Operating Instructions

for

Torsion Paddle Flow Meter / Monitor

Model: DPT-...

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

2.1 General

Before unpacking and commissioning the device, the operating instructions and the “General Safety Instructions” document must be read and followed carefully. The general safety instructions, the operating instructions, the data sheet as well as approvals and further information can be downloaded via the QR code on the device or under the respective product on www.kobold.com.

Due to technical changes, the device documentation 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.

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 device should be used only when the entire machine fulfils the EU machinery directive.

2.2 Hazard warnings

The following instructions are intended to ensure your personal safety and to prevent damage to the product described or connected devices. Safety instructions and warnings to prevent danger to the life and health of users or maintenance personnel, or to prevent damage to property, are highlighted in this documentation using the symbols defined here. *The symbols and terms used have the following meaning in the documentation itself:*

Symbol	Explanation	Symbol	Explanation
Note	Is important information about the product, the handling of the product or the respective part of the documentation to which particular attention should be drawn.	Caution	Means that minor personal injury or minor property damage may occur if proper precautions are not taken.

Symbol	Explanation	Symbol	Explanation
Warning	Indicates that serious personal injury or substantial property damage may occur if proper precautions are not taken.	Danger	Means that death can occur if proper precautions are not taken.
Warning	Attention: Hot surface!	Warning	Warning: Dangerous electrical voltage

2.3 As per PED 2014/68/EU

In acc with Article 4 Paragraph (3), "Sound Engineering Practice", of the PED 2014/68/EU no CE mark.

	Diagram 6 Pipe, gas Group 1 dangerous fluids
DPT, 3/8" - 1"	Art. 4, § 3
DTP, 1 1/2" – 3”	Cat. II

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:

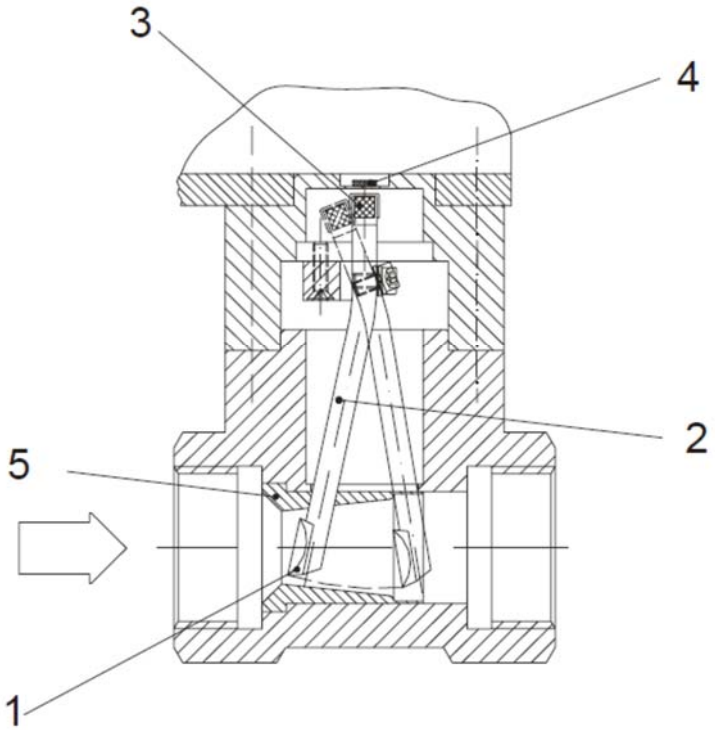
- Torsion Paddle Flow Meter model: DPT

4. Regulation Use

Any use of the device, 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

The KOBOLD Torsion Paddle Flow Meter, model: DPT, operates according to the diaphragm plate principle. A flat torsion spring acts simultaneously as a mount for the paddle and as an elastic force. The device thus operates with almost no wear.
The paddle comprises a diaphragm plate (1) and a lever arm (2).



When the diaphragm plate is moved by the flow in the flow direction, the lever arm is deflected by the force of the leaf spring.
This angular motion is transferred non-contacting through the casing wall by a magnet (3) to a Hall-effect sensor (4) with no losses. Different measuring ranges and instrument sizes are realised with the geometry of the lever arm, the diameter and shape of the diaphragm plate as well as the height and thickness of the leaf spring. Calibration nozzles (5) can also be press-fitted to adapt to the measuring ranges. The signal from the Hall-effect sensor is displayed by different electronic means and serves to monitor the volume flow.

