

FlowCon Green.0 / Green.1 / Green.2

Pressure Independent Control Valves
DN15-40 / 1/2"-1 1/2"



SPECIFICATIONS

Insert:

Static pressure:	2500 kPa / 360 psi
Ambient temperature:	+1°C to +50°C / +34°F to +122°F
Media temperature ¹ :	-20°C to +120°C / -4°F to +248°F
Material:	
- Insert:	Glass-reinforced PSU/POM/PPS
- Metal components (internal):	Stainless steel
- O-rings:	EPDM
- Cone:	PPS
- Diaphragm:	20 mm / 3/4" insert: EPDM 40 mm / 1 1/2" insert: Hydrogenated acrylonitrile-butadiene-rubber
- Head nut:	Forged brass ASTM CuZn40Pb2
Stroke:	20 mm / 3/4" insert: 3.4 mm / 0.13 in 40 mm / 1 1/2" insert: 5.2 mm / 0.2 in
Maximum close off pressure:	800 kPa / 116 psi
Maximum operational ΔP:	800 kPaD / 116 psid
Control characteristic:	linear (may be converted to equal % on actuator)
Control range:	1:1000 / IEC 60534
Rangeability:	100:1
Turn down ratio:	100:1
Shut-off leakage:	ANSI / FCI 70-2 2006, Class IV / IEC 60534-4, Class IV
Flow rate range:	20 mm / 3/4" insert: 0.0103-0.736 l/sec / 0.163-11.7 GPM 40 mm / 1 1/2" insert: 0.240-1.29 l/sec / 3.81-20.4 GPM

Valve:

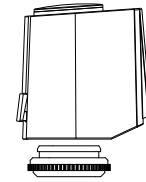
Material:	
- Housing:	Forged brass ASTM CuZn40Pb2 or DZR ASTM CuZn36Pb2As
- Ball valve:	ABV: Chemically nickel-plated brass ball
End connections ² :	A/AB: Fixed female ISO or NPT ABV: Union end connection in brass alloy ISO or NPT
Housing taps:	AB/ABV: 1/4" ISO.

Note 1: Stated temperature rating is defined due to no external insert condensation.
Note 2: NPT only available ex. US-factory.

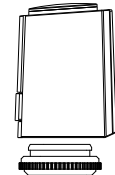
SPECIFICATIONS (...continued)

FlowCon FT Actuators (Thermal):

FlowCon Actuator ^{3/4}	FT.0.2	FT.0.3	FT.0.4
Supply voltage	24V AC -10%...+20%, 50/60 Hz	230V AC ±10%, 50/60 Hz	24V AC/DC -10%...+20%, 50/60 Hz
Type	Thermal	Thermal	Thermal
Power consumption	1.2W	1.2W	1.2W
Control signal ⁵	Analog 0-10V	ON/OFF	ON/OFF
Failsafe function	Normally closed	Normally closed	Normally closed
Operation time ⁶	App. 4.5 minutes	App. 4.5 minutes	App. 4.5 minutes
Ambient temperature	0°C to +60°C / +32°F to +140°F	0°C to +60°C / +32°F to +140°F	0°C to +60°C / +32°F to +140°F
Protection	IP54 including upside-down, class III	IP54 including upside-down, class II	IP54 including upside-down, class III
Cable	Plug-in, 1 m / 3 ft	Fixed, 1 m / 3 ft	Fixed, 1 m / 3 ft
Weight	0.12 kg / 0.26 lb	0.11 kg / 0.24 lb	0.11 kg / 0.24 lb



FlowCon FT.0.2



FlowCon FT.0.3/0.4

Note 3: FlowCon warranty is voided using other actuators than supplied by FlowCon International.

Note 4: Please note if mounted on FlowCon Green.2 specified leakage rate to be exceeded.

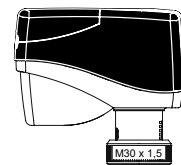
Note 5: To ensure that the valve is in an open position during commissioning, the actuator will be delivered in open position and remain in this position until it is electrically operated first time.

Note 6: Closing time is approximately the double dependent on ambient temperature.

