

Group: Controls

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MicroTech II[®] Chiller Unit Controller Protocol Information

BACnet[®] Networks (IP or Ethernet)

- WSC Water-Cooled Centrifugal, Single-Compressor
- WDC Water-Cooled Centrifugal, Dual-Compressor
- WPV Water-Cooled Centrifugal, Single-Compressor
- HSC Water-Cooled Single-Compressor Centrifugal, Heat Recovery
- HDC Water-Cooled Dual-Compressor Centrifugal, Heat Recovery
- TSC Water-Cooled Single-Compressor Centrifugal, Templifier™
- WMC Water-Cooled Centrifugal, Magnetic Bearing
- WCC Water-Cooled Centrifugal, Dual-Compressor Series Counter-flow
- AGZ Air-Cooled Global Scroll
- ACZ Air-Cooled Scroll Condensing Unit
- WGZ Water-Cooled Global Scroll
- AGS Air-Cooled Global Screw
- WGS Water-Cooled Global Screw
- TGZ Templifier™ Water Heater

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Limited Warranty

Consult your local McQuay Representative for warranty details. Refer to Form 933-43285Y. To find your local McQuay Representative, go to www.mcquay.com.

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Revision History

ED 15100	June, 2006	Initial release.
ED 15100-1	September, 2009	Added TGZ model

Software Revision

This edition documents the following versions of the standard MicroTech II® Communication Module software and all subsequent revisions until otherwise indicated. However, if your software is of a later revision, some of the information in this document may not completely describe your software.

Software

BACnet® Communication Module Firmware
BACnet Communication Module Interface Table

Revision

Flash_apps.bin (AeBCM-1
BeBCM-1.1.5.rc2)
BCM.CSV (4/21/06)

Reference Documents

Company	Number	Title	Source
American Society of Heating, Refrigerating and Air-Conditioning Engineers	ANSI/ASHRAE 135-2004	BACnet- A Data Communication Protocol for Building Automation and Control Networks	www.ashrae.org
McQuay International	IM 736	MicroTech II Chiller Unit Controller BACnet Communication Module-MS/TP	www.mcquay.com
McQuay International	IM 837	MicroTech II Chiller Unit Controller BACnet Communication Module-IP or Ethernet	www.mcquay.com
McQuay International	IMM AGS	MicroTech II Air-Cooled Screw Chiller Installation and Maintenance Manual	www.mcquay.com
McQuay International	IOMM ACZ/AGZ	MicroTech II Air-Cooled Condensing Unit Installation, Operation, and Maintenance Manual	www.mcquay.com
McQuay International	IOMM ACZ	MicroTech II Air-Cooled Condensing Unit Installation, Operation, and Maintenance Manual	www.mcquay.com
McQuay International	IOMM AGZ	MicroTech II Air-Cooled Scroll Chiller Installation, Operation, and Maintenance Manual	www.mcquay.com
McQuay International	IOMM WGZ	MicroTech II Water-Cooled Scroll Chiller Installation Manual	www.mcquay.com
McQuay International	IOMM WPV	MicroTech II Centrifugal Chiller Installation, Operation, and Maintenance Manual	www.mcquay.com
McQuay International	IOMM WSCWDC	MicroTech II Chiller Unit Controller Installation, Operation, and Maintenance Manual	www.mcquay.com
McQuay International	OM AGS	MicroTech II Air-Cooled Screw Chiller Operating Manual	www.mcquay.com
McQuay International	OM CentrifMicro II	MicroTech II Unit Controller for Centrifugal Chillers and Templifiers Operating Manual	www.mcquay.com
McQuay International	OM WGS	MicroTech II Water-Cooled Screw Chiller Operating Manual	www.mcquay.com
McQuay International	OMM TGZ	MicroTech II Templifier TGZ Heat Recovery Water Heaters Operating Manual	www.mcquay.com
McQuay International	OM WMC	MicroTech II Magnetic Bearing Compressor Chiller Operating Manual	www.mcquay.com
McQuay International	IOMM TSC	MicroTech II Templifier Single Compressor Centrifugal Installation, Operation, and Maintenance Manual	www.mcquay.com

Introduction

This document contains the necessary information to incorporate a MicroTech II Chiller Unit Controller from McQuay International into your Building Automation System (BAS). It includes all necessary BACnet properties and corresponding MicroTech II Chiller Unit Controller data points. It also contains the BACnet Protocol Implementation and Conformance Statement. BACnet terms are not defined. Refer to the BACnet specifications and functional profile for definitions and details.

Chiller Models

The following table lists the model designators of McQuay International Chiller units and the corresponding description.

WSC	Water-Cooled Centrifugal, Single-Compressor
WDC	Water-Cooled Centrifugal, Dual-Compressor
WPV	Water-Cooled Centrifugal, Packaged Unit
HSC	Water-Cooled Single-Compressor Centrifugal, Heat Recovery
HDC	Water-Cooled Dual-Compressor Centrifugal, Heat Recovery
TSC	Water-Cooled Single-Compressor Centrifugal, Templifier
WMC	Water-Cooled Centrifugal, Magnetic Bearing
WCC	Water-Cooled Centrifugal, Dual Compressor Series Counter-flow
AGZ	Air-Cooled Global Scroll
ACZ	Air-Cooled Scroll, Condensing Unit
WGZ	Water-Cooled Global Scroll
TGZ	Templifier™ Water Heater
AGS	Air-Cooled Global Screw
WGS	Water-Cooled Global Screw

Controller Data Points

The MicroTech II Chiller Unit Controller contains data points or unit variables that are accessible from as many as four user interfaces: the unit keypad/display, the Operator Interface Touch Screen, a BACnet IP or BACnet Ethernet network, or the BACnet Communication Module's HTTP interface. Not all points are accessible from each interface. This document lists all important data points and the corresponding path for each network interface. Refer to the applicable Operation Manual for keypad/display and Operator Interface Touch Screen detail (see Reference Documents section for literature part numbers.)

Protocol Definitions

The MicroTech II Chiller Unit Controller can be configured in a interoperable BACnet network. The BACnet Communication Module communicates via BACnet IP or BACnet Ethernet. The BACnet Communication Module can be setup to communicate either Metric (SI) or English units of measurement via the HTTP interface. In order to avoid conflict, both the Chiller keypad and BACnet Communication Module must be setup to communicate the same units of measure (Metric or English).

BACnet Protocol

The BACnet protocol is a standard communication protocol for Building Automation and Control Networks developed by the American National Standards Institute and American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) specified in ANSI/ASHRAE Standard 135-2004. It addresses all aspects of the various systems that are applied to building control systems. BACnet provides the communication infrastructure necessary to integrate products manufactured by different vendors and to integrate building services that are now independent.

Basic Protocol Information

BACnet Networks

Compatibility

The MicroTech II Chiller Unit Controller conforms to the BACnet Standard (ANSI/ASHARE 135-2004) as stated in the Protocol Implementation and Conformance Statement (PICS). Refer to the BACnet Protocol Implementation Conformance Statement on page 55.

BACnet Objects

MicroTech II Chiller Unit Controllers incorporate standard BACnet object types (i.e., object types defined in the BACnet Standard). Each object has properties that control unit variables or data points. Some object types occur more than once in the unit controller; each occurrence or instance has different property values and controls different unit variables or data points. Each instance is designated with a unique instance index. Some properties can be from the network adjusted (for example, read/write properties such as setpoints) and others can only be interrogated (for example, read-only properties such as status information).

Each data point accessible from a BACnet network is described with a table that gives the Object Identifier, Property Identifier, Full BACnet Reference or path, and the Name enumeration of the property.

Example of BACnet Data Point

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	18	Present Value	85
Object Name				
EntCondWaterTemp				

Object Identifier

Object Identifiers are each designated with an Object type as defined in the BACnet specification. The first column of the data point definition gives the object type. The object in the example shown above happens to be the Entering Condenser Water Temperature.

The object identifier is a property of the object that you can read from the object. The name of the property is “Object_Identifier” and the property identifier is 75.

Each object in a chiller controller has a unique identifier. BACnet object identifiers are two-part numbers of BACnet Object Identifier data type. The first part identifies the object type (the first 10 bits of the 32-bit BACnet Object Identifier [See ANSI/ASHRAE 135-2004 BACnet A Data Communication Protocol for Building Automation and Control Networks]). The first column of the data point definition gives the object type. The second part identifies the instances of that particular object type (the last 22 bits of the 32-bit BACnet Object Identifier).

The object identifier is shown in the data points listing as two numbers. The first number is shown in the Type ID column and designates the Object type enumeration. The second number is shown in the Instance column and designates the instance of that particular object type.

The object identifier is a property of the object that you can read from the object code. The name of the property is “Object_Identifier” and the property identifier is 75. The ASHRAE BACnet specification reserves the first 128 numbers for ASHRAE defined objects. Manufacturers may define additional object types and assign a number above 127 as long as they conform to the requirements of the ASHRAE BACnet specification.

Each object also has a name. Object names are character strings. The object name is a property of the object that you can read from the object. The name of the property is “Object_Name” and the property identifier is 77.

Objects are sometimes referred to as an object type and instance number as they are in the BACnet specification. The example object above would be: Analog Input, Instance 18.

Property Identifier

Each object has a number of properties or attributes. Each property has a unique identifier of BACnet Property Identifier data type. Property identifiers are an enumerated set; a number identifies each member. The value of the Property Identifier enumeration is shown in the Property ID column. In the example above the property identifier is 85.

Property Name

Each property also has a unique name. Property names are character strings and shown in the Property Name column. In the example above the property name is Present Value (Property Enumeration 85).

Object Name

This property is a character string that is the unique name of the object in the BACnet device. In the example above the object name is EntCondWaterTemp.

Property Values

Some properties are standard data types and some are enumerated sets. If the property value is an enumerated set, all enumerated values and corresponding meaning are given in the Property Values column of the data point listing.

MicroTech II Chiller Unit Controller Device Object

Each BACnet compatible device can only be assigned a single BACnet Device Object.

Device Object Identifier

The MicroTech II Chiller Unit Controller Device Object Identifier uniquely specifies the unit within the network. The device object type for all devices is fixed by ASHRAE at 8. Therefore, the device object instance number must be unique. The initial Device Object identifier is set at 3000 during manufacturing. The device object identifier can be read from the unit controller. The name of the property is "Object_Identifier" and the property identifier is 75.

Caution: If another device in the network already has this object identifier (instance number), you must change the instance number of one device object so that all devices in the network have a unique device identifier.

Device Object Name

The Device Object Name uniquely specifies a device in the network. It must be unique in the network. The device name for the MicroTech II Chiller Unit Controller device is MTII Chiller UC #####. The ##### represents the device object instance number. The device name is the "prefix" of all object names in the MicroTech II Chiller Unit Controller. All objects include the device name and a period "." (MTII Chiller UC #####.) preceding the object name. The device object instance number assigned at the factory is 3000.

Note: If you change the device instance in the BACnet Communication Module HTTP interface, you also change the device name and thus the full reference for all objects in the unit controller.

The Device Object name is also available to the network in the device. The property name is "Object_Name" and property identifier is 77.

HTTP Interface

The BACnet Communication Module uses a HTTP interface for setting certain network variables. Figure 1 shows the HTTP interface main page. This is a read-only screen that displays several setup parameters. The parameters that require setting depend on the data link layer of the BAS network.

Device, Date/Time, and Alarms require settings for all BACnet networks. BACnet via Ethernet does not require network settings. However, BACnet via IP does require network settings.

The BACnet Communication Module HTTP interface can be accessed by opening Internet Explorer® and typing in the IP address. (Note: the default IP address is 172.16.5.8 and subnet mask is 255.255.0.0.) Follow the steps below to modify to the BACnet Communication Module configuration:

1. Change the network settings (this includes the IP address and subnet mask.) on your computer and the options in Internet Explorer (this step is done only if your computer is not already on the same subnet as the BACnet Communication Module.)
2. Access the BACnet Communication Module configuration pages to change the desired parameters.
3. Press the Save Changes button and then reboot your computer.
4. Switch your Internet Explorer and network settings back to the original settings.

