

BACNET®/MODBUS® IP COMMUNICATION MODULE

MICROTECH® UNIT CONTROLLERS

REBEL® AND REBEL APPLIED® PACKAGED ROOFTOP SYSTEMS,
APPLIED ROOFTOP, AND SELF-CONTAINED UNITS



- MODEL DPSA WITH R-410A OR R-32
INCLUDES REFRIGERATION ONLY CONTROLS
- MODEL DPS WITH R-32
INCLUDES REFRIGERATION ONLY CONTROLS
- MODEL DCSA WITH R-32 AIR-COOLED SPLIT
CONDENSING SYSTEM
- MODELS: MPS, RAH, RCE, RCS, RDE, RDS, RDT, RFS, RPE,
RPS, SWP AND SWT

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Safety Information

Hazardous Information Messages



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: This manual provides installation, operation, and maintenance information for the BACnet® /Modbus® communication module used on a MicroTech® unit controller.

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.

NOTICE

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.



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.

Introduction

This manual describes how to install or replace a BACnet IP/Modbus TCP/IP communication module on a MicroTech® unit controller. It also explains how to set network parameters and establish communication between the unit controller and the BAS.

Reference Documents

Company	Number	Title	Source
Modbus-IDA.ORG		Modbus TCP Application Protocol (V1.1b3)	www.Modbus.org
American Society of Heating, Refrigerating and Air-Conditioning Engineers	ANSI/ASHRAE 135-2001	BACnet, a Data Communication Protocol for Building Automation and Control Networks	www.ashrae.org
Daikin Applied	ED 19133	MicroTech Modbus TCP/RTU Network Integration	www.DaikinApplied.com
	ED 19117	MicroTech Unit Controller Network Integration Guide, BACnet and LONWORKS Networks	
	OM 1288	MicroTech 4 unit controller for Rebel Applied Rooftop Systems	
	OM 1263	Rebel DPS MicroTech Refrigeration Only Controls (R-410A)	
	OM 1373	Rebel Applied DPSA Controls (R32)	
	OM 1401	Rebel Applied Refrigeration Only Controls (ROC) DPSA (R-32)	
	OM 1382	Rebel DPS MicroTech Controls (R32)	

Description

The communication module is a printed circuit board with a plastic enclosure that connects to the left side of the unit controller or attached expansion module (Figure 2).

The communication module firmware enables the unit controller application to exchange data using the IP protocol over Ethernet.

The communication module (MT3041) supports Applied Air Rooftops, Packaged Rooftop, or Self-Contained unit controller applications:

- MicroTech III (MT III) unit controller
- MicroTech 4 (MT4) unit controller

Application Software

BACnet IP

- Supported by all MT III and MT4 unit controller application software versions.

Modbus TCP

- Supported by MT4 unit controller application software versions 250636306 (v3.06) and newer.

Firmware

The communication module firmware applies to both BACnet IP and Modbus TCP network protocols with the following BSP (Board Support Package) versions:

- Communication module BSP versions 11.54 and newer.
- MicroTech unit controller BSP versions 11.78 and newer.

See Table 1 for network communication and unit controller application compatibility details.

Table 1: MicroTech Controller Compatibility with BACnet IP and Modbus TCP Protocols

MT Unit Controller Application	Model Type	Network Protocols Supported	
		BACnet IP	Modbus TCP
MT4 Rebel Applied Rooftop with R-410A or R-32 including Refrigeration Only Controls (ROC)	DPSA	Yes	Yes
Rebel Applied Rooftop with R-32 Air-Cooled Split Condensing System	DCSA	Yes	Yes
Rebel Packaged Rooftop with R-32, including Refrigeration Only Controls (ROC)	DPS	Yes	Yes
Rebel Packaged Rooftop with R-410A Only	DPS DPH	Yes	No
RoofPak® Applied Rooftop with/without R-32 Refrigerant	RPE RDE RPS RDT RFS RDZ RAH RCE RCS RDS	Yes	No
Self-Contained Units with/without R-32	SWT SWP	Yes	No
Maverick® II Commercial Rooftops with/without R-32	MPS	Yes	No