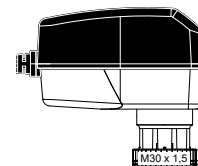
FlowCon FN / FNP / FNR Actuators (Gear):

FlowCon Actuator ⁷	FN.0.2	FNP.0.2	FNR.0.2	FNR.0.2-EQ
Supply voltage	24V AC/DC ±10%, 50/60 Hz	24V AC/DC ±10%, 50/60 Hz	24V AC/DC ±15%, 50/60 Hz	24V AC/DC ±15%, 50/60 Hz
Type	Electrical, bi-directional synchronous motor		Electrical, bi-directional step motor	
Power consumption	24V AC: 0.9VA standby / 2.5VA operating / 4.7VA max. 24V DC: 0.75W standby / 1.2W operating / 2.2W max.	24V AC: 0.9VA standby / 2.5VA operating / 4.7VA max. 24V DC: 0.75W standby / 1.2W operating / 2.2W max.	24V AC: 1VA standby / 6VA operating / 6VA max. 24V DC: 0.5W standby / 4W operating / 4W max.	24V AC: 1VA standby / 6VA operating / 6VA max. 24V DC: 0.5W standby / 4W operating / 4W max.
Control signal	Analog 0(2)-10V DC, <0.5mA	Analog 0(2)-10V DC, <0.5mA	Analog 0-10V DC, linear	Analog 0-10V DC, equal%
Feedback	Yes, control signal	No	No	No
Failsafe function	Fail in place	Fail in place	Fail in place	Fail in place
Auto stroke	Yes	Yes	No	No
Operation time	max 22 sec/mm	max 22 sec/mm	max 5.5 sec/mm	max 5.5 sec/mm
Ambient temperature	0°C to +50°C / +32°F to +122°F	0°C to +50°C / +32°F to +122°F	0°C to +50°C / +32°F to +122°F	0°C to +50°C / +32°F to +122°F
Media temperature	0°C to +120°C / +32°F to +248°F	0°C to +120°C / +32°F to +248°F	0°C to +120°C / +32°F to +248°F	0°C to +120°C / +32°F to +248°F
Humidity rating	0..85% rH, no condensation	0..85% rH, no condensation	0..80% rH, no condensation	0..80% rH, no condensation
Protection	IP54 including upside-down, class III, indoor use only	IP54 including upside-down, class III, indoor use only	IP54 including upside-down, class III, indoor use only	IP54 including upside-down, class III, indoor use only
Cable	Fixed 5 x 0.5 mm ² , 1.5 m / 5 x AWG20, 4.9 ft	Fixed 3 x 0.5 mm ² , 1.5 m / 3 x AWG20, 4.9 ft	Fixed 3 x 0.22 mm ² , 1.5 m / 3 x AWG24, 4.9 ft	Fixed 3 x 0.22 mm ² , 1.5 m / 3 x AWG24, 4.9 ft
Closing point adjustment	During operation the actuator will self-adjust according to the closing point and stroke length of the valve			
Weight	0.25 kg / 0.55 lb	0.25 kg / 0.55 lb	0.23 kg / 0.51 lb	0.23 kg / 0.51 lb

FlowCon Actuator ⁷	FNR.0.3	FN.0.4
Supply voltage	110/230V AC ±10%, 50/60 Hz	24V AC/DC ±10%, 50/60 Hz
Type	Electrical, bi-directional step motor	Electrical, bi-directional synchronous motor
Power consumption	1VA standby / 6VA operating / 8VA max.	24V AC: 0.9 VA standby / 2.5VA operating / 4.7VA max. 24V DC: 0.75W standby / 1.2W operating / 2.2W max.
Control signal	Digital 2-position / 3-point floating	Digital 2-position / 3-point floating
Feedback	No	No
Failsafe function	Fail in place	Fail in place
Auto stroke	No	Yes
Operation time	27.2 sec/mm	max 22 sec/mm Reaction time: 0.8 sec
Ambient temperature	0°C to +50°C / +32°F to +122°F	0°C to +50°C / +32°F to +122°F
Media temperature	0°C to +120°C / +32°F to +248°F	0°C to +120°C / +32°F to +248°F
Humidity rating	0..80% rH, no condensation	0..85% rH, no condensation
Protection	IP54 including upside-down, class II, indoor use only	IP54 including upside-down, class III, indoor use only
Cable	Fixed 3 x 0.5 mm ² , 1.5 m / 3 x AWG20, 4.9 ft	Fixed 3 x 0.5 mm ² , 1.5 m / 3 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	
Weight	0.23 kg / 0.51 lb	0.25 kg / 0.55 lb



FlowCon FN.0.2/0.4 and FNP.0.2



FlowCon FNR.0.x

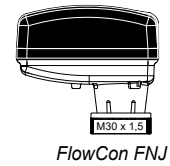
Note 7: FlowCon warranty is voided using other actuators than supplied by FlowCon International.

