

KOS1500/TC

ISOLATED THERMOCOUPLE TRANSMITTER

Y2K
YEAR 2000
COMPLIANT



kos1500tcmanualB.doc

30727051

Oct.99

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.

1.0 DESCRIPTION

The KOS1500/TC is a low cost isolated thermocouple two wire 4-20mA output temperature transmitter. Automatic thermocouple cold junction compensation is provided. The output is directly referenced to the mV input, allowing linearisation to be carried out by the loop monitoring instrumentation, if required. The device is housed inside a plastic enclosure, suitable for DIN rail mounting. Screw terminals are provided for wire connections. The enclosure provides access to side entry coarse offset and span adjusters together with a thermocouple selector.

2.0 SPECIFICATIONS @20°C

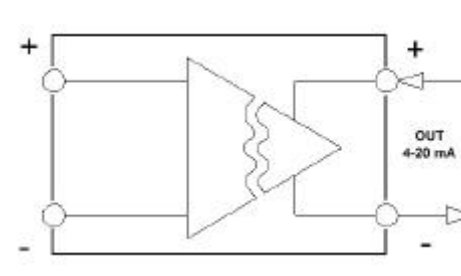
OUTPUT	TYPE	Passive 2 wire current output
	RANGE	4 a 20mA (30mA MAX)
	PROTECTION	Reverse connection plus overvoltage
	VOLTAGE	10 - 30V DC
	RIPPLE	Less than 40µA/V (Measured at 1V ripple 50Hz)
	RESPONSE	200mS to reach 70% of final value

INPUT	TYPE	Isolated mV input to accept mV or Thermocouples type K, T, N, J, R, S.
	ISOLATION	500V DC (Test FLASH a 1KV)
	IMPEDANCE	>1MΩ
	COLD JUNCTION	Automatic compensation may be Selected for the above TC or zero compensation may be selected for mV or differential TC measurement.
	ACCURACY (Typical)	±0.2°C @ 20°C ambient ±0.05°C/°C
	LINEARITY	± 0.005% for mV input TC Ranges are not linear and directly referenced to TC mV
	BURN OUT	Up scale standard (down scale burnout to order)
	RANGE SELECT	Coarse settings by side entry 16 Position rotary screw adjustment switches. Fine by front access pots

RANGES	OFFSET °C	SPAN°C
	4mA reading	for 4-20mA
K	-200 a 400	100 a 1200
T	-200 a 300	100 a 400
J	-200 a 300	70 a 750
N	-200 a 400	150 a 1200
R	0 a 1000	500 a 1700
S	0 a 1000	500 a 1760
mV	-5 a 15mV	3 a 50mV

*Also suitable for differential Thermocouple input.

GENERAL AMBIENT	0-50°C; 10-95% RH non condensing.
CONNECTION	Captive clamp screws.
CABLE SIZE	4mm ² solid / 2.5mm ² stranded
CASE MATERIAL	Grey Polyamide
FLAMMABILITY	UL94-VO VDE 0304 Part 3 level IIIA
DIMENSIONS	60 x 60 x 12.5 mm
MOUNTING	DIN rail EN 50022-35
WEIGHT	45g.
COMPLIANT WITH	EN50081-1 EN50082-1



3.0 INSTALLATION

3.1 MECHANICAL

This transmitter must be housed within a suitable enclosure that will provide protection from the external environment, ensuring that the stated temperature and humidity operating ranges are not exceeded. It is good practice to mount the transmitter away from sources of electrical and magnetic radiated noise, such as switchgear and transformers. The KOS1500TC enclosure is designed to snap fit onto a standard "TOP HAT" DIN rail. To remove from rail, apply pressure at the bottom face at the back upwards towards the rail to release the spring clip and tip away from the top. The transmitter may be mounted in any orientation and stacked side by side along the rail. Span and offset adjustments can be made from the front panel, whilst re-ranging the transmitter requires access to adjusters in the case side.

