

KOS203TC KOS203TC-2

PUSH BUTTON THERMOCOUPLE TEMPERATURE TRANSMITTER



Ekos203tcmannual.doc

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WARRANTY



The instruments are warranted against defective materials and workmanship for a period of three years from date of delivery.

If a product appears to have a defect or fails during the normal use within the warranty period, please contact the distributor from which you purchased the product.

This warranty does not apply to defects resulting from action of the buyer such as mishandling or improper interfacing.

The liability under this warranty shall extend only to the repair of the instrument. No responsibility is assumed by the manufacturer for any damage which may result from its use.

KOSMOS SERIES

1.0 DESCRIPTION

The transmitter is an in head 4-20mA transmitter that connects to a standard thermocouple sensor and converts the sensor temperature to a 4-20mA signal.

An LED provides visual indication of sensor fault and programming mode. The transmitter is simply ranged and calibrated on the bench by using a single on-board push button switch, without the need for soldering links. Digital technology ensures accurate and drift free linearisation to common curves, providing a level of performance not possible with earlier analogue types.

2.0 SPECIFICATION @25°C

2.1 INPUT

Input Type	KOS203TC	K -200 to 1370°C J -200 to 1200°C T -200 to 400°C
	KOS203TC-2	R - 0 to 1760°C S - 0 to 1760°C B - 0 to 1820°C

Accuracy $\pm 0.04\%$ FS $\pm 0.04\%$ rdg or 0.5°C (which ever is greater)

Linearisation BS4937 / IEC 584, EN60584
Cold junction tracking 0.02°C/°C
Cold junction range -20 to 70°C
Min. Span 10°C
Sensor Lead Length Maximum length 3 metres to maintain CE compliance

Sample Rate 500mS

2.2 OUTPUT

Output 4 to 20mA, 2 wire loop powered
Maximum Output Range 3.8 to 22mA
Operating Voltage 8 to 30V DC

Burnout Up-Scale ≥ 21 mA (Down scale to order)
Red programming LED comes on when Temperature is outside operating range

Protection Reverse Polarity Protected
Input/Output Isolation 50V DC (tested to 200V)
Warm-up time 2 minutes to full accuracy

EMC BS EN61326

Ambient Temp. Range -20 to 70°C
Ambient Humidity 0 to 95% (non condensing)
Ambient Storage -40 to 90°C
Calibration period 12 months to maintain published Specification. 5 years to twice specification.

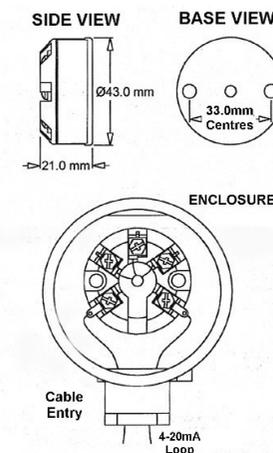
Dimension 43mm Diameter 21 mm Height
Weight 26 grams

Default range Type K 0-1000°C

3.0 INSTALLATION

3.1 Mechanical

This transmitter has been specifically designed to be mounted inside a DIN Standard probe head enclosure, which must provide adequate protection from moisture, corrosive atmosphere etc. All cable entries should be sealed using the correct size cable gland. Care must be taken when locating the transmitter to ensure the ambient temperature will remain inside the specified range of -20 to 70°C. The diagrams show the mechanical layout and typical application of the transmitter mounted inside a probe head enclosure, with sensor wires entering through the center hole.



3.2 Electrical

Connections to the transmitter are made to the screw terminals provided on the top face. To maintain CE compliance, input wires must be less than 3 metres in length and output wiring must be screened cable with the screen earthed at one end only. A hole is provided through the centre of the transmitter to allow sensor wires, (entering direct from the probe assembly via a base entry) to be threaded through the transmitter body, direct to the input screw terminals. The screw terminals have been designed to allow all connection wires to enter from either an inner or outer direction.