SPECIFICATIONS (...continued)

FlowCon FN / FNJ Actuators (Gear, failsafe):

FlowCon Actuator ⁸	FNJ.1.2	FNJ.1.2-EQ
Supply voltage	24V AC/DC ±15%, 50/60 Hz	24V AC/DC ±15%, 50/60 Hz
Type	Electrical, bi-directional synchronous motor	
Power consumption	24V AC: 2.5VA standby / 2.5VA operating / 5VA max. 24V DC: 1.5W standby / 1.5W operating / 3W max.	24V AC: 2.5VA standby / 2.5VA operating / 5VA max. 24V DC: 1.5W standby / 1.5W operating / 3W max.
Control signal	Analog 0-10V DC, linear	Analog 0-10V DC, equal%
Feedback	Yes, 0-10V DC	Yes, 0-10V DC
Failsafe function	Close, optional open	Close, optional open
Auto stroke	No	No
Operation time	8 sec/mm	8 sec/mm
Ambient temperature	0°C to +50°C / +32°F to +122°F	0°C to +50°C / +32°F to +122°F
Media temperature	0°C to +95°C / +32°F to +203°F	0°C to +95°C / +32°F to +203°F
Humidity rating	10..90% rH, no condensation	10..90% rH, no condensation
Protection	IP54 no upside-down mounting, class III, indoor use only	IP54 no upside-down mounting, class III, indoor use only
Cable	Plug-in, 4 wires x 0.35 mm ² halogen free, 1.5 m 4 wires x AWG22 halogen free, 4.9 ft	Plug-in, 4 wires x 0.35 mm ² halogen free, 1.5 m 4 wires x AWG22 halogen free, 4.9 ft
Closing point adjustment	During operation the actuator will self-adjust according to the closing point of the valve	
Weight	0.30 kg / 0.66 lb	0.30 kg / 0.66 lb

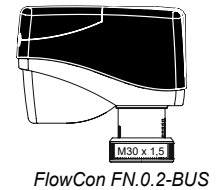
Note 8: FlowCon warranty is voided using other actuators than supplied by FlowCon International.



FlowCon FN Actuators (BUS):

FlowCon Actuator ⁹	FN.0.2-BUS
Supply voltage	24V AC/DC ±10%, 50/60 Hz
Type	Electrical, bi-directional synchronous motor
Power consumption	24V AC: 2.1VA standby / 3.6VA operating / 5.4VA max. 24V DC: 1.0W standby / 1.8W operating / 2.7W max.
Control signal	0-100% (BACnet or Modbus)
Feedback	Yes, 0-100% (BACnet or Modbus)
Failsafe function	Fail in place
Auto stroke	Yes
Operation time	22 sec/mm (alternatively 16 sec/mm or 28 sec/mm)
Ambient temperature	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 including upside-down, class III, indoor use only
Cable	<u>Group 1:</u> Fixed, 2 x 2 wires x 0.34 mm ² , 1.5 m / 2 x 2 wires x AWG22, 4.9 ft Fixed, 2 wires x 0.50 mm ² , 1.5 m / 2 wires x AWG20, 4.9 ft <u>Group 2:</u> Fixed, 4 wires x 0.50 mm ² , 1.5 m / 4 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
Weight	0.35 kg / 0.77 lb

Note 9: FlowCon warranty is voided using other actuators than supplied by FlowCon International.

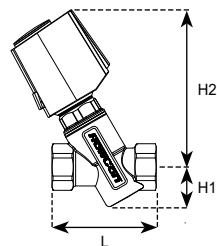


DIMENSIONS AND WEIGHT (NOMINAL)

