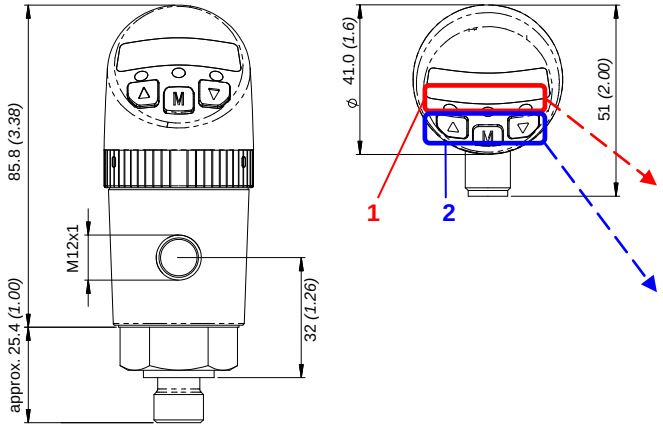
11 Technical Data

	BPS3000
Measuring element	Ceramic sensor, optional: piezoresistive sensor At 600 bar (9000 psi): piezoresistive sensor only Version with relay output: piezoresistive sensor only
Measuring Ranges	0 ... 0.2 bar to 0 ... 600 bar, 0 ... 3 psi to 0 ... 9000 psi, relative pressure 0 …1 bar to 0 …10 bar, 0…15 psi to 0 … 150 psi, absolute
Display	4-digit 14-segment LED display, red, digit height 9 mm
Transistor switching outputs PNP (IO-link version with PNP, NPN, PP)	1 or 2 x NO/NC function (programmable), adjustable switching time delay 0 ... 50 s
Relay output	2 x, max. 60V/1A/30W
Operating temperature range	-10 ... +70 °C / +14 ... +158 °F
Media temperature range	-25 ... +100 °C / -13 ... +212 °F
Storage temperature range	-30 … + 80°C / -22 … + 176 °F
Process connection	G ¼" M, G ½" front-flush, 1/4" NPT, 1/2" NPT, 7/16 – 20 UNF JIC 37°, 7/16 SAE-4, Cetop, G ½" open passage, G ¼“ IG, R ¼“ BSPT
Protection system2)/ class	IP65, IP67; UL-type 6, 4X, 3R (depending on version) / III
Electrical connection	Plug M 12x1, 4/5/8-pin (depending on output code)
Power supply	15 ... 32 V DC / relay output: 20-32 VDC
Approvals	cULus[1])
For further technical data and options please refer to the data sheets	

1) Operating conditions: max. ambient temperature 60°C, auxiliary energy max. 28 V DC
2) The specified protection classes apply only in mated condition with mating connectors of the respective protection class

Operating and display elements/Dimensions

Dimensions (*example*) in mm



Item 1: LEDs	
AL	(red) – Alarm
S1	(red) – switching point 1
S2	(red) – switching point 2

Item 2: Keys

For functions refer to chapter 8 "Programming" on page 5.

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Operating Instructions

Dual Pressure Switch BPS3000

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Art. no.: 923-1966
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Software version: 1.2 or higher

Specifications are subject to changes without notice!

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1 Intended Applications

The dual pressure switch monitors system pressures and has up to two switching outputs and one analog output.

Operate the switch exclusively in the specified fields of application
(see chapter "Technical Data“ on page 12).

Observe the applicable national safety regulations for assembly, commissioning and operation of the switch.

Do not use the switch as the only safety relevant element according to DGR 2014/68/EU (PED).

2 Safety Instructions

The safety instructions are intended to protect the user from dangerous situations and/or prevent material damage.

In the operating instructions the seriousness of the potential risk is designated by the following signal words:

⚠ **DANGER!**

Refers to imminent danger to life and health of men.

Nonobservance will result in serious injuries, or even life-threatening injuries and death.

⚠ **WARNING!**

Refers to a potential hazard.

