DAIKIN

Sales and Engineering Data Sheet ED 15121-12

Group: **Controls**
Part Number: **ED 15121**
Date: **October 2023**

MicroTech® Chiller Unit Controller Protocol Information

Modbus® Networks

Models AGZ and AMZ Trailblazer® Air-cooled Scroll Chiller

Models AWS and AWV Pathfinder® Air-cooled Screw Chiller

Model ADS Air-cooled Global Screw Chiller

Model WME, B Vintage Magnitude® Magnetic Bearing Centrifugal Chillers

Model WWV Navigator® Water-cooled Screw Chiller

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Introduction

This manual provides installation, operation, and maintenance information for Daikin Applied chillers with the MicroTech® controller.

NOTE: Installation and maintenance are to be performed only by licensed, if required by local codes and regulations, or qualified personnel who are familiar with local codes and regulations and are experienced with this type of equipment.

⚠ DANGER

LOCKOUT/TAGOUT all power sources prior to service, pressurizing, de-pressuring, or powering down the unit. Failure to follow this warning exactly can result in serious injury or death. Disconnect electrical power before servicing the equipment. More than one disconnect may be required to denergize the unit. Be sure to read and understand the installation, operation, and service instructions within this manual.

⚠ WARNING

Electric shock hazard. Improper handling of this equipment can cause personal injury or equipment damage. This equipment must be properly grounded. Connections to and service of the MicroTech control panel must be performed only by personnel that are knowledgeable in the operation of the equipment being controlled.

⚠ WARNING

Polyolester Oil, commonly known as POE oil is a synthetic oil used in many refrigeration systems, and may be present in this Daikin Applied product. POE oil, if ever in contact with PVC/CPVC, will coat the inside wall of PVC/CPVC pipe causing environmental stress fractures. Although there is no PVC/CPVC piping in this product, please keep this in mind when selecting piping materials for your application, as system failure and property damage could result. Refer to the pipe manufacturer's recommendations to determine suitable applications of the pipe.

⚠ CAUTION

Static sensitive components. A static discharge while handling electronic circuit boards can cause damage to the components. Discharge any static electrical charge by touching the bare metal inside the control panel before performing any service work. Never unplug any cables, circuit board terminal blocks, or power plugs while power is applied to the panel.

Hazard Identification Information

During all servicing operations, all instructions and recommendations, which appear in the installation and service instructions for the product, as well as on tags and labels fixed to the equipment and components and accompanying parts supplied separately, must be read, understood and followed.

- Apply all standard safety codes and practices.
- Wear safety glasses and gloves.
- Use the proper tools to move heavy objects. Move units carefully and set them down gently.

⚠ DANGER

Danger indicates a hazardous situation, which will result in death or serious injury if not avoided.

⚠ WARNING

Warning indicates a potentially hazardous situations, which can result in property damage, personal injury, or death if not avoided.

⚠ CAUTION

Caution indicates a potentially hazardous situations, which can result in minor injury or equipment damage if not avoided.

NOTICE

Notice indicates practices not related to physical injury.

NOTE: Indicates important details or clarifying statements for information presented.

Revision History

ED 15121	October 2009	Preliminary release.
ED 15121-1	April 2010	Added points and alarms supported for AWS with VFD. Removed Evaporator Pump Maintenance Warning. This is not supported. Removed Compressor Maintenance Warning. These are not supported. Added the Option Controller Communication Failed warning alarm.
ED 15121-2	October 2010	Added AGZ-D model to document. Added Oil Feed Pressure data point.
ED 15121-2	March 2012	Updated Daikin McQuay logo and associated references.
ED 15121-3	May 2012	Added valid values for Chiller Model. Previously it read TBD. Modified the range for Ice Setpoint.
ED 15121-4	April 2013	Added new alarms for the ADS chiller. Modified the description for clear alarms to indicate which alarms cannot be cleared by the network. The previous description was incorrect.
ED 15121-5	July 2016	Formatting changes. Added AGZ-E AWV and ADS chiller models. Added Total KW and changed COMP SHUTDOWN - Low Discharge Superheat Circuit 1, Comp 1 from 51755 to 51751.
ED 15121-6	March 2017	Added AMZ chiller model to data tables, Reference Documents, and other associated references.
ED 15121-7	July 2017	Add WME Gen 2 Chiller
ED 15121-8	January 2018	Added WWV chiller model
ED 15121-9	March 2019	Revised note on p.20 to clarify that not all Modus alarms have their own register. Removed BACnet references and updated Software Revision table.
ED 15121-10	May 2020	Addition of Waterside Economizer (Free Cooling) BACnet Objects and BACnet/LonWorks Alarms.
ED 15121-11	August 2022	Update of data table. Alarm additions.
ED 15121-12	August 2023	Addition of MicroTech 4 controller.

Software Revision

The software part number is encoded in the controller's memory and is available for display on the keypad/display. The part number is available via the Modbus® integration tools.

This document supports the following versions of the standard MicroTech III and MicroTech 4 Chiller Unit Controller application and all subsequent versions until otherwise indicated. However, if your software is of a later version, some of the information in this document may not completely describe your application.

Chiller Model	Application Software Version
Pathfinder Air-cooled Screw, Model AWS	263214205
Pathfinder VFD Air-cooled Screw, Model AWV	263220303
Trailblazer Air-cooled Scroll, Models AGZ-D, AGZ-E	251699403
Trailblazer Air-cooled Scroll, Model AMZ	263222002
Air-cooled Screw, Model ADS	G00008028-100
Magnitude Magnetic Bearing Centrifugal Chillers Model WME, B Vintage	G78761_102_082
Navigator Water-cooled Screw Chiller Model WWV	263224104

You can determine the revision of the application software from the keypad/display. The path from the main menu is Main Menu_About Chiller_App Version=

Reference Documents

Company	Number	Title	Source
Daikin Applied	IM 969	MicroTech III and MicroTech 4 Modbus Communication Module Installation Manual	www.DaikinApplied.com
Daikin Applied	IOM 1033-6	Magnitude Magnetic Bearing Centrifugal Chillers Model WME, B Vintage Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1202	Pathfinder Model AWS Air Cooled Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1242	Pathfinder Model AWV Air Cooled Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1206	Trailblazer Model AGZ Air Cooled Chiller Installation, Operation and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1243	Trailblazer Model AMZ Air Cooled Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOM 1264	Navigator Water-cooled Screw Chiller Model WWV Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Modbus-IDA. ORG		Modbus Application Protocol Specification V1.1b	www.Modbus.org
Modbus-IDA. ORG		Modbus over Serial Line Specification and Implementation Guide V1.02	www.Modbus.org

This document contains the necessary information to incorporate a MicroTech III or MicroTech 4 Chiller Unit Controller, subsequently referred to as the Chiller Unit Controller, into a Building Automation System (BAS). It includes all necessary Modbus® registers and corresponding Chiller Unit Controller data points.

Modbus terms and principles are not defined. Refer to the appropriate specifications (www.Modbus.org) for definitions and details.

Limited Warranty

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

Basic Protocol Information

Unit Controller Data Points

The Chiller Unit Controller contains data points or unit variables that are accessible from two different user interfaces: the unit keypad/display or a Modbus serial network. Not all points are accessible from each interface. This manual lists all important data points and the corresponding network path. Refer to Appendix B: Unit Controller Keypad Menus or the respective chiller operation manual, available on www.DaikinApplied.com, for keypad/display details.

NOTE: The Chiller Unit Controller maps additional Modbus registers that are not included in this document but are for internal use only. Please contact the Controls Customer Support at 866-462-7829 for assistance with Modbus integration.

Compatibility

The Chiller Unit Controller can be configured in an interoperable Modbus network. The controller must have the corresponding Modbus Communication Module installed.

The Chiller Unit Controller conforms to the published Modbus standards. Refer to www.Modbus.org for more information.

Protocol Definitions

The Modbus protocol is a standardized Application Level (OSI Level 7) protocol used in interoperable Industrial Control networks. Modbus provides the communication infrastructure necessary to integrate products manufactured by different vendors and to integrate control services that are now independent.

The Modbus protocol specifies how requests from the client are sent to a server and how servers reply. The client constructs a PDU (protocol data unit) and sends it to a specific server or broadcasts it to all servers. The PDU contains a function code that defines the action the client is requesting from the server(s). The PDU also includes a data field that further defines the action to the server, for example, the location of the data to be read.

A normal reply from a server includes the same function code and a response data field. In the case of a read operation, the response data field contains the requested data. In the case of a write operation, the response data field contains an echo of the write data of the request command. If the server detects an error in the transmission, the reply to the client includes and exception function code and the response data field contains an exception code.

Controllers can communicate on standard Modbus networks using one of two transmission modes: ASCII or RTU. Users select the serial port communication parameters (baud rate, parity mode, etc), during configuration of the controller. The mode and serial parameters must be the same for all devices on a Modbus network. Transmission mode determines how information is packed into the message fields and decoded. In RTU mode, each byte contains two hexadecimal characters, and in ASCII mode, each byte contains one ASCII character. **The Chiller Unit Controller uses the RTU mode only.**

Valid Function Codes

The Chiller Unit Controller supports eight public function codes as shown in Table 1. However, the Chiller Unit Controller contains only Holding Registers (4xxxx).

Table 1: Valid Function Codes

Function Code	Description	Definition
01 (0x01)	Read Coil Status	Reads the On/Off status of discrete outputs
02 (0x02)	Read Input Status	Reads the On/Off status of discrete inputs
03 (0x03)	Read Holding Registers	Reads one to approximately 125 contiguous input registers in a remote device
04 (0x04)	Read Input Registers	Reads the contents of input registers
05 (0x05)	Force Single Coil	Forces a single coil to either On or Off
06 (0x06)	Write Single Register	Writes a single Holding Register to a remote device
15 (0x0F)	Write Multiple Coils	Forces each coil in a sequence of coils to either On or Off
16 (0x10)	Write Multiple Registers	Writes a block of one to approximately 120 contiguous registers in a remote device

Valid Error Codes

The Chiller Unit Controller supports all exception codes. See Table 2 for a description of valid error codes.

Table 2: Valid Error Codes

Error Codes	Description	Definition
01	Illegal Function	The function code received in the query is not an allowable action for the server (or slave)
02	Illegal Data Address	The data address received in the query is not an allowable address for the server (or slave)
03	Illegal Data Value	A value contained in the query data field is not an allowable value for server (or slave)
04	Slave Device Failure	An unrecoverable error occurred while the server (or slave) was attempting to perform the requested action
05	Acknowledged	The server (or slave) has accepted and is processing the request
06	Slave Device Busy	The server (or slave) is busy processing a command. The client (or master) should retransmit when the server (or slave) is free
08	Memory Parity Error	The server (or slave) attempted to read record file, but detected a parity error in the memory. The client (or master) can retry the request, but service may be required on the server (or slave) device
0A	Gateway Path Unavailable	The gateway may be configured incorrectly or overloaded
0B	Gateway Target Device Failed to Respond	No response from the target device

Modbus Addressing

Each function code implies access to a specific Modbus reference set. Therefore, the leading digit is not included in the address field of a Modbus message. The Modbus Communication Module supports zero-based addressing. For example, Holding Register 40003 is addressed as 0002 in a Modbus message.

Modbus Data Point

Each data point accessible from a Modbus network is described with a table that gives the data type and Holding Register. If the data point represents an enumerated variable, the enumerations are also listed.

When a variable spans multiple Holding Registers, it is important to know how the data is represented in those Holding Registers.

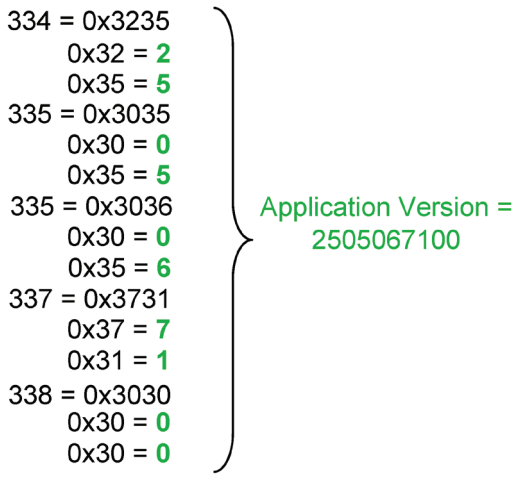
The following example shows Compressor Run Hours. Circuit 1, compressor 1 run hours is located at Holding Registers 74-75 (40074-40075). If the operating hours is 99900 (0x0001 0x863C), the registers will be as follows:

- 74 = 0x863C
- 75 = 0x0001

For strings, the interpretation differs. In this case, each Holding Register can contain two characters. If a string spans multiple registers, the first register (lowest register number) contains the two left-most characters of the string. Since the Chiller Unit Controller only supports Modbus RTU, use the ASCII Conversion Table in Appendix A to translate the numerical data to their corresponding ASCII characters.

Application Version is an example of registers that contain string data and is located at Holding Registers 334-338 (40334-40338). Figure 1 shows an example of the Holding Register and its value (in hexadecimal), followed by the ASCII character translation.

Figure 1: Example of Holding Register Value Translation to ASCII Characters



Example Data Point: Chiller On/Off

This output data point indicates the current state of the chiller. The OFF state is represented by state = FALSE and value = 0. The other discrete states are represented by state = TRUE and value > 0.

Data Type	Holding Register	Measurement	Units	Valid Range
RO Holding Register	8	Chiller State	NA	0 = Off 1 = On

Data Type

Data is represented as either single-bit elements or 16-bit elements. A single-bit element is referred to as a Discrete Input when it refers to read-only data and as a Coil when it refers to read-write data. A 16-bit element is referred to as a Input Register when it refers to read-only data, and as a Holding Register when it refers to read-write data. All of the Modbus registers defined in the Chiller Unit Controller are 16-bit Holding Registers. Some are read only (RO) and some are read-write (RW).

