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GREENHECK FSKN Bacnet Test Module

GREENHECK FSKN Bacnet Test Module Instruction Manual

Contents

GREENHECK FSKN Bacnet Test Module
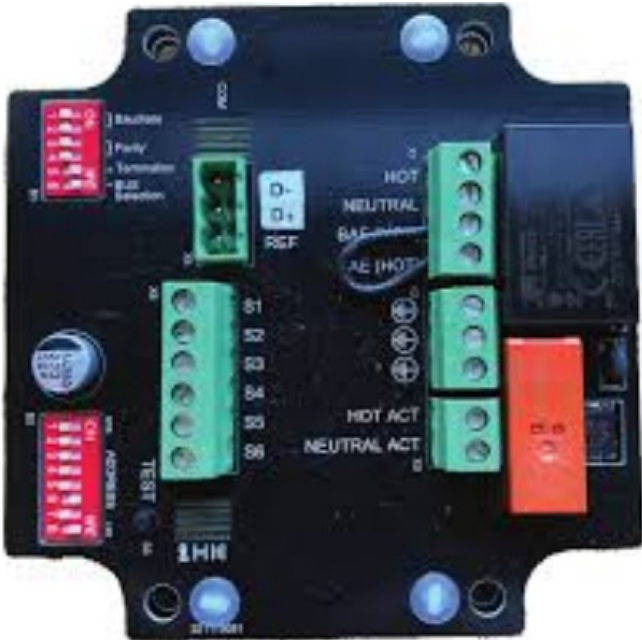
Specifications

- Product Name: FSKN BACNet Test Module
- Interface: BACnet or Modbus control system
- Purpose: Test actuated life safety damper per code requirements
- Safety Functions: None
- Compatibility: Designed for testing spring return containment dampers

Installation

Mounting
Surface mount the FSKNxx-BAC using the 4 holes on the base of the enclosure. Do not drill inside the enclosure. Mark holes, drill, and then mount the enclosure. Use bolts with lock washers inside damper sleeve or on any vibrating surface like ductwork.

Wiring Diagrams

Network Wiring Connections:
The wiring of the line for BACnet MS/TP or Modbus RTU must be carried out in accordance with applicable RS 485 standards. Set dipswitch 5 [Term] of last FSKN to ON to enable EOL 150 resistor.

BACnet Dip Switch Settings:
Refer to the provided table for dip switch settings based on baudrate, parity, and termination requirements.

Communication Status:

- Yellow flickering LED indicates communications established
- To reset error message, press reset button for longer than one second
- To perform a manual test, press and hold button until actuator springs closed

LED Status Signalization:

Color	Status	Meaning
Green	On/Blinking	Upper limit switch (damper open) – Damper opens (motor isactuated)
Yellow	On/Blinking	Lower limit switch (damper closed) – Damper closes (motor isnot actuated)
Red	Flashing	External fault = smoke detector triggered, nominal position notreached.

Basic Wiring
Provide disconnect and L1 N overload as required by local and national codes.

FAQ

Q: Can the FSKN be used in smoke control systems?
A: No, the FSKN should not be used in smoke control systems for any safety function.

**Q:** What are the recommended network wiring configurations?
A: For a mix of 2-wire and 3-wire devices, refer to the ASHRAE BACnet Standard or Modbus controller installation

instructions for wiring and grounding information.

The FSKN is an interface between a BACnet or Modbus control system and an actuated life safety damper. It's purpose is to test the damper per code requirements. It has no safety functions. It is a testing module.

Important!
The FSKN is not to be used in smoke control systems for any safety function. It is not UL 864 UUKL listed. It is an interface for testing spring return containment dampers per Chapter 7 of the IBC (International Building Code) and IFC (International Fire Code) only. Use the FSKN with spring return closed dampers only.
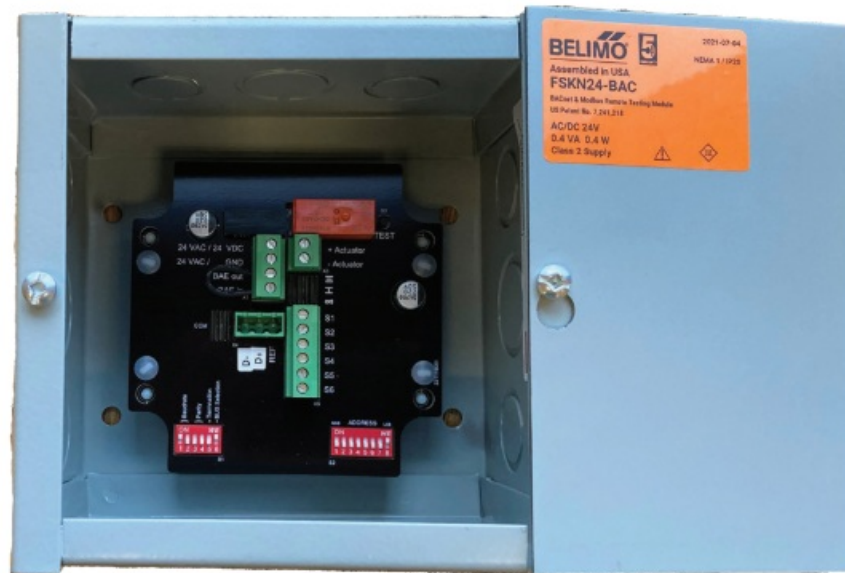

Installation

The enclosure is a standard NEMA 1 electrical box. It is surface mounted remotely or on the damper sleeve. If mounted on the damper sleeve the connected ducts must be free to fall away if necessary. Do not bridge the sleeve and duct. Four mounting holes are inside the enclosure.
Ground all conduits entering the box per NFPA 70 NEC and local codes. The life safety code requires flex or hard conduit for both 24V and 120V circuits. The life safety code requires flex or hard conduit for both 24V and 120V circuits. Only the 120V model requires a grounding screw connection.
Run the BACnet RS485 cable through an approved squeeze connector. The shields are to be grounded at one location only, typically at the originating controller. See the BACnet standard for RS485 wiring options.

