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MicroTech II®
AAF®-HermanNelson®
Unit Ventilator Unit Controller
Protocol Information

BACnet® Networks
LONWORKS® Networks
N2 Open Networks

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Table of Contents

Table of Contents 2
Limited Warranty 3
Notice 3
Reference Documents 3
Introduction 4
Unit Controller Data Points 4
Protocol Definitions 4
Basic Protocol Information 5
BACnet Networks 5
MicroTech II Unit Ventilator Unit Controller Device Object 6
BACnet MS/TP Network Connections 7
LONWORKS Networks 8
Network Considerations 9
N2 Open 12
Unit Ventilator Sequence of Operation 17
Protocol Object/Variable Availability 18
BACnet 18
LONWORKS/N2 Open 20
Protocol Point Detail Lists 23
BACnet 23
LONWORKS 26
N2 Open 28
Detailed Data Point Information 31
Application Mode Input 31
Auxiliary Heat Enable Input 32
Binary Inputs 1 Status Output 32
Binary Outputs 1 Status Output 33
Binary Outputs 2 Status Output 34
Binary Outputs 3 Status Output 35
Compressor Enable Input 36
Compressor Run Time Output 36
CW Valve Position Output 37
Discharge Air Temp Output 37
Discharge Air Temp Setpoint Output 38
Economizer Enable Input 38
Economizer IA/OA Enthalpy Differential 39
Economizer IA/OA Temp Differential 39
Economizer OA Enthalpy Setpoint 40
Economizer OA Temp Setpoint 41
Effective Occupancy Output 42
Effective Setpoint Output 42
Effective Space Temp Output 43
Emergency Override Input 43
Energize Exhaust Fan OAD Setpoint 44
Energy Hold Off Input 45
Energy Hold Off Output 45
Exhaust Interlock OAD Min Position Setpoint 46
F&BP Damper Position Output 47
Fan Cycling Configuration 47
Fan Speed Output 48
Fault Value 48
Filter Change Hours Setpoint 49
Heat/Cool Mode Input 50
Heat/Cool Mode Output 51
IA/DX Coil Temp Output 51
Local Bypass Time 52
Local Setpoint Output 52
Location Label 53
Minimum Send Time 53
OA/DX or Water/DX Coil Temp Output 54
OAD Max Position Setpoint 54
OAD Min Position High-Speed Setpoint 55
OAD Min Position Low-Speed Setpoint 55
OAD Min Position Med-Speed Setpoint 56
Occupancy Override Input 57
Occupancy Sensor Input 57
Occupancy Temperature Setpoints 58
Outdoor Air Damper Position Output 60
Outdoor Air Humidity Input 60
Outdoor Air Humidity Output 61
Outdoor Air Temp Input 61
Outdoor Air Temp Output 62
Passive Dehum Setpoint 62
Primary Cool Input 63
Primary Cool Output 63
Primary Heat Input 64
Primary Heat Output 64
Receive Heartbeat 65
Reset Alarm Input 65
Reset Filter Alarm Input 66
Secondary Cool Input 66
Secondary Cool Output 67
Secondary Heat Input 67
Secondary Heat Output 67
Send Heartbeat 68
Setpoint Offset Input 68
Setpoint Shift Input 69
Source (Water-in) Temp Input 70
Source (Water-in) Temp Output 70
Space CO2 Input 71
Space CO2 Output 72
Space CO2 Setpoint 72
Space Fan Run Time Output 73
Space Humidity Input 73
Space Humidity Output 74
Space Humidity Setpoint 75
Space Temp Input 75
Space Temp Setpoint Input 76
Unit Status Output 77
UV Application Version 78
UVC State Output 79
Valve Override Input 80
Water-out Temp Output 81
WH or CW/HW Valve Position Output 81
Alarms 82
Fault Alarms 82
Filter Alarm 82
Appendix A: Protocol Implementation Conformance Statement 83
BACnet Protocol Implementation Conformance Statement 83
Product Description 83
BACnet Standardized Device Profile 83
BACnet Interoperability Building Blocks (BIBBs) Supported 83
Standard Object Types Supported 84
Data Link Layer Options 84
Segmentation Capability 84
Device Address Binding 85
Networking Options 85
Character Sets Supported 85
Non-BACnet Equipment/Network(s) Support 85
Index 86

LONMARK 3.3

Unit controllers are LONMARK® certified with optional LONWORKS® communication module. Applies to McQuay Unit Ventilators with application code uvXXrev1_26 and higher.

Limited Warranty

Consult your local McQuay Representative for warranty details. Refer to Form 933-430285Y. To find your local McQuay Representative, go to www.mcquay.com.

Notice

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Reference Documents

Number	Company	Title
OM748	www.mcquay.com	Air Source Heat Pump with Electric Heat (Software Model 00)
OM749	www.mcquay.com	Water Source Heat Pump with Electric Heat (Software Model 02)Water Source Heat Pump without Electric Heat (Software Model 03)
OM750	www.mcquay.com	DX Cooling with Electric Heat (Software Model 04)
OM751	www.mcquay.com	DX Cooling Only (Software Model 05)
OM752	www.mcquay.com	Electric Heat Only (Software Model 06)
OM753	www.mcquay.com	DX Cooling with Wet Heat - Valve Control (Software Model 07)DX Cooling with Wet Heat - F&BP Damper Control (Software Model 08)
OM754	www.mcquay.com	2-pipe Wet Heat Only - Valve Control (Software Model 09)2-pipe Wet Heat Only - F&BP Damper Control (Software Model 10)
OM755	www.mcquay.com	2-pipe Heat/Cool - Valve Control (Software Model 11)2-pipe Heat/Cool - F&BP Damper Control (Software Model 12)
OM756	www.mcquay.com	4-pipe Heat/Cool - Valve Control (Software Model 13)4-pipe Heat/Cool - F&BP Damper Control (Software Model 14)
OM757	www.mcquay.com	2-pipe Cooling Only - Valve Control (Software Model 15)2-pipe Cooling Only - F&BP Damper Control (Software Model 16)
OM758	www.mcquay.com	2-pipe Cooling with Electric Heat - Valve Control (Software Model 17)2-pipe Cooling with Electric Heat - F&BP Damper Control (Software Model 18)
IM729	www.mcquay.com	MicroTech II AAF®HermanNelson® Unit Ventilator Controller LonWorks® Communication Modules
IM730	www.mcquay.com	MicroTech II AAF HermanNelson Unit Ventilator Controller BACnet® MS/TP Communication Modules
IM731	www.mcquay.com	MicroTech II AAF HermanNelson Unit Ventilator Controller BACnet Communication Modules
IM747	www.mcquay.com	MicroTech II Unit Ventilator Unit Controls Installation Manual
078-0014-01E	www.lonmark.org	LonMark Layers 1-6 Interoperability Guidelines, Version 3.0
078-0120-01E	www.lonmark.org	LonMark Application Layer Interoperability Guidelines, Version 3.2
8500_10	www.lonmark.org	LonMark Functional Profile: Space Comfort Controller, Version 1.0
078-0156-01G	www.lonmark.org	LonWorks FTT-10 Free Topology Transceiver Users Guide
ANSI/ASHRAE 135-2001	ASHRAE1791 Tullie Cl NE, Atlanta, GA30329	BACnet A Data Communication Protocol for Building Automation and Control Networks
http://cgproducts.johnsoncontrols.com/met_pdf/636018.pdf		N2 Open Installation Document

Introduction

This document contains the information required to incorporate a MicroTech II® Unit Ventilator Controller from McQuay International into your building automation system. It lists all BACnet® properties, LONWORKS® variables, Johnson Controls™ Metasys® N2 Open points, and corresponding MicroTech II Unit Ventilator Controller data points. It also contains the BACnet Protocol Implementation Conformance Statement. However, BACnet, LONWORKS, and N2 Open terms are not defined herein. Refer to the respective specifications for definitions and details.

Unit Controller Data Points

The MicroTech II Unit Ventilator Controller provides data points or unit variables that can be accessed from three types of user interfaces: a BACnet MS/TP network, a LONWORKS network, or an N2 Open network. This manual lists all the important data points and the corresponding paths for each applicable interface. Refer to the Reference Documents section for details.

Due to the fact that AAF HermanNelson® Unit Ventilators come in 18 different configurations, not all points, variables, objects, or alarms are available in each Unit Controller software model. In the case of the BACnet and LONWORKS protocols, there is a single external interface presented to the Building Automation System (BAS) that encompasses all 18 Unit Controller software models. However, due to the architecture of the MicroTech II programming and the special needs of the N2 Open protocol, there are four different external interfaces (four families) for the BAS, each of which has its own unique addressing scheme, depending on the model of unit ventilator.

Protocol Definitions

The MicroTech II Unit Ventilator Controller can be configured to operate with BACnet, LONWORKS, or N2 Open networks. However, the controller must have the corresponding network communications module installed. There are three network communications modules: BACnet MS/TP (Master/Slave Token Passing), LONWORKS, and N2 Open.

BACnet Protocol

BACnet is a standard communication protocol for Building Automation and Control Networks that was developed by the American National Standards Institute and American Society of Heating, Refrigeration and Air-conditioning Engineers. Its specifications are found in ANSI/ASHRAE Standard 135-2001, where all aspects of the various types of HVAC systems that are applied to building control systems are covered. BACnet provides the communication infrastructure to integrate products from different vendors into a single building-control system.

LONWORKS Network

LONWORKS is a control network specification for information exchange that is based on the use of the LonTalk protocol for transmitting data.

LonTalk® Protocol

LonTalk is a protocol that was developed by and is owned by the Echelon Corporation. It describes how information should be transmitted between devices on a control network.

LONMARK® Certification

LONMARK Certification is an official acknowledgement by the LonMark Interoperability Association that a product is communicating using the LonTalk protocol according to LONMARK Interoperability Guidelines, to transmit and receive data per a standard LONMARK functional profile. MicroTech II Unit Ventilator Controllers with optional communciation module are LONMARK 3.3 certified. LONMARK certificaiton applies to McQuay Unit Ventilators with application code uvXXrev1_26 and higher.

N2 Open Protocol

N2 Open, also known as Metasys N2 Open, is a protocol developed by Johnson Controls Corporation.

Basic Protocol Information

BACnet Networks

Compatibility

The MicroTech II Unit Ventilator Unit Controller conforms to the BACnet Standard (ANSI/ASHARE 135-2001) as stated in the Protocol Implementation and Conformance Statement (PICS).

BACnet Objects

MicroTech II Unit Ventilator Unit Controllers incorporate standard BACnet object types (i.e., object types defined in the BACnet Standard). Each object has properties that control unit variables or data points. Some object types occur more than once in the MicroTech II Unit Ventilator Unit Controller; each occurrence or instance has different properties and controls different unit variables or data points. Each instance is designated with a unique instance index. Some properties can be adjusted (read/write properties, e.g., setpoints) from the network and others can only be interrogated (read-only properties, e.g., status information).

Each data point accessible from a BACnet network is described with a table that gives the Object Identifier, Property Identifier, and the Full BACnet Reference or path.

Table 1: Example of BACnet Data Point

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Output	14	7	Present_Value	85
Full Reference				
MTII UVUC ##########.ComprEnable.Present_Value				

Under the same heading you will also find the available Range of Enumerations for both BACnet (where applicable) and LON/N2, and a box showing the Units of measure.

Table 2: Example of Range of Enumerations and Units

LON/N2 Range		BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
State	-1= Log_Nul (default) 0= Log_Off 1= Log_On	0= Off 1= On 255= Null (default)	1= Off 2= On 3= Null (default)

Units
No-units

BACnet Firmware Revision History

Firmware Version 2.08 – Before August 1, 2003

Firmware Version 3.00 and higher – After August 1, 2003

Object Identifier

In the BACnet Standard, the name of this property is "Object_Identifier" and the property identifier is 75. ASHRAE's BACnet Standard reserves the first 128 numbers for ASHRAE-defined objects. Manufacturers may define additional object types and assign a number above 127 as long as they conform to the requirements of the ASHRAE BACnet specification.

In the example above, under the heading Object Identifier, you'll find the Object Type is Multistate Output, the Type Enumeration is 14, and the Instance is 7.

An Object Identifier is the property that can be read from the object. In this case, the range of outputs (as shown in the Range of Enumerations) is Null (option not enabled), Off, and ON.

The Type Enumeration (14) is the numeric equivalent of Multistate Output as designated in the BACnet standard, so the Object Type can be accessed by its name or its number.

The Instance (7) shows which particular instance of a Multistate Output this Object Identifier is referring to, since each object in a Unit Ventilator controller must also have a unique identifier to differentiate it from all other objects in a unit ventilator. (See ANSI/ ASHRAE 135-1995 BACnet A Data Communication Protocol for Building Automation and Control Networks. So, as you can see, from the Object Identifier heading we can determine not only the object property, but which specific object it is, Instance 7 of Multistate Outputs.

Property Identifier

Each object can have a number of possible properties or attributes. The Name column under Property Identifier shows what type of data is being accessed from this object. In this case what is being accessed is the Present_Value (Null, On, or Off). Also, under the Enumeration column you'll find the number 85. This is the number that corresponds to the Property (Present_Value), as set out in the BACnet Standard. So the Property can be accessed either by name or number.

Full Reference

As you can see, we can easily determine which object is being addressed and what its properties are from the information that is supplied in the Object Identifier and Property Identifier boxes. And this information is sufficient for some controls companies to find and address these objects from their building-automation systems. However, they will need to supply a unique network address to each Unit Ventilator Unit Controller to determine which Instance 7 Multistate Output (for example) in which unit it is addressing.

However, each MicroTech II Unit Controller also has its own built-in unique system-wide address which we call the Full Reference. This Full Reference (although much longer to type) is preferred by some controls companies, not only because it is unique, but because it also contains all the necessary object information. The full reference (all the letters and numbers are case sensitive and require exact spelling - PLEASE NOTE SPACES) starts with the abbreviated product name, MTII (space) UVUC (space) followed by a unique 10-digit alpha-numeric factory-assigned serial number (represented here as ##########). This 10-digit number is the same as the board serial number that can be found on a label on or near the board. This is followed immediately by a period, then the Object Name, followed immediately by a period, followed by the Object Property (with an underscore as shown). So, the Full Reference for the Object above would be:

MTII UVUC ##########.ComprEnable.Present_Value

As you can see, from this address the BAS provider can determine that it's a MicroTech II Unit Ventilator, the board serial number, that the property being read is the Compressor State, and that the output is the object's Present_Value.

Range of Enumerations

This box shows the available input or output settings or ranges. In our example the Range of Enumerations is Nul (disabled), Off, or On. Other enumerations, such as temperature outputs, may include a range of numbers. They will be listed as Values. In other cases it could be a wide range of possible states such as Auto, Heat, Cool, Setback, etc. These will be listed in a column called States. However, most States will also be assigned a number so that they can be accessed by name or number.

Units

What is shown in this box is the unit of measurement that is used. This is especially important with Unit Ventilators because they use metric units such as degrees C, Kilojoules-per-kilogram, etc. So for those unfamiliar with such units of measure, it may be best to have a conversion reference handy.

MicroTech II Unit Ventilator Unit Controller Device Object

A Device Object is the unique address that is given to a device (Unit Ventilator Unit Controller) which allows it to be distinguished from other devices on a network.

Device Object Identifier

The Device Object Identifier uniquely specifies the MicroTech II Unit Ventilator Unit Controller in the network. It must be unique in the network and it must also have a unique instance number. The Device Object identifier of the MicroTech II Unit Ventilator Unit Controller is set at the factory and is comprised of the last four digits of the board serial number.

Note: If another device in the network should have the same object identifier (instance number), it must be changed to a unique identifier via the BAS.

Device Object Name

The Device Object Identifier uniquely specifies the MicroTech II Unit Ventilator Unit Controller in the network. It must be unique in the network. The device name for the MicroTech II Unit Ventilator Unit Controller device is MTII UVUC ##########. The ######### is a unique ten-digit number that is assigned during the manufacturing process and corresponds to the board serial number. The device name property is the "prefix" of all object names in the MicroTech II

Unit Ventilator Unit Controller. All objects include the device name and a period "." (MTII UVUC ##########.) in front of the object name.

BACnet MS/TP Network Connections

Network wiring connections to a BACnet MS/TP communication module are made to TB2. The four pin connections on that plug are shown below.

Table 3: TB2 Wiring Connections

Pin	Function
RT+	Non-inverting Input
RT-	Inverting Input
COM	Common
SH	Unused

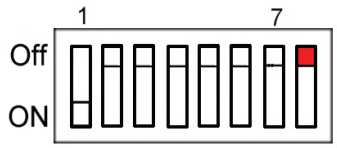
Address Switch

The communication module also has an Address Switch, which must be field-configured on each MicroTech II BACnet MS/TP Communications Module to a unique Media Access Control (MAC) address. MS/TP networks require this additional unique identifier setting so the module can be located and addressed when wired into the network. The system integrator usually pre-assigns an address to each module.

This unique address setting is made using the first seven switches of S1 (1-7). Always leave switch 8 in the OFF position (Master position). The available range of possible addresses using the binary switches is 0 through 127.

Disregard any ON-OFF marking designations on the switch. The UP position (toward the board edge) is OFF.

Figure 1: Address Switch (S1)



Dip switch settings and how they work

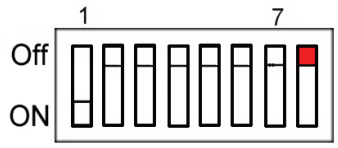
When a switch is in the up (OFF) position, its value is 0. So when all the switches are in the OFF position the module address is 0. When switches are set in the ON (closed) position, their individual values are shown in Figure 2 below. When all switches (except 8) are ON (closed), the module address is 127.

Table 4: Dip Switch Values (when ON)

Switch #	Value	Number when closed
1	2 to the zero power	1
2	2 to the 1st power	2
3	2 to the 2nd power	4
4	2 to the 3rd power	8
5	2 to the 4th power	16
6	2 to the 5th power	32
7	2 to the 6th power	64
8	Must always be in the up (OFF) position	

Example (as read from left to right): 0011001(0) = 76

Figure 2: Address Switch (S1) set to Example



(0+0+4+8+0+0+64=76)

LONWORKS Networks

LONWORKS technology, developed by Echelon Corporation, is the basis for LONWORKS interoperable systems. This technology is independent of the communications media. The LONWORKS Interoperable Association has developed standards for interoperable LONWORKS technology systems. They have published standards for HVAC equipment including the Space Comfort Controller functional profile. This profile specifies a number of mandatory and optional standard network variables and standard configuration parameters. This manual defines these variables and parameters available in the MicroTech II Unit Ventilator Controller.

Compatibility

The MicroTech II Unit Ventilator Controllers with the LONWORKS communications modules operate in accordance with the Space Comfort Controller (SCC) functional profile of the LonMark Interoperability standard.

LONWORKS Variables

MicroTech II Unit Ventilator Controllers use what are called LONWORKS Standard Network Variable Types (SNVTs), Standard Configuration Parameter Types (SCPTs), and User Defined Configuration Parameter Types (UCPTs) for network communication. There are two types of SNVTs, *nvi's and nvo's, used by the Unit Ventilator Unit Controller*. Network variable input (nvi) data points or setpoints are read/write types and can be adjusted. Network variable output (nvo) data points are read only and can just be interrogated. The Unit Ventilator also use SCPTs and UCPTs to transmit important configuration information over the network. These configuration points can be read and /or adjusted. The User Defined Configuration Parameter Types (UCPTs) require resource files to view them as they are user defined and not standard.

