MK - Hand-held Temperature Sensor — MKTS-HA

● Characteristics

- Input:	RTD Pt100 (RTD Pt1000 on request)
- Sensor type:	2-wire / 3-wire / 4-wire
- Accuracy sensor:	Class A / Class B / Class B 1/2 DIN
- Output:	RTD, 4...20 mA HART, interfaces
- Process connection:	straight tube tip, pointed tube tip
- Option:	tip with heating
- Electrical connection:	several plugs / cable
- Temperature range:	-50...+200 °C (sensor)
- Length of tube:	50...1000 mm
- Material:	stainless steel 1.4571 (tube, handle)
- Protection:	IP65, electronics completely potted

● Technical data

Input

Sensor RTD	Pt100, Pt1000:	2-, 3-, 4-wire
	Pt100, Pt1000:	2x 2-wire, 2x 3-wire
Temperature range:	-50...200 °C	

Output

RTD:	directly (2-, 3-, 4-wire, 2x 2-, 3wire)
Current:	4...20 mA with superimposed communication signal (HART), 2-wire current loop
Current range:	3,8...20,8 mA
Signal on error:	3,8 mA (sensor break, sensor open circuit)
Digital:	CANopen, Modbus RTG, PROFIBUS DP

Performance

Sensor:	RTD Pt100:	Class A / Class B / B1/2 DIN
	RTD Pt1000:	Class A / Class B / B1/2 DIN
Measuring amplifier:	Accuracy:	0,2K or 0,08% of range
	Resolution:	16 Bit / 0,3 µA
	Long term stability:	0,05% / year
	Filter setting:	yes
	Transmission behaviour:	temperature linear
	Turn-on delay time:	<5 s
	Response time:	1 s

Programmable features

Measuring amplifier:	measuring range start / measuring range end

● Applications

The hand-held sensor is suitable for control measurements of the temperaure in liquids and little compressed substances (e.g. paste). With the additional heating of the sensor tip the measurement with partially frozen goods is also possible. With the optional output signals the sensor is universally usable.

● Technical data (continued)

Supply

|	
Output RTD:	without
Output 4...20 mA:	Current loop: 12...40 VDC VDC
	Load: $R = (U_B\text{-}12\text{ V}) / 22$ mA
Output Interfaces:	10...35 VDC
Reverse battery protection:	available (no function, no damage)

Ambient conditions

Temperature:	Operating range: -40...+85 °C
	Medium: -50...+200 °C
	Storing: -40...+100 °C
Condensation:	uncritical

Mechanics

Dimensions:	see page 3
Process connection:	protecting tube (flat, pointed)
Electrical connection:	see page 3
Material:	Protecting tube: stainless steel 1.4571 (standard 6x0,5 mm)
	Process connection: stainless steel 1.4571
	Handle: stainless steel 1.4571
Weight:	approx.450 g (100 mm, M12)
Position for use:	any
Protection:	at least degree IP65 (when electrical connection is plugged)

● Connection M12-plug (example)

Assignment plug M12x1, 4-pole			
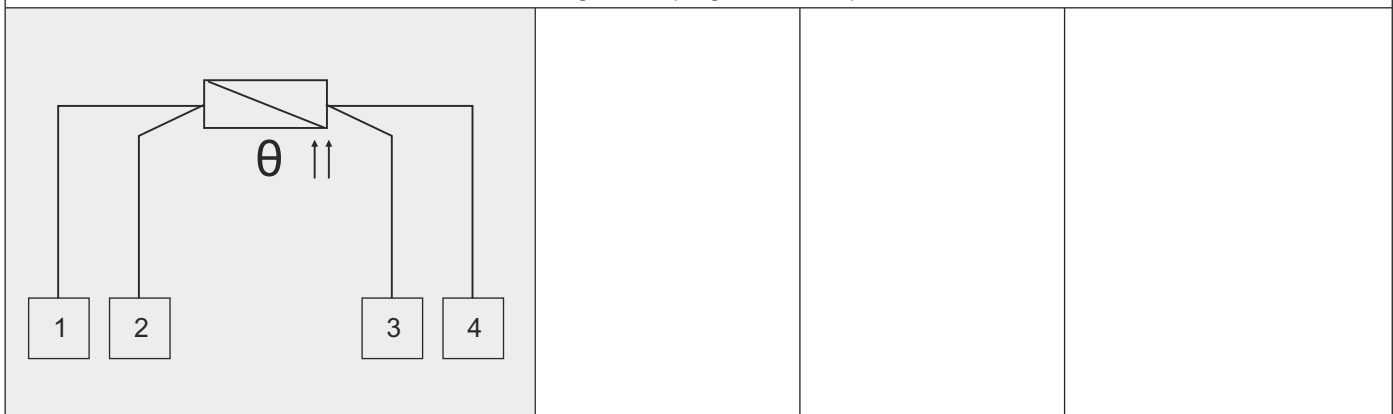
● HART Communication

