



Product Implementation Conformance Statement for the b3xxx Series

Date: April, 2008

Vendor Name: Schneider Electric

Product Name: Continuum

Product Model Number: b3xxx Series (See Table on Page 2)

Applications Software Version: 4.5

Firmware Revision: 4.5

BACnet Protocol Version: 1

BACnet Protocol Revision: 4

Product Description

The b3xxx Series of programmable controllers are BACnet Advanced Application Controllers (B-AAC). The models are functionally similar, but have different input and output capabilities. The table below details the differences.

Model Name	Number and Type of Inputs	Number and Type of Outputs	Expansion Modules Support	Smart Sensor Support
b3608	8 Universal Inputs		No	No
b3624	24 Universal Inputs		No	No
b3800	8 Universal Inputs	8 Digital Outputs	No	Yes
b3804	8 Universal Inputs	4 Analog Outputs, 4 Digital Outputs	No	Yes
b3810	8 Universal Inputs	8 Digital Outputs	Yes	Yes
b3814	8 Universal Inputs	4 Analog Outputs, 4 Digital Outputs	Yes	Yes
b3850	1 Flow Sensor 4 Universal Inputs	4 Digital Outputs	Yes	Yes
b3851	4 Universal Inputs	4 Digital Outputs	Yes	Yes
b3853	2 Flow Sensors 4 Universal Inputs	4 Digital Outputs	Yes	Yes
b3865	1 Flow Sensor 4 Universal Inputs	1 Actuator Output, 3 Digital Outputs	No	Yes
b3865-V	1 Flow Sensor 4 Universal Inputs	1 Actuator Output, 3 Digital Outputs	No	Yes
b3866	1 Flow Sensor 4 Universal Inputs	1 Actuator Output, 2 Analog Outputs, 3 Digital Outputs	No	Yes
b3866-V	1 Flow Sensor 4 Universal Inputs	1 Actuator Output, 2 Analog Outputs, 3 Digital Outputs	No	Yes
b3867	4 Universal Inputs	2 Analog Outputs, 5 Digital Outputs	No	Yes
b3885	1 Flow Sensor 2 Universal Inputs	1 Actuator Output 2 Digital Outputs	No	No
b3885-V	1 Flow Sensor 2 Universal Inputs	1 Actuator Output 2 Digital Outputs	No	No
b3887	3 Universal Inputs	5 Digital Outputs	No	Yes
b3920	16 Universal Inputs	8 Analog Outputs, 8 Digital Outputs	Yes	Yes

BACnet Standardized Device Profile (Annex L)

	BACnet Operator Workstation (B-OWS)
	BACnet Building Controller (B-BC)
X	BACnet Advanced Application Controller (B-AAC)
	BACnet Application Specific Controller (B-ASC)
	BACnet Smart Actuator (B-SA)
	BACnet Smart Sensor (B-SS)

