



Operating Instructions

for

Display

Model: LPI02, ST0028 and KMDFON

Display

1. Contents

1.Contents	2
2.Note	3
3.Instrument Inspection	3
4.Regulation Use	3
5.Technical data and wiring display mod. LPI-02	4
5.1Performances	4
5.2Operating conditions	4
5.3Functionalities	4
5.4Mechanical construction.....	5
5.5Dimensions.....	5
5.6Wiring	5
5.7Programming.....	6
6.Technical data and wiring display mod. ST0028	7
6.1Performances	7
6.2Operating conditions	7
6.3Functionalities	7
6.4Mechanical construction.....	8
6.5Dimensions.....	8
6.6Wiring	8
6.7Programming.....	9
7.Technical data and wiring display mod. KMDFON	10
7.1Performances	10
7.2Operating conditions	10
7.3Functionalities	11
7.4Mechanical construction.....	11
7.5Dimensions.....	11
7.6Wiring	12
7.7Programming.....	13
8.Disposal	15

Manufactured by:

Kobold Mesura S.L.U
Av Conflent N°68 Nave 15
08915 Badalona
Tel.: +34 93 460 38 83
Fax: +34 93 460 38 76
E-Mail: info.es@kobold.com
www.kobold.com
October 2024

2. Note

Please read these operating instructions before unpacking and putting the unit in 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 correspond 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.

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.

All parts falling under the standard scope of delivery are properly assembled within the unit.

4. Regulation Use

Any use of the displays, model: LPI02, ST0028 or KMDFON, 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. Technical data and wiring display mod. LPI02

5.1 Performances

Reference operating condition:	25°C
Max. measurement error:	0,1% of the programmed range ±1 digit
Influence of ambient temperature:	20ppm/°C of measuring range at 20°C as reference temperature
Output signal:	4...20 mA
Supply voltage:	24V
Voltage drop out:	3,3V at 4 mA and 3,7V at 20 mA
Minimum current of LED activation:	3.5 mA
Digits:	LED, 4 digits 7 segments, height 9,5mm
Visible dimension:	30x14
Display characteristics:	6400ucd for $I_f = 10\text{mA}$
Data storage:	FLASH
Storage period:	10 years (non powered)
Mounting:	4 holes/90 Ø 2.6 on Ø68
Hart protocol transmitter:	Transparent for the Hart protocol

5.2 Operating conditions

Ambient temperature:	-20...80°C
Storage temperature:	-30...80°C
Moisture:	25 by 95% non condensating
Ingress protection:	IP 20
Electromagnetic compatibility:	Carried out with positive results EN 61000, EN 55022

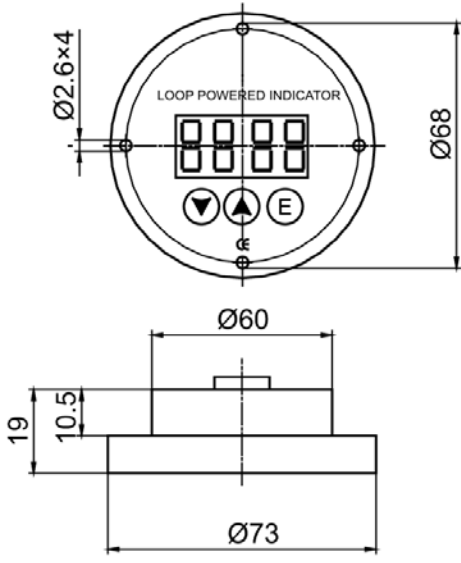
5.3 Functionalities

Parameters:	Zero, span, decimal, point, refresh rate, unit
Indication limits:	-1999 to +9999
Programmable range:	-1999 to +9999
Decimal points position:	0, 1, 2, 3 decimals
Over - load limits:	From 3.5 to 20.5 mA
Refresh rate:	From 1 to 10 second
Calibration points:	Zero (4 mA) and span (20 mA), stored on FLASH
Unit:	°C, °F, °K, % in cycle: (4sec. value - 2sec. unit)

