Installation and Operation Manual	IOM 1147
	Group: Controls
	Part Number: 910151284
	Date: March 2013
	Supersedes: New

MicroTech® III – Mark IV WSHP Unit Controller Interface

For Use with Integrating MicroTech III Unit Controllers into a Mark IV WSHP Network

DAIKIN

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Reference Documents

Number	Company	Title	Source
IM 927-x	Daikin	MicroTech III Water Source Heat Pump LonWorks Communication Module	
IM 928-x	Daikin	MicroTech III Water Source Heat Pump BACnet Communication Module	

Revision History

Number	Date	Description	
IOM1147	September 2011	Initial release	SA
IOM1147	March 2012	Pre-Final release	DAH

Limited Warranty

Consult your local Daikin Representative for warranty details. Refer to Form 933-43285Y. To find your local Daikin representative, go to www.DaikinApplied.com.

Notice

Hazard Identification 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.

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

⚠ WARNING

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

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

⚠ CAUTION

Static sensitive components. Can cause equipment damage.

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

NOTICE

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

⚠ WARNING

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

This equipment has exposed electrical connections inside the MTIII – Mark IV interface. Only personnel that are knowledgeable in the operation of this equipment must perform connections and service to the interface.

Introduction

Daikin is committed to providing solutions that support previous vintages of Water Source Heat Pump (WSHP) systems. Over time, it may become necessary to replace an existing WSHP(s) or add new WSHPs into a building with older heat pumps.

This document contains the information needed to install and configure a MicroTech III (MTIII) WSHP into a Mark IV WSHP network. A MTIII-Mark IV Interface Board has been developed to produce compatible signals for the MTIII for the Pump Request, Occupancy, and Emergency Shutdown lines of the Mark IV network.

Description

The MTIII–Mark IV Interface Board is a printed circuit board with two terminal blocks, labeled T1 and T2. T1 has four terminal pin connectors that interface to the Mark IV network. T2 has five terminal pin connectors that interface directly to the MTIII unit controller. See Figure 1 for locations of the terminal blocks and Table 1 for a description of terminal pin functions.

