

Installation and Operation Manual

IM 1005-5

Group: **Controls**

Part Number: **IM 1005**

Date: **August 2019**

MicroTech® III Unit Controller Remote User Interface

**RoofPak® Singlezone Heating and Cooling Units, Models RPS/RDT/RFS/
RCS/RPE/RDE**

**RoofPak® Applied Rooftop Systems Air Handling Units, Model RAH
Self-contained Air Conditioning Systems, Models SWT/SWP**

Rebel® Commercial Packaged Rooftop Systems, Model DPS

Maverick® II Commercial Packaged Rooftop Systems, Models MPS

Pathfinder® Air-cooled Screw Chiller, Models AWS/AWV

Trailblazer® Air-cooled Scroll Compressor Chiller, Models AGZ-D/AGZ-E

Magnitude®, B Vintage, Magnetic Bearing Centrifugal Chiller, Model WME

Navigator® Water-cooled Screw Chiller, Model WWV



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Notice

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General Information

This manual contains the information needed to install and operate the remote user interface for use with MicroTech III Applied Air and Air-cooled Scroll Chiller unit controllers from Daikin Applied.

For technical support on rooftop or self-contained unit controllers, contact the Daikin Applied Air Technical Response Center at 844-521-3928 (techresponseaah@daikinapplied.com).

For chiller unit controller support, contact the Daikin Applied Chiller Technical Response Center at 540-248-9239 (techresponse@daikinapplied.com).

Product Information

The remote user interface is designed for display, system configuration, set-up, and management of MicroTech III unit controllers:

- RoofPak Applied Packaged Rooftop Systems
- Self-Contained Air Conditioning Systems
- Rebel and Maverick II Commercial Packaged Rooftops
- Pathfinder and Trailblazer Air-cooled Chillers
- Magnitude and Navigator Water-cooled Chillers

In addition to the unit-mounted controller keypad/display, MicroTech III unit control systems can be equipped with a remote user interface that handles up to eight units per interface. The remote user interface provides access to unit diagnostics and control adjustments similar to the unit-mounted controller.

Revision History

IM 1005	January 2010	Initial release
IM 1005-1	September 2010	Added Daikin Trailblazer® chiller model AGZ-D
IM 1005-2	March 2012	Added Rebel® packaged rooftop model DPS. Updated Figure 3 with labels and connector cables.
IM 1005-3	November 2016	Added models AWV Pathfinder® chiller and AGZ-E Trailblazer® chiller, added RJ45 direct connection option, corrected bus wiring distance limitations, Troubleshooting section, Daikin branding and formatting updates
IM 1005-4	January 2018	Added WME & WWV chiller models.
IM 1005-5	August 2019	Update connections


Limited Warranty

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

Hazardous Information Messages

Recognize Safety Symbols, Words and Labels

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

 **CAUTION**


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

Static sensitive components. Can cause equipment damage.


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

 **WARNING**


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

 **DANGER**

Dangers indicate a hazardous situation which will result in death or serious injury if not avoided. Electric shock hazard. Can cause personal injury or equipment damage. This equipment must be properly grounded. Connections and service to the MicroTech III unit controller must be performed only by personnel knowledgeable in the operation of the equipment being controlled.

 **NOTICE**

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

 **WARNING**

Warning indicates potentially hazardous situations for PVC (Polyvinyl Chloride) and CPVC (Chlorinated Polyvinyl Chloride) piping in chilled water systems. In the event the pipe is exposed to POE (Polyolester) oil used in the refrigerant system, the pipe can be chemically damaged and pipe failure can occur.

Reference Documents

Daikin Applied	IOM 1202	Pathfinder Chiller Model AWS Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1206	Trailblazer Chiller Model AGZ Installation, Operation and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1242	Pathfinder Model AWW Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOMM 1033	Magnitude Model WME, B vintage Magnetic Bearing Centrifugal Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1264	Navigator Model WWV Water-cooled Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	OM 920	MicroTech III unit controller for Commercial Rooftop, Applied Rooftop, and Self-Contained Systems Operations Manual	www.DaikinApplied.com

Features

- Push-and-roll navigation wheel with an 8-line by 30-character display format
- Operating conditions, system alarms, control parameters and schedules are monitored
- RS-485 or KNX interface for local or remote installation
- Power from controller, no additional power supply necessary
- Supports panel mounting and wall mounting

Component Data

General

shows the details of the remote user interface hardware design.

