Sales and Engineering Data Sheet

ED 19112-1

MicroTech® WME, C-vintage Chiller Unit Controller Protocol Information

LonWorks® Networks

Revision History

ED19112	May 2020	Addition of Condenser/ Evaporator GPM
	January 2019	Initial release

Notice

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This document contains the necessary information needed to incorporate a Daikin Applied MicroTech WME Chiller Unit Controller into a building automation system (BAS). It lists all LonWorks variables and corresponding MicroTech WME Chiller Unit Controller data points. LonWorks terms are not defined. Refer to the respective specifications for definitions and details.

Reference Documents

Company	Number	Title	Source
Daikin Applied	IOM 1266	Magnitude® Model WME, C-vintage Magnetic Bearing Centrifugal Chiller Installation, Operation, and Maintenance Manual	www. DaikinApplied.com
Daikin Applied	IM 1284	MicroTech® Chiller Unit Controller LonWorks® Communication Module	www. DaikinApplied.com
LonMark Interoperability Association	078-0120- 01G	LonMark® Layers 1-6 Interoperability Guidelines, Version 3.4	www.lonmark.org
LonMark Interoperability Association	078-0120- 01G	LonMark® Application Layer Interoperability Guidelines, Version 3.4	www.lonmark.org
LonMark Interoperability Association	8040_10	LonMark® Functional Profile: Chiller, Version 1.0	www.lonmark.org
Echelon Corporation	078-0156- 01G	LonWorks® FTT-10A Free Topology Transceiver Users Guide	www.echelon.com

Software Revision

This document supports the following versions of the standard MicroTech WME Chiller Unit Controller application and all subsequent versions until otherwise indicated. However, if the unit software is of a later version, some of the information in this document may not completely describe the application.

Chiller Model	Chiller Application Software Version	Chiller HMI Software Version
Magnitude Magnetic Bearing Centrifugal Chillers Model WME, C Vintage	1.1.6	1.3.10

The revision of the application software can be determined from the chiller HMI under the 'Settings' menu.

Unit Controller Data Points

The MicroTech WME Chiller Unit Controller contains data points or unit variables that are accessible from two user interfaces: the local Human Machine Interface (HMI) or a LonWorks network. Not all points are accessible from each interface. This manual lists all important data points and the corresponding path for each applicable interface. Refer to the respective chiller operation manual, available on www.DaikinApplied.com, for HMI display details.

Protocol Definitions

Building Automation System (BAS) communication to the MicroTech WME Chiller Controller can be configured in a LonWorks network. This requires a BAS module, which can be ordered with the chiller and factory-mounted or can be field-mounted at any time after the chiller unit is installed. Connection to the chiller for LonWorks will be at the LonWorks communication module.

LonWorks Networks

A control network specification for information exchange built upon the use of the LonTalk protocol for transmitting data developed by the Echelon Corporation.

LonTalk Protocol

A protocol developed and 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 communicates using the LonTalk protocol and transmits and receives data per a standard LonMark functional profile.

The LonWorks Communication Module is LonMark 3.3 certified in accordance with the Chiller Functional Profile, Version 1.0. Refer to www.lonmark.org for details.

LonWorks Technology

LonWorks technology, developed by Echelon Corporation, is the basis for LonMark interoperable systems. This technology is independent of the communications media. The LonMark Interoperable Association has developed standards for interoperable LonWorks technology systems. In particular, they have published standards for HVAC equipment including the Chiller Functional Profile. This profile specifies a number of mandatory and optional standard network variables and standard configuration parameters. This manual defines the variables and parameters available in the MicroTech III Chiller Unit Controller that are supported by the Chiller Functional Profile.

LonWorks Variables

The MicroTech WME Chiller Unit Controller incorporates LonWorks network variables to access unit data points. The unit controller uses LonWorks Standard Network Variable Types (SNVT) from each profile. Some data points can be adjusted (input network variables, nvi) (read/write attributes, e.g., setpoints) from the network and others can only be interrogated (output network variables, nvo) (read only attributes, e.g., status information). Configuration variables (nci) are included with the read/write attributes.