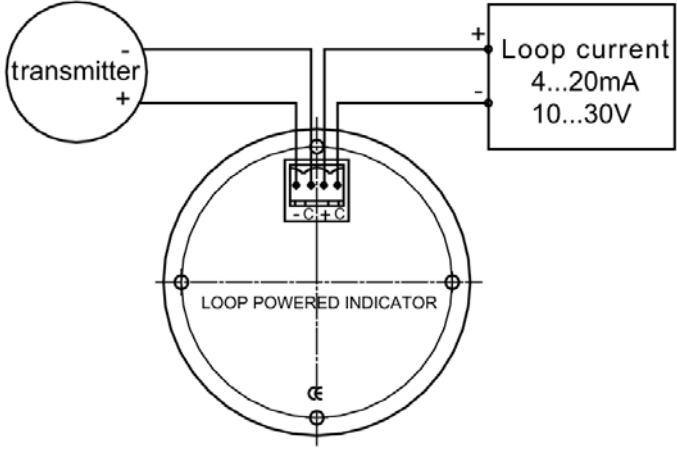
5.4 Mechanical construction

Electrical loop connection:	2 terminals, max. wire section 1mm ² (16 AWG)
Dimension:	Ø73 x 19mm
Weight:	75g

5.5 Dimensions



5.6 Wiring



Display

5.7 Programming

1. **Enter the Menu:**
 - i. Press "E" button for to 2 seconds to access the menu.
 2. **Set Decimal Point (dP):**
 - i. Press the "E" button to select.
 - ii. Use the Up/Down buttons to change decimal position point.
 - iii. Example: Selecting "3" will display the value as 123.4.
 3. **Set Zero Value (for 4mA) – ZERo:**
 - i. Press the "E" button to select.
 - ii. Use the Up/Down buttons to change the value between (-)1999 and (+)9999.
This value will be displayed at input current of 4 mA (point low)
 4. **Set Span Value (for 20mA) – SPAN:**
 - i. Press the "E" button to select.
 - ii. Use the Up/Down buttons to change the value between (-)1999 and (+)9999.
This value will be displayed at input current of 4 mA (point low)
 5. **Set Overload Limit (Li):**
 - i. Press the "E" button to select.
 - ii. Use the Up/Down buttons to change the value:
Set „0” for range 4 mA - 20 mA, the display shows:
- LO - when loop current < 4 mA
- HI - when loop current > 20 mA
Set „1” for range 3.6 mA - 20.4 mA, the display shows:
- LO - when loop current < 3.6 mA
- HI - when loop current > 20.4 mA
 6. **Set Sampling Time (St):**
 - i. Press the "E" button to select.
 - ii. Use the Up/Down buttons to set the sampling interval in seconds (1 to 10).
 7. **Set Unit Display (Unit):**
 - i. Press the "E" button to select.
 - ii. Use the Up/Down buttons to select the desired unit:
 1. **-nonE**: Only the value will be displayed.
 2. **°C, °F, K, or %**: The value will be displayed for 4 seconds, followed by the unit for 2 seconds.
- b. **Exit the Menu:**
- i. At any point, hold the Up/Down buttons to exit the menu.

6. Technical data and wiring display mod. ST0028

6.1 Performances

Reference operating condition:	23°C
Max. measurement error:	0,1% of the programmed range \pm 1 digit
Influence of ambient temperature:	100ppm / °C measured range
Input signal:	4...20 mA
Loop drop out:	max. 2,5 V.
Digits:	4 digits 7 segments LCD display
Visible dimension:	33,4x13,2 mm
Display characteristics:	TN positive transreflective
Data storage:	EEPROM
Storage period:	10 years (not powered)
Mounting:	3 holes \varnothing 3 mm on \varnothing 68 mm

6.2 Operating conditions

Ambient temperature:	-20...70°C
Storage temperature:	-30...80°C
Moisture:	25 to 95% not condensating
Ingress protection:	IP 20
Electromagnetic compatibility:	EMC according to EN 61000-6-4 and EN 61000-6-2 with instrument properly installed