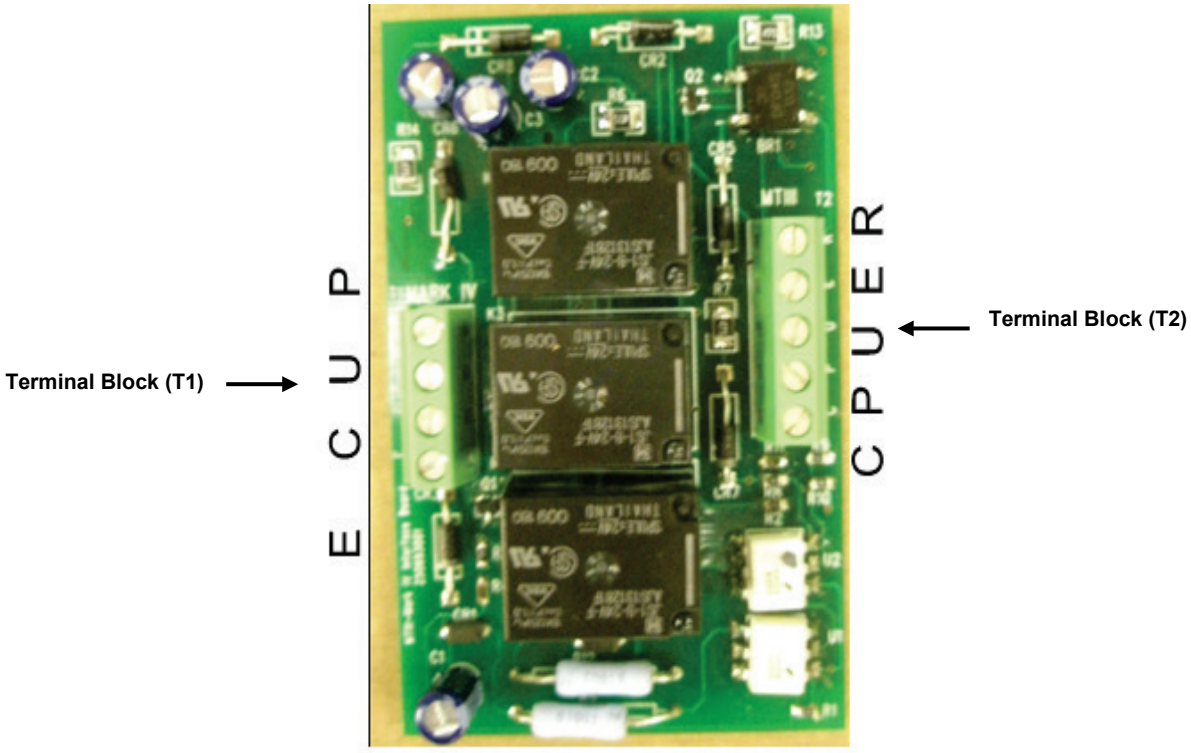

Figure 1 MTIII–Mark IV Interface Board Features

Terminal Block (T1)	Pin Description	Terminal Block (T2)	Pin Description
E	Emergency Shutdown	R	24Vac from MTIII WSHP
U	Un-occupancy	E	Emergency Shutdown
C	Common	U	Un-occupancy
P	Pump request	P	Pump request
		C	Common

Table 1. MTIII–Mark IV Interface Board Terminal Pin Descriptions

Application

The MTIII-Mark IV Interface Board is used to incorporate a MTIII WSHP unit controller into an existing Mark IV WSHP network. This board is required in the following application scenarios:

1. When adding of a new heat pump (with corresponding MTIII unit controller) into an existing network of Mark IV heat pumps.
2. When replacing a Mark IV heat pump (the entire unit, not just the controller) with a MTIII heat pump unit.

The MTIII-Mark IV Interface Board does the following:

1. Provides a means of electrical isolation for the "E" and/or "U" control signals between a Mark IV and MTIII WSHP daisy-chained network.
2. Converts the pump request signal from the MTIII WSHP unit controller to be compatible with the respective pump request signal from the existing Mark IV WSHP unit controller.

Component Data

The section below describes the major components used in the WSHP system.

MTIII WSHP Unit Controller

The MTIII WSHP Unit Controller is a microprocessor-based controller designed to operate Enfinity™, SmartSource™, and Vertical Stack models of Water Source Heat Pump units. It is capable of network communication to a Building Automation System (BAS) via optional BACnet® or LonWorks® interface boards.

Mark IV WSHP Unit Controller

The Mark IV WSHP Unit Controller is a microprocessor-based controller designed to operate a Water Source Heat Pump unit as well as provide outputs for unit status and fault detection. It can be used as a 1) a stand-alone controller, 2) daisy-chained in series to a Loop Water Controller for system control of the water loop or 3) used in conjunction with the Multiple Unit Control Panel (MUCP), which is an accessory that enables up to three WSHP units to be controlled from a single thermostat.

Loop Water Controller

The Loop Water Controller (LWC) is a microprocessor-based controller providing control of the heat rejection/heat addition stages and the water circulating pumps for control of a water source heat pump system through solid-state output relays. The LWC is designed to be used with the Mark IV unit controllers for standalone operation of the water loop. The LWC does not support serial communications to a BAS.

The Mark IV network has a pump request signal that can be used to request flow from the LWC. If the Mark IV network has incorporated the use of the Pump Request signal, it is implied that it includes a Pump Restart Relay board or similar mechanism to start the pump for the water loop.

Installation

The following section describes how to install MTIII-Mark IV Interface Board in a Mark IV WSHP network.

Installing the MTIII – Mark IV Interface Board

⚠ DANGER

Hazardous voltage. Can cause severe injury or death. Disconnect electric power before servicing equipment. More than one disconnect may be required to de-energize the unit.

Each MTIII WSHP board needs a MTIII-Mark IV Interface Board for its operation in an existing Mark IV network. Follow the steps below to properly install this interface board.