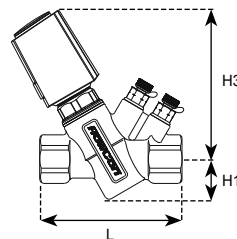
Model no.	Valve model	Valve size	Insert size	L	H1	H2	H3	H4	H5	H6	End connections C ¹⁰			Weight ¹¹	
						Actuator FT.0.2	Actuator FT.0.3 FT.0.4	Actuator FN.0.2 FN.0.2-BUS FN.0.4 FNP.0.2	Actuator FNJ	Actuator FNR	Female	Male	Sweat		
						mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)		mm (in)
G.X.XX.04	A	15 (1/2)	20 (3/4)	80 (3.15)	31 (1.22)	118 (4.65)	116 (4.57)	124 (4.88)	112 (4.41)	130 (5.12)	-	-	-	0.50 (1.10)	
G.X.XX.05		20 (3/4)												0.44 (0.97)	
G.X.XX.06		25 (1)												0.60 (1.32)	
G.X.XX.01	AB	15 (1/2)	20 (3/4)	81 (3.19)	31 (1.22)	118 (4.65)	116 (4.57)	124 (4.88)	112 (4.41)	130 (5.12)	-	-	-	0.50 (1.10)	
G.X.XX.02		20 (3/4)												85 (3.35)	0.52 (1.14)
G.X.XX.07		25 (1)												102 (4.02)	0.69 (1.52)
G.2.XX.14		25 (1)	40 (1 1/2)	128 (5.04)	47 (1.85)	138 (5.43)	137 (5.39)	144 (5.67)	132 (5.20)	153 (6.02)	-	-	-	1.86 (4.10)	
G.2.XX.15		32 (1 1/4)												1.70 (3.75)	
G.X.XX.03		ABV	15 (1/2)	20 (3/4)	122 (4.80)	33 (1.30)	118 (4.65)	116 (4.57)	124 (4.88)	112 (4.41)	130 (5.12)	22 (0.87)	24 (0.95)	20	0.90 (1.98)
	20 (3/4)		22 (0.87)									25 (0.99)	20		
	25 (1)		-									39 (1.54)	22		
G.2.XX.17	25 (1)		40 (1 1/2)	162 (6.38)	42 (1.65)	138 (5.43)	137 (5.39)	144 (5.67)	132 (5.20)	153 (6.02)	35 (1.38)	40 (1.57)	34	2.14 (4.72)	
	32 (1 1/4)										33 (1.30)	40 (1.57)	34		
	40 (1 1/2)										33 (1.30)	42 (1.65)	-		

Note 10: Add end connection length to body length.

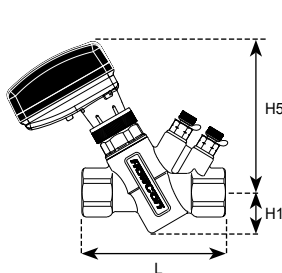
Note 11: Weight does not include end connections or actuator.



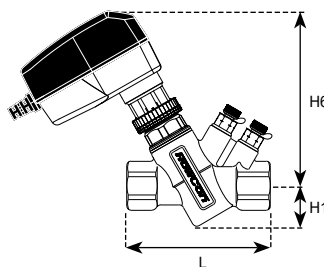
*FlowCon Green.0/1 in
FlowCon A valve
DN15/20/25 (1/2", 3/4", 1")
with FlowCon FT.0.2 actuator*



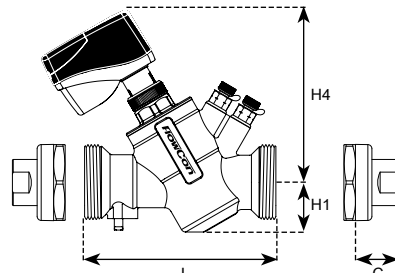
*FlowCon Green.0/1 in
FlowCon AB valve
DN15/20/25 (1/2", 3/4", 1")
with FlowCon FT.0.3/0.4 act.*



*FlowCon Green.0/1 in
FlowCon AB valve
DN15/20/25 (1/2", 3/4", 1")
w. FlowCon FNJ actuator*



*FlowCon Green.0/1 in
FlowCon AB valve
DN15/20/25 (1/2", 3/4", 1")
with FlowCon FNR actuator*



*FlowCon Green.2 in
FlowCon ABV valve
DN25/32/40 (1", 1 1/4", 1 1/2")
with FlowCon FN.0.2/0.2-BUS,
FN.0.4 + FNP.0.2 actuator*

MODEL NUMBER SELECTION

G

Flow range:

- 0** = 20 mm / 3/4" insert (low flow)
- 1** = 20 mm / 3/4" insert (medium flow)
- 1HF** = 20 mm / 3/4" insert (high flow)
- 2** = 40 mm / 1 1/2" insert

Type of actuator:

- 00** = No actuator

	Thermal	Gear	Gear failsafe
24V modulating	22 = FT.0.2	32 = FN.0.2 35 = FNP.0.2 36 = FNR.0.2 37 = FNR.0.2-EQ 39 = FN.0.2-BUS	40 = FNJ.1.2 41 = FNJ.1.2-EQ
230V digital	23 = FT.0.3	38 = FNR.0.3	
24V digital	24 = FT.0.4	34 = FN.0.4	

