

FlowCon FH Actuators

FlowCon Electrical Actuators



SPECIFICATIONS

FlowCon FH

Supply voltage:	24V AC/DC $\pm 10\%$, 50/60 Hz
Type:	Electrical, bi-directional synchronous motor
Power consumption:	24V AC: 1.5VA standby / 6VA operating / 8.5VA max. 24V DC: 0.6W standby / 2.6W operating / 4.1W max.
Inrush current:	10A (peak)
Control signal:	Analog 0(2)-10V DC, $<0.5\text{mA}$ or digital 3-point floating and ON/OFF
Resolution:	1:100 (0-10V analog) and 1:80 (2-10V analog)
Feedback:	Yes, control signal (analog) or 0-10V DC (digital ON/OFF)
Failsafe function:	Fail in place
Manual override:	Yes
Position indicator:	Yes
Operation time:	22 sec/mm
Actuating force:	600N -50N/+100N
Stroke:	7 mm / 0.276 in
Ambient temperature ¹ :	0°C to +50°C / +32°F to +122°F
Media temperature:	0°C to +120°C / +32°F to +248°F
Humidity rating:	0..85% rH, no condensation
Protection:	IP54 incl. upside-down, class III, indoor use only
CE conformity:	EN 60730
Cable:	Fixed, 5 wires x 0.50 mm ² , 1.5 meter Fixed, 5 wires x AWG20, 4.9 ft
Closing point adjustment:	During operation the actuator will self-adjust according to the closing point and stroke length of the valve.

Note 1: Including +5°C self-generated heat based on UL requirements.

SPECIFICATIONS (...continued)

FlowCon FH-BUS

Supply voltage:	24V AC/DC $\pm 10\%$, 50/60 Hz
Type:	Electrical, bi-directional synchronous motor
Power consumption:	24V AC: 2.2 VA standby / 4.8VA operating / 9.0VA max. 24V DC: 1.1 W standby / 2.5W operating / 4.7W max.
Inrush current:	24V AC: 7.2A (peak) 24V DC: 5.0A (peak)
Control signal:	0-100% (BACnet or Modbus)
Resolution:	1:100 (0-10V)
Feedback:	Yes, 0-100% (BACnet or Modbus)
Failsafe function:	Fail in place
Manual override:	Yes, with magnet
Position indicator:	Yes
Operation time:	22 sec/mm (alternatively 16 sec/mm or 28 sec/mm)
Actuating force:	500N -50N/+100N
Stroke:	14 mm / 0.55 in
Ambient temperature ² :	0°C to +50°C / +32°F to +122°F
Media temperature:	-10°C to +120°C / +14°F to +248°F
Humidity rating:	0..85% rH, no condensation
Protection:	IP54 incl. upside-down, class III, indoor use only
CE conformity:	EN 60730
Closing point adjustment:	During operation the actuator will self-adjust according to the closing point of the valve
Cable:	2 groups:
- Group 1:	Fixed, 2x2 wires x 0.34 mm ² , 1.5 meter Fixed, 2x2 wires x AWG22, 4.9 ft Fixed, 2 wires x 0.50 mm ² , 1.5 meter Fixed, 2 wires x AWG20, 4.9 ft
- Group 2:	Fixed, 4 wires x 0.50 mm ² , 1.5 meter Fixed, 4 wires x AWG20, 4.9 ft
Recommended cable:	Twisted pair with shielding (characteristic impedance ~120Ω)
Recommended cable length:	Baud rate dependent: 9600 and 19200 baud rate - max. 1000 meter 38400 and 57600 baud rate - max. 750 meter 76800 baud rate - max. 650 meter 115200 baud rate - max. 500 meter

Modbus:

Transmission type:	RTU slave
Interface:	EIA-485 / RS-485
Baud rates supported:	9600, 19200, 38400, 57600, 76800 and 115200
Start/stop bits:	8N2 (standard)
Participants:	Up to 32 recommended, max. 64 participants
Load:	1/8 unit load

BACnet:

Protocol:	BACnet MS/TP Master
Interface:	EIA-485 / RS-485
Device profile:	BACnet Application Specific Controller (B-ASC) type server
Baud rates supported:	9600, 19200, 38400, 57600, 76800 and 115200
Services (BIBBS) supported:	DS-RP-B, DS-RPM-B, DS-WP-B, DS-WPM-B, DS-COV-B, DM-DDB-B, DM-DOB-B, DM-DCC-B, DM-TS-B, DM-RD-B and DM-R-B
Participants:	Up to 32 recommended, max. 64 participants
Load:	1/8 unit load.

Note 2: Including +5°C self-generated heat based on UL requirements.

