

Overview

There are many applications for 2-position actuators in HVAC. The BA/EA1 provides a simplified method for wiring and trouble shooting of up to two "Belimo" style 2-position actuators with end switch position feedback.

The BA/EA1 plugs into the BA/BP2, BA/BP4, or BA/BP8 Backplane. A green LED on the BA/EA1 lights when power is present.

Easily reached on the front edge of the board are all the display LEDs, I/O connector and two actuator connectors. The BA/EA1 provides conditioned power for the actuators from the backplane. The actuator connectors provide power to the actuators and terminations for the end switch wires. The I/O connector accepts the On/Off control signal from the controller, an auxiliary end summary switch input from an adjacent EA1 and the end-switch summary output.

With no input signal to the BA/EA1 both actuators are in position A. Applying 24VDC and ground to the control input connector of the BA/EA1 switches both actuators to position B. The actuators can move together or in opposite directions based on J6 & J7 jumper settings. When the actuator end-switches close, an output on the BA/EA1 contact is closed. An auxiliary end switch input allows unlimited numbers of BA/EA1s to be cascaded together, with a single summary contact output indicating all end switches closed.

Mounting

The BA/EA1 plugs into either a BA/BP2, BA/BP4 or BA/BP8 Backplane as shown in Figure 1.

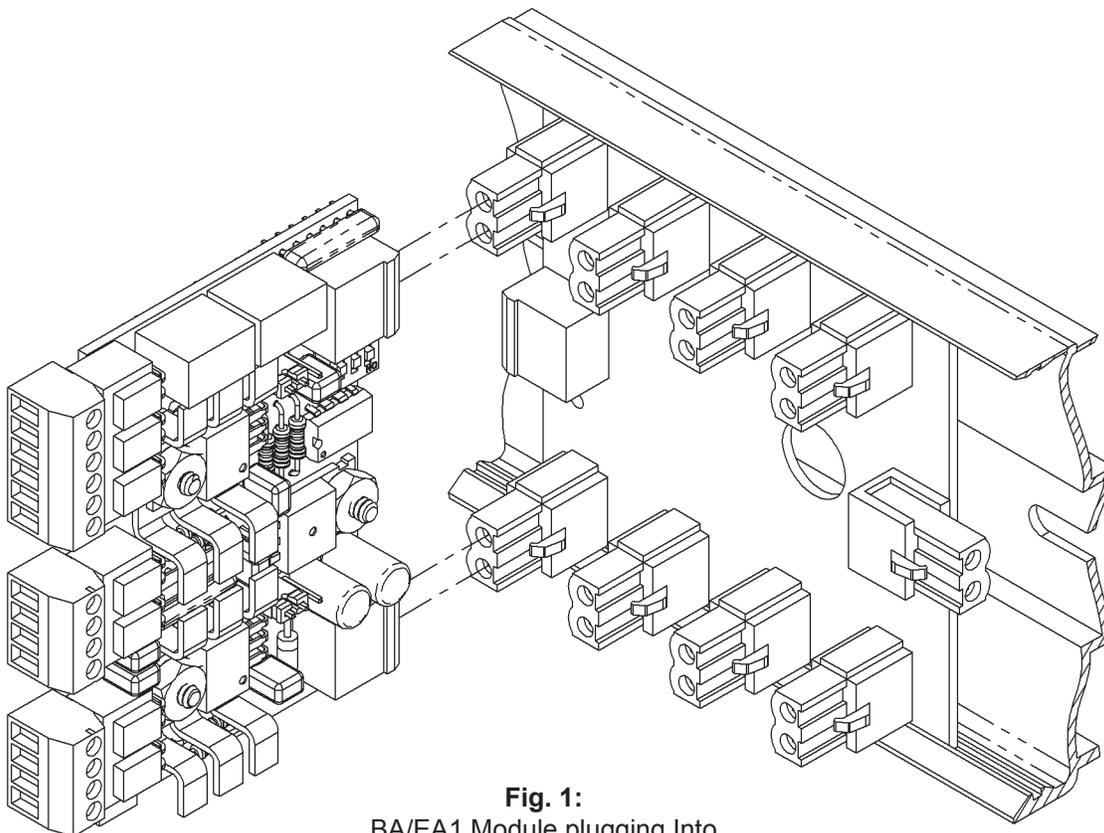


Fig. 1:
BA/EA1 Module plugging Into
a BA/BP4 Backplane

Specifications subject to change without notice.