Mounting

Surface mount the FSKNxx-BAC using the 4 holes on the base of the enclosure. Do not drill inside of enclosure. Mark holes, drill, and then mount the enclosure. Use bolts with lock washers inside damper sleeve or on any vibrating surface like ductwork.

mounting holes
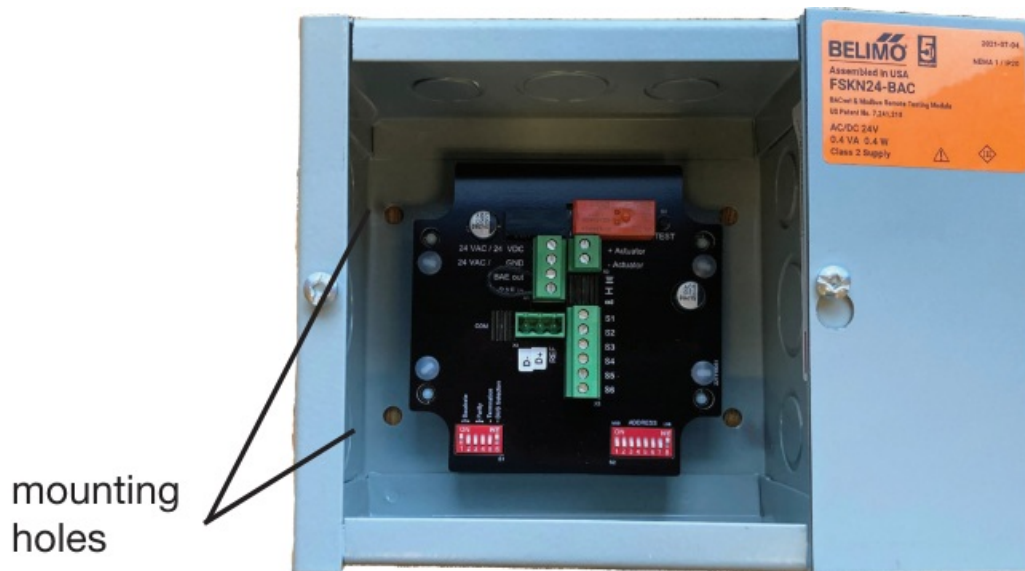
The enclosure has a standard screw cover, cULus 6 in. x 6 in. x 3 in. ANSI 61 polyester finish.

Wiring Diagrams

Network wiring connections
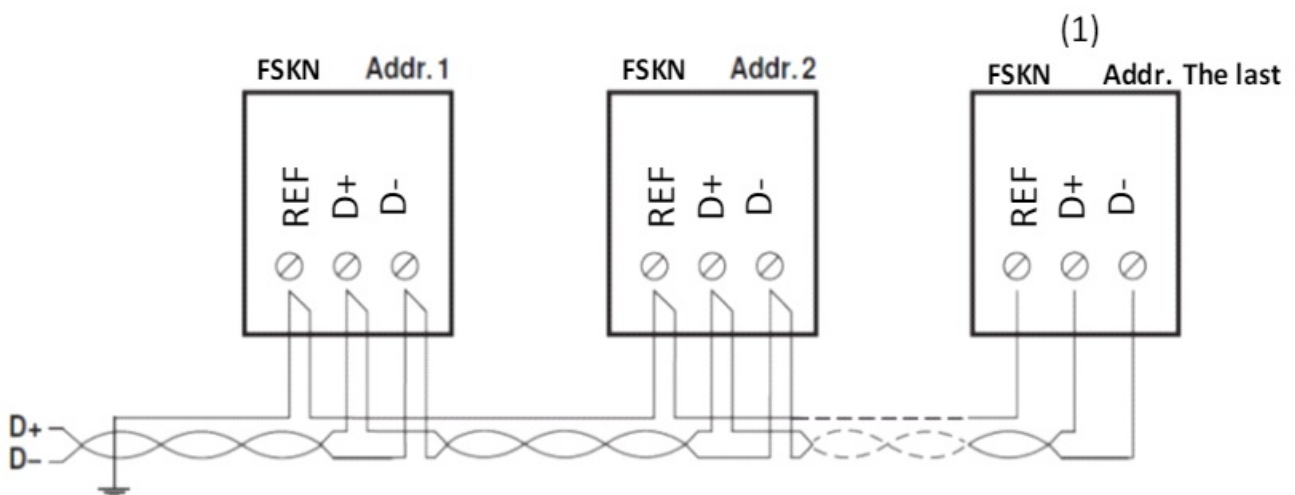
The wiring of the line for BACnet MS/TP or Modbus RTU must be carried out in accordance with applicable RS 485 standards.
(1) Set dipswitch 5 [Term] of last FSKN to ON to enable EOL 150Ω resistior.

If connected to a network with a mix of 2-wire (non-isolated) and 3-wire (isolated) devices, refer to the ASHRAE BACnet Standard or Modbus controller installation instructions for wiring and grounding information.