Type of housing:

20 mm / 3/4" insert:

- 01** = AB DN15 / 1/2"
- 02** = AB DN20 / 3/4"
- 03** = ABV.1 DN15-25 / 1/2"-1"
- 04** = A DN15 / 1/2"
- 05** = A DN20 / 3/4"
- 06** = A DN25 / 1"
- 07** = AB DN25 / 1"

40 mm / 1 1/2" insert:

- 14** = AB DN25 / 1"
- 15** = AB DN32 / 1 1/4"
- 17** = ABV.2 DN25-40 / 1"- 1 1/2"

P/t plug requirements:

- 0** = no (p/t) plugs
- B** = pressure/temperature plugs
- P** = taps plugged

Union end connections (inlet x outlet):

- 0.0** = no union ends

Model and size	Female threaded	Male threaded	Sweat
ABV.1 with Green insert, 20 mm	E = 15 mm / 1/2" F = 20 mm / 3/4"	H = 15 mm / 1/2" I = 20 mm / 3/4" J = 25 mm / 1"	K = 15 mm L = 18 mm M = 22 mm
ABV.2 with Green insert, 40 mm	G = 25 mm / 1" P = 32 mm / 1 1/4" Q = 40 mm / 1 1/2"	J = 25 mm / 1" S = 32 mm / 1 1/4" T = 40 mm / 1 1/2"	N = 28 mm W = 35 mm

Connection standard:

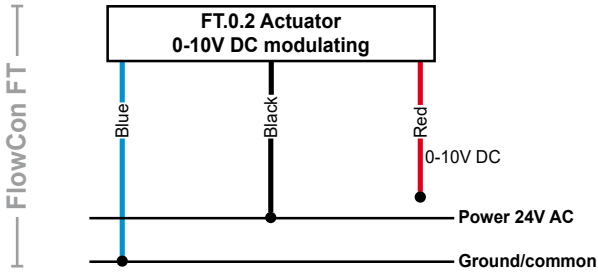
- I** = ISO
- N** = NPT

Example:

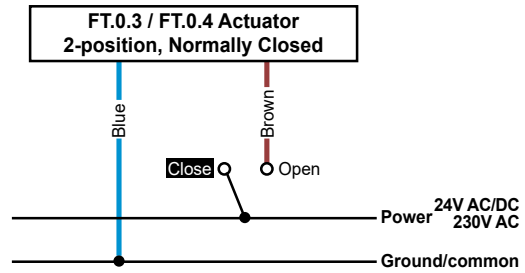
G.1.22.03.B.F.F.I = 20 mm (3/4") FlowCon Green, medium flow, with an ABV.1-housing with p/t plugs and a 24V thermal modulating actuator and DN20 (3/4") ISO female union end connections.