Each data point in a LONWORKS network is described in a table in this document that gives the LONWORKS **Name, Profile, SNVT Type,** and **SNVT Index.** If the variable is a configuration variable (nci), the table also includes the **SCPT Reference** and the **SCPT Number**.

Table 5:Example of LONWORKS Data Point

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciOAEnthSetpt	SNVT_enthalpy	153	SCPToutdoorAirEnthalpySetpoint	200

Under the same heading you will also find the available Range of Enumerations for both BACnet (where applicable) and LON/N2, and a box showing the Units of measure.

Table 6: Example of Range of Enumerations and Units

LON/N2 Range		BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
State	-1= Log_Nul (default) 0= Log_Off 1= Log_On	0= Off 1= On 255= Null (default)	0= Off 1= On 3= Null (default)

Units
No-units

LONWORKS Name

Each network variable has a name that is assigned in the LONWORKS SCC Functional Profile that you must use to access each data point. In our example, nciOAEnthSetpt is the name that you must use to access the enthalpy setpoint that is loaded in the unit controller.

SNVT Type

This column specifies the character of the standard network variable type, as shown on the profile's master list. In this case, the variable indicates that it is an enthalpy reading.

SNVT Index

This is the number from the master list, which corresponds to the SNVT type.

SCPT Reference Type

This column refers to the Standard Configuration Parameter Type (SCPT) as shown in the SCPT master list.

SCPT Number

This is the number in the master list that corresponds to the SCPT Reference Type.

Network Considerations

LONWORKS Network Topology

Each MicroTech II LONWORKS Communications Module is equipped with an FTT-10 transceiver for network communications. This transceiver allows for:

- free topology network wiring schemes using twisted pair (unshielded) cable
- polarity insensitive connections at each node.

These features greatly simplify installation and reduce network-commissioning problems. Additional nodes may be added with little regard to the existing cable routing.

Free Topology Networks

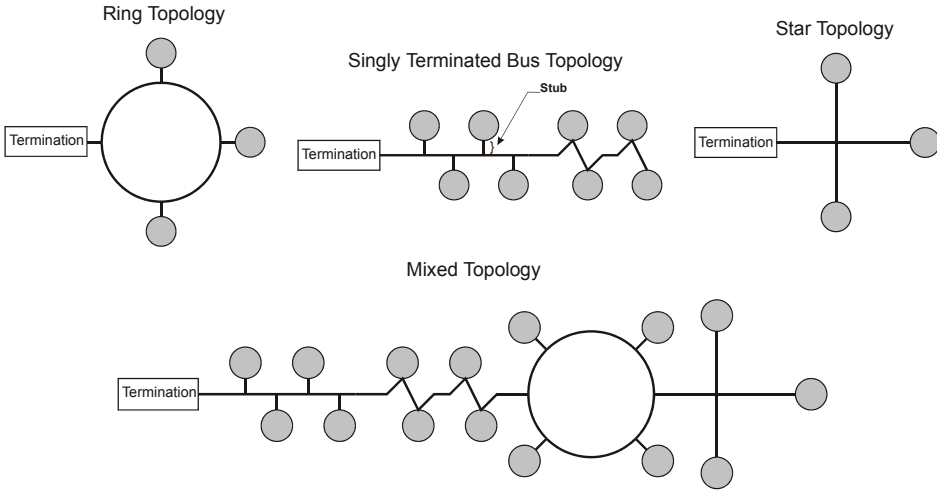
A LONWORKS "free topology network" means that devices (nodes) can be connected to the network in a variety of geometric configurations. For example, devices can be daisy-chained from one device to the next, connected with stub cables branching off from a main cable, connected using a tree or star topology, or any of these configurations can be mixed on the same network (as shown in Figure 3). Free topology segments require termination for proper transmission performance. Only one termination is required. It may be placed anywhere along the segment. **Refer to Echelon LONWORKS FTT-10 Transceiver User's Guide** (see Reference Documents for part number).

Free topology networks may take on the following topologies:

- Bus
- Ring
- Star
- Mixed (any combination of Bus, Ring, and Star).

Note: Limitations to wire lengths apply and must be observed.

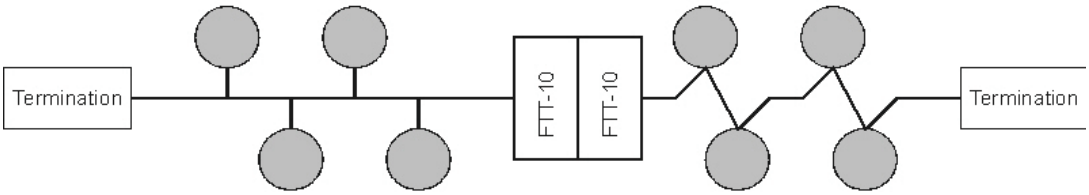
Figure 3: Singly Terminated Free Topology



A network segment is any part of the free topology network in which each conductor is electrically continuous. Each of the four diagrams illustrates a network segment. Some applications may require two or more segments; see "Free Topology Restrictions."

If necessary, segments can be joined with FTT-10-to-FTT-10 physical layer repeaters. Refer to Echelon LONWORKS FTT-10 Transceiver User's Guide (see Reference Documents for part number).

Figure 4: Combining Network Segments with a Repeater



Free Topology Restrictions

Although free topology wiring is very flexible, there are restrictions. A summary follows, refer to the **Echelon FTT-10 User's Guide** for details (see Reference Documents for part number).

1. The maximum number of nodes per segment is 64.
2. The maximum total bus length depends on the wire size.
3. One termination is required in each segment. It may be located anywhere along the segment.

Table 7: LONWORKS Cable Size and Lengths for Free Topology

Wire Size	Maximum Node-to-Node Length	Maximum Cable Length
24 AWG	820 ft (250 m)	1476 ft (450 m)
22 AWG	1312 ft (400 m)	1640 ft (500 m)
16 AWG	1640 ft (500 m)	1640 ft (500 m)

The longest cable path between any possible pair of nodes on a segment must not exceed the maximum node-to-node distance. If two or more paths exist between a pair of nodes (e.g., a loop topology), the longest path should be considered. Note that in a bus topology, the longest node-to-node distance is equal to the total cable length.

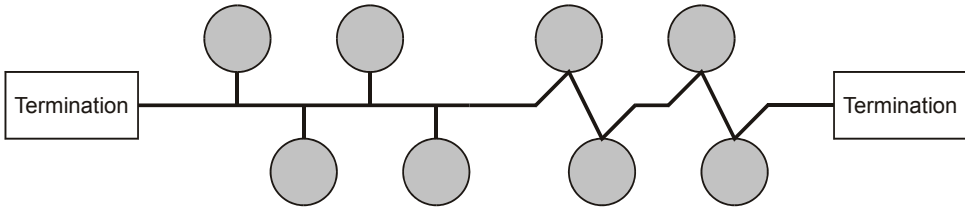
The total length of all cables in a segment must not exceed the maximum total cable length.

Doubly Terminated Networks

You can extend the maximum total cable length without using a repeater by using doubly-terminated network topology (see Figure 5). The trade-offs are (1) this network topology must be rigorously followed during the installation and subsequent retrofits and (2) two terminations must be installed at the ends of the bus for proper transmission performance. Refer to Echelon LONWORKS FTT-10 Transceiver User's Guide (see Reference Documents for part number).

Note: Limitations to wire lengths apply and must be observed.

Figure 5: Doubly Terminated Network Topology



Doubly Terminated Topology Restrictions

The restrictions on doubly-terminated bus topology are as follows:

1. The maximum number of nodes per segment is 64

2. The maximum total bus length depends on the wire size.

3. The maximum stub length is 9.8-ft (3 m). The length of the MicroTech II Unit Ventilator LONWORKS cable harness stub is 7.2-ft (2.19 m).

Table 8: Cable size and lengths for Doubly Terminated Topology

Wire Size	Maximum Cable Length
24 AWG	2952 ft (900 m)
22 AWG	4590 ft (1400 m)
16 AWG	8855 ft (2700 m)

Note: A stub is a piece of cable that is wired between the node and the bus (see Figure 3). If the bus is wired directly to the node, there is no stub, and thus the stub length is zero. If you are wiring to a field terminal strip on a unit, be sure to account for any factory wiring between the terminal strip and the controller. This wiring is considered part of the stub.

4. Two terminations are required in each segment. One must be located at each end of the bus.

Network Cable Termination

LONWORKS network segments require termination for proper data transmission performance. The type and number of terminations depend on network topology. Refer to Echelon LONWORKS FTT-10 Transceiver User's Guide (see Reference Documents for part number).

LONWORKS Network Addressing

Every Neuron Chip has a unique 48-bit Neuron ID or physical address. This address is generally used only at initial installation or for diagnostic purposes. For normal network operation, a device address is used.

Device addresses are defined at the time of network configuration. All device addresses have three parts. The first part is the Domain ID, designating the domain. Devices must be in the same domain in order to communicate with each other. The second part is the Subnet ID that 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. The third part is the Node ID that identifies an individual device within the subnet.

A group is a logical collection of devices within a domain. Groups are assembled with regard for their physical location in the domain. There may be up to 256 groups in domain. A group address is the address that identifies all devices of the group. There may be any number of devices in a group when unacknowledged messaging is used. Groups are limited to 64 devices if acknowledged messaging is used.

A broadcast address identifies all devices within a subnet or domain.

Commissioning the Network

Pressing the service pin on the MicroTech II LONWORKS Communications Module generates a service pin message, which contains the Neuron ID and the Standard Program Identification (SPID) of the node. A service pin message is a network message that is generated by a node and broadcast on the network. It can be used to commission the LONWORKS network.

A network configuration tool maps device Neuron IDs to the domain/subnet/node logical addressing scheme when it creates the network image, the logical network addresses and connection information for all devices (nodes) on the network.

External Interface File (XIF)

LonMark guidelines specify exact documentation rules so that proprietary configuration tools are not required to commission and configure LONWORKS devices. The MicroTech II LONWORKS Unit Ventilator Communications Module is self-documenting so that any network management tool can obtain all the information needed over the network to connect it into the system and to configure and manage it. An External Interface File (a specially formatted PC text file with an extension .XIF) is also available so that any network tool can design and configure it prior to installation. For a copy of the XIF file contact your local McQuay International representative.

Configuring the Unit Controller

Note: The MicroTech II Unit Ventilator Controller Main Control Board and MicroTech II LONWORKS Communication Module together are designed, programmed, and configured at the factory to be a Unit Ventilator unit controller in accordance with the LONWORKS Space Comfort Controller (SCC) functional profile. The unit is ready to operate with the default values of the various parameters set at the factory.

Default values may be changed with the unit's keypad or via the network. See the appropriate operation manual for default values and keypad operating instructions. See Reference Documents for part numbers.

N2 Open

Important Application Details

Current Format Applications

The N2 Open protocol currently uses one of four different point configurations to address points in AAF HermanNelson Unit Ventilator Unit Controllers, depending on the unit-ventilator model type. Table 9 shows which point configuration (1 through 4) each model of unit ventilator falls under. Point data for these is fully supported in this document.

Table 9: Current point configurations by model number

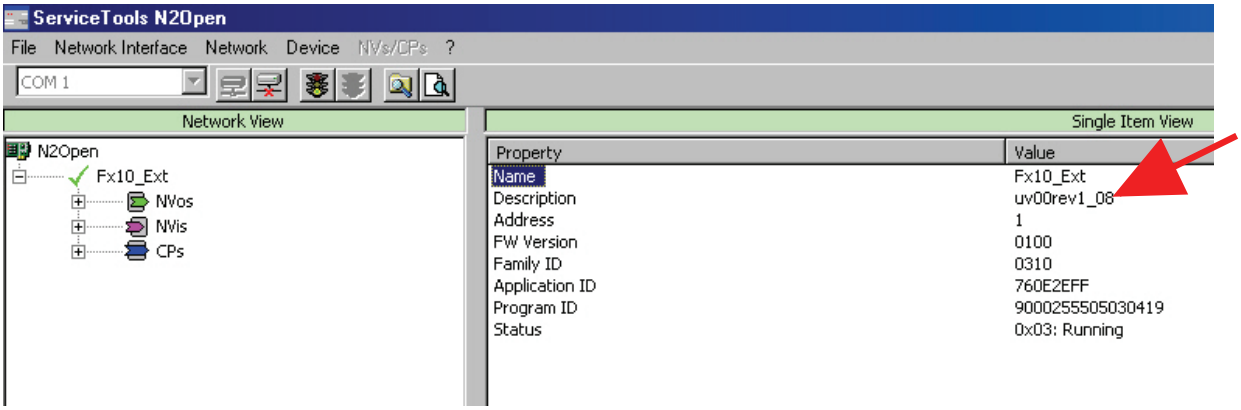
UV Model	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Point Configuration	1	2		3		4	3		4										

How to Determine a Software Revision

The software revision for any application loaded in a unit controller can be easily determined over the network or by using McQuay's ServiceTools® for ATS. When communicating over a network, call up the point titled UV Application Version. Information on how to address this point is available in the alphabetical list of point details that follows.

In ServiceTools for ATS, the application and revision are shown in the Single Item View window in a combined form under Description (see Figure 6).

Figure 6: Notice that under Description the UV application (uv00) and the revision (rev1_08) are shown in a combined form



How to Determine the N2 Open Software Model from the UV Model Number

To determine the proper MicroTech II software model:

Locate the unit ventilator model number on the unit data plate located in the lower right hand corner (facing the unit) for floor and self-contained units (models AV, AZ, AE, AR and ER) or on the upper right hand corner of the discharge face for horizontal (AH model) units.

Using Table 10, determine the software model based on the information given in fields 2, 6, 7 and 9 of the Unit Ventilator Model Nomenclature.

If required, change the network variables as shown in Table 11.

Example: U AVS 5 S13H G 65 E B1 AL 22 G I B 1

Field 2 — Field 6 — Field — Field 9

Table 10: Software Model vs Unit Ventilator Model Number

Software Model	Field 2	Field 6	Field 7	Field 9
00	AEQ, AED	G, H	12, 13	B1, E1, L1 = Standalone w/o TC B2, E2, L2 = Standalone Master w/oTC B3, E3, L3, = Standalone Slave w/o TC B4, E4, L4 = BACnet® MS/TP w/o TC B5, E5, L5 = LonMark SCC w/o TC B6, E6, L6 = N2 Open w/o TC B7, E7, L7 = Standalone w/TC B8, E8, L8 = Standalone Master w/TC B9, E9, L9 = Standalone w/o TC w/CO2 BA, EA, LA = Standalone Master w/o TC w/CO2 BB, EB, LB = Standalone Slave w/o TC w/CO2 BC, EC, LC = BACnet® MS/TP w/o TC w/CO2 BD, ED, LD = LonMark SCC w/o TC w/CO2 BE, EE, LE = N2 Open w/o TC w/CO2 BF, EF, LF = Standalone w/TC w/CO2 BG, EG, LG = Standalone Master w/TC w/CO2
02	ARQ, ERQ	G, H	00	
03	ARQ, ERQ	G, H	12, 13	
04	AZV, AZU, AZR, AVV, AHV, AVR, AHR	G, H	12, 13	
05	AVV, AHV, AZV, AZU	G, H	00	
06	AVV, AHV	Z	12, 13	
07	AZV, AZU, AZR, AVV, AHV	G, H	65, 66, 67, 68, 69, 78, 79	
08	AZS, AZQ, AVS, AHF	G, H	65, 66, 67, 68, 69, 78, 79	
09	AVV, AHV	Z	65, 66, 67, 68, 69, 78, 79	
10	AVS, AHF	Z	65, 66, 67, 68, 69, 78, 79	
11	AVV, AHV	U, D, E, F, 1, 2, 3, 4	00	
12	AVS, AHF	U, D, E, F, 1, 2, 3, 4	00	
13	AVV, AHV, AVR, AHR	S, V, W, 5, 6, 7	65, 66, 67, 68, 69, 78, 79	
14	AVS, AHF	S, V, W, 5, 6, 7	65, 66, 67, 68, 69, 78, 79	
15	AVV, AHV	S, V, W, 5, 6, 7, 8	00	
16	AVS, AHF	S, V, W, 5, 6, 7, 8	00	
17	AVV, AHV	S, V, W, 5, 6, 7	12, 13	
18	AVS, AHF	S, V, W, 5, 6, 7	12, 13	

Note: Not all coil combinations are available with all models.

Table 11: Network Variables (changed using MicroTech II ServiceTools for ATS)

If field 9 is B9,BA,BB,BC,BD,BE,BF,E9,EA,EB,EC,ED,EE,EF,L9,LA,LB,LC,LD,LE,LF			
Variable	**Variable Name**	**Orig. Value**	**New Value**
nciOAMinPos	OAD Min Position High-Speed Setpoint	20	5
nciCO2Enable	CO2 DCV Enable	Log_Off	Log_On

If field 2 is AVR,AHR,AZR (or passive dehumidification is used in software models 12, 14, or 16 only)			
Variable	**Variable Name**	**Orig. Value**	**New Value**
nciSpaceRHEnable	Space Humidity Sensor Enable	Log_Off	Log_On
nciDehumEnable	Dehumidification Enable	Log_Off	Log_On

If field 9 is E*			
Variable	**Variable Name**	**Orig. Value**	**New Value**
ciOutdoorRHEnable	Outdoor Humidity Sensor Enable	Log_Off	Log_On

If field 9 is L*			
Variable	**Variable Name**	**Orig. Value**	**New Value**
nciSpaceRHEnable	Space Humidity Sensor Enable	Log_Off	Log_On
ciOutdoorRHEnable	Outdoor Humidity Sensor Enable	Log_Off	Log_On

If split-system DX unit (Model 7 or 8 - AVV, AVS, AHV, AHF)			
Variable	**Variable Name**	**Orig. Value**	**New Value**
nciCoilDXTemp	Split-System OA/DX Coil Temp	0 (invalid)	50

If field 9 is L*			
Variable	**Variable Name**	**Orig. Value**	**New Value**
nciOALockoutEnable	OAD Lockout Enable	Log_Off	Log_On
NciOALockoutSetpt	OAD Lockout Setpoint	2	99

Point-Address information

To locate the proper address for each point, first determine the software type, then find the proper address information under N2 Open in the point description. For example, if you wish to address the Fan Cycling Configuration (indoor-fan operation) on an air-source heat pump (Model 0, which is software type 1), you'll find the Long Name (nciFanCycling) and the Short Name (bd-12).

Table 12: Typical N2 Open Long Name and Short Name Table

Long Name	1	2	3	4
nciFanCycling	bd-12	bd-35	bd-33	bd-32

Under the same heading you will also find the available Range of Enumerations for both BACnet (where applicable) and LON/N2, and a box showing the Units of measure.

Table 13: Example of Range of Enumerations and Units

LON/N2 Range		BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
State	-1= Log_Nul (default) 0= Log_Off 1= Log_On	0= Off 1= On 255= Null (default)	0= Off 1= On 3= Null (default)

Units
No-units

N2 Open Description

The N2 Open Communications Bus is a local network that links controllers and point interfaces to the Network Control Module (NCM). The N2 Open Bus uses a master/slave protocol in which the master device (the NCM) initiates all communication with the N2 Open Bus devices. These N2 Open Bus devices include the Digital Control Modules (DCMs), Point Multiplex Modules (XBN, XRE, XRL, XRM), and all Application Specific Controllers (ASCs).

