

Addition to Installation and Operation Instruction

The actuator type **FlowCon SM.0.0.06** is an electrical programmable actuator with BACnet. The BACnet PICS document can be found on the FlowCon website, www.flowcon.com. For fitting / re-fitting and orientation, see SM instruction.

Wiring Instructions for BACnet connection



Start-up Sequence

At first start-up please enter programming menu to set steps 14-18 according to the BACnet system settings. The device instance set in step 17 must be unique to the network. Remaining setup options, steps 0-13 can be programmed through BACnet connection.

Programming menu (continued)

The programming menu is always accessible. To enter the programming menu, **simultaneously press** ⇐ **and** ➡ **for 6 seconds**, until bottom line in display blinks.

For fast menu exit press \Leftrightarrow and \Rightarrow simultaneously for 6 seconds. The actuator will automatically return to normal operation mode if no action is detected on arrow keys for 1 minute.

To change a value, press \triangle or \bigtriangledown . For quick scroll through values hold down \triangle or \bigtriangledown .

Press \Rightarrow to accept a value and go to next step and press \Leftrightarrow to go to previous step. All values selected in the programming menu are stored in non-volatile memory.

Step	Display	Description	Values
14	* ^{•••} BRUD 76800	Select communication speed. *scrolling top: SELECT BRUD RATE	<u>Default: 9600.</u> Options: 9600, 19200, 38400, 76800.
15	* *** <i>MRC</i> 000	Select MAC address. *scrolling top: SELECT MRC RDDRESS	<u>Default: 000.</u> Options: 000-254.
16	*	Change of device instance. *scrolling top: CHRNGE DEVICE INSTRNC	<u>Default: NO.</u> Options: YES or NO. <i>Device instance is changed in step 16.</i>
17	* ^{**} <u>DEVICE</u> 049.1000	Select device instance. *scrolling top: SELECT DEVICE INSTRINC	Default: 0497000. Change one digit at a time. Press ➡ and ⇐ to move between digits.
18	* *** OUTOF 15	Select out-of-service time-out. *scrolling top: DUTDF5ERVICEINAIN	Default: 15. Options: 1-60. Please re-start actuator for changes to take effect.



Programming of the actuator through BACnet

Please note that change of settings through BACnet is not available while one of the menus is entered on the actuator itself.

In this instruction:

AV = Analog Value

BV = Binary Value

MSV = Multi-State Value.

Default values are underlined.

Choose which valve the actuator is mounted on in MSV.38 (programming menu step 2). Options:

1 = SM.0.0 (no valve)

- 2 = SM.1.1
- 3 = SM.2.1
- 4 = SM.3.0
- 5 = SM.3.1
- 6 = SM.3.2
- 7 = SM.4.1
- 8 = SM.4.2
- 9 = SM.4.3
- 10 = SM.5.1
- 11 = SM.5.2
- 12 = SM.6.2

Choose relevant unit in MSV.39 (programming menu step 3). Options:

<u>1 = l/sec</u>

- 2 = GPM
- 3 = l/hr

Choose operational direction in BV.17 (programming menu step 10). Options:

0 = NO (normally open)

<u>1 = NC (normally closed)</u>

Choose maximum flow rate in AV.62 (programming menu step 9).

The input will automatically be rounded off to the nearest available maximum flow rate for the cho-

sen valve. Please see the relevant tech note for information about the maximum flow rates available for each valve.

Choose control signal type in MSV.40 (programming menu step 5). Options:

1 = V

- 2 = mA
- 3 = digital (2-position / 3-point floating)
- 4 = BACnet

If MSV.40=1 (V) or MSV.40=2 (mA), please check control signal range. Choose minimum value for the control signal in AV.138 (programming menu step 6) and maximum value for the control signal in AV.139 (programming menu step 7). The range must be at least 3.0V respectively 6.0mA and maximum ranges are 0-10V respectively 0-20mA.

If MSV.40=4 (BACnet), please choose BACnet fallback timeout in AV.143 (options: 1-60 minutes, defalult:<u>10</u>) and BACnet fallback action (options: <u>1=close</u>, 2=stop, 3=open, 4=midway) in MSV.43 to define the action to be taken if the actuator does not get a value for the control signal within the timeout period since the last time it received a control signal. Administrating the control signal through BACnet is done by writing the present-value

of AV.141 in the range of 0.0-100.0%.

