TEC260x-4(+PIR) and TEC2613-4(+PIR) Series Network Temperature and Humidity Controllers Protocol Implementation Conformance Statement

Technical Bulletin

TEC260x-4, TEC260x-4+PIR,
TEC2613-4, TEC2613-4+PIR

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Document Introduction

This document contains the Protocol Implementation Conformance Statement (PICS) and BACnet® Interoperability Building Blocks (BIBBs) for the Network Temperature and Humidity Controllers as required by the American National Standards Institute/American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ANSI/ASHRAE) Standard 135-2001, BACnet protocol.

The PICS is a written document created by the manufacturer of a device to identify the particular options specified in the BACnet standard and implemented in the device.

BACnet Interoperability Building Blocks are collections of one or more BACnet services. This document includes a listing of the BIBBs currently supported by the Network Temperature and Humidity Controller.

Annex A - Protocol Implementation Conformance Statement (Normative)

Table 1: BACnet Protocol Implementation Conformance Statement

Vendor Name	Johnson Controls, Inc.
Product Name	TEC260x-4(+PIR) and TEC2613-4(+PIR) Series Network Temperature and Humidity Controllers
Product Model Numbers	TEC2601-4, TEC2601-4+PIR, TEC2602-4, TEC2602-4+PIR, TEC2603-4, TEC2603-4+PIR, TEC2604-4, TEC2604-4+PIR, TEC2613-4, TEC2613-4+PIR
Applications Software Version	Not Applicable
Firmware Version	3.05.04
BACnet Protocol Revision	Version 1, Revision 2

Product Description

The TEC260x-4(+PIR) and TEC2613-4(+PIR) Series BACnet communicating temperature and humidity controllers are for heating, cooling, and humidification equipment specifically designed to be monitored on a BACnet Master-Slave/Token-Passing (MS/TP) network.

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)**

Note: For a complete listing of the additional BIBBs supported (Annex K), see the *Annex K - BACnet Interoperability Building Blocks (BIBBs) (Normative)* section of this document.

Segmentation Capability

☐	**Segmentation Requests Supported**	Window Size	127
☐	**Segmentation Responses Supported**	Window Size	127

Standard Object Types Supported

The following is a list of the standard object types as defined by ASHRAE. See the section of the supported object type for details.

- ☒ **Analog Input**
- ☐ **Analog Output**
- ☒ **Analog Value**
- ☐ **Averaging**
- ☒ **Binary Input**
- ☐ **Binary Output**
- ☒ **Binary Value**
- ☐ **Calendar**
- ☐ **Command**
- ☒ **Device**
- ☐ **Event Enrollment**
- ☐ **File**
- ☒ **Group**
- ☐ **Life Safety Point**
- ☐ **Life Safety Zone**
- ☐ **Loop**
- ☐ **Multistate Input**
- ☐ **Multistate Output**
- ☒ **Multistate Value**
- ☐ **Notification Class**
- ☐ **Program**
- ☐ **Schedule**
- ☐ **Trend Log**

Analog Input

Table 2: Analog Input

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
☐	☐	Reliability	Out of Service

Analog Value

Table 3: Analog Value

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
☐	☐	Reliability	Object Name[1] Out of Service[2] Present Value[3]

1. Object Name is writable for Room Temperature (AV7) and Outdoor Temperature (AV9).
2. Out of Service is writable for every Analog Value object except PI Heating Demand (AV20), PI Cooling Demand (AV21), and Economizer Output (AV22).
3. Present Value is writable for every Analog Value object except PI Heating Demand (AV20), PI Cooling Demand (AV21), and Economizer Output (AV22).

Binary Input

Table 4: Binary Input

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
☐	☐	Active Text Inactive Text Reliability	Out of Service

Binary Value

Table 5: Binary Value

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
☐	☐	Active Text Inactive Text Reliability	Out of Service Present Value

Device

Table 6: Device

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
☐	☐	Max Info Frames Max Master	Max Master Object Identifier Object Name

Group

Table 7: Group

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
☐	☐	N/A	N/A

Multistate Value

Table 8: Multistate Value

Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
☐	☐	Reliability States Text	Out of Service[1] Present Value[2]

1. Out of Service is writable for every Multistate Value object except Effective Occupancy (MV34).
2. Present Value is writable for every Multistate Value object except Effective Occupancy (MV34).