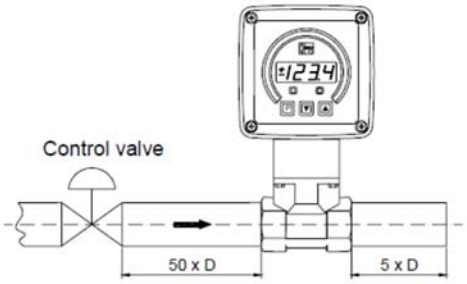
6. Mechanical Connection

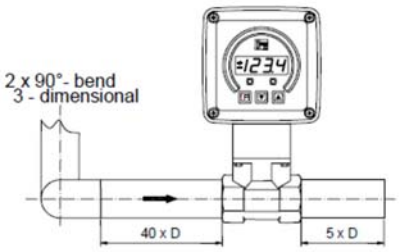
6.1 Check Service Conditions:

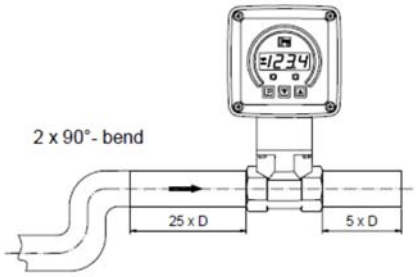
- Flow quantity
- Max. operating pressure
- Max. operating temperature
- Medium
- Mounting position

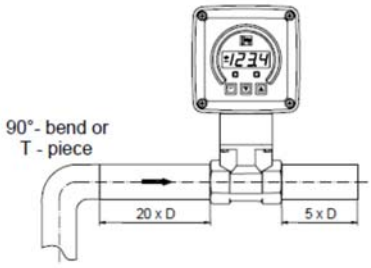
6.2 Installation

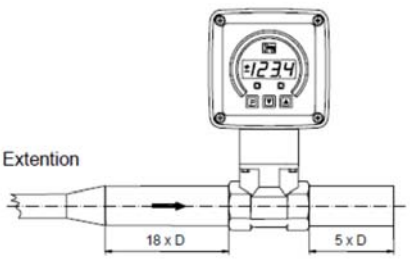
- Flow in direction of arrow (horizontal)
- Avoid pressure and tensile loads
  Mechanically fix inlet and outlet lines at distances of 50 mm from the connections
- Check connections for leakage
- Pay attention to the inlet and outflow zone (see drawing below)

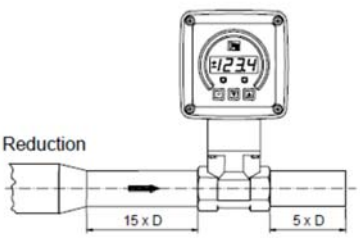












7. Electrical Connection

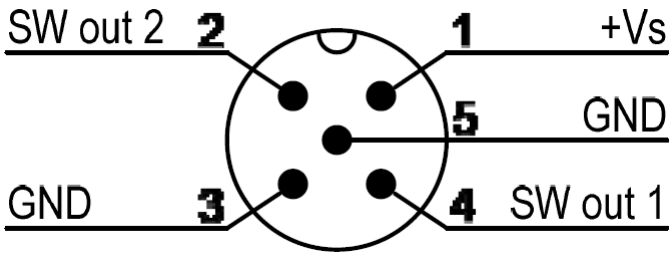
7.1 General

Caution	Attention! Make sure that the voltage values of your system correspond with the voltage values of the Flow Meter.

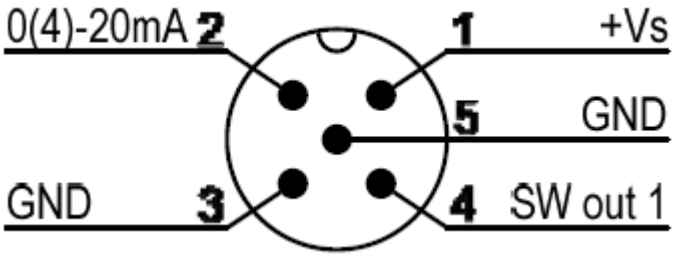
- **Make sure that the supply wires are de-energised.**
- Connect the supply voltage and the output signals to the plug connector PINs as shown below.
- We recommend the use of wires with cross sectional area of min. 0.25 mm²

Caution	Attention! Incorrect wiring will lead to damage of the unit's electronics.

