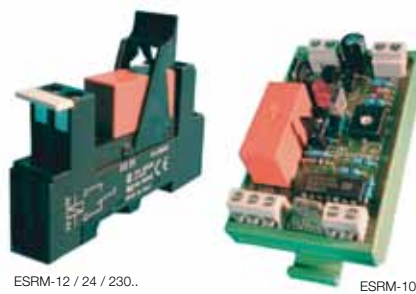


B.M.S INPUT - OUTPUT MODULES SINGLE AND ADJUSTABLE RELAY

ESRM..

DIN RAIL mounted relay modules compatible with building management systems, providing a switched output when an input signal is applied.  
The 12VDC relay is suitable for use with TREND controllers ONLY which give a 0-10vdc output. For other 0-10vdc systems use model ESRM-10.



Volt free contacts  
Din rail mounting  
Max Ambient -20 /+50 C  
Auto eject relay clip  
Flammability = UL94-V0

**ESRM-10 only:**

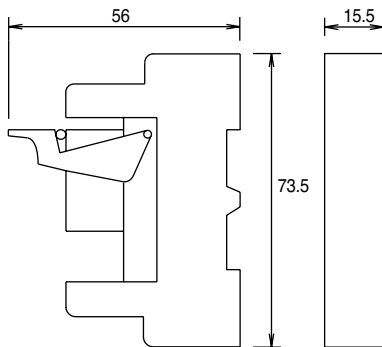
Off-On-Auto link to aid commissioning.  
LED light on when relay energised.  
Input current > 0.5mA

Type	Switch Point Input Approx.	Voltage	Coil Resistance	Coil Current Approx mA	Switch Rating 230VAC SPDT	Compatibility	Enclosure
<b>ESRM-12DC</b>	8 VDC	12 VDC	576Ω	20	(3)A	TREND I-Q 0 10vdc ONLY	IP00
<b>ESRM-24DC</b>	17 VDC	24 VDC	1440Ω	18	12(3)A	24vdc B.M.S. controllers	IP00
<b>ESRM-24AC</b>	17 VAC	24 VAC	350Ω	32	12(3)A	TREND IQ	IP00
<b>ESRM-230AC</b>	172 VAC	230 VAC	32500Ω	3.3	12(3)A	Most B.M.S. controllers	IP00

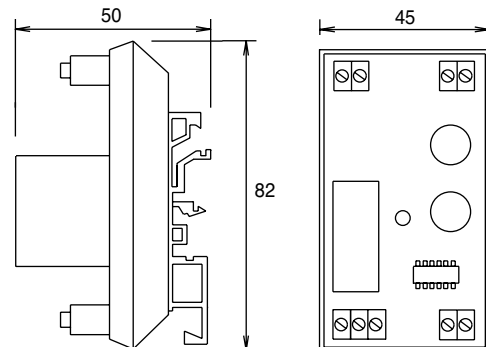
Type	Input	Supply ± 15%	Switch Rating 230VAC SPDT	Feedback Output	Consumption	Enclosure
<b>ESRM-10</b>	0-10VDC adj.	24VAC/DC	10(3)A	0-10VDC	51mA	IP00

DIMENSIONS

ESRM-12 / 24/ 230..

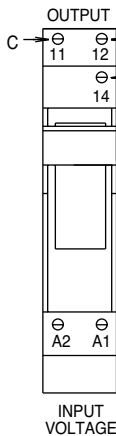


ESRM-10



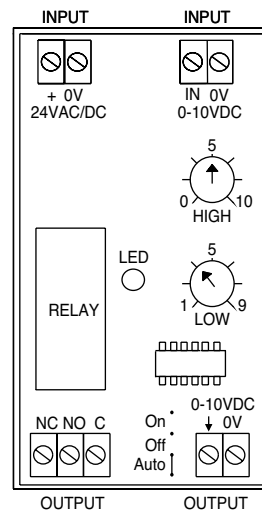
WIRING:

ESRM-12 / 24/ 230..



Terminal Size:  
0.5 - 2.5mm rising clamps  
Polarity is not important

ESRM-10



When the 0-10vdc input signal increases to the High setting contacts C-NO close.

When the 0-10vdc input signal decreases to the Low setting contacts C-NO open.

**INSTALLATION:** Terminals 0.5-2.5mm rising clamps      Min sensor / control signal cable size 7/0.2mm      Max length 100m.  
Screened cable is recommended      The screen should be earthed at the controller end only  
Keep sensor/control signal wires away from power cables/units which may cause interference.

# INPUT-OUTPUT MODULES

## B.M.S RELAY OVERRIDE MODULE 1 - 4 X 0-10VDC INPUTS 4 RELAY OUTPUTS

### EROV4

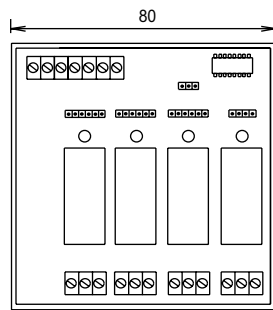
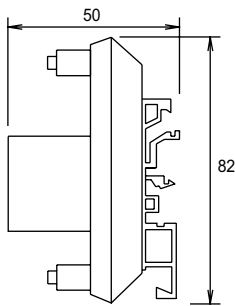
This unit provides up to 4 independent switched relay outputs from either 1,2,3 or 4 independent 0-10vdc inputs. Alternatively up to 4 outputs can be switched from just 1 x 0-10vdc input via link selection. All switch points are fixed at approx 5vdc on and 4vdc off. This product can also be used in place of 4 single relays.



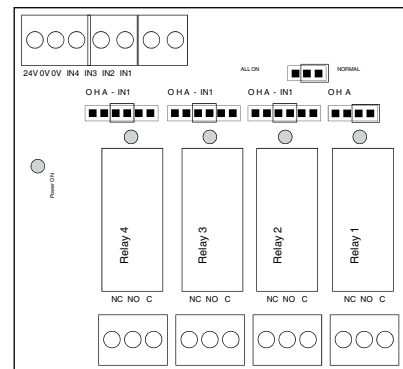
HAND-OFF-AUTO Manual Override links on each relay: -  
 HAND = Energised  
 OFF = De-energised  
 AUTO = Controller operated  
 Volt free contacts  
 LED indication  
 Din-Rail mounting  
 Input current > 1 mA  
 Max Ambient -10 /+50°C  
 Flammability = UL94-V0

Type	Supply +-15%	Input Signal	Switch Rating 230VAC SPDT	Relays On Off	Consumption	Mounting	Enclosure
<b>EROV4</b>	24VAC/DC	1-4 x 0-10VDC	4 x 10(3)A	> 5vdc < 4vdc	60mA	Din Rail	IP00

### DIMENSIONS:

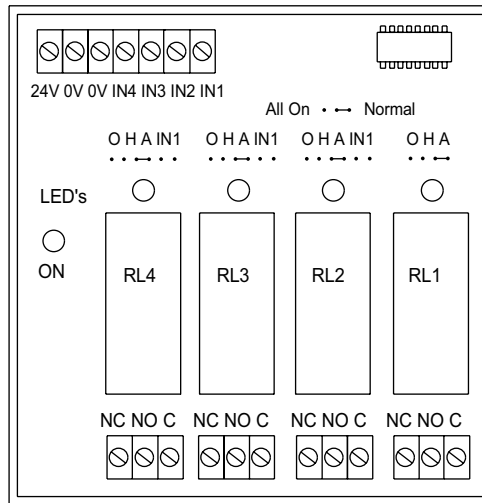


### AX-ORM4C Connection



### WIRING:

#### Up to 4 x 0-10vdc inputs




Each 0-10vdc input and relay output is independent. Outputs 1,2,3 or 4 can be linked to just one input IN1.  
 C-NO makes at approx >5vdc for each relay and C-NC makes at approx <4vdc for each relay. ie 0-4vdc OFF 5-10vdc ON.

