

## Installation and Maintenance

## IM 1307-1

Group: **Controls**

Part Number: **910339143**

Date: **March 2021**

## LONWORKS® Communication Module For MicroTech® Unit Controllers

### Unit Ventilator Models:

Vertical Floor - AVS, AVV, AVB, and AVR

Horizontal Ceiling - AHF, AHB, AHV and AHR

Self-Contained Vertical Floor - AZQ, AZU, AZR, AEQ, ARQ & GRQ

SmartSource® DOAS Water Source Heat Pump



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This manual contains the information you need to install and configure the LONWORKS® communication module on the MicroTech® Unit Ventilator (UV) or SmartSource® DOAS Water Source Heat Pump (WSHP) unit controller.

It is intended for technicians or other qualified personnel who are familiar with standard LONWORKS terminology and concepts.

For technical support, contact the Daikin Applied Controls Support Group at (866) 462-7829.

## Hazard Identification Messages

**⚠ CAUTION**

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

**⚠ DANGER**

**Improper installation or maintenance can cause equipment damage or personal injury.**

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

**⚠ WARNING**

**Improper grounding may result in injury, death, and property damage if not avoided.**

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

**⚠ 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.

## Limited Warranty

Consult your local Daikin Applied representative for warranty details. To find your local Daikin Applied representative, go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

## Notices

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## Revision History

IM 1307	September 2020	Initial release.
IM 1307-1	March 2021	Added DOAS WSHP. Added reference in LONWORKS Network Addressing section that .NET v4.8 is required when using Echelon CT programming tool. Other formatting changes. Replaced PN on cover to 910339143. Updated Wink description and Commissioning and Configuration tables for LONWORKS.

## References

Number	Company	Title	Source
078-0014-01E	LonMark® Interoperability Association	LonMark® Layers 1-6 Interoperability Guidelines	<a href="http://www.lonmark.org">www.lonmark.org</a>
078-0120-01E		LonMark Application Layer Interoperability Guidelines	
8500_20		Space Comfort Control (SCC) Functional Profile, v2.0	
078-0156-01G	Echelon® Corporation	LonWorks® FTT-10A Free Topology Transceiver Users Guide	<a href="http://www.echelon.com">www.echelon.com</a>
ED 19110	Daikin Applied	Protocol Information for MicroTech UV Unit Controller	<a href="http://www.DaikinApplied.com">www.DaikinApplied.com</a>
OM 1280		MicroTech Controls for Unit Ventilators	
OM 1308		MicroTech Controls for SmartSource DOAS Water Source Heat Pump	
ED 19118		Protocol Information for MicroTech DOAS WSHP Unit Controller	

## Software Version

This document supports the current version of LONWORKS communication module firmware. LONWORKS firmware is only compatible with MicroTech unit controller firmware/hardware. It is not backward compatible with legacy MicroTech II UV unit controllers.

The hardware and software numbers are displayed on both the unit controller and LONWORKS module hardware. [Figure 1](#) shows part numbers on the UV LONWORKS module.

## Description

The LONWORKS communication module is a printed circuit board that mounts directly to a MicroTech unit controller. The communication module connects the unit controller to the building automation system (BAS) on a LONWORKS network. It enables the exchange of variables between the unit controller and the network. The communication module uses a standard LONWORKS 48-bit Neuron Processor to translate the unit controller application into the LONWORKS network protocol.

The MicroTech unit controller and communication module boards are installed on both Daikin Applied's Unit Ventilator (UV) and DOAS (Dedicated Outdoor Air System) Water Source Heat Pump units. While the UV and DOAS WSHP share the same physical hardware, each one has its own LONWORKS firmware application. The differences are described where necessary.

## Application

The UV application is configured in accordance with the LonMark Space Comfort Control (SCC) Functional Profile, v2.0 (8500\_20). The object type is 8505 SCC-Unit Ventilator. The DOAS WSHP application is configured in accordance with the LonMark Discharge Air Controller functional profile\_8610.

The communication module firmware is LonMark® 3.4 certified. The LONWORKS network parameters are configurable using the latest Echelon® Commissioning Tool (CT) for FT6050 Smart Transceiver devices.

Refer to [www.lonmark.org](http://www.lonmark.org) for certification conformance and the [Commissioning and Configuration](#) section for initial network setup information.

## Specifications

Table 1 provides a summary of the communication module technical data and conformance to agency listings.

