

Temperature transmitter

KC-7730T



Temperature transmitter(KC-7730T)

Product Introduction

The KC-7730T smart transmitter is based on an MCU CPU for logic operations, with analog circuits integrated with digital circuits. Isolation technology is employed between the power supply, sensor signal acquisition, and RS485 digital communication, ensuring stable operation of the circuit board under harsh conditions. It features a 20-bit ADC high-precision acquisition and conversion module, an effective fully isolated processing circuit, and the Modbus RTU standard protocol.

Product Features

(For multi-measurement)

- 4-wires: 2 power + 2 communication.
- Multi-point linear calibration.
- Accuracy: $\pm 0.5\%$ FS (Optional: $\pm 0.25\%$ FS)
- Measurement range: Up to 20-bit ADC.
- RS485 communication: DC-DC
- MODBUS data communication.

Product Features

- Measuring Range: -40 to +600°C
- Accuracy: $\pm 0.5\%$ FS, $\pm 0.25\%$ FS
- Display Mode: LCD, Up to 6-digit dynamic display
- Power: DC24V (18~36VDC)
- Response Frequency: $\leq 500\text{Hz}$
- Stability: $\pm 0.1\%$ FS/year



Application Sizes and Materials

- Pressure Connection: PT, NPT, PF
- Process Fluid Wetted Material (Diaphragm): SS316L
- Sensor Body Material: SS304 or SS316
- Housing Material: Aluminum ALDC 21.1
- Weight: Approx. 1.5 kg
- KC-8200 Series

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Standard specifications

Temperature compensation and sensor accuracy:

Digital temperature compensation : Laser trimming technics Wide temperature compensation :

-10 to 70 °C / 0 to 70 °C (7 / 20 / 35 kPa)

Long term stability : 0.1 % FS per year

Basic conditions:

Reference temperature : 25 ± 1 °C

Vibration : Max. 0.1g (1m/s²)

Humidity : 80 ± 10 %RH

Local air pressure : 100 ± 5 kPa

Performance specifications:

Thermal sensitivity : ± 0.2 % FS in reference temperature to typical

Thermal zero shift : ± 0.2 % FS in reference temperature to typical

Thermal hysteresis : ± 0.1 % FS in reference temperature to typical

Engineering Units:

Pressure : kPa / MPa / mbar / bar / mmH2O / mmHg / torr / psi / kg/cm² / atm / inHg

Environmental conditions:

Ambient / Process temperature : - 20 to 70 °C

Storage temperature range : - 20 to 70 °C

Input power:

Voltage supply : DC 24V (Min. 12V to Max. 30V)

Load resistance : Max. 500 Ω at 24V / Power ripple : ≤ 500 mV P-P

Reverse polarity : Protected / Wire size : AWG 20

Output signal:

2-wire loop power / Analog 4 to 20 mA DC

Physical performance:

Process connection : PT 1/4 / 3/8 / 1/2 male thread

Electrical connection : Cable gland port PF 1/2 female

Shock : No change at 10 g RMS / 20 to 2000 Hz

Impact : 100g / 11ms

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RS-485

It adopts fixed communication parameter settings that cannot be modified by the user. The parameters are as follows:

1. Baud rate : 9600
2. Data bits : 8
3. Stop bit : 1
4. Check bit : None

Detailed description of MODBUS-RTU commands(Assuming transmitter address is 0x05)

Communication adopts Master--Slave mode, Master is master station, Slave is transmitter. CRC_H: CRC checking high byte, CRC_L: CRC checking low byte.

Read measured value (Temperature value)

Master: 0x05 0x03 0x00 0x00 0x00 0x02 CRC_H CRC_L Slave: 0x05 0x03 0x04 XX
XX XX XX CRC_H CRC_L

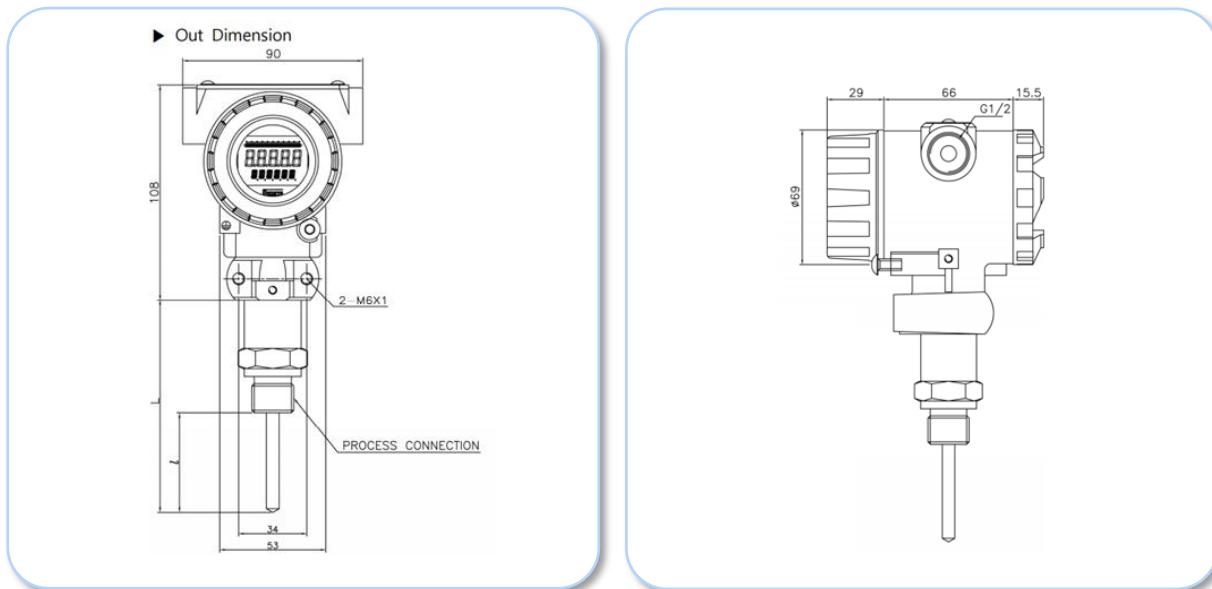
Explanation: (XX XX XX XX is temperature value single precision floating point number)