Specifications

General	
Dimensions	W x H x D: 1.77 x 4.33 x 2.95 in (45 x 110 x 75 mm)
Weight	3.5 oz (98 g)
Material	Base - plastic, pigeon-blue
	Housing - plastic, light-gray
Operating	
Temperature	-40 - 158°F (-40 - 70°C)
Humidity	<90% RH
Atmospheric pressure	Min. 10 psi (70kPa), corresponding to max. 9,842 ft (3,000 m) above sea level
Storage and Transportation	
Temperature	-40 - 158°F (-40 - 70°C)
Humidity	<95% RH
Atmospheric pressure	Min. 3.77 psi (26 kPa), corresponding to max. 32,808 ft (10,000 m) above sea level
Electrical	
Power	Via unit controller: DC 5 V (+5% / -5%), max. 270 mA
Network connection	Ethernet 10/100 over CAT 5 cable
	RJ-45 port, 8-pin connector
Additional Components	
Board-to-board connector	10-pin plug between communication module and unit controller
Agency Listings	
US	UL916, UL873
Canada	CSA C22.2M205
Europe	
EMC directive	2004/108/EC
Low-voltage directive	2006/95/EC
RoHS directive	2002/95/EC



CAUTION

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. Daikin disclaims any liability resulting from any interference or for the correction thereof.

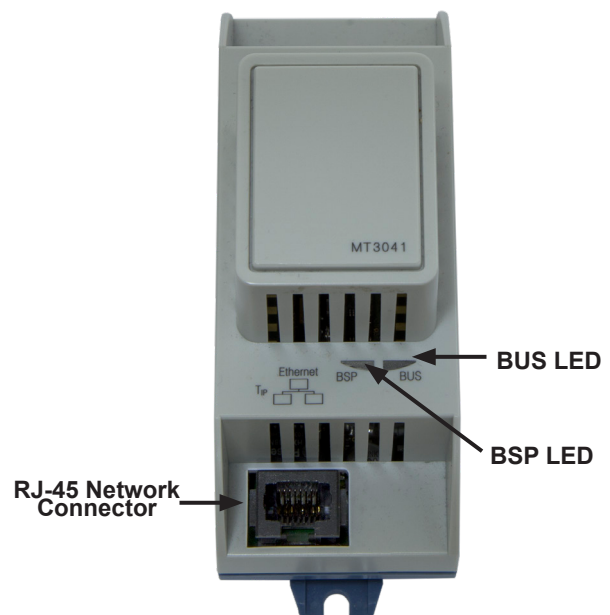
Component Data

The communication module connects directly to the left-hand side of the unit controller as shown in [Figure 1](#). It may be possible that another module is also connected to the unit controller. In this case, the communication module simply attaches directly to the left side of the existing module instead of the unit controller.

Figure 1: Communication module Attached to Main Controller



Figure 2: IP Communication Module BSP and Network Connector Locations



Light Emitting Diodes (LEDs)

The communication module has a BSP LED and a BUS LED to indicate communication activity and status of the communication module. These indicators are visible when the communication module is connected to the unit controller and the unit is powered on.

BSP LED

The BSP LED indicates the communication status between the communication module and the unit controller. [Table 2](#) describes the status of the BSP LED. [Figure 2](#) shows the location of the LEDs.

Table 2: BSP LED Activity

BSP LED Color	Meaning
Flashing between Red and Green	Board Support Package (BSP) upgrade in progress
Green	Communication is established between the communication module and the unit controller
Yellow	The communication module is capable of communicating to the unit controller. However, communication is not established
Red flashing with 2Hz	Red flashing with 2Hz = Software error ¹
Red	Hardware error ¹

¹Cycle power to the unit controller to clear the problem. If necessary, contact Daikin Applied Controls Customer Support at (800) 432-1342 or CTLTechSupport@daikinapplied.com for additional assistance.

BUS LED

The BUS LED indicates the communication status between the communication module and the network. [Table 3](#) describes the status of the BUS LED.

