



**CYPRESS**  
ENVIROSYSTEMS

# **Wireless Pneumatic Thermostat BACnet Gateway PICS**

Document No. 910-00008-01 rev 05

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## BACnet Protocol Implementation Conformance Statement

Date: 12/2010  
Vendor Name: Cypress Envirosystems  
Product Name: Wireless Pneumatic Thermostat BACnet Gateway  
Product Model Number: WPT-800-SBAC  
Application Software Version: V19.3.0  
Firmware Revision: All Revisions  
BACnet Protocol Revision: 135-1995b (1)

### 1. Product Description:

The WPT system is a BACnet gateway for wireless pneumatic thermostats (WPT). The WPT devices allow Building Management Systems to interface to the WPT devices for purposes of monitoring and controlling HVAC zone temperature.

### 2. BACnet Standardized Device Profile (Annex L):

- BACnet Operator Workstation (B-OWS)
- BACnet Advanced Operator Workstation (B-AWS)
- BACnet Operator Display (B-OD)
- 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)

### 3. BACnet Interoperability Building Blocks Supported (BIBBs)(Annex K):

#### *Required for Device Profile (B-SA)*

DS-RP-B  
DS-WP-B  
DM-DDB-B  
DM-DOB-B

#### *Optionally supported BIBBs*

DS-RPM-B  
DM-TS-B  
DM-UTC-B  
DM-RD-B  
AE-N-I-B

### 4. Segmentation Capability:

- Able to transmit segmented messages Window Size Configurable
- Able to receive segmented messages Window Size Configurable

## 5. Supported services

|  | Required | Optional | For Device profile B-SA |
|--|----------|----------|-------------------------|
| <input type="checkbox"/> Acknowledge Alarm                         |          |          |                         |
| <input type="checkbox"/> Add List Element                          |          |          |                         |
| <input type="checkbox"/> Atomic Read File                          |          |          |                         |
| <input type="checkbox"/> Atomic Write File                         |          |          |                         |
| <input type="checkbox"/> Authenticate                              |          |          |                         |
| <input type="checkbox"/> Confirmed COV Notification                |          |          |                         |
| <input checked="" type="checkbox"/> Confirmed Event Notification   |          | AE-N-I-B |                         |
| <input type="checkbox"/> Confirmed Private Transfer                |          |          |                         |
| <input type="checkbox"/> Confirmed Text Message                    |          |          |                         |
| <input type="checkbox"/> Create Object                             |          |          |                         |
| <input type="checkbox"/> Delete Object                             |          |          |                         |
| <input type="checkbox"/> Device Communication control              |          |          |                         |
| <input type="checkbox"/> Get Alarm Summary                         |          |          |                         |
| <input type="checkbox"/> Get Enrollment Summary                    |          |          |                         |
| <input type="checkbox"/> Get Event Information                     |          |          |                         |
| <input checked="" type="checkbox"/> I am                           | DM-DOB-B |          |                         |
| <input checked="" type="checkbox"/> I Have                         | DM-DOB-B |          |                         |
| <input type="checkbox"/> Life Safety Operation                     |          |          |                         |
| <input checked="" type="checkbox"/> Read Property                  | DS-RP-B  |          |                         |
| <input type="checkbox"/> Read Property Conditional                 |          |          |                         |
| <input checked="" type="checkbox"/> Read Property Multiple         |          | DS-RPM-B |                         |
| <input type="checkbox"/> Read Range                                |          |          |                         |
| <input checked="" type="checkbox"/> Reinitialize Device            |          | DM-RD-B  |                         |
| <input type="checkbox"/> Remove List Element                       |          |          |                         |
| <input type="checkbox"/> Request Key                               |          |          |                         |
| <input type="checkbox"/> Subscribe COV                             |          |          |                         |
| <input type="checkbox"/> Subscribe COV Property                    |          |          |                         |
| <input checked="" type="checkbox"/> Time Synchronization           |          | DM-TS-B  |                         |
| <input type="checkbox"/> Unconfirmed COV Notification              |          |          |                         |
| <input checked="" type="checkbox"/> Unconfirmed Event Notification |          | AE-N-I-B |                         |
| <input type="checkbox"/> Unconfirmed Private Transfer              |          |          |                         |
| <input type="checkbox"/> Unconfirmed Text Message                  |          |          |                         |
| <input checked="" type="checkbox"/> UTC Time Synchronization       |          | DM-UTC-B |                         |
| <input type="checkbox"/> VT Close                                  |          |          |                         |
| <input type="checkbox"/> VT Date                                   |          |          |                         |
| <input type="checkbox"/> VT Open                                   |          |          |                         |
| <input checked="" type="checkbox"/> Who Has                        | DM-DOB-B |          |                         |
| <input checked="" type="checkbox"/> Who Is                         | DM-DDB-B |          |                         |
| <input checked="" type="checkbox"/> Write Property                 | DS-WP-B  |          |                         |
| <input type="checkbox"/> Write Property Multiple                   |          |          |                         |