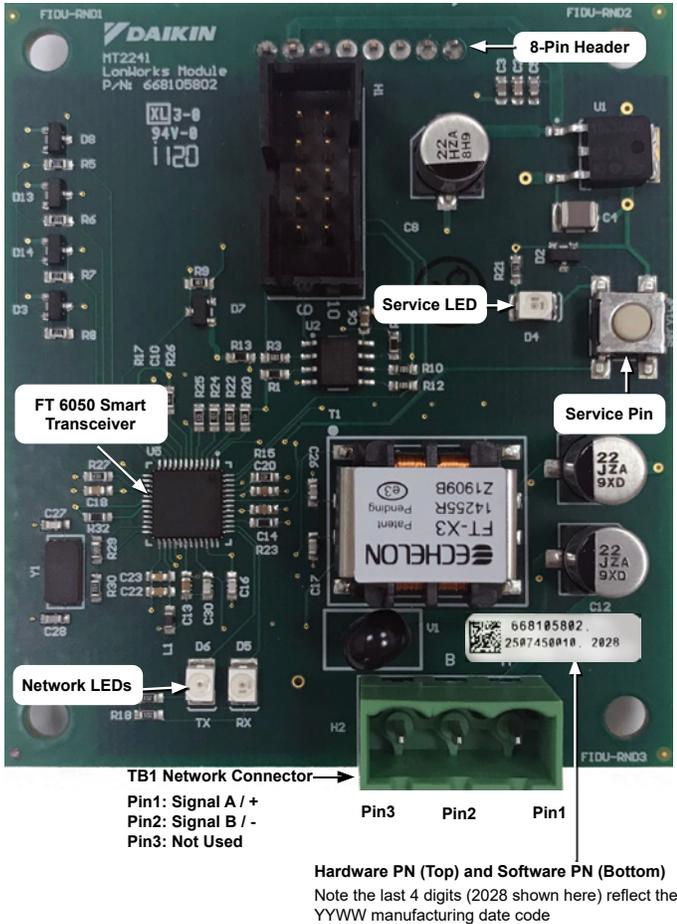
**Table 1: Specifications**

General	
Dimensions	2.95" x 2.6" (75mm x 65 mm)
Operating	
Temperature	-40 - 158°F (-40 - 70°C)
Humidity	<90% RH
Storage and Transportation	
Temperature	-40 - 158°F (-40 - 70°C)
Humidity	<90% RH
Power Supply	
Power	DC 5 V (+/-5%) power supplied by unit controller baseboard
Network	
Network cable	Twisted pair wire with 3-pin connector, compliant with RS-485 standard TIA/EIA-485-A <ul style="list-style-type: none"> <li>• Up to 1000 m (3280 ft) maximum total wire with one repeater</li> <li>• Up to 500 m (1640 ft) maximum total wire with no repeaters</li> </ul>
Bus connection	Galvanically isolated, 78k baud
Transceiver	LONWORKS FT 6050 Smart Transceiver supports TP/FT-10 channel Polarity insensitive
LONWORKS data memory	512 KB SPI flash memory
Network connector	3-pin (GND, A, and B) network connector plug
Transformer	FT-X3 communications transformer
Communications Protocol	ISO/IEC 14908-1 (ANSI/CEA 709.1-B and EN14908.1) control network protocol
Agency Listings/Certifications	
LonMark	LonMark 3.4 certified to either: <ul style="list-style-type: none"> <li>• SCC (8500_20) Functional Profile- Unit Ventilator</li> <li>• DAC Functional Profile (8610) - DOAS WSHP</li> </ul>
US	UL 60730-1 (baseboard)
Canada	CSA E60730-1 (baseboard)

## Component Data

The following section describes the key physical components of the communication module and their functions. The communication module is a rectangular printed circuit board that plugs on the top side of the unit controller baseboard. Important features include the service pin and service LED, network connector, transceiver, and 8-pin header. Table 1 shows the dimensional information and Figure 1 shows the module with important features for installation and start-up.

Figure 1: Communication Module Major Components



## Service Pin

The service pin button generates a service-switch message, which contains the Neuron® ID and the Standard Program Identification code (SPID) of the device, or node. A service-switch message is a network message that is generated by a node and broadcast on the network. It can be used to commission the device on the LONWORKS network. The service pin is activated by pressing down on the small round white button on top of the service switch. See Figure 1 for the location of the service pin button.