External Interface File (XIF)

LonMark guidelines specify exact documentation rules so that proprietary software is not required to commission and configure LonWorks devices. The MicroTech WME Chiller LonWorks Communication Module is self-documenting so that a LonWorks network management tool can obtain the information needed to connect, configure, and manage the device over the network. 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. XIF files are available on www.DaikinApplied.com and www.lonmark.org.

Network Topology, Addressing, and Commissioning

The MicroTech WME Chiller Unit Controller supports LonMark standards for network design, wiring, addressing and commissioning.

Refer to the LonMark Application Layer Interoperability Guidelines Version 3.3, LonMark Layers 1-6 Interoperability Guidelines Version 3.3 (www.lonmark.org) and LonWorks FTT-10A Free Topology Transceiver Users Guide (www.echelon.com).

Configuring the Unit Controller

The MicroTech WME Chiller Unit Controller is designed, programmed, and configured in accordance with the LonMark Chiller Functional Profile. The unit is ready to operate with the default values of the various pre-configured parameters. Default values may be changed at the unit controller keypad or via the network. Refer to the applicable MicroTech WME Chiller Unit Controller Operation Manual (www.DaikinApplied.com).

Receive Heartbeat Functionality

There are certain LonWorks network configuration properties (ncis) that are supported by Receive Heartbeat. Each nci is bound to a respective network variable input (nvi). These ncis, along with the corresponding nvi, follow certain rules based on both nciDefaults and nciRcvHrtbt settings. The nci variables that are used when the Receive Heartbeat timer expires include:

- nciCapacityLim
- nciChillerEnable
- nciCoolSetpt
- nciMode

The value of these variables under certain conditions (such as unit controller power-up or loss of network communication) are described below.

1. When nciDefaults = 0 and nciRcvHrtbt = 0:
   — Nvi variable values are cleared on a loss of power. Upon restoration of power, the unit controller uses the values of the nci variables shown above. Nvi variable values remain and continue to be used on a loss of communications.

2. When nciDefaults = 0 and nciRcvHrtbt > 0:
   — Nvi variable values are cleared on a loss of power. Upon restoration of power, the unit controller uses the values of the nci variables shown above.
   — Nvi variable values remain and continue to be used upon loss of communication until the Receive Heartbeat (nciRcvHrtbt) time expires. After that time expires, the nci variable values are used by the unit controller.

3. When nciDefaults = 1 and nciRcvHrtbt ≥ 0:
   — The last known value of nvi variables is used upon a loss of power or a loss of communication.

The LonWorks comprehensive data table section provides additional information. See "Table 2: LonWorks Network Variable Inputs (NVIs)" on page 7 and "Table 4: LonWorks Network Configuration Inputs (NCIs)" on page 13 for details on nciCapacityLim, nciChillerEnable, nciCoolSetpt, nciMode, nciRcvHrbt, and nciDefault settings.

Alarms

The MicroTech WME Chiller Unit Controller alarm information can be found in the "Alarms" on page 16 Also refer to "LonWorks Alarms" for complete classification, notification, and clearing details specific to each protocol.

Unit Controller Sequence of Operation

The sequence of operation for a MicroTech WME Chiller Unit Controller depends on the control type. Refer to the appropriate MicroTech WME Chiller Unit Controller Operation Manual for sequence of operation details, including HMI operation (www.DaikinApplied.com).

Network Parameters

The following section defines the network parameters, or data points, available to the BAS from the MicroTech WME Chiller Unit Controller. Table 1 lists all Data Points that are supported.

