Use this manual to physically connect the BACnet communication module to the MicroTech III Fan Coil Unit Controller for communication to a BACnet network. Connections and service to the MicroTech III Controller must be performed only by personnel knowledgeable in the operation of the equipment being controlled. Use the appropriate Engineering Data (ED), known as the Protocol Information document, to integrate the unit into your network. The Protocol Information document contains addressing details, BACnet® protocol information, and a list of the data points available to the network. See the Reference Documents section of this manual for Protocol Information document numbers. MicroTech III control integration literature is available from your local Daikin Applied sales representative and www.daikinapplied.com.
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Revision History

IM 1013 November 2013 Initial release

Reference Documents

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<tr>
<th>Number</th>
<th>Company</th>
<th>Title</th>
<th>Source</th>
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<tr>
<td>ED 15135</td>
<td>Daikin Applied</td>
<td>Protocol Information for MicroTech III Fan Coil Unit Controller, LonWorks and BACnet MS/TP</td>
<td><a href="http://www.daikinapplied.com">www.daikinapplied.com</a></td>
</tr>
<tr>
<td>OM 1111</td>
<td>Daikin Applied</td>
<td>MicroTech III Fan Coil Unit Controller Operation and Maintenance Manual</td>
<td><a href="http://www.daikinapplied.com">www.daikinapplied.com</a></td>
</tr>
<tr>
<td>OM 1095</td>
<td>Daikin Applied</td>
<td>MicroTech III Fan Coil Unit Controller Downloading Procedure</td>
<td><a href="http://www.daikinapplied.com">www.daikinapplied.com</a></td>
</tr>
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</table>

Notice

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General Information

This manual contains the information you need to install the BACnet® Communication Module to a MicroTech III Fan Coil Unit (FCU) Controller and integrate it into the network.

Hazard Identification Messages

⚠️ **DANGER**

Dangers indicate a hazardous situation which will result in death or serious injury if not avoided.

⚠️ **WARNING**

Warnings indicate potentially hazardous situations, which can result in property damage, severe personal injury, or death if not avoided.

⚠️ **CAUTION**

Cautions indicate potentially hazardous situations, which can result in personal injury or equipment damage if not avoided.

⚠️ **WARNING**

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

This equipment must be properly grounded. Connections and service to the MicroTech III Unit Controller must be performed only by personnel knowledgeable in the operation of the equipment being controlled.

⚠️ **CAUTION**

Static sensitive components. Can cause equipment damage.

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

**NOTICE**

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

The BACnet communication module incorporates a MicroTech III fan coil unit controller into a BACnet Local Area Network (LAN). It supports the BACnet MS/TP (EIA 485) data link layer (physical layer). The BACnet communication module mounts in the unit controller panel. The BACnet communication module is a rectangular printed circuit card with indicators (D1, D2, D3, & D4) on the top. Each BACnet communication module is a printed circuit board that plugs on the top side of the unit controller baseboard. Figure 1 identifies major components of the BACnet communication module.

*Figure 1. MicroTech III BACnet Communication Module*

**Application**

The BACnet communication module connects the MicroTech III fan coil unit controller to the Building Automation System (BAS) on a BACnet Local Area Network. It is the interface adapter for the exchange of BACnet objects between the network and the fan coil unit controller. Figure 2 shows the BACnet communication module and fan coil unit controller integrated into a BAS. Refer to OM 1111 - FCU Unit Controller Operation and Maintenance manual, available on www.daikinapplied.com, for details.
Component Data

The following section describes the major components of the BACnet communication module. Figures 1 and 3 show the location of these components.

Diagnostic Light Emitting Diodes (LEDs)

The BACnet MS/TP communication module has four LEDs to indicate communication activity and status of the BACnet communication module.

<table>
<thead>
<tr>
<th>LED</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Program Running</td>
<td>Flashes with software application main loop activity</td>
</tr>
<tr>
<td>D2</td>
<td>SPI Message Transfer</td>
<td>Flashes with SPI communications with baseboard.</td>
</tr>
<tr>
<td>D3</td>
<td>MS/TP Transmit</td>
<td>Flashes when transmitting a MS/TP message</td>
</tr>
<tr>
<td>D4</td>
<td>MS/TP Receive</td>
<td>Flashes when receiving a MS/TP message</td>
</tr>
</tbody>
</table>

BACnet MS/TP Network Connector (P3)

The P3 connector is the port that integrates the BACnet communication module to the BACnet MS/TP network.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>Non-inverting signal input</td>
</tr>
<tr>
<td>2</td>
<td>–</td>
<td>Inverting signal input</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Reference used where isolated device require a reference</td>
</tr>
<tr>
<td>4</td>
<td>Shield</td>
<td>Shield (isolated terminal for connection of shields)</td>
</tr>
</tbody>
</table>
BACnet Pushbuttons

<table>
<thead>
<tr>
<th>Switch</th>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Reset</td>
<td>Used to reset the BACnet communication module</td>
</tr>
<tr>
<td>S2</td>
<td>Default</td>
<td>Used to reset the BACnet communication module to default parameters</td>
</tr>
</tbody>
</table>

Network Configuration Ports

<table>
<thead>
<tr>
<th>Plugs</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>Used to configure the BACnet communication module</td>
</tr>
<tr>
<td>P2</td>
<td>Used to program the BACnet communication module</td>
</tr>
<tr>
<td>P3</td>
<td>BACnet MS/TP network connection point</td>
</tr>
<tr>
<td>P4</td>
<td>8-pin header plug that connects the BACnet communication module to the FCU unit controller baseboard</td>
</tr>
</tbody>
</table>

Physical Address Switch

The physical Address Switch, S3, is used to determine the MAC address of the BACnet communication module. Valid physical switch values are 0 to 127 for manual addressing, and 255 for auto-addressing. See the Integration section for addressing details.

8-Pin SPI Header

P4 is an 8-pin serial peripheral interface (SPI) connection port on the back side of the BACnet communication module. It matches up to the 8-Pin header on the fan coil unit controller.

Jumper J2

Jumper J2 is used only for internal development and testing purposes.
Installation

The BACnet communication module can be factory or field-installed (see Aftermarket Services). The following section describes how to install a new BACnet communication module or replace an existing module. It also describes how to connect the BACnet communication module to a BACnet MS/TP network.

The BACnet communication module mounts on the fan coil unit controller with connector pins and is held in place with four plastic locking standoffs. The BACnet MS/TP network connects to the BACnet communication module at the network connector plug, P3.

Required Equipment

Field installation/replacement and network connection requires the following:

- A BACnet MS/TP communication module (included in kit)
- Stand-offs (included in kit)
- IM 1013 (included in kit)
- Shielded, twisted pair pigtail wire and plug for network connection (see Figure 4 for wiring schematic)

Installing a new BACnet MS/TP Communication Module

⚠️ DANGER
The terminals on the MicroTech III fan coil unit controller are high voltage. Disconnect power to avoid electrical shock potential, which will result in death or serious injury.

1. Disconnect power from the fan coil unit controller.
2. Remove the network cable plug-in connector terminal block in P3 (see Figure 1.)
3. Locate the four standoffs for the BACnet communication module.
4. Install the four standoffs on the fan coil unit controller circuit board (see Figure 3).
5. Orient the BACnet communication module printed circuit board so that the side with the components faces out and the connector socket can mate with the 8-Pin header on the fan coil unit controller circuit board.
6. Push the BACnet communication module onto the connector pins and standoffs until you hear the faint click of the locking standoffs securing the communication module in place.
7. See Figure 4 for the BACnet MS/TP communication module wiring schematic, if necessary.

Replacing a BACnet MS/TP Communication Module

⚠️ DANGER
The terminals on the MicroTech III fan coil unit controller are high voltage. Disconnect power to avoid electrical shock potential, which will result in death or serious injury.

1. Disconnect power from the fan coil unit controller.
2. Record the MAC Address set in Address Switch S3.
3. Remove the network cable plug-in connector terminal block P3 (see Figure 1.)
4. Locate the four standoffs for the BACnet communication module from the unit controller main circuit board (see Figure 3.)
5. Depress the barb on one standoff and gently pull the corner of the BACnet communication module over the barb. Do not bend the BACnet communication module or misalign the connector pins.
6. Proceed to the other three corners, remove the BACnet communication module from each standoff, and pull the module over the standoffs.
7. Gently lift the BACnet communication module from the unit controller.
8. Locate the empty connector pins and four standoffs for the BACnet communication module in the unit controller (see Figure 1.)
9. Orient the BACnet communication module printed circuit board so that the side with the components faces out and the connector socket can mate with the 8-Pin header on the fan coil unit controller circuit board.

10. Push the BACnet communication module onto the connector pins and standoffs until you hear the faint click of the locking standoffs securing the communication module in place.

11. See Figure 4 for the BACnet communication module wiring schematic, if necessary.

**Figure 3. BACnet communication module Mounted on the MicroTech III Fan Coil Unit Controller**
Figure 4. BACnet MS/TP Network Connection Schematic Diagram

Note: The BACnet communication module can function as either a 2-wire device (+ shield) or as a 3-wire device (+ shield). Use of the GND (or reference) terminal on the BACnet communication module is optional. The GND terminal can be used to terminate a reference conductor should one exist. Therefore, if a reference conductor does not exist, the GND terminal is not applicable. Additionally, the Shield terminal is also optional. In all RS-485 networks, the shield should be continuous throughout the entire MS/TP trunk. However, it does not need to be tied together using the Shield terminal (for example, wire nuts are frequently used as an alternative). The optional Shield terminal is provided for convenience when tying together the segments of the shield.

Integration

Integrating the BACnet communication module into a Building Automation System (BAS) involves three steps:
1. Connect the unit controller to the network.
2. Address the unit controller to establish the primary BACnet parameter settings. This requires using one of the four commissioning methods described below.
3. Configure the unit controller for the remaining network parameters. This step is done at the BAS or with a BACnet network configuration tool, and is typically the responsibility of the network integrator. Refer to the Protocol Document, ED 15135 (available on www.daikinapplied.com) for a comprehensive list of the available BACnet objects and network integration details.

Connecting to the Network

After the BACnet communication module has been connected to the unit controller, it can then be integrated into a BACnet network following the steps below:
1. Replace the network cable plug in P3 (see Figure 1). The polarity of the signal must be maintained throughout the network. Always connect + to + and – to –.
2. Set the physical S3 address switch settings on the BACnet communication module (see Figure 1). The settings depend on which one of the four addressing methods is desired. The following Addressing and Commissioning section provides complete details on each method.
3. Apply power to the unit controller.

Addressing and Commissioning

Once the BACnet communication module is connected to the network and is properly attached to the unit controller, it is ready to be addressed so that communication can be established. Listed below are the four primary BACnet parameters that require configuration in order for each unit to communicate properly to the network. Table 2 provides default values and important commissioning information for all BACnet parameters.

- MAC Address (must be unique on the MS/TP trunk)
- Device Instance Number (must be unique on the network)
- Device Name (must be unique on the network)
- MS/TP Baud Rate (must be the same throughout the MS/TP trunk)

**NOTE** – Device instance number must not be set to 300. Device Instance number of 300 is reserved for the unconfigured state

There are four procedures that can be used to set the BACnet addressing parameters for each unit. **Initial network setup requires the user to follow only one of these procedures.** However, it is possible to use another method at some point in the future, if desired (i.e. a new unit(s) is added to the network and the user wishes to take advantage of auto-addressing.) Below is a brief overview of the four methods, followed by detailed commissioning instructions. Table 2 provides default values for and other important information for setting network parameters.

1. **Manual** – Physically adjust the 8 dipswitches on the BACnet communication module’s S3 address switch to set the MAC Address. The remaining parameters are then automatically determined based on the MAC Address value. Use this method only if it is not necessary to change the baud rate, Device Instance Number, and/or the Device Name default values (see Table 2.) If any one of these parameters requires configuration, use the Manual plus Serial Terminal Device method as described below.
2. **Manual plus Serial Terminal Device** – Set the MAC Address via the 8 dipswitches, and then use a serial terminal device such as Windows HyperTerminal to adjust remaining parameters (Device Instance Number, Device Name, Baud Rate, Max Masters, etc.)
3. **Auto Addressing** – Confirm that the S3 address switch is set to the default value of 255. Press the Timed Override button on the room sensor to activate the auto-assignment process for setting network parameters.
4. **Auto Addressing using Network Variables** – Confirm that the S3 address switch is set to the default value of 255. Set the analog value (AV412) via the BAS and then press the Timed Override button on the room sensor to activate the auto-assignment process. This method allows the desired System Minimum Device Instance number to be set at the BAS.

**Note:** *The auto-addressing feature was designed for units communicating to a MicroTech Integrated System (MIS) controller. However, any BAS can configure a MicroTech III fan coil unit controller with BACnet communication module for auto-addressing. See the MicroTech System Manager Operation Manual, OM 1092, available on www.daikinapplied.com, for complete details on the MIS controller.*
Table 1. Summary of the Four MicroTech III Fan Coil Unit Controller BACnet Addressing Options

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Network Addressing Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate</td>
<td>38400</td>
</tr>
<tr>
<td>MAC Address</td>
<td>Physical S3 switch setting</td>
</tr>
<tr>
<td>Device Instance Number **</td>
<td>3101000 + MAC Address</td>
</tr>
<tr>
<td>Device Name</td>
<td>* MTIIIUC_FCU_ + Device Instance</td>
</tr>
</tbody>
</table>

* For example, if the Device Instance = 3101007, then the Device Name = MTIIIUC_FCU_3101007.

** NOTE – Device instance number must not be set to 300. Device Instance number of 300 is reserved for the unconfigured state.

Addressing Method #1 - Manual

Use this method only if the baud rate, Device Instance Number, and/or the Device Name default values do not need to be changed (see Table 2). If any one of these parameters requires configuration, use the Addressing Method #2 - Manual plus Serial Terminal Device procedure.

Required Equipment – None

Addressing Procedure

1. Assign the MAC Address by setting the eight-position physical S3 address switch on the communication module (see Figure 1 for location). The allowable range is between 0 - 127. Note that the BACnet communication module ships with a default MAC Address of 255. Bit 0 of the address/mode corresponds to switch position 1, and bit 7 of the address/mode corresponds to switch position 8. See “S3 Address Switch” section on page 15 for operation of the S3 dipswitch.
2. The default baud rate is 38400 bps as indicated in Table 2.
3. The Device Instance Number is set to 3101000 + MAC Address as determined by the S3 address switch.
4. The Device Name is set to MTIIIUC_FCU_ + Device Instance Number. For Example, if the Device Instance Number = 3101007, then the Device Name = MTIIIUC_FCU_3101007.

Addressing Method #2 – Manual plus Serial Terminal Device

Required Equipment

- Laptop with a serial port
- Serial terminal device application such as HyperTerminal
- Null modem serial cable for establishing communication between the laptop and the serial terminal device application

Addressing Procedure

1. Assign the MAC Address by setting the eight-position S3 address switch on the communication module. See Figure 1 for location of the S3 dipswitch. See the S3 Address Switch Switch section for operation instructions.
2. Change the baud rate, if necessary. The default is 38400 bps as indicated in Table 2. The baud rate can only be modified using a Serial Terminal Device such as HyperTerminal. See Appendix A for details.
3. The Default Device Instance Number is 3101000 + MAC Address as set by physical S3 address switch. If necessary, the Device Instance Number can be altered to any available valid value using a Serial Terminal Device such as HyperTerminal. See Appendix A.
4. The Default Device Name is MTIIIUC_FCU_ + Device Instance Number. If necessary, the Device Name can be modified to any available valid value using a Serial Terminal Device such as HyperTerminal. See Appendix A.
Addressing Method #3 – Auto Addressing

**Required Equipment**
- Room Sensor with Timed Override button – Required

**Optional Equipment**
The following items are required only if it is necessary to change the baud rate, Device Instance Number, and/or the Device Name from their default values as shown in Table 2.
- Laptop with a serial port
- Serial terminal device application such as HyperTerminal
- Null modem serial cable for establishing communication between the laptop and the serial terminal device application

**Note:** In the unconfigured state (i.e. prior to activating the auto-addressing process as described below), the BACnet communication module is connected to the network and is “listening” to network traffic. It is not actively communicating. While in the unconfigured state, it is compiling a set of used MAC Addresses from other devices. The following procedures describe how a room sensor is used to commission the unit controller from an unconfigured state to an active, communicating state on the BACnet network.

**Addressing Procedure**
1. Confirm the physical S3 address switches are set to the default value of 255. See Figure 1 for physical location of the S3 dipswitch.
2. Apply power to the unit controller and verify other devices are available on the network.
3. Allow the BACnet communication module a minimum of two minutes to analyze the network traffic so that it can determine which MAC addresses are currently being used by other devices.
4. Press the Timed Override button on the Room Sensor for 11 or more seconds to activate the auto-assignment process.
5. The BACnet communication module is automatically assigned the highest available MAC Address. The assignment process begins at the highest value of 127. If 127 is already taken by another device, it uses the next lowest available address. For example, if 127 and 126 are taken but 125 is free, the BACnet communication module is assigned a MAC Address of 125.
6. The default baud rate is 38400 bps as indicated in Table 2. The baud rate can only be changed using a Serial Terminal Device such as HyperTerminal. See Appendix A.
7. The Device Instance Number is assigned a value of 3101000 + MAC Address.
8. The Device Name is assigned a value of MTIIIUC_FCU_ + Device Instance Number.

Addressing Method #4 – Auto Addressing using Network Variables
This method involves configuring BACnet Analog Value (AV) objects AV412 and AV411 from the BAS. These unique network variables were created for units communicating to a MicroTech Integrated System (MIS) controller, but they can also be used by a network integrator to commission any MicroTech III fan coil unit controller with a BACnet communication module.

**Description of Network Variables AV412 and AV411**
During the automatic assignment process, AV412 (the System Minimum Instance number) is added to the MAC Address value to determine the Device Instance Number. After the BACnet communication module is commissioned, the MAC address is commandable, or writeable, through the BAS using the AV411 object.

AV412 has an ObjectName of SystemMinInstance, the Present Value is writeable, and it has a default value of 3101000. During the commissioning process, the present value of AV412 is added to the MAC Address to determine the Device Instance Number. In order to change the value of AV412 on the BACnet communication module in the unconfigured state, the BAS must broadcast a new present value to AV412 using the BACnet service (BIBB – BACnet Interface Building Block) called “Unconfirmed COV” with a ProcessID value of 1. This prevents unauthorized unconfirmed writes, or changes, to AV412. Note that this change affects the AV412 present value for every fan coil BACnet communication module on the trunk.
The following is an example of how AV412 can be used in a typical BACnet network with a traditional BAS:

A network has two separate trunks. One trunk uses the default Minimum Instance Number of 3101000. The second trunk is set to a different Minimum Device Instance Number (Example 3102000) via AV412. In this way, the two trunks can each have unique Device Instance Numbers on the network.

The AV411 object is the MAC Address/Address Switch. It is a multi-purpose variable, which means that the ObjectName changes based on the value of the physical S3 address switch on the BACnet communication module. When the address switch is set to 255, the AV411 ObjectName is MACAddress, the Present Value is commandable via the BAS, and represents the communication module’s MS/TP MAC Address. However, if the address switch is not set to 255, the AV411 ObjectName is MACAddressSwitch, Present Value is read-only, and represents the S3 physical address switch setting.

Refer to the MicroTech III Fan Coil Unit Controller Protocol Information document, ED 15135 (available on www.daikinapplied.com) for more information about the Analog Values, AV411 and AV412 used specifically for dynamically addressing the BACnet communication module.

### Required Equipment
- Room sensor with Timed Override button – Required
- BAS – Required for setting network variables, AV412 and AV411

### Optional Equipment
The following items are required only if it is necessary to change the baud rate, Device Instance Number, and/or the Device Name from their default values as shown in Table 2.
- Laptop with a serial port
- Serial terminal device application such as HyperTerminal
- Null modem serial cable for establishing communication between the laptop and the serial terminal device application

### Addressing Procedure
1. Confirm the S3 switch on the BACnet communication module is set to the default value of 255.
2. Apply power to the unit controller and verify other devices are available on the network.
3. From the BAS, set AV412 to the new desired System Minimum Device Instance Number (see above for details.)
4. Allow the BACnet communication module a minimum of two minutes to analyze the network traffic so that it can determine which MAC addresses are currently being used by other devices.
5. Press the Timed Override button on the Room Sensor for 11 or more seconds to activate the auto-assignment process.
6. The assignment process begins at the highest value of 127. If 127 is already taken by another device, it uses the next lowest available address. For example, if 127 and 126 are taken but 125 is free, the BACnet communication module is assigned a MAC Address of 125.
7. The default baud rate is 38400 bps as indicated in Table 2. The baud rate can only be changed using a Serial Terminal Device such as HyperTerminal. See Appendix A.
8. The Device Instance Number is automatically configured to be the System Device Instance Number selected by the user at AV412 + MAC Address (see above for details.)
9. The Device Name Property is automatically configured to be MTIIIUC_FCU_ + Device Instance Number.

**Note:** If the Device Instance Number and / or Device Name have been changed from default values via the BAS system or a Serial Terminal Device application, it will no longer be automatically configured. However, restoring the BACnet communication module to default values allows auto-configuration to occur (see the Restoring the BACnet communication module to Default Values section for details.)
Configuration Settings for the BACnet Communication Module

Table 2 below describes the BACnet communication parameters and their default values that must be configured correctly for successful network communication.

Table 2. Network Communication Parameter Settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Setting</th>
<th>Range/Valid Values</th>
<th>Important Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS/TP Baud Rate</td>
<td>38400</td>
<td>9600, 19200, 38400, 76800</td>
<td>Manually adjustable only through the J1 configuration port connected to a laptop using a serial connector and terminal device application such as HyperTerminal. See Appendix A.</td>
</tr>
<tr>
<td>MS/TP Max Masters</td>
<td>127</td>
<td>1 - 127</td>
<td>Manually adjustable only through the J1 configuration port connected to a laptop using a serial connector and terminal device application such as HyperTerminal. See Appendix A.</td>
</tr>
<tr>
<td>MS/TP MAC Address</td>
<td>N/A</td>
<td>0 – 127 and 255 Note that 128-254 are not valid addresses.</td>
<td>When the physical S3 Address Switch is set to 255 (factory default), the MS/TP MAC Address is dynamically acquired during the commissioning process. Once commissioned, the MAC Address can be adjusted through the BAS using AV411 or through the laptop serial port (i.e. HyperTerminal.) See Appendix A. When the physical S3 Address Switch is not set to 255, the static MS/TP MAC Address directly matches the S3 Address Switch value.</td>
</tr>
<tr>
<td>System Minimum Instance (AV412)</td>
<td>3101000</td>
<td>0 - 4194302</td>
<td>Writeable only through the network. “Present Value” is used during the commissioning process to determine the Device Instance &amp; Name.</td>
</tr>
<tr>
<td>Device Instance Number</td>
<td>300</td>
<td>0- 4194303 (300 Not Allowed)</td>
<td>The commissioning process initializes the Device Instance Number to MAC Address + System Minimum Instance (AV412) or is manually adjustable</td>
</tr>
<tr>
<td>Device Object Name</td>
<td>MTIIIUC_FCU_0000300</td>
<td>Up to a 17-character Device Object Name</td>
<td>The commissioning process initializes the Device Object Name to: “MTIIIUC_FCU_” + Device Instance Number or is manually adjustable.</td>
</tr>
<tr>
<td>Max APDU Length</td>
<td>480</td>
<td>N/A</td>
<td>Fixed value is 480.</td>
</tr>
</tbody>
</table>