SPECIFICATIONS (...continued)

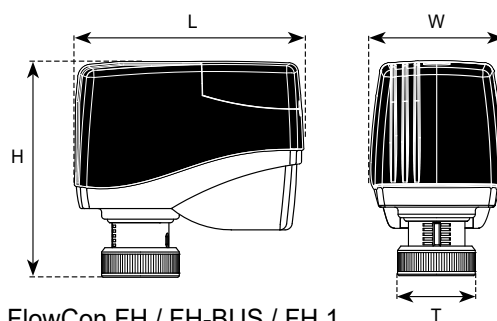
FlowCon FH.1

Supply voltage:	24V AC/DC $\pm 10\%$, 50/60 Hz
Type:	Electrical, bi-directional synchronous motor
Power consumption:	24V AC: 2.6VA standby / 7.9VA operating / 9VA max. 24V DC: 1.2W standby / 3.7W operating / 4.5W max.
Inrush current:	12A (peak)
Control signal:	Analog 0(2)-10V DC or digital 2-position with constant power supply
Resolution:	1:100 (0-10V analog) and 1:80 (2-10V analog)
Feedback:	Yes, control signal (analog) or 0-10V DC (digital)
Failsafe function:	Yes, optional open or close (set on actuator)
Electrical override:	Yes
Position indicator:	Yes
Operation time:	22 sec/mm (failsafe mode: 5 sec/mm)
Actuating force:	600N -50N/+100N
Stroke:	7 mm / 0.276 in
Ambient temperature ³ :	0°C to +50°C / +32°F to +122°F
Media temperature:	0°C to +120°C / +32°F to +248°F
Humidity rating:	0..85% rH, no condensation
Protection:	IP54 incl. upside-down, class III, indoor use only
CE conformity:	EN 60730
Cable:	Fixed, 5 wires x 0.50 mm ² , 1.5 meter Fixed, 5 wires x AWG20, 4.9 ft
Closing point adjustment:	During operation the actuator will self-adjust according to the closing point and stroke length of the valve.

Note 3: Including +5°C self-generated heat based on UL requirements.

DIMENSIONS AND WEIGHT (NOMINAL)

Actuator	L mm (in)	W mm (in)	H mm (in)	T	Weight kg (lb)
FH	96.0 (3.78)	56 (2.20)	91 (3.58)	M30x1.5	0.30 (0.67)
FH-BUS	96.0 (3.78)	56 (2.20)	91 (3.58)	M30x1.5	0.40 (0.88)
FH.1	96.0 (3.78)	56 (2.20)	91 (3.58)	M30x1.5	0.34 (0.75)



FlowCon FH / FH-BUS / FH.1

MODEL NUMBER SELECTION

Actuator type:

- Leave blank** = no failsafe
- .1** = failsafe
- BUS** = no failsafe, incl. Modbus and BACnet

FH

Example:

FH.1 = FlowCon FH actuator 24V modulating with failsafe function

VALVE FUNCTION

The valve functions are adjusted with the DIP switches under the connection cover.

FlowCon FH

Switch #1: Auto cycle ON/OFF

If the plant specifications permit it, the auto cycle can be activated during commissioning. Auto cycle prevents the valve from jamming when the valve is not moved for a longer period of inactivity, e.g. for heating systems during the summer. When the auto cycle is activated, the actuator will perform 50% stroke cycle if no stroke movement has occurred during a 3-weeks period.

Factory setting = OFF.

Switch #2: Analog 2-10V DC / 0-10V DC

Setting control range by the continuous actuating signal 0-10V DC or 2-10V DC.

Factory setting = 0-10V DC.

Switch #3: Normally open / Normally close

Setting actuating direction with 10V DC control signal to “valve open” or “valve closed” as well as the position feedback.

Factory setting = Normally closed; 0V DC = valve closed.

Switch #4: Equal % control / Linear control

Setting of actuating control curve to either equal percentage or linear control.

Factory setting = Linear control.

Switch #5: has no function.

Switch #6: Re-calibration

Setting is indifferent, but flipping the switch will start re-calibration. After re-calibration the actuator will automatically go into normal operation.



FlowCon FH-BUS

Switch #1: BIT 0 ON/OFF

For bus address setting. Setting bit 0 to either 1 (=ON) or 0 (=OFF).

Factory setting = OFF.

Switch #2: BIT 1 ON/OFF

For bus address setting. Setting bit 1 to either 1 (=ON) or 0 (=OFF).

Factory setting = OFF.

Switch #3: BIT 2 ON/OFF

For bus address setting. Setting bit 2 to either 1 (=ON) or 0 (=OFF).

Factory setting = OFF.

Switch #4: BIT 3 ON/OFF

For bus address setting. Setting bit 3 to either 1 (=ON) or 0 (=OFF).

Factory setting = OFF.

