



Sales and Engineering Data Sheet

ED 15063-6

Group: **Controls**

Part Number: **ED 15063**

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MicroTech® II Chiller Unit Controller Protocol Information

Modbus® Networks

WSC	Water-Cooled Centrifugal, Single-Compressor
WDC	Water-Cooled Centrifugal, Dual-Compressor
WPV	Water-Cooled Centrifugal, Single-Compressor
HSC	Water-Cooled Single-Compressor Centrifugal, Heat Recovery
HDC	Water-Cooled Dual-Compressor Centrifugal, Heat Recovery
TSC	Water-Cooled Single-Compressor Centrifugal, Templifier®
WMC	Water-Cooled Centrifugal, Magnetic Bearing
WCC	Water-Cooled Centrifugal, Dual Compressor Series Counterflow
AGZ	Air-Cooled Global Scroll
ACZ	Air-Cooled Scroll Condensing Unit
WGZ	Water-Cooled Global Scroll
AGS	Air-Cooled Global Screw
WGS	Water-Cooled Global Screw
TGZ	Templifier® Water Heater

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Revision History

ED 15063-0	May 2003	Preliminary release Added points for Solid State Starter – Current, Voltage, Power and Power Factor. Corrected some incorrect register listings. Changed doc to have only Holding Registers and Coils.
ED 15063-1	May 2005	Added WGS and WMC data. Added WMC, HSC HDC, and TSC to front page and Chiller Model table
ED 15063-2	Nov 2005	Added WCC to front page and Chiller Model table. Corrected Modbus Alarms table. Added Compressor Current, Compressor Power and Compressor Voltage to the Compressor Select table
ED 15063-3	April 2009	Added TGZ model to all applicable tables. Removed reference to OITS panel and added reference to unit keypad details in the "Set up unit for network control" section. Added Index column to Comprehensive Data Point table; corrected Chiller Status holding register in table and also in detailed data section. Removed reference to Chiller On/Off--use and Run Enabled instead
ED 15063-5	Jan 2013	Added individual compressor data points
ED 15063-6	Oct 2016	Extensive formatting and branding updates. Clarified WMC-only data points. Added Compressor 2 VFD Speed and Compressor Status to data tables

Software Revision

Keypad Menu Path Main Menu_About Chiller_App Version=

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 all versions of the standard MicroTech II 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.

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=

Notice

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Limited Warranty

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

Reference Documents

Company	Number	Title	Source
Daikin Applied	IM 743	MicroTech II Modbus Communication Module Installation 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
Daikin Applied	IOMM ACZ/AGZ	MicroTech II Air-Cooled Condensing Unit Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	OMM ACZ	MicroTech II Air-Cooled Condensing Unit Operation and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOMM AGZ	MicroTech II Air-Cooled Scroll Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	OMM WGZ	MicroTech II Water-Cooled Scroll Chiller Operation and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOMM WPV	MicroTech II Centrifugal Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOMM WSCWDC	MicroTech II Chiller Unit Controller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	OM AGS	MicroTech II Air-Cooled Screw Chiller Operating Manual	www.DaikinApplied.com
Daikin Applied	OM CentrifMicro II	MicroTech II Unit Controller for Centrifugal Chillers and Templifiers Operation Manual	www.DaikinApplied.com
Daikin Applied	OM WGS	MicroTech II Water-Cooled Screw Chiller Operation Manual	www.DaikinApplied.com
Daikin Applied	IOM WMC	MicroTech II Magnetic Bearing Compressor Chiller Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	IOMM TSC	MicroTech II Templifier Single Compressor Centrifugal Installation, Operation, and Maintenance Manual	www.DaikinApplied.com
Daikin Applied	OMM TGZ	MicroTech II Templifier TGZ Heat Recovery Water Heaters Operation Manual	www.DaikinApplied.com

This document provides the information needed to integrate a MicroTech® II Chiller Unit Controller from Daikin Applied into your Building Automation System (BAS). It includes all necessary Modbus® registers and corresponding MicroTech II Chiller Unit Controller data points.

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

Chiller Models

The following table lists the model designators of Daikin Applied chiller units supported in this document along with the corresponding description.

Unit Model Number	Description
WSC	Water-Cooled Centrifugal, Single-Compressor
WDC	Water-Cooled Centrifugal, Dual-Compressor
WPV	Water-Cooled Centrifugal, Packaged Unit
HSC	Water-Cooled Single-Compressor Centrifugal, Heat Recovery
HDC	Water-Cooled Dual-Compressor Centrifugal, Heat Recovery
TSC	Water-Cooled Single-Compressor Centrifugal, Templifier
WMC	Water-Cooled Centrifugal, Magnetic Bearing
WCC	Water-Cooled Centrifugal, Dual Compressor Series Counterflow
AGZ-A, B, C	Air-Cooled Global Scroll
ACZ-A, B	Air-Cooled Scroll, Condensing Unit
WGZ	Water-Cooled Global Scroll
AGS-A, B, C, D	Air-Cooled Global Screw
WGS	Water-Cooled Global Screw
TGZ	Templifier Water Heater

Unit Controller Data Points

The MicroTech II Chiller Unit Controller contains data points or unit variables that are accessible from three different user interfaces: the unit controller keypad/display, the Operator Interface Touch Screen (OITS), 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 A: Keypad Menu Paths](#) or the respective chiller operation manual, available on www.DaikinApplied.com, for keypad/display details.

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

Modbus Networks

Compatibility

The MicroTech II Chiller Unit Controller can be configured in an interoperable Modbus network. The controller must have the corresponding Modbus Communication Module installed. See MicroTech II Modbus Communication Module Installation Manual, IM 743 (www.DaikinApplied.com).