1. Disconnect power from the unit
2. Unscrew terminal T1 and T2 terminal blocks of MTIII-Mark IV Interface Board
3. Connect the C and R Pins of terminal block TB2 on MTIII WSHP board to pin C and R of T2 on MTIII-Mark IV Interface Board respectively.
4. Connect pin E and U of terminal block TB3 on MTIII WSHP board with E and U of terminal block T2 on MTIII-Mark IV Interface Board respectively.
5. Connect pin P and C on Terminal block T1 of MTIII-Mark IV Interface Board to pin 1 and 3 of header H8 on MTIII board respectively.
6. Connect pin E and U on Terminal block T1 of MTIII-Mark IV Interface Board to pin E and U of Mark IV respectively.
7. See Fig 2 below for interfacing a MTII WSHP to a Mark IV network using MTIII-Mark IV interface board

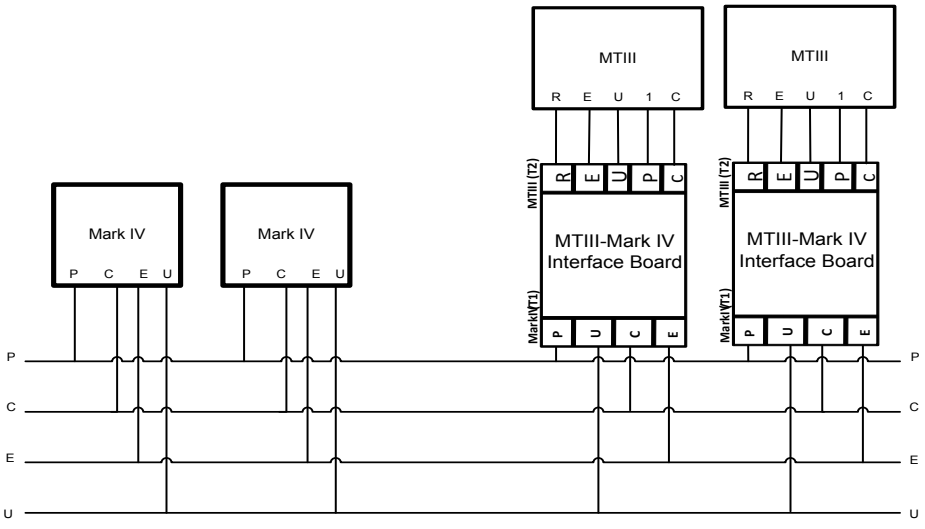

Figure 2 MTIII-Mark IV Interface Board Wiring Diagram

Replacing a MTIII – Mark IV Interface Board

⚠ DANGER

Hazardous voltage. Can cause severe injury or death. Disconnect electric power before servicing equipment. More than one disconnect may be required to de-energize the unit.

To replace a MTIII – Mark IV Interface Board, follow the steps below.

1. Remove power from the unit controller
2. Unscrew and disconnect all the wiring from terminal connector T1 and T2
3. Remove the old board and replace with the new one
4. Replace with the new unit and screw the wires back (see fig)
5. Apply power to the unit controller

Pump Request from MTIII WSHP board

- When a MTIII WSHP board has a call for Pump Request or compressor operation (Cooling or Heating), the control closes the PRVI Relay
- MTIII WSHP board applies a 24VAC on H8 pin 1 on the control board.
- The H8 pin 1 of the MTIII WSHP board is connected to T2 pin P of the MTIII-Mark IV Interface Board. For Pump Request only wiring, see installation wiring diagram Fig 3.
- The MTIII WSHP board applies 24VAC to pin P of MTIII-Mark IV Interface Board.
- The MTII-Mark IV Interface converts the 24VAC from MTIII to a voltage level compatible to a Mark IV pump output.

Pump Request from Mark IV WSHP board

- The pump output of the Mark IV board is connected to T1 terminal P of the MTIII-Mark IV Interface Board and terminal 2 of the Pump Restart Relay board. The Pump Restart Relay board is connected to the loop water controller terminals 58 and 64.
- When a call for pump is received from the MTIII-Mark IV WSHP board it will restart the loop circulation pump.