Data Link Layer Option

- ☐ BACnet Internet Protocol (IP) (Annex J)
- ☐ BACnet IP (Annex J), Foreign Device
- ☐ ISO 8802-3, Ethernet (Clause 7)
- ☐ ANSI/ATA 878.1, 2.5 MB ARCNET® network (Clause 8)
- ☐ ANSI/ATA 878.1, RS-485 ARCNET network (Clause 8), baud rates: _____
- ☒ Master-Slave/Token-Passing (MS/TP) master (Clause 9), baud rates: 9600, 19,200, 38,400, 76,800 (Auto-Detect)
- ☐ MS/TP slave (Clause 9), baud rates: _____
- ☐ Point-To-Point, EIA 232 (Clause 10), baud rates: _____
- ☐ Point-To-Point, modem (Clause 10), baud rates: _____
- ☐ LonTalk® protocol (Clause 11), medium: _____
- ☐ Other: _____

Device Address Binding

☐ Yes ☒ No **Is static device binding supported?** (required for two-way communication between MS/TP slaves and other devices)

Networking Options

- ☐ Router, Clause 6: _____
- ☐ Annex H, BACnet Tunneling Router over IP
- ☐ BACnet/IP Broadcast Management Device (BBMD)

  Does the BBMD support registrations by Foreign Devices? ☐ Yes ☐ No

Character Sets Supported

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

- ☒ ANSI X3.4
- ☐ IBM®/Microsoft® Double-Byte Character Set (DBCS)
- ☐ ISO 8859-1
- ☐ ISO 10646 Universal Character Set-2 (UCS-2)
- ☐ ISO 10646 (UCS-4)
- ☐ Japanese Industrial Standard (JIS) C 6226

If this product is a communication gateway, describe the types of non BACnet equipment/network(s) that the gateway supports:

Objects Table

Table 9: Objects Table (Part 1 of 4)

Object Name	Type and Instance	Object Property	Thermostat Parameter				
TEC26MM-AAA **MM: last two digits of model number** **AAA: address of device on the MS/TP network (from 4 to 127)**	Device 76bbb bbb: address of device on the MS/TP network from 004 to 127	Object_Identifier (R,W)	Unique ID number of a device on a network				
		Object_Name (R,W)	Unique name of a device on a network				
		Max_Master (R,W)	Maximum master devices allowed to be part of the network				
Object Name	**Type and Instance**	**Object Property**	**TEC2601-4(+PIR)**	**TEC2603-4(+PIR)**	**TEC2604-4(+PIR)**	**TEC2602-4(+PIR)**	**TEC2613-4(+PIR)**
Room Temperature	AV 7	Present_Value (R,W)	X	X	X	X	X
Room Temp Override	BV 8	Present_Value (R,W)	X	X	X	X	X
Outdoor Temperature	AV 9	Present_Value (R,W)	X	X	X	X	X
Outdoor Temp Override	BV 10	Present_Value (R,W)	X	X	X	X	X
Room Humidity	AV 11	Present_Value (R)					X
Occupancy Command	MV 12	Present_Value (R,W)	X	X	X	X	X
System Mode HP	MV 13	Present_Value (R,W)				X	
System Mode RTU	MV 14	Present_Value (R,W)	X	X	X		X
Fan Mode	MV 15	Present_Value (R,W)	X	X	X	X	X
Supply Temperature	AI 16	Present_Value (R)	X	X	X	X	
Supply RH	AI 17	Present_Value (R)					X

Table 9: Objects Table (Part 2 of 4)