The MicroTech II 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 an exception function code and the response data field contains an exception code.

Chiller unit 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 MicroTech II Chiller Unit Controller uses the RTU mode only.**

Table 1 shows the Modbus register mapping and character sets for each of the four data types. Table 2 displays supported function codes and Table 3 describes the valid error codes. The [Comprehensive Data Point Tables](#) section details how the MicroTech II Chiller Unit Controller implements the Modbus data structure.

Table 1: Modbus Data Types

Data Type	Description	Format	Type	Address	
Coil	Discrete (Binary) Outputs	1-Bit Boolean	R/W	0x	0001-09999
Discrete Input ¹	Discrete (Binary) Inputs	1-Bit Boolean	R	1x	10001-19999
Input Register ¹	Analog Inputs	16-Bit Integer	R	3x	30001-39999
Holding Register	Analog Outputs	16-Bit Integer	R/W	4x	40001-49999

1. The MicroTech II Chiller Unit Controller does not use these data types.

The MicroTech II Chiller Unit Controller uses the following Modbus data structure: 8 data bits, 1 or 2 stop bits, and no parity bit. It uses data transmission rates from 1200 to 19200 bps.

Valid Function Codes

The MicroTech II Chiller Unit Controller supports eight public function codes as described in [Table 2](#).

Table 2: Valid Function Codes

Function Code	Description	Definition
01 (0x01)	Read Coils	This function code reads status from 1 to 2000 contiguous coils in a remote device.
02 (0x02)	Read Discrete Inputs	This function code reads status from 1 to 2000 contiguous discrete inputs in a remote device.
03 (0x03)	Read Holding Registers	This function code reads the contents of a contiguous block of holding registers in a remote device.
04 (0x04)	Read Input Registers	This function code reads from 1 to approx. 125 contiguous input registers in a remote device.
05 (0x05)	Write Single Coil	This function code writes a single output to either ON or OFF in a remote device.
06 (0x06)	Write Single Register	This function code writes a single holding register in a remote device.
15 (0x0F)	Write Multiple Coils	This function code forces each coil in a sequence of coils to either ON or OFF in a remote device.
16 (0x10)	Write Multiple Registers	This function code writes a block of contiguous registers (1 to approx. 120 registers) in a remote device.

Valid Error Codes

The MicroTech II Chiller Unit Controller supports three error or exception codes. See [Table 3](#) for descriptions.

Table 3: Valid Error Codes

Error Code	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).

Modbus Data Points

Each data point accessible from a Modbus network is described in [Table 5](#). The table includes the index value, data type, default/range values, and a description of each point. This section defines the Modbus functions supported by the MicroTech II Chiller Unit Controller and that are included in [Table 5](#). Alarm points are described separately in [Table 6](#)

Index

There can be as many as 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. The index 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 is addressed using index 0 in the PDU.

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 an Input Register when it refers to read-only data (R) and as a Holding Register when it refers to read-write data (W).

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, a range of values is given. If the property value is an enumerated set, all enumerated values and corresponding meaning are given.

Description

The functional purpose of the data point, along with any interactions with other data points and specific chiller models, are defined.

Example Data Point: Chiller Enable

The following is an example of the information provided in [Table 5](#). Chiller Enable is an output data point that indicates the current state of the chiller. The OFF state is represented by 0, and the ON state is represented by 1.

Chiller Enable				
Index	Read/Write Access	Data Type	Range/Default (in Units)	Description
2	W	Coil	0 = Request Chiller Off 1 = Request Chiller On Default: 0 = Request Chiller Off	Enables (starts) the chiller to run if the operating conditions are satisfied, or disables (stops) the chiller from running. When this property is read, it indicates the current operating state of the chiller.

Configuring the Unit Controller

The MicroTech II Chiller Unit Controller and the Modbus Communication Module ship with default parameter values. Default values may be changed with the unit keypad, OITS panel, or via the network. Refer to the appropriate MicroTech II Unit Controller Operation Manual for default values and keypad operating instructions, and the Modbus Communication Module Installation Manual, IM 743, for details regarding network parameters available via the unit controller (www.DaikinApplied.com).

Network Setup

The following section explains how to set the network protocol from the MicroTech Chiller Unit Controller user interface. The steps vary somewhat depending on the type of chiller. Refer to the appropriate MicroTech II Unit Controller IOM for keypad display/touch screen menu operation details (www.DaikinApplied.com).

Once the BAS setup process is complete and communication has been established between the MicroTech II Unit Controller and the network, it is then possible to monitor and control unit operation. Some of the important functions include:

- Configure and monitor data points
- View and clear alarms
- Turn the unit on or off
- Operate the unit safely

Password Menu Screens

Model	AGZ-A	ACZ-A	AGZ-B AGZ-C	ACZ-B	AGS-A AGS-B	AGS-C	AGS-D	WGS	WMC WSC WDC WCC WPV HSC HDC TSC	WGZ/TGZ
Menu Screen	12	6	9	7	12	16	17	15	14	10
Password	2001	2001	2001	2001	8945	8453	8745	8745	2001	2001

Note that chiller models AGZ-A/B, ACZ-A/B, WGZ, and TGZ have a single unit controller. Models AGS-B/C and WGS have one unit controller with multiple circuit controllers. Unit settings for AGS-B/C and WGS models are adjusted from the unit controller.

Network Setup for Centrifugal Chillers

1. Disable the chiller. The chiller should not be operating while performing this procedure.
2. At the chiller touch screen interface panel:
 - a. Set the Protocol default to Modbus in the applicable menu screen.
 - b. Enter the password of "2001."
 - c. In the SETPOINTS/MODE screen, change the #3 setpoint, Control Source, to BAS.
3. Re-enable the chiller.
4. Verify that the chiller is operational from the BAS interface.