- O – Link to switch relay permanently off.
- H – Link to switch relay permanently on.
- A – Link to switch relay via the input signal.
- IN1 –
- ALL ON – Link to switch all output relays permanently on.
- NORMAL – Link to switch the relays via 0-10vdc input.
- Outputs 1,2,3 or 4 can be linked to switch from 1 x 0-10v input.

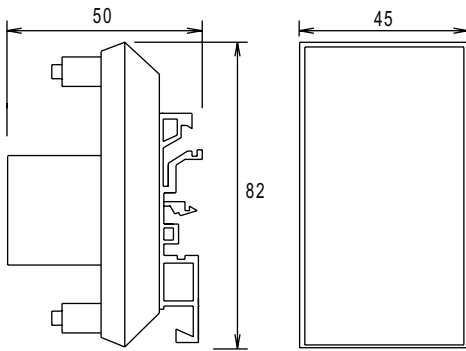
Terminals 0.5-2.5mm<sup>2</sup> rising clamps  
 Min sensor / control signal cable size 7/0.2mm  
 Max length 100m  
 Screened cable is recommended  
 The screen should be earthed at controller end only  
 Keep sensor/control signal wires away from power cables/units which may cause interference.

B.M.S INPUT OUTPUT MODULES 2 STAGE RELAY, RAISE - LOWER, HIGH LOW 0-10VDC

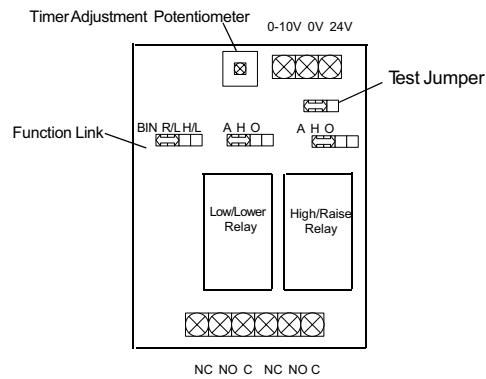
E2RM..

<p>These products accept a 0-10vdc input and produce a 2 stage relay output which can be used for external plant switching. HIGH-LOW or RAISE-LOWER functions can be selected. For multi-stage heating &amp; cooling, two of these units or other relay modules can be used with an ETC.. E13.. temperature controller or similar.</p>				<p>Select HIGH-LOW or RAISE-LOWER functions via link. ON-OFF-AUTO link provided on each relay to aid commissioning. LED's indicate relay status. Volt free contacts Din-Rail mounting Input current &gt; 0.5 mA Flammability = UL94-V0 Max Ambient -10 /+50°C</p>		
Type	Supply +15%	Input Signal	Power Consumption	Switch Rating 230VAC SPDT	Compatibility	Enclosure
<b>E2RM</b>	24VAC/DC	0-10vdc	40mA	2 x 10(3)A	Most B.M.S. Controllers	IP00

DIMENSIONS:



WIRING



INSTALLATION:

HIGH-LOW Mode - Relays switch in sequence.

High/Low	LOW	HIGH
0v	OFF	OFF
5v	ON	OFF
10v	ON	ON

RAISE-LOWER Mode - Relays switch as shown in the table below.

Raise/Lower	LOWER	RAISE
0v	OFF	OFF
5v	ON	OFF
7v	OFF	OFF
10v	OFF	ON

All values are maximum switching points. Exact switching points may be slightly lower than those stated

Terminals 0.5-2.5mm<sup>2</sup> rising clamps  
Screened cable is recommended  
Keep sensor/control signal wires away from power cables/units which may cause interference.

Min sensor / control signal cable size 7/0.2mm  
The screen should be earthed at controller end only

Max length 100m

# INPUT-OUTPUT MODULES

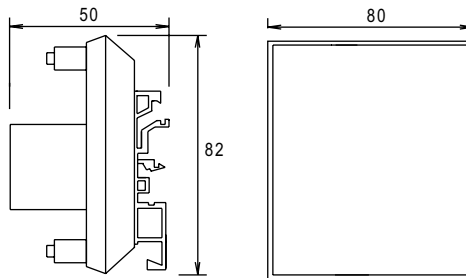
## B.M.S INPUT - OUTPUT MODULES 3 STAGE RELAY, SEQUENCE, BINARY 0-10VDC

### E3RMT..

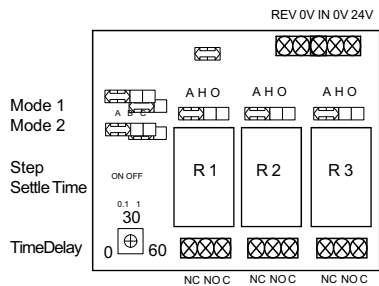
<p>These products accept a 0-10vdc input and produce a 3 stage relay output which can be used for external plant switching. 4 modes of operation can be selected: 3 stage switching, Heat - Cool + Fan, Sequence or 2 Stage Binary. For multi-stage heating &amp; cooling, 2 of these units or other relay modules can be used with the E13.. temperature controllers or similar.</p>	 <p>E3RMT</p>	<p>ON-OFF-AUTO Manual Override links on each relay: -                  ON = Energised                  OFF = De-energised                  AUTO = Controller operated</p> <p>Volt free contacts LED's indicate relay status                  Din-Rail mounting Consumption 80mA                  Input current &gt; 1 mA                  Max Ambient -10 /+50°C                  Flammability = UL94-V0</p>
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Type	Supply +/-15%	Input Signal	Switch Rating 230VAC SPDT	Operation Selectable	Time Delay	Enclosure
<b>E3RMT</b>	24VAC/DC	0-10VDC	3 x 10(3)A	3 Stage relay or Fan + Cool/Heat Sequence or 2 Stage Binary	0-60s	IP00

### DIMENSIONS:



### WIRING:



Time Delay : Allows a time period before each stage switches on or off. Set to 0 if not required.

RS : Remove jumper before changing position of JP1 or JP2. Alternatively disconnect the power supply. Replace jumper RS after changing JP1 or JP2

AHO : A = Auto H = Relay On O = Relay Off

JP1/ JP2 : Mode settings

MODE	MODE 1	MODE 2
3 stage	C	C
Fan + heat/cool	B	A
Sequence	C	B
2 stage Binary	B	B

### INSTALLATION:

**3 STAGE RELAY MODE**  
1-3 switch on as input increases

	LOW	MID	HIGH
0v	OFF	OFF	OFF
4v	ON	OFF	OFF
7v	ON	ON	OFF
10v	ON	ON	ON

**FAN - HEAT - COOL MODE**

	FAN	COOL	HEAT
0v	OFF	OFF	OFF
4v	ON	ON	OFF
7v	ON	OFF	OFF
10v	ON	OFF	ON

**SEQUENCE MODE**  
Only 1 stage on at any time

	RL1	RL1	RL2
0v	OFF	OFF	OFF
4v	ON	OFF	OFF
7v	OFF	ON	OFF
10v	OFF	OFF	ON

**BINARY MODE**

	OUT 1	OUT 2
0v	OFF	OFF
4v	ON	OFF
7v	OFF	ON
10v	ON	ON

All values are maximum switching points. Exact switching points may be slightly lower than those stated


Terminals 0.5-2.5mm<sup>2</sup> rising clamps  
 Screened cable is recommended  
 Keep sensor/control signal wires away from power cables/units which may cause interference.

