

EC-Net^{AX}/NIAGARA^{AX} Framework 3.5 BACNET PICS

BACnet Protocol Implementation Conformance Statement

Date: October 7, 2010

Vendor Name: Distech Controls Inc.

Product Name: EC-BOS^{AX} Series

Product Model Number: EC-BOS-2^{AX}, EC-BOS-6^{AX}, EC-BOS-7^{AX}, EC-BOS-403^{AX}, EC-BOS-545^{AX}, EC-BOS-NXS^{AX}, EC-BOS^{AX} Plant Controller, Soft EC-BOS^{AX} (Soft EC-BOS^{AX} is IP or Ethernet only)

Application Software Version: 3.5.8 or higher

Firmware Revision: 3.5.8 or higher

BACnet Protocol Revision: 9

Product Description:

Niagara AX provides the ability to view, monitor, and control BACnet devices over IP, raw Ethernet, or MS/TP media. Devices, points, schedules, and logs can be learned and managed from Niagara AX. In addition, Niagara points, schedules, histories, and alarming can be exposed to BACnet for monitor and control by foreign BACnet clients.

BACnet Standardized Device Profile (Annex L):

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

Additional BACnet Interoperability Building Blocks Supported (Annex K):

Data Sharing	Device & Network Management
DS-RP-A, B	DM-DDB-A, B
DS-RPM-A, B	DM-DOB-A, B
DS-WP-A, B	DM-DCC-B
DS-WPM-B	DM-RD-B
DS-COV-A, B	DM-TS-B
DS-COVU-A, B	DM-UTC-B
DS-V-A	DM-LM-A, B
DS-M-A	DM-BR-B
DS-COVP-B	DM-ANM-A
	DM-ADM-A
	DM-ATS-A
	DM-MTS-A

Alarm & Event Management AE-N-A, I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B AE-INFO-B AE-VN-A AE-VM-A	Trending T-VMT-A, I-B, E-B T-ATR-A, B T-V-A T-A-A
Scheduling SCHED-A, I-B, E-B SCHED-VM-A SCHED-WS-I-B	Network Management NM-CE-A

Segmentation Capability:

Feature	Supported	Window size
Transmit Segmented Messages	yes	10
Receive Segmented Messages	yes	any

Standard Object Types Supported:

- The CreateObject and DeleteObject services are not supported, so no objects are dynamically creatable or deletable through BACnet service requests, although these objects are dynamically creatable and deletable through Niagara.
- No general range restrictions exist; however, certain specific applications may have specific range restrictions.
- All potentially available properties are listed for each object type.
- Optional properties are listed in *italics*. Not all instances support all optional properties.
- Writable properties are listed in **bold**. Any range limitations are expressed in parentheses following the property name.

Notes from Table

1. The File_Size property of File objects is only writable if the underlying system file is changeable.
2. The Setpoint property of Loop objects is writable only if the setpoint is not linked from within Niagara.
3. The Recipient_List property of the Notification Class object will maintain entries that are internally configured within Niagara.
4. The List_Of_Object_Property_References property of the Schedule object will maintain entries that are internally configured within Niagara.
5. The Priority_For_Writing property of Schedule objects is not important for internal Niagara operation, as the priority at which a point is commanded is determined by the input to which the Schedule output is linked.
6. These Trend Log object properties are not writable if the backing history for the exported Trend Log is a Niagara-generated history. If the history is created as a BACnet Trend Log, then they are writable.
7. Trend Logs in Niagara are either COV or Interval. So the Log_Interval property cannot be written to a value other than 0 for COV logs, or to 0 for interval logs.

Object Type	Properties
Analog Input	Object_Identifier Object_Name Object_Type Present_Value Description <i>Device_Type</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service Units <i>Min_Pres_Value</i> <i>Max_Pres_Value</i> <i>Resolution</i> COV_Increment <i>Time_Delay</i> Notification_Class High_Limit Low_Limit Deadband Limit_Enable <i>Event_Enable</i> <i>Acked_Transitions</i> Notify_Type <i>Event_Time_Stamps</i>
Analog Output	Object_Identifier Object_Name Object_Type Present_Value Description <i>Device_Type</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service Units <i>Min_Pres_Value</i> <i>Max_Pres_Value</i> <i>Resolution</i> Priority_Array Relinquish_Default COV_Increment <i>Time_Delay</i> Notification_Class High_Limit Low_Limit Deadband Limit_Enable <i>Event_Enable</i> <i>Acked_Transitions</i> Notify_Type <i>Event_Time_Stamps</i>
Analog Value	Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State <i>Reliability</i> Out_Of_Service Units <i>Priority_Array</i> Relinquish_Default COV_Increment <i>Time_Delay</i> Notification_Class High_Limit Low_Limit Deadband Limit_Enable <i>Event_Enable</i> <i>Acked_Transitions</i> Notify_Type <i>Event_Time_Stamps</i>

