

Features & Benefits

- Link selectable modes staged or sequenced
- On/Off/Auto links for ease of commissioning
- DIN Rail mounting
- Fault finding LED indication
- Relay status LED indication

Technical Overview

The IO-RM-8 is intended for use with BMS controllers to convert an analogue control output to staged or sequenced relay modes.

LEDs indicate correct operation and Hand/Off/Auto jumpers ease commissioning. Low current draw from 0-10Vdc controller output means that the IO-RM-8 can work successfully with most BEMS controllers.

Product Codes

IO-RM-8 **8-Stage relay module**

Specification

Input signal	0-10Vdc 1mA min. into 22kΩ impedance
Output contacts	8A at 230Vac (resistive load)
Power supply:	24Vac ±15% @ 50Hz or 24Vdc +15% -6%, 65mA max.
Hysteresis	±0.2Vdc about switching points
Operating modes:	8 Stage 1 of 8 Sequenced Or combination
LED indication:	Supply OK Supply voltage low Supply voltage high Relay Status Hi input voltage Incorrect input mode jumper selection Low input voltage (only in 2-10Vdc mode)
Manual override	On/Off/Auto jumper selectable
Electrical terminals	Rising cage connectors for 0.5-2.5mm ² cables
Ambient range:	
Temperature	-10 to +40°C
RH	0-80% non-condensing
Dimensions (H x W x H)	72 x 156 x 55
Country of origin	UK



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.

WEEE Directive:



At the end of the products useful life please dispose as per the local regulations.
Do not dispose of with normal household waste.
Do not burn.



The products referred to in this data sheet meet the requirements of EU 2014/30/EU and 2014/35/EU

LED Status (continued)

Mode Select Error:

If the mode select jumper is missing or there is an inconsistent setting (such as connecting 2 jumpers) then this is an error. The red LED does triple flashes:

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

The relays are switched off.

Low Input:

If the input voltage goes below 1.5Vdc, $\pm 0.2Vdc$ hysteresis, when 2Vdc to 10Vdc input mode is selected then the red LED does double flashes:

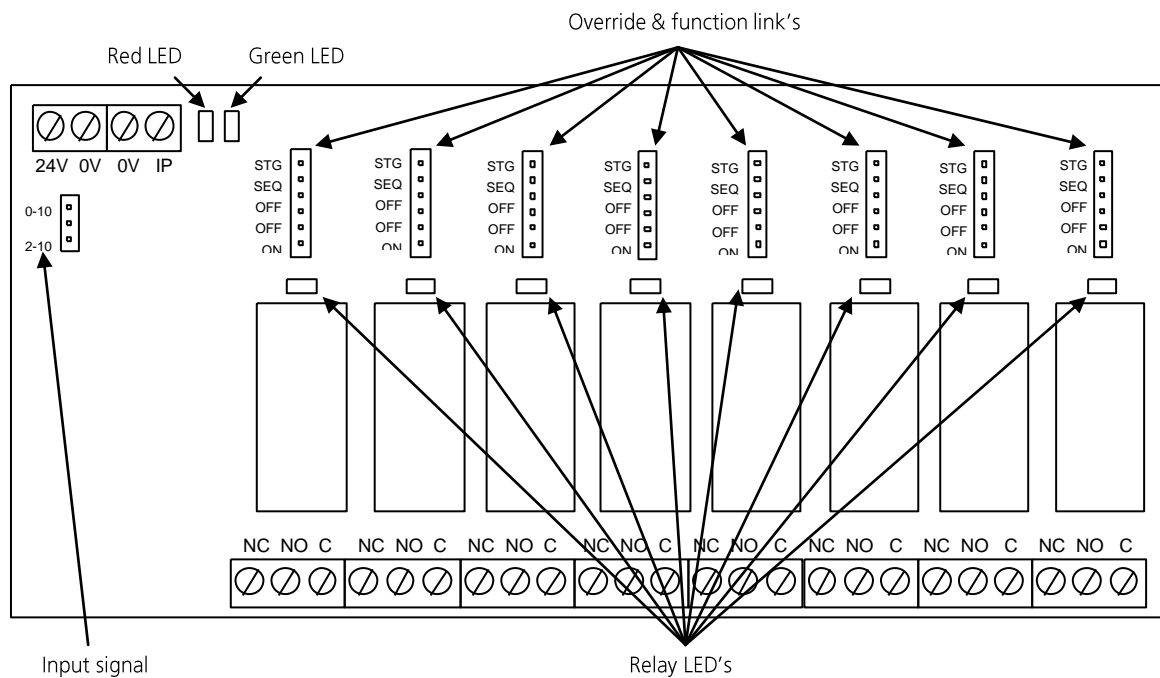
*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_*_**