Table 3: BUS LED Activity

BUS LED Color	Meaning
Green	The unit controller is capable of communicating to the network
Red	The unit controller is not capable of communicating to the network
Orange / Yellow	Communication module is initializing

BACnet Network Connector

An RJ-45 connector connects the communication module to the IP network (see [Figure 2](#) for location).

Board-to-Board Connector

The board-to-board connector connects the unit controller to the communication module ([Figure 3](#) and [Figure 4](#)).

Figure 3: Board-to-Board Connector

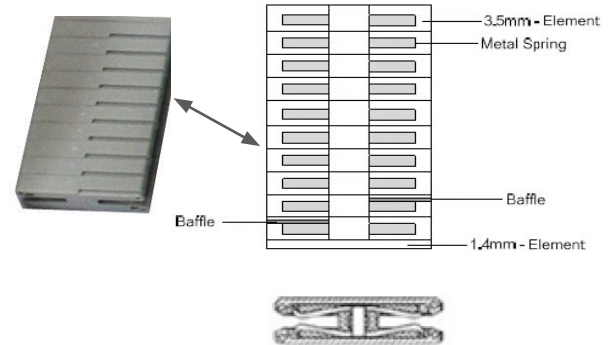
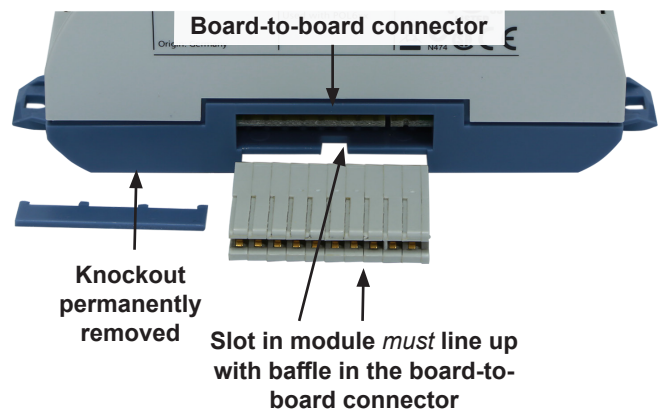


Figure 4: Communication Module and Knockout



Installation

The following section describes how to field install a new communication module or replace an existing module on the MicroTech unit controller.



WARNING

Electric shock hazard. The terminals on the unit controller are high voltage. Disconnect power to avoid electrical shock potential, which may result in personal injury, serious injury, death, or equipment damage.

This equipment must be properly grounded. Connections and service to the unit controller must be performed only by personnel knowledgeable in the operation of the equipment being controlled..

Field Installation Kit

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

- The communication module with RJ-45 network connector
- Board-to-board connector - [Figure 3](#)
- This manual (IM 916)

Refer to the [Service Information](#) section for replacement part numbers.

Installing a new Communication Module

Follow these steps to install a new communication module on the unit controller. The communication module can be connected directly to the unit controller itself or to an existing expansion module, if one is attached.

NOTE: There is a limit of three devices that can be attached to the left side of the unit controller.

1. Set the "Control Mode = Off" from the unit controller HMI Main Menu. This must be done prior to installing a new communication module.
2. Remove power from the unit controller.
3. Carefully remove the blue plastic knockout strip on the far left end of the unit controller itself (or additional module, if present). [Figure 4](#) shows the knockout strip after it has been removed from the unit controller.

To prevent damage to the unit controller, insert a small flathead screwdriver or similar tool into the tab on the bottom of the unit controller and pull the screwdriver away from the controller.
4. Carefully remove the blue plastic knockout strip on the right side of the communication module.
5. Insert the board-to-board connector into the communication module. Note that it only fits one way and that the baffles must line up with corresponding slots in the communication module and the unit controller ([Figure 4](#) and [Figure 5](#)).

Figure 5: Communication Module with Board-to-Board Connector Inserted



6. Insert the other end of the board-to-board connector to the far-left side of the unit controller or other module, if attached.
7. Insert a CAT 5 Ethernet cable into the communication module RJ-45 network connector ([Figure 2](#)).
8. Apply power to the unit controller.