Termination

Fig 2: BA/EA 1 Component Locator

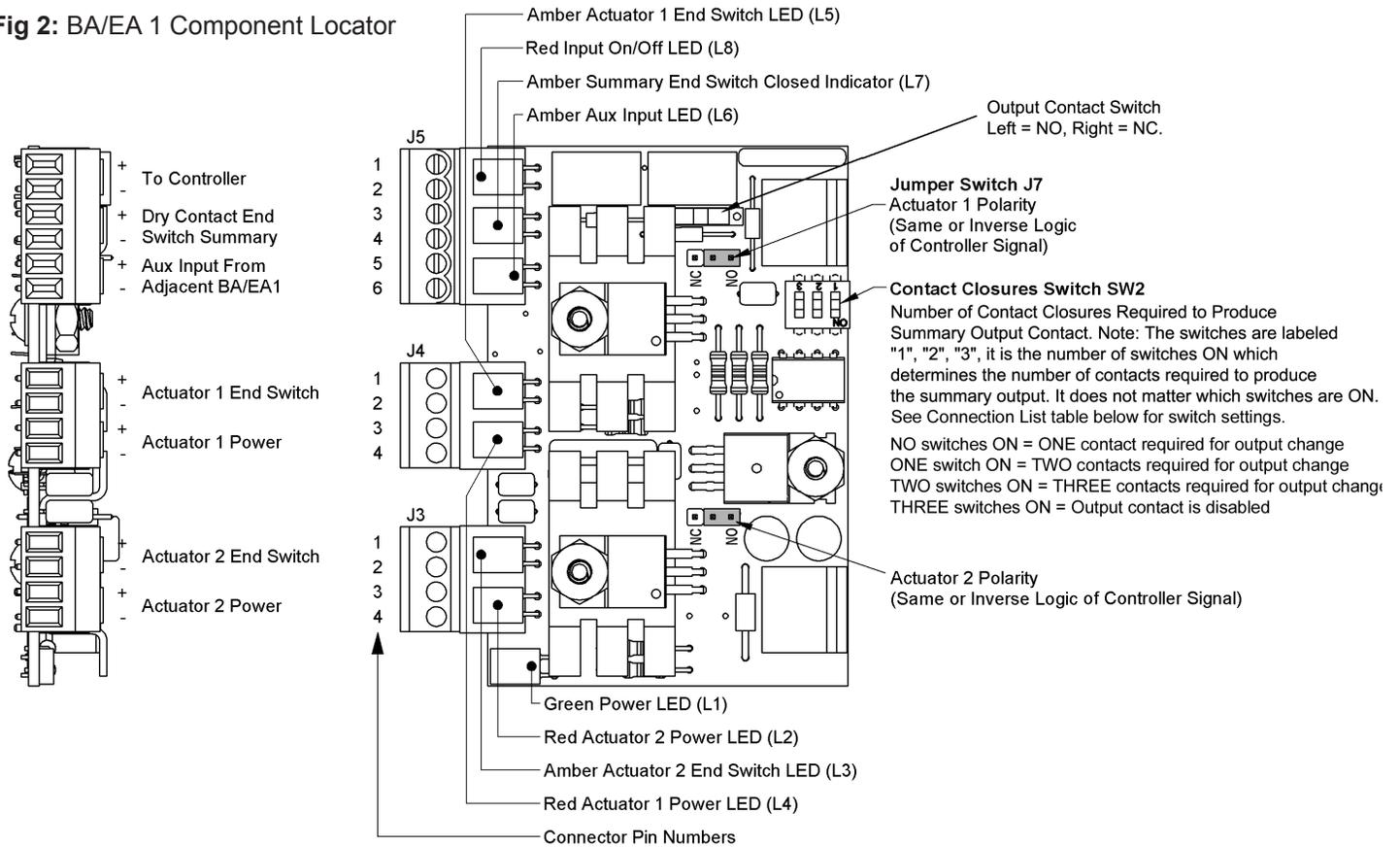


Table 1: BA/EA1 Connection List

Pin	BA/EA1 CONNECTION LIST
I/O Connector J5	
Pin 1	0 or 24 VDC from controller. 0VDC sets actuators to Position "A", 24VDC to Position "B"
Pin 2	Ground from Controller
Pin 3	Dry contact output from BA/EA1 indicating summary or actuator end switch closed
Pin 4	
Pin 5	Dry contact input to BA/EA1 from adjacent cascaded BA/EA1's summary output contact
Pin 6	
Actuator Connector J4	
Pin 1	Actuator Number 1 End Switch +
Pin 2	Actuator Number 1 End Switch -
Pin 3	Actuator Number 1 Power +
Pin 4	Actuator Number 1 Power -
Actuator Connector J3	
Pin 1	Actuator Number 2 End Switch +
Pin 2	Actuator Number 2 End Switch -
Pin 3	Actuator Number 2 Power +
Pin 4	Actuator Number 2 Power -

NOTE: The male connectors that plug into the jacks on the board use a rising block screw terminal to hold the wires. If the block is in a partially up position, the wire may be inserted under the block and the wire will not be held when the screw is tightened. To avoid improper wiring, turn the male connector screws counterclockwise until the block is below the wire opening before inserting the wire. Lightly tug on each wire after tightening to verify proper termination.

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BA/EA1 - Two Position Actuator Interface

Installation & Operating Instructions

14646_ins_BA_EA1

rev. 09/10/19

Diagnosics

Possible Problems:

Power LED L1 does not light.

Input LED L8 does not light.

Actuator drive LEDs L2 or L4 do not light.

End Switch LEDs L1, L5 or L6 do not light.

Possible Solution:

Check to see that the BA/EA 1 module and power cable are firmly inserted into the backplane.

Check to see that the backplane is receiving 26 to 36VDC power from its power supply.

Check for proper polarity of J5 pins 1 & 2.

Check controller for 24 VDC output.

Check controller ground connection.

Check output setting to see if drive LED should be on.

Disconnect J3 or J4. If LED turns on, check actuator wiring or actuator for short to ground.

Check wiring for shorts or opens. Check to see if end switch was wired correctly.

Check to see if actuator is physically obstructed.

NOTE A:

If you find that you must invert one output to get your application to work, you may find you have one end-switch closed in Position "A" and the other one closed in Position "B", but never both closed at the same time. In this case, the BA/EA1 cannot summarize the end-switch contacts, and you'll need to reverse one of the actuators to get the contacts at the same "end". (Flip the actuator over, do not just switch the ccw/cw switch.) Another possibility would be to add a "beginning-of-stroke" contact to the actuator which needs it. Another option would be to use a second BA/EA1 with the output contact inverted, then wire the summary status output to the aux input on the first BA/EA1.

NOTE B:

The BA/EA1 was designed primarily for Belimo spring-return actuators which have end switches at the end-of-stroke, but not necessarily at the beginning-of-stroke. Care must be taken when using the summary output contact, since all contacts to be summarized must be closed at the same time. This means the contacts must be closed in either the "controller signal on" position (previously referred to as Position "B") or the in the "controller signal off" position (previously referred to as Position "A").

NOTE C:

The BA/EA1 could be used to control one non-spring return two-position actuator, but at present, it cannot be used for a floating point application.

To use the BA/EA1 to control one non-spring return two-position actuator, connect the the actuator power "+" terminal (pin 3) of the upper plug J4 to the "Open" terminal of the actuator. Connect the the actuator power "+" terminal (pin 3) of the lower plug J3 to the "Close" terminal, and connect the actuator power "-" terminal (pin 4) of the upper plug J4 to the "Common" terminal of the actuator. Then set the Actuator Polarity Jumpers (J6 and J7) to opposite positions from one another.

If the actuator has an end switch, connect it to pins 1 and 2 of upper plug J4. If it has two end switches, connect the other end switch to pins 1 and 2 of lower plug J3. Set SW2 for "1". You will get an output contact at pins 3 and 4 of J5 when the actuator is at either end but not during the stroke.

Specifications

Power Voltage	26 to 36VDC (from BAPI PS17 Power Supply or other appropriate power supply)
Power Current	50 mA maximum plus actuators (1.7VA max plus actuator)
Actuator Control Voltage	0 to 24VDC @ 7mA maximum
Actuator Power Voltage	24VDC
Actuator Power Current	2 output of 250mA maximum (12 Watts total)

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