Holding Register

There are up to 65,536 elements of each data type in a Modbus device. Data elements are numbered from 1 to 65,536 in each type. Data elements are addressed with an index in the range from 0 to 65,535. The index is not the address of the data element in the unit controller memory, but instead it is used in Modbus PDUs to specify the location of the data in the unit controller. This means, for example, that data element number 1 (i.e., Holding Register 40001) is addressed using index 0 in the PDU.

In addition, the function code field portion of the message already specifies a "Holding Register" operation. Therefore the '4xxxx' reference is implicit. As such, this document represents the Holding Registers without the implicit 4xxxx. For example, Holding Register 8 is actually Holding Register 40008.

Valid Range

Some properties are standard data types and some are enumerated sets. If the property value represents a range of values (e.g. temperature or pressure) that range of values is shown. If the property value is an enumerated set, all enumerated values and corresponding meaning are shown as well.

Configuring the Unit Controller

The Chiller Unit Controller and the Modbus communication module ship with default parameter values. Default values may be changed with the unit keypad or via the network. Parameters must be adjusted to accommodate the specific network. Refer to the applicable chiller Installation, Operation, and Maintenance (IOM) Manual for default values and keypad operating instructions, and the Modbus Communication Module Installation Manual, IM 969, for details regarding network parameters available via the unit controller keypad/display (www.DaikinApplied.com).

Network Considerations

The following section provides a summary of Modbus properties available from the Chiller Unit Controller to the BAS. Table 3 shows the data points supported by each chiller model. Table 4 - Table 8 contain the register mapping details organized by chiller, circuit, compressor, pump, and miscellaneous data points respectively.

Table 3: Data Points by Chiller Model

Data Point	AWS (Application Version 2507500204 or Earlier)	AWS (Application Version 2507500205 or Later)	AGZ-D/AGZ-E	AMZ	ADS	AWV	WME Vintage B	WWV
Active Capacity Limit (Output)	X	X	X	X	X	X	X	X
Active Setpoint	X	X	X	X	X	X	X	X
Actual Capacity	X	X	X	X	X	X	X	X
Alarm Digital Output	X	X	X	X	X	X	X	X
Application Version	X	X	X	X	X	X	X	X
Capacity Limit Setpoint - Network	X	X	X	X	X	X	X	X
Chiller Capacity Limited	X	X	X	X	X	X	X	X
Chiller Current					X			
Chiller Enable Output	X	X	X	X	X	X	X	X
Chiller Enable Setpoint	X	X	X	X	X	X	X	X
Chiller Local/Network	X	X	X	X	X	X	X	X
Chiller Location	X	X	X	X	X	X	X	X
Chiller Mode Output	X	X	X	X	X	X	X	X
Chiller Mode Setpoint - Network	X	X	X	X	X	X	X	X
Chiller Model	X	X	X	X	X	X	X	X
Chiller On/Off	X	X	X	X	X	X	X	X
Chiller Status	X	X	X	X	X	X	X	X
Circuit 1 Suction Refrigerant Temperature				X				
Comp Shutdown - Refrig Charge					X			
Clear Alarm - Network	X	X	X	X	X	X	X	X
Compressor Current	X	X			X	X	X	X
Compressor Discharge Refrigerant Pressure							X	
Compressor Discharge Refrigerant Temperature	X	X			X	X	X	X
Compressor Lift Pressure							X	
Compressor Lift Temperature							X	
Compressor Motor Case Temperature							X	
Compressor Motor Gap Temperature							X	
Compressor Percent RLA	X	X			X	X	X	X
Compressor Power	X	X			X	X	X	X
Compressor Rotor Pump Temperature							X	
Compressor Run Hours	X	X	X	X	X	X	X	X
Compressor Starts	X	X	X	X	X	X	X	X
Compressor Stator Temperature 1							X	
Compressor Stator Temperature 2							X	
Compressor Stator Temperature 3							X	
Compressor Suction Refrigerant Pressure							X	
Compressor Suction Refrigerant Temperature	X	X	X	X	X	X	X	X
Compressor Unavailable						X[4]		
Compressor Voltage	X	X			X	X[3]	X	X
Condenser Entering Fluid Temperature							X	X

1. See Alarm Data Point Details section for compete description of registers and alarm types supported.
2. Unit must have Waterside Economizer option
3. Data point not available on AWV with Turboscrew compressor.
4. AWV unit controller must have application code 263220112 or newer.

Data Point	AWS (Application Version 2507500204 or Earlier)	AWS (Application Version 2507500205 or Later)	AGZ-D/AGZ-E	AMZ	ADS	AWV	WME Vintage B	WWV
Condenser Leaving Fluid Temperature							X	X
Condenser Pump1 Run Hours							X	X
Condenser Pump2 Run Hours							X	X
Condenser Pump1 Status							X	X
Condenser Pump2 Status							X	X
Condenser Refrigerant Pressure	X	X	X	X	X	X	X	X
Condenser Saturated Refrigerant Temperature	X	X	X	X	X	X	X	X
Cool Setpoint - Network	X	X	X	X	X	X	X	X
Current Date and Time	X	X	X	X	X	X	X	X
Evaporator Entering Fluid Temperature	X	X	X	X	X	X	X	X
Evaporator Flow Switch Status	X	X	X	X	X	X	X	X
Evaporator Fluid Flow Rate							X	
Evaporator Leaving Fluid Temperature	X	X	X	X	X	X	X	X
Evaporator LWT #n	X	X			X			
Evaporator Pump Run Hours	X	X	X	X	X	X	X	X
Evaporator Pump Status	X	X	X	X	X	X	X	X
Evaporator Refrigerant Pressure	X	X	X	X	X	X		X
Evaporator Saturated Refrigerant Temperature	X	X	X	X	X	X		X
Fault Alarm Code[1]	X	X	X	X	X	X	X	X
Fault Alarm Index[1]	X	X	X	X	X	X	X	X
Heat Recovery Entering Fluid Temperature			X					
Heat Recovery Leaving Fluid Temperature			X					
Ice Setpoint - Network	X	X	X	X	X	X		X
Liquid Line Refrigerant Temperature							X	X
Oil Feed Pressure	X	X			X	X		X
Outdoor Air Temperature	X	X	X	X	X	X		
Problem Alarm Code[1]	X	X	X	X	X	X	X	X
Problem Alarm Index[1]	X	X	X	X	X	X	X	X
Run Enabled	X	X	X	X	X	X	X	X
Software Identification	X	X	X	X	X	X	X	X
Status	X	X	X	X	X	X	X	X
Total Kilowatts	X	X			X	X	X	
Units	X	X	X	X	X	X	X	X
VFD Temp	X	X			X	X		
Warning Alarm Code[1]	X	X	X	X	X	X	X	X
Warning Alarm Index[1]	X	X	X	X	X	X	X	X
Waterside Economizer Enable Setpoint[2]						X		
Waterside Economizer State[2]						X		

1. See Alarm Data Point Details section for compete description of registers and alarm types supported.
2. Unit must have Waterside Economizer option
3. Data point not available on AWV with Turboscrew compressor.
4. AWV unit controller must have application code 263220112 or newer.

Data Point	AWS (Application Version 2507500204 or Earlier)	AWS (Application Version 2507500205 or Later)	AGZ-D/AGZ-E	AMZ	ADS	AWV	WME Vintage B	WWV
Condenser Fluid Flow Rate							X	
Condenser Flow Switch Status							X	X
Condenser Leaving Fluid Temperature							X	X
Condenser Pump1 Run Hours							X	X
Condenser Pump2 Run Hours							X	X
Condenser Pump1 Status							X	X
Condenser Pump2 Status							X	X
Condenser Refrigerant Pressure	X	X	X	X	X	X	X	X
Condenser Saturated Refrigerant Temperature	X	X	X	X	X	X	X	X
Cool Setpoint - Network	X	X	X	X	X	X	X	X
Current Date and Time	X	X	X	X	X	X	X	X
Evaporator Entering Fluid Temperature	X	X	X	X	X	X	X	X
Evaporator Flow Switch Status	X	X	X	X	X	X	X	X
Evaporator Fluid Flow Rate							X	
Evaporator Leaving Fluid Temperature	X	X	X	X	X	X	X	X
Evaporator LWT #n	X	X			X			
Evaporator Pump Run Hours	X	X	X	X	X	X	X	X
Evaporator Pump Status	X	X	X	X	X	X	X	X
Evaporator Refrigerant Pressure	X	X	X	X	X	X		X
Evaporator Saturated Refrigerant Temperature	X	X	X	X	X	X		X
Fault Alarm Code[1]	X	X	X	X	X	X	X	X
Fault Alarm Index[1]	X	X	X	X	X	X	X	X
Ice Setpoint - Network	X	X	X	X	X	X		X
Liquid Line Refrigerant Temperature							X	X
Oil Feed Pressure	X	X			X	X		X
Outdoor Air Temperature	X	X	X	X	X	X		
Problem Alarm Code[1]	X	X	X	X	X	X	X	X
Problem Alarm Index[1]	X	X	X	X	X	X	X	X
Run Enabled	X	X	X	X	X	X	X	X
Software Identification	X	X	X	X	X	X	X	X
Status	X	X	X	X	X	X	X	X
Total Kilowatts	X	X			X	X	X	
Units	X	X	X	X	X	X	X	X
VFD Temp	X	X			X	X		
Warning Alarm Code[1]	X	X	X	X	X	X	X	X
Warning Alarm Index[1]	X	X	X	X	X	X	X	X
Waterside Economizer Enable Setpoint[2]						X		
Waterside Economizer State[2]						X		

1. See Alarm Data Point Details section for compete description of registers and alarm types supported.
2. Unit must have Waterside Economizer option
3. Data point not available on AWV with Turboscrew compressor.
4. AWV unit controller must have application code 263220112 or newer.

Comprehensive Data Tables

Register Mapping

The Modbus Communication Module supports zero-based addressing. For example, Holding Register 40002 is addressed as 0001 in a Modbus message.

The Holding Registers shown in Table 4 - Table 8 assume 4xxxx addressing. For example, Holding Register 40001 is shown as 1.

Table 4: Chiller Data Points

Chiller Data Point	Holding Register (4xxxx)	Data Type	Read/ Write Access	Range/Default (in Units)	Description
Actual Capacity					
	13	RO Holding Register	R	0 – 100% × 10 Default: NA	Indicates the percent of maximum capacity the chiller is producing under the present operating conditions. At 100%, the chiller may be producing more or less than its nominal rating due to variations in operating conditions.
Active Capacity Limit Output					
	14	RO Holding Register	R	0 – 100% × 10 Default: 100%	A measure of the ratio of operating capacity limit to full capacity expressed in percent. This value is the lowest of all limits specified by the operator, analog Demand Limit input, or Network Capacity Limit Setpoint.
Active Setpoint					
	12	RO Holding Register	R	15.08 – 149.9°F × 10 -9.4 – 65.5°C × 10 Default: Cool	Indicates the current setpoint used to control the chiller. Based on the operating mode of the chiller, this value is derived from the Cooling Setpoint or Ice Setpoint. See Cool Setpoint - Network and Ice Setpoint - Network as well as Chiller Mode Output and Chiller Mode Setpoint - Network.
Alarm Digital Output					
	5	RO Holding Register	R	0=No Alarm 1=Alarm Default: NA	Indicates whether an alarm condition has occurred. This variable must be polled for alarm notification.
Capacity Limit Setpoint - Network					
	38	RW Holding Register	R/W	0 – 100% × 10 Default: 100% × 10	Sets the maximum capacity level of the chiller. This level may be adjusted via an operator workstation or other network device, but cannot be adjusted above a factory-specified limit. This register is ignored by the chiller application if Chiller Local/Remote is set to Local.
Chiller Capacity Limited					
	4	RO Holding Register	R	0=Not Limited 1=Limited Default: NA	Indicates whether conditions may exist that prevent the chiller from reaching full capacity. If conditions exist that limit operation, the chiller may be prevented from reaching the Leaving Water Temperature setpoint.
Chiller Current					
	25	RO Holding Register	R	0 – 10,000 Amps Default: NA	Indicates the average current of the chiller. Compressor currents may be added together to calculate this value.
Chiller Enable Output					
	2	RO Holding Register	R	0=Disable 1=Enable Default: 0=Disabled	Indicates if operation of the chiller is disabled or enabled. If the chiller is disabled, it cannot run. If it is enabled, it is allowed to run.
Chiller Enable Setpoint					
	9	RW Holding Register	R/W	0=Disable 1=Enable 2=Null Default: Null	Enables the chiller to run if operating conditions are satisfied, or disables the chiller from running. The default of Null causes Disable to be used, provided nothing else is writing to this point. This register is ignored by the chiller application if Chiller Local/Remote is set to Local.

Chiller Data Point	Holding Register (4xxxx)	Data Type	Read/ Write Access	Range/Default (in Units)	Description
Chiller Local/Remote					
	1	RO Holding Register	R	0=Remote 1=Local Default: Null	Indicates whether the chiller is in local control or allowed to be controlled remotely over the network. The value can only be changed locally. The values from the following variables are ignored in the chiller application if this variable is set to Local (1): • Chiller Enable Setpoint • Chiller Mode Setpoint – Network • Cool Setpoint Network • Ice Setpoint Network • Capacity Limit Setpoint • Clear Alarm Network
Chiller Mode Output					
	11	RO Holding Register	R	1=Ice 2=Cool 3=Heat 4=Cool/Heat Recovery 5=Defrost Default: NA	Indicates the current operating mode of the chiller.
Chiller Mode Setpoint - Network					
	34	RW Holding Register	R/W	0=Null 1=Ice* 2=Cool* 3=Heat 4=Cool/Heat Recovery Default: Null	Changes the operating mode of the chiller. This register is ignored by the chiller application if Chiller Local/ Remote is set to Local. It also only applies when Available Modes is set to Cool/Ice w/Glycol. Available Modes can also be found on the keypad. A value of Null causes the chiller to run in the Cool mode provided that nothing else is writing to this point. * Chiller models covered by this document only support Ice and Cool modes. If any other mode is written, the chiller will be set to Cool mode.
Chiller ON/OFF					
	8	RO Holding Register	R	0=OFF 1=ON Default: NA	Indicates the current state of the chiller. The OFF state is represented by State = FALSE and Value = 0. The other discrete states are represented by State = TRUE and Value > 0.
Chiller Status (Chiller Run Mode)					
	15	RO Holding Register	R	1=OFF 2=Start 3=Run 4=Pre Shutdown 5=Service Default: Determined by current state of chiller	Indicates the unit status of the chiller.