NOTE: The unit controller automatically resets itself approximately 30 seconds after power has been applied to it. This reset is necessary so that the communication module can synchronize with the unit controller.

9. Apply power to the unit controller. The communication module is now ready to be configured for network integration.



WARNING

Electric shock hazard. The terminals on the unit controller are high voltage. Disconnect power to avoid electrical shock potential, which may result in personal injury, serious injury, death, or equipment damage.

This equipment must be properly grounded. Connections and service to the unit controller must be performed only by personnel knowledgeable in the operation of the equipment being controlled..

Replacing a Communication Module

Follow these steps to remove an existing communication module from the unit controller and replace it with a new module.

1. Set the "Control Mode = Off" from the HMI Main Menu on the unit controller display menu. This must be done prior to removing and replacing an existing communication module.
2. Remove power from the unit controller.
3. Locate the communication module on the left side of the unit controller.
4. Gently pull the network cable connector from the communication module (Figure 2).
5. Grasp the communication module and carefully pull it from the unit controller (or from an adjacent module, if it is attached to one).
6. Install the new communication module:

NOTE: To prevent damage to the unit controller, insert a small flathead screwdriver or similar tool into the tab on the bottom of the unit controller and pull the screwdriver away from the controller.

- a. Carefully remove the blue plastic knockout strip on the right side of the communication module.
- b. Insert the board-to-board connector into the communication module. Note that it only fits one way and that the baffles must line up with corresponding slots in the module and the unit controller (Figure 4 and Figure 5).

7. Insert a CAT 5 Ethernet cable into the communication module's RJ-45 network connector (Figure 2).
8. Apply power to the unit controller. The communication module is now ready to be configured for network integration.
9. Follow the steps described in the next section to set addressing parameters.

NOTE: The unit controller automatically resets itself approximately 30 seconds after power has been applied to it. This reset is necessary so that the communication module can synchronize with the unit controller.

Network Configuration

The following section describes how to configure the communication module for BACnet IP or Modbus TCP integration. Follow these instructions to set addressing parameters from the MicroTech unit controller HMI menu display.

IP Addressing

There are three parameters that must be configured in order to establish communication between the unit controller and the network:

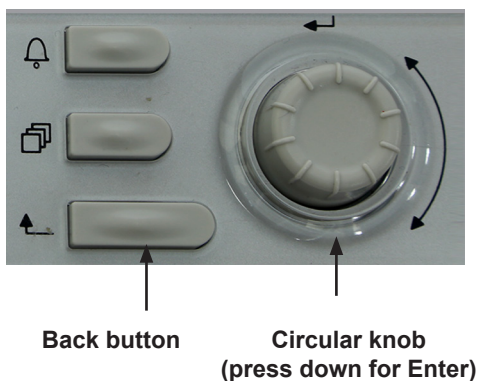
- IP Address
- IP Subnet Mask
- IP Gateway Address

Set Network Control

1. Verify the correct communication module is attached and is active upon unit controller power-up. See [Figure 1](#) and [Figure 2](#).

[Figure 6](#) describes the HMI navigation features.

Figure 6: Unit Controller Main Features



2. Enter the password from the **Daikin AHU Main Menu**:
 - a. Turn the circular knob on the unit controller until **Enter Password** is highlighted and Press Enter. If a password has already been entered, skip to Step 4.
3. Enter Password: 6363.
4. Set the "Control Mode = Off" from the **Daikin AHU Main Menu**.
5. Navigate to the **BMS Communications** menu ([Figure 7](#)).
 - a. Verify AHU Loc/Net is set to Network. This step is necessary in order to write commands from the BAS.
 - b. Scroll down to the **BACnet/Modbus IP Set-Up** menu and press Enter.

Figure 7: BMS Communications Menu

BMS Communication	
AHU Loc/Net=	Network
BACnet/Modbus IP Set-Up	
Network Unit Set-Up	
Comm Slot 1=	IP
Comm Slot 2=	None
Comm Slot 3=	None

NOTE: The **BACnet/Modbus IP Set-Up** menu only appears if the communication module installed correctly. If it is installed correctly and menu still does not appear, cycle power to the unit controller and repeat the configuration process.

