



Instruction Manual

PSA10

Electronic pressure switch with display



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Safety Information

General Instructions

To ensure safe operation, the device should only be operated according to the specifications in the instruction manual. The requisite Health & Safety regulations for a given application must also be observed. This statement also applies to the use of accessories.

Every person who is commissioned with the initiation or operation of this device must have read and understood the operating instructions and in particular the safety instructions!

The liability of the manufacturer expires in the event of damage due to improper use, non-observance of this operating manual, use of insufficiently qualified personnel and unauthorized modification of the device.

Proper Usage

The electronic pressure switches PSA10 are designed to control the pressure of liquids or gases which do not attack the device materials. All other usage is regarded as being improper and outside the scope of the device.

In particular, applications in which shock loads occur (for example, pulsed operation) should be discussed and checked in advance with our technical staff.

The series PSA10 pressure switches should not be deployed as the sole agents to prevent dangerous conditions occurring in plant or machinery. Machinery and plant need to be designed in such a manner that faulty conditions and malfunctions do not arise that could pose a safety risk for operators.

Dangerous substances

For dangerous media such as e.g. Oxygen, Acetylene, flammable or toxic substances as well as refrigeration systems, compressors, etc. must comply with the relevant regulations beyond the general rules.

Qualified Personnel

The PSA10 devices may only be installed by trained, qualified personnel who are able to mount the devices correctly. Qualified personnel are persons, who are familiar with assembling, installation, placing in service and operating these devices and who are suitably trained and qualified.

Inward Monitoring

Please check directly after delivery the device for any transport damages and deficiencies. Additional with reference to the accompanying delivery note the number of parts must be checked. Claims for replacement or goods which relate to transport damage can only be considered valid if the delivery company is notified without delay.

Installation

The pressure switch PSA10 can be mounted directly via the pressure connection or indirectly on a hydraulic block using a hose or a minimesh line.

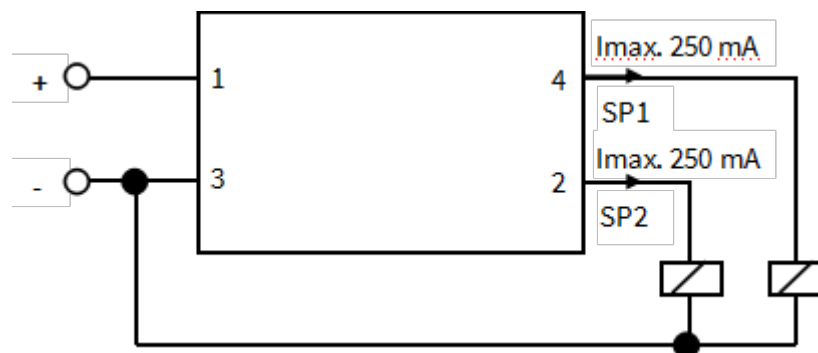
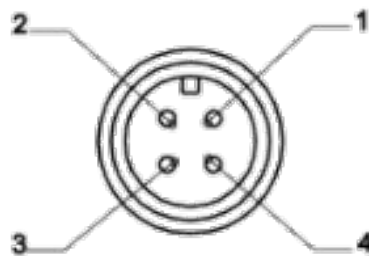
The PSA10 must be fitted using a suitable open-end wrench (across flats 27) on the hexagon nut of the pressure connection.

Do not install the PSA10 by gripping the housing, as this would damage the housing or the entire instrument.

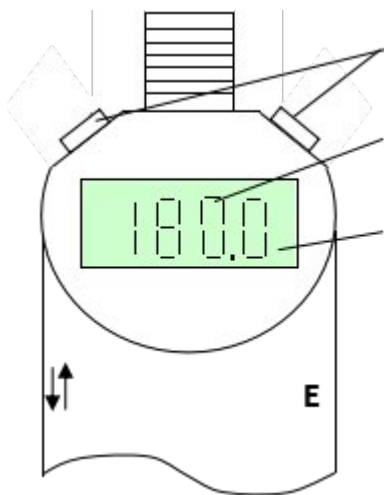
Electrical Connection

Attention: Prior to the electrical connection of the device, it must be ensured that the supply voltage matches that required and the supply voltage is switched off.