Important Notes

1. The address switch (S3) is factory defaulted to 255. The S3 address switch setting determines the mode that is used for establishing the MS/TP MAC Address.
2. The Default Setting is the value prior to the commissioning process completion (in other words, when the communication module is an unconfigured state). The unconfigured state implies that the S3 address switch is set to 255.
3. The Max APDU Length parameter should not be set higher than 480. This value is not user-adjustable.
S3 Address Switch

The following section provides a description of the S3 address switch positions and their respective values (see Tables 3 and 4). Figure 6 gives an example of the dipswitch settings for a common network address.

Table 3. Explanation of Physical DIP Switch States (ON or OFF)

<table>
<thead>
<tr>
<th>Address Switch State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Closed = dipswitch in down position = 1</td>
</tr>
<tr>
<td>OFF</td>
<td>Open = dipswitch in up position = 0</td>
</tr>
</tbody>
</table>

Figure 5. BACnet Communication Module Physical Address Switch (S3) – Default Settings to ON (Closed)*

* Note that the switches on the actual BACnet communication module are numbered: 8, 7, 6, 5, 4, 3, 2, 1 from left to right when the communication module is attached on the unit controller baseboard (as shown in Figures 1 and 3). This assumes the unit controller has not been rotated inside of the control enclosure.

Table 4. Address Switch Values When Switch is ON (Closed)

<table>
<thead>
<tr>
<th>Switch #</th>
<th>Value</th>
<th>Value When Switch is ON (Closed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 to the zero power</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2 to the 1st power</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>2 to the 2nd power</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>2 to the 3rd power</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>2 to the 4th power</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>2 to the 5th power</td>
<td>32</td>
</tr>
<tr>
<td>7</td>
<td>2 to the 6th power</td>
<td>64</td>
</tr>
<tr>
<td>8</td>
<td>2 to the 7th power</td>
<td>128</td>
</tr>
</tbody>
</table>

Figure 6. BACnet Communication Module Address Switch (S3) - Example of a Manual Network Address Setting*

The digital switch positions as read from right to left are: 01001100. This provides an address of 76 decimal. In this example, the S3 address switch is set to 76, so the Device Instance Number is assigned to 3101076 (AV412 = 3101000) and the Device Name is assigned to MTIIIUC_FCUC_3101076.

* Note that the switches on the actual BACnet communication module are numbered: 8, 7, 6, 5, 4, 3, 2, 1 from left to right when the communication module is attached on the unit controller baseboard (as shown in Figures 1 and 3).
Verifying the Network Address Using the Wink Command

The BACnet communication module implements a unit identification mode command to the unit controller by using the BACnet “ReinitializeDevice” request, with a Cold or Warm Start request handle, and a password of “wink” (all lower case). The “wink” unit identification function allows verification of an individual unit network address without opening the unit access panels. The Wink command can be used during all operating and non-operating (ex. Alarm) modes except for the following conditions:

- Invalid Equipment Configuration Alarm
- Emergency Shutdown Alarm
- Actuator Calibration Process

Upon receiving a “wink” command from a network management node, the unit controller exhibits the following identification sequence (all occur simultaneously):

- Room Sensor LED flashes (ON for 3.0 sec, OFF for 3.0 sec) for 15 total seconds, unless an alarm condition exists.
- Fan: The fan turns off for 5 seconds, turns on for 5 seconds, then off again for 5 seconds.

Restoring the BACnet Communication Module to Default Values

It is necessary to restore the BACnet communication module default settings under the following conditions:

- When new application software was loaded into the BACnet communication module.
- When the commissioning process does not work as expected.