WIRING INSTRUCTION

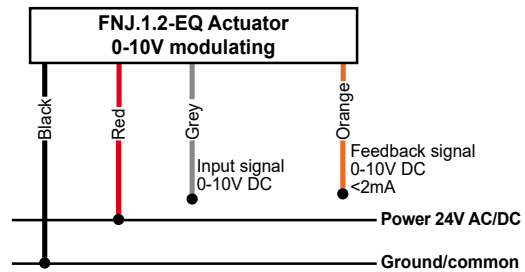
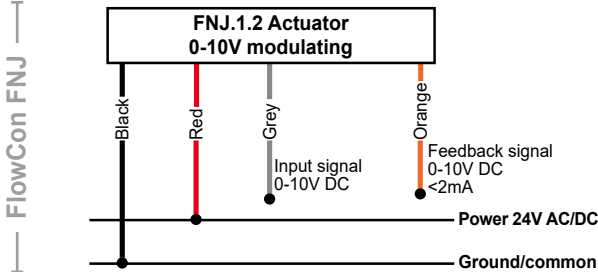
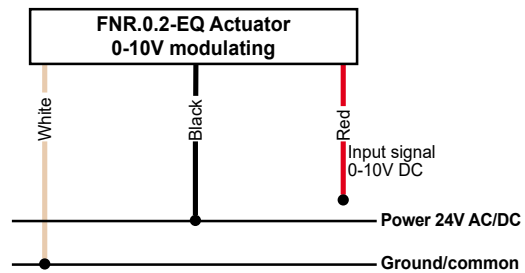
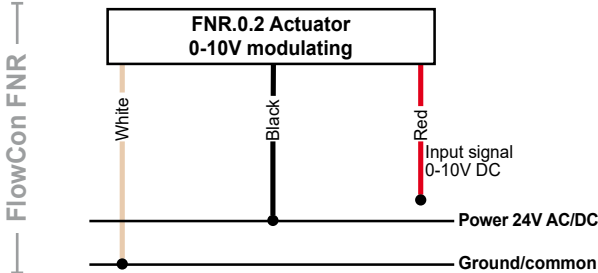
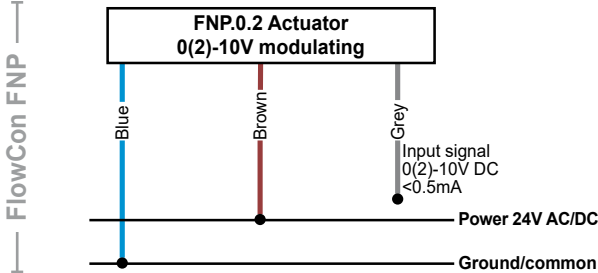
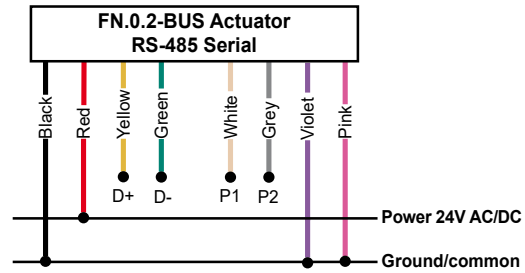
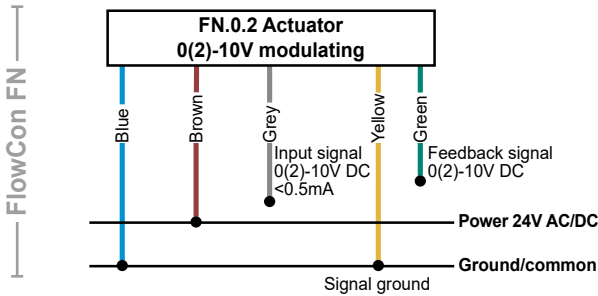
THERMAL MODULATING