BACnet Interoperability Building Blocks (BIBBs) Supported

BIBB	Name	BACnet Service	Support	Init	Exec
DS-RP-A ¹	Data Sharing - ReadProperty-A	ReadProperty	X	X	
DS-RP-B	Data Sharing - ReadProperty-B	ReadProperty	X		X
DS-RPM-B	Data Sharing - ReadPropertyMultiple-B	ReadPropertyMultiple	X		X
DS-RPC-B	Data Sharing - ReadPropertyConditional-B	ReadPropertyConditional	X		X
DS-WP-A ¹	Data Sharing - WriteProperty-A	WriteProperty	X	X	
DS-WP-B	Data Sharing - WriteProperty-B	WriteProperty	X		X
DS-WPM-B	Data Sharing - WritePropertyMultiple-B	WritePropertyMultiple	X		X
DS-COV-A	Data Sharing - COV-A	SubscribeCOV	X	X	
		ConfirmedCOVNotification	X		X
		UnconfirmedCOVNotification	X		X
DS-COV-B	Data Sharing - COV-B	SubscribeCOV	X		X
		ConfirmedCOVNotification	X	X	
		UnconfirmedCOVNotification	X	X	
AE-N-I-B	Alarm and Event-Notification-B	ConfirmedEventNotification	X	X	
		UnconfirmedEventNotification	X	X	
AE-ACK-B	Alarm and Event-ACK-B	AcknowledgeAlarm	X		X
AE-INFO-B	Alarm and Event-Information-B	GetEventInformation	X		X
SCHED-I-B	Scheduling-Internal-B		X		
T-VMT-I-B	Trending - Viewing and Modifying Trends Internal-B	ReadRange	X		X
T-ATR-B ¹	Trending – Automated Trend Retrieval-B	ConfirmedEventNotification	X	X	
		ReadRange	X		X
DM-DDB-A	Device Management-Dynamic Device Binding-A	Who-Is	X	X	
		I-Am	X		X
DM-DDB-B	Device Management-Dynamic Device Binding-B	Who-Is	X		X
		I-Am	X	X	
DM-DOB-A	Device Management-Dynamic Object Binding-A	Who-Has	X	X	
		I-Have	X		X
DM-DOB-B	Device Management-Dynamic Object Binding-B	Who-Has	X		X
		I-Have	X	X	
DM-DCC-B	Device Management-DeviceCommunicationControl-B	DeviceCommunicationControl	X		X
DM-TS-B	Device Management-TimeSynchronization-B	TimeSynchronization	X		X
DM-UTC-B	Device Management-UTCTimeSynchronization-B	UTCTimeSynchronization	X		X
DM-RD-B	Device Management-ReinitializeDevice-B	ReinitializeDevice	X		X
DM-BR-B ²	Device Management-Backup and Restore-B	AtomicReadFile	X		X
		AtomicWriteFile	X		X
		ReinitializeDevice	X		X
DM-OCD-B	Device Management-Object Creation and Deletion-B	CreateObject	X		X
		DeleteObject	X		X

¹ Not supported by b3885, b3885-V, and b3887.

² A single stream-based file object is provided, to support Backup and Restore. Record-based access is *not* supported. The file has a proprietary format, which is produced by the controller during a Backup operation. Any attempt to write the file using data not obtained by reading it, will result in an error.

Segmentation Capability

X	Able to transmit segmented messages	Window Size: 1
X	Able to receive segmented messages	Window Size: 1

Standard Object Types Supported

Object Type	Supported	Creatable ¹	Deletable ¹
Analog Input	X		
Analog Output	X		
Analog Value	X	X	X
Binary Input	X		
Binary Output	X		
Binary Value	X	X	X
Calendar	X	X	X
Command	X	X	X
Device	X		
Event Enrollment	X	X	X
File	X		
Loop	X	X	X
Multi-state Input	X		
Multi-state Output	X		
Multi-state Value	X	X	X
Notification Class	X	X	X
Program	X		
Schedule	X	X	X
Trend Log	X	X	X

¹ Except for Device and File, instances of all supported object types can be created, deleted and configured using CyberStation.

Object Types and Properties Supported

Properties that are Supported (S), Writable (W) and Optional (O) are indicated. See Restrictions on Object Identifiers and Names, below. All other strings are restricted to 32 characters. Unsigned values are limited to 4 294 967 294.

All Input and Output objects restrict Out_Of_Service to **true** if Channel is not configured.

Analog Input			
Property	S	W	O
COV_Increment	X	X	
Description	X	X	X
Event_State	X		
Object_Identifier	X		
Object_Name	X		
Object_Type	X		
Out_Of_Service	X	X	
Present_Value	X	X	
Status_Flags	X		
Units	X	X	

Binary Input			
Property	S	W	O
Active_Text	X	X	X
Description	X	X	X
Event_State	X		
Inactive_Text	X	X	X
Object_Identifier	X		
Object_Name	X		
Object_Type	X		
Out_Of_Service	X	X	
Polarity	X	X	
Present_Value	X	X	
Status_Flags	X		

Analog Output			
Property	S	W	O
COV_Increment	X	X	
Description	X	X	X
Event_State	X		
Object_Identifier	X		
Object_Name	X		
Object_Type	X		
Out_Of_Service	X	X	
Present_Value	X	X	
Priority_Array	X		
Relinquish_Default	X	X	
Status_Flags	X		
Units	X	X	

Binary Output			
Property	S	W	O
Active_Text	X	X	X
Description	X	X	X
Event_State	X		
Inactive_Text	X	X	X
Object_Identifier	X		
Object_Name	X		
Object_Type	X		
Out_Of_Service	X	X	
Polarity	X	X	
Present_Value	X	X	
Priority_Array	X		
Relinquish_Default	X	X	
Status_Flags	X		