3-wire networks are recommended to avoid problems

BACnet Dip Switch Settings

For Modbus dipswitch settings see FSKN 120 & FSKN24 BACnet and Modbus information at
www.belimo.us/firesmoke/FSKN.
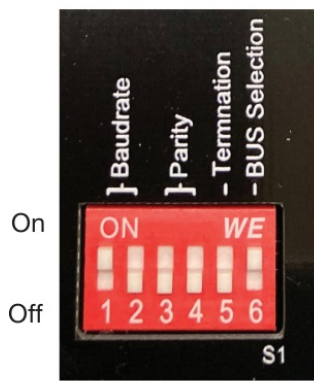
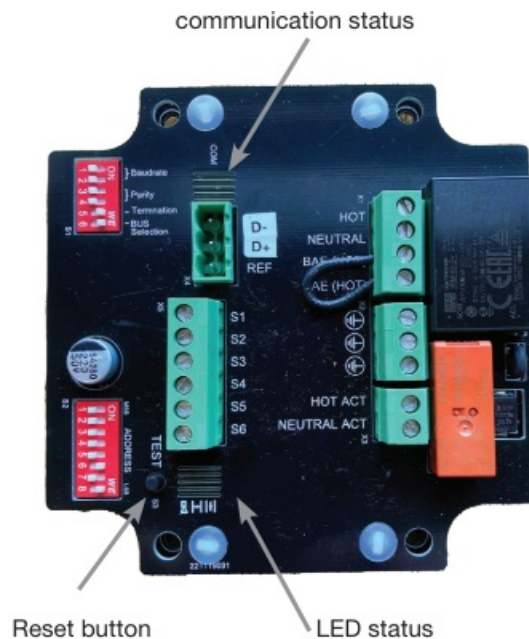| Baudrate	1	2	Parity	3	4	Termination	5	Bus	6
9'600	OFF	OFF	1-8-N-1	OFF	OFF	with 150 Ω	ON	BACnet	ON
19'200	OFF	ON	1-8-N-1	OFF	ON	OFF	OFF	Modbus	OFF
38'400	ON	OFF	1-8-N-1	ON	OFF				
76'800	ON	ON	1-8-N-1	ON	ON				

BACnet address	1	2	3	4	5	6	7	8
0		OFF	OFF	OFF	OFF	OFF	OFF	OFF
1		OFF	OFF	OFF	OFF	OFF	OFF	ON
2		OFF	OFF	OFF	OFF	OFF	ON	OFF
...								
127		ON	ON	ON	ON	ON	ON	ON

On the end of line FSKN Dipswitch 5, Term, is set to ON while others are always set to OFF.

FSKN120-BAC

communication status

Reset button   LED status

Communication status
Yellow flickering = communications established

Reset button
Press the button for longer than one second to reset an error message. Press and hold button until actuator springs closed to perform a manual test.

LEDs status signalisation Belimo damper actuator

Color	On/Blinking	Meaning
Green	On	Upper limit switch (damper open)
	Blinking	Damper opens (motor is actuated)
Yellow	On	Lower limit switch (damper closed)
	Blinking	Damper closes (motor is not actuated)
Red	On	Internal device fault (BKN)
	Blinking	External fault = smoke detector triggered, nominal position not reached.
	Flashing	External fault = If an error is stored (i.e. no longer pending, but not yet acknowledged), then this is displayed on the deveice by a periodic flash of the red LED

Blinking = 1⁄2 second on, 1⁄2 second off
Flashing = 1⁄4 second on, 1⁄2 second off

Basic FSKN120-BAC wiring

FSKN24-BAC

LED status   Reset button

Communication status

Communication status
Yellow flickering = communications established

Reset button
Press the button for longer than one second to reset an error message. Press and hold button until actuator springs closed to perform a manual test.
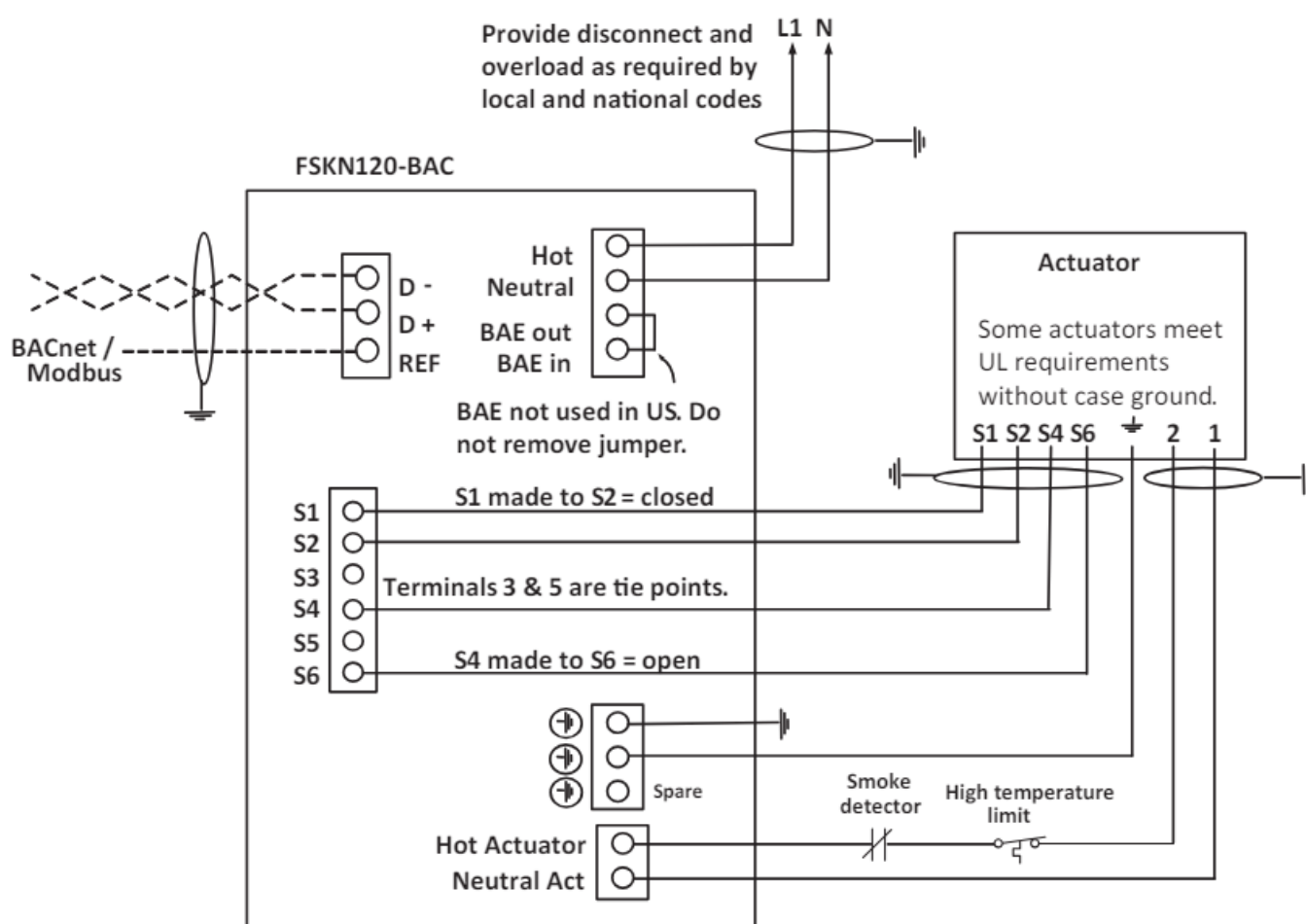
LEDs status signalisation Belimo damper actuator

