

KOS1401

LOOP POWERED TRIP AMPLIFIER 1 RELAY

Y2K
YEAR 2000
COMPLIANT



kos1401manualB.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 SPECIFICATIONS

1.1 KOS1401 LOOP POWERED TRIP

INPUT

Type Two wire 4-20mA, 50mA Max.
Protection Reverse connection protected.
Loop Drop 5V Max.

OUTPUT

Alarm HIGH or LOW level switch selected, side entry.
Contact Single Relay Changeover with NO/NC contacts available.
Rating Resistive Load 2^a@250V AC/125V DC
Max. Power 150W (Inductive Loads).

Indication Alarm LED on module front face
Setpoint 0-100% multi turn potentiometer, access on module front face (Repeatability ±0.2%)

Hysteresis 0.1-5% Single turn trim pot on module front face
Delay 0.5 second fixed delay

Failure mode On loss of signal: HIGH level No alarm condition
LOW level Alarm condition

(i.e. Alarm operates as if signal has fallen to -25% or 0mA)
Min. Current 3.5mA

1.2 GENERAL SPECIFICATIONS

Isolation 3000V AC rms between contacts and inputs
1000V AC rms between contacts

Ambient 0-50°C ; 10-95% RH non condensing

Connection Captive clamp screws

Cable Size 4mm² solid / 2.5 mm² stranded

Case Material Grey Polyamide

Case Flammability To UL94-V0 VDE 0304 pt3 Level IIIA

Dimensions 60 x 60 x 21 (67.5mm above rail)

Mounting Snap on top hat (DIN EN 50022-35)

Max Vibration 12G 10 to 55 Hz at double amplitude 2mm

Shock Res 12G

Compliant with EN50081-1, EN50082-1

Weight 100grams

2.0 INSTALLATION

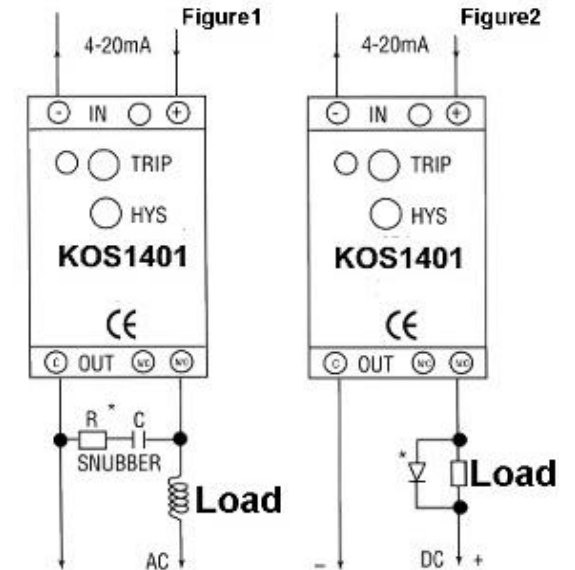
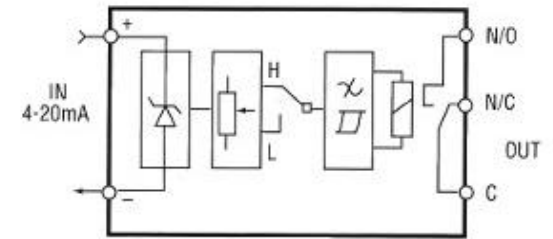
WARNING - Hazardous voltages may be present on the terminals – the equipment must be installed by suitably qualified personnel and mounted in an enclosure providing protection to at least IP20.

WARNING – If not installed and used in accordance with these instructions, protection against hazards may be impaired.

(IMPORTANT NOTE it may be preferred to set the user adjustment on the bench prior to installation).

2.1 MECHANICAL

This trip must be housed within a suitable enclosure that will provide protection from the external environment, to ensure that the stated temperature and humidity operating ranges are maintained. As KOS1401 contains a high quality relay, care must be taken to ensure the trip is not subjected to strong shock or vibration, as this may result in momentary opening of the relay contacts. The KOS1401 must not be located near a strong magnetic field, such as a transformer, solenoid or electric motor. The KOS1401 case is designed to snap fit onto a standard "TOP HAT" DIN rail. To remove from DIN rail, apply pressure at the bottom face of the back upwards towards the rail to release the spring clip and tip away from the top. The trip may be mounted in any orientation and stacked side by side along the rail.