The N2 Open Bus is wired in a daisy-chain fashion and the devices are connected in series. The N2 Open Bus can use solid or stranded wire or optical fiber when special fiber modems are used. So the choices include:

- 3-wire twisted cable
- two twisted-pair telephone cable
- two twisted-pair cable with a shield
- duplex optical fiber (requires a pair of fiber modems).

Selecting the Right Cable

For most N2 Open Bus installations, the most practical choice is solid, two twisted-pair, unshielded, telephone cables. If you have existing stranded cable, you can use it, but you may find that the strands become a nuisance when wiring the cable.

For N2 Open Bus installations where there is a lot of electrical noise (e.g., gas ignition systems, radar or magnetic resonance imaging equipment, on a factory floor, or outdoors), shielded wire or optical fiber is the best choice. Of the two, fiber is by far the better option, but it is more expensive. It offers extended N2 Open distances and excellent immunity to electrical noise, lightning, and various other building noises. It can also be buried underground between two buildings so that the N2 Open Bus can be extended in a campus-type installation.

N2 Bus Rules

Table 14 summarizes the rules and maximums allowed for installing the N2 Open Bus. You may wish to print this table and keep it handy.

Table 14: N2 Open Bus Rules

Category	Rules/Maximums Allowed
General	One or two N2 Open Bus per NCM
	Only daisy-chained devices
Number of Devices	100 devices per NCM (60 to 200 TC-9100s)
	50 devices per repeater
	Two repeaters cascaded
Line Length and Type	1524 m (5000 ft) between NCM to farthest N2 Open device before repeater is needed
	4572 m (15,000 ft) from NCM to farthest N2 Open device (three segments of 1524 m [5000 ft] each)
	2012 m (6600 ft) between two fiber modems
Cable	26 AWG twisted pair or larger(solid or stranded 22 AWG or heavier recommended)
Terminations	Two switched EOL per segment (preferred)
	One switched EOL per segment (required)

Number of Devices

Currently, up to 100 devices can be connected to an NCM, including repeaters. The actual number of devices is dependent on the features and point count used in the NCM.

Special rules apply to the TC-9100 controller, where the maximum number of devices can be from 60 to 200, dependent on the software configuration in the NCM.

Note: The number of devices varies because both the number of software objects and JC-BASIC processes influence the Network Controller's (NC's) performance (see Guidelines for Efficient Operation Technical Bulletin [LIT?636341]).

- Up to 50 daisy-chained devices are allowed before a repeater is needed. Add a repeater to the bus when you reach 49 devices. Count each repeater as one device.
- Any path from the NCM to an N2 Open device cannot go through more than two repeaters or two pairs of fiber modems (i.e., cascaded repeaters/modems). This is because the repeater/modem delays the N2 Open Bus signal between Sides A and B. The N2 Open Bus can compensate for only two of these delays; therefore, up to two repeaters or two pairs of fiber modems can be cascaded in series. Note that the signal from the NCM only passes through two repeaters or two pairs of modems to any N2 Open device.
- For additional information on the maximum number of devices and priority assignments, be sure to read Guidelines for Efficient Operation Technical Bulletin (LIT-636341).

Line Length and Type

- A repeater is required for every 1524 m (5000 ft) of daisy-chained cable.
- The maximum distance between an NCM and the farthest device (even through repeaters) is 4572 m (15,000 ft).
- You may use 18 through 26 AWG twisted pair wire; however, Johnson Controls recommends 22 AWG or heavier, because lighter wire breaks easily when stripped and installed.
- The maximum distance between two fiber modems is 2,012 m (6,600 ft). If your application requires lengths beyond that, contact S.I. Tech for information about their "high power" option.
- You may also use optical fiber on the N2 Open Bus (a pair of fiber modems is required for conversion). Duplex optical fiber is needed, either 50 (3.0 dB/km), 62.5 (4.0 dB/km), or 100 (5.0 dB/km) micrometers. The 62.5 size is preferred.

Unit Ventilator Sequence of Operation

The sequence of operation for a MicroTech II device is dependent on the control type. Refer to the appropriate Operation Manual for sequence of operation details. See your local McQuay International representative for documentation. These manuals also describe how to access data points via the keypad on different types of Unit Ventilators

There are currently eighteen different configurations for McQuay unit ventilators. For this reason, not all of the available status points have an application in every type of equipment. Shown on the left side of the chart below are the unit ventilator types. On the right side are the assigned unit-ventilator model numbers. In the group of tables that follow, data-point names are cross-referenced to the model type.

Table 15: Unit Ventilator Software Model Types

Unit Ventilator Control Configuration	UV Model
Air-Source Heat Pump with Electric Heat	0
Water-Source Heat Pump with Electric Heat	2
Water-Source Heat Pump Only	3
DX Cooling with Electric Heat	4
DX Cooling Only	5
Electric Heat Only	6
DX Cooling with Steam or Hot-Water Heat, Valve Control	7
DX Cooling with Steam or Hot-Water Heat, F&BP Damper Control	8
Steam or Hot-Water Heat Only, Valve Control	9
Steam or Hot-Water Heat Only, F&BP Control	10
Chilled-Water Cooling, Hot-Water Heating (2-Pipe), Valve Control	11
Chilled-Water Cooling, Hot-Water Heating (2-Pipe), F&BP Damper Control	12
Chilled-Water Cooling, with Steam or Hot-Water Heating (4-Pipe), Valve Control	13
Chilled-Water Cooling, with Steam or Hot-Water Heating (4-Pipe), F&BP Damper Control	14
Chilled-Water Cooling Only, Valve Control	15
Chilled-Water Cooling Only, F&BP Damper Control	16
Chilled-Water Cooling with Electric Heat, Valve Control	17
Chilled-Water Cooling with Electric Heat, F&BP Damper Control.	18

Protocol Object/Variable Availability

BACnet

Listed below are the BACnet objects that are available on each MicroTech II Unit Ventilator model type.

Table 16: BACnet Objects by UVC Software Model

Read/Write Attributes																		
Point Name	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Application Mode Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Auxiliary Heat Enable Input			X		X		X	X	X	X	X	X	X	X	X	X		
Compressor Enable Input	X	X	X	X	X		X	X										
Economizer Enable Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emergency Override Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Energy Hold Off Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Heat/Cool Mode Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Local Setpoint Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Occupancy Override Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Air Humidity Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Temp Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reset Alarm Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reset Filter Alarm Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Setpoint Offset Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Source (Water In) Temp											X	X						
Space CO2 Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Humidity Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Temp Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Read Only Attributes																		
Point Name	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Binary Inputs 1 Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Binary Outputs 1 Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Binary Outputs 2 Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Binary Outputs 3 Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Compressor Run Time Output	X	X	X	X	X		X	X										
CW Valve Position Output													X		X	X	X	X
Discharge Air Temp Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Discharge Air Temp Setpoint Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Effective Occupancy Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Effective Setpoint Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Effective Space Temp Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fan Speed Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
F&BP Damper Position Output								X		X		X		X		X		X
Local Setpoint Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Air Damper Position Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Fan Run Time Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
UVC State Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Water-out Temp Output		X	X															
WH or CW/HW Valve Position Output		X	X				X	X	X	X	X	X	X		X	X	X	X

Read/Write Setpoint Attributes																		
Point Name	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Economizer IA/OA Enthalpy Differential	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Economizer IA/OA Temp Differential	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Economizer OA Enthalpy Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Economizer OA Temp Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Local Bypass Time	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OAD Min Position High-Speed Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OAD Min Position Low-Speed Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OAD Min Position Med-Speed Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Occupied Cool	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Occupied Heat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space CO2 Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Humidity Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Standby Cool	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Standby Heat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Unoccupied Cool	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Unoccupied Heat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
UV Application Version Information	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Alarms																		
Point Name	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
IA Temp Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DX Pressure Fault	X	X	X	X	X		X	X										
Compressor Envelope Fault	X	X	X	X	X		X	X										
DA DX Cooling Low Limit Indication	X	X	X	X	X		X	X										
Condensate Overflow Indication	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X
IA Coil DX Temp Sensor Failure	X	X	X	X	X		X	X										
OA Temp Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DA Temp Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OA Coil DX Temp Sensor Failure	X			X	X		X	X										
Water Coil DX Temp Sensor Failure			X	X														
Water-out Temp Sensor Failure			X	X														
Water-in Temp Sensor Failure											X	X						
Space Humidity Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Humidity Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space CO2 Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Source Temp (Water-in) Inadequate Indication											X	X						
Change Filter Indication	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

LONWORKS/N2 Open

Listed below are the LONWORKS variables and N2 Open points that are available on each MicroTech II model of Unit Ventilator.

Table 17: Typical LONWORKS Variables & N2 Open Points by UVC Software Mode

Network Variable Inputs (NVI)																		
Point Name	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Application Mode Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Auxiliary Heat Enable Input			X		X		X	X										
Compressor Enable Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Economizer Enable Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emergency Override Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Energy Hold Off Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Heat/Cool Mode Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Occupancy Override Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Occupancy Sensor Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Air Humidity Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Air Temp Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Primary Cool Input	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X
Primary Heat Input	X	X																
Reset Alarm Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reset Filter Alarm Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Secondary Cool Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Secondary Heat Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Setpoint Offset Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Setpoint Shift Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Source (Water In) Temp Input											X	X						
Space CO2 Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Humidity Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Temp Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Temp Setpoint Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Valve Override Input		X	X				X	X	X	X	X	X	X	X	X	X	X	X

Network Variable Inputs (NVI)																		
Point Name	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Binary Inputs 1 Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Binary Outputs 1 Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Binary Outputs 2 Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Binary Outputs 3 Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Compressor Run Time Output	X	X	X	X	X		X	X										
CW Valve Position Output													X		X	X	X	X
Discharge Air Temp Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Discharge Air Temp Setpoint Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Effective Occupancy Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Effective Setpoint Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Effective Space Temp Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Energy Hold Off Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fan Speed Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
F&BP Damper Position Output								X		X		X		X		X		X
Heat/Cool Mode Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
IA/DX Coil Temp Output	X	X	X	X	X		X	X										
Local Setpoint Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OA/DX or Water/DX Coil Temp Output	X	X	X	X	X		X	X										
Outdoor Air Damper Position Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Air Humidity Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Air Temp Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Primary Cool Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Primary Heat Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Secondary Cool Output	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X
Secondary Heat Output	X	X																
Source (Water In) Temp Output											X	X						
Space CO2 Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Fan Run Time Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Humidity Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Unit Status Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
UVC State Output	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Water-out Temp Output		X	X															
WH or CW/HW Valve Position Output		X	X				X	X	X	X	X	X	X		X	X	X	X

Network Configuration Inputs (NCI)																		
Point Name	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Economizer IA/OA Enthalpy Differential	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Economizer IA/OA Temp Differential	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Economizer OA Enthalpy Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Economizer OA Temp Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Energize Exhaust Fan OAD Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Exhaust Interlock OAD Min Pos Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fan Cycling Configuration	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Filter Change Hours Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Local Bypass Time	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Location Label	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Minimum Send Time	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OAD Max Position Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OAD Min Position High-Speed Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OAD Min Position Low-Speed Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OAD Min Position Med-Speed Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Occupancy Temperature Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Passive Dehum Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Receive Heartbeat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Send Heartbeat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space CO2 Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space Humidity Setpoint	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
UV Application Version	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Alarms																		
Point Name	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
IA Temp Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DX Pressure Fault	X	X	X	X	X		X	X										
Compressor Envelope Fault	X	X	X	X	X		X	X										
DA DX Cooling Low Limit Indication	X	X	X	X	X		X	X										
Condensate Overflow Indication	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X
IA Coil DX Temp Sensor Failure	X	X	X	X	X		X	X										
OA Temp Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DA Temp Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OA Coil DX Temp Sensor Failure	X			X	X		X	X										
Water Coil DX Temp Sensor Failure		X	X															
Water-out Temp Sensor Failure		X	X															
Water-in Temp Sensor Failure											X	X						
Space Humidity Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoor Humidity Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Space CO2 Sensor Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Source Temp (Water-in) Inadequate	X										X	X						
Change Filter Indication	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Protocol Point Detail Lists

BACnet

Network Control Property (Keypad attributes available as BACnet Standard Objects for network control of the unit)	Page	Read or Read/Write	Read/Write Object Type	Instance	Enumerations BACnet Firmware 2.09 (Before 08/01/03)	Enumerations BACnet Firmware 3.00+ (After 08/01/03)	Description
SystemSummary							
ANALOG VALUES ** All Analog Values are stored in EEPROM **							
Occupied Cooling	58	R/W	AV	1	16-30 Celsius	61-86 °F	Occupied Cooling Setpoint
Standby Cool	58	R/W	AV	2	16-30 Celsius	61-86 °F	Standby Cooling Setpoint
Unoccupied Cool	58	R/W	AV	3	16-30 Celsius	61-86 °F	Unoccupied Cooling Setpoint
Occupied Heat	58	R/W	AV	4	10-28 Celsius	50-82 °F	Occupied Heat Setpoint
Standby Heat	58	R/W	AV	5	10-28 Celsius	50-82 °F	Standby Heat Setpoint
Unoccupied Heat	58	R/W	AV	6	10-28 Celsius	50-82 °F	Unoccupied Heat Setpoint
Local Bypass Time	52	R/W	AV	7	0-240 Minutes	0-240 Minutes	Amount of time unit will remain in Bypass mode
OAD Min Position High-Speed Setpoint	55	R/W	AV	8	0%-100%	0%-100%	Outside Air Damper Position at High Speed
OAD Min Position Med-Speed Setpoint	53	R/W	AV	9	0%-100%	0%-100%	Outside Air Damper Position at Medium Speed
OAD Min Position Min-Speed Setpoint	53	R/W	AV	10	0%-100%	0%-100%	Outside Air Damper Position at Low Speed
Space CO2 Setpoint	68	R/W	AV	11	0-65534 PPM	0-65534 PPM	Space C02 Max Limit
Economizer OA Temp Setpoint	40	R/W	AV	12	1-99 Celsius	33 -210 °F	Temperature below which the economizer function is available.
Economizer IA/OA Temp Differential	38	R/W	AV	13	1-99 Celsius	33 -210 °F	Indoor Air and Outdoor Air temperature differential
Economizer OA Enthalpy Setpoint	39	R/W	AV	14	2-150 kJ/kg	1- 64.5 BTU/lb	Outside Air Enthalpy setpoint
Economizer IA/OA Enthalpy Differential	38	R/W	AV	15	1-10 kJ/gk	.5 – 4.3 BTU/lb	Indoor Air and Outdoor Air Enthalpy differential
Space Humidity Setpoint	70	R/W	AV	16	0%-100%	0%-100%	Room Humidity Setpoint
UV Application Version	74	R/W	AV	17			Application revision identifier
ANALOG OUTPUTS							
Setpoint Offset Input	65	R/W	AO	1	-10 to +10 C	-18 to + 18 °F -10 to + 10 °C	Shifts the occupied heating and cooling setpoints using the deadband from AV1 and AV3.
MULTI-STATE OUTPUTS							
Occupancy Override Input	54	R/W	MO	1	0=Occupied 1=Unoccupied 2=Bypass 3=Standby 255=Null	1=Occupied 2=Unoccupied 3=Bypass 4=Standby 5=Null	Occupancy variable with the highest priority. Used to overide the local sensor or tenant override. *For Occupancy scheduling through a BAS the Occupancy Sensor (MO 9) should be used.
Application Mode	31	R/W	MO	2	0=Auto 1=Heat 3=Cool 4=Night Purge 6=Off 8=Emergency Heat 9=Fan Only 255=Null	1=Auto 2=Heat, 4=Cool 5=Night Purge 7=Off 9=Emergency Heat 10=Fan Only 15=Null	Commands the mode of the unit. For normal operation this value should be set to Auto or Null.
Emergency Override Input	42	R/W	MO	3	0=Normal, 1=Pressurized 2=Depressurized 3=Purge 4=Shutdown 5=Fire 255=Null	1=Normal 2=Pressurized 3=Depressurized 4=Purge 5=Shutdown 6=Fire 7=Null	Commands the Unit into an Emergency State
Reset Filter Alarm Input	62	R/W	MO	4	0=Reset Object 1=Clear Alarm 255=Null	1= Reset Object 2= Clear 3= Null	Resets the Filter Alarm
Reset Alarm Input	62	R/W	MO	5	0=Reset Object 1=Clear Alarm 255=Null	1= Reset Object 2= Clear 3= Null	Resets manual Alarms
Economizer Enable Input	37	R/W	MO	6	0=Disable 1=Enable 255=Null	1= Disable, 2= Enable 3= Null	Enables or Disables the economizer operation
Auxiliary Heat Enable	32	R/W	MO	8	0=Off 1=On 255=Null	1=Off 2=On 3=Null	Enables or Disables the Auxiliary Heat

Network Control Property (Keypad attributes available as BACnet Standard Objects for network control of the unit)	Page	Read or Read/Write	Read/WriteObject Type	Instance	Enumerations BACnet Firmware 2.08 (Before August 1 2003)	Enumerations BACnet Firmware 3.00 (After August 1 2003)	Description
Occupancy Sensor Input	55	R/W	MO	9	0=Occupied 1=Unoccupied 255=Null	1=Occupied 2=Unoccupied 5=Null	This is the object that should be used to command the units occupancy via the network. The local Bypass button will override this command for the amount of time specified in the object Local Bypass Time (AV 7).
MULTI-STATE INPUTS							
Fan Speed Output	46	R	MI	1	0=Off 2=Low Speed 3=Medium Speed 4=High Speed 255= Null	1=Off 3=Low Speed 4=Medium Speed 5=High Speed 6=Null	Displays the current fan speed
Heat/Cool Mode	48 49	R/W	MI	2	0=Auto 1=Heat 3=Cool 4=Night Purge 6=Off 8=Emergency Heat 9=Fan Only 255=Null	1=Auto 2=Heat 4=Cool 5=Night Purge 7=Off 9=Emergency Heat 10=Fan Only 15=Null	Displays the current mode of the controller. ** Note: In order to WRITE to this object the Out_of_Service property must be set to TRUE **
Effective Occupancy Output	40	R	MI	3	0=Occupied 1=Unoccupied 2=Bypass 3=Standby 255=Null	1=Occupied 2=Unoccupied 3=Bypass 4=Standby 5=Null	Displays the current occupancy
Energy Hold Off Input	43	R/W	MI	4	0=Disable 1=Enable 255=Null	1=Disable 2=Enable 3= Null	Stops Heating and Cooling of the space but provides protection from temperature extremes
ANALOG INPUTS							
Space Temp Input	71	R/W	AI	1	Celsius	°F or °C	Space Sensor Temperature reading *Writing a valid value to this will override the local sensor **Note: In order to WRITE to this object the Out_of_Service property must be set to TRUE **
Outdoor Air Temp Input	58	R/W	AI	2	Celsius	°F or °C	Outdoor Air Temperature Sensor reading *Note: In order to WRITE to this object the Out_of_Service property must be set to TRUE ** Writing a valid value to this will override the local sensor**
Outdoor Air Humidity Input	57	R/W	AI	3	0%-100%	0%-100%	Outdoor Air Humidity Sensor reading *Note: In order to WRITE to this object the Out_of_Service property must be set to TRUE ** Writing a valid value to this will override the local sensor
Space Humidity Input	69	R/W	AI	4	0%-100%	0%-100%	Space Humidity Sensor reading *Note: In order to WRITE to this object the Out_of_Service property must be set to TRUE ** Writing a valid value to this will override the local sensor **
Space CO2 Input	67	R/W	AI	5	PPM	PPM	Space CO2 sensor reading *Note: In order to WRITE to this object the Out_of_Service property must be set to TRUE ** Writing a valid value to this will override the local sensor **
Dishcarge Air Temp Output	36	R	AI	6	Celsius	°F or °C	Discharge Air Temperature
Effective Setpoint Output	41	R	AI	7	Celsius	°F or °C	This will display either the Heating or Cooling setpoint depending on the unit status.
Local Setpoint Output	50	R/W	AI	8	10-35 Celsius	55-85 °F or 10-35 °C	Used to Monitor or change the amount of setpoint adjustment from the local room sensor. Where no sensor is used it will display an Invalid value.
Discharge Air Temp Setpoint Output	37	R	AI	9	Celsius	°F or °C	Discharge Air Setpoint that is calculated by the controller.
Outdoor Air Damper Position Output	57	R	AI	10	0%-100%	0%-100%	Position of the Outside Air Damper