7.2 Compact Electronics: (..C30R, ..C30M)



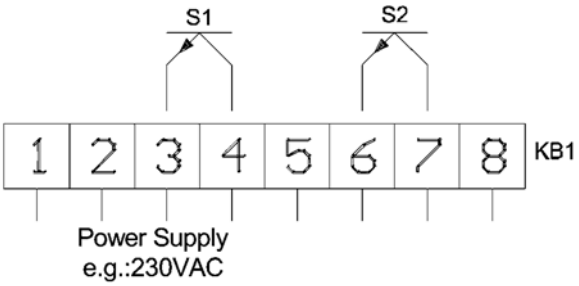
7.3 Compact Electronics: (..C34P, ..C34N)

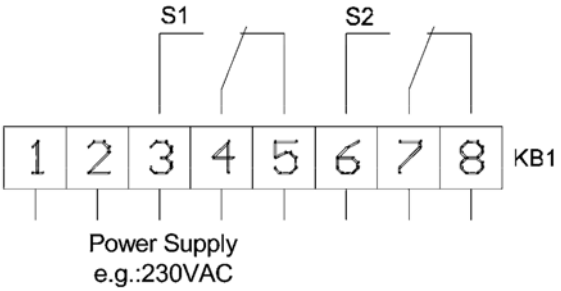


Terminals 3 and 5 are bridged internally and can therefore be used either for the output signal or the power supply.

7.4 ADI-Evaluation Electronic

To avoid damaging the device during electrical connection, the electrician should take suitable precautions against electrostatic discharge (e.s.d.).
The supply voltage for the indicating unit and the optional switching outputs are connected to terminal block 1 according to the wiring diagram below (KB1).

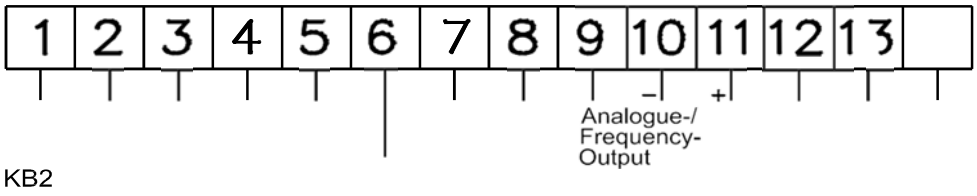




or

Sensor signal and the pickup supply can be connected to terminal block 2 (KB2).

NOTE Note	The electrical connection of the device to the sensor should not be changed.



8. Commissioning

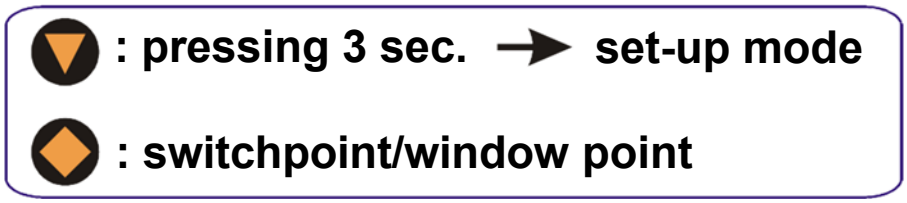
8.1 Setting Compact Electronics

8.1.1 Programming

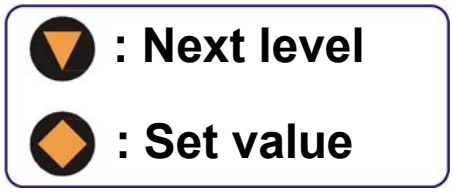
Connect the compact electronics according to the previous wiring diagram and apply the specified voltage.
The measuring range (upper range value) is displayed for 3 seconds after switch-on.

