Operating Instructions

for

Display Pressure Switch

Model: PSD

We don’t accept warranty and liability claims neither upon this publication nor in case of improper treatment of the described products.

The document may contain technical inaccuracies and typographical errors. The content will be revised on a regular basis. These changes will be implemented in later versions. The described products can be improved and changed at any time without prior notice.
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2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.
The instruction manuals on our website www.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition.
Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:
The standard delivery includes:

- Display Pressure Switch model: PSD

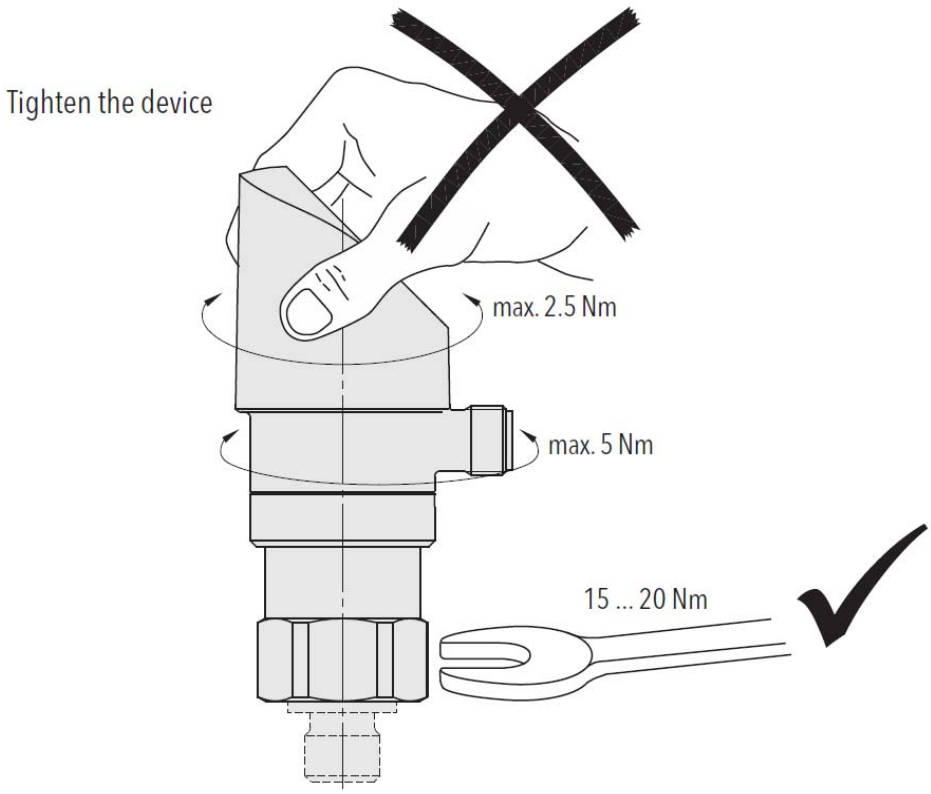
4. Regulation Use

Any use of the Display Pressure Switch, model: PSD, which exceeds the manufacturer's specification, may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

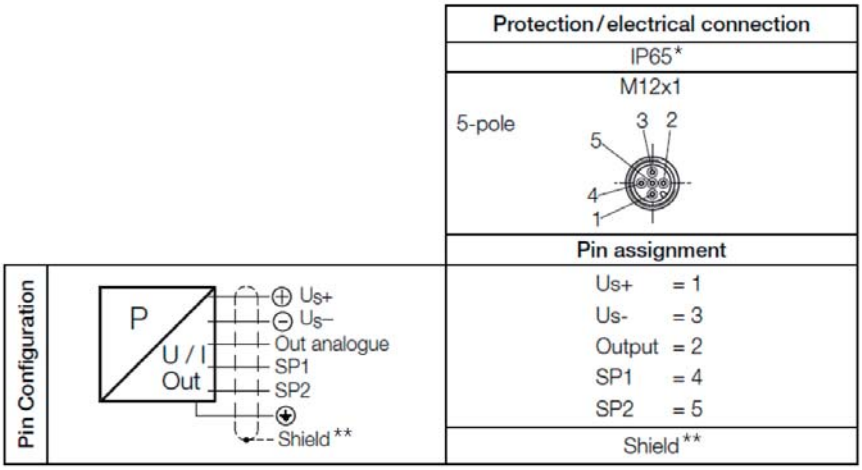
5. Operating Principle

KOBOLD is a leading international supplier of high-quality sensors and monitoring instruments among other things for measurement of pressure and temperature. The PSD is the ideal combination of pressure switch and transmitter with a pressure display. The parameters can be set on the device. The settings in combination with a comprehensive set of options make the PSD suitable for a wide range of demanding applications.

