

Group: Controls

Part Number: IM 736

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MicroTech II[®]

Chiller Unit Controller

BACnet[®] Communication Module (MS/TP)

- 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, Counterflow
- 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

NOTICE

Use this manual to physically install the Daikin MicroTech II Communication Module into the rooftop unit controller and connect the chiller unit controller to your network. Use the appropriate Daikin Applied Engineering Data (ED), known as the Protocol Information document, to integrate the unit into your network. The Protocol Information document contains addressing details, BACnet[®] protocol information, and a list of the data points available to the network. See the Reference Documents section of this manual for Protocol Information document numbers. MicroTech II control integration literature is available from your local Daikin Applied sales representative and www.DaikinApplied.com.



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Revision History

IM736-0	January 24, 2003	Initial release
IM736-1	May, 2005	Added WGS, WMC, HSC, HDC and TSC to front page and to the “Reference Documents” section Edited part numbers in parts list Added note in “Unit Setup for BACnet Control” section Added note in “Changing the MSTP Data Transmission Rate” section
IM736-2	November, 2005	Added module location, power wiring, and set screen information for scroll and screw compressor chillers. Added Table 1 and Password table.
IM 736-3	June, 2006	Removed references to BACnet IP/Ethernet and moved them to IM 837
IM 736-4	October, 2006	Added new section for downloading firmware from mcquaybiz or www.DaikinApplied.com
IM 736-5	May, 2007	Removed references to the baud rate switch and updated with baud rate jumpers. New figures 8 & 9

Reference Documents

Number	Company	Title	Source
ANSI/ASHRAE 135-2001	American Society of Heating, Refrigerating and Air-Conditioning Engineers	BACnet® A Data Communication Protocol for Building Automation and Control Networks	www.ashrae.org
IMM AGS	Daikin Applied	MicroTech II Air-Cooled Screw Chiller Installation and Maintenance Manual	www.DaikinApplied.com
IOMM ACZ/AGZ	Daikin Applied	MicroTech II Air-Cooled Condensing Unit Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
IOMM ACZ1	Daikin Applied	MicroTech II Air-Cooled Condensing Unit Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
IOMM AGZ1	Daikin Applied	MicroTech II Air-Cooled Scroll Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
IOMM AGZ	Daikin Applied	MicroTech II Air-Cooled Scroll Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
IOMM WGZ	Daikin Applied	MicroTech II Water-Cooled Scroll Chiller Installation Manual	www.DaikinApplied.com
IOMM WPV	Daikin Applied	MicroTech II Centrifugal Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
IOMM WSCWDC	Daikin Applied	MicroTech II Chiller Unit Controller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
OM AGS	Daikin Applied	MicroTech II Air-Cooled Screw Chiller Operating Manual	www.DaikinApplied.com
OM CentrifMicro II	Daikin Applied	MicroTech II Unit Controller for Centrifugal Chillers and Templifiers Operating Manual	www.DaikinApplied.com
ED 15062	Daikin Applied	MicroTech II Chiller Unit Controller Protocol Information, BACnet MS/TP and LONWORKS® Networks	www.DaikinApplied.com
OM WGS	Daikin Applied	MicroTech II Water-Cooled Screw Chiller Operating Manual	www.DaikinApplied.com
OM WMC	Daikin Applied	MicroTech II Magnetic Bearing Compressor Chiller	www.DaikinApplied.com
IOMM TSC	Daikin Applied	MicroTech II Templifier Single Compressor Centrifugal Installation, Operation, and Maintenance Manual	www.DaikinApplied.com

Limited Warranty

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

Notice

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Introduction

Recognize Safety Symbols, Words and Labels

The following symbols and labels are used throughout this manual to indicate immediate or potential hazards. It is the owner and installer's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of property damage and/or product damage, serious personal injury or death. Improper installation, operation and maintenance can void the warranty.

CAUTION

Hazards or unsafe practice **CAN** result in property damage, product damage, severe personal injury and or death.

NOTICE

Hazards or unsafe practices which **CAN** result in property damage, product damage, and or personal injury.

General Information

This manual contains the information you need to install the BACnet® Communication Module, incorporate it into the network, and maintain it.

WARNING

Electric shock hazard. Can cause personal injury or equipment damage.

This equipment must be properly grounded. Only personnel that are knowledgeable in the operation of the equipment being controlled must perform connections and service to the MicroTech II Chiller Unit Controller.

CAUTION

Static sensitive components. Can cause equipment damage.

Discharge any static electrical charge by touching the bare metal inside the control panel before performing any service work. Never unplug cables, circuit board terminal blocks, or power plugs while power is applied to the panel.

NOTICE

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense. **Daikin Applied disclaims any liability resulting from any interference or for the correction thereof.**

Description

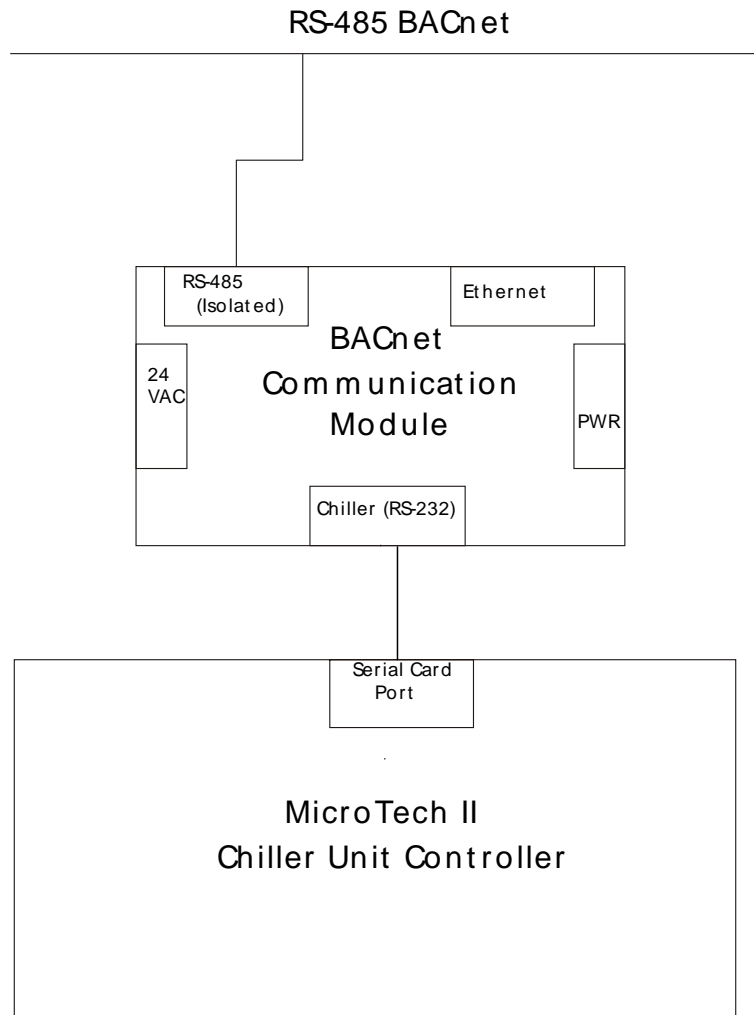
The BACnet Communication Module incorporates a MicroTech II Chiller Unit Controller into a BACnet Local Area Network (LAN). It supports the BACnet MS/TP (EIA 485) data link layer (physical layer).