Input Mode

2Vdc to 10Vdc input mode:

This works the same as the normal 0-10Vdc input mode except that the input voltages are taken from 20% to 100% of the full range, and are consequently more closely spaced. The bottom 20% is regarded as an error (see LED indications), and will cause all relays to be off (unless jumpers force them on). Hysteresis around changeover voltages are 80% of the normal $0.2Vdc = 0.16Vdc$.

Connections



Inputs;

24V	24Vac/dc
0V	0V
0V	0V
IP	0(2) to 10Vdc

Outputs;

Relay	
NC	Normally closed
NO	Normally open
C	Common

It is important not to mix SELV (safety extra low voltage) and non-SELV loads on the same IO-RM module. Consult BS 7671 for full details of SELV and non-SELV

Jumper Settings

Function & Override:



Staged

Sequenced

Off

Off

On

Input signal:



0-10Vdc



2-10Vdc

Switching Sequences

Staged:

Input Voltage	Nominal	Relay 1	Relay 2	Relay 3	Relay 4	Relay 5	Relay 6	Relay 7	Relay 8
0Vdc - 1.11Vdc	0.0Vdc	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1.11Vdc - 2.22Vdc	1.7Vdc	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2.22Vdc - 3.33Vdc	2.8Vdc	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3.33Vdc - 4.44Vdc	3.9Vdc	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
4.44Vdc - 5.55Vdc	5.0Vdc	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
5.56Vdc - 6.66Vdc	6.1Vdc	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
6.67Vdc - 7.77Vdc	7.2Vdc	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
7.78Vdc - 8.88Vdc	8.3Vdc	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
8.89Vdc - 10Vdc	9.4Vdc	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON

Sequenced:

Input Voltage	Nominal	Relay 1	Relay 2	Relay 3	Relay 4	Relay 5	Relay 6	Relay 7	Relay 8
0Vdc - 1.11Vdc	0.0Vdc	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1.11Vdc - 2.22Vdc	1.7Vdc	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2.22Vdc - 3.33Vdc	2.8Vdc	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
3.33Vdc - 4.44Vdc	3.9Vdc	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
4.44Vdc - 5.55Vdc	5.0Vdc	ON	ON	ON	ON	OFF	OFF	OFF	OFF
5.56Vdc - 6.66Vdc	6.1Vdc	ON	ON	ON	ON	ON	OFF	OFF	OFF
6.67Vdc - 7.77Vdc	7.2Vdc	ON	ON	ON	ON	ON	ON	OFF	OFF
7.78Vdc - 8.88Vdc	8.3Vdc	ON	ON	ON	ON	ON	ON	ON	OFF
8.89Vdc - 10Vdc	9.4Vdc	ON	ON	ON	ON	ON	ON	ON	ON

Tech Tip

Electrical Noise

By far the most common cause of electrical noise on a typical HVAC site is the contactor. Little, if any, electrical noise is produced when the contactor coil is energized, but significant noise is produced when the coil de-energizes, and may exceed 700Vac P-P. Typically, the contactor coil is switched by the C & N/O contacts of an IO-RM module relay.

Fitting an "RF snubber" across the contactor coil is a good way of greatly reducing the electrical noise pulse produced when the coil de-energizes. The ROXBURGH flying lead RC network type XEB1201 (Farnell part code 1187659) is a tried and trusted component for this purpose. Alternatively, a suitable MOV (metal oxide varistor) across the IO-RM C & N/O relay contacts will also help to prevent electrical noise being induced."

Whilst every effort has been made to ensure the accuracy of this specification, Sontay cannot accept responsibility for damage, injury, loss or expense from errors or omissions. In the interest of technical improvement, this specification may be altered without notice.

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