Min sensor / control signal cable size 7/0.2mm  
 The screen should be earthed at controller end only

Max length 100m

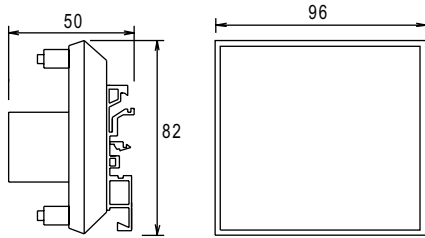
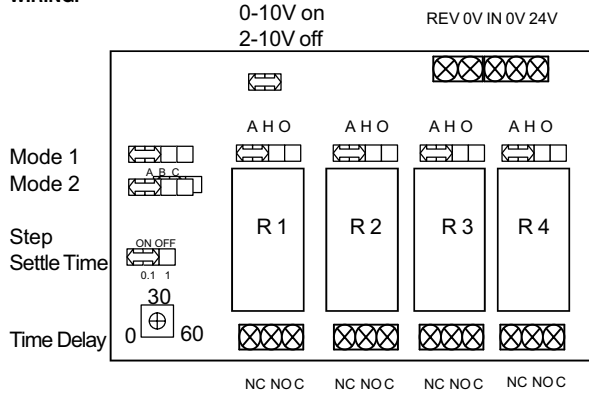
B.M.S INPUT - OUPUT MODULES 4 STAGE RELAY, SEQUENCE, BINARY 0-10VDC

E4RM

<p>These products accept a 0-10vdc input and produce a 4 stage relay output which can be used for external plant switching. Suitable for staging (<b>which can be reversed</b>) or sequencing operation. For multi-stage heating &amp; cooling, two of these units or other relay modules can be used with the E13.. temperature controllers or similar.</p>	 <p>E4RM</p>	<p>ON-OFF-AUTO Manual Override links on each relay: -                  ON = Energised                  OFF = De-energised                  AUTO = Controller operated                  LED's indicate relay status                  Volt free contacts Input current &gt; 1mA                  Din-Rail mounting Consumption 100mA                  Max Ambient -10 /+50°C                  Flammability = UL94-V0</p>
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Type Enclosure	Supply	Input Signal	Switch Rating +/-15%	Time Delay	Compatibility
E4RM	24VAC/DC	0-10VDC	4 x 10(3)A	0-200s	Most BMS Controllers IP00

UP TO 10 STAGED SWITCHING ACROSS 0-10VDC CAN BE ACHIEVED WHEN THIS PRODUCT IS USED WITH THE E6RM

<p><b>DIMENSIONS:</b></p>  <p>MODE RESET LINK : Remove link before changing modes and re-fit the link to reset the operation.                  TIME DELAY : Allows a time period between each stage switching on or off.</p>	<p><b>WIRING:</b></p> 
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**INSTALLATION:**

STAGED MODE	mode1 = C	mode2 = C		
Relays 1-4 switch on as the input signal increases				
INPUT	RLY 1	RLY 2	RLY 3	RLY 4
0v	OFF	OFF	OFF	OFF
2.4V	ON	OFF	OFF	OFF
4.8V	ON	ON	ON	OFF
7.2V	ON	ON	ON	OFF
9.6V	ON	ON	ON	ON

STAGED MODE	mode1 = A	mode2 = B		
Relays 4-1 switch on as the input signal increases when terminals R-R are closed via a volt free contact.				
INPUT	RLY 1	RLY 2	RLY 3	RLY 4
0v	OFF	OFF	OFF	OFF
2.4V	OFF	OFF	OFF	ON
4.8V	OFF	OFF	ON	ON
7.2V	OFF	ON	ON	ON
9.6V	ON	ON	ON	ON

SEQUENCED MODE mode1 = C mode2 = C  
Only one relay is on at any time

INPUT	RLY 1	RLY 2	RLY 3	RLY 4
0v	OFF	OFF	OFF	OFF
2.4V	ON	OFF	OFF	OFF
4.8V	OFF	ON	OFF	OFF
7.2V	OFF	OFF	ON	OFF
9.6V	OFF	OFF	OFF	ON

STAGED MODE + E6RM = 10 STG. JP1 = B JP2 = A  
Connect 0-10VDC to both E6RM and E4RM.  
No time delay or reverse action.

INPUT	RLY 1	RLY 2	RLY 3	RLY 4
6V	OFF	OFF	OFF	OFF
7V	ON	OFF	OFF	OFF
8V	ON	ON	OFF	OFF
9V	ON	ON	ON	OFF
10V	ON	ON	ON	ON

BINARY MODE JP1 = B JP2 = B

INPUT	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2	7.8	8.4	9.4	9.6
RLY 1	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
RLY 2	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON
RLY 3	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON
RLY 4	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON

All values are maximum switching points. Exact switching points may be slightly lower than those stated  
 Terminals 0.5-2.5mm<sup>2</sup> rising clamps Min sensor / control signal cable size 7/0.2mm Max length 100m  
 Screened cable is recommended The screen should be earthed at controller end only  
 Keep sensor/control signal wires away from power cables/units which may cause interference.

# INPUT-OUTPUT MODULES

## B.M.S INPUT - OUTPUT MODULES 6 (10) STAGE RELAY, SEQUENCE 0-10VDC

### E6RM

These products accept a 0-10vdc input and produce a 6 stage relay output which can be used for external plant switching. Suitable for staging (which can be reversed) or sequencing operation. For multi-stage heating & cooling, two of these units or other relay modules can be used with the E13.. temperature controllers or similar.



ON-OFF-AUTO Manual Override links on each relay: -  
 ON = Energised  
 OFF = De-energised  
 AUTO = Controller operated  
 Volt free contacts LED's indicate relay status  
 Din-Rail mounting Consumption 166mA  
 Input current > 1mA  
 Max Ambient -10 /+50°C  
 Flammability = UL94-V0

Type	Supply +/-15%	Input Signal	Switch Rating 230VAC SPDT	Time Delay	Compatibility	Enclosure
<b>E6RM</b>	24VAC/DC	0-10VDC	6 x 10(3)A	0-200s	Most BMS Controllers	IP00

**UP TO 10 STAGED SWITCHING ACROSS 0-10VDC CAN BE ACHIEVED WHEN THIS PRODUCT IS USED WITH THE E4RM**

**DIMENSIONS:**

MODE RESET LINK : Remove link before changing modes and re-fit the link to reset the operation.  
 TIME DELAY : Allows a time period between each stage switching on or off.

**WIRING:**

2-10V 0-10V      REV 0V IN 0V 24V

Mode 1  
 Mode 2  
 Step Settle Time  
 Time Delay

NC NO C   NC NO C   NC NO C   NC NO C   NC NO C   NC NO C

**INSTALLATION:**

STAGED MODE      mode1 = C   mode2 = C  
 Relays 1-6 switch on as the input signal increases.

INPUT	RLY 1	RLY 2	RLY 3	RLY 4	RLY 5	RLY 6
0v	OFF	OFF	OFF	OFF	OFF	OFF
2v	ON	OFF	OFF	OFF	OFF	OFF
3v	ON	ON	OFF	OFF	OFF	OFF
4.5v	ON	ON	ON	OFF	OFF	OFF
6v	ON	ON	ON	ON	OFF	OFF
7.8v	ON	ON	ON	ON	ON	OFF
10v	ON	ON	ON	ON	ON	ON

STAGED MODE - REVERSE D      mode1 = A   mode2 = B  
 Relays 6-1 switch on as the input signal increases when terminals R-R are closed via a volt free contact.

