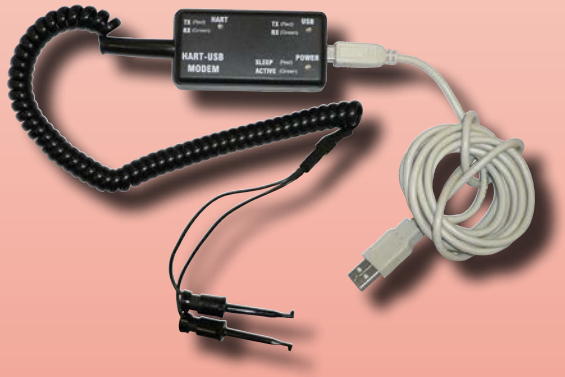
Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Temperature Transmitters

KOBOLD

measuring • monitoring • analysing

KM



HART COMMUNICATION PROTOCOL

- Wide supply voltage range: 7.5 ... 45 V_{DC}
- Operation, visualisation and maintenance via PC
- Universal setting with HART® protocol
- Fault signal on sensor break or short circuit, pre-settable to NAMUR NE 43
- 2-wire technology, 4 ... 20 mA analog output
- High accuracy

Application

- Linearised temperature measurement
  - Resistance thermometers
  - Thermocouples
  - Resistance
  - Voltage
- Connection head according to DIN 43 729 form B or DIN-rail

T2

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Description

Transmitters for head mounting model KM, transform resistance values or thermal voltage into a standard current signal 4 ... 20 mA. Transmission is absolute interference-free over long distances.Different sensor inputs are Resistance thermometers, Thermocouples, Resistance and Voltage. Programming of measuring ranges is via U-pro and HART® protocol. Connection head for mounting these U-pro transmitters is according to DIN 43729 form B.

Technical Details

KM-110 (Only Pt100)	
Supply voltage:	7.5 ... 45 V_{DC}
Input type:	1 x Pt100 3-wires (acc. to IEC 60751)
Sensor current:	0.5 mA
Range limit:	-200 ... +850 °C
Min. mesasuring range:	10 K
Output signal:	4 ... 20 mA
Max. load:	(Supply - 7.5 V) / 0.022 A
Signal on alarm:	Under range: Linear drop to 3.8 mA
	Over range: Linear rise to 20.5 mA
	Sensor open or short circuit: 3.6 mA or 22 mA
Accuracy:	0.2 K or 0.1% of span
Response time:	1 s
Test conditions:	Calibration temperature: +23 °C (73.4 K) ±5 K
Long term stability:	≤ 0.05% / year
Switch on delay:	≤ 5 s
Resolution:	1 µA
Ambient temperature:	-40 .... +85 °C
Storage temperature:	-40 ... +100 °C
Degree of protection:	Enclosure IP66, terminals IP00
Relative humidity:	< 95% RH (non-cond.)
Shock and vibration resistance:	4 g / 2 ... 150 Hz as per IEC60068-2-6
Electromagnetic compatibility (EMC):	Acc. to GB/T17626.2-1998, compliance with IEC61326-1:2005
Dimensions:	44 mm x 18 mm
Weight:	Approx. 27 g
Housing:	PC and potting silicone
Applied harmonised standards and normative documents:	IEC60529: Degree of protection provided by housing (IP-CODE)
	IEC61010: Safety requirements for electrical measurement
	IEC61326: Electromagnetic compatibility (EMC requirements)
	NAMUR: Standard working group for measurement and control technology in the chemical industry

