BACnet/IP MODULE

(BIP option)

Specifications

Ethernet Port : 10/100-compatible with 10 Base-T interface, RJ-45

Visual Indicators : Green LED LINK
Yellow LED ACT

Network Configuration: See 301C BACnet menu section.

BACnet/IP protocol

UDP Port: 47808. This value is not modifiable using the 301C.

The module has been developed as per ANSI/ASHRAE Standard 135-2001 : BACnet®— A Data Communication Protocol for Building Automation and Control Networks. The Data Link Layer option is per BACnet/IP (Annex J).

http://www.ashrae.org/

BACnet Objects

BACnet objects represent any information available through the 301C sub network. Each available value is represented by one object of a specific type. There are currently 6 object types supported :

Analog Input	represented by 'AI'
Analog Value	represented by 'AV'
Binary Input	represented by 'BI'
Binary Output	represented by 'BO'
Binary Value	represented by 'BV'
Device	represented by 'DEV'

Analog Input
The Analog Input object type defines a standardized object whose properties represent the externally visible characteristics of an analog input, such as a gas sensor.

Supported properties for the Analog Input object type are : Object_Identifier, Object_Name, Object_Type, Status_Flags, Event_State, Reliability, Present_Value, Out_of_Service and Units.

Analog Value
The Analog Value object type defines a standardized object whose properties represent the externally visible characteristics of an analog value. An "analog value" is a control system parameter residing in the memory of the BACnet Device, such as a gas alarm level.

Supported properties for the Analog Value object type are : Object_Identifier, Object_Name, Object_Type, Status_Flags, Event_State, Reliability, Present_Value and Units.

Binary Input
The Binary Input object type defines a standardized object whose properties represent the externally visible characteristics of a binary input. A "binary input" is a physical device or hardware input that can be in only one of two distinct states, such as the 301ADI digital inputs.

Supported properties for the Binary Input object type are : Object_Identifier, Object_Name, Object_Type, Status_Flags, Event_State, Reliability, Present_Value, Polarity, Inactive_Text and Active_Text and Out_of_Service.

Binary Output
The Binary Output object type defines a standardized object whose properties represent the externally visible characteristics of a binary output. A "binary output" is a physical device or hardware output that can be in only one of two distinct states, such as a relay or a switchable power output.

Supported properties for the Binary Output object type are : Object_Identifier, Object_Name, Object_Type, Status_Flags, Event_State, Reliability, Present_Value, Polarity, Inactive_Text, Active_Text, Priority_Array, Relinquish_Default and Out_of_Service.

Binary Value
The Binary Value object type defines a standardized object whose properties represent the externally visible characteristics of a binary value. A "binary value" is a control system parameter residing in the memory of the BACnet Device.

Supported properties for the Binary Value object type are : Object_Identifier, Object_Name, Object_Type, Status_Flags, Event_State, Reliability, Present_Value, Inactive_Text, Active_Text, Priority_Array, and Relinquish_Default.

Device
The Device object type defines a standardized object whose properties represent the externally visible characteristics of a BACnet Device. There is only one Device object to represent the BACnet Module.

Supported properties for the Device object are : Object_Identifier, Object_Name, Object_Type, System_Status, Vendor_Name, Vendor_Identifier, Model_Name, Firmware_Revision, Application_Software_Version, Protocol_Version, Protocol_Revision, Protocol_Services_Supported, Protocol_Object_Types_Supported, Object_List, Max_APDU_Length_Accepted, Segmentation_Supported, APDU_Timeout, Number_Of_APDU_Retries, Device_Address_Binding, Database_Revision, Local_Time, Local_Date, UTC_Offset, Daylight_Savings_Status and Out_of_Service.

Honeywell Products and BACnet Objects

Object Names

Object names are constructed in two parts, as follows:

Part one: The device display label (product name) for the network in which the object resides. This value is editable only when using the 301C controller.
Part two: Unique tag label among all the objects for the same device.

Ex : “301D2 CO2 AD:14.CO2” where ‘301D2 CO2 AD:14’ is the device display label and ‘CO2’ is the unique tag label that identifies the object as a CO2 sensor.