THERMAL ON/OFF

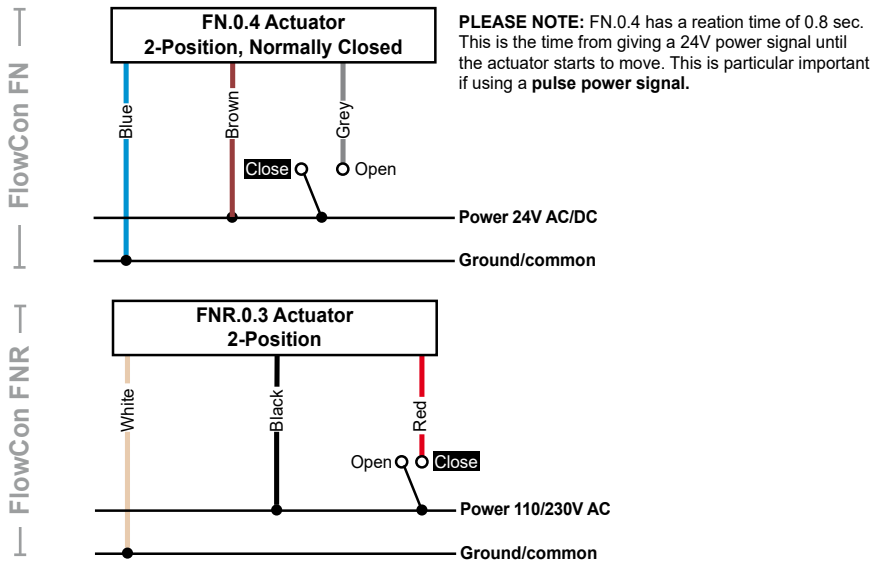


ELECTRICAL MODULATING

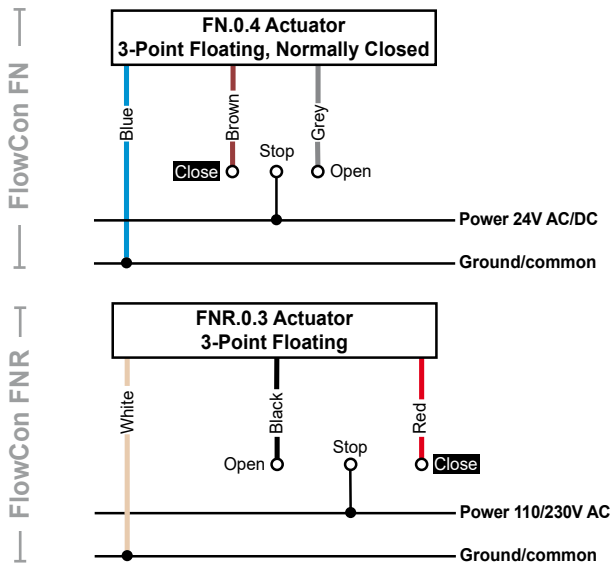


WIRING INSTRUCTION (...continued)

ELECTRICAL 2-POSITION



ELECTRICAL 3-POINT FLOATING



GENERAL SPECIFICATIONS

1. PRESSURE INDEPENDENT DYNAMIC CONTROL VALVES - FLOWCON GREEN

- 1.1. Contractor shall install the pressure independent dynamic control valves where indicated in drawings.
- 1.2. Valve shall be an electronic, dynamic, modulating, 2-way, pressure independent control device.
- 1.3. Pressure independent dynamic control valve shall accurately control flow, independent of system pressure fluctuation.
- 1.4. Maximum flow setting shall be adjustable to 41 different settings within the range of the valve size.
- 1.5. Valve housing shall be permanently marked to show direction of flow.

2. VALVE ACTUATOR

2.a. FlowCon FT actuators

- 2.a.1. Actuator housing shall be rated to IP54, including upside-down mounting.
- 2.a.2. Actuator shall be driven by 24V or 230V AC, and shall depending on actuator choice accept 0-10V DC or ON/OFF control signal.
- 2.a.3. Actuator shall use full stroke and provide full authority.
- 2.a.4. Actuator shall have visible indication of stroke position.
- 2.a.5. Failsafe function shall be available on all version.

OR....

2.b. FlowCon FN actuators

- 2.b.1. Actuator housing shall be rated to IP54. 360° mounting shall be acceptable.
- 2.b.2. Actuator shall be driven by 24V AC/DC and shall depending on actuator choice accept 0(2)-10V DC, 3-point floating or 2-position control signal.
- 2.b.3. Actuator shall use full stroke and provide full authority.
- 2.b.4. Actuator shall have visible indication of stroke position.
- 2.b.5. Feedback signal equal to control signal shall be standard on modulating versions.
- 2.b.6. Optional auto stroke function shall be available on modulating version.
- 2.b.7. Override shall be possible.
- 2.b.8. Optional bus version, with choice of BACnet or Modbus, shall be available. Bus version shall provide remote setting and control of actuator.

OR....

2.c. FlowCon FNP actuators

- 2.c.1. Actuator housing shall be rated to IP54. 360° mounting shall be acceptable.
- 2.c.2. Actuator shall be driven by 24V AC/DC and accept 0(2)-10V DC control signal.
- 2.c.3. Actuator shall use full stroke and provide full authority.
- 2.c.4. Actuator shall have visible indication of stroke position.
- 2.c.5. Optional auto stroke function shall be available on modulating version.
- 2.c.6. Electrical override shall be possible.

OR....

2.d. FlowCon FNR actuators

- 2.d.1. Actuator housing shall be rated to IP54. 360° mounting shall be acceptable.
- 2.d.2. Actuator shall be driven by 24V AC/DC or 110V/230V AC, and shall depending on actuator choice and accept 0(2)-10V DC, 3-point floating or 2-position control signal.
- 2.d.3. Actuator shall use full stroke and provide full authority.
- 2.d.4. Actuator shall have visible indication of stroke position.
- 2.d.5. Manual override shall be possible.

OR....

2.e. FlowCon FNJ actuators

- 2.e.1. Actuator housing shall be rated to IP54. 180° mounting shall be acceptable.
- 2.e.2. Actuator shall be driven by 24V AC/DC, and shall accept 0-10V DC control signal.
- 2.e.3. Actuator shall use full stroke and provide full authority.
- 2.e.4. Actuator shall have visible indication of stroke position.
- 2.e.5. Feedback signal of 0-10V DC shall be standard.
- 2.e.6. Failsafe version shall be standard.

