
W A L C H E M

IWAKI America Inc.

W900 BACnet Protocol
Implementation Conformance
Statement (PICS)

BACnet Protocol Implementation Conformance Statement

Date: 29 Aug 2024

Vendor Name: Iwaki America

Product Name: W900 Controller

Product Model Number: W900

Application Software Version: 4.27-17052 **Firmware Revision:** 4.27-17067 **BACnet Protocol Revision:** 1.17

Product Description:

The Walchem W900 is a water treatment process controller.

BACnet Standardized Device Profiles Supported (Annex L):

- ☐ BACnet Cross-Domain Advanced Operator Workstation (B-XAWS)
- ☐ BACnet Advanced Operator Workstation (B-AWS)
- ☐ BACnet Operator Workstation (B-OWS)
- ☐ BACnet Operator Display (B-OD)
- ☐ BACnet Advanced Lighting Workstation (B-ALWS)
- ☐ BACnet Lighting Operator Display (B-LOD)
- ☐ BACnet Advanced Life Safety Workstation (B-ALSWS)
- ☐ BACnet Life Safety Workstation (B-LSWS)
- ☐ BACnet Life Safety Annunciator Panel (B-LSAP)
- ☐ BACnet Advanced Access Control Workstation (B-AACWS)
- ☐ BACnet Access Control Workstation (B-ACWS)
- ☐ BACnet Access Control Security Display (B-ACSD)
- ☐ BACnet Advanced Elevator Workstation (B-AEWS)
- ☐ BACnet Elevator Workstation (B-EWS)
- ☐ BACnet Elevator Display (B-ED)
- ☐ BACnet Advanced Lighting Control Station (B-ALCS)
- ☐ BACnet Lighting Control Station (B-LCS)
- ☐ BACnet Building Controller (B-BC)
- ☐ BACnet Advanced Application Controller (B-AAC)
- ☒ BACnet Application Specific Controller (B-ASC)
- ☐ BACnet Smart Actuator (B-SA)
- ☐ BACnet Smart Sensor (B-SS)
- ☐ BACnet Lighting Supervisor (B-LS)
- ☐ BACnet Lighting Device (B-LD)
- ☐ BACnet Advanced Life Safety Controller (B-ALSC)
- ☐ BACnet Life Safety Controller (B-LSC)
- ☐ BACnet Advanced Access Control Controller (B-AACC)
- ☐ BACnet Access Control Controller (B-ACC)
- ☐ BACnet Advanced Elevator Controller (B-AEC)

- ☐ BACnet Elevator Controller (B-EC)
- ☐ BACnet Elevator Monitor (B-EM)
- ☐ BACnet Router (B-RTR)
- ☐ BACnet Gateway (B-GW)
- ☐ BACnet Broadcast Management Device (B-BBMD)
- ☐ BACnet Access Control Door Controller (B-ACDC)
- ☐ BACnet Access Control Credential Reader (B-ACCR)
- ☐ BACnet Secure Connect Hub (B-SCHUB)
- ☐ BACnet General Controller (B-GENERAL)

BACnet Interoperability Building Blocks Supported (Annex K):

DS-RP-B Data Sharing – Read Property

- W900 supports reading of a single property at a time.

DS-RPM-B Data Sharing – Read Property Multiple

- W900 supports reading groups of properties with a single BACnet command.
- W900 does not support message segmentation, so it is possible to request more data than the W900 can fit into a reply message. In this case, W900 generates a *Segmentation Not Supported* response. Clients can then reissue smaller **ReadPropertyMultiple** requests or issue an equivalent series of **ReadProperty** requests (which will take longer).

DS-WP-B Data Sharing – Write Property

- W900 interprets the command to write a single property.
- W900 does not currently have any writable properties, so all requests generated failure responses.

DM-DDB-B Device Management – Device Dynamic Binding

- W900 responds to **Who-Is** requests with a unicast **I-Am** packet.
- W900 supports the optional device instance range limits on the **Who-Is** request.
- W900 broadcasts a single unsolicited **I-Am** message (1) at startup, (2) when the BACnet service restarts, and (3) whenever a change is made to the W900's BACnet Device ID.

DM-DOB-B Device Management – Dynamic Object Binding

- W900 responds to **Who-Has** requests with a unicast **I-Have** packet.
- W900 supports both the **Who-Has** <Object Identifier> and **Who-Has** <Object Name> forms of this service, with optional device instance range limits.
- W900 does not emit unsolicited **I-Have** messages.