6. Verify the desired IP Protocol is displayed. Note that the default is BACnet. [Figure 9](#) has been set to Modbus.
 - a. For Modbus, scroll to IP Protocol= and press Enter.
 - b. Turn knob to select Modbus and then press Enter again to confirm selection.

Figure 8: BACnet/Modbus IP Set-Up Menu

BACnet/Modbus IP Set-Up	
IP Protocol=	Modbus
BACnet IP Set-Up	
Modbus IP Set-Up	

7. Once the IP protocol is set correctly, navigate to either the **BACnet IP Set-Up** or the **Modbus IP Set-Up** menu.
 8. Press Enter to open the BACnet IP Set-Up or Modbus IP Set-Up menu.
 9. Verify DHCP (Dynamic Host Configuration Protocol) network setting.
- NOTE:** The communication module enables DHCP by default. Also see the [DHCP and BBMD Networks](#) section for more information about multiple IP subnet networks.
10. To disable DHCP and set addressing parameters manually:
 - a. Change DHCP from Yes to No.
 - b. Follow steps 10-12. Otherwise, skip to Step 13.
 11. Change the Given IP Address (Gvn IP) from default 127.0.0.1 to unique value on the network:
 - a. Fully change all four octets of the desired field.

NOTE: After entering all four octets of the desired field, the cursor should blink in the open space to the right of the last character of the octet.

- b. Select Enter. *Do not press the Back button.*

12. Change the Given Subnet Mask (GvnMsk) of the communication module from default of 255.255.255.0 as needed for the network.
13. Change the Given Gateway (GvnGwy) of the communication module from the default 127.0.0.1 as needed for the network.
14. Change remaining parameters, if needed. See [Table 4](#) or [Table 5](#) for more information on these HMI addressing options:
 - Unit Support (BACnet only)
 - EnaWebSvr (Contact Daikin Applied Controls Customer Support at (800) 432-1342 or CTLTechSupport@daikinapplied.com before changing this parameter).
15. Check that the network cable is connected.
16. Select ApplyIPChgs when all parameters have been set. All changes must be made before saving.
17. After ApplyIPChgs is set to Yes, the unit controller automatically resets.
18. Once the reset is complete, navigate to the **BACnet IP Set-Up** or **Modbus IP Set-Up** menu and verify that Act IP, ActMsk, ActGwy, and other parameters are set correctly.