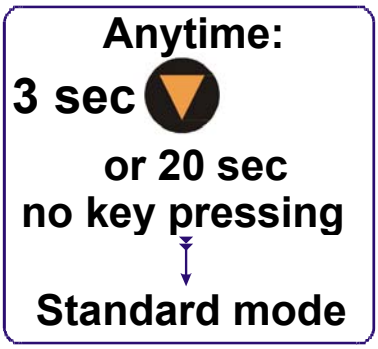
8.1.2 Key Function

Standard mode (measuring mode)



Set-up mode





8.1.3 Settings

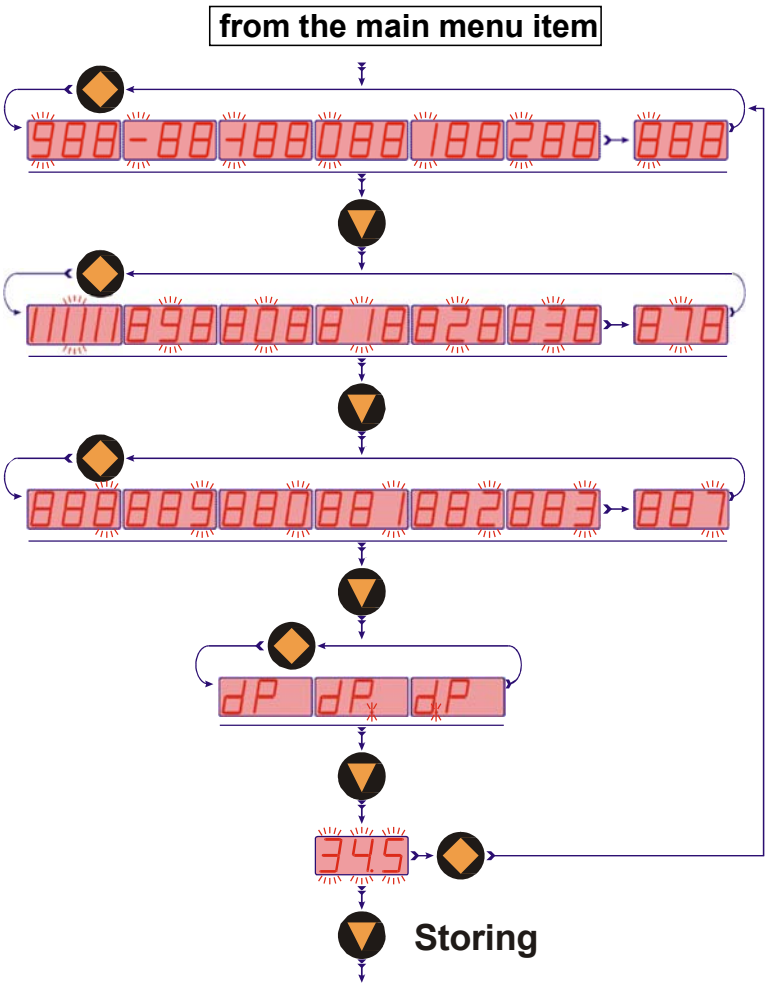
The following values can be changed in the compact electronics:

	Scale range	Factory setting
Switching point (**SPo, SP1**, **SP2**)	0 - 999	0.00
Hysteresis (**HYS**)	-199 - 0	-0.00
Window point (**duo**)	Switching point ...999	--- (de-activated)
Filter (**Filt**)	1/2/4/8/16/32/64	1
Contact type (**Con**, **Co1, Co2**)	N/O contact (**no**), N/C (**nc**) or frequency (**Fr**)	**no** (N/O contact)
Start current (**S-C**)*	000 - 999	000
End current (**E-C**)*	000 - 999	Upper range value
Start current selection (**SCS**)	0-- (0 mA), 4-- (4 mA)	4 mA
Change code (**CCo**)	000 - 999	000