INPUT	RLY 1	RLY 2	RLY 3	RLY 4	RLY 5	RLY 6
0v	OFF	OFF	OFF	OFF	OFF	OFF
2v	OFF	OFF	OFF	OFF	OFF	ON
3v	OFF	OFF	OFF	OFF	ON	ON
4.5v	OFF	OFF	OFF	ON	ON	ON
6v	OFF	OFF	ON	ON	ON	ON
7.8v	OFF	ON	ON	ON	ON	ON
10v	ON	ON	ON	ON	ON	ON

SEQUENCED MODE      mode1 = C   mode2 = B  
 Only one relay is on at any time.

INPUT	RLY 1	RLY 2	RLY 3	RLY 4	RLY 5	RLY 6
0v	OFF	OFF	OFF	OFF	OFF	OFF
2v	ON	OFF	OFF	OFF	OFF	OFF
3v	OFF	ON	OFF	OFF	OFF	OFF
4.5v	OFF	OFF	ON	OFF	OFF	OFF
6v	OFF	OFF	OFF	ON	OFF	OFF
7.8v	OFF	OFF	OFF	OFF	ON	OFF
10v	OFF	OFF	OFF	OFF	OFF	ON

STAGED MODE + E4RM = 10 STAGES JP1=B   JP2=A  
 Connect 0-10VDC to both E6RM and E4RM. No time delay or reverse action.

INPUT	RLY 1	RLY 2	RLY 3	RLY 4	RLY 5	RLY 6
0v	OFF	OFF	OFF	OFF	OFF	OFF
1v	ON	OFF	OFF	OFF	OFF	OFF
2v	ON	ON	OFF	OFF	OFF	OFF
3v	ON	ON	ON	OFF	OFF	OFF
4v	ON	ON	ON	ON	OFF	OFF
5v	ON	ON	ON	ON	ON	OFF
10v	ON	ON	ON	ON	ON	ON

All values are maximum switching points. Exact switching points may be slightly lower than those stated  
 Terminals 0.5-2.5mm<sup>2</sup> rising clamps      Min sensor / control signal cable size 7/0.2mm      Max length 100m  
 Screened cable is recommended      The screen should be earthed at controller end only  
 Keep sensor/control signal wires away from power cables/units which may cause interference.

B.M.S INPUT - OUTPUT MODULES 0-10VDC TO 0-20V PHASE CUT

E..PCM

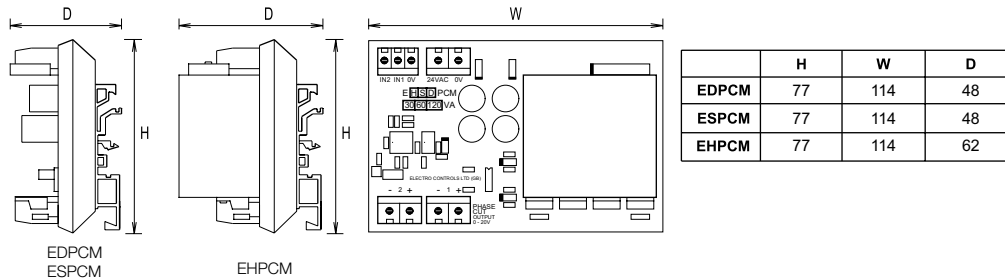
These units convert one or two 0-10vdc inputs to one or two 0-20V phase-cut outputs to control Staefa 2 wire valves and Belimo actuators.



Input current < 1mA  
**Use the correct size transformer for the VA rating of the actuator / valve.**  
 The output signal varies at the same rate as the input signal.  
 Humidity 0-90%HR non condensing  
 Ambient -10/+50°C  
 Consumption 51mA Flammability = UL94-V0

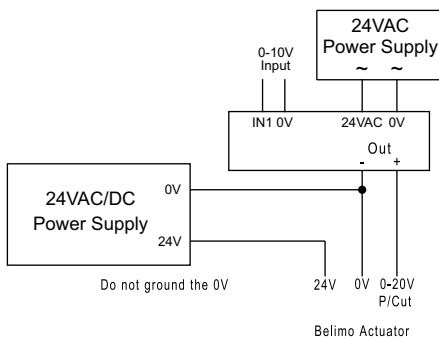
Type	Power Supply ±15%	Input Signal	Output Signal	MaxActuator Rating	Mounting	Enclosure
<b>EDPCM</b>	24VAC	2 x 0-10VDC	2 x 20V	<b>30VA/channel</b>	Din Rail	IP00
<b>ESPCM</b>	24VAC	1 x 0-10VDC	1 x 20V	<b>60VA</b>	Din Rail	IP00
<b>EHPCM</b>	24VAC	1 x 0-10VDC	1 x 20V	<b>120VA</b>	Din Rail	IP00

DIMENSIONS

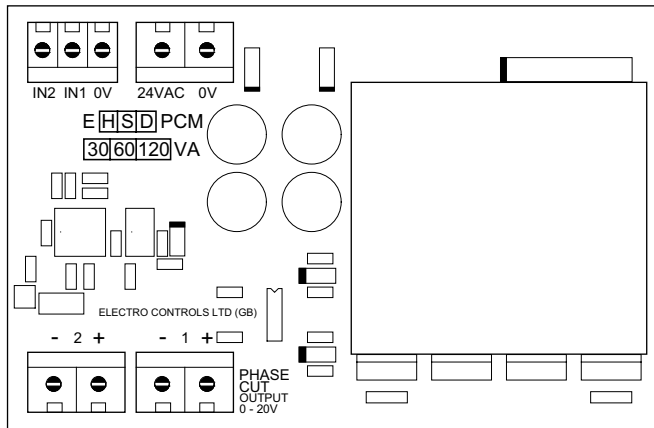


WIRING:

Example for wiring to Belimo Actuator



EDPCM  
 ESPCM  
 EHPCM



For the 24VAC POWER SUPPLY select transformer VA rating according to actuator rating.

**NOTE:** The ESPCM & EHPCM can only be used for 1 x 0-10VDC input & 1 x 0-20V phase cut output using channel 1. The EDPCM can be used for 2 x 0-10VDC input & 2 x 0-20V phase cut output using channels 1&2.

If the 0-10VDC input signal is removed, that channel will be cut off.  
 THE OUTPUTS MUST NOT BE CONNECTED OR DISCONNECTED WHEN THE UNIT IS POWERED AS THIS WILL DAMAGE THE UNIT.

**INSTALLATION:** Terminals 0.5-2.5mm rising clamps Min sensor / control signal cable size 7/0.2mm Max length 100m.  
 Screened cable is recommended The screen should be earthed at the controller end only  
 Keep sensor/control signal wires away from power cables/units which may cause interference.



# INPUT-OUTPUT MODULES

## B.M.S INPUT - OUTPUT MODULES 4 & 6 DIGITAL INPUT MULTIPLEXER

### E4DIM, E6DIM

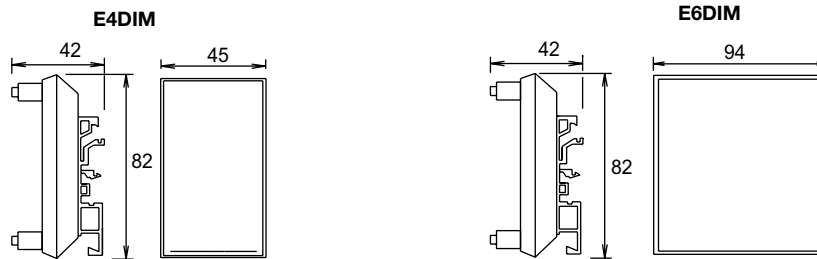
These units allow up to 4 or 6 volt free inputs to be converted into a single 0-10vdc analogue output channel which can in turn be decoded by a B.M.S controller into digital status bits.