Analog Value			
Property	S	W	O
COV_Increment	X	X	
Description	X	X	X
Event_State	X		
Object_Identifier	X		
Object_Name	X	X	
Object_Type	X		
Out_Of_Service	X	X	
Present_Value	X	X	
Priority_Array	X		
Relinquish_Default	X	X	
Status_Flags	X		
Units	X	X	

Binary Value			
Property	S	W	O
Active_Text	X	X	X
Description	X	X	X
Event_State	X		
Inactive_Text	X	X	X
Object_Identifier	X		
Object_Name	X	X	
Object_Type	X		
Out_Of_Service	X	X	
Present_Value	X	X	
Priority_Array	X		
Relinquish_Default	X	X	
Status_Flags	X		

Calendar			
Property	S	W	O
Active_Text	X	X	
Description	X	X	X
Event_State	X		
Inactive_Text	X	X	
Object_Identifier	X		
Object_Name	X		

Dates are restricted to years 1989-2105.
See Interpretation of Wildcards in Dates, below.

Command			
Property	S	W	O
Action	X	X	
Action_Text	X	X	X
All_Writes_Successful	X		
Description	X	X	X
In_Process	X		
Object_Identifier	X		
Object_Name	X	X	
Object_Type	X		
Present_Value	X	X	

Action is restricted to reference objects in the same device.

Device			
Property	S	W	O
Active_COV_Subscriptions	X		
APDU_Segment_Timeout	X	X	
APDU_Timeout	X	X	
Application_Software_Version	X		
Backup_Failure_Timeout	X	X	
Configuration_Files	X		
Database_Revision	X		
Daylight_Savings_Status	X	X	
Description	X	X	X
Device_Address_Binding	X		
Firmware_Revision	X		
Infinity_Path	X		X
Last_Restore_Time	X		
Local_Date	X		
Local_Time	X		
Location	X	X	X
Max_APDU_Length_Accepted	X		
Max_Info_Frames	X	X	
Max_Master	X	X	
Max_Segments_Accepted	X		
Model_Name	X		
Number_Of_APDU_Retries	X		X
Object_Identifier	X		
Object_List	X		
Object_Name	X		X
Object_Type	X		
Protocol_Object_Types_Supported	X		
Protocol_Revision	X		
Protocol_Services_Supported	X		
Protocol_Version	X		
Segmentation_Supported	X		
Serial_Number	X		X
System_Status	X		
UTC_Offset	X	X	
Vendor_Identifier	X		
Vendor_Name	X		

Infinity_Path is a proprietary property. See "Infinity Path Property" below.

Max_Info_Frames is restricted to the range 1..127.

Number_Of_APDU_Retries is restricted to the range 0..255.

Serial_Number is a proprietary property – See "Serial Number Property" below.

Event Enrollment			
Property	S	W	O
Acked_Transitions	X		
Description	X	X	X
Event_Enable	X	X	
Event_Parameters	X	X	
Event_State	X		
Event_Time_Stamps	X		
Event_Type	X		
Notification_Class	X	X	
Notify_Type	X	X	
Object_Identifier	X		
Object_Name	X	X	
Object_Property_Reference	X	X	
Object_Type	X		

Event_Type limited to Change_Of_State, Change_Of_Value, Floating_Limit, Out_Of_Range and Buffer_Ready.

Object_Property_Reference must reference Present_Value of point in same controller.

File			
Property	S	W	O
Archive	X	X	
File_Access_Method	X		
File_Size	X	X	
File_Type	X		
Modification_Date	X		
Object_Identifier	X		
Object_Name	X		
Object_Type	X		
Read_Only	X		

File_Size is writable when in Restore mode. Values limited to zero and current file size.