The overall physical layout includes:

- 5.7 × 3.8 × 1 in (144 × 96 × 26 mm) size
- 9.1 oz (256.7 g) weight, excluding packaging
- Plastic housing

Power

- Supplied by the MicroTech III unit controller for direct connection
- Separate 24V DAC power supply, optional for daisy chain connections, Max 85 mA

NOTE: Contact either the Daikin Applied Air Technical Response Center at 844-521-3928 (techresponseaah@daikinapplied.com) or the Chiller Technical Response Center at 540-248-9239 (techresponse@daikinapplied.com) if a separate power supply is desired.

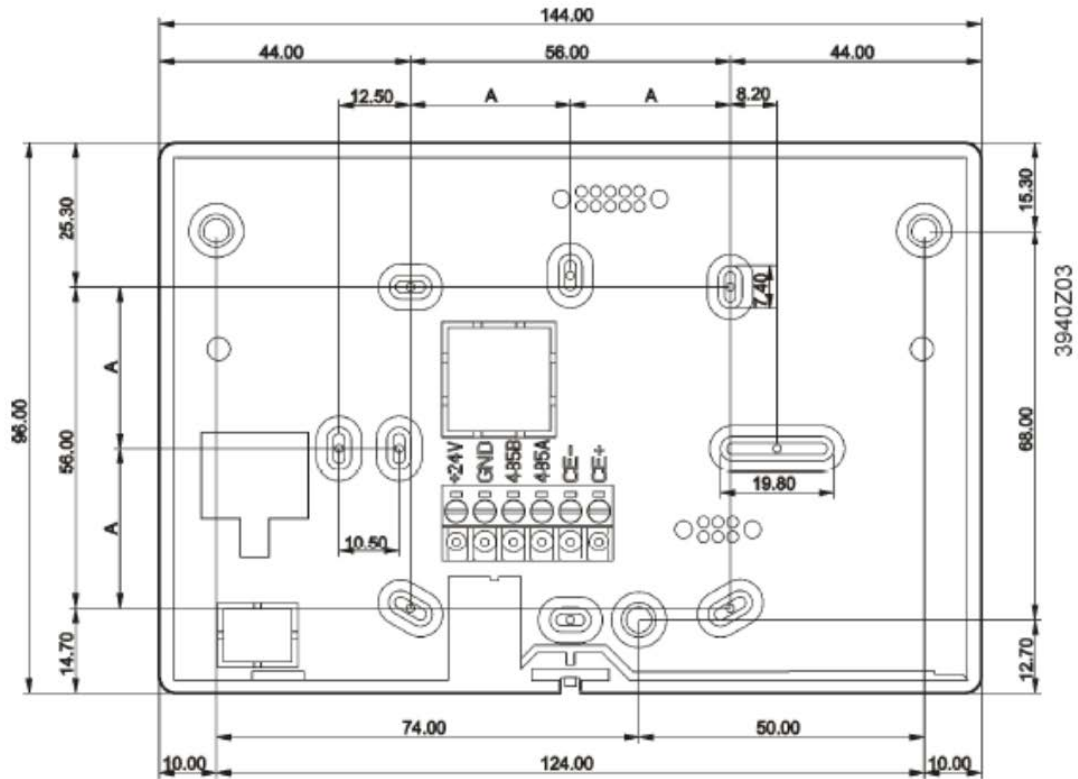
Display

- LCD type FSTN
- Resolution dot-matrix 96 x 208
- Backlight blue or white, user selectable

Environmental Conditions

Operation	EC 721-3-3
Temperature	-40...158°F (-40...+70°C)
Restriction LCD	-4...140°F (-20...+60°C)
Restriction Process-Bus	-13...158°F (-25...+70°C)
Humidity	< 90% RH (no condensation)
Air pressure	Min. 10.2 psi (700 hPa), corresponding to max. 9843 ft (3000 m) above sea level

Figure 1: Physical Dimensions



Pre-Installation

Please be aware of the following before mounting and installing the remote user interface.

Location Considerations

Placement of the remote user interface is necessary to ensure proper operation. When selecting a location, avoid the following:

- Locations that are outside the operating temperature and humidity range (see [Environmental Conditions](#).)
- Mounting on rooftop without a careful site evaluation and confirmation
- Walls that are subject to high vibration
- Areas with high humidity exterior walls and other walls that have a temperature differential between the two sides
- Areas that are close to heat sources such as sunlight, appliances, concealed pipes, chimneys, or other heat-generating equipment

Mounting Surfaces

For surface installation, mount the remote user interface to a flat surface such as sheet rock or plaster, control panel, or an electrical junction box.

- If mounting onto sheet rock or plaster, use anchors, if necessary
- For mounting in the unit controller panel, electrical junction box, or other metal enclosure, use the supplied magnets.