- LED status indication
- Input signal test links
- Load > 4.7kΩ
- Din-Rail mounting
- Compatible with TREND A to D
- Function module in the IQ controller.
- Max Ambient -10 /+50°C
- Flammability = UL94-V0

Type	Power Supply ±15%	Consumption Max.	Inputs 24VAC/DC 230VAC	Output Selectable	Mounting	Enclosure
<b>E4DIM</b>	24VAC/DC	50mA	4 x Volt Free Contacts	0-9vdc or 0.4-9.4vdc	Din Rail	IP00
<b>E6DIM</b>	24VAC/DC	60mA	6 x Volt Free Contacts	0-10vdc	Din Rail	IP00

### DIMENSIONS

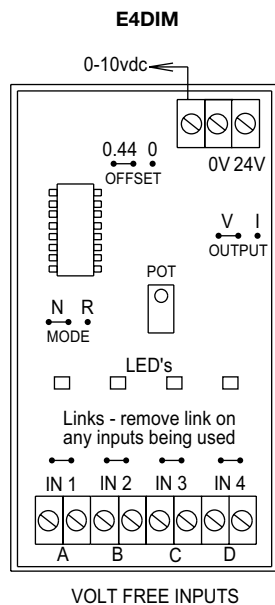


### WIRING:

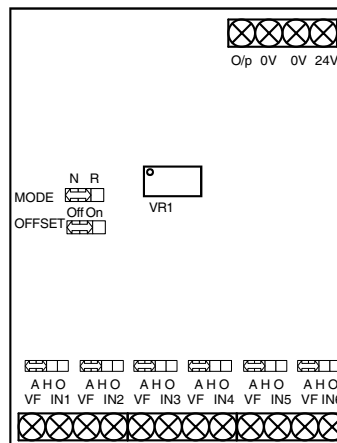
**OUTPUT LINK:**  
Select V for vdc output

**OFFSET LINK:**  
Select 0-9vdc or 0.4-9.4vdc output adjustable via pot.

**MODE LINK:**  
Select N for normal output



### E6DIM



### Jumpers

Mode: Normal or Reverse Action :

- N = Normal
- R = Reverse

Offset: Voltage versions

- Off = 0-10V
- On = 2-10V

Current versions

- Off = 0-20mA
- On = 4-20mA

All inputs must be volt free. Screened cable is recommended to eliminate electrical interference.

### INSTALLATION:

The unit is pre-calibrated, therefore the potentiometer should not require field adjustment of the 0-10vdc signal.

Total output voltage is equal to the sum of the inputs that are switched ON :-

E4DIM 0-9vdc Output:

Input A = 4.8V B = 2.4V C = 1.2V D = 0.6V If A + C are ON then output = 6V if B + C are ON then output = 3.6V

E4DIM 0.4-9.4vdc Output:

Input A = 5.2V B = 2.8V C = 1.6V D = 1.0V If A + C are ON then output = 6.8V if B + C are ON then output = 4.4V

E6DIM: Input IN1 = 0.156V IN2 = 0.313V IN3 = 0.625V IN4 = 1.25V IN5 = 2.5V IN6 = 5V

Terminals 0.5-2.5mm<sup>2</sup> rising clamps

Min sensor / control signal cable size 7/0.2mm

Max length 100m

Screened cable is recommended

The screen should be earthed at controller end only

Keep sensor/control signal wires away from power cables/units which may cause interference.



B.M.S INPUT-OUTPUT MODULES 0-10VDC IN 0-135Ω / 0-1000Ω OUT

DRN3.1..

These products accept a 0-10VDC input and convert it into a proportional 0-135Ω or 0-1000Ω resistance output.

For use in electrical actuator control, electronic potentiometer, resistive sensor simulation.



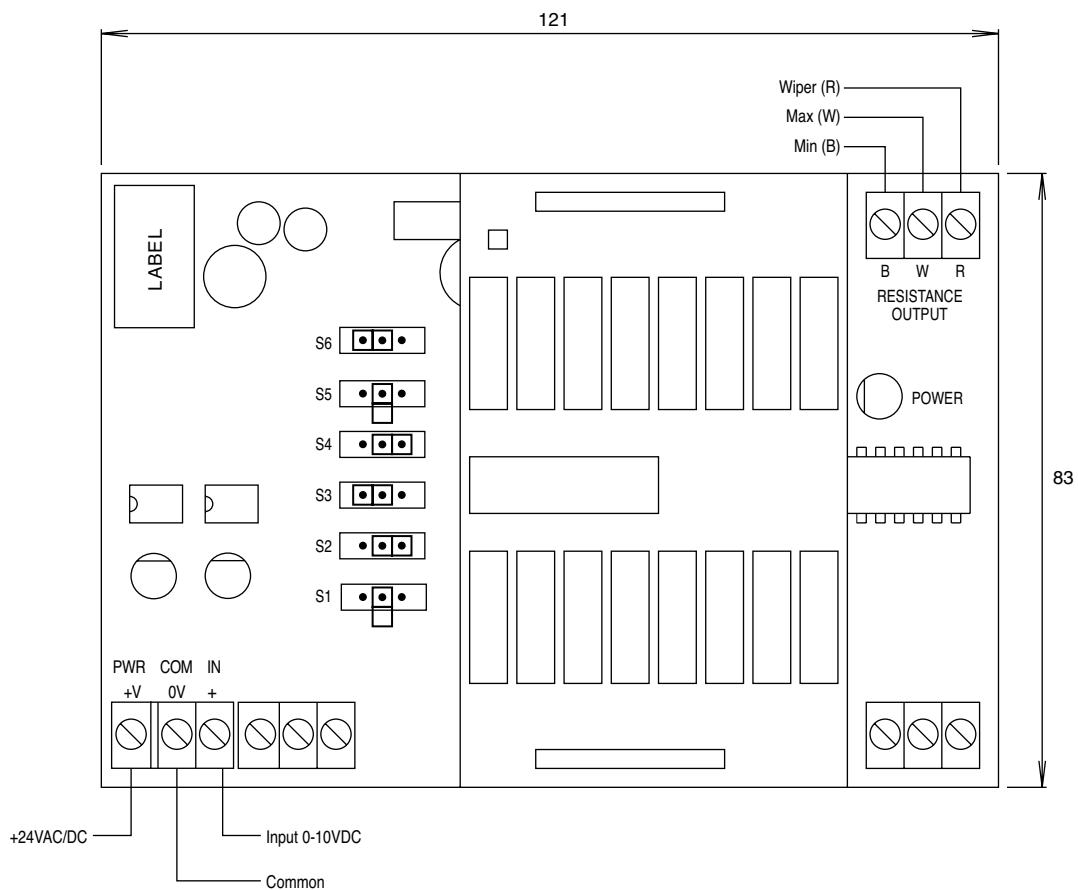
DRN3.1..

Electrically Isolated Resistive Output  
Power and signal Status Indicator  
Input Impedance: 0-10VDC 10KΩ  
4-20mA 250Ω

Type	Supply ±10%	Input	Output	Output Resolution	Consumption	Protection
DRN3.1.1	24VAC/DC	2 x 0-10VDC	0-135Ω	256 steps	250mA	IPO0
DRN3.1.2	24VAC/DC	0-10VDC	0-1000Ω	256 steps	250mA	IPO0

WIRING:

DRN3.1..