## Service Light Emitting Diode (LED)

Table 2 describes the various modes of LED activity as implemented by the communication module. The LED comes on once the service pin button is pressed and indicates that the communication module is able to communicate to the LONWORKS network. See Figure 1 for location of the Service LED and Commissioning and Configuration for integration details.

Table 2: Service LED Activity

LED Activity	Description
LED flashes once at power up, or comes ON when pressing the service pin button	Indicates normal operation for a commissioned communication module
LED is OFF continuously as soon as power is applied	Faulty communication module hardware and/or power supply
LED is ON continuously, even when power is first applied	Faulty communication module hardware and/or power supply
LED flashes at power-up; goes OFF; then comes ON solid	Indicates the device does not have the application image (APB) file installed Reload application and interface files, which can be found on <a href="http://www.DaikinApplied.com">www.DaikinApplied.com</a> or <a href="http://www.lonmark.org">www.lonmark.org</a> <sup>1</sup>
LED flashes very briefly once every second	Communication module could be experiencing an error with the device application code or possibly the communication module hardware Reload application and interface files, which can be found on <a href="http://www.DaikinApplied.com">www.DaikinApplied.com</a> or <a href="http://www.lonmark.org">www.lonmark.org</a> <sup>1</sup>
LED steadily blinks ON and OFF at ½ Hz Rate (1 Sec = ON; 1 Sec = OFF)	Indicates normal operation for a decommissioned communication module

<sup>1</sup>Contact the Daikin Applied Controls Customer Support Group at 866-462-7829 for additional assistance, if necessary.

## LONWORKS Network Connector

The TB1 network connector (Figure 1) is the physical port that attaches the communication module to the LONWORKS FTT-10 bus. The communication module is not polarity sensitive. See Table 3 for a description of the TB1 network pins and their function.

Table 3: Communication Module TB1 Network Connector Pins

Pin	Designation	Function
1	Signal A / +	FTT-10
2	Signal B / -	FTT-10
3		Not Used

## Network LEDs

The communication module has two network LEDs (labeled TX and RX) to indicate when data is being sent and received from the network. See [Table 4](#) for LED descriptions and [Figure 1](#) for the location.

**Table 4: Network LED Activity**

LED	Color	Description
TX	Green	Data is being transmitted to the LONWORKS network
RX	Green	Data is being received from the LONWORKS network

## 8-Pin Header

The 8-pin header connects the unit controller baseboard (via the SPI bus) to the communication module. See [Figure 1](#) for location of the 8-pin header.

## Neuron ID

The basis of the communication module is an Echelon Neuron integrated circuit (Neuron chip). Every Neuron chip has a unique 48-bit Neuron ID or physical address. The Neuron ID can be used to address the device on the LONWORKS network, which is activated by pressing the service pin button. The Neuron ID is generally used only during initial installation or for diagnostic purposes. For normal network operation, a device address is used.

## Transceiver and Transformer

Each communication module is equipped with an FT 6050 Smart Transceiver and FT-X3 transformer for network communication.

Together, they allow the unit to communicate on the LONWORKS network with minimal noise. The transceiver supports free network topology (including ring, star, and daisy-chain) using unshielded, twisted pair cable with polarity insensitive connections at each node. See [Table 5](#) and [Table 6](#) for details based on a free topology network. Also see [Figure 1](#) for locations of network connections on the unit controller and communication module hardware.

## Network Specifications

[Table 5](#) summarizes the network characteristics that apply to the communication module.

**Table 5: Transmission Specifications**

Component	Description
Network Topology	Flexible Free Topology
Device Transceiver	FT 6050 Smart Transceiver using Echelon IzoT™ device platform
Cable Types	EIA-485 network-supported wiring, with cables shown in <a href="#">Table 6</a> or Echelon-approved equivalent
Maximum Bus Length <sup>1</sup>	1640 feet (500 meters) per segment
Maximum Node Separation <sup>1</sup>	1312 feet (400 meters)
Data Transmission	Two-wire, half duplex
Data Transmission Rate	78 kbps (baud)

<sup>1</sup>Varies by wire type. Reference Echelon FT 6000 Series Smart Transceiver Specifications.

## Qualified Cables

Echelon has qualified three twisted-pair network communication cables that are available from a large number of different sources. Some local codes or applications may require the use of plenum-rated cable. [Table 6](#) describes the cables that meet this specification.

