resistance thermometer WTR 110

features

- resistance thermometer with neck tube, with screw in thread
- with process connection thread
- protective fitting on DIN 43 763
- protective fitting screwed with connection head
- available with several connection heads on DIN
- Temperature resistance installed in interchangeable bar measuring insert
- Measuring insert available with ceramic base or measuring transducer
- Passive (connection via terminals) or with a measuring transducer
- Available with:
      Digital measuring transducer DMU100 (4..20mA 3-wire/OLED display)
      Head transmitter KMU100 (4..20mA 2-wire)
      Head transmitter KMUS100 (0..10V 3-wire)
- Special designs on request

WTR 110-5-B-1A3-KMU-HT

product benefits

With our WTR 110 you have a device for temperature measurement in liquid and vapour mediums. The integrated neck tube provides decoupling from the process temperature, so that the sensor can be used reliably even at high temperatures. Due to the simple exchange of the measuring element, this sensor is also ideally suited for use in closed processes. High-quality materials give this sensor a very long service life.

WTR 110-1-B-1A3-KMU-HT

technical specifications

- protective fitting of V4A 1.4571
- diameter of protective fitting 9 x 1 mm, other diameter on request
- length of neck tube 120mm, other lengths on request
- process connecting thread G 1/2"A
- standard temperature of the process: -50°C...+400°C
                                                            -50°C...+650°C (HT-design)
                                                            -50°C...+850°C (HTT-design)
   (other temperature ranges on request)

exchangeable measuring element

Also available with display (DMU100).

resistance thermometer WTR 110

technical data DMU 100

- operating temperature: -30 °C..+70 °C
- operating voltage: UB = 10..35 V DC
- current requirement: 7.3 mA (UB=24V) + 4..20mA output
- input: PT1000 2-wire
- measuring range max.:   -100°C..+650°C
- measuring span min.:   10 K
- measuring deviation: <+-0.1% of the final value
- output: 4..20mA 3-wire (underflow 3.5mA, overflow 20.5mA)
- sensor break: 21mA
- standard configuration: 4 mA = -50 °C, 20 mA = 150 °C
  (wide temperature range can be parameterized)
- max. permissible load: $Rmax=[(UB – 6V) / 0.021 A]\ \Omega$
- display: high-resolution OLED display 0.96 inches
- orientation display: 0° or 180°
- display digits: 4 digits
- display range: -99.9 to +999.9°C
- configuration interface: USB Type C
- electrical connection: 5x terminal connection 1.5 mm²
- configuration: commercially available USB Type C cable (no programming adapter necessary)
  windows application for configuration ("pmtKonfigTool")

technical data KMU 100

- operating temperature: -40 °C..+85 °C
- operating voltage: UB = 10..36VDC
- current requirement: 4..20mA output
- input: PT100 or PT1000 2, 3, 4 wire
- measuring range max.   Pt100: -200°C..+850°C; Pt1000: –200°C … +250 °C
- measuring span min.:   10 K
- measuring deviation: across the entire range: 0.15 K or 0.07% of span*
  n the range -50°C … +250°C: 0.1 K or 0.07% of the measuring span*
- output: 4-20mA (underflow linear drop of 4.0 ... 3.8 mA,
  linear increase of 20.0 … 20.5 mA)
- sensor break: ≤ 3.6 mA ("Low") or ≥ 21 mA ("High") can be selected
- standard configuration   4mA = -50°C, 20mA = 150°C
  (wide temperature range can be parameterized)
- electrical connection: 6x screw terminals 1.5mm²
- configuration: PXU01 programming adapter
  Windows application for configuration ("PXU01")