3.2 ELECTRICAL

Connection to the transmitter are made via screw terminals. To maintain EMC compliance twisted pair (screened) cables are recommended for the signal connections. The correct type of wire must be used for sensor connections, compensating wire for thermocouple inputs, mV inputs must use screened copper wires. Incorrect sensor connection or sensor wire burnout will result in the output current saturating up scale on standard units (optionally downscale if requested at time of order).

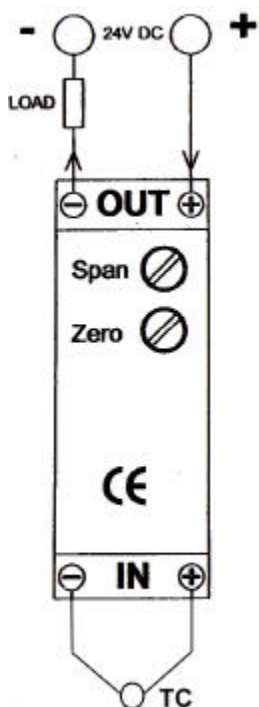
Is a good practice to ensure all 4-20mA signal loops are grounded at one point. Care must be taken when designing a 4-20mA circuit to ensure that the local burden of the loop, (that is the total voltage requirement of all the equipment connected in the loop at 20mA) does not exceed the loop power supply voltage.

To operate correctly the KOS1500TC requires a minimum of 10V across it's output terminals.

The transmitter is protected against reverse connection and over voltage. Figure 1 shows a typical 4-20mA circuit, the load resistor represents equipment such as indicators, loggers, PLC, etc.

KOSMOS SERIES

Figure 1



4.0 RANGES

The KOS1500TC is normally supplied factory ranged but if required the transmitter range can be changed by means of coarse, and multi turn fine, offset and span adjustment.

The following equipment is required :

- Precision mV/Thermocouple calibrator, to simulate T/C input.
- Milliamp meter(digital) ; accuracy 0.05% on 0 a 20mA range
- Power supply 24VDC 30mA Min.
- Trim tool.

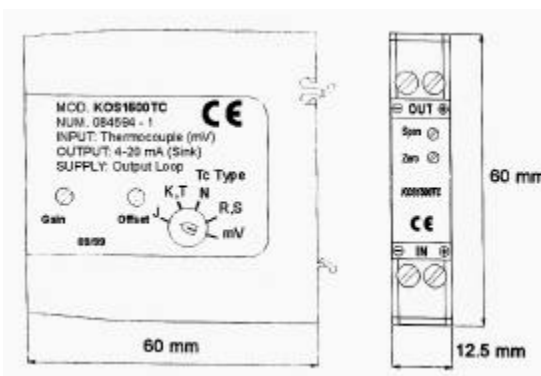
Decide on the range required and ensure the transmitter is capable of this range. If a range was not especified at time order, the transmitter will leave the factory set as type K 0 to 1000°C.

1. Connect calibrator to input terminals using the correct cable type, ensure polarity is correct . Connect as above, with the mA meters in place of, or in series with the load. Turn on. Allow a few minutes before calibration to allow the transmitter to stabilise after handling. Set Type selector on side panel to the type of input required, i.e. T/C type or mV.

Let Tlo = Temperature (mV) at 4-20mA output, Thi = Temperature (mV) at 20mA output.

2. Set calibrator to simulate Tlo, first rotate offset (coarse) to obtain a output reading close to 4mA. Use zero adjuster to trim reading to $4mA \pm 0.005mA$. (If zero trim reaches end of travel re-adjust coarse offset adjuster one step then re-adjust zero offset).
3. Set calibrator to Thi, first rotate coarse gain to obtain a output reading close to 20mA. Use span adjuster to trim reading to $20mA \pm 0.005mA$. (If span trim reaches end of travel re-adjust coarse gain adjuster one step and re-adjust fine span. Note clockwise rotation of the coarse adjuster reduces output current)
4. Set calibrator to Tlo, adjust zero offset for $4.00mA \pm 0.005mA$.
5. Set calibrator to Thi, adjust span for $20mA \pm 0.005mA$
6. Repeat steps 4 , 5 until both points are in calibration.
7. Turn off power and remove wires. Mark transmitter with the new range.

5.0 MECHANICAL DETAILS



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