Object Type	Properties
Binary Input	<p>Object_Identifier Object_Name Object_Type Present_Value Description Device_Type Status_Flags Event_State Reliability Out_Of_Service Polarity Inactive_Text Active_Text</p> <p><i>Change_Of_State_Time</i> Change_Of_State_Count (0) <i>Time_Of_State_Count_Reset</i> Elapsed_Active_Time (0) <i>Time_Of_Active_Time_Reset</i> Time_Delay Notification_Class Alarm_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps</p>
Binary Output	<p>Object_Identifier Object_Name Object_Type Present_Value Description Device_Type Status_Flags Event_State Reliability Out_Of_Service Polarity Inactive_Text Active_Text <i>Change_Of_State_Time</i> Change_Of_State_Count (0)</p> <p><i>Time_Of_State_Count_Reset</i> Elapsed_Active_Time (0) <i>Time_Of_Active_Time_Reset</i> Minimum_Off_Time Minimum_On_Time Priority_Array Relinquish_Default Time_Delay Notification_Class Feedback_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps</p>
Binary Value	<p>Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State Reliability Out_Of_Service Inactive_Text Active_Text <i>Change_Of_State_Time</i> Change_Of_State_Count (0) <i>Time_Of_State_Count_Reset</i></p> <p>Elapsed_Active_Time (0) <i>Time_Of_Active_Time_Reset</i> Minimum_Off_Time Minimum_On_Time Priority_Array Relinquish_Default Time_Delay Notification_Class Alarm_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps</p>
Calendar	<p>Object_Identifier Object_Name Object_Type</p> <p>Description Present_Value Date_List</p>

Object Type	Properties	
Device	Object_Identifier Object_Name Object_Type System_Status Vendor_Name Vendor_Identifier Model_Name Firmware_Revision Application_Software_Revision Location Description Protocol_Version Protocol_Revision Protocol_Services_Supported <i>Protocol_Object_Types_Supported</i> Object_List Max_APDU_Length_Accepted	Segmentation_Supported <i>Max_Segments_Accepted</i> <i>Local_Time</i> <i>Local_Date</i> <i>UTC_Offset</i> <i>Daylight_Savings_Status</i> <i>APDU_Segment_Timeout</i> APDU_Timeout Number_Of_APDU_Retries <i>Max_Master</i> <i>Max_Info_Frames</i> Device_Address_Binding Database_Revision <i>Configuration_Files</i> <i>Last_Restore_Time</i> Backup_Failure_Timeout <i>Active_COV_Subscriptions</i>
File (Stream Access Only)	Object_Identifier Object_Name Object_Type Description File_Type	File_Size ¹ Modification_Date Archive Read_Only File_Access_Method
Loop	Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State <i>Reliability</i> Out_Of_Service Output_Units Manipulated_Variable_Reference Controlled_Variable_Reference Controlled_Variable_Value Controlled_Variable_Units Setpoint_Reference Setpoint ² Action Proportional_Constant	<i>Proportional_Constant_Units</i> Integral_Constant <i>Integral_Constant_Units</i> Derivative_Constant <i>Derivative_Constant_Units</i> Bias Maximum_Output Minimum_Output Priority_For_Writing COV_Increment Time_Delay <i>Notification_Class</i> Error_Limit <i>Event_Enable</i> <i>Acked_Transitions</i> <i>Notify_Type</i> <i>Event_Time_Stamps</i>

Object Type	Properties	
Multi-state Input	Object_Identifier Object_Name Object_Type Present_Value Description <i>Device_Type</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service	Number_Of_States State_Text Time_Delay Notification_Class Alarm_Values <i>Fault_Values</i> <i>Event_Enable</i> <i>Acked_Transitions</i> Notify_Type <i>Event_Time_Stamps</i>
Multi-state Output	Object_Identifier Object_Name Object_Type Present_Value Description <i>Device_Type</i> Status_Flags Event_State <i>Reliability</i> Out_Of_Service Number_Of_States	State_Text Priority_Array Relinquish_Default Time_Delay Notification_Class <i>Feedback_Value</i> <i>Event_Enable</i> <i>Acked_Transitions</i> Notify_Type <i>Event_Time_Stamps</i>
Multi-state Value	Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State <i>Reliability</i> Out_Of_Service Number_Of_States	State_Text Priority_Array Relinquish_Default Time_Delay Notification_Class Alarm_Values <i>Fault_Values</i> <i>Event_Enable</i> <i>Acked_Transitions</i> Notify_Type <i>Event_Time_Stamps</i>
Notification Class	Object_Identifier Object_Name Object_Type Description	Notification_Class Priority Ack_Required Recipient_List ³
Schedule	Object_Identifier Object_Name Object_Type Description Effective_Period Weekly_Schedule Exception_Schedule	Schedule_Default List_Of_Object_Property_References ⁴ Priority_For_Writing ⁵ Status_Flags Reliability Out_Of_Service

Object Type	Properties
Trend Log	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Object_Identifier</p> <p>Object_Name</p> <p>Object_Type</p> <p><i>Description</i></p> <p>Log_Enable⁶</p> <p><i>Start_Time</i></p> <p><i>Stop_Time</i></p> <p><i>Log_DeviceObjectProperty</i></p> <p>Log_Interval^{6,7}</p> <p><i>COV_Resubscription_Interval</i></p> <p><i>Client_COV_Increment</i></p> <p>Stop_When_Full</p> <p>Buffer_Size</p> </div> <div style="width: 45%;"> <p>Log_Buffer</p> <p>Record_Count (0)⁶</p> <p>Total_Record_Count</p> <p><i>Notification_Threshold</i></p> <p><i>Records_Since_Notification</i></p> <p><i>Last_Notify_Record</i></p> <p>Event_State</p> <p>Notification_Class</p> <p><i>Event_Enable</i></p> <p><i>Acked_Transitions</i></p> <p>Notify_Type</p> <p><i>Event_Time_Stamps</i></p> </div> </div>

Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s) _____
- MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, 76800
- 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: _____
- 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 – Routing configurations: Ethernet-IP, Ethernet-MS/TP, IP-MS/TP
- 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™ 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/networks(s) that the gateway supports:

This product supports communications between BACnet and any third-party system to which Niagara can connect. Contact Tridium for a list of supported protocols.