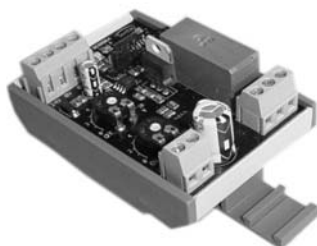


Adjustable Relay Module

Features



- Fault finding LED indication
- Relay status LED indication
- LED Status indication
- On/Off/Auto links for ease of commissioning
- 8A Relay and 0-10Vdc output
- 24Vac/dc Powered

Specification

Input signal	0-10Vdc 1mA min. into 22kΩ impedance
Output signal:	
Relay	8A at 230Vac (resistive load)
Voltage	0-10Vdc
Power supply:	
	24Vac ±15% @ 50Hz or
	24Vdc +15% -6%, 45mA max.
LED indication:	
	Supply OK
	Supply voltage low
	Supply voltage high
	Relay Status
	Hi input voltage
Manual override	On/Off/Auto jumper selectable
Electrical terminals	Rising cage connectors for 0.5-2.5mm ² cable
Ambient range:	
Temperature	-10°C to +40°C
RH	0-80% non-condensing
Dimensions	H72mm x W49.5mm x D55mm
Country of origin	UK

Product Codes

IO-RMA

Adjustable switching relay module



Warning!

When installed, the output relay contacts may carry 240Vac. Special care must be taken to isolate the switched voltages prior to any work being undertaken.



Technical Overview

The IO-RMA accepts a 0-10Vdc signal and provides a relay output with a adjustable switching threshold. The LED indicates that the relay is energised and Hand/Off/Auto jumpers ease commissioning.

The IO-RMA is ideal for any application where the switching of plant is interlocked with modulation of the same, or a different item of plant. Using the IO-RMA saves an output on the BMS controller.

Installation

1. The IO-RMA should only be installed by a competent, suitably trained technician, experienced in installation with hazardous voltages. (>50Vac & <1000Vac or >75Vdc & 1500Vdc)
2. Ensure that all power is disconnected before carrying out any work on the IO-RMA.
3. Maximum cable is 2.5mm², care must be taken not to over tighten terminals.
4. When mounting the IO-RMA care should be taken not to stress the PCB when fitting to the DIN rail. If it is necessary remove the module from the DIN rail, be sure to use a flat bladed screwdriver to release the DIN clips.
5. The IO-RMA is designed to operate from a 24Vac/dc supply (so that power can be drawn from a 24Vac transformer used for other purposes if a 24Vdc supply is not available). In either case one side of the supply is common to the signal ground from the BEMS controller.
6. The relay output is a single Pole Change Over (SPCO) so it can be wired as Normally Open (NO) or Normally Closed (NC).
7. The 0-10Vdc signal input requires a minimum of 1mA to operate.

Jumper Settings

Override links:



On



Off



Auto

Jumper Settings (continued)

Potentiometer locking:



Un-locked



Locked

Potentiometers

There are 2 pots, the on-pot and the off-pot. These divide the 0-10Vdc input into 3 bands. The off band, the hysteresis band and the on band. For example if the off-pot is set for 4Vdc and the on-pot is set to 6V then the off band is 0Vdc-4Vdc, the hysteresis band is 4Vdc-6Vdc and the on band is above 6Vdc

Once the input has settled, the relay is off on off band and on in the on band. In the hysteresis band the relay remains on whatever state it was in last.

If you are powering up the system with input voltage in the hysteresis band, the relay starts according to the nearest pot setting. For example, with the above settings, if the input voltage is 4.5Vdc at power-up the relay will be off, but with 5.5Vdc it will be on.

Potentiometer setting:

With the jumper in the 'A' position you can adjust the pots to the required settings.

A 0 to 10Vdc scale is printed on the PCB to give approximate guidance, to set the pots accurately you should adjust them to test voltages.

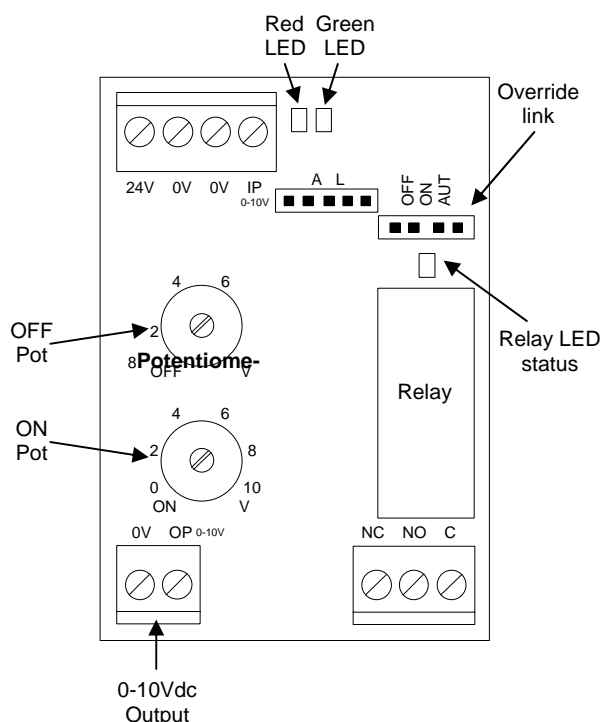
Locking the potentiometers:

Once the pots have been adjusted you can lock them. This prevents the settings from drifting or being tampered with.

To lock the pots move the jumper to 'L'.

To unlock the pots move the jumper back to 'A'

Connections



LED Status

Power supply

Normal:

The green LED indicates the supply power condition. If power supply is normal (between 22Vdc and 40Vdc $\pm 0.2V$ hysteresis) the green LED is ON continuously, showing that the IO-RMA is powered correctly.

Low Supply Voltage:

If power supply falls below about 21.8Vdc the green LED double flashes twice a second;

*_*_*_*_*_*_*_*

The low power condition clears at about 22.0Vdc. The relays behave as normal, but as the voltage falls further there may be insufficient voltage to keep it on, even though the LED is on.

LED Status (continued)

High Supply Voltage:

If the power supply is above 40V the green LED flashes 6 times a second;

*_*_*_*_*_*

All the relays are switched off (except when forced ON by jumper settings) as excessive voltage might overload the voltage regulator.

The relays are switched off:

For 2 seconds after power-up

When the supply is greater than 40V

For 2 seconds after any over 40V condition clears

This prevents the relays from switching on and off during power-up or power failure with an over voltage power supply.

Control Input Voltage

The red LED indicates input voltage condition

Normally the red LED is off.

High Input:

If the input voltage exceeds 11Vdc, $\pm 0.1V$ hysteresis, the red LED goes on continuously. The relays behave as if 10Vdc were applied. The input voltage should settle; It should not continuously dither between the on band and the off band. Voltage is deemed to have settled after it has been within one band for 250ms. If it has not settled for 500ms it is deemed to be unstable. If it is unstable the red LED flashes 6 times a second:

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The relay output remains in its last settled value.

Potentiometer Setting Error:

The on-pot should be set above the off-pot, if not the red LED does triple flashes:

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The relay is switched off.