item "PAoF" with the ▲/▼ buttons and confirm it; then, "1" appears in the display)

FS S	<b>Special menu 1 – span alignment</b> To correct the indication if the span value differs from the applied pressure value (an alignment is only possible if appropriate reference sources are available, provided that the deviation of the measured value is within certain limits); set "0238"; confirm this with both buttons; then, "FS S" appears in the display; now it is necessary to apply pressure to the device by means of a pressure reference (pressure must correspond to the upper range value); press both buttons to store the signal currently being emitted from the pressure switch as a span signal; from this point on the display shows the set upper range value (end point), although the sensor signal is shifted in the span signal. ⇒ The analogue output signal (for devices with analogue output) remains unaffected by this change.
oF S	<b>Special menu 2 – offset alignment/position correction (for 2-wire system only)</b> Set "0247"; the menu description corresponds to description "POSI" (menu 24) for 3-wire devices.
LoAd	<b>Special menu 3 – loading default settings (for 2-wire system only)</b> Set "0729"; the menu description corresponds to description "FAcT" (menu 25) for 3-wire devices.
SEtP	<b>Special menu 4 – setting password</b> Set "0835"; confirm this with both buttons; "SEtP" appears in the display; set the password with the ▲/▼ buttons (0...9999 adjustable, except for the code numbers 0238, 0247, 0729, 0835); confirm the password by pressing both buttons simultaneously.

### 8. Maintenance/Cleaning, Storage and Transport



#### **CAUTION! Material damage and loss of warranty!**

Any modifications or interventions in the device, made by the customer, might damage important parts or components. Such intervention leads to the loss of any warranty and manufacturer's responsibility!

→ Never modify the device or perform any repairs yourself.

#### **Maintenance:**

In principle, the device is maintenance-free. If necessary, the housing of the device can be cleaned with a damp cloth and a non-aggressive cleaning solution when switched off.

#### **Cleaning:**

Depending on the medium, deposits or contamination may occur on the membrane. If such a tendency of the medium is known, the operator has to specify appropriate cleaning intervals.

After professionally decommissioning the instrument, the membrane can usually be cleaned carefully with a non-aggressive cleaning solution and a soft brush or sponge. If the membrane is calcified, it is recommended to have the decalcification carried out by the ARMANO Messtechnik GmbH. Please also refer to chapter 9.2 "Return".



**CAUTION!** Incorrect cleaning may cause irreparable damage of the measuring cell. Therefore, never use any sharp objects or compressed air for cleaning the membrane.



**IMPORTANT! Improper transport can destroy the device and cause considerable personal and property damage.**

Please inspect the transport packaging and the delivered items immediately upon their receipt to determine their integrity, completeness and conformity with the delivery documents.

The permissible ambient conditions for storage and transport can be found in the data sheet.

#### **Storage:**

- If possible, store the instrument in its original packaging.
- If possible, remove the packaging not until installation of the device.
- Store the instruments in a dry place, not exposed to direct sunlight.
- The storage temperature of the instruments should not fall below or exceed the permissible temperature limitations specified in the data sheets.

#### **Transport:**



#### **Electronic components!**

The device is equipped with sensitive electronic components and has to be handled with due care.

- Use the original packaging or comparable packaging for transport.
- Avoid impacts or strong vibrations.
- Protect the device against moisture.

### 9. Recalibration and Return

#### 9.1 Recalibration

The offset value or range value may shift during the service life of the device. In this regard, it appears that a deviating signal value in relation to the set lower or upper range value is displayed. If either of these two phenomena occurs after prolonged use, recalibration is recommended to ensure continued high accuracy.

### 9.2 Return

Prior to any return, whether for recalibration, decalcification, for modification or for repair, the instrument has to be cleaned thoroughly and packaged carefully. Please enclose a notice of return with a detailed description of the faults when returning a defective device. If your instrument came into contact with harmful substances, a declaration of contamination is required additionally. A corresponding template can be found on our website [www.armano-messtechnik.com](http://www.armano-messtechnik.com). If you send in your device without a declaration of contamination and our service department has doubts regarding the medium used, then the repair will only be started once a corresponding declaration has been submitted.



#### **WARNING! Risk of injury due to harmful substances!**

If the device came into contact with harmful substances, appropriate precautions are to be taken during cleaning!

### 10. Dismounting and Disposal



#### **WARNING! Risk of injury!**

Never remove the device from a system in operation.  
Make sure that the system is switched off professionally.

#### **Before dismounting:**

Check before dismounting, whether the system

- is switched off,
- is in a safe and currentless state,
- is unpressurised and cooled down.

#### **Dismounting:**

→ Pay attention to potentially leaking media. Take appropriate precautions to collect them.