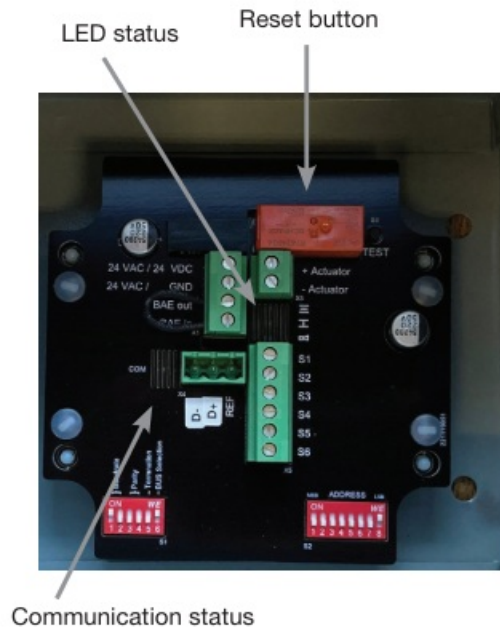| Color	On/Blinking	Meaning
Green	On	Damper is in the open position
	Blinking	Damper is opening
	Off	Damper blade is between open and close
Yellow	On	Damper is in closed position
	Blinking	Damper is closing
	Off	Damper blade is between close and open
Red	On	Internal device fault (BKN)
	Blinking	External fault = smoke detector triggered, nominal position not reached.
	Flashing	External fault = If an error is stored (i.e. no longer pending, but not yet acknowledged), then this is displayed on the deveice by a periodic flash of the red LED

Blinking = 1⁄2 second on, 1⁄2 second off
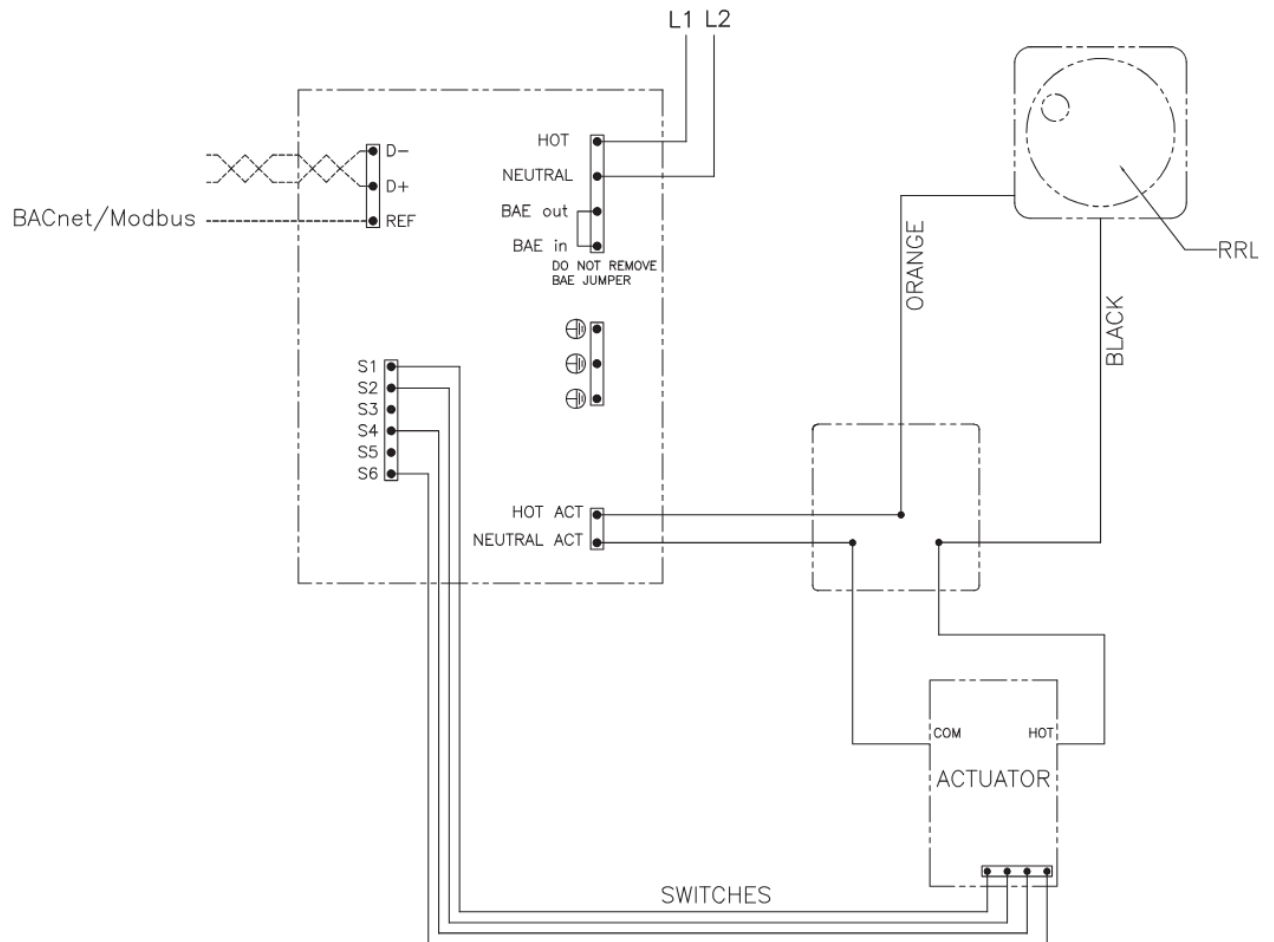Flashing = 1⁄4 second on, 1⁄2 second off