Network Control Property (Keypad attributes available as BACnet Standard Objects for network control of the unit)	Page	Read or Read/Write	Read/WriteObject Type	Instance	Enumerations BACnet Firmware 2.08 (Before August 1 2003)	Enumerations BACnet Firmware 3.00 (After August 1 2003)	Description
UVC State Output	74	R	AI	11	49=Econ_Mech 50=Mech_Cool 51=Econ 52=DA Heat 53=Heat 54=DeHumid 55=Full_Heat 56=Night_Purge 57=Off 65=Fan_Only 66=(Heat)Can't Heat 67=Can't Cool 68=(Emergency Heat) Can't Heat 69=Heat Low Limit 70=Cool Low Limit	49=Econ_Mech 50=Mech_Cool 51=Econ 52=DA Heat 53=Heat 54=DeHumid 55=Full_Heat 56=Night_Purge 57=Off 65=Fan_Only 66=(Heat)Can't Heat 67=Can't Cool 68=(Emergency Heat) Can't Heat 69=Heat Low Limit 70=Cool Low Limit	UnitVent Controller State
Space Fan Run Time Output	69	R	AI	12	Hours	Hours	Total run time of the Space Fan
Binary Output 1 Status Output	33	R	AI	13	0-255	0-255	Status of Binary Outputs: 1, 2, 3,4 ,5 , 6, 7
Binary Output 2 Status Output	34	R	AI	14	0-255	0-255	Status of Binary Outputs: 8, 9And Expansion Board Outputs: 1, 2
Binary Output 3 Status Output	34	R	AI	15	0-255	0-255	Status of Expansion Board Outputs: 6, 7, 8
Binary Inputs 1 Status Output	32	R	AI	16	0-255	0-255	Status of Binary Inputs: 1, 3, 4, 5, 6,12
Fault Value	46	R	AI	17	1=Space T. Sens. Fail 2=DX Press Fault 3=Comp. Env. Fault 4=Dis Air DX LowLimit 5=Cond. Overflow 6=Space Coil DX T. Sens. 7=Outdoor T. Sens 8=Dis Air Temp Sens. 9=Outdoor Coil DX T.Sensor or Water Coil DX T. Sens 10=Water-out T. Sensor Source or Water T.Sens 11=Space RH Sens 12=Outdoor RH Sens. 13=Space CO2 Sens. 14=Source Water Inadequate 15=Freeze Stat 16=Change Filter	1=Space T. Sens. Fail 2=DX Press Fault 3=Comp. Env. Fault 4=Dis Air DX LowLimit 5=Cond. Overflow 6=Space Coil DX T. Sens. 7=Outdoor T. Sens 8=Dis Air Temp Sens. 9=Outdoor Coil DX T.Sensor or Water Coil DX T. Sens 10=Water-out T. Sensor Source or Water T. Sens 11=Space RH Sens 12=Outdoor RH Sens. 13=Space CO2 Sens. 14=Source Water Inadequate 15=Freeze Stat 16=Change Filter	Displays the current faults in the unit
Source (Water-In) Temp Input	66	R/W	AI	18	Celsius	°F or °C	Monitor the entering water temperature *Note: In order to WRITE to this object the Out_of_Service property must be set to TRUE ** Writing a valid value to this will override the local sensor
Water-Out Temp Output	76	R	AI	19	Celsius	°F or °C	Monitor the leaving water temperature
Compressor Run Time	36	R	AI	20	Hours	Hours	Total Compressor Run Time
F&BP Damper Position Output	45	R	AI	21	0% -100%	0% -100%	Current Position of the Face and Bypass Damper
WH or CW/HW Valve Position Output	77	R	AI	22	0% -100%	0% -100%	Current position of the water valve **only for a modulating valve**
CW Valve Position Output	36	R	AI	23	0% -100%	0% -100%	Current position of the water valve **only for a modulating valve**

LONWORKS

This is a comprehensive list of LONWORKS variables with pertinent access data.

Table 19: List of LONWORKS Variable Information

Inputs				
Variable Description (NVI)	**LONWORKS Name**	**SNVT Type**	**SNVT Index**	**Page**
Application Mode	nviApplicMode	SNVT_hvac_mode	108	31
Auxiliary Heat Enable Input	nviAuxHeatEnable	SNVT_switch	95	32
Compressor Enable Input	nviComprEnable	SNVT_switch	95	35
Economizer Enable Input	nviEconEnable	SNVT_switch	95	37
Emergency Override Input	nviEmergOverride	SNVT_hvac_emerg	103	42
Energy Hold Off Input	nviEnergyHoldOff	SNVT_switch	95	43
Heat/Cool Mode Input	nviHeatCool	SNVT_hvac_mode	108	48
Occupancy Override Input	nviOccManCmd	SNVT_occupancy	109	54
Occupancy Sensor Input	nviOccSensor	SNVT_occupancy	109	55
Outdoor Air Humidity Input	nviOutdoorRH	SNVT_lev_percent	81	57
Outdoor Air Temp Input	nviOutdoorTemp	SNVT_temp_p	105	58
Primary Cool Input	nviCoolPriSlave	SNVT_lev_percent	81	60
Primary Heat Input	nviHeatPriSlave	SNVT_lev_percent	81	60
Reset Alarm Input	nviResetAlarm	SNVT_switch	95	62
Reset Filter Alarm Input	nviResetFilter	SNVT_switch	95	62
Secondary Cool Input	nviCoolSecSlave	SNVT_lev_percent	81	63
Secondary Heat Input	nviHeatSecSlave	SNVT_lev_percent	81	64
Setpoint Offset Input	nviSetptOffset	SNVT_temp_p	105	65
Setpoint Shift Input	nviSetptShift	SNVT_temp_setpt	106	65
Source (Water-in) Temp Input	nviSourceTemp	SNVT_temp_p	105	66
Space CO2 Input	nviSpaceCO2	SNVT_ppm	29	67
Space Humidity Input	nviSpaceRH	SNVT_lev_percent	81	69
Space Temp Input	nviSpaceTemp	SNVT_temp_p	105	71
Space Temp Setpoint Input	nviSetpoint	SNVT_temp_p	105	72
Valve Override Input	nviValveOverride	SNVT_hvac_overid	111	76

Outputs				
Variable Description (NVI)	**LONWORKS Name**	**SNVT Type**	**SNVT Index**	**Page**
Binary Inputs 1 Status Output	nvoBinaryIn1	SNVT_lev_cont	21	32
Binary Outputs 1 Status Output	nvoBinaryOut1	SNVT_lev_cont	21	33
Binary Outputs 2 Status Output	nvoBinaryOut2	SNVT_lev_cont	21	34
Binary Outputs 3 Status Output	nvoBinaryOut3	SNVT_lev_cont	21	34
CW Valve Position Output	nvoColdWater	SNVT_lev_percent	81	36
Compressor Run Time Output	nvoComprRunTime	SNVT_time_hour	124	36
Discharge Air Temp Output	nvoDischAirTemp	SNVT_temp_p	105	37
Discharge Air Temp Setpoint Output	nvoDATSetpt	SNVT_temp_p	105	37
Effective Occupancy Output	nvoEffectOccup	SNVT_occupancy	109	40
Effective Setpoint Output	nvoEffectSetpt	SNVT_temp_p	105	41
Effective Space Temp Output	nvoSpaceTemp	SNVT_temp_p	105	41
Energy Hold Off Output	nvoEnergyHoldOff	SNVT_switch	95	44
F&BP Damper Position Output	nvoFBPDamper	SNVT_lev_percent	81	45
Fan Speed Output	nvoFanSpeed	SNVT_switch	95	46
Heat/Cool Mode Output	nvoHeatCool	SNVT_hvac_mode	108	49
IA/DX Coil Temp Output	nvoIACoilDXTemp	SNVT_temp_p	105	49

Outputs				
Variable Description (NVI)	**LONWORKS Name**	**SNVT Type**	**SNVT Index**	**Page**
Local Setpoint Output	nvoSetpoint	SNVT_temp_p	105	50
OA/DX or Water/DX Coil Temp Output	nvoCoilDXTemp	SNVT_temp_p	105	51
Outdoor Air Damper Position Output	nvoOADamper	SNVT_lev_percent	81	57
Outdoor Air Humidity Output	nvoOutdoorRH	SNVT_lev_percent	81	58
Outdoor Air Temp Output	nvoOutdoorTemp	SNVT_temp_p	105	59
Primary Cool Output	nvoCoolPrimary	SNVT_lev_percent	81	60
Primary Heat Output	nvoHeatPrimary	SNVT_lev_percent	81	61
Secondary Cool Output	nvoCoolSecondary	SNVT_lev_percent	81	63
Secondary Heat Output	nvoHeatSecondary	SNVT_lev_percent	81	64
Source (Water-in) Temp Output	nvoSourceTemp	SNVT_temp_p	105	67
Space CO2 Output	nvoSpaceCO2	SNVT_ppm	29	68
Space Fan Run Time Output	nvoFanRunTime	SNVT_time_hour	124	69
Space Humidity Output	nvoSpaceRH	SNVT_lev_percent	81	70
Unit Status Output	nvoUnitStatus	SNVT_hvac_status	112	73
UVC State Output	nvoStateMachine	SNVT_char_ascii	7	75
Water-out Temp Output	nvoWaterOutTemp	SNVT_temp_p	105	77
WH or CW/HW Valve Position Output	nvoHotWater	SNVT_lev_percent	81	77

Configuration Setpoints						
Variable Description (NVI)	**LONWORKS Name**	**SNVT Type**	**UCPT Index**	**SCPT Index**	**SNVT Index**	**Page**
Economizer IA/OA Enthalpy Differential	nciEconEnthDiff	SNVT_enthalpy	25		153	38
Economizer IA/OA Temp Differential	nciEconDBDiff	SNVT_temp_p	21		105	39
Economizer OA Enthalpy Setpoint	nciOAEnthSP	SNVT_enthalpy		200	153	39
Economizer OA Temp Setpoint	nciOATSP	SNVT_temp_p		199	105	40
Energize Exhaust Fan OAD Position Setpoint	nciExhStartPos	SNVT_lev_percent		202	81	43
Exhaust Interlock OAD Min Setpoint	nciOAMinPosExhaust	SNVT_lev_percent	15		81	44
Fan Cycling Configuration	nciFanCycling	SNVT_lev_disc	75		22	45
Filter Change Hours Setpoint	nciFilterChangeHrs	SNVT_time_hour	35		124	47
Local Bypass Time	nciBypassTime	SNVT_time_hour		34	123	50
Location Label	nciLocation	SNVT_str_asc		17	36	51
Minimum Send Time	nciMinOutTm	SNVT_time_sec		52	107	51
OAD Max Position Setpoint	nciOAMaxPos	SNVT_lev_percent		20	81	52
OAD Min Position High-Speed Setpoint	nciOAMinPos	SNVT_lev_percent		23	81	52
OAD Min Position Low-Speed Setpoint	nciOAMinPosLowSpeed	SNVT_lev_percent	13		81	53
OAD Min Position Med-Speed Setpoint	nciOAMinPosMedSpeed	SNVT_lev_percent	12		81	54
Occupancy Temperature Setpoints	nciSetpoints	SNVT_temp_setpt		60	106	55
Passive Dehum Setpoint	nciPassDehumSetpt	SNVT_temp_p	60		105	59
Receive Heartbeat	nciRcvHrtBt	SNVT_time_sec		48	107	61
Send Heartbeat	nciSndHrtBt	SNVT_time_sec		49	107	64
Space CO2 Setpoint	nciSpaceCO2Lim	SNVT_ppm		42	29	68
Space Humidity Setpoint	nciSpaceRHSetpt	SNVT_lev_percent		36	81	71
UV Application Version	nciUVAppVersion	SNVT_volts	154		108	74

Note: All of the above configuration parameters that are UCPTs will require a resource file to view them, because they are not standard but are user-defined configuration parameter types. The resource files can be obtained from McQuay International's website at www.mcquay.com.

N2 Open

Listed below is the pertinent point-data information by software type.

Table 20: N2 Open Point Configurations

Inputs						
Description	Long Name	Point Configuration				Page
		1	2	3	4	
Application Mode	nviApplicMode	bd-21	bd-3	bd-3	bd-3	31
Auxiliary Heat Enable Input	nviAuxHeatEnable.State	N/A	N/A	bd-7	bd-6	32
	nviAuxHeatEnable.Value	N/A	N/A	adf-12	adf-11	
Compressor Enable Input	nviComprEnable.State	bd-24	bd-6	bd-6	N/A	35
	nviComprEnable.Value	adf-71	adf-11	adf-11	N/A	
Economizer Enable Input	nviEconEnable.State	bd-25	bd-8	bd-8	bd-7	37
	nviEconEnable.Value	adf-72	adf-13	adf-13	adf-12	
Emergency Override Input	nviEmergOverride	bd-27	bd-11	bd-11	bd-10	42
Energy Hold Off Input	nviEnergyHoldOff.State	bd-26	bd-9	bd-9	bd-8	43
	nviEnergyHoldOff.Value	adf-73	adf-14	adf-14	adf-13	
Heat/Cool Mode Input	nviHeatCool	bd-22	bd-4	bd-4	bd-4	48
Occupancy Override Input	nviOccManCmd	bd-19	bd-1	bd-1	bd-1	54
Occupancy Sensor Input	nviOccSensor	bd-20	bd-2	bd-2	bd-2	55
Outdoor Air Humidity Input	nviOutdoorRH	adf-75	adf-17	adf-17	adf-17	57
Outdoor Air Temp Input	nviOutdoorTemp	adf-74	adf-16	adf-16	adf-16	58
Primary Cool Input	nviCoolPriSlave	adf-79	adf-21	adf-20	adf-20	60
Primary Heat Input	nviHeatPriSlave	adf-77	adf-19	adf-19	adf-19	61
Reset Alarm Input	nviResetAlarm.State	bd-29	bd-13	bd-13	bd-12	62
	nviResetAlarm.Value	adf-82	adf-24	adf-23	adf-23	
Reset Filter Alarm Input	nviResetFilter.State	bd-28	bd-12	bd-12	bd-11	62
	nviResetFilter.Value	adf-81	adf-23	adf-22	adf-22	
Secondary Cool Input	nviCoolSecSlave	adf-80	adf-22	adf-21	adf-21	63
Secondary Heat Input	nviHeatSecSlave	adf-78	adf-20	N/A	N/A	64
Setpoint Offset Input	nviSetptOffset	adf-63	adf-3	adf-3	adf-3	65
Setpoint Shift Input	nviSetptShift.Occupied_C	adf-64	adf-4	adf-4	adf-4	66
	nviSetptShift.Occupied_H	adf-67	adf-7	adf-7	adf-7	
	nviSetptShift.StandBy_Co	adf-65	adf-5	adf-5	adf-5	
	nviSetptShift.StandBy_He	adf-68	adf-8	adf-8	adf-8	
	nviSetptShift.Unoccupied	adf-66	adf-6	adf-6	adf-6	
	nviSetptShift.Unoccupied	adf-69	adf-9	adf-9	adf-9	
Source (Water-in) Temp Input	nviSourceTemp	N/A	N/A	N/A	adf-15	66
Space CO2 Input	nviSpaceCO2	adi-7	adi-2	adi-2	adi-2	67
Space Humidity Input	nviSpaceRH	adf-76	adf-18	adf-18	adf-18	69
Space Temp Input	nviSpaceTemp	adf-61	adf-1	adf-1	adf-1	71
Space Temp Setpoint Input	nviSetpoint	adf-62	adf-2	adf-2	adf-2	72
Valve Override	nviValveOverrideState	N/A	bd-10	bd-10	bd-9	76
	nviValveOverridePercent	N/A	adf-15	adf-15	adf-15	
	nviValveOverrideFlow	N/A	adi-1	adi-1	adi-1	

Outputs						
Description	Long Name	Point Configuration				Page
		1	2	3	4	
Binary Inputs 1 Status Output	nvoBinaryIn1	adf-108	adf-51	adf-48	adf-46	32
Binary Outputs 1 Status Output	nvoBinaryOut1	adf-105	adf-48	adf-45	adf-43	33
Binary Outputs 2 Status Output	nvoBinaryOut2	adf-106	adf-49	adf-46	adf-44	34
Binary Outputs 3 Status Output	nvoBinaryOut3	adf-107	adf-50	adf-47	adf-45	35
Compressor Run Time Output	nvoComprRunTime	adi-10	adi-5	adi-4	N/A	36
CW Valve Position Output	nvoColdWater	N/A	N/A	N/A	adf-50	36
Discharge Air Temp Output	nvoDischAirTemp	adf-92	adf-34	adf-33	adf-33	37
Discharge Air Temp Setpoint Output	nvoDATSetpt	adf-104	adf-47	adf-44	adf42	37
Effective Occupancy Output	nvoEffectOccup	bd-32	bd-16	bd-16	bd-15	40
Effective Setpoint Output	nvoEffectSetpt	adf-89	adf-31	adf-30	adf-30	41
Effective Space Temp Output	nvoSpaceTemp	adf-83	adf-25	adf-24	adf-24	42
Energy Hold Off Output	nvoEnergyHoldOff.State	bd-35	bd-19	bd-19	bd-18	44
	nvoEnergyHoldOff.Value	adf-101	adf-43	adf-41	adf-41	
F&BP Damper Position Output	nvoFBPDamper	N/A	N/A	adf-49	adf-48	45
Fan Speed Output	nvoFanSpeed.State	bd-34	bd-18	bd-18	bd-17	46
	nvoFanSpeed.Value	adf-91	adf-33	adf-32	adf-32	
Heat/Cool Mode Output	nvoHeatCool	bd-33	bd-17	bd-17	bd-16	49
IA/DX Coil Temp Output	nvoIACoilDXTemp	adf-102	adf-45	adf-42	N/A	49
Local Setpoint Output	nvoSetpoint	adf-90	adf-32	adf-31	adf-31	50
OA/DX or Water/DX Coil Temp Output	nvoCoilDXTemp	adf-103	adf-46	adf-43	N/A	51
Outdoor Air Damper Position Output	nvoOADamper	adf-97	adf-39	adf-37	adf-37	57
Outdoor Air Humidity Output	nvoOutdoorRH	adf-99	adf-41	adf-39	adf-39	58
Outdoor Air Temp Output	nvoOutdoorTemp	adf-100	adf-42	adf-40	adf-40	59
Primary Cool Output	nvoCoolPrimary	adf-95	adf-37	adf-35	adf-35	60
Primary Heat Output	nvoHeatPrimary	adf-93	adf-35	adf-34	adf-34	61
Secondary Cool Output	nvoCoolSecondary	adf-96	adf-38	adf-36	adf-36	63
Secondary Heat Output	nvoHeatSecondary	adf-94	adf-36	N/A	N/A	64
Space CO2 Output	nvoSpaceCO2	adi-8	adi-3	adi-3	adi-3	68
Space Fan Run Time Output	nvoFanRunTime	adi-9	adi-4	adi-10	adi-4	69
Space Humidity Output	nvoSpaceRH	adf-98	adf-40	adf-38	adf-38	70
Unit Status Output	nvoUnitStatus.Cool_Outpu	adf-86	adf-28	adf-27	adf-27	73
	nvoUnitStatus.Economizer	adf-87	adf-29	adf-18	adf-28	
	nvoUnitStatus.Fan_Output	adf-88	adf-30	adf-29	adf-29	
	nvoUnitStatus.Heat_Outpu	adf-84	adf-26	adf-25	adf-25	
	nvoUnitStatus.Heat_Outpu	adf-85	adf-27	adf-26	adf-26	
	nvoUnitStatus.In_Alarm	bd-31	adf-15	adf-15	adf-14	
	nvoUnitStatus.Mode	bd-30	adf-14	adf-14	adf-13	
UVC State Output	nvoStateMachine	bd-36	bd-20	bd-20	bd-19	75
Water-out Temp Output	nvoWaterOutTemp	N/A	adf-44	N/A	N/A	77
WH or CW/HW Valve Position Output	nvoHotWater	N/A	N/A	adf-50	adf-49	77
Economizer IA/OA Enthalpy Differential	nciEconEnthDiff	adf-19	adf-70	adf-69	adf-69	38
Economizer IA/OA Temp Differential	nciEconDBDiff	adf-17	adf-68	adf-67	adf-67	39
Economizer OA Enthalpy Setpoint	nciOAEnthSp	adf-18	adf-69	adf-68	adf-68	39

