



MicroNet Heat Pump/Fan Coil Controller Reference Manual

FCC

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F-26174-3

July 2010 tl

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Preface

Purpose of Manual

This manual is intended for use by Schneider Electric engineers and technicians, as well as building owners and operating personnel. It provides device setup/configuration, programming, operating, application, and diagnostic/troubleshooting information. Where applicable, both interfaces—the MicroNet Controller Interface and the MicroNet Sensor—are explained and illustrated. The manual also includes information on interfacing the MicroNet Heat Pump/Fan Coil Controller with a Building Automation System (BAS).

To use this manual effectively, you should be familiar with basic DOS commands, the MicroNet Controller Interface software, and the MicroNet 2000™ family of controllers. If you are not familiar with the MicroNet Controller Interface software, read the **MicroNet Controller Interface User's Manual, F-25712**. Read the **MicroNet 2000 Family Fundamentals Guide, F-25711**, if you are not already familiar with the MicroNet 2000 family. See “Applicable Documentation” on page v for other related literature.

Abbreviations Used in this Manual

BAS	Building Automation System
CI or MNETCI	MicroNet Controller Interface
DOS	Disk Operating System
GCM™	Global Control Module
MN-HPFC	MicroNet Heat Pump/Fan Coil Controller
PC	Personal Computer
TSR	Terminate and Stay Resident
U-Bus™	Universal Bus
U-Link™	Universal Link

Conventions Used in This Manual

The following conventions apply throughout the MicroNet Heat Pump/Fan Coil Controller Reference and Application Manual:

<Enter>	(key name enclosed in angle brackets) Indicates a key on the PC keyboard or a button on the deluxe MicroNet Sensor keypad that performs a specific function.
<Alt - S>	(two key names or letters enclosed in angle brackets) Indicates a key combination. Hold down the first key and then press the second.
[0]	(number enclosed in straight brackets) Indicates the MicroNet Sensor equivalent for an attribute value.
System	(words in plain letters that look like typewriter print) Indicates a user entry or menu selection.
Side Notes	Adjacent to certain topics throughout the manual you will find side notes that provide additional information or tips.

Applicable Documentation

F-Number	Description	Audience	Purpose
F-25711	MicroNet 2000 Family Fundamentals Guide	<ul style="list-style-type: none"> - Sales Personnel - Application Engineers 	Provides an introduction to the product family. Contains detailed product descriptions, wiring practices, and system architecture information.
F-25712	MicroNet Controller Interface User's Manual	<ul style="list-style-type: none"> - Application Engineers - Installers - Start-up Technicians - Service Personnel 	Provides installation instructions, startup and menu information, and a tutorial.
F-25714	MN-CIM, MicroNet Controller Interface Module Installation Instructions	<ul style="list-style-type: none"> - Application Engineers - Installers - Start-up Technicians - Service Personnel 	Provides step-by-step installation procedures for the MicroNet Controller Interface Module.
F-25715	MN-S Series, MicroNet Sensor General Instructions	<ul style="list-style-type: none"> - Application Engineers - Installers - Start-up Technicians - Service Personnel 	Provides step-by-step installation and checkout procedures for MicroNet Sensors.
F-25717	MN-ASDI, MicroNet Integrator General Instructions (ASD Bus)	<ul style="list-style-type: none"> - Application Engineers - Installers - Start-up Technicians - Service Personnel 	Provides step-by-step installation and checkout procedures for the MicroNet Integrator.
F-26050	MN-SDT MicroNet Duct/Immersion Temperature Transmitter General Instructions	<ul style="list-style-type: none"> - Application Engineers - Installers - Start-up Technicians - Service Personnel 	Provides step-by-step installation and checkout procedures for the MicroNet MN-SDT Duct/Immersion Temperature Transmitter.
F-26172	MN-HPFC MicroNet Heat Pump/Fan Coil Controller Installation Instructions	<ul style="list-style-type: none"> - Application Engineers - Installers - Start-up Technicians - Service Personnel 	Provides step-by-step installation and checkout procedures for the Heat Pump/Fan Coil Controller.
SOFT-MNET-201	MicroNet Heat Pump/Fan Coil Controller Application Manual	<ul style="list-style-type: none"> - Application Engineers - Start-up Technicians - Service Personnel 	Provides complete application information for the MicroNet Heat Pump/Fan Coil Controller.

Manual Summary

This manual contains six chapters, four appendices, a glossary, and an index.

Chapter 1 - Introduction to the MicroNet Heat Pump/Fan Coil Controller

This chapter introduces the MicroNet Heat Pump/Fan Coil Controller. It describes typical applications and different system configurations. This chapter also details the equipment required for interface and operation.

Chapter 2 - Setup and Configuration

This chapter provides configuration and setup information. It defines the MicroNet Heat Pump/Fan Coil Controller application programs and gives a general overview of the setup process using either the MicroNet Controller Interface (CI) or the deluxe MicroNet Sensor. Details for defining device access, customizing the deluxe MicroNet Sensor display, and configuring staggered startup are also provided.

Chapter 3 - Attribute and Data Store Descriptions

This chapter introduces the concepts of attributes and data stores. It provides a functional description and default indication for each attribute and data store contained in the MicroNet Heat Pump/Fan Coil Controller.

Chapter 4 - Basic Operations

This chapter describes operational tasks using the MicroNet Controller Interface and the deluxe MicroNet Sensor. Procedures for communicating with a controller, viewing current status, trending, changing setpoints, working with files, and logging off are explained.

Chapter 5 - Diagnostics and Troubleshooting

This chapter provides information for diagnosing conditions and troubleshooting problems. It explains how to access and determine source priority of control values. Explanations and corrective actions for the MicroNet Controller Interface screen display messages (CI and device messages) are included.

Chapter 6 - BAS Interface

This chapter provides information on interfacing the MicroNet Heat Pump/Fan Coil Controller with the NETWORK 8000 Building Automation System.

Appendix A - Attribute Cross Reference

Appendix A provides a quick look-up chart for ID numbers for MicroNet Heat Pump/Fan Coil Controller attributes. ID numbers are listed alphanumerically.

Appendix B - Deluxe MicroNet Sensor Quick Reference

Appendix B provides a quick reference for the deluxe MicroNet Sensor, including a flowchart, keypad functions, and display timeout information.

Appendix C - Viewing and Printing Logged Files in DOS

Appendix C provides instructions for viewing and printing logged files in DOS.

Appendix D - Hex Conversion

Appendix D provides information for converting filenames resulting from a Get Multiple upload from their hex format to their node address format.

Glossary

The Glossary alphabetically lists and defines terms used in this manual.

Index

The Index alphabetically cross references subjects and page numbers.

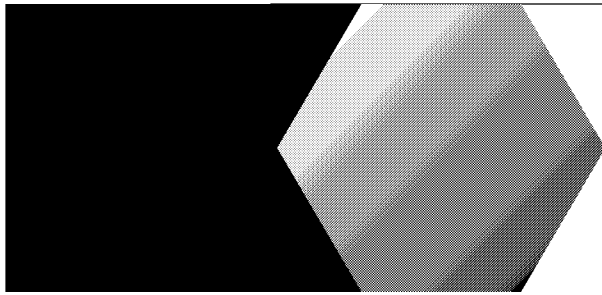


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Chapter 1

Introduction

Overview

The MicroNet Heat Pump/Fan Coil Controller (MN-HPFC Controller), a single stage heat pump or two-pipe/four-pipe fan coil controller, is a member of the MicroNet 2000 family of direct digital controllers. This controller provides two-position or floating control of heating/cooling stages, valves, or dampers.

The MN-HPFC mounts directly in the plenum and has three triac outputs. Controller attributes are changeable through the MicroNet Controller Interface and the MicroNet Sensor.

MicroNet Heat Pump/Fan Coil Controllers can operate in a stand-alone mode (Figure-1.1).

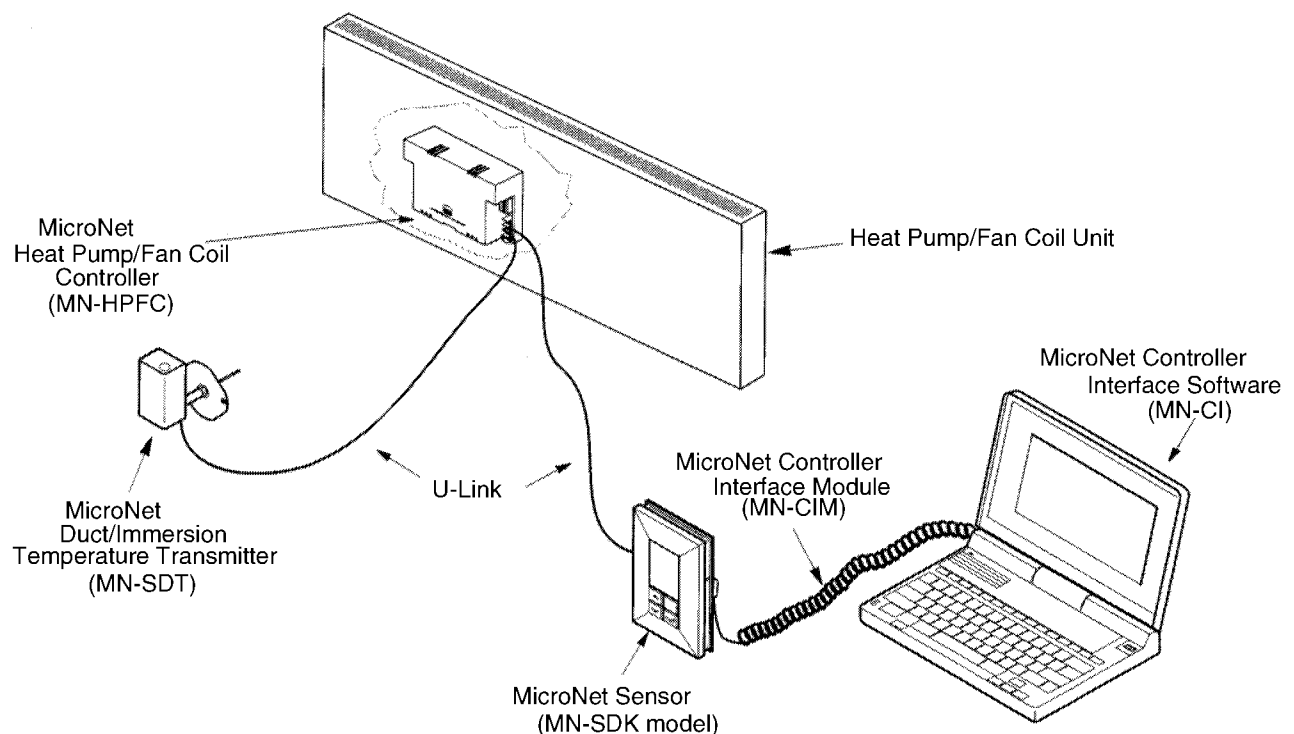


Figure-1.1 Stand-alone Installation.

They can also be connected in a peer-to-peer communication network under an MN-ASDI MicroNet Integrator (Figure-1.2), or can be integrated into a facility wide Building Automation System (Figure-1.3).

Data, such as room temperature or setpoints of a common MicroNet Sensor, can be shared between the MicroNet 2000 Controllers when they are networked together under an MN-ASDI MicroNet Integrator with each performing their own stand-alone control functions,.

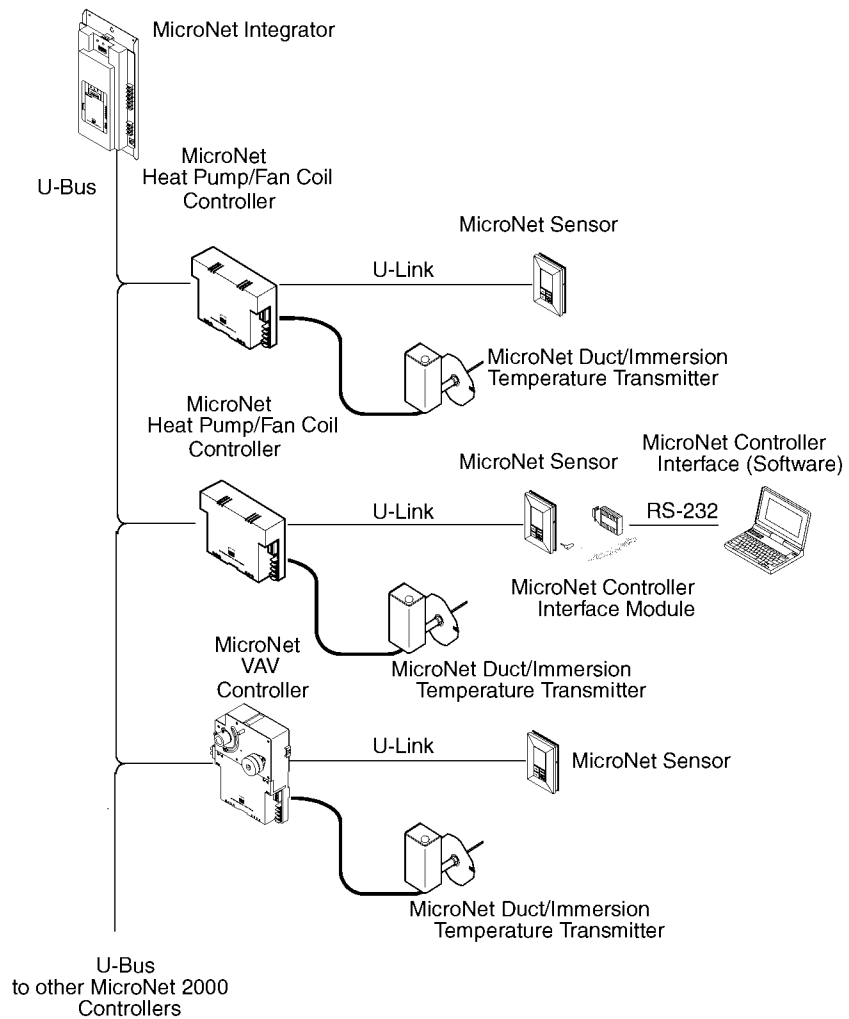


Figure-1.2 MicroNet Heat Pump/Fan Coil Controllers Networked under a MicroNet Integrator.

When MicroNet Heat Pump/Fan Coil Controllers are integrated into a Building Automation System (BAS), data can be shared between the MicroNet Controllers, the MN-ASDI MicroNet Integrator, and the individual BAS components.

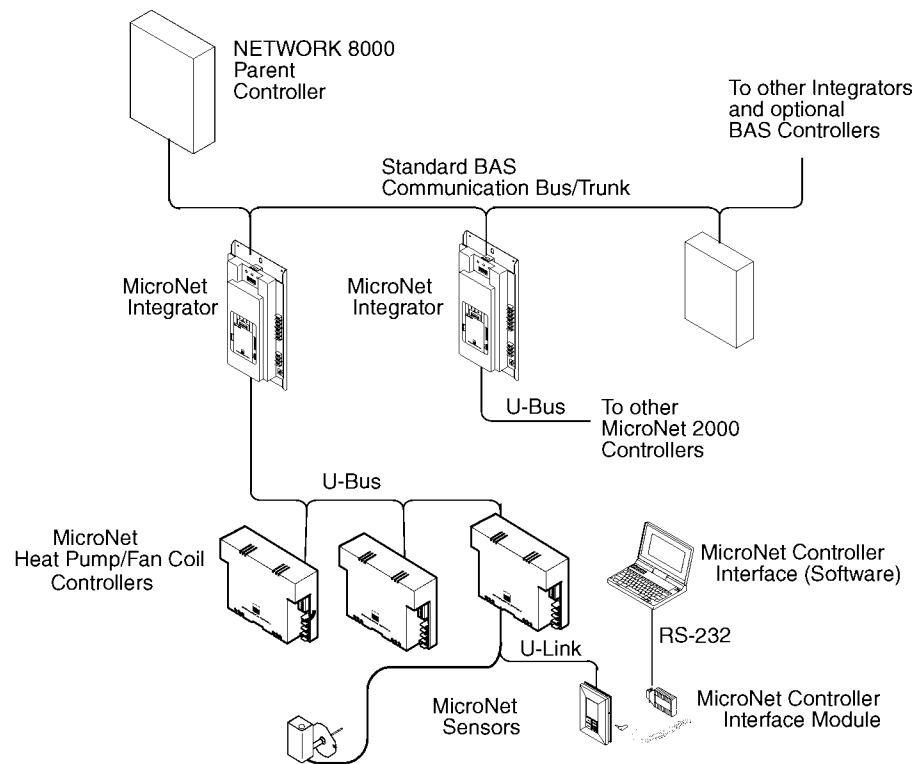


Figure-1.3 MicroNet Heat Pump/Fan Coil Controllers Integrated in a Building Automation System.

Required Equipment

Interface Platforms

The MicroNet Controller Interface or the MicroNet Sensor (deluxe model MN-SDK only) provide the interface between you and the MicroNet Heat Pump/Fan Coil Controller.

MicroNet Sensor

The deluxe MicroNet Sensor (MN-SDK) is a wall mount, room temperature sensor. It contains a Liquid Crystal Display (LCD) and a four-button keypad which allow you to view MicroNet Heat Pump/Fan Coil Controller values and change temperature setpoints or other pre-assigned controller values. With proper password access, additional set up and commissioning functions can also be performed.

MicroNet Controller Interface

The MicroNet Controller Interface (CI) software gives you the ability to download applications, make attribute adjustments, monitor operating conditions, and upload databases for backup. Specific platform requirements are listed below.

Table-1.1 MicroNet Controller Interface Platform Requirements.

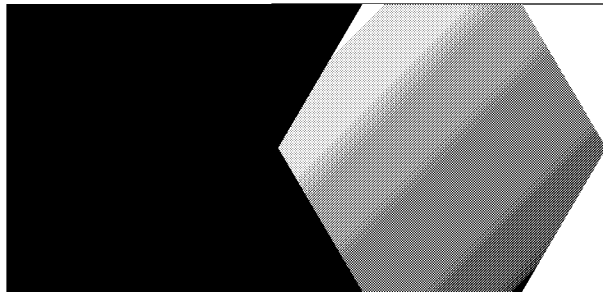
Requirement	Description
PC Type	IBM compatible PC (desktop or portable).
Processor	80286 or higher
RAM	512 Kb
Disk Drives	1 Mb. Hard disk space available (recommended) 3-1/2 inch high density floppy
Operating System	MS-DOS™ 3.3 or higher
Ports	RS-232 Serial Port
Monitor Capability	CGA, EGA, MCGA, or VGA, Monochrome or color.

Application Library

The **MicroNet Heat Pump/Fan Coil Controller Application Manual, SOFT-MNET-201**, contains the library of pre-engineered control applications. Each application in the library has a set of electronic files (on 3.5" diskettes) and an Application Document. The Application Document includes application features, the sequence of operation, bill of materials, attribute programming, and wiring diagram.

The electronic files include the Application Data File and an AutoCAD drawing. With these files, you can modify/customize the standard application package to suit the exact requirements of the project and significantly reduce engineering time and expense.

When shipped from the factory, the MN-HPFC is pre-configured for a satellite application. To use the controller in a different application, you need to download one of the Application Data Files contained in the **MicroNet Heat Pump/Fan Coil Controller Application Manual, SOFT-MNET-201**, or manually configure a database using the CI or deluxe MicroNet Sensor.



Chapter 2

Configuration and Setup

Introduction

This chapter provides configuration and setup information. It defines the MicroNet Heat Pump/Fan Coil Controller's application programs and includes a general overview of the setup process. Procedures for using the MicroNet Controller Interface (CI) and the deluxe MicroNet Sensor are explained. Specific instructions for defining device access, instructions for customizing the deluxe MicroNet Sensor display, and explanation regarding the MicroNet Heat Pump/Fan Coil Controller's output staggered startup feature are also provided.

MicroNet Controller Interface Prerequisites

This chapter assumes that the MicroNet Controller Interface (CI) software is installed and you are familiar with its use, menu structure, and logon procedures. It further assumes that the interface between the PC and the MicroNet Controller Interface Module has been properly setup. If necessary, refer to the **MicroNet Controller Interface User's Manual, F-25712**, for information on these topics.

The MN-HPFC Controller's Application Programs

The deluxe MicroNet Sensor does not use data stores to group the MicroNet Heat Pump/Fan Coil Controller's individual attributes. For the purpose of understanding and configuring the MicroNet Heat Pump/Fan Coil Controller, however, it is still beneficial to review the attributes by these

The MicroNet Heat Pump/Fan Coil Controller's application programs are defined by individual attributes. These attributes are grouped, by function, in the MicroNet Controller into six different read-write data stores. The name of each data store indicates the function of the group of attributes.

The data stores are briefly described on the following page. Refer to Chapter 3 "Attribute and Data Store Descriptions" for additional information and individual attribute descriptions.

The data stores fit into four different categories:

- Stand-alone control
- Peer-to-peer
- Sensor setup and display
- Controller name

Standalone Control

The Standalone SP and Calibration data stores provide the basic control program. Attributes in these data stores should be reviewed and/or edited regardless of the installation—stand-alone, peer-to-peer, or BAS control.

Standalone SP

Attributes in the Standalone SP data store represent the setpoints that are used when the controller is in the standalone control mode or anytime a higher level source for the attribute value is not present, disabled, or becomes non-functional.

Calibration

Attributes in the Calibration data store configure and setup the controller for a specific installation and application.

Peer-to-peer Control

The Shared Values data store is used for peer-to-peer control installations. For standalone control, the attributes in this data store can be left at their default settings. For peer-to-peer installations, these attributes would be programmed to specific values for the application.

Shared Values

Attributes in the Shared Values data store specify the source locations for the shared heat setpoint, cool setpoint, zone temperature, and occupancy mode values. These values can be used for control purposes. This data store also contains one user-defined value that can be shared for display in other controllers.

Sensor Setup and Display

The Sensor Config and Sensor Display data stores are used to setup the MicroNet Sensor. Attributes in these data stores should be reviewed and/or edited regardless of the installation—stand-alone, peer-to-peer, or BAS control.

Sensor Config

Attributes in the Sensor Config data store configure the deluxe MicroNet Sensor's display and enable (or disable) selected features for either the deluxe MicroNet Sensor or the MicroNet Sensor w/ Override.

Sensor Display

Attributes in the Sensor Displays data store define which attribute values are displayed in the user and setup display lists of the deluxe MicroNet Sensor.

Controller Name

The Controller Name data store contains one attribute that assigns a name to the MicroNet Heat Pump/Fan Coil Controller. This attribute is not available from the deluxe MicroNet Sensor.

General Setup

The MicroNet Heat Pump/Fan Coil Controller ships from the factory with a default application program (Satellite). The MicroNet Heat Pump/Fan coil Controller Application Manual, SOFT-MNET-201, contains a library of pre-engineered control applications which can be downloaded to replace a default program. These applications, however, as with the default program, provide only the basic configuration. Additional setup is still necessary to meet the requirements of a specific installation.

Configuration and setup is different depending upon whether or not you are using the controller's default application file or a pre-engineered application. Configuration and setup also depends on the type of interface used (*MicroNet Controller Interface or MicroNet Sensor). Setup steps are shown in the illustration below (Figure-2.1).

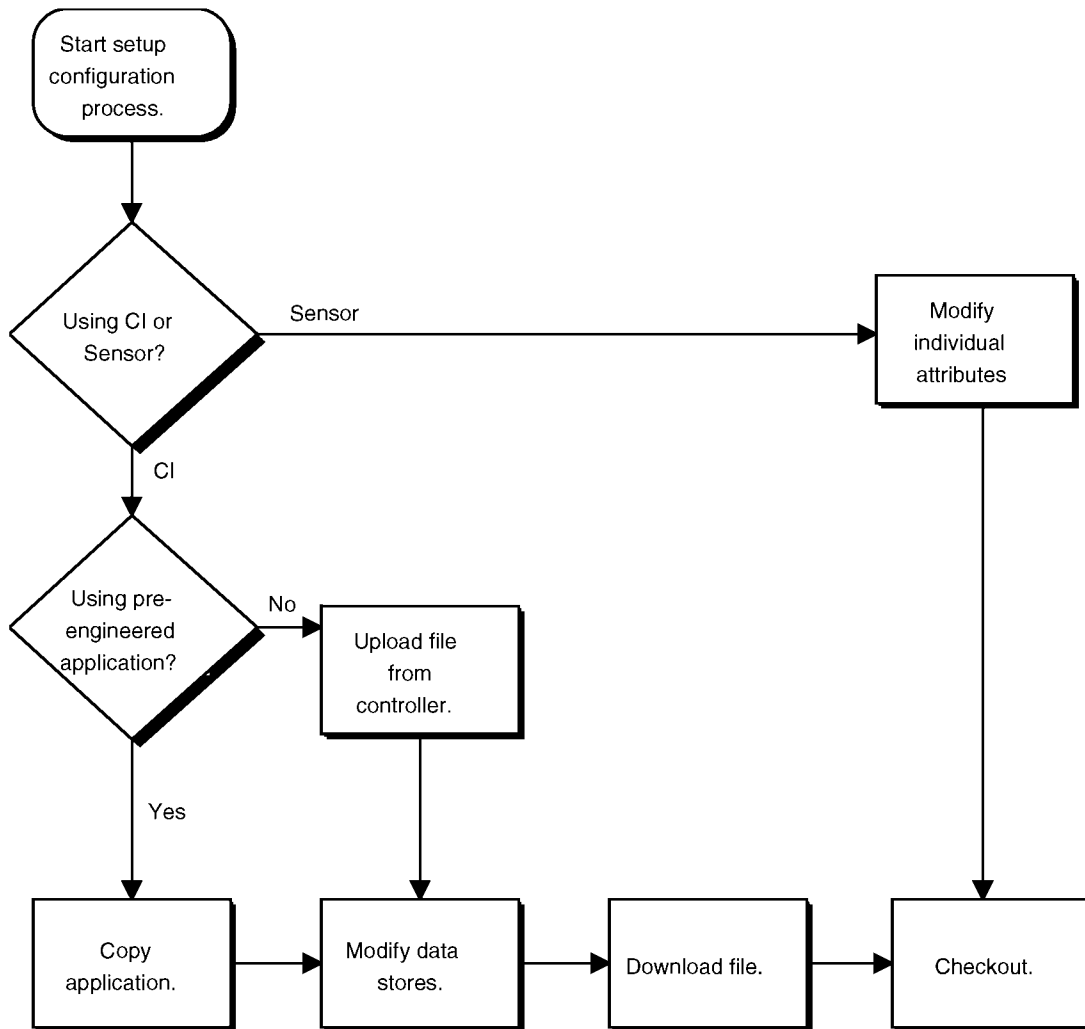


Figure-2.1 General Setup Steps.

Setup Using the MicroNet Controller Interface

As shown in the previous illustration (Figure-2.1), setup of the MicroNet Heat Pump/Fan Coil Controller using the MicroNet Controller Interface involves uploading or copying an application file, editing the data stores in the file, and then downloading the file to the controller.

Uploading a Default MicroNet Heat Pump/Fan Coil Controller File

Uploading the controller's default file and then editing the file off-line is not the only possible setup procedure. You can instead edit the controller's application program on-line and upload the edited program at a later time.

If you do not have an existing MicroNet Heat Pump/Fan Coil Controller application file to copy, you will need to upload the default file from the controller.

The CI's Get from Device function allows you to upload an application file from a MicroNet Heat Pump/Fan Coil Controller and save it to a file. Get from Device is an on-line function and requires that the CI is physically connected to a controller's U-Link. To upload an application file follow the steps below, or refer to "Uploading a File from a Device" section on page 40 for additional information.

1. Start from the CI's Files sub-menu.
2. Select Get from Device.
3. In the Enter Node Address window, enter the address of the MicroNet Heat Pump/Fan Coil Controller that you want to upload the file from and press <Enter>.
4. In the Enter DOS Filename window, type a legal DOS filename, without a file extension, and press <Enter>.

During the upload, the CI displays an Uploading Template note window if it does not have a template file for the MicroNet Heat Pump/Fan Coil Controller that you are uploading from. The CI checks for a matching template (type and revision) each time it establishes communication with a controller. It automatically uploads the template from the controller if a matching one is not found. The Uploading template note window is displayed when a template upload is necessary (Figure-2.2).

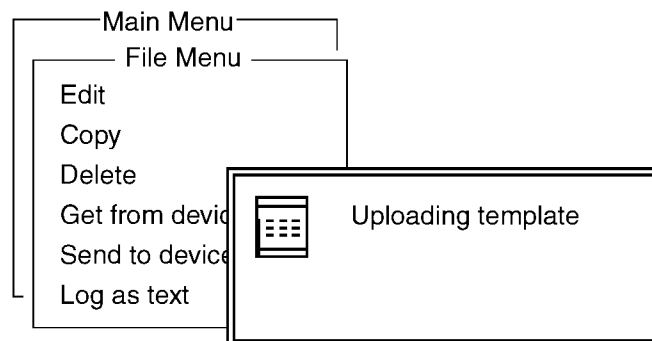


Figure-2.2 Uploading Template Note Window.

Copying an Application File

If you have an existing MicroNet Heat Pump/Fan Coil Controller application file that's similar to the application required, you can use the CI's Copy function to duplicate the file.

Copy is an off-line function. To use the CI's Copy function, follow the steps below, or refer to "Copying Files" section on page 31 for additional information.

1. Start from the CI's Files sub-menu.
2. Select **C**opy.
3. Select the file you wish to copy and press <Enter>.
4. In the Enter DOS FileName window, type a legal DOS filename, without a file extension, and press <Enter>.