6.3 Functionalities

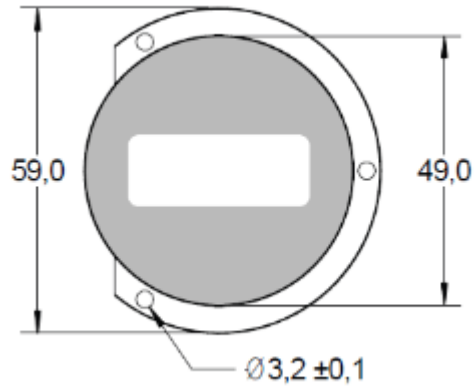
Parameters:	zero, span, decimal point
Indication limits:	-1999 to +9999
Programmable range:	free, within the indication limits
Decimal point position:	0, 1, 2, 3 decimals
Functions and readings:	Filter on measurement readings, over range limits, resolution
Filter on readings:	average on 1 to 8 measurement readings
Update of readings:	0.25 to 2s according to the filter readings
Over-load limits:	3,6 to 22 mA
Resolution:	selectable from 1 to 10 points
Calibration points:	zero (4 mA) and span (20 mA), stored on EEPROM

6.4 Mechanical construction

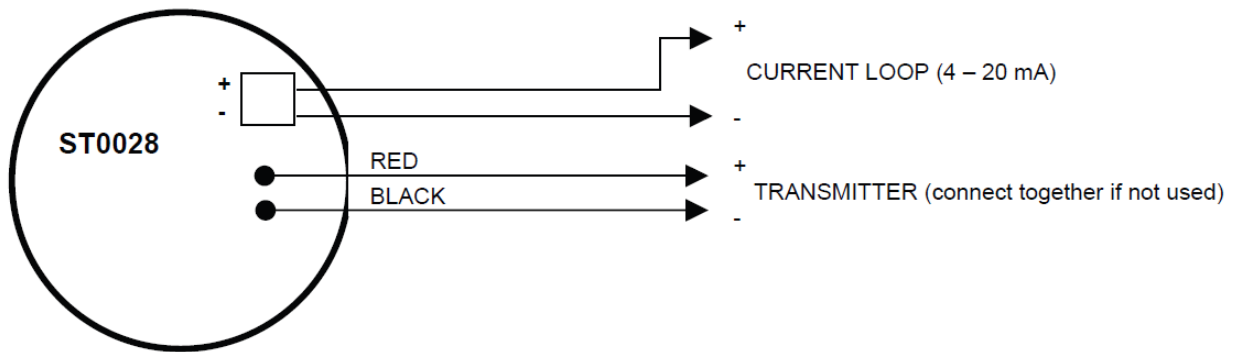
Electrical loop connection:	2 terminals, max. wire section 1 mm ² (AWG 16)
Connection to transmitter:	2 wires, max. 0,5 mm ²
Dimension:	diameter: \varnothing 59; thickness: 17 mm
Weight:	90 g

Display

6.5 Dimensions



6.6 Wiring



6.7 Programming

1. Enter the Configuration Menu:

- Press and hold the "F" key for 3 seconds.
- The first configuration item, **Decimal Point [dP]**, will appear on the display.
- Use the Up (↑) and Down (↓) keys to cycle through the configuration items.
- Press the "F" key to enter and set a specific parameter.
- Changes are saved to non-volatile memory when you complete the configuration using the "F" key.

Note: The display indications are shown between [] symbols in the following steps.

-
- **Configuration Items:**

2. Decimal Point Position [dP]:

- Use the Up (↑) and Down (↓) keys to select the number of decimal points (from none to 3 decimal places).
- **Default:** 1 decimal place.

3. Engineering Zero Setting [ZerO]:

- Use the Up (↑) and Down (↓) keys to set the zero value (range: -1999 to +9999).
- **Default:** 0.

4. Engineering Full-Scale Setting [SPAn]:

- Use the Up (↑) and Down (↓) keys to set the full-scale value (range: -1999 to +9999).
- **Default:** 100.0.

5. Reading Limits Selection [Li]:

- This setting controls how the display reacts when the input signal goes outside the 4-20 mA range:
 - **Li = 0:** Displays [OL] for over 20 mA and [-OL] for under 4 mA.
 - **Li = 1:** Extends the range by 10% beyond 4-20 mA before showing [OL] or [-OL].
- In both cases, [OL] and [-OL] appear if the engineering limits (-1999 to +9999) are exceeded.
- **Default:** 0.