Parts

Description	Part Number
MicroTech III Remote User Interface	193408003 ^{1,2}
Connectors (using CE+ CE- connection option)	193410302

1. Note that part number 193408001 is no longer available.
2. For daisy-chaining unit controllers together, a 2-pin connector (PN 193410302), is required *for each unit controller*. The 2-pin connector is not required for direct-connecting unit controllers.

To find your local parts office, visit www.DaikinApplied.com or call 800-37PARTS (800-377-2787).

Installation

The following section describes how to mount the remote user interface and connect it to one or more MicroTech III unit controllers.

CAUTION

Electrostatic discharge hazard. Can cause equipment damage.

This equipment contains sensitive electronic components that may be damaged by electrostatic discharge from your hands. Before you handle the equipment, you need to touch a grounded object, such as a metal enclosure, in order to discharge electrostatic potential in your body.

Mounting

WARNING

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

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

1. Remove plastic cover ([Figure 2](#)).
2. Mount the remote user interface. The remote user interface can be either panel mounted or wall mounted as shown in [Figure 3](#). See [Figure 4](#) and [Figure 5](#) for terminal connections for each of the mounting locations.

Figure 2: Removing the Cover of remote user interface

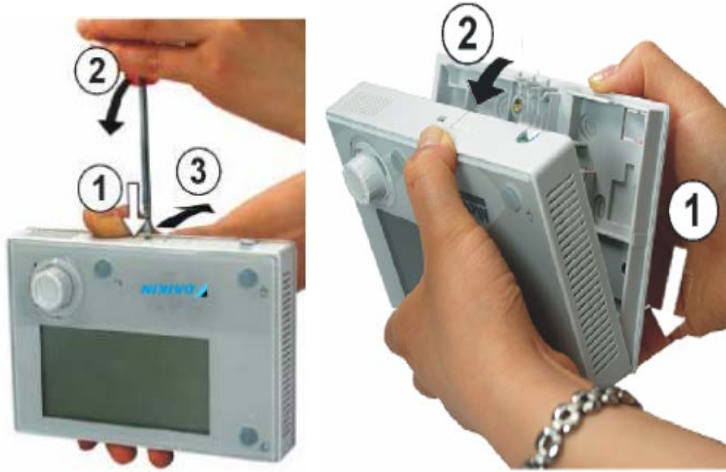
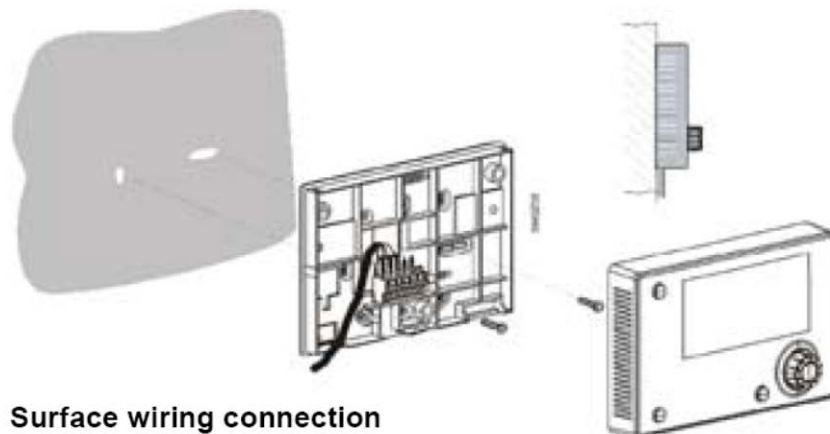
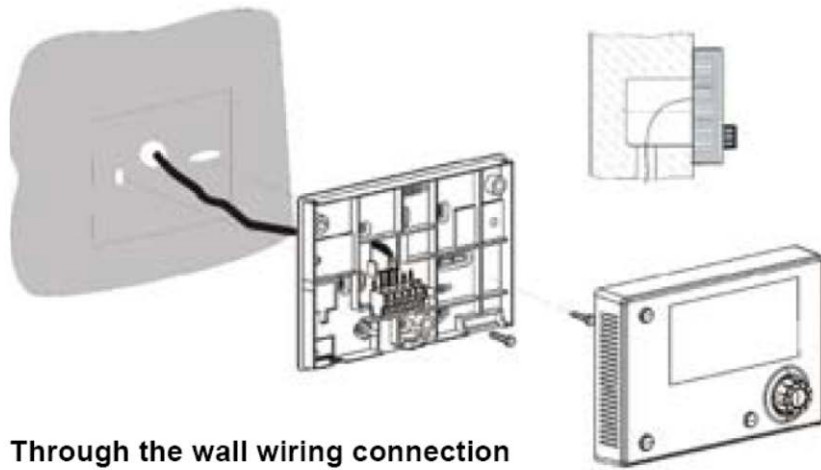


Figure 3: Wall and Surface Wiring Connections



Wiring the Remote User Interface

Wiring the remote user interface to the MicroTech III unit controller can be done in two different ways:

1. Daisy-chain connection to as many as eight units.
2. Direct connection to a single unit controller.

Connection and wiring instructions in each case are described in the following section. See [Table 1](#) for wire sizing and distance limitations.