GENERAL SPECIFICATIONS (...continued)

3. VALVE HOUSING

3.a. **FlowCon A**

- 3.a.1. Valve housing shall consist of forged brass ASTM CuZn40Pb2 or DZR ASTM CuZn36Pb2As, rated at no less than 2500 kPa (360 psi) static pressure at +120°C (+248°F).

OR....

3.b. **FlowCon AB**

- 3.b.1. Valve housing shall consist of forged brass ASTM CuZn40Pb2 or DZR ASTM CuZn36Pb2As, rated at no less than 2500 kPa (360 psi) static pressure at +120°C (+248°F).
- 3.b.2. Pressure/temperature test plugs for verifying accuracy of flow performance shall be available for all valve sizes.

OR....

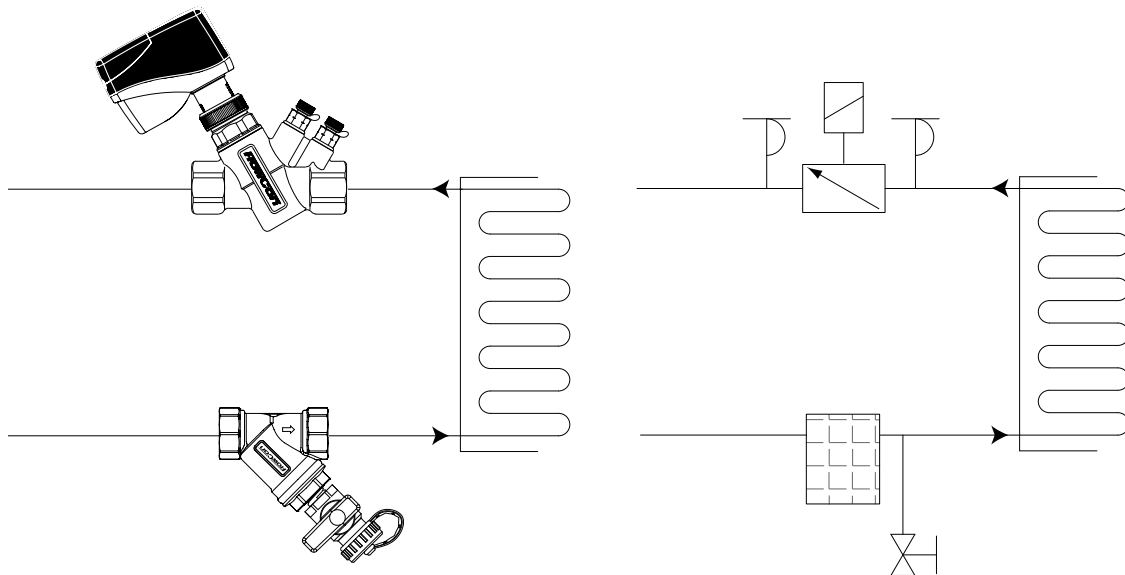
3.c. **FlowCon ABV**

- 3.c.1. Valve housing shall consist of forged brass ASTM CuZn40Pb2, rated at no less than 2500 kPa (360 psi) static pressure at +120°C (+248°F).
- 3.c.2. Valve ball shall consist of chemically nickel-plated brass (ASTM CuZn40Pb2).
- 3.c.3. Pressure/temperature test plugs for verifying accuracy of flow performance shall be available for all valve sizes.

4. FLOW REGULATION UNIT

- 4.1. Flow regulation unit shall consist of glass-reinforced PSU/POM/PPS with an EPDM diaphragm (20 mm / 3/4" insert) or a hydrogenated acrylonitrile-butadiene-rubber diaphragm (40 mm / 1 1/2" insert).
- 4.2. Flow regulation unit shall be readily accessible, for change-out or maintenance. Flow regulation unit shall be adjustable with the valve in-line and the system in operation.
- 4.3. Flow regulation unit shall be externally adjustable to 1 of 41 different flow rates without limiting the stroke length; shall be available in 3 different operational pressure ranges for DN15/20/25 (1/2", 3/4", 1") and 1 operational pressure range for DN25/32/40 (1", 1 1/4", 1 1/2"); minimum range shall be capable of being activated by 16 kPaD (2.3 psid). Further, the flow regulation unit shall be capable of controlling the flow within $\pm 10\%$ of controlled flow or $\pm 5\%$ of maximum flow.

APPLICATION AND SCHEMATIC EXAMPLE



UPDATES

For latest updates please see www.flowcon.com

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