Vulcain Object Tag Labels

Table 1:

Tag Labels	Description	Object Type
‘Gas label’	Gas sensor	AI
.Alrm	Simple alarm level	AV
Amin /Amax	Alarm level A and hysteresis	AV
Bmin /Bmax	Alarm level B and hysteresis	AV
Cmin /Cmax	Alarm level C and hysteresis	AV
relx	Relay output X (1 to 8)	BO
buzz	Buzzer output	BO
.outx	Output X (1 to 3)	BO or BV
.AIx	Analog input X (1 to 16)	AI
.BIx	Binary Input X (1 to 12)	BI
.RH	Relative Humidity sensor	AI
.Temp	Temperature sensor	AI

Object Table For Honeywell Network Devices

Objects residing in Honeywell network devices

Device	GP2	301IRF	301EM	201T2/vulbus	90DM3R
Objects	*.GAZ*	*.GAZ*	*.GAZ*	*.GAZ*	*.GAZ*
	.Amin	.Amin	.Amin	.Amin	.Alrm
	.Amax	.Amax	.Amax	.Amax	
	.Bmin	.Bmin	.Bmin	.Bmin	
	.Bmax	.Bmax	.Bmax	.Bmax	
	.Cmin	.Cmin	.Cmin	.Cmin	
	.Cmax	.Cmax	.Cmax	.Cmax	
	.rel1	.rel1	.rel1 (snsr1)	.rel1	
	.rel2	.rel2	.rel2 (snsr1)		
		.rel3	.rel3 (snsr1)		
			.rel4 (snsr1)		
			.out1 (snsr1)		
			.out2 (snsr1)		
			.out3 (snsr1)		

Object Table For Honeywell Network Devices

Objects residing in Honeywell network devices

Device	301AP	301C	301R	301ADI	901T
Objects	.rel1	.rel1	.rel1	.AI1 to .AI16	.*GAZ*
	.rel2	.rel2	.rel2	.BI1 to .BI12	.Amin
	.rel3	.rel3	.rel3		.Amax
	.buzz	.rel4	.rel4		.Bmin
		.buzz	.rel5		.Bmax
			.rel6		.Cmin
			.rel7		.Cmax
			.rel8		

Object Table For Honeywell Network Devices

Objects residing in Honeywell network devices

Device	ECF9	S301RLC	301W	301RW	Std.Device*
Objects	.*GAZ*	.*GAZ*	.*GAZ*	.rel1	.*GAZ*
	.Amin	.Amin	.Amin	.rel2	.Amin
	.Amax	.Amax	.Amax	.rel3	.Amax
	.Bmin	.Bmin	.Bmin	.rel4	.Bmin
	.Bmax	.Bmax	.Bmax	.rel5	.Bmax
	.Cmin	.Cmin	.Cmin	.rel6	.Cmin**
	.Cmax	.Cmax	.Cmax	.rel7	.Cmax**
				.rel8	

* Std.Device refers to the following products: S301M, 420MDBS and 90DM4

** The values .Cmin and .Cmax apply only to the 90DM4.

Object Examples

In the first example, we see the CO_2 gas sensor input for a $301D_2$ Vulcain network device:

Name : "301D2 CO2 AD:14.CO2"
Value : 600
Units : PPM
Object : 1.AI2*
Description : Analog Input

* 1 is the 301C unique device instance, AI is the object type and 2 is the unique instance of the object in this device. We identify this object as "Analog Input 2 of BACnet device 1".

In this example, we can see the output status for relay 2 of the same Vulcain network device, but with a different device display label:

Name : "Floor 01 Sensor 02 .rel2"
Value : OFF
Units :
Object : 1.BO4*
Description : Binary Output

*We identify this object as "Binary Output 4 of BACnet device 1".

Example 3 where we can see the first 24V output status of a 301EM Vulcain network device.

Name : "301EM CO AD:25.out1"
Value : OFF
Units :
Object : 1.BV1
Description : Binary Value*

**We identify this object as "*Binary Value 1 *of BACnet device 1".*

Protocol Implementation Conformance Statement

(Normative)

BACnet Protocol Implementation Conformance Statement

Date : August 1, 2005

Vendor Name : Honeywell Analytics
Product Name : 301C -BIP
Product Model Number: N/A
Applications Software Version : 1.0
Firmware Revision : 1.0
BACnet Protocol Revision : 1.0

Product Description:

The 301C -BIP has a module that uses BACnet communication. As such, the components of a Vulcain network can be connected to a BACnet network via the 301C controller.

BACnet Standardized Device Profile (Annex L)

☐ BACnet Operator Workstation (B-OWS)
☐ 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)

List all BACnet Interoperability Building Blocks Supported (Annex K)

Data Sharing

☐ Data Sharing-ReadProperty-A (DS-RP-A)
☑ Data Sharing-ReadProperty-B (DS-RP-B)
☐ Data Sharing-ReadPropertyMultiple-A (DS-RPM-A)
☑ Data Sharing-ReadPropertyMultiple-B (DS-RPM-B)
☐ Data Sharing-ReadPropertyConditional-A (DS-RPC-A)
☐ Data Sharing-ReadPropertyConditional-B (DS-RPC-B)
☐ Data Sharing-WriteProperty-A (DS-WP-A)
☑ Data Sharing-WriteProperty-B (DS-WP-B)
☐ Data Sharing-WritePropertyMultiple-A (DS-WPM-A)
☐ Data Sharing-WritePropertyMultiple-B (DS-WPM-B)
☐ Data Sharing-COV-A (DS-COV-A)
☐ Data Sharing-COV-B (DS-COV-B)
☐ Data Sharing-COVP-A (DS-COVP-A)
☐ Data Sharing-COVP-B (DS-COVP-B)
☐ Data Sharing-COV-Unsolicited-A (DS-COVU-A)
☐ Data Sharing-COV-Unsolicited-B (DS-COVU-B)