#### **Disposal:**

In compliance with the directives 2011/65/EU (RoHS) and 2012/19/EU (WEEE), the device must be disposed of separately as electrical and electronic waste. Please regard legal regulations of the country of distribution.



#### **NO DOMESTIC WASTE!**

The instrument comprises various materials. It shall not be disposed of together with domestic waste.

→ Bring the device to your local recycling plant

or

→ send the device back to your supplier or to the ARMANO Messtechnik GmbH.

### 11. Warranty Conditions

The warranty conditions are subject to the statutory warranty period of 24 months, valid from the date of delivery.

Any warranty claims are excluded in case of improper use, modification of or damage to the device. Damaged membranes are not accepted as warranty claim. Furthermore, defects resulting from normal wear are not subject to warranty services.

### 12. CE Conformity



The CE marking of the instruments certifies the conformity with prevailing EU directives for placing products on the market within the European Community. The following directives apply:

2014/30/EU (EMC)  
2014/68/EU (PED)

The corresponding declaration of conformity is enclosed or available upon request.

## 13. Declaration of Conformity

### EU-Konformitätserklärung nach DIN EN ISO/IEC 17 050-1

### EU Declaration of Conformity according to DIN EN ISO / IEC 17 050-1

Für die nachfolgend bezeichneten Erzeugnisse

We hereby declare for the following named goods

**ELEKTRONISCHER DRUCKSCHALTER**  
Typ PS 300  
gemäß Datenblatt 9621

**ELECTRONIC PRESSURE SWITCH**  
Model PS 300  
according to data sheet 9621

**ELEKTRONISCHER DRUCKSCHALTER**  
Typ PS 400  
gemäß Datenblatt 9622

**ELECTRONIC PRESSURE SWITCH**  
Model PS 400  
according to data sheet 9622

wird hiermit erklärt, dass sie den wesentlichen Schutzanforderungen entsprechen, die in nachfolgend bezeichneten Richtlinien festgelegt sind:

that they meet the essential protective requirements, which have been fixed in the following directives:

**RICHTLINIE 2014/30/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 26. Februar 2014**  
zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit – kurz: **EMV-Richtlinie**  
Konformitätsbewertungsverfahren: Modul A  
Angewandte Norm: EN 61326-1:2013

**DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND THE COUNCIL from February 26, 2014**  
on the approximation of the laws of the Member States relating to the electromagnetic compatibility – short: **EMC Directive**  
Conformity assessment procedure: Module A  
Applied standard: EN 61326-1:2013

**RICHTLINIE 2011/65/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 08. Juni 2011**  
zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten – kurz: **RoHS-Richtlinie**  
Konformitätsbewertungsverfahren: Modul A  
Angewandte Norm: DIN EN IEC 63000:2019-05

**DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND THE COUNCIL from June 8, 2011**  
on the restriction of the use of certain hazardous substances in electrical and electronic equipment – short: **RoHS Directive**  
Conformity assessment procedure: Module A  
Applied standard: DIN EN IEC 63000:2019-05

Des Weiteren fallen diese Geräte mit einem Druckmessbereich >0,5 bar als „druckhaltende Ausrüstungsteile“ unter die:

Moreover, these instruments with a pressure range >0.5 bar are, as pressure equipment parts, subject to

**RICHTLINIE 2014/68/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 15. Mai 2014**  
zur Angleichung der Rechtsvorschriften der Mitgliedstaaten betreffend Druckgeräte – kurz: **Druckgeräterichtlinie**

**DIRECTIVE 2014/68/EU OF THE EUROPEAN PARLIAMENT AND THE COUNCIL from May 15, 2014**  
on the approximation of the laws of the Member States relating to pressure equipment – short: **Pressure Equipment Directive**

Die Geräte werden nach geltender guter Ingenieurpraxis ausgelegt und gefertigt.  
Mit Messbereichen ab 0 – 200 bar wurden sie folgendem Konformitätsbewertungsverfahren unterzogen:

These instruments are designed and manufactured according to sound engineering practice.  
Versions with pressure ranges from 0 – 200 bar are subjected to the following conformity assessment procedure:

**Modul A „Interne Fertigungskontrolle“**

**Module A “Internal Production Control”**

Soweit zutreffend erstreckt sich die CE-Kennzeichnung dann auch auf diese Richtlinie.

As far as they are concerned, the CE-marking then also applies to this directive.

Diese Erklärung wird verantwortlich für den Hersteller:  
*This declaration is issued under the sole responsibility of the manufacturer:*

**ARMANO Messtechnik GmbH**  
abgegeben durch/by  
Grünhain-Beierfeld, 2020-10-19



**Bernd Vetter**  
Geschäftsführender Gesellschafter / Managing Director

**ARMANO**

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