Refer to the Communication Module Installation Manual, BACnet IP or Ethernet (IM 837) for detailed instructions.

Figure 1. BACnet Communication Module HTTP Main Page

Device Properties	
BACnet LAN Type	<input checked="" type="radio"/> BACnetIP <input type="radio"/> BACnet Ethernet
BACnetIP UDP Port	<input type="text" value="BAC0"/> hexadecimal
BCM Device Instance	<input type="text" value="3077"/> 0 to 4194303
Description	<input type="text" value="McQuay Chiller - IT Rev 1.3"/>
Location	<input type="text" value="McQuay"/>
APDU Timeout	<input type="text" value="5000"/> milliseconds
Number of APDU Retries	<input type="text" value="4"/>
Password for Restart	<input type="text" value="1234"/>
Metric Units	<input type="radio"/> Yes <input checked="" type="radio"/> No
Alarm Properties	
Alarming Enabled	<input type="radio"/> Yes <input checked="" type="radio"/> No
Alarm Destination Device Instance	<input type="text" value="0"/> 0 to 4194303
Alarm Process Id	<input type="text" value="0"/>
Alarm Problem Priority	<input type="text" value="255"/> 0 to 255
Alarm Fault Priority	<input type="text" value="0"/> 0 to 255
Alarm Warning Priority	<input type="text" value="255"/> 0 to 255
Clock Properties	
Daylight Saving Time	<input type="radio"/> Yes <input checked="" type="radio"/> No
UTC offset	<input type="text" value="0"/> minutes (-720 to +720)
Interval to send WhoIs	<input type="text" value="1"/> minutes (0=none)
BBMD Properties	
IP Address for BBMD*	<input type="text" value="None"/> (blank or none=none)
Foreign Device Time-To-Live*	<input type="text" value="0"/> seconds
*Required if BCM must register as a Foreign Device with a BBMD	
<input type="button" value="Save Changes"/>	

Below is a description of each network function controlled by the BACnet Communication Module HTTP interface:

Device Properties

BACnet LAN Type

The BACnet LAN Type parameter identifies the Data Link/Physical layers of the BAS network. The Data Link/Physical layers available are BACnet Ethernet and BACnet IP.

BACnet IP UDP Port

BACnet IP UDP (User Datagram Protocol) Port identifies the application process in the MicroTech II Chiller Unit Controller.

Device Instance

The device instance identifies the BACnet Communication Module device on the BAS network. The BACnet Communication Module ships from the factory with a default device instance of 3000. The device instance can be changed via the BACnet Communication Module HTTP interface.

Caution: If another device in the network already has this device instance, you must change the instance number of one device object so that all devices in the network have a unique device identifier.

Note: Changing the device instance of the Device Object changes the full reference of all objects because each full reference includes the instance number of the Device Object

Description

The Description parameter describes the application running in the BACnet device.

Location

The Location parameter is a changeable property that can be used to indicate the physical location of the MicroTech II Chiller Unit Controller.

APDU Timeout

The APDU Timeout parameter indicates the amount of time (in milliseconds) between retransmissions of an APDU requiring acknowledgment for which no acknowledgement has been received.

Number of APDU Retries

The Number of APDU Retries parameter indicates the maximum number of times that an APDU shall be retransmitted.

Password for Restart

Password that allows the BACnet Communication Module to be reinitialized from the network.

Alarm Properties

Alarming Enabled

The Alarming Enabled parameter indicates whether the Alarm Annunciation method of alarm notification has been enabled (see BACnet Alarm section).

Note: If the BACnet device does not recognize an Alarm Annunciation message, the BAS can poll the unit controller for alarms (see BACnet Alarm section).

Alarm Destination Device Instance

The Alarm Destination Device Instance parameter indicates the BACnet device in the network receiving the alarm notification annunciation.

Alarm Process ID

The Alarm Process ID parameter identifies the process that the device receiving the alarm notification annunciation executes after it receives the alarm notification.

Alarm Priority

The Alarm Priority parameters indicate the priority for each class of alarms. Priority values range from 0 to 255. The smaller the priority's value, the higher the priority. For example, an alarm set to a value of 1 is a higher priority alarm than an alarm set to a value of 255.

Clock Properties

The Clock Parameters indicate local time, the time difference between local time and Universal Coordinated Time (UCT) expressed in minutes, and whether or not the controller is in a daylight savings period. Setting these parameters is only necessary when the BAS network does not have a Time Master controller on the network. To change the actual date and time, go to the Clock Setup page.

Note: The clock must be reset any time power is lost to the chiller or if the BACnet Communication Module is rebooted.

Interval to send Who-Is

The Interval to send Who-Is parameter indicates the maximum rate at which the BACnet Communication Module can send Who-Is requests to identify unknown devices. This parameter is an integer and the frequency is per minute.

BBMD Parameters

IP Address for BBMD

The IP Address for BBMD parameter indicates the IP address for the BACnet Broadcast Management Device (BBMD) if used.

Time-To-Live for Foreign Device Registration

The Time-To-Live for Foreign Device Registration parameter indicates the time (in seconds) within which the foreign device must re-register with the BBMD. If it does not re-register, the BBMD will remove (purge) it from its Foreign Device Table (FDT) and discontinue forwarding messages to the foreign device.

BACnet IP

The BACnet IP parameters on the BACnet Properties and System Configuration/Network pages indicate the Internet Protocol parameters for the BACnet Communication Module. The UDP Port, IP address, subnet mask, and IP router address are variables that must be set during the BACnet Communication Module configuration. The BACnet default UDP Port is 47808 (BAC0 in Hex). This value may be changed at the BAS integrator's discretion.

Network Considerations

Access to Properties

To access a property via BACnet, you must specify the object identifier, including the device object identifier or the object name, in addition to the device object name and the property identifier.

The BACnet Communication Module HTTP interface allows you to read properties or read/write properties using the Test/Test or Test/Variables pages. To perform any read or writes you must specify the Object Type (Analog, Integer, or Digital) and the Index Number. For any enumerated types, the value read from the HTTP pages correlates directly with the enumeration when using BACnet. This document maps all HTTP points to their corresponding BACnet points.

Configuring the Unit Controller

The MicroTech II Chiller Unit Controller, along with the BACnet Communication Module, is designed, programmed, and configured at the factory to be a chiller unit controller accessible over a BACnet network. No additional programming is required to make this a chiller unit controller. The unit controller is ready to operate with the default values of the various parameters set at the factory. Default values may be changed with the unit keypad or via the network. Parameters must be adjusted in the HTTP interface to accommodate your particular network. See the appropriate Operation Manual for default values and keypad operating instructions and the BACnet Communication Module Installation Manual (see Reference Documents section for literature details.) The Installation Manual specifies default values for variables accessible from the network.

Typical Application: Minimum Integration

When you have integrated the unit into your network, you can monitor and control unit operation from your workstation. At a minimum, you can:

- Display and monitor data points
- Turn the unit on or off
- Operate the unit safely

Set up the Unit for Network Control

Unit Setup for MicroTech II Centrifugal Chiller Network Control:

1. Disable the chiller. The chiller should not be operating while performing this setup.
2. At the unit keypad:
 - a. In the Set Unit Setpoint screen 14, set the BAS Protocol to Modbus. Use the Manager Password of “2001.”
 - b. In the Set Unit Setpoint screen 1, set the Control Source to Local.
3. Verify with the chiller/control company technician that the chiller is operational on BAS.
 - a. In the Set Unit Setpoint screen 1, set the Control Source to BAS.

Setup for all Other MicroTech II Chillers Network Control:

1. Set the Set Unit Setpoint screen 1 initially to Source = Keypad.
2. Change the Protocol default to the appropriate BAS Protocol in the applicable menu screen shown in the table below.
3. Verify with the chiller/control company technician that the chiller is operational on BAS.
4. Set the Set Unit Setpoint screen 1 to Source = Network.

Model	AGZ-A	ACZ-A	AGZ-B	ACZ-B	AGS-A, B, DP	AGS-C	AGS-D	WGS	WGZ, TGZ
Menu Screen	7	6	10	7	12	16	17	15	10
Password	2001	2001	2001	2001	8945	8453	8745	8745	2001

NOTE: Models AGZ-A/B, ACZ-A/B, WGZ, and TGZ have one unit controller, while models AGS-B/C and WGS have one unit controller and multiple circuit controllers. Unit settings for AGS-B/C and WGS models are adjusted on the unit controller.

Display Important Data Points

Typical workstation displays of MicroTech II Chiller Unit Controller attributes include the following significant data points (page number of detailed description in parenthesis). Each data point is identified with a number that also references it in the Comprehensive Data Point Tables. These data points also appear in boldface in the Comprehensive Data Point Tables. References in the text of this section also identify these data points with a number and shading.

Table 1. Significant Data Points

No	Configuration	No	Temperatures	No	Setpoints
1	Chiller Status (22)	5	Evaporator Entering Water Temperature (32)	9	Cool Setpoint (31)
2	Chiller Mode Setpoint (21)	6	Evaporator Leaving Water Temperature (33)	10	Capacity Limit Setpoint(18)
3	Actual Capacity (17)	7	Condenser Entering Water Temperature (28)		
4	Chiller Enable (19)	8	Condenser Leaving Water Temperature (29)		

You can display any number of additional data points based on job requirements or individual preference. See BACnet Standard Objects for a list of all BACnet Objects available to the network. For a more detailed description of all available data points, see the Detailed Data Point Information section.

BACnet Standard Objects

Chiller Variables

Network Control Property Keypad attributes available as BACnet Standard Objects for network control of the unit	Page	R = Read W = Write	Object Type	Object Instance	Http Interface Object Type & Instance ¹	Description ²
Active Setpoint	17	R	AI	7	A 2	-40°–199°F
*Actual Capacity (3)	17	R	AI	9	A 10	0–160%
*Capacity Limit (Output) (10)	18	R	AI	8	A 42	0–160%
*Capacity Limit Setpoint (10)	18	W	AO	32	A 3	0 to 160%; Default=100%
*Chiller Enable (Input) (4)	19	W	BV	41	D 1	0=Request Chiller Off, 1=Request Chiller On, Default=Off
Chiller Limited	20	R	BI	39	D 6	0=Not Limited, 1=Limited
Chiller Local/Remote	20	R	BI	38	D 5	0=OFF, 1=ON
Chiller Mode Output	21	R	MSI	44	I 19	1=Ice, 2=Cool, 3=Heat, Default=Cool
Chiller Mode Setpoint	21	W	MSO	45	I 17	1=Ice, 2=Cool, 3=Heat, Default=Cool
Chiller On Off	22	R	BI	33	D 2	0=Chiller Off, 1=Chiller On
*Chiller Status BACnet (1)	22	R	MSI	43	I 18	1=Off, 2=Start, 3=Run, 4=Pre Shutdown, 5=Service
Chiller Type	23	R	MSI	48	I 28	1=AGZS, 2=AGZD, 3=WGZD/TGZ, 4=WSC/WDC, 5=AGSU, 6=ACZS, 7=ACZD, 8=WMC, 9=WGSD, 10=AGSD, 11=AGZS, 12=AGZDU, 13=WGZU, 14=ACZSU, 15=ACZDU
Compressor Current	23	R	AI	51	A 26	0–65,535
Compressor Discharge Temperature	24	R	AI	18	A 19	-460°–621°F
Compressor Percent RLA	24	R	AI	24	A 25	-3276.8–3276.7
Compressor Power	25	R	AI	54	A 27	0–65,535
Compressor Run Hours	25	R	AI	26	I 46	0–65,535
Compressor Select	26	W	MSO	46	I 32	1=Comp1, 2=Comp2, 3=Comp3, 4=Comp4, 5=Comp5, 6=Comp6
Compressor Starts	27	R	AI	25	I 45	0–65,535
Compressor Suction Line Temperature	27	R	AI	15	A 15	-40°–244°F
Compressor Voltage	27	R	AI	52	A 29	0–65,535
*Condenser Entering Water Temperature (7)	28	R	AI	3	A 7	-40°–244°F
Condenser Flow Rate		R	AI	50	A 24	0-65,534
Condenser Flow Switch Status	28	R	BI	35	D 8	0=No Flow, 1=Flow
*Condenser Leaving Water Temperature (8)	29	R	AI	4	A 8	-40°–244°F
Condenser Pump Run Hours	30	R	AI	28	I 48	0–65,535
Condenser Refrigerant Pressure	30	R	AI	16	A 21	-3276.8–3276.7
Condenser Saturated Refrigerant Temperature	30	R	AI	17	A 20	-40°–244°F
Condenser Water Pump Status	31	R	BI	37	D 31	0=No Flow, 1=Flow
*Cool Setpoint (9)	31	W	AO	29	A 1	10 – 120°F; Default=44°F
*Evaporator Entering Water Temperature (5)	32	R	AI	1	A 4	-40°–244°F
Evaporator Flow Switch Status	33	R	BI	34	D 7	0=No Flow, 1=Flow
*Evaporator Leaving Water Temperature for Unit(6)	33	R	AI	2	A 6	-40°–244°F
Evaporator Leaving Water Temperature for Compressor	34	R	AI	23	A 14	-40°–244°F
Evaporator Pump Run Hours	34	R	AI	27	I 47	0–65,535
Evaporator Refrigerant Pressure	35	R	AI	13	A 17	-3276.8–3276.7
Evaporator Saturated Refrigerant Temperature	35	R	AI	14	A 16	-40°–244°F
Evaporator Water Flow Rate	35	R	AI	49	A 18	Flow Rate in GPM Centrifugals Only
Evaporator Water Pump Status	36	R	BI	36	D 29	0=No Flow, 1=Flow