6. Filter Setting [FiLt]:

- Use the Up (↑) key to increase or Down (↓) key to decrease the number of samples used for averaging the input signal.
- Available values range from 1 to 8:
 - **FiLt = 1:** No averaging; display updates every 250 ms.
 - Higher values provide more stable readings but increase the update time (250 ms multiplied by the FiLt value).
- **Default:** 1.

7. Resolution Setting [riS]:

- Use the Up (↑) key to increase or Down (↓) key to decrease the display resolution.
- Available values are 1, 2, 5, and 10:

Display

- This number indicates the smallest change between consecutive readings.
 - Use higher values for large engineering ranges or when the input signal is unstable.
 - **Default:** 1.
- 8. Transfer Function Selection [Lin] / [root] (*):**
- Use the Up (↑) and Down (↓) keys to select the desired transfer function:
 - **Lin:** Linear.
 - **Root:** Square root.
 - **Default:** Lin.

7. Technical data and wiring display mod. KMDFON

7.1 Performances

Measuring range:	3.5...23mA (normal range 4...20mA)
Connections:	2 screw terminals for power (loop) 4 screw terminals for relay outputs
Accuracy:	≤ ±0.1% of input span within -10...70 °C ≤ ±0.2% of input span within -30...-10 °C / 70...80 °C
Loop voltage drop:	Two levels depending on chosen backlight brightness @ 20 mA : <ul style="list-style-type: none">- Low bright backlight (<40%) : Max. 4V @23 °C- High bright backlight (>40%) : Max. 6.5V @23 °C
Sample time:	≤ 1 second. Typical 0.3 second
Start-up time:	≤ 5 second
Display Type:	FSTN LCD
Measuring range:	-9999...99999
Digit height:	Max. 22mm

7.2 Operating conditions

Optimal readability:	-10...70°C
Operating temperature:	-30...80°C
Storage temperature:	-40...85°C
Humidity:	max 98% RH, condensing.
Vibrations:	According to IEC 68-2-6
EMC data:	Immunity, Emission: EN61326

7.3 Functionalities

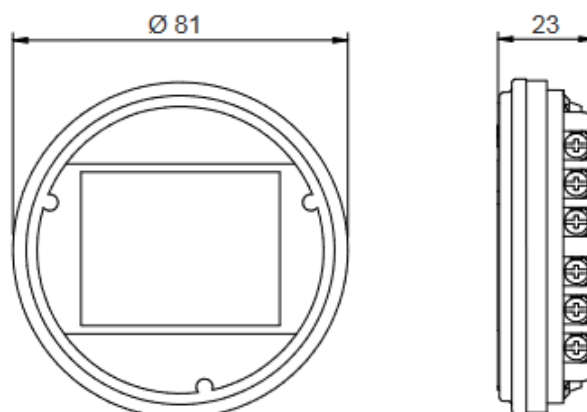
Measuring range:	4...20mA
------------------	----------

Error/warning indication:	Individually configurable display and backlight indication in white, green or red colour, steady or flashing light. Configurable limits between 3.5 and 23 mA
Zoom on range:	Minimum 2 mA of input span
Damping:	0...30 seconds
Linearization table:	2 to 30 points
Measuring unit:	°C, °F, K bar, mbar, kPa, MPa, psi, kg/cm ² , mmHg, mH ₂ O, atm, "Hg, mHg, "H ₂ O, %, l/h, Ton, m ³ , m ³ /h, Hz, mS, mV, V, ohm, Hz, sec, %, mA, or user defined
Relay (Option):	
Contacts:	2 solid state relays
Voltage:	60 Vp
Load Current:	75mA
Max on resistance:	10 Ohm