Chiller Data Point	Holding Register (4xxxx)	Data Type	Read/ Write Access	Range/Default (in Units)	Description
Clear Alarms - Network					
	10	RW Holding Register	R/W	0=Normal 1=Clear Alarms 2=Null Default: Null	Clears all active alarms. Many alarms are automatically clearing alarms. Of the alarms that need to be manually cleared, those listed below cannot be cleared from the network: • COMPRESSOR SHUTDOWN - Evaporator Pressure Low Circuit #n Compressor #n Fault • COMPRESSOR SHUTDOWN - Condenser Pressure High Circuit #n Compressor #n Fault • COMPRESSOR SHUTDOWN - Motor Temperature High Circuit #n Compressor #n Fault • UNIT SHUTDOWN – Evaporator Leaving Water Temp Low (Freeze) • COMPRESSOR SHUTDOWN - Mechanical High Pressure Trip Circuit #n Compressor #n Fault • COMPRESSOR SHUTDOWN - Mechanical Low Pressure Trip Circuit #n Compressor #n Fault The default of Null causes Normal to be used provided nothing else is writing to this point. This register is ignored by the chiller application if Chiller Local/ Remote is set to Local.
Condenser Flow Switch Status					
	7	RO Holding Register	R	0=OFF 1=ON Default: NA	Indicates the status of the fluid flowing through the condenser.
Condenser Fluid Flow Rate					
	21	RO Holding Register	R	0 – 65,535 GPM 0 – 4135 L/S Default: NA	Indicates the rate of fluid flow through the condenser.
Condenser Entering Fluid Temperature					
	19	RO Holding Register	R	-40° – 230°F × 10 -40° – 110°C × 10 Default: NA	Indicates the current temperature of the fluid entering the condenser.
Condenser Leaving Fluid Temperature					
	20	RO Holding Register	R	-40° – 230°F × 10 -40° – 110°C × 10 Default: NA	Indicates the current temperature of the fluid leaving the condenser.
Cool Setpoint - Network					
	35	RW Holding Register	R/W	24.98 – 60.08°F × 10 -3.9 – 15.6°C × 10 Default: 43.88°F × 10 6.6°C × 10	Changes the Cooling setpoint from the network. It sets the temperature of the Leaving Chilled Fluid setpoint when the chiller is operating in the Cooling Mode. This register is ignored by the chiller application if Chiller Local/Remote is set to Local.
Evaporator Entering Fluid Temperature					
	16	RO Holding Register	R	-40 – 230°F × 10 -40 – 110°C × 10 Default: NA	Indicates the current temperature of the fluid entering the evaporator.
Evaporator Flow Switch Status					
	6	RO Holding Register	R	0=No Flow 1=Flow Default: NA	Indicates the status of the fluid flowing through the evaporator.

Chiller Data Point	Holding Register (4xxxx)	Data Type	Read/ Write Access	Range/Default (in Units)	Description
Evaporator Fluid Flow Rate					
	18	RO Holding Register	R	0 – 65,535 GPM 0 – 4135 L/S Default: NA	Indicates the rate of fluid flow through the evaporator.
Evaporator Leaving Fluid Temperature					
	17	RO Holding Register	R	-40 – 230°F × 10 -40 – 110°C × 10 Default: NA	Indicates the current temperature of the fluid leaving the evaporator.
Ice Setpoint - Network					
	36	RW Holding Register	R/W	**AWS/AWV/WWV:** 17.6 – 39.2°F × 10 -8.0 – 4.0°C × 10 **AGZ/AMZ:** 15.08 – 38.12°F × 10 -9.4 – 3.4°C × 10 Default: 24.98°F × 10 -3.9°C × 10	Changes the Ice setpoint from the network. It sets the temperature of the Leaving Chilled Fluid setpoint when the chiller is operating in the Ice Mode. This register is ignored by the chiller application if Chiller Local/Remote is set to Local.
Outdoor Air Temperature					
	24	RO Holding Register	R	-40 - 230°F x 10 -40 - 110°C x 10 Default: NA	Indicates the current outdoor air temperature.
Run Enabled					
	3	RO Holding Register	R	0=OFF 1=RunAllowed Default: NA	Reflects the running mode of the chiller. Run Enabled indicates that the chiller can start if operating conditions are met.
Total Kilowatts					
	27	RW Holding Register	R	0 – 3500 kW Default: NA	Indicates the total chiller Kilowatts.
Waterside Economizer Enable Setpoint					
	1855	RW Holding Register	R/W	0=Disable 1=Enable Default: Disable (1)	Enables Waterside Economizer operation. Setting this variable to Enable allows the chiller to enter Hybrid or Waterside Economizer cooling mode if operating conditions are satisfied for either mode. Otherwise, the unit will operate in Mechanical cooling mode. The unit controller only uses this variable if Chiller Local/Network is set to Network (0). Chiller Local/Network can only be changed using the unit controller keypad display. Hybrid and Waterside Economizer modes are only available on units ordered with optional Waterside Economizer. For more information, see unit Installation and Operation Manual.
Waterside Economizer State					
	1854	RO Holding Register	R/W	0=Off 1=Mech 2=Hybrid 3=WsEcon Default: Off (1)	Indicates the current cooling mode of the chiller. Hybrid and Waterside Economizer modes are only available on units ordered with optional Waterside Economizer. For more information, see unit Installation and Operation Manual. For more information, see unit Installation and Operation Manual.

Table 5: Circuit Data Points

Circuit Data Point	Holding Register (4xxxx)	Data Type	Read/Write Access	Range/Default (in Units)	Description
Circuit 1					
Condenser Refrigerant Pressure	39	RO Holding Register	R	0 – 410 psi × 10 (700 psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	Indicates the current condenser pressure. There is a separate Holding Register for each compressor.
Condenser Saturated Refrigerant Temperature	40	RO Holding Register	R	-14.98 – 185°F × 10 -26.1 – 85°C × 10 Default: NA	Indicates the current saturated refrigerant temperature of the condenser. There is a separate Holding Register for each condenser.
Evaporator Refrigerant Pressure	41	RO Holding Register	R	-349.97 – 349.97 psi × 10 -2413 – 2413 kPa × 10 Default: NA	Indicates the current refrigerant pressure in the evaporator. There is a separate Holding Register for each compressor.
Evaporator Saturated Refrigerant Temperature	42	RO Holding Register	R	-14.98 – 185°F -26.1 – 85°C Default: NA	Indicates the current saturated refrigerant temperature of the evaporator. There is a separate Holding Register for each condenser.
Liquid Line Refrigerant Temperature	1984	RO Holding Register	R	-40 – 230°F × 10 -40 – 110°C × 10 Default: NA	Indicates the liquid line refrigerant temperature for the circuit.
Suction Refrigerant Temperature	1990	RO Holding Register	R	-40°–230°F -40°–110°C	Indicates the current refrigerant temperature entering the circuit compressor.
Circuit 2					
Condenser Refrigerant Pressure	43	RO Holding Register	R	0 – 410 psi × 10 (700 psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	Indicates the current condenser pressure. There is a separate Holding Register for each compressor.
Condenser Saturated Refrigerant Temperature	44	RO Holding Register	R	-14.98 – 185°F × 10 -26.1 – 85°C × 10 Default: NA	Indicates the current saturated refrigerant temperature of the condenser. There is a separate Holding Register for each condenser.
Evaporator Refrigerant Pressure	45	RO Holding Register	R	-349.97 – 349.97 psi × 10 -2413 – 2413 kPa × 10 Default: NA	Indicates the current refrigerant pressure in the evaporator. There is a separate Holding Register for each compressor.
Evaporator Saturated Refrigerant Temperature	46	RO Holding Register	R	-14.98 – 185°F × 10 -26.1 – 85°C × 10 Default: NA	Indicates the current saturated refrigerant temperature of the evaporator. There is a separate Holding Register for each condenser.
Circuit 3					
Condenser Refrigerant Pressure	47	RO Holding Register	R	0 – 410 psi × 10 (700 psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	Indicates the current condenser pressure. There is a separate Holding Register for each compressor.
Condenser Saturated Refrigerant Temperature	48	RO Holding Register	R	-14.98 – 185°F × 10 -26.1 – 85°C × 10 Default: NA	Indicates the current saturated refrigerant temperature of the condenser. There is a separate Holding Register for each condenser.
Evaporator Refrigerant Pressure	49	RO Holding Register	R	-349.97 – 349.97 psi × 10 -2413 – 2413 kPa × 10 Default: NA	Indicates the current refrigerant pressure in the evaporator. There is a separate Holding Register for each compressor.
Evaporator Saturated Refrigerant Temperature	50	RO Holding Register	R	-14.98 – 185°F × 10 -26.1 – 85°C × 10 Default: NA	Indicates the current saturated refrigerant temperature of the evaporator. There is a separate Holding Register for each condenser.

Circuit Data Point	Holding Register (4xxxx)	Data Type	Read/Write Access	Range/Default (in Units)	Description
Circuit 4					
Condenser Refrigerant Pressure	51	RO Holding Register	R	0 – 410 psi × 10 (700 psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	Indicates the current condenser pressure. There is a separate Holding Register for each compressor.
Condenser Saturated Refrigerant Temperature	52	RO Holding Register	R	-14.98 – 185°F × 10 -26.1 – 85°C × 10 Default: NA	Indicates the current saturated refrigerant temperature of the condenser. There is a separate Holding Register for each condenser.
Evaporator Refrigerant Pressure	53	RO Holding Register	R	-349.97 – 349.97 psi × 10 -2413 – 2413 kPa × 10 Default: NA	Indicates the current refrigerant pressure in the evaporator. There is a separate Holding Register for each compressor.
Evaporator Saturated Refrigerant Temperature	54	RO Holding Register	R	-14.98 – 185°F × 10 -26.1 – 85°C × 10 Default: NA	Indicates the current saturated refrigerant temperature of the evaporator. There is a separate Holding Register for each condenser.

Table 6: Compressor Data Points

Compressor Data Point	Holding Register (4xxxx)	Data Type	Read/Write Access	Range/Default (in Units)	Description
Circuit 1					
Compressor 1 Current	70	RO Holding Register	R	0 – 10,000 Amps Default: NA	Indicates the average current of the compressor motor.
Compressor 1 Percent RLA	69	RO Holding Register	R	0 – 100% Default: NA	Indicates the current percent RLA for the compressor motor of the compressor.
Compressor 2 Percent RLA[3]	82	RO Holding Register	R	0 – 100% Default: NA	Indicates the current percent RLA for the compressor motor of the compressor.
Compressor 1 Discharge Refrigerant Pressure	66	RO Holding Register	R	0 – 410 Psi × 10 (700 Psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	The current discharge refrigerant pressure for the compressor.
Compressor 2 Discharge Refrigerant Pressure	79	RO Holding Register	R	0 – 410 Psi × 10 (700 Psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	The current discharge refrigerant pressure for the compressor.
Compressor 1 Discharge Refrigerant Temp	68	RO Holding Register	R	-40 – 250°F × 10 -40 – 121°C × 10 Default: NA	Indicates the current refrigerant temperature discharged from the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Lift Pressure	946	RO Holding Register	R	0 – 410 Psi × 10 (700 Psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	The current lift pressure for the compressor.
Compressor 2 Lift Pressure	947	RO Holding Register	R	0 – 410 Psi × 10 (700 Psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	The current lift pressure for the compressor.
Compressor 1 Lift Temperature	940	RO Holding Register	R	-45 – 212°F × 10 -42.8 – 100°C × 10 Default: NA	Indicates the lift temperature for the compressor.
Compressor 2 Lift Temperature	941	RO Holding Register	R	-45 – 212°F × 10 -42.8 – 100°C × 10 Default: NA	Indicates the lift temperature for the compressor.
Compressor 1 Motor Case Temperature	928	RO Holding Register	R	-45 – 212°F × 10 -42.8 – 100°C × 10 Default: NA	Indicates the motor case temperature for the compressor.
Compressor 2 Motor Case Temperature	929	RO Holding Register	R	-45 – 212°F × 10 -42.8 – 100°C × 10 Default: NA	Indicates the motor case temperature for the compressor.
Compressor 1 Motor Gap Temperature	922	RO Holding Register	R	-45 – 212°F × 10 -42.8 – 100°C × 10 Default: NA	Indicates the motor gap temperature for the compressor.
Compressor 2 Motor Gap Temperature	923	RO Holding Register	R	-45 – 212°F × 10 -42.8 – 100°C × 10 Default: NA	Indicates the motor gap temperature for the compressor.
Compressor 1 Oil Feed Pressure	1849	RO Holding Register	R	-5.801473 – 17.54946 psi × 10 -40 – 121 kPa × 10 Default: NA	Indicates the current oil feed pressures the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Power	72	RO Holding Register	R	0 – 3,500 kW Default: NA	Indicates the current power of the compressor motor. There is a separate variable for each compressor.
Compressor 1 Rotor Pump Temperature	934	RO Holding Register	R	-45 – 212°F × 10 -42.8 – 100°C × 10 Default: NA	Indicates the rotor pump temperature for the compressor.

1. Data point not available on AWV with Turboscrew compressor.
2. AWV unit controller must have application code 263220112 or newer.
3. Data point only used for WME Vintage B.