NOTE: Power is supplied by the MicroTech III unit controller. If a separate 24V power supply is desired, please contact either the Daikin Applied Air Technical Response Center at 844-521-3928 (techresponseaah@daikinapplied.com) or the Chiller Technical Response Center at 540-248-9239 (techresponse@daikinapplied.com).

Daisy-Chain Connection

Establish a physical connection from the remote user interface to the MicroTech III unit controller.

1. Connect a twisted pair wire to the CE + and CE – pins of each unit controller and remote user interface (see [Figure 4](#) and [Figure 5](#)).
2. Daisy-chain up to eight MicroTech III unit controllers to a single remote user interface. See [Figure 5](#) for wiring details. Note the wire size and distance limitations provided in [Table 1](#).
3. Cycle power to each MicroTech III unit controller once the wiring of the remote user interface is complete.

NOTE: Downloading and communication using the daisy-chain connection may be slower than for the RJ45 (Ethernet) direct connection.

Table 1: Wiring Specifications

Bus connection	CE+, CE-, not interchangeable
Terminal	2-screw connector
Max. length	1000 ft (305 m)
Cable type	
Wiring distance up to 500 ft	Twisted pair, shielded cable 16 AWG
Wiring distance between 500 - 1000 ft	Twisted pair, shielded cable 14 AWG
Wiring distance over 1000 ft	Not currently supported. Contact the appropriate Daikin Applied Technical Response Center for assistance.

Figure 4: Interface Details for Daisy-Chain Connection

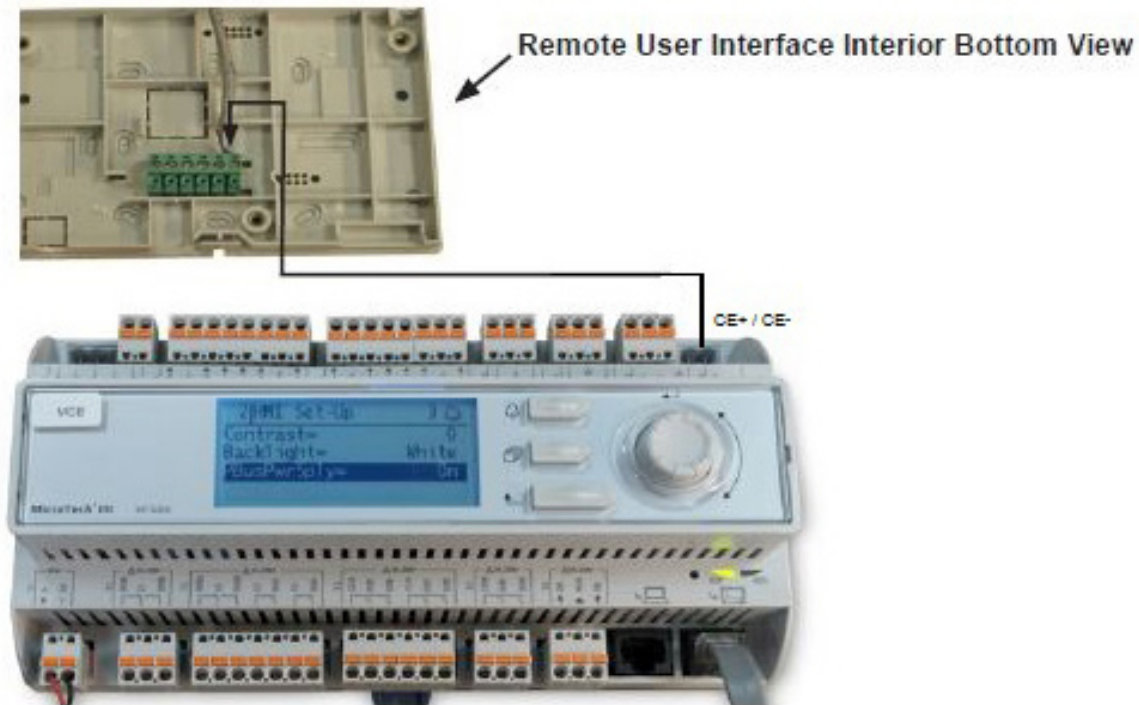
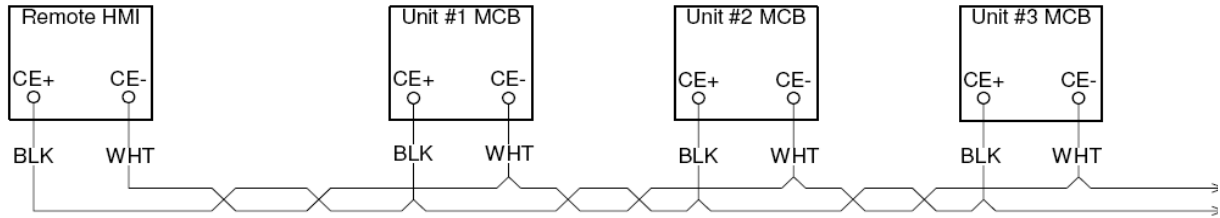