7.4 Mechanical construction

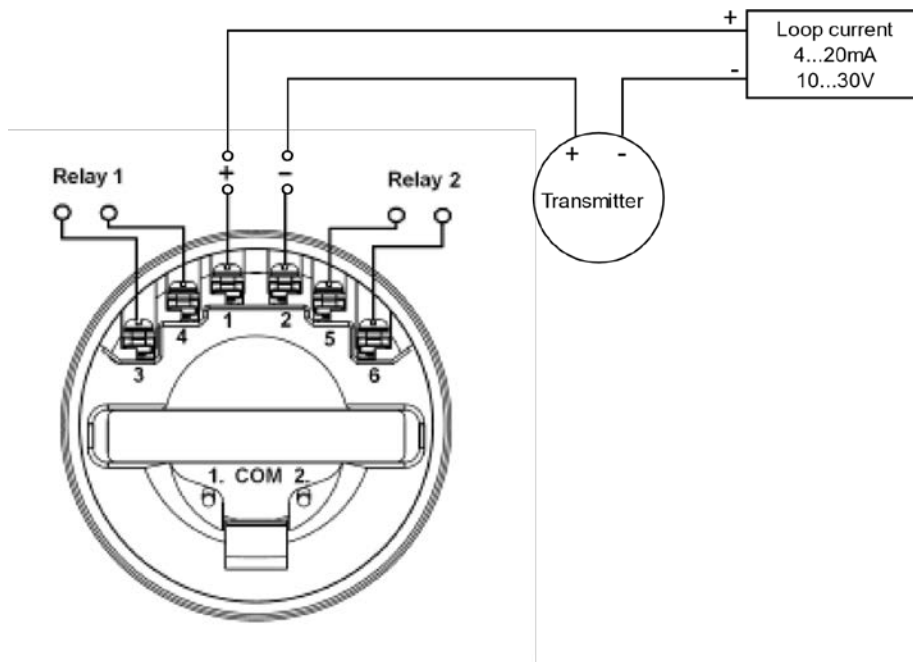
Dimensions:	See 7.5
Material:	Polycarbonate plastic
Enclosure:	Ø80 mm housing and front ring stainless steel, AISI 304
Protection class:	IP 10 on terminals IP 67 in Ø80 housing
Weight:	100g – display alone 170g – display inc. front ring