* the larger value is valid

technical data KMUS 100

- operating temperature: -40 °C..+85 °C
- operating voltage: UB = 15..35 V DC
- current requirement: max. 10mA
- input: PT100/PT1000 2-, 3-, 4-wire
- measuring range   12 measuring ranges, see page 3
- measuring deviation: <+-0.3% of measuring range
- output: 0..10V 3-wire
- sensor break: >10V
- standard configuration: 0V = -20°C, 10V = 150°C
- electrical connection: 6 screw terminals 1.5mm2
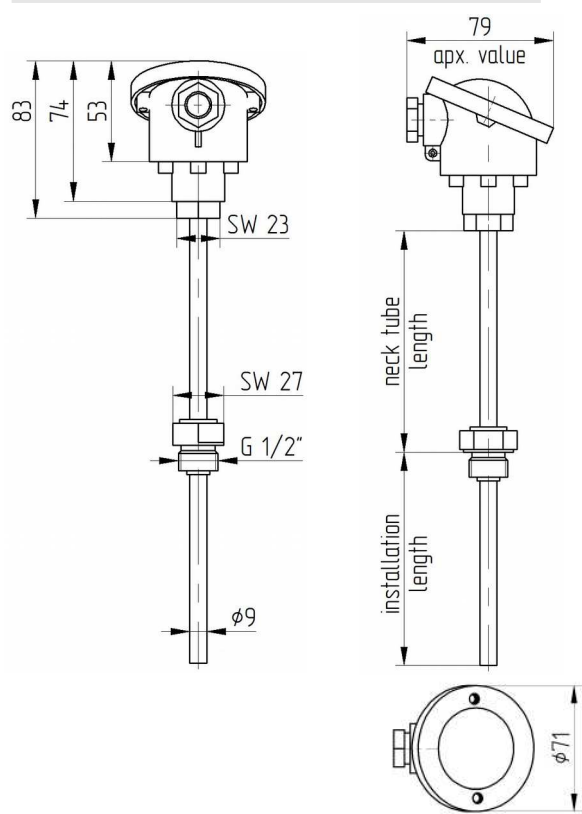- configuration: DIP switch (12 different measuring ranges)

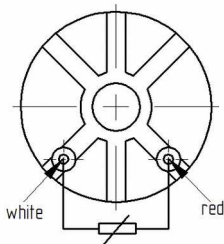## technical drawing WTR 110
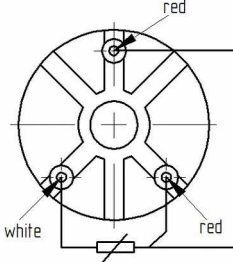
stainless steel head
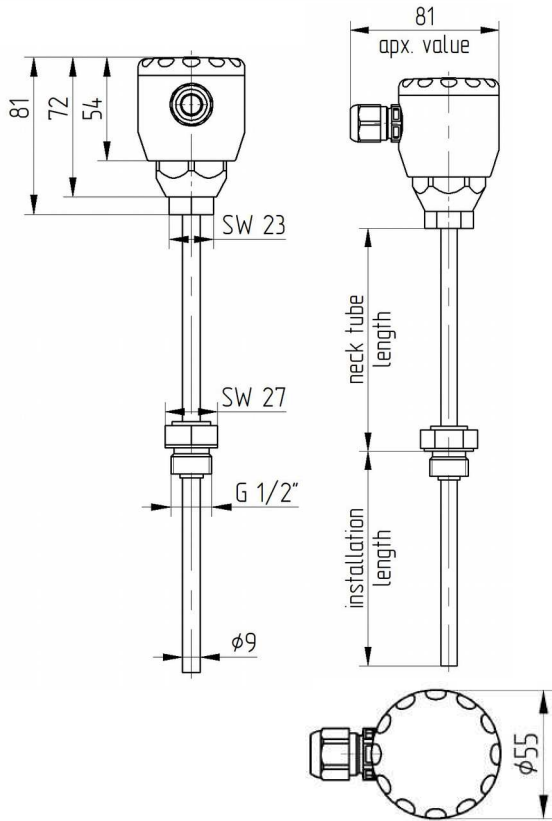
aluminiumhead

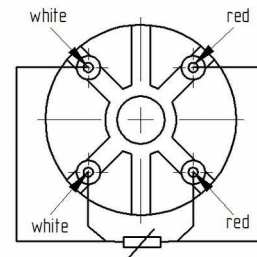## connection WTR 110

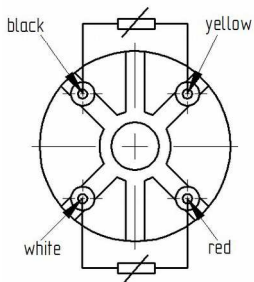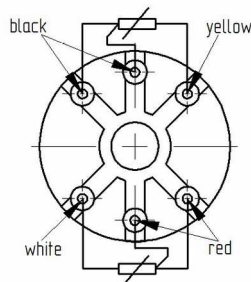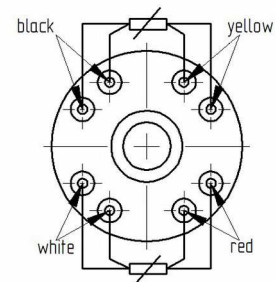### connection WTR 110 passive (ceramic base)