Figure 5: Daisy-Chain Connection Wiring Details



Direct Connection

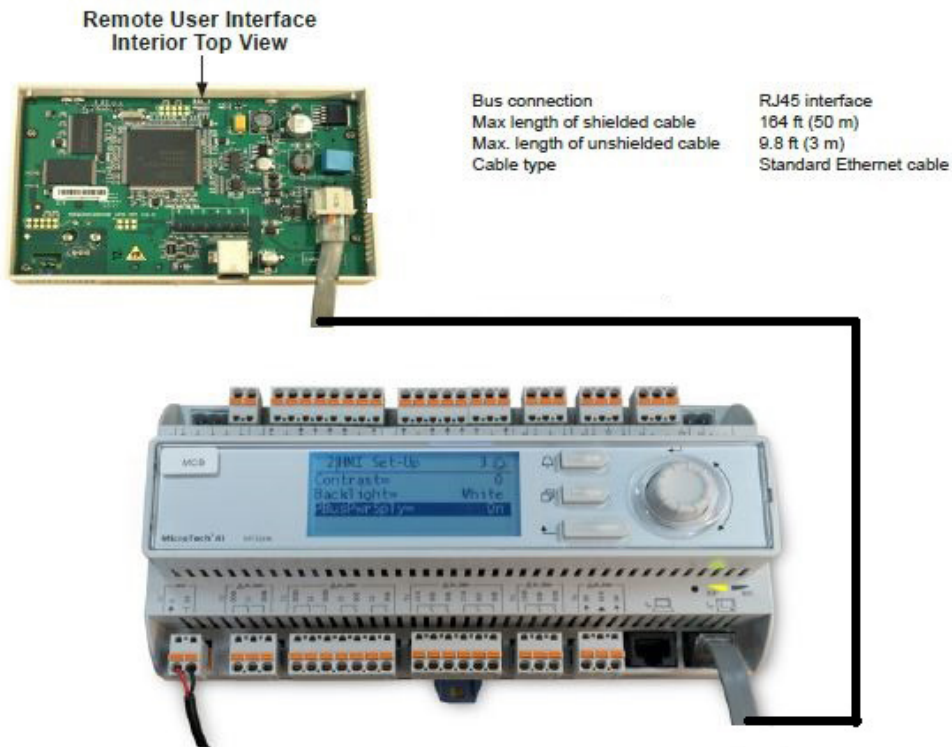
The remote user interface can be wired directly to a single MicroTech III unit controller over a standard RJ45 (Ethernet) connection.

NOTE: Power is supplied by the unit controller. If a separate 24V power supply is desired, please contact either the Daikin Applied Air Technical Response Center at 844-521-3928 (techresponseaah@daikinapplied.com) or the Chiller Technical Response Center at 540-248-9239 (techresponse@daikinapplied.com).

Procedure

1. Locate the connector location as shown in Figure 6
2. Follow Figure 6 for connection details. Note the distance limitations provided.
3. Cycle power to the unit(s) once the wiring of the remote user interface is complete.

Figure 6: Interface Details for RJ45 Connector



Using the Remote User Interface

Hardware Features

The remote user interface keypad/display consists of an 8-line by 30 character display, a "push and roll" navigation wheel, and three buttons: Alarm, Menu, and Back (Figure 7).

- Turn the navigation wheel clockwise (right) or counterclockwise (left) to navigate between lines on a screen and also to increase and decrease changeable values when editing. Press down on the wheel to use it as an Enter button.
- Press the Back button to display the previous page.
- Press the Home button to return to the main screen from the current page.
- Press the Alarm button to view the Alarm Lists menu.