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KM-3 and KM-6 Series

Input	Sensor	Measurement ranges	Min. meas. ranges
Resistances thermometer	Pt100 Pt500 Pt1000 acc. to IEC 60751	-200 ... 850 °C (-328 ... 1562 °F) -200 ... 250 °C (-328 ... 482 °F) -200 ... 250 °C (-328 ... 482 °F)	10 °C 10 °C 10 °C
	Cu50 Cu100	-50 ... 150 °C (-58 ... 302 °F) -50 ... 150 °C (-58 ... 302 °F)	10 °C 10 °C
	Ni100 Ni500 Ni1000 acc. to DIN 43760	-60 ... 180 °C (-76 ... 356 °F) -60 ... 180 °C (-76 ... 356 °F) -60 ... 150 °C (-76 ... 302 °F)	10 °C 10 °C 10 °C
Resistance	Resistance Ω	0 ... 400 Ω 0 ... 2000 Ω	10 Ω 10 Ω
Connection type: 2-, 3- or 4-wire connection Sensor current: 0.5mA			
Thermocouples (TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni N(NiCrSi-NiSi R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 ... +1820 °C (32 ... 3308 °F) -270 ... +1000 °C (-454 ... 1832 °F) -210 ... +1200 °C (-346 ... 2191 °F) -270 ... +1372 °C (-454 ... 2501 °F) -270 ... +1300 °C (-454 ... 2372 °F) -50 ... +1768 °C (-58 ... 3214 °F) -50 ... +1768 °C (-58 ... 3214 °F) -270 ... +400 °C (-454 ... 752 °F)	500 K 50 K 50 K 50 K 50 K 500 K 500 K 50 K
Voltage transmitters (mV)	(mV)	-10 ... 75 mV -100 ... 100 mV -100 ... 500 mV -100 ... 2000 mV	5 mV 5 mV 10 mV 20 mV

Supply voltage: 7.5 ... 45 V_{DC}

Output signal: 4 ... 20 mA

Max. load: Max. (supply - 7.5 V) / 0.022 A

Signal on alarm: Under range:
Linear drop to 3.8 mA

Over range:
Linear rise to 20.5 mA

Sensor open or short circuit:
3.6 mA or 22 mA

Linearisation/transmission behaviour: Temperature linear, resistance linear, voltage linear

Galvanic isolation: U=2 KV_{AC} (input/output) only KM-323, KM-325, KM-63, KM-665

Response time: 0.25 s

Long term stability: RTDs - ±0.1% of reading or 0.1 °C whichever is greater, for 24 months. Thermocouples - ±0.1% of reading or 0.1 °C whichever is greater, for 12 months

Switch on delay: < 2 s

Influence of ambient: Negligible

Load influence: ±0.02%/100 Ω, values refer to the full scale value

Power supply influence: Negligible

Self stability configuration: 0 ... 2%

Filter configurating: 03... 160 µA

Resolution: 0.3 µA

Accuracy		
Input	**Sensor**	**Accuracy**
RTD	Pt100, Ni100 Pt500, Ni500 Pt1000, Ni1000 Cu50 Cu100	0.02% 0.05% 0.3% 0.2% 0.3%
TC	K,J,T,E N S,B,R	typ. 0.1% of span typ. 0.1% of span typ. 0.1% of span
Ω	10 to 400Ω 10 to 2000Ω	±0.1 Ω or 0.02% ±1.5 Ω or 0.03%
mV	-10 to 75mV -100 to 1000mV -100 to 500mV -100 to 2000mV	± 4 µV or 0.02% ± 4 µV or 0.02% ± 7.5 µV or 0.02% ± 7.5 µV or 0.02%

Installation instructions:	Installation angle: No limit Installation area: Connection head according to DIN 43 729 Form B or DIN-rail
Ambient temperature:	-40 .... +85 °C (-40 ... 185 °F)
Storage temperature:	-40 ... +100 °C (-40 ... 212 °F)
Degree of protection:	Enclosure IP 66, terminals IP 00 (head mounting) IP 20 (DIN-rail)
Relative humidity:	< 95% RH (non-cond.)
Shock and vibration resistance:	4g / 2 ... 150 Hz as per IEC 60068-2-6
Electromagnetic compatibility (EMC):	Inteference immunity and interference emission according to IEC 61326-1:2006
Dimensions:	KM-3 Series: Ø 44 x 22.5 mm; KM-6 Series: 12.6 x 99 x 112.5 mm
Weight:	KM-3 Series: approx. 33.5 g; KM-6 Series: approx. 80 g
Housing:	KM-3 Series: PC and potting silicone; KM-6 Series: PC
Applied harmonised standards and normative documents:	IEC 60529: Degree of protection provided by housing (IP-CODE) IEC 61010: Safety requirements for electrical measurement IEC 61326: Electromagnetic compatibility (EMC requirements) NAMUR: Standard working group for measurement and control technology in the chemical industry