PIN assignment of M12x1 connector:



Controls of the PSA10



2 keys (↓↑ and E) for adjusting the switch points, switch-back points and additional functions

4-digit digital display

LED backlight to indicate switch points
(red = active / green = inactive)

Function of keys:

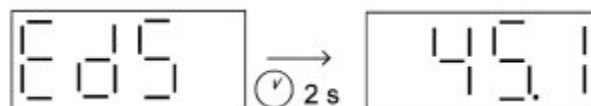


- Im Menü absteigen
- Wert vergrößern
- Wird die Taste länger gedrückt, erfolgt ein Schnelldurchlauf der Parameterwerte



- Auswahl Menüpunkt
- Wert bestätigen

Digital display



Once the power supply has been switched on, the device briefly flashes "EdS", and then begins to show the actual pressure.

To check the unit of measurement being used for the pressure indication, press the right-hand key. Depending on the setting, bar, PSI or MPA will be shown

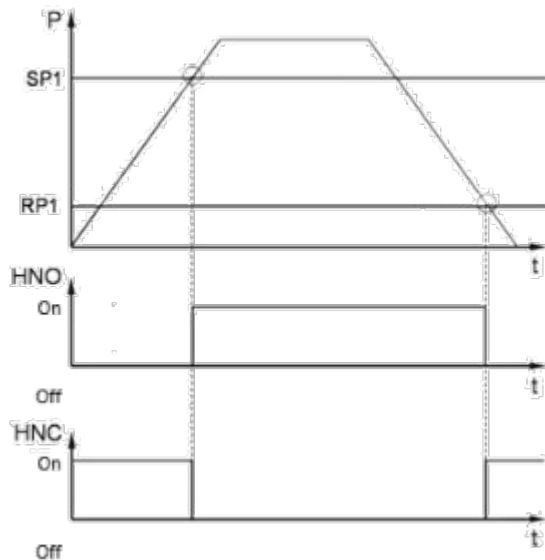
If the actual pressure exceeds the instrument's nominal pressure it can no longer be displayed. The nominal pressure flashes in the display. As a result, when the menu point Max Value (Hi) is selected, the value of the highest measured pressure which has been stored flashes until the instrument is reset by "reset Min-/Max-value" (re.HL) or "reset" (rES).

If the actual pressure is less than 0.6 % of the nominal range, 0 bar is displayed.

Hysteresis function

The PSA10 has 2 switch outputs. The following settings can be made under the basic settings:

Example for switch point 1 (normally closed and normally open function):



Switch point setting (SP)

One switch point and one switch-back point can be set for each switching output.

The particular output will switch when the set switch point is reached and switch back when the pressure drops below the switch-back point.

Abbreviations:

"SP1", "SP2" = Switch point 1, switch point 2

"RP1", "RP2" = switch back point 1, switch back point 2

"HNO", = normally open with hysteresis function

"HNC" = normally closed with hysteresis function

NOTE:

It is only possible to set the switch point (SP) if it is higher than the respective switch-back point (RP). In the case of low SPs we recommend setting the RP first.

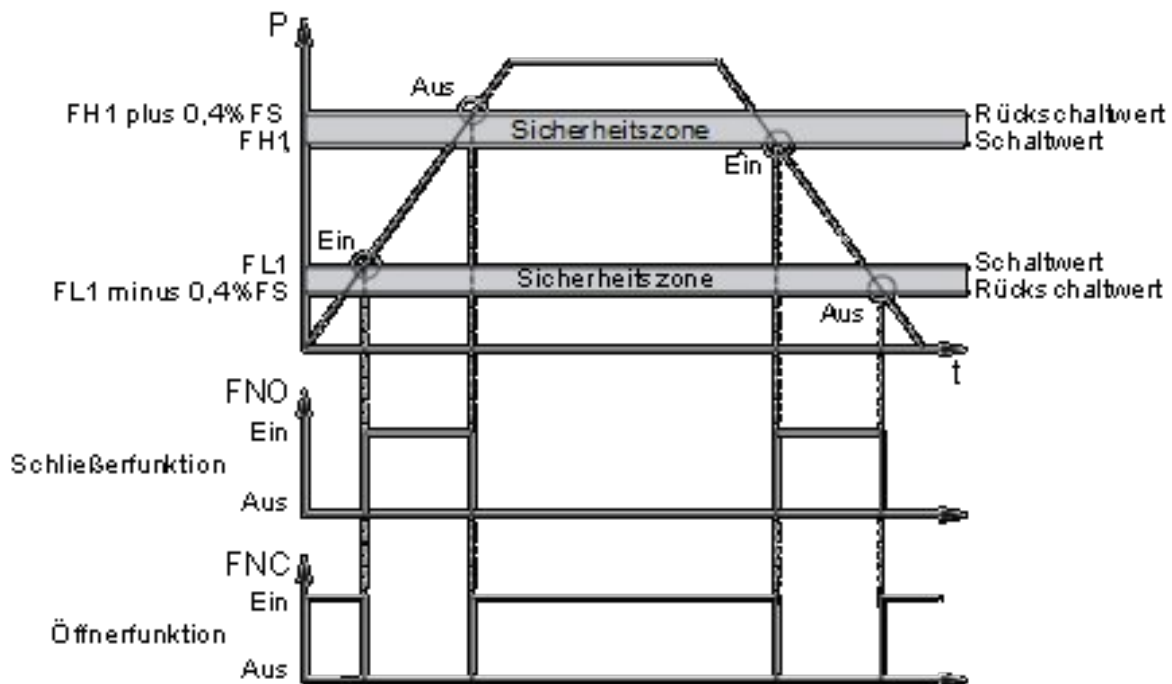
Window function

The window function allows you to monitor a range. An upper and a lower switch value can be entered for each switch output. These values determine the range.

The relevant output will then switch when the pressure enters this range.

When the pressure leaves this range, i.e. when the switch-back point has been reached, the output switches back. The lower switch-back value is just below the lower switch value. The upper switch-back value is just above the upper switch value. The range between the switch value and the switch-back value forms a safety margin which prevents unwanted switching operations from being triggered (such as those triggered by the pulsations of a pump).

Example for switch point 1 (normally closed and normally open function):



Abbreviations:

- "FH1", "FH2" = upper switch value 1 / upper switch value 2
- "FL1", "FL2" = lower switch value 1 / lower switch value 2
- "FNO" = normally open when window function is active
- "FNC" = normally closed when window function is active

NOTE:

It is only possible to set the switch point (SP) if it is higher than the respective switch-back point (RP). In the case of low SPs we recommend setting the RP first.

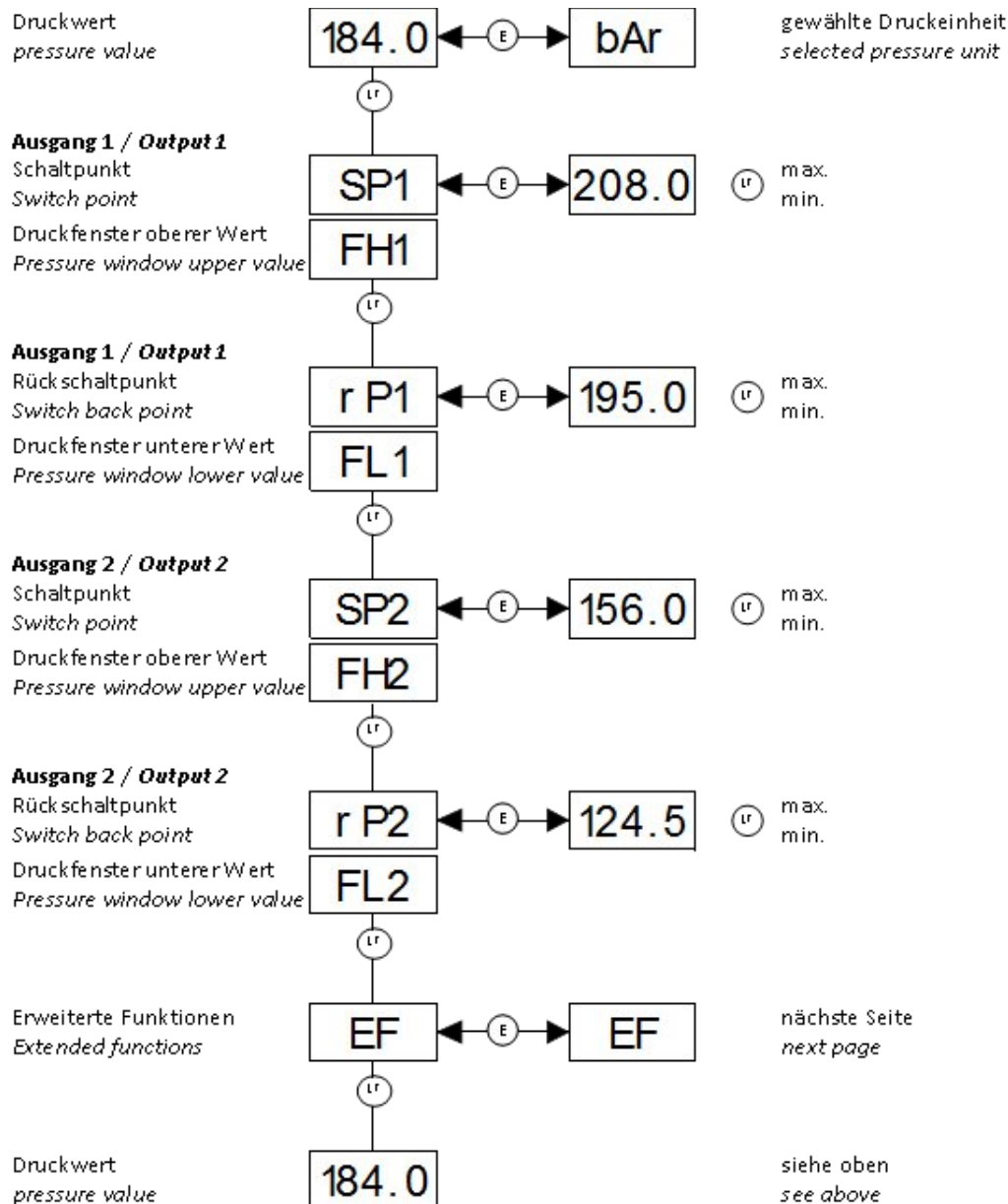
The window function only works properly (switching on and off) if all switch values (including the safety margin) are above 0 bar and below the nominal pressure range.