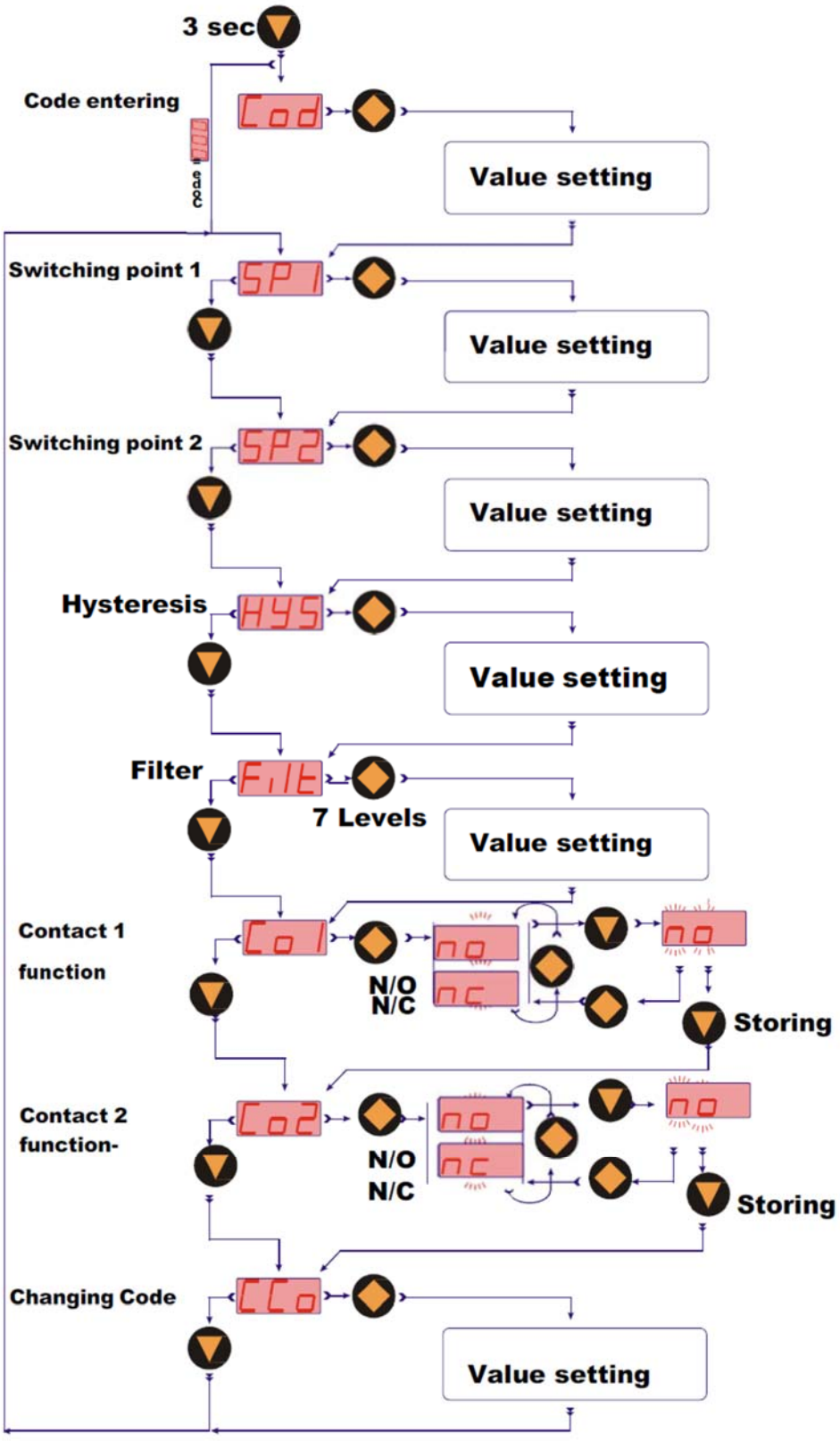
** Lower and upper range values of the flow rate are based on 0/4-20 mA.*