Network Setup for all other Chillers

1. Disable the chiller. The chiller should not be operating while performing this procedure.
2. Set the Protocol default to Modbus in the applicable menu screen.
 - a. Use the table below to determine the operator password for the specific chiller model.
 - b. Enter the password.
3. Adjust the Set/Unit Setpoint screen 1 to Source = Network.
4. Re-enable the chiller.
5. Verify that the chiller is operational from the BAS.

Network Considerations

The following section provides a summary of Modbus properties available from the MicroTech II Chiller Unit

Controller to the BAS. [Table 4](#) shows the data points supported by each chiller model.

Table 4: Data Points for Chiller Models

Data Point	WSC WMC	WDC WCC	WPV HSC TSC	AGZ	ACZ	WGZ TGZ	AGS	WGS
Active Alarms	X			X	X	X	X	X
Active Setpoint	X			X		X	X	X
Actual Capacity	X			X	X	X	X	X
Actual RPM	X ⁵							
Alarm Digital Output	X			X	X	X	X	X
Capacity Limit Output	X			X ¹	X ¹	X	X	X
Capacity Limit Setpoint	X			X ¹	X	X	X	X
Cavity Temperature	X ⁵							
Chiller Enable	X			X	X	X	X	X
Chiller Limited	X			X ¹	X ¹	X	X	X
Chiller Local/Remote	X			X	X	X	X	X
Chiller Mode Output	X			X	X	X	X	X
Chiller Mode Setpoint	X			X	X	X		X
Chiller Power ⁶	X							
Chiller Status	X			X	X	X	X	X
Compressor 2 Active Capacity Limit	X ⁵							
Compressor 2 VFD Speed	X ⁵							
Compressor Current ³	X							X
Compressor Discharge Temperature	X						X	X
Compressor Percent RLA	X							
Compressor Power ³	X							X
Compressor Run Hours	X			X	X	X	X	X
Compressor Select	X			X	X	X	X	X
Compressor Status	X ⁵							
Compressor Starts	X			X	X	X	X	X
Compressor Suction Line Temperature	X			X				X
Compressor Voltage ³	X							X
Condenser Entering Water Temperature	X					X		X
Condenser Flow Switch Status	X							X
Condenser Leaving Water Temperature	X					X		X
Condenser Pump Run Hours	X							
Condenser Refrigerant Pressure	X			X	X	X	X	X
Condenser Saturated Refrigerant Temperature	X			X	X	X	X	X
Condenser Water Flow Rate	X							
Condenser Water Pump Status	X							X
Cool Setpoint	X			X		X	X	X
Design RPM	X ⁵							
Evaporator Entering Water Temperature	X			X		X		X
Evaporator Flow Switch Status	X			X	X	X	X	X
Evaporator Leaving Water Temperature for Compressor	X							
Evaporator Leaving Water Temperature for Unit	X			X	X	X	X	X
Evaporator Pump Run Hours	X							
Evaporator Refrigerant Pressure	X			X	X	X	X	X
Evaporator Saturated Refrigerant Temperature	X			X	X	X	X	X
Evaporator Water Flow Rate	X							
Evaporator Water Pump Status	X			X		X	X	X
Heat Recovery Entering Water Temperature	X							

1. Dual circuit chillers only
2. Not available on WMC chiller
3. Optional Solid State Starter or Magnetic Bearing compressor required. Voltage, Power and Current are per compressor
4. Available on AGS A and B vintage chillers only
5. Available on WMC chiller only
6. Optional Solid State Starter or Magniteic Bearing compressor required.

Data Point	WSC WDC WPV WMC WCC HSC TSC HDC	AGZ	ACZ	WGZ TGZ	AGS	WGS
Heat Recovery Leaving Water Temperature	X					
Heat Setpoint	X					
Ice Setpoint	X	X		X	X	X
IGV Percentage Open	X ⁵					
Inverter Temperature	X ⁵					
Liquid Line Refrigerant Pressure					X ⁴	
Liquid Line Refrigerant Temperature	X			X	X ⁴	
Maximum RPM	X ⁵					
Minimum RPM	X ⁵					
Oil Feed Pressure ²	X					
Oil Feed Temperature ²	X					
Oil Sump Pressure ²	X					
Oil Sump Temperature ²	X					
Outdoor Air Temperature		X	X	X	X	
Pump Select	X					
Run Enabled	X	X	X	X	X	X

1. Dual circuit chillers only
2. Not available on WMC chiller
3. Optional Solid State Starter or Magnetic Bearing compressor required. Voltage, Power and Current are per compressor
4. Available on AGS A and B vintage chillers only
5. Available on WMC chiller only
6. Optional Solid State Starter or Magniteic Bearing compressor required.

Register Mapping

This section details all data points available from the MicroTech II Chiller Unit Controller to the BAS via the Modbus network. The following tables include the index number, data type, read/write capability, ranges and default

values, and description of each point. [Table 5](#) includes general network parameters and [Table 6](#) includes Modbus alarm points.