The BACnet Communication Module mounts in the MicroTech II Chiller Unit Controller panel. The BACnet Communication Module is a rectangular metal enclosure with connectors and an indicator on the front panel.

Application

The BACnet Communication Module connects the MicroTech II Chiller Unit Controller to the Building Automation System (BAS) on a BACnet Local Area Network. It is the interface adapter for the exchange of BACnet objects between the network and the unit controller. Figure 1 shows the BACnet Communication Module and MicroTech II Chiller Unit Controller integrated into a BAS.

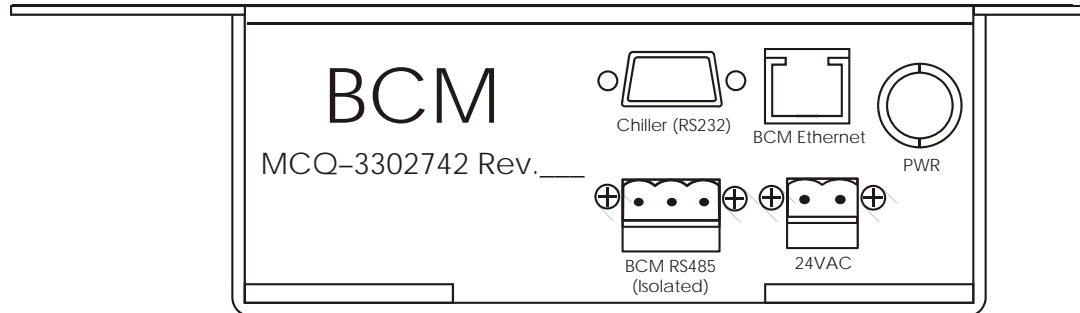
Figure 1. Building Automation System



Component Data

Figure 2 shows the external connectors of the BACnet Communication Module.

Figure 2. BACnet Communication Module External Connectors (Top View)



Connectors

The BACnet Communication Module uses two of the connectors mounted on the top panel.

Chiller (RS232)

This connector is the interface between the MicroTech II Chiller Unit Controller and the BACnet Communication Module.

BCM RS485 (Isolated)

This connector is the interface to the BACnet MS/TP network.

24 VAC

This connector is for the input power.

Indicators

The BACnet Communication Module has one indicator mounted on the top panel.

PWR

This indicator lights when power is applied to the BACnet Communication Module.

Baud Rate Jumpers

Two baud rate jumpers are used to set the BACnet Communication Module data transmission rate on an MS/TP network. The jumpers, labeled W2 and W3, are located inside of the metal enclosure. The BACnet Communication Module ships from the factory at a default baud rate of 38400 bps. See Changing the MS/TP Data Transmission Rate for details.

Installation

The BACnet Communication Module can be factory or field installed. The sales representative should use the appropriate chiller selection software program in Daikin Tools™ to include the BACnet Communication Module with the unit.

For field installation, the BACnet Communication Module kit may be ordered through the Daikin Applied sales office or through Daikin Applied Parts. The BACnet Communication Module kit includes the BACnet Communication Module, cables, serial card connector, and this installation manual. The BACnet Communication Module is also sold separately (i.e. just the module itself) through Daikin Applied Parts. See Replacement Parts for part numbers.

Mounting

Installing a new BACnet Communication Module

You can add a new BACnet Communication Module to the MicroTech II control system in order to incorporate it into an existing BACnet network.

Mounting a BACnet Communication Module

To mount a BACnet Communication Module:

1. Remove power from the MicroTech II Chiller Unit Controller.
2. See Table 1 for BACnet Communication Module location and mount the module. Where studs are indicated, mount the module on the studs with the hardware included in the kit (see Figure 3). For other locations, drill mounting holes using the module as a template, exercising care not to drill through to a component or wiring. Secure the module with machine screws.

Table 1. Module Location and Power Wiring

Chiller Model	Power Connection Terminals	Mounting Location
AGS-B	HOT>TB1-60, COM>TB1-75	Studs in control panel
AGZ-A/ACZ-A	HOT>31-32, COM>21-28	Studs inside left-hand control panel door
AGZ-B/ACZ-B	HOT>42-54, COM>81-84	Upper right-hand corner of control panel door
AGS-C	HOT>TB1-60, COM>TB1-75	Studs in control panel
HSC	HOT>UTB1-70, COM>UTB1-71	Studs on door of the unit control panel
HDC	HOT>UTB1-70, COM>UTB1-71	Studs on door of the unit control panel
TSC	HOT>UTB1-70, COM>UTB1-71	Studs on door of the unit control panel
WCC	HOT>UTB1-70, COM>UTB1-71	Studs on door of the unit control panel
WDC	HOT>UTB1-70, COM>UTB1-71	Studs on door of the unit control panel
WGS	HOT>42-54, COM>81-84	Mount horizontally behind the unit controller
WGZ	HOT>31-43, COM>56-60	Upper right-hand corner of control panel door
WMC	HOT>UTB1-70, COM>UTB1-71	Studs on top of the panel door
WPV	HOT>UTB1-70, COM>UTB1-71	Studs on door of the unit control panel
WSC	HOT>UTB1-70, COM>UTB1-71	Studs on door of the unit control panel

NOTES:

- a. If a range of terminal numbers is given, such as 42-54, connect to any terminal in the range.
 - b. The two-pin power connector wires are marked HOT and COM (common).
3. Locate the Serial Card slot on the MicroTech II Chiller Unit Controller (see Figure 4.)
 4. Remove the cover from the Serial Card slot if it has not already been removed. Use a small screwdriver to pry the cover off from one end.
 5. Remove the plastic knock-out in the cover.

6. Figure 5 details the Serial Card slot with the 8-pin plug that mates to the receptacle on the RS 232 Serial Interface Card. Grasp the RS 232 Serial Interface Card, with the network connector on the underside. The 8-pin receptacle must mate to the 8-pin plug in the MicroTech II Chiller Unit Controller. The plug has a guide on each end to direct the card into the mating guide on the receptacle.

Note: This operation relies more on feeling the RS 232 Serial Interface Card into the connector than seeing the connectors mate.

7. Insert the RS 232 Serial Interface Card, pointing up, into the slot, rolling it into a level position as you move it into the slot.
8. Keeping the RS 232 Serial Interface Card *level*, move it in the slot until you feel the connectors line up. The correct position seems to be level, toward the left side of the slot, and down slightly from the top.
9. When you feel the connectors align, press the RS 232 Serial Interface Card into the connector. Verify that it is firmly seated in the connector.
10. Replace the cover on the Serial Card slot. Slip the cover over the network connector plug.
11. Connect the BACnet Communication Module to the MicroTech II Chiller Unit Controller.
 - a. Plug the Serial Cable in both the RS 232 Serial Interface Card and the BACnet Communication Module's Chiller (RS232) connector.
 - b. Route the Serial Cable across the hinge and over to the BACnet Communication Module.
12. Connect power to the BACnet Communication Module.
 - a. Plug the power wires into the BACnet Communication Module's 24 VAC connector and neatly route the wires to the unit terminals as indicated in Table , using existing raceways and/or self-adhesive wire bases whenever possible.
13. Connect the BACnet Communication Module to the network (see Figure 2.)
 - a. Route the network cable through a knockout to the appropriate connector on the BACnet Communication Module.
14. Restore power to the MicroTech II Chiller Unit Controller.

Replacing an Existing BACnet Communication Module

To replace a BACnet Communication Module

1. Remove power from the MicroTech II Chiller Unit Controller.
2. Remove the power wires from the terminal block.
3. Locate the Serial Card slot on the MicroTech II Chiller Unit Controller (see Figure 4.)
4. Pull the network cable connector from the BACnet Communication Module.
5. Remove the cover from the Serial Card slot. Use a small screwdriver to pry it off from one end.
6. Grasp the RS 232 Serial Interface Card and carefully pull it from the controller.
7. Install the new RS 232 Serial Interface Card:
 - a. Grasp the RS 232 Serial Interface Card, with the network connector on the underside. The 8-pin receptacle must mate to the 8-pin plug in the MicroTech II Chiller Unit Controller. The plug has a guide on each end to direct the RS 232 Serial Interface Card into the mating guide on the receptacle. Figure 5 details the Serial Card slot showing how the 8-pin plug mates to the receptacle on the RS 232 Serial Interface Card.

Note: This operation relies more on feeling the RS 232 Serial Interface Card into the connector than seeing the connectors mate.

- b. Insert the RS 232 Serial Interface Card, pointing up, into the slot, rolling it into a level position as you move it into the slot.

- c. Keeping the RS 232 Serial Interface Card *level*, move it in the slot until you feel the connectors line up. The correct position seems to be level, toward the left side of the slot, and down slightly from the top.
 - d. When you feel the connectors align, press the RS 232 Serial Interface Card into the connector. Verify that it is firmly seated in the connector.
8. Replace the cover on the Serial Card slot. Slip the cover over the network connector plug.
9. Remove the BACnet Communication Module from the control panel door.
10. Mount the BACnet Communication Module on the studs with the hardware included in the kit (see Figure 3.)
11. Connect the BACnet Communication Module to the MicroTech II Chiller Unit Controller.
 - a. Plug the Serial Cable in both the RS 232 Serial Interface Card and the BACnet Communication Module.
 - b. Route the cable across the hinge and over to the BACnet Communication Module.
12. Connect power to the BACnet Communication Module.
 - a. Plug the power wires into the BACnet Communication Module PWR connector and route the wires per instructions on page 10.
13. Connect the BACnet Communication Module to the network (see Figure 2.)
 - a. Route the network cable through a knockout and to the appropriate connector on the BACnet Communication Module.
14. Restore power to the MicroTech II Chiller Unit Controller.

Figure 3. BACnet Communication Module Mounted in a Centrifugal Chiller Control Panel

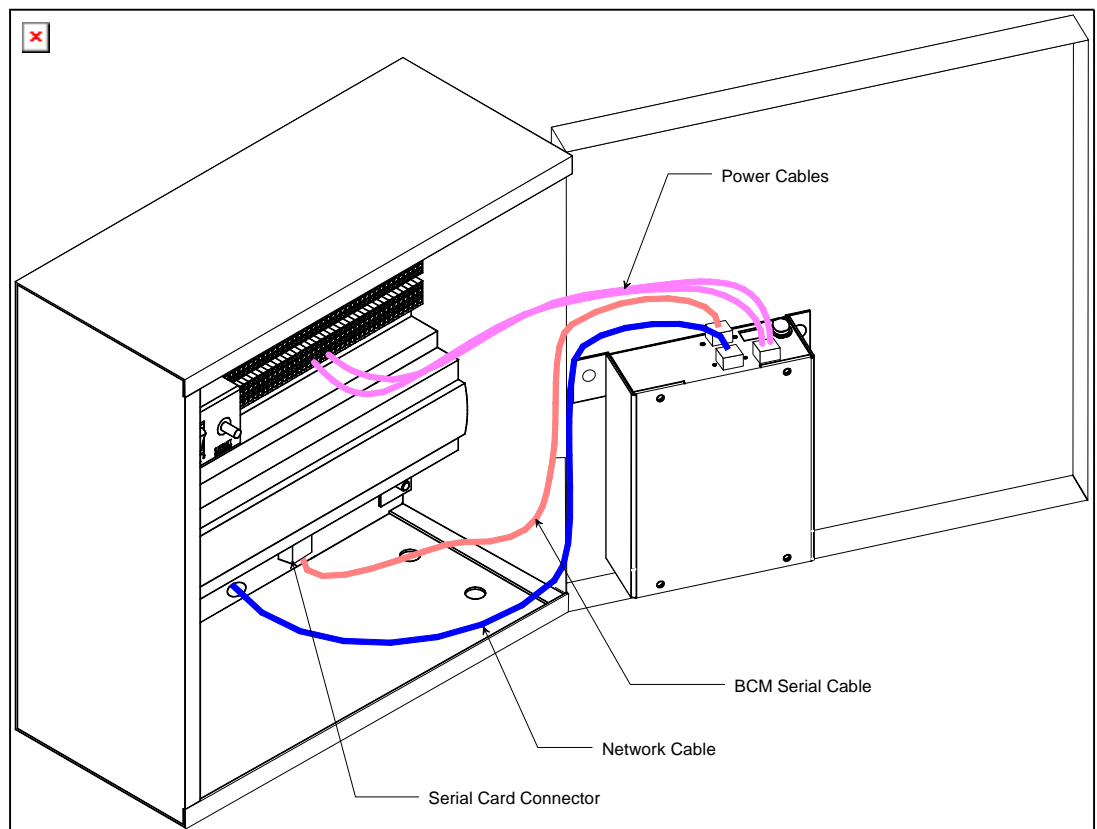


Figure 4. Serial Card Slot in Unit Controller

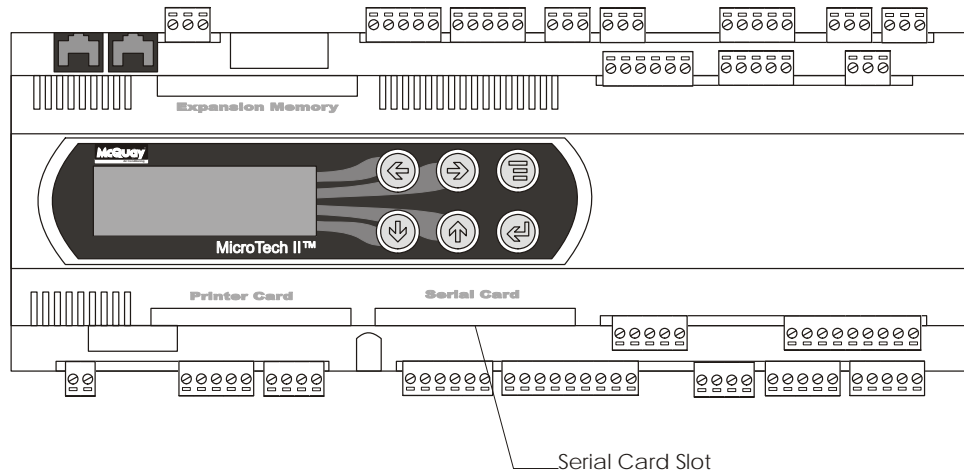
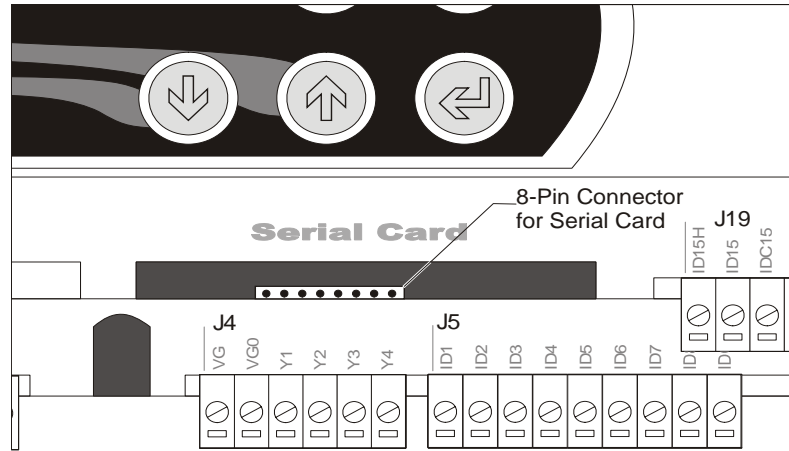


Figure 5. Serial Card Slot Detail



Unit Setup for BACnet Network Control

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 chiller touch screen interface panel:
 - a. In the SETPOINTS MODE screen, set the #9 setpoint, BAS Protocol to BACnet. Use the Operator Password of "2001."
 - b. In the SETPOINTS MODE screen, set the #3 setpoint, Control Source to Local.
3. Verify with the chiller/control company technician that the chiller is operational on BAS.
4. In the SETPOINTS MODE screen, set the #3 setpoint, 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 to BACnet in the applicable menu screen shown in the table below.

Table 2. MicroTech II Chiller Unit Controller Menu Screens

Model	AGZ-A	ACZ-A	AGZ-B	ACZ-B	AGS-B	AGS-C	WGS	WGZ
Menu Screen	9	6	9	7	12	14	15	10
Password	2001	2001	2001	2001	8945	8453	8745	2001

NOTE: Models AGZ-A/B, ACZ-A/B, and WGZ 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.

3. Verify with the chiller/control company technician that the chiller is operational on a BAS.
4. Set the Set Unit Setpoint screen 1 to Source = Network.

Integration

Access to Properties

To access a property, you must specify the object identifier including the device object identifier or the object name including the device object name and the property identifier. See the MicroTech II Chiller Unit Protocol Information document (ED 15062) for details.

Configuring the Unit Controller

The MicroTech II Chiller Unit Controller and BACnet Communication Module are designed, programmed, and configured at the factory. The unit is ready to operate with the default parameter values in the unit controller after you change the default parameter values in the HTTP Interface. If you need to change the default values in the MicroTech II Chiller Unit Controller, see the appropriate Operation Manual for default values and keypad operating instructions. Use the MicroTech II Chiller Unit Controller Protocol Information document (ED 15062) for descriptions of the HTTP Interface variables.

Network Connection

BACnet MS/TP Addressing

The BACnet MS/TP Medium Access Control (MAC) address is a variable one-octet address that must be set during the BACnet Communication Module configuration. See your system integrator for a MAC address. This address, and two other parameters for MS/TP networks, can be modified using the BACnet Configuration page (see Configure the BACnet Communication Module section.) The MS/TP MAC address must be unique to the MS/TP network. Valid MAC addresses run from 0 to 127.