Network Control Property Keypad attributes available as BACnet Standard Objects for network control of the unit	Page	R = Read W = Write	Object Type	Object Instance	Http Interface Object Type & Instance¹	Description²
Heat Recovery Entering Water Temperature	36	R	AI	5	A 22	-40°–244°F
Heat Recovery Leaving Water Temperature	37	R	AI	6	A 23	-40°–244°F
Heat Setpoint	37	W	AO	31	A 5	50–150°F, Default=95°F
Ice Setpoint	38	W	AO	30	A 50	15– 35°F, Default=25°F
Liquid Line Refrigerant Pressure	38	R	AI	12	A 38	-22592–22591 psi
Liquid Line Refrigerant Temperature	39	R	AI	11	A 36	-40°–244°F
Oil Feed Pressure	40	R	AI	19	A 32	-22592–22591 psi
Oil Feed Temperature	40	R	AI	21	A 34	-40°–244°F
Oil Sump Pressure	40	R	AI	20	A 33	-22592–22591 psi
Oil Sump Temperature	41	R	AI	22	A 35	-40°–244°F
Outdoor Air Temperature	41	R	AI	10	A 39	-40°–244°F
Power Factor		R	AI	53	A 28	-99 - +100
Pump Select	42	W	MSO	47	D 19	1=Pump No. 1, 2=Pump No. 2; Default=1
Run Enabled	43	R	BI	33	D 2	0=OFF, 1=Run Allowed

1. A=Analog, I=Integer and D=Digital (Binary).
 2. Property Values between the BACnet points and the HTTP points are the same.
- *Boldface denotes data points for typical minimum integration.

Chiller Alarm Objects

Network Control Property Keypad attributes available as BACnet Standard Objects for network control of the unit	Page	R = Read W = Write	Object Type	Object Instance	Http Interface Object Type & Instance	Description
Warning Alarms, Analog Input Object (11)	45	R	AI	902	N/A	Alarm Index
Problem Alarms, Analog Input Object (11)	45	R	AI	900	N/A	Alarm Index
Fault Alarms, Analog Input Object (11)	46	R	AI	901	N/A	Alarm Index
Warning Alarms, Multi-state Input Object (11)	46	R	MSI	902	N/A	Alarm Index and Alarm Text (30 characters max)
Problem Alarms, Multi-state Input Object (11)	46	R	MSI	900	N/A	Alarm Index and Alarm Text (30 characters max)
Fault Alarms, Multi-state Input Object (11)	47	R	MSI	901	N/A	Alarm Index and Alarm Text (30 characters max)
Alarm Digital Output (11)	47	R	BI	40	D 3	0=No Alarm, 1=Alarm
BACnet Clear Alarm (12)	48	W	BV	42	D 24	0= Normal, 1=Clear Alarm

Detailed Data Point Information

This section lists the information (the data) that is available to the BAS via the BACnet network. This information is used to safely operate and log the performance of the chiller. The BAS system integrator also uses this information when creating custom graphics.

The information needed to access these points through the HTTP interface is also included. The HTTP interface allows you to read/write these data points using their Analog, Integer and Digital designations along with an index number for each variable. For the Property Values definitions of the HTTP data points, refer to that same points BACnet variable description.

Table 2. Data Points for Chiller Models

Data Point	WSC WDC WPV HSC HDC TSC WMC WCC	AGZ	ACZ	AGS	WGZ TGZ	WGS
Active Setpoint	X	X		X	X	X
Actual Capacity	X	X		X	X	X
Capacity Limit Output	X	X*	X*	X	X	X
Capacity Limit Setpoint	X	X*	X*	X	X	X
Chiller Enable	X	X	X	X	X	X
Chiller Limited	X	X*	X*	X	X	X
Chiller Local/Remote	X	X	X	X	X	X
Chiller Location	X	X	X	X	X	X
Chiller Mode Output	X	X		X	X	X
Chiller Mode Setpoint	X	X		X	X	X
Chiller On Off	X	X	X	X	X	X
Chiller Status	X	X	X	X	X	X
Chiller Type	X	X		X	X	X
Compressor Current**	X					X
Compressor Discharge Temperature	X			X		X
Compressor Percent RLA	X					X
Compressor Power**	X					X
Compressor Run Hours	X	X	X	X	X	X
Compressor Select	X	X	X	X	X	X
Compressor Starts	X	X	X	X	X	X
Compressor Suction Line Temperature	X			X	X	X
Compressor Voltage**	X					X
Condenser Entering Water Temperature	X				X	X
Condenser Flow Switch Status	X				X	X
Condenser Leaving Water Temperature	X					X
Condenser Pump Run Hours	X					
Condenser Refrigerant Pressure	X	X	X	X	X	X
Condenser Saturated Refrigerant Temperature	X	X	X	X	X	X
Condenser Water Pump Status	X				X	X
Cool Setpoint	X	X		X	X	X
Current Alarm	X	X	X	X	X	X
Default Values	X	X	X	X	X	X
Device Object	X	X	X	X	X	X
Evaporator Entering Water Temperature	X			X	X	X
Evaporator Flow Switch Status	X	X	X	X	X	X
Evaporator Leaving Water Temperature for Unit	X	X		X	X	X
Evaporator Leaving Water Temperature for Compressor	X	X		X		
Evaporator Pump Run Hours	X					
Evaporator Refrigerant Pressure	X	X	X	X	X	X
Evaporator Saturated Refrigerant Temperature	X	X	X	X	X	X
Evaporator Water Pump Status	X	X		X	X	X
Fault Alarms, Analog Input Object	X	X	X	X	X	X

Data Point	WSC	AGZ	ACZ	AGS	WGZ	WGS
	WDC WPV HSC HDC TSC WMC WCC				TGZ	
Fault Alarms, Multi-state Input Object	X	X	X	X	X	X
Heat Recovery Entering Water Temperature	X					
Heat Recovery Leaving Water Temperature	X					
Heat Setpoint	X					
Ice Setpoint	X	X		X	X	X
Liquid Line Refrigerant Pressure				X****		
Liquid Line Refrigerant Temperature	X			X****	X	
Maximum Send Time	X	X	X	X	X	X
Minimum Send Time	X	X	X	X	X	X
Network Clear Alarm	X	X		X	X	X
Oil Feed Pressure***	X					
Oil Feed Temperature***	X					
Oil Sump Pressure***	X					
Oil Sump Temperature***	X					
Outdoor Air Temperature		X	X	X		
Problem Alarms, Analog Input Object	X	X	X	X	X	X
Problem Alarms, Multi-state Input Object	X	X	X	X	X	X
Pump Select	X					
Receive Heartbeat	X	X	X	X	X	X
Run Enabled	X	X	X	X	X	X
Warning Alarms, Analog Input Object	X	X	X	X	X	X
Warning Alarms, Multi-state Input Object	X	X	X	X	X	X

*Dual Circuit Only

**Optional Solid State Starter Required. Voltage, Power and Current are per compressor

***Not available on the WMC

****AGS A and B vintage only

Active Setpoint

Keypad Menu Path:

Menu
 \Set
 Unit SPs (3)

This output network variable indicates the current value of the setpoint temperature used to control the temperature of the Leaving Chilled Water or Leaving Hot Water. Based on the operating mode of the chiller, this value is derived from the Cool Setpoint, Heat Setpoint, or Ice Setpoint. The default mode is Cooling and is used unless changed by the Mode input. (A2)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-199° F/-40°-93°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	7	Present Value	85
Object Name				
ActiveLvgWaterTarget				

HTTP Interface

Variable Details

Variable Type	Index
Analog	4

Actual Capacity

Keypad Menu Path: This output network variable indicates the percent of capacity the chiller is currently producing. It may be more or less than the nominal capacity of the chiller. (A10)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Percent of chiller capacity	NA	Real	0% to 160%	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	9	Present Value	85
Object Name				
ChillerCapacity				

HTTP Interface

Variable Details

Variable Type	Index
Analog	10

Capacity Limit Output

Keypad Menu Path: This output variable is a measure of the ratio of operating capacity to full capacity expressed in percent. This output variable indicates the current value of the Capacity Limit. (A42)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Percent of maximum capacity	NA	Real	0% to 160%	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	8	Present Value	85
Object Name				
ActiveCapacityLimit				

HTTP Interface

Variable Details

Variable Type	Index
Analog	42

Capacity Limit Setpoint

Keypad Menu Path: Capacity Limit is a measure of the ratio of operating capacity to full capacity expressed in percent. This level may be adjusted via an operator workstation or other network device, but cannot be adjusted above a factory-specified limit. The input network variable sets the operating value (input). Refer to the appropriate Operation Manual for suitable variable values. (A3)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Percent of maximum capacity	NA	Real	0% to 160%.	See Below

BACnet

This read or read/write property sets the maximum capacity limit of the chiller. This level may be adjusted, but cannot be adjusted above a factory-specified limit.

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Output	1	32	Present Value	85
Object Name				
NetworkCapacityLimitPct				

Default Value (Relinquish_Default)

100%

HTTP Interface

Variable Details

Variable Type	Index
Analog	3

Chiller Enable

Keypad Menu Path:

Menu
 \Set
 \Unit SP (1)

The Chiller Enable data point starts the chiller in a particular way. This is a commandable property. Refer to the appropriate Operating Manual for suitable variable values. (D1)

Measurement	Units	Data Type	Valid Range	Default Value
Chiller State	NA	Enumerated	See Below	See Below

BACnet

This read or read/write property enables (starts) the chiller to run if the operating conditions are satisfied, or disables (stops) the chiller from running. When this property is read, it indicates the current operating state of the chiller.

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Value	5	41	Present Value	85
Object Name				
ChillerEnable				
Property Values				
0 = Disable(Inactive)				
1 = Enable(Active)				

Default Value (Relinquish_Default)

0 = Request Chiller Off

HTTP Interface

Variable Details

Variable Type	Index
Digital	1

Chiller Limited

Keypad Menu Path: This output network variable indicates the main running mode and states of the chiller. The Limited network variable indicates whether conditions exist that prevent the chiller from reaching setpoint. (D6)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Status	NA	Enumerated	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	39	Present Value	85
Object Name				
ChillerLimited				
Property Values				
0 = Not Limited(Inactive) 1 = Limited(Active)				

HTTP Interface

Variable Details

Variable Type	Index
Digital	6

Chiller Local/Remote

Keypad Menu Path: The Local/Remote network variable indicates whether the chiller is in local control or allowed to be controlled remotely over the network. (D5)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Mode	NA	Enumerated	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	38	Present Value	85
Object Name				
ChillerLocalRemote				
Property Values				
0 = Off (Inactive) 1 = On (Active)				

HTTP Interface

Variable Details

Variable Type	Index
Digital	5

Chiller Location

Keypad Menu Path: This configuration network parameter provides a description of the location of the chiller.
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Structure	Any NUL terminated ASCII string up to 31 bytes.	ASCII string of zeros + NUL

Chiller Mode Output

Keypad Menu Path: This output data point indicates the current operating mode of the chiller. (I19)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
HVAC Mode	NA	Unsigned Integer	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	44	Present Value	85
Object Name				
ActiveMode				
Property Values				
1. ICE				
2. COOL				
3. HEAT				

HTTP Interface

Variable Details

Variable Type	Index
Integer	19

Chiller Mode Setpoint

Keypad Menu Path: The Chiller Mode data point determines the mode of operation of the chiller. This is a commandable property of a Multi-state Output object. Refer to the appropriate Operating Manual for suitable variable values. (I17)
Menu \Set Unit SP (1)

Measurement	Units	Data Type	Valid Range	Default Value
HVAC Mode	NA	Unsigned Integer	See Below	See Below

BACnet

This commandable property sets the mode of operation of the chiller and provides the ability for another node on the network to place a chiller in another mode.

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Output	14	45	Present Value	85
Object Name				
ChillerOperationMode				
Property Values				
1. ICE 2. COOL 3. HEAT				

Default Value (Relinquish_Default)

2

HTTP Interface

Variable Details

Variable Type	Index
Integer	17

Chiller On Off

Keypad Menu Path:

Menu
View
Unit
Status

This output network variable indicates the current state of the chiller. The OFF state is represented by state = FALSE and value = 0. The other discrete states are represented by state = TRUE and value > 0. (D2)

Measurement	Units	Data Type	Valid Range	Default Value
Chiller State	NA	Enumerated	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	33	Present Value	85
Object Name				
UnitOFF				
Property Values				
0 = Off 1 = Run Allowed				

HTTP Interface

Variable Details

Variable Type	Index
Digital	2

Chiller Status

Menu Path:

Menu
View
Unit
Status

This output network variable indicates the main running mode and states of the chiller. The mode provides the primary running states of a chiller and the state provides an indicator of other conditions present. (I18)

Measurement	Units	Data Type	Valid Range	Default Value
State	NA	Unsigned Integer	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	43	Present Value	85
Object Name				
UnitStatus				
Property Values				
1 = Off 2 = Start 3 = Run 4 = Pre Shutdown 5 = Service				

HTTP Interface

Variable Details

Variable Type	Index
Integer	18

Chiller Type

Keypad Menu Path:
No Keypad
Equivalent

This output network variable indicates the type of chiller connected to this unit controller. (I28)

Measurement	Units	Data Type	Valid Range	Default Value
Event Count	NA	Unsigned Integer	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	48	Present Value	85
Full Reference				
McQuayChillerType				
Property Values				
1 = AGZS	6 = ACZS	11 = AGZS		
2 = AGZD	7 = ACZD	12 = AGZDU		
3 = WGZD	8 = WMC	13 = WGZ/TGZ		
4 = WSC/WDC	9 = WGSD	14 = ACZSU		
5 = AGSU	10 = AGSD	15 = ACZDU		

HTTP Interface

Variable Details

Variable Type	Index
Integer	28

Compressor Current

Keypad Menu Path: This output network variable indicates the current compressor amperes of the compressor selected with Compressor Select on page 26. (A26)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Electric Current	Amperes	Real	-3276.8-3276.7	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	51	Present Value	85
Object Name				
Current				

HTTP Interface

Variable Details

Variable Type	Index
Analog	26

Compressor Discharge Temperature

Keypad Menu Path: This output network variable indicates the current compressor refrigerant temperature of the compressor selected with Compressor Select on page 26. (A19)
Menu View Comp (5)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/ °C	Real	-460°-621°F -273.17°-327.66°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	18	Present Value	85
Object Name				
DischargeTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	19

Compressor Percent RLA

Keypad Menu Path: This output network variable indicates the current motor current for the compressor motor of the compressor selected with Compressor Select on page 26. (A25)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Percent RLA	Percent	Real	0% to 160%	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	24	Present Value	85
Object Name				
CompMotorCurrentPercent				

HTTP Interface

Variable Details

Variable Type	Index
Analog	25

Compressor Power

Keypad Menu Path:

No Keypad
Equivalent

This output network variable indicates the current power for the compressor motor of the compressor selected with Compressor Select on page 26. (A27)

Measurement	Units	Data Type	Valid Range	Default Value
Power	kiloWatts	Real	0-6553.5	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	54	Present Value	85
Object Name				
Kilowatts				

HTTP Interface

Variable Details

Variable Type	Index
Analog	27

Compressor Run Hours

Keypad Menu Path:

Menu
View
Compressor

This output network variable indicates the number of hours that the compressor motor of the compressor selected with Compressor Select on page 26. (I46)

Measurement	Units	Data Type	Valid Range	Default Value
Event Count	Hours	Real	0-65,535	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	26	Present Value	85
Object Name				
CompHours				

HTTP Interface

Variable Details

Variable Type	Index
Integer	46

Compressor Select

Keypad Menu Path:
No Keypad
Equivalent

This input network variable selects the compressor/circuit (number 1, 2, 3, 4, 5 or 6) that is interrogated. The controller returns the information for the selected compressor/circuit. You must first select a compressor/circuit then interrogate the selected compressor/circuit. This variable selects a compressor/circuit for the following variables. See Table 3 to determine which of these variables will be available. (I32)

Name	Page
Compressor Current	24
Compressor Discharge Temperature	24
Compressor Percent RLA	24
Compressor Power	25
Compressor Run Hours	25
Compressor Starts	27
Compressor Suction Line Temperature	27
Compressor Voltage	28
Condenser Refrigerant Pressure	30
Condenser Saturated Refrigerant Temperature	31
Evaporator Leaving Water Temperature for Compressor	34
Evaporator Refrigerant Pressure	35
Evaporator Saturated Refrigerant Temperature	35
Oil Feed Pressure	40
Oil Feed Temperature	40
Oil Sump Pressure	41
Oil Sump Temperature	41

Measurement	Units	Data Type	Valid Range	Default Value
Event Count	NA	Unsigned Integer	0-65,535	Comp No. 1

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Output	14	46	Present Value	85
Object Name				
CompSelect				
Property Values				
1 = Comp/Circuit No. 1 2 = Comp/Circuit No. 2 3 = Comp/Circuit No. 3 (Circuit No. 1 on Scroll Chillers and Condensing Units) 4 = Comp/Circuit No. 4 (Circuit No. 2 on Scroll Chillers and Condensing Units) 5 = Comp No. 5 (Circuit No. 1 on Scroll Chillers and Condensing Units) 6 = Comp No. 6 (Circuit No. 2 on Scroll Chillers and Condensing Units)				

HTTP Interface

Variable Details

Variable Type	Index
Integer	32

Compressor Starts

Keypad Menu Path: This output network variable indicates the number of times the compressor motor of the compressor selected with Compressor Starts on page 26. (I45)
Menu
View
Compressor

Measurement	Units	Data Type	Valid Range	Default Value
Event Count	NA	Real	0-65,535	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	25	Present Value	85
Object Name				
CompStarts				

HTTP Interface

Variable Details

Variable Type	Index
Integer	45

Compressor Suction Line Temperature

Keypad Menu Path: This output network variable indicates the current suction line refrigerant temperature. There is a separate output for each compressor. See Compressor Select on page 26. (A15)
Menu
View
Unit
Refrigerant (2)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-244°F/-40°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	15	Present Value	85
Object Name				
SuctionTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	15

Compressor Voltage

Keypad Menu Path:
No Keypad
Equivalent

This output network variable indicates the current compressor voltage. There is a separate output for each compressor. See Compressor Select on page 26. (A29)

Measurement	Units	Data Type	Valid Range	Default Value
Electric Voltage	VAC	Real	0-65,534	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	52	Present Value	85
Object Name				
Voltage				

HTTP Interface

Variable Details

Variable Type	Index
Analog	29

Condenser Entering Water Temperature

Keypad Menu Path:
Menu
View
Unit
Water

This output network variable indicates the current temperature of the entering condenser water. (A7)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-244°F/ -40°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	3	Present Value	85
Object Name				
EntCondWaterTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	8

Condenser Flow Rate

Keypad Menu Path:
No Keypad
Equivalent

This output network variable indicates the rate of the water flow through the condenser. (A24)

Measurement	Units	Data Type	Valid Range	Default Value
Flow Volume	GPM / L/S	Real	0-65,534	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	50	Present Value	85
Object Name				
CondWaterFlowRate				

HTTP Interface

Variable Details

Variable Type	Index
Analog	24

Condenser Flow Switch Status

Keypad Menu Path:
No Keypad
Equivalent

This output network variable indicates the status of the water flow through the condenser. (D8)

Measurement	Units	Data Type	Valid Range	Default Value
Flow State	NA	Enumerated	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	35	Present Value	85
Object Name				
CondWaterFlowStatus				
Property Values				
0 = No Flow(Inactive)				
1 = Flow(Active)				

HTTP Interface

Variable Details

Variable Type	Index
Digital	8

Condenser Leaving Water Temperature

Keypad Menu Path:
Menu
View
Unit Water

This output network variable indicates the current temperature of the leaving condenser water. (A8)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-244°F/-40°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	4	Present Value	85
Object Name				
LvgCondWaterTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	8

Condenser Pump Run Hours

Keypad Menu Path: This output network variable indicates the number of hours that the selected condenser pump motor has been turned on. See Pump Select on page 41. (I48)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Event Count	NA	Real	0 –65,535	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	28	Present Value	85
Object Name				
CondPumpOperHours				

HTTP Interface

Variable Details

Variable Type	Index
Integer	48

Condenser Refrigerant Pressure

Keypad Menu Path: This output network variable indicates the current refrigerant pressure in the selected condenser. There is a separate output for each compressor. See Compressor Select on page 26. (A21)
Menu View Unit Refrigerant (1)

Measurement	Units	Data Type	Valid Range	Default Value
Pressure (gauge)	Psi/kPa	Real	-22592–22591 psi / -3,276.8-3,276.7 kPa	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	16	Present Value	85
Object Name				
CondPressure				

HTTP Interface

Variable Details

Variable Type	Index
Analog	21

Condenser Saturated Refrigerant Temperature

Keypad Menu Path: This output network variable indicates the current saturated refrigerant temperature in the condenser. There is a separate output for each compressor. See Compressor Select on page 26. (A20)
Menu
\Unit
\Refrigerant (1)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-244°F/-40°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	17	Present Value	85
Object Name				
CondSatTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	20

Condenser Water Pump Status

Keypad Menu Path: This output network variable indicates whether the selected pump has been commanded On or Off. See Pump Select on page 42. (D31)
No Keypad
Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Flow State	NA	Enumerated	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	37	Present Value	85
Object Name				
CondPumpState				
Property Values				
0 = Off(Inactive)				
1 = On(Active)				

HTTP Interface

Variable Details

Variable Type	Index
Digital	31

Cool Setpoint

Keypad Menu Path: The Cool Setpoint data point determines the temperature of the Leaving Chilled Water. This is a commandable property of an Analog Output object. Refer to the appropriate Operation Manual for suitable variable values. (A47)
Menu
\Set
\Unit SPs (3)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	Dependent on Chiller mode and model	See below

BACnet

This commandable property sets the temperature of the Leaving Chilled Water. This level may be adjusted via an operator workstation or other network device.