Object Name	Type and Instance	Object Property	Thermostat Parameter				
			TEC2601-4(+PIR)	TEC2603-4(+PIR)	TEC2604-4(+PIR)	TEC2602-4(+PIR)	TEC2613-4(+PIR)
Keypad Lockout	MV 18	Present_Value (R,W)	X	X	X	X	X
Control Output	GRP 19	Present_Value (R)	X	X	X	X	X
PI Heating Demand	AV 20	Present_Value (R)	X	X	X	X	X
PI Cooling Demand	AV 21	Present_Value (R)	X	X	X	X	X
Economizer Output	AV 22	Present_Value (R)			X		
Controller Status	GRP 23	Present_Value (R)	X	X	X	X	X
AUX	BI 24	Present_Value (R)	X	X	X	X	X
G Fan	BI 25	Present_Value (R)	X	X	X	X	X
Y1 Cool	BI 26	Present_Value (R)	X	X	X	X	X
Y2 Cool	BI 27	Present_Value (R)		X	X	X	X
W1 Heat	BI 28	Present_Value (R)	X	X	X	X	X
W2 Heat	BI 29	Present_Value (R)		X	X		X
Reversing Valve	BI 30	Present_Value (R)				X	
DI 1 Status	BI 31	Present_Value (R)	X	X	X	X	X
DI 2 Status	BI 32	Present_Value (R)	X	X	X	X	
Local Motion	BI 33	Present_Value (R)	X	X	X	X	X
Effective Occupancy	MV 34	Present_Value (R)	X	X	X	X	X
Controller Alarms	GRP 35	Present_Value (R)	X	X	X	X	X
Frost Alarm	BI 36	Present_Value (R)	X	X	X	X	X
Filter Alarm	BI 38	Present_Value (R)	X	X	X	X	X
Service Alarm	BI 39	Present_Value (R)	X	X	X	X	X
Fan Lock Alarm	BI 40	Present_Value (R)	X	X	X	X	X
Temperature Setpoints	GRP 41	Present_Value (R,W)	X	X	X	X	X
Occupied Heat Setpoint	AV 42	Present_Value (R,W)	X	X	X	X	X
Occupied Cool Setpoint	AV 43	Present_Value (R,W)	X	X	X	X	X
Unoccupied Heat Setpoint	AV 44	Present_Value (R,W)	X	X	X	X	X
Unoccupied Cool Setpoint	AV 45	Present_Value (R,W)	X	X	X	X	X
General Options 1	GRP 46	Present_Value (R)	X	X	X	X	X
Temperature Scale	BV 47	Present_Value (R,W)	X	X	X	X	X
Heating Setpoint Limit	AV 48	Present_Value (R,W)	X	X	X	X	X
Cooling Setpoint Limit	AV 49	Present_Value (R,W)	X	X	X	X	X
Heating Lockout Temperature	AV 50	Present_Value (R,W)	X	X	X	X	X
Cooling Lockout Temperature	AV 51	Present_Value (R,W)	X	X	X	X	X
Deadband	AV 52	Present_Value (R,W)	X	X	X	X	X

Table 9: Objects Table (Part 3 of 4)

Object Name	Type and Instance	Object Property	Thermostat Parameter				
			TEC2601-4(+PIR)	TEC2603-4(+PIR)	TEC2604-4(+PIR)	TEC2602-4(+PIR)	TEC2613-4(+PIR)
Heating CPH	MV 53	Present_Value (R,W)	X	X	X	X	X
Cooling CPH	MV 54	Present_Value (R,W)	X	X	X	X	X
Frost Protection	BV 55	Present_Value (R,W)	X	X	X	X	X
Aux Contact	BV 56	Present_Value (R,W)	X	X	X	X	X
Menu Scroll	BV 57	Present_Value (R,W)	X	X	X	X	X
General Options 2	GRP 58	Present_Value (R)	X	X	X	X	X
Password Value	AV 59	Present_Value (R,W)	X	X	X	X	X
Power-up Delay	AV 60	Present_Value (R,W)	X	X	X	X	X
Temporary Occupancy Time	MV 61	Present_Value (R,W)	X	X	X	X	X
Fan Control	BV 62	Present_Value (R,W)	X	X	X	X	X
Anticycle	MV 63	Present_Value (R,W)	X	X	X	X	X
Fan Purge Delay	BV 64	Present_Value (R,W)	X	X	X	X	X
DI 1 Configuration	MV 65	Present_Value (R,W)	X	X	X	X	X
DI 2 Configuration	MV 66	Present_Value (R,W)	X	X	X	X	
Proportional Band	MV 67	Present_Value (R,W)	X	X	X	X	X
Unoccupied Time	AV 68	Present_Value (R,W)	X	X	X	X	X
Stages	GRP 72	Present_Value (R)		X	X	X	X
Heating Stages	MV 73	Present_Value (R,W)		X	X		X
Cooling Stages	MV 74	Present_Value (R,W)		X	X		X
Heat Pump Stages	MV 75	Present_Value (R,W)				X	
Economizer	GRP 76	Present_Value (R)			X		
Economizer Changeover Setpoint	AV 77	Present_Value (R,W)			X		
Economizer Minimum Position	AV 78	Present_Value (R,W)			X		
Mechanical Cooling Enabled	BV 79	Present_Value (R,W)			X		
Mixed Air Setpoint	AV 80	Present_Value (R,W)			X		
Heat Pump	GRP 81	Present_Value (R)				X	
High Balance Point	AV 82	Present_Value (R,W)				X	
Low Balance Point	AV 83	Present_Value (R,W)				X	
Comfort Mode	BV 84	Present_Value (R,W)				X	
Reversing Valve Configuration	BV 85	Present_Value (R,W)				X	
Compressor Interlock	BV 86	Present_Value (R,W)				X	
Dehumidification Model Configuration Options	GRP 87	Present_Value (R)					X