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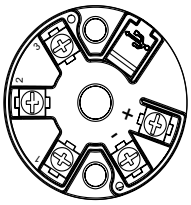
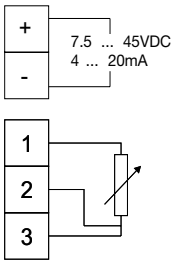
Wiring Diagram

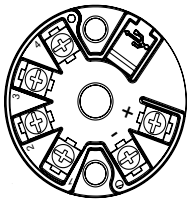
KM-110

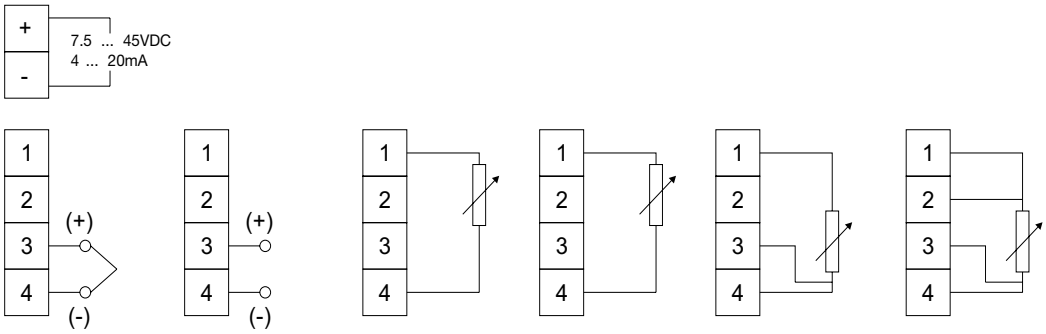




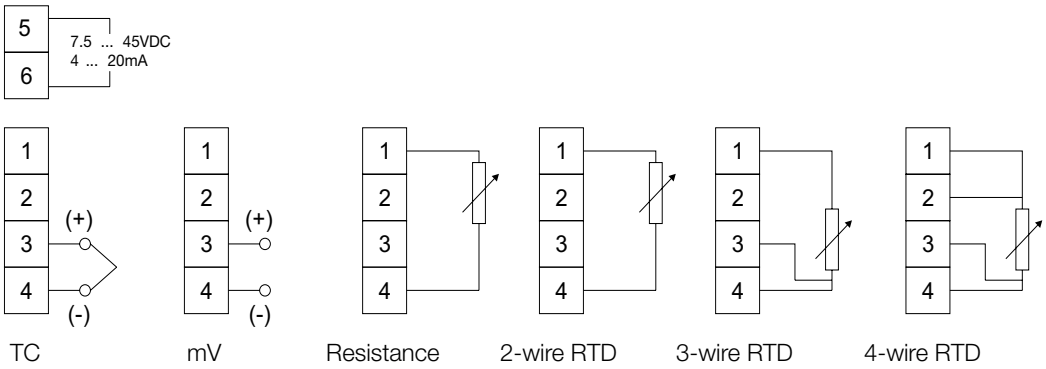
3-wire PT100

KM3-Series

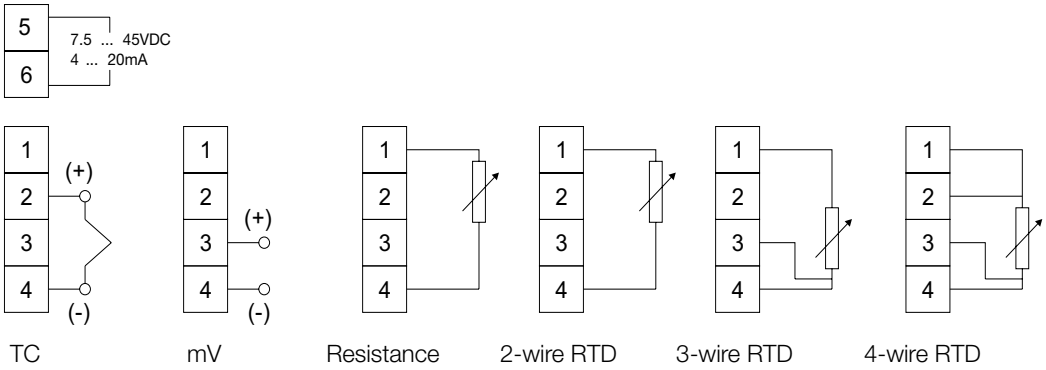




KM-660 and KM-663



KM-665



Order Details (Example: **KM-110**)