The jumper settings for S1 - S6 are as shown above.

The resistance between terminals B and R will increase as the input signal increases and the resistance between W and R will decrease.

<b>INSTALLATION:</b>	Terminals 0.5 - 2.5mm <sup>2</sup> Max length 100m.	Sensor cable size 7/0.2mm Screened cable is recommended.	Keep away from power cables/units which may cause interference. The screen should be earthed at the controller 0V terminal only.
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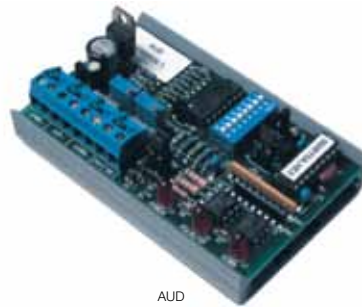
# INPUT-OUTPUT MODULES

## B.M.S INPUT-OUTPUT MODULE RAISE / LOWER IN 0-10VDC OUT

### AUD

This product converts a Floating Point Input to a 0-10VDC Output.

There are two inputs on the AUD, one to increase the output and one to decrease the output. The output is stable when both inputs are off.



AUD

- 255 Step Resolution
- Pulsed relay contact input
- Accuracy +/-3%
- LED Status Indicators
- Field selectable rate of change
- Field Adjustable Output with manual Override Potentiometer

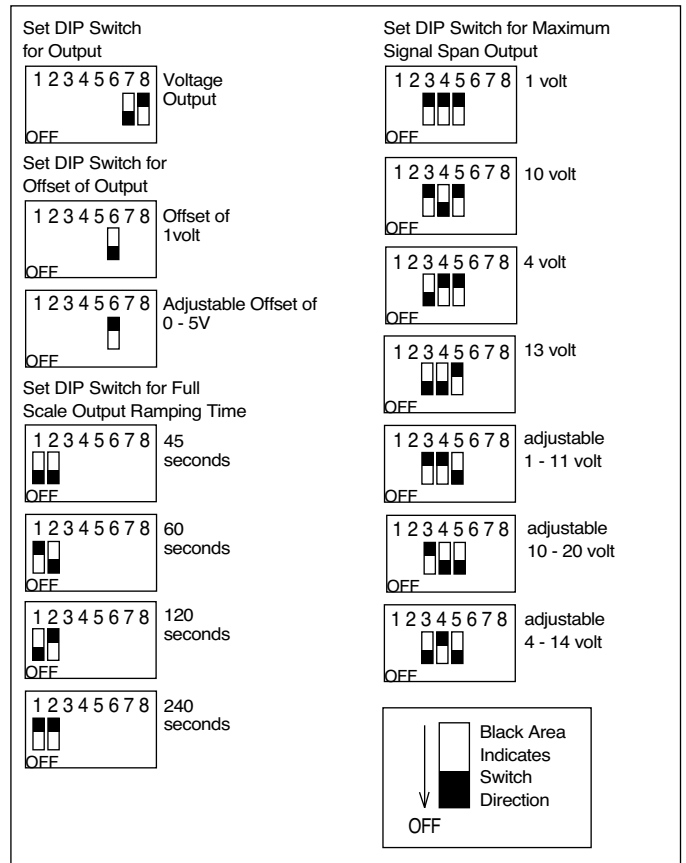
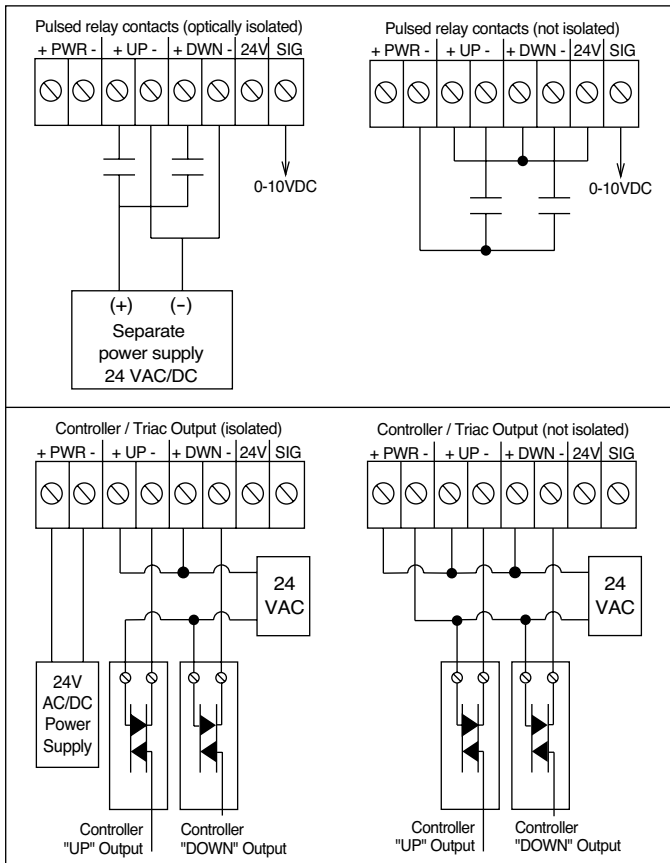
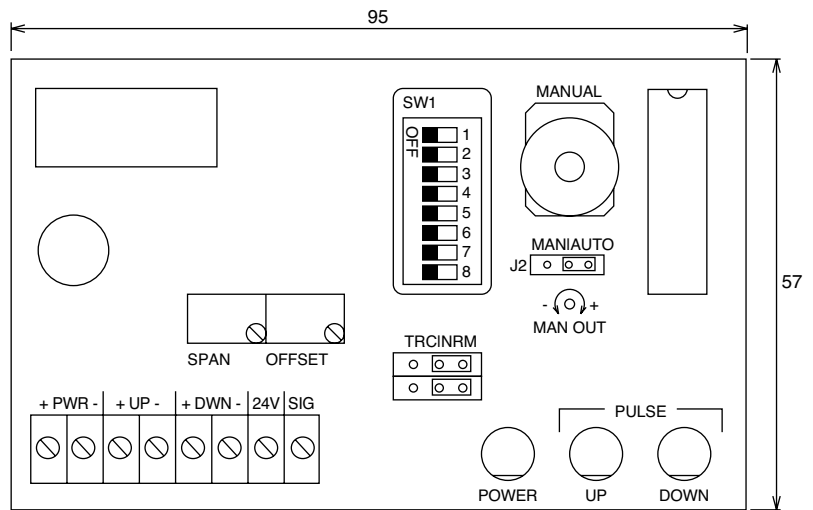
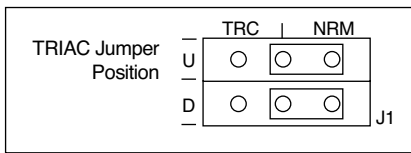
Type	Supply ±10%	Output	Rate of Change*	Signal Trigger Level	Consumption	Protection
AUD	24VAC/DC	0-10VDC	45sec - 240sec	24 to 26.4VAC	50mA	IPO0

\*The time it takes for the output to go from 0-10VDC

### WIRING:

#### INSTALLATION:

- Terminals 0.5 - 2.5mm
- Sensor cable size 7/0.2mm
- Keep away from power cables/units which may cause interference.
- Max length 100m.
- Screened cable is recommended.
- The screen should be earthed at the controller 0V terminal only.



B.M.S RESISTANCE INPUT MODULE 135/1000Ω IN 0-10VDC OUT

ERIM

These units convert 0-135 ohm or 0-1000 ohm input to a 0-10vdc output.