Main menuue

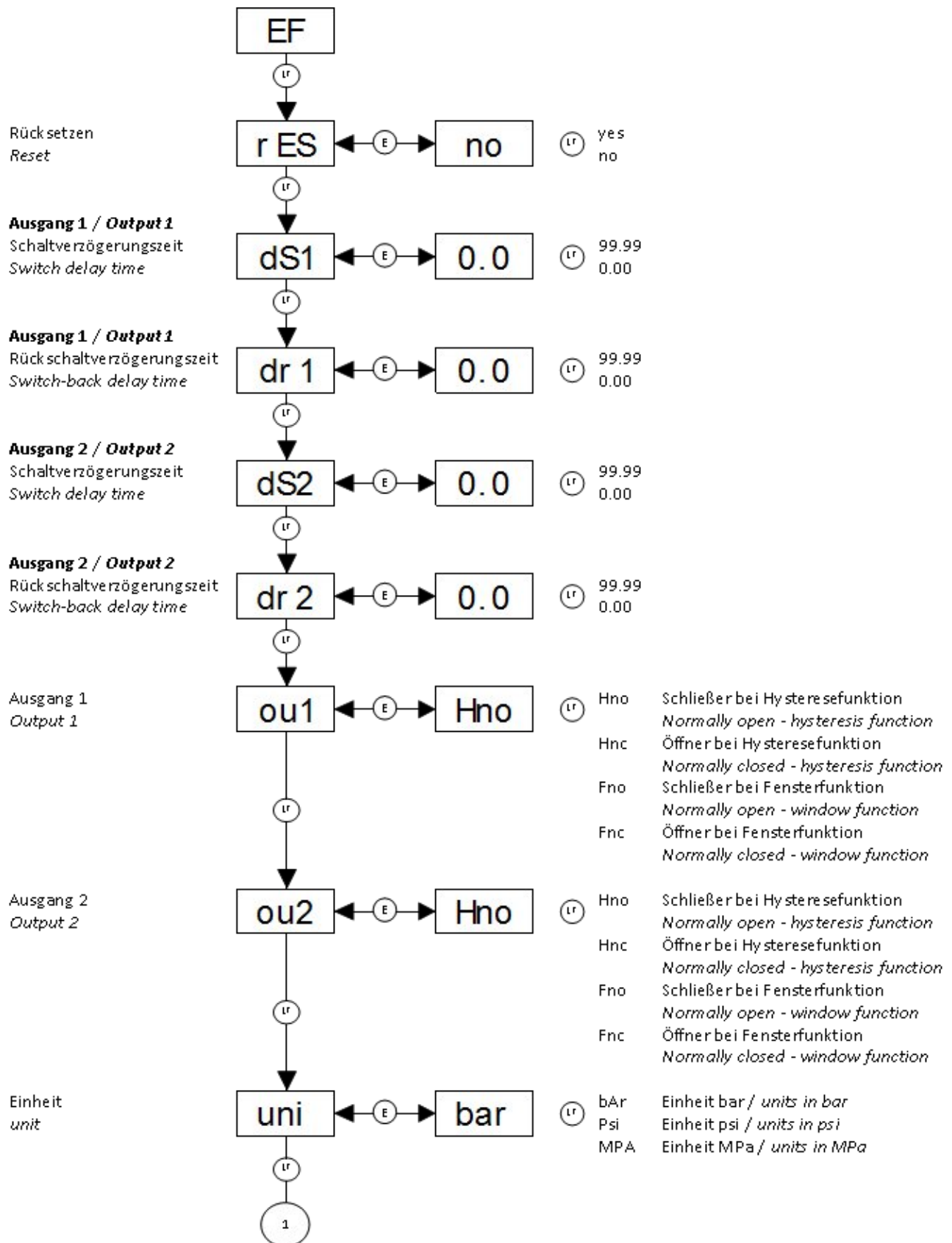
If no key is pressed for approx. 60 seconds, the menu closes automatically, and any changes that may have been made will not be saved.

