Temperature transmitter

Application

The NPT1 is a universal temperature transmitter for DIN rail or wall mounting. The device converts the sensor signal from a TC or RTD (2-, 3-wire) to a 0(4)-20 mA standard signal. The transmitter detects an input sensor failure when sensor break or shortcut. Inputs from a wide variety of RTD and TC sensors are accepted (see Table 2). The configuration is performed via the USB interface. No programming adapter is needed. The transmitter is delivered with a basic configuration for Pt100. The latest version of the configuration software is available for download on www.akytec.de.

WARNING ***Make sure that the device is fully disconnected from auxiliary power before starting any commissioning or repair work.***

CAUTION ***Connect the power supply only after the wiring has been completed.***

DANGER ***Do not use the device where it is subjected to flammable or explosive gas.***

Description

- Housing – plastic, grey
- Terminal blocks – 2 terminal blocks (9 screw terminals)
- LED „POWER“ – lit when power supply is ON, flashes (1 Hz) when sensor failure
- miniUSB interface, protected with rubber cap – for connection to the PC

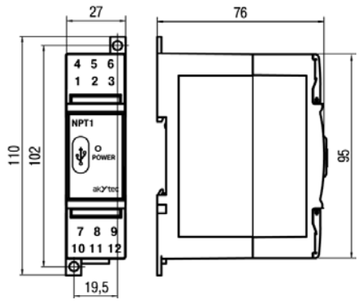

Fig. 1 Dimensions

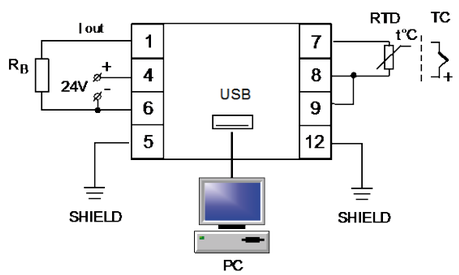

Fig. 2 Electrical connections

The device is protected against reverse polarity and input is protected against wire breakage and sensor short circuit.

Specifications

Table 1 General data

Power supply		24 (12…36) V DC
Current consumption	operation, max.	35 mA
	configuration, max.	50 mA
Analog inputs		1
Analog outputs		1
Accuracy	TC	0.5%
	RTD	0.25%
Linearity error	max.	±0.1%
Resolution ADC	TC	14 bit
	RTD	15 bit
RTD	circuit	2-wire or 3-wire
Lead resistance	per lead	100 ohm
	permissible deviation for 3-wire circuit	0.01% von R_0 [d]
Analog output		0(4)-20 mA
Characteristic curve for analog output		rising or falling
Resolution DAC		11 bit
Output ripple		0.6%
Permissible load		RB ≤ (U_V-12 V) / 0.02 A
PC interface		USB2.0 Full Speed
Setting time	max.	3 s
Galvanic isolation		none
Protection class		III
IP code		IP20
Ambient temperature		–40...+85 °C
Humidity		up to 95% (non-condensing)
Dimensions		27 x 110 x 78 mm
Weight		approx. 100 g

Table 2 Sensor types

Sensor	Measuring range, °C	Accuracy, % FS	Temperature drift, % [a]	Supply voltage drift, % [b]	Load drift, % [c]
Pt50	–200…+750	0.25	0.125	0.125	0.125
Pt100	–200…+750	0.25	0.125	0.125	0.125
Pt1000	– 200…+850	0.25	0.125	0.125	0.125
Ni100	–55...+175	0.25	0.125	0.125	0.125
J	–200…+1200	0.5	0.25	0.25	0.25
N	–200…+1300	0.5	0.25	0.25	0.25
K	–200…+1300	0.5	0.25	0.25	0.25
S	0…+1750	0.5	0.25	0.25	0.25
R	0…+1750	0.5	0.25	0.25	0.25
B	+200…+1800	0.5	0.25	0.25	0.25
T	–200…+400	0.5	0.25	0.25	0.25

a) % FS, per 10°C deviation from (20 ± 5)°C
b) % FS, within U_V = 12…36 V
c) % FS, within permissible load
d) R_0 – resistance at 0°C, for Pt100 R_0 = 100 ohm.

Configuration

The configuration software „NPT Configurator“ runs under Windows XP/Vista/7/8/10.
The software enables to configure the following parameters:

- Sensor type
- Measuring span [1]
- Output signal 0-20 mA or 4-20 mA
- Settings of the input filter (damping, bandwidth)
- Output signal at sensor failure (sensor break or shortcut) (20…24 mA)
- Besides the software enables to calibrate the transmitter.

[1] It is not recommended to set the measuring span less than 1/8 of the measuring range, otherwise the measuring accuracy will be reduced.

The NPT1 is a „Plug-and-play“ device. It is connected to the PC via shielded cable USB-miniUSB with a maximum length of 3 m (not included in the delivery). The driver will be installed after the connection has been completed. Wait until the installation is completed.

The entry „USB Serial Port“ with the port number appears in Device Manager.
Power supply in configuration mode is provided via USB interface.

WARNING ***The device may only be disconnected from the PC when the configuration is completed.***

NOTICE ***Before connecting the transmitter to the PC, the 24 V power supply must be switched off, otherwise the device will not be recognized by the system.***

Installation and commissioning

The electrical wiring should be performed after the device is mounted on the DIN rail or wall (see Fig. 2). The maximum wire size is 1.5 mm². While connecting the measuring device the maximum load RB should be taken into consideration (see Tab. 1).

Maintenance

The maintenance includes:

- Cleaning the enclosure and the terminals from dust, dirt and debris
- Checking the fastening of the device
- Checking the wiring (connecting leads, fastenings, mechanical damage).

The device should be cleaned with a damp cloth only. No abrasives or solvent-containing cleaners may be used. The safety guidelines in section ‘Application’ must be observed when carrying out maintenance.

Transportation and storage

Pack the device in such a way as to protect it reliably against impact for storage and transportation. The original packaging provides optimum protection. If the device is not taken immediately after delivery into operation, it must be carefully stored at a protected location. The device should not be stored in an atmosphere with chemically active substances.
Permitted storage temperature: -40…+85 °C

NOTICE ***The device may have been damaged during transportation.***

NOTICE ***Check the device for transport damage and completeness!***

NOTICE ***Report the transport damage immediately to the shipper and akYtec GmbH!***

Scope of delivery

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