Keypad/Display Features

The first line on each page includes the page title and the line number to which the cursor is currently "pointing." The line numbers are X/Y to indicate line number X of a total of Y lines

for that page. The left most position of the title line includes an "up" arrow to indicate there are pages "above" the currently displayed items, a "down" arrow to indicate there are pages "below" the currently displayed items or an "up/down" arrow to indicate there are pages "above and below" the currently displayed page. Each line on a page can contain status-only information or include changeable data fields. When a line contains status-only information and the cursor is on that line, all but the value field of that line is highlighted meaning the text is white with a black box around it. When the line contains a changeable value and the cursor is at that line, the entire line is highlighted.

Each line on a page may also be defined as a "jump" line, meaning pushing the navigation wheel will cause a "jump" to a new page. An arrow is displayed to the far right of the line to indicate it is a "jump" line and the entire line is highlighted when the cursor is on that line.

NOTE: Only menus and items that are applicable to the specific unit configuration are displayed.

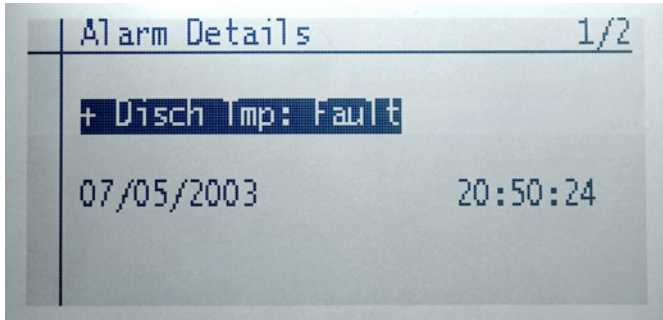
Figure 7: Remote User Interface Main Features



Alarms

The Alarm Details Menu includes active alarm and alarm log information. See [Figure 8](#) for an example of an active alarm. Also refer to the appropriate MicroTech III unit controller Operation Manual (www.DaikinApplied.com) for available alarm options.

Figure 8: Alarm Details Menu



Passwords

Unit controller menu functions have different levels of accessibility. The ability to view and/or change settings depends on the access level of the user and the password entered. There are four levels of password access:

1. No password.
2. Level 2. The highest level of access. Without entering a password, the user has access only to basic status menu items. Entering the Level 2 password (6363) allows similar access as Level 4 with the addition of the Unit Configuration Menu.
3. Level 4. Entering the Level 4 password (2526) allows similar access as Level 6 with the addition of the Commission Unit Menu, Manual Control, and Service Menu groups.
4. Level 6. Entering the Level 6 password (5321) allows access to the Alarm Lists Menu, Quick Menu, and the View/Set Unit Menus group.

NOTE: Alarms can be acknowledged without entering a password.

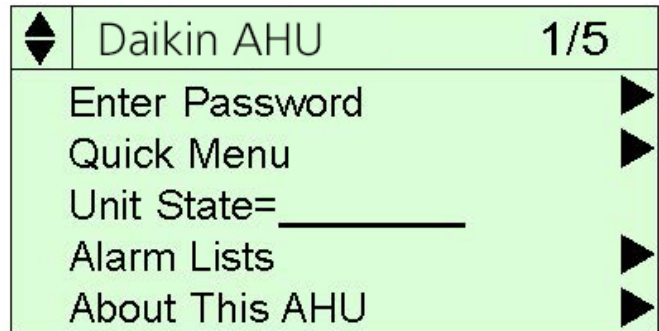
Accessing The Password Page

The main password page is displayed when the remote user interface display (HMI) is first accessed.

1. Press the Home button.
2. Press the Back button multiple times, or if the keypad/display has been idle longer than the Password Timeout (default 10 minutes).

The main password page provides access to enter a password, access the Quick Menu, view the current Unit State, access the alarm lists or view information about the unit ([Figure 9](#)).

Figure 9: Main Password Page



The MicroTech III unit controller Operation Manual (www.DaikinApplied.com) provides additional information about passwords, including how to use the Navigation and Edit Mode settings to access and modify passwords.

Configuration

The following section describes how to set up the HMI so that it can be used to display, configure, or change unit parameters. Refer to the applicable MicroTech III unit controller Operation Manual for a detailed description of chiller or rooftop sequence of operation and keypad menu structure when configuring the unit via the remote user interface (www.DaikinApplied.com).

NOTE: To toggle between units, press the Back button for five seconds to return to the main screen.