## 6. Standard Object Types Supported:

***The following is the list of supported Object types.***

- Accumulator
- 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 Value
- Notification Class
- Program
- Pulse Converter
- Schedule
- Trend Log

**Detailed list of supported objects**

The following table lists all supported Objects and any optional properties that are supported. All required properties are supported.

| Object                            | Create Object Service | Delete Object Service | Optional Properties Supported   | Writeable Properties | Proprietary Properties | Property Range Restriction |
|-----------------------------------|-----------------------|-----------------------|---|----------------------|------------------------|----------------------------|
| Device                            | No                    | No                    | Description<br>Location<br>numberOfAPDUretires<br>Max_Segments_Accepted<br>Local_Time<br>Local_Date<br>UTC_Offset<br>Daylight_Savings_Status<br>APDU_Segment_Tmeout |                      | None                   | None                       |
| Analog Input 1<br>Current_Temp    | No                    | No                    | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value<br>1   | None                   | None                       |
| Analog Input 2<br>Branch Pressure | No                    | No                    | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value<br>1   | None                   | None                       |
| Analog Input 3<br>Battery Level   | No                    | No                    | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value<br>1   | None                   | None                       |
| Analog Output 1*<br>Setpoint      | No                    | No                    | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value        | None                   | None                       |

|  |    |    |   |                    |      |      |
|--|----|----|---|--------------------|------|------|
| <b>Analog Output 2**</b><br>Unoccupied Setpoint            | No | No | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value      | None | None |
| <b>Analog Output 3***</b><br>Setpoint_CoolAbove            | No | No | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value      | None | None |
| <b>Analog Output 4***</b><br>Setpoint_HeatBelow            | No | No | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value      | None | None |
| <b>Analog Output 5***</b><br>Unoccupied_Setpoint_CoolAbove | No | No | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value      | None | None |
| <b>Analog Output 6***</b><br>Unoccupied_Setpoint_HeatBelow | No | No | Description<br>minPresValue<br>maxPresValue<br>Reliability<br>Resolution<br>profileName   | Present_Value      | None | None |
| <b>Binary Input 1</b><br>Occ_Override                      | No | No | description<br>inactiveText<br>activeText<br>reliability<br>profile name  | Present_Value<br>1 | None | None |
| <b>Binary Output 1****</b><br>Occ_State                    | No | No | Description<br>inactiveText<br>activeText<br>minimumOffTime<br>minimumOnTime<br>Reliability<br>changeOfStateTime<br>changeOfStateCount<br>timeOfStateCountReset<br>elapsedActiveTime<br>timeOfActiveTimeReset<br>timeDelay<br>notificationClass<br>feedbackValue<br>eventEnable<br>ackedTransitions<br>notifyType<br>eventTimeStamps<br>profileName | Present_Value      | None | None |

\* Supported on all Conventional WPTs (non-Deadband)

\*\* Only supported on REV 28 or newer Conventional WPTs

\*\*\* Only supported on Deadband WPTs

\*\*\*\* Only supported on REV 28 or newer Conventional WPTs and all Deadband WPTs

(1) Writeable when Out of Service is true

## 7. Data Link Layer Options:

BACnet IP, (Annex J)

- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s) \_\_\_\_\_
- MS/TP master (Clause 9), baud rate(s): \_\_\_\_\_
- MS/TP slave (Clause 9), baud rate(s): \_\_\_\_\_
- Point-To-Point, EIA 232 (Clause 10), baud rate(s): \_\_\_\_\_
- Point-To-Point, modem, (Clause 10), baud rate(s): \_\_\_\_\_
- LonTalk, (Clause 11), medium: \_\_\_\_\_
- BACnet/ZigBee (ANNEX O)
- Other: \_\_\_\_\_

### 8. 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

### 9. 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/IP Broadcast Management Device (BBMD)
  - Does the BBMD support registrations by Foreign Devices?  Yes  No
  - Does the BBMD support network address translation?  Yes  No

### 10. 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)

### 11. 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 X 0208

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

This device is a gateway to Cypress Envirosystems proprietary wireless pneumatic network