DM-DCC-B Device Management – Device Communication Control

- W900 allows BACnet clients to disable and re-enable BACnet communication via the **DeviceCommunicationControl** service.
- Communication can be disabled either until re-enabled, or with a timeout value.
- The **DeviceCommunicationControl** service's optional Password parameter is ignored if present.

Segmentation Capability:

- ☐ Able to transmit segmented messages
Window Size _____
- ☐ Able to receive segmented messages
Window Size _____

Standard Object Types Supported:

Device

W900 properties that apply to the device as a whole

Analog Input

AI Flowmeter, Digital Input (other than DI State type), or Virtual Input

Analog Value

Analog Output, Pulse Relay, or Analog Control Output

Binary Input

DI State input

Binary Value

Discrete Relay or Discrete Control Output

Network Port

Ethernet or WiFi

Properties supported by each Object Type

Unless otherwise noted, properties are Read-Only over BACnet.

Device Properties

Table 1. Supported Device Object properties

| Property | Comments |
|---------------------------------|---|
| Object_Identifier | Object_Identifier has a factory-assigned value for Device objects that can be changed by the operator. The Device Object_Identifier is required to be unique across all devices on the BACnet network. |
| Object_Name | The Device's Object_Name is the W900 Name that the operator sets via the W900's Global Settings. It is required to be unique across all devices on the BACnet network. |
| Object_Type | 8 (Device) |
| System_Status | 0 (Operational) when BACnet is active |
| Vendor_Name | Iwaki America |
| Vendor_Identifier | 1057 (Iwaki America) |
| Model_Name | Product Name found on the W900's Controller Details page |
| Firmware_Revision | 4.27-17067 |
| Application_Software_Version | 4.27-17052 |
| Location | The Device's Location is the W900 Location that the operator sets via the W900's Global Settings. |
| Description | W900 |
| Protocol_Version | 1 |
| Protocol_Revision | 17 |
| Protocol_Services_Supported | Read-Property, Read-Property-Multiple, Write-Property, Device-Communication-Control, Who-Has, Who-Is |
| Protocol_Object_Types_Supported | Analog Input, Analog Value, Binary Input, Binary Value, Device, Network Port |
| Object_List | List of BACnet objects currently configured in the controller |
| Max_APDU_Length_Accepted | 832 |
| Segmentation_Supported | 3 (None) |
| Local_Time | |
| Local_Date | |
| APDU_Timeout | 20000 milliseconds |
| Number_Of_APDU_Retries | 3 |
| Device_Address_Binding | Empty list |
| Database_Revision | |
| Serial_Number | Serial Number found on the W900's Controller Details page |

Analog Object Properties

Table 2. Supported properties for Analog objects

| Property ID | Analog Input | Analog Value | Comments |
|-------------------|-------------------------------------|-------------------------------------|--|
| Object_Identifier | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Assigned by the system. Cannot be modified by the operator. |
| Object_Name | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Device-unique name constructed from operator-entered object name and the object's type/number identifier |
| Object_Type | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 0 (Analog Input) or 2 (Analog Value) |
| Present_Value | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Description | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Operator-entered object name |
| Device_Type | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Operator-selected object type |
| Status_Flags | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Event_State | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Always NORMAL because W900 does not support event reporting |
| Reliability | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Out_Of_Service | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Units | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | See below |
| Min_Pres_Value | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| Max_Pres_Value | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| Resolution | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

Analog Object Units

Supported values for the Units property include the BACnet Engineering Units defined in ASHRAE 135, along with the following proprietary Units values:

Table 3. Proprietary Units for Analog objects

| Value | Units | Value | Units | Value | Units |
|-------|------------------------|-------|-----------|-------|----------------------------|
| 512 | mV/unit | 513 | mv/decade | 517 | PPB/PPM ratio |
| 518 | counts | 520 | /gal | 521 | /l |
| 522 | /m ³ | 527 | MG/S | 528 | MG/M |
| 529 | MG/H | 530 | MG/D | 533 | pulses |
| 534 | percent/degree Celsius | 535 | 1/cm | 538 | oz/gal |
| 539 | 1/seconds | 541 | dBm | 542 | string entered into device |

Versions 4.25 and earlier used proprietary units that have been supplanted by Addendum ASHRAE 135-2020*cn*.