Outputs						
Description	Long Name	Point Configuration				Page
		1	2	3	4	
Economizer OA Temp Setpoint	nciOATSP	adf-16	adf-67	adf-66	adf-66	40
Energize Exhaust Fan OAD Setpoint	nciExhStartPos	adf-13	adf-64	adf-63	adf-63	43
Exhaust Interlock OAD Min Position Setpoint	nciOAMinPosExhaust	adf-12	adf-63	adf-62	adf-62	44
Fan Cycling Configuration	nciFanCycling	bd-12	bd-35	bd-33	bd-33	45
Filter Change Hours Setpoint	nciFilterChangeHrs	adi-3	adi-8	adi-7	adi-7	47
Local Bypass Time	nciBypassTime	adi-1	adi-6	adi-5	adi-5	50
OAD Max Position Setpoint	nciMaxPos	adf-14	adf-65	adf-64	adf-64	52
OAD Min Position High-Speed Setpoint	nciOAMinPos	adf-7	adf-58	adf-57	adf-57	53
OAD Min Position Low-Speed Setpoint	nciOAMinPosLowSpeed	adf-11	adf-62	adf-61	adf-61	53
OAD Max Position Med-Speed Setpoint	nciOAMinPosMedSpeed	adf-10	adf-61	adf-60	adf-60	54
Occupancy Temperature Setpoints	nciSetpoints.Occupied_Co	adf-1	adf-52	adf-51	adf-51	55
	nciSetpoints.Standby_Coo	adf-2	adf-53	adf-52	adf-52	
	nciSetpoints.Unoccupied_	adf-3	adf-54	adf-53	adf-53	
	nciSetpoints.Occupied_Hea	adf-4	adf-55	adf-54	adf-54	
	nciSetpoints.Standby_Hea	adf-5	adf-56	adf-55	adf-55	
	nciSetpoints.Unoccupied_	adf-6	adf-57	adf-56	adf-56	
Passive Dehum Setpoint	nciPassDehumSetpt	N/A	N/A	N/A	adf-91	59
Space CO2 Setpoint	nciSpaceCO2Lim	adi-2	adi-7	adi-6	adi-6	69
Space Humidity Setpoint	nciSpaceRHSetpt	adf-8	adf-59	adf-58	adf-58	71
UV Application Version	nciUVAppVersion	adf-110	adf-115	adf-106	adf-99	74

Detailed Data Point Information

The following is a list of MicroTech II Unit Ventilator Unit Controller data points by descriptive names listed in alphabetical order. It provides a detailed description followed by the address routes in the BACnet, LONWORKS, and N2 Open protocols. It also shows the available options, ranges of selections, and factory defaults.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

Application Mode Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to set the controllers to the proper operating mode from the supervisory controller. If a mode is requested which isn not supported by the unit controller, the unit controller will default to the auto mode.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Output	14	2	Present Value	85
Full Reference				
MTII UVUC ##########.ApplicMode.Present_Value				

LonWorks

LONWORKS Name	SNVT Type	SNVT Index
nviApplicMode	SNVT_hvac_mode	108

N2 Open

Long Name	1	2	3	4
nviApplicMode	bd-21	bd-3	bd-3	bd-3

Range of Enumerations

LON/N2 Range	BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 or higher
-1= HVAC_NUL (default)	0= Auto	1= Auto
0= HVAC_AUTO	1= Heat	2= Heat
1= HVAC_HEAT	2= Morning Warmup	3= Morning Warmup
2= HVAC_MORNING_WARMUP	3= Cool	4= Cool
3= HVAC_COOL	4= Night Purge	5= Night Purge
4= HVAC_NIGHT_PURGE	5= Pre Cool	6= Pre Cool
5= HVAC_PRE_COOL	6= Off	7= Off
6= HVAC_OFF	7= Test	8= Test
7= HVAC_TEST	8= Emergency Heat	9= Emergency Heat
8=HVAC_EMERGENCY_HEAT	9= Fan Only	10= Fan Only
9= HVAC_FAN_ONLY	10= Free Cool	11= Free Cool
10= HVAC_FREE_COOL	11= Ice	12= Ice
11= HVAC_ICE	12= Max Heat	13= Max Heat
12= HVAC_MAX_HEAT	13 = Dehumidification	14= Dehumidification
13=HVAC_DEHUMIDIFICATION	255= Null (default)	15= Null (default)

Note: Selections shown in gray are unavailable.

Units
No-units

Auxiliary Heat Enable Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to enable and disable auxiliary heat operation. The input information is typically sent from a system supervisor panel.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Output	14	8	Present _Value	85
Full Reference				
MTII UVUC ##########.AuxHeatEnable.Present_Value				

LonWorks

LONWORKS Name	SNVT Type	SNVT Index
nviAuxHeatEnable	SNVT_switch	95

N2 Open

Long Name	1	2	3	4
nviAuxHeatEnable.State	N/A	N/A	bd-7	bd-6
nviAuxHeatEnable.Value	N/A	N/A	adf-12	adf-11

Range of Enumerations

LON/N2 Range		BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
State	-1= Log_Nul (default) 0= Log_Off 1= Log_On	0= Off 1= On 255= Null (default)	1= Off 2= On 3= Null (default)

Units
No-units

Binary Inputs 1 Status Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only BACnet object is used to monitor the state of the controller's binary inputs.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	16	Present_Value	85
Full Reference				
MTII UVUC ##########.BinaryIn1.Present_Value				

Units
No-units

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoBinaryIn1	SNVT_lev_cont	21

N2 Open

Long Name	1	2	3	4
nvoBinaryIn1	adf-108	adf-51	adf-48	adf-46

Range of Enumerations

This provides a decimal representation (1 byte) of the state of the physical binary inputs. For example, if Binary Input #1 is closed, Analog Input #16 (BACnet) or nvoBinaryIn1 (LONWORKS) equals 1. If Binary Input #3 is closed, Analog Input # 16 (BACnet) or nvoBinaryIn1 (LONWORKS) equals 4. If Binary Inputs #1 and #3 are both closed, Analog Input # 16 (BACnet) or nvoBinaryIn1 (LONWORKS) equals 5, etc. For a description of the Binary Inputs please refer to IM 747.

Bit Number	Binary Input Number	Decimal Value
0	1	1
1	12	2
2	3	4
3	4	8
4	5	16
5	6	32
6	Unused	64
7	Unused	128

Range
0-255

Binary Outputs 1 Status Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only BACnet object is used to monitor the state of the controller's binary outputs 1 through 7.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	13	Present_Value	85
Full Reference				
MTII UVUC ##########.BinaryOut1.Present_Value				

LONWORKS

LONWORKS® Name	SNVT Type	SNVT Index
nvoBinaryOut1	SNVT_lev_cont	21

N2 Open

Long Name	1	2	3	4
NvoBinaryOut1	adf-105	adf-48	adf-45	adf-43

Range of Enumerations

This provides a decimal representation of the state of the physical binary outputs. For example, if Binary Output #1 is closed, Analog Input #13 (BACnet) or nvoBinaryOut1 (LONWORKS) equals 1. If Binary Output #3 is closed, Analog Input # 13 (BACnet) or nvoBinaryOut1 (LONWORKS) equals 4. If Binary Outputs #1 and #3 are both closed, Analog Input # 13 (BACnet) or nvoBinaryOut1 (LONWORKS) equals 5, etc. For a description of the Binary Outputs please refer to IM 747.

Bit Number	Binary Output Number	Decimal Value
0	1	1
1	2	2
2	3	4
3	4	8
4	5	16
5	6	32
6	7	64
7	Unused	128

Range
0-255

Units
No-units

Binary Outputs 2 Status Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only BACnet object is used to monitor the state of the controller's binary outputs 8 and 9. Also the expansion board outputs 3 and 4.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	14	Present_Value	85
Full Reference				
MTII UVUC ##########.BinaryOut2.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
NvoBinaryOut2	SNVT_lev_cont	21

N2 Open

Long Name	1	2	3	4
NvoBinaryOut2	adf-106	adf-49	adf-46	adf-44

Range of Enumerations

This provides a decimal representation of the state of the physical binary outputs. For example, if Binary Output #8 is closed, Analog Input #14 (BACnet) or nvoBinaryOut2 (LONWORKS) equals 1. If Expansion Board Binary #3 is closed. Analog Input # 14 (BACnet) or nvoBinaryOut2 (LONWORKS) equals 4. If Binary Outputs #8 and Expansion Board Binary #3 are both closed, Analog Input # 14 (BACnet) or nvoBinaryOut2 (LONWORKS) equals 5, etc.

Bit Number	Binary Output Number	Decimal Value
0	8	1
1	9	2
2	Exp. 3	4
3	Exp. 4	8
4	Unused	16
5	Unused	32
6	Unused	64
7	Unused	128

Range
0-255

Units
No-units

Binary Outputs 3 Status Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only BACnet object is used to monitor the state of the expansion board binary outputs 6, 7 and 8.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	15	Present_Value	85
Full Reference				
MTII UVUC ##########.BinaryOut3.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
NvoBinaryOut3	SNVT_lev_cont	21

N2 Open

Long Name	1	2	3	4
NvoBinaryOut3	adf-107	adf-50	adf-47	adf-45

Range of Enumerations

This provides a decimal representation of the state of the physical binary outputs. For example, if Expansion Board Binary Output #6 is closed, Analog Input #15 (BACnet) or nvoBinaryOut3 (LONWORKS) equals 1. If Expansion Board Binary Output #8 is closed. Analog Input # 15 (BACnet) or nvoBinaryOut3 (LONWORKS) equals 4. If Expansion Board Binary Outputs #6 and #8 are both closed, Analog Input # 15 (BACnet) or nvoBinaryOut3 (LONWORKS) equals 5, etc. For a description of the Binary Inputs please refer to IM 747.

Bit Number	Binary Output Number	Decimal Value
0	Exp. 6	1
1	Exp. 7	2
2	Exp. 8	4
3	Unused	8
4	Unused	16
5	Unused	32
6	Unused	64
7	Unused	128

Range
0-255

Units
No-units

Compressor Enable Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to enable and disable compressor operation. The input information is typically sent from a system coordination panel.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Output	14	7	Present_Value	85
Full Reference				
MTII UVUC ##########.ComprEnable.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviComprEnable	SNVT_switch	95

N2 Open

Long Name	1	2	3	4
nviComprEnable.State	bd-24	bd-6	bd-6	N/A
nviComprEnable.Value	adf-71	adf-11	adf-11	N/A

Range of Enumerations

LON/N2 Range		BACnet Range Firmware 2.08	BACnet Range Firmware 3.00 and higher
State	-1= Log_Nul (default) 0= Disable 1= Enable	0= Off 1= On 255= Null (default)	1= Off 2= On 3= Null (default)

Units
No-units

Compressor Run Time Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only BACnet object is used to monitor the total compressor runtime.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	20	Present_Value	85
Full Reference				
MTII UVUC ##########.ComprRunTime.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoComprRunTime	SNVT_time_hour	124

N2 Open

Long Name	1	2	3	4
nvoComprRunTime	adi-10	adi-5	adi-4	N/A

Units
Hours

CW Valve Position Output

Keypad Menu Path U2

This output network variable or read-only BACnet object shows the chilled-water modulating valve's current position in terms of percent open.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	23	Present _Value	85
Full Reference				
MTII UVUC ##########.ColdWater.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoColdWater	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoColdWater	N/A	N/A	N/A	adf-50

Units
Percent

Discharge Air Temp Output

Keypad Menu Path d1

This output network variable or read-only BACnet object is used to monitor the unit's discharge-air temperature.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	6	Present _Value	85
Full Reference				
MTII UVUC ##########.DischAirTemp.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoDischAirTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoDischAirTemp	adf-92	adf-34	adf-33	adf-33

Units
Degrees-Celsius

Discharge Air Temp Setpoint Output

Keypad Menu Path d0

This output network variable or read-only BACnet object is used to monitor the unit's discharge-air temperature setpoint.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	9	Present _Value	85
Full Reference				
MTII UVUC ##########.DATSetpt.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoDATSetpt	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoDATSetpt	adf-104	adf-47	adf-44	adf-42

Units
Degrees-Fahrenheit or Degrees-Celsius

Economizer Enable Input

Keypad Menu Path E1

This input network variable or read/write BACnet object is used to enable and disable economizer operation. The input information is typically sent from a system supervisory panel to override the local economizer's enable decision.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Output	14	6	Present _Value	85
Full Reference				
MTII UVUC ##########.EconEnable.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviEconEnable	SNVT_switch	95

N2 Open

Long Name	1	2	3	4
nviEconEnable.State	bd-25	bd-8	bd-8	bd-7
nviEconEnable.Value	adf-72	adf-13	adf-13	adf-12

Range of Enumerations

LON/N2 Range		BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
State	-1= Log_Nul (default) 0= Disable 1= Enable	0= Off 1= On 255= Null (default)	1= Disable 2= Enable 3= Null (default)

Units
No-units

Economizer IA/OA Enthalpy Differential

Keypad Menu Path E6

This configuration property or read/write BACnet object is used to adjust the economizer IA/OA enthalpy differential.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet® object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	15	Present_Value	85
Full Reference				
MTII UVUC ##########.EconEnthDiff.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	UCPT Index
nciEconEnthDiff	SNVT_enthalpy	153	25

N2 Open

Long Name	1	2	3	4
nciEconEnthDiff	adf-19	adf-70	adf-69	adf-69

Range of Enumerations

Range	Default
1 – 10 (KJ/Kg)	3 (KJ/Kg)
0.5 – 4.3 (BTU/lb)	1.2 (BTU/lb)

Units
Kilojoules-per-kilogram or BTU-per-lb

Economizer IA/OA Temp Differential

Keypad Menu Path E3

This configuration property or read/write BACnet object is used to adjust the economizer IA/OA temperature differential.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet® object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	13	Present_Value	85
Full Reference				
MTII UVUC ##########.EconDBDiff.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	UCPT Index
nciEconDBDiff	SNVT_temp_p	105	21

N2 Open

Long Name	1	2	3	4
nciEconDBDiff	adf-17	adf-68	adf-67	adf-67

Range of Enumerations

Range	Default
33-210 (°F)	33 (°F)
1 – 99 (°C)	1 (°C)

Units
Degrees-Fahrenheit or Degrees-Celsius

Economizer OA Enthalpy Setpoint

Keypad Menu Path E5

This configuration property or read/write BACnet object is used to adjust the economizer's outdoor-air enthalpy setpoint.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	14	Present_Value	85
Full Reference				
MTII UVUC ##########.OAEnthSept.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciOAEnthSp	SNVT_enthalpy	153	SCPToutdoorAirEnthalpySetpoint	21

N2 Open

Long Name	1	2	3	4
nciOAEnthSp	adf-18	adf-69	adf-68	adf-68

Range of Enumerations

Range	Default
1- 64.5 (BTU/lb)	24.94 (BTU/lb)
2 – 150 (KJ/Kg)	58 (KJ/Kg)

Units
Kilojoules-per-kilogram or BTU-per-pound

Economizer OA Temp Setpoint

Keypad Menu Path E2

This configuration property or read/write BACnet object is used to adjust the economizer's outdoor-air temperature setpoint.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Analog Value	2	12	Present _Value	85
Full Reference				
MTII UVUC ##########. OATSP.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciOATSP	SNVT_temp_p	105	SCPToutdoorAirTempSetpoint	199

N2 Open

Long Name	1	2	3	4
nciOATSP	adf-16	adf-67	adf-66	adf-66

Range of Enumerations

Range	Default
32-210 (°F)	68 (°F)
0 – 99 (°C)	20 (°C)

Units
Degrees-Fahrenheit or Degrees-Celsius

Effective Occupancy Output

Keypad Menu Path Eo

This output network variable or read only BACnet object is used to set and/or indicate the unit's actual occupancy mode.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Input	13	3	Present _Value	85
Full Reference				
MTII UVUC ##########.EffectOccup.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoEffectOccup	SNVT_occupancy	109

N2 Open

Long Name	1	2	3	4
nvoEffectOccup	bd-32	bd-16	bd-16	bd-15

Range of Enumerations

LON/N2 Range	BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
0= Occupied	0= Occupied	1= Occupied
1= Unoccupied	1= Unoccupied	2= Unoccupied
2=Bypass	2= Bypass	3= Bypass
3= Standby	3= Standby	4= Standby
255=Invalid	255=Null (default)	5= Null (default)

Units
No-units

Effective Setpoint Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only BACnet object is used to monitor the controller's current effective temperature setpoint.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	7	Present _Value	85
Full Reference				
MTII UVUC ##########.EffectSetpt.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoEffectSetpt	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoEffectSetpt	adf-89	adf-31	adf-30	adf-30

Units
Degrees-Fahrenheit or Degree-Celsius

Effective Space Temp Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read/write BACnet object is used to monitor the controller's current effective space temperature. If the space-temperature input-network-variable value is valid, this output will show the value of the input. If there is no valid value for the space-temperature input network variable or read/write object, the value of the local sensor will be displayed. If neither value is valid, the output will read invalid.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Analog Input	0	1	Present _Value	85
Full Reference				
MTII UVUC ##########.SpaceTemp.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoSpaceTemp	SNVT_temp_p	103