Table 1: Data Points

Data Point	WME Vintage C
Active Setpoint	X
Actual Capacity	X
Alarm Description	X
Capacity Limit (Output)	X
Capacity Limit - LON	X
Capacity Limit Setpoint	X
Chiller Capacity Limited	X
Chiller Enable - LON	X
Chiller Enable Setpoint	X
Chiller Local/Remote	X
Chiller Mode - LON	X
Chiller Mode Output	X
Chiller Mode Setpoint	X
Chiller On/Off	X
Chiller Run Mode	X
Chiller Status	X
Clear Alarm - Network	X
Compressor Current	X
Compressor Discharge Refrigerant Temperature	X
Compressor Percent RLA	X
Compressor Run Hours	X
Compressor Select	X
Compressor Starts	X
Compressor Suction Line Temperature	X
Compressor Voltage	X
Condenser Entering Water Temperature	X
Condenser Flow Rate	X
Condenser Flow Switch Status	X
Condenser Leaving Water Temperature	X
Condenser Pump Run Hours	X
Condenser Pump Status	X
Condenser Refrigerant Pressure	X
Condenser Saturated Refrigerant Temperature	X
Cool Setpoint	X
Cool Setpoint - LON	X
Default Values	X
Evaporator Entering Water Temperature	X
Evaporator Flow Rate	X
Evaporator Flow Switch Status	X
Evaporator Leaving Water Temperature	X
Evaporator Pump Run Hours	X
Evaporator Pump Status	X
Evaporator Refrigerant Pressure	X
Evaporator Saturated Refrigerant Temperature	X
Liquid Line Refrigerant Temperature	X
Location	X
Maximum Send Time	X
Minimum Send Time	X
Pump Select	X
Receive Heartbeat	X
Run Enabled	X
Total kW	X

LonWorks Network Objects

This section describes the data that is available to the BAS via the LonWorks network. Each LonWorks variable may or may not be available on the unit HMI. Table 2 – Table 4 contain the relevant information needed to integrate the MicroTech WME Chiller Unit Controller into the LonWorks network. The tables are organized by Network Variable Inputs, Network Variable Outputs, and Network Configuration Inputs. The parameters are listed alphabetically by point name within each table.

Table 2: LonWorks Network Variable Inputs (NVIs)

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Capacity Limit Setpoint					
	nviCapacityLim	lev_percent (81)	0 – 160% Default: 100%	N	Sets the ratio of operating capacity to full capacity. This level may be adjusted, but not above the specified limit. Refer to the appropriate Chiller Operation Manual for suitable variable values.
Chiller Enable Setpoint					
	nviChillerEnable	Switch (95)	0 = Request Chiller Off 1 = Request Chiller On Default: 0 (Off)	N	Enables (starts) the chiller to run if the operating conditions are satisfied, sets the default power-up and restart mode, or disables (stops) the chiller from running. Indicates the current operating state of the chiller.
Chiller Mode Setpoint					
	nviMode	hvac_mode (108)	1 = HVAC_HEAT 3 = HVAC_COOL 11 = HVAC_ICE Default: 3 = Cool	N	Sets the mode of operation for the chiller. Refer to the appropriate Chiller Operating Manual for suitable variable values. Only Cool Mode is applicable to the WME.
Clear Alarm - Network					
	nviClearAlarm	switch (95)	0 = No Alarm 1 = Clear Alarm Default = 0	N	Clears active alarms. It cannot clear all alarms in the Fault category (alarms that shut down the chiller). See LonWorks Alarm Management.

