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AT-1U

Analog Temperature Transmitters [0-10V]



www.fif.com.pl

F&F products are covered by an 24 months warranty from date of purchase

PURPOSE

AT-1U module is designed to measure temperature with an external temperature sensor and converting the measured quantity to an unified analog output signal the voltage from range 0-10V.

FUNCTIONING

AT-1U shall keep under continuous transformation the resistance of external temperature sensor to output voltage signal from the range 0-10V. As a result of the transformation appears on the output current proportional to the temperature of the environment in which is the temperature sensor

The module cooperate with a resistive temperature sensor KTY61-210 (or analogous) Dedicated the temperature probes of the production of F&F: RT probe or probe Rt823. Probes are available separately. The output signal of module is protected by noise filter, which eliminates interference network, affecting the accuracy of the transmitted signal. This allows the use of signal cables up to 20m

Installation

1. Take OFF the power.
2. Put the module on the rail.
3. Temperature probe connect to joints 10-12 (arbitrary polarity)
4. Power supply connect to joint 1-2 accordance to mark. Signal output 3 connect with analog input of receiver.

ATTENTION!!!! Maximum lenght of UTP cable - 20m

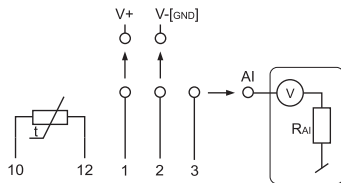
ATTENTION!!

Module AT-1U and receiving device can be powered from the same power supply. In the case when they are powered from two different power supplies should be connected with each other GND (-) both power to offset potentials. Otherwise, the measurement result will be saddled with a mistake.

ATTENTION!!

Module AT-1U work correctly with receivers with inner resistance (R_{AI}) of analog input more than 2k Ω . In the case of the input with resistance (R_{AI}) lower than 2k Ω , the measurement result will be saddled with a mistake.

WIRING DIAGRAM



Auxiliary calculation formulas

Based on a linear function $y=a*x+b$ calculate formulas

$$[1] \quad U_w = [0,06666 \times T_m + 3,333] \pm 1\%$$

$$\text{Where } a = \frac{10-0}{100-(-50)} = 0,06666$$

$$[2] \quad T_m = [15 \times U_w - 50] \pm 1\%$$

$$\text{Where } a = \frac{100-(-50)}{10-0} = 15$$

U_w - output voltage [V]

T_m - environment temperature of sensor [°C]

4±20mA - range of output current signal

-50±100[°C] - measure range of temperature sensor

±1% - precision of processing

Assembly

General assumptions

- recommended the use of filters and surge suppression (eg, OP-230)

-recommended is wiring to UTP (twisted pair) for connecting the module to another device

- In the case of shielded cables grounded screens performed only on one side and as close to the device

- not installed parallel signal wires in close proximity to the line and high voltage *średnie*

- do not install the module in close proximity to electrical devices, high-power electromagnetic measuring instruments, devices with phase power regulation, and other devices which can introduce distortions

TECHNICAL DATA

supply	9+30V DC
measure range	-50°C++100°C
mistake precision	±1,5°C
max. voltage	0+10V
temperature sensor	KTY81-210
working temperature	-40°C++85°C
storage temperature	-40°C++85°C
relative humidity	85% to +30°C
connection	screw terminals 2,5mm ²
dimensions	1 module (18mm)
protection level	IP20

Dedicated temperature probe [F&F]

mark	RT
temperature sensor	KTY81-210
sensor dimensions	Ø5; h=20mm
sensor isolation	heat shrink
cable	OMY 2x0,34mm ² ; l=2,5m

mark	RT823
temperature sensor	KTY81-210
sensor dimensions	Ø8; h=40mm
sensor isolation	metal bushing
cable	refractory SIHF 2x05mm ² ; l=2,5m

Working with programming controller MAX [F&F]

Example of program instruction in ForthLogic Language, reading of input current and convert the value of the measured to temperature.

1AI? 9.37 F* 87,5 F-

More information in the user programming in ForthLogic language

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