**Table 6: Qualified Cables - Details**

Wire Size	Qualified Cable Types	Maximum Cable Length <sup>1</sup>	Maximum Node-to-Node Length
24 AWG	EIA-485 Category 5	1476 ft (450 m)	820 ft (250 m)
22 AWG	Belden 85102	1640 ft (500 m)	1312 ft (400 m)
16 AWG	Belden 8471	1640 ft (500 m)	1640 ft (500 m)

<sup>1</sup>Varies by wire type. Up to 3280 ft (1000 m) maximum total wire with one repeater and up to 1640 ft (500 m) maximum total wire with no repeaters. Reference Echelon FT 6000 Series Smart Transceiver Specifications.

**NOTE:** Ideally, two unit controllers should be connected with one continuous piece of cable in order to reduce the risk of communications errors. If it is necessary to splice the cable, use crimp-type butt connectors (good) or solder (best). Never use wire nuts.

## Bus Termination

LONWORKS network segments require termination resistors for proper data transmission performance. One termination is required in each segment. It may be located anywhere along the segment. The type and number of terminations depend on network topology and attention to impedance. Refer to the Echelon LONWORKS Transceiver User's Guide for details ([www.echelon.com](http://www.echelon.com)).

## Installation and Mounting

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

**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 a communication module, you need to touch a grounded object, such as the metal enclosure, in order to discharge the electrostatic potential from your body.

**WARNING**

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

This equipment must be properly grounded. Only personnel knowledgeable in the operation of the equipment being controlled must perform connections and service to the unit controller.

The communication module mounts on the unit controller baseboard with connector pins. It is held in place with four plastic locking standoffs. Field wiring connections to the LonWorks network are made at the three-terminal plug (TB1) on the communication module (Figure 1).

### Field Installation Kit

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

- The LONWORKS communication module
- Four white plastic standoffs
- Network connector (TB1) attached to the communication module)

See [Service Information](#) for replacement kit part numbers.

### Installing a new Communication Module

Follow these procedures to install a new communication module on the unit controller so that it can be incorporated into a LONWORKS network.

**NOTE:** Do not remove the new communication module from the ESD (electrostatic discharge) bag until ready to install.

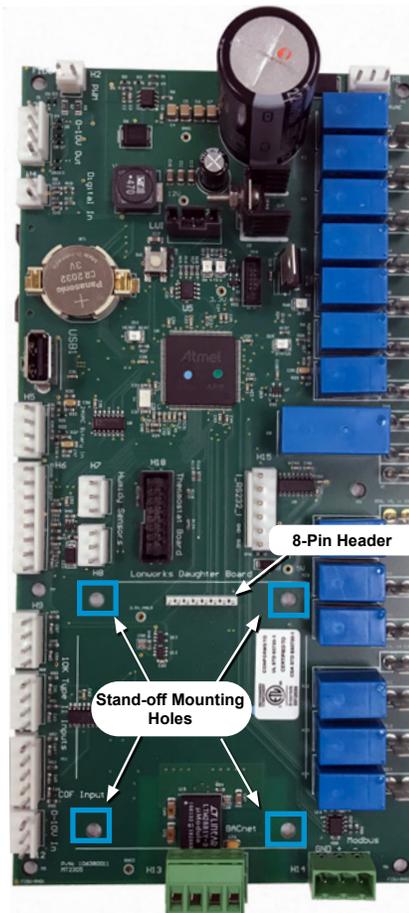
**NOTE:** It is recommended that a properly grounded wrist strap is used when handling or installing the new communication module.

1. Remove power from the unit controller.
2. Remove the 4-pin BACnet network connector (Figure 2, bottom center of image).
3. Remove the unwired cable plug from the TB1 network connector socket (Figure 1).
4. Locate the four white standoffs that are included with the

communication module kit. Take the first standoff and insert it into the first empty mounting pin (hole) on the unit controller. Repeat for the remaining three standoffs (Figure 3). The standoffs snap into place and lock into place when properly inserted.

5. Locate the 8-pin header on the unit controller (Figure 2).
6. Orient the communication module so that the side with the components faces out and the connector socket on the back of the module can mate with the 8-pin header on the unit controller.
7. Guide the communication module connector socket into the unit controller 8-pin header, and then gently but firmly push the standoffs into place. A faint click is heard when the locking standoffs have secured the communication module in place (Figure 2 - Figure 4).
8. Connect the network wires into the network plug using a flat-head screwdriver.
9. Insert the network cable plug into the communication module TB1 network connector socket.
10. Apply power to the unit controller.