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Compressor Select					
	nviCompSelect	count (8)	1 – 6 (See Description column at right for details) Default: 1	N	Selects the compressor/circuit (No.1, 2) that is to be interrogated. The unit controller returns the information for the selected compressor/circuit. Compressor/circuit values and descriptions are as follows: 1 = Comp/Circuit No. 1 2 = Comp/Circuit No. 2 The following points are supported by Compressor Select: • Compressor Current • Compressor Discharge Temperature • Compressor Percent RLA • Compressor Run Hours • Compressor Starts • Compressor Status • Compressor Voltage • Condenser Refrigerant Pressure* • Condenser Saturated Refrigerant Temperature* • Evaporator Refrigerant Pressure* • Evaporator Saturated Refrigerant Temperature* • Liquid Line Refrigerant Temperature* *WME is single circuit only, so Compressor Select is not used for this data point.
Cool Setpoint					
	nviCoolSetpt	temp_p (105)	10° – 120°F -12.2° – 48.9°C Default: 44°F/6.7°C	N	Determines the cooling setpoint temperature of the leaving evaporator water when the chiller is operating in Cooling Mode. Cooling is the normal mode of chiller operation, unless overridden by the optional Mode variable that changes it to another mode. Only Cool Mode is applicable to the WME. Refer to the appropriate Operation Manual for suitable variable values.
Pump Select					
	nviPumpSelect	switch (95)	0 = Pump 1 1 = Pump 2 Default: 0 (Pump 1)	N	Selects which pump (No.1 or No. 2) supplies the data. The unit controller returns the information for the respective condenser or evaporator pump. Select the desired pump first and then interrogate it. See Evaporator Pump Run Hours and Condenser Pump Run Hours.

Table 3: LonWorks Network Variable Outputs (NVOs)

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Active Setpoint					
	nvoActiveSetpt	temp_p (105)	-40°– 199°F -40°– 93°C Default: NA	N	The current setpoint used to control the temperature of the Leaving Chilled Water. Based on the operating mode of the chiller, this value is derived from the Cool Setpoint, Heat Setpoint, or Ice Setpoint. The default mode of Cooling is used unless changed by the Mode input. Only Cool Mode is applicable to the WME.
Actual Capacity					
	nvoActCapacity	lev_percent (81)	0 – 160% Default: NA	N	The percent of capacity the chiller is currently producing. It may be more or less than the nominal capacity of the chiller. For positive displacement chillers (those using screw and scroll compressors) this is a percentage of total compressors running. For centrifugal chillers, this data point represents the combined percent RLA of the compressors.
Alarm Description					
	nvoAlarmDescr	str_asc (36)	– 30 characters plus a NUL terminator Default: NA	N	Indicates any active alarm(s). The type of alarm is included in the text string. Alarm messages are shown in LonWorks Alarm Management. The unit controller can accommodate 15 simultaneous alarms. Alarm messages are sent sequentially one every five seconds.
Capacity Limit (Output)					
	nvoCapacityLim	lev_percent (81)	0 – 160% Default: NA	N	Measures the ratio of operating capacity to full capacity of the chiller. Indicates the current value of the Capacity Limit.
Chiller Capacity Limited					
	nvoChillerStat.limited	chlr_status (127)	0 = Not Limited (Inactive) 1 = Limited (Active) Default: NA	N	Indicates the main running mode and states of the chiller, and whether conditions exist that prevent the chiller from reaching setpoint. This variable is supported by Chiller Status.
Chiller Local/Remote					
	nvoChillerStat.local	chlr_status (127)	0 = Remote 1 = Local Default: NA	N	Indicates whether the chiller is in local control or allowed to be controlled remotely over the network. This variable is supported by Chiller Status.
Chiller Mode Output					
	nvoChillerstat.chlr_op_mode	chlr_status (127)	Chiller Operating Mode (hvac_t) 1 = HVAC_HEAT 3 = HVAC_COOL 11 = HVAC_ICE Default: NA	N	The current operating mode of the chiller. Only Cool Mode is applicable to the WME.
Chiller ON OFF					
	nvoOnOff	switch (06)	0 = False (Off) 1 = True (Run Allowed) Default: NA	N	Indicates the current state of the chiller. It is normally recommended to monitor Chiller Status for the current operating state of the chiller.
Chiller Run Mode					
	nvoChillerstat. chlr_run_mode	chlr_status (127)	Chiller Run Mode (chiller_t) 0 = CHLR_OFF 1 = CHLR_START 2 = CHLR_RUN 3 = CHLR_PRESHUTDN 4 = CHLR_SERVICE	N	The unit status of the chiller. Chiller Status includes the Run Mode. The Run Mode is defined as Off, Start, Run, Pre-shutdown and Service. The Run Mode provides the primary running states of a chiller and the state provides an indicator of other conditions present.