Configure the BACnet Communication Module

The BACnet Communication Module is configured using an HTML Interface page in an HTTP server residing in the BACnet Communication Module. You can only access the HTTP Interface via the BACnet Communication Module Ethernet port at its IP address. In order to access this page, your computer must be on a similar subnet as the BACnet Communication Module, which is shipped set to a default IP subnet mask (255.255.0.0), and IP address (172.16.5.8.). You must change the network settings on your computer to closely match the subnet. After you have configured the BACnet Communication Module, you should restore the original network settings to your computer. The configuration process is the same regardless of your computer's operating system.

Figure 6 shows the HTTP Interface page. It has a total of six areas of information: three are BACnet specific and three are network specific. 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 MS/TP networks require network settings.

Upgrading BACnet Communication Module Firmware

If an update to the BACnet Communication Module firmware is required or recommended, you must follow all of the procedures previously described in IM 736 to verify proper installation, network setup and configuration. Refer to the following sections: Installing a new BACnet Communication Module, Unit Setup for BACnet Network Control, and Configure the BACnet Communication Module.

Once these steps are complete and your PC is on a similar IP address and subnet mask as the BACnet Communication Module, follow the instructions listed below to download the firmware from the Daikin Applied website.

1. Go to www.DaikinApplied.com\Products\Controls\Application Software and click on the “MicroTech II Chiller BACnet Communication Module v1.xx Update” file.
2. Save the contents of the zip file to a selected folder on your hard drive.
3. Open the zip file from your hard drive and print this section of IM 736.
4. Verify that the BACnet Communication Module is set to the default IP address of 172.16.5.

Note: Step 4 is required so that the automatic firmware download process works properly.


5. Double click on the transfer.bat file to install the BACnet Communication Module firmware.
6. Cycle power to the BACnet Communication Module.
7. Verify that the correct BACnet Communication Module firmware version has been downloaded.
 - Open Internet Explorer.
 - Type the BACnet Communication Module’s IP address in the web browser.
 - The BACnet Communication Module User Interface will open and you should see “BACnet Communication Module v1.xx” text at the top of the page.

If you have any questions or concerns about the firmware download process, please contact the Daikin Applied Controls Customer Support Team at 1-866-4McQuay (462-7829).

Figure 6. BACnet Communication Module HTTP Interface Page

BACnet Communications Module v1.11

Device	Device Instance	3000
	LAN Type	BACnet/IP
	Metric Units	No
	Client Timeout	Normal
	Who-Is Frequency	1
Date/Time	Local Date/Time	1980/1/1 5:40:06
	UTC Offset	480
	Daylight Savings	No
Alarms	Enabled?	No
	Alarm Destination	
	Device Instance	0
	Alarm Destination	
	Process ID	1
	Problem Priority	0
	Fault Priority	0
Warning Priority	255	
Ethernet	MAC address	0x00 80 66 04 20 EB
BACnet/IP	UDP Port	0xBAC0
	IP address	172.16.5.8
	IP subnet mask	255.255.0.0
	IP default gateway	
MS/TP	MAC address	0x04
	Max Masters	127
	Max Info Frames	5
	Baudrate	19200

configure


Changing the Network Settings

The BACnet Communication Module is assigned a factory default IP address and Subnet Mask. These are only temporary but are required so that you know where to access the BACnet Communication Module in order to change network parameters. The BACnet Communication Module is configured using a minimal HTTP server that is accessed using Internet Explorer®.

Required Tools

You need the following tools to configure the BACnet Communication Module for network operation:

- PC with Ethernet card and TCP/IP protocol.
- Internet Explorer browser.
- Ethernet Cable (Either an Ethernet crossover cable for direct connection or a standard Ethernet cable for connecting through a hub.)

Procedure

The procedure for changing the network settings varies depending the operating system in your computer.

You must access the HTTP Interface page at its IP address. In order to access the configuration page, your computer must be on the same subnet as the BACnet Communication Module. Doing so will allow you to:

1. Change the network settings on your computer and options in Internet Explorer.
2. Access the HTTP Interface page to change the BACnet Communication Module parameters.
3. Change the network settings of your computer and Internet Explorer options back to the way they were before the configuration process.

Details regarding each of these items are described below.

To Change the IP address in the BACnet Communication Module:

Note: You can only connect to the BACnet Communication Module via the Ethernet port. To install the BACnet Communication Module using an MS/TP (RS-485) network, you must connect via an Ethernet cable directly to the BACnet Communication Module, then change the settings for the MS/TP network, and finally install the BACnet Communication Module in the MS/TP network.

1. Connect to the BACnet Communication Module via the Ethernet port.
 2. Request the Subnet Mask of the network for the BACnet Communication Module from the network administrator.
 3. Request an IP address for the BACnet Communication Module from the network administrator.
 4. Change the network settings on your computer to access the BACnet Communication Module. Use the appropriate procedure below for your operating system.
 5. Open the browser on your computer.
 6. In the Internet Explorer, go to Tools/Internet Options/Connections/LAN Settings.
 - a. Note the selections for future reference.
 - b. Verify that Automatically Detect Settings, Use Automatic Configuration Script, and Use a Proxy Server for Your LAN are *not* selected.
-

Note: Verify that these settings are disabled to confirm that the changes you make to the BACnet Communication Module with the browser take effect.

7. Type <http://172.16.5.8/> in the Address box of the browser and press the Enter key to access the BACnet Communication Module.
8. Make changes to the configuration file in the BACnet Communication Module (see the Changing the MS/TP Data Transmission Rate section.)
9. Reboot the BACnet Communication Module to change the settings.
10. In the browser on your computer:
 - a. Go to Tools/Internet Options/Connections/LAN Settings.

- b. Restore the settings as noted in Step 6a.
11. Restore the network settings on your computer (see following page for instructions based on your operating system.)

Network Settings for Microsoft Windows® 95 and 98

To change the network setting in Microsoft Windows 95 and 98 computer:

1. Open the Control Panel on your computer.
2. Open the Network Applet.
3. Select the TCP/IP-Ethernet card combination on your computer.
4. Select the Properties button.
5. Select the IP Address tab.
6. Note the IP address and Subnet mask if they have values or that Obtain IP address automatically is selected.
7. Select Specify an IP address.
8. Change the Subnet mask to 255.255.0.0.
9. Change the IP address to 172.16.X.X (where X.X is unique on the subnet but not 172.16.5.8).
10. Click the OK button.
11. Reboot your computer to change the Subnet Mask and IP address.

To restore the network setting in Microsoft Windows 95 and 98 computer:

1. Open the Control Panel on your computer.
2. Open the Network Applet.
3. Select the TCP/IP-Ethernet card combination on your computer.
4. Select the Properties button.
5. Select the IP Address tab.
6. Restore the settings noted as previously noted.
7. Click the OK button.
8. Reboot your computer to restore the original Subnet Mask and IP address.

Network Setting for Microsoft Windows NT

To change the network settings in a Microsoft Windows NT computer:

1. Open the Control Panel on your computer.
2. Open the Network Applet.
3. Select the Protocols tab.
4. Select the TCP/IP-Ethernet card combination on your computer.
5. Select the Properties button.
6. Select the appropriate adapter.
7. Note the IP address and Subnet mask if they have values or that Obtain IP address automatically is selected.
8. Select Specify an IP address.
9. Change the Subnet mask to 255.255.0.0.
10. Change the IP address to 172.16.X.X (where X.X is unique on the subnet but not 172.16.5.8).
11. Click on the Apply button.

To restore the network settings in a Microsoft Windows NT computer:

1. Open the Control Panel on your computer.
2. Open the Network Applet.
3. Select the Protocols tab.
4. Select the TCP/IP-Ethernet card combination on your computer.
5. Select the Properties button.

6. Select the appropriate adapter.
7. Restore the settings as previously noted.
8. Click the Apply button.

Network Setting for Microsoft Windows 2000

To change the network settings in a Microsoft Windows 2000 computer:

1. Select My Network Places on the desktop and right click.
2. Open Properties.
3. Select Local Area Connections and right click.
4. Open Properties.
5. Select TCP/IP.
6. Click on Properties button.
7. Note settings for future reference.
8. Select Use the following IP address.
9. Change the Subnet mask to 255.255.0.0.
10. Change the IP address to 172.16.X.X (where X.X is unique on the subnet but not 172.16.5.8).
11. Click OK.

To restore the network settings in a Microsoft Windows 2000 computer:

1. Select My Network Places on the desktop and right click.
2. Open Properties.
3. Select Local Area Connections and right click.
4. Open Properties.
5. Select TCP/IP.
6. Restore the network settings as previously noted.
7. Click OK.

Test Network Communications

You can determine whether your computer is properly configured to access the BACnet Communication Module.

To test whether your computer is properly addressed to communicate with the BACnet Communication Module:

1. Open a DOS window (go to Start button\Programs\Accessories\Command Prompt.)
2. Type "ping 172.16.5.8" at the DOS prompt.
3. Press Enter.
4. Observe response. See Figure 7 for a successful response.

Figure 7. Successful Ping and Response

```
C:\>ping 172.16.5.8

Pinging 172.16.5.8 with 32 bytes of data:

Reply from 172.16.5.8: bytes=32 time=93ms TTL=63
Reply from 172.16.5.8: bytes=32 time=5ms TTL=63
Reply from 172.16.5.8: bytes=32 time=70ms TTL=63
Reply from 172.16.5.8: bytes=32 time=16ms TTL=63

Ping statistics for 172.16.5.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 5ms, Maximum = 93ms, Average = 46ms

C:\>
```

Configuring the HTTP Interface

To change the parameters in the HTTP Interface, select the Configure button at the bottom of the HTTP Interface home page. Figure 6 shows the Configuration page in the HTTP Interface.

To Configuring the HTTP Interface:

1. Connect to the BACnet Communication Module via the Ethernet port for configuration.
2. Browse to the HTTP Interface page Figure 6
3. Select the Configure button. The HTTP Configuration page opens (see Figure 10.)
4. Enter the password. Default password is 1234.
5. Adjust the parameters for particular network.

Note: The factory default setting for the BACnet Communication Module's MS/TP data transmission rate is 38400 bps. If this is the data transmission rate you want for your network, skip step 6.

6. To install the BACnet Communication Module on an MS/TP network, set the Data Transmission Rate switch to the data transmission rate of your network. (see Changing the MS/TP Data Transmission Rate section.) Select the Change or Reboot button to set the changes into the BACnet Communication Module. You only need to reboot for the parameters that indicate a reboot is necessary.
7. Select the Home button to return to the HTTP Interface page.
8. Verify that the changes were made. If the changes were not made, verify that the LAN Settings are not selected in Internet Explorer.
9. Close your browser.
10. Remove the connection to Ethernet port you made in Step 1.

Changing the MS/TP Data Transmission Rate

Two jumpers are used to set the BACnet Communication Module data transmission rate (i.e. baud rate) on an MS/TP network. The jumpers are located inside of the metal enclosure. The BACnet Communication Module ships from the factory at a default baud rate of 38400 bps. To change the baud rate to 9600 or 19200 bps, follow the instructions below. In addition to setting the two jumpers, you must also set the baud rate on the HTTP interface. After you set baud rate, verify that you have removed the Ethernet cable from the BACnet Communication Module so that MS/TP communications can proceed efficiently.

⚠ WARNING

Electric shock hazard. Can cause personal injury or equipment damage.

This equipment has exposed electrical connections inside BACnet Communication Module. Only personnel that are knowledgeable in the operation of this equipment must perform connections and service to the BACnet Communication Module.

To Change the MS/TP Data Transmission Rate:

Note: The current version of the BACnet Communication Module ships with two jumpers for setting the transmission (baud) rate. Older versions of the BACnet Communication Module used a switch for this purpose. Refer to IM 736-4, available on www.mcquaybiz.com, for changing the baud rate via the switch.

1. Remove power from the BACnet Communication Module.
2. Remove the four screws that secure the cover to the BACnet Communication Module and lift the cover.
3. Locate the two jumpers, labeled W2 and W3, inside of the metal enclosure.

Note: The BACnet Communication Module ships from the factory at a default baud rate of 38400 bps. (i.e. the jumpers are in the high or “open” position with the plastic covers removed.) Figure 8 shows the inside of the BACnet Communication Module when the cover is removed and the jumpers are at the “open” position.

4. To change the baud rate to 9600 or 19200 bps, set the jumpers to the low or “closed” position by placing the plastic covers entirely over both jumpers as shown in Figure 9.
5. Replace the cover and the four screws that secure the cover.
6. Restore power to the BACnet Communication Module.

Figure 8. Jumpers in the “Open” Position

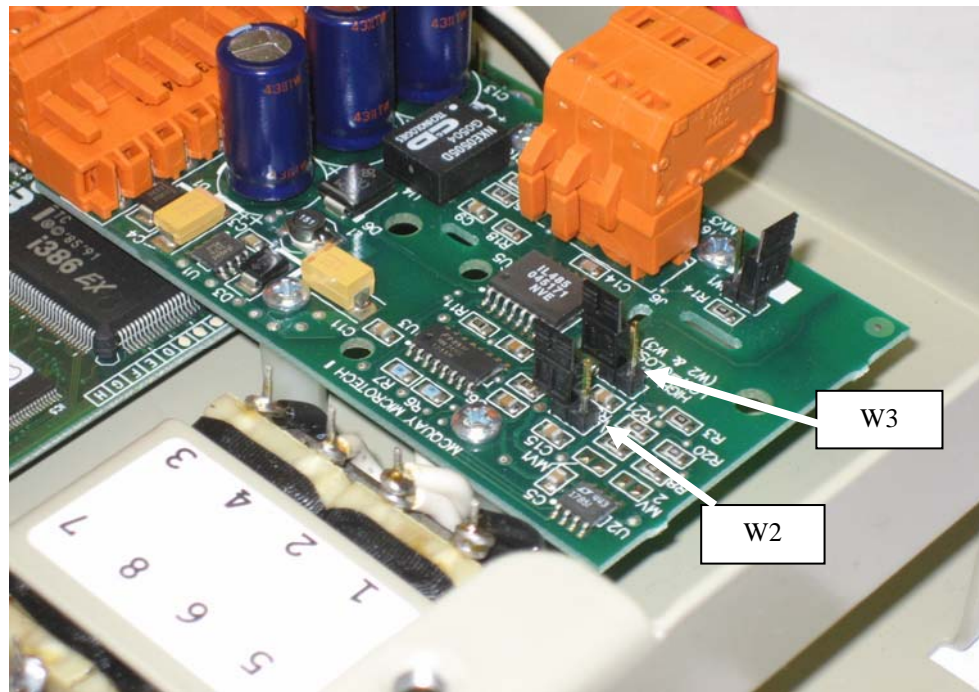
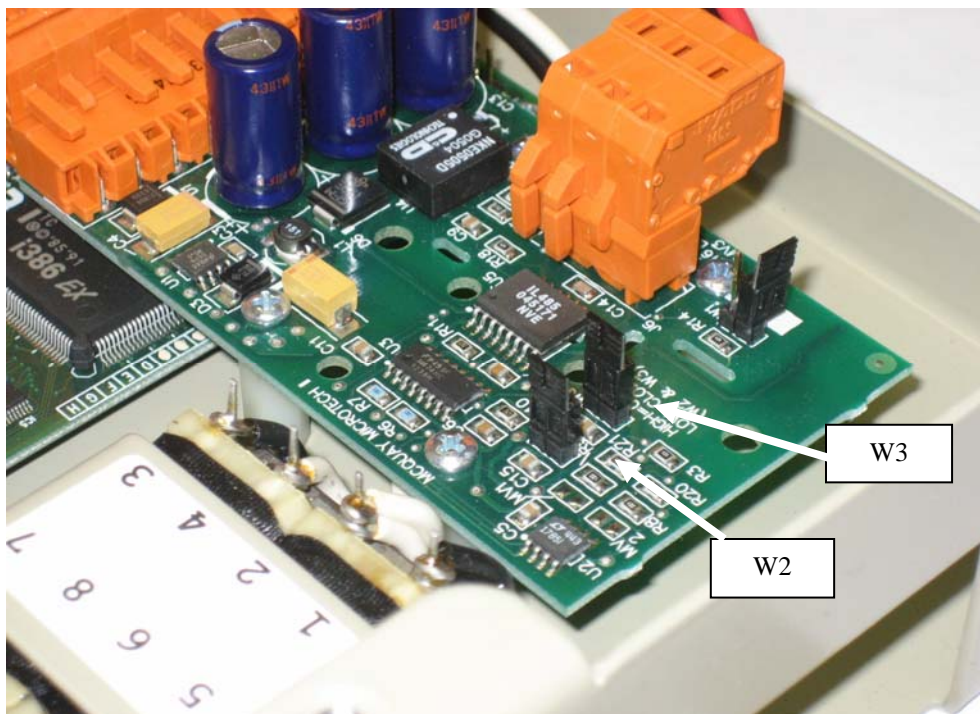


Figure 9. Jumpers in the “Closed” Position



Changing Parameters in the HTTP Interface Page

Password

In order to change any parameters, you must enter a password in the Configuration page. The initial password is 1234. You can change this password by following these steps: enter your password, enter the new password, and reboot.

Figure 10. BACnet Communication Module Configuration Page

Configuration

Password	<input type="text"/>
New Password	<input type="text"/>

Device	Device Instance	<input type="text" value="3000"/>
	LAN Type	<input type="radio"/> Ethernet <input checked="" type="radio"/> BACnet/IP <input type="radio"/> MS/TP (reboot required)
	Metric Units	<input type="radio"/> Yes <input checked="" type="radio"/> No (reboot required)
	Client Timeout	<input checked="" type="radio"/> Normal <input type="radio"/> Busy Network
	Who-Is Frequency	<input type="text" value="1"/>
	Reinit Password	<input type="text"/>

Date/Time	Year	<input type="text" value="1980"/>
	Month (1..12)	<input type="text" value="1"/>
	Day (1..31)	<input type="text" value="23"/>
	Hours (0..23)	<input type="text" value="21"/>
	Minutes (0..59)	<input type="text" value="42"/>
	Seconds (0..59)	<input type="text" value="16"/>
	UTC Offset (-720..720)	<input type="text" value="300"/>
	Daylight Savings?	<input type="radio"/> Yes <input checked="" type="radio"/> No
	Set New Time?	<input type="radio"/> Yes <input checked="" type="radio"/> No


Alarms	Enabled?	<input type="radio"/> Yes <input checked="" type="radio"/> No
	Alarm Destination Device Instance	<input type="text" value="1"/>
	Alarm Destination Process ID	<input type="text" value="1"/>
	Problem Priority (0..255)	<input type="text" value="0"/>
	Fault Priority (0..255)	<input type="text" value="0"/>
	Warning Priority (0..255)	<input type="text" value="255"/>

Ethernet	MAC address	0x00 80 66 04 13 07
-----------------	-------------	---------------------

BACnet/IP	UDP Port	0x[BAC0] (reboot required)
	IP address	<input type="text" value="172.16.5.10"/> (reboot required)
	IP subnet mask	<input type="text" value="255.255.0.0"/> (reboot required)

MS/TP	MAC address	0x[00] (reboot required)
	Max Masters	<input type="text" value="2"/> (reboot required)
	Max Info Frames	<input type="text" value="20"/> (reboot required)
	Baudrate	<input type="text" value="9600"/>

[home](#) [change](#) [reboot](#)



Configurable Parameters

Table 3 defines the configurable parameters of the BACnet Communication Module in the same order as they appear on the HTTP Configuration page (see Figure 10). Change parameters as required for you network.

Table 3. Configurable Parameters

Section	Parameter	Value (Range)/Definition	Initial Value/Note
Password	Password	Enter the password before changing any parameters on this page.	1234
	New Password	You can change the password; enter the new password here.	
Device	Device Instance	0-4194303/Device Instance of the BACnet Communication Module	3000/This must be unique throughout the entire BACnet network.
	LAN Type	MS/TP	BACnet/IP
	Client Timeout	Normal or Busy Network/The time the BACnet Communication Module waits for a response to a ConfirmedEventNotification.	Normal/Setting to Normal gives ADPU timeout = 3000ms. Setting to Busy Network gives ADPU timeout = 10000 ms.
	Who Is Frequency	Limits the frequency, in minutes, of Who Is requests the BACnet Communication Module issues.	1 (per minute)
	Reinit Password	Password that allows the BACnet Communication Module to be reinitialized from the network.	Blank/Blank indicates no password is required. If a password is entered, a password is required before a BACnet client can reinitialize this BACnet Communication Module.
Date/Time	Year	Current Year	If the network has a BACnet Time Master the Time and Date parameters are set automatically.
	Month (1..12)	Current Month	
	Day (1..31)	Current Day	
	Hours (0..23)	Current Hours	
	Minutes (0..59)	Current Minutes	
	Seconds (0..59)	Current Seconds	
	UCT Offset (-720..720)	Difference, in minutes, of the Universal Coordinated Time and local time.	
	Daylight Savings?	Yes or No	
	Set New Time?	Yes or No	No/If the network does not have a BACnet Time Master, you must set the time manually.
Alarms	Enabled?	Yes or No/Enabling this feature provides alarm annunciation from the BACnet Communication Module to a BACnet Client. BACnet Clients can also poll variables in BACnet Communication Module for alarm information. See the Protocol Information document (ED 15062) for details.	No/Yes enables the BACnet Communication Module to send a ConfirmedEventNotification message to a single BACnet device whenever an alarm occurs in the chiller. This message has an Event Type = Complex Event and has proprietary properties in its Event Values section. Not all BACnet devices can accept this message.
	Alarm Destination Device Instance	0-4194303/Device Object of the BACnet device that receives the alarm notification.	1
	Alarm Destination Process ID	Process ID used at the receiving BACnet device to determine the response action to the alarm notification.	1/May be changed to suit the BAS preference.
	Problem Priority (0..255)	Priority for Problem Alarms	0
	Fault Priority (0..255)	Priority for Fault Alarms	0
	Warning Priority (0..255)	Priority for Warning Alarms	255

Section	Parameter	Value (Range)/Definition	Initial Value/Note
MS/TP	MAC address	0-127/Media Access Control Address (unique hardware address) of the BACnet Communication Module.	1/See the BAS systems integrator. This value must be entered as a hexadecimal value. See Appendix A: Hexadecimal Conversion on page 28.
	Max Masters	Maximum Number of Master Controllers currently on the network that the BACnet Communication Module can poll.	127 Master Controllers/ See the BAS system integrator. BAS integrators can decrease this value to improve network performance.
	Max Info Frames	Maximum Number of Information Frames the BACnet Communication Module can send before it must pass the token.	5 Frames
	Baudrate	9600 bps, 19200 bps, and 38400 bps/Data Transmission rate on the MS/TP network	38400 bps/ See the BAS system integrator. Be sure to set the Switch to the correct position.*

*Although 76800 bps selectable, it is not a valid speed.

Service Information

Test Procedures

If you can control the unit from its keypad, but you are not able to communicate with unit via the network:

- Check the network wiring.
- Verify that the jumpers are set correctly for the desired baud rate (see the Changing the MS/TP Data Transmission Rate section for details.)
- Check communications.
 - Use the standard TCP/IP suite of protocols to check your connectivity with other devices. For example, type “ping <IP address of the MicroTech II BACnet Communications Module>.” If you get a response from that IP address, you are connected to the BACnet Communication Module.

If the BACnet Communication Module still does not respond, call the Daikin Applied Controls Customer Support group at 866-4MCQUAY (866-462-7829).

Replacement Parts

Description	Part Number
MicroTech II BACnet Communication Module-MS/TP kit	350147404
MicroTech II BACnet Communication Module, no RS 232 Serial Interface Card	330274201
MicroTech II BACnet Communication Module Serial Cable (72 in.)	330274204
RS 232 Serial Interface Card	330343102
Connector-Wago	330803003
Tool-Wago Connector	330803050

Appendix A: Hexadecimal Conversion Table

Dec	Hex
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C
13	D
14	E
15	F
16	10
17	11
18	12
19	13
20	14
21	15
22	16
23	17
24	18
25	19
26	1A
27	1B
28	1C
29	1D
30	1E
31	1F

Dec	Hex
32	20
33	21
34	22
35	23
36	24
37	25
38	26
39	27
40	28
41	29
42	2A
43	2B
44	2C
45	2D
46	2E
47	2F
48	30
49	31
50	32
51	33
52	34
53	35
54	36
55	37
56	38
57	39
58	3A
59	3B
60	3C
61	3D
62	3E
63	3F

Dec	Hex
64	40
65	41
66	42
67	43
68	44
69	45
70	46
71	47
72	48
73	49
74	4A
75	4B
76	4C
77	4D
78	4E
79	4F
80	50
81	51
82	52
83	53
84	54
85	55
86	56
87	57
88	58
89	59
90	5A
91	5B
92	5C
93	5D
94	5E
95	5F

Dec	Hex
96	60
97	61
98	62
99	63
100	64
101	65
102	66
103	67
104	68
105	69
106	6A
107	6B
108	6C
109	6D
110	6E
111	6F
112	70
113	71
114	72
115	73
116	74
117	75
118	76
119	77
120	78
121	79
122	7A
123	7B
124	7C
125	7D
126	7E
127	7F

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