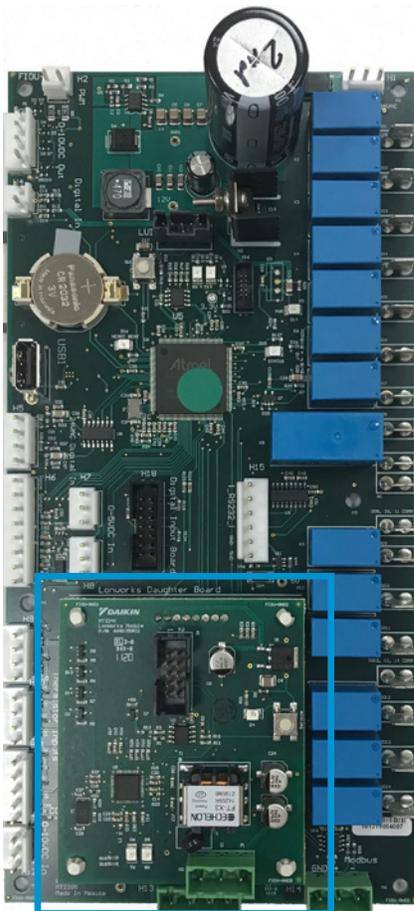
**Figure 2: Communication Module Mounting Location on the Unit Controller (Module Not Installed)**



**Figure 3: Communication Module Standoffs and Mounting Location**



**Figure 4: Communication Module Installed on the Unit Controller**



## Replacing a Communication Module

Follow these procedures to remove an existing communication module, replace it, and incorporate it into an existing LONWORKS network.

**NOTE:** Do not remove the new communication module from the ESD (electrostatic discharge) bag until ready to install.

**NOTE:** It is recommended that a properly grounded wrist strap is used when handling or installing the new communication module.

1. Disconnect power from the unit controller.
2. Remove the wired cable plug from the communication module TB1 network connector socket (Figure 1).
3. Locate the four standoffs for the communication module from the unit controller (Figure 2).
4. Depress the barb on one standoff and gently pull the corner of the communication module over the barb. Do not bend the communication module or mis-align the connector pins.
5. Proceed to the other three corners, by carefully removing the communication module from each standoff, and pulling it over the standoffs.
6. Gently lift the communication module from the unit controller.
7. Locate the empty connector pins and four standoffs on the unit controller (Figure 2).
8. Remove the new communication module from the ESD bag, handling it by the edges.
9. Orient the communication module so that the side with the components faces out and the connector socket can mate with the 8-pin header on the unit controller.
10. Push the communication module onto the connector pins and standoffs until you hear the faint click of the locking standoffs securing the communication module in place.
11. Insert the network cable plug into the communication module TB1 network connector socket.
12. Apply power to the unit controller.

## LONWORKS Network Addressing Conformance

The LONWORKS communication module conforms to the LonMark standard for device addressing, which is defined at the time of network configuration. Device addresses have three parts:

1. The Domain ID - designates the domain. Devices must be in the same domain in order to communicate with each other.
2. The Subnet ID - specifies a collection of up to 127 devices that are on a single channel or a set of channels connected by repeaters. There may be up to 255 subnets in a domain.
3. The Node ID - identifies an individual device within the subnet.

### ***LonMark Standard Network Variables and Configuration Properties***

The communication module software translates the LonMark Standard Network Variable Types (SNVTs) and Standard Configuration Property Types (SCPTs) in accordance with the LonMark profiles used on the LONWORKS network into the variables and parameters used in the unit controller. These include both resource and device file types.

#### **Device Files**

The Device External Interface File (a specially formatted PC text file with an extension (.XIF) is the primary device file type. The XIF and other device files are required for displaying the standard network variables (SNVTs) and configuration properties (SCPTs). See [Table 7](#) and [Table 8](#) for a list of all device files supported by each unit controller application.

### ***User-Specified Network Variables and Configuration Properties***

The communication module software also supports User Network Variable Types (UNVTs) and User Configurable Property Types (UCPTs) which are defined by the set of resource files for each unit controller application.