Compressor Data Point	Holding Register (4xxxx)	Data Type	Read/Write Access	Range/Default (in Units)	Description
Compressor 2 Rotor Pump Temperature	935	RO Holding Register	R	-45 – 212°F × 10 -42.8 – 100°C × 10 Default: NA	Indicates the rotor pump temperature for the compressor.
Compressor 1 Run Hours	74-75	RW Holding Register	R/W	0 – 999,999 hours Default: NA	Indicates the number of hours that the compressor motor has been turned on. There is a separate Holding Register for each compressor.
Compressor 2 Run Hours	87-88				
Compressor 3 Run Hours	100-101				
Compressor 1 Starts	73	RO Holding Register	R	0 – 65,535 starts Default: NA	Indicates the number of times the compressor motor has been started. There is a separate Holding Register for each compressor.
Compressor 2 Starts	86				
Compressor 3 Starts	99				
Compressor 1 Stator Temperature 1	904	RO Holding Register	R	-58 – 392°F × 10 -50 – 200°C × 10 Default: NA	Indicates the temperature of compressor motor stator sensor 1.
Compressor 2 Stator Temperature 1	905	RO Holding Register	R	-58 – 392°F × 10 -50 – 200°C × 10 Default: NA	Indicates the temperature of compressor motor stator sensor 1.
Compressor 1 Stator Temperature 2	910	RO Holding Register	R	-58 – 392°F × 10 -50 – 200°C × 10 Default: NA	Indicates the temperature of compressor motor stator sensor 2.
Compressor 2 Stator Temperature 2	911	RO Holding Register	R	-58 – 392°F × 10 -50 – 200°C × 10 Default: NA	Indicates the temperature of compressor motor stator sensor 2.
Compressor 1 Stator Temperature 3	916	RO Holding Register	R	-58 – 392°F × 10 -50 – 200°C × 10 Default: NA	Indicates the temperature of compressor motor stator sensor 3.
Compressor 2 Stator Temperature 3	917	RO Holding Register	R	-58 – 392°F × 10 -50 – 200°C × 10 Default: NA	Indicates the temperature of compressor motor stator sensor 3.
Compressor 1 Suction Refrigerant Pressure	63	RO Holding Register	R	0 – 410 Psi × 10 (700 Psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	The current suction refrigerant pressure for the compressor.
Compressor 2 Suction Refrigerant Pressure	76	RO Holding Register	R	0 – 410 Psi × 10 (700 Psi for R410A) 0 – 2827 kPa × 10 (4826 kPa for R410A) Default: NA	The current suction refrigerant pressure for the compressor.
Compressor 1 Suction Refrigerant Temp	65	RO Holding Register	R	-40 – 230°F × 10 -40 – 110°C × 10 Default: NA	Indicates the current refrigerant temperature entering the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Unavailable[2]	970	RO Holding Register	R	0 = Available 1 = Unavailable	Indicates whether the compressor is Available (0) or Unavailable (1) to operate.
Compressor 1 Voltage[1]	71	RO Holding Register	R	0 – 15,000 VAC Default: NA	Indicates the average voltage of the compressor motor. There is a separate register for each compressor.

1. Data point not available on AWV with Turboscrew compressor.
2. AWV unit controller must have application code 263220112 or newer.
3. Data point only used for WME Vintage B.

Compressor Data Point	Holding Register (4xxxx)	Data Type	Read/Write Access	Range/Default (in Units)	Description
Circuit 2					
Compressor 1 Current	109	RO Holding Register	R	0 – 10,000 amps Default: NA	Indicates the average current of the compressor motor.
Compressor 1 Discharge Refrigerant Temp	107	RO Holding Register	R	-40 – 250°F × 10 -40 – 121°C × 10 Default: NA	Indicates the current refrigerant temperature discharged from the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Oil Feed Pressure	1809	RO Holding Register	R	-5.801473 – 17.54946 psi × 10 -40 – 121 kPa × 10 Default: NA	Indicates the current oil feed pressures the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Percent RLA	108	RO Holding Register	R	0-110% Default: NA	Indicates the current percent RLA for the compressor motor of the compressor.
Compressor 1 Power	111	RO Holding Register	R	0 – 3,500 kW Default: NA	Indicates the current power of the compressor motor. There is a separate variable for each compressor.
Compressor 1 Run Hours	113-114	RW Holding Register	R/W	0 – 999,999 hours Default: NA	Indicates the number of hours that the compressor motor has been turned on. There is a separate Holding Register for each compressor.
Compressor 2 Run Hours	126-127				
Compressor 3 Run Hours	139-140				
Compressor 1 Starts	112	RO Holding Register	R	0 – 65,535 starts Default: NA	Indicates the number of times the compressor motor has been started. There is a separate Holding Register for each compressor.
Compressor 2 Starts	125				
Compressor 3 Starts	138				
Compressor 1 Suction Refrigerant Temperature	104	RO Holding Register	R	-40 – 230°F × 10 -40 – 110°C × 10 Default: NA	Indicates the current refrigerant temperature entering the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Unavailable[2]	972	RO Holding Register	R	0 = Available 1 = Unavailable	Indicates whether the compressor is Available (0) or Unavailable (1) to operate.
Compressor 1 Voltage[1]	110	RO Holding Register	R	0 – 15,000 VAC Default: NA	Indicates the average voltage of the compressor motor. There is a separate register for each compressor.
Circuit 3					
Compressor 1 Current	148	RO Holding Register	R	0 – 10,000 amps Default: NA	Indicates the average current of the compressor motor.
Compressor 1 Suction Refrigerant Temperature	143	RO Holding Register	R	-40 – 230°F × 10 -40 – 110°C × 10 Default: NA	Indicates the current refrigerant temperature entering the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Discharge Refrigerant Temp	146	RO Holding Register	R	-40 – 250°F × 10 -40 – 121°C × 10 Default: NA	Indicates the current refrigerant temperature discharged from the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Oil Feed Pressure	1770	RO Holding Register	R	-5.801473 – 17.54946 psi × 10 -40 – 121 kPa × 10 Default: NA	Indicates the current oil feed pressures the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Percent RLA	147	RO Holding Register	R	0 – 110% Default: NA	Indicates the current percent RLA for the compressor motor of the compressor.
Compressor 1 Power	150	RO Holding Register	R	0 – 3,500 kW Default: NA	Indicates the current power of the compressor motor. There is a separate variable for each compressor.
Compressor 1 Run Hours	152-153	RW Holding Register	R/W	0 – 999,999 hours Default: NA	Indicates the number of hours that the compressor motor has been turned on. There is a separate Holding Register for each compressor.
Compressor 1 Starts	151	RO Holding Register	R	0 – 65,535 starts Default: NA	Indicates the number of times the compressor motor has been started. There is a separate Holding Register for each compressor.
Compressor 1 Voltage[1]	149	RO Holding Register	R	0 – 15,000 VAC Default: NA	Indicates the average voltage of the compressor motor. There is a separate register for each compressor.

1. Data point not available on AWV with Turboscrew compressor.
2. AWV unit controller must have application code 263220112 or newer.
3. Data point only used for WME Vintage B.

Compressor Data Point	Holding Register (4xxxx)	Data Type	Read/Write Access	Range/Default (in Units)	Description
Circuit 4					
Compressor 1 Discharge Refrigerant Temp	185	RO Holding Register	R	-40 – 250°F × 10 -40 – 121°C × 10 Default: NA	Indicates the current refrigerant temperature discharged from the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Oil Feed Pressure	1731	RO Holding Register	R	-5.801473 – 17.54946 psi × 10 -40 –121 kPa × 10 Default: NA	Indicates the current oil feed pressures the compressor. There is a separate Holding Register for each compressor.
Compressor 1 Run Hours	191-192	RW Holding Register	R/W	0 – 999,999 hours Default: NA	Indicates the number of hours that the compressor motor has been turned on. There is a separate Holding Register for each compressor.
Compressor 1 Starts	190	RO Holding Register	R	0 – 65,535 starts Default: NA	Indicates the number of times the compressor motor has been started. There is a separate Holding Register for each compressor.
Compressor 1 Suction Refrigerant Temperature	182	RO Holding Register	R	-40 – 230°F × 10 -40 – 110°C × 10 Default: NA	Indicates the current refrigerant temperature entering the compressor. There is a separate Holding Register for each compressor.

1. Data point not available on AWV with Turboscrew compressor.
2. AWV unit controller must have application code 263220112 or newer.
3. Data point only used for WME Vintage B.

Table 7: Pump Data Points

Pump Data Point	Holding Register (4xxxx)	Data Type	Read/Write Access	Range/Default (in Units)	Description
Evaporator Pump Run Hours					
Pump 1	303-304	RO Holding Register	R	0 – 999,999 hours Default: NA	Indicates the number of hours that the pump motor has been turned on. There is separate Holding Register for each pump.
Pump 2	306-307				
Evaporator Pump Status					
Pump 1	305	RO Holding Register	R	0 = Pump OFF Request 1 = Pump ON Request Default: NA	Indicates if the pump has been commanded ON or OFF. There is a separate Holding Register for each pump.
Pump 2	308				
Condenser Pump 1 Run Hours					
	297-298	RO Holding Register	R	0 – 999,999 Hrs Default: NA	Indicates the number of hours that the pump motor has been turned ON. There is separate Holding Register for each pump.
Condenser Pump 2 Run Hours					
	300-301	RO Holding Register	R	0-999,999 Hrs Default: NA	Indicates the number of hours that the pump motor has been turned ON. There is separate Holding Register for each pump.
Condenser Pump 1 Status					
	299	RO Holding Register	R	0=Pump OFF Request 1=Pump ON Request Default: NA	Indicates if the pump has been commanded ON or OFF. There is a separate Holding Register for each pump.
Condenser Pump 2 Status					
	302	RO Holding Register	R	0=Pump OFF Request 1=Pump ON Request Default: NA	Indicates if the pump has been commanded ON or OFF. There is a separate Holding Register for each pump.

Table 8: Misc Data Points

Data Point	Holding Register (4xxxx)	Data Type	Read/Write Access	Range/Default (in Units)	Description
Current Date and Time				All Defaults: NA	Synchronizes the chiller's internal time clock with the BAS. The day of the week is calculated by the unit controller.
Year	309	RW Holding Register	R/W		
Month	310	RW Holding Register	R/W	1-12	
Date	311	RW Holding Register	R/W	1-31	
Day of Week	312	RO Holding Register	R	0 (Monday) - 6 (Sunday)	
Hour	313	RW Holding Register	R/W	0-23	
Minute	314	RW Holding Register	R/W	0-59	
Second	315	RW Holding Register	R/W	0-59	
Units	316	RW Holding Register	R/W	0=English 1=Metric Default: 0=English	The units of measure for data points communicating to the Modbus network.
Chiller Model	317	RO Holding Register	R	0=Centrifugal 1=Water Cooled 2=Air Cooled 3=Heat Pump 9=Other Default: NA	The model of the chiller.
Chiller Location	318-327	RW Holding Register	R/W	1-20 characters* Default: NA	Provides a description of the chiller network location. If the location is changed via Modbus, the change is written immediately to the unit controller. However, if the location is changed by an outside source (other than Modbus), then the change is not available via Modbus until power is cycled to the unit controller. **Note that the character string cannot contain " or $ symbols. These registers are a numerical value and need to be translated into a character string. Unsupported characters result in a space. See Appendix A: ASCII Conversion Table and Figure 1.*
Application Software Version	334-338	RO Holding Register	R	1-10 characters* Default: NA	Indicates the software version of the application software. **Note that the character string cannot contain " or $ symbols. These registers are a numerical value and need to be translated into a character string. Unsupported characters result in a space. See Appendix A: ASCII Conversion Table and Figure 1.*

Alarms

Alarm Management

The Chiller Unit Controller has various ways of managing alarms. Alarms can be recognized, acknowledged, and cleared from the network by one of several methods: 1) individually, 2) Alarm Digital Output register, or 3) alarm class (code or index).

Alarm Classes

Modbus alarms in a Chiller Unit Controller are divided into three classes: Faults, Problems, and Warnings. Fault alarms have the highest severity level. Problem alarms have medium severity level. Warning alarms have the lowest severity level.

Fault Alarms

Fault alarms require an acknowledgment from the operator. These alarms indicate that the compressor or chiller is shut down.

Problem Alarms

Problem alarms do not cause compressor shutdown but limit operation of the chiller in some way.

Warning Alarms

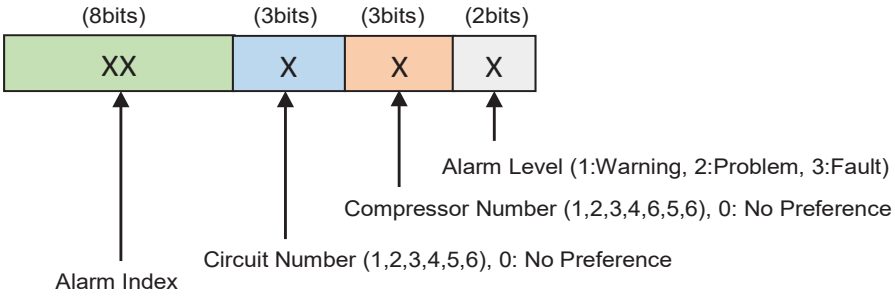
A warning is enunciated whenever an abnormal condition exists which does not affect chiller operation.

Alarm Monitoring

Monitor Alarm Individually

To monitor alarms individually, read the value from the Holding Register for each alarm. Some, but not all, alarms have their own Holding Register. If the Holding Register is zero (0), the alarm is not active. If the Holding Register is one (1), the alarm is active.

Figure 2: Alarm Code Format



Monitor by Alarm Digital Output

To determine whether any alarm is active or not, read the Alarm Digital Output register, 40005. If the value of the Holding Register is zero (0), no alarms are active. If the Holding Register is one (1), there is at least one active alarm.