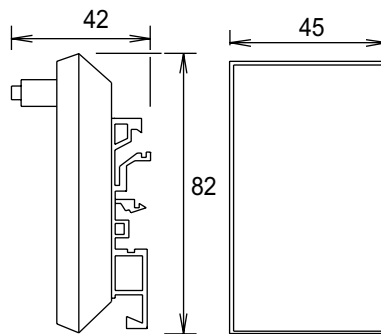


Multi-turn pot to adjust output.  
LED indication  
Max ambient -10 /+50°C  
Din-Rail mounting  
Flammability = UL94-V0

Type	Supply ±10%	Input Adjustable	Output	Consumption	Mounting	Protection
<b>ERIM 135R</b>	24VAC/DC	0-135Ω	0-10VDC	20mA	Din Rail	IP00
<b>ERIM 1K</b>	24VAC/DC	0-1000Ω	0-10VDC	20mA	Din Rail	IP00

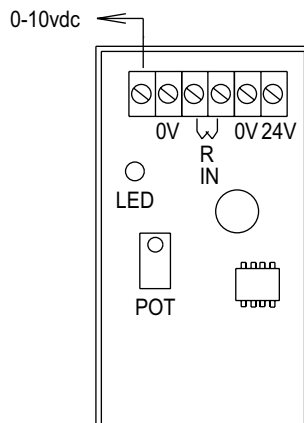
DIMENSIONS

ERIM 135R/1K



WIRING:

ERIM 135R/1K



**INSTALLATION:** Terminals 0.5-2.5mm rising clamps  
Screened cable is recommended  
Keep sensor/control signal wires away from power cables/units which may cause interference.

Min sensor / control signal cable size 7/0.2mm  
The screen should be earthed at the controller end only



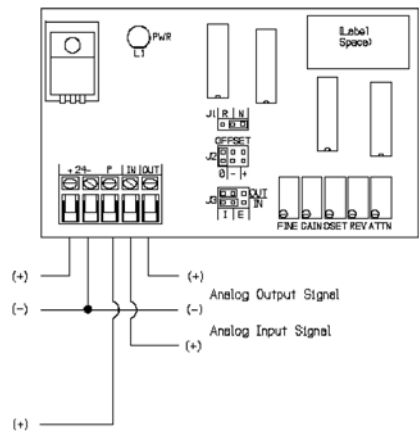
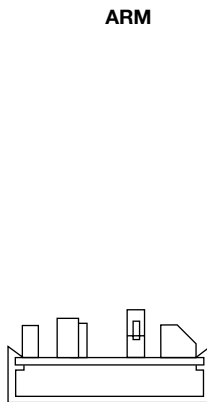
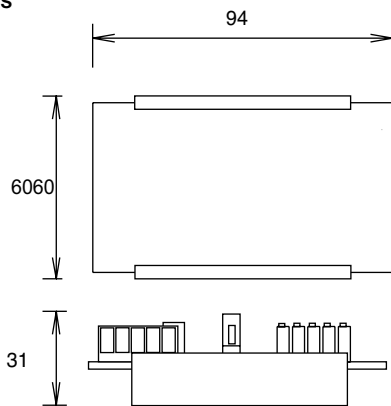
B.M.S INPUT - OUTPUT MODULES ANALOGUE RESCALING VDC / MA

ARM

<p>■ This unit can be used to convert / rescale current or voltage signals:</p> <p>VDC input converted to mA output.                  mA input converted to VDC output.                  mA or VDC input to mA or VDC reversed output.                  Enlarging or reducing signals.                  Adjustments are made using the potentiometers.</p>		<p>Input Impedence:                  1MΩ Voltage      250Ω Current                  Consumption: 200mA maximum                  Output current: 44mA maximum                  LED Power Indicator                  Common Applications :                  4-20mA in to 0-10vdc out                  0-10vdc in to 4-20mA out                  Reversed Output                  Signal / Sensor Range adjustment</p>
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Type	Supply ± 10%	Input Adjustable	Output Adjustable	Ambient Humidity	Ambient Temp °C	Mounting	Protection
ARM	24VAC/DC	0 - 44 mA 0 -35 vdc	1 - 44 mA 0.25 - 20 vdc	10 to 95% non-condensing	0-50	Panel	IPO0

DIMENSIONS



SETUP :

Factory Calibration -

No Attenuation of the Input Signal  
 Voltage Input  
 Voltage Output  
 Normal Acting Output Signal  
 No Offset to the Output Signal  
 Gain of 1 to the Output Signal (1:1)

Trim Pots Fully Clockwise

FINE  
 GAIN = gain of 1  
 REV = 0 volts reverse  
 OFFSET = 0 volts offset

Trim Pots Fully Counter-clockwise

ATTN = no input signal attenuation

The input signal is NOT isolated from the output.  
 When using a 24VAC supply, all devices connected to the ARM must use the same ground.  
 Terminals 0.5-2.5mm .  
 Min cable size 7/0.2mm. Max length 100m  
 Keep sensor/control signal wires away from power cables/units which may cause interference.  
 Screened cable is recommended

0-10vdc to 5-10VDC

J1 to normal position.  
 J2 to positive position.  
 J3 to voltage input, voltage output.  
 Apply 0vdc to the input.  
 Adjust OFFSET for a 5vdc output.  
 Apply 10vdc to the input.  
 Adjust ATTN for a 10vdc output.

0-10VDC to 4-20mA

J1 to normal position.  
 J2 to positive position.  
 J3 to voltage input, current output.  
 Apply 0vdc to the input.  
 Adjust OFFSET for a 4mA output.  
 Apply 10vdc to the input.  
 Adjust ATTN for a 20mA output.

4-20mA to 0-10VDC

J1 to normal position.  
 J2 to negative position.  
 J3 to current input, voltage output.  
 Apply 4mA to the input.  
 Adjust OFFSET for a 0vdc output.  
 Apply 20mA to the input.  
 Adjust GAIN for a 10vdc output.

0-10VDC to 8-2VDC

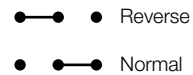
J1 to reverse position.  
 J2 to no offset position.  
 J3 to voltage input, voltage output.  
 Apply 0vdc to the input.  
 Adjust REV for an 8vdc output .  
 Apply 10vdc to the input.  
 Adjust ATTN for a 2vdc output.

0-10VDC to 0-5VDC

J1 to normal position.  
 J2 to no offset position.  
 J3 to voltage input, voltage output.  
 Apply 0vdc to the input.  
 Check output is 0vdc.  
 Apply 10vdc to the input.  
 Adjust ATTN for a 5vdc output.

Jumper Settings -

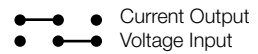
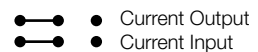
J1 - Output Direction



J2 - Offset Setting



J3 - Input / Output Setting



NOTE : Equivalent Calibration voltage = Required Input Signal Amps x 250 (ie. 4mA is 0.004 x 250 =1vdc and 20mA is 0.020 x 250 =5vdc)  
 Set up the unit with a voltage input and / or output (changing J3) using the formula. If required change J3 back to the correct setting.