8.1.4 Value Setting

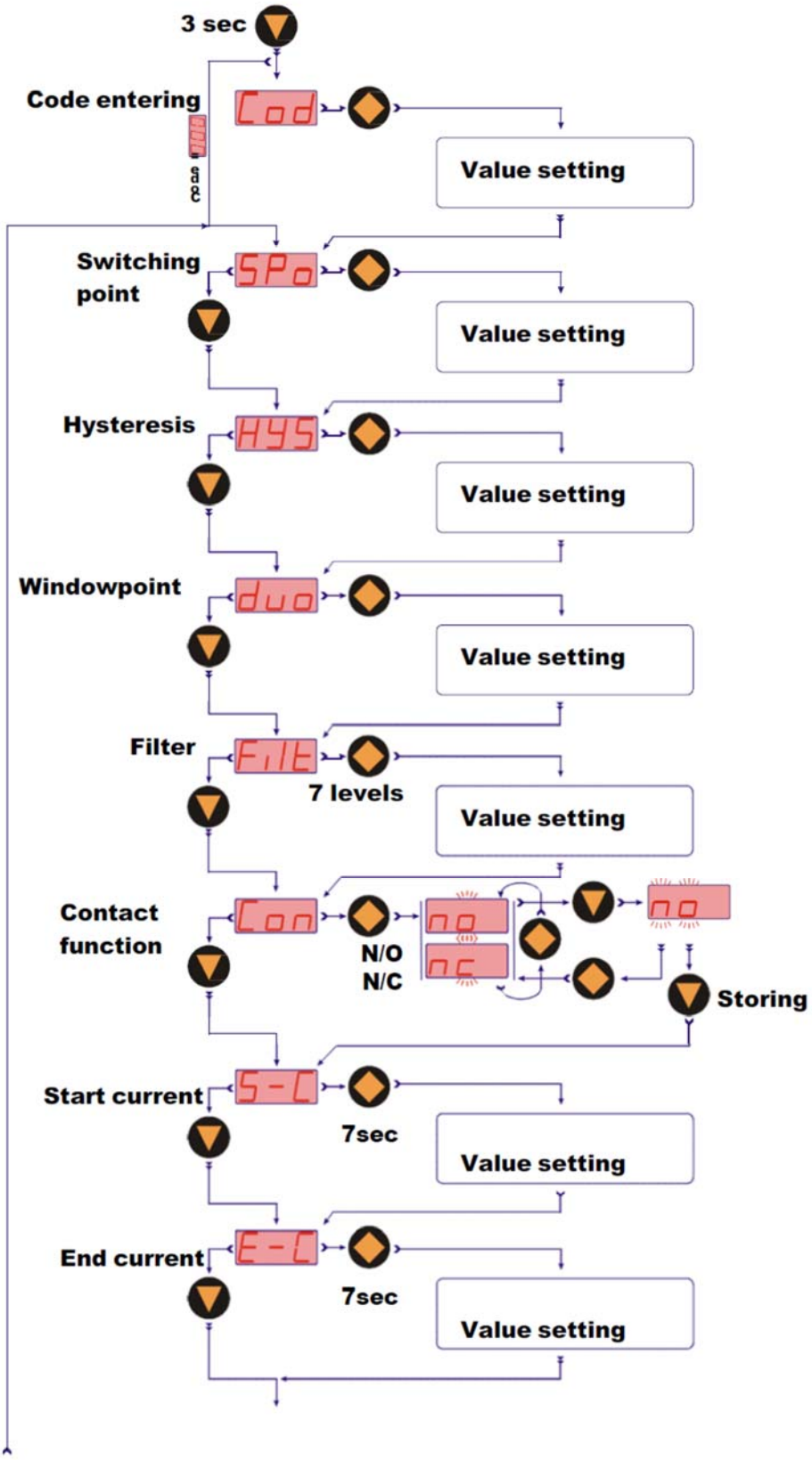
You can select value setting in the main menu item (for example: Switching point, "**SPo**") by pressing the "⏎" key. The structure shown below illustrates the universal routine for changing individual parameters.

