

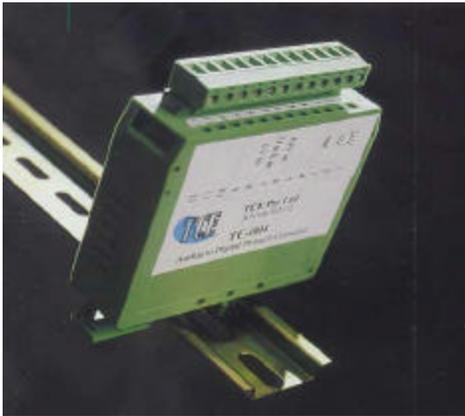
TC-004 Analog / Digital Converter

What is it?

The TC-004 Analog / Digital Converter is a unique device designed measure an analog input and to transmit to a PLC digital input. Although it requires only one normal digital 24VDC input on the PLC, it provides an accurate analog measurement for use in the PLC program.

What does it look like?

It is packaged in a standard Phoenix DIN Rail mounting enclosure, with a removable 12-way screw terminal strip.



How does it work?

It measures the analog input, 0 - 21mA or 0 - 10V. It then outputs the measurement as a low speed serial pulse train to a standard PLC digital input.

The PLC receives 16 bits of data in a format ready to load into a 16 bit data register. The PLC register ends up containing the value of the measured analog value as 0 – 32767.

Is it compatible?

The PLC digital input does not need to be a high speed or counter type input. Any normal 24VDC digital input is suitable.

The rate of data transmission is selected to allow non-time critical operation of the receiving PLC. The shortest pulse time is 100mS, so the PLC needs normally very easy to achieve.

A small section of ladder program collects and interprets the pulses in sequence and loads a register with the measured temperature value.

There is no particular limit to the number of TC004 transmitters that can be used with a single PLC. It depends only on the number of inputs and program and data memory available.

It uses the same protocol as the TC-003 Digital RTD Transmitter.

Specifications

Data format

Start pulse and 16 data bits, 2's complement binary code, MSB first, °C x 10.

Start pulse

500mS +ve , 100mS -ve

Data pulse

Binary 0 100mS +ve, 200mS -ve
Binary 1 200mS +ve, 100mS -ve

Rate

One reading every 8 seconds

Accuracy

Current 21mA ±0.2%
Voltage 0 – 10V ±0.3%

Range

0- 21mA, 0 – 10V

Resolution

Full scale 32767 counts

Power Supply

24VDC , 20mA
min 18V, max 30V

Connection

3-Wire
+24VDC, 0VDC, output
0V connection is connected to input 0 terminal

Input

21mA into 7.5 ohms approx.
10V into 100k ohms

Output

- ❖ 24VDC “push-pull”, 100mA.
- ❖ Output connection switches between 0V and +24VDC to operate correctly with normal PLC 24VDC sink or source input (“PNP” or “NPN”) .
- ❖ Output is short -circuit, overload and reverse polarity protected.

Transient protection

- ❖ Transients above 33V are absorbed by Tranzorb surge suppressors.
- ❖ Continuous DC operation above 33V will destroy the sensor.

Physical

- ❖ 25mm wide, 76mm high, 110mm deep (from mounting panel including terminals
- ❖ 12 way plug-in Screw terminal block