Monitor by Alarm Code or Alarm Index

To monitor alarms by alarm class, read the Holding Register for the appropriate class (Warnings, Problems, and Faults). Each class has two Holding Registers. One register reports the highest active alarm code and one reports the highest active alarm index. The alarm codes and alarm indexes are not ordered by priority. See Alarm Data Point Details for more information. The alarm code is calculated in Figure 2

Clearing Alarms

Some alarms can be cleared automatically while others require manual clearing. Manual alarms that cannot be cleared from the network are as follows:

- COMPRESSOR SHUTDOWN - Evaporator Pressure Low Circuit #n Compressor #n Fault
- COMPRESSOR SHUTDOWN - Condenser Pressure High Circuit #n Compressor #n Fault
- COMPRESSOR SHUTDOWN - Motor Temperature High Circuit #n Compressor #n Fault
- UNIT SHUTDOWN – Evaporator Leaving Water Temp Low (Freeze)
- COMPRESSOR SHUTDOWN - Mechanical High Pressure Trip Circuit #n Compressor #n Fault
- COMPRESSOR SHUTDOWN - Mechanical Low Pressure Trip Circuit #n Compressor #n Fault

Alarm Data Points Summary

Table 9 provides an alphabetical listing of Modbus alarms available for each chiller model.

Table 9: Alarm Data Point by Chiller Model

Alarm Data Point	AWS (2507500204 or earlier)	AWS (2507500205 or later)	AGZ-D/ AGZ-E	AMZ	AWV	ADS	WME Vintage B	WWV
Alarm/Limit Controller Communication Failed	X	X			X	X		
Bad Current Limit Input	X	X						
Bad Demand Limit Input	X	X	X	X	X	X		X
Bad Setpoint Override Input	X	X	X	X	X	X		X
Circuit #n Failed Pumpdown	X	X	X	X	X	X		X
Circuit 1 Ground Fault Protection					X			
Circuit 2 Ground Fault Protection					X			
CIRCUIT SHUTDOWN - Condenser Pressure High Trip Circuit #n Fault			X	X				
CIRCUIT SHUTDOWN - Condenser Pressure Sensor Circuit #n Fault			X	X				
CIRCUIT SHUTDOWN - Evaporator Pressure Sensor Circuit #n Fault			X	X				
CIRCUIT SHUTDOWN - Low Evaporator Pressure Trip Circuit #n Fault			X	X				
CIRCUIT SHUTDOWN - Evaporator 1 Freeze Protection Fault	X	X						
CIRCUIT SHUTDOWN - Evaporator 2 Freeze Protection Fault	X	X						
CIRCUIT SHUTDOWN - Mains PVM Fault #n								X
CIRCUIT SHUTDOWN - Mechanical High Pressure Trip Circuit 1				X				
CIRCUIT SHUTDOWN - Motor Earth Fault #n								X
CIRCUIT SHUTDOWN - Motor Protector Trip Circuit 1				X				
CIRCUIT SHUTDOWN - Motor PVM Fault #n								X
CIRCUIT SHUTDOWN - Number of Allowed Re-Starts Exceeded Circuit 1				X				
CIRCUIT SHUTDOWN - PVM GFP Circuit #n Fault			X	X				
CIRCUIT SHUTDOWN - Suction Temperature Sensor Fault Circuit 1				X				
CIRCUIT SHUTDOWN - VFD Control Card High Temperature #n								X
COMP SHUTDOWN - Refrig Charge Circuit #n Fault						X		
Compressor Controller Communication Failed - Circuit #n	X	X	X		X			X
COMPRESSOR LOCKOUT - Number of Allowed Re-Starts Exceeded Circuit #n Compressor #n Fault	X	X	X					
Compressor #n Oil Feed Loss					X			X
COMPRESSOR SHUTDOWN - COM ERROR with COMPRESSOR VFD Circuit #n Comp #n	X[1]	X[1]				X		X
COMPRESSOR SHUTDOWN - Compressor Did Not Stop							X	
COMPRESSOR SHUTDOWN - Compressor Does Not Start							X	
COMPRESSOR SHUTDOWN - COMPRESSOR VFD Fault Circuit #n Comp #n	X[1]	X[1]				X	X	X
COMPRESSOR SHUTDOWN - COMPRESSOR VFD Over Heat #n Fault	X[1]	X[1]				X		X
COMPRESSOR SHUTDOWN - Condenser Pressure High Circuit #n Compressor #n Fault	X	X	X	X	X	X		X
COMPRESSOR SHUTDOWN - Condenser Pressure Sensor Circuit #n Compressor #n Fault	X	X	X	X	X	X	X	X
COMPRESSOR SHUTDOWN - Condenser Pressure Sensor Fault							X	
COMPRESSOR SHUTDOWN - Condenser Water Flow Loss							X	X
COMPRESSOR SHUTDOWN - Current Overload Trip #n Fault	X	X	X	X	X	X	X	X
COMPRESSOR SHUTDOWN - Discharge Pressure High							X	
COMPRESSOR SHUTDOWN - Discharge Pressure Sensor Fault							X	
COMPRESSOR SHUTDOWN - Discharge Temperature High Circuit #n Compressor #n Fault	X	X			X	X	X	X
COMPRESSOR SHUTDOWN - Discharge Temperature Sensor Circuit #n Compressor #n Fault	X	X			X	X	X	X
COMPRESSOR SHUTDOWN - Discharge Temperature Sensor Fault #n							X	
COMPRESSOR SHUTDOWN - Enable Relay Off Fault							X	
COMPRESSOR SHUTDOWN - Evaporator Leaving Water Temperature Low (Freeze) Fault	X	X	X	X	X	X		
COMPRESSOR SHUTDOWN - Evaporator Pressure Low Circuit #n Compressor #n Fault	X	X	X	X	X			X

Alarm Data Point	AWS (2507500204 or earlier)	AWS (2507500205 or later)	AGZ-D/ AGZ-E	AMZ	AWV	ADS	WME Vintage B	WWV
COMPRESSOR SHUTDOWN - Evaporator Pressure Sensor Circuit #n Compressor #n Fault	X	X	X	X	X	X		X
COMPRESSOR SHUTDOWN - IGV Calibration Fault							X	
COMPRESSOR SHUTDOWN - IGV Driver Fault							X	
COMPRESSOR SHUTDOWN - IPS Over Temperature							X	
1. Only available on AWS with optional VFD								
COMPRESSOR SHUTDOWN - Lift Pressure Low #n							X	
COMPRESSOR SHUTDOWN - Liquid Line Temperature Sensor Fault #n							X	X
COMPRESSOR SHUTDOWN - Low Discharge Superheat Circuit #n Compressor #n Fault	X	X			X	X		X
COMPRESSOR SHUTDOWN - Low Motor Current #n							X	
COMPRESSOR SHUTDOWN - Low Pressure Ratio #n Fault	X	X				X		X
COMPRESSOR SHUTDOWN - Low Rotor Pump Superheat							X	
COMPRESSOR SHUTDOWN - MBC Fault							X	
COMPRESSOR SHUTDOWN - MBC Modbus Communication Fault							X	
COMPRESSOR SHUTDOWN - MBC Orbit Error							X	
COMPRESSOR SHUTDOWN - Mechanical High Pressure Trip Circuit #n Compressor #n Fault	X	X	X	X	X		X	X
COMPRESSOR SHUTDOWN - Mechanical Low Pressure Trip Circuit #n Compressor #n	X	X						
COMPRESSOR SHUTDOWN - Motor Gap Temperature High							X	
COMPRESSOR SHUTDOWN - Motor Gap Temperature Sensor Fault							X	
COMPRESSOR SHUTDOWN - Motor Case Temperature Sensor Fault							X	
COMPRESSOR SHUTDOWN - Motor Protector Trip Circuit #n Compressor #n			X	X				
COMPRESSOR SHUTDOWN - Motor Speed Fail							X	
COMPRESSOR SHUTDOWN - Motor Temp Sensor Circuit #n Compressor #n	X	X			X	X		
COMPRESSOR SHUTDOWN - Motor Temperature High Circuit #n Compressor #n Fault	X	X			X	X		X
COMPRESSOR SHUTDOWN - No Pressure at Startup Circuit #n	X	X			X	X		X
COMPRESSOR SHUTDOWN - No Pressure Change After Start Circuit #n	X	X	X	X		X		X
COMPRESSOR SHUTDOWN - Primary Power Fail							X	
COMPRESSOR SHUTDOWN - Oil Delta Pressure High Circuit #n Compressor #n Fault	X	X			X	X		X
COMPRESSOR SHUTDOWN - Oil Feed Pressure Sensor Circuit #n Compressor #n Fault	X	X			X	X		X
COMPRESSOR SHUTDOWN - Outside Air Temperature Sensor Fault	X	X	X	X	X	X		
COMPRESSOR SHUTDOWN - Overvoltage #n								X
COMPRESSOR SHUTDOWN - Rotor Pump Temperature Sensor Fault							X	
COMPRESSOR SHUTDOWN - Slide Position Sensor #n Fault	X	X						
COMPRESSOR SHUTDOWN - Starter Fault Compressor #n Fault	X	X				X		
COMPRESSOR SHUTDOWN - Stator Temperature High							X	
COMPRESSOR SHUTDOWN - Stator Temperature1 Sensor Fault							X	
COMPRESSOR SHUTDOWN - Stator Temperature2 Sensor Fault							X	
COMPRESSOR SHUTDOWN - Stator Temperature3 Sensor Fault							X	
COMPRESSOR SHUTDOWN - Suction Pressure Low							X	
COMPRESSOR SHUTDOWN - Suction Pressure Sensor Fault							X	
COMPRESSOR SHUTDOWN - Suction Temperature Sensor Circuit #n Compressor #n Fault	X	X	X	X	X	X	X	X
COMPRESSOR SHUTDOWN - Surge Temperature							X	
COMPRESSOR SHUTDOWN - Undervoltage #n								X
COMPRESSOR SHUTDOWN - VFD Modbus Communication Fault							X	
Compressor 1 IGV Position Failure							X	
Compressor 2 IGV Position Failure							X	
Compressor 1 IGV Position Warning							X	
Compressor 2 IGV Position Warning							X	
Compressor VFD Current High #n					X			
Compressor 1 VFD Cooling Fin Overheat Warning							X	
Compressor 2 VFD Cooling Fin Overheat Warning							X	

Alarm Data Point	AWS (2507500204 or earlier)	AWS (2507500205 or later)	AGZ-D/ AGZ-E	AMZ	AWV	ADS	WME Vintage B	WWV
Condenser Leaving Water Temperature Sensor Failure							X	X
CONDENSER PUMP ON - Condenser Water Freeze Protection							X	
Controller Board #n Offline Fault	X	X	X	X	X	X		X
DC Fan Controller Comm Failure					X			
DC Fan Fault #n					X			
1. Only available on AWS with optional VFD								
Economizer EXV Comm Failure					X			
Economizer Refrigerant Pressure Sensor Fault #n					X			
Economizer Temperature Sensor Fault #n					X			
Evaporator Entering Water Temperature Sensor Fault	X	X			X	X	X	X
Evaporator Entering Water Temperature Sensor Warning			X	X				
Evaporator EXV Comm Failure					X			
Evaporator EXV Motor Error #n					X			
Evaporator Leaving Water Temperature 1 Sensor Fault	X	X				X		
Evaporator Leaving Water Temperature 2 Sensor Fault	X	X				X		
EVAPORATOR PUMP ON - Evaporator Water Freeze Protection							X	
External Event	X	X	X	X		X		
EXV Controller Communication Failed - Circuit #n	X	X	X	X	X			X
INHIBIT LOAD - Compressor Motor Current High #n Problem	X[1]							
INHIBIT LOAD - Condenser Pressure High Circuit #n Problem	X					X		X
INHIBIT LOAD - Evaporator Pressure Low #n Problem	X					X		X
Low Pressure Difference or Ratio #n					X			
Low Refrigerant Charge - Circuit #n Warning						X		
Multistart Fail Compressor #n					X			
Option Controller Communication Failed	X	X						
PUMP #1 START ATTEMPTED - Condenser Pump #1 Failure							X	X
PUMP #2 START ATTEMPTED - Condenser Pump #2 Failure							X	X
PUMP 1 START ATTEMPTED - Evaporator Pump 1 Failure			X	X	X		X	X
PUMP 2 START ATTEMPTED - Evaporator Pump 2 Failure			X	X	X		X	X
Rapid Restore Module Communication Failure			X					
RESTART DELAYED - Power Loss While Running Circuit #n	X	X			X	X		X
SHUTDOWN - Phase Voltage Protection Fault	X	X				X		
START INHIBITED - Ambient Temperature Low	X	X	X	X	X			
Unit Ground Fault Protection					X			
Unit Low Source Temperature Warning								X
UNIT Power Restore	X				X			
UNIT SHUTDOWN - Condenser Entering Water Temperature Sensor Fault							X	X
UNIT SHUTDOWN - Condenser LWT or EWT Low (Freeze)								X
UNIT SHUTDOWN - Evaporator Entering Water Temperature Sensor Fault	X	X				X	X	X
UNIT SHUTDOWN - Evaporator Leaving Water Temperature Sensor Fault	X	X	X	X	X	X	X	X
UNIT SHUTDOWN - Evaporator LWT or EWT Low (Freeze)	X	X	X	X	X			X
UNIT SHUTDOWN - Evaporator Water Flow Loss Fault	X	X	X	X	X	X	X	X
UNIT STOP - Emergency Stop Alarm	X	X			X	X		X
UNIT STOP - Evaporator Water Temperatures Inverted	X	X			X	X		X
UNIT STOP - External Alarm	X	X	X	X	X	X	X	X
UNIT STOP - PVM GFP Fault			X	X				
UNLOAD - Compressor Motor Current High #n Problem	X[1]							
UNLOAD - Condenser Pressure High #n Problem	X		X		X			
UNLOAD - Evaporator Pressure Low #n Problem	X		X		X			
Water Side Economizer EWT Sensor Failure					X			
Water Side Economizer Valve Fault					X			
Water Side Economizer Valve Problem					X			
1. Only available on AWS with optional VFD								

Alarm Data Point Details

The following section provides a comprehensive description of all Modbus alarms supported by the Chiller Unit Controller. Table 10, Table 11, and Table 12 show the alarm index, alarm code, and registers needed to read individual alarms. The tables are organized by alarm type (Warning, Problem, and Fault alarms, respectively.)