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Chiller Status					
	nvoChillerstat	chlr_status (127)	Chiller Run Mode (chiller_t) 0 = CHLR_OFF 1 = CHLR_START 2 = CHLR_RUN 3 = CHLR PRESHUTDN 4 = CHLR_SERVICE Chiller Operating Mode (hvac_t) 1 = HVAC_HEAT 3 = HVAC_COOL 11 = HVAC_ICE Default: NA	N	This is a structured LON variable providing the following chiller statuses and states: Chiller Run Mode, Chiller Operating Mode, In Alarm, Run Enabled, Local, Limited, CHW Flow, and CondW Flow. (see state table below)
Compressor Current					
	nvoCurrent	amp (1)	-3,276.8 – 3,276.7 Amps Default NA	N	The number of amps being drawn by the selected compressor. See Compressor Select for more information.
Compressor Discharge Refrigerant Temperature					
	nvoCompDisTemp	temp_p (105)	-460° – 621°F -273.17° – 327.66°C Default: NA	N	The refrigerant temperature of the selected compressor. See Compressor Select for more information.
Compressor Percent RLA					
	nvoCompPercRLA	lev_percent (81)	-163.84 – 163.83% Default: NA	N	The motor current of the selected compressor. See Compressor Select for more information.

State table within Chiller Status Description:

State	Description
In_Alarm	1 = Chiller is in an alarm condition. This condition may also be observed in the Node Object's status. 0 = No alarm condition.
Run_Enabled	1 = Chiller starts if operating conditions are satisfied. 0 = Chiller not permitted to run. Chiller may be in local mode or placed in a disabled condition and can't be run via a remote request.
Local	1 = Chiller has been placed in a locally controlled mode of operation and cannot respond to remote requests. 0 = Chiller is not in local mode and network visible values maybe changed or monitored remotely.
Limited	1 = Chiller conditions may exist that prevents the Chiller from reaching setpoint. 0 = Chiller is not restricted from attempting to reach setpoint.
CHW_flow	1 = Chiller fluid flow is detected. 0 = No chilled fluid flow present.
CONDW_flow	1 = Condenser fluid flow has been detected 0 = No condenser fluid flow is observed.

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Compressor Run Hours					
	nvoCompHrs	count (8)	0 – 65,535 hours* Default: NA	N	The number of hours the selected compressor motor has been running. See Compressor Select for more information. *Note the value returned must be multiplied by 10 to give actual run hours.
Compressor Starts					
	nvoCompStarts	count (8)	0 – 65,535 starts Default: NA	N	The number of times the selected compressor motor has started. See Compressor Select for more information.
Compressor Suction Line Temperature					
	nvoSuctionTemp	temp_p (105)	-40° – 244°F -40° – 118°C Default: NA	N	The current suction line refrigerant temperature. There is a separate output for each compressor. See Compressor Select for more information.
Compressor Voltage					
	nvoVoltage	Volt_ac (138)	0 – 65,534 VAC Default: NA	N	The current voltage of the selected compressor. There is a separate output for each compressor. See Compressor Select for more information.
Condenser Entering Water Temperature					
	nvoEntCndWTemp	temp_p (105)	-40° – 244°F -40° – 118°C Default: NA	N	The current temperature of the water entering the condenser.
Condenser Flow Rate					
	nvoCondFlowRate	flow (15)	0-65,535 GPM 0-4134.6 L/S Default: NA	N	Indicates the current fluid flow rate for the condenser.
Condenser Flow Switch Status					
	nvoCndWFlow	switch (95)	0 = No Flow (Inactive) 1 = Flow (Active) Default: NA	N	The status of the water flow through the condenser.
Condenser Fluid Flow Rate					
	18	nvoCondFlowRate	R	0-65,535 GPM 0-4134.6 L/S Default: NA	Indicates the current fluid flow rate for the condenser.
Condenser Leaving Water Temperature					
	nvoLvgCndWTemp	temp_p (105)	-40° – 244°F -40° – 118°C Default: NA	N	The current temperature of the leaving condenser water.
Condenser Pump Run Hours					
	nvoCondPumpHrs	count (8)	0 – 65,535 hours* Default: NA	N	The number of hours that the selected condenser pump motor has been turned on. See Pump Select for more information. *Note the value returned must be multiplied by 10 to give actual run hours.
Condenser Pump Status					
	nvoCndWPump	Switch (95)	0 = Pump commanded OFF 1 = Pump commanded ON Default: NA	N	Indicates whether the selected pump has been commanded on or off. See Pump Select for more information.
Condenser Refrigerant Pressure					
	nvoCondRefPress	press (30)	-3,276.8 – 3,276.7 psi -22,592.1 - 22,592.1 kPa Default: NA	N	Indicates the current condenser pressure.
Condenser Saturated Refrigerant Temperature					
	nvoSatCndRefTemp	temp_p (105)	-40° – 244°F -40° – 118°C Default: NA	N	The current saturated refrigerant temperature of the condenser.