Loop			
Property	S	W	O
Action	X	X	
Bias	X	X	X
Controlled_Variable_Reference	X	X	
Controlled_Variable_Units	X	X	
Controlled_Variable_Value	X		
Derivative_Constant	X	X	X
Derivative_Constant_Units	X	X	X
Description	X	X	X
Event_State	X		
Integral_Constant	X	X	X
Integral_Constant_Units	X	X	X
Manipulated_Variable_Reference	X	X	
Maximum_Output	X	X	X
Minimum_Output	X	X	X
Object_Identifier	X		
Object_Name	X	X	
Object_Type	X		
Out_Of_Service	X	X	
Output_Units	X	X	
Present_Value	X	X	
Priority_For_Writing	X	X	
Proportional_Constant	X	X	X
Proportional_Constant_Units	X	X	X
Reliability	X		X
Setpoint	X	X	
Setpoint_Reference	X	X	
Status_Flags	X		
Update_Interval	X	X	X

Present_Value is writable only when Out_Of_Service is true.

Multistate Input			
Property	S	W	O
Description	X	X	X
Event_State	X		
Number_Of_States	X		
Object_Identifier	X		
Object_Name	X		
Object_Type	X		
Out_Of_Service	X	X	
Present_Value	X	X	
State_Text	X		X
Status_Flags	X		

Multistate Output			
Property	S	W	O
Description	X	X	X
Event_State	X		
Number_Of_States	X		
Object_Identifier	X		
Object_Name	X		
Object_Type	X		
Out_Of_Service	X	X	
Present_Value	X	X	
Priority_Array	X		
Relinquish_Default	X	X	
State_Text	X		X
Status_Flags	X		

Program			
Property	S	W	O
Description	X	X	X
Object_Identifier	X		
Object_Name	X		
Object_Type	X		
Out_Of_Service	X	X	
Program_Change	X	X	
Program_State	X		
Status_Flags	X		

Read_Property of Program_Change always return Ready.

Multistate Value			
Property	S	W	O
Description	X	X	X
Event_State	X		
Number_Of_States	X		
Object_Identifier	X		
Object_Name	X	X	
Object_Type	X		
Out_Of_Service	X	X	
Present_Value	X	X	
Priority_Array	X		
Relinquish_Default	X	X	
State_Text	X		X
Status_Flags	X		

Cyberstation can configure the State_Text.

Notification Class			
Property	S	W	O
Ack_Required	X	X	
Notification_Class	X		
Description	X	X	X
Object_Identifier	X		
Object_Name	X	X	
Object_Type	X		
Priority	X	X	
Recipient_List	X	X	

Schedule			
Property	S	W	O
Description	X	X	X
Effective_Period	X	X	
Exception_Schedule	X	X	X
Following_Transition_Time	X		
List_Of_Obj_Property_References	X	X	
Next_Transition_Time	X		
Object_Identifier	X		
Object_Name	X	X	
Object_Type	X		
Out_Of_Service	X	X	
Present_Value	X	X	
Previous_Transition_Time	X		
Priority_For_Writing	X	X	
Reliability	X		
Schedule_Default	X	X	
Status_Flags	X		
Weekly_Schedule	X	X	

In Effective_Period and Exception_Schedule, dates are restricted to years 1989-2105. See Interpretation of Wildcards in Dates, below.

List_Of_Obj_Property_References is limited to internal objects.

Present_Value is writable only when Out_Of_Service is true.

Previous_Transition_Time, Next_Transition_Time and Following_Transition_Time are proprietary properties – See “Support for Optimum Start-Stop” below.

Trend Log			
Property	S	W	O
Buffer_Size	X	X	
COV_Resubscription_Interval	X		X
Description	X	X	X
Event_State	X		
Log_Buffer	X		
Log_Device_Object_Property	X	X	
Log_Enable	X	X	
Log_Interval	X	X	
Object_Identifier	X		
Object_Name	X	X	
Object_Type	X		
Record_Count	X	X	
Start_Time	X	X	
Stop_Time	X	X	
Stop_When_Full	X	X	
Total_Record_Count	X		

Log_Device_Object_Property is limited to reference objects in the same device.

In Start_Time and Stop_Time, dates are restricted to years 1989-2105.

Buffer_Size is required to be at least 2 but is otherwise limited only by available memory.