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Output	1	29	Present Value	85
Object Name				
NetworkCoolTempSetpoint				

Default Value (Relinquish_Default)

44°F

HTTP Interface

Variable Details

Variable Type	Index
Analog	1

Device Object

Keypad Menu Path:

No Keypad
Equivalent

Each BACnet compatible device must have a single BACnet Device Object. The device object contains all required properties. All properties of the device object may be read, but cannot be changed over the network. The initial instance of the MicroTech II Chiller device object is 3000. All critical properties of the device object can be changed in the HTTP interface.

Caution: If another device in the network has the same object identifier (instance number), you must change the instance number of one device object so that all devices in the network have a unique device instance.

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Device	8	3000		
Object Name				
MTII Chiller UC 3000				

Evaporator Entering Water Temperature

Keypad Menu Path:

Menu
View
Unit
Water

This output attribute indicates the temperature of the evaporator entering water temperature. (A4)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40-245°F/-40°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	1	Present Value	85
Object Name				
EntEvapWaterTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	4

Evaporator Flow Switch Status

Keypad Menu Path: This output network variable indicates the status of water flow through the evaporator. (D7)

No Keypad
Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Flow State	NA	Enumerated	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	34	Present Value	85
Object Name				
EvapWaterFlowStatus				
Property Values				
0 = No Flow(Inactive)				
1 = Flow(Active)				

HTTP Interface

Variable Details

Variable Type	Index
Digital	7

Evaporator Leaving Water Temperature for Unit

Keypad Menu Path: This output network variable indicates the current temperature of the evaporator leaving chilled water. (A6)

Menu
View
Unit Water
OR
Menu
View
Comp (2)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-244°F/-4°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	2	Present Value	85
Object Name				
LvgEvapWaterTempUnit				

HTTP Interface

Variable Details

Variable Type	Index
Analog	6

Evaporator Leaving Water Temperature for Compressor

Keypad Menu Path:
Menu
View
Comp

This output network variable indicates the current temperature of the Evaporator leaving chilled water temperature of the compressor selected with Compressor Select on page 26 (centrifugal chillers only). (A14)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-244°F/-40°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	23	Present Value	85
Object Name				
LvgEvapWaterTempComp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	14

Evaporator Pump Run Hours

This output network variable indicates the number of hours that the selected evaporator pump has been turned on. There is a separate output for each pump. See Pump Select on page 42. (I47)

Measurement	Units	Data Type	Valid Range	Default Value
Event Count	NA	Real	0-65,535	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	27	Present Value	85
Object Name				
EvapPumpOperHours				

HTTP Interface

Variable Details

Variable Type	Index
Integer	47

Evaporator Refrigerant Pressure

Keypad Menu Path: This output network variable indicates the current refrigerant pressure in the evaporator. There is a separate output for each compressor. See Compressor Select on page 26. (A17)

Menu
View
Comp (2)

Measurement	Units	Data Type	Valid Range	Default Value
Pressure (gauge)	Psi/kPa	Real	-22592–22591 psi / -3,276.8-3,276.7 kPa	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	13	Present Value	85
Object Name				
EvapPressure				

HTTP Interface

Variable Details

Variable Type	Index
Analog	17

Evaporator Saturated Refrigerant Temperature

Keypad Menu Path: This output network variable indicates the current saturated refrigerant temperature in the evaporator. There is a separate output for each compressor. See Compressor Select on page 26. (A16)

Menu
Unit
Refrigerant (1)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°–244°F/-40°–118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	14	Present Value	85
Object Name				
EvapSatTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	16

Evaporator Water Flow Rate

Keypad Menu Path: This output network variable indicates the current evaporator water flow rate. (A18)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Flow Volume	GPM / L/S	Real	0-65,534	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	49	Present Value	85
Object Name				
EvapWaterFlowRate				

HTTP Interface

Variable Details

Variable Type	Index
Analog	18

Evaporator Water Pump Status

Keypad Menu Path: This output network variable indicates whether the selected pump has been commanded On or Off.
No Keypad Equivalent See Pump Select on page 42. (D29)

Measurement	Units	Data Type	Valid Range	Default Value
Flow State	NA	Enumerated	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	36	Present Value	85
Object Name				
EvapPumpState				
Property Values				
0 = Commanded Off(Inactive)				
1 = Commanded On(Active)				

HTTP Interface

Variable Details

Variable Type	Index
Digital	29

Heat Recovery Entering Water Temperature

Keypad Menu Path: This output network variable indicates the current temperature of the water entering the heat recovery section. (A22)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-244°F/-40°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	5	Present Value	85
Object Name				
HeatRecEntWaterTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	22

Heat Recovery Leaving Water Temperature

Keypad Menu Path: This output network variable indicates the current temperature of the water leaving the heat recovery section. (A23)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°-244°F/-40°-118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	6	Present Value	85
Object Name				
HeatRecLvgWaterTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	23

Heat Setpoint

Keypad Menu Path: This input network variable provides the heating setpoint when the chiller is operating in the heat mode. The value is ignored if the controller is in cooling mode. The BACnet property is a commandable property of a Multi-state Output object. Refer to the appropriate Operation Manual for suitable variable values. (A50)
Menu \Set Unit SPs (3)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	100°-150°F/37.8°-65.6°C	See Below

BACnet

This commandable property sets the temperature of the Leaving Chilled Water when it is in the heating mode.

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Output	0	31	Present Value	85
Object Name				
NetworkHeatTempSetpoint				

Default Value (Relinquish_Default)

100°F

HTTP Interface

Variable Details

Variable Type	Index
Analog	5

Ice Setpoint

Keypad Menu Path:

Menu
 \Set
 Unit SPs (3)

The Ice Setpoint data point determines the temperature of the Leaving Chilled Water. This is a commandable property of a Analog Output object. Refer to the appropriate Operation Manual for suitable variable values. (A30)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/ °C	Real	Dependent on Chiller Mode and Model	See below

BACnet

This commandable property sets the temperature of the Leaving Chilled Water. This level may be adjusted via an operator workstation or other network device. When this property is read, it indicates the current value of the temperature of the Leaving Chilled Water.

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Output	1	30	Present Value	85
Object Name				
NetworkIceTempSetpoint				

Default Value (Relinquish_Default)

25°F

HTTP Interface

Variable Details

Variable Type	Index
Analog	50

Liquid Line Refrigerant Pressure

Keypad Menu Path:

No Keypad
 Equivalent

This output network variable indicates the current liquid line refrigerant pressure. There is a separate output for each compressor/circuit. See Compressor Select on page 26. (A38)

Measurement	Units	Data Type	Valid Range	Default Value
Pressure	Psi/kPa	Real	-22592–22591 psi / -3,276.8 .. 3,276.7 kPa	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	12	Present Value	85
Object Name				
LiquidLinePress				

HTTP Interface

Variable Details

Variable Type	Index
Analog	38

Liquid Line Refrigerant Temperature

Keypad Menu Path: This output network variable indicates the current liquid line refrigerant temperature. There is a separate output for each compressor/circuit. See Compressor Select on page 26. (A36)

Menu
View
Unit \Refrg (2)
Liquid Line=

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/ °C	Real	-40°–244°F -40°–118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	11	Present Value	85
Object Name				
LiquidLineTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	36

Maximum Send Time

Keypad Menu Path: This configuration network parameter controls the maximum period of time that expires before the following network variables are transmitted.

No Keypad
Equivalent

- nvoChillerStat
- nvoActiveSetpt
- nvoActualCapacity
- nvoLvgChWTemp
- nvoLvgCndWTemp
- nvoEntCndWTemp
- nvoEntChWTemp

Measurement	Units	Data Type	Valid Range	Default Value
Elapsed Time	seconds	Unsigned Integer	0–6553.4 sec	0 (no automatic update)

Minimum Send Time

Keypad Menu Path: This configuration network parameter controls the minimum period of time that expires before objects can be retransmitted.
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Elapsed Time	seconds	Unsigned Integer	0–6553.4 sec	0 (no automatic update)

Oil Feed Pressure

Keypad Menu Path: This output network variable indicates the current compressor oil feed pressure. There is a separate output for each compressor. See Compressor Select on page 26. (A32)
Menu View
\Comp (3)

Measurement	Units	Data Type	Valid Range	Default Value
Pressure	psi/kPa	Real	-22592–22591 psi -3,276.8 .. 3,276.7 kPa	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	19	Present Value	85
Object Name				
OilFeedPressure				

HTTP Interface

Variable Details

Variable Type	Index
Analog	32

Oil Feed Temperature

Keypad Menu Path: This output network variable indicates the current compressor oil feed temperature. There is a separate output for each compressor. See Compressor Select on page 26. (A34)
Menu View
\Comp (4)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/°C	Real	-40°–244°F -40°–118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	21	Present Value	85
Object Name				
OilFeedTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	34

Oil Sump Pressure

Keypad Menu Path: This output network variable indicates the current compressor oil sump pressure. There is a separate output for each compressor. See Compressor Select on page 26. (A33)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Pressure	psi/kPa	Real	-22592–22591 psi -3,276.8 .. 3,276.7 kPa	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	20	Present Value	85
Object Name				
OilSumpPressure				

HTTP Interface

Variable Details

Variable Type	Index
Analog	33

Oil Sump Temperature

Keypad Menu Path: This output network variable indicates the current compressor oil sump temperature. There is a separate output for each compressor. See Compressor Select on page 26. (A35)
Menu View
\Comp (4)

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/ °C	Real	-40°–244°F -40°–118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	22	Present Value	85
Object Name				
OilSumpTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	35

Outdoor Air Temperature

Keypad Menu Path: This output network variable indicates the current outdoor air temperature. (A39)
No Keypad Equivalent

Measurement	Units	Data Type	Valid Range	Default Value
Temperature	°F/ °C	Real	-40°–244°F -40°– 118°C	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	10	Present Value	85
Object Name				
OutdoorAirTemp				

HTTP Interface

Variable Details

Variable Type	Index
Analog	39

Power Factor

Keypad Menu Path:

No Keypad
Equivalent

Power factor is a read-only point that defines the cosine of the phase angle between the voltage applied to a load and the current passing through the load. The power factor is assigned an analog value scaled by 0.01 (i.e. a value of +95 corresponds to a power factor of 0.95). For a more detailed description of power factor, see Application Guide AG 31-002, available on www.mcquay.com (A28)

Measurement	Units	Data Type	Valid Range	Default Value
Power Factor	Power Factor	Real	-99 - +100	N/A

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	53	Present Value	85
Object Name				
PowerFactor				

HTTP Interface

Variable Details

Variable Type	Index
Analog	28

Pump Select

Keypad Menu Path:

No Keypad
Equivalent

This input network variable selects which pump (Number 1 or Number 2) supplies the data. The Chiller Unit Controller returns the information for the appropriate Condenser or Evaporator pump. You must first select a pump and then interrogate the selected pump. See Condenser Pump Run Hours on page 30 and Evaporator Pump Run Hours on page 33. (D19)

Measurement	Units	Data Type	Valid Range	Default Value
Event Count	NA	Unsigned Integer	See Below	1 = Pump No. 1

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Output	14	47	Present Value	85
Object Name				
PumpSelect				
Property Values				
1 = Pump #1 2 = Pump #2				

HTTP Interface

Variable Details

Variable Type	Index
Digital	19

Receive Heartbeat

Keypad Menu Path:
No Keypad
Equivalent

This configuration network parameter defines maximum time that elapses after the last update to a specified network variable input before the unit starts to use its default values. If this time expires, the controller reverts to the default values of input network variables and configuration variables.