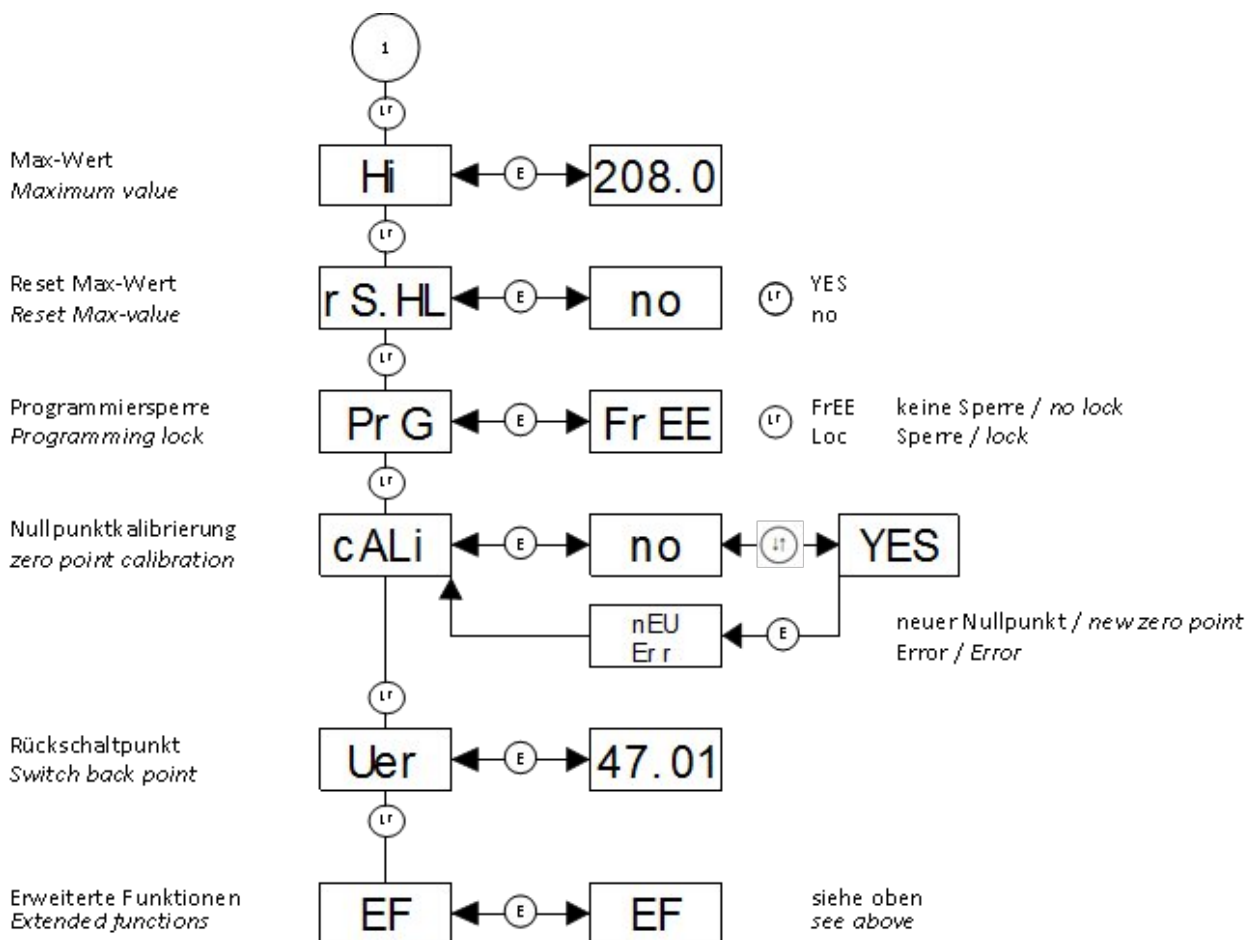
If both keys are pressed at the same time, the menu closes automatically and any changes made are saved.

When an adjusted parameter is confirmed, the set value is displayed for a second before returning to the relevant menu point.



Extended functions





Calibration of zero point

The function "Cali" enables the calibration of the sensor zero point. The current pressure is saved as the new zero point. This is possible in the range +/- 3% of the instrument rated pressure. "neW" appears in the display when a calibration is carried out in the permitted range, otherwise "Err" is displayed.

This function is useful, for example, if there is always a residual pressure left in the system which should be displayed as 0 bar.

CAUTION:

Following a zero point adjustment, for example on a 600 bar instrument, a pressure of up to 18 bar will be displayed as 0 bar. Before any work is carried out on the hydraulic system, ensure that the system is depressurised.

Programming lock

In order to prevent unauthorised adjustment of the device, a programming lock can be set. If the menu item "PrG" is set to "Loc" in the extended menu, the programming lock is set. All values can still be read but can't be edited. When trying to edit a value by means of the arrow keys, "Loc" is displayed as long as the key is pressed. The functions "reS" and "Rs.HL" are locked as well.

Error messages

If an error is detected, a corresponding error message appears that must be acknowledged by pressing any key.

Possible error messages:

E.10	<p>A data error was detected in the saved settings. This could be due to strong electromagnetic interference or a component fault.</p> <p><u>Action:</u> Press (E) and confirm "RES" by pressing "Yes". The factory settings will be restored for all adjustable parameters and all minimum and maximum values will be deleted. Enter the data again from the beginning.</p>
E.12	<p>An error was detected in the saved calibration data. This could be due to strong electromagnetic interference or a component fault.</p> <p><u>Action:</u> Disconnect then reconnect the supply voltage to the instrument. If the error persists, the instrument must be returned to the factory for recalibration or repair.</p>
E.21	<p>A communication error was detected within the instrument. This could be due to strong electromagnetic interference or a component fault.</p> <p><u>Action:</u> Press (E). If the error persists, disconnect then reconnect the supply voltage to the instrument. If the error still persists, please contact our service department.</p>

