

DIGITAL TEMPERATURE TRANSMITTER



Type: **DTW**

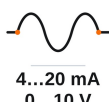
- Pt100 · Pt1000 · POTENTIOMETER
- -200 ... +850 °C
- HEAD AND RAIL VERSION
- Ex ia OPTION



IP00



IP20



4...20 mA
0...10 V

ORDER CODE

Code	Field	Meaning
EKMC	series	Digital Temperature Transmitter DTW
00 · 11	housing	head version · rail version
0 ... 6	input	Pt100 2-wire · Pt100 3-wire · Pt100 4-wire · Pt1000 2-wire · Pt1000 3-wire · Pt1000 4-wire · potentiometer, reed chains, 3-wire
0 · 1	configuration	factory setting · customized, please specify
0 · 1	special model	no · yes, please specify
0 · 1	ambient temperature	-40 ... +85 °C · -50 ... +105 °C, head version without Ex only
0 · 1	Ex version	none · intrinsically safe, see compliance

Factory setting: Pt100, three-wire, 0 ... 150 °C, fault signal downscale, damping off. With two-wire connection the line resistance cannot be compensated.



OVERVIEW

The DTW measures with Pt100, Pt1000 or a potentiometer — reed chains — and gives the value as 4 ... 20 mA in a two-wire current loop. The measuring range is freely configurable within -200 to +850 °C; the smallest span is 10 K or 3.8 Ω, whichever is the higher value. Resistance thermometers are connected in two-, three- or four-wire technique, potentiometers in three-wire technique. The device comes in two housings with identical electronics: the head version of Ø 44 × 22.5 mm for DIN connection heads of form B, fully potted and rated IP00, and the rail version of 99 × 113.6 × 17.5 mm for standard rails to IEC 60715, rated IP20. Sensor break, sensor short circuit and range violation are monitored and signalled to NAMUR NE43. An intrinsically safe version is available as an option.

MEASUREMENT AND OUTPUT	DEVICE AND ENVIRONMENT
• Pt100 and Pt1000, 2-, 3-, 4-wire • Potentiometer, reed chains, 3-wire • Range -200 ... +850 °C, freely configurable • Smallest span 10 K or 3.8 Ω • Deviation 0.2 K or 0.1 % of span • Output 4 ... 20 mA, 3.8 ... 20.5 mA to NE43 • Fault signal configurable to NAMUR NE43 • Damping 1 ... 60 s, configurable	• Head version Ø 44 × 22.5 mm, IP00, 45 g • Rail version 99 × 113.6 × 17.5 mm, IP20, 0.2 kg • Case PBT, glass-fibre-reinforced • Supply DC 8 ... 35 V, two-wire loop • Ambient -40 ... +85 °C • Option -50 ... +105 °C, head version • Terminals 0.14 ... 2.5 mm², 0.4 Nm • Option Ex ia to ATEX and IECEx

TECHNICAL DATA

INPUT

Pt100 · Pt1000	max. configurable range -200 ... +850 °C · smallest span 10 K or 3.8 Ω, the higher value applies · 2-, 3-, 4-wire · measuring current max. 0.2 mA · IEC 60751:2008
Line resistance	max. 50 Ω per wire, in 3- and 4-wire circuits
Potentiometer	reed chains · 0 ... 100 % (1 ... 50 kΩ) · smallest span 10 % (min. 1 kΩ) · 3-wire · measuring current max. 0.1 mA

ACCURACY

Deviation Pt100 · Pt1000	0.2 K or 0.1 % of span, the higher value applies
Deviation potentiometer	0.2 % of span relative · 1 % of span absolute
Temperature coefficient	≤ ± 0.01 % of span per 1 K
Influence of supply	± 0.005 % of span per 1 V
Long-term drift	< 0.1 % of span per year, IEC 61298-2
Reference conditions	23 °C ± 3 K · 24 V · 860 ... 1060 hPa

OUTPUT AND SUPPLY

Current signal	4 ... 20 mA loop, 2-wire
Transmission	temperature-linear to IEC 60751
Current range	3.8 ... 20.5 mA to NAMUR NE43
Fault signal	configurable — downscale < 3.6 mA · upscale > 21.0 mA
Supply	DC 8 ... 35 V
Load	$RA \leq (UB - 8 \text{ V}) / 0.0215 \text{ A}$, with RA in Ω and UB in V