Table 4: Network Parameter Settings - BACnet

Parameter ³	Range/Default ⁴	Description/Notes
Name ¹	Up to 17 characters Default: Varies	This Device Object Name must be unique throughout the entire BACnet network. The last 6 characters of the default are the last 6 digits of the MAC Address, which is on a printed sticker affixed to the communication module.
Dev Instance	0 - 4194302 Default: 1579312	Device Instance of the 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. Identifies the application process in the destination unit. Only change the UPD Port if there are multiple subnets. See network administrator before modification.
DHCP ²	Off or On Default: On	Dynamic Host Configuration Protocol (DHCP) is a network protocol that enables a server to automatically assign an IP Address. Set to Off if a static IP Address is needed. See Revision History for more information.
Act IP	If DHCP set to On: Address automatically assigned by network If DHCP set to Off: Address = Given IP	Actual IP Address of the communication module. This parameter is not changeable. Displays 0.0.0.0 if the network is not connected when power is applied to the unit controller. If DHCP is set to Yes (enabled), the network automatically assigns this address. If DHCP is set to No (not enabled), the Actual IP Address is set equal to the Given IP Address (Gvn IP) provided when the network is connected and Apply Changes has been set to Yes.
ActMsk	If DHCP set to On: Address automatically assigned by network If DHCP set to Off: Address = Given Subnet Mask	Actual Subnet Mask of the communication module. Displays 0.0.0.0 if the network is not connected when power is applied to the unit controller. If DHCP is set to Yes (enabled), the network automatically assigns this address. If DHCP is set to No (not enabled), the Actual Subnet Mask is set equal to the Given Subnet Mask (Gvn Msk) provided when the network is connected and Apply Changes has been set to Yes.
ActGwy	If DHCP set to On: Address automatically assigned by network If DHCP set to Off: Address = Given Gateway Address	Actual Gateway Address. Item remains blank if the network is not connected when power is applied to the unit controller. If DHCP is set to Yes, the network automatically assigns this address. If DHCP is set to No, the Actual Gateway Address is set equal to the Given Gateway Address (Gvn Gwy) provided when the network is connected and Apply Changes has been set to Yes.
Gvn IP	Default: 127.0.0.1	Given IP Address of the communication module. The IP address consists of the four-octet IP address followed by the two-octet UDP (User Datagram Protocol) port number. The IP address portion of the BACnet/IP address must be unique in the BACnet/IP network segment. Set the four-octet IP Address to match the Static IP Address.
GvnMsk	Default: 255.255.255.0	Given Subnet Mask of the communication module. Set the Given Subnet Mask to match the Static Subnet Mask Address.
GvnGwy	Default: 127.0.0.1	Given Gateway Address of the communication module. Set the Given Gateway Address to match the Static Gateway Address.
Unit Support	English or Metric Default: English	Defines the desired units of measurement for data passed from the unit controller to the BAS via the communication module.
NC Dev 1 ¹	0-4194303 Default: 0 (no device)	Alarm Recipient Device 1. This is the device instance of the BACnet BAS or supervisory controller that receives the alarm notification. The default should remain at 0. However, if the BAS does not support writing to a Recipient List, use this value in place of the Notification Class Recipient List.
NC Dev2 ¹	0-4194303 Default: 0 (no device)	Alarm Recipient Device 2. This is the device instance of the BACnet BAS or supervisory controller that receives the alarm notification. Use this in place of the Recipient List in the Notification Class. The default should remain at 0. However, if the BAS does not support writing to a Recipient List, use this value in place of the Notification Class Recipient List.
EnaWebSrvr	Default: Off	Enables the embedded web server. Do not enable unless directed by Daikin Applied Controls Customer Support. Contact (800) 432-1342 or CTLTechSupport@daikinapplied.com for assistance.
Comm Status	See Description	Status of the communication module. When network communication is successful, the status indicates OK. The following describes the possible communication states as displayed in the HMI: State Meaning OK Normal operation Hardware Physical or electrical module fault Init Module is initializing or being enumerated Memory EEPROM/flash/configuration memory error ID Module identification failure COVReg Internal communication (COV) registration failure Other Miscellaneous or undefined diagnostic condition
BACnet BSP	Varies	Basic Support Package (BSP). Indicates the communication module firmware version. The BSP is read-only.

¹Parameter must be configured via the unit controller HMI.²The communication module defaults to DHCP-enabled. See a system integrator for additional information regarding IP networks with DHCP functionality.³The parameters shown in boldface text are required for minimum network configuration.⁴If the unit controller software requires a field update, configuration parameters revert to their default values.