Data Link Layer Options

	BACnet IP
	BACnet IP, Foreign Device
	ISO 8802_3, Ethernet
	ANSI/ATA 878.1, 2.5 MB ARCNET
	ANSI/ATA 878.1, RS_485, baud rate(s)_____
X	MS/TP master, baud rate(s)_____ 9600,19200,38400,76800
	MS/TP slave, baud rate(s)_____
	Point-To-Point, EIA 232, baud rate(s)_____
	Point-To-Point, modem, baud rate(s)_____
	LonTalk, medium: _____
	Other

Device Address Binding

Static Device Binding Supported <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

Networking Options

<input type="checkbox"/>	Router	List all routing configurations
<input type="checkbox"/>	Annex H, BACnet Tunneling Router over IP	
<input type="checkbox"/>	BACnet/IP Broadcast Management Device (BBMD)	
<input type="checkbox"/>	Support registrations by foreign devices	

Character Sets Supported

<input checked="" type="checkbox"/>	ANSI X3.4	<input checked="" type="checkbox"/>	ISO 8859-1
<input type="checkbox"/>	ISO 10646 (UCS-2)	<input type="checkbox"/>	ISO 10646 (UCS-4)
<input type="checkbox"/>	IBM /Microsoft DBCS	<input type="checkbox"/>	JIS C 6626

Serial Number Property

Every Continuum device has a unique serial number, assigned at the factory. The serial number is made available by the Serial_Number property of the Device object. The property identifier is 515, and the data type is Unsigned.

Infinity Path Property

Continuum devices can also be accessed via the proprietary Infinity protocol, which requires specific path information to access each device. Accordingly, the Infinity_Path property (identifier 517) of the Device object provides an unsigned integer value composed as follows:

Byte Position	bCX controllers	b3xxx controllers
Lowest	ACC Net ID of the device	ACC Net ID of the parent bCX device [bCX or other BACnet router]
Second	0	Commport Id [in the parent bCX] of the MSTP network
Third	0	MSTP Mac address of the controller

Support for Optimum Start-Stop

The controller includes a proprietary extension that can be used, together with Plain English programming, to optimize the start and stop times for heating and cooling systems based on scheduled occupancy times. The extension consists of three proprietary properties of the Schedule object type:

Name	Identifier	Meaning
Previous_Transition_Time	512	The time when the Schedule's Present_Value most recently changed value
Next_Transition_Time	513	The time when the Schedule's Present_Value is next scheduled to change value
Following_Transition_Time	514	The time when the Schedule's Present_Value is next scheduled to change value after the time indicated by Next_Transition

These properties are unsigned integer values, each giving a date and time expressed as the number of seconds after midnight, January 1, 1970. The Plain English language, which is used to specify the behavior of Program objects, includes the ability to compare these times with the present time, and to compute time intervals.

Each transition indicates a scheduled change in the value of the Schedule's Present_Value attribute. When determining a transition, time-value pairs that do not change the value are not considered transitions.

Restrictions on Object Identifiers and Names

The instance number portion of the Object_Identifier property has a restricted range, which depends to some extent on the object type. The following table gives the valid range of instance numbers:

Object Type	Minimum	Maximum
Device	1	4194302
File ¹	1	1
All others	1	200

For all object types, the Object_Name is limited to 16 characters. The first character must be alphabetic, and the remaining characters must be alphabetic, numeric, or one of '_' or '.'.

Interpretation of Wildcards in Dates

The BACnet specification [ANSI/ASHRAE Standard 135-2001] is open to multiple interpretations regarding the meaning of wildcards in dates, especially when used to specify date ranges. The following describes how the controllers, especially in the context of the Schedule properties Exception_Schedule and Effective_Period, and the Calendar property Date_List, interpret wildcards.

For purposes of comparing dates, the day-of-week fields are not used. That is, they are totally redundant. When comparing dates, a wildcard field is considered equal to the corresponding field in the date being compared. A date falls within the range if it is not before the StartDate and not after the EndDate.

Because the day-of-week field is redundant, its value must be either unspecified or consistent with the other fields. Because it can be consistent with those fields only if they are specified, the controllers allow the day-of-week to be specified only if the other three fields are specified as well.

Accordingly, the following conditions in a date range are treated as errors and will prevent a WriteProperty from completing:

1. A day-of-week is specified but two or fewer of the other fields in the Date are specified.
2. A day-of-week is specified, but is inconsistent with the Date specified by the other fields.
3. A year field is specified, which is outside the range limit of 1989 – 2105.
4. The endDate is earlier than the StartDate.
5. Any of the specified fields are out of range (e.g., 31st day of February).

¹ Only one file object exists (for backup and restore) and users do not create objects of this type.