1 x PT 2-wire

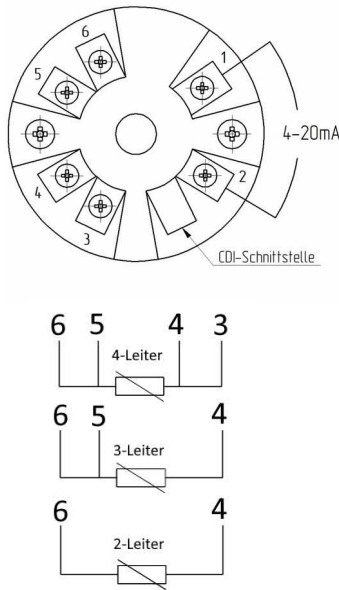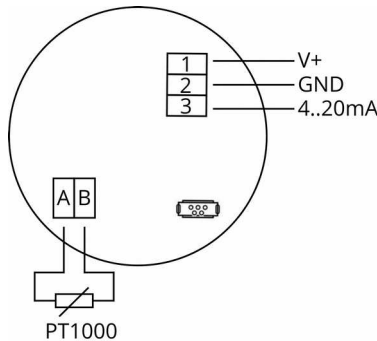1 x PT 3-wire

1 x PT 4-wire

2 x PT 2-wire

2 x PT 3-wire

2 x PT 4-wire

connection WTR 110 with measuring transducer

WTR 110 with KMU 100

4–20mA

CDI-Schnittstelle

6 5 4 3
4-Leiter

6 5 4
3-Leiter

6 4
2-Leiter

WTR 110 with DMU 100

1 — V+
2 — GND
3 — 4..20mA

A B

PT1000

WTR 110 with KMUS 100

V+ GND
0..10V

1 2 3 4 5 6

DIP-switch

correction potentiometer
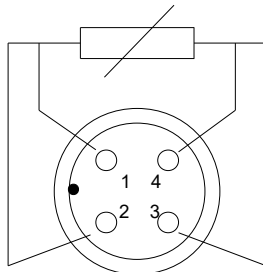
4   5 6
3- wire
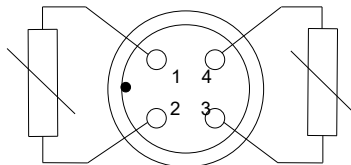
6   5 6
2- wire
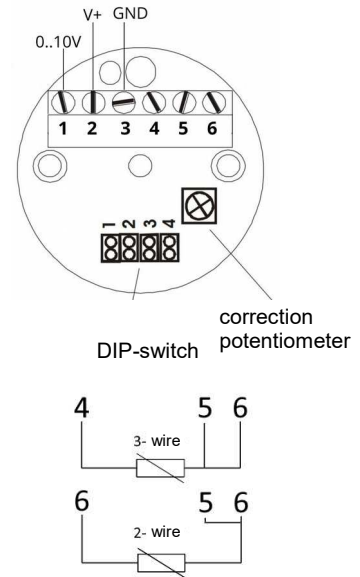
Connection WTR 110 with M12 plug

**M12 plug
PT100 and PT1000**

1 4
2 3

**M12 plug
2x PT100 and 2x PT1000**

1 4
2 3

M12 plug with measuring transducer

1 (brown)
+ voltage
10...35VDC

1 4
2 3

3 (blue)
output 4...20mA
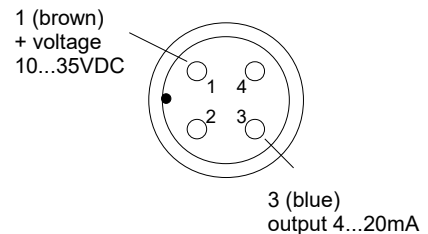
configuration

If the WTR 110 is used with a DMU 100, the DMU settings can be read out, graphically displayed and changed using the Windows software "pmtKonfigTool". The Windows software can be downloaded from the website www.promesstec.de. The connection between PC and MUFG-DMU can be established with a standard USB Type C cable.

If the WTR 110 is used with a KMU 100, the settings of the KMU can be read out, graphically displayed and changed using the PXU01 parameterization software kit. In addition to the software, the software kit also includes a programming adapter.