Follow these steps to set the BACnet communication module back to default configuration settings:

1. Confirm that the communication module S3 address switch is set to the desired value. Use values 0 to 127 for manual addressing, and 255 for auto-addressing.
2. Press and hold the S2 Default pushbutton. See Figure 1 for location.
3. While holding the S2 switch, press and release the S1 Reset pushbutton. The LEDs should flash once, turn off and turn on after another. See Figure 1 for location.
4. Release the S2 Default pushbutton (once all four LEDs are ON steady) to restore the BACnet communication module to default values.
**Troubleshooting**

If you can control the unit from the room sensor, but not able to communicate with the unit via the MS/TP network:

- Verify the Program Running LED (D1) is flickering.
- Verify the SPI Message Transfer LED (D2) is flickering.
- Verify the MS/TP Transmit LED (D3) is flickering.
- Verify the network (bus) wiring.
- Check the network communication parameters in the BACnet communication module for proper settings.
  - Verify the logical MAC Address is unique, and in the valid range of 0 to 127 (Master).
  - Verify the Device Instance Number is unique, and in the valid range of 1 to 4194302. **
  - Verify the Device Object Name is configured, and is unique in the network.
  - Verify the MS/TP baud rate matches the network communication data rate.
  - Verify the MS/TP Max Masters matches the network setting, and in the valid range of 1 to 127.

**NOTE** – Device instance number must *not* be set to 300. Device Instance number of 300 is reserved for the unconfigured state

For additional assistance if necessary, contact the Controls Customer Support group at 866-462-7829.

**Warranty**

All Daikin Applied equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied Representative for warranty details. Refer to Form 933-430285Y. To find your local Daikin Applied Representative, go to [www.daikinapplied.com](http://www.daikinapplied.com).

**Aftermarket Services**

To find your local parts office, visit www.daikinapplied.com or call 800-37PARTS (800-377-2787). To find your local service office, visit www.daikinapplied.com or call 800-432-1342.
Appendix A: BACnet Configuration Menu

This section describes how to set BACnet parameters using the BACnet configuration menu. The BACnet configuration menu is accessed using an application such as Microsoft Windows® HyperTerminal®. It is assumed that the user is familiar with such an application.

The BACnet configuration menu is accessed through the DB-9 serial connector on the module itself. Any serial terminal device or application (such as HyperTerminal) can be used to view the menu and change the configuration parameters.

The parameters listed below can be accessed and modified via the BACnet configuration menu:
- Device Instance - must be set to a unique value on the BACnet network
- Device Name - must be set to a unique value on the BACnet network
- MS/TP Baud Rate - must be set according to the BACnet network requirements
- Max Master – Default 127, allowable range 1-127
- Address Switch (MS/TP MAC Address) – only viewable via the BACnet Configuration Menu. It can only be changed using the S3 address switch on the BACnet communication module

Follow these steps to connect to the BACnet configuration menu (see Figure 7):
1. Verify that the terminal application communication settings are set to: 19200 bps, 8 data bits, no parity, 1 stop bit, and no flow control.
2. Use a null modem serial cross over cable to connect the computer to the BACnet communication module.
3. Once connected, press the ‘Enter’ key to display the menu shown in Figure 7.
4. After all parameters have been configured, press the ‘S’ key to save setting changes.

Figure 7. BACnet Configuration Menu

```
==================== Configuration Menu ====================
Daikin Applied - MTIIIUC_FCU
BACnet FW FC0 v1.0     UnitApp FC0 vUC-1.0 IO-1.0
======= SW PN 2506908 ======================================
DEVICE
1) Instance ........... 3101003
2) Name ............... MTIIIUC_FCU_3101003
3) Location ...........
4) Description ........
5) Units .............. English
6) Config Settings .... 9E D0 03 00

MS/TP
7) Baudrate ........... 38400
8) MaxMasters ........... 127
   Address Switch ..... 3

TERMINAL
9) EIA-232 Baudrate ... 19200
B) Backup or R) Restore Configuration
S) Save settings

Enter Selection:
```

NOTE – Reference Protocol Information document, ED15135, for specific details about the configuration settings.

For additional technical assistance, contact the Controls Customer Support group at 866-462-7829.

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This document contains the most current product information as of this printing. For the most current product information, please go to www.daikinapplied.com.