The HART-Tool is a graphical user interface for the ME series with menu-driven progam for configuration. It can be used for putting into operation, configuration, analysis of signals, data backup and documentation of the device.
Operating systems: Windows 2000, Windows XP
Connection via HART interface (modem) with USB interface of a PC or hand-held HART communicator

Settings:	- Adjustment of output current	- Simulation of output current	- Filter function
	- Limits of measuring range	- Linear output signal	- HART address
	- HART TAG number	- 2-point calibration	
	- 6-point calibration (linearization)		

Please note: When using communication via a HART modem, a comunication resistance of 250 Ω has to be taken into account.

● Electrical connection

| M12x1	Super Seal	Deutsch	Deutsch	Bajonett	Valve	AMP	Cable
4-pole 5-pole 8-pole	3-pole	3-pole	4-pole	4-pole	4-pole	6-pole	n-pole

● Possible output signals

Connection / Output	M12 4-pole	M12 5-pole	M12 8-pole	Bajonett 4-pole	Deutsch 4-pole	Deutsch 3-pole	Super Seal 3-pole	Valve 4-pole	AMP 6-pole	Cable[1]
RTD, 2-wire	X + H	X + H	X + H	X + H	X + H	X	X	X + H	X + H	X + H
RTD, 3-wire	X	X + H	X + H	X	X	X	X	X	X + H	X + H
RTD, 4-wire	X	X	X + H	X	X			X	X + H	X + H
RTD, 2x 2-wire	X	X	X + H	X	X			X	X + H	X+ H
RTD, 2x 3-wire			X + H						X	X + H
4...20 mA HART	X + H	X + H	X + H	X + H	X + H	X	X	X + H	X + H	X + H
CANopen	X	X	X + H	X	X			X	X + H	X + H
PROFIBUS	X	X	X + H	X	X			X	X + H	X + H
Modbus	X	X	X + H	X	X			X	X + H	X + H

1) 2-pole (+shield) up to 8-pole (+shield), as required

X = possible   X + H = possible with additional heating

● Dimensions (in mm)