6. Mechanical Connection

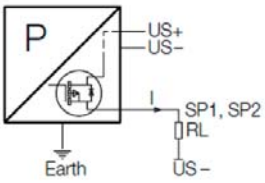


7. Electrical Connection



* provied that the female connector is mounted according to instructions

** The use of shielded cable is recommended

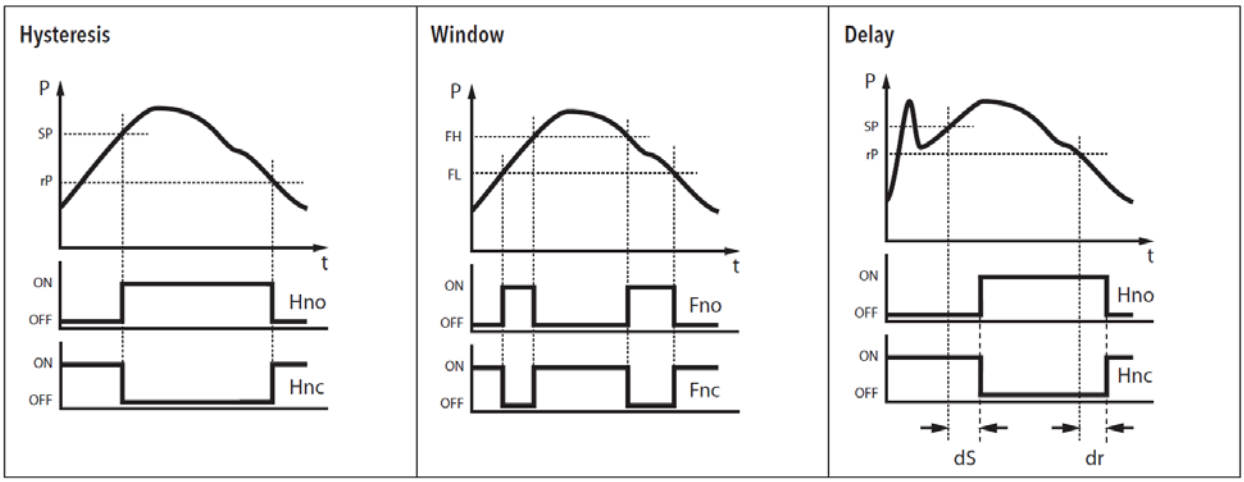


Connection of loads to switching output

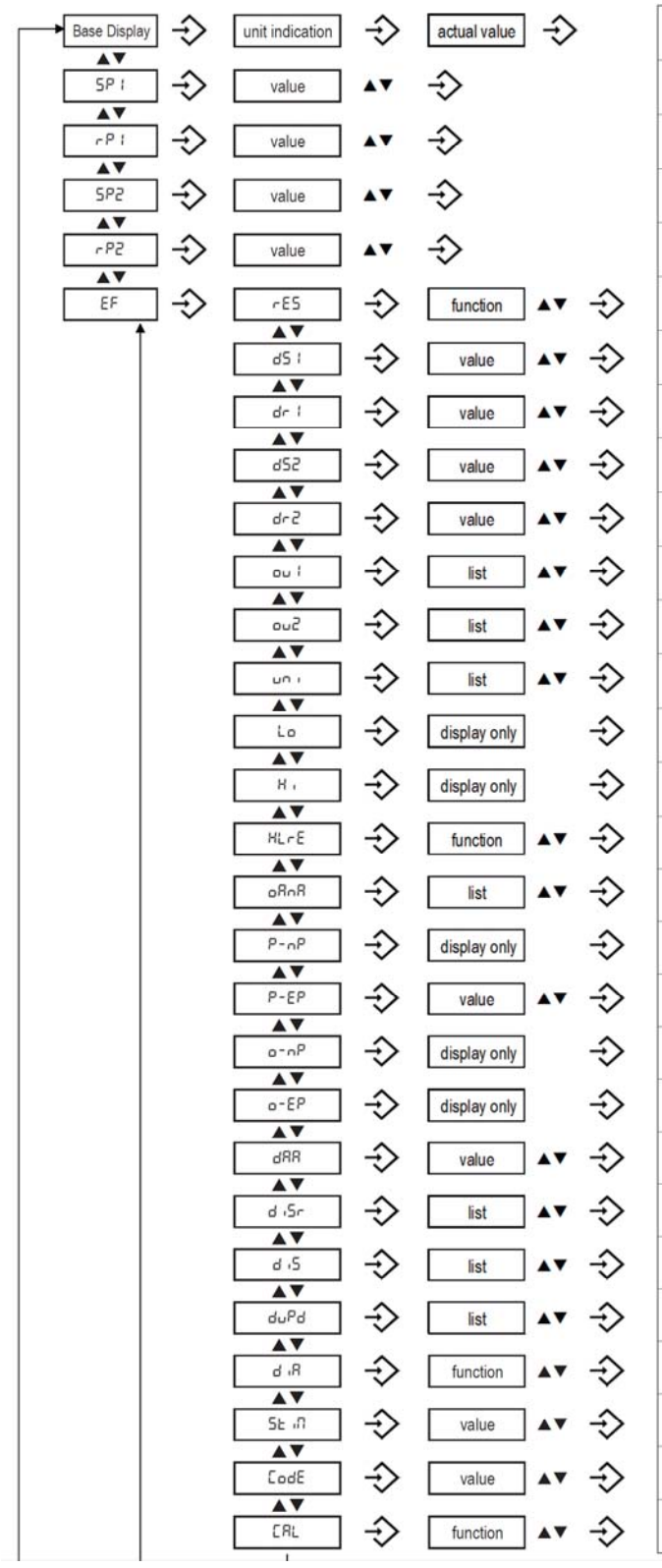
7.1 Output signal / supply voltage

Output	**I_{SUPPLY}**	**U_{SUPPLY}**
4...20 mA	≤ 30 mA	15...30 VDC
0...10 VDC	≤ 30 mA	15...30 VDC