#### **Resource Files**

Resource files contain definitions of the user-defined functional profiles, network variables types, configuration property types, and enumerations. Resource files are required for displaying these user-specific variables (UNVTs) and configuration properties (UCPTs) that are not included in the standard device profile. See [Table 7](#) and [Table 8](#) for a list of all resource files supported by each unit controller application.

## Network Integration Procedure

After the communication module has been installed, the unit controller is ready for integration into a building automation system (BAS). Commissioning and configuring the communication module for network communication involves these four steps, each of which are described further in this section:

1. Physically connecting the LONWORKS communication module network port and verifying wiring
2. Commissioning to establish communication between the unit controller and network
3. Configuring the unit to the BAS
4. Verifying network communication

### Connecting to the Network

After the communication module has been properly installed on the unit controller, it is ready to be physically connected into the LONWORKS network. Follow these steps to commission the module and establish network communication:

**NOTE:** It is recommended that the communication module network plug is not connected to the LONWORKS network until commissioning is ready to begin.

1. Verify the communication module is attached properly to the unit controller.
2. Verify that the communication module's network connector (TB1) pins 1 and 2 are connected to the LONWORKS network ([Figure 1](#) and [Figure 2](#)).
3. Follow Echelon specifications for network wiring and as referenced in the previous section.

 <b>CAUTION</b>
Do not install the cable in the same conduit with power wiring. The temperature of the cable must not exceed 131°F (55°C), which can result in personal injury or equipment damage if not avoided.

### Commissioning

Before proceeding, you will need the following:

- LONWORKS application such as Echelon® CT (Commissioning Tool), available at [www.echelon.com](http://www.echelon.com)

**NOTE:** Echelon CT requires a 32-bit version of Visio software and also .NET v4.8 Windows framework. It is also recommended that .NET v3.5 remain installed in order to support other PC applications not related to the Echelon CT Tool.

- Device and resource files for the LONWORKS communication module
- Twisted pair shielded cable with 3-pin connector
- Echelon TP/FT-10 to USB network interface, U10 or similar
- Computer with Windows-compatible operating system

1. Download the packaged zip folder for the desired application (UV or DOAS WSHP) from either [www.DaikinApplied.com](http://www.DaikinApplied.com) or [www.lonmark.org](http://www.lonmark.org).

**NOTE:** The zip folder contains the XIF device files and resource files needed for network mapping and configuration. Refer to [Table 7](#) and [Table 8](#) for a description of all files.

**Table 7: Device and Resource Files - UV**

XIF Device Files	Resource Files
MT_UV_FT6050.APB	McQuaySCC_UV.enu
MT_UV_FT6050.HEX	McQuaySCC_UV.fmt
MT_UV_FT6050.NEI	McQuaySCC_UV.fpt
MT_UV_FT6050.NME	McQuaySCC_UV.typ
MT_UV_FT6050.NMF	
MT_UV_FT6050.XFB	
MT_UV_FT6050.XFO	
MT_UV_FT6050.XIF	

**Table 8: Device and Resource Files - DOAS WSHP**

XIF Device Files	Resource Files
MT_DOAS_WSHP_FT6050.APB	McQuayDAC_DOAS.enu
MT_DOAS_WSHP_FT6050.HEX	McQuayDAC_DOAS.fmt
MT_DOAS_WSHP_FT6050.NEI	McQuayDAC_DOAS.fpt
MT_DOAS_WSHP_FT6050.NME	McQuayDAC_DOAS.typ
MT_DOAS_WSHP_FT6050.NMF	
MT_DOAS_WSHP_FT6050.XFB	
MT_DOAS_WSHP_FT6050.XFO	
MT_DOAS_WSHP_FT6050.XIF	

2. Use a network configuration tool (Echelon CT programmer or similar) to map the device Neuron ID to the domain/subnet/node logical addressing scheme when it creates the network image, the network address, and connection information.

**NOTE:** The Echelon IzoT Commissioning Tool design manager is used in conjunction with the CT programmer to create the network drawing and import the device template into the network.

3. Confirm that the BAS is ready to receive a network device broadcast message.
4. Press the service pin button to address and establish communication.

**NOTE:** Pressing the service pin generates a service-pin message, which contains the Neuron ID and the Standard Program Identification code (SPID) of the device. A service pin message is a network message that is generated by a node and broadcast on the network.

## Configuring the Communication Module

As a general rule, the communication module does not require configuration unless advised by the network integrator. The unit controller, along with the communication module, is ready to operate with the default parameter values in the unit controller.