Customize User Preferences

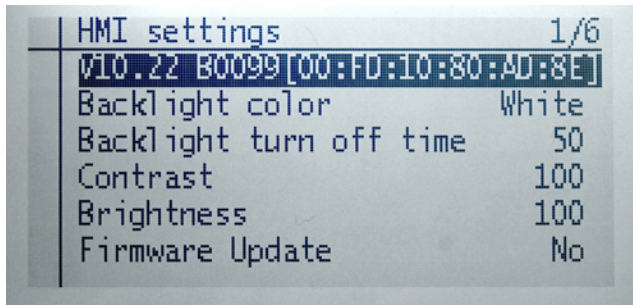
1. Turn power on to the unit controller(s). Power to the remote user interface is provided automatically from the MicroTech III unit controller(s) through the RJ45 (Ethernet) direct connection.
2. The main screen with HMI Settings and Controller List appears ([Figure 10](#)).

Use the HMI Settings screen to change options for backlight color, backlight turn off time, contrast, and brightness.

NOTE: The main screen can be accessed at any time by pressing the Home button for five seconds.

3. Press the navigation wheel to select the HMI Settings menu, if desired.

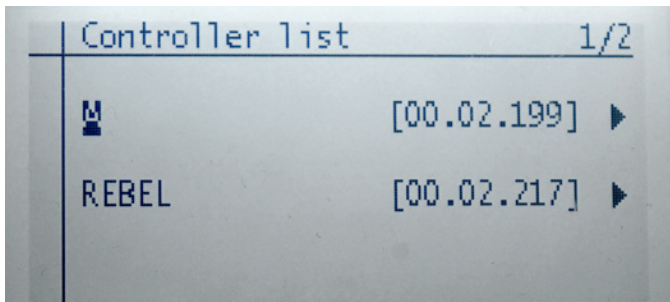
Figure 10: Main Screen HMI Settings



Synchronize with MicroTech III Unit Controller

1. Press the navigation wheel to select the Controller List screen (Figure 11).
 - The Controller List automatically updates each time the remote user interface is powered up so that information is synchronized from the main unit controller.
 - The Controller List screen displays the unit controller(s) connected to the remote user interface. This screen allows the user to select between units, if more than one unit is connected to the remote user interface

Figure 11: Controller List Details

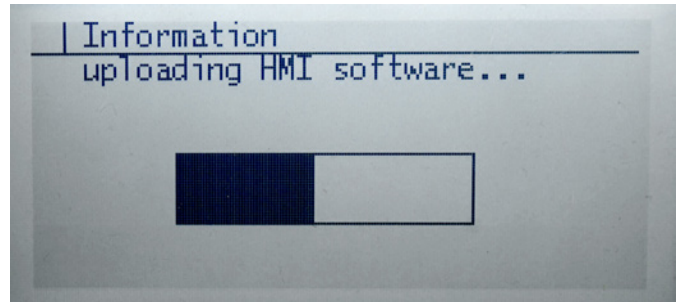


NOTE: A single unit appears on the screen as a selection possibility if only one unit controller is connected to the remote user interface.

2. Turn the navigation wheel clockwise and then press down to select the desired unit.
 - The Information screen appears as the remote user interface performs a download sequence to import the necessary information from the main unit controller. A status bar appears on the Downloading the Objects screen to indicate that the download is in process (Figure 12).

NOTE: Refer to the Troubleshooting section if the remote user interface appears to "freeze" during the initial downloading sequence.

Figure 12: Information: Downloading Objects



3. Once the first unit has been downloaded, select the next unit controller, if applicable. The download process is required for each unit controller connected to the remote user interface.
4. Press the Home button for five seconds to return to the main screen.

NOTE: The Downloading the Objects sequence generally takes a minute or less when direct-connecting to a single unit. However, the downloading sequence takes longer when using the daisy-chain connection. When the download sequence is complete, the Main screen of the unit controller appears on the remote user interface. At this point, the remote user interface and unit controller are synchronized.

5. Access and adjust the same parameters that are available via the unit controller keypad/display. Refer to the applicable MicroTech III unit controller Operation Manual for the keypad menu structure and detailed description the unit controller sequence of operation (www.DaikinApplied.com).

Firmware Upgrade Procedure

Follow these steps to update the remote user interface (HMI) firmware (.bin) file.

NOTE: The upgrade procedure requires the use of an SD memory card no larger than 8GB with a FAT32 file system format.

NOTE: A field update is not possible on units with v1.07 firmware. Contact the Daikin Applied Air Technical Response Center at 844-521-3928 (techresponseaah@daikinapplied.com) or the Chiller Technical Response Center at 540-248-9239 (techresponse@daikinapplied.com) for assistance.