Nonobservance may result in serious injuries, or even fatal injuries and death.

⚠ **CAUTION!**

Refers to a potential hazard.

Nonobservance may result in light injuries.

Attention!

Refers to a potential hazard.

Nonobservance may result in damage to the switch and/or to the plant.

☞ **NOTE**

Refers to important information essential to the user.

Disposal

The switch must be disposed of correctly in accordance with the local regulations for electric/electronic equipment.

The switch must not be disposed of with the household garbage!

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3 Standards

The standards applied during development, manufacture and configuration are listed in the CE conformity and manufacturer's declaration.

4 Warranty/Guaranty

Our scope of delivery and services is governed by the legal warranties and warranty periods.

Terms of guaranty

We guaranty for function and material of the dual pressure switch under normal operating and maintenance conditions in accordance with the statutory provisions.

Loss of guaranty

The agreed guaranty period will expire in case of:

- incorrect use,
- incorrect installation or
- incorrect handling or operation contrary to the provisions of these operating instructions.

No liability is assumed for any damage resulting therefrom, or any consequential damage.

Refer to Barksdale "Standard Terms and Conditions“.

5 Installation

Attention! Jolts and heavy vibrations must be avoided during transport. Even if the switch casing remains undamaged, inside parts may be damaged and cause malfunctions.

The pressure switch may only be installed and electrically connected by trained and instructed staff according state-of-the-art standards.

⚠ **DANGER! Electric shock and/or explosion!**

Install the switch only in systems where the maximum pressure Pmax is not exceeded (see type label). Only install the switch when deenergized (electrically and hydraulically/pneumatically).

Mount the pressure switch from the bottom to the fitting using a wrench SW 27 and tighten it to a torque of 20 Nm.

☞ **NOTE**: The damping screw from brass installed in the pressure inlet can be removed if required, e. g. soiled medium or material incompatibility, using a slotted screwdriver (max. width 3 mm). Attention: Removing the damping screw will reduce the resistance of the device against pressure peaks.

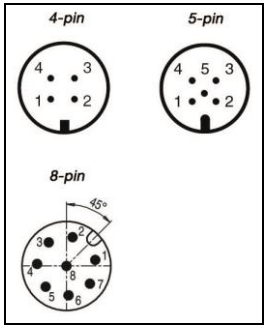
Electrical connection is to be carried out dependent on the type of switch (see type label) according to the chart below. Wrong assignment of the connections may cause malfunctions or incorrect switch outputs.

Electrical connection

Plug M 12x1 4/5/8-pin	Model with 2 switching points	Model with 1 switching point and 1 analog output	Model with 2 switching points and 1 analog output	Model with 2 switching points (relay contacts)	
	Signal output code 1, 7	Signal output code 2, 3	Signal output code 4, 5, 8	Signal output code 6	
1	+Ub	+Ub	+Ub	+Ub	
2	SP2	Signal	Signal	SP1a	NC
3	OV	0V	0V	SP1b	
4	SP1 / IO link[1]	SP1	SP1 / IO link[1]	0V	
5	-	-	SP2	SP2a	NO
6	-	-	-	SP2b	
7	-	-	-	-	
8	-	-	-	Housing	

[1] only code 7 and 8

Plug



6 Commissioning / Operation

The pressure switch may only be commissioned and operated by authorized staff.

⚠ **WARNING! Hot surfaces!**

During operation with higher temperatures the casing surface may become very hot! Wear protective gloves!

⚠ **WARNING! Electric shock!**

Do not put the switch into operation when the switch itself or the connection cable is damaged.

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After having been switched on the switch runs through a self-test. If the software recognizes an error during the self-test or during operation, this is signaled in the display by "Err" and the corresponding message, refer to Error list on page 7. The red LEDs S1 and S2 signal the activity of the two switching points.

Operation via three plastic film keys is menu-driven. ▲, ▼ and M

Attention! The keys may be damaged by pointed, hard objects. Do not use any pointed, hard objects for making entries.