Choose feedback signal type and range in MSV.41 (programming menu step 8). Options:

- 1 = 2-10V 2 = 0-10V 3 = 4-20mA4 = auto
- <u>4 = auto</u>

Option 4 is only available and default if control signal type is V or mA (this option sets feedback signal type and range to the same as control signal type and range). If control signal type is digital or BACnet, option 1 is default.

1B95082 - 02/2023



Choose control mode in MSV.46 (programming menu step 11). Options:

1 = Linear flow

- 2 = Equal %
- 3 = Linear rotation
- 4 = Linear signal

Choose whether or not to enable flush at startup in BV.53 (programming menu step 4).

Flush enabled, results in the actuator opening the valve almost fully if no control signal is registered at start-up.

This function is only available if control signal type is V or mA.

Options:

0 = disable

<u>1 = enable</u>

Choose whether or not to enable password protection of the actuator in BV.54 (programming menu step 12).

If password protection is enabled, the actuator requires a password to enter the programming menu via the buttons on the actuator. Options:

<u>0 = disable</u>

1 = enable

Choose the direction of the failsafe action in BV.18 (programming menu step 13).

Options:

0 = open1 = close

Please note, that the settings and values can not be altered through BACnet while the alarm menu or the programming menu is entered on the actuator.

Condition of the actuator through BACnet

Besides checking the values of the objects already described, the following information is available through BACnet:

Check the current flow rate (not measured) in AV.68. To know whether the valve is fully closed, please check the motor position in AV.98, if AV.98=0% the valve is fully closed.

Check the appropriate pressure range

in MSV.44.Values:

1 = NA 2 = 32-320kPaD 3 = 40-320kPaD 4/5/7/10 = 30-800kPaD 6 = 50-800kPaD 8/9/11/12 = 35-800kPaD

Check the actuator state in MSV.45.

Values:

- 1 = normal operation
- 2 = calibration mode
- 3 = flush mode
- 4 = auto-stroke
- 5 = alarm (at least one alarm has been activated)

6 = failsafe (failsafe action has begun) If MSV.45=5, please check for any alarms in BV.55 - BV.62.

Values:

- 0 = no alarm
- 1 = alarm activated

If MSV.40=1 or MSV.40=2, **check the control signal value** in AV.141. If MSV.40=3, check the control signal in MSV.42.

Check unit and value of the feedback signal in AV.164.

Check the battery capacity (0-100%) in AV.140.



Problem solving

In case there is any problem with the actuator and/or valve, pls. start with these procedures:

Verify that none of the actuator's objects are outof-service (all out-of-service values are false).

Check actuator state in MSV.45. If MSV.45=5 check which alarm(s) has been activated and try to resolve the alarm issue(s).

Check all wiring to ensure that no loose connections are interrupting the signals.

Restart the actuator (disconnect power for a moment). Please make sure that the failsafe action is completed and the actuator is shut off before restoring power.

Auto-stroke

Trigger an auto-stroke sequence to re-calibrate the valve's closing point, by setting BV.63=1. The auto-stroke function will close the valve, then open the valve to fully open (regardless of chosen maximum flow) and return to the position specified by the control signal input. Please note that in cases where MSV.40=3 (control signal type is digital), the actuator finishes the autostroke sequence in fully open position regardless of the chosen maximum flow. In these cases the auto-stroke sequence should be followed by giving the actuator control signal to close until the current flow rate is at or lower than the maximum flow rate.

The auto-stroke sequence cannot be cancelled. While the auto-stroke sequence is running, the actuator state will be MSV.45=4. When the auto-stroke sequence is complete, the state of the auto-stroke object will return to disabled: BV.63=0 and the actuator state will return to normal: MSV.45=1.

Failsafe mode

If the power supply is out of range or lost, failsafe mode will be activated:

- 1. BV.59=1 and MSV.45=5, there is a delay of approximately 60 sec.
- BV.59=1 and MSV.45=6, the actuator opens/ closes the valve (according to failsafe direction chosen in BV.18).
- 3. Actuator shuts off.

If the power supply is restored during 1. or 2., failsafe mode is deactivated.

BACnet fallback function

If MSV.40=4 (control signal type is BACnet), the BACnet fallback function is activated:

- 1. When AV.141 is written to, a time counter starts.
- 2. If the counter reaches the value of AV.143, the action from MSV.43 starts. BV.62=1.
- When AV.141 is written to the next time, the counter is reset and re-started. BV.62=0.

Please note, that the actuator state does not go into alarm mode (MSV.45 \neq 5) when the BACnet fallback action is activated (BV.62=1).

If no BACnet fallback action is wanted, please choose MSV.43=2.