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Evaporator Entering Water Temperature					
	nvoEntChWTemp	temp_p (105)	-40° – 244°F -40° – 118°C Default: NA	N	The temperature of the evaporator entering water temperature
Evaporator Flow Switch Status					
	nvoChWFlow	switch (95)	0 = No Flow (Inactive) 1 = Flow (Active) Default: NA	N	The status of the water flow through the evaporator.
Evaporator Fluid Flow Rate					
	nvoEvapFlowRate	flow (15)	0-65,535 GPM 0-4134.6 L/S Default: NA	N	Indicates the current fluid flow rate for the evaporator.
Evaporator Leaving Water Temperature					
	nvoLvgCHWTemp	temp_p (105)	-40° – 244°F -40° – 118°C Default: NA	N	The current temperature of the evaporator leaving chilled water.
Evaporator Pump Run Hours					
	nvoEvapPumpHrs	count (8)	0 – 65,535 hours* Default: NA	N	The number of hours that the selected evaporator pump has been turned on. There is a separate output for each pump. See Pump Select for more information. *Note the value returned must be multiplied by 10 to give actual run hours.
Evaporator Pump Status					
	nvoChWPump	switch (95)	0 = Pump Commanded OFF 1 = Pump Commanded ON Default: NA	N	Indicates whether the selected pump has been commanded on or off. See Pump Select for more information.
Evaporator Refrigerant Pressure					
	nvoEvapRefPress	press (30)	-3,276.8 – 3,276.7 psi -22,592.1 – 22,592.1 kPa Default: NA	N	The current evaporator refrigerant pressure.
Evaporator Saturated Refrigerant Temperature					
	nvoSatEvpRefTemp	temp_p (105)	-40° – 244°F -40° – 118°C Default: NA	N	The current saturated refrigerant temperature of the evaporator.
Liquid Line Refrigerant Temperature					
	nvoLiquLineTemp	temp_p (105)	-40° – 244°F -40° – 118°C Default: NA	N	The current liquid line refrigerant temperature.
Run Enabled					
	nvoChillerStat.Run_Enabled	chlr_status (127)	0 = OFF 1 = Run Allowed Default: NA	N	Indicates that the chiller can start if operating conditions are met. This variable is supported by Chiller Status.
Total kW					
	nvoKiloWatts	power_kilo (28)	0 – 65,535 kiloWatts Default: NA	N	Totalized power for the unit

Table 4: LonWorks Network Configuration Inputs (NCIs)

