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AT-1U

Analogue
temperature transducer
[0÷10 V]

5 908312 594604

Do not dispose of this device in the trash along with other waste!
According to the Law on Waste, electro coming from households free of charge and can give any amount to up to that end point of collection, as well as to store the occasion of the purchase of new equipment (in accordance with the principle of old-for-new, regardless of brand). Electro thrown in the trash or abandoned in nature, pose a threat to the environment and human health.

Purpose

Transducer AT-1U is designed for temperature measurement by means of an external temperature sensor and converting the measured value to a unified, analogue, output voltage signal in the range of 0÷10 V.

Functioning

The AT-1U module continuously converts the resistance of an external temperature sensor to an output voltage signal in the range 0÷10 V. As a result of the transformation, a voltage proportional to the temperature of the environment in which the temperature sensor is located appears at the output.

The module works with a resistance temperature sensor type KTY81-210 (or equivalent).

Dedicated temperature probes manufactured by F&F: RT probe or RT2 probe. Probes available separately.

Due to the nature of the input signal, the maximum length of the signal cables (shielded) connecting the module to the analogue input should not exceed 20 m in length.

Auxiliary calculation formulas

Based on the linear function y=ax+b, let's calculate the formulas:
[1] Uw = [0,06666 × Tm + 3,333] ± 1%, where:

$$a=\frac{10-0}{100-(-55)}=0,06452$$

[2] Tm =[15 × Uw -55] ± 1%, where:

$$a=\frac{100-(-55)}{10-0}=15,5$$

Uw – output voltage [V]
Tm – temperature of sensor environment [°C]
0÷10 mA – signal output current range
-55÷100°C – temperature sensor measuring range
± 1%– conversion error

Mounting

Use of surge protectors and interference filters is recommended (e.g. OP-230 F&F).

Use of shielded twisted wires is recommended for connecting the unit to another device.

If using shielded cables, ground the screens on one side only and as close to the device as possible.

Do not lead signal cables parallel and in direct proximity to high- and medium-voltage line.

Don’t install the unit in direct proximity to high power receivers, electromagnetic measuring devices, appliances with phase power adjustment and any other devices that can create interferences.

1. Disconnect the power supply.
2. Install the module on the rail.
3. Connect the temperature probe to terminals 10-12 (polarity optional).
4. Connect the power supply to terminals 1-2 as marked. Connect signal output 3 to the analogue input of the receiving device.

