ENERGY FIT SYSTEM

FlowCon Energy FIT System

Energy-Saving Pressure Independent Temperature Control System
DN50-250 / 2”-10”

SPECIFICATIONS

FlowCon PICV valve:

Static pressure:	4000 kPa / 580 psi
Ambient temperature:	-10°C to +50°C / +14°F to +122°F
Media temperature:	-20°C to +120°C / -4°F to +248°F
Material:	
- Housing and covers:	Ductile iron ASTM A395 Grade 60-40-18
- Metal components (internal):	Stainless steel
- Stem seal and O-rings:	EPDM
- Diaphragm:	Hydrogenated acrylonitrile-butadiene-rubber
Stroke:	2160° (FIT6: 3600°)
Maximum close off pressure:	800 kPa / 116 psi
Maximum operational ΔP:	800 kPaD / 116 psid
Maximum allowable operating pressure:	1600 kPaD / 232 psid
Control characteristic:	Linear flow
Control range:	1:800 / IEC 60534
Rangeability:	>100:1
Turn down ratio:	228:1
Shut-off leakage:	ANSI / FCI 70-2 2006 / IEC 60534-4 - Class IV
Flow rate range:	1.48-76.8 l/sec / 23.4-1220 GPM
End connection:	Universal flange connections which can be used with both ISO and ANSI flanges. Mounting kits are not supplied by FlowCon
Housing taps:	1/4” ISO

SPECIFICATIONS (...continued)

FlowCon PICV actuators[1]:

FlowCon SM.0.0.0.3 (standard)
FlowCon SM.0.0.0.4 (standard failsafe)
FlowCon SM.0.0.0.6 (BACnet failsafe)

Supply voltage:	22-26V AC, 50/60 Hz or 22-26V DC
Type:	Electrical, Bi-directional synchronous motor
Power consumption:	SM.0.0.0.3: 2.0VA standby / 5.0VA operating / 12VA max. SM.0.0.0.4/6: 3.5VA standby / 5.0VA operating / 12VA max.
Control signal:	2-10V DC
Resolution:	1:800 (2-10V)
Feedback:	2-10V DC
Control mode:	Linear flow
Failsafe function:	SM.0.0.0.3: Fail in place SM.0.0.0.4/6: Optional open or close (set on actuator)
Manuel override:	Yes
Position indicator:	Yes, through the actuator
Operation time:	FIT.3-5: 190 sec (from closed to fully open valve) FIT.6: 317 sec (from closed to fully open valve)
Ambient temperature:	-10°C to +50°C / +14°F to +122°F
Humidity rating:	5..95% rH, no condensation
Housing material:	UL94 V0-rated plastic
Protection:	IP54 including upside-down mounting
CE conformity:	EN 60730, class II
Programming:	Programming of all settings on interface with buttons and display or via BACnet
Cable:	Fixed, 5 wires x 0.80 mm^2 / AWG18 halogen free, 1 meter / 3 ft Additional for BACnet versions: Fixed, 3 wires x 0.80 mm^2 /AWG18 halogen free, 1 meter / 3 ft
Calibration:	Automatic at startup
Valve-actuator coupling:	Easy snap coupling
Protocol:	BACnet MS/TP
Interface:	EIA-485 / RS-485
Device profile:	BACnet Application Specific Controller (B-ASC) type server
Baud rates support:	9600, 19200, 38400 and 76800
Services (BIBBS) supported:	DS-RP-B, DS-WP-B, DM-DDB-B, DM-DOB-B and DM-DCC-B
Participants:	Up to 32 recommended, max. 127 participants

Note 1: FlowCon warranty is voided using other actuators than supplied or recommended by FlowCon International.

SPECIFICATIONS (...continued)

FlowCon Intelligent Interface:

Supply voltage:	24V AC/DC
Power consumption:	4W
Cable:	3 groups: Group 1: fixed, 1 wire with quick-connector, 3 meter / 9 ft (T1) fixed, 1 wire with quick-connector, 1 meter / 3 ft (T2) fixed, 3 wires, 0.6 meter / 2 ft (analogue actuator communication) Group 2: fixed, 2 wires 0.6 meter / 2 ft (power and ground) fixed, 3 wires 0.6 meter / 2 ft (BACnet BMS communication) Group 3: fixed, 1 wire with quick-connector, 1 meter / 3 ft (P1) fixed, 1 wire with quick-connector, 1 meter / 3 ft (P2) fixed, 3 wires, 0.6 meter / 2 ft (BACnet actuator communication)
Communication standard:	RS485
Control signal:	2-10V DC
Output signal:	2-10V DC
Humidity rating:	5..95% rH, no condensation
Protection:	IP54 including upside-down mounting
Housing material:	UL94 V0-rated plastic
CE conformity:	Yes
Protocol:	BACnet MS/TP
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-WP-B, DM-DDB-B, DM-DOB-B, DM-DCC-B, DS-RPM-B and DM-RD-B
Participants:	Up to 32 recommended, max. 127 participants
Load:	1/8 unit load

Temperature sensors (T1 and T2):

Supply voltage:	NA
Cable:	No cable, but with quick-connector
Signal output:	Resistive
Media temperature:	-20°C to +120°C / -4° to +248°F
Working pressure:	40 bar / 580 psi
Housing material:	304 stainless steel
Protection:	IP65
Probe length:	DN50-80 / 2”-3”: 12.7 mm / 0,5 in DN80-250 / 3”-10”: 84.7 mm / 3.3 in use of sensor pocket is recommended
Probe diameter:	6 mm / 0.236 in
CE conformity:	Yes
Connection:	1/4” ISO

Performance data:

- Sensor type:	PT1000
- Accuracy:	0.5% FS (Full Scale)
- Linearity:	±0.5% FS (Full Scale)
- Long time stability:	0.1% FS (Full Scale)
- Response time:	at 50°C (122°F): 2.3 sec / at 90°C (194°F): 5.4 sec.

SPECIFICATIONS (...continued)

Pressure sensors (P1 and P2):

Supply voltage:	12V DC
Cable:	No cable, but with quick-connector
Output:	4-20mA
Media temperature:	-10°C to +85°C / 14°F to +185°F
Pressure range[2]:	0-25 bar / 0-360 psi
Housing material:	304 stainless steel
Protection:	IP65
CE conformity:	Yes
Connection:	1/4" ISO

Performance data:

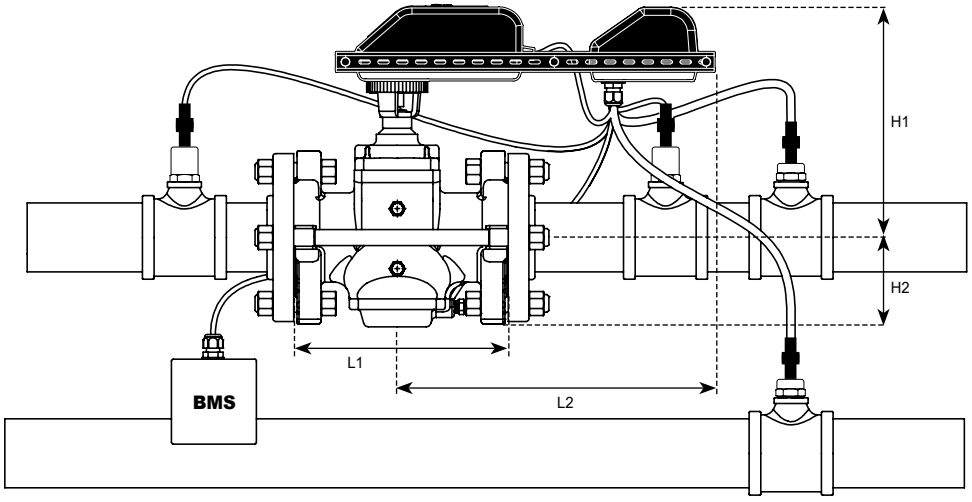
- Accuracy:	±1.5% FS (Full Scale) (tolerances can be software compensated in the FlowCon Intelligent Interface)
- Stability:	0.5% FS (Full Scale) ±0.05%
- Thermal effect on zero:	±0.1% FS (Full Scale)
- Thermal effect on span:	±0.05% FS (Full Scale)
- Electronic proof:	Short circuit protection
- Response time:	<20 msec (20 sec mean value calculated in the FlowCon Intelligent Interface)

Note 2: Calibrated at factory at 24V DC

DIMENSIONS AND WEIGHT (NOMINAL)

Model no.	Valve size	PICV Valve				Weight[3]
		L1	L2	H1	H2	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	kg (lb)
FIT.3	50/65/80 (2-2 1/2-3)	224 (8.82)	338 (13.3)	252 (9.92)	95 (3.74)	14.7 (32.4)
FIT.4	80/100 (3-4)	320 (12.60)	338 (13.3)	292 (11.50)	135 (5.31)	31.7 (69.8)
FIT.4.3						32.7 (72.1)
FIT.5	125/150 (5-6)	422 (16.61)	338 (13.3)	343 (13.50)	180 (7.09)	61.7 (136)
FIT.6	200/250 (8-10)	725 (28.54)	338 (13.3)	472 (18.58)	292 (11.50)	249 (549)

Note 3: Weight includes PICV valve, PICV actuator (non failsafe), Intelligent Interface and sensor kit.



FlowCon FIT.3

MODEL NUMBER SELECTION

FIT . . . B . . 0 0 2

Housing size:
3 = DN50-80 / 2”-3”
4 = DN80-100 / 3”-4”
5 = DN125-150 / 5”-6”
6 = DN200-250 / 8”-10”

Control range:
0 = 30-800 kPaD / 4.4-116 psid (FIT.3 only)
1 = 30-800 kPaD / 4.4-116 psid
(not available on size 200-250mm, 8”-10”)
2 = 35-800 kPaD / 5.1-116 psid
3 = 50-800 kPaD / 7.3-116 psid High flow
(only available on size 80-100mm, 3”-4”)

P/t plug requirements:
B = p/t plugs (standard)

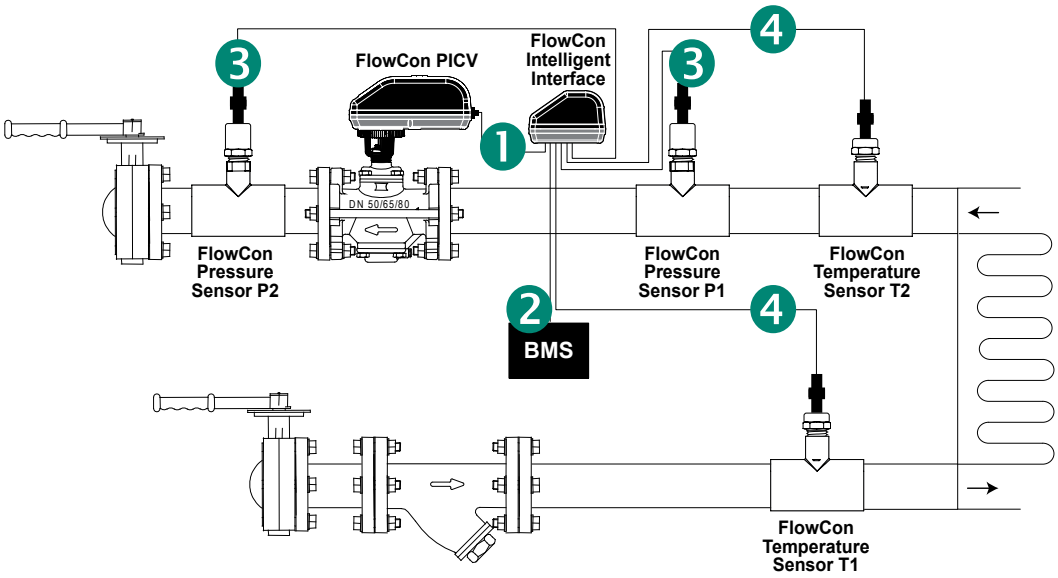
Type of actuator:
3 = display
4 = display and failsafe
6 = display, BACnet and failsafe

Sensor kit:
2 = PICV valve, pressure/temperature sensor kit, Bluetooth® and ΔT control

1 actuator bracket included (standard)

Example:
FIT.3.1.B.6.0.0.2 = FlowCon Energy FIT System DN50/65/80 (2” / 2 1/2” / 3”), 30-800 kPaD (4.4-116 psid) with p/t plugs, display/BACnet/failsafe actuator, pressure/temperature sensor kit, Bluetooth® and ΔT control incl. actuator bracket included (standard).

WIRING INSTRUCTION



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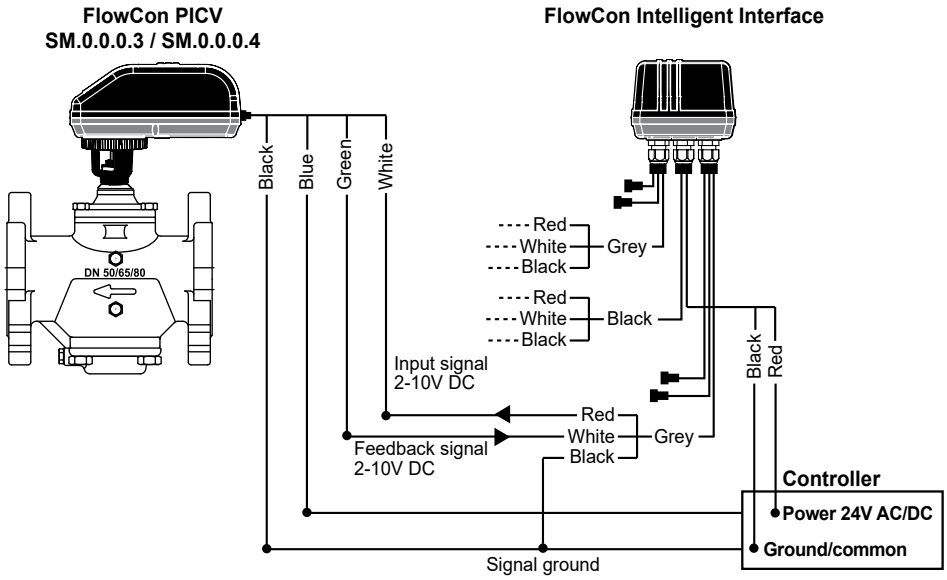

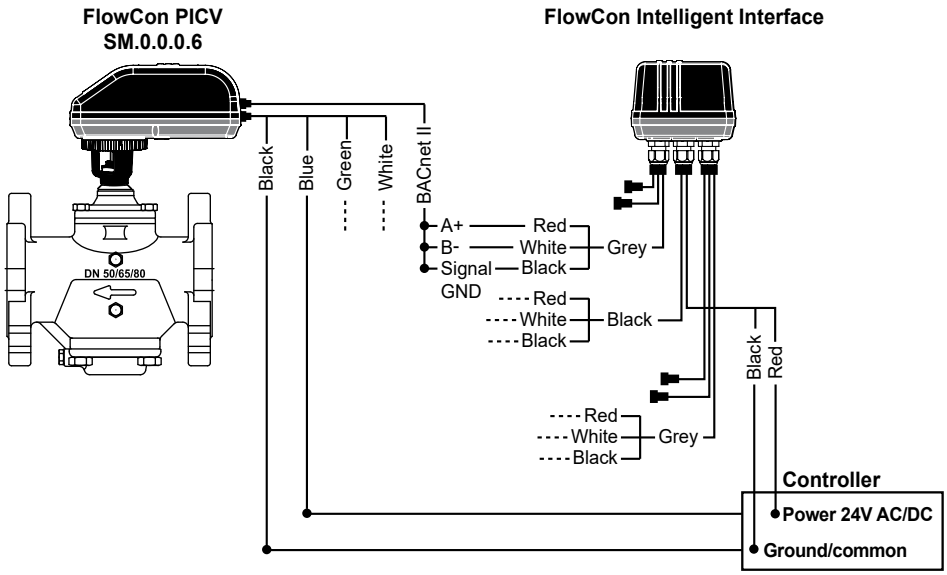

WIRING INSTRUCTION

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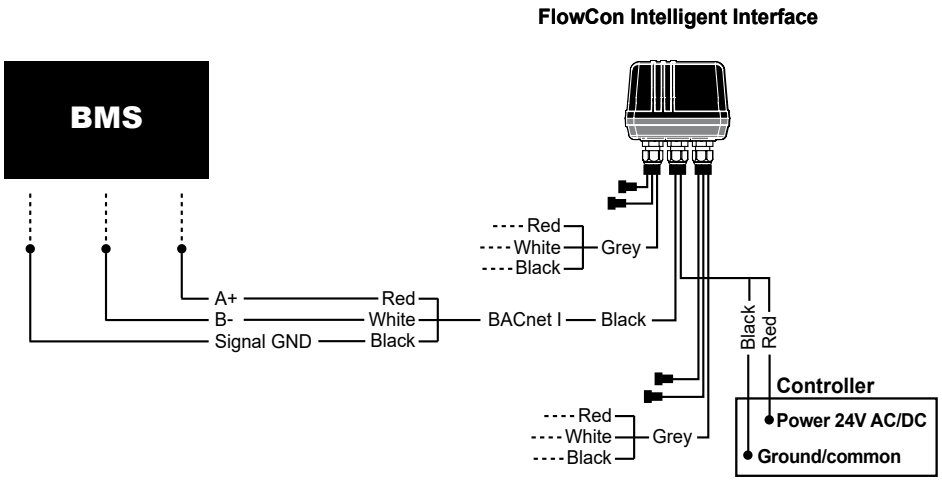

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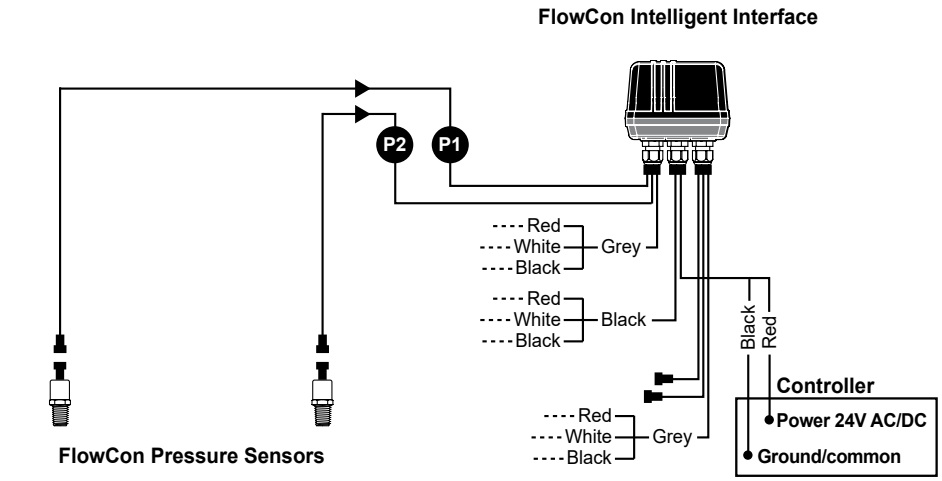

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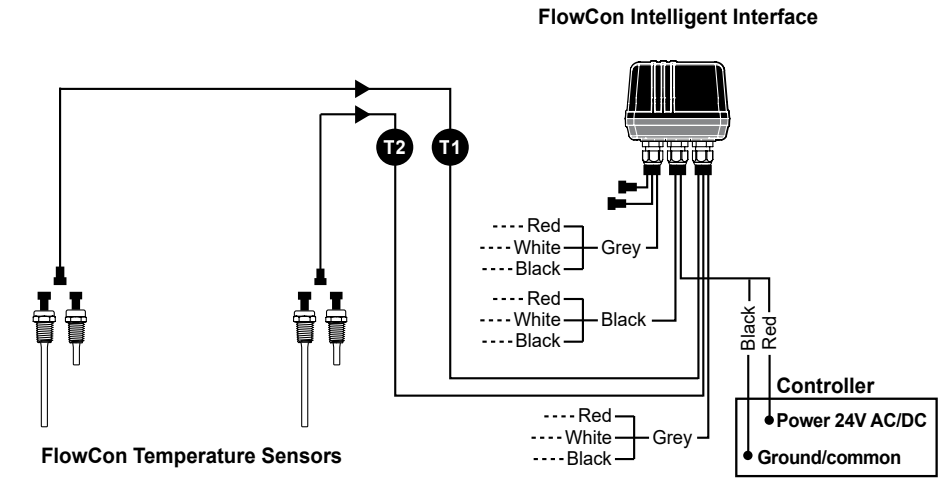


DESCRIPTION

The FlowCon Energy FIT System measures energy usage while monitoring performance to adjust the PICV to optimize chiller performance. The PICV maintains the correct flow despite pressure changes and guarantees that flow and actuator position only change when demand requirements change or water ΔT is outside of specification.

The FlowCon FIT is fully customizable and allows selection of components that work best to optimize the application's unique energy goals. It consists of a FIT Intelligent Interface and a SM actuator. The FIT Interface has control logics based on sensor inputs and feedback from the actuator. The sensors used for the FIT System are two PT1000 temperature sensors and two 25 bar pressure sensors measuring relative to atmospheric pressure. The temperature sensors provide the FlowCon FIT with measurements of up- and downstream temperature, and the pressure sensors measure the ΔP across the PICV allowing the BMS to reduce system pressure to save pump energy when pressure drop is higher than the PICV's requirements.

When the FIT System is set up with pressure and temperature sensors, inlet- and outlet temperatures, static and differential pressures, flow rate and BTU will be readable in the Building Management System through the BACnet objects. Also, the control objects can be controlled through the BACnet interface. For full detailed information, please see FlowCon FIT BACnet PICS.

If combined, a BACnet compatible SM actuator and the FIT Intelligent Interface will give you access to remote programming of the SM actuator via BACnet. Furthermore, notifications from the SM actuator are routed through the FIT to the BMS system for remote monitoring. In addition, the BACnet compatible SM actuator will show a variety of information incl. sensor data in its display for local access.

There are 3 main control modes for the FIT module: direct ΔT Control, direct Comfort Control, and Smart Control. ΔT Control adjusts the flow through the valve with the aim of maintaining a set design ΔT in the hydraulic system. Comfort Control allows you to adjust the control signal of the actuator directly and thereby control water flow rate like a standard control valve. And Smart Control uses a dual layer control characteristic. The main control is changing the flow to optimize the room temperature relative to the room temperature target. When the room temperature is within the accepted range, the ΔT control is activated to optimize the water ΔT.

Finally, the FlowCon Energy FIT System has local Bluetooth® access in immediate vicinity of the FIT Interface that can be used through the FlowCon App. The FlowCon Intelligent Interface calculates the BTU and displays the data via Bluetooth® on an Android or iPhone mobile device. In the FlowCon App you may connect to the FIT System by tapping "Connection" and "Search" for FlowCon systems around. Follow the steps in the App menu and press "Add". This way, you can monitor T1, T2, ΔT, P1, P2, ΔP, Flow, BTU and ΔT target.

FLOW RATE TABLE

Model no.	Valve size		Control range		Lowest settable max flow			Turn down ratio lowest max flow	Highest settable max flow			Turn down ratio highest max flow
	mm	inch	kPaD	psid	l/sec	l/hr	GPM		l/sec	l/hr	GPM	
FIT.3.0	50/65/80	2 - 3	30-800	4.4-116	1.48	5310	23.4	38:1	4.16	15000	65.9	228:1
FIT.3.1	50/65/80	2 - 3	30-800	4.4-116	2.6	9240	40.7		7.1	25700	113	
FIT.3.2	50/65/80	2 - 3	35-800	5.1-116	3.6	12800	56.3		9.9	35600	157	
FIT.4.1	80/100	3 / 4	30-800	4.4-116	3.5	12600	55.4		9.4	33800	149	
FIT.4.2	80/100	3 / 4	35-800	5.1-116	4.7	17000	75.0		14.2	51000	225	
FIT.4.3	80/100	3 / 4	50-800	7.3-116	3.7	13300	58.3		20.2	72700	320	
FIT.5.1	125/150	5 / 6	30-800	4.4-116	6.5	23400	103		23.3	83800	369	
FIT.5.2	125/150	5 / 6	35-800	5.1-116	7.1	25600	113		29.5	106000	468	
FIT.6.2	200/250	8 / 10	35-800	5.1-116	9.2	33100	146		76.8	277000	1220	

Accuracy: Greatest of either ±5% of controlled flow rate or ±2% of maximum flow rate.

FLOW RATE SETTING[4] - VALVE SIZE DN65-DN100

Maximum Flow Rate								
Valve size: DN50-DN80 · 2"-3"								
30-800 kPaD 4.4-116 psid			30-800 kPaD 4.4-116 psid			35-800 kPaD 5.1-116 psid		
FIT.3.0			**FIT.3.1**			**FIT.3.2**		
l/sec	l/hr	GPM	l/sec	l/hr	GPM	l/sec	l/hr	GPM
1.48	5310	23.4	2.57	9240	40.7	3.55	12800	56.3
1.58	5700	25.1	2.81	10100	44.6	3.85	13900	61.0
1.69	6080	26.8	3.05	11000	48.3	4.13	14900	65.5
1.79	6460	28.4	3.27	11800	51.9	4.41	15900	69.9
1.90	6830	30.1	3.49	12500	55.2	4.67	16800	74.0
2.00	7190	31.6	3.69	13300	58.4	4.92	17700	78.0
2.09	7540	33.2	3.88	14000	61.5	5.16	18600	81.7
2.19	7880	34.7	4.06	14600	64.3	5.38	19400	85.3
2.28	8220	36.2	4.23	15200	67.0	5.60	20200	88.8
2.37	8540	37.6	4.39	15800	69.6	5.81	20900	92.1
2.46	8860	39.0	4.54	16300	72.0	6.01	21600	95.2
2.55	9170	40.4	4.68	16900	74.2	6.19	22300	98.2
2.63	9470	41.7	4.82	17300	76.4	6.37	22900	101
2.71	9770	43.0	4.94	17800	78.4	6.54	23600	104
2.79	10100	44.3	5.06	18200	80.2	6.71	24100	106
2.87	10300	45.5	5.17	18600	82.0	6.86	24700	109
2.95	10600	46.7	5.28	19000	83.7	7.00	25200	111
3.02	10900	47.8	5.38	19400	85.2	7.14	25700	113
3.09	11100	49.0	5.47	19700	86.6	7.28	26200	115
3.16	11400	50.0	5.55	20000	88.0	7.40	26600	117
3.22	11600	51.1	5.63	20300	89.2	7.52	27100	119
3.29	11800	52.1	5.70	20500	90.4	7.63	27500	121
3.35	12000	53.1	5.77	20800	91.5	7.74	27900	123
3.41	12300	54.0	5.84	21000	92.5	7.84	28200	124
3.46	12500	54.9	5.90	21200	93.5	7.94	28600	126
3.52	12700	55.8	5.96	21400	94.4	8.03	28900	127
3.57	12900	56.6	6.01	21600	95.2	8.12	29200	129
3.62	13000	57.4	6.06	21800	96.0	8.20	29500	130
3.67	13200	58.2	6.10	22000	96.8	8.28	29800	131
3.72	13400	58.9	6.15	22100	97.5	8.36	30100	133
3.76	13500	59.6	6.19	22300	98.2	8.44	30400	134
3.80	13700	60.2	6.23	22400	98.8	8.51	30600	135
3.84	13800	60.9	6.27	22600	99.4	8.58	30900	136
3.88	14000	61.4	6.31	22700	101	8.65	31100	137
3.91	14100	62.0	6.35	22900	101	8.72	31400	138
3.94	14200	62.5	6.39	23000	101	8.78	31600	139
3.97	14300	63.0	6.42	23100	102	8.85	31900	140
4.00	14400	63.4	6.46	23300	102	8.91	32100	141
4.03	14500	63.8	6.50	23400	103	8.98	32300	142
4.05	14600	64.2	6.54	23500	104	9.04	32600	143
4.07	14700	64.5	6.58	23700	104	9.11	32800	144
4.09	14700	64.8	6.62	23800	105	9.18	33000	145
4.11	14800	65.1	6.67	24000	106	9.25	33300	147
4.12	14800	65.3	6.72	24200	106	9.32	33500	148
4.13	14900	65.5	6.77	24400	107	9.39	33800	149
4.14	14900	65.7	6.82	24600	108	9.46	34100	150
4.15	14900	65.8	6.88	24800	109	9.54	34300	151
4.16	15000	65.9	6.94	25000	110	9.62	34600	153
4.16	15000	65.9	7.01	25200	111	9.71	34900	154
4.16	15000	65.9	7.08	25500	112	9.79	35300	155
4.16	15000	65.9	7.15	25700	113	9.89	35600	157

Maximum Flow Rate								
Valve size: DN80 and DN100 · 3"-4"								
30-800 kPaD 4.4-116 psid			35-800 kPaD 5.1-116 psid			50-800 kPaD 7.3-116 psid		
FIT.4.1			**FIT.4.2**			**FIT.4.3**		
l/sec	l/hr	GPM	l/sec	l/hr	GPM	l/sec	l/hr	GPM
3.49	12600	55.4	4.73	17000	75.0	3.68	13300	58.3
3.88	14000	61.6	5.29	19000	83.8	4.42	15900	70.0
4.26	15300	67.5	5.82	21000	92.3	5.13	18500	81.3
4.61	16600	73.0	6.33	22800	100	5.82	21000	92.3
4.94	17800	78.4	6.82	24500	108	6.50	23400	103
5.26	18900	83.4	7.28	26200	115	7.15	25700	113
5.56	20000	88.1	7.72	27800	122	7.78	28000	123
5.84	21000	92.6	8.14	29300	129	8.40	30200	133
6.11	22000	96.9	8.54	30700	135	8.99	32400	142
6.36	22900	101	8.91	32100	141	9.57	34400	152
6.60	23800	105	9.27	33400	147	10.1	36400	160
6.82	24600	108	9.61	34600	152	10.7	38400	169
7.03	25300	111	9.93	35700	157	11.2	40200	177
7.23	26000	115	10.2	36800	162	11.7	42100	185
7.41	26700	117	10.5	37800	167	12.2	43800	193
7.58	27300	120	10.8	38800	171	12.6	45500	200
7.73	27800	123	11.0	39700	175	13.1	47100	207
7.88	28400	125	11.3	40500	178	13.5	48700	214
8.01	28800	127	11.5	41300	182	13.9	50200	221
8.14	29300	129	11.7	42000	185	14.3	51600	227
8.25	29700	131	11.9	42700	188	14.7	53000	233
8.35	30100	132	12.0	43400	191	15.1	54300	239
8.45	30400	134	12.2	43900	194	15.4	55600	245
8.53	30700	135	12.4	44500	196	15.8	56800	250
8.61	31000	137	12.5	45000	198	16.1	58000	255
8.68	31300	138	12.6	45500	200	16.4	59100	260
8.75	31500	139	12.7	45900	202	16.7	60200	265
8.80	31700	140	12.9	46300	204	17.0	61200	269
8.85	31900	140	13.0	46700	205	17.3	62100	274
8.90	32000	141	13.1	47000	207	17.5	63000	278
8.94	32200	142	13.1	47300	208	17.8	63900	281
8.97	32300	142	13.2	47600	209	18.0	64700	285
9.00	32400	143	13.3	47800	210	18.2	65500	288
9.03	32500	143	13.4	48100	212	18.4	66200	292
9.05	32600	143	13.4	48300	213	18.6	66900	295
9.07	32600	144	13.5	48500	214	18.8	67600	297
9.09	32700	144	13.5	48700	214	18.9	68200	300
9.10	32800	144	13.6	48800	215	19.1	68700	303
9.12	32800	145	13.6	49000	216	19.2	69200	305
9.13	32900	145	13.7	49200	217	19.4	69700	307
9.15	32900	145	13.7	49300	217	19.5	70200	309
9.16	33000	145	13.7	49500	218	19.6	70600	311
9.18	33000	145	13.8	49600	218	19.7	70900	312
9.19	33100	146	13.8	49800	219	19.8	71300	314
9.21	33200	146	13.9	49900	220	19.9	71600	315
9.23	33200	146	13.9	50100	220	20.0	71900	316
9.25	33300	147	14.0	50200	221	20.0	72100	317
9.28	33400	147	14.0	50400	222	20.1	72300	318
9.31	33500	148	14.1	50600	223	20.1	72500	319
9.34	33600	148	14.1	50800	224	20.2	72600	320
9.38	33800	149	14.2	51000	225	20.2	72700	320

Accuracy: Greatest of either ±5% of controlled flow rate or ±2% of maximum flow rate.

Note 4: Above values are related to maximum flow rate setting of the valve and thereby defining the flow through the valve at maximum control signal, normally 10V. Values above do not relate to control signals below 10V. All above valves will have 800 positions between the pre-set flow value and 2V if control range is selected to 2-10V.

FlowCon International recommends that the FlowCon Energy FIT System is selected to ensure that the set maximum flow rates are minimum 50% of the rated valve maximum capacity.

FLOW RATE SETTING[5] - VALVE SIZE DN125-DN250

Maximum Flow Rate					
Valve size: DN125 and DN150 · 5”-6”					
30-800 kPaD 4.4-116 psid			35-800 kPaD 5.1-116 psid		
FIT.5.1			FIT.5.2		
l/sec	l/hr	GPM	l/sec	l/hr	GPM
6.48	23300	103	7.10	25600	113
7.24	26100	115	8.06	29000	128
7.98	28700	126	8.98	32300	142
8.70	31300	138	9.87	35500	157
9.39	33800	149	10.7	38600	170
10.1	36200	160	11.6	41600	183
10.7	38600	170	12.4	44500	196
11.4	40900	180	13.1	47300	208
12.0	43100	190	13.9	50000	220
12.6	45200	199	14.6	52600	232
13.1	47300	208	15.3	55100	243
13.7	49300	217	16.0	57500	253
14.2	51200	226	16.6	59800	264
14.8	53100	234	17.2	62100	273
15.3	54900	242	17.8	64200	283
15.7	56600	249	18.4	66300	292
16.2	58300	257	19.0	68300	301
16.6	59900	264	19.5	70200	309
17.1	61500	271	20.0	72100	317
17.5	63000	277	20.5	73800	325
17.9	64400	284	21.0	75500	333
18.3	65800	290	21.4	77200	340
18.6	67100	295	21.9	78700	347
19.0	68300	301	22.3	80200	353
19.3	69500	306	22.7	81700	360
19.6	70700	311	23.1	83100	366
19.9	71700	316	23.4	84400	372
20.2	72800	320	23.8	85700	377
20.5	73800	325	24.1	86900	383
20.7	74700	329	24.5	88100	388
21.0	75600	333	24.8	89200	393
21.2	76400	336	25.1	90300	398
21.4	77200	340	25.4	91400	402
21.6	77900	343	25.7	92400	407
21.8	78600	346	25.9	93400	411
22.0	79200	349	26.2	94300	415
22.2	79800	351	26.5	95200	419
22.3	80300	354	26.7	96100	423
22.5	80800	356	26.9	97000	427
22.6	81300	358	27.2	97800	431
22.7	81700	360	27.4	98600	434
22.8	82100	361	27.6	99400	438
22.9	82400	363	27.8	100000	441
23.0	82700	364	28.1	101000	445
23.0	83000	365	28.3	102000	448
23.1	83200	366	28.5	102000	451
23.2	83400	367	28.7	103000	455
23.2	83500	368	28.9	104000	458
23.2	83600	368	29.1	105000	461
23.3	83700	369	29.3	105000	464
23.3	83800	369	29.5	106000	468

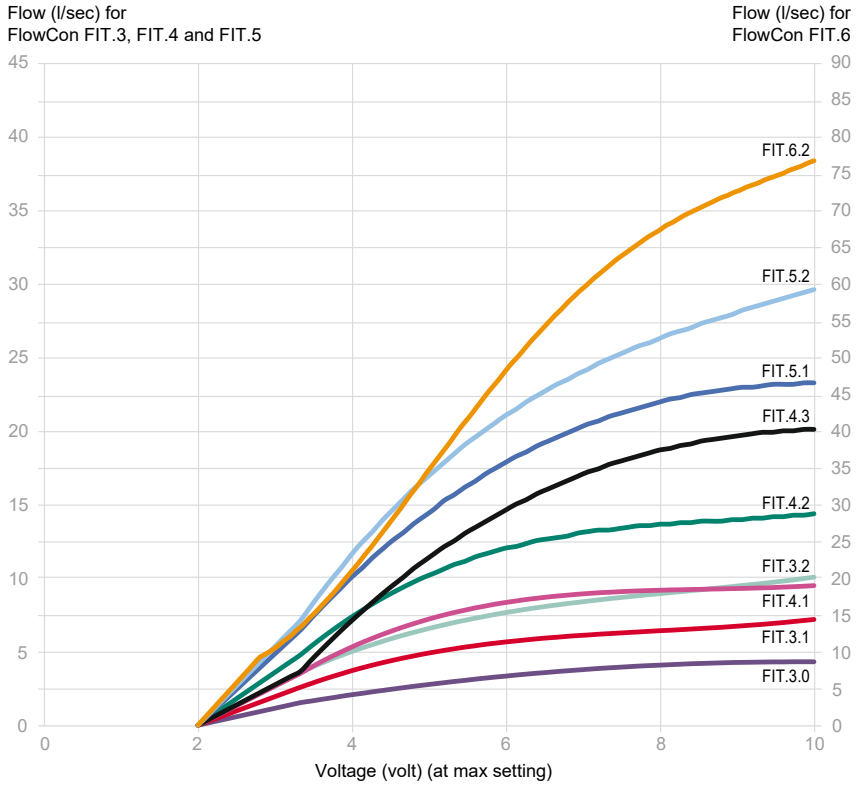
Maximum Flow Rate					
Valve size: DN200 and DN250 · 8”-10”					
35-800 kPaD 5.1-116 psid					
FIT.6.2					
l/sec	l/hr	GPM	l/sec	l/hr	GPM
9.21	33100	146	57.5	207000	911
9.69	34900	154	58.3	210000	924
10.2	36800	162	59.1	213000	936
10.8	38900	171	59.8	215000	948
11.5	41200	182	60.6	218000	960
12.1	43700	192	61.3	221000	972
12.9	46300	204	62.0	223000	983
13.6	49100	216	62.7	226000	994
14.5	52000	229	63.4	228000	1000
15.3	55100	242	64.0	230000	1010
16.2	58200	256	64.6	233000	1020
17.1	61500	271	65.2	235000	1030
18.0	64900	286	65.8	237000	1040
19.0	68400	301	66.4	239000	1050
20.0	71900	317	66.9	241000	1060
21.0	75600	333	67.4	243000	1070
22.0	79300	349	68.0	245000	1080
23.1	83100	366	68.4	246000	1080
24.1	86900	383	68.9	248000	1090
25.2	90800	400	69.4	250000	1100
26.3	94700	417	69.8	251000	1110
27.4	98700	435	70.2	253000	1110
28.5	103000	452	70.6	254000	1120
29.6	107000	470	71.0	256000	1130
30.8	111000	488	71.4	257000	1130
31.9	115000	506	71.8	258000	1140
33.0	119000	523	72.1	260000	1140
34.2	123000	541	72.5	261000	1150
35.3	127000	559	72.8	262000	1150
36.4	131000	577	73.2	263000	1160
37.5	135000	595	73.5	265000	1170
38.6	139000	613	73.8	266000	1170
39.8	143000	630	74.2	267000	1180
40.9	147000	648	74.5	268000	1180
41.9	151000	665	74.8	269000	1190
43.0	155000	682	75.1	270000	1190
44.1	159000	699	75.5	272000	1200
45.2	163000	716	75.8	273000	1200
46.2	166000	732	76.1	274000	1210
47.2	170000	749	76.5	275000	1210
48.3	174000	765	76.8	277000	1220
49.3	177000	781			
50.2	181000	796			
51.2	184000	812			
52.2	188000	827			
53.1	191000	842			
54.0	194000	856			
54.9	198000	870			
55.8	201000	884			
56.6	204000	898			
57.5	207000	911			

Accuracy: Greatest of either ±5% of controlled flow rate or ±2% of maximum flow rate.

Note 5: Above values are related to maximum flow rate setting of the valve and thereby defining the flow through the valve at maximum control signal, normally 10V. Values above do not relate to control signals below 10V. All above valves will have 800 positions between the pre-set flow value and 2V if control range is selected to 2-10V.

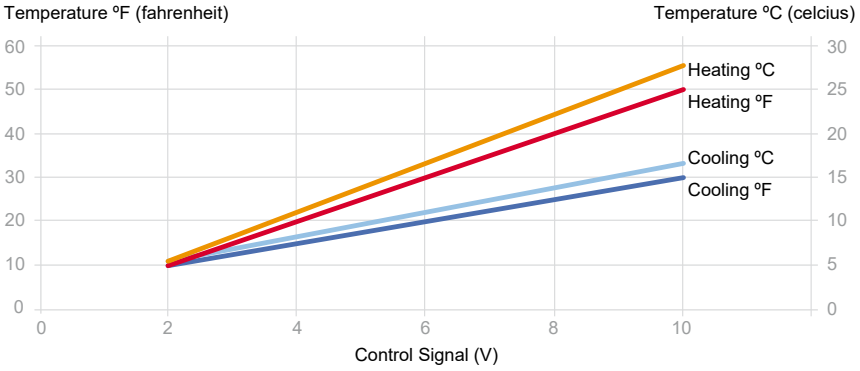
FlowCon International recommends that the FlowCon Energy FIT System is selected to ensure that the set maximum flow rates are minimum 50% of the rated valve maximum capacity.

CONTROL CURVE AT MAXIMUM PRE-SETTING[6]



Note 6: Above curves show the control curve of the valves in maximum allowed pre-setting condition and may vary if lower pre-settings are selected. The valves will always have 1000 positions between the pre-set flow value and 0V if control range is selected to 0-10V.

CONTROL CURVE VS. ΔT



FLANGE MATCH PICV HOUSING

Model no.	Flange size (inch)	ASME B16.5 weld neck		Flange size (mm)	EN1092-1 weld neck			
		Class 150	Class 300		PN10	PN16	PN25	PN40
FIT.3.X	2	-	-	50	✓	✓	✓	✓
	2 1/2	✓	✓	65	✓	✓	✓	✓
	3	✓	✓	80	✓	✓	✓	✓
FIT.4.X	3	✓	✓	80	✓	✓	✓	✓
	4	✓	✓	100	✓	✓	✓	✓
FIT.5.X	5	✓	✓	125	✓	✓	✓	✓
	6	✓	-	150	✓	✓	✓	✓
FIT.6.2	8	-	✓	200	-	-	✓	✓
	10	✓	-	250	✓	✓	✓	✓

GENERAL SPECIFICATIONS

1. PRESSURE INDEPENDENT TEMPERATURE CONTROL SYSTEM

1.1. Contractor shall install where indicated in drawings.

1.2. System shall include a Pressure independent dynamic control valve, a sensor kit and an electronic unit.

1.2.1. The PICV valve shall accurately control flow independent of system pressure fluctuations.

1.2.2. The sensor kit shall include 2 temperature sensors and 2 pressure sensors. Temperature sensors shall measure the ΔT across the coil and pressure sensors shall measure the ΔP across the PICV.

1.2.3. The intelligent interface shall accurately change PICV flow to maintain target ΔT. In addition, the electronic unit shall calculate BTU heat transfer and supply continuous information on ΔT, ΔP and flow.

2. VALVE ACTUATOR

2.1. Valve-actuator coupling shall be snap coupling for fast mounting and de-mounting.

2.2. Actuator housing shall be rated to IP54 including upside-down mounting.

2.3. Actuator shall be driven by a 24V AC/DC motor and shall accept 2-10V DC electric input signal.

2.4. Actuator shall be capable of providing linear feedback signal to the control system. Feedback signal shall be equal to input signal, 2-10V DC.

2.5. Automatic calibration of valve position shall be standard.

2.6. Actuator shall include buttons for external programming of all settings.

2.7. Actuator display showing current valve flow, maximum valve flow, input signal, feedback signal and operational direction shall be standard.

2.8. Optional failsafe versions to power valve to either open (max. setting) or closed position from any position in case of power failure shall be available.

2.9. Optional BACnet versions shall be available. BACnet versions shall provide remote setting and control of actuator.

3. VALVE HOUSING

3.1. Housing shall consist of ductile iron ASTM A395 Grade 60-40-18 rated at no less than 4000 kPa (580 psi) static pressure and +120°C (+248°F).

3.2. Housing shall be permanently marked to show direction of flow.

3.3. Housing shall be for installation between flanges.

3.4. Dual pressure/temperature test plugs for verifying accuracy of flow performance shall be standard on all valve sizes.

3.5. Identification label according to PED-requirements shall be available for all valves.

4. FLOW REGULATOR / AUTOMATIC BALANCING UNIT

4.1. Maximum flow setting shall be adjustable to 51 different settings within the range of the valve size.

4.2. Flow regulation unit shall be manufactured of stainless steel and hydrogenated acrylonitrile-butadiene-rubber and shall be capable of controlling flow within ±5% of controlled flow rate or ±2% of maximum flow rate.

4.3. Flow regulation unit shall be accessible for change-out or maintenance.

5. INTELLIGENT INTERFACE / ELECTRONIC UNIT

5.1. Intelligent interface shall consist of UL94 V0-rated plastic.

5.2. Intelligent interface shall be rated to IP54 including upside-down mounting.

5.3. Intelligent interface shall be driven by 24V AC/DC.

5.4. Intelligent interface shall be Bluetooth® enabled.

5.5. Intelligent interface shall be capable of communicating via BACnet with the control system and wireless feedback signal to handheld devices. Shall communicate with both Android and iPhone devices and display via App.

6. TEMPERATURE SENSOR

6.1. Temperature sensors shall consist of 304 stainless steel.

6.2. Temperature sensors shall be IP65.

6.3. Temperature sensors shall provide a resistive output signal corresponding to water temperature.

7. PRESSURE SENSOR

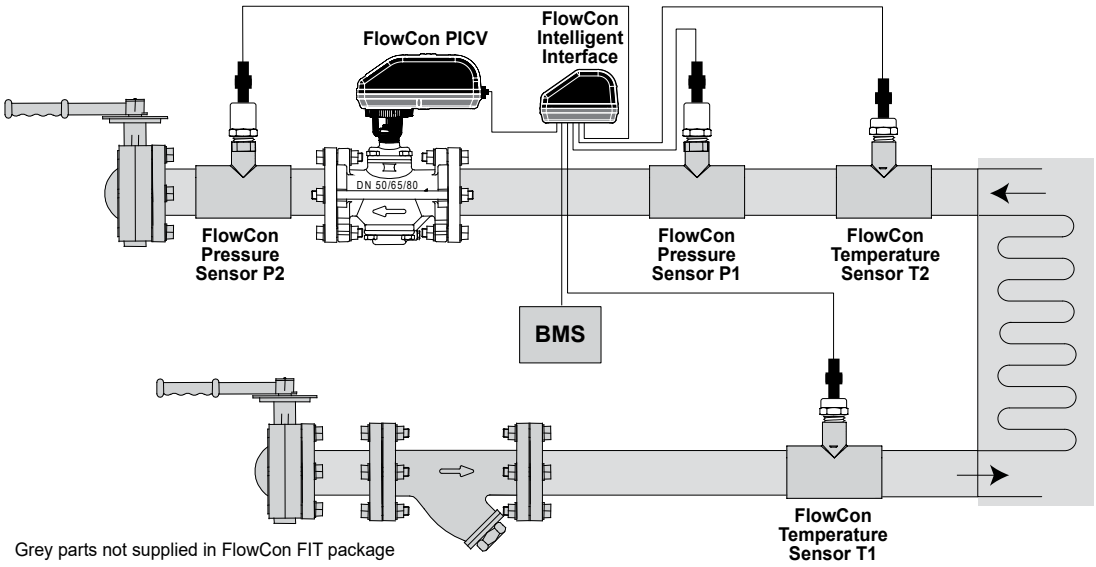
7.1. Pressure sensors shall consist of 304 stainless steel.

7.2. Pressure sensors shall IP65.

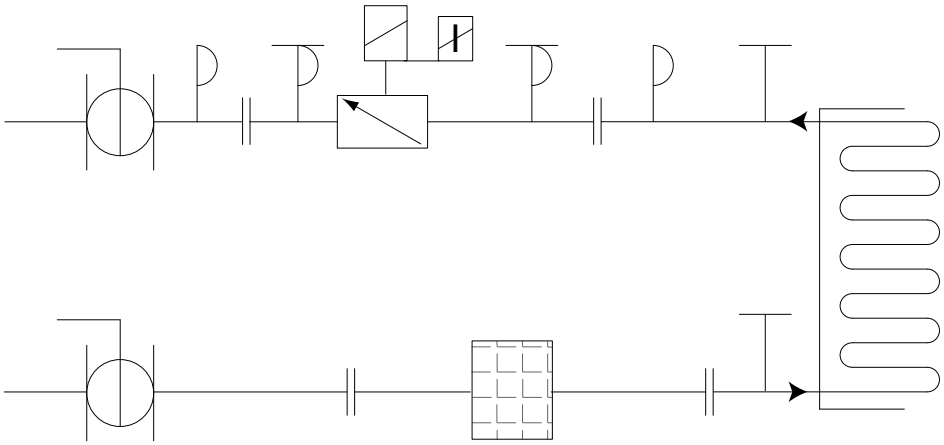
7.3. Pressure sensors shall be driven by 12V DC.

7.4. Pressure sensors shall provide a 4-20mA output signal corresponding to water pressure.

APPLICATION AND SCHEMATIC EXAMPLE



Grey parts not supplied in FlowCon FIT package



UPDATES

For latest updates please see www.flowcon.com