Read measured value (Temperature value + board temperature value)

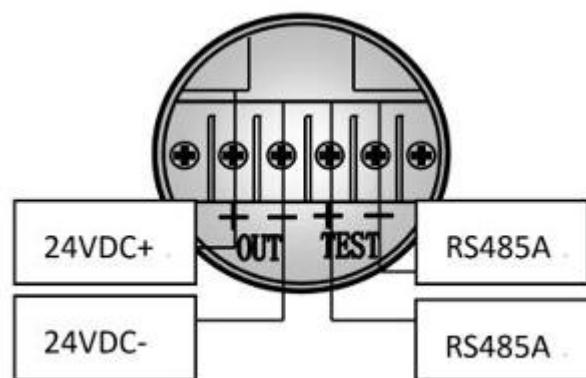
Master: 0x05 0x03 0x00 0x00 0x00 0x04 CRC_H CRC_L
Slave: 0x05 0x03 0x08 XX XX XX YY YY YY YY CRC_H CRC_L
Explanation: (XX XX XX XX is temperature value single precision floating point number. YY YY YY YY is board temperature value single precision floating point number. Unit is °C)

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Drawing dimensions



wiring diagram



Temperature transmitter(KC-7730T)

Oder code

KC-7730T = - - - - P - - - V - -

1 2 3 4 5 6 7 8 9 10

Temperature type	Code 1
Sheath RTD 6.4	S
RTD 6.0	R
Agency approved, customer spec'	W

Input power	Code 5
DC 24 V ±10 %, 30 mA	2
Agency approved, customer spec'	W

Requirements	Code 9
Test Report (by Manufacturer)	T1
Calibration (by KOLAS)	T2
Material Certificate (Mill Sheet)	M1
Recoder, Indicator, Controller	R/I/C
Thermo Well (Drilled or Endclosed)	TW
Agency approved, customer spec'	W

wire connector	Code 2
G(PF)1/2" Female	G
Agency approved, customer spec'	W

Output signal	Code 6
DC 4 ~ 20mA Hart 2-wire	4
RS-485 (Option)	R
Agency approved, customer spec'	W

Option	Code 10
Agency approved, customer spec'	W

Process access	Code 3
PT 1/2"	O
Agency approved, customer spec'	W

Display	Code 7
Digital Display (LCD)	DD
Agency approved, customer spec'	W

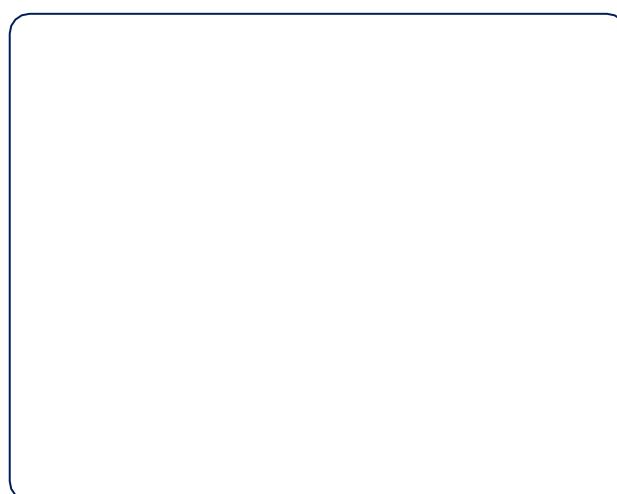
Temperature range	Code 4
0 ~ 100°C	1
0 ~ 200°C	2
0 ~ 300°C	3
0 ~ 400°C	4
0 ~ 500°C	5
0 ~ 600°C	6
Agency approved, customer spec'	W

Sensor length	Code 8
100L	1
200L	2
300L	3
400L	4
500L	5
Agency approved, customer spec'	W



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