Model*	Input	Output	Galvanic isolation	Programming mode**
KM-110	Pt100	4 ... 20 mA	No	U-pro
KM-320	Pt100, Pt500, Pt1000. (acc. to IEC 60751) Cu40, Cu100 Ni100, Ni500, Ni1000 (acc. to DIN 43760) TC: B, E, J, K, N, R, S, T (acc. to IEC 584) Resistance: 100 ... 400 Ω, 10 ... 2000 Ω Voltage: 10 ... 75 mV, 100 ... 2000 mV	4 ... 20 mA	No	U-pro
KM-323			Yes	U-pro
KM-325			Yes	HART®
KM-660			No	U-pro
KM-663			Yes	U-pro
KM-665			Yes	HART®

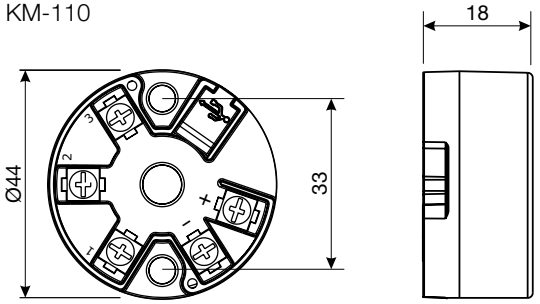
* Add suffix "V" if factory setting of desired measuring range is required
** For programming the transmitters use a standard HART® modem. Models with U-pro don't support Hand-Held HART® Communicator

Accessories (for programming the transmitters with programming modes U-pro / HART®)

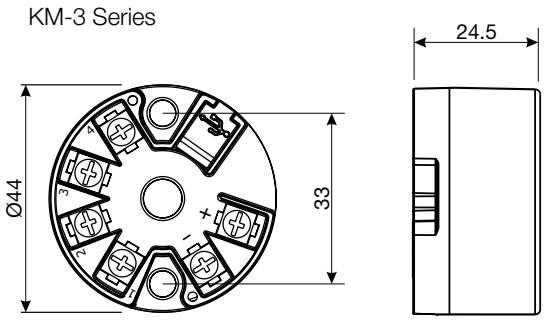
Model	Description
KM-HART (includes configuration software KM-Soft)	HART® modem 

Dimensions [mm]

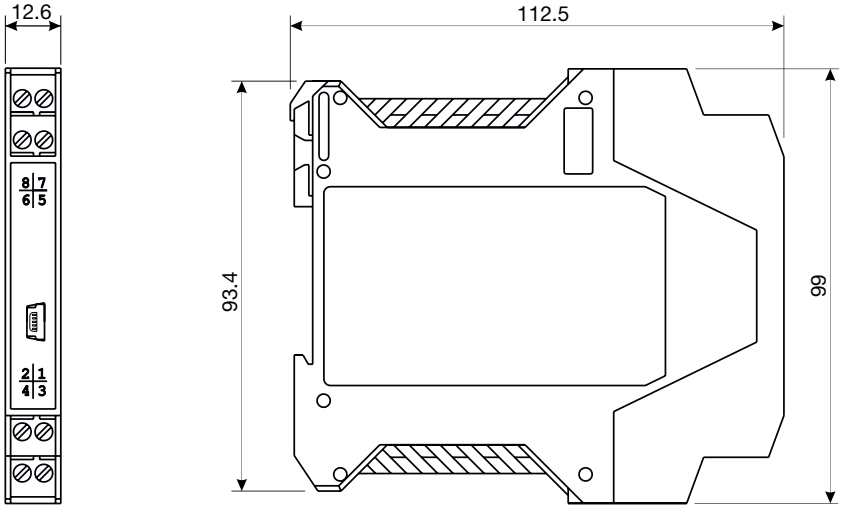
KM-110



KM-3 Series



KM-6 Series



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