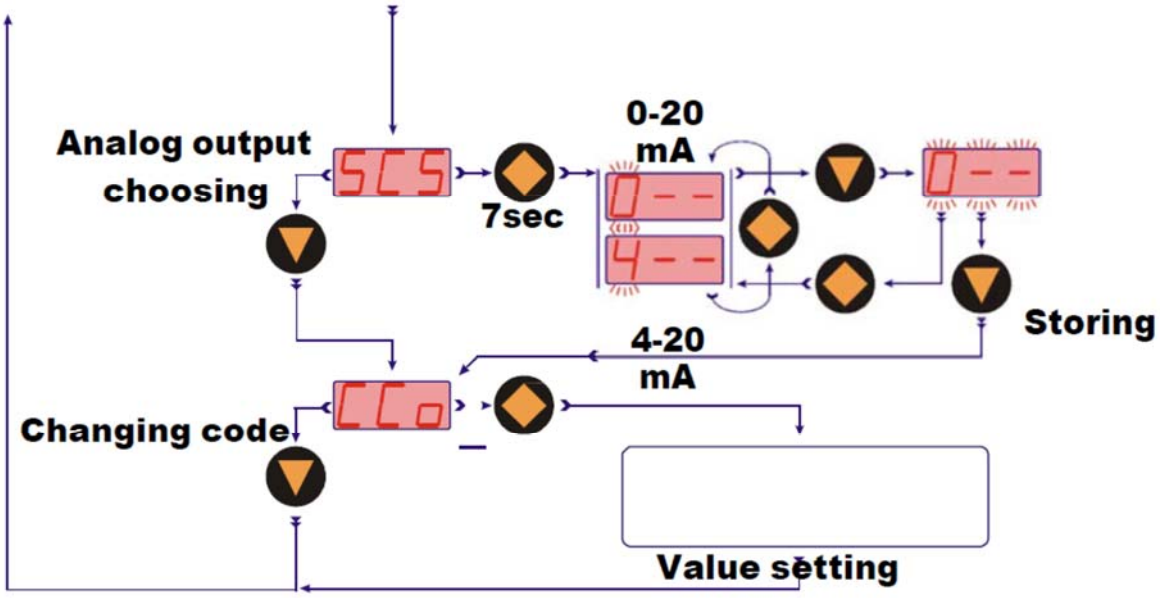


8.1.5 Set-up Mode



Compact electronic ..C34..





8.1.6 Main Menu Items

Switching point

The switching point is entered in menu item "**SPo, SP1, SP2**". A value in the range 000 to 999 may be chosen. A decimal point position is also assigned to this value. The position of the decimal point can be set after the first, second or last position (no decimal point). If the indicated value exceeds the set switching point, then the electronics switches and energizes the LED.
If the hysteresis is equal to zero and the window point is de-activated, the electronic switches back whenever the indicated value falls below the switching point.

Hysteresis

After the switching point, hysteresis can be entered as a negative value in the menu "**HYS**". The default hysteresis value is zero. However, this can lead to confused switching, when the measuring signal fluctuates around the switching point or window point. This problem can be cured by increasing the hysteresis. The hysteresis is based on the switching point and the window point (switching point minus hysteresis; window point plus hysteresis).

Example: switching point 100 l/min; hysteresis: -2.5 l/min
The electronics switches when 100 l/min is exceeded and switches back when the flow rate falls below 97.5 l/min.

Window point (duo point)

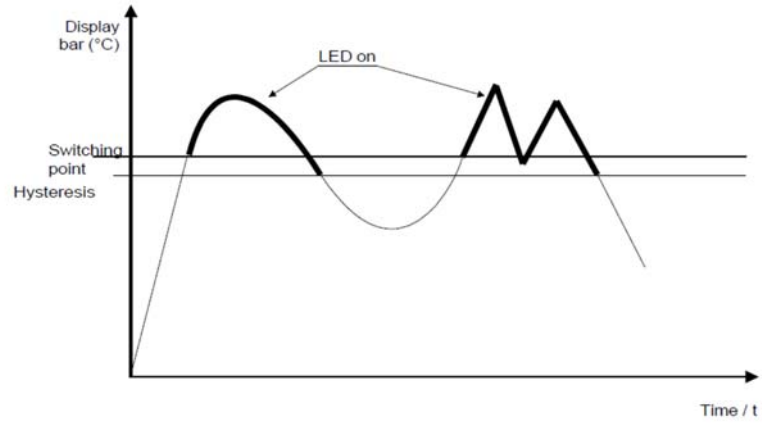
A window point "**duo**" (duo point) can be defined in addition to the switching point. The window point must be greater than the switching point. The measured value can be monitored within a set range by means of the window point and switching point. The switching point marks the lower end of the range of values and the window point the upper end.

