KOS1402

LOOP POWERED TRIP AMPLIFIER

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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 responsability is assumed by the manufacturer for any damage which may result from its use.

KOSMOS SERIES

1.0 SPECIFICATION @20ºC
1.1 KOS1402 LOOP POWERED TRIP

Input	
Type	2 wires 4-20mA, 50mA Max
Protection	Reverse conection protected
Loop Drop	5V MAX
Output	
Alarms	2x high/low alarms selected by switches (side entry)
Contact	2 x N.O. relay contacts with shared common
Rating	Resistive load 2A @ 250V AC/125V DC Max Power 150W (Inductive Loads)
Indication	2 x Alarm LED on module front face
Setpoint	0-100% multi turn trip set potentiometer,(access on module front face). (Repeatability ±0.2%)
Hysteresis	Fixed at 0.5%
Delay	0.5 second fixed delay
Failure mode	On loss of signal: High level: no alarm condition Low level: Alarm condition (ie Alarm operates as if signal has fallen to -25% or 0mA)
Minimum Current	3.5mA

1.2 GENERAL SPECIFICATIONS

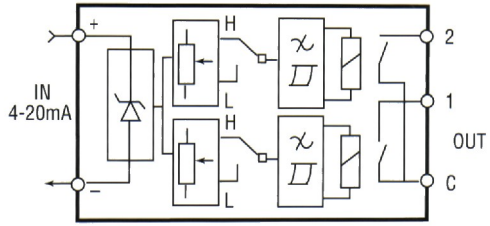
Isolation	3000VAC rms between contacts and input 1000VAC rms between contacts
Ambient	0-50ºC; 10-95% RH non condensing
Conection	Captive clamp screws
Cable size	4mm sq solid / 2.5mm sq stranded
Case material	Grey Polyamide
Case Flammability	UL94-V0 VDE 0304 pt3 level IIIA
Dimensions	60x60x21mm
Mounting	Rail DIN EN 50022-35
Max Vibration	12G 10 to 55Hz at double amplitude 2mm
Shock Res	12G
Compliant with	EN50081-1, EN50082-1
Weight	60g

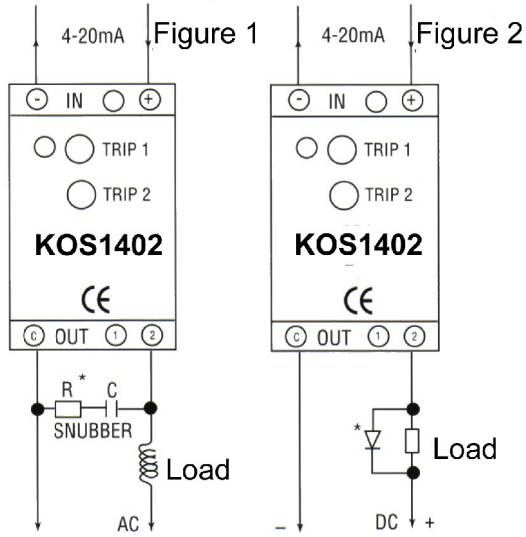
2.0 INSTALLATION

Warning - Hazardous voltages may be present on the terminals - the equipment must be installed by suitability 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 preferable to set the user adjustment on the bench prior installation. Please read Section 2 before installation).

2.1 MECHANICAL
This trip must be housed within a suitable enclosure that will provide protection from external enviroment, ensuring that the stated temperature and humidity operating ranges are maintained. As KOS1402 contains high quality relays, the usual precautions taken when using products containing relays apply, such as 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 KOS1402 must not be located near a strong magnetic field, such as a transformer,solenoid or electric motor. The KOS1402 case designed to snap fit onto a standard "TOP HAT" DIN Rail. To remove from DIN 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 trip may be mounted in any orientation and stacked side by side along the rail.

Block Diagram KOS1402





* Components not supplied

2.2 ELECTRICAL

Conections 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 dual contacts provided by the KOS1402 are capable of switching 250V AC 125V DC @ 2A resitive load, 150Watts inductive load. Internal Varistors are connected across the contacts to protect against over voltage. It is advised that a external R/C 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 contacts from the energy stored in the inductor (See fig 2).

Installation overvoltage category 2 (as per BS EN61010-1)

- If this equipment is to be used in environments with overvoltage category 3, transient suppresors should be installed on wiring carrying greater than 50V AC or 75VDC.
- Any power supply to the equipment greater than 50V AC 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.

3.0 ALARM 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 settins have been modified, one trip operation must be completed in order to synchronise the latching relay(s). Once this cycle has been completed the unit will function correctly during normal operation cycles. On power down the trip contacts will rest for a -25% (0mA) process value and take this state indefinitely until power up. The initial power up cycle will only be requiered again if the unit switch settings are changed, or the unit is removed from the installation and is subjected to shocks greater that 12G, ie during transit. This section deals with the setting up of the trip. Two adjustement are available to the user on each channel:-

- High /Low alarm selection switch located on the side of the trip, for each trip.
- Setpoint adjustment - 15 turn potetiometer front panel provides 0-100% setpoint range for each trip.

Hysteresis is fixed at 0.5% Hysteresis is necessary to stop relay chatter at the trip point.
The alarm status is indicated on the front panel by means of a red LED, one for each channel - "ON" indicates in alarm.
With care, the KOS1402 trip setpoints may be set up in the process but the task is greatly simplified by replacing the process signal with a adjustable 4-20mA current source, to simulate the 4-20mA process signal. The set up process is as follows:-

a. First decide on the type of trip required for each channel, "High" for alarm ON above setpoint, or "low" for alarm ON 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(s) 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 side face)

b. 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. Repeat for other channel.

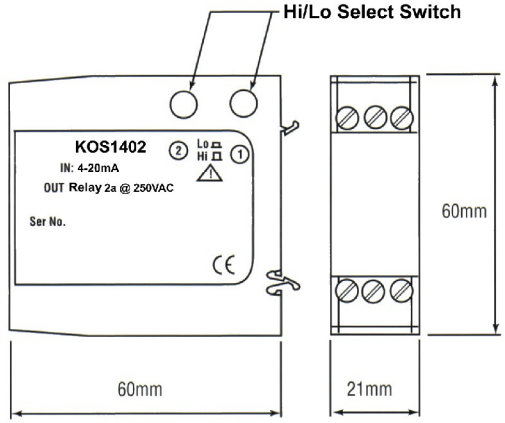
c. Now raise and lower the process input signal about the trip setting and unsure the alarm trips at setpoint and trips off at setpoint plus (minus) hysteresis. If required fine adjust settings.

Current calibrator must be capable of driving the expected 5V loop drop.

4.0 OPERATION

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

5.0 MECHANICAL DETAIL



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