PSA10

Electronic Pressure Switch with Display

- switching ranges -1...+16 bar to 4...400 bar
- switching status display as red and green backlighting clearly visible from a distance
- 2 transistor switching outputs PNP adjustable as N/C or N/O contact
- adjustable delay of switching signals
- 4-digit LED display with menu navigation
- max. temperature: 85 °C



Description:

The electronic pressure switches of the PSA10 series operate reliably with a thin-film measuring cell as a pressure monitor up to 400 bar. The robust and reliable measuring device contains two transistor switching outputs (PNP), which can be configured as normally closed or normally open.

Due to the 4-digit LED display and the buttons located on the device, the pressure switch can be set very easily and self-explanatory on site. In addition to the current pressure display, the red or green LED backlight indicates the switching status.

The two switching points can also be used to select the "window function", which enables precise monitoring of a pressure range.

Typical applications:

The pressure switch is suitable for almost all liquid and gaseous media and is used in vacuum technology, gas technology, filter monitoring as well as for various monitoring tasks in hydraulics and pneumatics, in machine, apparatus and plant construction, in process engineering and building services engineering.

Technical Data:

Unit:	bar, psi, MPa
Process connection:	G 1/4 male, fest (standard) adapter G 1/4 AG, rotatable
Media temperature:	-25...+85 °C compensated
Materials (wetted by the media):	FPM st. steel 1.4548 (measuring cell) st. steel 1.4301 (connection piece)
Shock resistance:	50 g according to DIN EN 600068-2-6 (11 ms)
Vibration resistance:	10 g acc. to DIN EN 60068-2-29 (500 Hz)
Accuracy	≤ 1 % of span at room temperature incl. non-linearity, hysteresis, zero point and full scale deviation
Mounting position:	any
Life span:	100 million switching cycles, > 10 million Load changes (0...100 %)
Weight:	0,07 kg
Protection class:	IP67 acc. to DIN EN 40050

Electrical Data:

Auxiliary power:	9,6...32 VDC
Electr. connection:	round plug connector M12x1
Signal type:	2 transistor outputs PNP, adjustable
Power consumption:	max. 0,535 A total
Switching current:	max. 250 mA per output
Reaction time:	< 10 ms

Display:

Display:	4-digit, 7 segment LED display
Character height:	4,5 mm
Switching state:	multi-colored switching display (red / green background)

Pressure Ranges:

Pressure range	Switching range [bar]			
	Lower limit	Upper limit	Step size	Min. hysteresis
-1...+16 bar	-1	16	0,05	0,25
0...20 bar	0,25	20	0,05	0,25
0...100 bar	1,0	100	0,2	1,0
0...250 bar	2,5	250	0,5	2,5
0...400 bar	4	400	1	4

Order Code:

Order number:	PSA10.	S.	020.	1.	M.	0
Electronic pressure switch with display						
Version:	S = 2 transistor switching outputs PNP					
Adjustment range:	009 = -1,0...+16 bar, p _{max} : 50 bar 020 = 0,25...20 bar, p _{max} : 80 bar 100 = 1,0...100 bar, p _{max} : 200 bar 250 = 2,5...250 bar, p _{max} : 500 bar 400 = 4...400 bar, p _{max} : 800 bar					
Process connection:	1 = G 1/4 male thread (solid, standard) A = adapter G 1/4 male thread (rotatable)					
Electrical connection:	M = round plug connector M12x1 (4-pin)					
Options:	0 = without 9 = please specify in plain text					

Accessories:

Order number:	SM12.	4.	2.	G.	0
M12x1-plug connector with PVC cable					
Number of poles:	4 = 4-pin				
Cable length:	0 = without cable for self-assembly 2 = 2 m PVC cable (standard) 5 = 5 m PVC cable 10 = 10 m PVC cable				
Version:	G = straight W = angled				
Options:	0 = without 9 = please specify in plain text				



Dimensions:

