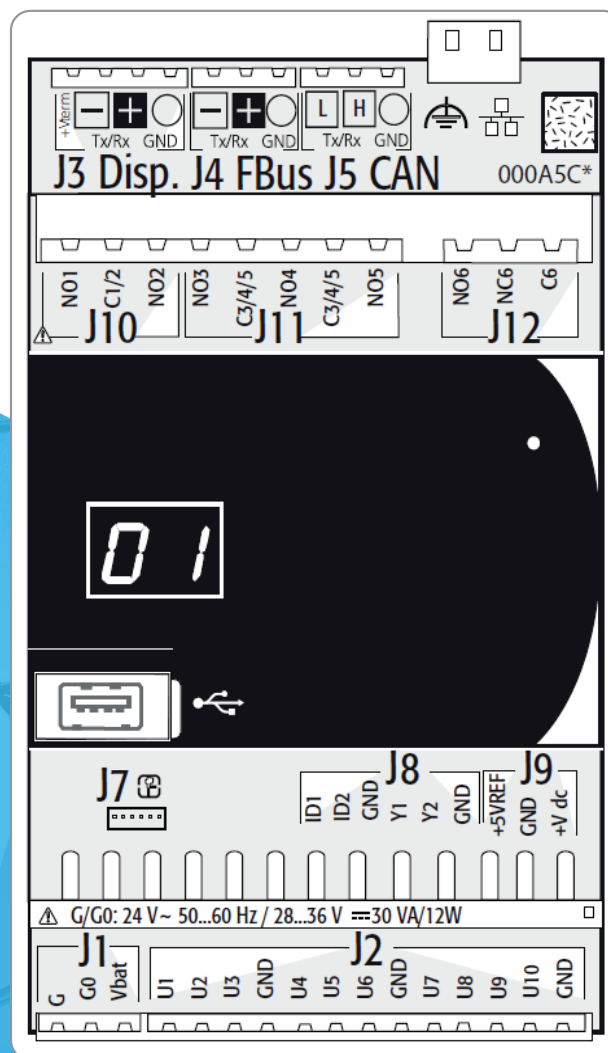


BACNET® AND MODBUS®

CHILLER UNIT CONTROLLER

USED ON CHILLER MODELS WME-C, WMT, AND AGZ-F



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Safety Information

This manual contains information regarding the BACnet® and Modbus® communication module used with the MicroTech® Chiller Unit Controller for WME-C, WMT and AGZ-F chiller models. It describes how to install or replace the communication module on the MicroTech Chiller Unit Controller, subsequently referred to as the Chiller Unit Controller.

NOTE: Installation and maintenance are to be performed only by licensed, if required by local codes and regulations, or qualified personnel who are familiar with local codes and regulations and are experienced with this type of equipment.

DANGER

LOCKOUT/TAGOUT all power sources prior to service, pressurizing, depressurizing, or powering down the unit. Failure to follow this warning exactly can result in serious injury or death. Disconnect electrical power before servicing the equipment. More than one disconnect may be required to deenergize the unit. Be sure to read and understand the installation, operation, and service instructions within this manual.

WARNING

Electric shock hazard. Improper handling of this equipment can cause personal injury or equipment damage. This equipment must be properly grounded. Connections to and service of the MicroTech control panel must be performed only by personnel that are knowledgeable in the operation of the equipment being controlled.

CAUTION

Static sensitive components. A static discharge while handling electronic circuit boards can cause damage to the components. Discharge any static electrical charge by touching the bare metal inside the control panel before performing any service work. Never unplug any 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 disclaims any liability resulting from any interference or for the correction thereof.

Hazard Identification

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.

DANGER

Danger indicates a hazardous situation, which will result in death or serious injury if not avoided.

WARNING

Warning indicates a potentially hazardous situations, which can result in property damage, personal injury, or death if not avoided.

CAUTION

Caution indicates a potentially hazardous situations, which can result in minor injury or equipment damage if not avoided.

NOTICE

Notice indicates practices not related to physical injury.

NOTE: Indicates important details or clarifying statements for information presented.

Introduction

The BACnet and Modbus communication module connects the Chiller Unit Controller to a building automation system (BAS). This interface enables the exchange of BACnet objects or Modbus Holding Registers between the unit controller and the network. Although both BACnet (IP and MS/TP) and Modbus are supported by the same communication module hardware, the unit controller can only be configured to communicate using one of these protocols at any given time. Additionally, within the BACnet protocol, the hardware can be configured for either BACnet IP or BACnet MS/TP, not both.

The communication module, together with the unit controller, supports the BACnet (IP and MS/TP) and Modbus RTU standard protocols.

Features

- Integration into a building automation and control system via BACnet (B-AAC profile) or Modbus RTU
- Simple connection to a Chiller Unit Controller
- Network parameters configurable via the unit HMI
- Circuit board components enclosed in protective housing

Specifications

The following section provides a summary of technical data and conformance to agency listings.

General	
Dimensions	W × H × D: 2.76 × 4.33 × 2.48 in (70 × 110 × 63 mm)
Material	Case - technopolymer, Traffic White RAL 9016
Operating	
Temperature	-40 – 158°F (-40 – 70°C)
Humidity	≤90% RH
Storage and Transportation	
Temperature	-40 – 158°F (-40 – 70°C)
Humidity	≤90% RH
Electrical	
Power	24 Vac +10%/-15% 50/60 Hz; 28 to 36 Vdc +10% to -15%
BACnet MS/TP Network connection	RS-485 (EIA-485)
	2-wire twisted pair, shielded
Modbus Network connection	RS-485 (EIA-485)
	3-wire twisted pair, shielded
BACnet IP Network connection	Ethernet 10/100; CAT 5 STP cable
	RJ-45 port, 8-pin connector
Baud rate BACnet MS/TP, Modbus	19200, 38400, 57600, and 76800
Additional Components	
J3 network connector	RS-485 connection plug, 3-pin spring cage top entry
Standards Compliance	
Electrical Safety	EN 60730-1, EN 60730-2-9, EN 61010-1, UL60730

Electromagnetic compatibility	EN 61000-6-1, EN 61000-6-2, EN 61000-6-2/EC, EN 61000-6-2/IS1, EN61000-6-3, EN 61000-6-4
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Reference Documents

Company	Number	Title	Source
Daikin Applied	IOM 1266	Magnitude Model WME, C-vintage Magnetic Bearing Centrifugal Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1297	Magnetic Bearing Oil-Free Centrifugal Chiller Model WMT Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1359	Air-Cooled Scroll Chiller Model AGZ, Vintage F Installation, Operation, and Maintenance Manual;	www.DaikinApplied.com
Daikin Applied	ED 19111	MicroTech® Chiller Unit Controller Protocol Information used on chiller model WME-C	www.DaikinApplied.com
Daikin Applied	ED 19131	MicroTech® Chiller Unit Controller Protocol Information used on chiller models AGZ-F and WMT	www.DaikinApplied.com
American Society of Heating, Refriger, and Air-Conditioning Engineers	ANSI/ASHRAE 135-2012	BACnet A Data Communication Protocol for Building Automation and Control Networks	www.ashrae.org
Modbus-IDA.ORG		Modbus Application Protocol Specification V1.1b	www.Modbus.org
Modbus-IDA.ORG		Modbus over Serial Line Specification and Implementation Guide V1.02	www.Modbus.org

Revision History

Part Number	Date	Notes
IM1283	January 2019	Preliminary release
IM1283-1	February 2024	Addition of WMT and AGZ-F chiller models

Software Revision

This document supports the following versions of the standard Chiller Unit Controller applications and all subsequent versions until otherwise indicated. However, if the unit software is of a later version, some of the information in this document may not completely describe the application. The revision of the application software can be determined from the chiller HMI (Human Machine Interface).

Chiller Model	Chiller Application Software Version	Chiller HMI Software Version
Magnitude Magnetic Bearing Centrifugal Chiller Model WME, C Vintage	1.2.2	1.4.3
Air-Cooled Scroll Chiller Model AGZ, Vintage F	1.0.8 Installer	
Magnetic Bearing Oil-Free Centrifugal Chiller Model WMT	-	-

Limited Warranty

Consult your local Daikin Applied Representative for warranty details. To find your local Daikin Applied Representative, go to www.DaikinApplied.com.

Dimensions

Figure 1: Communication Module Top View

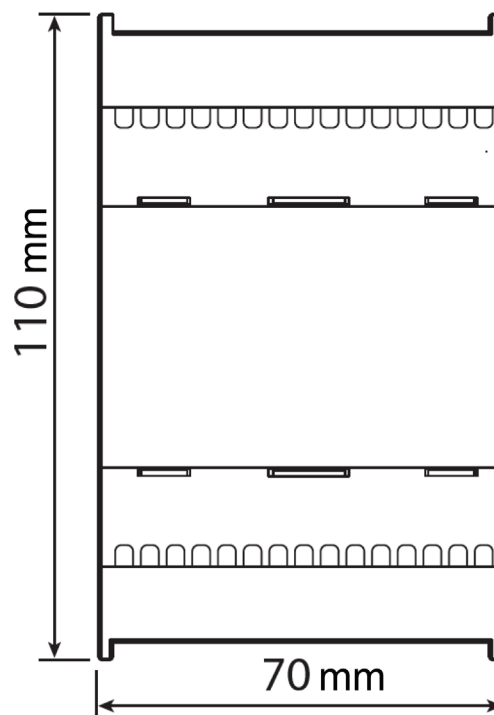
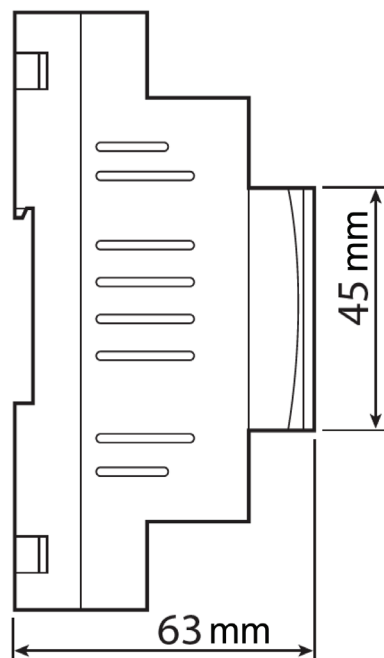


Figure 2: Communication Module Side View



Component Data

The BACnet and Modbus communication module is a printed circuit board contained within a plastic enclosure. For a WME-C or WMT chiller, it is installed on DIN rail to the left of the Chiller Unit Controller within the chiller unit control panel (as shown in [Figure 3](#) and [Figure 4](#)). For an AGZ-F chiller, it is installed on DIN rail to the right of the Chiller Unit Controller within the chiller unit control panel (as shown in [Figure 5](#)). Regardless of whether the communication module being installed is a field upgrade to BACnet/Modbus communication or replacement of a factory-installed module, the installation process is similar. For a field upgrade to add a BACnet/Modbus communication on a WME-C or WMT chiller, the existing I/O (Input/Output) module connected to the left of the unit controller will be replaced with the BACnet and Modbus communication module. For a field upgrade to add a BACnet/Modbus communication on an AGZ-F chiller, the BACnet and Modbus communication module is an added component, not a replacement.

Figure 3: WME-C Unit Control Panel

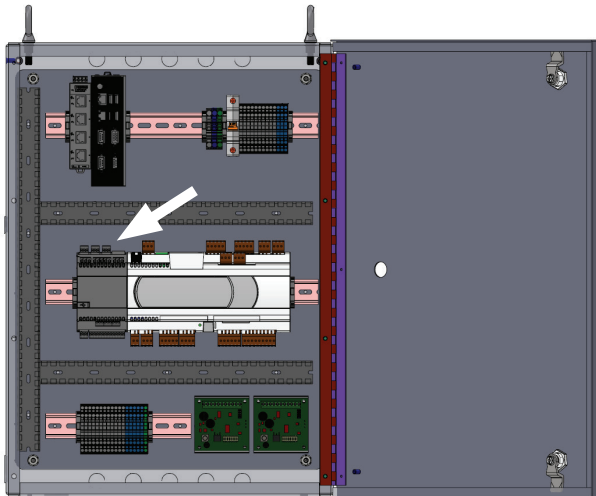


Figure 4: WMT Unit Control Panel

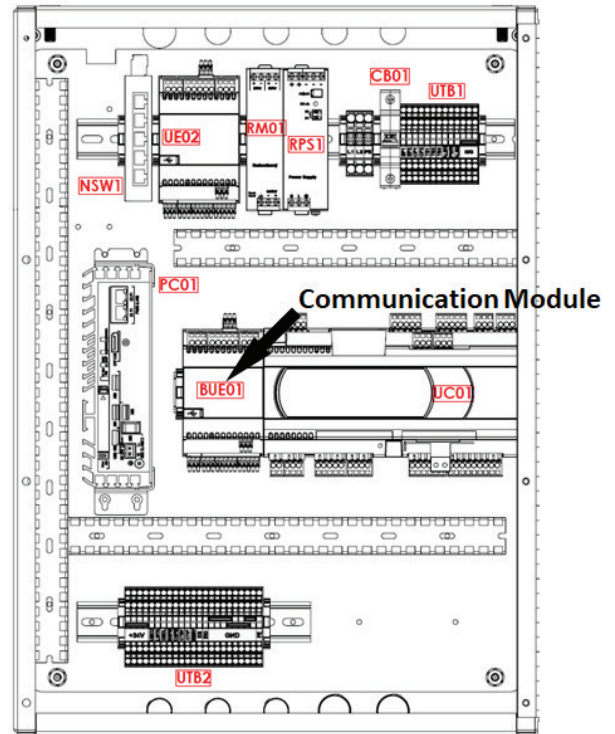


Figure 5: AGZ-F Unit Control Panel

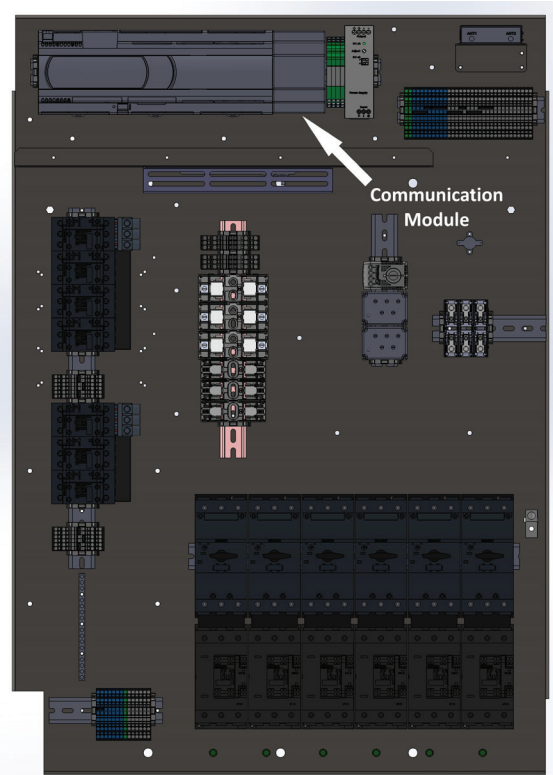
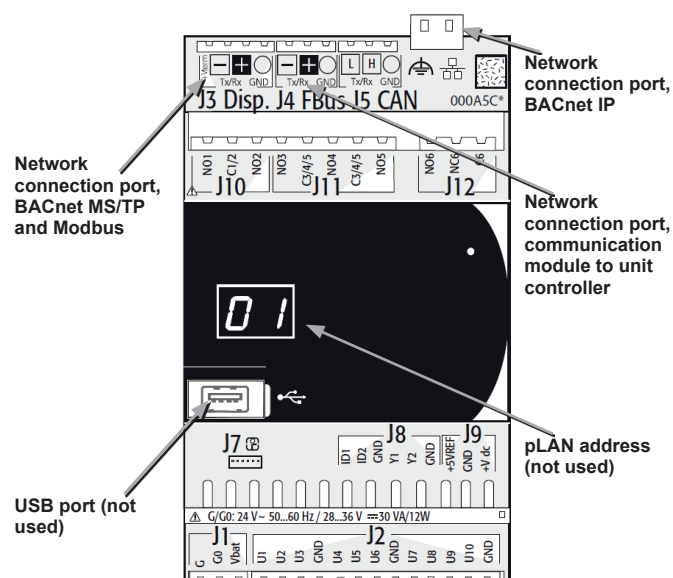


Figure 6 shows the important features of the BACnet and Modbus communication module, which are described in the following sections.

Figure 6: BACnet and Modbus Communication Module – Main Features



Installation and Mounting

The following section describes how to field install a new BACnet and Modbus communication module or replace an existing module on the 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.



DANGER

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

This equipment must be properly grounded. Only personnel knowledgeable in the operation of the equipment being controlled must perform connections and service to the unit controller.

Prior to installing the BACnet and Modbus Communication Module, disable the chiller, then remove power from the unit at either the unit disconnect switch or panel disconnect. Only repower the unit once all electrical connections are finalized.

Field Installation Kit

The BACnet and Modbus communication module field-installed kit ships with the following items:

- The BACnet and Modbus communication module
- Installation manual [IM 1283](#)

Installing a New BACnet/Modbus Module

For a new installation of a BACnet/Modbus communication module on a **WME-C** or **WMT** chiller, the existing unit I/O-only module must be replaced. The following steps are required to complete the installation:

1. Disable the chiller by setting the Unit On/Off Switch to "OFF" from inside the control panel of the unit. This must be done prior to installing a new communication module.
2. Remove power from the unit at either the unit disconnect switch or panel disconnect. Only repower the unit once all electrical connections are finalized.
3. Carefully disconnect and label all pre-terminated plugs prior to removing the existing I/O module.
4. Remove the I/O-only module from the DIN rail by lifting the connector tabs on the back of the module using a small flat-blade screwdriver.
5. Install the BACnet/Modbus communication module in the same location by gently pressing it onto the DIN rail until the connector tabs snap into place.
6. Reconnect all labeled, pre-terminated plugs to the corresponding port on the BACnet/Modbus communication module. See subsequent sections of this document for further information, including BACnet or Modbus connections.
7. Repower the unit.

8. Enable the chiller by setting the Unit On/Off Switch to "ON" from inside the control panel of the unit.

For an **AGZ-F** chiller, depending on the unit options, there may be an existing BACnet/Modbus communication module installed in the unit control panel that is used only for I/O. In this case, there is no new hardware to install, however, BACnet/Modbus communication must be enabled. This process is described in a subsequent section of this document.

If there is no existing BACnet/Modbus communication module installed in the unit control panel, the communication module must be added to the control panel. The following steps are required to complete the installation:

1. Disable the chiller by setting the Unit On/Off Switch to "OFF" from the control box door. This must be done prior to installing a new communication module.
2. Remove power from the unit at either the unit disconnect switch or panel disconnect. Only repower the unit once all electrical connections are finalized.
3. Install the new BACnet/Modbus communication module to the right of the unit controller by gently pressing it onto the DIN rail until the connector tabs snap into place.
4. Connect 24 VDC+ and 24 VDC- power to the J1 Port of the BACnet/Modbus communication module (see Power Connection section for more details).
5. See subsequent sections of this document for further information, including BACnet or Modbus connections.
6. Repower the unit.
7. Enable the chiller by setting the Unit On/Off Switch to "ON" from the control box door.

Replacement of BACnet/Modbus Module

The following steps are required to complete the replacement of an existing BACnet and Modbus communication module:

1. Disable the chiller by setting the Unit On/Off Switch to "OFF" from inside the control panel of the unit. This must be done prior to installing a new communication module.
2. Remove power from the unit at either the unit disconnect switch or panel disconnect. Only repower the unit once all electrical connections are finalized.
3. Carefully disconnect and label all pre-terminated plugs prior to removing the existing BACnet and Modbus communication module.
4. Remove the existing module from the DIN rail by lifting the connector tabs on the back of the module using a small flat-blade screwdriver.
5. Install the replacement BACnet and Modbus communication module in the same location by gently pressing it onto the DIN rail until the connector tabs snap into place.
6. Reconnect all labeled, pre-terminated plugs to the corresponding port on the replacement BACnet and Modbus communication module. See subsequent sections of this document for further information, including BACnet

or Modbus connections.

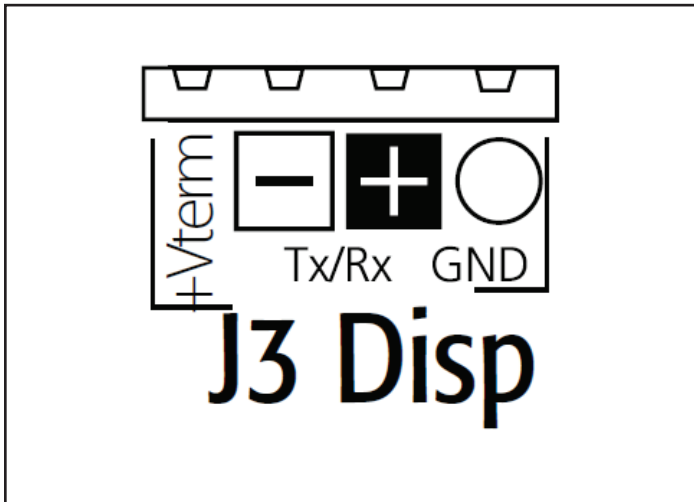
7. Repower the unit.
8. Enable the chiller by setting the Unit On/Off Switch to "ON" from inside the control panel of the unit.

BACnet MS/TP and Modbus Connection Port

BACnet MSTP and Modbus are connected using the port labeled, "J3 Disp". It is important to note this is a four pin connector, however, only two of these pins are used. The module is a two-wire RS-485 (EIA-485) device, meaning only the TX/RX positive (+) and negative (-) terminals are used. It is critical to connect the network conductors to the appropriate terminals (Figure 7). Failure to do so could result in network failure or hardware damage.

NOTE: Necessary end-of-line and bias resistors for the network must be field-supplied.

Figure 7: J3 Port Connections



BACnet IP Connection Port

The BACnet IP network is connected using a standard CAT 5 STP cable. The Ethernet port is an RJ-45, 8-pin connection communicating at 10/100 Mbps.

Fieldbus Port

The port labeled, "J4 FBus," (Figure 8) is used to connect the communication module to the unit controller. The positive (+), negative (-) and GND terminals on port J4 are connected to the matching terminals on the, "J11 pLAN," port on the unit controller (Figure 9). The wire harness for this connection is factory-supplied.

Figure 8: J4 FBus Port

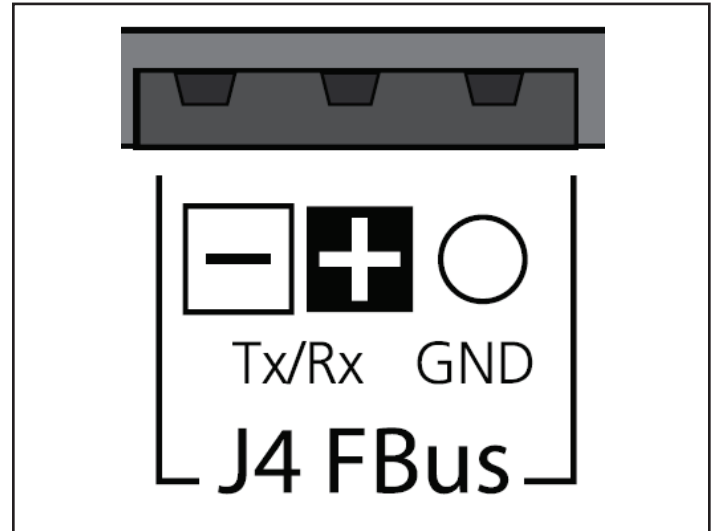
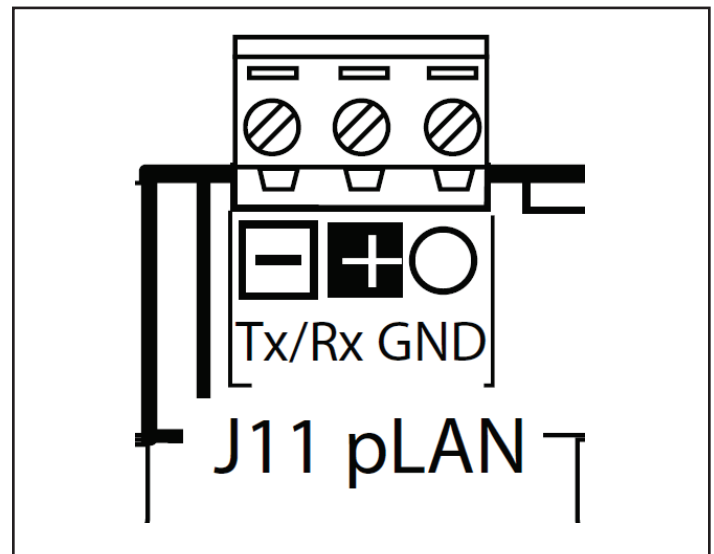


Figure 9: J11 pLAN Port

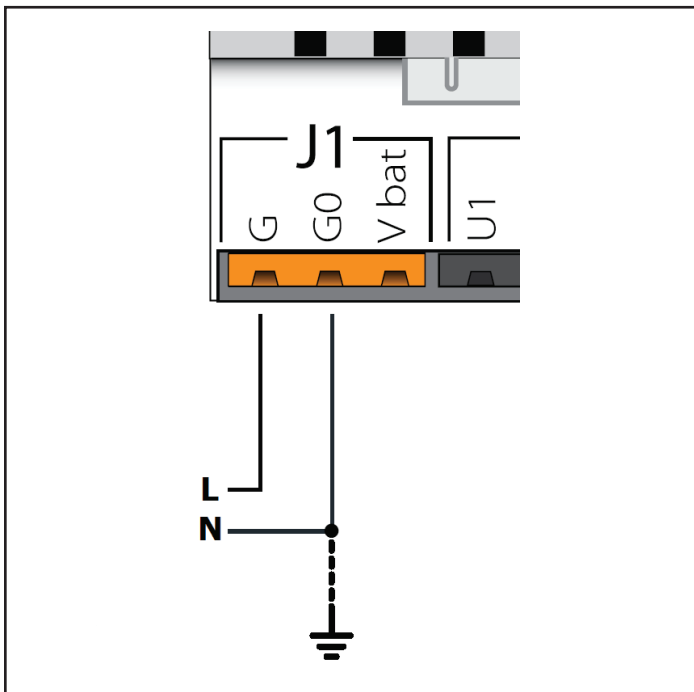


Power Connection

The power for the BACnet/Modbus communication module is provided by a pre-terminated, 3-pin plug connector. For a WME-C or WMT chiller, regardless of whether the communication module is being installed as a field upgrade to add BACnet/Modbus communication or as a replacement of a factory-installed communication module, the pre-terminated plug will already be connected to the correct 24 VAC terminals on the unit terminal block. Insert the pre-terminated, 3-pin plug into the receptacle for port J1 on the BACnet and Modbus communication module. [Figure 10](#) provides a reference for the J1 Port 24 VAC connections. The “Vbat” terminal is not used.

For an AGZ-F chiller with a factory-installed BACnet/Modbus communication module, the pre-terminated plug will already be connected to the correct 24 VDC terminals on the unit terminal block. Insert the pre-terminated, 3-pin plug into the receptacle for port J1 on the BACnet/Modbus communication module. If the communication module is being installed as a field upgrade to add BACnet/Modbus communication, the 3-pin plug on port J1 must be connected to 24 VDC at the unit terminal block. Refer to the chiller as-built wiring diagrams to determine appropriate 24 VDC+ and 24 VDC- connections in the chiller control panel. [Figure 10](#) provides a reference for the J1 Port 24 VDC connections. The “Vbat” terminal is not used. Use a minimum of 20 AWG conductors for the 24 VDC connections.

Figure 10: J1 Port (Power)



USB Port

A USB port is located on the front face of the communication module, but is not used for the BACnet or Modbus application.

pLAN address

A digital readout of the pLAN device address is located on the front face of the communication module, but is not used for the BACnet or Modbus application. This value can be ignored.

Network Configuration

The following sections describe how to configure the BACnet and Modbus communication module for BAS network integration. All configuration is done at the chiller HMI (Human Machine Interface) under the 'Settings' menu for WME-C and WMT chillers and under the "Configuration" menu for AGZ-F chillers.

NOTICE

In the following sections, separate configuration procedures are provided for WME-C, WMT and AGZ-F chillers.

BACnet IP Network Types

Single IP Subnet

In BACnet/IP networks with only one IP subnet (IP domain), broadcast messages from a device (ex. 172.16.255.255 or 0xBAC0) are sent to all other subnet members as IP broadcasts without requiring any additional configuration.

DHCP Networks

BACnet IP networks with DHCP use a server (typically a router or gateway) to automatically request network configuration parameters, such as IP addresses, to all devices. DHCP-enabled networks eliminate the need for a user to configure these settings manually since IP Addresses and other parameters are determined dynamically by the server.

There are several important aspects to consider with DHCP-enabled networks:

Aspect	Considerations
BBMDs	DHCP cannot be used together with BBMDs, as the IP addresses are configured as static addresses and cannot change during operation.
Alarm Recipient	In BACnet, alarm recipients are entered with their "Device Object Identifier" or their BACnet address. The IP address is part of the BACnet address and may not be changed for the alarm recipient. For this reason, option "Device Object Identifier" must always be used.
Access Rights	If access rights are assigned based on IP address, such as firewalls, the address must be static. Access rights are based off of the UDP Port Number (ex. UDP 47808) or the MAC Address of the BACnet communication module.
IP Version	The BACnet communication module supports IP Version 4, (i.e. IP devices with 32 bit addresses).

Multiple IP Subnets

A BACnet/IP network may consist of multiple IP subnets assigned the same BACnet network number. In this case, a BBMD (BACnet Broadcast Management Device) allows broadcasts to be transmitted to all other BBMDs on the BACnet network. BBMDs allow devices on one network to distribute broadcasts, or communicate, across multiple subnets. A BBMD also provides for foreign device registration. This allows a device on one network to communicate with a device on another network by using the BBMD to forward and route the messages.

The BACnet communication module can be registered as a BBMD device. This is done by registering the IP Address and subnet mask of the communication module as a Foreign Device with the BBMD.

BACnet IP Configuration (WME-C)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the Settings screen.
3. If necessary, set BAS Module Connection.
4. Set BAS Protocol.
5. Set BAS Settings (Module Type, Measurement Units, Device Instance, IP Address, IP Gateway, and IP Subnet Mask).
6. Set Control Source and Remote Enable parameters.
7. Enable the chiller.

The BACnet communication module is configured using the HMI on the chiller. [Table 1](#) describes the available BACnet IP network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Document [ED 19111](#) for descriptions of the available BACnet objects (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch on the front of the unit control panel to the "OFF" position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Settings Screen

1. From the chiller HMI, select the "Settings" icon. This displays the Settings screen of the HMI. It is not necessary to have entered the password at this point.
2. From the Settings screen, select the "Interface" tab.

Set BAS Module Connection and Protocol

1. From the "Interface" tab of the HMI, verify that "BAS Module Connected" is set to "Yes". If it is not (Figure 11), proceed to step 2. If it is, skip to step 5.
2. Press the BAS Module Connected parameter.
3. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001. Press "Enter" when all digits are inputted. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
4. From the drop-down list, select "Yes" for the BAS Module Connected parameter.
5. Press the "BAS Network Protocol" parameter.
6. From the drop-down list, select "BACnet IP" for the BAS Network Protocol parameter. This sets the protocol to BACnet IP and enables the additional associated parameters (for a complete list of all parameters, see Table 1).
7. Once the BAS Module Connected parameter is set to Yes and the BAS Network Protocol parameter is set to BACnet IP (Figure 12), the unit controller and HMI PC power must be cycled to apply the changes.
8. After the unit controller and HMI PC are repowered, proceed to *Set BAS Settings*.

Figure 11: BAS Module Connected Parameter

BAS Protocol	
BAS Module Connected	No
BAS Network Protocol	None
BAS Remote Enable	Disable

Figure 12: BAS Module Configured for BACnet IP

BAS Protocol	
BAS Module Connected	Yes
BAS Network Protocol	BACnet IP
BAS Remote Enable	Disable
BAS Measurement Units	Imperial

Table 1: BACnet IP Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/ LON Default: None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Units	Imperial or Metric Default: Imperial	Sets the Units of Measure that will be broadcast to the BAS
Device Instance	0 – 4194302 Default: 9050	Device Instance of the BACnet communication module. This must be unique throughout the entire BACnet network.
UDP Port	Default: 47808 (BAC0 hex)	User Datagram Protocol. The UDP Port allows host-to-host communication via the IP network and is used to identify the application process in the destination unit. Only change the UPD Port if there are multiple subnets. See network administrator before modification.
IP Address	If DHCP is enabled, Address automatically assigned by network Default: 192.168.1.10	IP Address of the BACnet communication module.
IP Gateway	If DHCP is enabled, Address automatically assigned by network Default: 192.168.1.1	Gateway Address of the BACnet communication module.
IP Mask	If DHCP is enabled, Address automatically assigned by network Default: 255.255.255.0	Subnet Mask of the BACnet communication module.
DHCP	Default: Disabled	Dynamic Host Configuration Protocol (DHCP) is a network protocol that enables a server to automatically assign an IP Address. Set to Disable if a static IP Address is needed.

Set BAS Settings

1. From the chiller HMI, select the “Settings” icon. This displays the Settings screen of the HMI.
2. From the Settings screen, select the “Interface” tab.
3. Press the “BAS Measurement Units” parameter and select the desired value, Imperial or Metric.
4. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001, then press “Enter” when all digits are inputted.
5. Press the “Device Instance” parameter and enter the desired value using the keypad. This number must be unique throughout the entire BACnet network. Press “Enter” when all digits are inputted. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
6. Press the “UDP Port” parameter and enter the desired value using the keypad. Press “Enter” when all digits are inputted. Note – The Default UDP Port value of 47808 rarely needs to be modified for BACnet IP networks.
7. If Dynamic Host Configuration Protocol (DHCP) will be used to provide IP addresses on the network, press the “DHCP” parameter and select “Enabled.” This completes the necessary BAS Settings for a DHCP BACnet IP network. Note: Enabling DHCP will initially cause the IP Address, IP Gateway, and IP Mask to revert to all zeroes. These addresses will update information once assigned by the network.
8. If the BACnet IP network requires static IP addresses, leave the DHCP parameter set to Disabled (default) and press the “IP Address” parameter on the HMI. Using the keypad, enter the desired IP address for the chiller. Once all digits are entered, press the “Enter” button. Note – the IP Address must be unique throughout the network segment.
9. Press the “IP Gateway” parameter on the HMI. Using the keypad, enter the desired IP Gateway for the chiller. Once all digits are entered, press the “Enter” button.
10. Press the “IP Mask” parameter on the HMI. Using the keypad, enter the desired IP Subnet Mask for the chiller. Once all digits are entered, press the “Enter” button.
11. All necessary BACnet IP communication parameters should now be configured (Figure 13).
12. Proceed to *Set Control Source and Remote Enable* on page 14.

Figure 13: Chiller Configured for BACnet IP

Unit Status: Cool Starting
Compressor 1 Status: Off

Leaving Water: 65.0 °F
Water Setpoint: 44.0
Date & Time: October 04, 2018 03:16:54 PM

Chiller Control: Auto

▶ Auto

■ Stop

WaterModesMotorTowerValvesOffsetsAlarmsCommissionInterface

BAS Module Connected
Select whether the BAS communications module is connected to the unit controls
**Power cycle required to apply changes
Password Level Required: Manager

Set-up

Chiller0
Display CursorDisabled
Floating Data DescriptionsAbbreviated

HMI Touch Screen

HMI Software Version1.0.13
Chiller Software Version---

Maximum Trend and Alarm Files

Maximum Alarm History Files365
Maximum Trend Files30

Date and Time

Current Year2018
Current Month10
Current Day4
Current Hour15
Current Minute16
Current Second54
Timezone LocationAmerica/New_York
Set Timezone LocationSet

BAS Protocol

BAS Module ConnectedYes
BAS Network ProtocolBACnet IP
BAS Remote EnableDisable
BAS Measurement UnitsImperial

BAS Settings

Device Instance0
UDP Port47808
IP Address192.168.1.2
IP Gateway192.168.1.1
IP Mask255.255.255.0

Save / Restore Parameters

Save to FileSave
Restore from FileRestore

Home

Evaporator

Compressor

Condenser

Expansion

Tower

Settings

Trend

Alarm

Operator

Set Control Source and Remote Enable

The “Control Source” and “Remote Enable” parameters on the HMI determine the method used for controlling the chiller through the BAS.

Control Source indicates what method will be used to enable the chiller. The available options are: Remote Switch, Local (OITS), and BAS. “Remote Switch” is used when a hard-wired contact will enable the chiller. “Local” is used when the chiller will be enabled at the chiller HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller.

Remote Enable indicates what method will be used to set the Cool (Leaving Water Temperature) Setpoint, Mode Setpoint, and Capacity Limit Setpoint and to clear alarms. The available options are: Disable (default) and Enable. With this parameter set to “Enable,” the unit controller will use the Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint, and Clear Alarm values written from the BAS network. With Remote Enable set to “Disable,” the unit controller will ignore the Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint, and Clear Alarm values written from the BAS network.

Table 2 provides a summary of chiller control with all possible settings of the Control Source and Remote Enable parameters:

Table 2: Control Source and Remote Enable Settings

Control Source = BAS, BAS Remote Enable = Enable	Control Source = BAS, BAS Remote Enable = Disable	Control Source = Local or Remote Switch, BAS Remote Enable = Disable	Control Source = Local or Remote Switch, BAS Remote Enable = Enable
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will use BACnet/Modbus/LON Enable command, but will ignore Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, but will use Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

Set Control Source

1. From the “Settings” screen on the HMI, select the “Modes” tab.
2. Locate the “Control Source” parameter under the “Chiller Control and Mode” category (Figure 14).
3. Press the Control Source parameter.
4. If the keypad appears, key in the Operator-level password of 100, then press “Enter” when all digits are inputted.
5. If the BAS will be used to enable and disable the chiller using a BACnet command, select “BAS” from the Control Source parameter drop-down list.

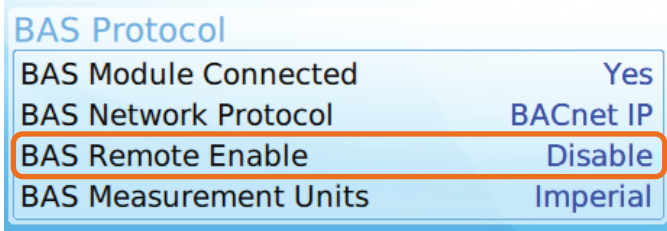
Figure 14: Control Source Parameter



Set Remote Enable

1. From the “Settings” screen on the HMI, select the “Interface” tab.
2. Locate the “BAS Remote Enable” parameter under the “BAS Protocol” category (Figure 15).
3. Press the BAS Remote Enable parameter.
4. If the keypad appears, key in the Manager-level password of 2001, then press “Enter” when all digits are inputted.
5. If the BAS will be used set the Cool (Leaving Water Temperature) Setpoint, Mode Setpoint, Capacity Limit Setpoint, and to clear alarms for the chiller using a BACnet command, select “Enable” from the BAS Remote Enable parameter drop-down list.
6. Proceed to *Enable the Chiller*.

Figure 15: Remote Enable Parameter



Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch on the front of the unit control panel to the “ON” position. When placed in the ON position, the chiller is able to run based on its current enable/disable command.

BACnet IP Configuration (WMT)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the Interface menu of the Settings screen.
3. Set BAS Module Connected parameter (if needed).
4. Cycle power to the control panel.
5. Set BAS Protocol, Settings (Device Instance, IP Address, IP Gateway, and IP Subnet Mask), and Units.
6. Cycle power to the control panel.
7. Navigate to the Modes menu of the Settings screen.
8. Set the Control Source.
9. Enable the chiller.

The BACnet communication module is configured using the HMI on the chiller. Table 3 describes the available BACnet IP network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller unit controller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Document [ED 19131](#) for descriptions of the available BACnet objects (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch to the “OFF” position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Set BAS Module Connection

1. From the chiller HMI, select the “Settings” icon. This displays the Settings screen of the HMI. It is not necessary to have entered the password at this point.
2. From the Settings screen, select the “Interface” tab.
3. Under “BAS Protocol,” verify that “BAS Module Connected” is set to “Yes”. If it is not (Figure 16), proceed to step 4. If it is, proceed to *Set BAS Protocol, Settings, and Units*.
4. Select the “BAS Module Connected” parameter. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001. Press “Enter” when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
5. From the drop-down list, select “Yes” for the BAS Module Connected parameter.
6. Once the BAS Module Connected parameter is set to “Yes” (Figure 17), power must be cycled to the unit control panel

to apply the changes.

- After the unit control panel is repowered, proceed to Set BAS Protocol, Settings, and Units.

Figure 16: BAS Module Not Connected

BAS Protocol

BAS Module Connected No

BAS Network Protocol None/LON

BAS Measurement Units Imperial

BAS Timezone Location US/Eastern

Set BAS Timezone Location Set

Figure 17: BAS Module Connected

BAS Protocol

BAS Module Connected Yes

BAS Network Protocol None/LON

BAS Measurement Units Imperial

BAS Timezone Location US/Eastern

Set BAS Timezone Location Set

select the “IP Address” parameter on the HMI. Using the keypad, enter the desired IP address for the chiller. Once all digits are entered, press the “Enter” button. Note – the IP Address must be unique throughout the network.

- Select the “Device Instance” parameter and enter the desired value using the keypad. This number must be unique throughout the entire BACnet network. Press “Enter” when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
- Select the “UDP Port” parameter and enter the desired value using the keypad. Press “Enter” when all digits are entered. Note – The Default UDP Port value of 47808 rarely needs to be modified for BACnet IP networks.
- Select the “IP Gateway” parameter on the HMI. Using the keypad, enter the desired IP Gateway for the chiller. Once all digits are entered, press the “Enter” button.
- Select the “IP Mask” parameter on the HMI. Using the keypad, enter the desired IP Subnet Mask for the chiller. Once all digits are entered, press the “Enter” button.
- Select the “BAS Measurement Units” parameter and select the desired value, Imperial (Default) or Metric.
- All necessary BACnet IP communication parameters should now be configured ([Figure 18](#)).
- Cycle power to the unit control panel.
- Proceed to Set Control Source.

Set BAS Protocol, Settings, and Units

- Under “BAS Protocol,” select the “BAS Network Protocol” parameter. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001. Press “Enter” when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
- From the pop-up window, select “BACnet IP”. This sets the protocol to BACnet IP and enables the additional associated parameters on the “Interface” screen (for a complete list of all parameters, see [Table 3](#)).
- If Dynamic Host Configuration Protocol (DHCP) will be used to provide IP addresses on the network, select the “DHCP” parameter under “BAS Settings” and select Enabled. This completes the necessary BAS Settings for a DHCP BACnet IP network. Note: Enabling DHCP will initially cause the IP Address, IP Gateway, and IP Mask to revert to all zeroes. These addresses will update information once assigned by the network.
- If the BACnet IP network requires static IP addresses, leave the DHCP parameter set to Disabled (default) and

Table 3: BACnet IP Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/LON Default: None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Unit	Imperial or Metric (SI) Default: Imperial	Sets the Units of Measure that will be broadcast to the BAS
BACnet IP DHCP Enable	Enabled or Disabled Default: Disabled	Dynamic Host Configuration Protocol (DHCP) is a network protocol that enables a server to automatically assign an IP Address. Set to Disable if a static IP Address is needed
Device Instance	0 – 4194302 Default: 9050	Device Instance of the BACnet communication module. This must be unique throughout the entire BACnet network.
UDP Port	Default: 47808 (BAC0 hex)	User Datagram Protocol. The UDP Port allows host-to-host communication via the IP network and is used to identify the application process in the destination unit. Only change the UPD Port if there are multiple subnets. See network administrator before modification.
IP Address	If DHCP is enabled, Address automatically assigned by network Default: 192.168.1.10	IP Address of the BACnet communication module.
IP Gateway	If DHCP is enabled, Address automatically assigned by network Default: 192.168.1.1	Gateway Address of the BACnet communication module.
IP Mask	If DHCP is enabled, Address automatically assigned by network Default: 255.255.255.0	Subnet Mask of the BACnet communication module.

Figure 18: BAS Module Configured for BACnet IP

BAS Protocol		BAS Settings	
BAS Module Connected	Yes	BACnet IP DHCP Enable	Disabled
BAS Network Protocol	BACnet IP	Device Instance	9050
		UDP Port	47808
BAS Measurement Units	Imperial	IP Address	162.16.1.10
BAS Timezone Location	US/Eastern	IP Gateway	162.16.1.1
Set BAS Timezone Location	<input type="button" value="Set"/>	IP Mask	255.255.0.0

Set Control Source

The “Control Source” parameter on the HMI determines the method used for controlling the chiller through the BAS. The available options are: Remote Switch, Local (HMI), and BAS. “Remote Switch” is used when hard-wired signals from a BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, and switch the chiller mode between cool and ice. “Local” is used when the chiller will only be controlled by the onboard HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, switch the chiller mode, and clear alarms. [Table 4](#) provides a summary of chiller control with all possible settings of the “Control Source” parameter:

Table 4: Control Source Settings

Control Source = BAS	Control Source = Local or Remote Switch
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

1. From the “Settings” screen on the HMI, select the “Modes” tab.
2. Locate the “Control Source” parameter under the “Chiller Control and Mode” category ([Figure 19](#)).
3. Select the “Control Source” parameter.
4. If the keypad appears, key in the Operator-level password of 100, then press “Enter” when all digits are entered
5. If a BAS will use BACnet commands to enable the chiller, provide a leaving water setpoint and capacity limiting, switch the chiller mode, and clear alarms, select “BAS” from the drop-down list.
6. Proceed to Enable the Chiller.

Figure 19: Control Source Parameter



Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch to the “ON” position. When placed in the ON position, the chiller is allowed to run based on its current enable/disable command.

BACnet IP Configuration (AGZ-F)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the BAS Configuration screen.
3. Set BAS Module Connected parameter (if needed).
4. Cycle power to the control panel.
5. Set BAS Protocol, Settings (Device Instance, IP Address, IP Gateway, and IP Subnet Mask), and Units.
6. Cycle power to the control panel.
7. Navigate to the Commission screen.
8. Set Control Source.
9. Enable the chiller.

The BACnet communication module is configured using the HMI on the chiller. [Table 5](#) describes the available BACnet IP network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller unit controller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Document [ED 19131](#) for descriptions of the available BACnet objects (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch on the front of the unit control panel to the “OFF” position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Set BAS Module Connection

1. From the chiller HMI, login using the Manager-level password and select the “Menu” icon ([Figure 20](#)).
2. From the Menu, select the “Configuration” icon ([Figure 21](#)).
3. From the Configuration screen, select the “BAS Configuration” icon ([Figure 22](#)).
4. Verify that “BAS Module Connected” is set to “Yes”. If it is not ([Figure 23](#)), proceed to step 5. If it is, proceed to Set BAS Protocol, Settings, and Units.
5. Select the “BAS Module Connected” parameter. A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press “OK” when all digits are entered.
6. From the drop-down list, select “Yes,” then press “OK”.
7. Once the BAS Module Connected parameter is set to “Yes” ([Figure 24](#)), power must be cycled to the unit control panel to apply the changes.

- After the unit control panel is repowered, proceed to Set BAS Protocol, Settings, and Units.

Figure 20: Menu Icon

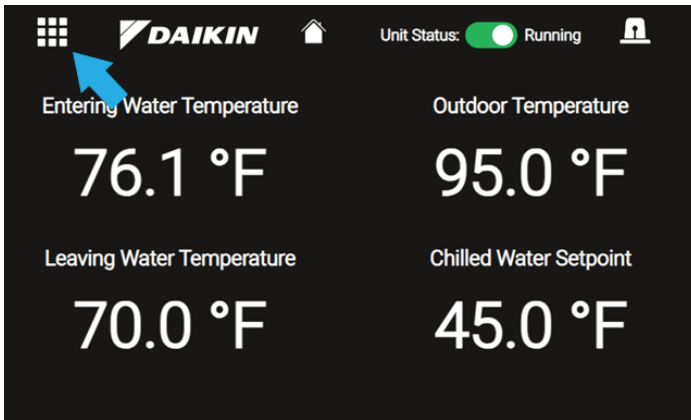


Figure 21: Configuration Icon

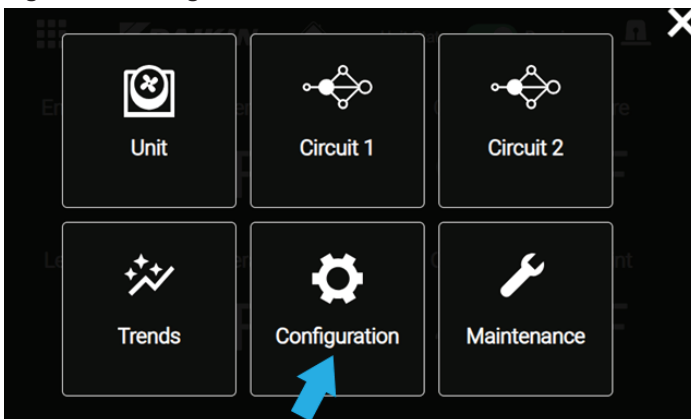


Figure 22: BAS Configuration Icon

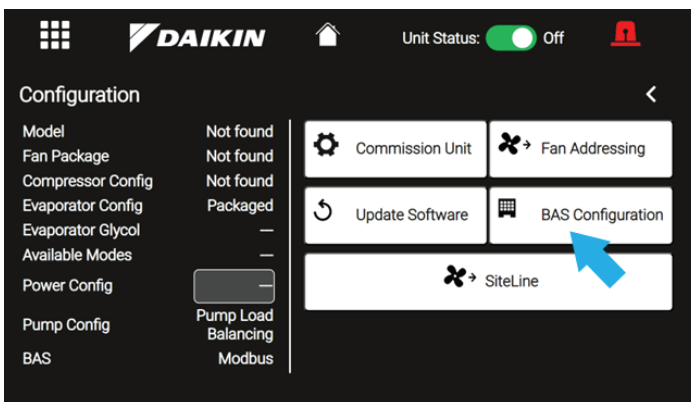


Figure 23: BAS Module Not Connected

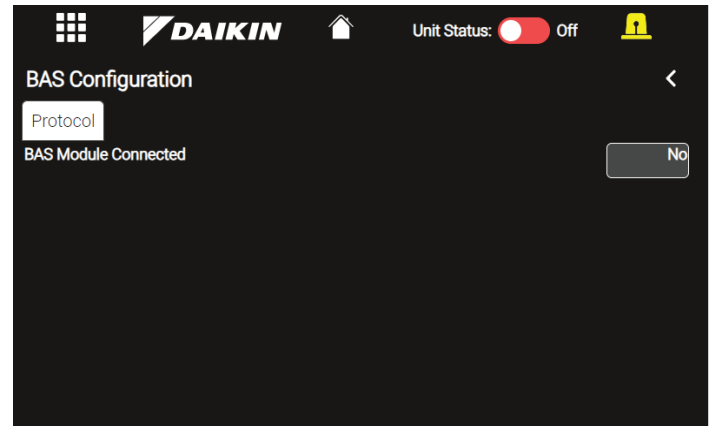
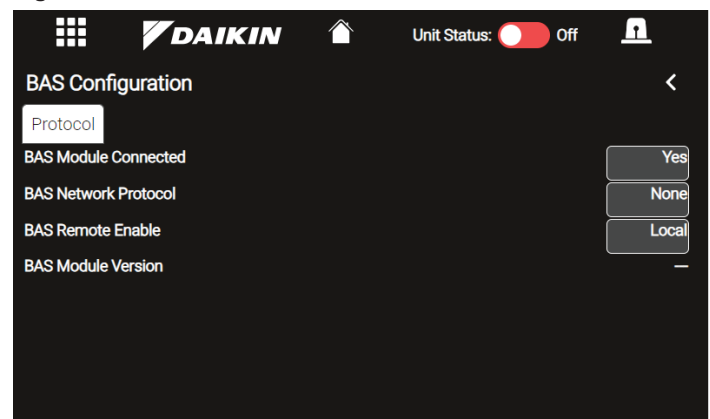


Figure 24: BAS Module Connected



Set BAS Protocol, Settings, and Units

- From the "Protocol" tab of the BAS Configuration screen, select the "BAS Network Protocol" parameter.
- A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press "OK" when all digits are entered.
- If necessary, press the "BAS Network Protocol" parameter again.
- From the pop-up window, select "BACnet IP" (Figure 25). This sets the protocol to BACnet IP and enables the additional associated parameters on the "Settings" tab (for a complete list of all parameters, see Table 5).
- Select the "BAS Measurement Units" parameter, select the desired value, English (Default) or SI (Metric), then press "OK".
- From the BAS Configuration screen, select the "Settings" tab.
- Select the "Device Instance" parameter and enter the desired value using the keypad. This number must be unique throughout the entire BACnet network. Press "OK" when all digits are entered.
- Select the "UDP Port" parameter and enter the desired value using the keypad. Press "OK" when all digits are

entered. Note – The Default UDP Port value of 47808 rarely needs to be modified for BACnet IP networks.

9. If Dynamic Host Configuration Protocol (DHCP) will be used to provide IP addresses on the network, select the “DHCP” parameter, select “Enable,” then press “OK”. This completes the necessary BAS Settings for a DHCP BACnet IP network. Note: Enabling DHCP will initially cause the IP Address, IP Gateway, and IP Mask to revert to all zeroes. These addresses will update information once assigned by the network.
10. If the BACnet IP network requires static IP addresses, leave the DHCP parameter set to “Disable” (default) and select the “IP Address” parameter on the HMI. Using the onscreen keypad, enter the desired IP address for the chiller. Once all digits are typed, press the “OK” button. Note – the IP Address must be unique throughout the network.
11. Select the “IP Gateway” parameter on the HMI. Using the keypad, enter the desired IP Gateway for the chiller. Once all digits are entered, press the “OK” button.
12. Select the “IP Mask” parameter on the HMI. Using the keypad, enter the desired IP Subnet Mask for the chiller. Once all digits are typed, press the “OK” button.
13. All necessary BACnet IP communication parameters should now be configured (Figure 26).
14. Cycle power to the unit control panel.
15. Proceed to Set Control Source.

Figure 25: BACnet IP Selected

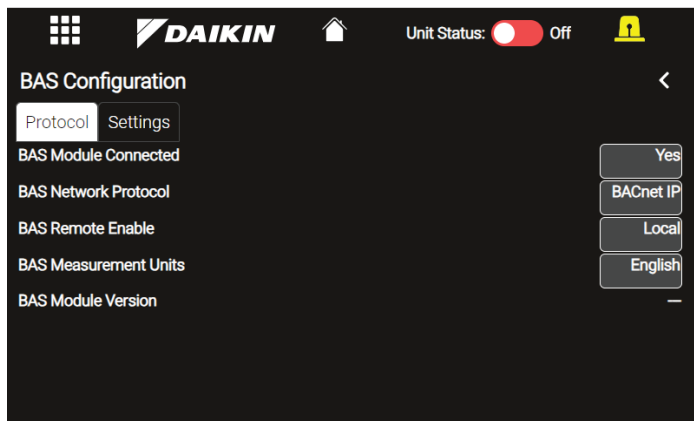


Table 5: BACnet IP Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/LON Default: None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Units	English or Metric (SI) Default: English	Sets the Units of Measure that will be broadcast to the BAS
Device Instance	0 – 4194302 Default: 9050	Device Instance of the BACnet communication module. This must be unique throughout the entire BACnet network
UDP Port	Default: 47808 (BAC0 hex)	User Datagram Protocol. The UDP Port allows host-to-host communication via the IP network and is used to identify the application process in the destination unit. Only change the UDP Port if there are multiple subnets. See network administrator before modification.
IP Address	If DHCP is enabled, Address automatically assigned by network Default: 192.168.1.10	IP Address of the BACnet communication module.
IP Gateway	If DHCP is enabled, Address automatically assigned by network Default: 192.168.1.1	Gateway Address of the BACnet communication module.
IP Mask	If DHCP is enabled, Address automatically assigned by network Default: 255.255.255.0	Subnet Mask of the BACnet communication module.
DHCP	Default: Disabled	Dynamic Host Configuration Protocol (DHCP) is a network protocol that enables a server to automatically assign an IP Address. Set to Disable if a static IP Address is needed

Figure 26: Chiller BACnet IP Settings

Figure 27: Control Source Parameter - BAS Selected

Set Control Source

The “Control Source” parameter on the HMI determines the method used for controlling the chiller through the BAS. The available options are: Remote Switch, Local (OITS), and BAS. “Remote Switch” is used when hard-wired signals from a BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, and switch the chiller mode between cool and ice. “Local” is used when the chiller will only be controlled by the onboard HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, switch the chiller mode between cool and ice, and clear alarms. [Table 6](#) provides a summary of chiller control with all possible settings of the “Control Source” parameter:

Table 6: Control Source Settings

Control Source = BAS	Control Source = Local or Remote Switch
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

1. From the Menu, select the “Configuration” icon.
2. From the Configuration screen, select the “Commission” icon.
3. Select the “Control Source” parameter.
4. A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press “OK” when all digits are entered.
5. If necessary, select the “Control Source” parameter again.
6. If a BAS will enable the chiller, provide setpoints, and clear alarms through BACnet, select “BAS” from the drop-down list, then press “OK” ([Figure 27](#)).
7. Proceed to *Enable the Chiller*.

Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch on the front of the unit control panel to the “ON” position. When placed in the ON position, the chiller is allowed to run based on its current enable/disable command.

BACnet MS/TP Configuration (WME-C)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the Settings screen.
3. If necessary, set BAS Module Connection.
4. Set BAS Protocol.
5. Set BAS Settings (Measurement Units, MS/TP MAC Address, Device Instance, Baud Rate, Max Info Frames, and Max Master).
6. Set Control Source and Remote Enable parameters.
7. Enable the chiller.

The BACnet communication module is configured using the HMI on the chiller. [Table 7](#) describes the available BACnet MS/TP network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller unit controller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Documents ED 19111 (WME-C) and ED 19131 (WMT and AGZ-F) for descriptions of the available BACnet objects (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch on the front of the unit control panel to the "OFF" position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Settings Screen

1. From the chiller HMI, select the "Settings" icon. This displays the Settings screen of the HMI. It is not necessary to have entered the password at this point.
2. From the Settings screen, select the "Interface" tab.

Set BAS Module Connection and Protocol

1. From the "Interface" tab of the HMI, verify that "BAS Module Connected" is set to "Yes". If it is not ([Figure 28](#)), proceed to step 2. If it is, skip to step 5.
2. Press the BAS Module Connected field on the Interface tab of the HMI.
3. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001. Press "Enter" when all digits are inputted. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
4. From the drop-down list, select "Yes" for the BAS Module Connected parameter ([Figure 29](#)).
5. Press the "BAS Network Protocol" parameter on the Interface tab of the HMI.
6. From the drop-down list, select "BACnet MS/TP" for the BAS Network Protocol parameter. This sets the protocol to BACnet MS/TP and enables the additional associated parameters (for a complete list of all parameters, see [Table 7](#)).
7. Once the BAS Module Connected parameter is set to Yes and the BAS Network Protocol parameter is set to BACnet MS/TP ([Figure 29](#)), the unit controller and HMI PC power must be cycled to apply the changes.
8. After the unit controller and HMI PC are repowered, proceed to *Set BAS Settings*.

Figure 28: BAS Module Connected Parameter

BAS Protocol	
BAS Module Connected	No
BAS Network Protocol	None
BAS Remote Enable	Disable

Figure 29: BAS Module Configured for BACnet MS/TP

BAS Protocol	
BAS Module Connected	Yes
BAS Network Protocol	BACnet MSTP
BAS Remote Enable	Disable
BAS Measurement Units	Imperial

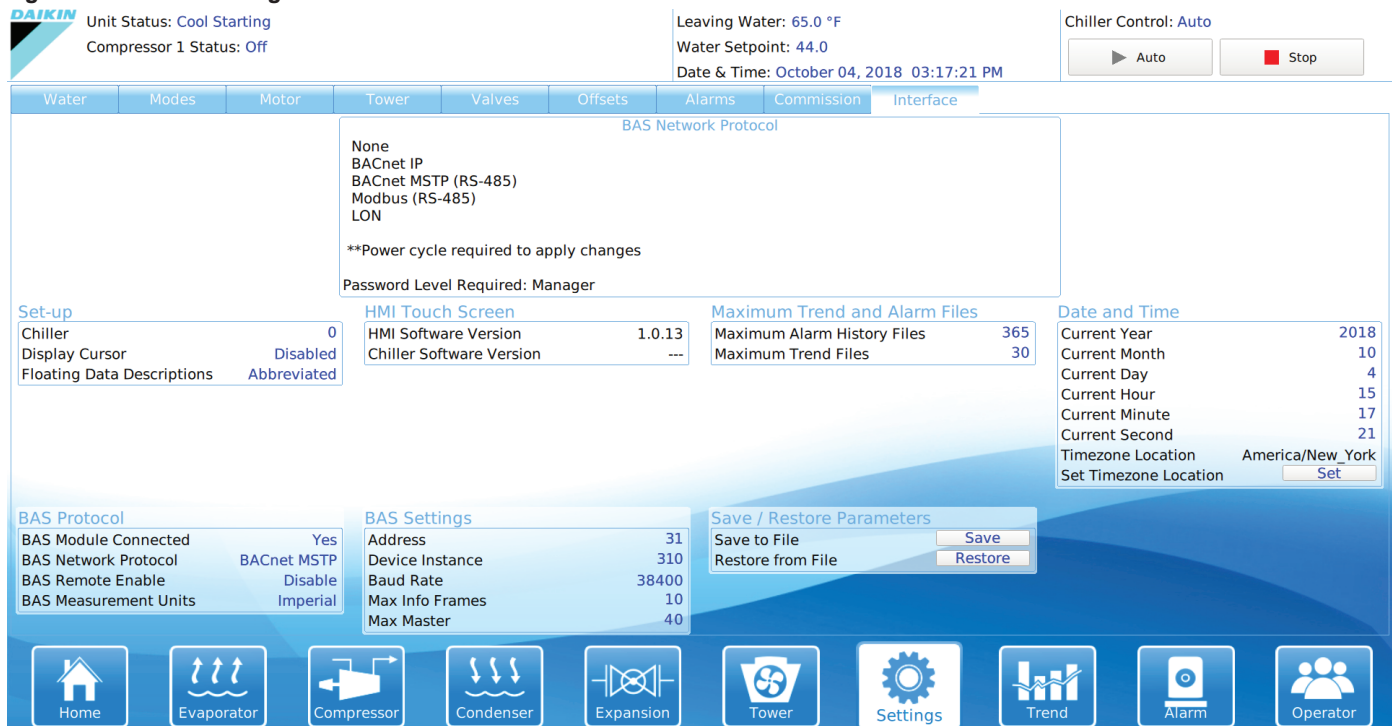
Table 7: BACnet MS/TP Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/LON Default: None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Units	Imperial or Metric Default: Imperial	Sets the Units of Measure that will be broadcast to the BAS
Address	0 – 127 Default: 1	MS/TP MAC Address of the BACnet communication module. Each device on the BACnet MS/TP network must have a unique MS/TP MAC Address
Device Instance	0 – 4194302 Default: 9050	Device Instance of the BACnet communication module. This must be unique throughout the entire BACnet network.
Baud Rate	9600, 19200, 38400, 57600, 76800 Default: 19200	Data transfer speed (bps) of the BACnet MS/TP network.
Max Info Frames	0 – 255 Default: 10	This parameter specifies the maximum number of information frames the BACnet module may send before it must pass the token.
Max Master	0 – 127 Default: 127	This parameter specifies the highest MS/TP MAC Address used on the network

Set BAS Settings

- From the chiller HMI, select the “Settings” icon. This displays the Settings screen of the HMI.
- From the Settings screen, select the “Interface” tab.
- Press the “BAS Measurement Units” parameter and select the desired value, Imperial or Metric.
- A keypad prompt will appear to enter a password. Key in the Manager-level password of 2001, then press “Enter” when all digits are inputted.
- Press the “Address” parameter and enter the desired MS/TP MAC address using the keypad. This number must be unique throughout the entire BACnet MS/TP network. Press “Enter” when all digits are inputted. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
- Press the “Device Instance” parameter and enter the desired value using the keypad. This number must be unique throughout the entire BACnet network. Press “Enter” when all digits are inputted.
- Press the “Baud Rate” parameter and select the desired value from the drop-down list, 9600, 19200, 38400, 57600 or 76800. Note – this setting must be the same for all devices on the BACnet MS/TP network.
- Press the “Max Info Frames” parameter on the HMI. Using the keypad, enter the desired value. Once all digits are entered, press the “Enter” button.
- Press the “Max Masters” parameter on the HMI. Using the keypad, enter the value of the highest MS/TP MAC address used for any device on the network. If unsure, leave this set to 127. Once all digits are entered, press the “Enter” button.
- All necessary BACnet MS/TP communication parameters should now be configured (Figure 30).
- Proceed to *Set Control Source and Remote Enable* on page 24.

Figure 30: Chiller Configured for BACnet MS/TP



Set Control Source and Remote Enable

The “Control Source” and “Remote Enable” parameters on the HMI determine the method used for controlling the chiller through the BAS.

Control Source indicates what method will be used to enable the chiller. The available options are: Remote Switch, Local (OITS), and BAS. “Remote Switch” is used when a hard-wired contact will enable the chiller. “Local” is used when the chiller will be enabled at the chiller HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller.

Remote Enable indicates what method will be used to set the Cool (Leaving Water Temperature) Setpoint, Mode Setpoint, and Capacity Limit Setpoint and to clear alarms. The available options are: Disable (default) and Enable. With this parameter set to “Enable,” the unit controller will use the Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint, and Clear Alarm values written from the BAS network. With Remote Enable set to “Disable,” the unit controller will ignore the Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint, and Clear Alarm values written from the BAS network.

Table 8 provides a summary of chiller control with all possible settings of the Control Source and Remote Enable parameters:

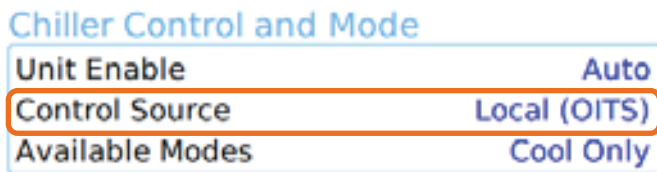
Table 8: Control Source and Remote Enable Settings

Control Source = BAS, BAS Remote Enable = Enable	Control Source = BAS, BAS Remote Enable = Disable	Control Source = Local or Remote Switch, BAS Remote Enable = Disable	Control Source = Local or Remote Switch, BAS Remote Enable = Enable
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will use BACnet/Modbus/LON Enable command, but will ignore Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, but will use Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

Set Control Source

1. From the “Settings” screen on the HMI, select the “Modes” tab.
2. Locate the “Control Source” parameter under the “Chiller Control and Mode” category (Figure 31).
3. Press the Control Source parameter.
4. If the keypad appears, key in the Operator-level password of 100, then press “Enter” when all digits are inputted.
5. If the BAS will be used to enable and disable the chiller using a BACnet command, select “BAS” from the Control Source parameter drop-down list.

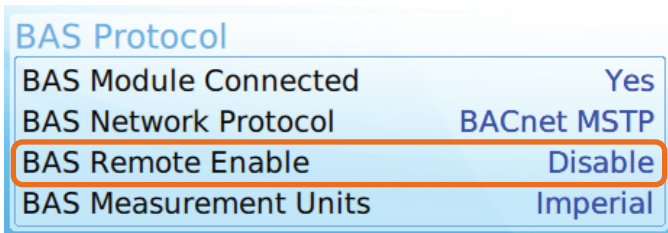
Figure 31: Control Source Parameter



Set Remote Enable

1. From the “Settings” screen on the HMI, select the “Interface” tab.
2. Locate the “BAS Remote Enable” parameter under the “BAS Protocol” category (Figure 32).
3. Press the BAS Remote Enable parameter.
4. If the keypad appears, key in the Manager-level password of 2001, then press “Enter” when all digits are inputted.
5. If the BAS will be used set the Cool (Leaving Water Temperature) Setpoint, Mode Setpoint, and Capacity Limit Setpoint and to clear alarms for the chiller using a BACnet command, select “Enable” from the BAS Remote Enable parameter drop-down list.
6. Proceed to *Enable the Chiller*.

Figure 32: Remote Enable Parameter



Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch on the front of the unit control panel to the “ON” position. When placed in the ON position, the chiller is able to run based on its current enable/disable command.

BACnet MS/TP Configuration (WMT)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the Interface menu of the Settings screen.
3. Set BAS Module Connected parameter (if needed).
4. Cycle power to the control panel.
5. Set BAS Protocol, Settings (MS/TP MAC Address, Device Instance, Baud Rate, Max Info Frames, and Max Master), and Units.
6. Cycle power to the control panel.
7. Navigate to the Modes menu of the Settings screen.
8. Set the Control Source.
9. Enable the chiller.

The BACnet communication module is configured using the HMI on the chiller. Table 9 describes the available BACnet MS/TP network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller unit controller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Document [ED 19131](#) for descriptions of the available BACnet objects (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch to the “OFF” position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Set BAS Module Connection

1. From the chiller HMI, select the “Settings” icon. This displays the Settings screen of the HMI. It is not necessary to have entered the password at this point.
2. From the Settings screen, select the “Interface” tab.
3. Under “BAS Protocol,” verify that “BAS Module Connected” is set to “Yes”. If it is not (Figure 33), proceed to step 4. If it is, proceed to Set BAS Protocol, Settings, and Units.
4. Select the “BAS Module Connected” parameter. A keypad prompt will appear to enter a password. Key in the

Manager level password of 2001. Press “Enter” when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.

- From the drop-down list, select “Yes” for the BAS Module Connected parameter.
- Once the BAS Module Connected parameter is set to “Yes” (Figure 34), power must be cycled to the unit control panel to apply the changes.
- After the unit control panel is repowered, proceed to Set BAS Protocol, Settings, and Units.

Figure 33: BAS Module Not Connected

Figure 34: BAS Module Connected

Set BAS Protocol, Settings, and Units

- Under “BAS Protocol,” select the “BAS Network Protocol” parameter. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001. Press “Enter” when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
- From the pop-up window, select “BACnet MS/TP”. This sets the protocol to BACnet MS/TP and enables the additional associated parameters on the “Interface” screen (for a complete list of all parameters, see Table 9).
- Select the “Address” parameter and enter the desired MS/

TP MAC address using the keypad. This number must be unique throughout the entire BACnet MS/TP network. Press “Enter” when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.

- Select the “Device Instance” parameter and enter the desired value using the keypad. This number must be unique throughout the entire BACnet network. Press “Enter” when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
- Select the “Baud Rate” parameter and select the desired value from the drop-down list, 9600, 19200, 38400, 57600 or 76800. Note – this setting must be the same for all devices on the BACnet MS/TP network.
- Select the “Max Info Frames” parameter on the HMI. Using the keypad, enter the desired value. Once all digits are entered, press the “Enter” button
- Select the “Max Masters” parameter on the HMI. Using the keypad, enter the value of the highest MS/TP MAC address used for any device on the network. If unsure, leave this set to 127. Once all digits are entered, press the Enter button.
- Select the “BAS Measurement Units” parameter and select the desired value, Imperial (Default) or Metric.
- All necessary BACnet MS/TP communication parameters should now be configured (Figure 35).
- Cycle power to the unit control panel.
- After the unit control panel is repowered, proceed to Set Control Source.

Table 9: BACnet MS/TP Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/LON Default: None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Units	Imperial or Metric Default: Imperial	Sets the Units of Measure that will be broadcast to the BAS
Address	0 – 127 Default: 1	MS/TP MAC Address of the BACnet communication module. Each device on the BACnet MS/ TP network must have a unique MS/TP MAC Address
Device Instance	0 – 4194302 Default: 9050	Device Instance of the BACnet communication module. This must be unique throughout the entire BACnet network.
Baud Rate	9600, 19200, 38400, 57600, 76800 Default: 19200	Data transfer speed (bps) of the BACnet MS/TP network.

Parameter	Range/Default	Description
Max Info Frames	0 – 255 Default: 10	This parameter specifies the maximum number of information frames the BACnet module may send before it must pass the token
Max Master	0 – 127 Default: 127	This parameter specifies the highest MS/TP MAC Address used on the network

Figure 35: BAS Module Configured for BACnet MS/TP

BAS Protocol		BAS Settings	
BAS Module Connected	Yes	Address	1
BAS Network Protocol	BACnet MSTP	Device Instance	9050
		Baud Rate	38400
		Max Info Frames	10
BAS Measurement Units	Imperial	Max Master	127
BAS Timezone Location	US/Eastern		
Set BAS Timezone Location	<input type="button" value="Set"/>		

Set Control Source

The “Control Source” parameter on the HMI determines the method used for controlling the chiller through the BAS. The available options are: Remote Switch, Local (HMI), and BAS. “Remote Switch” is used when hard-wired signals from a BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, and switch the chiller mode between cool and ice. “Local” is used when the chiller will only be controlled by the onboard HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, switch the chiller mode, and clear alarms. Table 10 provides a summary of chiller control with all possible settings of the “Control Source” parameter:

Table 10: Control Source Settings

Control Source = BAS	Control Source = Local or Remote Switch
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

1. From the “Settings” screen on the HMI, select the “Modes” tab.
2. Locate the “Control Source” parameter under the “Chiller Control and Mode” category (Figure 36).
3. Select the “Control Source” parameter.
4. If the keypad appears, key in the Operator-level password of 100, then press “Enter” when all digits are entered
5. If a BAS will use BACnet commands to enable the chiller, provide a leaving water setpoint and capacity limiting, switch the chiller mode, and clear alarms, select “BAS” from the drop-down list.

6. Proceed to Enable the Chiller.

Figure 36: Control Source Parameter

Chiller Control and Mode

Unit Enable

Control Source

Available Modes

Off

Local (HMI)

Cool Only

Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch to the “ON” position. When placed in the ON position, the chiller is allowed to run based on its current enable/disable command.

BACnet MS/TP Configuration (AGZ-F)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the BAS Configuration screen.
3. Set BAS Module Connected parameter (if needed).
4. Cycle power to the control panel.
5. Set BAS Protocol, Settings (MAC Address, Device Instance, Baud Rate, Max Info Frames, Max Master), and Units.
6. Cycle power to the control panel.
7. Navigate to the Commission screen.
8. Set Control Source.
9. Enable the chiller.

The BACnet communication module is configured using the HMI on the chiller. Table 11 describes the available BACnet MS/TP network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller unit controller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Document [ED 19131](#) for descriptions of the available BACnet objects (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch on the front of the unit control panel to the “OFF” position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Set BAS Module Connection

1. From the chiller HMI, login using the Manager-level password and select the “Menu” icon (Figure 37).
2. From the Menu, select the “Configuration” icon (Figure 38).
3. From the Configuration screen, select the “BAS Configuration” icon (Figure 39).
4. Verify that “BAS Module Connected” is set to “Yes”. If it is not (Figure 40), proceed to step 5. If it is, proceed to Set BAS Protocol, Settings, and Units.
5. Select the “BAS Module Connected” parameter. A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press “OK” when all digits are entered.
6. From the drop-down list, select “Yes,” then press “OK”.

7. Once the BAS Module Connected parameter is set to “Yes” (Figure 41), power must be cycled to the unit control panel to apply the changes.
8. After the unit control panel is repowered, proceed to Set BAS Protocol, Settings, and Units.

Figure 37: Menu Icon

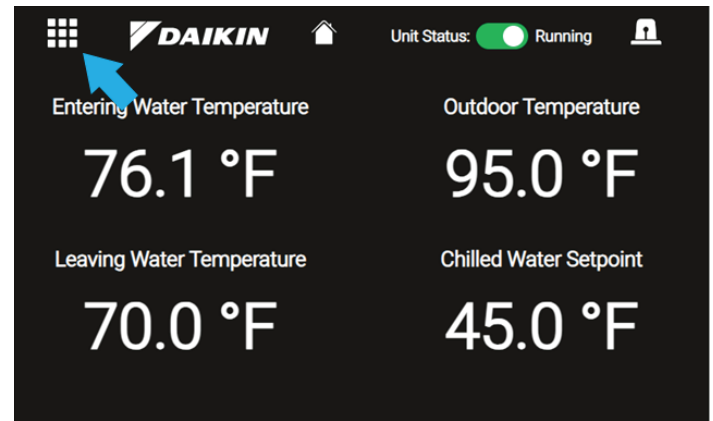


Figure 38: Configuration Icon

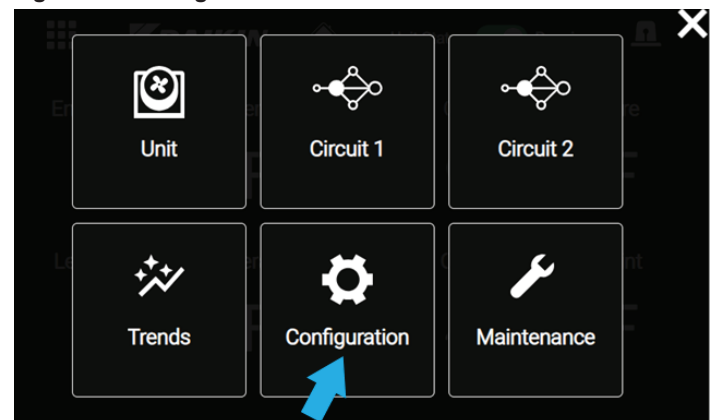


Figure 39: BAS Configuration Icon

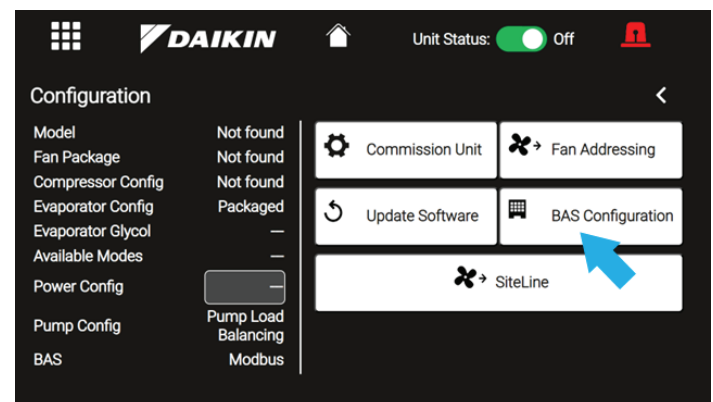


Figure 40: BAS Module Not Connected

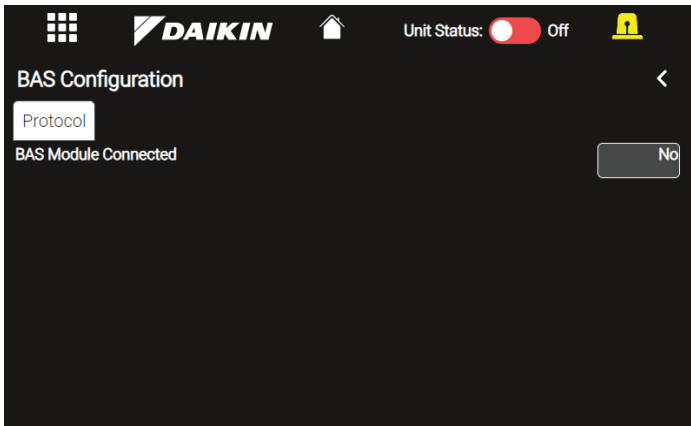
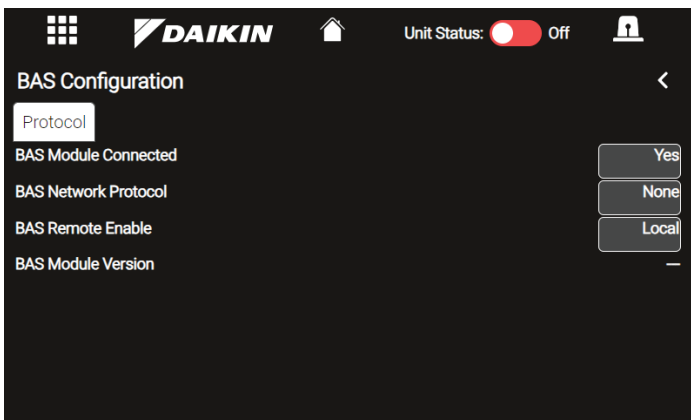


Figure 41: BAS Module Connected



Set BAS Protocol, Settings, and Units

1. From the “Protocol” tab of the BAS Configuration screen, press the “BAS Network Protocol” parameter.
2. A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press “OK” when all digits are entered.
3. If necessary, press the “BAS Network Protocol” parameter again.
4. From the pop-up window, select “BACnet MS/TP” (Figure 42). This sets the protocol to BACnet MS/TP and enables the additional associated parameters on the “Settings” tab (for a complete list of all parameters, see Table 11).
5. Select the “BAS Measurement Units” parameter and select the desired value, English (Default) or Metric.
6. From the BAS Configuration screen, select the “Settings” tab.
7. Select the “Address” parameter and enter the desired MS/TP MAC address using the keypad. This number must be unique throughout the entire BACnet MS/TP network. Press “OK” when all digits are entered.
8. Select the “Device Instance” parameter and enter the desired value using the keypad. This number must be unique throughout the entire BACnet network. Press “OK”

when all digits are entered.

9. Select the “Baud Rate” parameter and select the desired value from the drop-down list, 9600, 19200, 38400, 57600 or 76800. Note – this setting must be the same for all devices on the BACnet MS/TP network.
10. Select the “Max Info Frames” parameter and enter the desired value using the keypad. Press “OK” when all digits are entered.
11. Select the “Max Masters” parameter and enter the desired value using the keypad. This should be the value of the highest MS/TP MAC address used for any device on the network. If unsure, leave this set to 127. Once all digits are entered, press “OK”.
12. All necessary BACnet MS/TP communication parameters should now be configured (Figure 43).
13. Cycle power to the unit control panel.
14. After the unit control panel is repowered, proceed to *Set Control Source*.

Figure 42: BACnet MS/TP Selected

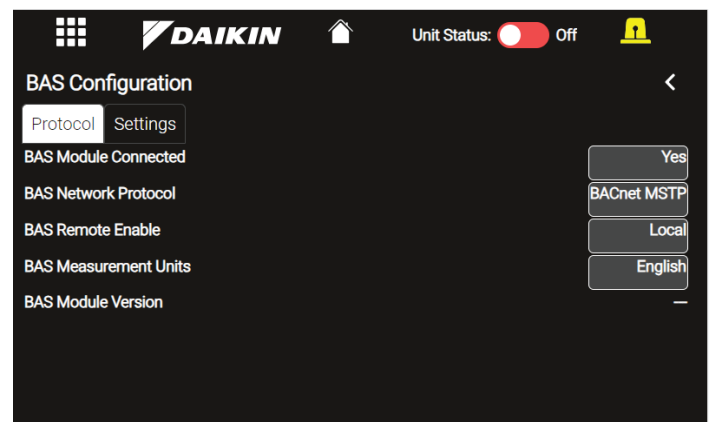


Table 11: BACnet MS/TP Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Units	English or Metric Default: English	Sets the Units of Measure that will be broadcast to the BAS
Address	0 – 127 Default: 1	MS/TP MAC Address of the BACnet communication module. Each device on the BACnet MS/ TP network must have a unique MS/TP MAC Address
Device Instance	0 – 4194302 Default: 9050	Device Instance of the BACnet communication module. This must be unique throughout the entire BACnet network.
Baud Rate	9600, 19200, 38400, 57600, 76800 Default: 19200	Data transfer speed (bps) of the BACnet MS/TP network.

Parameter	Range/Default	Description
Max Info Frames	0 – 255 Default: 10	This parameter specifies the maximum number of information frames the BACnet module may send before it must pass the token.
Max Master	0 – 127 Default: 127	This parameter specifies the highest MS/TP MAC Address used on the network

Figure 43: Chiller BACnet MS/TP Settings

Set Control Source

The “Control Source” parameter on the HMI determines the method used for controlling the chiller through the BAS. The available options are: Remote Switch, Local (OITS), and BAS. “Remote Switch” is used when hard-wired signals from a BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, and switch the chiller mode between cool and ice. “Local” is used when the chiller will only be controlled by the onboard HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, switch the chiller mode between cool and ice, and clear alarms. [Table 12](#) provides a summary of chiller control with all possible settings of the “Control Source” parameter:

Table 12: Control Source Settings

Control Source = BAS	Control Source = Local or Remote Switch
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

1. From the Menu, select the “Configuration” icon.
2. From the Configuration screen, select the “Commission” icon.
3. Select the “Control Source” parameter.
4. A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press “OK” when all digits are entered.
5. If necessary, select the “Control Source” parameter again.
6. If a BAS will enable the chiller, provide setpoints, and clear alarms through BACnet, select “BAS” from the drop-down list, then press “OK” ([Figure 44](#)).
7. Proceed to *Enable the Chiller*.

Figure 44: Control Source Parameter - BAS Selected

Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch on the front of the unit control panel to the “ON” position. When placed in the ON position, the chiller is allowed to run based on its current enable/disable command.

Modbus Configuration (WME-C)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the Settings screen.
3. If necessary, set BAS Module Connection.
4. Set BAS Protocol.
5. Set BAS Settings (Measurement Units, Address, Baud Rate, Parity, and Stop Bits).
6. Set Control Source and Remote Enable parameters.
7. Enable the chiller.

The Modbus communication module is configured using the HMI on the chiller. [Table 13](#) describes the available Modbus network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller unit controller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Documents ED 19111 (WME-C) and ED 19131 (WMT and AGZ-F) for descriptions of the available Modbus registers (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch on the front of the unit control panel to the "OFF" position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Settings Screen

1. From the chiller HMI, select the "Settings" icon. This displays the Settings screen of the HMI. It is not necessary to have entered the password at this point.
2. From the Settings screen, select the "Interface" tab.

Set BAS Module Connection and Protocol

1. From the "Interface" tab of the HMI, verify that "BAS Module Connected" is set to "Yes". If it is not ([Figure 45](#)), proceed to step 2. If it is, skip to step 5.
2. Press the "BAS Module Connected" field on the Interface tab of the HMI.
3. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001. Press "Enter" when all digits are inputted. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
4. From the drop-down list, select "Yes" for the BAS Module Connected parameter ([Figure 46](#)).
5. Press the "BAS Network Protocol" parameter on the Interface tab of the HMI.
6. From the drop-down list, select "Modbus" for the BAS Network Protocol parameter. This sets the protocol to Modbus and enables the additional associated parameters (for a complete list of all parameters, see [Table 13](#)).
7. Once the BAS Module Connected parameter is set to Yes and the BAS Network Protocol parameter is set to Modbus ([Figure 46](#)), the unit controller and HMI PC power must be cycled to apply the changes.
8. After the unit controller and HMI PC are repowered, proceed to *Set BAS Settings*.

Figure 45: BAS Module Connected Parameter

BAS Protocol	
BAS Module Connected	No
BAS Network Protocol	None
BAS Remote Enable	Disable

Figure 46: BAS Module Configured for Modbus

BAS Protocol	
BAS Module Connected	Yes
BAS Network Protocol	Modbus
BAS Remote Enable	Disable
BAS Measurement Units	Imperial

Table 13: Modbus Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/LON Default: None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Units	Imperial or Metric Default: Imperial	Sets the Units of Measure that will be broadcast to the BAS
Address	0 – 247 Default: 1	The Modbus Address of the communication module. This must be unique throughout the entire network.
Baud Rate	9600, 19200, 38400, 57600, 76800 Default: 19200	Data transfer speed (bps) of the Modbus network.
Parity	Even, Odd, or None Default: None	Defines the parity (i.e. the use of checksums for detecting transmission errors) that is specified for the bus. This must also be identical for all nodes on the bus.
Modbus Stop Bits	1 or 2 Default: 1	This defines the number of stop bits. This value must also be coordinated with the other bus nodes.

- Press the “Parity” parameter and select the desired value from the drop-down list, Even, Odd, or None. Note – this setting must be the same for all devices on the Modbus network.
- Press the “Modbus Stop Bits” parameter and select the desired value from the drop-down list, 1 or 2. Note – this setting must be the same for all devices on the Modbus network.
- All necessary Modbus communication parameters should now be configured ([Figure 47](#)).
- Proceed to *Set Control Source and Remote Enable* on [page 33](#).

Set BAS Settings

- From the chiller HMI, select the “Settings” icon. This displays the Settings screen of the HMI.
- From the Settings screen, select the “Interface” tab.
- Press the “BAS Measurement Units” parameter and select the desired value, Imperial or Metric.
- A keypad prompt will appear to enter a password. Key in the Manager-level password of 2001, then press “Enter” when all digits are inputted.
- Press the “Address” parameter and enter the desired Modbus address using the keypad. This number must be unique throughout the entire Modbus network. Press “Enter” when all digits are inputted. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
- Press the “Baud Rate” parameter and select the desired value from the drop-down list 9600, 19200, 38400, 57600 or 76800. Note – this setting must be the same for all devices on the Modbus network.

Figure 47: Chiller Configured for Modbus

DAIKIN Unit Status: Cool Starting
Compressor 1 Status: Off

Leaving Water: 65.0 °F
Water Setpoint: 44.0
Date & Time: October 04, 2018 03:17:44 PM

Chiller Control: Auto
▶ Auto ■ Stop

Water Modes Motor Tower Valves Offsets Alarms Commission **Interface**

BAS Network Protocol

None
BACnet IP
BACnet MSTP (RS-485)
Modbus (RS-485)
LON

**Power cycle required to apply changes

Password Level Required: Manager

Set-up

Chiller 0
Display Cursor Disabled
Floating Data Descriptions Abbreviated

HMI Touch Screen

HMI Software Version 1.0.13
Chiller Software Version ---

Maximum Trend and Alarm Files

Maximum Alarm History Files 365
Maximum Trend Files 30

Date and Time

Current Year 2018
Current Month 10
Current Day 4
Current Hour 15
Current Minute 17
Current Second 44
Timezone Location America/New_York
Set Timezone Location Set

BAS Protocol

BAS Module Connected Yes
BAS Network Protocol Modbus
BAS Remote Enable Disable
BAS Measurement Units Imperial

BAS Settings

Address 1
Baud Rate 38400
Parity None
Modbus Stop Bits 1

Save / Restore Parameters

Save to File Save
Restore from File Restore

Home Evaporator Compressor Condenser Expansion Tower Settings Trend Alarm Operator

Set Control Source and Remote Enable

The “Control Source” and “Remote Enable” parameters on the HMI determine the method used for controlling the chiller through the BAS.

Control Source indicates what method will be used to enable the chiller. The available options are: Remote Switch, Local (OITS), and BAS. “Remote Switch” is used when a hard-wired contact will enable the chiller. “Local” is used when the chiller will be enabled at the chiller HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller.

Remote Enable indicates what method will be used to set the Cool (Leaving Water Temperature) Setpoint, Mode Setpoint, and Capacity Limit Setpoint and to clear alarms. The available options are: Disable (default) and Enable. With this parameter set to “Enable,” the unit controller will use the Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint, and Clear Alarm values written from the BAS network. With “Remote Enable” set to “Disable,” the unit controller will ignore the Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint, and Clear Alarm values written from the BAS network.

Table 14 provides a summary of chiller control with all possible settings of the Control Source and Remote Enable parameters:

Table 14: Control Source and Remote Enable Settings

Control Source = BAS, BAS Remote Enable = Enable	Control Source = BAS, BAS Remote Enable = Disable	Control Source = Local or Remote Switch, BAS Remote Enable = Disable	Control Source = Local or Remote Switch, BAS Remote Enable = Enable
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will use BACnet/Modbus/LON Enable command, but will ignore Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, but will use Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

Set Control Source

1. From the Settings screen on the HMI, select the “Modes” tab.
2. Locate the “Control Source” parameter under the “Chiller Control and Mode” category (Figure 48).
3. Press the Control Source parameter.
4. If the keypad appears, key in the Operator-level password of 100, then press “Enter” when all digits are inputted.
5. If the BAS will be used to enable and disable the chiller using a BACnet command, select “BAS” from the Control Source parameter drop-down list.

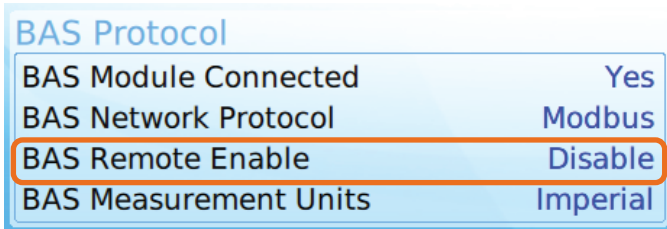
Figure 48: Control Source Parameter



Set Remote Enable

1. From the Settings screen on the HMI, select the “Interface” tab.
2. Locate the “BAS Remote Enable” parameter under the “BAS Protocol” category (Figure 49).
3. Press the BAS Remote Enable parameter.
4. If the keypad appears, key in the Manager-level password of 2001, then press “Enter” when all digits are inputted.
5. If the BAS will be used set the Cool (Leaving Water Temperature) Setpoint, Mode Setpoint, and Capacity Limit Setpoint and to clear alarms for the chiller using a BACnet command, select “Enable” from the “BAS Remote Enable” parameter drop-down list.
6. Proceed to *Enable the Chiller*.

Figure 49: Remote Enable Parameter



Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch on the front of the unit control panel to the “ON” position. When placed in the ON position, the chiller is able to run based on its current enable/disable command.

Modbus Configuration (WMT)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the Interface menu of the Settings screen.
3. Set BAS Module Connected parameter (if needed).
4. Cycle power to the control panel.
5. Set BAS Protocol, Settings (Measurement Units, Address, Baud Rate, Parity, and Stop Bits), and Units.
6. Cycle power to the control panel.
7. Navigate to the Modes menu of the Settings screen.
8. Set the Control Source.
9. Enable the chiller.

The Modbus communication module is configured using the HMI on the chiller. Table 15 describes the available Modbus network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller unit controller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Document [ED 19131](#) for descriptions of the available BACnet objects (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch to the “OFF” position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Set BAS Module Connection

1. From the chiller HMI, select the “Settings” icon. This displays the Settings screen of the HMI. It is not necessary to have entered the password at this point.
2. From the Settings screen, select the “Interface” tab.
3. Under “BAS Protocol,” verify that “BAS Module Connected” is set to “Yes”. If it is not (Figure 50), proceed to step 4. If it is, proceed to Set BAS Protocol, Settings, and Units.
4. Select the “BAS Module Connected” parameter. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001. Press “Enter” when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
5. From the drop-down list, select “Yes” for the BAS Module Connected parameter.
6. Once the BAS Module Connected parameter is set to “Yes” (Figure 51), power must be cycled to the unit control panel

to apply the changes.

- After the unit control panel is repowered, proceed to *Set BAS Protocol, Settings, and Units*.

Figure 50: BAS Module Not Connected

The screenshot shows the 'BAS Protocol' configuration screen. It has a light blue header with the title 'BAS Protocol'. Below the title, there are four rows of configuration items, each with a label and a value: 'BAS Module Connected' with value 'No', 'BAS Network Protocol' with value 'None/LON', 'BAS Measurement Units' with value 'Imperial', and 'BAS Timezone Location' with value 'US/Eastern'. At the bottom, there is a 'Set BAS Timezone Location' label followed by a 'Set' button.

Figure 51: BAS Module Connected

The screenshot shows the 'BAS Protocol' configuration screen, similar to Figure 50, but with 'BAS Module Connected' set to 'Yes'. The other settings ('BAS Network Protocol: None/LON', 'BAS Measurement Units: Imperial', 'BAS Timezone Location: US/Eastern') and the 'Set BAS Timezone Location' button remain the same.

Set BAS Protocol, Settings, and Units

- Under "BAS Protocol," select the "BAS Network Protocol" parameter. A keypad prompt will appear to enter a password. Key in the Manager level password of 2001. Press "Enter" when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
- From the pop-up window, select "Modbus". This sets the protocol to Modbus and enables the additional associated parameters on the "Interface" screen (for a complete list of all parameters, see [Table 15](#)).
- Select the "Address" parameter and enter the desired address using the keypad. This number must be unique throughout the entire Modbus network. Press "Enter" when all digits are entered. Note - there is a small delay between pressing the keypad and recording the entry. Be sure that an asterisk appears in the window before pressing the next number.
- Select the "Baud Rate" parameter and select the desired value from the drop-down list, 9600, 19200, 38400, 57600 or 76800. Note – this setting must be the same for all

devices on the Modbus network.

- Select the "Parity" parameter and select the desired value from the drop-down list, Even, Odd, or None (Default). Note – this setting must be the same for all devices on the Modbus network.
- Select the "Modbus Stop Bits" parameter and select the desired value from the drop-down list, 1 (Default) or 2. Note – this setting must be the same for all devices on the Modbus network.
- Select the "BAS Measurement Units" parameter and select the desired value, Imperial (Default) or Metric.
- All necessary Modbus communication parameters should now be configured ([Figure 52](#)).
- Cycle power to the unit control panel.
- Proceed to Set Control Source.

Table 15: Modbus Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/LON Default: None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Units	Imperial or Metric Default: Imperial	Sets the Units of Measure that will be broadcast to the BAS
Address	0 – 247 Default: 1	The Modbus Address of the communication module. This must be unique throughout the entire network.
Baud Rate	9600, 19200, 38400, 57600, 76800 Default: 19200	Data transfer speed (bps) of the Modbus network.
Parity	Even, Odd, or None Default: None	Defines the parity (i.e. the use of checksums for detecting transmission errors) that is specified for the bus. This must also be identical for all nodes on the bus.
Modbus Stop Bits	1 or 2 Default: 1	This defines the number of stop bits. This value must also be coordinated with the other bus nodes.

Figure 52: BAS Module Configured for Modbus

The screenshot shows the 'BAS Protocol' configuration screen with 'BAS Module Connected' set to 'Yes' and 'BAS Network Protocol' set to 'Modbus'. The other settings ('BAS Measurement Units: Imperial', 'BAS Timezone Location: US/Eastern') and the 'Set BAS Timezone Location' button remain the same. Additionally, there is a 'BAS Settings' section on the right side of the screen with the following values: 'Address' set to '1', 'Baud Rate' set to '38400', 'Parity' set to 'None', and 'Modbus Stop Bits' set to '1'.

Set Control Source

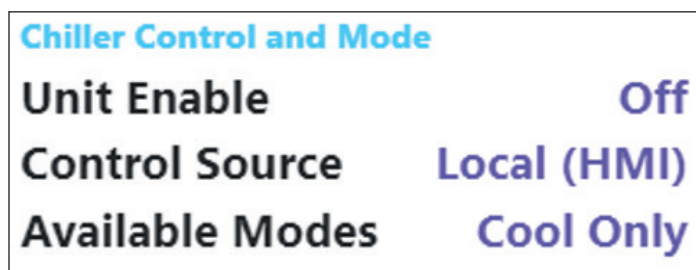
The “Control Source” parameter on the HMI determines the method used for controlling the chiller through the BAS. The available options are: Remote Switch, Local (HMI), and BAS. “Remote Switch” is used when hard-wired signals from a BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, and switch the chiller mode between cool and ice. “Local” is used when the chiller will only be controlled by the onboard HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, switch the chiller mode, and clear alarms. [Table 16](#) provides a summary of chiller control with all possible settings of the “Control Source” parameter:

Table 16: Control Source Settings

Control Source = BAS	Control Source = Local or Remote Switch
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

1. From the “Settings” screen on the HMI, select the “Modes” tab.
2. Locate the “Control Source” parameter under the “Chiller Control and Mode” category ([Figure 53](#)).
3. Select the “Control Source” parameter.
4. If the keypad appears, key in the Operator-level password of 100, then press “Enter” when all digits are entered
5. If a BAS will use BACnet commands to enable the chiller, provide a leaving water setpoint and capacity limiting, switch the chiller mode, and clear alarms, select “BAS” from the drop-down list.
6. Proceed to Enable the Chiller.

Figure 53: Control Source Parameter



Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch to the “ON” position. When placed in the ON position, the chiller is allowed to run based on its current enable/disable command.

Modbus Configuration (AGZ-F)

Below is a preview of the configuration procedure, followed by detailed instructions for each step.

1. Disable the chiller.
2. Navigate to the BAS Configuration screen.
3. Set BAS Module Connected parameter (if needed).
4. Cycle power to the control panel.
5. Set BAS Protocol, Settings (Address, Baud Rate, Parity, and Stop Bits), and Units.
6. Cycle power to the control panel.
7. Navigate to the Commission screen.
8. Set Control Source.
9. Enable the chiller.

The Modbus communication module is configured using the HMI on the chiller. [Table 17](#) describes the available Modbus network parameters used to establish communication between the unit controller and the BAS.

Refer to the applicable chiller Installation and Operation Manual (see Reference Documents) for additional information on using the chiller HMI to adjust parameters and set defaults. Systems integrators should refer to Protocol Document ED 19131 for descriptions of the available Modbus registers (www.DaikinApplied.com).

Below are detailed instructions for each step in the configuration process.

Disable the Chiller

1. Set the Unit Switch on the front of the unit control panel to the “OFF” position. When placed in the OFF position while the chiller is running, the Unit Switch will shut down the chiller in a controlled sequence and will stop each compressor that is running.

Set BAS Module Connection

1. From the chiller HMI, login using the Manager-level password and select the “Menu” icon ([Figure 54](#)).
2. From the Menu, select the “Configuration” icon ([Figure 55](#)).
3. From the Configuration screen, select the “BAS Configuration” icon ([Figure 56](#)).
4. Verify that “BAS Module Connected” is set to “Yes”. If it is not ([Figure 57](#)), proceed to step 5. If it is, proceed to Set BAS Protocol, Settings, and Units.
5. Select the “BAS Module Connected” parameter. A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press “Enter” when all digits are entered.
6. From the drop-down list, select “Yes,” then press “OK”.
7. Once the BAS Module Connected parameter is set to “Yes” ([Figure 58](#)), power must be cycled to the unit control panel to apply the changes.

- After the unit control panel is repowered, proceed to Set BAS Protocol, Settings, and Units.

Figure 54: Menu Icon

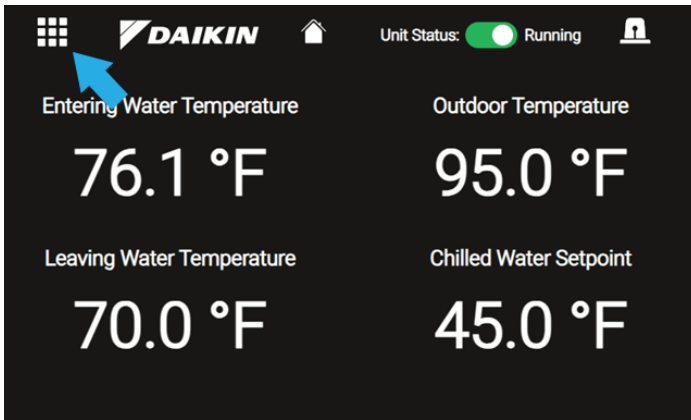


Figure 55: Configuration Icon

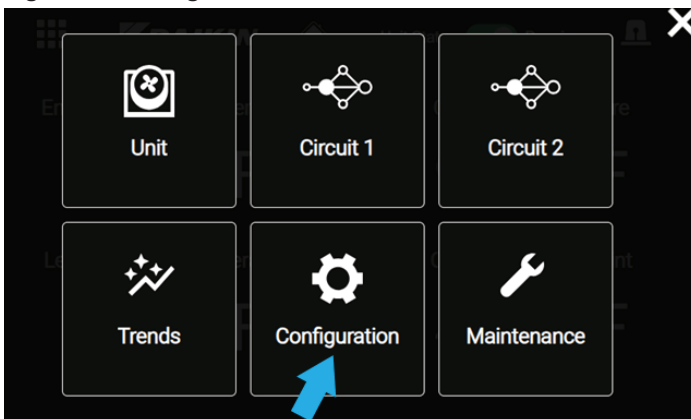


Figure 56: BAS Configuration Icon

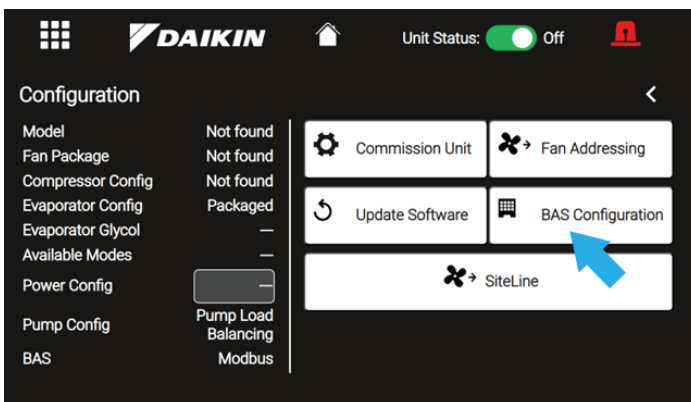


Figure 57: BAS Module Not Connected

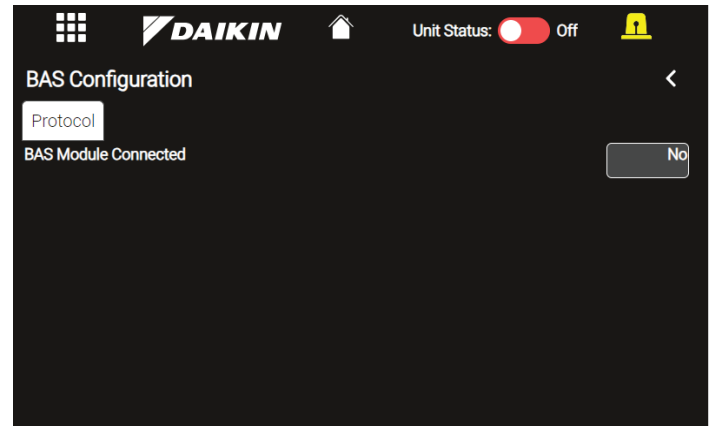
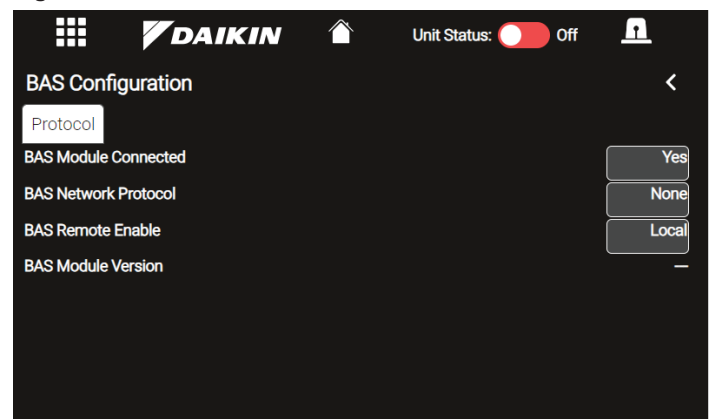


Figure 58: BAS Module Connected



Set BAS Protocol, Settings, and Units

- From the "Protocol" tab of the BAS Configuration screen, press the "BAS Network Protocol" parameter.
- A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press "OK" when all digits are entered.
- If necessary, press the "BAS Network Protocol" parameter again.
- From the pop-up window, select "Modbus" (Figure 59). This sets the protocol to Modbus and enables the additional associated parameters on the "Settings" tab (for a complete list of all parameters, see Table 17).
- Select the "BAS Measurement Units" parameter and select the desired value, English (Default) or Metric.
- From the BAS Configuration screen, select the "Settings" tab.
- Select the "Address" parameter and enter the desired Modbus Address value using the keypad. This number must be unique throughout the entire Modbus network. Press "OK" when all digits are entered.
- Select the "Baud Rate" parameter and select the desired value from the drop-down list, 9600, 19200, 38400, 57600 or 76800. This setting must be the same for all devices on

the Modbus network.

9. Select the “Parity” parameter and select the desired value from the drop-down list, Even, Odd, or None. This setting must be the same for all devices on the Modbus network.
10. Select the “Modbus Stop Bits” parameter and select the desired value from the drop-down list, 1 or 2. This setting must be the same for all devices on the Modbus network. All necessary Modbus communication parameters should now be configured (Figure 60).
11. Cycle power to the unit control panel.
12. After the unit control panel is repowered, proceed to *Set Control Source*.

Figure 59: Modbus Selected

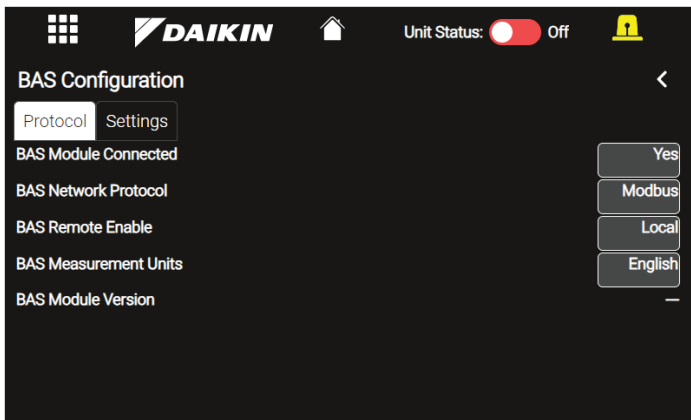
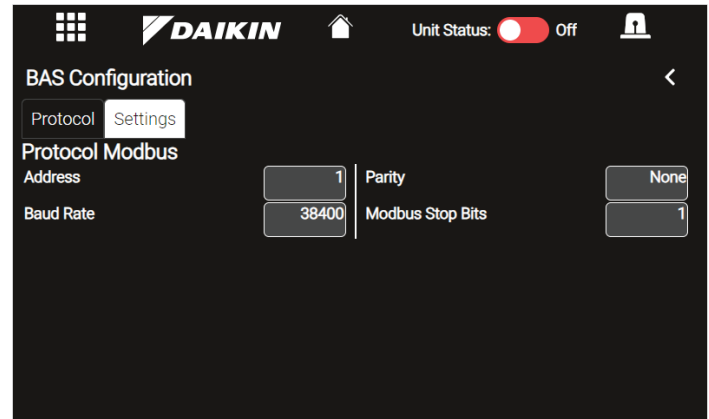


Table 17: Modbus Parameters

Parameter	Range/Default	Description
BAS Network Protocol	BACnet IP, BACnet MS/TP, Modbus, None/LON Default: None/LON	Sets the type of BAS communication protocol supported.
BAS Measurement Units	English or Metric Default: English	Sets the Units of Measure that will be broadcast to the BAS
Address	0 – 247 Default: 1	The Modbus Address of the communication module. This must be unique throughout the entire network.
Baud Rate	9600, 19200, 38400, 57600, 76800 Default: 19200	Data transfer speed (bps) of the Modbus network.
Parity	Even, Odd, or None Default: None	Defines the parity (i.e. the use of checksums for detecting transmission errors) that is specified for the bus. This must also be identical for all nodes on the bus.
Modbus Stop Bits	1 or 2 Default: 1	This defines the number of stop bits. This value must also be coordinated with the other bus nodes.

Figure 60: Chiller Modbus Settings



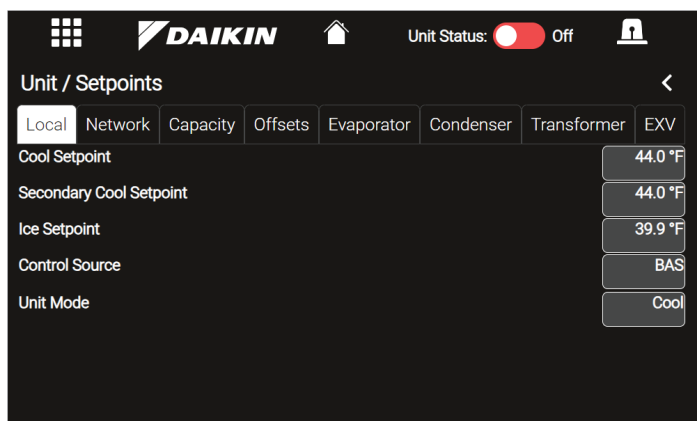
Set Control Source

The “Control Source” parameter on the HMI determines the method used for controlling the chiller through the BAS. The available options are: Remote Switch, Local (OITS), and BAS. “Remote Switch” is used when hard-wired signals from a BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, and switch the chiller mode between cool and ice. “Local” is used when the chiller will only be controlled by the onboard HMI. “BAS” is used when a BACnet command from the BAS will enable the chiller, provide leaving water setpoint reset and capacity limiting, switch the chiller mode between cool and ice, and clear alarms. Table 18 provides a summary of chiller control with all possible settings of the “Control Source” parameter:

Table 18: Control Source Settings

Control Source = BAS	Control Source = Local or Remote Switch
Chiller will use BACnet/Modbus/LON Enable command, and will use Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS	Chiller will ignore BACnet/Modbus/LON Enable command, and will ignore Cool Setpoint, Ice Setpoint, Mode Setpoint, Capacity Limit Setpoint and Clear Alarm values written from BAS

1. From the Menu, select the “Configuration” icon.
2. From the Configuration screen, select the “Commission” icon.
3. Select the “Control Source” parameter.
4. A keypad prompt will appear to enter a password. Key in the Manager level password of 2526. Press “OK” when all digits are entered.
5. If necessary, select the “Control Source” parameter again.
6. If a BAS will enable the chiller, provide setpoints, and clear alarms through Modbus, select “BAS” from the drop-down list, then press “OK” (Figure 61).
7. Proceed to Enable the Chiller.

Figure 61: Control Source Parameter - BAS Selected

Enable the Chiller

Once all configuration is complete, the unit can be re-enabled.

1. Set the Unit Switch on the front of the unit control panel to the "ON" position. When placed in the ON position, the chiller is allowed to run based on its current enable/disable command.

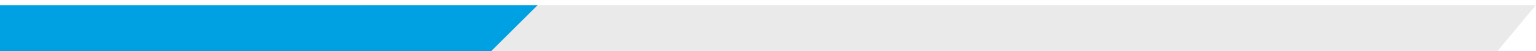
Troubleshooting

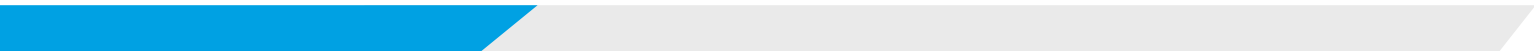
The following procedures can be used to troubleshoot issues with a BACnet or Modbus integration to the Chiller Unit Controller.

Table 19: Troubleshooting Procedures for Chiller Unit Controller Integration

Symptom	Protocol	Action
No communication to chiller communication module	BACnet IP	→ Verify the protocol is set to BACnet IP at the HMI
		→ Verify the HMI is configured to match the network IP addressing scheme, either static IP or DHCP
		→ For static IP addressing, confirm the IP address information is entered correctly on the HMI and is unique throughout the network
		→ Confirm the Device Instance number is correct and unique throughout the network
		→ Confirm Ethernet network cable is connected to the Ethernet port on the chiller communication module
No communication to chiller communication module	BACnet MS/TP	→ Verify the protocol is set to BACnet MS/TP at the HMI
		→ Confirm the Baud Rate setting at the HMI matches all other devices on the network
		→ Confirm the MS/TP MAC address is correct and unique throughout the network
		→ Confirm the Device Instance number is correct and unique throughout the network
		→ Verify the Max Master is set correctly at the HMI and all devices have a MS/TP MAC address less than or equal to this value
		→ Confirm the twisted-shielded pair network cable is connected to the correct terminals on the chiller communication module
		→ Verify the network shield is only landed at one device on the network
		→ Verify that only the first and last devices on the network have end-of-line resistors
		→ Verify the network topology is a daisy-chain
		→ Verify the network wiring does not exceed 4000 ft total distance limit (without repeaters)
		→ Verify the wiring polarity is maintained
		→ Verify the network trunk avoids strong sources of electromagnetic interference
		→ Verify the network trunk is not located near a DC load switch (relay)
No communication to chiller communication module	Modbus	→ Verify the protocol is set to Modbus at the HMI
		→ Confirm the Baud Rate setting at the HMI matches all other devices on the network
		→ Confirm the Modbus address is correct and unique throughout the network
		→ Verify the Parity and Stop Bits match all other devices on the network
		→ Confirm the twisted-shielded pair network cable is connected to the correct terminals on the chiller communication module
		→ Verify the network shield is only landed at one device on the network
		→ Verify that only the first and last devices on the network have end-of-line resistors
		→ Verify the network topology is a daisy-chain
		→ Verify the network wiring does not exceed 4000 ft total distance limit (without repeaters)
		→ Verify the wiring polarity is maintained
		→ Verify the network trunk avoids strong sources of electromagnetic interference
		→ Verify the network trunk is not located near a DC load switch (relay)

Symptom	Protocol	Action
Intermittent communication to chiller communication module	BACnet MS/TP, Modbus	→ Confirm the twisted-shielded pair network cable is connected to the correct terminals on the chiller communication module (MS/TP, Modbus)
		→ Confirm the MS/TP MAC address is correct and unique throughout the network (MS/TP)
		→ Confirm the Device Instance number is correct and unique throughout the network (MS/TP)
		→ Confirm the Modbus address is correct and unique throughout the network (Modbus)
		→ Verify the Parity and Stop Bits match all other devices on the network (Modbus)
		→ Confirm the Baud Rate setting at the HMI matches all other devices on the network (MS/TP, Modbus)
		→ Verify the network shield is only landed at one device on the network (MS/TP, Modbus)
		→ Verify that only the first and last devices on the network have end-of-line resistors (MS/TP, Modbus)
		→ Verify the network topology is a daisy-chain (MS/TP, Modbus)
		→ Verify the network wiring does not exceed 4000 ft total distance limit (without repeaters) (MS/TP, Modbus)
		→ Verify the wiring polarity is maintained
		→ Verify the network trunk avoids strong sources of electromagnetic interference (MS/TP, Modbus)
		→ Verify the network trunk is not located near a DC load switch (MS/TP, Modbus)
Intermittent communication to chiller communication module	BACnet IP	→ Confirm Ethernet network cable is securely connected to the Ethernet port on the chiller communication module
		→ Verify the HMI is configured to match the network IP addressing scheme, either static or DHCP
		→ For static IP addressing, confirm the IP address information is entered correctly on the HMI and is unique throughout the network
		→ Confirm the Device Instance number is correct and unique throughout the network
Cannot Enable/Disable the chiller through the BAS network	BACnet IP, BACnet MS/TP, Modbus	→ Confirm the Control Source parameter on the HMI is set to BAS (Settings > Modes > Control Source)
		→ Confirm the Unit Switch on the front of the unit control panel is set to the "ON" position
Cannot set Cool Setpoint, Mode Setpoint, Capacity Limit Setpoint, or Clear Alarms through the BAS network	BACnet IP, BACnet MS/TP, Modbus	→ Confirm the BAS Remote Enable parameter on the HMI is set to Enable (Settings > Interface > BAS Remote Enable)
Contact the Daikin Applied Controls Customer Support group at 866-462-7829 or DaikinControls@daikinapplied.com for additional assistance, if necessary.		





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