If the WTR 110 is used with a KMUS 100, the measuring range can be adjusted using four DIP switches. The measuring ranges are listed in the table below. There is also a correction potentiometer on the top of the head transmitter, which can be used to fine-tune the output voltage. A seal secures the potentiometer against accidental adjustment.

Nr.	Messbereich	DIP-Sch. 1 2 3 4
MB1:	- 20°C .. +150°C	1-1-1-1
MB2:	0°C .. + 50°C	0-1-1-1
MB3:	0°C .. +100°C	1-0-1-1
MB4:	0°C .. +200°C	0-0-1-1
MB5:	0°C .. +300°C	1-1-0-1
MB6:	0°C .. +400°C	0-1-0-1
MB7:	0°C .. +500°C	1-0-0-1
MB8:	0°C .. +600°C	0-0-0-1
MB9:	- 50°C .. + 50°C	1-1-1-0
MB10:	-100°C .. +100°C	0-1-1-0
MB11:	- 30°C .. + 70°C	1-0-1-0
MB12:	- 40°C .. + 60°C	0-0-1-0

Jumper = 1: plugged in, Jumper = 0: not plugged in

Attention: Only ranges 1..5 are available for Pt1000.

order-code WTR 110...	order example: WTR 110-5-A-1A3-KMU (0-100 °C)

connection heads

-1	aluminiumhead,	standard,	with screwing,	protection class IP65
-2	aluminiumhead	with flap lid,	with screwing,	protection class IP65
-2W	aluminiumhead	with flap lid,	with screw connection,	protection class IP65 with window
-3	aluminiumhead	with flap lid and snap closing,	with screwing,	protection class IP54
-4	aluminiumhead	with high flap lid,	with screwing,	protection class IP65
-5	stainless steel head standard with screw cap,		with screwing,	protection class IP69K
-6	stainless steel head standard with screw cap,		with M12-plug,	protection class IP69K
-15	stainless steel head hightened design		with screwing	protection class IP69K
-16	stainless steel head hightened design		with M12-plug	protection class IP69K

mounting length (ML), measuring element length (MEL)

-A	50 mm mounting length	(MEL = 205mm)
-B	100 mm mounting length	(MEL = 255mm)
-C	160 mm mounting length	(MEL = 315mm)
-D	200 mm mounting length	(MEL = 355mm)
-E	250 mm mounting length	(MEL = 405mm)
-F	300 mm mounting length	(MEL = 455mm)
-G	350 mm mounting length	(MEL = 505mm)
-H	400 mm mounting length	(MEL = 555mm)
-K	special length according to customer`s wish	

optional (not specified neck tube length standard 120mm)

/HR 30	neck tube length 30mm
/HR 60	neck tube length 60mm
/HR 80	neck tube length 80mm

optional (not specified diameter 9mm)

/6x1	diameter 6mm, wall strength 1mm
/10x1	diameter 10mm, wall strength 1mm
/11x2	diameter 11mm, wall strength 2mm
/16x4	diameter 16mm, wall strength 4mm

type of sensor and tolerance

-1A2	1xPT100 class A 2-wire
-1A3	1xPT100 class A 3-wire
-1A4	1xPT100 class A 4-wire
-2A2	2xPT100 class A 2-wire
-2A3	2xPT100 class A 3-wire
-1A2/PT1000	1xPT1000 class A 2-wire
-2A2/PT1000	2xPT1000 class A 2-wire
-KX	other types of sensor and tolerance on request

optional (several combinations possible)

When using a measuring transducer, please specify the temperature range!

-KMU	with programmable measuring transducer (temperature range on request on preadjustment please specify)
-2KMU	with 2 programmalbel measuring transducers
-KMUS	with head transmitter output 0...10 VDC
-DMU	OLED display in the viewing window incl. measuring transmitter 4...20 mA configurable via software only with the aluminiumhead "2W"
-MME	coat measuring element, vibration resistant
-PS	perforated protection fitting (air sensor)
-HT	high temperature design up to +650°C
-HTT	high temperature design up to +850°C

accessories

welding sleeves

-99-000421	GEM 150, stainless steel weld-in sleeve, G1/2" inner thread, outer diameter 26mm, length sleeve 33mm

M12-connection wires

-101090	connection cable M12 angled, 4-pole, 5m PVC cable, grey
-101087	connection cable M12 straight, 4-pole, 5m PVC cable, grey

Other lengths available on request.

For more accessories, see accessories data sheet.