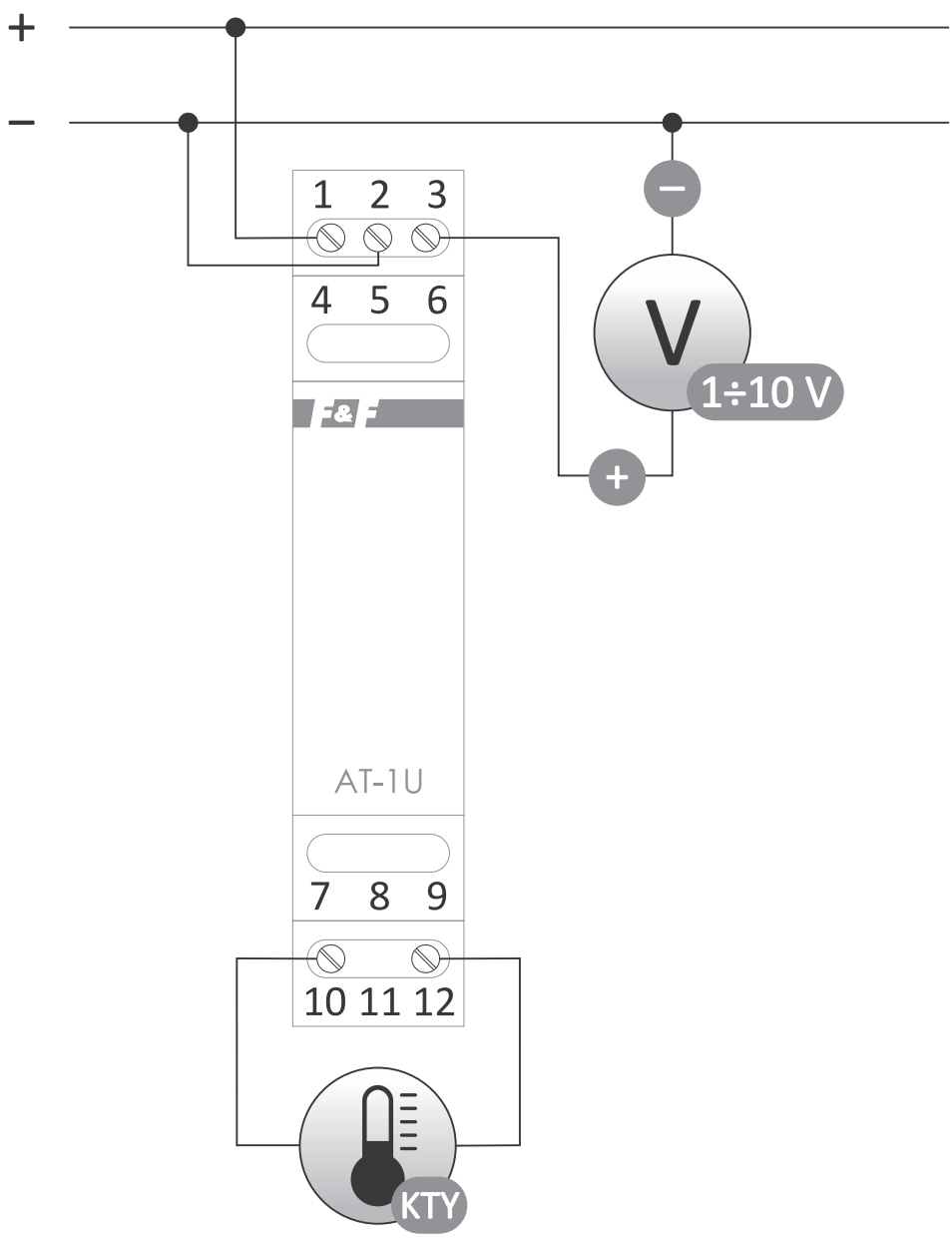
The length of the shielded cable should not exceed 20 m.

The AT-1U module and the receiving device can be supplied from the same power supply unit. If they are powered from two different power supplies, the GND outputs (?) of both power supplies should be connected together to equalize potentials. **Otherwise, the measurement result will be subject to error.**

The AT-1U module works correctly with receivers with an internal resistance (RAI) of the analogue input greater than 2 kΩ.

In the case of an input with a resistance RAI lower than 2 kΩ, the measurement result will be subject to error.

Wiring diagram



1-2 – power supply
3 – 0÷10 V voltage output
10-12 – KTY temperature sensor– power supply

Technical data

power supply	9÷30 V DC
measurement range	-50÷130°C
maximum measurement error	±1.5°C
output signal	0÷10 V
processing error	±0.5%
signal wire	20 m
temperature sensor	KTY
temeprature probe	RT/RT2
power consumption	0.8 W
working temperature	-20÷50°C
terminal	2.5 mm² screw terminals
tightening torque	0.4 Nm
dimensions	1 module (18 mm)
mounting	on TH-35 rail
ingress protection	IP20

Dedicated temperature probes

probe identification	RT
measurement range	-50÷130°C
temperature sensor	KTY81-210
sensor dimensions	ø5; H= 20 mm
sensor insulation	shrink sleeve
wire length	OMY 2×0.34 mm², L= 2.5 m
working temperature	-50÷65°C

probe identification	RT2
measurement range	-50÷130°C
temperature sensor	KTY81-210
sensor dimensions	ø8; H= 40 mm

sensor insulation	metal sleeve
wire length	heat-resistant SIHF 2×0.5 mm², L= 2.5 m
working temperature	-50÷130°C

Operation with MAX [F&F] programmable controller

Example of a programmatic instruction in ForthLogic to read an input voltage value and convert it to a measured temperature value:

```
1 AI? 15.0 F* 50.0 F-
```

For more information, see the Forthlogic programming guide.

Warranty

The F&F products are covered by a warranty of the 24 months from the date of purchase. Effective only with proof of purchase. Contact your dealer or directly with us.

CE declaration

F&F Filipowski L.P declares that the device is in conformity with the essential requirements of The Low Voltage Directive (LVD) 2014/35/EU.
The CE Declaration of Conformity, along with the references to the standards in relation to which conformity is declared, can be found at www.fif.com.pl on the product page: www.fif.com.pl from the product subpage.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