Ø26

approx. 173

Length of tube
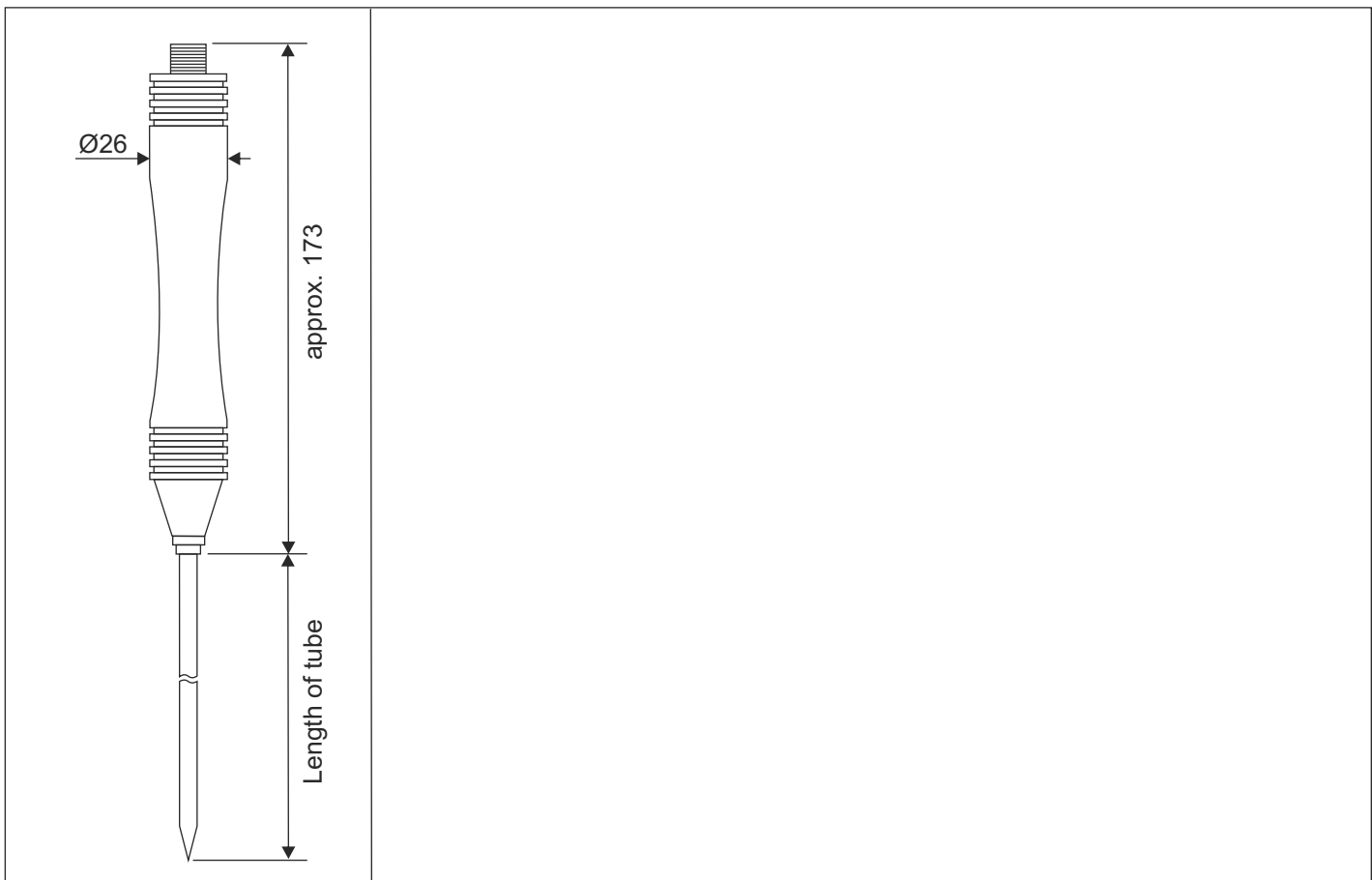
● Order code

| | | | M | H | X | X | X | X | X | X | - | X | X | X |

Input:	1x RTD Pt100	0
	1x RTD Pt1000	1
	2x RTD Pt100 (2- or 3-wire only)	2
	2x RTD Pt1000 (2- or 3-wire only)	3

Sensor type:	2-wire	0
	3-wire	1
	4-wire	2

Accuracy:	Class A	0
	Class B	1
	Class B 1/2 DIN	2

Process connection:	tip flat	0
	tip pointed	1
	tip flat with heating	2
	tip pointed with heating	3

Output:	sensor directly	0
	4...20 mA HART	1
	CANopen	2
	Modbus RTG	3
	Profibus	4

Length of tube:	50 mm	0
	100 mm	1
	200 mm	2
	250 mm	3
	400 mm	4
	600 mm	5
	1000 mm	6
	other legth (to specify)	7

Electrical connection:	M12, 4-pole	0
	M12, 5-pole	1
	M12, 8-pole	2
	Deutsch DT04, 3-pole	3
	Deutsch DT04, 4-poe	4
	Super Seal 1.5, 3-pole	5
	bayonet (DIN), 4-pole	6
	valve plug, 4-pole	7
	cable, 2 m	8
	AMP MIL PT028-10, 6-pole	9

Configuration:	factory setting [1]	0
	customized (to specify) [2]	1

Other:	special model	0

1) Measuring range: / Indicating range

2) The possibilities which are specified in the technical data can be selected. For not given values the details of factory-set are used.

Accessories:

DEV-HM (Interface HART, USB, software)   Order No.: