

BACnet Protocol Implementation Conformance Statement



Date: October 24, 2023
Vendor Name: FlowCon International/Griswold Controls
Product Name: EPIC/FIT Intelligent Interface
Applications Software Version: 1.05
Product Model: ACC40023
Firmware Revision: 2.4.3
BACnet Protocol Revision: 12

Product Description:
BACnet Intelligent Interface for EPIC/FIT valves are intended for pressure independent flow management control securing continuously correct Delta T for energy optimization, optimal room comfort or a SMART control combination, depending on control mode setting..

BACnet Standardized Device Profile (Annex L):

- BACnet Operator Workstation (B-OWS)
- BACnet Building Controller (B-BC)
- BACnet Advanced Application Controller (B-AAC)
- BACnet Application Specific Controller (B-ASC)
- BACnet Smart Sensor (B-SS)
- BACnet Smart Actuator (B-SA)

List all BACnet Interoperability Building Blocks Supported (Annex K):

- DS-RP-B Data Sharing - Read Property - B
- DS-WP-B Data Sharing - Write Property - B
- DM-DDB-B Device Management - Dynamic Device Binding - B
- DM-DOB-B Device Management - Dynamic Object Binding - B
- DM-DCC-B Device Management - Device Communication Control - B
- DS-RPM-B Data Sharing - Read Property Multiple - B
- DM-RD-B Device Management - Reinitialize Device- B

Segmentation Capability: This device does not support segmentation.

Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ASTM 878.1, 2.5 Mb. ARCNET (Clause 8)
- ASTM 878.1, RS-485 ARCNET (Clause 8) baud rate(s):
- MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, 57600, 76800 and 115200
- MS/TP slave (Clause 9), baud rate(s): 9600, 19200, 38400, 57600, 76800 and 115200
- Point-To-Point, EIA 232 (Clause 10), baud rate(s): max. EIA 232
- Point-To-Point, modem, (Clause 10), baud rate(s): max. modem
- LonTalk, (Clause 11), medium:
- Other:

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)

- Yes No

Networking Options: This device has no special networking options.

- Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- Annex H, BACnet Tunneling Router over IP
- BACnet Broadcast Management Device (BBMD)
 - Does the BBMD support registrations by Foreign Devices? Yes No
 - Does the BBMD support network address translation? Yes No

Network Security Options:

- Non-secure Device - is capable of operating without BACnet Network Security
- Secure Device - is capable of using BACnet Network Security (NS-SD BIBB)
 - Multiple Application-Specific Keys:
 - Supports encryption (NS-ED BIBB)
 - Key Server (NS-KS BIBB)

Character Sets Supported:

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ANSI X3.4
- IBM™/Microsoft™ DBCS
- ISO 8859-1
- ISO 10646 (UCS-2)
- ISO 10646 (UCS-4)
- JIS C 6226

If this product is a communication gateway, describe the types of non-BACnet equipment/network(s) that the gateway supports: This device is a gateway (for MVP/SM.0.0.0.5/6) and non gateway (for MVP/SM.0.0.0.3/4).

Standard Object Types Supported:

Object Type	Supported	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
Device Priority Property	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Max_Master Max_Info_Frame Description #1000 to #1026	Object_Identifier Object_Name Max_Master Description #1000 to #1002
Analog Value (AV)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reliability Description	Present_Value ¹
Binary Value (BV)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reliability Active_Text Inactive_Text Description	Present_Value ²
Multi-state Value (MSV)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Description Reliability States_Text	Present_Value ³

Note 1: Present_Value writable for objects AV.4 and AV.62 and AV.11, AV.12, AV.138, AV.139, AV.141, AV.143 and object AV.164 under specific conditions.
 Note 2: Present_Value writable for objects BV.17, BV.18, BV.53, BV.54, BV.62 and BV.63 and object BV.56 under specific conditions.
 Note 3: Present_Value writable for objects MSV.1, MSV.2, MSV.3, MSV.4, MSV.5, MSV.6, MSV.7, MSV.38, MSV.39 and object MSV.43 under specific conditions.

Proprietary Properties

ID	Data Type	Meaning	Writable
Proprietary property #1000	Unsigned type	Represents the physical layer MAC address. This value range from 0 to 127.	<input checked="" type="checkbox"/>
Proprietary property #1001	Unsigned type	Represents the MS/TP baud rate. Available values are: 9600, 19200, 38400, 57600, 76800 and 115200.	<input checked="" type="checkbox"/>

All proprietary properties of this device exist within the Device object.

List of Objects

Analog Input (AI):

ID	Name	Description	R/W	Present-Value Options
1	WaterTemperature1	T1, temperature sensor 1	R	-30 to 500. Unit as per MSV.3.
2	WaterTemperature2	T2, temperature sensor 2	R	-30 to 500. Unit as per MSV.3.
3	WaterTempDelta	ΔT , numerical valve of T1-T2	R	0 to 500. Unit as per MSV.3.
4	WaterTempDeltaTarget	ΔT Target	R/W	<u>10</u> 0 to 200. Unit as per MSV.3. <i>FIT system is controlled by ΔT Target if MSV.4= 1</i>
5	WaterTempDeltaDeadband	ΔT Target deadband	R/W	<u>0.5</u> 0.1 to 100. Units as per MSV.3, default °C.
6	RoomTemperature	Room temperature	R/W	<u>23</u> -100 to 500. Units as per MSV.3, default °C.
7	RoomTargetTemp	Room temperature target	R/W	<u>23</u> -100 to 500. Units as per MSV.3, default °C.
8	RoomTargetDeadband	Room temperature target deadband	R/W	<u>1</u> 0.1 to 100. Units as per MSV.3, default °C.
9	TargetEvalInterval	Time interval for temperature check	R/W	<u>10</u> 3 to 3600. Unit is seconds.
10	EnergyConsumption	Energy consumption in BTU or kW	R	0 to 1000. Unit as per MSV.3.
11	Temp1Correct	Correction value for temperature sensor 1	R	<u>0</u> -10.0 to 10.0. Unit as per MSV.3.
12	Temp2Correct	Correction value for temperature sensor 2	R	<u>0</u> -10.0 to 10.0. Unit as per MSV.3.
13	Pressure1	P1, pressure sensor 1	R	0 to 1000. Unit as per MSV.6. Works in config. 1, 2 and 4.
14	Pressure2	P2, pressure sensor 2	R	0 to 1000. Unit as per MSV.6. Works in config. 1, 2 and 4.
15	PressureDelta	ΔP , numerical valve of P1-P2	R	0 to 1000. Unit as per MSV.6. Works in config. 1, 2 and 4.
16	Press1Correct	Correction value for pressure sensor 1	R/W	<u>0</u> -10.0 to 10.0. Unit as per MSV.6. Works in config. 1, 2 and 4.
17	Press2Correct	Correction value for pressure sensor 2	R/W	<u>0</u> -10.0 to 10.0. Unit as per MSV.6. Works in config. 1, 2 and 4.
18	SystemOnCounter	Standard counter in minutes, counting minutes the system is on	R	0 to 50.000.000. Unit is minutes.
62	MaxFlow	Maximum flow rate	R/W	0 to 277100. Unit as per MSV.39. Range adapts to selected valve in MSV.7 or MSV.38 and selected unit in MSV.39
68	FlowRate	Current flow rate	R	0 to 277100. Unit as per MSV.39. Range adapts to selected valve in MSV.7 or MSV.38 and selected unit in MSV.39 In config. 1 object is controlled by PICV actuator. In config. 2, 3 and 4 object is controlled by FIT.
98	MotorPosition	Motor position / valve opening	R	0 to 100. Unit is %. In config. 1 object is controlled by PICV actuator. In config. 2, 3 and 4 object is mirrored AV.141
138	ControlSigMin	Analog control signal minimum value	R/W	0 to 10. Unit is Volts. NO FUNCTION.
139	ControlSigMax	Analog control signal maximum value	R/W	0 to 10. Unit is Volts. NO FUNCTION.
140	BatteryCapacity	Actuator battery capacity	R	0 to 100. Unit is %. Works in config. 1.
141	AnalogControlSignal	Analog control signal value	R/W	10 to 100, for MSV.4=4 or 5. Unit is %. 0 to 100, for MSV.4=1, 2 or 3. Unit is %.
143	BACnetFallbackTimeout	BACnet control fallback timeout	R/W	1 to 60. Unit is minutes. Default= 10 for MSV.4=2. Default= 60 for MSV.4=1, 3, 4 or 5 Works in config. 1.

Analog Value (AV, continued):

ID	Name	Description	R/W	Present-Value Options
164	FeedbackSignal	Feedback signal value	R	2 to 10. Unit is Volts. NO FUNCTION.
165	WaterT1	FIT writes T1 back to the actuator display	R/W	-30 to 500. Unit is converted to °C. Works in config. 1. FIT overwrites this value.
166	WaterT2	FIT writes T2 back to the actuator display	R/W	-30 to 500. Unit is converted to °C. Works in config. 1. FIT overwrites this value.
167	WaterdT	FIT writes ΔT back to the actuator display	R/W	0 to 500. Unit is converted to °C. Works in config. 1. FIT overwrites this value.
168	dP	FIT writes ΔP back to the actuator display	R/W	0 to 1000. Unit is converted to kPaD Works in config. 1. FIT overwrites this value.

Binary Value (BV):

ID	Name	Description	R/W	Present-Value Options
1	PressureDeltaAlarm		R	0= OFF 1= ON Works in config. 1, 2 and 4.
2	RestartUnit	Restart unit	R/W	0= Not activate 1= Activated
17	RotationDirection	Motor rotation direction	R/W	0= NO 1= NC Works in config. 1.
18	FailsafeDirection	Failsafe rotation direction	R/W	0= Open 1= Close Works in config. 1.
53	FlushMode	Flush mode enable	R/W	0= Disabled 1= Enabled Works in config. 1.
54	Password	Password enable	R/W	0= Disabled 1= Enabled Works in config. 1.
55	OvertorquedAlarm	Overtorqued alarm	R	0= Off 1= On Works in config. 1.
56	OvertorquedInPastAlarm	Overtorqued in past alarm	R/W	0= Off 1= On Works in config. 1.
57	OverTemperatureAlarm	Critical over temperature alarm	R	0= Off 1= On Works in config. 1.
58	HighTemperatureAlarm	Uncritical high temperature alarm	R	0= Off 1= On Works in config. 1.
59	PowerFailAlarm	Power failure / out of range alarm	R	0= Off 1= On Works in config. 1.
60	NoCtrlSignalAlarm	No control signal alarm	R	0= Off 1= On Works in config. 1.
61	BattErrorAlarm	Battery error alarm	R	0= Off 1= On Works in config. 1.
62	BACnetFallback-Alarm	BACnet fallback alarm	R/W	0= Off 1= On Works in config. 1.
63	Autostroke	Activate auto-stroke. After auto-cycle FIT will proceed to normal operation and reset to 0=disabled	R/W	0= Disabled 1= Enabled Works in config. 1.

Multi-State Value (MSV):

ID	Name	Description	R/W	Present-Value Options
1	Baud Rate	FIT baud rate	R/W	1= 9600 2= 19200 3= 38400 4= 57600 5= 76800 6= 115200
2	MS/TP MAC Address	FIT MS/TP MAC address	R/W	0 to 127
3	Temperature and Energy Units	FIT workable temperature and energy units	R/W	1= °C and BTU/h 2= °F and BTU/h 3= °C and kW 4= °F and kW

Multi-State Value (MSV), continued:

ID	Name	Description	R/W	Present-Value Options
4	Flow Control	<p>FIT direct control mode</p> <p>When set to direct ΔT Control, FlowCon FIT will work as an energy valve based on a system defined tar-get ΔT. When set to direct Comfort Control, FlowCon FIT will work as a PICV for room comfort control. When set to Smart Control, FlowCon FIT will prioritize room temeparture setting and within designated range optimize the ΔT.</p> <p>When set to any 90% close-mode, FlowCon FIT will as minimum be opened 10% to avoid dead end leg.</p>	R/W	<p>1= ΔT Control (Delta T Target) 2= Comfort Control (Set Flow) 3= Smart Control (Room temp. in combi with ΔT) 4= ΔT Control 90% close 5= Smart Control 90% close</p> <p>Comfort Control is also recommended under commissioning or during system verification.</p>
5	Configuration	!! FIT configuration !!	R/W	<p>1= SM.0.0.0.5/6 2= SM.0.0.0.3/4 3= FN/FH w/o pressure sensors 4= FN/FH w pressure sensors</p>
6	Pressure Units	FIT workable pressure unit	R/W	1= kPa 2= psi
7	ValveModelG	FIT valve model number based on FlowCon Green	R/W	<p>1= Green.0 2= Green.1 3= Green.2 4= Green.3 <i>Works in config. 3 and 4</i></p>
38	ValveModel	FIT valve model number based on FlowCon SM	R/W	<p>1= SM.0.0 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 <i>Works in config. 1 and 2</i> <i>Controlled by PICV actuator in config. 1;</i> <i>Default= 1</i> <i>Controlled by FIT in config. 2;</i> <i>Default= 2 (1 not available)</i></p>
39	FlowScaleUnit	Flow scale unit	R/W	<p>1= l/sec Controlled by PICV actuator in config. 1 Controlled by FIT in config. 2, 3 and 4</p>
40	ControlSignalMode	Control signal mode	R	<p>1= 2-10VDC 2= 4-20mA 3= Digital 4= BACnet Only BACnet is valid, 1/2/3 have no function <i>Works in config. 1. Controlled by FIT.</i></p>
41	FeedbackSignalMode	Feedback signal mode	R	<p>1= 2-10VDC 2= 0-10VDC 3= 4-20mA 4= Auto NO FUNCTION.</p>
43	BACnetFallbackAction	BACnet control fallback action	R	<p>1= Close 2= Stop 3= Open 4= Midway <i>Works in config. 1. Controlled by PICV actuator.</i></p>
44	PressureRange_kPaD	PICV pressure range as per MSV.38	R	<p>1= NA (SM.0.0) 2= 32-320 (SM.1.1) 3= 40-320 (SM.2.1) 4= 30-800 (SM.3.0) 5= 30-800 (SM.3.1) 6= 35-800 (SM.3.2) 7= 30-800 (SM.4.1) 8= 35-800 (SM.4.2) 9= 50-800 (SM.4.3) 10= 30-800 (SM.5.1) 11= 35-800 SM.5.2) 12= 35-800 (SM.6.2) <i>Works in config. 1. Controlled by PICV actuator.</i></p>
45	ActuatorState	Actuator operation state	R	<p>1= Normal 2= Calibration 3= Flush 4= Auto-stroke 5= Alarm 6= Failsafe <i>Works in config. 1. Controlled by PICV actuator.</i></p>
46	ControlCurveMode	Actuator control mode	R/W	<p>1= Linear flow 2= Equal% 3= Linear rotation 4= Linear signal Only Linear flow is valid, 2/3/4 have no function <i>Works in config. 1. Controlled by PICV actuator.</i></p>