Table 10: Warning Alarms

Alarm	Holding Register	Data Type	Read/Write Access	Range[3]	Description
Warning Alarm Index	28	RO Holding Register	R	0 = Normal 1 = Alarm	Displays the active warning index. The alarms are not ordered based on any priority. If multiple warning alarms are present at one time, this object will be set to the alarm that has the highest alarm index. This object is set to zero if no warning alarms are active.
Warning Alarm Code	31				Displays the active warning code. The alarms are not ordered based on any priority. If multiple warning alarms are present at one time, this object will be set to the alarm that has the highest alarm code. This object is set to zero if no warning alarms are active.

Alarm Index	Alarm Code	Individual Alarm Monitoring Holding Registers[3]	Description
0	0	NA	No Alarms
2	513	366	Evaporator Entering Water Temperature Sensor Failure
8	2049	377	Bad Setpoint Override Input
9	2305	378	Bad Demand Limit Input
11	2817	740	Unit Power Restore[1]
12	3105	741	Circuit Failed Pumpdown - Circuit 1
	3137	742	Circuit Failed Pumpdown - Circuit 2
	3169	743	Circuit Failed Pumpdown - Circuit 3
	3201	744	Circuit Failed Pumpdown - Circuit 4
13	3329	745	External Event
14	3585	814	Bad Current Limit Input
15	3841	815	Option Controller Communication Failed
16	4128	825	Low Refrigerant Charge - Circuit 1
	4160	826	Low Refrigerant Charge - Circuit 2
	4192	827	Low Refrigerant Charge - Circuit 3
17	4352	828	Chiller Network Communication Failure
24	6177	NA	Economizer Refrigerant Pressure Sensor Fault 1[2]
	6209	NA	Economizer Refrigerant Pressure Sensor Fault 2[2]
25	6433	NA	Economizer Temperature Sensor Fault 1[2]
	6465	NA	Economizer Temperature Sensor Fault 2[2]
27	6945	NA	DC Fan Fault 1[2]
	6977	NA	DC Fan Fault 2[2]
28	7169	NA	Economizer EXV Comm Failure[2]
208	53285	NA	Compressor 1 IGV Position Warning
	53289	NA	Compressor 2 IGV Position Warning
209	53541	NA	Compressor 1 VFD Overheat Warning
	53545	NA	Compressor 2 VFD Overheat Warning
212	54273	NA	Rapid Restore Module Communication Failure[4]
245	62721	399	Unit Low Source Temp Warning[5]

1. This alarm is only available in AWS chiller unit controller application versions 2507500204 or earlier. On older revisions of AWS, the individual alarm monitoring Holding Register always read zero.
2. This alarm is only available in AWV chillers.
3. The range (0=Normal, 1=In Alarm) only applies to individual alarm monitoring holding registers.
4. This alarm is only available in AGZ chillers.
5. This alarm only available in WWV chillers.

Table 11: Problem Alarm Index

Alarm	Holding Register	Data Type	Read/Write Access	Range[2]	Description
Problem Alarm Index	29	RO Holding Register	R	0 = Normal 1 = Alarm	Displays the active problem index. The alarms are not ordered based on any priority. If multiple problem alarms are present at one time, this object will be set to the alarm that has the highest problem index. This object is set to zero if no problem alarms are active.
Problem Alarm Code	32				Displays the active problem code. The alarms are not ordered based on any priority. If multiple problem alarms are present at one time, this object will be set to the alarm that has the highest alarm code. This object is set to zero if no problem alarms are active.

Alarm Index	Alarm Code	Individual Alarm Monitoring Holding Registers[2]	Description
0	0	NA	No Alarms
64	16418	384	RESTART DELAYED - Power Loss While Running Circuit 1
	16450	385	RESTART DELAYED - Power Loss While Running Circuit 2
	16482	386	RESTART DELAYED - Power Loss While Running Circuit 3
	16514	387	RESTART DELAYED - Power Loss While Running Circuit 4
65	16642	388	START INHIBITED - Ambient Temperature Low
67	17168	390	INHIBIT LOAD - Condenser Pressure High Circuit 1[1]
	17218	391	INHIBIT LOAD - Condenser Pressure High Circuit 2[1]
	17250	392	INHIBIT LOAD - Condenser Pressure High Circuit 3[1]
	17282	393	INHIBIT LOAD - Condenser Pressure High Circuit 4[1]
69	17698	395	UNLOAD - Condenser Pressure High Circuit 1[1]
	17730	396	UNLOAD - Condenser Pressure High Circuit 2[1]
	17762	397	UNLOAD - Condenser Pressure High Circuit 3[1]
	17794	398	UNLOAD - Condenser Pressure High Circuit 4[1]
70	17954	NA	CONDENSER PUMP ON - Condenser Water Freeze Protection
71	18178	NA	PUMP #1 START ATTEMPTED - Condenser Pump #1 Failure
72	18434	NA	PUMP #2 START ATTEMPTED - Condenser Pump #2 Failure
76	19490	411	INHIBIT LOAD - Evaporator Pressure Low Circuit 1[1]
	19522	412	INHIBIT LOAD - Evaporator Pressure Low Circuit 2[1]
	19554	413	INHIBIT LOAD - Evaporator Pressure Low Circuit 3[1]
	19586	414	INHIBIT LOAD - Evaporator Pressure Low Circuit 4[1]
78	20002	416	UNLOAD - Evaporator Pressure Low Circuit 1[1]
	20034	417	UNLOAD - Evaporator Pressure Low Circuit 2[1]
	20066	418	UNLOAD - Evaporator Pressure Low Circuit 3[1]
	20098	419	UNLOAD - Evaporator Pressure Low Circuit 4[1]
79	20262	420	UNLOAD - Compressor Motor Current High Circuit 1, Comp 1[1]
	20294	422	UNLOAD - Compressor Motor Current High Circuit 2, Comp 1[1]
	20326	424	UNLOAD - Compressor Motor Current High Circuit 3, Comp 1[1]
80	20514	NA	EVAPORATOR PUMP ON - Evaporator Water Freeze Protection
81	20738	575	PUMP 2 START ATTEMPTED - Evaporator Pump 1 Failure
82	20994	576	PUMP 1 START ATTEMPTED - Evaporator Pump 2 Failure
84	21542	780	INHIBIT LOAD - Compressor Motor Current High Circuit 1, Comp 1[1]
	21574	782	INHIBIT LOAD - Compressor Motor Current High Circuit 2, Comp 1[1]
	21606	784	INHIBIT LOAD - Compressor Motor Current High Circuit 3, Comp 1[1]
237	60674	NA	Water Side Economizer Valve Problem[3]
238	60930	NA	Water Side Economizer EWT Sensor Failure[3]

1 These alarms are only available in AWS versions 2507500204 or earlier. On older revisions, the individual alarm monitoring Holding Register always reads zero.

2. The range (0=Normal, 1=In Alarm) only applies to individual alarm monitoring holding registers.

3. This alarm only available for chillers with optional Waterside Economizer.

Table 12: Fault Alarm Index

Alarm	Holding Register	Data Type	Read/Write Access	Range[2]	Description
Fault Alarm Index	30	RO Holding Register	R	0 = Normal 1 = Alarm	Displays the active fault index. The alarms are not ordered based on any priority. If multiple fault alarms are present at one time, this object will be set to the alarm that has the highest alarm index. This object is set to zero if no fault alarms are active.
Fault Alarm Code	33				Displays the active fault code. The alarms are not ordered based on any priority. If multiple fault alarms are present at one time, this object will be set to the alarm that has the highest alarm code. This object is set to zero if no fault alarms are active.

Alarm Index	Alarm Code	Individual Alarm Monitoring Holding Registers[2]	Description
0	0	NA	No Alarms
4	1027	NA	Condenser Leaving Water Temperature Sensor Failure
20	5159	NA	Compressor 1 IGV Position Failure
	5163	NA	Compressor 2 IGV Position Failure
29	7427	NA	Unit Ground Fault Protection[1]
30	7683	NA	Circuit 1 Ground Fault Protection[1]
31	7939	NA	Circuit 2 Ground Fault Protection[1]
32	8195	NA	Evaporator EXV Comm Failure[1]
33	8451	NA	DC Fan Controller Comm Failure[1]
34	8743	NA	Low Pressure Difference or Ratio 1[1]
	8775	NA	Low Pressure Difference or Ratio 2[1]
35	8999	NA	Multistart Fail Compressor 1[1]
	9031	NA	Multistart Fail Compressor 2[1]
36	9255	NA	Evaporator EXV Motor Error 1[1]
	9287	NA	Evaporator EXV Motor Error 2[1]
37	9511	NA	Compressor VFD Current High 1[1]
	9543	NA	Compressor VFD Current High 2[1]
96	24615	NA	COMPRESSOR SHUTDOWN - Comp 1 Stator Temperature1 Sensor Fault
	24619	NA	COMPRESSOR SHUTDOWN - Comp 2 Stator Temperature1 Sensor Fault
97	24871	NA	COMPRESSOR SHUTDOWN - Comp 1 Stator Temperature2 Sensor Fault
	24875	NA	COMPRESSOR SHUTDOWN - Comp 2 Stator Temperature2 Sensor Fault
98	25127	NA	COMPRESSOR SHUTDOWN - Comp 1 Stator Temperature3 Sensor Fault
	25131	NA	COMPRESSOR SHUTDOWN - Comp 2 Stator Temperature3 Sensor Fault
99	25383	NA	COMPRESSOR SHUTDOWN - Comp 1 Motor Gap Temperature Sensor Fault
	25387	NA	COMPRESSOR SHUTDOWN - Comp 2 Motor Gap Temperature Sensor Fault
100	25639	NA	COMPRESSOR SHUTDOWN - Comp 1 Motor Case Temperature Sensor Fault
	25643	NA	COMPRESSOR SHUTDOWN - Comp 2 Motor Case Temperature Sensor Fault
101	25895	NA	COMPRESSOR SHUTDOWN - Comp 1 Rotor Pump Temperature Sensor Fault
	25899	NA	COMPRESSOR SHUTDOWN - Comp 2 Rotor Pump Temperature Sensor Fault
102	26151	NA	COMPRESSOR SHUTDOWN - Comp 1 Discharge Pressure Sensor Fault
	26155	NA	COMPRESSOR SHUTDOWN - Comp 2 Discharge Pressure Sensor Fault
103	26407	NA	COMPRESSOR SHUTDOWN - Comp 1 Suction Pressure Low
	26411	NA	COMPRESSOR SHUTDOWN - Comp 2 Suction Pressure Low
104	26663	NA	COMPRESSOR SHUTDOWN - Comp 1 Discharge Pressure High
	26667	NA	COMPRESSOR SHUTDOWN - Comp 2 Discharge Pressure High
105	26919	NA	COMPRESSOR SHUTDOWN - Comp 1 Compressor Does Not Start
	26923	NA	COMPRESSOR SHUTDOWN - Comp 2 Compressor Does Not Start
106	27175	NA	COMPRESSOR SHUTDOWN - Comp 1 Stator Temperature High
	27179	NA	COMPRESSOR SHUTDOWN - Comp 2 Stator Temperature High
107	27431	NA	COMPRESSOR SHUTDOWN - Comp 1 Motor Gap Temperature High
	27435	NA	COMPRESSOR SHUTDOWN - Comp 2 Motor Gap Temperature High
108	27687	NA	COMPRESSOR SHUTDOWN - Comp 1 Low Rotor Pump Superheat
	27691	NA	COMPRESSOR SHUTDOWN - Comp 2 Low Rotor Pump Superheat
109	27943	NA	COMPRESSOR SHUTDOWN - Comp 1 Surge Temperature
	27947	NA	COMPRESSOR SHUTDOWN - Comp 2 Surge Temperature

1. This alarm is only available in AWV chillers.
2. The range (0=Normal, 1=In Alarm) only applies to individual alarm monitoring holding registers.
3. This alarm is only available in WWV chillers.
4. This alarm only available for chillers with optional Waterside Economizer.
5. This alarm is only available in AMZ chillers.