Basic FSKN24-BAC wiring

Initial Start-Up

Token passing by devices on a MSTP network is specified in the BACnet standard. The status indication LEDs are illuminated as soon as power is applied. The FSKN activates the test sequence with the first power on and expects input on the switch terminals, Closed or open in correct sequence. If nothing is connected to a switch terminal, an error will occur with associated blinking patterns. The error message can be removed by connecting the switch wires and then pressing the Test button or using the Command MV120 4 Reset command.
The green LED blinks when power is applied and the actuator is driving open.
The green LED is on continuously after the S2 switch makes.
A blinking red LED indicates a failure.
A blinking yellow LED is a transition indication.

Normal Operation
The FSKN relay is closed and the smoke detector and "primary heat responsive device," manual reset high temperature limit, operate normally.

During normal operation if a test command is issued to an FSKN:

1. The FSKN relay is energized which opens its NC contacts and power is removed from the actuator which then springs the damper closed.
2. The position switch (FSKN terminals S1 & S2, wires S1 & S2 on the actuator) makes (closes) indicating the damper is closed. Damper blade switches may also be employed.
3. After 80 seconds the FSKN relay is de-energized which again powers the actuator and drives the damper open. The switch between terminals S1 & S2 opens. The yellow and green LEDs blink until the damper is reopened fully.
