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AC-1I 5A

ANALOG CURRENT CONVERTER [4-20mA]

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

PURPOSE

The AC-1I module is designed to measure AC current and converting the measured value to an analog output signal unifity current in the range 4÷20 mA.

FUNCTIONING

The AC-1I is adapted for cooperate with current transformers with secondary current 5A.
The transmitter measures the current flowing through the measurement input I_{in} Current measured value from 0÷5A is proportionally converted to a DC output I_{out} signal in the range 4÷20 mA.
The transmitter measures the rms current TrueRMS, which ensures high measurement accuracy even with distorted waveforms.Signal output module is secured suppression filter, which eliminates interference network, affecting the accuracy of the transmitted signal. This allows the use of signal cables up to 300m.

Installation

1. Take off the power.
2. Put the module on the rail.
3. Power supply of module connect to joints 10(-)-12(+) [U_{pow}]
4. Circuit of measured current(transformer secondary winding) connect in the series to 1-3 [I_{in}]. Any polarity.
5. The output signal 11 '(+) [I_{out}] connected to the analog input (AI) current of the receiving device. ATTENTION! Both devices must have a single point GND (-). ATTENTION! The maximum length of the cable (UTP) is 300m.
Optional to terminals 11-11 '[I_{out}] can be connected to an ammeter or other current measuring device.

ATTENTION!

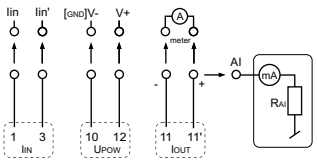
Because of the differences between the internal resistance (R_{AI}) current analog devices that can be used with the AC- 1I module it is necessary to supply the module voltage for V +. The minimum voltage value can be calculated from the formula

$$U_{V+} > \frac{R_{AI}[\Omega]+400}{50}\ [V]$$

R_{IA} - internal resistance of the receiving device inputs.

In the case of module supply voltage lower than the required measurement result will be an error.

Wiring diagram



Computational Models of Support

Based on linear y=ax+b we have formula;:

[1] $I_{out} = [3{,}2 \times I_m + 4] \pm 0{,}5\%$

$$\text{where } a = \frac{20-4}{5-0} = 3{,}2$$

[2] $I_m = [0{,}3125 \times I_{out} - 1{,}25] \pm 0{,}5\%$

$$\text{where } a = \frac{5-0}{20-4} = 0{,}3125$$

I_{out} - output current [mA]
I_m - measured current [A]
4÷20[mA] - range of current of signal output
0÷5[A] - range of measure of measured current
± 0,5% - processing error

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 średniegi
- 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*
range of measuer TrueRMS	
current	*0÷5AC*
voltage	*<285V AC*
max. current load I_{in}	*<10A AC*
permissible overload	*100A/100msek*
output signal	*4÷20mA*
lenght of signal cable	*300m*
breakdown voltage IN->OUT	*2,1KV*
max measure mistake	*±0,2A*
processing mistake	*±0,5%*
power consumption	*0,8W*
working temperature	*-20°C÷+50°C*
relative humidity	*85% to +30°C*
connection	*screw terminals 2,5mm^2*
dimensions	*1 module (18mm)*
fixing	*on the rail TH-35*
protection level	*IP20*

Working with programming controller MAX [F&F].

Example of curriculum instruction in ForthLogic language of reading the values and converting the current value of the measured intensity:

1 AI? 0,3125 F 1,25 F-*

More information in programming instruction with ForthLogic language.

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