Measurement	Units	Data Type	Valid Range	Default Value
Elapsed Time	seconds (0,1)	Unsigned Integer	0.0 – 6553.4 sec (0.1 sec). 0xFFFF represents invalid data	0 Seconds

Run Enabled

Keypad Menu Path:
Menu

This output network variable indicates that the chiller can start if operating conditions are met. See Chiller Status on page 22 for details.

Measurement	Units	Data Type	Valid Range	Default Value
Chiller Status	NA	Enumerated	See Below	NA

BACnet

Variable Details

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	33	Present Value	85
Object Name				
UnitOFF				
Property Values				
0 = Off(Inactive) 1 = Run Allowed(Active)				

HTTP Interface

Variable Details

Variable Type	Index
Digital	2

Alarms

Alarm Classes

BACnet alarms in a MicroTech II Chiller Unit Controller are divided into three classes: Faults, Problems, and Warnings. Fault alarms have the highest severity level. Problem alarms have medium severity level. Warning alarms have the lowest severity level.

Fault Alarms

Fault alarms require an acknowledgment from the operator. These alarms indicate that the compressor is shut down.

Problem Alarms

Problem alarms do not cause compressor shutdown but limit operation of the chiller in some way.

Warning Alarms

A warning is enunciated whenever an abnormal condition exists which does not affect chiller operation.

BACnet Alarm Handling

The BACnet Communication Module has three methods for handling BACnet alarms: Alarm Annunciation, Poll Multiple, and Poll Singular.

Alarm Annunciation

This method of alarm notification sends a BACnet ConfirmedEventNotification to a single BACnet device specified in the HTTP interface.

The ConfirmedEventNotification Service includes the fields identified in Table 3. Refer to ANSI/ASHRAE 135-2004, BACnet-A Data Communication Protocol for Building Automation and Control Networks for detailed definitions.

Table 3. Event Notification Service Details

Field	Source
Process Identifier	Device Instance Process ID in the HTTP interface.
Initiating Device Identifier	Device Instance of the BACnet Communication Module as specified in the HTTP interface.
Event Object Identifier	Object Instance that generated the Alarm. (Subtract 1000 from this value to get the instance of the of the object in the BACnet Communication Module.)
Time Stamp	The time the BACnet Communication Module detected the alarm initially.
Notification Class	P = Problems W = Warnings F = Faults
Priority	Priority specified in the HTTP interface.
Event Type	Complex Event.
Message Text	Alarm Message Text as shown in Table 4.
Notify Type	ALARM
AckRequired	Notification Requirement as shown in the Ack column of Table 4.
From State	The Event State of the BACnet Communication Module before the occurrence of the event that caused Alarm.

Field	Source
To State	The Event State of the BACnet Communication Module after the occurrence of the event that caused the Alarm.
Event Values	Conditions in the BACnet Communication Module at the time of the alarm. Each number in the Event Values column of Table 4 is the instance number of an object in the BACnet Communication Module that displays its present value in this field of the Event Notification message.

Not all BACnet devices can receive an alarm message of this type. A BAS integrator may not want to use this method to handle alarms. If either case is true, the BAS integrator can use the Poll Multiple or Poll Singular method.

Poll Multiple

The Poll Multiple method requires that three objects in the BACnet Communication Module be polled for alarm notification: one object indicates Warning Alarms, one indicates Problem Alarms, and one indicates Fault Alarms. The BACnet Communication Module includes three Analog Input and three Multi-state objects that contain the alarm information. The Analog Input objects return a number for an alarm condition. The number is found in the Index column of Table 4. The Multi-state object returns the same number for the alarm condition and the text of the alarm message found in the Alarm Message Text column of Table 4.

Warning Alarms, Analog Input Object

This BACnet object indicates the index number of warning alarms. If the present value is zero, no alarm has occurred (see Table 4.)

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Integer	Enumerated	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	902	Present Value	85
Object Name				
AIWarningAlarm				

Problem Alarms, Analog Input Object

This BACnet object indicates the index number of problem alarms. If the present value is zero, no alarm has occurred (see Table 4.)

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Integer	Enumerated	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	900	Present Value	85
Object Name				
AIProblemAlarm				

Fault Alarms, Analog Input Object

This BACnet object indicates the index number of fault alarms. If the present value is zero, no alarm has occurred (see Table 4.)

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Integer	Enumerated	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Analog Input	0	901	Present Value	85
Object Name				
AIFaultAlarm				

Warning Alarms, Multi-state Input Object

This BACnet object indicates the index number of warning alarms in the present value property and the text of the alarm message in the state text property. If the present value is zero, no alarm has occurred (see Table 4.)

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Integer	Enumerated	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	902	Present Value	85
Object Name				
MSIWarningAlarm				

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Character String	NA	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	902	State Text	110
Object Name				
MSIWarningAlarm				

Problem Alarms, Multi-state Input Object

This BACnet object indicates the index number of problem alarms in the present value property and the text of the alarm message in the state text property. If the present value is zero, no alarm has occurred (see Table 4.)

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Integer	Enumerated	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	900	Present Value	85
Object Name				
MSIProblemAlarm				

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Character String	NA	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	900	State Text	110
Object Name				
MSIProblemAlarm				

Fault Alarms, Multi-state Input Object

This BACnet object indicates the index number of Fault Alarms in the present value property and the text of the alarm message in the state text property. If the present value is zero, no alarm has occurred (see Table 4.)

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Integer	Enumerated	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	901	Present Value	85
Object Name				
MSIFaultAlarm				

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Character String	NA	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Multi-state Input	13	901	State Text	110
Object Name				
MSIFaultAlarm				

Poll Singular

Alarm Digital Output

The Poll Singular method requires that one Binary Input object in the BACnet Communication Module be polled for alarm notification. This object indicates whether an alarm condition has occurred. The operator interface displays the alarm text. (D3)

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Integer	Enumerated	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Input	3	40	Present Value	85
Object Name				
AlarmDigitalOutput				
Property Values				
0 = No Alarm				
1 = Alarm				

Clearing Alarms

This BACnet object clears all active alarms. However, it cannot clear all alarms in the Fault category (i.e. alarms that shut down the chiller). Fault alarms must be cleared at the chiller panel. The following are alarms can be cleared at the chiller but not over the network: (D24)

- Low Evaporator Pressure
- High Condenser Pressure (by pressure sensor)
- High Condenser Pressure (by pressure switch)
- Low Oil Pressure
- Freeze Protection
- High Motor Temperature

Note: The above list pertains only to centrifugal chillers. The Flow Loss alarm is the only alarm that can be cleared remotely on all other chiller types.

Measurement	Units	Data Type	Valid Range	Default Value
NA	NA	Integer	Enumerated	NA

Object Identifier			Property Identifier	
Object Type	Type Enumeration	Instance	Property Name	Property Enumeration
Binary Value	5	42	Present Value	85
Object Name				
ClearAlarm				
Property Values				
0 = Normal				
1 = Clear Alarm				

HTTP Interface

Variable Details

Variable Type	Index
Digital	24

BACnet Alarm Messages

The following table identifies each alarm, class, whether an acknowledgement is required, the alarm text, and indicates system parameters at the time of the alarm.

Table 4. BACnet Alarms

Alarm	Class	Description	Event Values	WSC WDC WPV HSC HDC TSC WMC WCC	AGZ	ACZ	WGZ TGZ	AGS	WGS
1	W	NO ACTION – Condenser Entering Water Temperature Sensor Failure	1,2,3,4,9	X					
2	W	NO ACTION – Evaporator Entering Water Temperature Sensor Failure	1,2,3,4,9,10	X			X	X	X
3	W	NO ACTION - Liquid Line Refrigerant Temperature Sensor Failure	1,2,3,4,9	X			X		
4	W	NO ACTION (STOP if Heat) - Condenser Leaving Water Temperature Sensor Failure	1,2,3,4,9	X			X		
5	P	RESTART DELAYED - Power Loss While Running #1	1,2,9,10					X	X

Alarm	Class	Description	Event Values	WSC	AGZ	ACZ	WGZ	AGS	WGS
				WDC			TGZ		
				WPV					
				HSC					
				HDC					
				TSC					
				WMC					
				WCC					
6	P	RESTART DELAYED - Power Loss While Running #2	1,2,9,10					X	X
7	P	RESTART DELAYED - Power Loss While Running #3	1,2,9,10					X ²	
9	W	Expansion Alarm – Warning	1,2,9,10				X	X	
10	P	START INHIBITED - Ambient Temperature Low	1,2,3,4,9,10		X	X	X	X	X
11	P	INHIBIT LOAD – Condenser Pressure High #1	1,2,9,10		X ⁵	X ³	X	X	X
12	P	INHIBIT LOAD – Condenser Pressure High #2	1,2,9,10		X ⁵	X ³	X	X	X
13	P	INHIBIT LOAD – Condenser Pressure High #3	1,2,9,10					X ²	
15	P	UNLOAD – Condenser Pressure High	1,2,9,10		X	X			
16	P	UNLOAD – Condenser Pressure High #1	1,2,3,4,9,10		X ⁵	X ³	X	X	X
17	P	UNLOAD – Condenser Pressure High #2	1,2,3,4,9,10		X ⁵	X ³	X	X	X
18	P	UNLOAD – Condenser Pressure High #3	1,2,3,4,9,10					X ²	
20	P	CONDENSER PUMP ON - Condenser Water Freeze Protection #1	1,2,3,4,9	X			X		
21	P	CONDENSER PUMP ON - Condenser Water Freeze Protection #2	1,2,3,4,9	X			X		
22	P	CONDENSER PUMP ON - Condenser Water Freeze Protection #3	1,2,3,4,9	X			X		
23	P	CONDENSER PUMP ON - Condenser Water Freeze Protection #4	1,2,3,4,9	X			X		
24	P	PUMP #2 START ATTEMPTED - Condenser Pump #1 Failure	1,2,3,4,9	X					
25	P	PUMP #1 START ATTEMPTED - Condenser Pump #2 Failure	1,2,3,4,9	X					
26	P	LOAD - Discharge Temperature High #1	1,2,3,4,9	X					
27	P	LOAD - Discharge Temperature High #2	1,2,3,4,9	X					
28	P	LOAD - Discharge Temperature High #3	1,2,3,4,9	X					
29	P	LOAD - Discharge Temperature High #4	1,2,3,4,9	X					
30	P	NO EWT RESET - Entering Evaporator Temperature Sensor Failure	1,2,3,4,9	X					
31	P	INHIBIT LOAD - Evaporator Pressure Low	1,2,3,4,9,10		X ⁶	X ⁴			
32	P	INHIBIT LOAD - Evaporator Pressure Low #1	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
33	P	INHIBIT LOAD - Evaporator Pressure Low #2	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
34	P	INHIBIT LOAD - Evaporator Pressure Low #3	1,2,3,4,9,10					X ²	
36	P	UNLOAD - Evaporator Pressure Low	1,2,3,4,9,10	X	X ⁶	X ⁴			
37	P	UNLOAD - Evaporator Pressure Low #1	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
38	P	UNLOAD - Evaporator Pressure Low #2	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
39	P	UNLOAD - Evaporator Pressure Low #3	1,2,3,4,9,10					X ²	
41	P	UNLOAD - Compressor Motor Current High #1	1,2,3,4,9,10	X					
42	P	UNLOAD - Compressor Motor Current High #2	1,2,3,4,9,10	X					
43	P	UNLOAD - Compressor Motor Current High #3	1,2,3,4,9,10					X ²	
45	P	EVAPORATOR PUMP ON - Evaporator Water Freeze Protection Comp #1	1,2,3,4,9	X					
46	P	EVAPORATOR PUMP ON - Evaporator Water Freeze Protection Comp #2	1,2,3,4,9	X					
47	P	EVAPORATOR PUMP ON - Evaporator Water Freeze Protection Comp #3	1,2,3,4,9	X					
48	P	EVAPORATOR PUMP ON - Evaporator Water Freeze Protection Comp #4	1,2,3,4,9	X					
49	P	PUMP #2 START ATTEMPTED - Evaporator Pump #1 Failure	1,2,3,4,9	X					