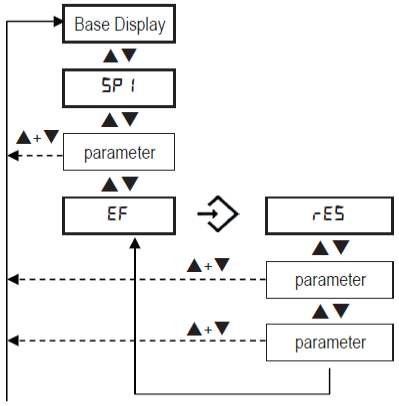
Switching output functions



8. Operating menu



Description	Value range
Switch point SP1 (Hysteresis) or Window high FH1	SP1 > rP1, FH1 > FL1 Hysteresis ≥ 1 % FS
Reset point rP1 (Hysteresis) or Window low FL1	rP1 < SP1, FL1 < FH1 Hysteresis ≥ 1 % FS
Switch point SP2 (Hysteresis) or Window high FH2	SP2 > rP2, FH2 > FL2 Hysteresis ≥ 1 % FS
Reset point rP2 (Hysteresis) or Window low FL2	rP2< SP2, FL2 < FH2 Hysteresis ≥ 1 % FS
Reset to factory settings	
Switching delay time for SP1/FH1	0.01 ... 99.99s
Switching delay time for rP1/FL1	0.01 ... 99.99s
Switching delay time for SP2/FH2	0.01 ... 99.99s
Switching delay time for rP2/FL2	0.01 ... 99.99s
Function switching output 1	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)
Function switching output 2	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)
Pressure unit	bar/MPa/kPa/psi/m WC/mm WC
Lowest measured pressure	
Highest measured pressure	
Reset highest and lowest pressure value	
Analogue output type	I, U, off
Pressure zero point	
Pressure end point	50 % ... 100 % FS
Analogue output zero point	
Analogue output end point	
Damping analogue output rise time 10 ... 90 % nominal pressure	0.01 ... 3.00 s
Display rotate	no, yes (180°)
Display mode	actual, highest, lowest, off, act. – 1 decimal, act. – 2 dec., act. – 3 dec.
Display update rate	1, 2, 5, 20 Hz
Diagnostic mode	
Sampling time for logger	0.1 ... 999.9 s, off (0)
Access code	4-digit code
Factory use	



By pressing ▲+▼ simultaneously the menu will return to the base display or automatically after ca. 60 s without operation.

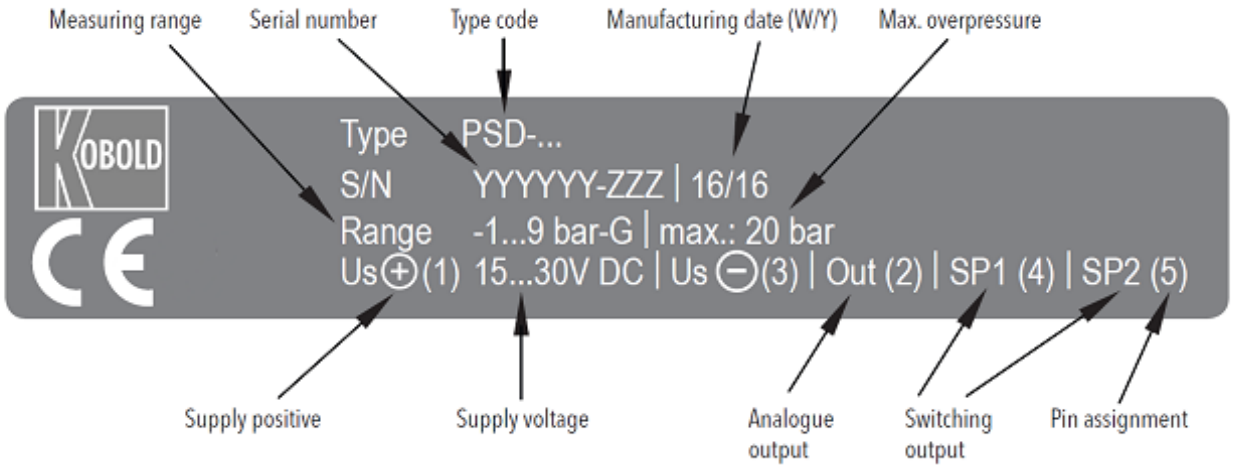
pw* When performing a parameter change by pressing ▲ or ▼ and if an access code has been defined, it has to be entered digit by digit.

After confirming the new parameter value, the menu item of the changed parameter will be displayed.

Parameter

Name	Standard setting (accessory ZS)	Value range	Short name
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75% measuring range	SP1>RP1 FH1>FL1 hysteresis≥1% FS	SP1
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25% measuring range	RP1<SP1 FL1<FH1 hysteresis ≥ 1% FS	RP1
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75% measuring range	SP2>RP2 FH2>FL2 hysteresis≥ 1% FS	SP2
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25% measuring range	RP2<SP2 FL2<FH2 hysteresis ≥ 1% FS	RP2
Switch point delay time SP1 (hysteresis mode) Switch point delay time FH1 (window mode)	0	0...99.99 s	dS1
Switch point delay time RP1 (hysteresis mode) Switch point delay time FL1 (window mode)	0	0...99.99 s	dR1
Switch point delay time SP2 (hysteresis mode) Switch point delay time FH2 (window mode)	0	0...99.99 s	dS2
Switch point delay time RP2 (hysteresis mode) Switch point delay time FL2 (window mode)	0	0...99.99 s	dR2
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), hysteresis NC (Hnc), window NO (Fno), window NC (Fnc)	ou1
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), hysteresis NC (Hnc), window NO (Fno), window NC (Fnc)	ou2
Pressure units	bar	bar, psi, MPa, kPa, mWC	uni
Measuring range adjustment	100 % nominal pressure	50…100% nominal pressure	P-EP
Damping (analogue output)	0.01 s	0.01…3.00 s (time constant)	dAA
Display rotation	no	no, yes (180°)	disr
Display mode	Current pressure value	Pressure value: current, highest, lowest, display off Current value: decimal places selectable (max. 3)	dis
Display update	2	1, 2, 5, 20 Hz	duPd