The transmitter is protected against reverse connection, therefore incorrect connection of the output wires will result in near zero current flow in the loop. On power-up the LED also indicates the thermocouple type by flashing once, twice, or three times, the number of flashes representing the index of the thermocouple type shown on the transmitter label.

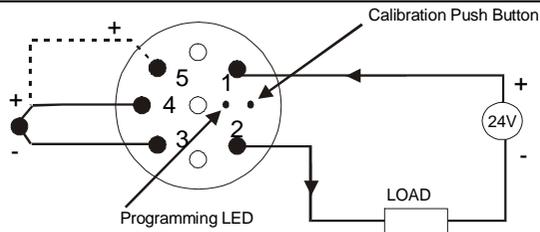


Figure 2

KOS203TC	TC TYPE	K	J	T	SUPPLY	
	LED	•	••	•••		
PIN N°	+	4	5	4	+	1
	-	3	3	3	-	2

KOS203TC-2	TC TYPE	R	S	B	SUPPLY	
	LED	•	••	•••		
PIN N°	+	4	4	4	+	1
	-	3	3	3	-	2

Care must be taken when designing the 4-20mA circuit to ensure that the total burden of the loop, that is the total voltage requirements of all the equipment in the loop added together, does not exceed the power supply voltage. If a number of devices are connected in the loop ensure that only one instrument is tied to ground. Grounding the loop at two points will result in shorting out part of the loop and therefore any transmitters in that part of the loop will not operate.

Maximum load resistor, R_L is calculated as follows:

$$R_L = (V-8)/20 \times 1000$$

For 24V supply:

$$R_L = (24-8)/20 \times 1000$$

3.3 EMC

This transmitter conforms with EC directives BS EN 61326 when correctly installed in a termination head providing at least IP20 protection and filled with a sensor with less than 3 metres of cable.

4.0 RANGES

With the aid of suitable equipment, this transmitter can be programmed to a different range by following the simple procedure listed below.

4.1 Equipment

The following apparatus will be required in order to re-range the transmitter.

- Power supply voltage between 24VDC, 30mA min. current
- TC Calibrator
- Connecting cables including TC compensation cables.
- 3mm Diameter screw driver or similar device.
- Current meter 0-20mA to monitor loop current (optional).

4.2 Method

Refer to Figure 2 and 3 for correct connection and type setting details, this information is duplicated on the transmitter side label.

4.2.1 Setting the thermocouple Type

Each transmitter accepts three different thermocouple types as shown on the side label. At switch on the indicator flashes the appropriate number of times to indicate the thermocouple type selected.

The thermocouple type may be changed by performing the following procedure:

1. Power on the transmitter with the programming switch depressed (Press the programming switch by inserting a 3mm diameter screwdriver blade through the programming hole, located in the top face of the transmitter housing).
2. Release the programming switch and press the switch down 1, 2, or 3 times depending upon the TC type required.
3. After approximately 5 seconds timeout the instrument will restart and confirm the TC type by flashing the LED the number of times programmed.

4.2.2 Setting the Range

1. Connect circuit as shown in Figure 3 and set the TC calibrator for temperature required at 4mA, switch on and allow 2 minutes warm up time (for best accuracy).
2. Press and hold the programming switch by inserting a 3mm diameter screwdriver blade through the programming hole, located in the top face of the transmitter housing. Hold the switch for approximately 5 seconds, until the RED programming led flashes. Release the switch.
3. Set the calibrator for the required temperature at 20mA. Allow 10 seconds setting time, then press and release the programming switch. The programming LED will flash quickly for a few moments, then go out. The transmitter is now ranged.
4. Check the transmitter output range is correct by setting the calibrator to the 4mA and then 20mA settings, checking the output current reading on the meter.

4.3 Calibration Circuit

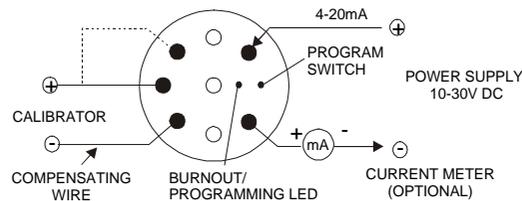


Figure 3

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