## 12. Revision History

| Revision | Date     | Changes  |
|----------|----------|--|
| 1        | 11/12/10 | Initial release  |
| 2        | 11/17/10 | Updated object properties to support   |
| 3        | 11/29/10 | <ul style="list-style-type: none"> <li>• Added service subscribeCOV as it was required for DS-COV-B</li> <li>• Add service reinitializeDevice. This service is not needed but removing it causes other issues and will be removed for phase 3</li> <li>• Add BIBB DM-RD-B to cover support for service reinitializeDevice and will be removed for Phase3</li> <li>• Remove BIBB DS-WPM-B as we don't support and is not really needed</li> <li>• Add AE-N-I-B to cover support for services confirmedEventNotification and unconfirmedEventNotification. These are proposed to be removed for Phase3</li> <li>• Added support for notification-class object for phase 2 only.</li> <li>• Updated the properties to match SW</li> </ul> |
| 4        | 12/6/10  | <ul style="list-style-type: none"> <li>• Update section 7 objects notes regarding which objects are supported by each of the product variants</li> </ul>   |
| 5        | 12/9/10  | <ul style="list-style-type: none"> <li>• Removed Suscribe COV Property</li> <li>• Remove BBIB DS-COV-B</li> <li>• Remove three services related to DS-COV-B</li> <li>• Remove properties COV increment from all objects</li> </ul>   |

### 13. Addendum

#### Services Bit-Field

|                              |    |   |
|------------------------------|----|---|
| acknowledgeAlarm             | 0  | 0 |
| confirmedCOVNotification     | 1  | 0 |
| ConfirmedEventNotification   | 2  | 1 |
| getAlarmSummary              | 3  | 0 |
| GetEnrollmentSummary         | 4  | 0 |
| subscribeCOV                 | 5  | 0 |
| atomicReadFile               | 6  | 0 |
| atomicWriteFile              | 7  | 0 |
| addListElement               | 8  | 0 |
| removeListElement            | 9  | 0 |
| createObject                 | 10 | 0 |
| deleteObject                 | 11 | 0 |
| readProperty                 | 12 | 1 |
| readPropertyConditional      | 13 | 0 |
| readPropertyMultiple         | 14 | 1 |
| writeproperty                | 15 | 1 |
| writePropertyMultiple        | 16 | 0 |
| deviceCommunicationControl   | 17 | 0 |
| confirmedPrivateTransfer     | 18 | 0 |
| confirmedtextMessage         | 19 | 0 |
| reinitializeDevice           | 20 | 1 |
| vtOpen                       | 21 | 0 |
| vtClose                      | 22 | 0 |
| vtData                       | 23 | 0 |
| authenticate                 | 24 | 0 |
| requestKey                   | 25 | 0 |
| i-Am                         | 26 | 1 |
| i-Have                       | 27 | 1 |
| unconfirmedCOVNotification   | 28 | 0 |
| unconfirmedEventNotification | 29 | 1 |
| unconfirmedPrivateTransfer   | 30 | 0 |
| unconfirmedTextMessage       | 31 | 0 |
| timeSynchronization          | 32 | 1 |
| who-Has                      | 33 | 1 |
| who-Is                       | 34 | 1 |
| readRange                    | 35 | 0 |
| utcTimeSynchronization       | 36 | 1 |
| lifeSafetyOperation          | 37 | 0 |
| subscribeCOVProperty         | 38 | 0 |
| getEventInformation          | 39 | 0 |



### Objects Bit-Field

|                    |    |   |
|--------------------|----|---|
| Analog-input       | 0  | 1 |
| Analog-output      | 1  | 1 |
| Analog-value       | 2  | 0 |
| Binary-input       | 3  | 1 |
| Binary-output      | 4  | 1 |
| Binary-value       | 5  | 0 |
| Calendar           | 6  | 0 |
| Command            | 7  | 0 |
| Device             | 8  | 1 |
| Event-enrollment   | 9  | 0 |
| File               | 10 | 0 |
| Group              | 11 | 0 |
| Loop               | 12 | 0 |
| Multi-state-input  | 13 | 0 |
| Multi-state-output | 14 | 0 |
| Notification-class | 15 | 1 |
| Program            | 16 | 0 |
| Schedule           | 17 | 0 |
| Averaging          | 18 | 0 |
| Multi-state-value  | 19 | 0 |
| Trend-log          | 20 | 0 |
| Life-safety-point  | 21 | 0 |
| Life-safety-zone   | 22 | 0 |
| Accumulator        | 23 | 0 |
| Pulse-converter    | 24 | 0 |
| Event-log          | 25 | 0 |
| >>>reserved<<<     | 26 | 0 |
| Trend-log-multiple | 27 | 0 |
| Load-control       | 28 | 0 |
| Structured-view    | 29 | 0 |
| Access-door        | 30 | 0 |

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