9. Type label description



10. Technical Information

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

11. Order Codes

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

12. Dimensions

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

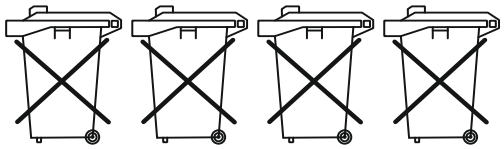
13. Disposal

Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

Batteries

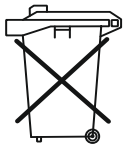
Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



Cd[1] Hg[2] Pb[3] Li[4]

1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

Electrical and electronic equipment

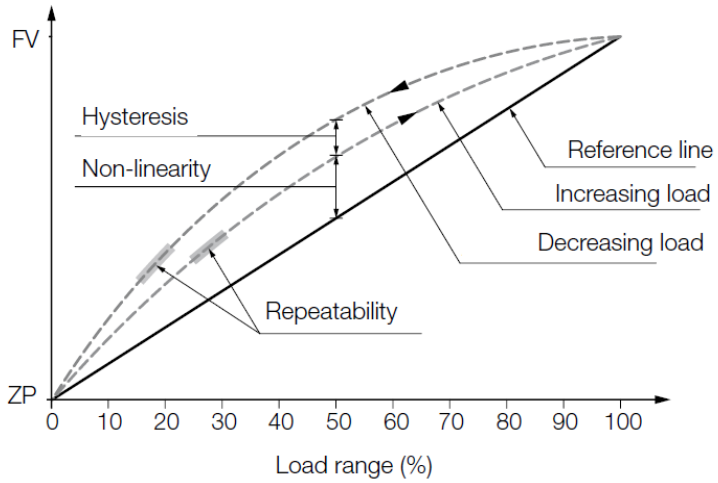


14. Terminology

Non-linearity

The largest deviation from the effective characteristic line of an ideal reference line. The reference line can be defined as a limit point adjustment, a BSL or a BSL through 0.

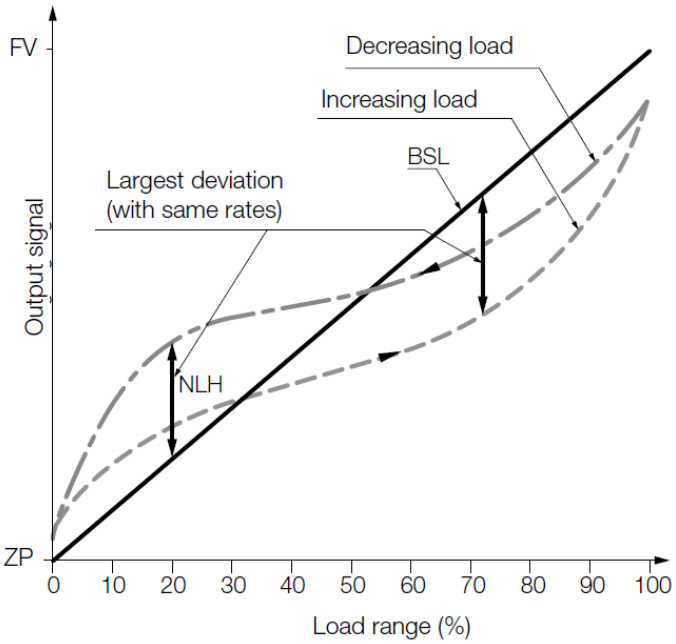
Specifications: Non-linearity, Hysteresis



BSL through Zero

As an additional requirement for the minimum value adjustment, the BSL through zero (also BSL/0) must go straight through zero or the origin.