N2 Open

Long Name	1	2	3	4
nvoSpaceTemp	adf-83	adf-25	adf-24	adf-24

Units
Degrees-Fahrenheit or Degrees-Celsius

Emergency Override Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to force the device into an emergency (non-normal) mode. A supervisory controller typically sets it.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Multistate Output	14	3	Present _Value	85
Full Reference				
MTII UVUC ##########.EmergOverride.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviEmergOverride	SNVT_hvac_emerg	103

N2 Open

Long Name	1	2	3	4
nviEmergOverride	adf-27	adf-11	adf-11	adf-10

Range of Enumerations

LON/N2 Range	BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
EMERG_NORMAL	0= Normal	1= Normal
EMERG_PRESSURIZE	1= Pressurized	2= Pressurized
EMERG_DEPRESSURIZE	2= Depressurized	3= Depressurized
EMERG_PURGE	3= Purge	4= Purge
EMERG_SHUTDOWN	4= Shutdown	5= Shutdown
EMERG_FIRE	5= Fire	6= Fire
EMERG_NUL (default)	255= Null (default)	7= Null (default)

Units
No-units

Energize Exhaust Fan OAD Setpoint

Keypad Menu Path o6

This configuration property sets the point on the outdoor-air damper position above which the exhaust fan output will be energized.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciExhStartPos	SNVT_lev_percent	81	SCPTexhaustEnable Position	202

N2 Open

Long Name	1	2	3	4
nciExhStartPos	adf-13	adf-64	adf-63	adf-63

Range of Enumerations

Range	Default
0% - 100%	10%

Units
Percent

Energy Hold Off Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to stop heating and cooling while allowing the unit to protect the space from temperature extremes. When the unit is in Energy Hold Off, the unit will not provide heating unless the space temperature exceeds the emergency-heat setpoint. It does not allow for cooling operation. This input is usually used in connection with such things as window-contact sensors or remote shutdown devices.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Input	13	4	Present _Value	85
Full Reference				
MTII UVUC ##########.EnergyHoldOff.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviEnergyHoldOff	SNVT_switch	95

N2 Open

Long Name	1	2	3	4
nviEnergyHoldOff.State	bd-26	bd-9	bd-9	bd-8
nviEnergyHoldOff.Value	adf-73	adf-14	adf-14	adf-13

Range of Enumerations

LON/N2 Range		BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
State	-1= Log_Nul (default) 0= Disable 1= Enable	0= Disable 1= Enable 255= Null (default)	1= Disable 2= Enable 3= Null (default)

Note: To write to the EnergyHoldOff BACnet object, the out-of-service prompt property must be set to TRUE. The Present_Value property displayed by this object will always be 0.0. The object resets itself to 0.0 after a valid value is written to it

Units
No-units

Energy Hold Off Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read/write BACnet object indicates the state of the current Energy Hold Off condition.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Input	13	4	Present _Value	85
Full Reference				
MTII UVUC ##########.EnergyHoldOff.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoEnergyHoldOff	SNVT_switch	95

N2 Open

Long Name	1	2	3	4
nvoEnergyHoldOff.State	bd-35	bd-19	bd-19	bd-19
nvoEnergyHoldOff.Value	adf-101	adf-43	adf-41	adf-41

Range of Enumerations

LON/N2 Range		BACnet Range Firmware 2.08	BACnet Range Firmware 3.00 and higher
State	-1= Log_Nul (default) 0= Disable 1= Enable	0= Disable 1= Enable 255= Null (default)	1= Disable 2= Enable 3= Null (default)

Units
No-units

Exhaust Interlock OAD Min Position Setpoint

Keypad Menu Path o5

This configuration property indicates the outdoor-air-damper minimum position when the exhaust-fan interlock is energized.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	UCPT Index
nciOAMinPosExhaust	SNVT_lev_percent	81	15

N2 Open

Long Name	1	2	3	4
nciOAMinPosExhaust	adf-12	adf-63	adf-62	adf-62

Range of Enumerations

Range	Default
0% - 100%	100%

Units
Percent

F&BP Damper Position Output

Keypad Menu Path dP

This output network variable or read-only BACnet object reflects the current position of the F&BP damper.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	21	Present _Value	85
Full Reference				
MTII UVUC ##########.FBPDamper.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoFBPDamper	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoFBPDamper	N/A	N/A	adf-49	adf-48

Units
Percent

Fan Cycling Configuration

Keypad Menu Path CF

This configuration property is used to enable space fan cycling during occupied, standby and bypass occupancy modes.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	UCPT Index
nciFanCycling	SNVT_lev_disc	22	75

N2 Open

Long Name	1	2	3	4
nciFanCycling	bd-12	bd-35	bd-33	bd-32

Range of Enumerations

Range
2 = Continuous (no cycling) (default) 3 = Cycle

Units
No-units

Fan Speed Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only BACnet object is used to monitor the unit's actual fan speed.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Input	13	1	Present _Value	85
Full Reference				
MTII UVUC ##########.FanSpeed.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoFanSpeed	SNVT_switch	95

N2 Open

Long Name	1	2	3	4
nvoFanSpeed.State	bd-34	bd-18	bd-18	bd-17
nvoFanSpeed.Value	adf-91	adf-33	adf-32	adf-32

Range of Enumerations

LON/N2 Range		BACnet Range Firmware 2.08	BACnet Range Firmware 3.00 and higher
Value	5=Low Speed 75=Med Speed 95=High Speed	0 = Off 2 = Low Speed 3 = Medium Speed 4 = High Speed	1 = Off 3 = Low Speed 4 = Medium Speed 5 = High Speed
State	-1= Log_Nul (default) 0= Disable 1= Enable		

Note: The fan speed can be verified by observing the fan LEDs on the Local User Interface. In the LonTalk protocol, use the Value portion of the SNVT_switch to see the fan speed. Check the Value portion of the Range of Enumerations above to interpret the values shown.

Units
No-units

Fault Value

Keypad Menu Path No Keypad Equivalent

This read-only BACnet object is available to monitor the control alarm status. Alarms are always displayed by priority, with the highest priority alarm displayed first. As an example, a Space Temperature Sensor Failure (Priority 1) will be displayed before a DX Pressure Fault (Priority 2).

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	17	Present _Value	85
Full Reference				
MTII UVUC ##########.InAlarm. Present_Value				

Priority	Fault Description	Indication
	No Fault	0
1	Space Temp Sensor Failure	1
2	DX Pressure Fault	2
3	Compressor Envelope Fault	3
4	Discharge Air DX Cooling Low Limit Indication	4
5	Condensate Overflow Indication	5
6	Space Coil DX Temp Sensor Failure	6
7	Outdoor Temp Sensor Failure	7
8	Discharge Air Temp Sensor Failure	8
9	Outdoor Coil DX Temp Sensor Failure	9
	Water Coil DX Temp Sensor Failure	
10	Water-out Temp Sensor Failure	10
	Source (Water-in) Temp Sensor Failure	
11	Space Humidity Sensor Failure	11
12	Outdoor Humidity Sensor Failure	12
13	Space CO2 Sensor Failure	13
14	Source (Water-in) Temp Inadequate Indication	14
15	Low Air Temp Fault	15
16	Change Filter Indication	16

Units
No-units

Filter Change Hours Setpoint

Keypad Menu Path No Keypad Equivalent

This configuration property is used to adjust the number of fan run hours between filter change alarms.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	UCPT Index
nciFilterChangeHrs	SNVT_time_hour	124	35

N2 Open

Long Name	1	2	3	4
nciFilterChangeHrs	adi-3	adi-8	adi-7	adi-7

Range of Enumerations

Range	Default
100 - 1000	700 hrs%

Units
Hours

Heat/Cool Mode Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to coordinate one unit's heat/cool changeover operation with any other controller that it operates. For example, one controller may be controlling operation of another unit inside the same conditioned space. If a mode of operation is requested that is not supported by a controller, it will revert to automatic operation.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Input	13	2	Present _Value	85
Full Reference				
MTII UVUC ##########.HeatCool.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviHeatCool	SNVT_hvac_mode	108

N2 Open

Long Name	1	2	3	4
nviHeatCool	bd-22	bd-4	bd-4	bd-4

Range of Enumerations

LON/N2 Range	BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
HVAC_NUL (default)	0 = AUTO	1 = AUTO
HVAC_AUTO	1 = HEAT	2 = HEAT
HVAC_HEAT	2 = MORNING_ WARMUP	3 = MORNING_ WARMUP
HVAC_MORNING_ WARMUP	3 = COOL	4 = COOL
HVAC_COOL	4 = NIGHT PURGE	5 = NIGHT PURGE
HVAC_NIGHT_PURGE	5 = PRE COOL	6 = PRE COOL
HVAC_PRE_COOL	6 = OFF	7 = OFF
HVAC_OFF	7 = TEST	8 = TEST
HVAC_TEST	8 = EMERGENCY HEAT	9 = EMERGENCY HEAT
HVAC_EMERGENCY_HEAT	9 = FAN ONLY	10 = FAN ONLY
HVAC_FAN_ONLY	10 = FREE COOL	11 = FREE COOL
HVAC_FREE_COOL	11 = ICE	12 = ICE
HVAC_ICE	12 = MAX_HEAT	13 = MAX_HEAT
HVAC_MAX_HEAT	13 = DEHUMIDIFICATION	14 = DEHUMIDIFICATION
HVAC_DEHUMIDIFICATION	255= Null (default)	15 = NULL (default)

Note: Selections shown in gray are unavailable. To write to the present value of the HeatCool BACnet® object, the out-of-service prompted property must be set to TRUE.

Note: Before the HeatCool object (BACnet) or the nviHeatCool network variable input (LONWORKS or N2 Open) can be used, the ApplicMode object (BACnet) or the nviApplicMode network variable (LONWORKS or N2 Open) must be set to Auto or Invalid. ApplicMode has priority over HeatCool.

Units
No-units

Heat/Cool Mode Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read only BACnet object is used to indicate the unit's actual heat/cool mode.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Input	13	2	Present _Value	85
Full Reference				
MTII UVUC ##########.HeatCool.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoHeatCool	SNVT_hvac_mode	108

N2 Open

Long Name	1	2	3	4
nvoHeatCool	bd-33	bd-17	bd-17	bd-16

Range of Enumerations

LON/N2 Range	BACnet® Range Firmware 2.08	BACnet® Range Firmware 3.00 and higher
HVAC_NUL (default)	0 = AUTO	1 = AUTO
HVAC_AUTO	1 = HEAT	2 = HEAT
HVAC_HEAT	2 = MORNING_ WARMUP	3 = MORNING_ WARMUP
HVAC_MORNING_ WARMUP	3 = COOL	4 = COOL
HVAC_COOL	4 = NIGHT PURGE	5 = NIGHT PURGE
HVAC_NIGHT_PURGE	5 = PRE COOL	6 = PRE COOL
HVAC_PRE_COOL	6 = OFF	7 = OFF
HVAC_OFF	7 = TEST	8 = TEST
HVAC_TEST	8 = EMERGENCY HEAT	9 = EMERGENCY HEAT
HVAC_EMERGENCY_HEAT	9 = FAN ONLY	10 = FAN ONLY
HVAC_FAN_ONLY	10 = FREE COOL	11 = FREE COOL
HVAC_FREE_COOL	11 = ICE	12 = ICE
HVAC_ICE	12 = MAX_HEAT	13 = MAX_HEAT
HVAC_MAX_HEAT	13 = DEHUMIDIFICATION	14 = DEHUMIDIFICATION
HVAC_DEHUMIDIFICATION	255= NULL (default)	15 = NULL (default)

Units
No-units

IA/DX Coil Temp Output

Keypad Menu Path No Keypad Equivalent

This output network variable is used to monitor the space-air or DX-coil (evaporator) temperature.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoIACoilDXTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoIACoilDXTemp	adf-102	adf-45	adf-42	N/A

Units
Degrees-Fahrenheit or Degrees-Celsius

Local Bypass Time

Keypad Menu Path No Keypad Equivalent

This configuration property or read/write BACnet object sets the maximum amount of time that the controller can be in the Bypass (temporary occupied) mode when the unit is put into Bypass mode either over the network or by pressing the Bypass button on the wall sensor.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	7	Present _Value	85
Full Reference				
MTII UVUC ##########.BypassTime.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciBypassTime	SNVT_time_min	123	SCPTbypassTime	34

N2 Open

Long Name	1	2	3	4
nciBypassTime	adi-1	adi-6	adi-5	adi-5

Range of Enumerations

Range	Default
0 - 240	120 min

Units
Minutes

Local Setpoint Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read/write BACnet object is used to monitor and/or set the amount of setpoint adjustment of the local room-temperature sensor. If there is no connection to such a device the output will send the invalid value.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	8	Present _Value	85
Full Reference				
MTII UVUC ##########.LocalSetpt.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoSetpoint	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoSetpoint	adf-90	adf-32	adf-31	adf-31

Units
Degrees-Celsius

Location Label

Keypad Menu Path No Keypad Equivalent

This configuration property can (optionally) be used to provide descriptive physical unit location information such as room numbers, names, etc.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciLocation	SNVT_str_asc	36	SCPTlocation	17

Units
No-units

Minimum Send Time

Keypad Menu Path No Keypad Equivalent

This configuration property defines the minimum period of time between automatic network-variable output transmissions.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciMinOutTm	SNVT_time_sec	107	SCPTminSendTime	52

Range of Enumerations

Range	Default
0 - 6553.4	0 sec

Units
Seconds

OA/DX or Water/DX Coil Temp Output

Keypad Menu Path No Keypad Equivalent

This output network variable is used to monitor the outdoor air/DX or water/DX coil temperature.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoCoilDXTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoCoilDXTemp	adf-103	adf-46	adf-43	N/A

Units
Degrees-Fahrenheit or Degrees-Celsius

OAD Max Position Setpoint

Keypad Menu Path o7

This configuration property indicates the outdoor-air damper maximum position.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciOAMaxPos	SNVT_lev_percent	81	SCPTOAMaxPos	20

N2 Open

Long Name	1	2	3	4
nciOAMaxPos	adf-14	adf-65	adf-64	adf-64

Range of Enumerations

Range	Default
0 - 100%	100%

Units
Percent

OAD Min Position High-Speed Setpoint

Keypad Menu Path o2

This configuration property or read/write BACnet object indicates the outdoor-air-damper minimum position when the space fan is set to run at high speed. This is the default position, regardless of the fan speed, when the unit is configured for CO2 sensing.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	8	Present _Value	85
Full Reference				
MTII UVUC ##########.OAMinPos.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciOAMinPos	SNVT_lev_percent	81	SCPTOAMinPos	23

N2 Open

Long Name	1	2	3	4
nciOAMinPos	adf-7	adf-58	adf-57	adf-57

Range of Enumerations

Range	Default
0 - 100%	20%

Units
Percent

OAD Min Position Low-Speed Setpoint

Keypad Menu Path o4

This configuration property or read/write BACne*t* object indicates the outdoor-air damper minimum position when the space fan is set to run at low speed

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	10	Present _Value	85
Full Reference				
MTII UVUC ##########.OAMinPosLowSpeed.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Index
nciOAMinPosLowSpeed	SNVT_lev_percent	81	13

N2 Open

Long Name	1	2	3	4
nciOAMinPosLowSpeed	adf-7	adf-58	adf-57	adf-57

Range of Enumerations

Range	Default
0 - 100%	35%

Units
Percent

OAD Min Position Med-Speed Setpoint

Keypad Menu Path o3

This configuration property or read/write BACnet object indicates the outdoor-air damper minimum position when the space fan is set to run at medium speed.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	9	Present _Value	85
Full Reference				
MTII UVUC ##########.OAMinPosMedSpeed.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Index
nciOAMinPosMedSpeed	SNVT_lev_percent	81	12

N2 Open

Long Name	1	2	3	4
nciOAMinPosMedSpeed	adf-10	adf-61	adf-60	adf-60

Range of Enumerations

Range	Default
0 - 100%	30%

Units
Percent

Occupancy Override Input

Keypad Menu Path 0(

This input network variable or read/write BACnet object is used to set the unit for different occupancy modes. This command is typically sent by an occupant-interface module or a supervisory controller. It is used to manually control occupancy modes or to override the scheduled occupancy mode.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Output	14	1	Present _Value	85
Full Reference				
MTII UVUC ##########.OccManCmd.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviOccManCmd	SNVT_occupancy	109

N2 Open

Long Name	1	2	3	4
nviOccManCmd	bd-19	bd-1	bd-1	bd-1

Range of Enumerations

LON/N2 Range	BACnet Range Firmware 2.08	BACnet Range Firmware 3.00 and higher
OC_OCCUPIED	0= Occupied	1= Occupied
OC_UNOCCUPIED	1= Unoccupied	2= Unoccupied
OC_BYPASS	2= Bypass	3= Bypass
OC_STANDBY	3= Standby	4= Standby
OC_NUL (default)	255= Null (default)	5= Null (default)

Units
No-units

Occupancy Sensor Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to indicate the presence of occupants in the controlled space. The information is typically sent either by an occupancy sensor or a supervisory controller. Where an occupancy sensor is the source of this input, setting a valid value will take precedence over the information from hard-wired input. To make use of this network variable, the nviOccManCmd variable must be set to Auto or Invalid.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Multistate Output	13	9	Present_Value	85
Full Reference				
MTII UVUC ##########.EffectOccup.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviOccSensor	SNVT_occupancy	109

N2 Open

Long Name	1	2	3	4
nviOccSensor	bd-20	bd-2	bd-2	bd-2

Range of Enumerations

LON/N2 Range	BACnet Range Firmware 2.08	BACnet Range Firmware 3.00 and higher
OC_OCCUPIED	0= Occupied	1= Occupied
OC_UNOCCUPIED	1= Unoccupied	2= Unoccupied
OC_BYPASS	2= Bypass	3= Bypass
OC_STANDBY	3= Standby	4= Standby
OC_NUL (default)	255= Null(default)	5= Null (default)

Note: Items shown in gray are unavailable.