Scheduling

☐ Scheduling-A (SCHED-A)
☐ Scheduling-Internal-B (SCHED-I-B)
☐ Scheduling-External-A (SCHED-E-B)

Trending

☐ Viewing and Modifying Trends-A (T-VMT-A)
☐ Trending-Viewing and Modifying Trends-Internal-B (T-VMT-I-B)
☐ Trending-Viewing and Modifying Trends-External-B (T-VMT-E-B)
☐ Trending-Automated Trend Retrieval-A (T-ATR-A)
☐ Trending-Automated Trend Retrieval-B (T-ATR-B)

Network Management

☐ Network Management-Connection Establishment-A (NM-CE-A)
☐ Network Management-Connection Establishment-B (NM-CE-B)
☐ Network Management-Router Configuration-A (NM-RC-A)
☐ Network Management-Router Configuration-B (NM-RC-B)

Alarm and Event Management

☐ Alarm and Event-Notification-A (AE-N-A)
☐ Alarm and Event-Notification Internal-B (AE-N-I-B)
☐ Alarm and Event-Notification External-A (AE-N-E-B)
☐ Alarm and Event-ACK-A (AE-ACK-A)
☐ Alarm and Event-ACK-B (AE-ACK-B)
☐ Alarm and Event-Alarm Summary-A (AE-ASUM-A)
☐ Alarm and Event-Alarm Summary-B (AE-ASUM-B)
☐ Alarm and Event-Enrollment Summary-A (AE-ESUM-A)
☐ Alarm and Event-Enrollment Summary-B (AE-ESUM-B)
☐ Alarm and Event-Information-A (AE-INFO-A)
☐ Alarm and Event-Information-B (AE-INFO-B)
☐ Alarm and Event-LifeSafety-A (AE-LS-A)
☐ Alarm and Event-LifeSafety-B (AE-LS-B)

Device Management

☐ Device Management-Dynamic Device Binding-A (DM-DDB-A)
☑ Device Management-Dynamic Device Binding-B (DM-DDB-B)
☐ Device Management-Dynamic Object Binding-A (DM-DOB-A)
☐ Device Management-Dynamic Object Binding-B (DM-DOB-B)
☐ Device Management-DeviceCommunicationControl-A (DM-DCC-A)
☑ Device Management-DeviceCommunicationControl-B (DM-DCC-B)
☐ Device Management-Private Transfer-A (DM-PT-A)
☐ Device Management-Private Transfer-B (DM-PT-B)
☐ Device Management-Text Message-A (DM-TM-A)
☐ Device Management-Text Message-B (DM-TM-B)
☐ Device Management-TimeSynchronization-A (DM-TS-A)
☑ Device Management-TimeSynchronization-B (DM-TS-B)
☐ Device Management-UTCTimeSynchronization-A (DM-UTC-A)
☐ Device Management-UTCTimeSynchronization-B (DM-UTC-B)

☐ Device Management-ReinitializeDevice-A (DM-RD-A)
☑ Device Management-ReinitializeDevice-B (DM-RD-B)
☐ Device Management-Backup and Restore-A (DM-BR-A)
☐ Device Management-Backup and Restore-B (DM-BR-B)
☐ Device Management-List Manipulation-A (DM-LM-A)
☐ Device Management-List Manipulation-B (DM-LM-B)
☐ Device Management-Object Creation and Deletion-A (DM-OCD-A)
☐ Device Management-Object Creation and Deletion-B (DM-OCD-B)
☐ Device Management-Virtual Terminal-A (DM-VT-A)
☐ Device Management-Virtual Terminal-B (DM-VT-B)

Segmentation Capability :

☐ Segmented requests supportedWindow Size _____
☐ Segmented responses supportedWindow Size : Take maximum Windows size supported by the other device

Standard Object Types Supported :

Analog Input	For all objects
Analog Output	1) cannot be dynamically createable using Create Object service
Analog Value	2) cannot be dynamically deletable using DeleteObject sercice
Binary Input	3) No additionnal writable properties exist
Binary Output	4) No proprietary properties exist
Binary Value	5) No range restriction
Device	

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):

☐ 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, BACnet / Modbus.
☐ 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 :