2.2 ELECTRICAL

Connections to the trip are made via screw terminals, with wire protector plates provided inside each terminal. To maintain CE compliance twisted pair (screened) cables are recommended for signal connections. It is also good practice to ensure that all 4-20mA loops are grounded at a single point. Before installation ensure the 4-20mA loop has enough voltage available to drive the trip. Refer to the above specification for the loop voltage drop. The change over contacts provided by the KOS1401 are capable of switching 250V AC 125V DC @ 2 A resistive load, 150 Watts inductive load. Internal Varistors are connected across the contacts to protect against over voltage. It is advised that an external RC snubber network is used when switching inductive AC loads (see fig 1). When switching DC inductive loads, a diode connected in parallel with the inductor must be used to protect the contact from the energy stored in the inductor (see fig 2).

Installation overvoltage category 2 (BS EN61010-1)

- If the equipment is to be used in environments with overvoltage category 3, transient suppressors should be installed on wiring carrying greater than 50VAC or 75VDC.
- Any power supply to the equipment greater than 50VAC or 75VDC must be protected by a suitable fuse and a switch or circuit breaker which should be near the equipment.
- The equipment contains no user serviceable parts..

4.0 ALARM TRIP SETUP

Note: Latching relays are used in this product in conjunction with an advanced relay drive circuit. During commissioning, on initial power up, or after switch settings have been modified, one trip operation must be completed in order to synchronise the latching relay. Once this cycle has been completed the unit will function correctly during normal operation cycles. On power down the trip contacts will rest as for a -25% (0mA) process value and take this state indefinitely until power up. The initial power up cycle will only be required again if the unit switch settings are changed, or the unit is removed from the installation and is subjected to shocks greater than 12G, i.e. during transit.

This section deals with the trip setup. Three adjustments are available to the user :

- High/Low alarm selection switch located on the side of the trip .
- Setpoint adjustment – single turn front panel potentiometer provides 0-100% setpoint range.
- Hysteresis adjustment , single turn potentiometer located on front panel provides 0.1 to 5% setpoint hysteresis. Hysteresis is provided to stop relay chatter at the trip point, the amount of hysteresis required will be dependent on the process signal noise.

A red LED indicates alarm states ON.

With care, the KOS1401 trip setpoint may be set up in the process but the task is greatly simplified by replacing the process signal with an adjustable 4-20mA current source, to simulate the 4-20mA process signal.

The set up process is as follows:

- First decide on the type of trip required, "High" for alarm ON state above setpoint, or "low" for alarm ON state below setpoint. Set the High/Low alarm selection switch on the side of the enclosure to the desired setting, by inserting a 3mm blade screw driver into the hole and apply one press against the switch plunger. This will toggle the switch between the two alarm settings being:

High alarm state – plunger out (flush with the enclosure inside face)

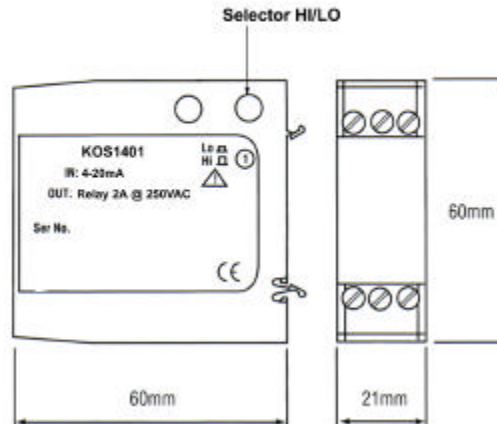
Low alarm state – plunger in (depressed below inside face)

- Using a 3mm screw driver, turn the Hysteresis control full anticlockwise to set the hysteresis to 0.1%
- Set the process current to the desired trip alarm setting, then using a 3mm screw driver adjust the setpoint until the alarm changes state. Clockwise to increase, anticlockwise to decrease. Adjust the setpoint backwards and forwards until it is positioned at the point at which the alarm LED has just come on.
- Set the hysteresis control to the desired value, as a guide fully clockwise sets 5%, mid position 2.5%.
- Now raise and lower the process input signal about the trip setting and ensure the alarm trips at the setpoint and trips off at setpoint plus (minus) hysteresis. If required fine adjust settings.
- Now fully operate the system, it may be found necessary to adjust the hysteresis setting during operation depending upon the fluctuation on noise present on the process signal.

4.0 OPERATION

Once setup and operating satisfactorily the trip amplifier requires no further user adjustments.

5.0 MECHANICAL DETAIL



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