Table 5: Chiller Data Points

Chiller Data Point	Index	Data Type ¹		Read/Write Access	Range/Default (in Units)	Description
Active Setpoint	40003	Holding Register	A 2	R	-40° - 199°F x 10 -40° - 93°C x 10 Default: NA	The current setpoint used to control the temperature of the Leaving Chilled Water or Leaving Hot Water. Based on the operating mode of the chiller, this value is derived from the Cool Setpoint, Heat Setpoint, or Ice Setpoint. The default mode is Cooling and is used unless changed by Chiller Mode Setpoint.
Actual Capacity	40011	Holding Register	A 10	R	0 - 160% x 10 Default: NA	The percent of capacity the chiller is currently producing. It may be more or less than the nominal capacity of the chiller. For positive displacement chillers (those using screw and scroll compressors) this is a percentage of total compressors running. For centrifugal chillers, this data point represents the combined percent RLA of the compressors.
Actual RPM				R	0 - 32,678 RPM Default: NA	The actual speed of the compressor. Available on WMC chiller only.
Compressor 1	40247	Holding Register	I 18			
Compressor 2	40251	Holding Register	I 22			
Capacity Limit Output	40043	Holding Register	A 42	R	0 - 160% x 10 Default: NA	Measures the ratio of operating capacity to full capacity of the chiller. Indicates the current value of the Capacity Limit Setpoint.
Capacity Limit Setpoint	40004	Holding Register	A 3	W	0 - 160% x 10 Default: 100%	Sets the chiller's maximum operating capacity as a percentage of full capacity. This level may be adjusted, but not above the specified limit. The input network variable sets the operating value (input). Refer to the appropriate MicroTech II Chiller Operation Manual for suitable variable values.
Cavity Temperature				R	-4° - 212°F x 10 -20° - 100°C x 10 Default: NA	The current temperature of the compressor's motor starter cavity. Available on WMC chiller only.
Compressor 1	40086	Holding Register	A 85			
Compressor 2	40106	Holding Register	A 105			
Chiller Enable	2	Coil	D 1	W	0 = Request Chiller Off 1 = Request Chiller On Default: 0 = Request Chiller Off	Enables (starts) the chiller to run if the operating conditions are satisfied, or disables (stops) the chiller from running. When this property is read, it indicates the current operating state of the chiller.
Chiller Limited	7	Coil	D 6	R	0 = Not Limited (Inactive) 1 = Limited (Active) Default: NA	Indicates the main running mode and states of the chiller, and whether conditions exist that prevent the chiller from reaching the Leaving Water Temperature setpoint.
Chiller Local/Remote	6	Coil	D 5	R	0 = Remote 1 = Local Default: NA	Indicates whether the chiller is in local control or allowed to be controlled remotely over the network.
Chiller Mode Output	40148	Holding Register	I 19	R	1 = Ice 2 = Cool 3 = Heat Default: 2 = Cool	The current operating mode of the chiller.
Chiller Mode Setpoint	40146	Holding Register	I 17	W	1 = Ice 2 = Cool 3 = Heat Default: 2 = Cool	Sets the mode of operation for the chiller. Refer to the appropriate MicroTech II Chiller Operating Manual for suitable variable values.
Chiller Power	40245	Holding Register	I 116	R	0 - 1,000 kW Default: NA	Total kilowatts of all compressors. Available on centrifugal chillers only. Optional Solid State Starter or Magnetic Bearing compressor required.

1. D = Coil or Discrete (Binary) Output, I = Input Register/Analog Input, A = Holding Register/Analog Output. Numeric value indicates the Modbus (input) point address. See [Table 1](#) for additional information.

Chiller Data Point	Index	Data Type ¹	Read/Write Access	Range/Default (in Units)	Description	
Chiller Status	40147	Holding Register	I 18	R	Models: WSC, WDC, WPV, WMC, WCC, HSC, TSC, HDC 0 = Off 1 = Start 2 = Run 3 = Pre-shutdown 4 = Service Default: Determined by the current state of the chiller	The unit status of the chiller.
					Models: ACZ, AGS, AGZ, WGS, WGZ, TGZ 1 = Off 2 = Start 3 = Run 4 = Pre-shutdown 5 = Service Default: Determined by the current state of the chiller	
Compressor 2 Active Capacity Limit	40108	Holding Register	A 107	R	0 - 100% Default: NA	The active capacity limit for compressor 2. Available on WMC chiller only.
Compressor 2 VFD Speed	40100	Holding Register	A 99	R	0 - 100% Default: NA	The active capacity limit for compressor 2. Available on WMC chiller only.
Compressor Current		Holding Register		R	0 - 65,535 Amps Default: NA	The number of amps being drawn from the selected compressor. See Compressor Select .
Compressor Select	40027		A 26			
Compressor 2	40096		A 95			
Compressor 3	40110		A 109			
Compressor 4	40115		A 114			
Compressor 5	40120		A 119			
Compressor 6	40125		A 124			
Compressor Discharge Temperature		Holding Register		R	-459.9° - 621°F x 10 -273.3° - 327.2°C x 10 Default: NA	The refrigerant temperature of the selected compressor. See Compressor Select .
Compressor Select	40020		A 19			The current compressor refrigerant temperature of compressor 2. Not available on all chiller models. See Compressor Select .
Compressor 2	40092	A 91				
Compressor Percent RLA		Holding Register		R	0 - 110% x 10 Default: NA	The motor current of the selected compressor. See Compressor Select .
Compressor Select	40026		A 25			
Compressor 2	40095		A 94			
Compressor 3	40109		A 108			
Compressor 4	40114		A 113			
Compressor 5	40119		A 118			
Compressor 6	40124		A 123			
Compressor Power		Holding Register		R	0 - 65,535 kW Default: NA	The motor power of the selected compressor. See Compressor Select .
Compressor Select	40028		A 27			
Compressor 2	40097		A 96			
Compressor 3	40111		A 110			
Compressor 4	40116		A 115			
Compressor 5	40121		A 120			
Compressor 6	40126		A 125			
Compressor Run Hours		Holding Register		R	0 - 65,535 hours* Default: NA	The number of hours the selected compressor motor has been running. See Compressor Select . *Note the value returned must be multiplied by 10 to give actual run hours.
Compressor Select	40175		I 46			
Compressor 2	40236		I 107			
Compressor 3	40239		I 110			
Compressor 4	40242		I 113			

1. D = Coil or Discrete (Binary) Output, I = Input Register/Analog Input, A = Holding Register/Analog Output. Numeric value indicates the Modbus (input) point address. See [Table 1](#) for additional information.

