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**W A L C H E M**

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**IWAKI America Inc.**

W600 BACnet Protocol  
Implementation Conformance  
Statement (PICS)

# BACnet Protocol Implementation Conformance Statement

**Date:** 29 Aug 2024

**Vendor Name:** Iwaki America

**Product Name:** W600 Controller

**Product Model Number:** W600 (with optional 191733-2-x Enhanced Ethernet board)

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

## Product Description:

The Walchem W600 is a water treatment process controller. W600 controllers can support BACnet when equipped with the optional 191733-2-x Enhanced Ethernet board.

## 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

- W600 supports reading of a single property at a time.

### DS-RPM-B Data Sharing – Read Property Multiple

- W600 supports reading groups of properties with a single BACnet command.
- W600 does not support message segmentation, so it is possible to request more data than the W600 can fit into a reply message. In this case, W600 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

- W600 interprets the command to write a single property.
- W600 does not currently have any writable properties, so all requests generated failure responses.

### DM-DDB-B Device Management – Device Dynamic Binding

- W600 responds to **Who-Is** requests with a unicast **I-Am** packet.
- W600 supports the optional device instance range limits on the **Who-Is** request.
- W600 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 W600's BACnet Device ID.

### DM-DOB-B Device Management – Dynamic Object Binding

- W600 responds to **Who-Has** requests with a unicast **I-Have** packet.
- W600 supports both the **Who-Has** <Object Identifier> and **Who-Has** <Object Name> forms of this service, with optional device instance range limits.
- W600 does not emit unsolicited **I-Have** messages.

### DM-DCC-B Device Management – Device Communication Control

- W600 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

W600 properties that apply to the device as a whole

### Analog Input

Digital Input (other than DI State type) or Virtual Input

### Analog Value

Analog Output or Pulse Relay

### Binary Input

DI State input

### Binary Value

Discrete Relay

### Network Port

Ethernet

## 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	<b>Object_Identifier</b> 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 <b>Object_Name</b> is the W600 Name that the operator sets via the W600'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 W600's Controller Details page
Firmware_Revision	4.27-17067
Application_Software_Version	4.27-17052
Location	The Device's <b>Location</b> is the W600 Location that the operator sets via the W600's Global Settings.
Description	W600
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 W600'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 W600 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 <sup>3</sup>	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 W600 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 W600 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