Table 5: Network Parameter Settings - Modbus

Parameter ³	Range/Default ⁴	Description/Notes																
DHCP ²	Off or On Default: On	Dynamic Host Configuration Protocol (DHCP) is a network protocol that enables a server to automatically assign an IP Address. Set to Off if a static IP Address is needed. See Revision History for more information.																
Act IP	If DHCP set to On: Address automatically assigned by network If DHCP set to Off: Address = Given IP	Actual IP Address of the communication module. This parameter is not changeable. Displays 0.0.0.0 if the network is not connected when power is applied to the unit controller. If DHCP is set to Yes (enabled), the network automatically assigns this address. If DHCP is set to No (not enabled), the Actual IP Address is set equal to the Given IP Address (Gvn IP) provided when the network is connected and Apply Changes has been set to Yes.																
ActMsk	If DHCP set to On: Address automatically assigned by network If DHCP set to Off: Address = Given Subnet Mask	Actual Subnet Mask of the communication module. Displays 0.0.0.0 if the network is not connected when power is applied to the unit controller. If DHCP is set to Yes (enabled), the network automatically assigns this address. If DHCP is set to No (not enabled), the Actual Subnet Mask is set equal to the Given Subnet Mask (Gvn Msk) provided when the network is connected and Apply Changes has been set to Yes.																
ActGwy	If DHCP set to On: Address automatically assigned by network If DHCP set to Off: Address = Given Gateway Address	Actual Gateway Address. Item remains blank if the network is not connected when power is applied to the unit controller. If DHCP is set to Yes, the network automatically assigns this address. If DHCP is set to No, the Actual Gateway Address is set equal to the Given Gateway Address (Gvn Gwy) provided when the network is connected and Apply Changes has been set to Yes.																
Gvn IP	Default: 127.0.0.1	Given IP Address of the communication module. The IP address consists of the four-octet IP address followed by the two-octet UDP (User Datagram Protocol) port number. The IP address portion of the BACnet/IP address must be unique in the BACnet/IP network segment. Set the four-octet IP Address to match the Static IP Address.																
GvnMsk	Default: 255.255.255.0	Given Subnet Mask of the communication module. Set the Given Subnet Mask to match the Static Subnet Mask Address.																
GvnGwy	Default: 127.0.0.1	Given Gateway Address of the communication module. Set the Given Gateway Address to match the Static Gateway Address.																
Unit Support	Default: SI (Metric)	Defines the desired units of measurement for data passed from the unit controller to the Modbus via the communication module. <i>Modbus default is set to Metric (SI) and cannot be changed.</i>																
EnaWebSrvr	Default: Off	Enables the embedded web server. Do not enable unless directed by Daikin Applied Controls Customer Support. Contact (800) 432-1342 or CTLTechSupport@daikinapplied.com for assistance.																
Comm Status	See Description	Status of the communication module. When network communication is successful, the status indicates OK. The following describes the possible communication states as displayed in the HMI: <table><tr><th>State</th><th>Meaning</th></tr><tr><td>OK</td><td>Normal operation</td></tr><tr><td>Hardware</td><td>Physical or electrical module fault</td></tr><tr><td>Init</td><td>Module is initializing or being enumerated</td></tr><tr><td>Memory</td><td>EEPROM/flash/configuration memory error</td></tr><tr><td>ID</td><td>Module identification failure</td></tr><tr><td>COVReg</td><td>Internal communication (COV) registration failure</td></tr><tr><td>Other</td><td>Miscellaneous or undefined diagnostic condition</td></tr></table>	State	Meaning	OK	Normal operation	Hardware	Physical or electrical module fault	Init	Module is initializing or being enumerated	Memory	EEPROM/flash/configuration memory error	ID	Module identification failure	COVReg	Internal communication (COV) registration failure	Other	Miscellaneous or undefined diagnostic condition
State	Meaning																	
OK	Normal operation																	
Hardware	Physical or electrical module fault																	
Init	Module is initializing or being enumerated																	
Memory	EEPROM/flash/configuration memory error																	
ID	Module identification failure																	
COVReg	Internal communication (COV) registration failure																	
Other	Miscellaneous or undefined diagnostic condition																	
Modbus BSP	Varies	Basic Support Package (BSP). Indicates the communication module firmware version. Modbus IP applies to BSP versions 11.54 and newer. It is read-only.																

¹Parameter must be configured via the unit controller HMI.

²The communication module defaults to DHCP-enabled. See a system integrator for additional information regarding IP networks with DHCP functionality.

³The parameters shown in boldface text are required for minimum network configuration.

⁴If the unit controller software requires a field update, configuration parameters revert to their default values.

DHCP and BBMD Networks

Single IP Subnet

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.

Multiple IP Subnets - BACnet BBMD

Networks 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.

Multiple IP Subnets - DHCP

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.

Network Considerations

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

Aspect	Considerations
BBMDs	DHCP <i>can not</i> 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 (as they are for 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 communication module.
IP version	The communication module supports IP Version 6, (i.e. IP devices with 32 bit addresses).

Service Information

Follow these steps to troubleshoot common network communication issues.