Chiller Data Point	Index	Data Type ¹	Read/Write Access	Range/Default (in Units)	Description	
Compressor Select	40161	Holding Register	I 32	W	1 - 6 (See Description column for details) Default: 1	<p>Selects the compressor/circuit (No. 1, 2, 3, 4, 5 or 6) that is to be interrogated. The unit controller returns the information for the selected compressor/circuit.</p> <p>First select a compressor/circuit, then interrogate the selected compressor/circuit. See Table 4 to determine the network points available for each chiller type.</p> <p>Compressor/circuit values and descriptions are as follows:</p> <p>1 = Comp/Circuit 1 (Circuit 1 on Scroll Chillers and Condensing Units) 2 = Comp/Circuit 2 (Circuit 2 on Scroll Chillers and Condensing Units) 3 = Comp/Circuit 3 4 = Comp/Circuit 4 5 = Comp 5 6 = Comp 6</p> <p>The following points are supported by Compressor Select:</p> <ul style="list-style-type: none"> Compressor Current Compressor Discharge Temperature Compressor Percent RLA Compressor Power Compressor Run Hours Compressor Starts Compressor Status Compressor Voltage Condenser Refrigerant Pressure Condenser Saturated Refrigerant Temperature Evaporator Leaving Water Temperature for Compressor Evaporator Refrigerant Pressure Evaporator Saturated Refrigerant Temperature Liquid Line Refrigerant Pressure Liquid Line Refrigerant Temperature Oil Feed Pressure Oil Feed Temperature Oil Sump Pressure Oil Sump Temperature
Compressor Starts						
Compressor Select	40174	Holding Register	I 45	R	0 - 65,535 starts Default: NA	The number of times the selected compressor motor has started. See Compressor Select .
Compressor 2	40235		I 106			
Compressor 3	40238		I 109			
Compressor 4	40241		I 112			
Compressor Status						
Compressor Select	40173	Holding Register	I 44	R	0 = Off 1 = Start Oil Pump 2 = Interlock/Prelube 3 = Run 4 = Shutdown 5 = Postlube Default: NA	Operating status of the compressor that is currently selected. See Compressor Select . Available on WMC chiller only.
Compressor 2	40234		I 105			
Compressor 3	40237		I 108			
Compressor 4	40240		I 111			
Compressor 5	40243		I 114			
Compressor 6	40244		I 115			
Compressor Suction Line Temperature						
Compressor Select	40016	Holding Register	A 15	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current suction line refrigerant temperature. There is a separate output for each compressor. See Compressor Select .
Compressor 2	40089		A 88			The current suction line refrigerant temperature for compressor 2. Not available on all chiller models. See Compressor Select .
Compressor Voltage						
Compressor Select	40030	Holding Register	A 29	R	0 - 65,535 VAC Default: NA	The current voltage of the selected compressor. There is a separate output for each compressor. See Compressor Select .
Compressor 2	40099		A 98			
Compressor 3	40113		A 112			
Compressor 4	40118		A 117			
Compressor 5	40123		A 121			
Compressor 6	40128		A 127			

1. D = Coil or Discrete (Binary) Output, I = Input Register/Analog Input, A = Holding Register/Analog Output. Numeric value indicates the Modbus (input) point address. See [Table 1](#) for additional information.

Chiller Data Point	Index	Data Type ¹		Read/Write Access	Range/Default (in Units)	Description
Condenser Entering Water Temperature	40008	Holding Register	A 7	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current temperature of the water entering the condenser.
Condenser Flow Switch Status	9	Coil	D 8	R	0 = No Flow (Inactive) 1 = Flow (Active) Default: NA	The status of the water flow through the condenser.
Condenser Leaving Water Temperature	40009	Holding Register	A 8	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current temperature of the leaving condenser water.
Condenser Pump Run Hours						
Pump Select	40177	Holding Register	I 48	R	0 - 65,535 hours Default: NA	The number of hours that the selected condenser pump motor has been turned on. See Pump Select .
Pump 2	40233		I 104		0 - 32,768 hours Default: NA	The number of hours that the selected condenser pump 2 has been turned on. Not available on all chiller models.
Condenser Refrigerant Pressure						
Compressor Select	40022	Holding Register	A 21	R	-3,276.8 - 3,276.7 psi x 10 -22,592 - 22,592 kPa x 10 Default: NA	The current refrigerant pressure in the selected condenser. There is a separate output for each compressor. See Compressor Select .
Compressor 2	40094		A 93			The current refrigerant pressure for compressor 2. Not available on all chiller models.
Condenser Saturated Refrigerant Temperature						
Compressor Select	40021	Holding Register	A 20	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current saturated refrigerant temperature in the condenser. There is a separate output for each compressor. See Compressor Select .
Compressor 2	40093		A 92			The current saturated refrigerant temperature in the condenser for compressor 2. Not available on all chiller models.
Condenser Water Flow Rate	40025	Holding Register	A 24	R	0 - 65,534 GPM 0 - 4,135 Liters/Sec Default: NA	The current condenser water flow rate. Flow rate for centrifugal chillers measured in GPM only.
Condenser Water Pump Status	32	Coil	D 31	R	0 = Pump Off Request 1 = Pump On Request Default: NA	Indicates whether the selected pump has been commanded on or off. See Pump Select .
Cool Setpoint	40002	Holding Register	A 1	W	10° - 120°F x 10 -12.2° - 48.9°C x 10 Default: 44°F / 6.7°C	Determines the temperature of the Leaving Chilled Water when the chiller is operating in Cooling mode. Cooling is the default mode, unless it is overridden by a change made to the Chiller Mode Setpoint. Refer to the appropriate Operation Manual for suitable variable values.
Design RPM						
Compressor 1	40254	Holding Register	I 125	R	0 - 32,678 RPM Default: NA	Indicates the Turbocor compressor(s) calculated speed target based on conditions and request demand. Available on WMC chiller only.
Compressor 2	40255		I 126			
Evaporator Entering Water Temperature	40005	Holding Register	A 4	R	-40° - 245°F x 10 -40° - 118°C x 10 Default: NA	The temperature of the evaporator entering water.
Evaporator Flow Switch Status	8	Coil	D 7	R	0 = No Flow (Inactive) 1 = Flow (Active) Default: NA	The status of water flow through the evaporator.
Evaporator Leaving Water Temperature for Compressor						
Compressor Select	40015	Holding Register	A 14	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current leaving chilled water temperature of the selected compressor. See Compressor Select .
Compressor 2	40088		A 87			The current leaving chilled water temperature of compressor 2. Not available on all chiller models.
Evaporator Leaving Water Temperature for Unit	40007	Holding Register	A 6	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current temperature of the evaporator leaving chilled water.

