



Operating Instructions for Temperature Sensor

Model: MMA



1. Contents

1. Contents.....	2
2. Note	3
3. Safety.....	3
3.1 Personnel qualification.....	3
4. Instrument Inspection.....	3
5. Regulation Use.....	4
6. Operating Principle.....	4
7. Electrical connection	5
7.1 Sensor wiring diagram	5
7.2 Transmitter wiring diagram	5
8. Maintenance and repairs.....	6
9. Storage	6
10. Technical Details.....	6
10.1 Sensor wiring	6
10.2 Sensor according to IEC 60751	6
10.3 Tolerance class.....	6
10.4 General details.....	7
10.5 Transmitter 4...20 mA	7
11. Trouble Shooting.....	8
12. Dismounting, return and disposal.....	9
12.1 Dismounting.....	9
12.2 Disposal	9
13. Order codes	9
14. Notes.....	10
15. EU-Certificates	11

Manufactured by: KOBOLD Instruments Inc.
1801 Parkway View Drive
Pittsburgh PA 15205-1422
Tel.: 412-788-2830
Fax: 412-788-4980
E-Mail: info@koboldusa.com
Internet: www.koboldusa.com

2. Note

Please read these operating instructions before unpacking and putting the unit in operation. Follow the instructions precisely as described herein.

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. Safety

Before installation, commissioning and operation, ensure that the appropriate sensor is used.

Non-observance can result in serious injury and/or damage to equipment.

3.1 Personnel qualification

Improper handling can result in considerable injury and damage to equipment. The instructions included in this manual may only be carried out by qualified personnel.

4. 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:

- Device model: MMA
- Operating Instructions

5. Regulation Use

The temperature sensors of the MMA Series are suitable for all applications where processes involving fluids, solid bodies or materials, or gases, require temperature recording and measurement. Our temperature sensors are suitable for use in the following industrial areas: chemicals, petrochemicals, water, feed, food, sanitary, etc.

Any use of the Temperature Sensor, model: MMA, 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.

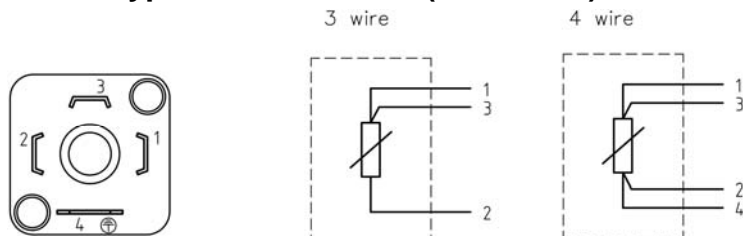
6. Operating Principle

Resistance thermometers work by using the continuous change of resistance of metals subject to temperature rising and decreasing. The most common resistance material used is platinum as it is very stable and has very good repeatability. The temperature coefficient of platinum is positive, so its resistance increases as the temperature rises. This property is defined in the IEC751 standard, which defines measurements deviations categories A and B.

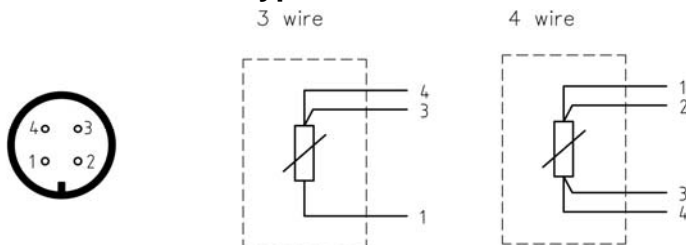
7. Electrical connection

7.1 Sensor wiring diagram

Connector type EN 175301-803 (DIN 43650)

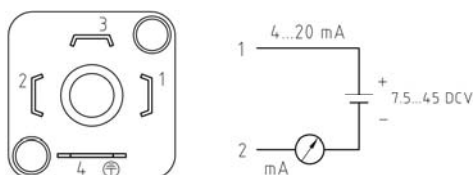


7.1.1 Connector type M12

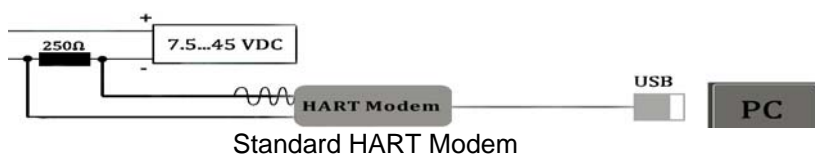
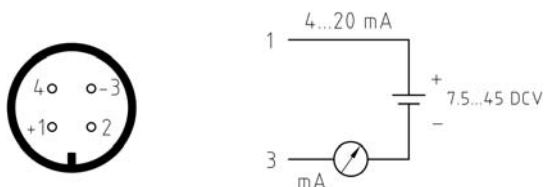


7.2 Transmitter wiring diagram

7.2.1 Connector type EN 175301-803 (DIN 43650)



1.1.1 Connector type M12



8. Maintenance and repairs

The instrument does not require maintenance or servicing.
Repairs must be only carried out by Kobold (manufacturer)

9. Storage

Measuring instruments should be protected against humidity and dust. Storage temperature: 1 - 176°F (-25...80°C) for sensors without transmitter.