Alarm	Class	Description	Event Values	WSC	AGZ	ACZ	WGZ	AGS	WGS			
				WDC	WPV	HSC	HDC	TSC	WMC	WCC		
50	P	PUMP #1 START ATTEMPTED - Evaporator Pump #2 Failure	1,2,3,4,9	X								
51	P	(Check Chiller Display for Cause)	1,2,3,4,9,10	X	X	X	X	X	X			
52	F	COMPRESSOR SHUTDOWN - Outside Air Temperature Sensor Fault	1,2,3,4,9,10		X	X	X	X	X			
53	F	COMPRESSOR SHUTDOWN - Current Overload Trip #1	1,2,3,4,9,10	X				X	X			
54	F	COMPRESSOR SHUTDOWN - Current Overload Trip #2	1,2,3,4,9,10	X				X	X			
55	F	COMPRESSOR SHUTDOWN - Current Overload Trip #3	1,2,3,4,9,10					X ²				
57	F	COMPRESSOR SHUTDOWN - Motor Current Imbalance #1	1,2,3,4,9,10	X				X ¹	X			
58	F	COMPRESSOR SHUTDOWN - Motor Current Imbalance #2	1,2,3,4,9,10	X				X ¹	X			
61	F	COMPRESSOR SHUTDOWN - Low Motor Current #1	1,2,3,4,9,10	X								
62	F	COMPRESSOR SHUTDOWN - Low Motor Current #2	1,2,3,4,9,10	X								
65	F	UNIT SHUTDOWN - Motor Protector Trip	1,2,3,4,9,10		X ⁶	X ⁴						
66	F	COMPRESSOR SHUTDOWN - Motor Protector Trip #1	1,2,3,4,9,10		X ⁵	X ³	X					
67	F	COMPRESSOR SHUTDOWN - Motor Protector Trip #2	1,2,3,4,9,10		X ⁵	X ³	X					
68	F	COMPRESSOR SHUTDOWN - Motor Temperature High #1	1,2,3,4,9,10	X				X ¹	X			
69	F	COMPRESSOR SHUTDOWN - Motor Temperature High #2	1,2,3,4,9,10	X				X ¹	X			
70	F	COMPRESSOR SHUTDOWN - Motor Temperature High #3	1,2,3,4,9,10					X ²				
72	F	COMPRESSOR SHUTDOWN - Phase Loss #1	1,2,3,4,9,10	X ⁷	X ⁵	X ³		X ¹	X			
73	F	COMPRESSOR SHUTDOWN - Phase Loss #2	1,2,3,4,9,10	X ⁷	X ⁵	X ³		X ¹	X			
74	F	COMPRESSOR SHUTDOWN - Phase Loss #3	1,2,3,4,9,10					X ²				
76	F	COMPRESSOR SHUTDOWN - Phase Reversal #1	1,2,9,10	X ⁷				X ¹	X			
77	F	COMPRESSOR SHUTDOWN - Phase Reversal #2	1,2,9,10	X ⁷				X ¹	X			
78	F	COMPRESSOR SHUTDOWN - Phase Reversal #3	1,2,9,10					X ²				
80	F	COMPRESSOR SHUTDOWN - Overvoltage #1	1,2,9,10	X ⁷				X ¹	X			
81	F	COMPRESSOR SHUTDOWN - Overvoltage #2	1,2,9,10	X ⁷				X ¹	X			
82	F	COMPRESSOR SHUTDOWN - Overvoltage #3	1,2,9,10					X ²				
84	F	COMPRESSOR SHUTDOWN - Undervoltage #1	1,2,9,10	X ⁷				X ¹	X			
85	F	COMPRESSOR SHUTDOWN - Undervoltage #2	1,2,9,10	X ⁷				X ¹	X			
86	F	COMPRESSOR SHUTDOWN - Undervoltage #3	1,2,9,10					X ²				
88	F	COMPRESSOR SHUTDOWN - Condenser Pressure Sensor Fault	1,2,3,4,9,10		X ⁶	X ⁴						
89	F	COMPRESSOR SHUTDOWN - Condenser Pressure Sensor Fault #1	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X			
90	F	COMPRESSOR SHUTDOWN - Condenser Pressure Sensor Fault #2	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X			
91	F	COMPRESSOR SHUTDOWN - Condenser Pressure Sensor Fault #3	1,2,3,4,9,10					X ²				
93	F	COMPRESSOR SHUTDOWN - Condenser Water Flow Loss	1,2,3,4,9	X								
94	F	COMPRESSOR SHUTDOWN - Condenser Pressure High	1,2,3,4,9,10	X	X ⁶	X ⁴						

Alarm	Class	Description	Event Values	WSC WDC WPV HSC HDC TSC WMC WCC	AGZ	ACZ	WGZ TGZ	AGS	WGS
95	F	COMPRESSOR SHUTDOWN - Condenser Pressure High #1	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
96	F	COMPRESSOR SHUTDOWN - Condenser Pressure High #2	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
97	F	COMPRESSOR SHUTDOWN - Condenser Pressure High #3	1,2,3,4,9,10					X ²	
99	F	COMPRESSOR OFF - Current High with Compressor OFF #1	1,2,3,4,9	X					
100	F	COMPRESSOR OFF - Current High with Compressor OFF #2	1,2,3,4,9	X					
101	F	COMPRESSOR OFF - Current High with Compressor OFF #3	1,2,3,4,9	X					
102	F	COMPRESSOR OFF - Current High with Compressor OFF #4	1,2,3,4,9	X					
103	F	COMPRESSOR SHUTDOWN - Discharge Temperature Sensor Fault #1	1,2,3,4,9,10	X				X	X
104	F	COMPRESSOR SHUTDOWN - Discharge Temperature Sensor Fault #2	1,2,3,4,9,10	X				X	X
105	F	COMPRESSOR SHUTDOWN - Discharge Temperature Sensor Fault #3	1,2,3,4,9,10					X ²	
107	F	COMPRESSOR SHUTDOWN - Discharge Temperature High #1	1,2,3,4,9,10	X				X	X
108	F	COMPRESSOR SHUTDOWN - Discharge Temperature High #2	1,2,3,4,9,10	X				X	X
109	F	COMPRESSOR SHUTDOWN - Discharge Temperature High #3	1,2,3,4,9,10					X ²	
111	F	COMPRESSOR SHUTDOWN - Condenser Entering Water Temperature Sensor Fault	1,2,3,4,9,10				X		X
112	F	COMPRESSOR SHUTDOWN - Evaporator Water Flow Loss	1,2,3,4,9,10	X	X	X	X	X	X
113	F	COMPRESSOR SHUTDOWN - Evaporator Leaving Water Temperature Low (Freeze)	1,2,3,4,9,10		X		X	X	X
114	F	COMPRESSOR SHUTDOWN - Evaporator Pressure Low	1,2,3,4,9,10		X ⁶	X ⁴			
115	F	COMPRESSOR SHUTDOWN - Evaporator Pressure Low #1	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
116	F	COMPRESSOR SHUTDOWN - Evaporator Pressure Low #2	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
117	F	COMPRESSOR SHUTDOWN - Evaporator Pressure Low #3	1,2,3,4,9,10					X ²	
119	F	COMPRESSOR SHUTDOWN - Evaporator Pressure Sensor Fault	1,2,3,4,9,10		X ⁶	X ⁴			
120	F	COMPRESSOR SHUTDOWN - Evaporator Pressure Sensor Fault #1	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
121	F	COMPRESSOR SHUTDOWN - Evaporator Pressure Sensor Fault #2	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
122	F	COMPRESSOR SHUTDOWN - Evaporator Pressure Sensor Fault #3	1,2,3,4,9,10					X ²	
124	F	COMPRESSOR SHUTDOWN - Ground Fault Trip #1	1,2,3,4,9,10	X ⁷	X ⁶	X ³	X	X ¹	X
125	F	COMPRESSOR SHUTDOWN - Ground Fault Trip #2	1,2,3,4,9,10	X ⁷	X ⁶	X ³	X	X ¹	X
126	F	COMPRESSOR SHUTDOWN - Ground Fault Trip #3	1,2,3,4,9,10					X ²	
128	F	COMPRESSOR SHUTDOWN - Lift Pressure Low #1	1,2,9,10					X	X
129	F	COMPRESSOR SHUTDOWN - Lift Pressure Low #2	1,2,9,10					X	X
130	F	COMPRESSOR SHUTDOWN - Lift Pressure Low #3	1,2,9,10					X ²	
132	F	COMPRESSOR SHUTDOWN - Liquid Line Pressure Sensor Fault #1	1,2,9,10					X	
133	F	COMPRESSOR SHUTDOWN - Liquid Line Pressure Sensor Fault #2	1,2,9,10					X	

Alarm	Class	Description	Event Values	WSC	AGZ	ACZ	WGZ	AGS	WGS
				WDC	WPV	HSC	HDC	TSC	WMC
134	F	COMPRESSOR SHUTDOWN - Liquid Line Pressure Sensor Fault #3	1,2,9,10					X ²	
136	F	COMPRESSOR SHUTDOWN - Liquid Line Temperature Sensor Fault #1	1,2,9,10					X	
137	F	COMPRESSOR SHUTDOWN - Liquid Line Temperature Sensor Fault #2	1,2,9,10					X	
138	F	COMPRESSOR SHUTDOWN - Liquid Line Temperature Sensor Fault #3	1,2,9,10					X ²	
140	F	UNIT LOCKOUT - Number of Allowed Re-Starts Exceeded	1,2,9,10		X ⁶	X ⁴			
141	F	COMPRESSOR LOCKOUT - Number of Allowed Re-Starts Exceeded #1	1,2,3,4,9,10		X ⁵	X ³	X	X ¹	X
142	F	COMPRESSOR LOCKOUT - Number of Allowed Re-Starts Exceeded #2	1,2,3,4,9,10		X ⁵	X ³	X	X ¹	X
143	F	COMPRESSOR LOCKOUT - Number of Allowed Re-Starts Exceeded #3	1,2,3,4,9,10					X ²	
145	F	COMPRESSOR SHUTDOWN - Evaporator Leaving Water Temperature Sensor Fault	1,2,3,4,9,10		X		X	X	X
146	F	COMPRESSOR SHUTDOWN - Evaporator Leaving Water Temperature Sensor Fault #1	1,2,3,4,9	X					
147	F	COMPRESSOR SHUTDOWN - Evaporator Leaving Water Temperature Sensor Fault #2	1,2,3,4,9	X					
148	F	COMPRESSOR SHUTDOWN - Evaporator Leaving Water Temperature Sensor Fault #3	1,2,3,4,9	X					
149	F	COMPRESSOR SHUTDOWN - Evaporator Leaving Water Temperature Sensor Fault #4	1,2,3,4,9	X					
150	F	UNIT STOP - Mechanical High Pressure Trip	1,2,9,10		X ⁶	X ⁴			
151	F	COMPRESSOR SHUTDOWN - Mechanical High Pressure Trip #1	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
152	F	COMPRESSOR SHUTDOWN - Mechanical High Pressure Trip #2	1,2,3,4,9,10	X	X ⁵	X ³	X	X	X
153	F	COMPRESSOR SHUTDOWN - Mechanical High Pressure Trip #3	1,2,3,4,9,10					X ²	
155	F	COMPRESSOR SHUTDOWN - Oil Net Pressure Low #1	1,2,3,4,9	X					
156	F	COMPRESSOR SHUTDOWN - Oil Net Pressure Low #2	1,2,3,4,9	X					
157	F	COMPRESSOR SHUTDOWN - Oil Net Pressure Low #3	1,2,3,4,9	X					
158	F	COMPRESSOR SHUTDOWN - Oil Net Pressure Low #4	1,2,3,4,9	X					
159	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature High #1	1,2,3,4,9	X					
160	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature High #2	1,2,3,4,9	X					
161	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature High #3	1,2,3,4,9	X					
162	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature High #4	1,2,3,4,9	X					
163	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature Low #1	1,2,3,4,9	X					
164	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature Low #2	1,2,3,4,9	X					
165	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature Low #3	1,2,3,4,9	X					
166	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature Low #4	1,2,3,4,9	X					
167	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature Sensor Fault #1	1,2,3,4,9	X					