1. D = Coil or Discrete (Binary) Output, I = Input Register/Analog Input, A = Holding Register/Analog Output. Numeric value indicates the Modbus (input) point address. See [Table 1](#) for additional information.

Chiller Data Point	Index	Data Type ¹	Read/Write Access	Range/Default (in Units)	Description
Evaporator Pump Run Hours					
Pump Select	40176	Holding Register	I 47	R	0 - 65,535 hours* Default: NA The number of hours that the selected evaporator pump has been turned on. There is a separate output for each pump. See Pump Select . *Note the value returned must be multiplied by 10 to give actual run hours.
Pump 2	40232		I 103		
Evaporator Refrigerant Pressure					
Compressor Select	40018	Holding Register	A 17	R	-3,276.8 - 3,276.7 psi x 10 -22,592 - 22,592 kPa x 10 Default: NA The current refrigerant pressure in the evaporator. There is a separate output for each compressor. See Compressor Select .
Compressor 2	40091		A 90		
Evaporator Saturated Refrigerant Temperature					
Compressor Select	40017	Holding Register	A 16	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA The current saturated refrigerant temperature in the evaporator. There is a separate output for each compressor. See Compressor Select .
Compressor 2	40090		A 89		
Evaporator Water Flow Rate	40019	Holding Register	A 18	R	0 - 65,534 GPM Default: NA The current evaporator water flow rate. Measured in GPM only for centrifugal chillers.
Evaporator Water Pump Status	30	Coil	D 29	R	0 = Pump Off Request 1 = Pump On Request Default: NA Indicates whether the selected pump has been commanded on or off. See Pump Select .
Heat Recovery Entering Water Temperature	40023	Holding Register	A 22	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA The current temperature of the water entering the heat recovery section.
Heat Recovery Leaving Water Temperature	40024	Holding Register	A 23	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA The current temperature of the water leaving the heat recovery section.
Heat Setpoint	40006	Holding Register	A 5	W	50° - 150°F x 10 10° - 65.6°C x 10 Default: Varies by model Provides the heating setpoint (i.e. sets the temperature of the leaving evaporator water) when the chiller is operating in the heat mode. The value is ignored if the unit controller is in Cooling mode. Refer to the appropriate Operation Manual for suitable variable values.
Ice Setpoint	40051	Holding Register	A 50	W	15° - 35°F x 10 -9.5° - 1.7°C x 10 Default: 25°F / -3.9°C Determines the temperature of the leaving evaporator water. Refer to the appropriate Operation Manual for suitable variable values.
IGV Percentage Open					
Compressor 1	40249	Holding Register	I 120	R	0 - 110% Default: NA The current percentage that vanes are open for each compressor (0% = closed, 110% = open/full capacity). Available on WMC chiller only.
Compressor 2	40253		I 124		
Inverter Temperature					
Compressor 1	40087	Holding Register	A 86	R	32 - 212°F x 10 0 - 100°C x 10 Default: NA The current drive temperature. There is a separate output for each compressor. Available on WMC chiller only.
Compressor 2	40107		A 106		
Liquid Line Refrigerant Pressure	40039	Holding Register	A 38	R	-3,276.8 - 3,276.7 psi x 10 -22,592 - 22,592 kPa x 10 Default: NA The current liquid line refrigerant pressure. There is a separate output for each compressor/circuit.
Liquid Line Refrigerant Temperature					
Compressor Select	40037	Holding Register	A 36	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA The current liquid line refrigerant temperature. There is a separate output for each compressor/circuit.
Compressor 2	40105				
Maximum RPM					
Compressor 1	40246	Holding Register	I 117	R	0 - 32,678 RPM Default: NA The maximum (choke) RPM. This is the speed the Turbocor compressor calculates above which the efficiency of the compressor begins to decrease. Available on WMC chiller only.
Compressor 2	40250		I 121		

1. D = Coil or Discrete (Binary) Output, I = Input Register/Analog Input, A = Holding Register/Analog Output. Numeric value indicates the Modbus (input) point address. See [Table 1](#) for additional information.