Units
No-units

Occupancy Temperature Setpoints

Keypad Menu Path Co = Occupied Cooling Setpoint
Cs = Standby Cooling Setpoint
Cu = Unoccupied Cooling Setpoint
Ho = Occupied Heating Setpoint
HS = Standby Heating Setpoint
HU = Unoccupied Heating Setpoint

This configuration property or read/write BACnet object defines the space temperature setpoints for the various heat, cool, and occupancy modes.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Analog Value	2	1	Present_Value	85
Full Reference				
MTII UVUC ##########.OccupiedCool.Present_Value				

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	2	Present _Value	85
Full Reference				
MTII UVUC ##########.StandbyCool.Present_Value				

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	3	Present _Value	85
Full Reference				
MTII UVUC ##########.UnoccupiedCool.Present_Value				

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	4	Present _Value	85
Full Reference				
MTII UVUC ##########.OccupiedHeat.Present_Value				

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	5	Present _Value	85
Full Reference				
MTII UVUC ##########.StandbyHeat.Present_Value				

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	6	Present _Value	85
Full Reference				
MTII UVUC ##########.UnoccupiedHeat.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciSetpoints	SNVT_temp_setpt	106	SCPTsetPnts	60

N2 Open

Long Name	1	2	3	4
nciSetpoints.Occupied_Co	adf-1	adf-52	adf-51	adf-51
nciSetpoints.Standby_Coo	adf-2	adf-53	adf-52	adf-52
nciSetpoints.Unoccupied_Co	adf-3	adf-54	adf-53	adf-53
nciSetpoints.Occupied_He	adf-4	adf-55	adf-54	adf-54
nciSetpoints.Standby_Hea	adf-5	adf-56	adf-55	adf-55
nciSetpoints.Unoccupied_He	adf-6	adf-57	adf-56	adf-56

Range of Enumerations

Options	Range	Default
Occupied_Cool	61-86 °F (16-30 °C)	73.4 °F (23 °C)
StandBy_Cool	61-86 °F (16-30 °C)	77 °F (25 °C)
Unoccupied_Cool	61-86 °F (16-30 °C)	82.4 °F (28 °C)
Occupied_Heat	50-82 °F (10-28 °C)	69.8 °F (21°C)
StandBy_Heat	50-82 °F (10-28 °C)	66.2 °F (19 °C)
Unoccupied_Heat	50-82 °F (10-28 °C)	60.8 °F (16 °C)

Units
Degrees-Celsius or Degrees-Fahrenheit

Outdoor Air Damper Position Output

Keypad Menu Path o1

This output network variable or read-only BACnet object reflects the current position of the outdoor-air damper.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	10	Present_Value	85
Full Reference				
MTII UVUC ##########.OADamper.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoOADamper	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoOADamper	adf-97	adf-39	adf-37	adf-37

Units
Percent

Outdoor Air Humidity Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to allow the outdoor humidity information to be provided via the network from a single sensor. A communicating sensor typically sends the information or it can be set by a supervisory controller. If the input network variable or read/write object is set for a valid value, that value will override the unit's hard-wired sensor. Otherwise the hard-wired sensor information will be used.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	3	Present_Value	85
Full Reference				
MTII UVUC ##########.OutdoorRH.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviOutdoorRH	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nviOutdoorRH	adf-75	adf-17	adf-17	adf-17

Range of Enumerations

Range	Default
0 - 100%	163.835%

Note: To write to the present value of the OutdoorRH BACnet object, the out-of-service prompted property must be set to TRUE.

Units
Percent-relative-humidity

Outdoor Air Humidity Output

Keypad Menu Path r3

This output network variable or read/write BACnet object is used to monitor the outdoor humidity. The value of this variable reflects either the output of the (optional) unit-mounted outdoor humidity sensor or the value of any valid input setting.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	3	Present _Value	85
Full Reference				
MTII UVUC ##########.OutdoorRH.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoOutdoorRH	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoOutdoorRH	adf-99	adf-41	adf-39	adf-39

Units
Percent-relative-humidity

Outdoor Air Temp Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to allow the outdoor temperature to be provided to the network from a single sensor. A communicating sensor typically sends the information or it can be set by a supervisory controller. If the input network variable or read/write object is set for a valid value, that value will override the unit's hard-wired sensor. Otherwise the hard-wired sensor information will be used.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	2	Present _Value	85

Full Reference
MTII UVUC ##########.OutdoorTemp.Present_Value

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviOutdoorTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nviOutdoorTemp	adf-74	adf-16	adf-16	adf-16

Range of Enumerations

Range	Default
-459.71 to 621.81 (°F)	621.81 (°F)
-273.17 to 327.6 (°C)	327.67 (°C)

Note: To write to the present value of the OutdoorTemp BACnet object, the out-of-service prompted property must be set to TRUE.

Units
Degrees-Fahrenheit or Degrees-Celsius

Outdoor Air Temp Output

Keypad Menu Path ot

This output network variable or read/write BACnet object is used to monitor the outdoor temperature. The value of this variable reflects either the output of the unit-mounted outdoor temperature sensor or the value of any valid input setting.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Analog Input	0	2	Present _Value	85
Full Reference				
MTII UVUC ##########.OutdoorTemp.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoOutdoorTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoOutdoorTemp	adf-100	adf-42	adf-40	adf-40

Units
Degrees-Celsius or Degrees-Fahrenheit

Passive Dehum Setpoint

Keypad Menu Path No Keypad Equivalent

This configuration property is used to adjust the space temperature setpoint for passive dehumidification.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Index
NciPassDehumSetpt	SNVT_temp_p	105	60

N2 Open

Long Name	1	2	3	4
nciPassDehumSetpt	N/A	N/A	N/A	adf-91

Range of Enumerations

Range	Default
68 – 77 (°F)	71.6 (°F)
20 – 25 (°C)	22 (°C)

Units
Degrees-Fahrenheit or Degrees-Celsius

Primary Cool Input

Keypad Menu Path No Keypad Equivalent

This input network variable is intended for dependent slave operation. It is typically bound to the primary cool output network variable of another controller. When the controller is in dependent slave mode the value will be used to control the primary cool source in the slave controller overriding the normal heating algorithm.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviCoolPriSlave	SNVT_lev_percent	105

N2 Open

Long Name	1	2	3	4
nviCoolPriSlave	adf-79	adf-21	adf-20	adf-20

Range of Enumerations

Range	Default
-163.84 to 163.83	163.835 (%)

Units
Percent

Primary Cool Output

Keypad Menu Path No Keypad Equivalent

This output network variable provides the current level of the primary cool (economizer) output.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoCoolPriSlave	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoCoolPriSlave	adf-95	adf-37	adf-35	adf-35

Units
Percent

Primary Heat Input

Keypad Menu Path No Keypad Equivalent

This input network variable is intended for dependent slave operation. It is typically bound to the primary heat output network variable of another controller. When the controller is in dependent slave mode the value will be used to control the primary heat source in the slave controller overriding the normal heating algorithm.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviHeatPriSlave	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nviHeatPriSlave	adf-77	adf-19	adf-19	adf-19

Range of Enumerations

Range	Default
-163.84 to 163.83	163.835 (%)

Units
Percent

Primary Heat Output

Keypad Menu Path No Keypad Equivalent

This output network variable provides the current level of the primary heat (valve, face and bypass damper, electric heat, or compressor) output.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoHeatPriSlave	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoHeatPriSlave	adf-93	adf-35	adf-34	adf-34

Units
Percent

Receive Heartbeat

Keypad Menu Path No Keypad Equivalent

This configuration property is used to control the maximum time that elapses after the last update to a specified network variable input before the controller starts to use its default or hard-wired values.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciRcvHrtBt	SNVT_time_sec	107	SCPTmaxRcvTime	48

Range of Enumerations

Range	Default
0 - 6553.4	0 sec

Units
Seconds

Reset Alarm Input

Keypad Menu Path rA

This input network variable or read/write BACnet object is used to clear a unit alarm. This network variable/BACnet object is used to clear unit alarms that require manual clearing after three occurrences in one week's time (i.e. DX Pressure Fault, Compressor Envelope Fault).

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Multistate Output	14	5	Present _Value	85
Full Reference				
MTII UVUC ##########.ResetAlarm.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviResetAlarm	SNVT_switch	95

N2 Open

Long Name	1	2	3	4
nviResetAlarm.State	bd-29	bd-13	bd-13	bd-12
nviResetAlarm.Value	adf-82	adf-24	adf-23	adf-23

Range of Enumerations

LON/N2 Range		BACnet Range Firmware 2.08	BACnet Range Firmware 3.00 and higher
State	-1 = Nul/Reset nvi (default) 0 = Reset nvi 1 = Clear Alarm	0= Reset Object 1= Clear Alarm 255= Nul (default)	1= Reset Object 2= Clear Alarm 3= Null (default))

Units
No-units

Reset Filter Alarm Input

Keypad Menu Path (r

This input network variable or read/write BACnet object is used to clear a change-filter indication.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Multistate Output	14	4	Present _Value	85
Full Reference				
MTII UVUC ##########.ResetFilter.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviResetFilter	SNVT_switch	95

N2 Open

Long Name	1	2	3	4
nviResetFilter.State	bd-28	bd-12	bd-12	bd-11
nviResetFilter.Value	adf-81	adf-23	adf-22	adf-22

Range of Enumerations

LON/N2 Range		BACnet Range Firmware 2.08	BACnet Range Firmware 3.00 and higher
State	-1 = Nul/Reset nvi (default) 0 = Reset nvi 1 = Clear Alarm	0= Reset Object 1= Clear Alarm 255= Null (default)	1= Reset Object 2= Clear Alarm 3= Null (default))

Note: Immediately after a "1" is written to either the Reset Filter (BACnet) object or nviResetFilter network variable, a "0" or "Nul" value must be written once the filter alarm is cleared to reset the BACnet object or network variable. Failure to do so will prevent the end user from knowing when the filter should be changed.

Units
No-units

Secondary Cool Input

Keypad Menu Path No Keypad Equivalent

This input network variable is intended for master/slave operation. It is typically used to tie the secondary-cooling output of one unit to the controller of another. The values of the unit set up to be the master will control the slave, overriding its own sensing devices.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviCoolSecSlave	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nviCoolSecSlave	adf-80	adf-22	adf-21	adf-21

Range of Enumerations

Range	Default
-163.84 to 163.83	163.835 (%)

Units
Percent

Secondary Cool Output

Keypad Menu Path No Keypad Equivalent

This output network variable provides the current level of the secondary cool (economizer) output.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoCoolSecondary	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoCoolSecondary	adf-96	adf-38	adf-36	adf-36

Units
Percent

Secondary Heat Input

Keypad Menu Path No Keypad Equivalent

This input network variable is intended for dependent slave operation. It is typically bound to the Secondary Heat Output network variable of another controller. When the controller is in dependent slave mode the value will be used to control the secondary heat source in the slave controller, overriding the normal heating algorithm.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviHeatSecSlave	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nviHeatSecSlave	adf-78	adf-20	N/A	N/A

Range of Enumerations

Range	Default
-163.84 to 163.83	163.835 (%)

Units
Percent

Secondary Heat Output

Keypad Menu Path No Keypad Equivalent

This output network variable provides the current level of the secondary heating (electric strip) output.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoHeatSecondary	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoHeatSecondary	adf-94	adf-36	N/A	N/A

Units
Percent

Send Heartbeat

Keypad Menu Path No Keypad Equivalent

This configuration property defines the maximum period of time before certain network variable outputs will automatically be updated.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciSndHrtBt	SNVT_time_sec	107	SCPTmaxSendTime	49

Range of Enumerations

Range	Default
0 - 6553.4	0 sec

Units
Seconds

Setpoint Offset Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to shift the effective occupied and standby temperature setpoints by adding a selected value to the current setpoints. The unoccupied setpoints are not affected by this variable. A supervisory controller typically sets this setpoint shift or by a wall-mounted temperature-sensing module that has a setpoint adjustment knob. The affected setpoints can be set higher or lower through this input.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Analog Output	1	1	Present_Value	85
Full Reference				
MTII UVUC ##########.SetptOffset.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviSetptOffset	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nviSetptOffset	adf-63	adf-3	adf-3	adf-3

Range of Enumerations

Range	Default
-18 to +18 (°F)	589.8 (°F)
-10 to 10 (°C)	327.67 (°C)

Note: This BACnet object or LONWORKS N2 Open network variable can only be used when the unit is running in the occupied/standby mode and the Occupied/Standby setpoints must be adjusted. For example, in order to adjust the Occupied Cooling setpoint the unit must be running in the Occupied mode.

Units
Degrees-Celsius

Setpoint Shift Input

Keypad Menu Path No Keypad Equivalent

This input network variable is used to shift the effective heat/cool setpoints by adding an occupancy-based selected value to the current setpoints. This setpoint shift is typically set by a supervisory controller, which provides functions such as outdoor-air temperature compensation. All occupied, standby, and unoccupied setpoints can be automatically set higher or lower through this input.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviSetptShift	SNVT_temp_p	106

N2 Open

Long Name	1	2	3	4
nviSetptShift.Occupied_C	adf-64	adf-4	adf-4	adf-4
nviSetptShift.Occupied_H	adf-67	adf-7	adf-7	adf-7
nviSetptShift.StandBy_Co	adf-65	adf-5	adf-5	adf-5
nviSetptShift.StandBy_He	adf-68	adf-8	adf-8	adf-8
nviSetptShift.Unoccupied	adf-66	adf-6	adf-6	adf-6
nviSetptShift.Unoccupied	adf-69	adf-9	adf-9	adf-9

Range of Enumerations

Options	Range	Default
Occupied_Cool	-10 to 10 (°C)	327.67 (°C)
StandBy_Cool	-10 to 10 (°C)	327.67 (°C)
Unoccupied_Cool	-10 to 10 (°C)	327.67 (°C)
Occupied_Heat	-10 to 10 (°C)	327.67 (°C)
StandBy_Heat	-10 to 10 (°C)	327.67 (°C)
Unoccupied_Heat	-10 to 10 (°C)	327.67 (°C)

Note: All of the setpoints must be changed from the invalid value of 327.67 °C to a value within the range specified above for the setpoint shift to function properly. For setpoints that you do not want shifted, set the corresponding nviSetptShift input network variable enumeration to 0 °C. For example, if you want only the Occupied Cooling setpoint to be shifted 2 °C, set the Occupied_Cool to 2 °C and set the Standby_Cool, Unoccupied_Cool, Occupied_Heat, Standby_Heat, Unoccupied_Heat all to 0°C.

Units
Degrees-Celsius

Source (Water-in) Temp Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to monitor the source (water-in) temperature. A communicating sensor typically sends the information or it can be set by a supervisory controller. If the input network variable or read/write object is set for a valid value, that value will override the sensor. Otherwise the sensor information will be used.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Output	0	18	Present _Value	85
Full Reference				
MTII UVUC ##########.SourceTemp.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviSourceTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nviSourceTemp	N/A	N/A	N/A	adf-15

Range of Enumerations

Range	Default
-459.71 to 621.8 (°F)	621.8 (°F)
-273.17 to 327.66 (°C)	327.67 (°C)

Note: To write to the present value of the SourceTemp BACnet object, the out-of-service prompted property must be set to TRUE.

Units
Degrees-Fahrenheit or Degrees-Celsius

Source (Water-in) Temp Output

Keypad Menu Path So

This output network variable or read/write BACnet object is used to monitor the source (water-in) temperature. The value of this variable reflects the unit mounted source (water-in) temperature sensor or the value of the source (water-in) temperature input network variable or read/write object. If the input network variable or read/write object is set for a valid value, that value will override the sensor. Otherwise the sensor information will be used.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	18	Present _Value	85
Full Reference				
MTII UVUC ##########.SourceTemp.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoSourceTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoSourceTemp	N/A	N/A	N/A	adf-47

Units
Degrees-Fahrenheit or Degrees-Celsius

Space CO2 Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to provide the space CO2 information to the network. The value is typically sent either by a communicating sensor or by the supervisory controller. If the input network variable or read/write object is set for a valid value, that value will override the sensor. Otherwise the sensor information will be used.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	5	Present _Value	85
Full Reference				
MTII UVUC ##########.SpaceCO2.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviSpaceCO2	SNVT_ppm	29

N2 Open

Long Name	1	2	3	4
nviSpaceCO2	adi-8	adi-3	adi-3	adi-3

Range of Enumerations

Range	Default
0 to 65534	65535 (ppm)

Note: To write to the present value of the SpaceCO2 BACnet object, the out-of-service prompted property must be set to TRUE.

Units
Parts-per-million

Space CO2 Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read/write BACnet object is used to monitor the space CO2. The value of this variable reflects the (optional) unit-mounted space CO2 sensor or the value of the space humidity input network variable or read/write object (if valid).

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	5	Present _Value	85
Full Reference				
MTII UVUC ##########.SpaceCO2.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoSpaceCO2	SNVT_ppm	105

N2 Open

Long Name	1	2	3	4
nvoSpaceCO2	adi-8	adi-3	adi-3	adi-3

Units
Parts-per-million

Space CO2 Setpoint

Keypad Menu Path No Keypad Equivalent

This configuration property or read/write BACnet object defines the CO2 high limit setpoint for the controlled space. An optional CO2 sensor or an input network variable or read/write object is required.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	11	Present _Value	85
Full Reference				
MTII UVUC ##########.SpaceCO2Lim.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciSpaceCO2Lim	SNVT_ppm	29	SCPTlimitCO2	42

N2 Open

Long Name	1	2	3	4
nciSpaceCO2Lim	adi-2	adi-7	adi-6	adi-6

Range of Enumerations

Range	Default
0 to 3000	1200 ppm

Units
Parts-per-million

Space Fan Run Time Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only BACnet object is used to monitor the total fan runtime.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	12	Present _Value	85
Full Reference				
MTII UVUC ##########.FanRunTime.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoFanRunTime	SNVT_time_hour	124

N2 Open

Long Name	1	2	3	4
nvoFanRunTime	adi-9	adi-4	adi-10	adi-4

Units
Hours

Space Humidity Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write BACnet object is used to provide space-humidity information to the network. The value is typically sent either by a communicating sensor or by the supervisory controller. If the input network variable or read/write object is set for a valid value, that value will override the sensor. Otherwise the sensor information will be used.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	4	Present _Value	85
Full Reference				
MTII UVUC ##########.SpaceCO2.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviSpaceRH	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nviSpaceRH	adf-76	adf-18	adf-18	adf-18

Range of Enumerations

Range	Default
0 to 100 (%)	163.835 (%)

Note: To write to the present value of the SpaceRH BACnet object, the out-of-service prompted property must be set to TRUE.

Units
Percent-relative-humidity

Space Humidity Output

Keypad Menu Path r1

This output network variable or read/write BACnet object is used to monitor the space humidity. The value of this variable reflects the (optional) unit mounted space humidity sensor or the value of the space humidity input network variable or read/write object (if valid).

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	4	Present _Value	85
Full Reference				
MTII UVUC ##########.SpaceCO2.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoSpaceRH	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoSpaceRH	adf-98	adf-40	adf-38	adf-38

Range of Enumerations

Range	Default
0 to 100 (%)	163.835 (%)

Note: To write to the present value of the SpaceTemp BACnet object, the out-of-service prompted property must be set to TRUE.

Units
Percent-relative-humidity

Space Humidity Setpoint

Keypad Menu Path r2

This configuration property or read/write *BACnet* object defines the humidity high-limit setpoint for the controlled space. An optional humidity sensor or an input network variable or read/write object is required.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	16	Present _Value	85
Full Reference				
MTII UVUC ##########.SpaceRHSetpt.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	SCPT Reference	SCPT Index
nciSpaceRHSetpt	SNVT_lev_percent	81	SCPThumSetpt	36

N2 Open

Long Name	1	2	3	4
nciSpaceRHSetpt	adf-8	adf-59	adf-58	adf-58

Range of Enumerations

Range	Default
40 to100 (%)	60%

Units
Percent-relative-humidity

Space Temp Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write *BACnet* object is used to provide the space-temperature information to the network. A communicating space temperature sensor or a supervisory controller typically sends it. If the input network variable or read/write object is set for a valid value, that value will override the sensor. Otherwise the sensor information will be used.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	1	Present _Value	85
Full Reference				
MTII UVUC ##########.SpaceTemp.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviSpaceTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nviSpaceTemp	adf-61	adf-1	adf-1	adf-1

Range of Enumerations

Range	Default
40 to 95 (°F)	621.8 (°F)
10 to 35 (°C)	327.67 (°C)

Note: To write to the present value of the SpaceTemp BACnet object, the out-of-service prompted property must be set to TRUE.