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Capacity Limit - LON					
nciCapacityLim	SNVT Type: NA (81) SCPT_limitChlrCap (81)	0 – 160% Default: 100%	Y		Sets the chiller's maximum operating capacity as a percentage of full capacity. Sets a default value for the capacity limit of the chiller (nviCapacityLim), unless nciDefaults = 1. If nciDefaults = 1, nviCapacityLim remains the last valid value after power is restored. The capacity limit value is not the nominal capacity limit of the chiller. Refer to the appropriate Operating Manual for suitable variable values. The chiller object uses nciCapacityLim on power-up or loss of communication unless nciDefaults = 1. Loss of communication is determined by Receive Heartbeat (nciRCvHrtBt). If Receive Heartbeat is greater than zero, then communication is considered lost when nviCapacityLim is not written to again before the Receive Heartbeat timer expires. Each time nviCapacityLim is written, the Receive Heartbeat timer is reset. If Receive Heartbeat is set to 0, then this function is disabled and communication loss is never detected. See Receive Heartbeat and Default Values in this table for additional information.
Chiller Enable - LON					
nciChillerEnable	switch (95) SCPT_pwrUpState (73)	0 = Request Chiller OFF 1 = Request Chiller ON Default: 0 = Request Chiller OFF	Y		Sets the default power-up and restart mode of the chiller (nviChillerEnable), unless nciDefaults = 1. If nciDefaults = 1, nviChillerEnable will retain the last valid value when power is restored. Refer to the unit controller Operating Manual for variable values. The chiller object uses nciChillerEnable on power-up or loss of communication unless nciDefaults =1. Loss of communications is determined by Receive Heartbeat (nciRCvHrtBt). If Receive Heartbeat is greater than zero, then communication is considered lost if nviChillerEnable is not written to again before the Receive Heartbeat timer expires. Each time nviChillerEnable is written, the Receive Heartbeat timer is reset. If Receive Heartbeat is set to 0, then this function is disabled and communication loss is never detected. See Receive Heartbeat and Default Values in this table for additional information.

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Chiller Mode - LON					
nciMode	hvac_mode (108) SCPT_HVACmode (74)	1 = HVAC_HEAT 3 = HVAC_COOL 11 = HVAC_ICE Default: 3 = HVAC_COOL	Y	Establishes the default operating mode of the chiller, unless nciDefaults = 1. If nciDefaults = 1, the last valid value is used. Chiller Mode Setpoint – Network (nviMode) is set equal to nciMode on power-up or loss of communication unless nciDefaults =1. Loss of communication is determined by Receive Heartbeat (nciRCvHrtBt). If Receive Heartbeat is greater than zero, then communication is considered lost when nviMode is not written to again before the Receive Heartbeat timer expires. Each time nviMode is written, the Receive Heartbeat timer is reset. If Receive Heartbeat is set to 0, then this function is disabled and communication loss is never detected. Writing a value other than those shown in the Range column will result in HVAC_COOL (3) being written If nciDefaults = 1, the following default values are specified: • Heat Mode • Cool Mode (default) • Ice Mode Only Cool Mode is applicable to the WME. See Receive Heartbeat and Default Values in this table for additional information.
Cool Setpoint - LON					
nciCoolSetpt	temp_p (105) SCPT_CoolSetpoint (75)	10° – 120°F -12.2° – 48.9°C Default: 44°F / 6.7°C	Y	Cool Setpoint (nviCoolSetpt) is set to nciCoolsetpt on power-up or loss of communication unless nciDefaults =1. If nciDefaults = 1, nviCoolSetpt will retain the last valid value when power is restored. Refer to the appropriate Operating Manual for suitable variable value. Loss of communication is determined by Receive Heartbeat (nciRCvHrtBt). If Receive Heartbeat is greater than zero, then communication is considered lost when nviCoolSetpt is not written to again before the Receive Heartbeat timer expires. Each time nviCoolSetpt is written, the Receive Heartbeat timer is reset. If Receive Heartbeat is set to 0, then this function is disabled and communication loss is never detected. See Receive Heartbeat and Default Values in this table for additional information.
Default Values					
nciDefaults	switch (95) SCPT_DefautBehavior (71)	0 = Use default values 1 = Use manufacturer specified Values Default: 0 = Use default values	N	Determines the set of values used upon chiller power up and communication failure. The choice is the stated default (nci) values or last valid value and is used with the following variables: • Chiller Enable • Capacity Limit • Cool Setpoint • Mode
Location					
nciLocation	str_asc (36) SCPT_location (17)	Any NULL-terminated ASCII string up to 31 bytes Default: 00000 (ASCII string of zeros plus NULL)	N	Provides a description of the chiller location.