Chiller Data Point	Index	Data Type ¹		Read/Write Access	Range/Default (in Units)	Description
Minimum RPM		Holding Register		R	0 - 32,678 RPM Default: NA	The minimum (surge) RPM. This is the speed the Turbocor compressor calculates as the minimum safe operating speed above onset of stall. Available on WMC chiller only.
Compressor 1	40248		I 119			
Compressor 2	40252		I 123			
Oil Feed Pressure		Holding Register		R	-3,276.8 - 3,276.7 psi x 10 -22,592 - 22,592 kPa x 10 Default: NA	The current compressor oil feed pressure. There is a separate output for each compressor. See Compressor Select . The current compressor oil feed pressure for compressor 2. Not available on all chiller models.
Compressor Select	40033		A 32			
Compressor 2	40101		A 100			
Oil Feed Temperature		Holding Register		R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current compressor oil feed temperature. There is a separate output for each compressor. See Compressor Select . The current compressor oil feed temperature for compressor 2. Not available on all chiller models.
Compressor Select	40035		A 34			
Compressor 2	40103		A 102			
Oil Sump Pressure		Holding Register		R	-3,276.8 - 3,276.7 psi x 10 -22,592 - 22,592 kPa x 10 Default: NA	The current compressor oil sump pressure. There is a separate output for each compressor. See Compressor Select . The current compressor oil sump pressure for compressor 2. Not available on all chiller models.
Compressor Select	40034		A 33			
Compressor 2	40102		A 101			
Oil Sump Temperature		Holding Register		R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current compressor oil sump temperature. There is a separate output for each compressor. See Compressor Select . The current compressor oil sump temperature for compressor 2. Not available on all chiller models.
Compressor Select	40036		A 35			
Compressor 2	40104		A 103			
Outdoor Air Temperature	40040	Holding Register	A 39	R	-40° - 244°F x 10 -40° - 118°C x 10 Default: NA	The current outdoor air temperature.
Pump Select	20	Coil	D 19	W	1 = Pump 1 2 = Pump 2 Default: 1	Selects which pump (No.1 or No. 2) supplies the data. The unit controller returns the information for the respective condenser or evaporator pump. Select the desired pump first and then interrogate it. See Condenser Pump Run Hours and Evaporator Pump Run Hours .
Run Enabled	3	Coil	D 2	R	0 = Off 1 = Run Allowed Default: NA	Indicates that the chiller can start if operating conditions are met. See Pump Select .

1. D = Coil or Discrete (Binary) Output, I = Input Register/Analog Input, A = Holding Register/Analog Output. Numeric value indicates the Modbus (input) point address. See [Table 1](#) for additional information.

Table 6: Chiller Alarms

Data Point	Index	Data Type ¹		Read/Write Access	Range	Description
Active Alarms	40130 - 40145	Holding Register	I 1 - I 16	R	0 = No Alarm 1 = Alarm	16 Holding Registers; each bit represents an alarm condition. Read the status of each register to determine the particular alarm condition. See Table 7 - Table 9 for the bit location and description of each alarm condition.
Alarm Digital Output	4	Coil	D 3	R	0 = No Alarm 1 = Alarm	Indicates whether an alarm condition has occurred. This coil must be polled for alarm notification. See the Modbus Alarm Management section for a full description of all alarm conditions supported by the MicroTech II chiller.
Clear Alarms	25	Coil	D 24	W	0 = Normal 1 = Clear Alarm	Clears all active alarms. See the Modbus Alarm Management section for additional information.

1. D = Coil or Discrete (Binary) Output, I = Input Register/Analog Input, A = Holding Register/Analog Output. Numeric value indicates the Modbus (input) point address. See [Table 1](#) for additional information.

Modbus Alarm Management

The MicroTech II Chiller Unit Controller has various ways of managing alarms. Using one of the mechanisms described in this section, alarms can be recognized, acknowledged, and cleared. Alarms are managed using the unit controller keypad/display or from the BAS.

Alarm Classes

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

Table 7 - Table 9 provide a description of alarms supported within each of these three classes by chiller model.

Warning Alarms

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

Problem Alarms

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

Fault Alarms

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

Alarm Monitoring

Alarm Digital Output is the coil used to indicate that an alarm condition has occurred. It does not describe the alarm itself. A separate holding register, Active Alarms, must be read in order to determine the specific alarm condition of the register.

See Table 6 for index values of Alarm Digital Output and Active Alarm. Table 7 - Table 9 describe the Warning, Problem, and Fault alarm registers supported by Active Alarms.

Clearing Alarms

Alarms within the MicroTech II Chiller Unit Controller can be cleared via Modbus by setting the Clear Alarms coil to a value of one (1). After the alarms are cleared, this coil returns to Normal (0). See Table 6 for specific attributes of Clear Alarm.

The alarms that **must** be cleared at the chiller (i.e. cannot be cleared from the network) are as follows:

- Low Evaporator Pressure
- High Condenser Pressure (by pressure sensor)
- High Condenser Pressure (by pressure switch)
- Low Oil Pressure
- Freeze Protection
- High Motor Temperature

NOTE: The above list pertains only to centrifugal chillers. The only alarm that can be cleared remotely on all other chiller types is the Flow Loss alarm.