Units
Degrees-Celsius

Space Temp Setpoint Input

Keypad Menu Path No Keypad Equivalent

This input network variable or read/write *BACnet* object is used to allow the temperature setpoints for the occupied and standby modes to be changed from the network, however it doesn't change the unoccupied setpoints. If no valid value is entered, either the local setpoint adjustment or the occupied-temperature setpoint value will be used.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

Note: Before the nviSetpoint network variable can be used, you must use the Local User Interface (LUI) to command the unit controller to use the 55°F - 85°F sensor adjustment option, rather than the default +/- 3°F sensor adjustment option. This is done by changing the rS menu item in the Local User Interface from the default value of "0" to "1". Once this is set to "1", the nviSetpoint input network variable can be used to set the occupied and standby setpoints, overriding the setpoint adjustment on the locally wired sensor.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Analog Input	0	8	Present _Value	85
Full Reference				
MTII UVUC ##########.LocalSetpt.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviSetpoint	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nviSetpoint	adf-62	adf-2	adf-2	adf-2

Range of Enumerations

Range	Default
50 to 95 (°F)	621.8 (°F)
10 to 35 (°C)	327.67 (°C)

Note: To write to the present value of the Local Setpoint BACnet object, the out-of-service prompted property must be set to TRUE.

Units
Degrees-Fahrenheit or Degrees-Celsius

Unit Status Output

Keypad Menu Path No Keypad Equivalent

This output network variable or read-only *BACnet* object is available to monitor the controller status. It provides a combined readout of the operating mode, the capacity of heating and cooling used, and an indication if any alarms are present. Alarms are always displayed by priority with the highest-priority alarm displayed first. As an example, a Space Temperature Sensor Failure (Priority 1) will be displayed before a DX Pressure Fault (Priority 2).

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Analog Input	0	17	Present _Value	85
Full Reference				
MTII UVUC ##########.InAlarm.Present_Value				

Note: In the BACnet protocol, only the In_Alarm portion of the Unit Status is communicated over the network.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoUnitStatus	SNVT_hvac_status	112

N2 Open

Long Name	1	2	3	4
nvoUnitStatus.Cool_Outpu	adf-86	adf-28	adf-27	adf-27
nvoUnitStatus.Economizer	adf-87	adf-29	adf-18	adf-28
nvoUnitStatus.Fan_Output	adf-88	adf-30	adf-29	adf-29
nvoUnitStatus.Heat_Outpu	adf-84	adf-26	adf-25	adf-25
nvoUnitStatus.Heat_Outpu	adf-85	adf-27	adf-26	adf-26
nvoUnitStatus.In_Alarm	bd-31	adf-15	adf-15	adf-15
nvoUnitStatus.Mode	bd-30	adf-14	adf-14	adf-14

Range of Enumerations

Options
Mode
Heat_Output_Primary (%)
Heat_Output_Secondary (%)

Cool_Output (%)
Economizer_Output (%)
Fan_Output (%)
In_Alarm

Priority	Fault Description	Indication
	No Fault	0
1	Space Temp Sensor Failure	1
2	DX Pressure Fault	2
3	Compressor Envelope Fault	3
4	Discharge Air DX Cooling Low Limit Indication	4
5	Condensate Overflow Indication	5
6	Space Coil DX Temp Sensor Failure	6
7	Outdoor Temp Sensor Failure	7
8	Discharge Air Temp Sensor Failure	8
9	Outdoor Coil DX Temp Sensor Failure	9
	Water Coil DX Temp Sensor Failure	
10	Water-out Temp Sensor Failure	10
	Source (Water-in) Temp Sensor Failure	
11	Space Humidity Sensor Failure	11
12	Outdoor Humidity Sensor Failure	12
13	Space CO2 Sensor Failure	13
14	Source (Water-in) Temp Inadequate Indication	14
15	Not Used	15
16	Change Filter Indication	16

UV Application Version

Keypad Menu Path No Keypad Equivalent

This configuration property or read/write *BACnet* object defines the application software model and version. The format will be xxx.xx where the digits to the left of the decimal point represent the version and any digits to the right of the decimal point represent the software model number. For example, 104.0 equals software model 0, version 104.

⚠ CAUTION

Please note that anytime a command is written to a network configuration parameter (nci), or to a BACnet object that controls a configuration parameter, this information is stored in the unit controller's EEPROM memory. Recognize that writing to the unit controller's EEPROM memory is an operation that has a finite limit. For this reason the number of writes made to configuration parameters, or BACnet objects linked to configuration parameters, must be limited in order to avoid damage to the unit controller.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Value	2	17	Present _Value	85
Full Reference				
MTII UVUC ##########.UVAppVersion.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index	UCPT Index
nciUVAppVersion	SNVT_volts	108	154

N2 Open

Long Name	1	2	3	4
nciUVAppVersion	adf-110	adf-115	adf-106	adf-99

Units
Volts

UVC State Output

Keypad Menu Path St

This output network variable or read-only *BACnet* object is used to monitor the current UVC state.

BACnet

Object Identifier			Property	
Object Type	Type Enumeration	Instance	Name	Enumeration
Analog Input	0	11	Present_Value	85
Full Reference				
MTII UVUC ##########.StateMachine.Present_Value				

LonWorks

LONWORKS Name	SNVT Type	SNVT Index
nvoStateMachine	SNVT_char_ascii	7

N2 Open

Long Name	1	2	3	4
nvoStateMachine	bd-36	bd-20	bd-20	bd-19

Range of Enumerations

State Name	BACnet® Value Firmware 2.08 (Decimal)	BACnet® Value Firmware 3.00 and higher (Decimal)	Lon/N2Open Value (ACSII)	LUI State Number
Econ_Mech	49	49	1	1
Mech_Cool	50	50	2	2
Econ	51	51	3	3
DA_Heat	52	52	4	4
Heat	53	53	5	5
(opt) Dehumid	54	54	6	6
Full_Heat	55	55	7	7
Night_Range	56	56	8	8
Off	57	57	9	9
Fan_Only	65	65	A	10
(Heat) Can't_Heat	66	66	B	11
Can't_Cool	67	67	C	12
(Em Heat) Can't_Heat	68	68	D	13
(Heat) Low_Limit	69	69	E	14
(Cool) Low_Limit	70	70	F	15

Valve Override Input

Keypad Menu Path Uo

This input network variable is used to force the controller into a manual mode in order to override water valves that are controlled by the unit. This function is most commonly used when water-balancing a system. This input is typically initiated from a supervisory controller or ServiceTools. In this state all other inputs will be ignored. In order to determine the correct enumeration for a particular Unit Vent type the Software Model must be determined from page 12 & 13. Depending on the Unit Vent software model only specific enumerations will effect the valve opertation.

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nviValveOverride	SNVT_hvac_overid	111

N2 Open

Long Name	1	2	3	4
nviValveOverride.State	N/A	bd-10	bd-10	bd-10
nviValveOverride.Percent	N/A	adf-15	adf-15	adf-15
nviValveOverride.Flow	N/A	adi-1	adi-1	adi-1

Range of Enumerations

Options	Range	UnitVent Software Model #	Default
State	HVO_OFF	All	HVO_NUL
	** For HW/CW Valves or Motorized Water Valve us the following commands: HVO_POSITION HVO_FLOW_VALUE HVO_FLOW_PERCENT HVO_Open HVO_CLOSE HVO_MINIMUM HVO_MAXIMUM	2,3,11,12	
	**For Hot Water Valves use the following commands: HVO_POSITION_1 HVO_FLOW_VALUE_1 HVO_FLOW_PERCENT_1 HVO_Open_1 HVO_CLOSE_1 HVO_MINIMUM_1 HVO_MAXIMUM_1	7,8,9,10,13,14	
	** For Chilled Water Valves use the following commands : HVO_POSITION_2 HVO_FLOW_VALUE_2 HVO_FLOW_PERCENT_2 HVO_Open_2 HVO_CLOSE_2 HVO_MINIMUM_2 HVO_MAXIMUM_2	13,14,15,16,17,18	
	HVO Null	All	
Percent	-163.84 to 163.83		163.835 (%)
Flow	0 to 65534		65535 (l/s)

Water-out Temp Output

Keypad Menu Path TO

This output network variable or read-only *BACnet* object is used to monitor the leaving-water temperature.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	19	Present _Value	85
Full Reference				
MTII UVUC ##########.WaterOutTemp.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoWaterOutTemp	SNVT_temp_p	105

N2 Open

Long Name	1	2	3	4
nvoWaterOutTemp	N/A	adf-44	N/A	N/A

Units
Degrees-Fahrenheit or Degrees-Celsius

WH or CW/HW Valve Position Output

Keypad Menu Path U1

This output network variable or read-only *BACnet* object reflects the current position of the WH or CW/HW modulating valve in percent open.

BACnet

Object Identifier			Property	
Object Type	**Type Enumeration**	**Instance**	**Name**	**Enumeration**
Analog Input	0	22	Present _Value	85
Full Reference				
MTII UVUC ##########.HotWater.Present_Value				

LONWORKS

LONWORKS Name	SNVT Type	SNVT Index
nvoHotWater	SNVT_lev_percent	81

N2 Open

Long Name	1	2	3	4
nvoHotWater	N/A	N/A	adf-50	adf-49

Units
Percent

Alarms

Fault Alarms

The highest priority alarm always takes precedence. Once it is cleared, the next-highest precedence alarm is displayed. Since it is designed for integration into a building-control system, no alarm history is available.

Table 21: Alarm Operation by Model Type

Alarm Priority	Fault Description	Mdl00	Mdl02	Mdl03	Mdl04	Mdl05	Mdl06	Mdl07	Mdl08	Mdl09	Mdl10	Mdl11	Mdl12	Mdl13	Mdl14	Mdl15	Mdl16	Mdl17	Reset	LUI Fault Codes
1	A Temp Sensor Failure	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Auto	F0
2	DX Pressure Fault	x	x	x	x	x		x	x										2-Auto in 7-days then Manual	F1
3	Compressor Envelope Fault	x	x	x	x	x		x	x										2-Auto in 7-days then Manual	F2
4	DA DX Cooling Low Limit Indication	x	x	x	x	x		x	x										Auto	F3
5	Condensate Overflow Indication	x	x	x	x	x		x	x			x	x	x	x	x		x	Auto	F4
6	IA Coil DX Temp Sensor Failure	x	x	x	x	x		x	x										Auto	F5
7	OA Temp Sensor Failure	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	Auto	F6
8	DA Temp Sensor Failure	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	Auto	F7
9	OA Coil DX Temp Sensor Failure	x			x	x		x	x										Auto	F8
	Water Coil DX Temp Sensor failure		x	x															Auto	
10	Water-out Temp Sensor Failure		x	x															Auto	F9
	Water-in Temp Sensor Failure										x	x							Auto	
11	Space Humidity Sensor Failure	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	Auto	FA
12	Outdoor Humidity Sensor Failure	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	Auto	FB
13	Space CO2 Sensor Failure	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	Auto	FC
14	Source Temp (Water-in) Inadequate Indication	x									x	x							Auto	FD
15	Low Air Temp Fault							x	x	x	x	x	x	x	x	x	x	x	Auto	FE
16	Change Filter Indication	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Manual	FF

Filter Alarm

The filter alarm is triggered by an adjustable number of fan run hours. When the fan run hours exceed the number of fan run hours set by the nciFilterChangeHours network variable, a reset filter alarm is generated. The filter change hours can be addressed and set in LONWORKS using the nciFilterChangeHours configuration property. The command to reset the filter alarm (in LONWORKS) is nviResetFilter.

Appendix A:
Protocol Implementation Conformance Statement

This section contains the Protocol Implementation Conformance Statement (PICS) for the MicroTech II Unit Ventilator Unit Controller from McQuay International as required by ANSI/ASHRAE (American National Standards Institute/American Society of Heating, Refrigeration, and Air Conditioning Engineers) Standard 135-2001, BACnet; A Data Communication Protocol for Building Automation and Control Networks.

BACnet Protocol Implementation Conformance Statement

Date:	August 2007
Vendor Name:	McQuay International
Product Name:	MicroTech II Unit Ventilator Unit Controller
Product Model Number:	MTII UVUC
Applications Software Version:	
Firmware Revision:	
BACnet® Protocol Revision:	Version 1 Revision 2

Product Description

The MicroTech II Unit Ventilator Unit Controller with optional BACnet Communications Module is a microprocessor-based controller designed to operate AAF HermanNelson Unit Ventilators and to be integrated into BACnet building-automation systems.

BACnet Standardized Device Profile

- ☐ BACnet Operator Workstation (B-OWS)
- ☐ BACnet Building Controller (B-BC)
- ☐ BACnet Advanced Application Controller (B-AAC)
- ☒ BACnet Application Specific Controller (B-ASC)
- ☐ BACnet Smart Sensor (B-SS)
- ☐ BACnet Smart Actuator (B-SA)

BACnet Interoperability Building Blocks (BIBBs) Supported

BIBB Name	Designation
Data Sharing – Read Property – B	DS-RP-B
Data Sharing – Read Property Multiple – B	DS-RPM-B
Data Sharing – Write Property – B	DS-WP-B
Data Sharing – Write Property Multiple – B	DS-WPM-B
Device Management – Dynamic Device Binding – B	DM-DDB-B
Device Management – Dynamic Object Binding – B	DM-DOB-B
Device Management – Device Communication Control – B	DM-DCC-B

Standard Object Types Supported

Object-Type	Creatable	Deleteable	Optional Properties Supported	Additional Properties	Writable Properties Not Required To Be Writable
Analog Input	☐	☐			Present_Value Out_of_Service
Analog Output	☐	☐			
Analog Value	☐	☐	Priority_Array Relinquish_Default		Present_Value
Binary Input	☐	☐			Present_Value Out_of_Service
Binary Output	☐	☐			
Binary Value	☐	☐	Priority_Array Relinquish_Default		Present_Value
Device	☐	☐		MSTP_Baud_Rate MSTP_Network_Number	Object_Identifier Object_Name Max_Master Max_Info_Frames MSTP_Baud_Rate MSTP_Network_Number
File	☐	☐			
Multi-state Input	☐	☐			Present_Value Out_of_Service
Multi-state Output	☐	☐			
Multi-state Value	☐	☐	Priority_Array Relinquish_Default		Present_Value

Data Link Layer Options

- ☐ BACnet IP, (Annex J)
- ☐ BACnet IP, (Annex J), Foreign Device
- ☐ ISO 8802-3, Ethernet (Clause 7)
- ☐ ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ☐ ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s):
- ☒ MS/TP master (Clause 9), baud rate(s): 9600, 19200
- ☐ MS/TP slave (Clause 9), baud rate(s):
- ☐ Point-To-Point, EIA 232 (Clause 10), baud rate(s):
- ☐ Point-To-Point, modem, (Clause 10), baud rate(s):
- ☐ LonTalk, (Clause 11), medium:
- ☐ Other:

Segmentation Capability

- ☐ Segmented requests supported Window Size: 1
- ☐ Segmented responses supported Window Size:

Device Address Binding

Static Device Binding ☐ Yes
☒ No

Networking Options

☐ Router, Clause 6

Routing Configurations:

☐ Annex H, BACnet Tunneling Router over IP

☐ BACnet/IP Broadcast Management Device (BBMD)

Registrations by Foreign Devices? ☐ Yes
☒ No

Character Sets Supported

☒ ANSI X3.4 ☐ BM™/Microsoft™ DBCS ☐ ISO 8859-1

☐ ISO 10646 (UCS-2) ☐ ISO 10646 (UCS-4) ☐ JIS C 6226

Note: Support for multiple character sets does not imply they can be supported simultaneously.

Non-BACnet Equipment/Network(s) Support

☐ Communications Gateway

Non-BACnet equipment/networks(s):

Index

Alarm, Faults
  Clear Individual, 86
BACnet MS/TP Network Connections, 7
BACnet Objects, 5
BACnet Protocol, 4
BACnet®, 18, 23
Basic Protocol Information, 5
Binary Inputs 1 Status Output, 32
Commissioning the Network, 11
Compatibility, 5, 8
Compressor Enable Input, 36
Compressor Run Time Output, 36
Configuring the Unit Controller, 11
Current Format Applications, 12
Device Object Identifier, 6
Device Object Name, 6
Discharge Air Temp Output, 37
Doubly Terminated Networks, 10
Economizer IA/OA Enthalpy Differential, 39
Economizer OA Enthalpy Setpoint, 40
Effective Occupancy Output, 42
Effective Setpoint Output, 42
Energize Exhaust Fan OAD Setpoint, 44
Energy Hold Off Output, 45
Example of BACnet Data Point, 5
Exhaust Interlock OAD Min Position Setpoint, 46
External Interface File (XIF), 11
F&BP Damper Position Output, 47
Fault Alarms, 82
Fault Value, 48
Filter Alarm, 82
Free Topology Networks, 9
Free Topology Restrictions, 10
Full Reference, 5, 6, 31, 32, 36, 37, 38, 39, 40, 41, 42, 43, 45, 47, 48, 50, 51, 52, 55, 56, 57, 58, 59, 60, 61, 62, 65, 66, 68, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81
Heat/Cool Mode Output, 51
How to Determine the N2 Open Software Model from the UV Model Number, 12
Instance, 31, 32, 36, 37, 38, 39, 40, 41, 42, 43, 45, 47, 48, 50, 51, 52, 55, 56, 57, 58, 59, 60, 61, 62, 65, 66, 68, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81
IP Mask, 86
Limited Warranty, 3
Line Length and Type, 16
LONMARK® Certification, 4
LonTalk® Protocol, 4
LonWorks®, 26
LonWorks® Name, 8
LONWORKS® Network, 4
LonWorks® Network Addressing, 11
LonWorks® Network Topology, 9
LonWorks® Networks, 8
LonWorks® Variables, 8
MicroTech II Unit Ventilator Unit Controller Device Object, 6
Minimum Send Time, 53
N2 Open, 12
N2 Open Protocol, 4
Network Cable Termination, 11
Network Considerations, 9
Notice, 3
Object Identifier, 5, 31, 32, 36, 37, 38, 39, 40, 41, 42, 43, 45, 47, 48, 50, 51, 52, 55, 56, 57, 58, 59, 60, 61, 62, 65, 66, 68, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81
Object Type, 31, 32, 36, 37, 38, 39, 40, 41, 42, 43, 45, 47, 48, 50, 51, 52, 55, 56, 57, 58, 59, 60, 61, 62, 65, 66, 68, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81
Occupancy Sensor Input, 57
Outdoor Air Humidity Input, 60
Outdoor Air Humidity Output, 61
Outdoor Air Temp Output, 62
Passive Dehum Setpoint, 62
Primary Cool Output, 63
Protocol, 83
Protocol Definitions, 4
Protocol Implementation Conformance Statement, 83
Protocol Point Detail Lists, 23
Range of Enumerations, 6
SCPT Number, 9
SCPT Reference Type, 9
Secondary Cool Input, 66
Secondary Heat Input, 67
Secondary Heat Output, 67
Selecting the Right Cable, 15
Send Heartbeat, 68
Setpoint Shift Input, 69
SNVT Index, 9
SNVT Type, 9
Source (Water-in) Temp Input, 70
Space CO2 Input, 71
Space CO2 Output, 72
Space Fan Run Time Output, 73
Space Temp Input, 75
Space Temp Setpoint Input, 76
Type Enumeration, 31, 32, 36, 37, 38, 39, 40, 41, 42, 43, 45, 47, 48, 50, 51, 52, 55, 56, 57, 58, 59, 60, 61, 62, 65, 66, 68, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81
Unit Controller Data Points, 4
Unit Status Output, 77
Units, 6
UVC State Output, 79
Valve Override Input, 80
WH or CW/HW Valve Position Output, 81