Table 4. Obsolete Walchem-Proprietary Units

| Obsolete Value | Standard Value | Units |
|----------------|----------------|------------------------|
| 514 | 47909 | µS/cm |
| 515 | 47911 | mS/m |
| 516 | 47910 | mS/cm |
| 519 | 47912 | Millions of US Gallons |
| 523 | 47879 | gallons/second |
| 524 | 47880 | gallons/day |
| 525 | 47878 | liters/day |
| 531 | 47914 | ml/minute |
| 532 | 47917 | pulses/minute |
| 536 | 47915 | mils/year |
| 537 | 47916 | mm/year |

Binary Object Properties

Table 5. Supported properties for Binary objects

| Property ID | Binary Input | Binary Value | Comments |
|-------------------|-------------------------------------|-------------------------------------|--|
| Object_Identifier | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Assigned by the system. Cannot be modified by the operator. |
| Object_Name | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Device-unique name constructed from operator-entered object name and the object's type/number identifier |
| Object_Type | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3 (Binary Input) or 5 (Binary Value) |
| Present_Value | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Description | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Operator-entered object name |
| Device_Type | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Operator-selected object type |
| Status_Flags | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Event_State | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Always NORMAL because W900 does not support event reporting |
| Reliability | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Out_Of_Service | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Polarity | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 0 (NORMAL) |
| Inactive_Text | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| Active_Text | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |

Network Port Object Properties

Table 6. Supported properties for Network Port objects

| Property ID | Comments |
|------------------------|--|
| Object_Identifier | Assigned by the system. Cannot be modified by the operator. |
| Object_Name | Assigned by the system. |
| Object_Type | 56 (Network Port) |
| Description | Assigned by the system. |
| Status_Flags | |
| Reliability | 0 (No Fault Detected) |
| Out_Of_Service | |
| Network_Type | 5 (IPv4) |
| Network_Number | 0 (Local IP Network) because W900 is not a BACnet Router |
| Network_Number_Quality | 0 (Unknown) |
| Changes_Pending | |
| MAC_Address | |
| APDU_Length | 832 |
| Link_Speed | |
| BACnet_IP_Mode | 0 (Normal) |
| IP_Address | |
| BACnet_IP_UDP_Port | Data Port configured by operator in Remote Comms settings (default: 47808) |
| IP_Subnet_Mask | |
| IP_Default_Gateway | |
| IP_DNS_Server | |
| IP_DHCP_Enable | |

BACnet Options

Data Link Layer Options:

- ☐ ARCNET (ATA 878.1), 2.5 Mb. (Clause 8)
- ☐ ARCNET (ATA 878.1), EIA-485 (Clause 8), baud rate(s) _____
- ☒ BACnet IP, (Annex J)
- ☐ BACnet IP, (Annex J), BACnet Broadcast Management Device (BBMD)
- ☐ BACnet IP, (Annex J), Network Address Translation (NAT Traversal)
- ☐ BACnet IPv6, (Annex U)
- ☐ BACnet IPv6, (Annex U), BACnet Broadcast Management Device (BBMD)
- ☐ BACnet/ZigBee (ANNEX O)
- ☐ Ethernet, ISO 8802-3 (Clause 7)
- ☐ LonTalk, (Clause 11), medium: _____
- ☐ 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): _____
- ☐ BACnet Secure Connect (Annex AB)
 - ☐ BACnet Secure Connect Node If direct connections are supported:
Maximum number of simultaneous direct connections initiated: _____
Maximum number of simultaneous direct connections accepted: _____
 - ☐ BACnet Secure Connect Hub Function
Maximum number of simultaneous direct connections accepted: _____
 - ☐ HTTPS Proxy Support
List the type of HTTPS proxies supported: _____
 - ☐ Additional Cipher suites supported beyond those required for TLS v1.3
The additional cipher suites supported using the cipher suite names as of the TLS Cipher Suite Registry at IANA (See RFC 8446): _____
 - ☐ Additional Transport Layer Security versions other than v1.3 supported
The TLS versions other than v1.3 that are supported, including the supported cipher suites for the version beyond those required, using the cipher suite names as defined by the TLS version supported: _____
 - ☐ Generates private keys internally, and provides matching certificate signing requests
 - ☐ DNS host name resolution supported (RFC 1123)
 - ☐ mDNS host name resolution supported (RFC 6762)
- ☐ 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:

- ☐ Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- ☐ Annex H, BACnet Tunneling Router over IP

Character Sets Supported:

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

- ☒ ISO 10646 (UTF-8)
- ☐ IBM™/Microsoft™ DBCS
- ☐ ISO 8859-1
- ☐ ISO 10646 (UCS-2)
- ☐ ISO 10646 (UCS-4)
- ☐ JIS X 0208

Gateway Options

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

n/a