For information about the factory settings for the parameters and how to change them please refer to the next chapter 8 "Programming".

7 IO-link version

General information

This device features an IO-link communication interface which requires an IO-link capable module (IO-link master) for operation. The IO-link interface permits direct access to process and diagnostic data and offers the possibility of parametrising the device during operation. Moreover communication via a point-to-point connection using a USB adapter cable is possible.

Device-specific information

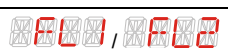
The IODDs required for the configuration of the IO-link device and detailed information about process structure, diagnostic information and parameter addresses are available at ->IODD finder and on https://www.barksdale.de/de/download/iolink/. To find the required information please enter the order code in the search mask. IO-link devices manufactured before 04-01-2019 do not support different polarities of the switching outputs.

☞ **NOTE:** Since process connection, seal and measuring cell have no influence on the IO-link communication you must replace them by "xx". E.g. BPS38GVM0400BP = BPS38xxM0400Bx
TIP: Use the autocomplete function of the IODD finder by entering the article no. character by character. If your device has been manufactured before 04-01-2019 please take into account that the proposed device ID begins with 0x010.

8 Programming

Navigation function	Symbol (membrane key)
Menu descending	▼
Menu ascending	▲
Horizontal movement in menu, select menu item	M
Parameter change ascending	▲
Parameter change descending	▼
Adopt parameter change and return to current menu item	M
Return to measured value display	Press ▲ + ▼ simultaneously

Parameter

Parameter	14-segment display	Description
SP1/SP2[1]		Hysteresis function: switching point of solid state contact
FH1/FH2[1]		Window function: Window High solid state contact
rP1/rP2[1]		Hysteresis function: hysteresis of solid state contact
FL1/FL2[1]		Window function: Window Low solid state contact
EF		Extended programming functions
rES		Reset parameters to factory settings
dS1/dS2[1]		Switching time delay – the set contact rating must be permanently exceeded to trigger a switching function
dr1/dr2[1]		Switching time delay – the contact rating must be permanently lower than the set contact rating to trigger a switching function
Ou1/Ou2[1]		Switching function of solid state contact Hno = hysteresis function, NO contact HNC = hysteresis function, NC contact FNO = window function, NO contact FNC = window function, NC contact DIA = diagnostic function, NO contact (only Ou2)
Pol 1/ Pol 2 [3]		Select polarity of switching output: PP, NPN, PNP
uni		Select unit: bar, PSI, MPa If the measuring range is outside the display range, unit selection is impossible. The parameter "uni“ is not displayed.
OuA[2]		Analog output I = 4... 20 mA U = 0... 10 V I.INV = 20... 4 mA U.INV = 10... V
ASP[2]		Analog start value

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Parameter	14-segment display	Description
AEP[2]		Analog end value
dPA[2]		Damping of analog output
ErS.A[2]		Error signal of analog output Values: < 3.6 or > 22 or Off
Hi		Saved value of highest pressure measured
Lo		Saved value of lowest pressure measured
COF		Offset correction (max. 10 % of measuring range)
ddis		Damping display
Fdis		Rotate display through 180°
udiS		Unit indication
Firm		Firmware version
LocK		Software lock

[1] only models with 2nd switching contact

[2] only models with analog output

[3] only IO-link devices

Error list

Parameter	14-segment display	Description
sens		Sensor defect
SC1		Short circuit, solid state contact 1
SC2		Short circuit, solid state contact 2
AOut		Open output, short circuit
OL		Sensor limit positive
UL		Sensor limit negative
KEY		Internal defect