Network Parameters

- Verify that network parameters are set correctly as shown in [Table 4](#) (BACnet) or [Table 5](#) (Modbus).
- Confirm that there are no duplicate devices on the network (Device Name and Device ID, for example).
- Check the use of the character # at the end of each IP setting. There should not be a "space" at the end.
- Verify that all settings have been configured from the unit controller HMI and then set Apply Changes (ApplyIPChgs) to Yes. The unit controller then automatically restarts.

Network wiring

- Check for loose connections and that devices are plugged in properly.
- Confirm that the link light for each device's connector is on, which indicates that information is capable of being sent and received.

Compatibility

Verify the unit controller software application version and communication module BSP version.

Network Communications

- Confirm that the DHCP parameter is set to "Off" when a static IP address is being used for non-DHCP networks.
- Check that the defined BACnet UDP port, e.g. BAC0, is open in the firewall.
- Verify if BBMDs are required. BBMD must be used if the BACnet client and BACnet server are located on different subnets. Use the command "tracert" to check this. Tracert shows all stations used to forward the signal to another segment. See [Figure 9](#) for the result of a BBMD network as displayed by using the "tracert" command.

Figure 9: Example of Confirmed BBMD Network

```

C:\WINNT\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings\scheunea\Desktop>tracert 10.169.8.193
Tracing route to 10.169.8.193 over a maximum of 30 hops
  1  <1 ms  <1 ms  <1 ms  139.16.79.252
  2  1 ms  <1 ms  <1 ms  10.169.8.193
Trace complete.

```

- Follow the next steps to ping the unit controller if the communication module is not working:

NOTE: The ping feature applies only to BACnet BSP versions prior to v11.22. It is disabled (by default) in v11.22 and newer.

Step	Action
1	Select Start > Run on the Windows start bar The "Run" dialog box opens
2	Enter C:\>ping XX XX XX and press Enter The ping result is displayed

A response from that IP address indicates connection to the communication module. If the ping fails and there is no response, verify the communication module and the PC network settings.

Parts

Table 6: Replacement Parts List

Description	Part Number
MicroTech BACnet IP/Modbus TCP communication module kit (includes communication module, board-to-board connector and network connector).	090016709
Network connector (8-pin)	193410303
Board-to-board connector (10-pin)	300047027

Technical Support

Contact the Daikin Applied Controls Customer Support group at 866-462-7829 or CTLTechSupport@daikinapplied.com.

Refer to the applicable Unit Controller Operation Manual ([Reference Documents](#)) for additional information on HMI addressing options. Also refer to Network Protocol Documents, ED 19117 (BACnet points) or ED 19133 (Modbus registers) (www.daikinapplied.com).

Revision History

Revision	Date	Description of Changes
IM 916	Oct 2008	Initial release
IM 916-1	May 2009	Modified Step 5 of "To Configure the Module using the Keypad/Display" section. Additional steps were added to describe how to properly set Given IP Address, Given IP Mask, or Given IP Gateway.
IM 916-2	Oct 2009	Added Maverick II (MPS) model. Additional changes to keypad display for new global navigation menu.
IM 916-3	Aug 2010	Removed note regarding about needing a crossover cable. Updated BSP in Table 1 to v1.1.30s.
IM 916-3	Mar 2012	Update Daikin logo and references. Added Rebel to cover.
		Added step to turn OFF Control Mode on HMI prior to installing a new module on unit controller.
		Removed NC Dev3 and RcvHrtBt from the Network Configuration Menu table these are no longer used.
		Added AHU Loc/Net, Comm Status and RstOutOfSrv to the Network Configuration Menu table
		Changed BACnetBSP Initial Value in the Network Configuration Menu table to 9.26
IM 916-4	Apr 2020	Re-branded layout and added MicroTech 4 Rebel Applied. Other minor corrections.
IM 916-5	Jan 2021	Fixed incorrect Rebel Applied OM number in Reference Documents table and cross references used in the IM.
IM 916-6	Jun 2023	Branding and other formatting updates.
IM 916-7	Jul 2026	Added support for Modbus IP network configuration. Other formatting updates and modified Table 2.

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