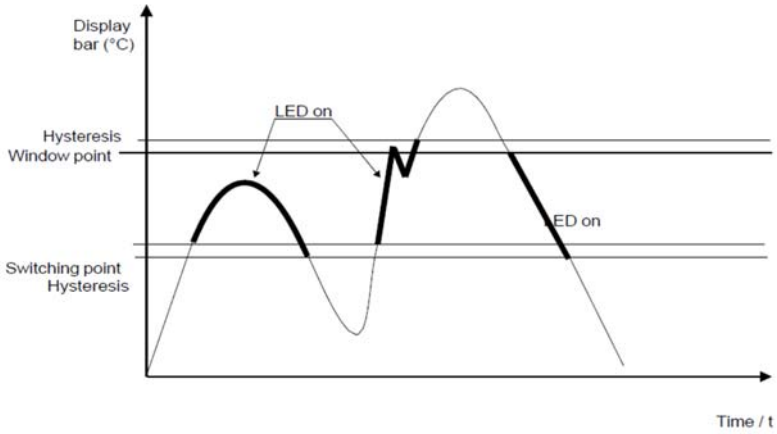
NOTE Note	If the window point (duo point) is lower than or equal to the switching point, an error message is displayed (Er4), its value is then deleted and thus its function is disabled (applies to window point and switching point setting).

Value setting is similar to switching point setting.
The window point serves to monitor the measured value within a set range.

Example:
Switching point: 100 l/min; window point: 150 l/min; hysteresis: -1 l/min
The electronics switches when 100 l/min is exceeded. When the measured value stays within the limits 99 l/min (100-1) and 151 l/min (150+1), then the electronics also remains in the activated switch state (LED on). Should the measured value exceed 151 l/min or drop below 99 l/min, then the electronics switches back.

Switching performance
The switching performance of the electronics is illustrated in the diagram below. The contact closes (N/O contact) when the switching point is exceeded or when the value drops below the window point. It opens when the window point plus hysteresis is exceeded or when the value drops below the switching point minus hysteresis. The switch state of the electronics is indicated by an





LED.

Filter

The filter function "**Filt**" generates the sliding average value from the measured values. The following values are available (see section 8.1.3 Settings):

1 / 2 / 4 / 8 / 16 / 32 / 64

The filter value determines the dynamic behaviour of the indicated value: high values result in a slow display response. The filter is disabled if a filter value of "1" is selected. In other words, the indicated value is equal to the unfiltered measured value.

The integrated step detector responds to a measured-value step change greater than approximately 6.25% of the upper range value. When a measured-value step change is detected, the actual measured value is displayed immediately.

Contact Model

The function of the transistor switching output is set in menu item "**Con, Co1 or Co2**". The switching function switches from
no - N/O contact to
nc - N/C to and back.
N/O contact means: contact closes when switching point is exceeded N/C means: contact opens when switching point is exceeded

Current output

The current output is selected in menu items
"**S-C**" Start current indicated value < >
0(4) mA "**E-C**" End current indicated value < >
20 mA
"**SCS**" Start current selection (0-20 mA or 4-20 mA).
The indicated value at which 0(4) mA flow is entered in the menu item Start current. The indicated value at which 20 mA flow is entered in the menu item End current.

Change Code

The change code option "**CCo**" secures the unit against unauthorised tampering. If the code is different from 000, the user must input the code immediately after entering the adjustment mode.

See Operating instructions supplement for compact electronics with frequency output

8.2 Setting ADI Evaluation Electronic

See Operating instructions supplement for ADI evaluation electronic

9. Maintenance

The measuring instrument requires no maintenance if the measured medium is not contaminated. In order to avoid any problems, we recommend that a filter is installed. For example, the magnetic filter, model MFR.
Work on the sensor and electronics should only be carried out by the supplier, otherwise the guarantee is nullified.

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

See “General Safety Instructions” - via the QR code on the device or via www.kobold.com

14. EU Declaration of Conformance

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

Torsion Paddle Flow Meter / Monitor model: DPT -...

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

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

for DPT, 1 ½" –3"

2014/68/EU **PED**

- Category II, Diagram 1, vessel, group 1 dangerous fluids
- Module A2

Additionally for devices with ADI electronics:

2014/35/EU **Low Voltage Directive**

Also, the following standards are fulfilled:

EN 60529:2014
Degrees of protection provided by enclosures (IP Code)

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

AD 2000 Pamphlets

Additionally for devices with compact or ADI electronics:

EN IEC 61326-1:2021
Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements, industrial area

Hofheim, 15 Jan. 2026

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Compliance Manager