Alarm	Class	Description	Event Values	WSC	AGZ	ACZ	WGZ	AGS	WGS
				WDC			TGZ		
				WPV					
				HSC					
				HDC					
				TSC					
				WMC					
				WCC					
168	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature Sensor Fault #2	1,2,3,4,9	X					
169	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature Sensor Fault #3	1,2,3,4,9	X					
170	F	COMPRESSOR SHUTDOWN - Oil Feed Temperature Sensor Fault #4	1,2,3,4,9	X					
171	F	COMPRESSOR SHUTDOWN - Oil Level Low #1	1,2,9,10					X	X
172	F	COMPRESSOR SHUTDOWN - Oil Level Low #2	1,2,9,10					X	X
173	F	COMPRESSOR SHUTDOWN - Oil Level Low #3	1,2,9,10					X ²	
175	F	COMPRESSOR SHUTDOWN - Oil Filter Delta Pressure High #1	1,2,9,10					X	X
176	F	COMPRESSOR SHUTDOWN - Oil Filter Delta Pressure High #2	1,2,9,10					X	X
177	F	COMPRESSOR SHUTDOWN - Oil Filter Delta Pressure High #3	1,2,9,10					X ²	
179	F	COMPRESSOR SHUTDOWN - Oil Feed Pressure Sensor Fault #1	1,2,3,4,9	X					
180	F	COMPRESSOR SHUTDOWN - Oil Feed Pressure Sensor Fault #2	1,2,3,4,9	X					
181	F	COMPRESSOR SHUTDOWN - Oil Feed Pressure Sensor Fault #3	1,2,3,4,9	X					
182	F	COMPRESSOR SHUTDOWN - Oil Feed Pressure Sensor Fault #4	1,2,3,4,9	X					
183	F	COMPRESSOR SHUTDOWN - Oil Sump Pressure Sensor Fault #1	1,2,3,4,9	X					
184	F	COMPRESSOR SHUTDOWN - Oil Sump Pressure Sensor Fault #2	1,2,3,4,9	X					
185	F	COMPRESSOR SHUTDOWN - Oil Sump Pressure Sensor Fault #3	1,2,3,4,9	X					
186	F	COMPRESSOR SHUTDOWN - Oil Sump Pressure Sensor Fault #4	1,2,3,4,9	X					
187	F	COMPRESSOR SHUTDOWN - Oil Sump Temperature Sensor Fault #1	1,2,3,4,9	X					
188	F	COMPRESSOR SHUTDOWN - Oil Sump Temperature Sensor Fault #2	1,2,3,4,9	X					
189	F	COMPRESSOR SHUTDOWN - Oil Sump Temperature Sensor Fault #3	1,2,3,4,9	X					
190	F	COMPRESSOR SHUTDOWN - Oil Sump Temperature Sensor Fault #4	1,2,3,4,9	X					
191	F	SHUTDOWN – Phase Voltage Protection	1,2,9,10		X ⁶	X ⁴			
192	F	COMPRESSOR SHUTDOWN - Starter Fault Compressor #1	1,2,3,4,9,10	X	X			X	X
193	F	COMPRESSOR SHUTDOWN - Starter Fault Compressor #2	1,2,3,4,9,10	X	X			X	X
194	F	COMPRESSOR SHUTDOWN - Starter Fault Compressor #3	1,2,3,4,9,10					X ²	
196	F	COMPRESSOR SHUTDOWN - No Starter Transition #1	1,2,3,4,9	X				X ¹	
197	F	COMPRESSOR SHUTDOWN - No Starter Transition #2	1,2,3,4,9	X				X ¹	
198	F	COMPRESSOR SHUTDOWN - No Starter Transition #3	1,2,3,4,9	X				X ¹	
199	F	COMPRESSOR SHUTDOWN - No Starter Transition #4	1,2,3,4,9	X				X ¹	
200	F	COMPRESSOR START ABORT - Oil Pressure Low #1	1,2,3,4,9	X					
201	F	COMPRESSOR START ABORT - Oil Pressure Low #2	1,2,3,4,9	X					

Alarm	Class	Description	Event Values	WSC	AGZ	ACZ	WGZ	AGS	WGS
				WDC WPV HSC HDC TSC WMC WCC			TGZ		
202	F	COMPRESSOR START ABORT - Oil Pressure Low #3	1,2,3,4,9	X					
203	F	COMPRESSOR START ABORT - Oil Pressure Low #4	1,2,3,4,9	X					
204	F	COMPRESSOR SHUTDOWN - Subcooling Low #1	1,2,9,10					X ²	X
205	F	COMPRESSOR SHUTDOWN - Subcooling Low #2	1,2,9,10					X ²	X
206	F	COMPRESSOR SHUTDOWN - Subcooling Low #3	1,2,9,10					X ²	
208	F	COMPRESSOR SHUTDOWN - Surge Suction Superheat High-Running #1	1,2,3,4,9	X					
209	F	COMPRESSOR SHUTDOWN - Surge Suction Superheat High-Running #2	1,2,3,4,9	X					
210	F	COMPRESSOR SHUTDOWN - Surge Suction Superheat High-Running #3	1,2,3,4,9	X					
211	F	COMPRESSOR SHUTDOWN - Surge Suction Superheat High-Running #4	1,2,3,4,9	X					
212	F	COMPRESSOR SHUTDOWN - Surge Suction Superheat High-Starting #1	1,2,3,4,9	X					
213	F	COMPRESSOR SHUTDOWN - Surge Suction Superheat High-Starting #2	1,2,3,4,9	X					
214	F	COMPRESSOR SHUTDOWN - Surge Suction Superheat High-Starting #3	1,2,3,4,9	X					
215	F	COMPRESSOR SHUTDOWN - Surge Suction Superheat High-Starting #4	1,2,3,4,9	X					
216	F	COMPRESSOR SHUTDOWN - Suction Temperature Sensor Fault #1	1,2,3,4,9,10	X				X	X
217	F	COMPRESSOR SHUTDOWN - Suction Temperature Sensor Fault #2	1,2,3,4,9,10	X				X	X
218	F	COMPRESSOR SHUTDOWN - Suction Temperature Sensor Fault #3	1,2,3,4,9,10					X ²	
220	F	COMPRESSOR START ABORT - Vanes Open OR No Start – Interlock Switch #1	1,2,3,4,9	X					
221	F	COMPRESSOR START ABORT - Vanes Open OR No Start – Interlock Switch #2	1,2,3,4,9	X					
222	F	COMPRESSOR START ABORT - Vanes Open OR No Start – Interlock Switch #3	1,2,3,4,9	X					
223	F	COMPRESSOR START ABORT - Vanes Open OR No Start – Interlock Switch #4	1,2,3,4,9	X					
224	F	COMPRESSOR SHUTDOWN - (Check Chiller Display for Cause)	1,2,3,4,9,10	X				X	X

¹-AGS 'C' Vintage Only (two circuits only)

²-AGS 'B' Vintage Only (up to three circuits)

³-ACZ Dual Circuit Only

⁴-ACZ Single Circuit Only

⁵-AGZ Dual Circuit Only

⁶-AGZ Single Circuit Only

⁷-Solid State Starter Option required. Not available on WMC.

Appendix A: Protocol Implementation Conformance Statement (PICS)

This section contains the Protocol Implementation Conformance Statement (PICS) for the MicroTech II Chiller Unit Controller of McQuay International as required by ANSI/ASHRAE Standard 135-2004, BACnet: A Data Communication Protocol for Building Automation and Control Networks.

BACnet Protocol Implementation Conformance Statement

Date: September 2009
Vendor Name: McQuay International
Product Name: MicroTech II Chiller Unit Controller
Product Model Number: MTII Chiller UC
Applications Software Version:
Firmware Revision:
BACnet Protocol Revision: Version 1
Revision 2

Product Description

The MicroTech II Chiller Unit Controller with optional BACnet Communication Module is a microprocessor-based controller designed to operate McQuay International chillers and be integrated into BACnet building automation systems.

BACnet Standardized Device Profile

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

BACnet Interoperability Building Blocks (BIBBs) Supported

BIBB Name	Designation
Data Sharing – ReadProperty – B	DS-RP-B
Data Sharing – ReadPropertyMultiple – B	DS-RPM-B
Data Sharing – WriteProperty – B	DS-WP-B
Data Sharing – WritePropertyMultiple – B	DS-WPM-B
Alarm and Event – Notification Internal – B	AE-N-I-B
Alarm and Event – ACK – B	AE-ACK-B
Alarm and Event – Information – B	AE-INFO-B
Device Management – Dynamic Device Binding – A	DM-DDB-A
Device Management – Dynamic Device Binding – B	DM-DDB-B

BIBB Name	Designation
Device Management – Dynamic Object Binding – B	DM-DOB-B
Device Management – DeviceCommunicationControl – B	DM-DCC-B
Device Management – TimeSynchronization – B	DM-TS-B
Device Management – UTCTimeSynchronization – B	DM-UTC-B
Device Management – ReinitializeDevice – B	DM-RD-B
Device Management – Restart – B	DM-R-B

Standard Object Types Supported

Object-Type	Dynamically Creatable	Dynamically Deleteable	Optional Properties Supported	Writaeble Properties not Required to be Writaeble	Proprietary Properties
Analog Input	<input type="checkbox"/>	<input type="checkbox"/>	Description Reliability		Read_Only ¹
Analog Output	<input type="checkbox"/>	<input type="checkbox"/>	Description Reliability	Relinquish Default	Read_Only ¹
Binary Input	<input type="checkbox"/>	<input type="checkbox"/>	Description Reliability Inactive_Text Active_Text		Read_Only ¹
Binary Value	<input type="checkbox"/>	<input type="checkbox"/>	Description Reliability Inactive_Text Active_Text Priority Array Relinquish Default	Present Value Relinquish Default	Read_Only ¹
Device	<input type="checkbox"/>	<input type="checkbox"/>	Description Location Local_Time Local_Date UTC_Offset Daylight_Savings_Status	Location	
Multi-state Input	<input type="checkbox"/>	<input type="checkbox"/>	Description Reliability State_Text		Read_Only ¹
Multi-state Output	<input type="checkbox"/>	<input type="checkbox"/>	Description Reliability State_Text	Relinquish Default	Read_Only ¹

1. Read_Ony is a read only proprietary property used to indicate whether the Present_Value is read-only (0), writeable but not commandable (1) or writeable and commandable (2).

Data Link Layer Options

- BACnet IP, (Annex J)
- ISO 8802-3, Ethernet (Clause 7)
- MS/TP master (Clause 9), baud rate(s):

Segmentation Capability

- Segmented requests supported Window Size:
- Segmented responses supported Window Size:

Device Address Binding

- Static Device Binding Yes
- No

Networking Options

- Router, Clause 6
- Routing Configurations:
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)
- Registrations by Foreign Devices? Yes
- No

Character Sets Supported

- ANSI X3.4 IBM™/Microsoft™ DBCS ISO 8859-1
- ISO 10646 (UCS-2) ISO 10646 (UCS-4) JIS C 6226

Note: Support for multiple character sets does not imply they can be supported simultaneously.

Non-BACnet Equipment/Network(s) Support

- Communication Gateway
- Non-BACnet equipment/network(s):

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