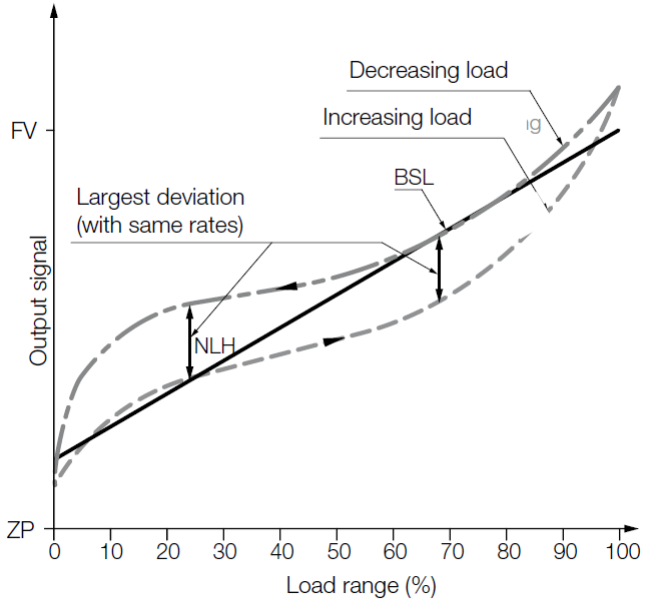
Specifications: Accuracy NLH (BSL through zero)



BSL Best Straight Line
The reference line according to the BSL or the minimum value adjustment is placed in such a way that the maximum positive and negative deviations are as small as possible.

Specifications: Non-linearity, Hysteresis

Specifications: Accuracy NLH (BSL)



NLH Non-linearity and Hysteresis

Largest deviation from the ideal characteristic line (BSL, BSL/0 or limit point). In pressure measuring instruments, the non-linearity and pressure hysteresis are given together at a constant temperature.

Temperature Coefficient TC

Change of measured value for zero point and span as a result of changes in temperature

Long-term Stability Long-term Drift

The change of accuracy due to aging under certain reference conditions during a certain period of time, typically 1 year.

TEB Total Error Band

Total error (root from sum of the square of the deviations) due to measurement deviations (accuracy) and temperature influence (temperature coefficient TC). The temperature influence is usually given in the information across a range larger than that given in the standard (-10 ... +60 °C). Whilst DIN 16086 also continues to add to the long-term stability over a year, the information is subject to ex-works conditions for obvious reasons.

15. EU Declaration of Conformance

We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

Display Pressure Switch **Model: PSD**

to which this declaration relates is in conformity with the following EU directives stated below

2014/30/EU	**EMC Directive**
2011/65/EU	**RoHS** (category 9)
2015/863/EU	Delegated Directive (RoHS III)

Also, the following standards are fulfilled:

EN 61000-6-2:2019 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

EN 61000-6-3:2007 + A1:2010 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Hofheim, 05 Sept 2023

H. Volz
General Manager

J. Burke
Compliance Manager

16. UK Declaration of Conformity

We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

Display Pressure Switch **Model: PSD**

to which this declaration relates is in conformity with the following UK directives stated below:

S.I. 2016/1091	**Electromagnetic Compatibility Regulations 2016**
S.I. 2020/1647	**The Hazardous Substances and Packaging Regulations 2020**

Also, the following standards are fulfilled

BS EN 61000-6-2:2019
Electromagnetic compatibility (EMC) Generic standards. Immunity standard for industrial environments

BS EN 61000-6-3:2007 + A1:2011 Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments

BS EN IEC 63000:2018
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Hofheim, 05 Sept 2023

H. Volz
General Manager

J. Burke
Compliance Manager