However, be aware that *Receive Heartbeat*, *Max Send Time*, and *Min Send Time* are typical parameters that may need to be changed for your network. They should be modified on an as-needed basis. Maintain default values if possible.

Refer to the respective MicroTech Unit Controller Integration Guide, for all LONWORKS network parameters supported by the unit controller (see [References](#) for document numbers and location).

## Verifying Network Addressing (Wink)

The MicroTech unit controller supports the LONWORKS Wink functionality. A Wink command is initiated by the BAS or through the LONWORKS commissioning software. The Wink function allows verification of an individual unit network address without opening the unit access panel. The Wink command sent from the network is specific to the unit controller application (UV or DOAS WSHP.)

**NOTE:** The Wink command can be used during all operating modes. This applies to both applications.

When the network issues a Wink command, unit controller performs a sequence of steps as described below.

### Unit Ventilator

1. The following occurs immediately:
  - The unit controller Status LED blinks rapidly during the Wink
  - The unit transitions to fan-only mode
  - Immediate shutdown of all running compressors
  - Electric heat shuts down
  - Auxiliary heat shuts down
  - Indoor fan turns off for 5 seconds. The unit controller then does the following:
    2. Turns indoor fan on at 100% (unless the *ShutdownDIArm* is Active) for 5 seconds
    3. Turns indoor fan off for 5 seconds
    4. Resumes normal activity (initially in fan-only mode)

### DOAS WSHP

The unit controller immediately initiates a normal shutdown of all running compressors. This takes approximately 5 minutes. The unit controller then does the following:

1. Turns fan off for 5 seconds
2. Turns fan on for 5 seconds
3. Turns fan off for 5 seconds
4. Resumes normal activity

## Troubleshooting

Follow these procedures if you can control the unit from the local room sensor, but is not communicating to the network:

### Network Wiring and Connections

- Check for faulty cable connectors at the LONWORKS communication module and throughout the network.
- Determine if there is a network ground fault.
- For network terminal connections, twist the wires together a minimum of three times.
- Use only approved cable. Do not use different wire types on the same bus.
- Follow the bus length limits for the cable type.
- Confirm that you have the compatible LONWORKS communication module for the unit controller. See [Table 9](#) for part number.
- Make sure that the network trunk avoids strong sources of electromagnetic interference (EMI).
- Verify that the network trunk is not located near a DC load switch (relay) unable to communicate with the unit:
- Check addressing. Press the Service Switch on the communication module to send the service message to the network. The service-switch message contains the Neuron ID and the Standard Program Identification code (SPID) of the device, or node.

### Bus Terminators

Errors from bus termination can have the following results:

- Signal level too low could indicate the wrong bus terminator or too many terminators.
- Signal level too high could indicate a high-level signal or signal reflections point due to a missing or wrong bus terminator, or that bus terminators are placed incorrectly.
  - Verify that the correct terminators are used based on your network topology.
    - Free topology should have a single 52.3 Ω bus terminator at busiest point of network.
    - Line topology should have two (2) 105 Ω bus terminators at both network ends.

## Network Performance and Communications

- If network traffic is slow, communication is intermittent, or the trunk is experiencing “noise,” it may be necessary to use a network protocol analyzer or oscilloscope to determine the source of poor performance.
- Confirm power is applied to the unit controller.
- Note that software files and certain network data points used by the current FT 6050 LONWORKS communication module are not compatible with the legacy FT 3150 LONWORKS communication module hardware.

## Parts

To find your local service office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-432-1342.

**Table 9: Replacement Kits**

Description <sup>1</sup>	Part Number
<b>MicroTech UV LONWORKS field installation kit</b> Includes: communication module, four stand-offs and 3-pin network connector. Requires UV application version 1.3 or newer.	910314262

<sup>1</sup> Note that network connection wiring is not included in the kit.

## Technical Support

Contact the Daikin Applied Controls Customer Support Group at 866-462-7829 for additional assistance, if necessary.

Refer to the appropriate MicroTech Unit Controller Operation Manual for additional information about unit parameters and setpoint configuration. Also refer to the appropriate Unit Controller Integration Guide for all LONWORKS parameters and other network communication information.

See [References](#) for literature descriptions and locations.



### ***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](http://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](http://www.DaikinApplied.com).

### ***Aftermarket Services***

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

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

Products manufactured in an ISO Certified Facility.