4. When the actuator has driven the damper open either the actuator open switch (wires S4 & S6) or the damper blade open switch again makes and the test is complete.
5. The FSKN then indicates no failure and the information is available to the BACnet controller.
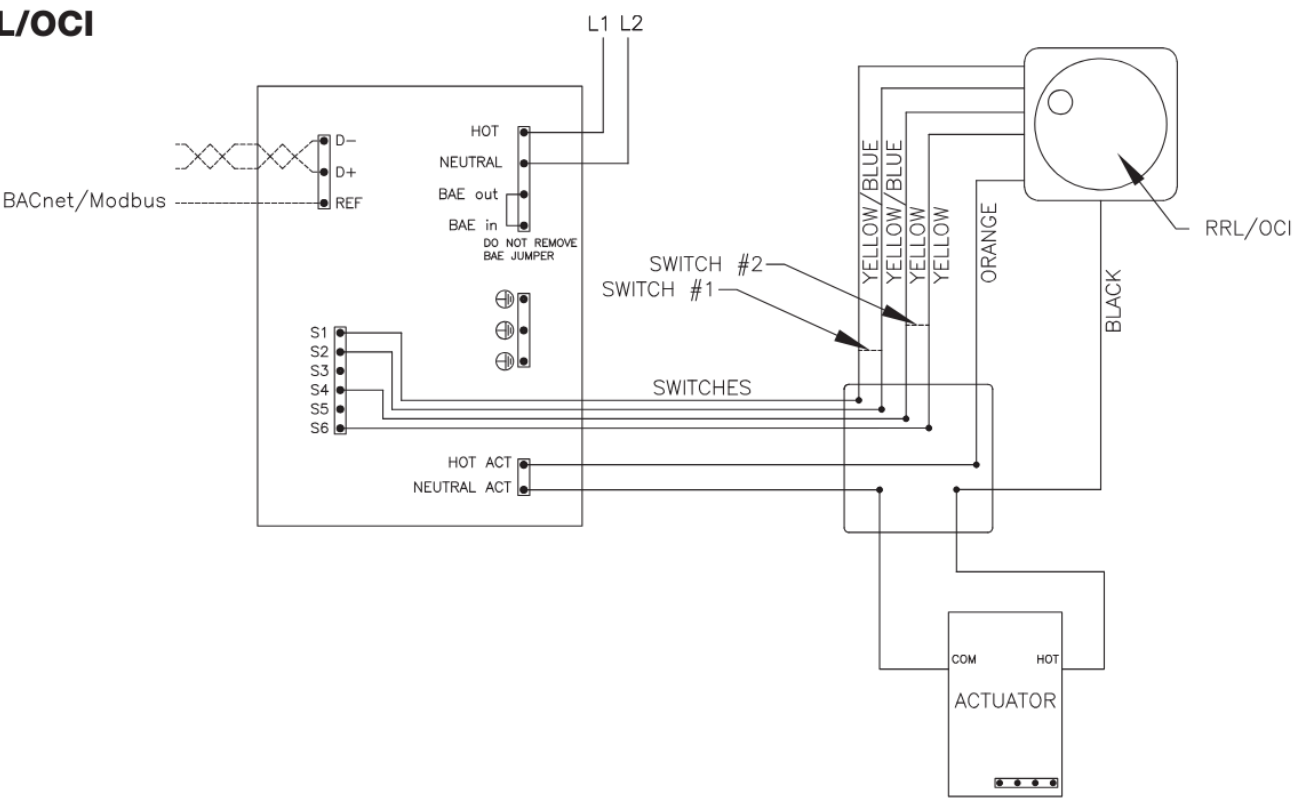
6. If the sequence is incorrect (either the closed switch or the open switch not making or breaking in correct sequence then a Failure message is recorded.
7. Both the Red and Green LEDS will flash while the actuator is opening.
8. After correcting any problem either pressing the Test switch on the FSKN or entering MV120 4 Reset command will change the FSKN Actuator status to normal.
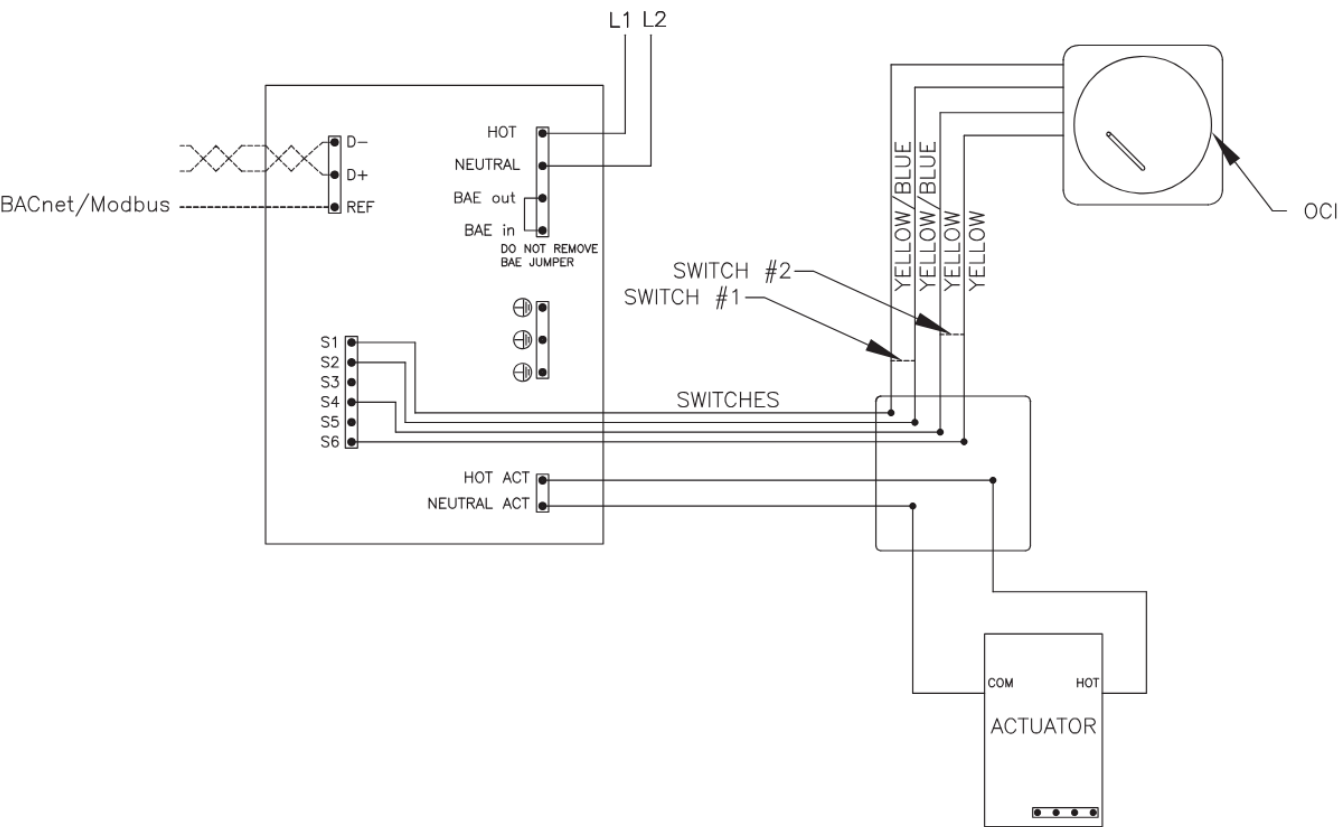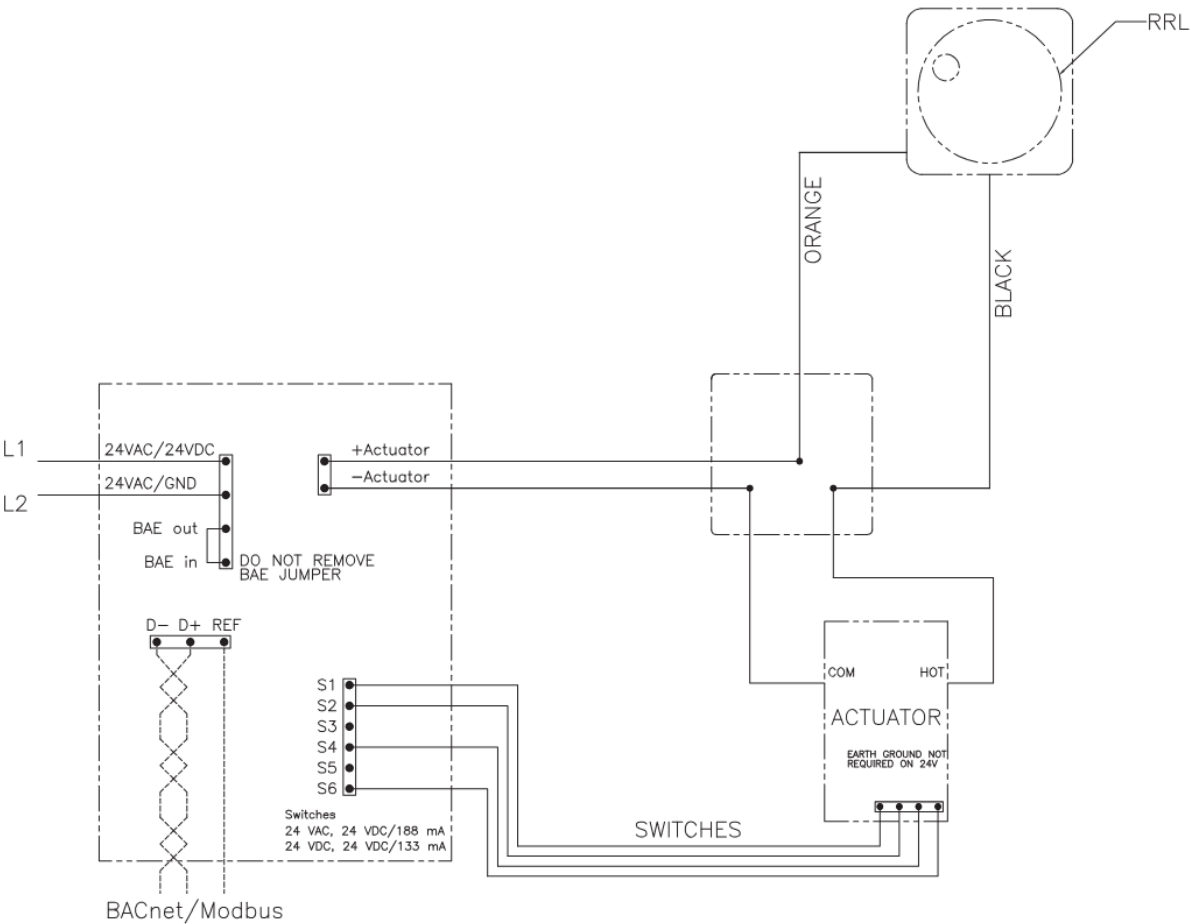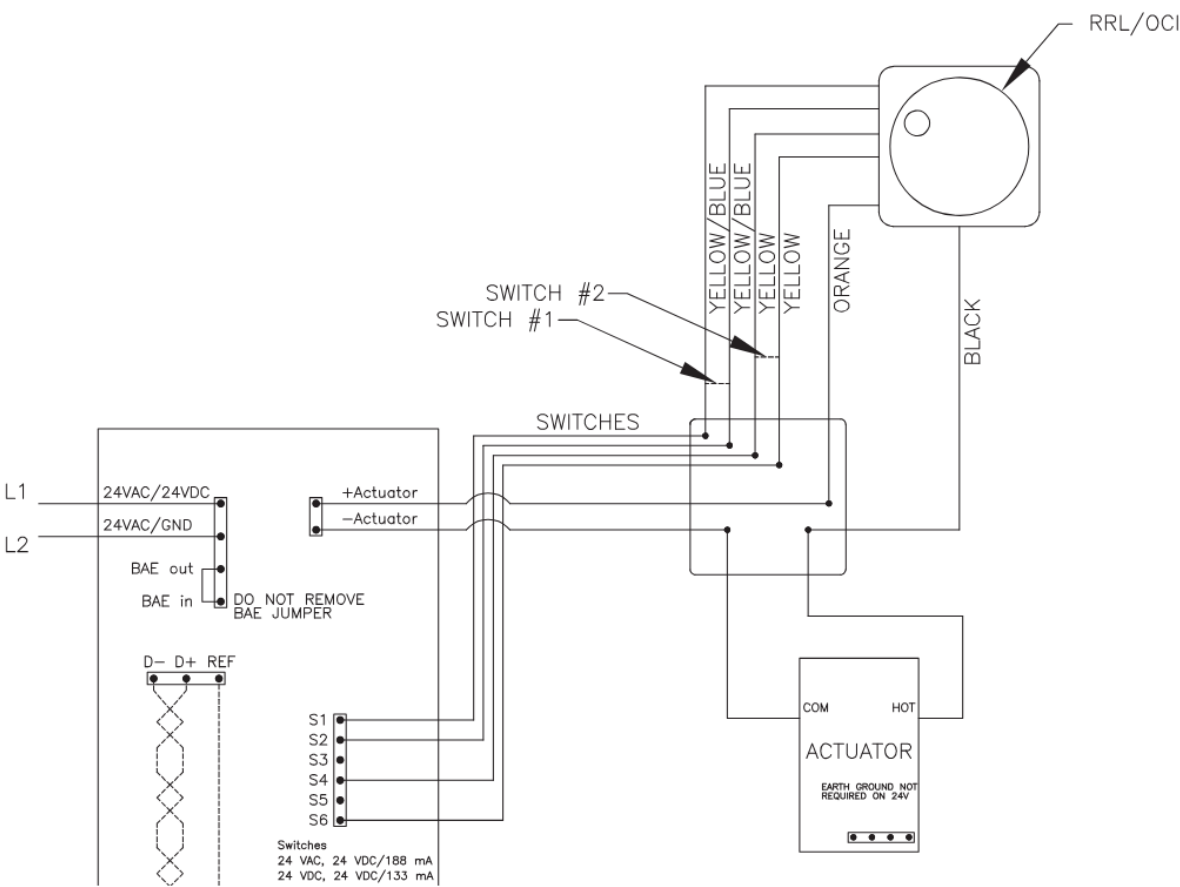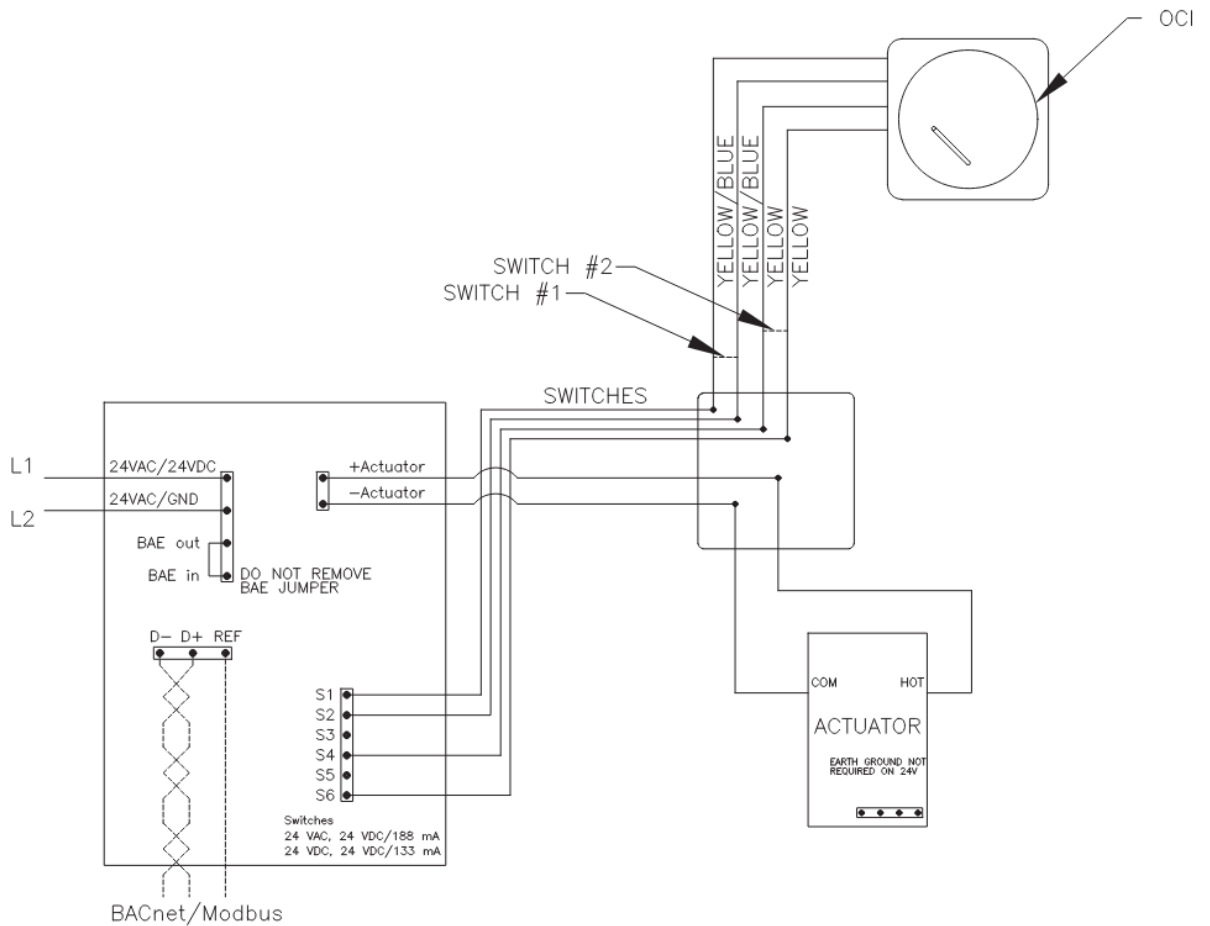
Wiring Diagrams: FSKN120-BAC