Point Name	LonWorks Variable	SNVT Type (SNVT Index)	Range/Default (In Units)	Heartbeat	Description
Maximum Send Time					
	nciMaxSendTime	time_sec (107) SCPT_maxSendTime (49)	0 – 6,553.4 sec Default: 0 sec (no automatic update)	N	Controls the maximum period of time that expires before the following network variables are transmitted: • nvoChillerStat • nvoActiveSetpt • nvoActualCapacity • nvoLvgChWTemp • nvoLvgCndWTemp • nvoEntCndWTemp • nvoEntChWTemp
Minimum Send Time					
	nciMinSendTime	time_sec (107) SCPT_minSendTime (52)	0 – 6,553.4 sec Default: 0 sec (no automatic update)	N	Controls the minimum period of time that expires before objects can be re-transmitted.
Receive Heartbeat					
	nciRcvHrtBt	time_sec (107) SCPT_maxRcvTime (49)	0 – 6,553.4 sec Default: 0 sec (0xFFF = invalid data)	Y	Defines the maximum time that elapses after the last update to a specified network variable input before the unit starts to use the value contained in the corresponding network configuration variable (nci). This variable is only applicable when nciDefaults is set to 0. If nciDefaults is set to 1, this variable will be set to 0 by the chiller application. The following variables use Receive Heartbeat: • nciCapacityLim • nciChillerEnable • nciCoolSetpt • nciMode See Receive Heartbeat section for additionalinformation.

LONWORKS Alarm Management

LONWORKS Alarm Monitoring

Two LonWorks network variables indicate alarm conditions. The Chiller Status network output variable, nvoChillerStat, indicates that the unit controller is in alarm, but it does not identify the alarm condition. See Table 3 - Chiller Status. The Current Alarm network output variable, nvoAlarmDescr, indicates the alarm condition. See Table 3 – Alarm Description.

LONWORKS Alarm Clearing

Use Clear Alarm - Network, nviClearAlarm, to clear alarms by setting the state property to 1. The value property of nviClearAlarm is not used. The state property of nviClearAlarm will automatically return to a value of zero within a few seconds.

LonWorks Alarm Messages

This section provides a comprehensive description of all alarm messages supported by the MicroTech WME Chiller Unit Controllers. Table 5 identifies each alarm, class, and alarm message.

Table 5: LONWORKS Alarm Messages

Alarm Description	Category	Alarm Message
Expansion Alarm - WARNING	Warning	WARNING (Check Unit for Detail)
Compressor Current Overload Trip 1	Fault	COMP STOP - Current Overload 1
Compressor Current Overload Trip 2	Fault	COMP STOP - Current Overload 2
Condenser Pressure Sensor Fault	Fault	COMP STOP - CondPressSensFail
No Condenser Water Flow	Fault	COMP STOP - Cond Water Flow Loss
High Condenser Pressure	Fault	COMP STOP - Cond Press High
High Discharge Temperature Circuit 1	Fault	COMP STOP - DischargeTempHigh 1
High Discharge Temperature Circuit 2	Fault	COMP STOP - DischargeTempHigh 2
No Evaporator Water Flow	Fault	COMP STOP - Evap Water Flow Loss
Low Evaporator Pressure	Fault	COMP STOP - Evap Press Low
Evaporator Pressure Sensor Fault	Fault	UNIT STOP - EvapPressSensor Fail
Expansion Alarm - FAULT	Fault	FAULT (Check Unit for Detail)

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