The CI copies the file and adds it to the File list with the new filename.

Editing an Application File

Changes made to a MicroNet Heat Pump/Fan Coil Controller's application file are made using the CI's Edit function on the File sub-menu.

File-Edit is an off-line function. To use the CI's Edit function on the File sub-menu, follow the steps below, or refer to "Editing Other Control Attributes" section on page 23 for additional information.

1. Start from the CI's Files sub-menu.
2. Select **E**dit.
3. From the Files List, select the file you wish to edit and press <Enter>.
4. From the Stores List, select the data store that contains the attribute(s) that you wish to edit and press <Enter>.
5. Select the attribute to edit and press <Enter>.
6. Select or type the new value for the attribute and press <Enter>.
7. Follow the same procedure to change other attributes.
8. When you are finished editing, press <Alt-S> to save your changes.
9. Press <Esc> to close the data store window.
10. Select other data stores and edit as necessary.

Downloading an Application File

Downloading to a Single Device

The Send to Device function allows you to send a single application file to a device.

Send to Device is an on-line function. To use the Send to Device function on the Device sub-menu, follow the steps below, or refer to "Downloading a File to a Device" section on page 35 for additional information.

1. Start from the CI's Files sub-menu.
2. Select **Send to Device**.
3. From the Files List, select the file you wish to send and press <Enter>.
4. In the Enter Node Address window, enter the address of the device that you want to send the file to and press <Enter>.

The CI displays the "Downloading Data" note window before returning to the Files list.

Downloading to Multiple Devices

The Send Multiple function allows you to download an application file to more than one controller.

Send Multiple is an on-line function. To use the CI's Send Multiple function on the System sub-menu, follow the steps below, or refer to "Performing a System Download" section on page 36 for additional information.

1. Start from the CI's System sub-menu.
2. Select **Send Multiple**.
3. From the Files List, select the file that you wish to download and press <Enter>.
4. In the Enter Integrator window, enter the number of the MicroNet Integrator whose controllers you want to download the files to and press <Enter>.
5. Individually select the controllers that you want to download the file to using <↓> to move cursor and pressing <Enter> to select the controllers that you want to download the file to. Or, press <Alt-A> to select all controllers in the list.
6. Press <Esc> when you have finished selecting controllers.
7. Type **Y** to send the file to the selected controllers.

The CI displays a Multiple File Transfer In Progress note window while the download is in progress and displays a Transfer Log at the completion of the download.

Setup Using the Deluxe MicroNet Sensor

Setup of the MicroNet Heat Pump/Fan Coil Controller using the deluxe MicroNet Sensor involves editing the individual attribute in the sensor's Program Mode.

To enter the Program Mode:

1. Start from the MicroNet Sensor default user display.
2. Press and hold <Select> for four to six seconds
The Current Status frame appears (Figure-2.3).

No schedules exist in the MicroNet Heat Pump/Fan Coil Controller. However, if the Schedule Access attribute (056) is set to ON, the SCHED frame appears after pressing <Select> for four to six seconds. Press <Select> again to access the Current Status

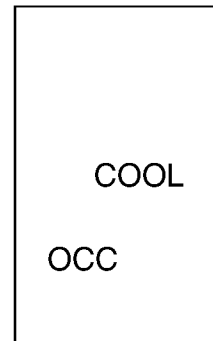


Figure-2.3 Sample Current Status Frame.

3. Press <Select> again to scroll to the Address frame.
4. Continue to press <Select> until the Password frame is displayed (Figure-2.4).

The sensor displays a different frame each time <Select> is pressed.

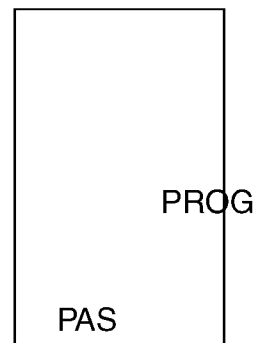


Figure-2.4 Password Frame.

5. If the password attribute has not been changed, press <▲> twice to scroll to the default password (2), otherwise, press <▲> as many times as necessary to scroll to the password and press <Enter>.

The sensor displays the Schedule (SCHED) frame.

No schedules exist in the MicroNet Heat Pump/Fan Coil Controller; however, the SCHED frame still appears.

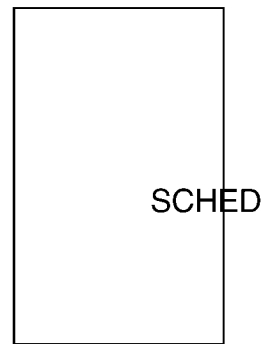


Figure-2.5 Schedule Frame.

6. Press <Select>.

The sensor displays the first attribute in the Set-up Mode (Figure-2.6).

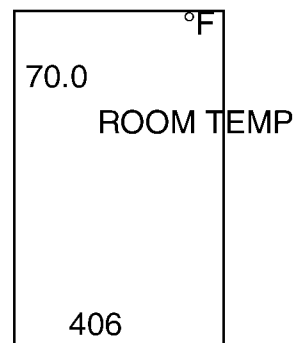


Figure-2.6 First Set-up Mode Frame.

7. Continue to press <Select> scrolling through the remaining Setup Mode attributes, until the Enter Program Mode frame appears (Figure-2.7).

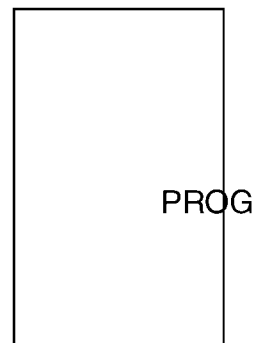


Figure-2.7 Enter Program Mode Frame.

8. Press <Enter> to enter the Program Mode.

The Program Mode frame appears with the left 0 flashing (Figure-2.8).

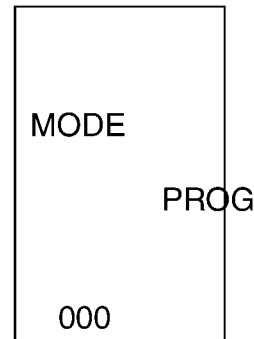


Figure-2.8 Program Mode Frame.

Refer to Chapter 3, "Attribute and Data Store Descriptions," for Attribute ID numbers.

The frame requires you to enter the three-digit ID number for the attribute that you wish to edit. Each digit of the ID number is entered individually with the left digit entered first.

9. Use <▲> or <▼> to enter the left digit.
10. Press <Select> to move to the middle digit.
The middle 0 flashes.
11. Use <▲> or <▼> to enter the middle digit.
12. Press <Select> to move to the right digit.
The right 0 flashes.
13. Use <▲> or <▼> to enter the right digit.
14. If necessary, press <Select> one or more times to move back to the left and/or middle digit to review or change the ID number.
15. When you have finished entering the attribute ID number, press <Enter>.

The Sensor displays the edit frame for the selected attribute (Figure-2.9).

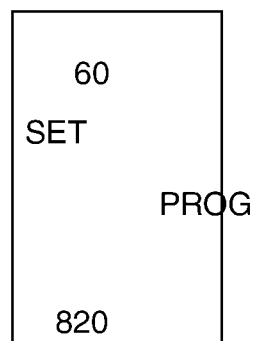


Figure-2.9 Attribute Edit Frame.

16. Use <▲> or <▼> to edit the attribute value.

17. Press <Enter> to save the change.

The sensor displays the End Program Mode frame (Figure-2.10).

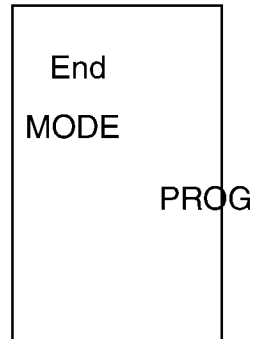


Figure-2.10 End Program Mode Frame.

18. Press <Select> to return to the Program Mode and continue editing attributes, or press <Select> and <▼> simultaneously to quit and return to the Default Display.

Defining Device Access

Defining device access involves assigning user access in the MicroNet Controller Interface and in the deluxe MicroNet Sensor.

MicroNet Controller Interface

When using the MicroNet Controller Interface (CI) with the MicroNet Heat Pump/Fan Coil Controller, the CI controls user access to the MicroNet Heat Pump/Fan Coil Controller. The CI allows 16 different user names and passwords. There are 6 different levels of access, plus 0 which prevents the user from logging on to the CI. The highest level of access is 6. All functions are available at this access level. Table-2.1 lists which functions are available for each CI access level. Help is available at all access levels above 0.

As a default, the MicroNet Controller Interface ships with one assigned user name (User) and password (Pass). The default access for User/Pass is 6. The default username, password, and access is changed and new users are added using the Access function on the CI's Configuration sub-menu. Refer to the **MicroNet Controller Interface User's Manual, F-25712**, for additional information

Table-2.1 CI Access Level Definitions.

CI Access Level	Main Menu Function			
	Device	File	System	Configure
0	No Access to MicroNet Heat Pump/Fan Coil Controller			
1	<ul style="list-style-type: none"> • Connect • Diagnostics • Status 	<ul style="list-style-type: none"> • Copy • Log as Text 	<ul style="list-style-type: none"> • Node List • Time & Date 	<ul style="list-style-type: none"> • Access (View own user name, password, and access level.)
2	<ul style="list-style-type: none"> • Connect • Diagnostics • Trend • Status 	<ul style="list-style-type: none"> • Copy • Log as Text 	<ul style="list-style-type: none"> • Node List • Time & Date 	<ul style="list-style-type: none"> • Access (View own user name, password, and access level.)
3	<ul style="list-style-type: none"> • Connect • Diagnostics • Trend • Status 	<ul style="list-style-type: none"> • Copy • Get from Device • Log as Text 	<ul style="list-style-type: none"> • Node List • Get Multiple • Time & Date 	<ul style="list-style-type: none"> • Setup • Access (View user names, own password, and own access level.)
4	<ul style="list-style-type: none"> • Connect • Edit (Control Status, Controller Name, Sensor Config, Sensor Displays) • Diagnostics • Trend • Status 	<ul style="list-style-type: none"> • Copy • Get from Device • Log as Text 	<ul style="list-style-type: none"> • Node List • Get Multiple • Time & Date 	<ul style="list-style-type: none"> • Setup • Access (View user names and own access level. Change own user name and password.)

Chapter 2

Table-2.1 CI Access Level Definitions.

CI Access Level	Main Menu Function			
	Device	File	System	Configure
5	<ul style="list-style-type: none"> • Connect • Edit (Control Values, Point Values, Control Status, BAS DI Control, SP Source, Standalone SP, Controller Name, Shared Values, Sensor Config, Sensor Displays) • Diagnostics • Reset • Trend • Status 	<ul style="list-style-type: none"> • Edit (Standalone SP, Controller Name, Shared Values, Sensor Config, Sensor Displays) • Copy • Get from Device • Send to Device • Log as Text 	<ul style="list-style-type: none"> • Node List • Get Multiple • Send Multiple • Time & Date 	<ul style="list-style-type: none"> • Setup • Access (View user names and own access level. Change own user name and password.)
6	Full Access	Full Access	Full Access	Full Access

MicroNet Sensor

When using the deluxe MicroNet Sensor to interface with the MicroNet Heat Pump/Fan Coil Controller, access to the MicroNet Heat Pump/Fan Coil Controller is controlled by the MicroNet Sensor. The deluxe MicroNet Sensor has three levels of access and four different display modes (Table-2.1). The User Mode is the lowest level display mode and requires no password entry.

For additional information on the deluxe MicroNet Sensor including display modes, keypad functions, display time-outs, and override operation, refer to Appendix B, "Deluxe MicroNet Sensor"

Table-2.2 Deluxe MicroNet Sensor Display Modes and Access Requirements.

Display Mode	Mode Definition	Access
User	View/change controller attributes assigned to the four User Displays.	No password required.
Service	View service frames including Current Status, Address, Device Type, Fault, Error, and Software Rev. View and change Schedules if Schedule Access attribute (056) is Enabled and schedules are available in the controller.	Press <Select> and hold for 4 to 6 seconds.
Setup	View/change controller attributes assigned to the eight Setup Displays.	Password Entry.
Program	View/change any controller attribute.	

The Password attribute (870) in the Sensor Config data store provides access to the MicroNet Sensor's setup and program modes.

The default setting for the password attribute is 2. Valid password numbers are 0 through 32,000. Zero disables the password requirement, allowing entry to the setup and program modes if <Enter> is pressed at the Password Entry Frame. To lock out entry to the Setup and Program modes from the MicroNet Sensor, enter a password number greater than 10,000.

Customizing the MicroNet Sensor Display

The attributes in Sensor Display data store in the MicroNet Heat Pump/Fan Coil Controller determine which controller values appear in the deluxe MicroNet Sensor's User Mode and Setup Mode displays. By editing these attributes, the MicroNet Sensor's display can be customized to display different MicroNet Heat Pump/Fan Coil Controller values. Refer to Chapter 3, "Attribute and Data Store Descriptions" for default displays values.

Configuring Staggered Startup

The MicroNet Heat Pump/Fan Coil Controller's digital outputs are designed to power up in a staggered or delayed pattern to prevent large power surges. The controller operates normally during the staggered startup, but the controller's digital outputs are disabled.

Non-Satellite Applications

Following manual startup or reset from the CI, power up of the digital outputs of a controller which is configured for a non-satellite application is controlled by the physical address switch setting. Use the following equation to determine power up delay time:

$$DelayTime = \langle Address \times 3 \rangle + 6$$

For example, the digital outputs of a controller with an address of three (3) have a delay time of fifteen (15) seconds.

$$DelayTime = \langle 3 \times 3 \rangle + 6$$

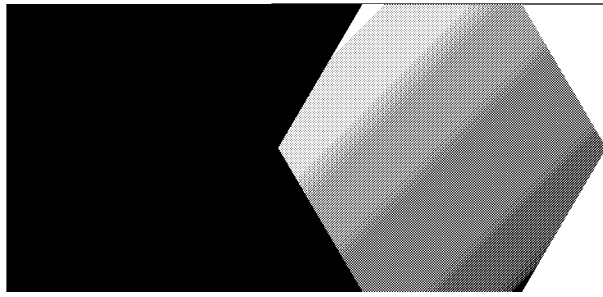
$$DelayTime = 15$$

The digital outputs of a controller with an address of ten (10) have a delay time of thirty-six (36) seconds.

Satellite Applications

Following manual startup or reset from the CI, the digital outputs of a controller configured for a satellite application have a fixed six (6) second startup delay. The BAS must be used to stagger the startup of the digital outputs.

Each individual U-Bus has its own power up delay schedule. If more than one U-Bus is connected to a common ASD Bus, the digital outputs of multiple controllers may power up at the same time.



Chapter 3

Attribute and Data Store Descriptions

Introduction

This chapter provides descriptions for the attributes and data stores which make up the MicroNet Heat Pump/Fan Coil Controller's application program. Data stores are listed in the order in which they appear in the MicroNet Controller Interface. The attribute name, an ID number, and a description are provided for each MicroNet Controller attribute. Depending on the data store type (read-only, read-override, or read-write), other information such as range and default values are also included.

What are Attributes?

Attributes are individual pieces of information that define something about the MicroNet Controller.

What are Data Stores?

In the MicroNet Controller Interface, all MicroNet Controller attributes are grouped into data stores. Each data store has a specific function which is indicated by the name of the data store (Standalone SP, BAS DI Control, Sensor Display, etc.).

Read-only

Attributes in read-only data stores can be viewed, but not overridden or edited. The values are stored in RAM and are continually updated when viewed from the Edit function on the Device sub-menu of the MicroNet Controller Interface. Read-only data stores are unavailable when editing an application file.

Read-override

Attributes in the read-override data stores can be viewed and overridden. The values are stored in RAM and are continually updated when viewed from the Edit function on the Device sub-menu of the MicroNet Controller Interface. Read-override data stores are unavailable when editing an application file.

Read-write

Attributes in the read-write data stores can be viewed and edited. The values are stored in EEPROM and are part of the database file that is downloaded and/or uploaded from the controller. Current values are read from the controller when viewed from the Edit function on the Device sub-menu of the MicroNet Controller Interface.

Attribute Descriptions by Data Store

Control Values

Attributes in the Control Values data store ((Table-3.1)) indicate the controlling values that are used by the MicroNet Heat Pump/Fan Coil Controller regardless of the level of system control (stand-alone, peer-to-peer, or BAS). These values are considered outputs. The Control Values data store is a read-override data store. Its attributes can be overridden using the MicroNet Controller Interface. When the MicroNet Heat Pump/Fan Coil Controller is part of a peer-to-peer network (connected to a MicroNet Integrator), these values are continuously sent to the MicroNet Integrator and can be read by a BAS.

Table-3.1 Control Values.

Name	ID #	Description	Range
Cool Setpoint	454	Displays the occupied cooling setpoint value currently used by the controller.	-320.00 to 320.00
Heat Setpoint	455	Displays the occupied heating setpoint value currently used by the controller.	
Unocc Cool SP	456	Displays the unoccupied cooling setpoint value currently used by the controller.	
Unocc Heat SP	457	Displays the unoccupied heating setpoint value currently used by the controller.	

Point Values

Attributes in the Point Values data store ((Table-3.2)) indicate the physical point values that are associated with the controller, as well as the specific calculated values such as percentage of heating or cooling and occupancy status. These values are considered outputs. The Point Values data store is a read-override data store. Its attributes can be overridden using the MicroNet Controller Interface. When the MicroNet Heat Pump/Fan Coil Controller is part of a peer-to-peer network (connected to a MicroNet Integrator), these values are continuously sent to the MicroNet Integrator and can be read by a BAS.

Table-3.2 Point Values.

Name	ID #	Description	Range
Occupied Mode	20D	Displays the controller's mode of operation, occupied or unoccupied. On = occupied mode, Off = unoccupied mode.	Off On Not Active [†] Abnormal [‡]
DO 1 Status	211	Displays the current state of digital output 1.	Off On Not Active Abnormal(‡.)

Table-3.2 Point Values.

Name	ID #	Description	Range
DO 2 Status	212	Displays the current state of digital output 2.	Off On Not Active Abnormal(‡.)
DO 3 Status	213	Displays the current state of digital output 3.	Off On Not Active Abnormal(‡.)
DI 1	221	Displays the current state of digital input 1. This attribute displays “Not Active” unless an MN-SDT Temperature Transmitter is connected as Input Temp 2 to the MN-HPFC controller.	Off On Not Active Abnormal(‡.)
Room Temp	406	Displays the current temperature of the room (zone) as sensed by the primary MicroNet sensor. When the primary sensor is missing, this attribute displays “Not Active.”	-320.00 to 320.00
Temp 2	402	Displays the temperature of the second (#2) MicroNet Sensor connected to the U-Link. When the secondary sensor is missing, this attribute displays “Not Active.”	-320.00 to 320.00
Cooling Output	704	Displays the current percentage, from 0 to 100, of cooling provided by the controller.	0.00 to 100.00
Heating Output	705	Displays the current percentage, from 0 to 100, of heating provided by the controller.	0.00 to 100.00

†. Attributes cannot be set to “Not Active” from the MicroNet Deluxe Sensor.

‡. Abnormal is a valid state. However, attributes in the Point Values data store cannot be overridden to “abnormal.”

Control Status

Attributes in the Control Status data store ((Table-3.3)) indicate control status information associated with the MicroNet Heat Pump/Fan Coil Controller. The Control Status data store is a read-only data store. Its attributes can be viewed, but cannot be overridden or edited.

Table-3.3 Control Status.

Name	ID #	Description	Range
Override Timer	821	Displays the remaining override time after the occupied override has been activated through the use of the override key at the MicroNet Sensor.	0 to 32000

Chapter 3

Table-3.3Control Status.

Name	ID #	Description	Range
Control Status	301	<p>Displays a value from 0 to 255 indicating the current control status of the controller.</p> <p>0 = Satellite Mode 1 = No output is on because the BAS has disabled the outputs. Or, the outputs are locked out for staggered delay time after a controller startup condition. 2 = Cooling mode is enabled 3 = Cooling mode is enabled but locked out by BAS [Lockout Cool (268)] 4 = Heating mode is enabled 5 = Heating mode is enabled but locked out by BAS [Lockout Heat (267)] 128 = Diagnostic Condition</p> <p>The displayed value may indicate one or more control status conditions. For example, a display value of 3 indicates that two control status conditions are active (1 = No output requested because BAS has disabled output and 2 = Cooling Mode is enabled) since 1 + 2 = 3.</p>	0 to 255
System Faults	303	<p>Displays a value from 0 to 255 indicating hardware failures or problems.</p> <p>0 = Normal Operation 1 = Controller EEPROM Checksum 16 = Sensor/Input Fault 32 = Missing changeover input for a fan coil application</p> <p>The displayed value may indicate one or more system faults. For example, a display value of 48 indicates that two system faults are active (16 = Sensor/Input Fault and 32 = Missing changeover input for a fan coil application) since 16 + 32 = 48.</p>	0 to 255
Appl Errors	309	<p>Displays a value from 0 to 255 indicating application type controller errors.</p> <p>0 = Normal Operation 16 = Current Heat SP is greater than current Cool SP</p>	0 to 255

BAS DI Control

Attributes in the BAS DI Control data store ((Table-3.4)) indicate the digital values received from the BAS. The BAS DI Control data store is a read-override data store. Its attributes can be overridden using the MicroNet Controller Interface.

Table-3.4BAS DI Control.

Name	ID #	Description	Range
Occupied Mode	260	Commands controller to the occupied or unoccupied mode. On = Occupied Mode, Off = Unoccupied Mode. The controller uses Local Occupancy Source when Occupied Mode is not active.	Off On Not Active [†] Abnormal [‡]
CI Changeover	277	Applicable only to Two-pipe Fan Coil applications. Off commands the controller to the cooling mode, and ON commands the controller to the heating mode. When this input is "Not Active" (no BAS control), the controller uses its local changeover input.	Off On Not Active(†.) Abnormal [‡]
Lock Out Cool	268	Commands the controller to disable all cooling outputs. On = Cool Locked Out, Off = Normal Control, Not Active = No BAS Control.	Off On Not Active(†.) Abnormal [‡]
Lock Out Heat	267	Commands the controller to disable all heating outputs. On = Heat Locked Out, Off = Normal Control, Not Active = No BAS Control.	Off On Not Active(†.) Abnormal [‡]
Clear Overrides	26B	Commands the controller to clear and inhibit any override at the controller level. On = Clear/Inhibit, Off = Normal Control, Not Active = No BAS Control. When sent from the BAS, On clears all overrides and inhibits future overrides from the BAS and CI. When overridden to On from the CI, all overrides, including the Clear Overrides attribute, are cleared. Future overrides are not inhibited.	Off On Not Active(†.) Abnormal [‡]
DO 1 Sat. Cmd	281	Commands the DO 1 output On or Off whenever "Control Mode" = Satellite. The controller ignores this command if the DO is not a satellite point.	Off On Not Active(†.) Abnormal [‡]
DO 2 Sat. Cmd	282	Commands the DO 2 output On or Off whenever "Control Mode" = Satellite. The controller ignores this command if the DO is not a satellite point.	Off On Not Active(†.) Abnormal [‡]
DO 3 Sat. Cmd	283	Commands the DO 3 output On or Off whenever "Control Mode" = Satellite. The controller ignores this command if the DO is not a satellite point.	Off On Not Active(†.) Abnormal [‡]

†. Attributes cannot be set to "Not Active" from the MicroNet Deluxe Sensor.

‡. Abnormal is a valid state. However, attributes in the BAS DI Control data store cannot be overridden to "abnormal."

SP Source

Attributes in the SP Source data store ((Table-3.5)) indicate where the setpoint and other controlling values (Room Temp and Occupied Mode) used by the controller come from. The SP Source data store is a read-only data store. Its attributes can be viewed, but cannot be overridden or edited.

Table-3.5SP Source.

Name	ID #	Description	Range
Cool SP Source	1A4	Identifies the source of the controlling Cool Setpoint attribute (454) shown in the Control Values data store.	Local [0] Shared [2] BAS [3]
Heat SP Source	1A5	Identifies the source of the controlling Heat Setpoint attribute (455) shown in the Control Values data store. A display of Temporary [1] indicates that Heating SP is tracking the Cool SP.	Local [0] Temporary [1] Shared [2] BAS [3]
Rm Temp Source	1A6	Identifies the source of the Room Temp attribute (406) shown in the Point Values data store.	Local [0] Shared [2]
Occ Source	1B0	Identifies the source of the Occupied Mode attribute (20D) shown in the Point Values data store.	Local [0] Temporary [1] Shared [2] BAS [3]

Definitions for the possible sources are:

- Local - indicates that the controlling value is from the controller's Standalone SP data store or local sensor (Room Temp). Setpoint values can be set from the CI or entered from the deluxe MicroNet Sensor. For the Occ Source (1B0) attribute, local also may indicate that the controlling value is from DI 1 input on the Temp 2 sensor (the MN-SDT Temperature Transmitter).
- Temporary - indicates that the <Override> button on the MicroNet Sensor has been pressed, overriding the controller from the unoccupied mode to the occupied mode. In the Heat SP Source (1A5) attribute, temporary [1] indicates that Heating SP is tracking the Cooling SP.
- Shared -indicates that the controlling value is from the Shared Values data store and the controller is receiving this value from another MicroNet Controller on the U-Bus.
- BAS - indicates that the controlling value is sent from the Building Automation System to the controller via the MicroNet Integrator and the MN Block in the GCM.

Standalone SP

Attributes in the Standalone SP data store ((Table-3.6)) represent the setpoints that are used when the controller is in the standalone control mode. These setpoints are the lowest level of system control and are also used anytime a higher level source for the attribute value is not present, disabled, or becomes non-functional. The Standalone SP data store is a read-write data store. Its attributes can be edited either on-line or off-line.

Table-3.6 Standalone SP.

Name	ID #	Description	Default	Range
Local Cool SP	414	Cooling setpoint used during the occupied mode. [†]	75.00°F	-320.00 to 320.00
Local Heat SP	415	Heating setpoint used during the occupied mode. [†] This value is used unless the Heat Setpoint Tracking attribute (063) is enabled (set to On).	70.00°F	-320.00 to 320.00
Local Uoc Cl SP	434	Cooling setpoint used during the unoccupied mode. [†]	78.00°F	-320.00 to 320.00
Local Uoc Ht SP	435	Heating setpoint used during the unoccupied mode. [†]	67.00°F	-320.00 to 320.00
Local Hi Lmt SP	432	Maximum value for local heating setpoint entered from the deluxe MicroNet Sensor.	85.00°F	-320.00 to 320.00
Local Lo Lmt SP	433	Minimum value for local cooling setpoint when entered from the deluxe MicroNet Sensor.	65.00°F	-320.00 to 320.00
Setpoint Offset	524	Defines the heating setpoint as an offset from the cooling setpoint (Cooling SP- SP Offset = Heating SP). Active if the heat setpoint tracking feature (063) is enabled (On). Allows the heating setpoint to track the cooling setpoint. Used in applications that require heating and cooling control to be based on the changing of a single setpoint value.	0.5°F	-320.00 to 320.00
Delay Time	831	Applicable only to single stage heat pump application. Provides a delay which must time out after the heat pump's compressor turns Off before the fan is shut Off.	60 sec.	0 to 32000
Hysteresis	521	The hysteresis of the heat pump changeover valve transition point or two-pipe fan coil heating/cooling mode transition point.	0.5°F	-320.00 to 320.00
Duty Cycle	826	The cycle time for the heat pump compressor output. The attribute has no effect if "Control Mode" = Fan Coil, Fan/Float, or Satellite.	12 min.	0 to 32000
Min On Time	829	Applicable only to a single stage heat pump application. The minimum time DO 2 (compressor) shall be On before it can be turned Off when applied as a heat pump application.	1 min.	0 to 32000
Min Off Time	822	Applicable only to a single stage heat pump application. The minimum time DO 2 (compressor) shall be Off before it can be turned On when applied as a heat pump application. During staggered startup, the controller's minimum off time is combined with staggered startup delays of controller outputs. [‡]	4 min.	0 to 32000

[†]. The controller will be inoperative if heating setpoints exceed cooling setpoints.

[‡]. For more information regarding staggered startup, refer to "Staggered Startup" in Chapter 2 "Configuration and Setup."

Calibration

Attributes in the Calibration data store ((Table-3.7)) calibrate and configure the controller for a specific installation. These values are not typically changed once the job has been installed and commissioned. The Calibration data store is a read-write data store. Its attributes can be edited either on-line or off-line.

Table-3.7Calibration.

Name	ID #	Description	Default	Range
Control Mode	107	Specifies the configuration of the controller and the type of application it will perform. When Control Mode is configured as Fan/Float for a four-pipe application, the ACT Travel Time (854) must be set to zero (0).	Satellite [0]	Satellite [0] Heat Pump [1] Fan Coil [2] Fan/Float [3]
Changeover	22E	Applicable only to two-pipe fan coil applications. Specifies the action of the local digital input (DI1) of the MN-SDT Temperature Transmitter. Off = DI1 is Off (open contact) for the local cooling mode. On = DI1 is On (closed contact) for the local cooling mode. When the controller does not have an MN-SDT Temperature Transmitter, use Not Active. Also use Not Active if the Changeover function is not from DI. DI1 is available only if the address of the MN-SDT Temperature Transmitter is configured as 2 (Temp 2).	Off	Off On Not Active [†]
Occupancy	229	Not applicable if controller is configured as a satellite. Specifies the action of the local digital input (DI1) of the MN-SDT Temperature Transmitter. The controller will default to occupied mode regardless of the attribute's value if the MN-SDT Temperature Transmitter is not connected. Off = DI1 is Off (open contact) for the local occupancy mode. On = DI1 is On (closed contact) for the local occupancy mode. Use "Not Active" when controller does not have an MN-SDT Temperature Transmitter. DI1 is available only if the address of the MN-SDT Temperature Transmitter is configured as 2 (Temp 2).	Off	Off On Not Active(†.)
Fan Mode	001	Specifies the type of fan operation. Fan On = continuous fan operation during occupied mode, and Fan Auto = intermittent fan operation during occupied mode. The MicroNet MN-SDK will indicate Set Fan Auto (0) or Set Fan On (1).	Fan On [1]	Fan Auto [0] Fan On [1]

Table-3.7 Calibration.

Name	ID #	Description	Default	Range
Changeover ACT	03E	Applicable only to heat pump applications. Specifies how the controller responds to the configuration of the reversing valve and indirectly specifies the action of the reversing valve. Direct (0) = DO1 is Off in the cooling mode = reversing valve action is normally open. Reverse (1) = DO1 is On in the cooling mode = reversing valve action is normally closed.	Direct [0]	Direct [0] Reverse [1]
Purge	22B	Enables a purge sequence to eliminate floating actuator drift which may occur if the actuator has been positioned fully open or closed for long periods of time. Purges actuator drift by responding every 15 to 20 minutes with a five second drive open or drive closed action. The default (Off) and Not Active disable the purge sequence.	Off	Off On Not Active(†.)
DO 1	201	Specifies the default value for Digital Output 1 in satellite mode. This is also the state that DO 1 will assume if a system fault is active.	Off	Off On Not Active(†.)
DO 2	202	Specifies the default value for Digital Output 2 in satellite mode. This is also the state that DO 2 will assume if a system fault is active.	Off	Off On Not Active(†.)
DO 3	203	Specifies the default value for Digital Output 3 in satellite mode. This is also the state that DO 3 will assume if a system fault is active.	OFF	Off On Not Active(†.)
Cool TR	514	Defines the cooling throttling range over which the cooling loop controls. A negative entry or an entry of 0.0 sets the Cooling Output (704) attribute to 0.	3.00	0.01 to 320.00
Heat TR	515	Defines the heating throttling range over which the heating loop controls. A negative entry or an entry of 0.0 sets the Heating Output (705) attribute to 0.	3.00	0.01 to 320.00
Cool IGAIN	614	Defines the integral gain factor that is used in conjunction with the cooling setpoint and throttling range for control of the cooling loop.	0.00	0.00 to 10.00
Heat IGAIN	615	Defines the integral gain factor that is used in conjunction with the heating setpoint and throttling range for control of the heating loop.	0.00	0.00 to 10.00
Act Travel Time	854	Defines the floating valve actuator travel time. Set to the nominal full stroke time in seconds for the valve actuator. NOTE: Do not use a travel time less than 4 seconds. When controller is configured for a Four-pipe Fan Coil Application, the Act Travel Time must be set to zero (0).	60 sec.	0 to 32000
Room Temp Cal	506	Provides offset calibration of the zone temperature sensor input from the U-Link.	0.00	-320.00 to 320.00
Temp 2 Cal	502	Provides offset calibration of the second U-Link temperature sensor input.	0.00	-320.00 to 320.00

†. Attributes cannot be set to "Not Active" from the MicroNet Deluxe Sensor.

Controller Name

The attribute in the Controller Name data store ((Table-3.8)) assigns a name to the MicroNet Heat Pump/Fan Coil Controller. The name does not have to be unique for each controller. The Controller Name data store is a read-write data store. Its attributes can be edited either on-line or off-line.

Table-3.8 Controller Name.

Name	ID #	Description	Default	Range
Name	F10	Identifies the controller with a 12 character name. This value cannot be read or entered from the MicroNet MN-SDK sensor.	Sat/HP/FC	Any alphanumeric characters

Shared Values

Attributes in the Shared Values data store ((Table-3.9)) specify source locations for values shared from other MicroNet Controllers on the U-Bus (a MicroNet Integrator is required). The Shared Values data store is a read-write data store. Its attributes can be edited either on-line or off-line.

Table-3.9 Shared Values.

Name	ID #	Description	Default	Range
HT/CL SP Addr	310	Specifies the address of the controller supplying the heating and cooling setpoints. When one MicroNet Sensor controls multiple MicroNet controllers, this attribute allows the setpoints to be entered in one controller and shared with the other controllers. Only the address of the source controller is specified, the heating (455) and cooling (454) setpoints are assumed. Heating (455) and cooling (454) setpoints from the source controller are used regardless of the origin of the setpoints (local, shared, BAS, or heat tracking setpoint).	255	0 to 255 [†]
Room Temp Addr	316	Specifies the address of the controller supplying the zone temperature value. When one MN-SDT Temperature Transmitter controls multiple MicroNet controllers, this attribute allows one controller to read the zone temperature and share it with the others. Only the address of the source controller is specified; the room temperature (406) ID is assumed.	255	0 to 255(†.)
Occ Mode Addr	317	Specifies the address of the controller supplying the shared occupancy mode value. When one MicroNet controller provides the occupied/unoccupied command, this attribute allows the controller to share the command with others. Since only the address of the source controller is specified, the occupied mode (20D) ID is assumed.	255	0 to 255(†.)
Shared Addr 1	311	Specifies the address of the controller supplying the heating/cooling changeover value. When one MicroNet Temperature Transmitter provides the heating/cooling changeover value, this attribute allows the controller to share the command with others. Since only the address of the source controller is specified, the DI1 (221) ID is assumed.	255	0 to 255(†.)
Sensor 2 ID	E52	Specifies the attribute ID number of the controller's second sensor value that is to be globally shared. This global attribute can be displayed by other controllers if the attribute ID number is entered in the controllers as a User Display attribute. The default (000) disables sending Sensor 2 ID as a global value.	000	Any available attribute ID number

†. The default address (255) prevents the controller from receiving a shared value from another MicroNet controller. The entry must be a valid address and not the address of source controller.

Sensor Config

Attributes in the Sensor Config data store ((Table-3.10)) configure the deluxe MicroNet Sensor's display and enable (or disable) selected features for either the deluxe MicroNet Sensor or the MicroNet Sensor w/Override. The Sensor Config data store is a read-write data store. Its attributes can be edited either on-line or off-line.

Table-3.10 Sensor Config.

Name	ID #	Description	Default	Range
Eng Units	050	Selects the engineering unit used by the deluxe MicroNet Sensor for temperature display. (The CI uses a separate engineering unit selection in its Setup Store.)	°F [0]	°F [0] °C [1]
SP 1/10 Deg	051	Selects the deluxe MicroNet Sensor setpoint display format, whole degrees or tenths.	xxx [0]	xxx [0] xx.x [1]
Temp 1/10 Deg	052	Selects the deluxe MicroNet Sensor temperature display format, whole degrees or tenths.	xxx [0]	xxx [0] xx.x [1]
Display Time	054	Enables the time and day display in the deluxe MicroNet Sensor's User Mode. This feature is not operational in controllers without a device clock, including the MicroNet Heat Pump/Fan Coil Controller.	Disable [0]	Disable [0] Enable [1]
Time Format	055	Selects the deluxe MicroNet Sensor time format.	AM/PM [0]	AM/PM [0] 24 hr [1]
Schedule Access	056	Determines whether the Time & Day values and Schedule Setup Attributes are available (On) or unavailable (Off) in the Service Mode of the deluxe MicroNet Sensor.	Off [0]	Off [0] On [1]
CFM Icon Enable	057	Enables the CFM icon display for flow values in the deluxe MicroNet Sensor. If disabled, flow values are displayed with no units (used for controllers calibrated for operation in liters per second or cubic meters per hour).	Disable [0]	Disable [0] Enable [1]
Auto SP Enable	070	Enables the auto setpoint enable feature in the deluxe MicroNet Sensor. When enabled, allows setpoint changes made in the User Mode to be saved by pressing <Select>. When disabled, the <Enter> key must be used to save setpoint changes in the User Mode.	Disable [0]	Disable [0] Enable [1]
Override PB	072	Enables the override feature in the MicroNet Sensor w/ Override and the User Mode in the deluxe MicroNet Sensor. When enabled: The controller goes into the occupied mode for time specified by the Override Time (820) attribute if the <Override> button is pressed for less than four seconds and released. The Override Time resets to the Override Time attribute value if the Override Time has not expired and the <Override> button is pressed for less than four seconds and released. The controller returns to the unoccupied mode if the <Override> button is pressed for four seconds or more and released. The controller returns to the unoccupied mode when the Override Time expires.	Disable [0]	Disable [0] Enable [1]
Ht SP Tracking	063	Enables setpoint tracking. When On, the setpoint offset (525) is used to establish the heating setpoint and allow the heating setpoint to track the cooling setpoint. When Off, the heat setpoint (415) value is used and no tracking takes place.	Disable [0]	Disable [0] Enable [1]

Table-3.10 Sensor Config.

Name	ID #	Description	Default	Range
Ctrl Icon Mask	30A	Determines which control icons, displayed in the deluxe MicroNet Sensor's Current Status frame also appear in the default display (User Display 1). 0 = No icons displayed. 1 = OCC. 2 = COOL. 4 = HEAT. 8 = OFF. 16 = ON. 32 = Reserved for future use. 64 = Reserved for future use. 128 = Reserved for future use. 255 = All icons displayed. A control icon that is not selected to appear in the default display still appears in the current status frame. A value from 0 to 255 indicates sum of icons enabled. NOTE: This attribute also enables the Override Status Indicator (red LED) on the MicroNet Sensor w/ Override model. When using this sensor model, set the Ctrl Icon Mask attribute to 1.	0	0 to 255
Mode Icon Mask	30B	Determines which mode icons, displayed in the deluxe MicroNet Sensor's Current Status frame also appear in the default display (User Display 1). 0 = No icons displayed. 1 = AUTO. 2 = FAN. 4 = MODE. 8 = EMER. 16 = Reserved for future use. 32 = Reserved for future use. 64 = Reserved for future use. 128 = Reserved for future use. 255 = All icons displayed. A value from 0 to 255 indicates sum of icons enabled. A control icon that is not selected to appear in the default display still appears in the Current Status frame.	0	0 to 255
Password	870	Specifies the password for Setup and Program Mode access in the deluxe MicroNet Sensor.	2	0 to 32000
Override Time	820	Specifies the amount of time (in minutes) the override function stays in effect when the Override PB (072) is enabled and the <Override> button is pressed for less than 4 seconds.	60 min.	0 to 32000 min

Sensor Displays

Attributes in the Sensor Displays data store ((Table-3.11)) define which attribute values are displayed in the user and setup display lists of the deluxe MicroNet Sensor. Any non-string attribute in the controller can be programmed to appear in the user or setup display; however, only the attributes that provide information about the operating status of the controller or its control setpoints are typically used.

Table-3.11 Sensor Displays.

Name	ID #	Description	Default	Range
User Display 1	E01	In the deluxe MicroNet Sensor, defines which attribute appears first in the user display. When the MicroNet Sensor is left unattended for a period of time, this is the attribute that is displayed.	Room Temp (406)	Any available attribute
User Display 2	E02	In the deluxe MicroNet Sensor, defines which attribute appears second in the user display.	Not Used (000)	Any available attribute
User Display 3	E03	In the deluxe MicroNet Sensor, defines which attribute appears third in the user display.	Not Used (000)	Any available attribute
User Display 4	E04	In the deluxe MicroNet Sensor, defines which attribute appears fourth in the user display.	Not Used (000)	Any available attribute
Setup Display 1	E11	In the deluxe MicroNet Sensor, defines which attribute appears first in the setup display.	Not Used (000)	Any available attribute
Setup Display 2	E12	In the deluxe MicroNet Sensor, defines which attribute appears second in the setup display.	Not Used (000)	Any available attribute
Setup Display 3	E13	In the deluxe MicroNet Sensor, defines which attribute appears third in the setup display.	Not Used (000)	Any available attribute
Setup Display 4	E14	In the deluxe MicroNet Sensor, defines which attribute appears fourth in the setup display.	Not Used (000)	Any available attribute
Setup Display 5	E15	In the deluxe MicroNet Sensor, defines which attribute appears fifth in the setup display.	Not Used (000)	Any available attribute
Setup Display 6	E16	In the deluxe MicroNet Sensor, defines which attribute appears sixth in the setup display.	Not Used (000)	Any available attribute
Setup Display 7	E17	In the deluxe MicroNet Sensor, defines which attribute appears seventh in the setup display.	Not Used (000)	Any available attribute
Setup Display 8	E18	In the deluxe MicroNet Sensor, defines which attribute appears eighth in the setup display.	Not Used (000)	Any available attribute



Chapter 4

Basic Operations

Introduction

This chapter describes operational tasks using the MicroNet Controller Interface (CI) and the deluxe MicroNet Sensor (model MN-SDK). The chapter contains five sections.

- “Communicating with a Controller” explains how to physically connect the CI to the MicroNet Heat Pump/Fan Coil Controller and establish communications.
- “Viewing Controller Data” describes how to use the CI and the MicroNet Sensor to view controller information such as status and trends.
- “Making On-line Changes” details procedures for overriding attributes, changing setpoints, and editing other control attributes.
- “Working with Files” explains how to work off-line to edit, copy, and delete files. Procedures for uploading files are also explained.
- “Log Off” explains how to log off and exit the CI software program.

MicroNet Controller Interface Prerequisites

This chapter assumes that the MicroNet Controller Interface (CI) software is installed and you are familiar with its use, menu structure, and logon procedures. It further assumes that the interface between the PC and the MicroNet Controller Interface Module has been properly setup. If necessary, refer to the **MicroNet Controller Interface User’s Manual, F-25712**, for information on these topics.

Communicating with a Controller

The MicroNet Controller Interface’s on-line functions require a physical connection between the PC running the CI software and the MicroNet Heat Pump/Fan Coil Controller. On-line functions also require an established communication path.

Physical Connection

To physically connect to a controller, you need to plug the U-Link jack end of the MicroNet Controller Interface Module into the MicroNet communication jack on a MicroNet Sensor (Figure-4.1).

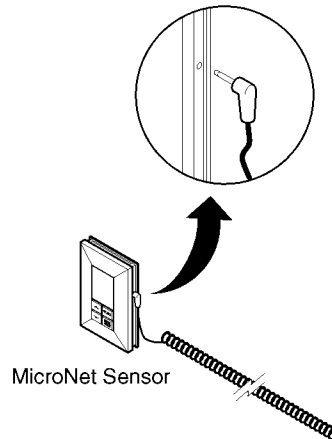


Figure-4.1 MicroNet Communication Jack.

You can make the physical connection in two places:

- At a MicroNet Sensor (any model) that is connected to the desired controller.
- At the MicroNet Sensor (any model) of another MicroNet Controller, if the desired controller is on the same U-Bus or a different U-Bus connected via the communication trunk of the BAS.

Commands to Communicate

When establishing communications, the CI checks to see if it has a matching template for the controller. If not, the CI uploads the template from the controller after making the connection to the controller. The CI displays an Uploading Template note window as it uploads the template.

When physically connected to a MicroNet Sensor or to a MicroNet communication jack somewhere on the network, there are several ways to establish communications with a MicroNet Heat Pump/Fan Coil Controller.

- Backspace key
- Connect
- Node List

Using the Backspace Key

Use the Backspace key to establish communications with the MicroNet Heat Pump/Fan Coil Controller that the CI is physically connected to. To use the Backspace key, the PC must be physically connected to the controller's MicroNet Sensor.

To establish communications using the Backspace key:

1. Start from the Main Menu.
2. Press <Backspace>.

The CI briefly displays the message, "Connecting to Device" before returning to the Main Menu. The status bar indicates the connected device.

Using Connect

Use Connect to establish communications with the physically connected MicroNet Heat Pump/Fan Coil Controller, with a different MicroNet Controller on the same U-Bus, or with different MicroNet Controller on a different U-Bus. You can use either Connect's node address method or node list method to establish communications

Node Address Method

To establish communications using the node address method:

1. Start from Device sub-menu.
2. Select Connect and press <Enter>.

The Enter Node Address window appears (Figure-4.2).

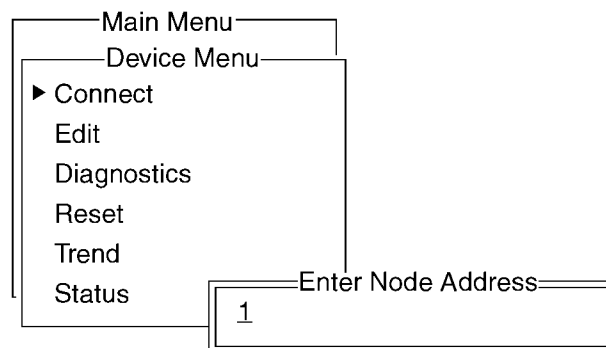


Figure-4.2 Enter Node Address Window.

The device number of the MicroNet Heat Pump/Fan Coil Controller that you are currently connected to appears above the flashing cursor. If you are not already connected to a controller, the default number 1 is displayed.

3. Type the node address of the MicroNet Heat Pump/Fan Coil Controller that you are trying to connect to, and press <Enter>.

A node address is a series of numbers which represent the devices on the bus. A node address can consist of just the device number or it can include both the MicroNet Integrator number and the device number.

If you want to connect to a MicroNet Heat Pump/Fan Coil Controller that is under the local Integrator, simply type the device number of that controller and press <Enter>. For example, to access MicroNet Heat Pump/Fan Coil Controller 2, type 2.

If you want to connect to a MicroNet Heat Pump/Fan Coil Controller that is on a different U-Bus on the network, type the Integrator Number: Device Number. For example, to access MicroNet Heat Pump/Fan Coil Controller 2 under Integrator 7, type 7 : 2.

The CI briefly displays the message, "Connecting to Device" before returning to the Device sub-menu. The status bar indicates the connected device.

If you enter a zero, the CI connects to the local MicroNet Integrator.

The node list method of establishing communications does not apply to stand-alone controllers. Attempting to use this method with stand-alone controllers generates an error message.

The device numbers for the controllers appear differently depending upon the entry in the "Enter Node Address" window. 2: was entered to generate the "Node Address Menu" in (Figure-4.3) above. If * was entered in the "Enter Node Address" window, the device numbers would appear without the preceding Integrator and colon.*

Node List Method

To establish communications using the node list method:

1. Start from the Device sub-menu.
2. Select Connect and press <Enter>.

The CI displays the "Enter Node Address" window.
3. Type * in place of either the MicroNet Integrator number or the device number and press <Enter>.

The asterisk (*) acts as a wildcard. For example, type * to generate a node list for all devices under the local Integrator, or type 5 : * to generate a list of devices that are under MicroNet Integrator 5.

The CI displays the "Generating node list" note window before displaying a Node Address Menu (Figure-4.3).

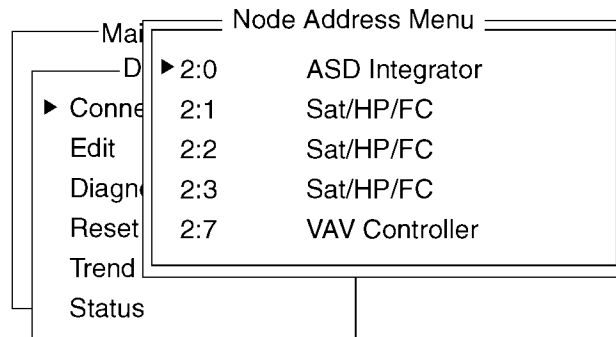


Figure-4.3 Node Address Menu.

The menu includes all devices found on the U-Bus, including the MicroNet Integrator, MicroNet Heat Pump/Fan Coil Controllers, and any other MicroNet Controllers on the U-Bus. It lists a device number and device type indication for each device found.

4. To connect to any one of the devices listed, select the device and press <Enter>.

The CI displays the "Connecting to device" note window before returning to the Device sub-menu. The status bar indicates the logically connected device.

Using Node List

The Node List feature does not apply to stand-alone controllers. Attempting to use Node List with stand-alone controllers generates an error message.

Use Node List to establish communications with the physically connected MicroNet Heat Pump/Fan Coil Controller or with a different MicroNet Heat Pump/Fan Coil Controller on the same U-Bus.

To establish communications using Node List:

1. Start from the Systems sub-menu.
2. Select Node List and press <Enter>

The CI displays the “Generating node list” note window before displaying a Node Address Menu (Figure-4.4).

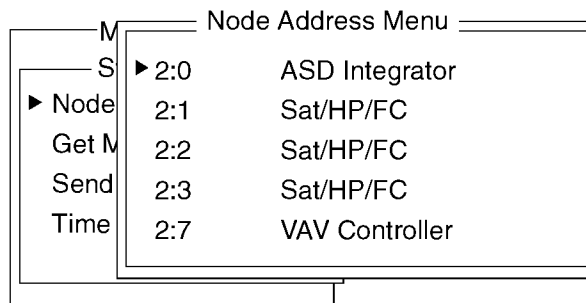


Figure-4.4 Node Address Menu.

The menu includes a list of all devices found on the U-Bus, including the MicroNet Integrator, MicroNet Heat Pump/Fan Coil Controllers, and any other MicroNet Controllers found on the U-Bus of the current connected controller. If the CI is not logically connected to a controller, it generates a node list for devices found on the U-Bus of the physically connected controller.

3. To connect to any one of the devices listed, select the device and press <Enter>.

The CI displays the “Connecting to device” note window before returning to the System sub-menu. The status bar indicates the logically connected device.

Viewing Controller Data

Status Display

When you select Status, the CI displays an "Enter Node Address" window if you are not already connected to a device. To connect to and view current status information for a local controller, enter that controller's device number. To connect to and view status information for a non-local controller, enter the controller's complete node address, Integrator

MicroNet Controller Interface

At the CI, Status provides a quick indication of the MicroNet Heat Pump/Fan Coil Controller's operation by combining the values for the Point Values, Control Values, and Control Status data stores.

To view Status values:

1. Start from Device sub-menu.
2. Select Status and press <Enter>.

The CI displays the "Uploading Configuration" and "Uploading Data" windows before displaying the "Device Current Status" window. The "Device Current Status" window shows current values for the connected device. Values are displayed in text form and are updated by the CI as they change. An asterisk in front of an attribute value indicates that the value has been overridden (Figure-4.5).

Overridden Attribute

Device Current Status			
Occupied Mode	*On	Cool Setpoint	75.00 °F
DO 1 Status	Off	Heat Setpoint	65.00 °F
DO 2 Status	Off	Unocc Cool SP	85.00 °F
DO 3 Status	Off	Unocc Heat SP	55.00 °F
DI 1	On	Override Timer	0 Min
Room Temp	68.00 °F	Control Status	4
Temp 2	80.71 °F	System Faults	0
Cooling Output	0.00 %	Appl. Errors	0
Heating Output	0.00 %		

Figure-4.5 Device Current Status Window.

Values in the Device Current Status screen do not update while the Enter DOS Filename

With the Device Current Status window displayed, the current status information can be logged to a text file by pressing <Alt-L>. After you specify a legal DOS filename, the CI logs the information to a .TXT file. This file can be viewed or printed later. Refer to Appendix C for additional information.

MicroNet Sensor

1. Start from the MicroNet Sensor's default user display.
2. Press and hold <Select> for four to six seconds.
The sensor enters the Service mode and the Current Status frame appears (Figure-4.6).

If the Schedule Access attribute (0056) is set to ON, the SCHED frame appears after pressing <Select> for four to six seconds. Press <Select> again to access the Current

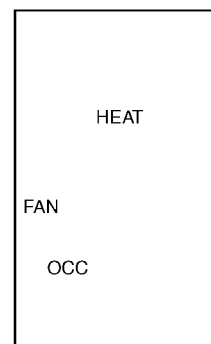


Figure-4.6 Typical Current Status Frame.

The information that appears in the Current Status frame shows the MicroNet Heat Pump/Fan Coil Controller's current operating status. The following table (Table-4.1) shows the icons that may appear in the controller's Current Status frame and provides a definition.

Table-4.1 Current Status Icons.

Icon	Definition
COOL	In cooling mode.
EMER	In a diagnostic condition. Indicates that one or more of the following System Faults exist in the controller and control is not possible: <ul style="list-style-type: none"> • EEPROM Checksum Error (1). • Sensor/Input Status Error (16). • Missing Changeover Input (32).
FAN	Fan is On.
HEAT	In heating mode.
OCC	In occupied mode.
UNOCC	In unoccupied mode.

In the example frame above, the current status information indicates the system is in the occupied mode, in the heating mode, and the fan is On.

The Current Status frame at the sensor does not indicate all of the details of the Device Current Status window at the CI. However, based on the setup of the Sensor Displays data store and the specific application, the status of all attributes shown in the CI can be seen and monitored in specific frames in the sensor.

Trending

When you select Trend, the CI displays an “Enter Node Address” window if you are not already connected to a device. To connect to and trend values from a local controller, enter that controller’s device number. To connect to and trend values from a non-local controller, enter the controller’s complete node address, Integrator number:Device number. For

The trend function allows you to view real-time data from a MicroNet Heat Pump/Fan Coil Controller.

Setting up a Trend

The first time you select Trend, you’ll need to specify the trend setup parameters. Once set up and saved, the CI will use these parameters for all MicroNet Heat Pump/Fan Coil Controller trends until you change them. To set up a trend:

1. Start from the Device sub-menu.
2. Select Trend and press <Enter>.

The CI displays the Trend Setup Store window (Figure-4.7).

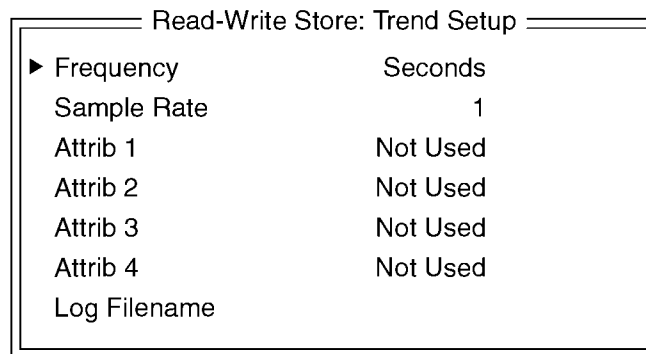


Figure-4.7 Trend Setup Store Window.

Due to communication activity on the U-Link and/or U-Bus, the CI may take and display trend samples at a slower rate than specified in the Trend Setup window.

Trending between non-local controllers over the NETWORK 8000 ASD Bus while using sample rates greater than 5 minutes, causes on-line/off-line exceptions to be generated at the GCM.

The Trend Setup Store window allows you to select which MicroNet Heat Pump/Fan Coil Controller attributes you want to trend and how often you want to trend them. You can choose to trend up to four different attribute values at a rate as fast as once every second, or as slow as once every 255 hours.

To define how often the attributes are trended:

3. Select Frequency and press <Enter>.

The following edit window appears (Figure-4.8).

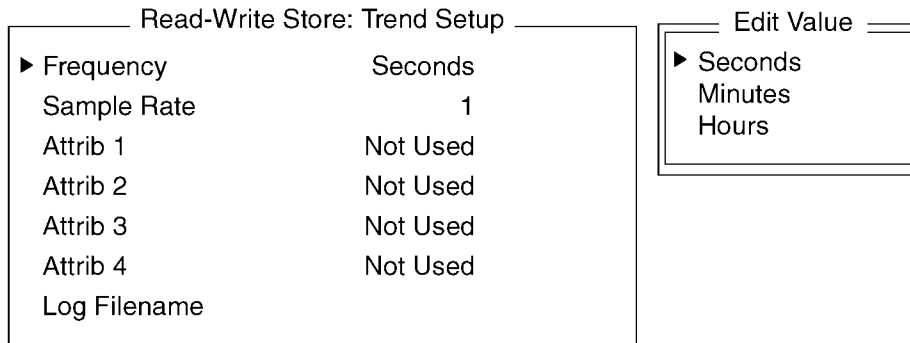


Figure-4.8 Frequency Edit Value Window.

4. Select **Seconds**, **Minutes**, or **Hours** and press <Enter>. Your selection appears in the Trend Setup Store window.
5. Select **Sample Rate** and press <Enter>. The following edit window appears (Figure-4.9).



Figure-4.9 Sample Rate Edit Value Window.

6. Enter a value between 1 and 255 and press <Enter>.

The entry appears in the Trend Setup Store window (Figure-4.10).

Read-Write Store: Trend Setup	
Frequency	Minutes
▶ Sample Rate	5
Attrib 1	Not Used
Attrib 2	Not Used
Attrib 3	Not Used
Attrib 4	Not Used
Log Filename	

Figure-4.10 Edited Trend Setup Window.

The next four entries define which MicroNet Heat Pump/Fan Coil Controller attributes will be trended.

7. Select Attrib 1 and press <Enter>.

The Store List appears (Figure-4.11). The Store List includes all MicroNet Heat Pump/Fan Coil Controller data stores. In addition, <Not Used> appears at the top of the list. Select <Not Used> to return an edited Attribute to the default setting of Not Used.

Read-Write Store: Trend Setup	
Frequency	Minutes
Sample Rate	5
▶ Attrib 1	Not Used
Attrib 2	Not Used
Attrib 3	Not Used
Attrib 4	Not Used
Log File	

Store List	
▶ <Not Used>	
Control Values	
Point Values	
Control Status	
BAS DI Control	
SP Source	
Standalone SP	
Calibration	
Controller Name	
Shared Values	
Sensor Config	
Sensor Display	

Figure-4.11 Store List.

8. Select the data store that contains the attribute that you want to trend and press <Enter>.

An Attribute List for the selected data store appears (Figure-4.12).

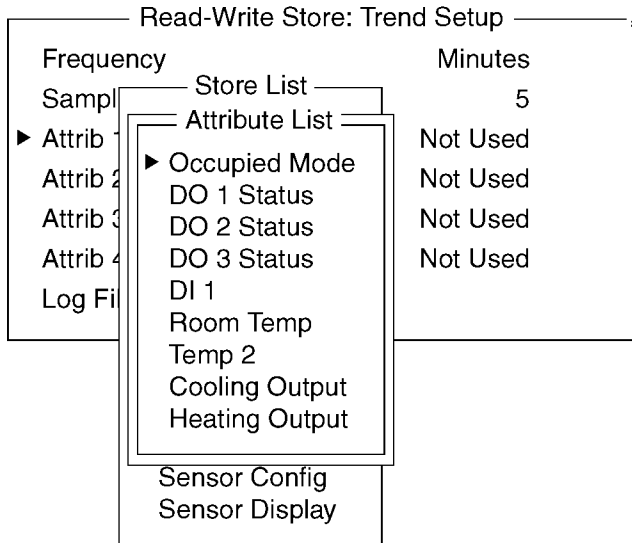


Figure-4.12 Attribute List.

- Select the attribute to trend and press <Enter>. The selected attribute appears in the Trend Setup Store window (Figure-4.13).

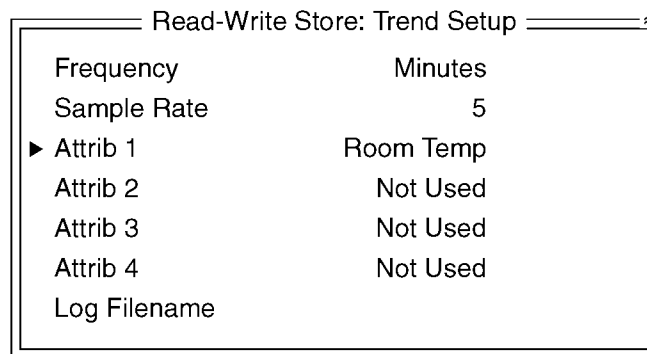


Figure-4.13 Edited Trend Setup Window.

- Continue the same procedure for Attrib 2 through Attrib 4. The Log Filename is optional. It is used to save the trend information to a text file.

To save the trend to a text file:

11. Select Log Filename and press <Enter>.

The following edit window appears (Figure-4.14).

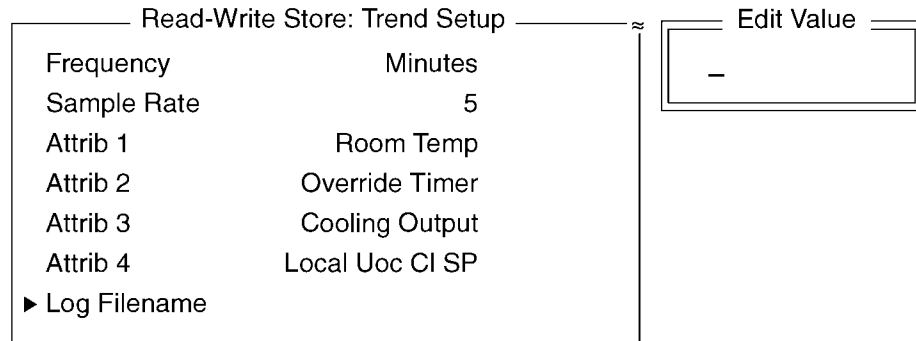


Figure-4.14 Edited Trend Setup Window.

12. Type a legal DOS filename without an extension.

The CI automatically adds a .LOG extension to the trend file when it is saved. The file is saved to the directory shown on the far left of the Status Bar. It cannot be saved to a different drive and/or different directory by entering the path as part of the file name.

A Log Filename is not required to trend data. If you don't enter a Log Filename, you can still run the trend, however, the information won't be saved to a file. It will be lost as soon as you quit the trend.

13. Press <Alt-S> to save the trend setup.

The CI displays a Saving data Note Window as it saves the settings for Frequency, Sample Rate, and Attribs 1 through 4. These settings appear in the Trend Setup Store window the next time Trend is selected and the CI is connected to a MicroNet Heat Pump/Fan Coil Controller. The CI does not save the Log Filename as part of the Trend Setup Store.

If you don't save the trend setup, you can still run the trend. The CI prompts you to save the trend setup when you exit the Trend Setup window.

Running the Trend

Run the trend after the frequency, sample rate, attributes, and log filename have been defined.

To start the trend:

1. Press <Alt-M>.

The following trend window is displayed (Figure-4.15). New samples appear at the top of the list. The CI continues to log trend information on the screen and into the .LOG file (if a filename was specified) until you quit.

Time	Room Temp	Heating Output	Cooling Output	Control Status
10:54:36a	73.05	0.00	52.00	2
10:49:36a	72.97	0.00	51.00	2
10:44:36a	72.88	0.00	51.00	2
10:39:36a	72.82	0.00	51.00	2
10:34:36a	72.97	0.00	51.00	2
10:29:36a	73.05	0.00	51.00	2
10:24:36a	72.97	0.00	51.00	2
10:19:36a	72.88	0.00	51.00	2
10:14:36a	72.84	0.00	51.00	2

Every: 5 Minutes Log File: TREND.LOG

Figure-4.15 Trend Window.

2. Press <Esc> to quit.

The CI stops trending data, closes the trend window, and closes the .LOG file (if a filename was specified).

Making On-line Changes

Overrides

An override forces an attribute value to a desired setting. Digital values can be forced to On, Off, or Not Active. Analog values can be forced to some value within their range. Overrides remain in effect until they are cleared manually or by the BAS, the controller is reset, or power to the controller is lost. By overriding an attribute you eliminate the need to temporarily edit the value and then change it back again.

Overriding Attributes

Only attributes in read-override data stores can be overridden. The MicroNet Heat Pump/Fan Coil Controller has three read-override data stores: Control Values, Point Values, and BAS DI Control.

The following example shows overriding a digital value in the Point Value data store, however, the same procedure can be used to override any attribute (analog or digital) in any of the three read-override data stores.

To override an attribute:

1. Start from the Device sub-menu.
2. Select Edit and press <Enter>.

The following Store List appears (Figure-4.16).

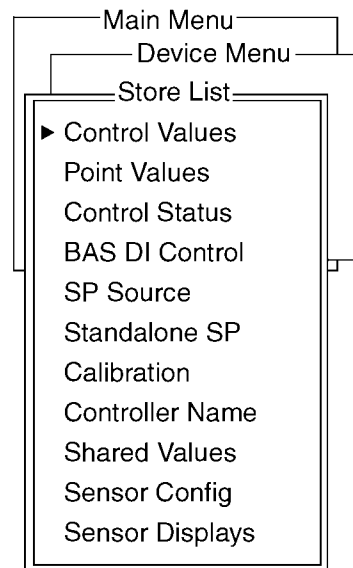


Figure-4.16 Store List.

3. Select Point Values and press <Enter>.

The Clear Overrides attribute (026b) in the BAS DI Control data store disables overrides from the CI. If it is set to On, attributes in the Control Values, Point Values, and BAS DI Control data stores cannot be overridden.

The Point Values data store appears (Figure-4.17). The screen “blinks” occasionally as the CI updates the attribute values in the data store.

Read-Ovrd Store: Point Values	
► Occupied Mode	On
DO 1 Status	Off
DO 2 Status	Off
DO 3 Status	On
DI 1	On
Room Temp	73.50 °F
Temp 2	56.40 °F
Cooling Output	0.00 %
Heating Output	0.00 %

Controller Name
Shared Values
Sensor Config
Sensor Displays

If the attribute selected was an analog value, an edit value window would have appeared in place of the Select Value window. Edit Value windows require you to type in a value.

Figure-4.17 Point Values Attributes.

4. Select the attribute to override and press <Enter>. A Select Value window appears (Figure-4.18).

Read-Ovrd Store: Point Values		Select Value
► Occupied Mode	On	► Off
DO 1 Status	Off	On
DO 2 Status	Off	Not Active
DO 3 Status	On	
DI 1	On	
Room Temp	73.50 °F	
Temp 2	56.40 °F	
Cooling Output	0.00 %	
Heating Output	0.00 %	

Controller Name
Shared Values
Sensor Config
Sensor Displays

Figure-4.18 Select Value Window.

5. Select the override value and press <Enter>.

The CI displays the “Sending override” note window as it sends the override value to the MicroNet Heat Pump/Fan Coil Controller. The override value is entered in the read-override data store. An asterisk in front of the value indicates that the attribute has been overridden (Figure-4.19).

Read-Ovrd Store: Point Values	
▶ Occupied Mode	*Off
DO 1 Status	Off
DO 2 Status	Off
DO 3 Status	Off
DI 1	On
Room Temp	73.50 °F
Temp 2	56.40 °F
Cooling Output	0.00 %
Heating Output	0.00 %

Controller Name
Shared Values
Sensor Config
Sensor Displays

Figure-4.19 Overridden Occupied Mode Attribute.

Clearing an Override

Overridden MicroNet Heat Pump/Fan Coil Controller attributes can be cleared by the following methods.

- Individually from their respective read-override data store.
- Collectively from the Clear Overrides attribute in the BAS DI Control data store.

To clear an individual overridden attribute:

1. Select and open the proper read-override data store window if it is not already displayed.
2. Select the overridden attribute that you want to clear.
3. Press <Alt-C>.

The CI displays the “Clearing override” before returning to the read-override data store. The attribute returns to its original value.

To clear all overridden attributes at one time:

1. Open the BAS DI Control data store.
2. Select the Clear Overrides attribute and press <Enter>.
3. Select On from the Select Value window and press <Enter>.

The CI clears all overrides and returns the Clear Overrides attribute to its previous state.

Setpoints

Determining Setpoint Sources

Before changing a setpoint value it is a good idea to verify that the setpoint that you want to change is actually a setpoint that is controlling the MicroNet Heat Pump/Fan Coil Controller. The SP Source data store indicates which setpoint and other controlling values (Room Temp and Occupied Mode) are being used by the controller.

To access and view the SP Source data store:

1. Start from the Device sub-menu.
2. Select `Edit` and press <Enter>.

The following Store List appears (Figure-4.20).

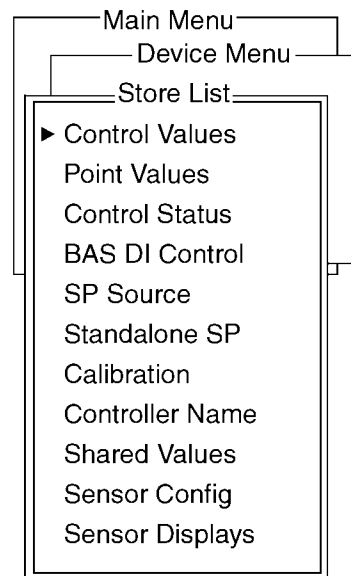


Figure-4.20 Store List.

3. Select `SP Source` and press <Enter>.

The CI displays an “Uploading data” note window before displaying the SP Source data store (Figure-4.19).

Read-Only Store: SP Source	
▶ Cool SP Source	Shared
Heat SP Source	Shared
Rm Temp Source	Local
Occ Source	BAS

Controller Name
Shared Values
Sensor Config
Sensor Displays

Figure-4.21 SP Source Data Store.

The data store indicates a source for each attribute in the group. There are four possible sources as listed below:

Definitions for the possible sources are:

- **Local** - indicates that the controlling value is from the controller's Standalone SP data store. The setpoint can be set from the CI or entered from the deluxe MicroNet Sensor. For occupancy source, local may also indicate that the controlling value is from DI 1 input on Temp 2 sensor (MN-SDT).
- **Temporary** - indicates that the <Override> button on the MicroNet Sensor has been pressed, overriding the controller from the unoccupied mode to the occupied mode. In the Occ Source (1B0) attribute, local indicates that the controlling value is from the controller's DI 1 Input on the Temp 2 MN-SDT Temperature Transmitter.
- **Shared** - indicates that the controlling value is from the Shared Values data store and the controller is receiving this value from another MicroNet Controller on the U-Bus.
- **BAS** - indicates that the controlling value is sent from the Building Automation System to the controller via the MicroNet Integrator.

Changing a Standalone Setpoint Value

MicroNet Controller Interface

To change a standalone setpoint in a MicroNet Heat Pump/Fan Coil Controller:

1. Start from the Device sub-menu.
2. Select **E d i t** and press <Enter>.

The CI displays the following list of data stores (Figure-4.22).

The CI displays an "Enter Node Address" window if you are not already connected to a device. To connect to and change the setpoint in a local device, enter that device's number. To connect to and change the setpoint in a non-local device, enter the device's complete node address, Integrator number:Device number. For additional information, refer to the "Using Connect" section on page 3.

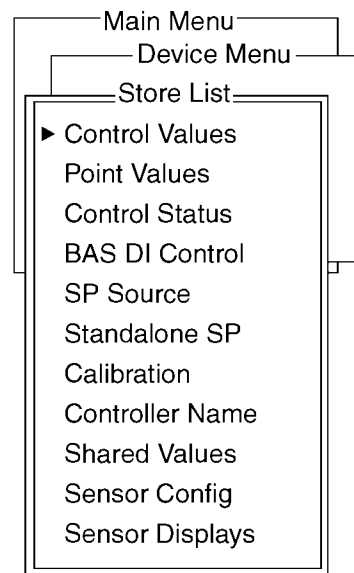


Figure-4.22 Data Store List.

3. Select the Standalone SP data store and press <Enter>. The Standalone SP data store appears (Figure-4.23).

Read-Write Store: Standalone SP

▶ Local Cool SP	75.00 °F
Local Heat SP	70.00 °F
Local Uoc Cl SP	78.00 °F
Local Uoc Ht SP	67.00 °F
Local Hi Lmt SP	85.00 °F
Local Lo Lmt SP	65.00 °F
Setpoint Offset	0.50 °F
Delay Time	60 Sec
Hysteresis	0.50 °F
Duty Cycle	12 Min
Min On Time	1 Min
Min Off Time	4 Min

Figure-4.23 Standalone SP Data Store.

4. Select the setpoint that you want to edit and press <Enter>. The edit window for that setpoint appears (Figure-4.24).

Read-Write Store: Standalone SP

▶ Local Cool SP	75.00 °F
Local Heat SP	70.00 °F
Local Uoc Cl SP	78.00 °F
Local Uoc Ht SP	67.00 °F
Local Hi Lmt SP	85.00 °F
Local Lo Lmt SP	65.00 °F
Setpoint Offset	0.50 °F
Delay Time	60 Sec
Hysteresis	0.50 °F
Duty Cycle	12 Min
Min On Time	1 Min
Min Off Time	4 Min

Edit Value

72.00

Figure-4.24 Cool Setpoint Edit Window.

5. Type the new setpoint value and press <Enter>.

The CI enters the new value in the Standalone SP data store (Figure-4.25).

Read-Write Store: Standalone SP	
▶ Local Cool SP	72.00 °F
Local Heat SP	70.00 °F
Local Uoc Cl SP	78.00 °F
Local Uoc Ht SP	67.00 °F
Local Hi Lmt SP	85.00 °F
Local Lo Lmt SP	65.00 °F
Setpoint Offset	0.5 °F
Delay Time	60 Sec
Hysteresis	0.5 °F
Duty Cycle	12 Min
Min On Time	1 Min
Min Off Time	4 Min

Figure-4.25 Edited Standalone SP Data Store.

6. Follow the same procedure to change other standalone setpoints.
7. When you are finished, press <Alt-S> to save your changes.

The CI displays a "Downloading data" note window as it sends the new setpoint values to the MicroNet Heat Pump/Fan Coil Controller. The CI then returns to the Standalone SP data store.

8. Press <Esc> to close the Standalone SP data window.

The CI returns to the Store List window.

If you press <Esc> without first saving your changes, the CI displays a Query window asking if you want to save your changes (Figure-4.26).

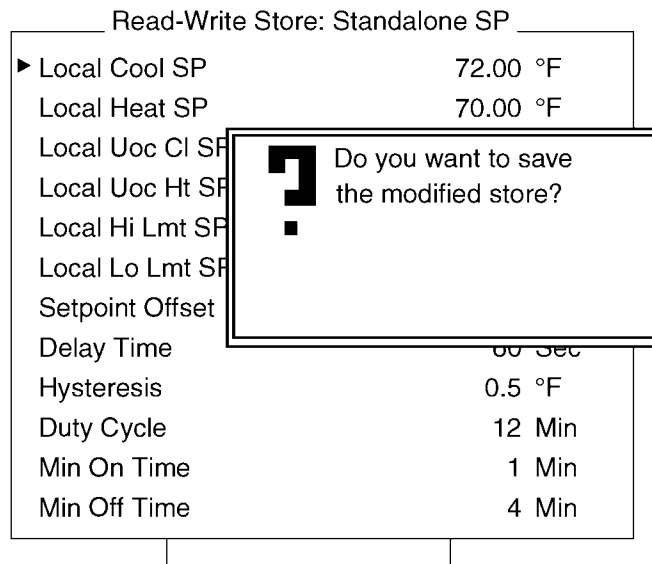


Figure-4.26 Save Changes Query Window.

9. Type Y to save your changes, or type N to revert to the last saved values.

MicroNet Sensor

You can easily change a control setpoint (Local Heat SP, Local Cool SP, etc.) if it has been assigned to appear in the user display.

To change a control setpoint that is in the user display:

1. Start from the default user display.
2. Press <Select> to scroll through the user display frames.
The sensor changes frames each time you press <Select>.

3. Continue to press <Select> until the control setpoint that you want to change is displayed. Two typical setpoint frames are shown below (Figure-4.27).

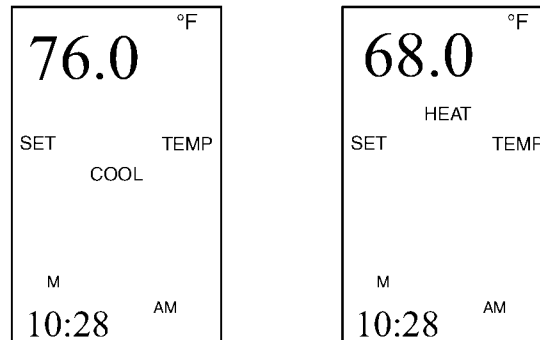


Figure-4.27 Typical Control Setpoint Frames.

If the Auto SP Enable attribute is set to Enable, you can press <Select> to save the new setpoint value.

4. Press <▲> or <▼> to increase or decrease the setpoint value as desired.

The setpoint value increases or decreases depending upon which button is pressed.

Important: When changed from the deluxe MicroNet Sensor, heating and cooling setpoints are limited by the Local Hi Lmt SP (432) and Local Lo Lmt SP (433) attributes. Setpoints higher than the Local Hi Lmt SP attribute value or lower than the Local Lmt SP attribute value cannot be entered from the deluxe MicroNet Sensor.

5. When the desired setpoint value is displayed, press <Enter> to save the new setpoint value.

Editing Other Control Attributes

MicroNet Controller Interface

All attributes in the MicroNet Heat Pump/Fan Coil Controllers read-write data stores can be edited off-line and downloaded to the controller. The procedure for editing these attributes is the same as the procedure for changing a standalone setpoint in the Standalone SP data store. (See “Changing a Standalone Setpoint Value” on page 4-17.) The MicroNet Heat Pump/Fan Coil Controller contains the following read-write data stores:

- Standalone SP
- Calibration
- Controller Name
- Shared Values
- Sensor Config
- Sensor Displays

If the Schedule Access attribute (056) is set to ON, the SCHED frame appears after pressing <Select> for four to six seconds. Press <Select> again to access the Current Status Frame.

MicroNet Sensor

Up to eight control attributes can be assigned for display from the deluxe MicroNet Sensor's Set-up Mode. Throttling range and unoccupied setpoints are attributes that are typically assigned to the Set-up Mode display. To change control attributes in the Set-up Mode:

To enter the Service Mode and view the information listed above:

1. Start from the MicroNet Sensor default user display.
2. Press and hold <Select> for five to six seconds
The Current Status frame appears.
3. Press <Select> again to scroll to the Address frame.
4. Press <Select> to scroll through the Service Mode frames.
The sensor displays a different frame each time <Select> is pressed.
5. Continue to press <Select> until the Password frame is displayed (Figure-4.28).

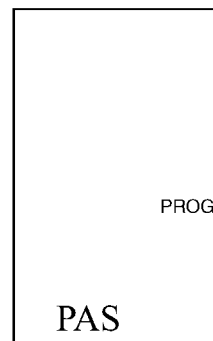


Figure-4.28 Password Frame.

6. Use <▲> to enter the access password.
7. Press <Enter>.
The sensor displays the Schedule (SCHED) frame.
8. Press <Select>.
The sensor displays the first attribute in the Set-up Mode (Figure-4.29). Set-up Mode frames indicate a brief attribute description using available icons, the attribute setting, and the attribute's ID number for additional reference. In the following example, the attribute is the Cooling Throttling Range, it is set to 3.0°F, and the data store ID number is 514.

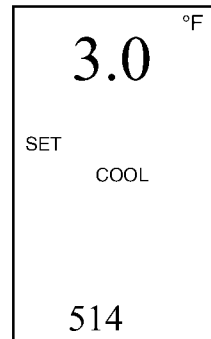


Figure-4.29 Typical Set-up Mode Frame.

9. Press <Select> to scroll through the attributes.
10. Use <▲> or <▼> to change an attribute value or toggle the attribute setting to another option.
11. Press <Enter> to save the change.

MicroNet Heat Pump/Fan Coil Controller attributes that do not appear in the deluxe MicroNet Sensor's setup display can be accessed and edited. To access and edit these attributes:

1. Scroll through the attributes in the Setup Display.
2. Press <Enter> when the following frame appears (Figure-4.30).

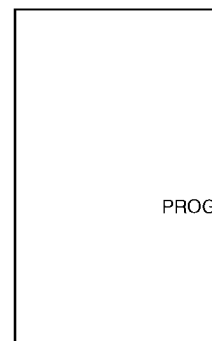


Figure-4.30 Enter Program Mode Frame.

The Program Mode frame appears with the left 0 flashing (Figure-4.31).

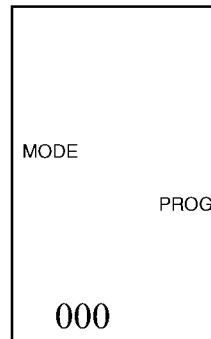


Figure-4.31 Program Mode Frame.

Refer to Chapter 3, "Attribute and Data Store Descriptions" and Appendix A, "Attribute Cross Reference."

The frame requires you to enter the ID number for the attribute that you wish to edit. Each digit of the ID number is entered individually with the left digit entered first.

3. Use <▲> or <▼> to enter the left digit.
4. Press <Select> to move to the middle digit.
The middle 0 flashes.
5. Use <▲> or <▼> to enter the middle digit.
6. Press <Select> to move to the right digit.
The right 0 flashes.
7. Use <▲> or <▼> to enter the right digit.
8. If necessary, press <Select> one or more times to move back to the left and/or middle digit to review or change the ID number.
9. When you have finished entering the attribute ID number, press <Enter>.

The Sensor displays the edit frame for the selected attribute. The attribute ID number is shown at the bottom of the frame. The attribute's current value is shown at the top. The Set icon is lit if the attribute can be changed. The following sample edit frame shows the OverrideTime attribute (820) and its current setting, 60 minutes.

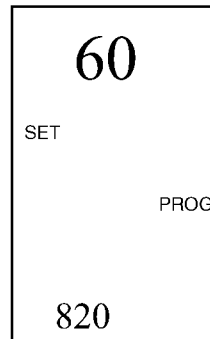


Figure-4.32 Attribute Edit Frame.

10. Use <▲> or <▼> to edit the attribute value.
11. Press <Enter> to save the change.

The Sensor displays the following frame (Figure-4.33).

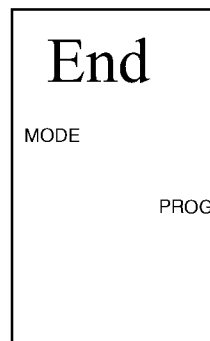


Figure-4.33 End Program Mode Frame.

12. Press <Select> to return to the Program Mode and continue editing attributes or press <Enter> to quit.

Working with Files

The CI provides several functions for manipulating a MicroNet Heat Pump/Fan Coil Controller application file. These functions are located on the File sub-menu and allow you to upload, edit, copy, delete, log as text, and download files. All functions on the File sub-menu are off-line functions, except Get from Device and Send to Device. Get from Device and Send to Device are on-line functions and require that the CI is connected to a MicroNet Heat Pump/Fan Coil Controller.

A MicroNet Heat Pump/Fan Coil Controller file contains only the read-write data stores. Specifically:

- Standalone SP
- Calibration
- Controller Name
- Shared Values
- Sensor Config
- Sensor Displays

When you use any of the features listed on the File sub-menu, you are only working with these data stores.

Editing Files

When you edit a file you change attribute settings in one or more of these data stores.

To edit a file:

1. Start from the Files sub-menu.
2. Select `Edit` and press `<Enter>`.

The Files list appears (Figure-4.34).

If the file you wish to edit exists on a different drive, or in a directory other than the one shown in the far left of the status bar, you need to select `-DIR-` from the Files list.

Selecting `-DIR-` establishes the directory path. When the path has been setup, press `<Esc>`. The files within the last defined directory are listed.

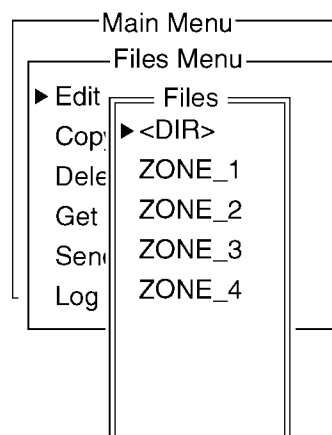


Figure-4.34 Files List

Read-Only and Read-Override Stores appear dimmed or grayed in a File Stores List to indicate that they cannot be accessed or changed. Only Read-Write Stores are accessible and changeable from a File Store List.

3. Select the file you wish to edit and press <Enter>. The Store list appears (Figure-4.35).

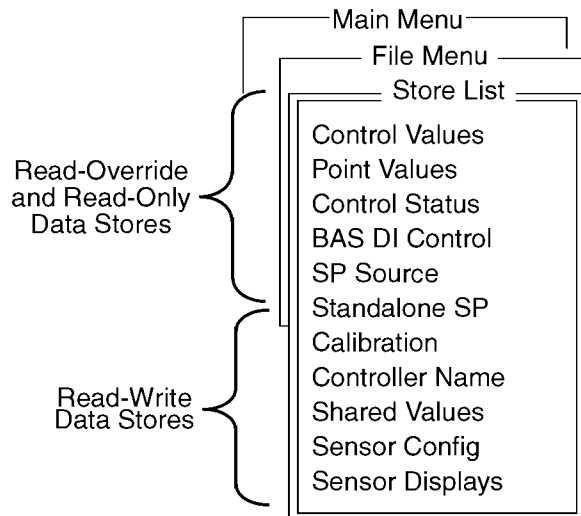


Figure-4.35 Store List.

The following example shows editing an attribute in the Sensor Config data store, however, the same procedure can be used to edit any attribute (analog or digital) in any of the MicroNet Heat Pump/Fan Coil Controller's Read-Write data stores.

4. Select the data store that contains the attribute(s) that you wish to edit and press <Enter>. The data store appears (Figure-4.36).

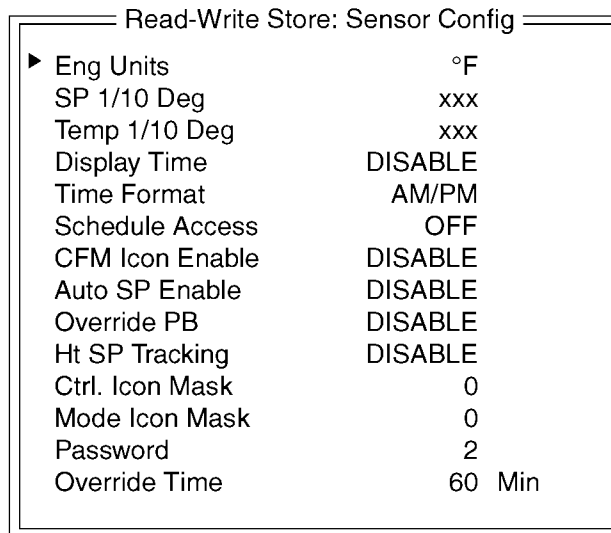


Figure-4.36 Sensor Config Data Store.

5. Select the attribute to edit and press <Enter>.

An edit window appears to the right of the Select Attribute list. The current value of the attribute appears in the edit window (Figure-4.37).

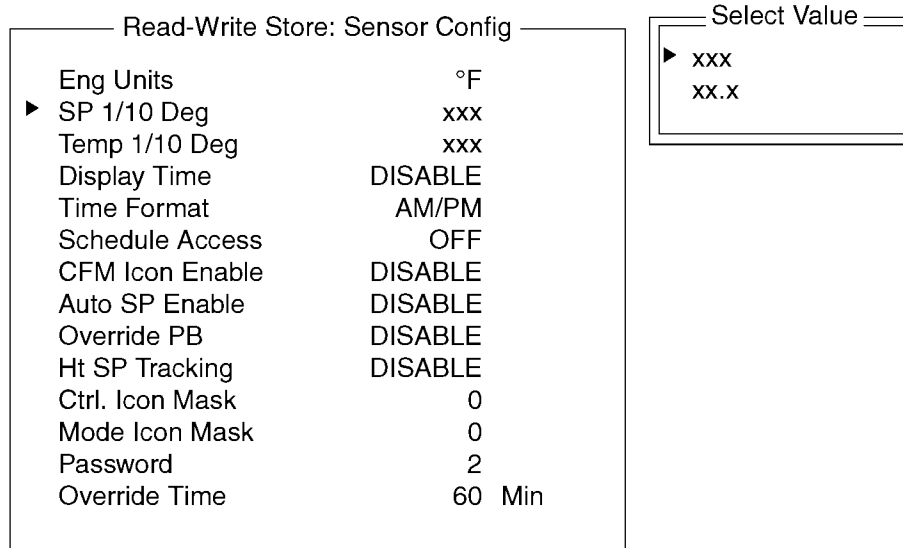


Figure-4.37 Select Value Window.

6. Select or type the new value for the attribute and press <Enter>.

The CI enters the new value in the Select Attribute list (Figure-4.38).

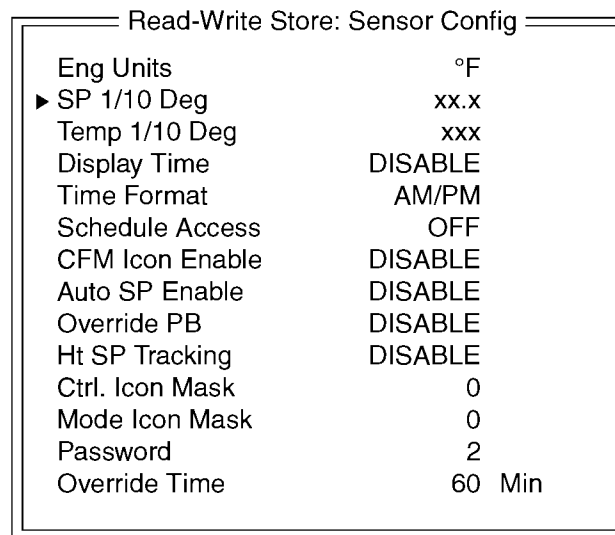


Figure-4.38 Select Value Window.

7. Follow the same procedure to change other attributes.

8. When you are finished editing attributes press <Alt-S> to save your changes.

The CI displays a “Downloading data” note window as it saves your changes. The CI then returns to the Read-Write data store window.

9. Press <Esc> to close the window.

If you press <Esc> without first saving your changes, the CI displays a Query window asking if you want to save your changes (Figure-4.39).

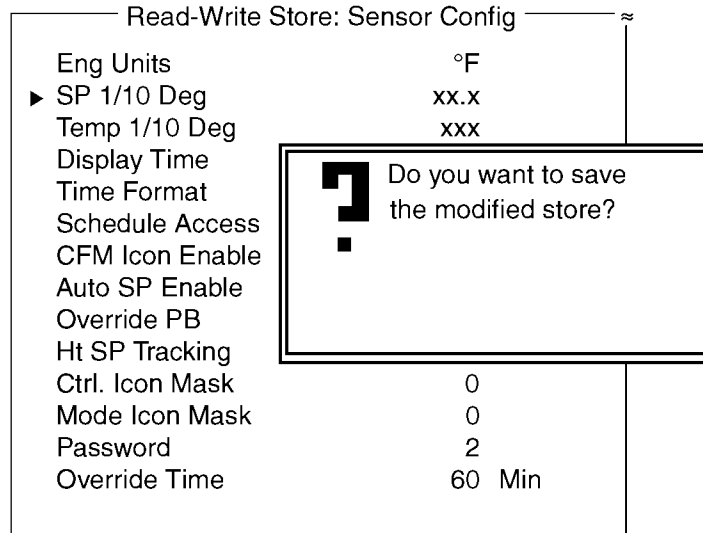


Figure-4.39 Save Changes Query Window.

10. Type Y to save your changes, or type N to revert to the last saved values.

Copying Files

Use the Copy feature to copy an application file.

To copy a file:

1. Start from the Files sub-menu.
2. Select Copy and press <Enter>.

The Files list appears (Figure-4.40).

If the file you wish to copy exists on a different drive, or in a directory other than the one shown in the far left of the status bar, you need to select -DIR- from the Files list.

Selecting -DIR- establishes the directory path. When the path has been setup, press <Esc>. The files within the last defined directory are listed.

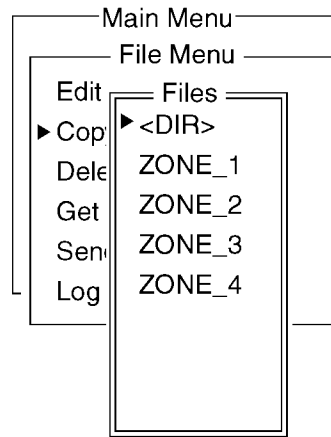


Figure-4.40 Files List.

3. Select the file you wish to copy and press <Enter>.

The CI prompts you to enter a DOS filename for the new file (Figure-4.41).

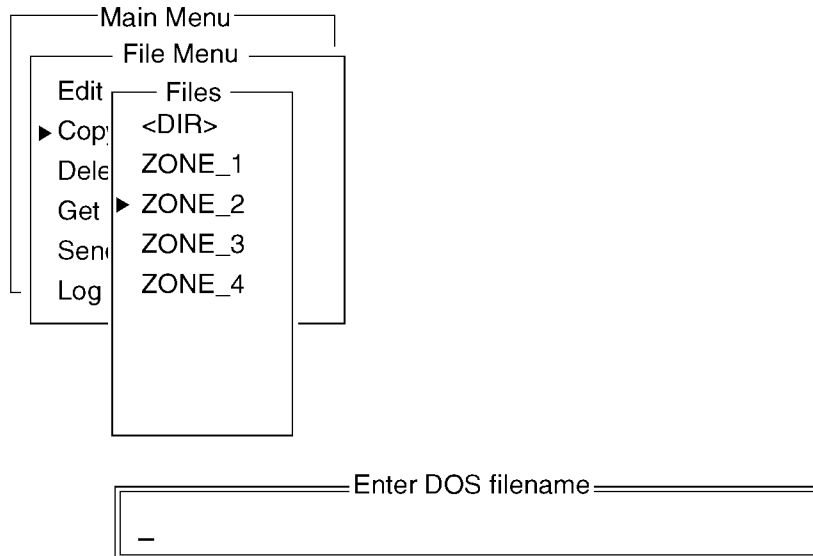


Figure-4.41 Enter DOS Filename Prompt.

The file is saved to the directory shown in the far left of the status bar. To save the file to a different drive and/or different directory, enter the path as part of the filename and press <Enter>.

4. Type a legal DOS filename, without a file extension, and press <Enter>.

A .001 extension is added automatically to the MicroNet Heat Pump/ Fan Coil Controller file when the CI copies it.

The CI copies the file and adds it to the File list with the new filename (Figure-4.42).

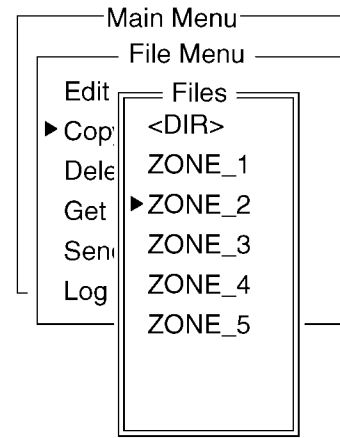


Figure-4.42 Copied File in Files List.

Deleting Files

Use the Delete feature to erase a file that you no longer need.

To delete a file:

1. Start from the Files sub-menu.
2. Select Delete and press <Enter>.

The Files list appears (Figure-4.43).

If the file you wish to delete exists on a different drive, or in a directory other than the one shown in the far left of the status bar, you need to select -DIR- from the Files list.

Selecting -DIR- establishes the directory path. When the path has been setup, press <Esc>. The files within the last defined directory are listed.

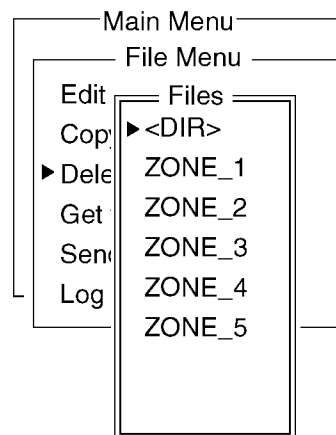


Figure-4.43 Files List.

3. Select the file you wish to delete and press <Enter>.

The CI displays a query window asking you to confirm that you want to delete the selected file (Figure-4.44).

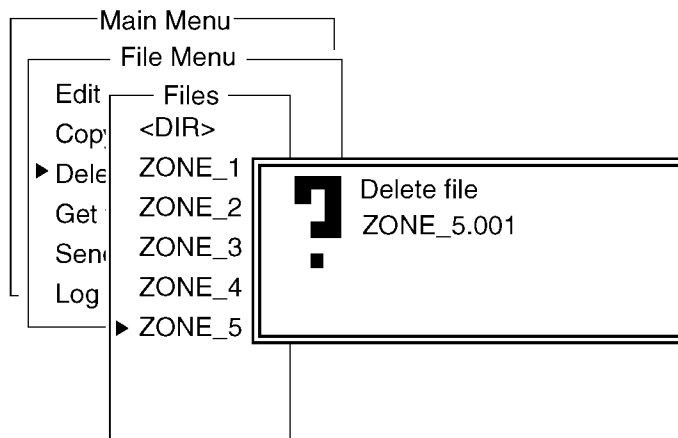


Figure-4.44 Delete File Query Window.

4. Type Y to delete the selected file, or type N to cancel the delete command.

If you type Y, the CI deletes the file and removes it from the Files list (Figure-4.42).

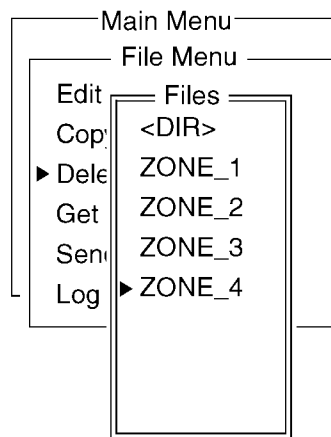


Figure-4.45 File Deleted from Files List.

If you type N, the selected file is not deleted. It still appears in the Files list.

Downloading a File to a Device

The Send to Device function allows you to send a single application file to a device. To use the Send to Device function:

1. Start from the Files sub-menu.
2. Select Send to Device and press <Enter>.

The Files list appears (Figure-4.46).

If the file you wish to send exists on a different drive, or in a directory other than the one shown in the far left of the status bar, you need to select -DIR- from the Files list.

Selecting -DIR- establishes the directory path. When the path has been setup, press <Esc>. The files within the last defined directory are listed.

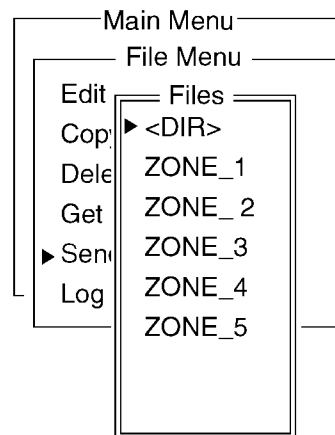


Figure-4.46 Files List.

3. Select the file you wish to send and press <Enter>.

The CI displays an “Enter Node Address” window. If the CI is not connected to a device, 1 appears above the flashing cursor, otherwise the number of the current connected device appears (Figure-4.47).

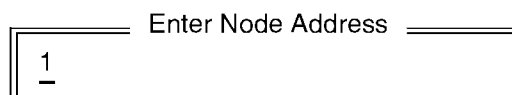


Figure-4.47 Enter Node Address Note Window.

4. Enter the number of the device that you want to send the file to and press <Enter>.

The CI displays the “Downloading Data” note window before returning to the Files list.

Performing a System Download

The Send Multiple function allows you to download an application file to more than one controller. To use the Send Multiple function:

1. Start from the System sub-menu.
2. Select Send Multiple and press <Enter>.

The CI displays the Files List (Figure-4.48).

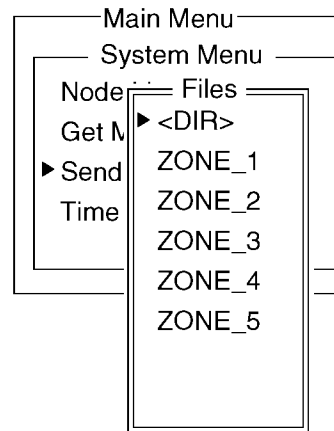


Figure-4.48 Filename Entry Screen.

3. Select the file that you wish to download and press <Enter>.

The CI displays the Enter Integrator window (Figure-4.49).

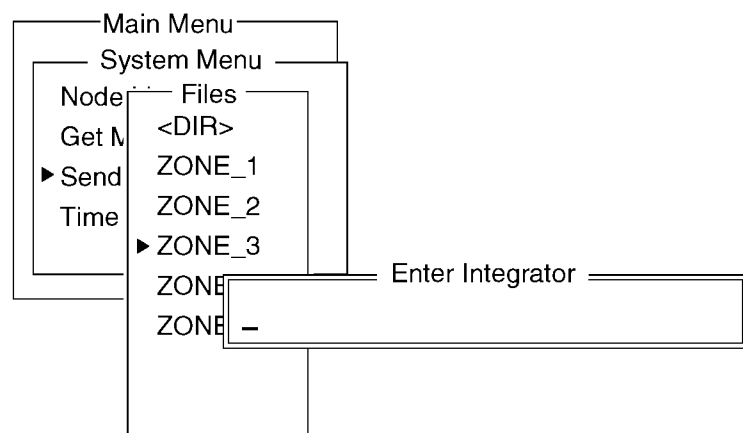


Figure-4.49 Enter Starting Integrator Entry Window.

4. Enter the number of the MicroNet Integrator whose controllers you want to download the files to.

The CI displays the "Generating Node List" note window before displaying the following Select Value window (Figure-4.50).

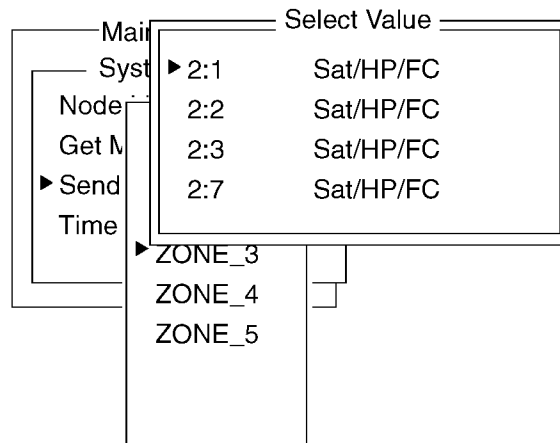


Figure-4.50 Select Value Window.

- Press <↓> to move cursor through the list and press <Enter> to select the controllers that you want to download the file to. Or, press <Alt-A> to select all controllers in the list.

An asterisk appears to the right of each controller selected (Figure-4.51).

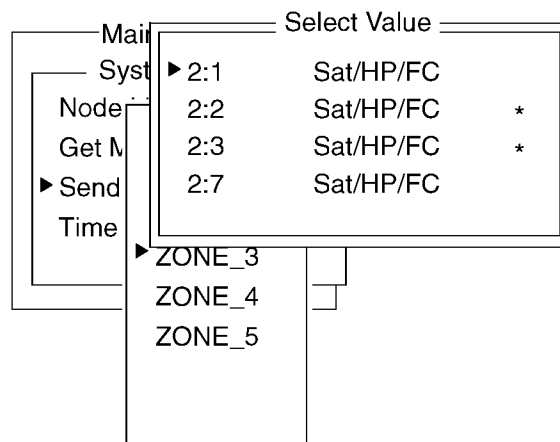


Figure-4.51 Asterisk Indicating Controllers Selected for Download.

- Press <Esc> when you are finished selecting controllers.

The CI displays the following query window (Figure-4.52).

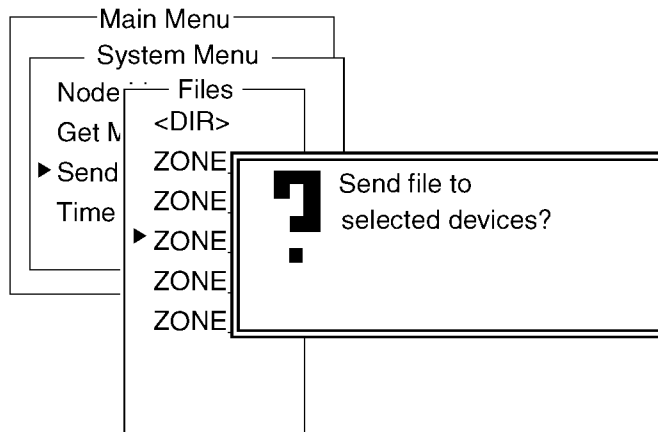


Figure-4.52 Send File Query Window.

7. Type Y to send the file to the selected device or type N to cancel the download.

If you typed Y the CI displays the following window while the download is in progress (Figure-4.53).

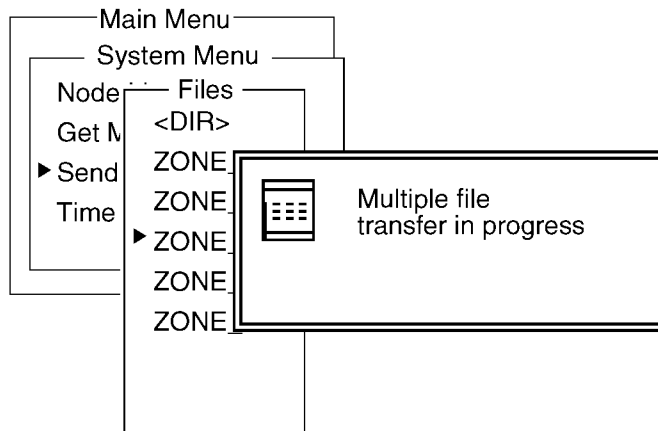


Figure-4.53 File Transfer Note Window.

Also during the download, the CI displays “n:n Downloading data” messages in the command help bar to indicate its progress. When the download is complete the CI displays the “Multiple File Transfer Log” window. The Transfer Log indicates the results of the download (Figure-4.54).

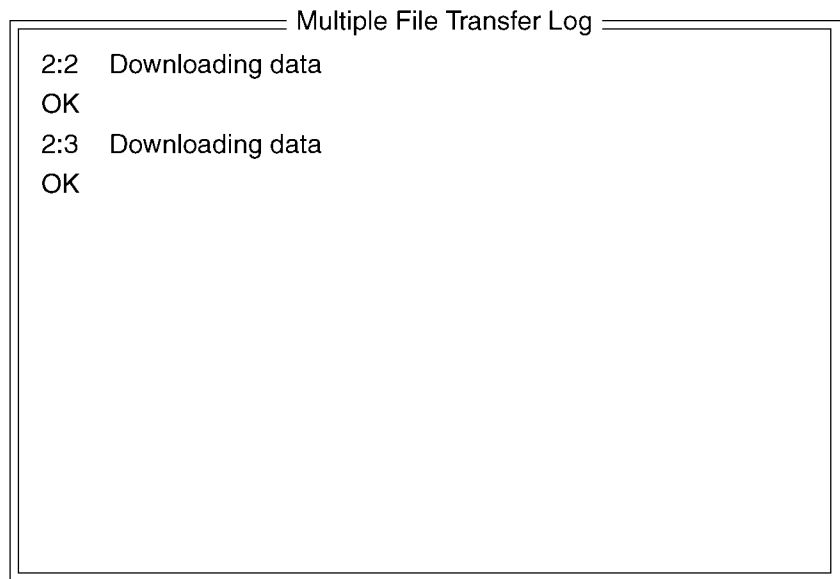


Figure-4.54 Multiple File Transfer Log.

Uploading a File from a Device

The Get from Device function allows you to upload an application file from a device and save it to a file. To use the Get from Device function:

1. Start from the Files sub-menu.
2. Select **Get from Device** and press <Enter>. The CI displays an “Enter Node Address” window. If the CI is not connected to a device, 1 appears above the flashing cursor, otherwise the number of the current connected device appears
3. Enter the number of the device that you want to upload the file from and press <Enter>. The CI displays an “Enter DOS Filename” window.
4. Type a legal DOS filename, without a file extension, and press <Enter>.

The file is saved to the directory shown in the far left of the status bar. To save the file to a different drive and/or different directory, enter the path as part of the filename and press <Enter>.

A .001 extension is added automatically when the CI uploads the file. The CI displays a “Uploading data” note window as it uploads the file. When the upload is complete, the CI adds the new file to the Files List and returns to the File Sub-menu.

Performing a System Upload

When performing a multiple upload, the CI automatically overwrites the files from a previous multiple upload if the same prefix is used and the same controller(s) are uploaded.

The Get Multiple function allows you to upload application data from multiple MicroNet Heat Pump/Fan Coil Controllers under a series of MicroNet Integrators and store the uploaded data in files. To use the Get Multiple function:

1. Start from the System sub-menu.
2. Select **Get Multiple** and press <Enter>. The CI displays the following entry window (Figure-4.55).

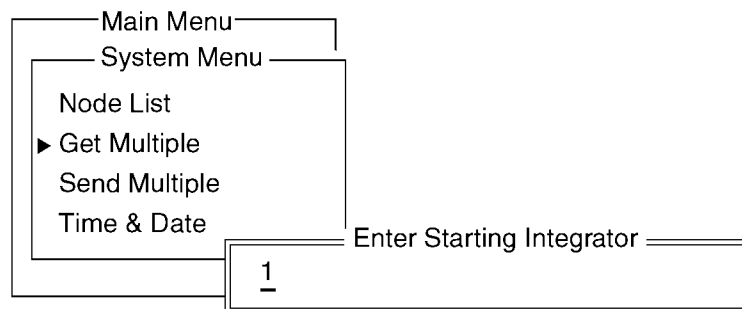


Figure-4.55 Starting Integrator Entry Window.

3. Type Integrator's device number, or if the upload includes more than one Integrator, type the lowest Integrator device number and press <Enter>.

The CI displays the following entry window (Figure-4.56).

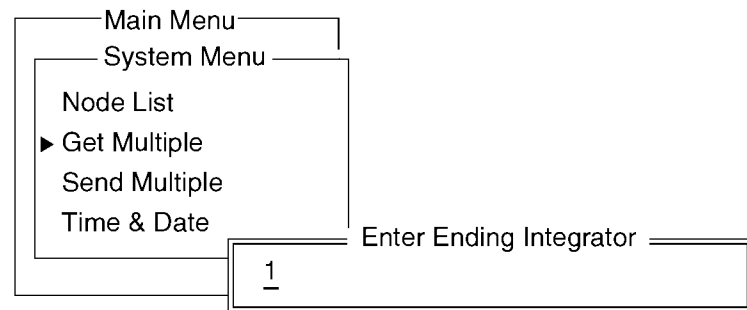


Figure-4.56 Ending Integrator Entry Window.

4. Type Integrator's device number, or if the upload includes more than one Integrator, type the highest Integrator device number and press<Enter>.

The CI displays the following entry window (Figure-4.57).

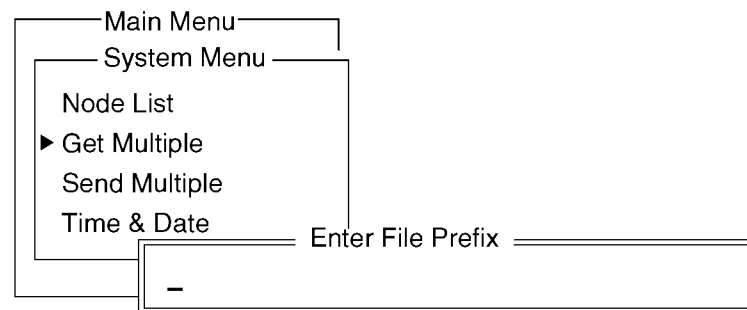


Figure-4.57 Enter File Prefix Entry Window.

5. Type a prefix for the multiple file upload and press <Enter>.

The prefix can consist of up to four letters and/or numbers. The CI creates unique filenames for each uploaded application file by appending the controller's integrator number and device number to the prefix. The integrator number and device number are appended in hex format. Hex numbers and their decimal equivalents are listed in Appendix D.

The CI displays the following note window during the upload (Figure-4.58).

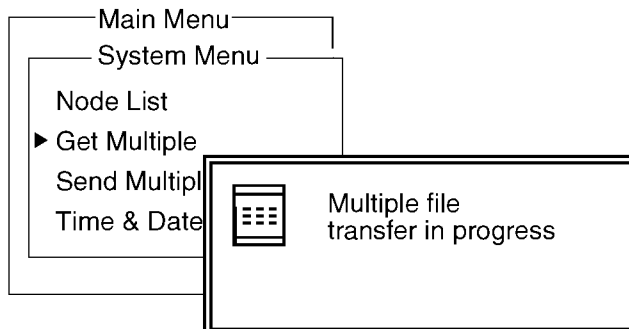


Figure-4.58 File Transfer Note Window.

Also during the upload, the CI displays messages in the command help bar to indicate its progress. Messages include “n:n Generating node list” and “n:n Uploading data.”When the upload is complete the CI displays a Multiple File Transfer Log. The transfer log indicates the results of the upload (Figure-4.59).

In this example (Figure-4.59), the -534 error refers to the MicroNet Integrator. The error is normal because the MicroNet Integrator does not contain any read-write data stores.

All MicroNet controllers, regardless of type, are uploaded by the process of performing a system upload. However, the Multiple File Transfer Log does not indicate the type of controller uploaded. For example, the transfer log does not reflect the difference between a VAV controller and an MN-HPFC controller. To determine type of controller, open each uploaded file and examine data.

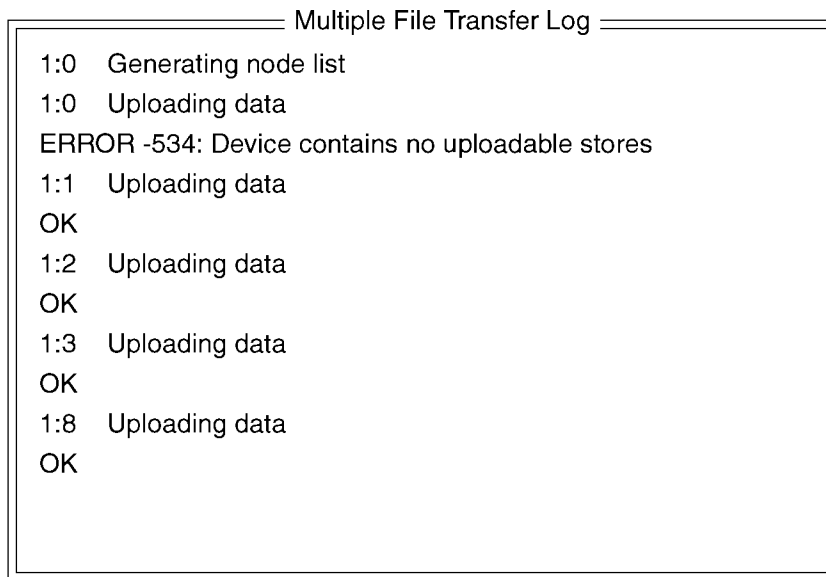


Figure-4.59 Multiple File Transfer Log.

The device files for all of the successful uploads are added to the Files List (Figure-4.60).

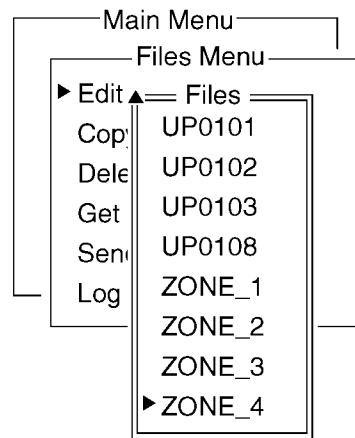


Figure-4.60 Files List

Saving a File as Text

Data that is logged to a DOS file cannot be used as an electronic database backup.

The Log as Text function transfers complete database files to DOS. You can use the Alt -L key combination to log other data to a file.

If the file you wish to save as text exists on a different drive, or in a directory other than the one shown in the far left of the status bar, you need to select -DIR- from the Files list.

Selecting -DIR- establishes the directory path. When the path has been setup, press <Esc>. The files within the last defined directory are listed.

The Log as Text function allows you to save an application file as an ASCII text file. The data can be retrieved later for viewing or printing. Refer to Appendix C, "Viewing and Printing Logged Files in DOS," for details. Printed copies of these files can be stored as hard copy documentation of a control program and can be used at a later date to verify or troubleshoot a controller's database.

To use the Log as Text function:

1. Start from the Files sub-menu.
2. Select Log as Text and press <Enter>.

The Files list appears (Figure-4.61).

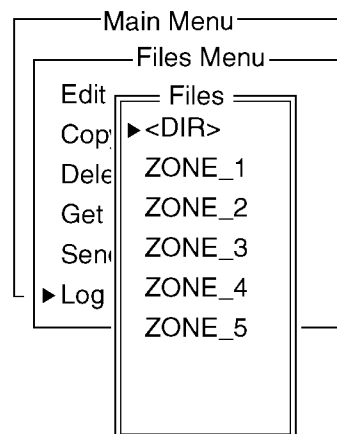


Figure-4.61 Files List.

3. Select the file you wish to save as an ASCII text file and press <Enter>. The CI displays the following screen (Figure-4.62).

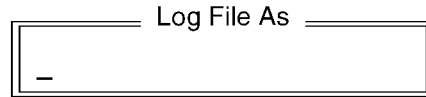


Figure-4.62 Log File As Entry Screen.

4. Type a valid DOS file name (up to eight characters with no extension) and press <Enter>. Include the path with the file name if different than the current path. A .TXT extension is added automatically when the CI creates the file. The CI displays the following screen (Figure-4.63).

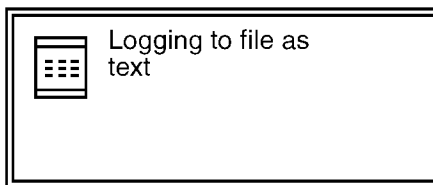


Figure-4.63 Logging Note Window.

When the Log as Text process is complete, the CI displays the Files sub-menu.

Logoff

To logoff the CI:

1. Start from the Main Menu.
2. Select Logoff and press <Enter>
The Logon screen appears (Figure-4.64).

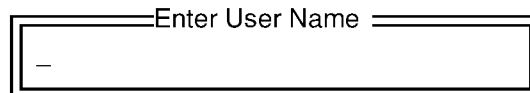


Figure-4.64 Logon Screen.

3. Press <Esc>.

The CI displays the following note window before the DOS prompt appears (Figure-4.65).

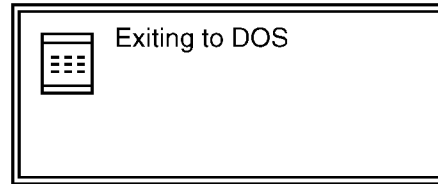


Figure-4.65Exiting to DOS Note Window.

The following table lists the diagnostic indications that the LED provides (Table-5.1).

Table-5.1 MicroNet Heat Pump/Fan Coil Controller LED Indications.

LED Status	Indication
Off.	Indicates no power is applied to the controller.
Slow flicker, approximately once every 2 seconds.	Indicates a fault condition. Refer to Diagnostic Information section below.
Normal slow flicker, approximately 1.5 times per second.	Indicates a normal operating condition for a stand-alone controller.
Normal fast flicker, approximately 3 times per second.	Indicates a normal operating condition for a controller on an active U-Bus.
Normal fast flicker that changes to a very fast flicker for short periods of time.	Indicates that the U-Bus is sending or is waiting to send a message.

Diagnostic Information

When you select *Diagnostics*, the CI displays an “Enter Node Address” window if you are not already connected to a device. To connect to and view diagnostic information from a local controller, enter that controller’s device number. To connect to and view diagnostic information from a non-local controller, enter the controller’s complete node address, Integrator number: Device number. For additional information, refer to the “Using Connect” section in Chapter 4.

MicroNet Controller Interface

The Diagnostic function provides diagnostic information for the current MicroNet Heat Pump/Fan Coil Controller. The CI’s diagnostic routine checks for many different types of failures in the MicroNet Heat Pump/Fan Coil Controller including general system faults, application errors, and control status information.

To view diagnostic information:

1. Start from the Device sub-menu.
2. Select *Diagnostics* and press <Enter>. The *Diagnostics* window appears (Figure-5.2).

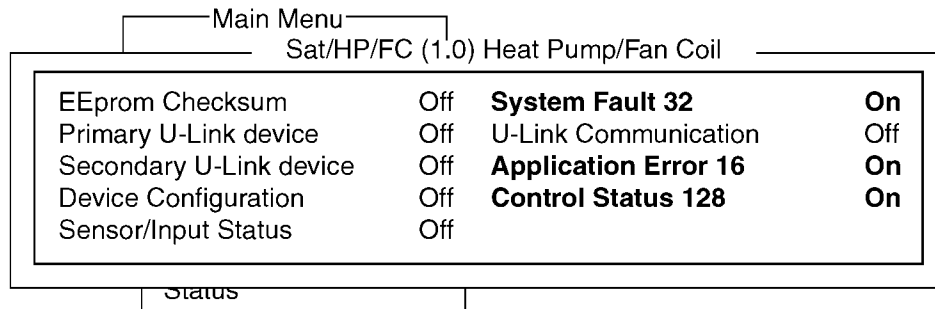


Figure-5.2 Device Diagnostics Window.

The device diagnostics window lists general system faults, application errors, and control status information. For system faults and application errors, “Off” indicates normal operation. Detected errors are highlighted and indicated by an “On” in the status column. Refer to ((Table-2.2)) for cause and corrective action information.

Table-2.2 MicroNet Heat Pump/Fan Coil Controller Diagnostic.

CI Display	Error Type (Value)	Data Store (ID#)	Cause	Corrective Action
EEPROM Checksum	System Fault (1)	Control Status (303)	Either a data store or the device EEPROM is corrupt.	Reprogram the controller by downloading a new application file. If error still exists, replace the controller.
Primary U-Link Device	System Fault (2)	—	Diagnostic is not implemented in MicroNet Heat Pump/Fan Coil Controller.	
Secondary U-Link Device	System Fault (4)	—	Diagnostic is not implemented in MicroNet Heat Pump/Fan Coil Controller.	
Device Configuration	System Fault (8)	—	Diagnostic is not implemented in MicroNet Heat Pump/Fan Coil Controller.	
Sensor/Input Status	System Fault (16)	Control Status (303)	Required input for control failed. Occurs if: <ul style="list-style-type: none"> • The sensor is not connected to the U-Link. • The sensor failed. • The controller is configured for an attribute that does not exist or is not available in the assigned device (shared value). 	<ul style="list-style-type: none"> • Verify proper U-Link connection. • Replace the sensor. • Replace the controller. • If using a shared value, verify that the attribute exists and is available in the assigned device.
System Fault 32	System Fault (32)	Control Status (303)	Missing changeover input for a fan coil application.	Provide changeover input.
U-Link Communication	System Fault (128)	—	Diagnostic is not implemented in MicroNet Heat Pump/Fan Coil Controller.	
Application Error 16	Application Error (16)	Control Status (309)	The current Heat SP is greater than the current Cool SP.	Change setpoint values.

For the control status information, the “On” and “Off” indicate the current operating mode. “On” conditions are highlighted. In the example below Figure-5.3, the diagnostic window indicates that the controller is operating normally (no errors) in the cooling mode (2). Refer to Table-2.2 for control status display, diagnostic, and indication information.

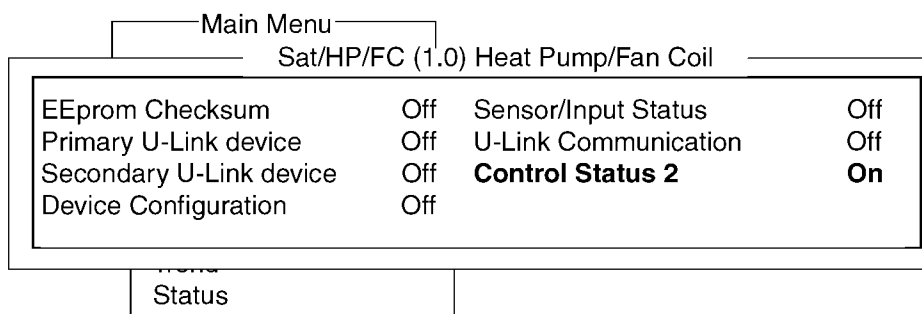


Figure-5.3 Control Status Indication in Device Diagnostic Window.

Table-2.3 MicroNet Heat Pump/Fan Coil Controller Status Diagnostics.

CI Device Diagnostic Window Display	Control Status Diagnostic	Indication
Control Status 0	Satellite mode.	Controller is in satellite mode.
Control Status 1	No outputs are on as a result of one or both of the following: <ul style="list-style-type: none"> • The BAS has disabled the outputs. • The outputs are locked out for staggered delay time following a controller startup condition. 	
Control Status 2	Cooling mode is enabled.	Controller is in cooling mode.
Control Status 3	Cooling mode is enabled but locked out by BAS [Lockout Cool (268)].	
Control Status 4	Heating mode is enabled.	Controller is in heating mode.
Control Status 5	Heating mode is enabled but locked out by BAS [Lockout Cool (268)].	
Control Status 128	Diagnostic condition.	Controller is in a diagnostic condition. Indicates that one or more of the following System Faults or Application Errors exists in the controller and control is not possible: <ul style="list-style-type: none"> • EEPROM Checksum Error • Sensor/Input Fault • Missing Changeover Input • Current Heat SP is greater than Current Cool SP

MicroNet Sensor

From the MicroNet Sensor's Service Mode you can view the following types of diagnostic data.

- Device Address.
- Device Type.
- Diagnostics (including System Faults and Application Errors).
- Software Revision

To enter the Service Mode and view the information listed above:

1. Start from the MicroNet Sensor default user display.
2. Press and hold <Select> for four to six seconds.
The Current Status frame appears.
3. Press <Select> again to scroll to the Address frame.
4. Continue to press <Select> to view all other Service Mode frames (Device Type, System Faults, Application Errors, and Software Revision).

If the Schedule Access attribute (056) is set to ON, the SCHED frame appears after pressing <Select> for four to six seconds. Press <Select> again to access the Current

Address

The Address frame indicates the address of the connected MicroNet Heat Pump/Fan Coil Controller. In the example below (Figure-5.4), the Address frame indicates that the controller's address is 8.

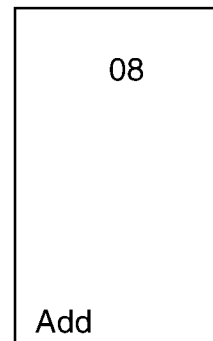


Figure-5.4 Address Frame.

Device Type

The Device Type frame indicates what kind of MicroNet Controller the MicroNet Sensor is connected to. In the example below (Figure-5.5), the five (5) in the upper right corner of the Device Type frame indicates that the connected device is a MicroNet Heat Pump/Fan Coil Controller.

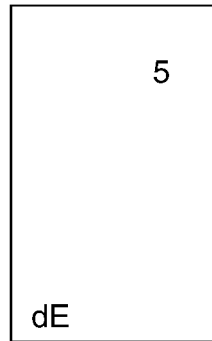


Figure-5.5 Device Type Frame.

System Fault

The System Fault frame indicates diagnostic errors in the internal hardware. The System Fault frame has a range of 0 to 255. 0 indicates normal operation. If a number other than 0 is displayed, it is an indication that one or more System Fault errors are occurring.

To determine the actual errors:

1. Use (Table-2.4) to find the largest diagnostic code number that can be subtracted from the number that's displayed.
2. Note this code number and subtract it from the displayed number.
3. Find the next largest diagnostic code number that can be subtracted from the remainder.
4. Note this number and subtract it from the remainder.
5. Continue this process until the remainder equals 0.

All noted diagnostic code numbers indicate occurring faults. Refer to (Table-2.2) for cause and corrective action information.

Table-2.4 System Fault Diagnostic Codes.

Diagnostic Code	System Fault
0	Normal Operation
1	EEPROM Checksum Error
2	Reserved for future use
4	Reserved for future use
8	Reserved for future use
16	Sensor/Input Failure
32	Changeover Input missing for Fan Coil Application
64	Reserved for future use
128	Reserved for future use

In the example below (Figure-5.6), the System Fault frame indicates that two errors are occurring: 1 and 16.

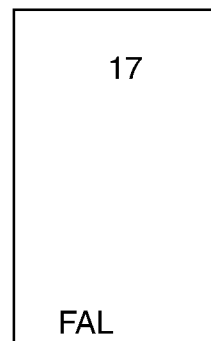


Figure-5.6 System Fault Frame.

Application Error

The Application Error frame indicates diagnostic errors in the application. The Application Error frame has a range of 0 to 255. 0 indicates that normal operation. If a number other than 0 is displayed, it is an indication that one or more Application Errors are occurring.

To determine the actual errors:

1. Use (Table-2.5) to find the largest diagnostic code number that can be subtracted from the number that's displayed.
2. Note this code number and subtract it from the displayed number.
3. Find the next largest diagnostic code number that can be subtracted from the remainder.
4. Note this number and subtract it from the remainder.
5. Continue this process until the remainder equals 0.

All noted diagnostic code numbers indicate occurring faults. Refer to (Table-2.2) for cause and corrective action information.

Table-2.5 Application Error Diagnostic Codes.

Diagnostic Code	Application Error
0	Normal
1	Reserved for future use
2	Reserved for future use
4	Reserved for future use
8	Reserved for future use
16	Current Heat SP is greater than current Cool SP
32	Reserved for future use
64	Reserved for future use
128	Reserved for future use

In the example below (Figure-5.7), the Application Error frame indicates normal operation.

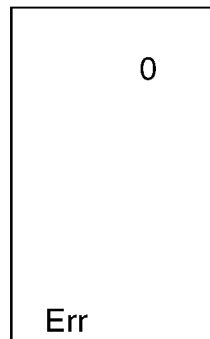


Figure-5.7 Application Error Frame.

Software Revision

The Software Revision frame indicates the version of the software used by the connected MicroNet Heat Pump/Fan Coil Controller. In the example below (Figure-5.8), the software version is 1.0.

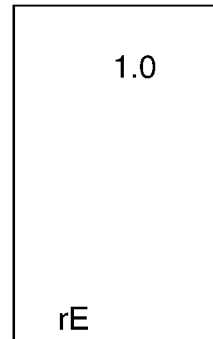


Figure-5.8 Software Revision Frame.

Determining Source Priority

The following tables illustrate the priority of values when the actual control values can be obtained from a number of different sources. These attributes include occupied setpoint, unoccupied setpoint, room temperature, occupied mode, and changeover value for fan coil operation.

Occupied Setpoint Source Priority Tables

Cool Setpoint

The following table (Table-2.6) lists order of priority for control source values which are capable of determining Cool Setpoint (454). The table shows which cool setpoint will take priority in situations where the cool setpoint is available from a number of different sources. The Cool SP Source (1A4) indicates the source of the value used as the controlling cool setpoint.

Table-2.6 Source Priority for Occupied Cool Setpoint.

Priority	Cool SP Source (1A4)	Cool Setpoint (454)
Highest	CI	Overridden Value
	BAS	AIN1 from MN Block
	Shared	From another controller @ HT/CL SP Addr (310)
Lowest	Local	From local Cool SP (414)

Heat Setpoint

The following table (Table-2.7) lists the order of priority for control source values which are capable of determining Heat Setpoint (455). The table shows which heat setpoint will take priority in situations where the heat setpoint is available from a number of different sources. The Heat SP Source (1A5) indicates the source of the value used as the controlling heat setpoint.

Table-2.7 Source Priority for Occupied Heat Setpoint.

Priority	Heat SP Source (1A5)	Heat Setpoint (455)
Highest	CI	Overridden Value
	BAS	AIN2 from MN Block
	Shared	From another controller @ HT/CL SP Addr (310)
	Temporary	Heat SP = Cool SP - SP Offset If HT SP Tracking (063) is enabled with SP Offset @ Setpoint Offset (524)
Lowest	Local	From local Heat SP (415)

Unoccupied Setpoint Source Priority Table

The following table (Table-2.8) lists the order of priority for control source values which are capable of determining Unocc Cool SP (456) and Unocc Heat SP (457). The table shows which setpoint source will take priority in situations where the setpoint is available from a number of different sources.

Table-2.8 Unoccupied Cool Setpoint Priority.

Priority	Unocc Cool SP (456)	Unocc Heat SP(457)
Highest	Overridden Value	Overridden Value
	AIN3 from MN Block	AIN4 from MN Block
Lowest	Local Unocc Cool SP (434)	Local Unocc Ht SP (435)

Room Temperature Source Priority Table

The following table (Table-2.8) lists the order of priority for control source values which are capable of determining Rm Temp Source (454). The table shows which room temperature source will take priority in situations where the room temperature source is available from a number of different sources. The Rm Temp Source (1C6) indicates the source of the value used as the controlling Room temperature source.

Table-2.9 Room Temperature Priority.

Priority	Rm Temp Source (1C6)	Cool Setpoint (454)
Highest	CI	Overridden Value
	Shared	From another controller @ Room Temp Addr (316)

Table-2.9 Room Temperature Priority.

Priority	Rm Temp Source (1C6)	Cool Setpoint (454)
Lowest	Local	From Sensor 1 "Room Temp" (406)

Troubleshooting

The following tables (Table-2.10 and Table-2.11) list problems that may occur while operating the MicroNet Heat Pump/Fan Coil Controller and the CI. They explain possible causes and recommend corrective measures.

Table-2.10 CI Error Messages.

Error Number	Message	Cause	Corrective Action
-100	String file size incorrect.	The number of strings contained in the MNETCI.STR file has been modified or the MNETCI.STR file is corrupt. Error occurs at start-up when the number of strings in the MNETCI.STR file does not match the number defined in the file.	Reload string file from distribution disks.
-101	Unable to open input file.	The CI could not locate or open a file for input. Error occurs if file is hidden, read-only, or corrupt.	<ul style="list-style-type: none"> • Verify that the file exists in the path specified. • Check the file attributes in DOS to verify that it is not read-only or hidden. • Use the DOS ATTRIB command to change these attributes.
-102	Path too long, cannot change to new directory.	The CI can only support a 200 character path. If files are located deep in a file path, the CI will not be able to access them.	Use DOS commands to move the files to a directory higher in the directory tree.
-103	Filename invalid.	Filename entered is not a valid DOS filename. Error occurs if filename contains invalid characters, is too long, etc.	Enter a valid filename. Valid characters include letters A through Z, numbers 0 through 9, hyphen, underscore, and parentheses. Refer to DOS manual for proper DOS file name format.
-104	Unable to open output file.	The CI could not open output file. Error could be caused by a bad, write-protected, or nonexistent disk. If replacing an existing file, this error could occur if the file is read-only or corrupt.	<ul style="list-style-type: none"> • Verify that the specified disk is present. • Change to a new disk. • If replacing file, verify that the filename is valid and that the file is not read-only or corrupt.
-105	Invalid node address.	Node address entered is not valid. Error occurs if the address contains invalid characters, is out of range, etc.	Enter a valid address. Refer to Chapter 4, Connect for node address information.

Chapter 5

Table-2.10 CI Error Messages.

Error Number	Message	Cause	Corrective Action
-106	No devices found.	No devices exist at the specified address. Error occurs when the CI does not receive a response from the Integrator. This could be caused by any number of communication problems or there may not be a device at the address requested.	<ul style="list-style-type: none"> • If a specific error message is generated before getting this message, refer to the corrective action for that error code. • If no other error message is generated, check to make sure there are controllers under requested Integrator.
-107	Insufficient memory on target disk.	Error occurs when attempting to create a file on a disk that contains zero or not enough memory.	Remove unneeded files from the disk or choose a new disk.
-108	See help menu for more information.	Error occurs when attempting to access help (F1) while inside the critical error handler.	Resolve error generated by error handler, then use Help menu to get information on critical error.
-109	No valid attributes in store.	Error occurs if selected data store only string attributes.	Select a new data store.
-110	Duplicate user name.	Error when attempting to enter a user name that already exists in the Access data store.	Enter a different user name.
-500	Unable to open help index file.	The CI could not locate the MNETCI.IDX file in the executable directory.	Reload the MNETCI. IDX file from distribution disks into the directory containing the MNETCI. EXE file.
-501	Unable to open help file.	The help file (MNETCI.HLP) is not in the executable directory or is corrupt.	Reload the MNETCI.HLP file from distribution disks into the directory containing the MNETCI.EXE file.
-502	Help version is incompatible with the current program.	A new version of the help file has been issued.	Upgrade to the latest help file version.
-503	Error in help index.	The CI could not read help index file because it has been changed or corrupted.	Reload the MNETCI.HLP file from distribution disks into directory containing MNETCI.EXE.
-504	Error in help file	The CI could not read help file because it has been changed or corrupted.	Reload the MNETCI.HLP file from distribution disks into directory containing MNETCI.EXE file.
-505	Help menus exceed maximum number of levels.	The help routine attempts to open too many windows at one time. The current limit is ten. Error occurs if the help files have been modified.	Rework help to reduce number of menu levels.
-506	Help entry was not found in the help file.	The CI requested a help index that does not appear in the help file. Error occurs if the help files have been modified.	Locate missing help index and add to help file.
-507	Unable to load template.	The CI is unable to upload template file from the controller because a communication error occurred during the template upload request.	If a specific error message is generated before getting this message, refer to the corrective action for that error code.

Table-2.10 CI Error Messages.

Error Number	Message	Cause	Corrective Action
-508	Unable to open template file.	The CI cannot open the template file because it is missing or corrupt.	<ul style="list-style-type: none"> Exit to DOS and delete the template (.TEM) file. Reconnect to the controller to upload a new template file. If the error still exists, attempt to connect to another controller of the same type to upload a new template file.
-510	Response was not received, but bus activity was detected.	Message successfully sent, but a response was not received, however some characters (either garbled response or an unsolicited response was received).	<p>Any number of communication problems could cause this error.</p> <ul style="list-style-type: none"> Retry communications. If error still occurs, check for faulty connections or cables. Check for incorrect device addresses. Verify that the controllers are operational.
-511	Response was not received.	Message successfully sent, but a response was not received. No characters were received.	<p>Any number of communication problems could cause this error.</p> <ul style="list-style-type: none"> Retry communications. If error still occurs, check for faulty connections or cables. Check for incorrect device addresses. Verify that the controllers are operational.
-512	Bad response received.	The response received by the CI does not match the response expected. Error occurs if duplicate device addresses exist on the U-Bus.	Verify that there is only one controller with the address number the same as the one connected to the CI.
-513	Unable to transmit request.	The CI was unable to transmit request. Error occurs if the MicroNet Controller Interface Module (CIM) is not connected to the CI, if it is not functioning correctly, or if the CI is not configured for the correct communication port.	<ul style="list-style-type: none"> Check connections between the PC, CIM, and the MicroNet Sensor. Verify that the correct communication port is selected in the Configuration sub-menu.
-514	Unable to edit this attribute.	The attribute type is not supported by the CI. Error occurs if a MicroNet controller uses an attribute type that is unknown to the CI.	Upgrade to the latest CI version.
-515	Disk is write protected. Remove write protection or switch disks.	The CI is attempting to access write protected floppy disks. Error occurs when attempting to access floppy drives.	Remove the write protection from the disk in question or put a new disk in the current drive.
-516	Disk not found.	The CI is attempting to access a floppy drive that does not contain a disk.	Change to a valid drive or place a disk in the floppy drive.

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Table-2.10 CI Error Messages.

Error Number	Message	Cause	Corrective Action
-517	Disk not readable.	The CI is attempting to access a bad floppy disk. The disk may be the wrong density (high density disk in low density drive) or wrong format (Mac disk in IBM drive).	Use another disk or reformat the disk.
-518	DOS device error.	Generic error message generated when attempting to read disk. Something has caused read/write of disk to fail, possibly a lost cluster or bad sectors. Usually indicates a serious problem with the drive in question.	Use DOS tools (chkdsk, for example) to locate and repair the problem.
-519	Help index file is not up to date.	Changes were made to MNETCI.HLP without updating MNETCI.IDX file.	Do not attempt to modify the help file. Reload MNETCI.HLP and MNETCI.IDX from the distribution disks into directory containing MNETCI.EXE file.
-521	Unable to upload data.	MicroNet CI unable to upload required information from the controller. Error could be caused by any number of communication problems.	Any number of communication problems could cause this error. <ul style="list-style-type: none"> • Retry communications. • If error still occurs, check for faulty connections or cables. • Check for incorrect device addresses. • Verify that the controllers are operational.
-522	Store not found in template.	The template file has been modified or corrupted. Error also occurs when attempting to use Device - Diagnostics or Device - Status while connected to a MicroNet Integrator. This is correct result since the Integrator does not contain the store required to perform these features.	<ul style="list-style-type: none"> • Exit to DOS and delete the template (.TEM) file. Reconnect to the controller to upload a new template file. • If the error still exists, attempt to connect to another controller of the same type to upload a new template file. • If connected to a MicroNet Integrator, acknowledge error.
-523	Invalid access information.	User name and/or password could not be found in the CI access information. User name and/or password were incorrectly entered, user name has been removed, or the CI configuration file is corrupt.	<ul style="list-style-type: none"> • Verify that the correct user name and password. • Consult your system administrator for proper access information.
-524	Unable to read data from file.	The CI is unable to read the setup data from the Trend file.	Delete the .TRD file. Reselect Trend to create a new default file.
-525	Unable to write data to device.	The CI is unable to save a store to the connected device during Device-Edit.	<ul style="list-style-type: none"> • Check for faulty connections or cables. • Check for incorrect addresses. • Verify that the controllers are operational.

Table-2.10 CI Error Messages.

Error Number	Message	Cause	Corrective Action
-526	Unable to create report.	Occurs when attempting to log an application file to a text file. Can be caused by a corrupt template or application file.	<ul style="list-style-type: none"> Exit to DOS and delete the template (.TEM) file. Reconnect to the controller to upload a new template file. If the error still exists, attempt to connect to another controller of the same type to upload a new template file.
-527	Framing error occurred during communication.	The CIM was disconnected from the PC or MicroNet Sensor during communication.	<ul style="list-style-type: none"> Check the connection between the PC and CIM and between the CIM and Sensor. Read the READ.ME file for Gateway PC considerations.
-528	Parity error occurred during communication.	The CIM was disconnected from the PC or MicroNet Sensor during communication.	Check the connection between the PC and CIM and between the CIM and Sensor.
-529	Overrun error occurred during communication.	Characters enter the PC buffer too quickly and are overwritten. Occurs when a mouse or other serial device is connected to the selected port.	<ul style="list-style-type: none"> Check the communication port and baud rate selection. Verify that the CIM is correctly connected to the port.
-530	No current status stores in device.	There are no stores in the device to monitor on the current status screen. Can only occur in controller that communicates with a MicroNet Integrator without having Current Status stores.	Verify that the selected device type is supposed to have a current status display. If so, delete template file for that device and retry Current Status.
-531	No valid attribute IDs entered.	No attribute ID number were entered in the Trend Setup window.	<ul style="list-style-type: none"> Enter at least one attribute ID and attempt the trend again. Refer to the Trending section in Chapter 4 for Trend information and refer to the specific controller reference manual for attribute information and descriptions.
-532	File revision incompatible with device.	The file selected to download does not match the type or revision level of the controller.	<ul style="list-style-type: none"> Verify that selected file is the correct file. Verify that the file matches the controller type. Upload a new template file from the controller and edit the file before downloading again.
-533	Source and destination file must be different.	The file selected and the file entered in the Enter DOS Filename window must be different.	Choose a different filename for the destination file.

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Table-2.10 CI Error Messages.

Error Number	Message	Cause	Corrective Action
-534	Device contains no uploadable stores	The device does not contain any Read-Write stores.	<ul style="list-style-type: none"> • If the device is known to contain Read-Write stores, delete the device template (.TEM) file. • If the error still exists, contact your Schneider Electric representative.
-900	Unable to allocate memory.	The MicroNet CI has run out of memory and was forced to abort.	Remove any Terminate & Stay Resident (TSR) programs in order to free memory.
- 901	Unable to load string file MNETCI.STR.	The MicroNet CI was unable to correctly load string file. This could occur if file was deleted, moved, corrupted, or hidden.	Delete the MNETCI.STR file from the executable directory, if necessary, and reload from the distribution disks.

Table-2.11 Device Error Messages.

Error Number	Message	Cause	Corrective Action
1	Store does not exist.	The CI attempted to access a store/ attribute in the controller that does not exist. Error occurs when the template file is corrupt.	<ul style="list-style-type: none"> • Exit to DOS and delete the template (.TEM) file. Reconnect to the controller to upload a new template file. • If the error still exists, attempt to connect to another controller of the same type to upload a new template file. • Contact your local Schneider Electric representative.
2	Attribute does not exist.	The CI attempted to access a store/ attribute that does not exist in the controller or the template file has been corrupted.	<ul style="list-style-type: none"> • Check the attribute's ID number and verify that it was correctly entered in the data store. • If error still exists, exit to DOS and delete the template (.TEM) file. Reconnect to the controller to upload a new template file. • Contact your local Schneider Electric representative.
3	No configuration for requested store.	The CI attempted to upload configuration for non-valid data store. Error occurs during a template upload and indicates that the uploaded data was corrupted during template creation.	<ul style="list-style-type: none"> • Exit to DOS and delete the template (.TEM) file. Reconnect to the controller to upload a new template file. • If the error still exists, attempt to connect to another controller of the same type to upload a new template file. • Contact your local Schneider Electric representative.

Table-2.11 Device Error Messages.

Error Number	Message	Cause	Corrective Action
4	EEPROM busy writing.	The CI attempted to write to the device at the same time another Integrator or CI was writing to it.	<ul style="list-style-type: none"> • Retry communications. • Make sure no one else is writing to the device and retry communications. • If error still exists, reset the device by interrupting the power to the device or by toggling one of the DIP switches on the device's address switch.
5	EEPROM checksum error.	Either a data store or the device EEPROM is corrupt.	<ul style="list-style-type: none"> • Reprogram the controller by downloading a new application file. • If error still exists, replace the controller.
6	Message type not supported.	The CI or other interface device attempted to communicate with a message type not supported by the device.	Interface not compatible with the device type. Contact your local Schneider Electric representative.
7	Not a writable data store.	The CI attempted to write to a non-writable data store. Indicates a problem with the template for that device type.	<ul style="list-style-type: none"> • Exit to DOS and delete the template (.TEM) file. Reconnect to the controller to upload a new template file. • If the error still exists, attempt to connect to another controller of the same type to upload a new template file. • Contact your local Schneider Electric representative.
8	Not an overridable data store.	The CI attempted to override to a non-overridable data store. Indicates a problem with the template for that device type	<ul style="list-style-type: none"> • Exit to DOS and delete the template (.TEM) file. Reconnect to the controller to upload a new template file. • If the error still exists, attempt to connect to another controller of the same type to upload a new template file. • Contact your local Schneider Electric representative.
9	Insufficient RAM.	The message is too large for the device or the previous global message is still being processed.	<ul style="list-style-type: none"> • Retry communications. • If error still exists, replace the controller.
10	Invalid address.	The address entered is not within the Integrator address range.	<ul style="list-style-type: none"> • Review the Device Node List for active Integrator addresses. • Check the job drawings for the assigned Integrator address. • Check the specific MicroNet Integrator's General Instructions for a list of valid Integrator addresses and verify that the Integrator is set to a proper address.

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Table-2.11 Device Error Messages.

Error Number	Message	Cause	Corrective Action
11	Comm time-out from remote device.	The controller does not exist, is defective, or there is a transient communication failure.	<ul style="list-style-type: none"> • Retry communications. • Verify the controller exists and is functioning at the target address.
12	Transmit failure on U-Bus.	The controller(s), integrator, or the wiring is defective.	<ul style="list-style-type: none"> • Retry communications. • Diagnose and repair the device(s) and/or the wiring.
13	Receive failure on U-Bus.	A bad CRC was received on the message. There is a transient communications failure or the controller is defective.	<ul style="list-style-type: none"> • Retry communications. • Replace the controller.
14	Invalid device address.	All the address DIP switches are in the Off position.	Check the job drawings for the specified address and set the address DIP switches to the proper address.
15	Not a readable data store.	The data store is not available for display. Occurs in the Time & Date screen if there is no clock in the device.	<ul style="list-style-type: none"> • Select a different data store. • If viewing the Time & Date in a controller that has no clock, this is a normal response and there is no corrective action.
16	No response from remote integrator.	The target Integrator does not exist, is defective, or there is a transient communication failure.	<ul style="list-style-type: none"> • Retry communications. • Verify the target integrator exists and is functioning at the specified address.
17	No response from BAS parent controller.	The parent controller is busy or defective.	<ul style="list-style-type: none"> • Retry communications. • Verify that all remote CIs and other interface devices are not using the parent controller's communication trunk and retry communication.
18	Not a readable attribute.	The attribute is not available for display.	Select a different attribute.
19	Overrides inhibited by BAS.	The Clear Overrides attribute is set to On.	The Clear Override attribute must be set to Off before overrides can be implemented.
20	No response from remote BAS parent controller.	The remote parent controller doesn't exist or the parent controller communication network is defective.	<ul style="list-style-type: none"> • Retry communications. • Verify that the parent controller network and device are operating and retry communications.

Resetting the Controller

If communications between the MicroNet Heat Pump/Fan Coil Controller and the CI is not possible, you can reset the MicroNet Heat Pump/Fan Coil Controller by toggling one of the controller's address switches. Changing the switch address causes a cold reset.

When you select Reset, the CI displays an "Enter Node Address" window if you are not already connected to a controller. To connect to and reset a local controller, enter that controller's device number. To connect to and reset a non-local controller, enter the controller's complete node address, Integrator number: Device number. For additional information, refer to the "Using Connect" section in Chapter 4.

The CI's Reset function resets the MicroNet Heat Pump/Fan Coil Controller to its start-up state. The MicroNet Heat Pump/Fan Coil Controller is restarted based on what is called a "cold reset." With cold reset:

- All attribute output values are cleared and recalculated.
- All accumulated data is lost.
- All overrides are cleared.
- Time and date are reset to the default values.
- All digital outputs are set to Off.

After the start-up delay:

- Control functions, such as delay times, are in effect.
- Data accumulation restarts.

To reset the MicroNet Heat Pump/Fan Coil Controller from the CI:

1. Start from the Device sub-menu.
2. Select `Reset` and press `<Enter>`.

The CI displays a query window asking you to confirm that this is the MicroNet Heat Pump/Fan Coil Controller to reset (Figure-5.9).

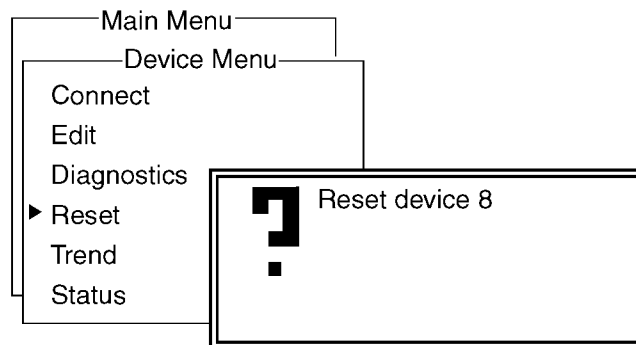


Figure-5.9 Reset Query Window.

3. Type `Y` to reset the device listed in the query window or type `N` to cancel the reset command.

If you type `Y` to reset, the CI briefly displays the following note window (Figure-5.10) before returning to the Device Sub-menu.

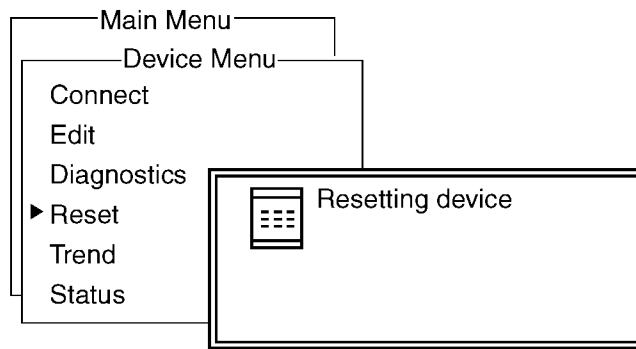
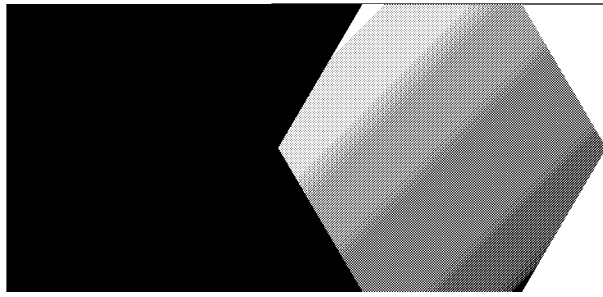


Figure-5.10 Resetting Device Note Window.



Chapter 6

BAS Interface

Introduction

This chapter provides information on interfacing the MicroNet Heat Pump/Fan Coil Controller with the Building Automation Systems (BAS).

NETWORK 8000

MicroNet Heat Pump/Fan Coil Controllers can be integrated into the NETWORK 8000 BAS to share data and provide the controllers with centralized control functions such as time scheduling, and occupied/unoccupied changeover. The MicroNet Heat Pump/Fan Coil Controller is integrated into the NETWORK 8000 BAS through the MN-ASDI MicroNet Integrator and the MicroNet MN block in the ASD GCM (Figure-6.1).

The MN-ASDI MicroNet Integrator connects to the ASD Bus. It acts as the communication link between the NETWORK 8000 BAS and the MicroNet Heat Pump/Fan Coil Controllers by routing and exchanging information between its parent ASD GCM and the MicroNet Heat Pump/Fan Coil Controllers on its U-Bus.

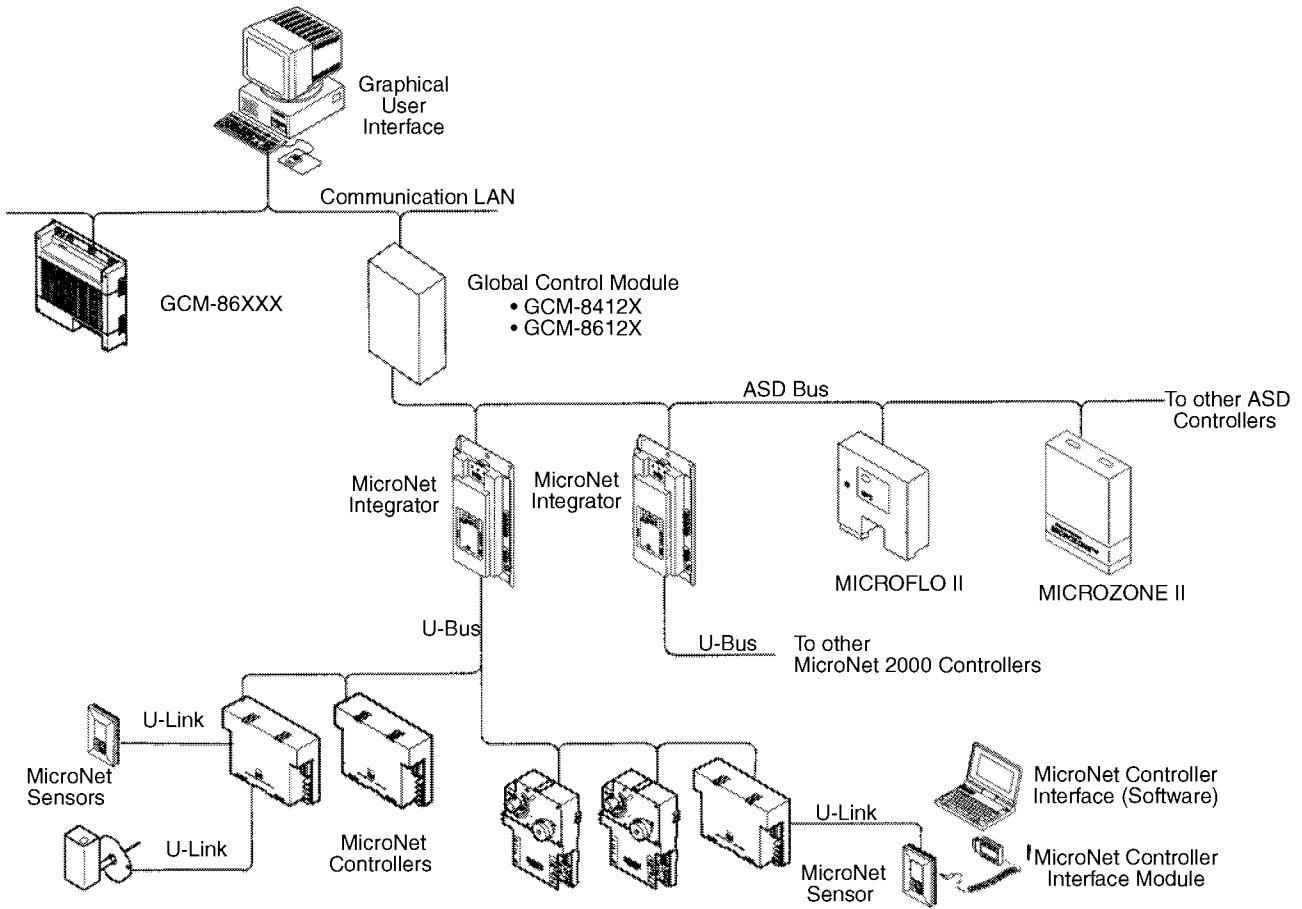


Figure-6.1 NETWORK 8000 System Architecture.

The MicroNet Integrator communicates with the MicroNet Heat Pump/Fan Coil Controllers on its U-Bus to transfer MicroNet data to them and communicates with its parent ASD GCM to transfer BAS data to it (Figure-6.2).

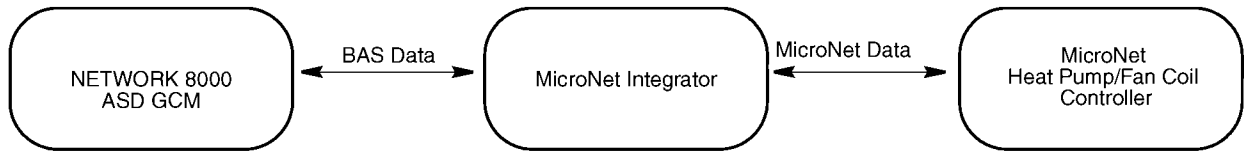


Figure-6.2 Overview of MicroNet Heat Pump/Fan Coil Controller and NETWORK 8000 Information Exchange.

In addition to the MicroNet Integrator, the MicroNet MN block in the ASD GCM is an essential element in the information exchange between the MicroNet Heat Pump/Fan Coil Controllers and the NETWORK 8000 BAS. The MN block sends values to, and receives values from a specific MicroNet Controller. The MN block can also send global values to multiple MicroNet Controllers on an Integrator's U-Bus.

Communications

Information is communicated between the NETWORK 8000 BAS and the MicroNet Heat Pump/Fan Coil Controllers as described below and shown in the following illustration (Figure-6.3).

- A. The MicroNet Integrator receives input values from the MicroNet MN block.
- B. If the MicroNet block is communicating to a specific MicroNet Heat Pump/Fan Coil Controller, the MicroNet Integrator sends the block's input values to the appropriate controller. These values appear in the controller's Control Values and BAS DI Control data stores.
- C. If the MicroNet block is communicating global values, the MicroNet Integrator holds these values, sharing them with MicroNet Controllers that request them.
- D. Periodically and when a change occurs, each MicroNet Heat Pump/Fan Coil Controller updates the MicroNet Integrator with values from its Point Values, Control Values, and Control Status data stores.
- E. The MicroNet Integrator sends the values from the controller's Point Values, Control Values, and Control Status data stores to the appropriate MN block in the GCM. The values are sent at the block's request and appear as outputs of the block.

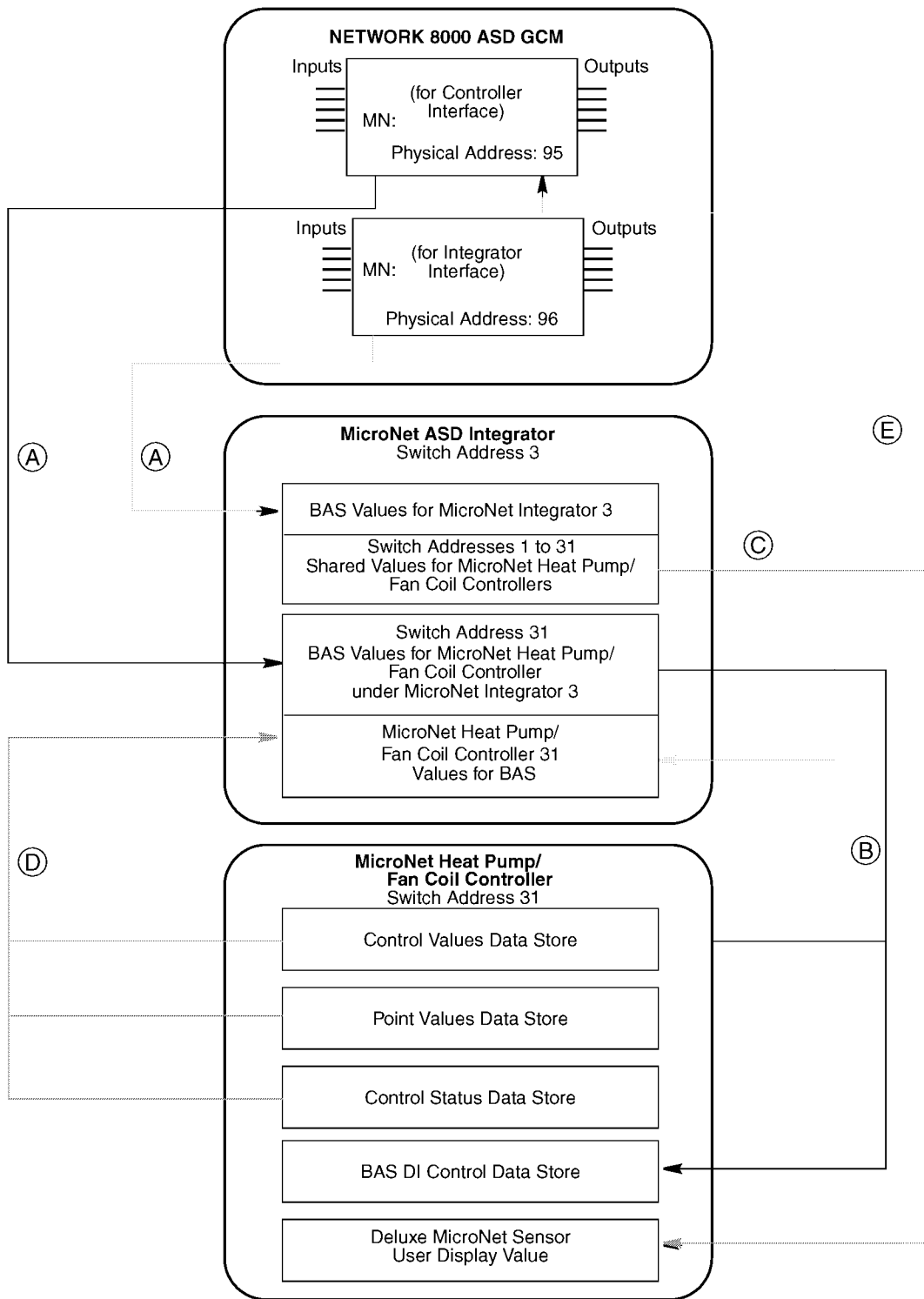


Figure-6.3 Information Exchange.

Successful communication and information exchange between the MicroNet Heat Pump/Fan Coil Controllers and the NETWORK 8000 BAS is dependent upon proper setup of the MN block in the parent ASD GCM. Proper block setup includes:

- The block's assigned address which reflects the proper controller.
- Input values assigned to active values or pointers.
- Block enabled and update time assigned.
- Block EMS Control (EMSCO) enabled.

Refer to The MicroNet Block section in this chapter and the MN block description in the **GCM/LCM Programmer's Manual, F-23120**, for block setup information.

Communication Interruptions

Communication interruptions between the GCM, the MicroNet Integrator and the MicroNet Heat Pump/Fan Coil Controller are handled in the following manner.

If the MicroNet Integrator does not receive an update from the MicroNet Heat Pump/Fan Coil Controller for 120 seconds:

- The MicroNet Integrator stops responding to the GCM when it requests that controller's values.
- The outputs in the non-communicating controller's MN block change to ABNORMAL LOST COMM and a LEAVES BUS exception is generated at the GCM.

If the MicroNet Integrator was disabled or disconnected from the GCM:

- The outputs for the blocks associated with all MicroNet Heat Pump/Fan Coil Controllers on the Integrator's U-Bus change to ABNORMAL LOST COMM.
- LEAVES BUS exceptions are generated at the GCM for all controllers on the Integrator's U-Bus.

If the MicroNet Integrator is receiving communication from the GCM, but has not received valid communication for a specific MicroNet Heat Pump/Fan Coil Controller for 255 seconds (for example, the MicroNet block was deleted, the ADDR parameter was changed, or the CENAB input set to Off):

- The MicroNet Integrator sends NOT ACTIVE values to the appropriate MicroNet Heat Pump/Fan Coil Controller.
- The NOT ACTIVE digital values are reflected in the controller's BAS DI Control data store. Depending upon the application, the controller reverts to using setpoint values from its Shared Values or Standalone SP data stores.
- A LEAVES BUS exception is not generated at the GCM.

If the MicroNet Integrator does not receive any communication from the GCM for 120 seconds:

- The MicroNet Integrator sends NOT ACTIVE values to all MicroNet Heat Pump/Fan Coil Controllers on its U-Bus.
- The NOT ACTIVE digital values are reflected in the controllers' BAS DI Control data stores. The controllers revert to using setpoint values from their Standalone SP data stores.

- LEAVES BUS exceptions would be generated if the MicroNet Integrator was disconnected from the GCM, but would not be generated if the GCM lost power or was turned Off.

The MicroNet Generic (MN) Block

The MN block provides the communication interface to any MicroNet Controller, including the MicroNet Heat Pump/Fan Coil Controller.

Using the MN Block

Intended to be generic, the MN block uses universal input and output names. It also requires additional setup to designate the correct number of inputs and outputs and assign the proper engineering units to the analog outputs.

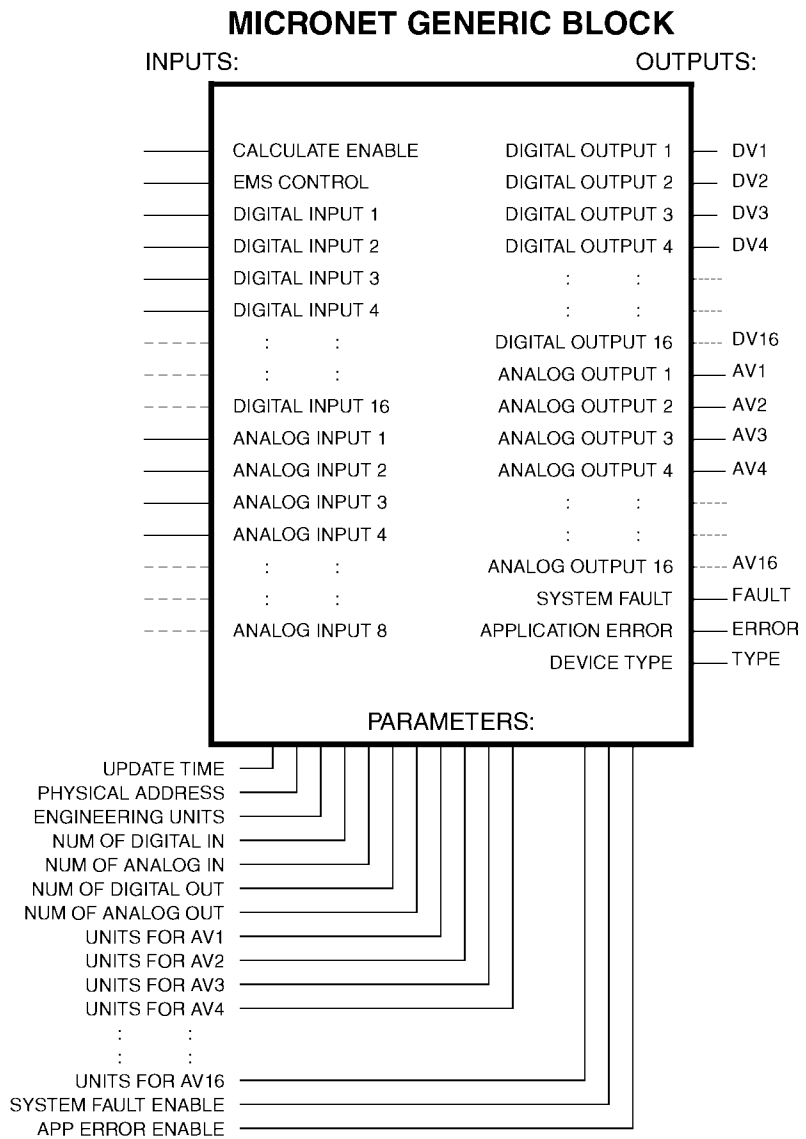


Figure-6.4MN Block.

MN Block Parameters

MN Block Heat Pump/Fan Coil Mode Parameters

When the MN block is used with a MicroNet Heat Pump/Fan Coil Controller in the satellite mode, the MN block parameters should be configured as shown in the “Heat Pump/Fan Coil Setup Value” column (Table-6.1).

Table-6.1 MN Block Parameters for Heat Pump/Fan Coil Mode.

Brave.	Name	Description	Heat Pump/ Fan Coil Setup Value
UPTIM	Update Time	Specifies the frequency at which the MN block executes its algorithm. Time required to transfer data not included. As a general rule, communication time = 2 devices per second. $\frac{\text{Number of devices on network}}{2} = UPTIM$	15 seconds
ADDR	Physical Address	Physical Address of the interfacing MicroNet Heat Pump/Fan Coil Controller.	As required
UNITS	Engineering Units	Specifies when the MicroNet Integrator converts temperature type attributes. Applies to all temperature values sent or received from the MicroNet Integrator.	Deg F or Deg C
NUMDI	Num of Digital In	Specifies the number of digital values sent to the MicroNet Heat Pump/Fan Coil Controller.	5
NUMAI	Num of Analog In	Specifies the number of analog values sent to the MicroNet Heat Pump/Fan Coil Controller.	4
NUMDO	Num of Digital Out	Specifies the number of digital values received from the MicroNet Heat Pump/Fan Coil Controller and displayed as digital outputs of the MN block.	5
NUMAO	Num of Analog Out	Specifies the number of analog values received from the MicroNet Heat Pump/Fan Coil Controller and displayed as analog outputs of the MN block.	10
UAV1	Units for AV1	Assigns the engineering units associated with AV 1, Room Temp.	Deg F or Deg C
UAV2	Units for AV2	Assigns the engineering units associated with AV2, Temp 2.	Deg F or Deg C
UAV3	Units for AV3	Assigns the engineering units associated with AV3, Cooling Output	%
UAV4	Units for AV4	Assigns the engineering units associated with AV4, Heating Output.	%
UAV5	Units for AV5	Assigns the engineering units associated with AV5, Cool SP	Deg F or Deg C
UAV6	Units for AV6	Assigns the engineering units associated with AV6, Heat SP.	Deg F or Deg C
UAV7	Units for AV7	Assigns the engineering units associated with AV7, Unocc Cool SP.	Deg F or Deg C
UAV8	Units for AV8	Assigns the engineering units associated with AV8, Unocc Heat SP.	Deg F or Deg C
UAV9	Units for AV9	Assigns the engineering units associated with AV9, Override Timer.	min
UAV10	Units for AV10	Assigns the engineering units associated with AV10, Control Status.	1

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Table-6.1 MN Block Parameters for Heat Pump/Fan Coil Mode.

Brave.	Name	Description	Heat Pump/ Fan Coil Setup Value
FAENA	System Fault Enable	<p>Establishes which system fault exceptions generated from the MicroNet Heat Pump/Fan Coil Controller are enabled and sent to the exception log in the GCM. Selections include:</p> <ul style="list-style-type: none"> • 0 Enable all exceptions. • 1 Mask Controller EEPROM Memory Checksum exception. • 16 Mask Room temperature is ABNORMAL. • 32 Mask missing changeover. • 255 Mask all exceptions. <p>An exception that is masked is not sent to any port or exception log in the GCM, but the FAULT output still displays the diagnostic value. Exception masks may be combined to mask more than one type. For example, 17 would mask the EEPROM CHECKSUM and ABNORMAL exceptions since $1 + 16 = 17$. All others are enabled and, if they occur, are sent to the exception log in the GCM.</p>	0
APENA	App Error Enable	<p>Establishes which application error exceptions generated from the MicroNet Heat Pump/Fan Coil Controller are enabled and sent to the exception log in the GCM. Selections include:</p> <ul style="list-style-type: none"> • 0 Enable all exceptions. • 16 Mask Heat SP is greater than Cool SP. <p>An exception that is masked is not sent to any port or exception log in the GCM, but the ERROR output still displays the diagnostic value. Exception masks may be combined to mask more than one mask as in FAENA above. All others are enabled and, if they occur, are sent to the exception log in the GCM.</p>	0

How the MN Block Works

The EMS Control input (EMSCO) determines if the MN block sends its values to the MicroNet Integrator. If the EMSCO input is On:

- The MN block's inputs (except CENAB and EMSCO) are sent to the MicroNet Integrator.
- The MicroNet Integrator sends the values to the appropriate MicroNet Heat Pump/Fan Coil Controller. These values are sent to specific data stores and attribute locations in the controller. The block's digital inputs are sent to the attributes in the controller's BAS DI Control data store. The blocks analog inputs are sent to the attributes in the controller's Control Values data store.
- At the MN block's request, the MicroNet Integrator sends the values from the controller's Point Values, Control Values, and Control Status data stores to the appropriate MN block. These values appear as outputs of the block.

If the EMSCO is Off:

- The MN block inputs are not sent to the MicroNet Integrator and the MicroNet Heat Pump/Fan Coil Controller uses shared values from the MicroNet Integrator or its own standalone values.
- The MicroNet Integrator continues to send controller values to the MN block when requested by the block.

Table-2.2MN Block Digital Inputs and Corresponding BAS DI Control Data Store

Attribute.

MN Block Digital Input Abbreviation (Description)	BAS DI Control Data Store Attribute (ID#)
DIN1 (Digital Input 1)	Occupied Mode [†] (260)
DIN2 (Digital Input 2)	Changeover [‡] (277)
DIN3 (Digital Input 3)	Lock Out Cool [‡] . (268)
DIN4 (Digital Input 4)	Lock Out Heat [‡] . (267)
DIN5 (Digital Input 5)	Clear Overrides (26B)

†. Can be incorporated with the Deluxe MicroNet Sensor Override Pushbutton function.

‡. Not used in Satellite Mode.

Table-2.3MN Block Analog Inputs and Corresponding Controller Values Data

Stores.

MN Block Analog Input Abbreviation (Description)	Control Values Data Store Attribute (ID#)
AIN1 (Analog Input 1)	BAS Value to Cool SP (454)
AIN2 (Analog Input 2)	BAS Value to Heat SP (455)
AIN3 (Analog Input 3)	BAS Value to Unocc Cool SP (456)
AIN4 (Analog Input 4]	BAS Value to Unocc Heat SP (457)

tribute IDs.