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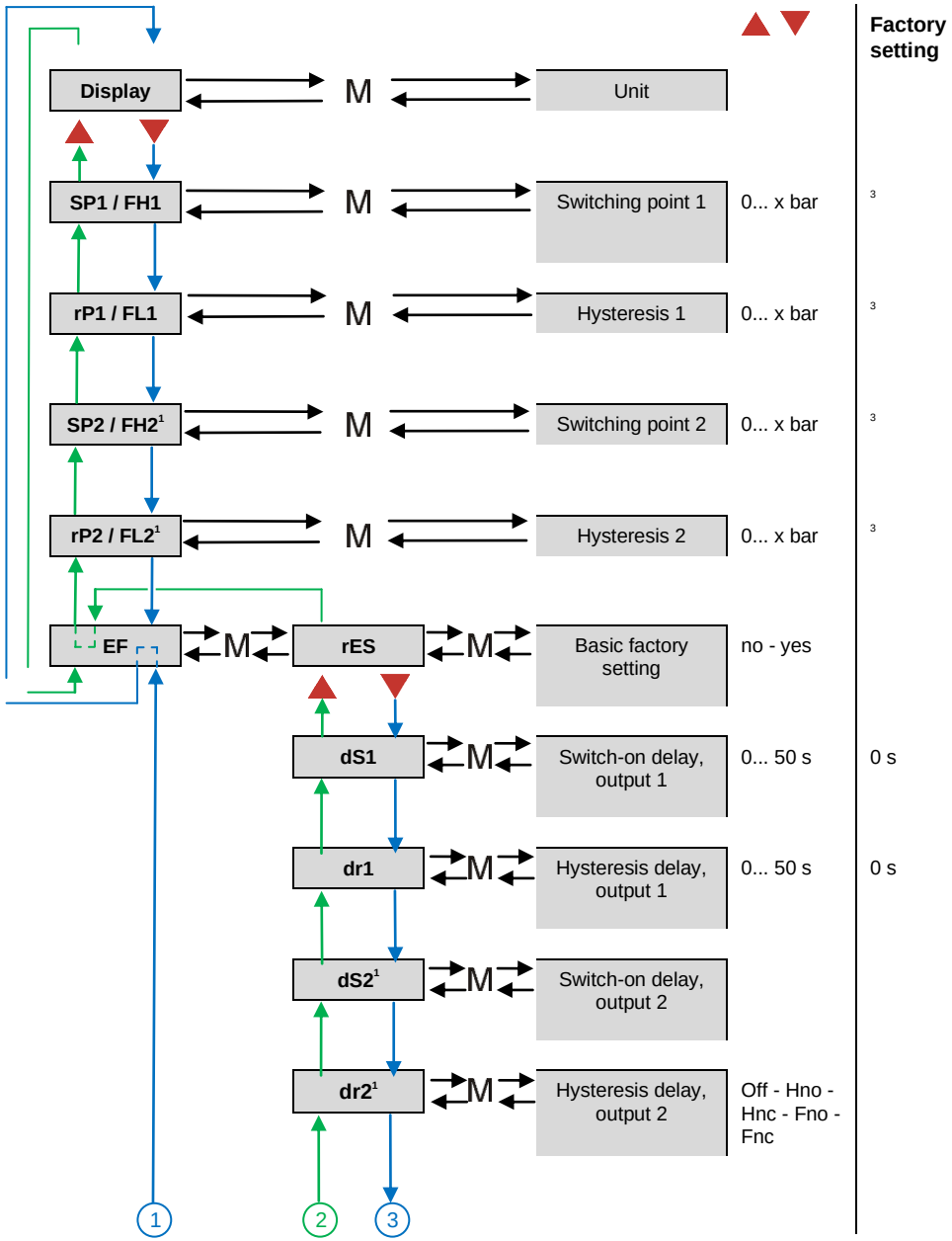
Menu Structure