10. Technical Details

10.1 Sensor wiring

- 2 wires Error due to the lead resistance of the sensor
- 3 wires With connecting wires up to 25 m, lead resistance is negligible.
- 4 wires The lead resistance of the connecting wires is negligible

10.2 Sensor according to IEC 60751

- Class B
- Class A
- Class 1/3
- Class 1/10

The nominal value of Pt100 sensors is 100Ω at 0 °C.

10.3 Tolerance class

- Class B $\pm 0.3 + 0.005 * t$
- Class A $\pm 0.15 + 0.002 * t$
- Class 1/3 $\pm 0.10 + 0.005 * t$
- Class 1/10 $\pm 0.03 + 0.0017 * t$

t= measuring temperature in °C without sign

10.4 General details

Ambient temperature:

With connector EN 175301-803 without transmitter:	-40...+90 °C
With connector EN 175301-803 with transmitter:	-40...+85 °C
With display AUF:	-20...+80°C
With connector M12 with or without transmitter:	-25...+80 °C

10.5 Transmitter 4...20 mA

Power supply:	7.5 to 45 V
Accuracy:	0.2K or 0.1% of span
Response time:	1s
Calibration temperature:	+23 °C (73.4K) ± 5K
Influence of ambient temperature:	≤±0.01%/V deviation from 24V.
Current Output:	4...20 mA.
Load:	$R_{max} = [(U_{supply} - 7.5 / 0.022)] \Omega$
Signal on alarm:	Underranging lineal drop to 3.5 mA. Overranging linear rise to 20.5 mA. Sensor break; sensor open- 3.6 mA or 22 mA.
Range Configurable:	The transmitter range is configurable from PC through the KM-HART interface and the KM-Soft software

Note: Please refer to KM-Software manual for Range configuration.

11. Trouble Shooting

Faults	Possible Causes	Corrective actions
No signal/line breakage	Mechanical load too high or over temperature. Line breakage.	Check power supply
Wrong measured values	Sensor drift caused by over temperature	Replace probe
	Sensor drift caused by chemical attack	Use a sensor with thermowell
Wrong measured values (too low)	Entry of moisture into cable	Replace probe. Check configuration of output/range
Wrong measured values and response times too long	Wrong mounting geometry, for example mounting depth too deep or heat dissipation too high	The temperature-sensitive area of the sensor must be inside the medium, and surfaces must be isolated.
	Deposits on the sensor or thermowell	Remove deposits
Oscillation of measured value	Cable break in connecting cable or loose contact caused by mechanical overload	Replace probe with a suitable design, for example equipped with a strain relief or a thicker conductor cross-section. Check wiring
Corrosion	Composition of the medium not as expected or modified or wrong thermowell material selected	Analyze medium and then select a more-suitable material or replace thermowell regularly
Signal interference	Stray currents caused by electric fields or ground loops	Use of screened connecting cables, increase the distance to motors and power lines
	Ground loop	Elimination of potentials, use of galvanic isolated transmitter supply isolators or transmitters

12. Dismounting, return and disposal

12.1 Dismounting

Residual media in dismounted instruments can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

All instruments delivered to KOBOLD must be free from any kind of hazardous substances (acids, bleaches, solutions, etc.).

12.2 Disposal

Incorrect disposal may endanger the environment.

13. Order codes

For order codes information, please see the KOBOLD USA datasheet.

14. Notes

15. EU-Certificates

DECLARACIÓN DE CONFORMIDAD EU

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

KOBOLD MESURA S.L.U.
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*

MMA.....

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 Richtilinen 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 LVD2014/35/EU RoHS2011/65/EU

Normas armonizadas y documentos de la normativa aplicados:

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

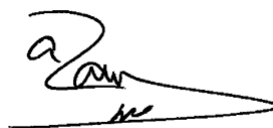
EN 61010-1 :2011, EN 61000-6-2 :2006, IEC 60529:2013, IEC 61010-1:2016,
IEC 61326-1:2012, IEC60751:2008

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

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

Badalona 04 July 2016
MMA 01/0621 26/02/2015

Gerente



Azzam Chamand

KOBOLD MESURA S.L.U
Avda. Conflent 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