Table-2.4MN Block Outputs and Corresponding Controller Data Stores and At-

MN Block Output Abbreviation (Description)	Data Store	Attribute (ID#)
DV1 (Digital Output 1)	Point Values	Occupied Mode (20D)
DV2 (Digital Output 2)	Point Values	DO1 Status (211)
DV3 (Digital Output 3)	Point Values	DO2 Status (212)
DV4 (Digital Output 4)	Point Values	DO3 Status (213)
DV5 (Digital Output 5)	Point Values	DI1 Status (221)
AV1 (Analog Output 1)	Point Values	Room Temp (406)
AV2 (Analog Output 2)	Point Values	Temp 2 (402)
AV3 (Analog Output 3)	Point Values	Cooling Output (704)
AV4 (Analog Output 5)	Point Values	Heating Output (705)
AV5 (Analog Output 5)	Control Values	Cool Setpoint (454)
AV6 (Analog Output 6)	Control Values	Heat Setpoint (455)
AV7 (Analog Output 7)	Control Values	Unocc Cool SP (456)
AV8 (Analog Output 8)	Control Values	Unocc Heat SP (457)
AV9 (Analog Output 9)	Control Status	Override Timer (821)
AV10 (Analog Output 10)	Control Status	Control Status (301)
FAULT (System Fault)	Control Status	System Faults (303)
ERROR (Application Error)	Control Status	Appl Errors (309)
TYPE (Device Type)	Not Applicable	Device Type (883) 5 = HPFC Controller

MN Block Satellite Mode Parameters

When used with the MicroNet Heat Pump/Fan Coil Controller in satellite mode, the MN block parameters should be configured as shown in the "Setup Value" column (Table-2.5).

Table-2.5 MN Block Parameters for Satellite Mode.

Brave.	Name	Description	Satellite Setup Value
UPTIM	Update Time	Specifies the frequency at which the MN block executes its algorithm. Time required to transfer data not included. As a general rule, communication time = 2 devices per second. $\frac{\text{Number of devices on network}}{2} = UPTIM$	15 sec
ADDR	Physical Address	Physical Address of the interfacing MicroNet Heat Pump/Fan Coil Controller.	As required
UNITS	Engineering Units	Specifies when the MicroNet Integrator converts temperature type attributes. Applies to all temperature values sent or received from the MicroNet Integrator.	Deg F or Deg C
NUMDI	Num of Digital In	Specifies the number of digital values sent to the MicroNet Heat Pump/Fan Coil Controller.	8
NUMAI	Num of Analog In	Specifies the number of analog values sent to the MicroNet Heat Pump/Fan Coil Controller.	0
NUMDO	Num of Digital Out	Specifies the number of digital values received from the MicroNet Heat Pump/Fan Coil Controller and displayed as digital outputs of the MN block.	5
NUMAO	Num of Analog Out	Specifies the number of analog values received from the MicroNet Heat Pump/Fan Coil Controller and displayed as analog outputs of the MN block.	2
UAV1	Units for AV1	Assigns the engineering units associated with AV 1, Room Temp.	Deg F or Dec C
UAV2	Units for AV2	Assigns the engineering units associated with AV2, Temp 2.	Deg F or Deg C

Brave.	Name	Description	Satellite Setup Value
FAENA	System Fault Enable	<p>Establishes which system fault exceptions generated from the MicroNet Heat Pump/Fan Coil Controller are enabled and sent to the exception log in the GCM. Selections include:</p> <ul style="list-style-type: none"> • 0 Enable all exceptions. • 1 Mask Controller EEPROM Memory Checksum exception. • 2 Reserved for future use. • 4 Reserved for future use. • 8 Reserved for future use. • 16 Mask Room temperature is ABNORMAL. • 32 Mask missing changeover. • 64 Reserved for future use. • 128 Reserved for future use. • 255 Mask all exceptions. <p>An exception that is masked is not sent to any port or exception log in the GCM, but the FAULT output still displays the diagnostic value. Exception masks may be combined to mask more than one type. For example, 17 would mask the EEPROM CHECKSUM and SENSORINPUT exceptions since $1 + 16 = 17$. All others are enabled and, if they occur, are sent to the exception log in the GCM.</p>	0
APENA	App Error Enable	<p>Establishes what types of application error exceptions generated from the MicroNet controller are enabled and sent to the exception log in the GCM. Selections include:</p> <ul style="list-style-type: none"> • 0 Enable all exceptions. • 1 Mask all exceptions. <p>An exception that is masked is not sent to any port or exception log in the GCM, but the ERROR output still displays the diagnostic value. Exception masks may be combined to mask more than one type as in FAENA above.</p>	0

Table-2.6MN Block Digital Inputs and Corresponding BAS DI Control Data Store

Attribute.

MN Block Digital Input Abbreviation (Description)	BAS DI Control Data Store Attribute (ID#)
DIN1 (Digital Input 1)	Occupied Mode [†] (260)
DIN2 (Digital Input 2)	CL Changeover [‡] (277)
DIN3 (Digital Input 3)	Lock Out Cool [‡] . (268)
DIN4 (Digital Input 4)	Lock Out Heat [‡] . (267)
DIN5 (Digital Input 5)	Clear Overrides (26B)
DIN6 (Digital Input 6)	DO1 Sat Cmd (281)
DIN7 (Digital Input 7)	DO2 Sat Cmd (282)
DIN8 (Digital Input 8)	DO3 Sat Cmd (283)

[†]. Can be incorporated with the Deluxe MicroNet Sensor Override Pushbutton function.

[‡]. Not used in Satellite Mode.

tribute IDs.

Table-2.7MN Block Outputs and Corresponding Controller Data Stores and At-

MN Block Output Abbreviation (Description)	Data Store	Attribute (ID#)
DV1 (Digital Output 1)	Point Values	Occupied Mode (20D)
DV2 (Digital Output 2)	Point Values	DO1 Status (211)
DV3 (Digital Output 3)	Point Values	DO2 Status (212)
DV4 (Digital Output 4)	Point Values	DO3 Status (213)
DV5 (Digital Output 5)	Point Values	DI1 Status (221)
AV1 (Analog Output 1)	Control Values	Room Temp (406)
AV2 (Analog Output 2)	Control Values	Temp 2 (402)
FAULT (System Fault)	Control Status	System Faults (303)
ERROR (Application Error)	Control Status	Appl Errors (309)
TYPE (Device Type)	Not Applicable	Device Type (883) 5 = HPFC Controller

MN Block Considerations

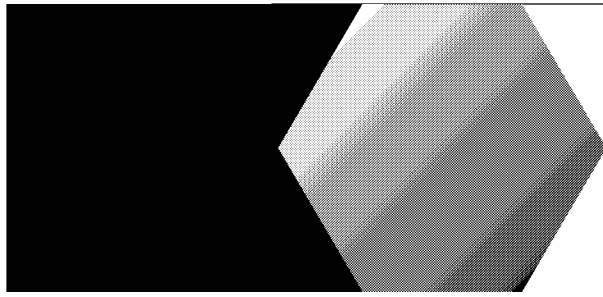
Temperature Setpoints

Temperature setpoint sent from the MicroNet blocks in the GCM are subject to the following limits in the MicroNet Heat Pump/Fan Coil Controller:

- The valid range of values for temperature setpoints in all MicroNet Controllers is -320.00 to 320.00. If the GCM sends a setpoint value that is greater than 320.00, the MicroNet Integrator limits the value to 320.00 before sending it to the MicroNet Heat Pump/Fan Coil Controller. If the GCM sends a setpoint value that is lower than -320.00, the MicroNet MN-ASDI Integrator limits the value to -320.00 before sending it to the MicroNet Heat Pump/Fan Coil Controller.

View/Edit/Override Function

MicroNet Heat Pump/Fan Coil MN Block outputs can be viewed and edited in the GCM's View/Edit/Override screen. Although the View/Edit/Override screen may indicate that an output is overridden, MicroNet Heat Pump/Fan Coil values can be overridden only through the CI.



Appendix A

Attribute Cross Reference

This appendix provides a quick look-up chart for MicroNet Heat Pump/Fan Coil Controller attribute ID numbers (Table-A.1). ID numbers are listed numerically by hex. Locate the ID number in the first column. The second column provides the attribute name, the third column lists its associated data store, and the fourth column provides a cross reference to the table and starting page number where the attribute is described.

Table-A.1 MicroNet Heat Pump/Fan Coil Controller Attribute Cross Reference.

ID#	Name	Data Store	Description Location
001	Fan Mode	Calibration	Table-3.7, pg. 3-8
03E	Changeover ACT	Calibration	Table-3.7, pg. 3-8
050	Eng Units	Sensor Config	Table-3.10, pg. 3-12
051	SP 1/10 Deg	Sensor Config	Table-3.10, pg. 3-12
052	Temp 1/10 Deg	Sensor Config	Table-3.10, pg. 3-12
054	Display Time	Sensor Config	Table-3.10, pg. 3-12
055	Time Format	Sensor Config	Table-3.10, pg. 3-12
056	Schedule Access	Sensor Config	Table-3.10, pg. 3-12
057	CFM Icon Enable	Sensor Config	Table-3.10, pg. 3-12
063	Ht SP Tracking	Sensor Config	Table-3.10, pg. 3-12
070	Auto SP Enable	Sensor Config	Table-3.10, pg. 3-12
072	Override PB	Sensor Config	Table-3.10, pg. 3-12
107	Control Mode	Calibration	Table-3.7, pg. 3-8
1A4	Cool SP Source	SP Source	Table-3.5, pg. 3-6
1A5	Heat SP Source	SP Source	Table-3.5, pg. 3-6
1A6	Rm Temp Source	SP Source	Table-3.5, pg. 3-6

Table-A.1 MicroNet Heat Pump/Fan Coil Controller Attribute Cross Reference.

ID#	Name	Data Store	Description Location
1B0	Occ Source	SP Source	Table-3.5, pg. 3-6
201	DO1	Calibration	Table-3.7, pg. 3-8
202	DO2	Calibration	Table-3.7, pg. 3-8
203	DO3	Calibration	Table-3.7, pg. 3-8
20D	Occupied Mode	Point Values	Table-3.2, pg. 3-2
211	DO 1 Status	Point Values	Table-3.2, pg. 3-2
212	DO 2 Status	Point Values	Table-3.2, pg. 3-2
213	DO 3 Status	Point Values	Table-3.2, pg. 3-2
221	DI 1	Point Values	Table-3.2, pg. 3-2
229	Occupancy	Calibration	Table-3.7, pg. 3-8
22B	Purge	Calibration	Table-3.7, pg. 3-8
22E	Changeover	Calibration	Table-3.7, pg. 3-8
260	Occupied Mode	BAS DI Control	Table-3.4, pg. 3-5
267	Lock Out Heat	BAS DI Control	Table-3.4, pg. 3-5
268	Lock Out Cool	BAS DI Control	Table-3.4, pg. 3-5
26B	Clear Overrides	BAS DI Control	Table-3.4, pg. 3-5
277	CI Changeover	BAS DI Control	Table-3.4, pg. 3-5
281	DO 1 Sat. Cmd	BAS DI Control	Table-3.4, pg. 3-5
282	DO 2 Sat. Cmd	BAS DI Control	Table-3.4, pg. 3-5
283	DO 3 Sat. Cmd	BAS DI Control	Table-3.4, pg. 3-5
300	Device Address	not applicable [†]	Address, pg. 5-5
301	Control Status	Control Status	Table-3.3, pg. 3-3
303	System Faults	Control Status	Table-3.3, pg. 3-3
305	Software Rev	not applicable [†]	Software Revision, pg. 5-9
309	Appl Errors	Control Status	Table-3.3, pg. 3-3
30A	Ctrl Icon Mask	Sensor Config	Table-3.10, pg. 3-12
30B	Mode Icon Mask	Sensor Config	Table-3.10, pg. 3-12
310	HT/CL SP Addr	Shared Values	Table-3.9, pg. 3-11

Table-A.1 MicroNet Heat Pump/Fan Coil Controller Attribute Cross Reference.

ID#	Name	Data Store	Description Location
311	Shared Add. 1	Shared Values	Table-3.9, pg. 3-11
316	Room Temp Addr	Shared Values	Table-3.9, pg. 3-11
317	Occ Mode Addr	Shared Values	Table-3.9, pg. 3-11
402	Temp 2	Point Values	Table-3.2, pg. 3-2
406	Room Temp	Point Values	Table-3.2, pg. 3-2
414	Local Cool SP	Standalone SP	Table-3.6, pg. 3-7
415	Local Heat SP	Standalone SP	Table-3.6, pg. 3-7
432	Local Hi Lmt SP	Standalone SP	Table-3.6, pg. 3-7
433	Local Lo Lmt SP	Standalone SP	Table-3.6, pg. 3-7
434	Local Uoc Cl SP	Standalone SP	Table-3.6, pg. 3-7
435	Local Uoc Ht SP	Standalone SP	Table-3.6, pg. 3-7
454	Cool Setpoint	Control Values	Table-3.1, pg. 3-2
455	Heat Setpoint	Control Values	Table-3.1, pg. 3-2
456	Unocc Cool SP	Control Values	Table-3.1, pg. 3-2
457	Unocc Heat SP	Control Values	Table-3.1, pg. 3-2
502	Temp 2 Cal	Calibration	Table-3.7, pg. 3-8
506	Room Temp Cal	Calibration	Table-3.7, pg. 3-8
514	Cool TR	Calibration	Table-3.7, pg. 3-8
515	Heat TR	Calibration	Table-3.7, pg. 3-8
521	Hysteresis	Standalone SP	Table-3.6, pg. 3-7
524	Setpoint Offset	Standalone SP	Table-3.6, pg. 3-7
614	Cool IGAIN	Calibration	Table-3.7, pg. 3-8
615	Heat IGAIN	Calibration	Table-3.7, pg. 3-8
704	Cooling Output	Point Values	Table-3.2, pg. 3-2
705	Heating Output	Point Values	Table-3.2, pg. 3-2
820	Override Time	Sensor Config	Table-3.10, pg. 3-12
821	Override Timer	Control Status	Table-3.3, pg. 3-3
822	Min Off Time	Standalone SP	Table-3.6, pg. 3-7
826	Duty Cycle	Standalone SP	Table-3.6, pg. 3-7

Table-A.1 MicroNet Heat Pump/Fan Coil Controller Attribute Cross Reference.

ID#	Name	Data Store	Description Location
829	Min On Time	Standalone	Table-3.6, pg. 3-7
831	Delay Time	Standalone SP	Table-3.6, pg. 3-7
854	Act Travel Time	Calibration	Table-3.7, pg. 3-8
870	Password	Sensor Config	Table-3.10, pg. 3-12
883	Device Type	Not applicable [†]	Device Type, pg. 5-6
E01	User Display 1	Sensor Displays	Table-3.11, pg. 3-14
E02	User Display 2	Sensor Displays	Table-3.11, pg. 3-14
E03	User Display 3	Sensor Displays	Table-3.11, pg. 3-14
E04	User Display 4	Sensor Displays	Table-3.11, pg. 3-14
E11	Setup Display 1	Sensor Displays	Table-3.11, pg. 3-14
E12	Setup Display 2	Sensor Displays	Table-3.11, pg. 3-14
E13	Setup Display 3	Sensor Displays	Table-3.11, pg. 3-14
E14	Setup Display 4	Sensor Displays	Table-3.11, pg. 3-14
E15	Setup Display 5	Sensor Displays	Table-3.11, pg. 3-14
E16	Setup Display 6	Sensor Displays	Table-3.11, pg. 3-14
E17	Setup Display 7	Sensor Displays	Table-3.11, pg. 3-14
E18	Setup Display 8	Sensor Displays	Table-3.11, pg. 3-14
E52	Sensor 2 ID	Shared Values	Table-3.9, pg. 3-11
F10	Name	Controller Name	Table-3.8, pg. 3-10

[†] Attribute not part of a MicroNet Heat Pump/Fan Coil Controller data store. Corresponds to one of the deluxe MicroNet Sensor's Service Mode frames.

Appendix B

Deluxe MicroNet Sensor Quick Reference

This appendix provides an overview of the deluxe MicroNet Sensor's display frames and key sequences required to move through these frames.

User Mode

User Display 1 = Default Display
 User Display 2
 User Display 3
 User Display 4

Press and hold <Select> for 4 to 6 seconds to enter Service Mode.

Service Mode

(Schedule)
 Current Status
 Address
 Device Type
 Fault
 Error
 Software Rev
 Password

Enter →
 End (Return to User Display 1).

If Schedule Access (0056) is set to On.

Setup Mode

Schedule
 Setup Display 1
 Setup Display 2
 Setup Display 3
 Setup Display 4
 Setup Display 5
 Setup Display 6
 Setup Display 7
 Setup Display 8
 User Display 1
 User Display 2
 User Display 3
 User Display 4

Program →
 End (Return to Service Mode).

Program Mode

Attribute ID
 End (Return to Setup Mode).

Schedule Setup*

Time and Day of Week
 Schedule 1 ON Time
 Schedule 1 OFF Time
 Schedule 1 Active Days
 Schedule 2 ON Time
 Schedule 2 OFF Time
 Schedule 2 Active Days
 Schedule 3 ON Time
 Schedule 3 OFF Time
 Schedule 3 Active Days
 Schedule n ON Time
 Schedule n OFF Time
 Schedule n Active Days
 End ((Return to User Display 1 or the Setup Mode point of entry)

* Schedules are not active in controllers that do not contain a device clock, including the MicroNet Heat Pump/Fan Coil Controller.

Figure-B.1 Deluxe MicroNet Sensor Flowchart.

Keypad Functions

Keypad functions for the deluxe MicroNet Sensor are shown in Table-B.2.

Table-B.2 Deluxe MicroNet Sensor Keypad Functions.

Keypad Button	Function
<Select>	Move to the next frame.
<▲>	Increase the value of the displayed attribute.
<▼>	Decrease the value of the displayed attribute.
<Enter>	Save new value.
<Override>	Enter the occupied mode of operation. [†]
<Select> and <▼>	Automatically log off from Service, Setup, Program or Schedule Mode and return directly to User Display 1.
Hold <▲> and quickly press <▼> once	Fast scroll toggle for increasing value.
Hold <▼> and quickly press <▲> once	Fast scroll toggle for decreasing value.

[†] Operational if Override PB attribute is enabled. See Override Operation below.

Display Mode Time-outs

The deluxe MicroNet Sensor times out if left idle for a certain period of time. Time-outs for each display mode are listed below:

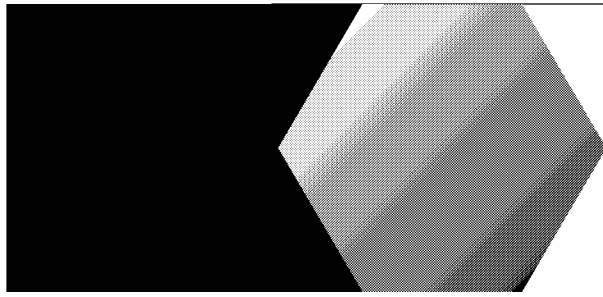
- User Mode - 15 seconds, returns to default display.
- Service Mode - 15 minutes, returns to User Mode.
- Setup Mode - 15 minutes, returns to Service Mode.
- Program Mode - 15 minutes, returns to Setup Mode.
- Schedule Mode - 1 minute, returns to previous mode (Service or Setup)

Override Operation

In the unoccupied mode of operation:

- If the Override button is pressed and released (for less than four seconds), the controller goes into the occupied mode for the time specified by the Override Time attribute.
- If the Override button is pressed and released (for less than four seconds), before the override time has expired, the override time resets to the time specified by the Override Time attribute.

- If the Override button is pressed and held for four seconds or more, the override is cancelled and the controller returns to the unoccupied mode.
- If the override time is left to expire, the controller returns to the unoccupied mode.



Appendix C

Viewing and Printing Logged Files in DOS

Files that have been logged as text can be viewed on the screen of the PC and sent to a printer on the PC. Viewing and/or printing logged files is done within DOS, not in the CI. To view and/or print logged files you need to exit the CI program.

Viewing a File

To view a logged file, you must be in the directory where the file resides. See your DOS Owner's Manual for additional information on directories, subdirectories, and paths.

The MORE command must be in your DOS path for this command to work.

1. Exit the CI program by selecting Logoff from the Main Menu.
2. Press <Esc> when the Logon window appears.
The DOS drive/directory prompt is displayed.
3. Type DIR and press <Enter>. The directory should contain files with .TXT and/or .LOG extensions.
4. To view a file, type TYPE filename.extension and press <Enter>.
Example: TYPE UNIT01.LOG and press <Enter>.
The file's contents scrolls on the screen.
5. Press <Ctrl-S> to stop the scrolling.
6. Press <Ctrl-Q> to resume scrolling.

After displaying the complete file, the DOS drive/directory prompt returns.

If the file is long, you can use the MORE command to view the file one page at a time. To view a file page by page:

1. Type TYPE filename.extension | MORE and press <Enter>.
Example: TYPE UNIT01.LOG | MORE and press <Enter>.
2. Press any key to see the next page of the file.

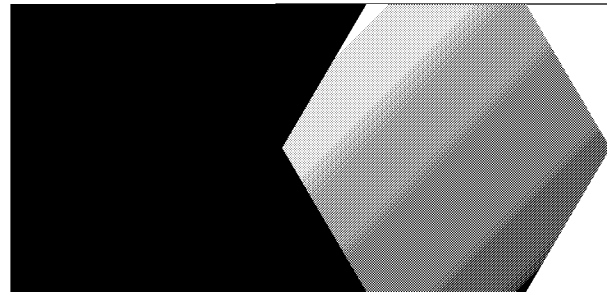
When the complete file has been displayed, the DOS drive/directory prompt appears.

Printing a File

The PRINT command is not a standard DOS command. To print a logged file, you must have your DOS path set. See your DOS Owner's Manual for additional information on directories, subdirectories, and paths.

To print a logged file in DOS:

1. Exit the CI program by selecting `Logoff` from the Main Menu.
2. Press `<Esc>` when the Logon window appears.
The DOS drive/directory prompt is displayed.
3. Type `Dir` and press `<Enter>` to view the files in the directory.
The directory should contain files with
a `.TXT` and/or `.LOG` extensions.
4. Type `PRINT filename.extension` and press `<Enter>`.
For example, `PRINT TREND.LOG` and press `<Enter>`.



Appendix D ***Hex Conversion***

This appendix provides information for converting filenames created by a Get Multiple upload from their hex format to their node address format.

When uploading files from multiple MicroNet Heat Pump/Fan Coil Controllers, the CI creates unique filenames for each uploaded application file by appending the integrator number and device number to the prefix entered in the Enter File Prefix window (Figure-D.1).

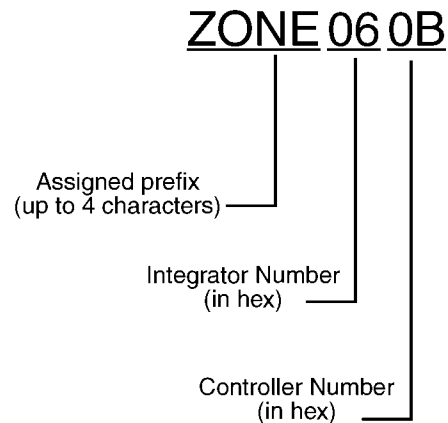


Figure-D.1 File Format for Get Multiple Uploads.

The integrator number and device number are appended in hex format. Hex numbers and their decimal equivalents are listed in the following table (Table-D.1). Using the conversion table, it can be determined that the file shown in the illustration above was uploaded from Controller 11 under Integrator 6.

Table-D.1 Hex Conversion Table.

00	0	20	32	40	64	60	96	80	128	A0	160	C0	192	E0	224
01	1	21	33	41	65	61	97	81	129	A1	161	C1	193	E1	225
02	2	22	34	42	66	62	98	82	130	A2	162	C2	194	E2	226
03	3	23	35	43	67	63	99	83	131	A3	163	C3	195	E3	227
04	4	24	36	44	68	64	100	84	132	A4	164	C4	196	E4	228
05	5	25	37	45	69	65	101	85	133	A5	165	C5	197	E5	229
06	6	26	38	46	70	66	102	86	134	A6	166	C6	198	E6	230
07	7	27	39	47	71	67	103	87	135	A7	167	C7	199	E7	231
08	8	28	40	48	72	68	104	88	136	A8	168	C8	200	E8	232
09	9	29	41	49	73	69	105	89	137	A9	169	C9	201	E9	233
0A	10	2A	42	4A	74	6A	106	8A	138	AA	170	CA	202	EA	234
0B	11	2B	43	4B	75	6B	107	8B	139	AB	171	CB	203	EB	235
0C	12	2C	44	4C	76	6C	108	8C	140	AC	172	CC	204	EC	236
0D	13	2D	45	4D	77	6D	109	8D	141	AD	173	CD	205	ED	237
0E	14	2E	46	4E	78	6E	110	8E	142	AE	174	CE	206	EE	238
0F	15	2F	47	4F	79	6F	111	8F	143	AF	175	CF	207	EF	239
10	16	30	48	50	80	70	112	90	144	B0	176	D0	208	F0	240
11	17	31	49	51	81	71	113	91	145	B1	177	D1	209	F1	241
12	18	32	50	52	82	72	114	92	146	B2	178	D2	210	F2	242
13	19	33	52	53	83	73	115	93	147	B3	179	D3	211	F3	243
14	20	34	52	54	84	74	116	94	148	B4	180	D4	212	F4	244
15	21	35	53	55	85	75	117	95	149	B5	181	D5	213	F5	245
16	22	36	54	56	86	76	118	96	150	B6	182	D6	214	F6	246
17	23	37	55	57	87	77	119	97	151	B7	183	D7	215	F7	247
18	24	38	56	58	88	78	120	98	152	B8	184	D8	216	F8	248
19	25	39	57	59	89	79	121	99	153	B9	185	D9	217	F9	249
1A	26	3A	58	5A	90	7A	122	9A	154	BA	186	DA	218	FA	250
1B	27	3B	59	5B	91	7B	123	9B	155	BB	187	DB	219	FB	251
1C	28	3C	60	5C	92	7C	124	9C	156	BC	188	DC	220	FC	252
1D	29	3D	61	5D	93	7D	125	9D	157	BD	189	DD	221	FD	253

Appendix D

Hex	Number	Hex	Number	Hex	Number	Hex	Number	Hex	Number	Hex	Number	Hex	Number	Hex	Number	Hex	Number
1E	30	3E	62	5E	94	7E	126	9E	158	BE	190	DE	222	FE	254		
1F	31	3F	63	5F	95	7F	127	9F	159	BF	191	DF	223	FF	255		



Glossary

Following are terms and their definitions as they are used in this manual.

Term	Definition
Application File	MicroNet Controller device database file. Composed of read-write data stores.
ASD GCM	Application Specific Device Global Control Module - a Global Control Module which communicates with Application Specific Devices such as MICROZONE IIs, MICROFLO IIs, Lighting Interface Modules (LIM), Packaged Equipment Modules (PEM), and MicroNet 2000 controllers via MicroNet Integrator.
Attributes	In MicroNet 2000, individual elements that define a setup parameter, control program, etc.
BAS	Building Automation System.
BAS control	The supervisory control of a central system which provides total system monitoring and overall control of the local sub-systems.
CI	MicroNet Controller Interface - PC software that interfaces with MicroNet 2000 components.
Data Store	A group of similar function attributes.
Device Number	A controller's switch address setting.
LCD	Liquid Crystal Display.
LED	Light Emitting Diode.
MicroNet Controller Interface Module	RS-232 to U-Link converter. Connects between a standard PC serial port and the MicroNet Communications jack on a MicroNet Sensor. Allows the MicroNet Controller Interface software, operating on the PC, to communicate with MicroNet Controllers.
MicroNet Integrator	A protocol converter between the U-Bus and BAS. Also provides peer-to-peer communication capabilities between MicroNet Controllers without a BAS.
MicroNet Sensor	A wall-mount room sensor which communicates to a MicroNet Controller via the U-Link.
MNETCI	Executable file name for the MicroNet Controller Interface.

Term	Definition
NETWORK 8000	A BAS that includes direct digital controllers with integral communications ability.
Off-Line	The CI is not connected to a MicroNet Controller.
On-Line	The CI is connected to a MicroNet Controller.
Peer-to-peer communication network	Communication network that allows controllers to communicate with one another without going through a central processor.
Read-only data store	Data store containing attributes that can be viewed, but not overridden or edited. Read-only data store attributes are stored in RAM and are continually updated when viewed from the Edit function on the CI's Device sub-menu.
Read-override data store	Data store containing attributes that can be viewed and overridden. Read-override data store attributes are stored in RAM and are continually updated when viewed from the Edit function on the CI's Device sub-menu.
Read-write data store	Data store containing attributes that can be viewed and edited. Read-write data store attributes are stored in EEPROM and constitute the application file that is downloaded and/or uploaded from the a MicroNet Controller.
Stand-alone control	A controller's ability to perform intended functions without the presence of a BAS.
U-Bus	Universal Bus – a communication bus between MicroNet Controllers or between MicroNet Integrators and MicroNet Controllers.
U-Link	Universal Link – a communications bus between a MicroNet Controller and controlled devices such as a MicroNet Sensor.
Wildcard	The asterisk character. Used in the Connect function to generate a node list.

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