ROA Remote Control Relay

MDA Ex (ib) 0379, QLD Ex (ib) 0379

1. Description

The ROA Remote Control Relay is designed to provide stop/start or on/off control of equipment from a remote location. This is achieved with the use of two conductors or pilot and earth in a cable where earth continuity is not a requirement. To monitor the earth continuity of a mobile cable, in an underground mining operation, the Ampcontrol ROB Earth Continuity Relay should be used.

The ROA Relay has been approved to be intrinsically safe to AS 1829-1977 and is suitable for use in Zone 1 or 2 hazardous areas.

The relay is housed in a Sprecher & Schuh enclosure with a LED indicator.

Power is supplied from a separate transformer. To prevent false operation of the relay it is necessary to ensure that the ROA module is the only device connected to the IST transformer. This is to ensure the integrity of the Intrinsically Safe control line and to prevent circulating currents and ground loops

2. Features

- Electronic design
- Two wire stop/start control
- Plug in enclosure for quick change out
- LED indication to aid fault finding
- Mines Department Approved

3. Application

The ROA Intrinsically Safe Remote Operation Relay is Mines Department Approved for mining applications. The relay is normally installed in a substation or flameproof enclosure to provide remote operation of electrical equipment. The relay is also suitable for above ground or industry applications where two-wire control is required.

3.1 Stop/Start Control

The ROA Remote Operation Relay is suitable in any installation where there is a requirement for a three wire, standard stop/start station to be used. This type of operation is achieved by the use of two conductors, thus reducing cable costs between the stop/start station and the equipment.

In this application a 100 ohm, 5 Watt resistor is connected across the start button. A conductor or the pilot of a cable is terminated at the remote end with a diode connected to earth or a return conductor. This ensures detection of a short circuit between conductors. The cathode of the diode must be connected to earth or the return conductor (see typical circuit).

The loop resistance of the circuit will be 100 ohms plus the resistance of the cable. When the start button is pressed the contacts short out the 100 ohm resistor and provided the cable resistance is less than 45 ohms the relay will energise. When this occurs the normally open and normally closed contacts change state. The LED on the front of the module will be illuminated. This indicates a healthy control circuit.

The relay de-energises when the loop resistance of the circuit exceeds 200 ohms or the resistance between the conductors is less than 250 ohms.

3.2 On/Off Control

The relay can also be used as a standard on/off control, connected to two wires or connected to the pilot and earth of a cable. This allows non flameproof switches to be used in hazardous areas. A typical example is a pump float switch.

4. Specifications

Supply Volts:

AC 16-0-16 Volts +10% - 25%, 3 VA
AC 0-6 volts (control)

Loop Resistance:

Pick up if resistance is < 45 ohms
Trip if resistance is > 200 ohms
Shunt Leakage Trip if < 250 ohms

Time Delay:

On detection of a healthy circuit:	10 mS
Drop out due to an open circuit:	200 mS
Drop out due to a short circuit:	200 mS

Relay Contacts:

1 N/O and 1 N/C contact. Rated at 6A 240 VAC, 4A 30 VDC

Dimensions:

Enclosure with front connected, polarised base:
107 H x 52 W x 134 D mm

Transformer (IST003, IST004)
97H x 88 W x 85 D mm

5. Equipment List

E01414 ROA Earth Continuity Relay
E02312 ROA Relay Base
E03931 IST003 Transformer
Primary 110 Volts
Secondary 16-0-16, 0-6 Volts, 10VA
E03932 IST004 Transformer
Primary 240 Volts
Secondary 16-0-16, 0-6 Volts, 10VA

TYPICAL CIRCUIT