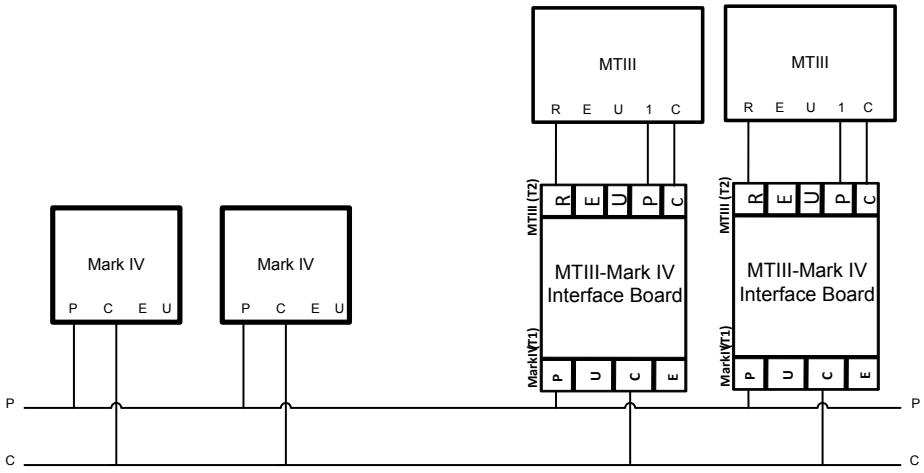

Figure 3 MTIII–Mark IV Interface Board Pump Request Wiring

Emergency Shutdown and Occupancy from Mark IV WSHP board

When MTIII WSHP units are installed in a Mark IV network, the Occupancy (U) and Emergency Shutdown (E) inputs used by the Mark IV boards are connected to the MTIII-Mark IV Interface Board T1 side of terminal U and E respectively.

For emergency shutdown and occupancy in a network that involves both MTIII and Mark IV boards the sensor connection that triggers the emergency shutdown or occupancy shall be made on Mark IV (T1) side NOT on MTIII (T2) side of the MTIII-Mark IV Interface Board.

For a Mark IV board, the Occupancy and Emergency Shutdown inputs are 24VAC or 24VDC.

On MTIII-Mark IV Interface Board T2 side of terminal U and E are connected to TB3 terminal U and E of MTIII respectively.

The MTIII-Mark IV Interface Board converts the 24VAC or 24VDC input signals from the Mark IV boards to common signal compatible to a MTIII WSHP board ground signal.

See Figure 4 below for Emergency shutdown and Occupancy wiring.

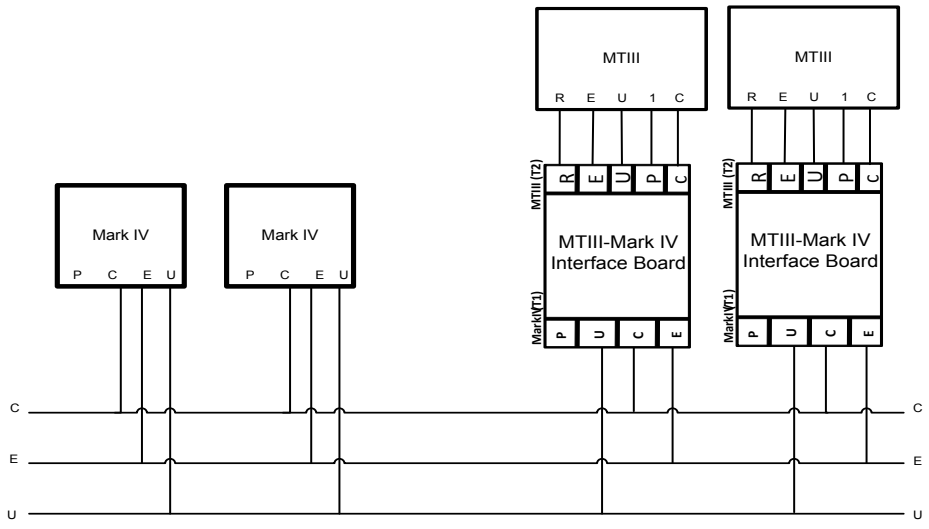

Figure 4 MTIII–Mark IV Interface Board Emergency Shutdown and Occupancy Wiring

Service Information

Troubleshooting Guide

For further technical assistance, contact the Daikin Controls Network Integration Support group at daikincontrols@DaikinApplied.com (email) or phone 866-462-7829.

Parts List

Description	Part Number
MicroTech III – Mark IV Interface Board	250693001

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

All Daikin equipment is sold pursuant to Daikin's Standard Terms and Conditions of Sale and Limited Warranty. Consult your local Daikin Representative for warranty details. Refer to Form 933-43285Y.