Upgrading from VVS10 to a newer version

1. Upload the firmware file, POL12289.bin, on the SD-Card in the root directory with no other files.
2. Insert the SD Card into the MicroTech III unit controller. The unit controller must be powered-up and running.
3. Connect the HMI DM to the unit controller.
4. Press the back button of the HMI DM until the "HMI Setting and Local Connection" page appears.
 - a. Choose the HMI Setting. Scroll to the end of this page and the "Firmware Update" option appears.
 - b. Push and roll to YES. Push the knob of the HMI DM again.
5. The "Now Firmware Updating" message appears on the user HMI display.

Do not remove power from the unit controller.
6. After successful upgrade of the firmware, the HMI DM goes back to the normal HMI page.
7. Follow steps 1-4 to upgrade firmware for each HMI on a daisy-chain network. Please be aware that each remote user interface must use the same firmware version.

This section contains helpful information, frequently asked questions, and other tips related to the remote user interface.

General Troubleshooting

Problem

During the initial download sequence, the keypad/display appears to freeze up and a "Loading.....Lost Connection" message appears.

Solution

The remote user interface is stuck in the downloading sequence due to incompatibility with v1.07 application software. The remote user interface must be updated to v10.22 or newer application software. Contact Daikin Applied Air Technical Response at 844-521-3928 for further instructions.

Problem

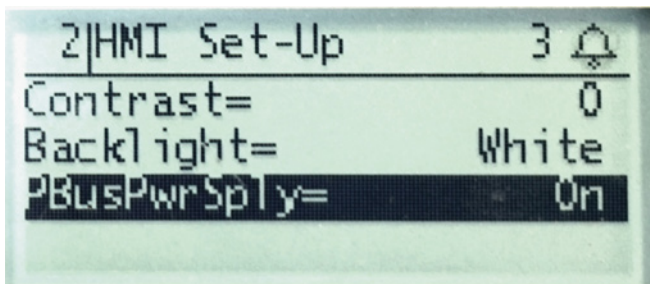
The remote user interface is experiencing a loss of communication.

Solution

The site may have "dirty power" or electrical noise causing loss of communication.

1. Access the Power Bus menu on the MicroTech III unit controller by the following keypad menu path: service menu/HMI setup/PBusPwrSpLy=ON (default). See [Figure 13](#).
2. Set the default Power Bus supply.
 - a. For the first and last units on the daisy-chain trunk, leave the Power Bus supply at the default of ON.
 - b. For all other units within the daisy chain trunk, set the Power Bus supply to the OFF position.

Figure 13: Power Bus Menu



Problem

The remote user interface has been connected to the MicroTech III unit controller but the display remains blank after power-up.

Solution

Verify that the unit controller has power. Check wiring from the unit controller to the remote user interface.

NOTE: Inputs and outputs are polarity sensitive.

Frequently Asked Questions

1. Is a separate 24V power supply necessary for direct connection?
 - No, power is provided by the MicroTech III unit controller.
2. What type of cable is recommended for daisy-chain connection?
 - Daikin Applied generally recommends using twisted pair, 16 AWG shielded cable up to 500 ft and 14 AWG from 500 to 1000 ft. Contact the appropriate Technical Response Center for applications requiring longer distances.

How do I know if or when I need to upgrade the remote user interface (HMI) firmware files?

- If the remote user interface seems to freeze during initial download process
 - If wiring has been confirmed (inputs and outputs are polarity sensitive) and HMI is not responding
- See [Firmware Upgrade Procedure](#) section for details.

What if I want to upgrade the MicroTech III unit controller firmware?

- Contact either the Daikin Applied Air Technical Response Center at 844-521-3928 (techresponseaah@daikinapplied.com) or the Chiller Technical Response Center at 540-248-9239 (techresponse@daikinapplied.com) for assistance.

Helpful Tips

Service technicians often find it convenient to have two keypad/displays connected to a single unit controller. Using a split-screen setup makes it possible to view multiple menu items at the same time during start-up and also for diagnostic purposes.

- Simply hook up the first remote user interface with an RJ45 direct connection, and then use a two-wire twisted pair cable to connect to the second keypad/display.



Daikin Applied Training and Development

Now that you have made an investment in modern, efficient Daikin equipment, its care should be a high priority. For training information on all Daikin HVAC products, please visit us at www.DaikinApplied.com and click on Training, or call 540-248-9646 and ask for the Training Department.

Warranty

All Daikin equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied Representative for warranty details. To find your local Daikin Applied Representative, go to www.DaikinApplied.com.

Aftermarket Services

To find your local parts office, visit www.DaikinApplied.com or call 800-37PARTS (800-377-2787). To find your local service office, visit www.DaikinApplied.com or call 800-432-1342.

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