RRL

RRL/OCI

L1 L2

HOT
NEUTRAL
BAE out
BAE in
DO NOT REMOVE
BAE JUMPER

D−
D+
REF

BACnet/Modbus

S1
S2
S3
S4
S5
S6

SWITCH #2
SWITCH #1

YELLOW/BLUE
YELLOW/BLUE
YELLOW
YELLOW
ORANGE

BLACK

RRL/OCI

SWITCHES

HOT ACT
NEUTRAL ACT

COM   HOT

ACTUATOR

OCI

L1 L2

HOT
NEUTRAL
BAE out
BAE in
DO NOT REMOVE
BAE JUMPER

D−
D+
REF

BACnet/Modbus

S1
S2
S3
S4
S5
S6

SWITCH #2
SWITCH #1

YELLOW/BLUE
YELLOW/BLUE
YELLOW
YELLOW

OCI

SWITCHES

HOT ACT
NEUTRAL ACT

COM   HOT

ACTUATOR

Wiring Diagrams: FSKN24-BAC

RRL

L1 — 24VAC/24VDC
L2 — 24VAC/GND
BAE out
BAE in — DO NOT REMOVE BAE JUMPER

D− D+ REF

+Actuator
−Actuator

S1
S2
S3
S4
S5
S6

Switches
24 VAC, 24 VDC/188 mA
24 VDC, 24 VDC/133 mA

SWITCHES

BACnet/Modbus

ORANGE

BLACK

RRL

COM   HOT

ACTUATOR

EARTH GROUND NOT
REQUIRED ON 24V

RRL/OCI

RRL/OCI

L1 — 24VAC/24VDC
L2 — 24VAC/GND
BAE out
BAE in — DO NOT REMOVE BAE JUMPER

D− D+ REF

+Actuator
−Actuator

S1
S2
S3
S4
S5
S6

Switches
24 VAC, 24 VDC/188 mA
24 VDC, 24 VDC/133 mA

SWITCH #2
SWITCH #1

SWITCHES

YELLOW/BLUE
YELLOW/BLUE
YELLOW
YELLOW
ORANGE

BLACK

COM   HOT

ACTUATOR

EARTH GROUND NOT
REQUIRED ON 24V

OCI

Links to wiring diagrams with smoke detector

486250 FSKN Wiring Diagrams, Rev. 1, May 2023 (greenheck.com)

Reference links to Belimo

belimo_FSKN_installation-instructions.pdf

Belmo_FSKN_Application-Guide_en-us.pdf (belimo.com)

belimo_FSKN120_FSKN24_BACnet_Modbus_guide_en-us.pdf

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Documents / Resources

GREENHECK FSKN Bacnet Test Module [pdf] Instruction Manual
FSKN Bacnet Test Module, FSKN, Bacnet Test Module, Test Module, Module

References

- 🗏 **Error page**
- **User Manual**