7.5 Dimensions

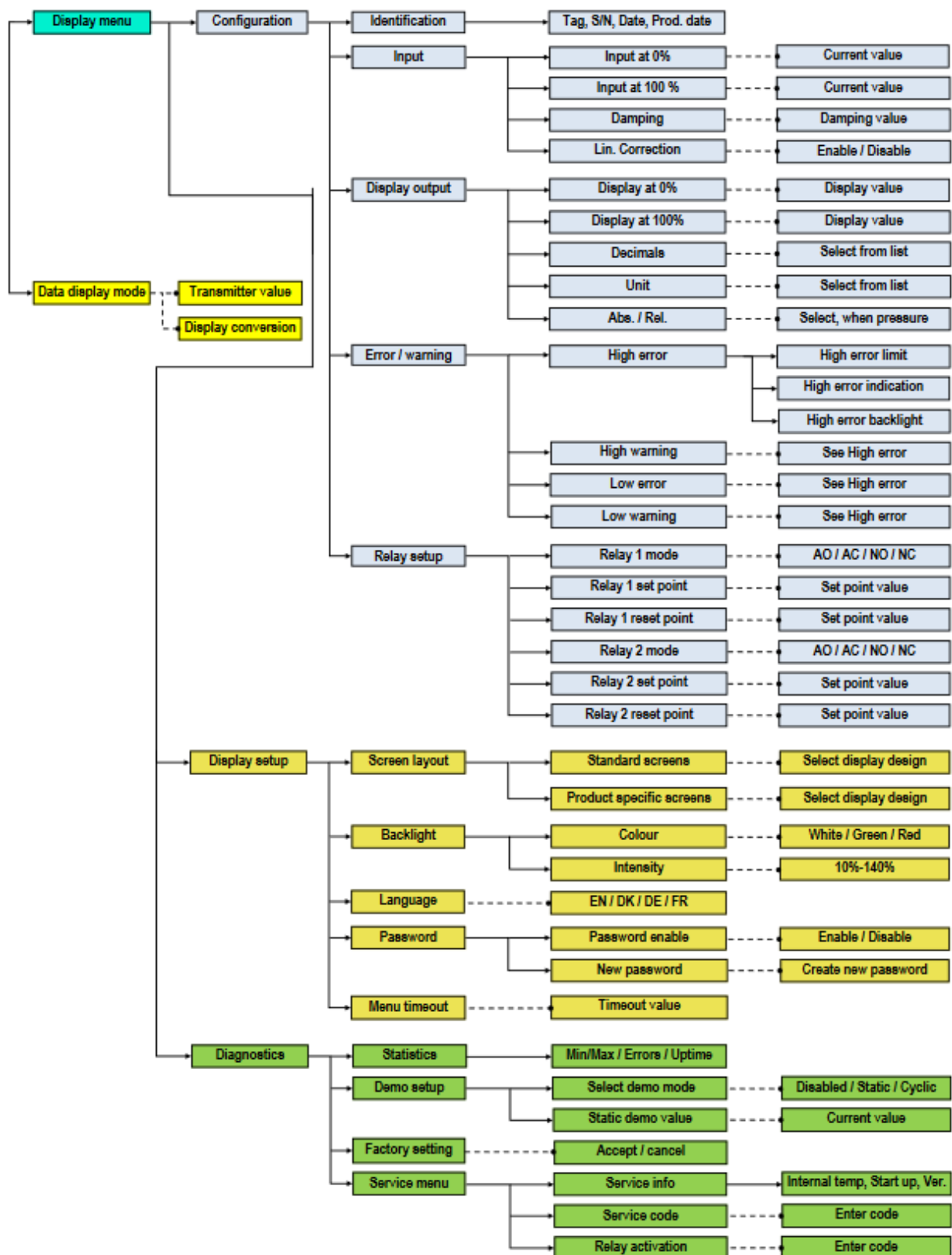


Display

7.6 Wiring



7.7 Programming



8. Disposal

Note!

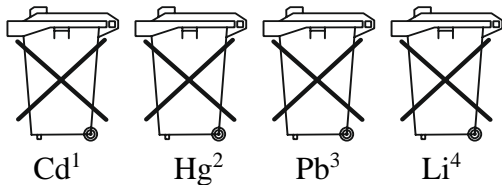
Avoid environmental damage caused by media-contaminated parts

Dispose of the device and packaging in an environmentally friendly manner

Comply with applicable national and international disposal regulations and environmental regulations.

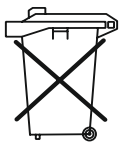
Batteries

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:



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

Electrical and electronic equipment



9. EU Declaration of conformity

DECLARACIÓN DE CONFORMIDAD EU

*EU DECLARATION OF CONFORMITY
EU-KONFORMITÄTSERKLÄRUNG
DÉCLARATION DE CONFORMITÉ EU
DICHIARAZIONE DI CONFORMITÀ EU*

KOBOLD MESURA SLU

Avda. Conflent 68 nave 15 08915 Badalona (España)

Declara, bajo la propia responsabilidad, que el producto

*Declares under our sole responsibility, that the product
Erklärt in alleiniger Verantwortung, dass das produkt
Déclare sous sa seule responsabilité, que le produit
Dichiara sotto la propria responsabilità, che il prodotto*

Loop supply display models:
KMDFON, LPI02, ST0028

A los cuales se refiere esta declaración, son conformes a las siguiente Directivas Europeas:

*To which this declaration relates is in conformity with the following European Directives:
Mit folgenden Euroäischen Richtlinien Konform ist:
À auxquels se réfère cette déclaration, ils sont conformes aux Directives Européennes suivant :
A ai quali si riferisce questa dichiarazione, sono conformi alle direttive europee seguente:*

EMC2014/30/EU RoHS2011/65/EU

Normas armonizadas y documentos de la normativa aplicados:

*Applied harmonised standards and normative documents:
Angewandte harmonisierte Normen und normative Dokumente:
Normes harmonisées et documents normatifs appliqués
Norme armonizzate e documenti normativi applicati:*

KMDFON: EN61326-1:2013, EN63000:2018

LPI02: EN61000-4-2:2010, EN61000-4-3:2020, EN61000-4-6:2023, EN61000-6-2:2016, EN61000-6-3:2021

ST0028: EN61326-1:2013, EN61326-2-3, 63000:2018

Fabricado en: KOBOLD MESURA SLU Avda. Conflent 68 nave 15 08915 BADALONA (Spain)

*Made in:
Hergestellt in:
Fabriqué dans:
Fabbricato in:*



Gerente

Badalona October 2024
DT0735

Display

KOBOLD MESURA S.L.U
Av Conflent N°68 Nave 15
08915 Badalona
Tel.: +34 93 460 38 83
Fax: +34 93 460 38 76
E-Mail: info.es@kobold.com
www.kobold.com

Technical data
Subject to change without prior notice