# INPUT-OUTPUT MODULES

## B.M.S INPUT - OUTPUT MODULES ANALOGUE BUFFER MODULE 0-10VDC

### ABM4

This unit can be used to generate / reroute up to four 0-10vdc signals:

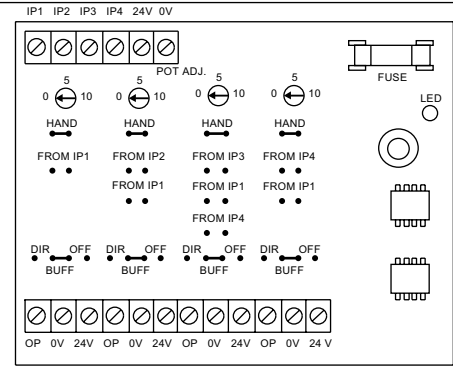
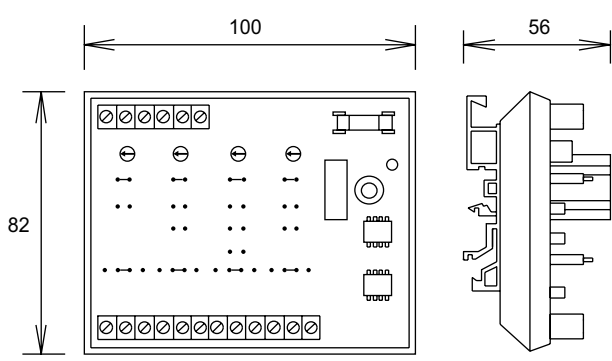
Applications include - Manual adjustment of the 0-10vdc signal potentiometer can be used to position actuators etc, providing commissioning test signals, buffering one signal to drive several actuators or buffering four signals to drive four actuators - each of which draws a high input signal current.



- Direct / Buffer / Off Link Selectable
- Hand / Auto Link Selectable
- LED Power Indicator
- Output Signal Current: 20mA per channel
- Output Power Current: 6A
- Operating Current: 260mA AC 115mA DC
- Input Time Constant: 1ms
- Manual Output Adjustment
- Output Voltage Test Points
- Terminals: Rising Clamps 0.5-2.5mm<sup>2</sup>

Type	Supply ± 10%	Input	Output Direct or Buffered	Ambient Humidity	Ambient Temp °C	Mounting	Protection
<b>ABM4</b>	24VAC/DC	0 - 10 vdc	0 - 10 vdc	0 to 90% non-condensing	0-50	Din Rail	IPO0

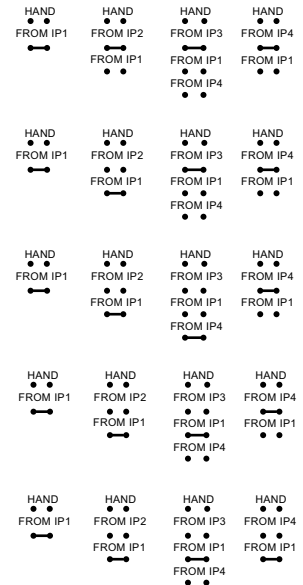
### DIMENSIONS



### INSTALLATION:

#### Selecting Inputs -

- Each output separate  
Output 1 linked to input 1  
Output 2 linked to input 2  
Output 3 linked to input 3  
Output 4 linked to input 4
- Two linked, two separate  
Output 1 linked to input 1  
Output 2 linked to input 1  
Output 3 linked to input 3  
Output 4 linked to input 4
- Two sets of two linked  
Output 1 linked to input 1  
Output 2 linked to input 1  
Output 3 linked to input 4  
Output 4 linked to input 4
- Three linked, one separate  
Output 1 linked to input 1  
Output 2 linked to input 1  
Output 3 linked to input 1  
Output 4 linked to input 4
- All linked  
Output 1 linked to input 1  
Output 2 linked to input 1  
Output 3 linked to input 1  
Output 4 linked to input 1



#### Buffering Outputs -

- When an output is set to BUFFER the signal is buffered to 20mA in both HAND and AUTO modes.
- When an output is set to DIRECT, the signal is only powered from the pot in HAND mode or the input in AUTO mode.
- When the output is set to OFF, the output signal is open circuit.

#### Hand Mode -

When an input link is set to HAND, the output signal can be set by adjusting the associated pot.

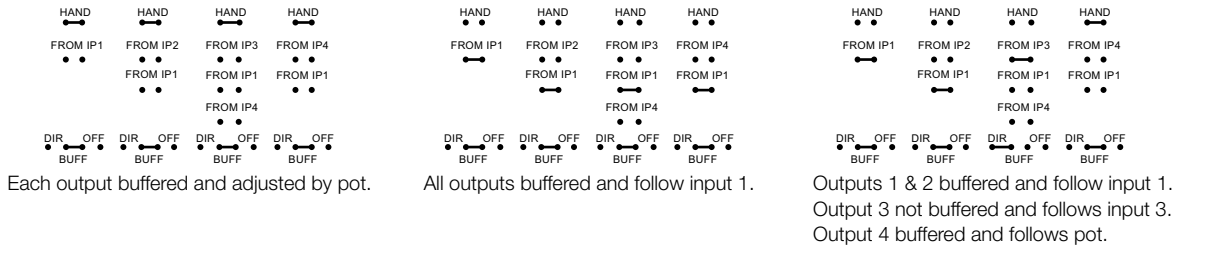
#### NOTE -

All the 0v terminals are common. There must be only one link used per channel.

Min sensor / control signal cable size 7/0.2mm  
The screen must be earthed at controller end only

Max length 100m.  
Screened cable is recommended.  
Keep sensor/control signal wires away from power cables/units which may cause interference.

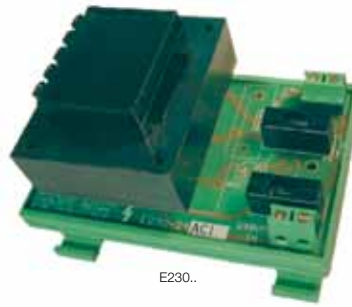
### EXAMPLES :



TRANSFORMERS

E230..

Din rail mounting modules used to convert AC and DC voltages.



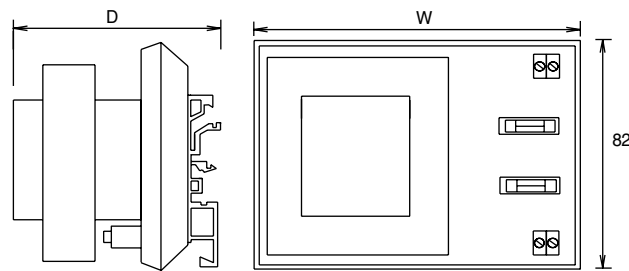
Max Ambient -10/+50 C  
 Terminals 0.5-2.5mm rising clamps  
 Flammability = UL94-V0  
 If fitting inside an enclosure, ensure adequate ventilation is provided as these units can become hot.

Type	Input ±10%	Output ±15%	Primary Fuse Rating	Secondary Fuse Rating	VA	Mounting	Enclosure
<b>E230-24AC1</b>	230VAC	24VAC	315mA (T)	1A (T)	25	Din Rail	IP00
<b>E230-24AC2</b>	230VAC	24VAC	315mA (T)	2A (T)	50	Din Rail	IP00
<b>E230-24AC3</b>	230VAC	24VAC	315mA (T)	3A (T)	75	Din Rail	IP00
<b>E230-24DC1</b>	230VAC	24VAC	315mA (T)	1A (T)	-	Din Rail	IP00

Power supplies with other outputs available to special order

DIMENSIONS

E230..



	W	D
E230-24AC1	113	78
E230-24AC2	113	85
E230-24AC3	130	90
E230-24DC1	113	78

**ACCESSORIES:** EE-M2T Wall mounting enclosure for E230-24AC1. 125H x 125 W x 75D Protection IP65

This enclosure has no ventilation – therefore do not use on loads above 20VA  
 DO NOT USE WITH OTHER TRANSFORMERS due to size and ventilation requirements

WIRING:

E230..