TIME BEHAVIOUR AND MONITORING

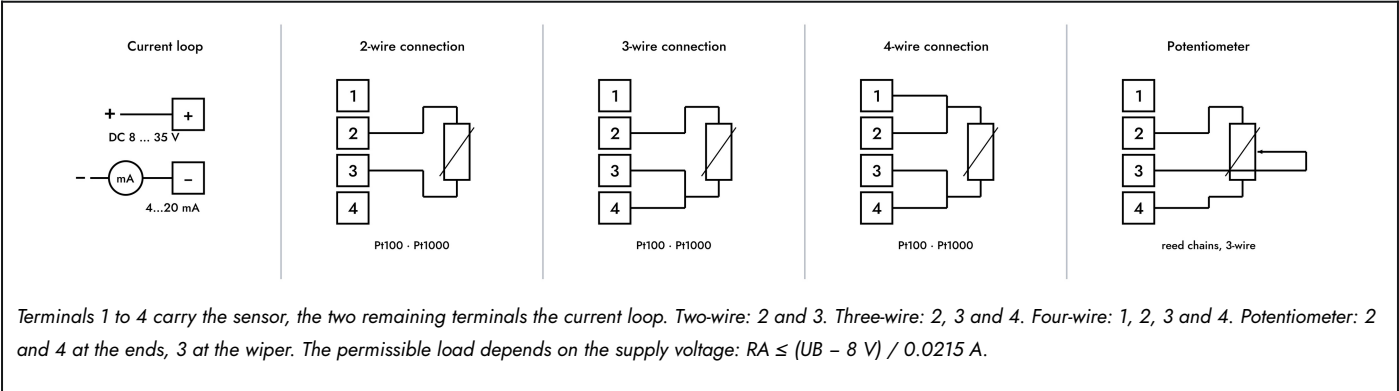
Switch-on time	max. 3 s · warm-up time max. 4 min
Step response	< 0.4 s
Damping	1 ... 60 s, configurable
Measuring rate	20 per s in 2- and 4-wire · 5 per s in 3-wire and potentiometer
Monitoring	sensor break and sensor short circuit configurable, downscale as delivered · range violation configurable, off as delivered

MECHANICS AND ENVIRONMENT

Head version	PBT, glass-fibre-reinforced · Ø 44 × 22.5 mm · 45 g · IP00, electronics fully potted · for DIN connection heads of form B
Rail version	plastics · 99 × 113.6 × 17.5 mm · 0.2 kg · IP20 · for standard rails to IEC 60715
Terminals	captive screws · solid wire 0.14 ... 2.5 mm ² · stranded wire with ferrule 0.14 ... 1.5 mm ² · tightening torque 0.4 Nm
Ambient temperature	-40 ... +85 °C · option -50 ... +105 °C, head version without Ex only
Vibration and shock	amplitude 0.75 mm, 10 ... 2000 Hz, 10 g, IEC 60068-2-6 · 30 g / 11 ms and 100 g / 6 ms, IEC 68-2-27
Free fall	1.5 m to IEC 60721-3-2



ELECTRICAL CONNECTION



ACCESSORIES

Configuration set with programming unit and magnetic quick contacts, ordered separately

The programming unit is connected to the two contacts marked on the device; the device stays in the loop while being set.

COMPLIANCE

 IP00	Head version	IP00 to IEC 60529 — electronics fully potted
 IP20	Rail version	IP20 to IEC 60529
 4...20 mA 0...10 V	Output signal	4 ... 20 mA, 2-wire, 3.8 ... 20.5 mA to NAMUR NE43

The manufacturer names the EMC directive 2014/30/EU with EN 61326 — emission group 1, class B, and immunity for the industrial environment — the RoHS directive 2011/65/EU, and as an option ATEX and IECEx to 2014/34/EU: head version II 1G Ex ia IIC T6...T4 Ga and II 1D Ex ia IIIC T135 °C Da, rail version II 2(1)G Ex ia [ia Ga] IIC T6...T4 Gb and II 2(1)D Ex ia [ia Da] IIIC T135 °C Db. Temperature restrictions apply to the Ex version.



DIMENSIONS (mm)