Table 9: Objects Table (Part 4 of 4)

Object Name	Type and Instance	Object Property	Thermostat Parameter				
			TEC2601-4(+PIR)	TEC2603-4(+PIR)	TEC2604-4(+PIR)	TEC2602-4(+PIR)	TEC2613-4(+PIR)
RH Display	BV 88	Present_Value (R,W)					X
Dehumidification RH Setpoint	AV 89	Present_Value (R,W)					X
Dehumidification Hysteresis	AV 90	Present_Value (R,W)					X
Dehumidification Low OA Lockout	AV 91	Present_Value (R,W)					X
Dehumidification Lockout Functions	BV 92	Present_Value (R,W)					X
Dehumidification Output Status	BI 93	Present_Value (R)					X
Humidification Model Configuration Options	GRP 94	Present_Value (R)					X
Humidification RH Setpoint	AV 95	Present_Value (R,W)					X
Eff (Effective) Reset Humidification RH Spt (Setpoint)	AV 96	Present_Value (R)					X
Humidification High Limit Spt (Setpoint)	AV 97	Present_Value (R,W)					X
Low RH Setpoint	AV 98	Present_Value (R,W)					X
Low Temp Reset RH Setpoint	AV 99	Present_Value (R,W)					X
High Temp Reset RH Setpoint	AV 100	Present_Value (R,W)					X
Humidifier Output	AV 101	Present_Value (R)					X

Annex K - BACnet Interoperability Building Blocks (BIBBs) (Normative)

Table 10 lists all the BIBBs which, per ANSI/ASHRAE Standard 135-2001, could be supported by a BACnet Application Specific Controller (B-ASC). The checked BIBBs are supported by the TEC260x-4(+PIR) and TEC2613-4(+PIR) Series Network Temperature and Humidity Controllers.

Table 10: BACnet Application Specific Controller BIBBs Support

Application Service (B-ASC)	Designation	Supported
Data Sharing - Read Property - B	DS-RP-B	☒
Data Sharing - Read Property Multiple - B	DS-RPM-B	☒
Data Sharing - Write Property - B	DS-WP-B	☒
Device Management - Dynamic Device Binding - B	DM-DDB-B	☒
Device Management - Dynamic Object Binding - B	DM-DOB-B	☒
Device Management - Device Communication Control - B	DM-DCC-B	☒

Table 11 lists all the BACnet standard application services. The checked services are supported by the TEC260x-4(+PIR) and TEC2613-4(+PIR) Series Network Temperature and Humidity Controllers.

Table 11: BACnet Standard Application Services Support (Part 1 of 2)

Application Service	Initiates Requests	Executes Requests
AcknowledgeAlarm	☐	☐
AddListElement	☐	☐
AtomicReadFile	☐	☐
AtomicWriteFile	☐	☐
ConfirmedCOVNotification	☐	☐
ConfirmedEventNotification	☐	☐
ConfirmedPrivateTransfer	☐	☐
ConfirmedTextMessage	☐	☐
CreateObject	☐	☐
DeleteObject	☐	☐
DeviceCommunicationControl	☐	☒
Disconnect-Connection-To-Network	☐	☐
Establish-Connection-To-Network	☐	☐
GetAlarmSummary	☐	☐
GetEnrollmentSummary	☐	☐
GetEventInformation	☐	☐
I-Am	☒	☐
I-Am-Router-To-Network	☐	☐
I-Could-Be-Router-To-Network	☐	☐

Table 11: BACnet Standard Application Services Support (Part 2 of 2)

Application Service	Initiates Requests	Executes Requests
I-Have	☒	☐
Initialize-Routing-Table	☐	☐
Initialize-Routing-Table-Ack	☐	☐
LifeSafetyOperation	☐	☐
ReadProperty	☐	☒
ReadPropertyConditional	☐	☐
ReadPropertyMultiple	☐	☒
ReadRange	☐	☐
ReinitializeDevice	☐	☐
RemoveListElement	☐	☐
SubscribeCOV	☐	☐
SubscribeCOVProperty	☐	☐
TimeSynchronization	☐	☐
UnconfirmedCOVNotification	☐	☐
UnconfirmedEventNotification	☐	☐
UnconfirmedPrivateTransfer	☐	☐
UnconfirmedTextMessage	☐	☐
UTCTimeSynchronization	☐	☐
VT-Close	☐	☐
VT-Data	☐	☐
VT-Open	☐	☐
Who-Has	☐	☒
Who-Is	☐	☒
Who-Is-Router-To-Network	☐	☐
WriteProperty	☐	☒
WritePropertyMultiple	☐	☐

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