Alarm Index	Alarm Code	Individual Alarm Monitoring Holding Registers[2]	Description
110	28199	NA	COMPRESSOR SHUTDOWN - Comp 1 Motor Speed Fail
	28203	NA	COMPRESSOR SHUTDOWN - Comp 2 Motor Speed Fail
111	28455	NA	COMPRESSOR SHUTDOWN - Comp 1 Compressor Did Not Stop
	28459	NA	COMPRESSOR SHUTDOWN - Comp 2 Compressor Did Not Stop
112	28711	NA	COMPRESSOR SHUTDOWN - Comp 1 MBC Fault
	28715	NA	COMPRESSOR SHUTDOWN - Comp 2 MBC Fault
113	28967	NA	COMPRESSOR SHUTDOWN - Comp 1 IGV Driver Fault
	28971	NA	COMPRESSOR SHUTDOWN - Comp 2 IGV Driver Fault
114	29223	NA	COMPRESSOR SHUTDOWN - Comp 1 IGV Calibration Fault
	29227	NA	COMPRESSOR SHUTDOWN - Comp 2 IGV Calibration Fault
115	29479	NA	COMPRESSOR SHUTDOWN - Comp 1 Enable Relay Off Fault
	29483	NA	COMPRESSOR SHUTDOWN - Comp 2 Enable Relay Off Fault
116	29735	NA	COMPRESSOR SHUTDOWN - Comp 1 MBC Modbus Communication Fault
	29739	NA	COMPRESSOR SHUTDOWN - Comp 2 MBC Modbus Communication Fault
117	29991	NA	COMPRESSOR SHUTDOWN - Comp 1 VFD Modbus Communication Fault
	29995	NA	COMPRESSOR SHUTDOWN - Comp 2 VFD Modbus Communication Fault
118	30247	NA	COMPRESSOR SHUTDOWN - Comp 1 MBC Orbit Error
	30251	NA	COMPRESSOR SHUTDOWN - Comp 2 MBC Orbit Error
119	30503	NA	COMPRESSOR SHUTDOWN - Comp 1 Primary Power Fail
	30507	NA	COMPRESSOR SHUTDOWN - Comp 2 Primary Power Fail
120	30759	NA	COMPRESSOR SHUTDOWN - Comp 1 IPS Over Temperature
	30763	NA	COMPRESSOR SHUTDOWN - Comp 2 IPS Over Temperature
121	31015	NA	COMPRESSOR SHUTDOWN - Comp 1 Suction Pressure Sensor Fault
	31019	NA	COMPRESSOR SHUTDOWN - Comp 2 Suction Pressure Sensor Fault
127	32551	440	COMP SHUTDOWN - Low Pressure Ratio Circuit 1, Comp 1
	32583	442	COMP SHUTDOWN - Low Pressure Ratio Circuit 2, Comp 1
	32615	444	COMP SHUTDOWN - Low Pressure Ratio Circuit 3, Comp 1
	32647	445	COMP SHUTDOWN - Low Pressure Ratio Circuit 4, Comp 1
128	32771	446	UNIT SHUTDOWN - Outside Air Temp Sensor Fault
129	33063	447	COMPRESSOR SHUTDOWN - Current Overload Trip Circuit 1, Comp 1
	33095	449	COMPRESSOR SHUTDOWN - Current Overload Trip Circuit 2, Comp 1
	33127	451	COMPRESSOR SHUTDOWN - Current Overload Trip Circuit 3, Comp 1
131	33575	NA	COMPRESSOR SHUTDOWN - Comp 1 Low Motor Current
	33579	NA	COMPRESSOR SHUTDOWN - Comp 2 Low Motor Current
133	34083	NA	CIRCUIT SHUTDOWN - Motor Protector Trip Circuit 1[5]
	34087	466	COMP SHUTDOWN - Motor Protector Trip Circuit 1 Comp 1
	34119	468	COMP SHUTDOWN - Motor Protector Trip Circuit 2 Comp 1
135	34599	478	COMP SHUTDOWN - Motor Temp High Circuit 1, Comp 1
	34631	480	COMP SHUTDOWN - Motor Temp High Circuit 2, Comp 1
	34663	482	COMP SHUTDOWN - Motor Temp High Circuit 3, Comp 1
	34695	483	COMP SHUTDOWN - Motor Temp High Circuit 4, Comp 1
136	34855	734	COMP SHUTDOWN - Motor Temp Sensor Fault Circuit 1, Comp 1
	34887	736	COMP SHUTDOWN - Motor Temp Sensor Fault Circuit 2, Comp 1
	34919	738	COMP SHUTDOWN - Motor Temp Sensor Fault Circuit 3, Comp 1
	34951	739	COMP SHUTDOWN - Motor Temp Sensor Fault Circuit 4, Comp 1
139	35623	NA	COMPRESSOR SHUTDOWN - Overvoltage #1[3]
	35655	NA	COMPRESSOR SHUTDOWN - Overvoltage #2[3]
140	35879	NA	COMPRESSOR SHUTDOWN - Undervoltage #1[3]
	35911	NA	COMPRESSOR SHUTDOWN - Undervoltage #2[3]

1. This alarm is only available in AWV chillers.
2. The range (0=Normal, 1=In Alarm) only applies to individual alarm monitoring holding registers.
3. This alarm is only available in WWV chillers.
4. This alarm only available for chillers with optional Waterside Economizer.
5. This alarm is only available in AMZ chillers.

Alarm Index	Alarm Code	Individual Alarm Monitoring Holding Registers[2]	Description
142	36387	509	CIRCUIT SHUTDOWN - Condenser Pressure Sensor Circuit 1 Fault
	36391	509	COMP SHUTDOWN - Condenser Pressure Sensor Fault Circuit 1, Comp 1
	36419	511	CIRCUIT SHUTDOWN - Condenser Pressure Sensor Circuit 2 Fault
	36423	511	COMP SHUTDOWN - Condenser Pressure Sensor Fault Circuit 2, Comp 1
	36455	513	COMP SHUTDOWN - Condenser Pressure Sensor Fault Circuit 3, Comp 1
	36487	514	COMP SHUTDOWN - Condenser Pressure Sensor Fault Circuit 4, Comp 1
143	36611	NA	COMPRESSOR SHUTDOWN - Condenser Water Flow Loss
145	37155	517	CIRCUIT SHUTDOWN - Condenser Pressure High Trip Circuit 1 Fault
	37159	517	COMP SHUTDOWN - Condenser Pressure High Circuit 1, Comp 1
	37187	519	CIRCUIT SHUTDOWN - Condenser Pressure High Trip Circuit 2 Fault
	37191	519	COMP SHUTDOWN - Condenser Pressure High Circuit 2, Comp 1
	37223	521	COMP SHUTDOWN - Condenser Pressure High Circuit 3, Comp 1
	37255	522	COMP SHUTDOWN - Condenser Pressure High Circuit 4, Comp 1
147	37671	529	COMP SHUTDOWN - Discharge Temp Sensor Fault Circuit 1, Comp 1
147	37675	NA	COMP SHUTDOWN - Comp 2 Discharge Temperature Sensor Fault
	37703	531	COMP SHUTDOWN - Discharge Temp Sensor Fault Circuit 2, Comp 1
	37735	533	COMP SHUTDOWN - Discharge Temp Sensor Fault Circuit 3, Comp 1
	37767	534	COMP SHUTDOWN - Discharge Temp Sensor Fault Circuit 4, Comp 1
148	37927	535	COMP SHUTDOWN - Discharge Temp High Circuit 1, Comp 1
	37959	537	COMP SHUTDOWN - Discharge Temp High Circuit 2, Comp 1
	37991	539	COMP SHUTDOWN - Discharge Temp High Circuit 3, Comp 1
	38023	540	COMP SHUTDOWN - Discharge Temp High Circuit 4, Comp 1
149	38147	NA	UNIT SHUTDOWN - Condenser Entering Water Temperature Sensor Fault
150	38403	542	UNIT SHUTDOWN - Evaporator Water Flow Loss
151	38659	543	UNIT SHUTDOWN - Evaporator LWT or EWT Low (Freeze)
153	39203	545	CIRCUIT SHUTDOWN - Low Evaporator Pressure Trip Circuit 1 Fault
	39207	545	COMP SHUTDOWN - Evaporator Pressure Low Circuit 1, Comp 1
	39235	547	CIRCUIT SHUTDOWN - Low Evaporator Pressure Trip Circuit 2 Fault
	39239	547	COMP SHUTDOWN - Evaporator Pressure Low Circuit 2, Comp 1
	39271	549	COMP SHUTDOWN - Evaporator Pressure Low Circuit 3, Comp 1
	39303	550	COMP SHUTDOWN - Evaporator Pressure Low Circuit 4, Comp 1
155	39715	552	CIRCUIT SHUTDOWN - Evaporator Pressure Sensor Circuit 1 Fault
	39719	552	COMP SHUTDOWN - Evaporator Pressure Sensor Fault Circuit 1, Comp 1
	39747	554	CIRCUIT SHUTDOWN - Evaporator Pressure Sensor Circuit 2 Fault
	39751	554	COMP SHUTDOWN - Evaporator Pressure Sensor Fault Circuit 2, Comp 1
	39783	556	COMP SHUTDOWN - Evaporator Pressure Sensor Fault Circuit 3, Comp 1
	39815	557	COMP SHUTDOWN - Evaporator Pressure Sensor Fault Circuit 4, Comp 1
157	40231	NA	COMPRESSOR SHUTDOWN - Comp 1 Lift Pressure Low
	40235	NA	COMPRESSOR SHUTDOWN - Comp 2 Lift Pressure Low
159	40739	NA	COMPRESSOR SHUTDOWN - Liquid Line Temperature Sensor Fault
161	41251	NA	CIRCUIT SHUTDOWN - Number of Compressor Re-Starts Exceeded Circuit 1[5]
	41225	583	COMP LOCKOUT - Number of Allowed Re-Starts Exceeded Circuit 1, Comp 1
	41827	585	COMP LOCKOUT - Number of Allowed Re-Starts Exceeded Circuit 2, Comp 1
	41319	587	COMP LOCKOUT - Number of Allowed Re-Starts Exceeded Circuit 3, Comp 1
	41351	588	COMP LOCKOUT - Number of Allowed Re-Starts Exceeded Circuit 4, Comp 1
162	41475	589	UNIT SHUTDOWN - Evaporator Leaving Water Temp Sensor Fault
163	41731	755	Evaporator Entering Water Temperature Sensor Failure
166	42531	NA	CIRCUIT SHUTDOWN - Mechanical High Pressure Alarm Circuit 1[5]
	42535	601	COMP SHUTDOWN - Mechanical High Pressure Trip Circuit 1, Comp 1
	42567	603	COMP SHUTDOWN - Mechanical High Pressure Trip Circuit 2, Comp 1
	42599	605	COMP SHUTDOWN - Mechanical High Pressure Trip Circuit 3, Comp 1
	42631	606	COMP SHUTDOWN - Mechanical High Pressure Trip Circuit 4, Comp 1

1. This alarm is only available in AWV chillers.
2. The range (0=Normal, 1=In Alarm) only applies to individual alarm monitoring holding registers.
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5. This alarm is only available in AMZ chillers.

Alarm Index	Alarm Code	Individual Alarm Monitoring Holding Registers[2]	Description
172	44071	637	COMPRESSOR SHUTDOWN - Oil Delta Pressure High Circuit 1, Comp 1
	44103	639	COMPRESSOR SHUTDOWN - Oil Delta Pressure High Circuit 2, Comp 1
	44135	641	COMPRESSOR SHUTDOWN - Oil Delta Pressure High Circuit 3, Comp 1
	44167	642	COMPRESSOR SHUTDOWN - Oil Delta Pressure High Circuit 4, Comp 1
173	44327	643	COMP SHUTDOWN - Oil Feed Pressure Sensor Fault Circuit 1, Comp 1
	44359	645	COMP SHUTDOWN - Oil Feed Pressure Sensor Fault Circuit 2, Comp 1
	44391	647	COMP SHUTDOWN - Oil Feed Pressure Sensor Fault Circuit 3, Comp 1
	44423	648	COMP SHUTDOWN - Oil Feed Pressure Sensor Fault Circuit 4, Comp 1
176	45059	661	SHUTDOWN - Phase Voltage Protection (Unit)
	45091	751	SHUTDOWN - Phase Voltage Protection Circuit 1
	45123	752	SHUTDOWN - Phase Voltage Protection Circuit 2
	45155	753	SHUTDOWN - Phase Voltage Protection Circuit 3
	45187	754	SHUTDOWN - Phase Voltage Protection Circuit 4
177	45351	662	COMP SHUTDOWN - Starter Fault Compressor Circuit 1, Comp 1
	45383	664	COMP SHUTDOWN - Starter Fault Compressor Circuit 2, Comp 1
	45415	666	COMP SHUTDOWN - Starter Fault Compressor Circuit 3, Comp 1
	45447	667	COMP SHUTDOWN - Starter Fault Compressor Circuit 4, Comp 1
183	46883	NA	CIRCUIT SHUTDOWN - Suction Temperature Sensor Fault Circuit 1[5]
	46887	698	COMP SHUTDOWN - Suction Temp Sensor Fault Circuit 1, Comp 1
	46919	700	COMP SHUTDOWN - Suction Temp Sensor Fault Circuit 2, Comp 1
	46951	702	COMP SHUTDOWN - Suction Temp Sensor Fault Circuit 3, Comp 1
	46983	703	COMP SHUTDOWN - Suction Temp Sensor Fault Circuit 4, Comp 1
187	47911	717	COMP SHUTDOWN - Mechanical Low Pressure Trip Circuit 1, Comp 1
	47943	719	COMP SHUTDOWN - Mechanical Low Pressure Trip Circuit 2, Comp 1
	47975	721	COMP SHUTDOWN - Mechanical Low Pressure Trip Circuit 3, Comp 1
	48007	722	COMP SHUTDOWN - Mechanical Low Pressure Trip Circuit 4, Comp 1
188	48131	746	Controller Board Offline - Unit
	48163	723	Controller Board Offline Circuit 1 (Circuit Number = Unit Controller Board Number)
	48195	724	Controller Board Offline Circuit 2 (Circuit Number = Unit Controller Board Number)
	48227	725	Controller Board Offline Circuit 3 (Circuit Number = Unit Controller Board Number)
	48259	726	Controller Board Offline Circuit 4 (Circuit Number = Unit Controller Board Number)
	48163	NA	Compressor Controller Communication Failed - Circuit #1
	48195	NA	Compressor Controller Communication Failed - Circuit #2
	48163	NA	EXV Controller Communication Failed - Circuit #1
	48195	NA	EXV Controller Communication Failed - Circuit #2
189	48419	747	COMP SHUTDOWN - No Pressure Change After Start Circuit 1
	48451	748	COMP SHUTDOWN - No Pressure Change After Start Circuit 2
	48483	749	COMP SHUTDOWN - No Pressure Change After Start Circuit 3
	48515	750	COMP SHUTDOWN - No Pressure Change After Start Circuit 4
190	48675	711	COMP SHUTDOWN - No Pressure At Startup Circuit 1
	48707	712	COMP SHUTDOWN - No Pressure At Startup Circuit 2
	48739	713	COMP SHUTDOWN - No Pressure At Startup Circuit 3
	48771	714	COMP SHUTDOWN - No Pressure At Startup Circuit 4
191	48935	756	COMP SHUTDOWN - Slide Position Sensor Fault Circuit 1, Comp 1
	48967	758	COMP SHUTDOWN - Slide Position Sensor Fault Circuit 2, Comp 1
	48999	760	COMP SHUTDOWN - Slide Position Sensor Fault Circuit 3, Comp 1
	49031	761	COMP SHUTDOWN - Slide Position Sensor Fault Circuit 4, Comp 1
192	49155	798	UNIT STOP - Emergency Stop Alarm
193	49411	799	UNIT STOP - Evaporator Water Temperature Inverted
194	49667	800	UNIT STOP - External Alarm
195	49923	590	Evaporator Leaving Water Temperature 1 Sensor Fault
196	50179	591	Evaporator Leaving Water Temperature 2 Sensor Fault
197	50435	592	CIRCUIT SHUTDOWN - Evaporator 1 Freeze Protection
198	50691	593	CIRCUIT SHUTDOWN - Evaporator 2 Freeze Protection

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5. This alarm is only available in AMZ chillers.