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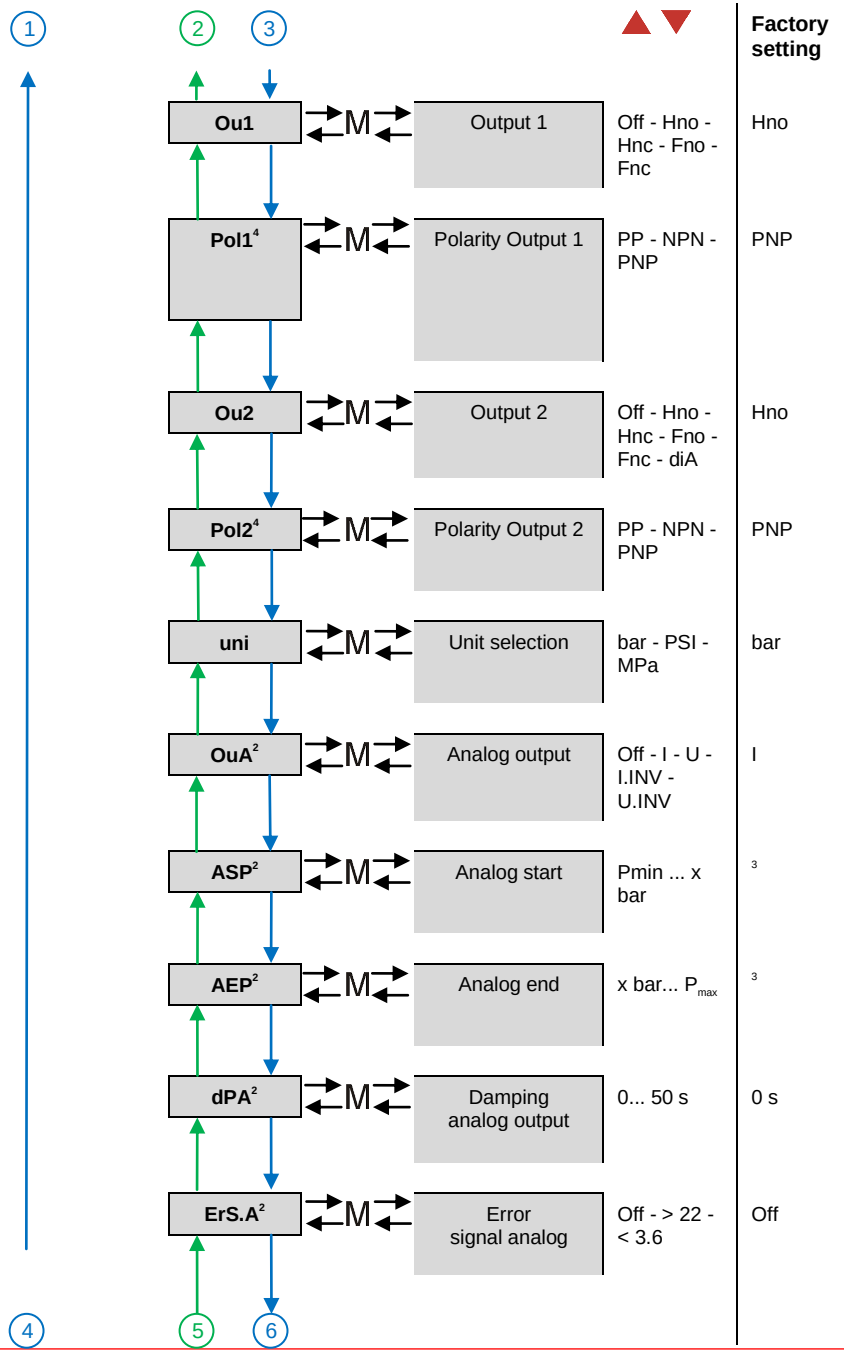