Switch #5: BIT 4 ON/OFF

For bus address setting. Setting bit 4 to either 1 (=ON) or 0 (=OFF).

Factory setting = OFF.

Switch #6: BIT 5 ON/OFF

For bus address setting. Setting bit 5 to either 1 (=ON) or 0 (=OFF).

Factory setting = OFF.

Switch #7: Bus portocol

Setting bus protocol selection to either MODbus (=ON) or BACnet (=OFF)

Factory setting = OFF.



VALVE FUNCTION (...continued)

Switch #8: Terminating resistor

Setting terminating resistor to either active (=ON) or inactive (=OFF).

Factory setting = OFF.

Initial setting of switches 1 to 6 is OFF, which indicates that bus communication is deactivated and the actuator is in first-time mounting position. With switches 1 to 6 binary setting of the bus address is performed.

BIT 5 (32)	BIT 4 (16)	BIT 3 (8)	BIT 2 (4)	BIT 1 (2)	BIT 0 (1)	Address
0	0	0	0	0	1	1
0	0	0	0	1	0	2
0	0	0	0	1	1	3
0	0	0	1	0	0	4
0	0	0	1	0	1	5
0	0	0	1	1	0	6
0	0	0	1	1	1	7
0	0	1	0	0	0	8
0	0	1	0	0	1	9
0	0	1	0	1	0	10
0	0	1	0	1	1	11
0	0	1	1	0	0	12
:	:	:	:	:	:	:
1	1	1	1	1	1	63

FlowCon FH.1

Switch #1: Auto cycle ON/OFF

If the plant specifications permit it, the auto cycle can be activated during commissioning. Auto cycle prevents the valve from jamming when the valve is not moved for a longer period of inactivity, e.g. for heating systems during the summer. When the auto cycle is activated, the actuator will perform 50% stroke cycle if no stroke movement has occurred during a 3-weeks period.

Factory setting = OFF.

Switch #2: Analog 2-10V DC / 0-10V DC

Setting control range by the continuous actuating signal 0-10V DC or 2-10V DC.

Factory setting = 0-10V DC.

Switch #3: Normally open / Normally close

Setting actuating direction with 10V DC control signal to “valve open” or “valve closed” as well as the position feedback.

Factory setting = Normally closed; 0V DC = valve closed.

Switch #4: Equal % control / Linear control

Setting of actuating control curve to either equal percentage or linear control.

Factory setting = Linear control.

Switch #5: Failsafe open/close

Setting actuator direction at power failure to “valve open” or “valve closed”.

Factory setting = close.

Switch #6: Electrical override

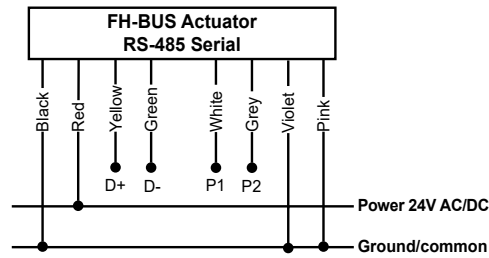
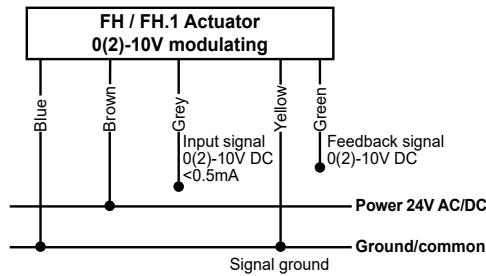
Setting override function to ON and the actuator will open valve fully. When set to OFF again, the actuator will re-calibrate and thereafter go into normal operation mode.

Factory setting = OFF

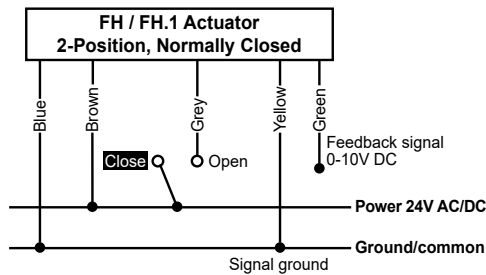


WIRING INSTRUCTION

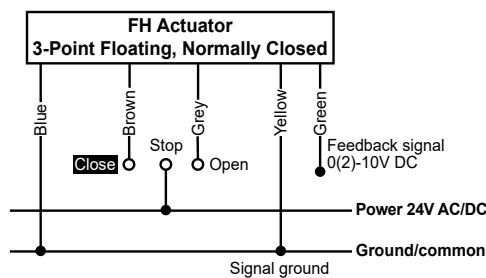
ELECTRICAL MODULATING



ELECTRICAL 2-POSITION



ELECTRICAL 3-POINT FLOATING



UPDATES

For latest updates please see www.flowcon.com

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