Alarm Index	Alarm Code	Individual Alarm Monitoring Holding Registers[2]	Description
199	50983	762	COMPRESSOR SHUTDOWN - COMPRESSOR VFD Fault Circuit 1, Comp 1
	51015	764	COMPRESSOR SHUTDOWN - COMPRESSOR VFD Fault Circuit 2, Comp 1
	51047	766	COMPRESSOR SHUTDOWN - COMPRESSOR VFD Fault Circuit 3, Comp 1
200	51239	768	COMP SHUTDOWN - COMPRESSOR VFD Over Heat Fault Circuit 1, Comp 1
	51271	770	COMP SHUTDOWN - COMPRESSOR VFD Over Heat Fault Circuit 2, Comp 1
	51303	772	COMP SHUTDOWN - COMPRESSOR VFD Over Heat Fault Circuit 3, Comp 1
201	51495	774	COMP SHUTDOWN - COM ERROR With COMPRESSOR VFD Circuit 1, Comp 1
	51527	776	COMP SHUTDOWN - COM ERROR With COMPRESSOR VFD Circuit 2, Comp 1
	51559	778	COMP SHUTDOWN - COM ERROR With COMPRESSOR VFD Circuit 3, Comp 1
202	51751	808	COMP SHUTDOWN - Low Discharge Superheat Circuit 1, Comp 1
	51783	810	COMP SHUTDOWN - Low Discharge Superheat Circuit 2, Comp 1
	51815	812	COMP SHUTDOWN - Low Discharge Superheat Circuit 3, Comp 1
228	58371	816	UNIT STOP - PVM GFP Fault
	58403	817	CIRCUIT SHUTDOWN - PVM GFP Circuit 1 Fault
	58435	818	CIRCUIT SHUTDOWN - PVM GFP Circuit 2 Fault
230	58915	822	COMP SHUTDOWN - Refrig Charge Circuit 1
	58947	823	COMP SHUTDOWN - Refrig Charge Circuit 2
	58979	824	COMP SHUTDOWN - Refrig Charge Circuit 3
232	59427	NA	CIRCUIT SHUTDOWN - VFD Control Card High Temperature #1[3]
	59459	NA	CIRCUIT SHUTDOWN - VFD Control Card High Temperature #2[3]
233	59651	NA	UNIT SHUTDOWN - Condenser LWT or EWT Low (Freeze)[3]
234	59939	NA	CIRCUIT SHUTDOWN - Motor Earth Fault #1[3]
	59971	NA	CIRCUIT SHUTDOWN - Motor Earth Fault #2[3]
235	60195	NA	CIRCUIT SHUTDOWN - Motor PVM Fault #1[3]
	60227	NA	CIRCUIT SHUTDOWN - Motor PVM Fault #2[3]
236	60451	NA	CIRCUIT SHUTDOWN - Mains PVM Fault #1[3]
	60483	NA	CIRCUIT SHUTDOWN - Mains PVM Fault #2[3]
239	61187	NA	Water Side Economizer Valve Fault[4]
240	61477	673	Circuit 1, Compressor 1 Oil Feed Loss
	61509	675	Circuit 2, Compressor 1 Oil Feed Loss

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Appendix A: ASCII Conversion Table

Converting Register Values to ASCII Characters

Table 13 lists the ASCII characters and their decimal and hexadecimal numbers. The Chiller Unit Controller does not support the characters in boldface type. Also, non-printing characters, with the exception of the (Space) character, are not listed in this table and are not supported. Characters not supported are translated to a space.

Table 13: ASCII Conversion Table

Char (Space)	Decimal	Hexadecimal	Char	Decimal	Hexadecimal	Char	Decimal	Hexadecimal
	32	0x20	@	64	0x40	`	96	0x60
!	33	0x21	A	65	0x41	a	97	0x61
“	**34**	**0x22**	**B**	66	0x42	b	98	0x62
#	35	0x23	C	67	0x43	c	99	0x63
$	**36**	**0x24**	D	68	0x44	d	100	0x64
%	37	0x25	E	69	0x45	e	101	0x65
&	38	0x26	F	70	0x46	f	102	0x66
‘	39	0x27	G	71	0x47	g	103	0x67
(	40	0x28	H	72	0x48	h	104	0x68
)	41	0x29	I	73	0x49	I	105	0x69
*	42	0x2a	J	74	0x4a	j	106	0x6a
+	43	0x2b	K	75	0x4b	k	107	0x6b
‘	44	0x2c	L	76	0x4c	l	108	0x6c
-	45	0x2d	M	77	0x4d	m	109	0x6d
.	46	0x2e	N	78	0x4e	n	110	0x6e
/	47	0x2f	O	79	0x4f	o	111	0x6f
0	48	0x30	P	80	0x50	p	112	0x70
1	49	0x31	Q	81	0x51	q	113	0x71
2	50	0x32	R	82	0x52	r	114	0x72
3	51	0x33	S	83	0x53	s	115	0x73
4	52	0x34	T	84	0x54	t	116	0x74
5	53	0x35	U	85	0x55	u	117	0x75
6	54	0x36	V	86	0x56	v	118	0x76
7	55	0x37	W	87	0x57	w	119	0x77
8	56	0x38	X	88	0x58	x	120	0x78
9	57	0x39	Y	89	0x59	y	121	0x79
:	58	0x3a	Z	90	0x5a	z	122	0x7a
;	59	0x3b	[	91	0x5b	{	123	0x7b
<	60	0x3c	\	92	0x5c	|	124	0x7c
=	61	0x3d	]	93	0x5d	}	125	0x7d
>	62	0x3e	^	94	0x5e	~	126	0x7e
?	63	0x3f	_	95	0x5f			

Appendix B: Unit Controller Keypad Menus

Use Table 14 to find and access network parameters via the Chiller Unit Controller keypad/display. Data points are listed alphabetically along with the path(s) to the corresponding keypad menu screen.

Table 14: Chiller Unit Controller Keypad Menu Path

Data Point	Keypad Menu Path
Active Capacity Limit (Output)	No Keypad Equivalent
Active Setpoint	Main Menu_Active Setpt=
Actual Capacity	Main Menu_Unit Capacity=
Alarm Digital Output	No Keypad Equivalent
Application Version	Main Menu_About Chiller_Unit S/N=
Chiller Capacity Limited	No Keypad Equivalent
Chiller Current	Main Menu_View/Set Unit_Power Conservation_Unit Current=
Chiller Enable Output	Main Menu_View/Set Unit_Status/Settings_Netwrk En SP=
Chiller Enable Setpoint	No Keypad Equivalent
Chiller Local/Network	Main Menu_View/Set Unit_Status/Settings_Control Source=
Chiller Location	No Keypad Equivalent
Chiller Mode Output	Main Menu_View/Set Unit_Status/Settings_Netwrk Mode SP=
Chiller Mode Setpoint - Network	No Keypad Equivalent
Chiller Model	Main Menu_About Chiller_Model #=
Chiller On/Off	No Keypad Equivalent
Chiller Status	No Keypad Equivalent
Comp Shutdown - Refrig Charge	No Keypad Equivalent
Clear Alarm - Network	No Keypad Equivalent
Compressor Current	Main Menu_View/Set Circuit_Circuit #1_Comp 1_Current= OR
	Main Menu_View/Set Circuit_Circuit #2_Comp 1_Current= OR
	Main Menu_View/Set Circuit_Circuit #3_Comp 1_Current=
Compressor Discharge Refrigerant Temperature	Main Menu_View/Set Circuit_Circuit #1_Data_Discharge Temp= OR
	Main Menu_View/Set Circuit_Circuit #2_Data_Discharge Temp= OR
	Main Menu_View/Set Circuit_Circuit #3_Data_Discharge Temp= OR
	Main Menu_View/Set Circuit_Circuit #4_Data_Discharge Temp= OR
Compressor Percent RLA	Main Menu_View/Set Circuit_Circuit #1_Comp 1_Percent RLA= OR
	Main Menu_View/Set Circuit_Circuit #2_Comp 1_Percent RLA= OR
	Main Menu_View/Set Circuit_Circuit #3_Comp 1_Percent RLA=
Compressor Power	No Keypad Equivalent
Compressor Run Hours	Main Menu_View/Set Circuit_Circuit #1_Comp 1_Run Hours= OR
	Main Menu_View/Set Circuit_ Circuit #1_Comp 2_Run Hours= OR
	Main Menu_View/Set Circuit_ Circuit #1_Comp 3_Run Hours= OR
	Main Menu_View/Set Circuit_ Circuit #2_Comp 1_Run Hours= OR
	Main Menu_View/Set Circuit_ Circuit #2_Comp 2_Run Hours= OR
	Main Menu_View/Set Circuit_ Circuit #2_Comp 3_Run Hours= OR
	Main Menu_View/Set Circuit_ Circuit #3_Comp 1_Run Hours= OR
	Main Menu_View/Set Circuit_ Circuit #4_Comp 1_Run Hours=
Compressor Starts	Main Menu_View/Set Circuit_ Circuit #1_Comp 1_No. Of Starts= OR
	Main Menu_View/Set Circuit_ Circuit #1_Comp 2_No. Of Starts= OR
	Main Menu_View/Set Circuit_ Circuit #1_Comp 3_No. Of Starts= OR
	Main Menu_View/Set Circuit_ Circuit #2_Comp 1_No. Of Starts= OR
	Main Menu_View/Set Circuit_ Circuit #2_Comp 2_No. Of Starts= OR
	Main Menu_View/Set Circuit_ Circuit #2_Comp 3_No. Of Starts= OR
	Main Menu_View/Set Circuit_ Circuit #3_Comp 1_No. Of Starts= OR
	Main Menu_View/Set Circuit_ Circuit #4_Comp 1_No. Of Starts=
Compressor Suction Refrigerant Temperature	Main Menu_View/Set Circuit_Circuit #1_Data_Suction Temp= OR
	Main Menu_View/Set Circuit_Circuit #2_Data_Suction Temp= OR
	Main Menu_View/Set Circuit_Circuit #3_Data_Suction Temp= OR
	Main Menu_View/Set Circuit_Circuit #4_Data_Suction Temp=
Compressor Voltage	No Keypad Equivalent

Data Point	Keypad Menu Path
Condenser Refrigerant Pressure	Main Menu_View/Set Circuit_Circuit #1_Data_Cond Pressure= OR
	Main Menu_View/Set Circuit_Circuit #2_Data_Cond Pressure = OR
	Main Menu_View/Set Circuit_Circuit #3_Data_Cond Pressure = OR
	Main Menu_View/Set Circuit_Circuit #4_Data_Cond Pressure =
Condenser Saturated Refrigerant Temperature	Main Menu_View/Set Circuit_Circuit #1_Data_Cond Sat Temp= OR
	Main Menu_View/Set Circuit_Circuit #2_ Data_Cond Sat Temp = OR
	Main Menu_View/Set Circuit_Circuit #3_ Data_Cond Sat Temp = OR
	Main Menu_View/Set Circuit_Circuit #4_ Data_Cond Sat Temp =
Cool Setpoint - Network	Main Menu_View/Set Unit_Status/Settings_Netwrk Cool SP=
Current Date and Time	(Chiller Date & Time) Main Menu_View/Set Unit_Date/TimeSchedules_Actual Time= AND
	Main Menu_View/Set Unit_Date/TimeSchedules_Actual Date=
Evaporator Entering Fluid Temperature	Main Menu_Evaporator EWT=
Evaporator Flow Switch Status	No Keypad Equivalent
Evaporator Leaving Fluid Temperature	Main Menu_Evaporator LWT=
Evaporator LWT #n	Main Menu_View/Set Circuit_Circuit #1_Status/Settings_Evap Leaving Water Temp= OR
	Main Menu_View/Set Circuit_Circuit #2_Status/Settings_Evap Leaving Water Temp= OR
	Main Menu_View/Set Circuit_Circuit #3_Status/Settings_Evap Leaving Water Temp=
Evaporator Pump Run Hours	Main Menu_View/Set Unit_Status/Settings_Evap Pmp 1 Hrs= AND
	Main Menu_View/Set Unit_Status/Settings_Evap Pmp 2 Hrs=
Evaporator Pump Status	No Keypad Equivalent
Evaporator Refrigerant Pressure	Main Menu_View/Set Circuit_Circuit #1_Data_Evap Pressure= AND
	Main Menu_View/Set/Circuit_Circuit #2_Data_Evap Pressure= AND
	Main Menu_View/Set/Circuit_Circuit #3_Data_Evap Pressure= AND
	Main Menu_View/Set/Circuit_Circuit #4_Data_Evap Pressure= AND
Evaporator Saturated Refrigerant Temperature	Main Menu_View/Set Circuit_Circuit #1_Data_Evap Sat Temp= AND
	Main Menu_View/Set Circuit _Circuit #2_Data_Evap Sat Temp= AND
	Main Menu_View/Set Circuit _Circuit #3_Data_Evap Sat Temp= AND
	Main Menu_View/Set Circuit _Circuit #4_Data_Evap Sat Temp=
Ice Setpoint - Network	Main Menu_View/Set Unit_Status/Settings_Netwrk Ice SP=
Oil Feed Pressure	No Keypad Equivalent
Outdoor Air Temperature	Main Menu_View/Set Unit_Temperatures_Outside Air=
Run Enabled	No Keypad Equivalent
Software Identification	No Keypad Equivalent
Total Kilowatts	Main Menu_View/Set Unit kW Power_Conservation_Total kW
Units	Main Menu_View/Set Unit_Modbus Setup_Unit Support=
VFD Temp	No Keypad Equivalent

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