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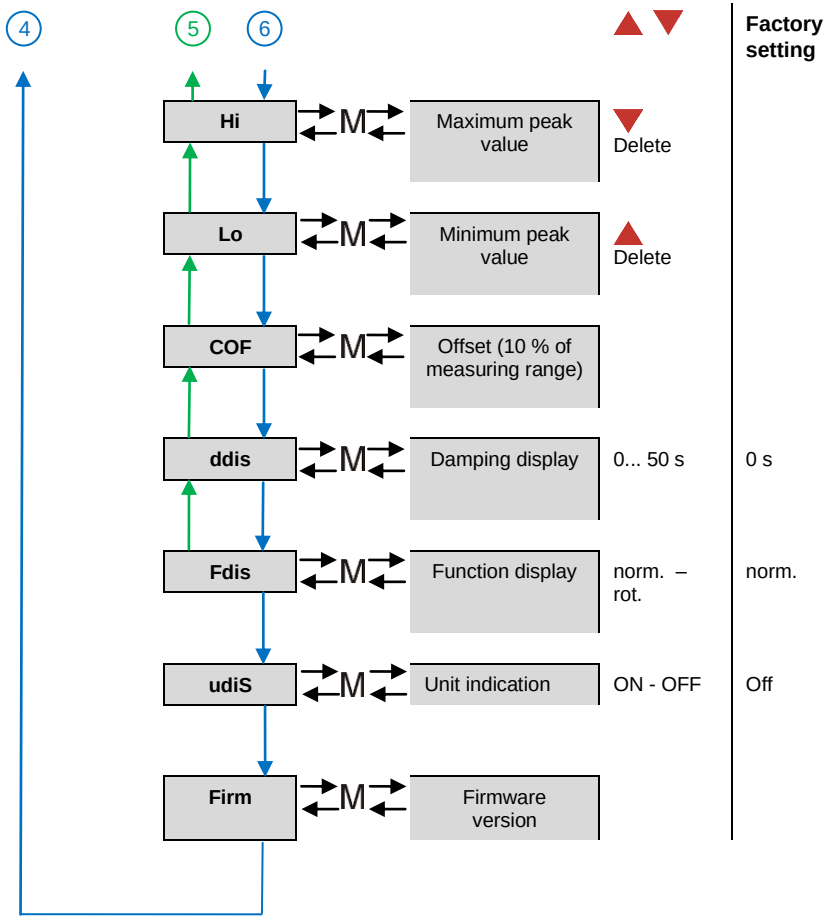


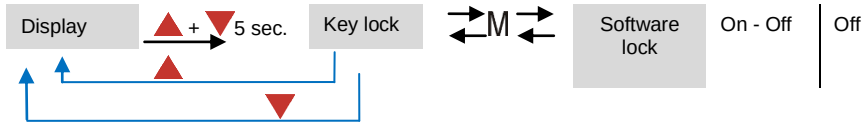
[1] only models with 2nd switching contact

[2] only models with analog output
(ASP = 0.0% - 80.0% range, AEP =20,0% - 100% range; ASP = AEP – 20,% range)

[3] setting according to measuring range

[4] only IO-link devices

Software lock



9 Maintenance/Cleaning

Maintenance

The pressure switch requires no maintenance.

⚠ **WARNING! Risk of injury!**

Check the switch for functioning at regular intervals.

If the switch does not work properly, stop operation immediately.

Cleaning

Attention! Material damage!

The devices may be damaged by the use of unsuitable cleaning agents.

The following cleaning agents can be used for cleaning polycarbonates:

- mild soapy water or detergent
- isopropyl alcohol

Rinse with water immediately after cleaning. No cleaning agent must remain on the surface.

Clean the devices only at room temperature, never in direct sun light.

The following cleaning agents may impair the condition of components from polycarbonate and shall not be used.

- ZEP Fast 505, Pinesol, Formula 409
- brake cleaner
- halogenated solvents
- strong alkaline solutions
- MEK (methyl ethyl ketone)
- abrasives (abrasive additives)

10 Decommissioning

⚠ **DANGER! Electric shock and/or explosion!**

Only remove the switch when deenergized (electrically and hydraulically/pneumatically).

Disconnection of the switch from pressure and power supply must be carried out by trained or instructed personnel according to state-of-the-art standards.

⚠ **WARNING! Hot surfaces!**

During operation with higher temperatures the casing surface may become very hot! Wear protective gloves!