Table 7: Modbus Warning Alarms

Description	Holding Register	Bit	WSC WDC				AGZ	ACZ	WGZ TGZ	AGS	WGS
			WPV	WMC	WCC	HSC					
Entering Condenser Water Temperature Sensor Fault	40130	1		X							
Entering Evaporator Water Temperature Sensor Fault	40130	2		X				X	X	X	
Liquid Line Refrigerant Temperature Sensor Fault	40130	3		X				X			
Leaving Condenser Water Temperature Sensor Fault	40130	4		X				X		X	
Repower After Power Loss 1	40130	5							X	X	
Repower After Power Loss 2	40130	6							X	X	
Repower After Power Loss 3	40130	7							X ¹		
Repower After Power Loss 4	40130	8									
Expansion Alarm	40130	9						X	X		

1. AGS B Vintage Only

Table 8: Modbus Problem Alarms

Description	Holding Register	Bit	WSC WDC				AGZ	ACZ	WGZ/TGZ	AGS	WGS
			WPV	WMC	WCC	HSC					
Low Ambient Temperature Lockout	40130	10				X	X	X	X	X	
High Condenser Pressure – Inhibit Loading Circuit 1	40130	11				X ⁴	X ²	X	X	X	
High Condenser Pressure – Inhibit Loading Circuit 2	40130	12				X ⁴	X ²	X	X	X	
High Condenser Pressure – Inhibit Loading Circuit 3	40130	13							X ¹		
High Condenser Pressure – Inhibit Loading Circuit 4	40130	14									
High Condenser Pressure – Unload	40130	15				X ⁵	X ³				
High Condenser Pressure – Unload Circuit 1	40131	0				X ⁴	X ²	X	X	X	
High Condenser Pressure – Unload Circuit 2	40131	1				X ⁴	X ²	X	X	X	
High Condenser Pressure – Unload Circuit 3	40131	2							X ¹		
High Condenser Pressure – Unload Circuit 4	40131	3									
Condenser Water Freeze Protect Comp 1	40131	4	X					X			
Condenser Water Freeze Protect Comp 2	40131	5	X					X			
Condenser Water Freeze Protect Comp 3	40131	6									
Condenser Water Freeze Protect Comp 4	40131	7									
Condenser Pump 1 Fault	40131	8	X								
Condenser Pump 2 Fault	40131	9	X								
High Discharge Temperature Comp 1	40131	10	X								
High Discharge Temperature Comp 2	40131	11	X								
High Discharge Temperature Comp 3	40131	12									
High Discharge Temperature Comp 4	40131	13									
Entering Evap Temperature Sensor Fault (EWT Reset Active)	40131	14	X								
Low Evaporator Pressure - Inhibit Loading	40131	15				X ⁵	X ³				
Low Evaporator Pressure - Inhibit Loading Circuit 1	40132	0	X			X ⁴	X ²	X	X	X	
Low Evaporator Pressure - Inhibit Loading Circuit 2	40132	1	X			X ⁴	X ²	X	X	X	
Low Evaporator Pressure - Inhibit Loading Circuit 3	40132	2							X ¹		
Low Evaporator Pressure - Inhibit Loading Circuit 4	40132	3									
Low Evaporator Pressure – Unload	40132	4				X ⁵	X ³				
Low Evaporator Pressure – Unload Circuit 1	40132	5	X			X ⁴	X ²	X	X	X	
Low Evaporator Pressure – Unload Circuit 2	40132	6	X			X ⁴	X ²	X	X	X	
Low Evaporator Pressure – Unload Circuit 3	40132	7							X ¹		
Low Evaporator Pressure – Unload Circuit 4	40132	8									
High Motor Current On Compressor 1	40132	9	X								
High Motor Current On Compressor 2	40132	10	X								
High Motor Current On Compressor 3	40132	11									
High Motor Current On Compressor 4	40132	12									
Evaporator Freeze Protect Comp 1	40132	13	X								

1. AGS B Vintage Only
2. ACZ Dual Circuit Only
3. ACZ Single Circuit Only
4. AGZ Dual Circuit Only
5. AGZ Single Circuit Only

Description	Holding Register	Bit	WSC WPV WCC HDC	WDC WMC HSC TSC	AGZ	ACZ	WGZ/TGZ	AGS	WGS
Evaporator Freeze Protect Comp 2	40132	14		X					
Evaporator Freeze Protect Comp 3	40132	15							
Evaporator Freeze Protect Comp 4	40133	0							
Evaporator Pump 1 Fault	40133	1		X					
Evaporator Pump 2 Fault	40133	2		X					
Expansion Alarm	40133	3							

1. AGS B Vintage Only
2. ACZ Dual Circuit Only
3. ACZ Single Circuit Only
4. AGZ Dual Circuit Only
5. AGZ Single Circuit Only

Table 9: Modbus Fault Alarms

Description	Holding Register	Bit	WSC WPV WCC HDC	WDC WMC HSC TSC	AGZ	ACZ	WGZ TGZ	AGS	WGS
Outside Ambient Temperature Sensor Fault	40133	4			X	X	X	X	X
Compressor Current Overload Trip 1	40133	5	X					X ¹	X
Compressor Current Overload Trip 2	40133	6	X					X ¹	X
Compressor Current Overload Trip 3	40133	7							
Compressor Current Overload Trip 4	40133	8							
Motor Current Imbalance On Compressor 1	40133	9	X					X ¹	X
Motor Current Imbalance On Compressor 2	40133	10	X					X ¹	X
Motor Current Imbalance On Compressor 3	40133	11							
Motor Current Imbalance On Compressor 4	40133	12							
Low Motor Current Comp 1	40133	13	X					X ¹	X
Low Motor Current Comp 2	40133	14	X					X ¹	X
Low Motor Current Comp 3	40133	15							
Low Motor Current Comp 4	40134	0							
Motor Protection	40134	1			X ⁶	X ⁴			
Motor Protection Circuit 1	40134	2			X ⁵	X ³	X		
Motor Protection Circuit 2	40134	3			X ⁵	X ³	X		
High Motor Temperature Comp 1	40134	4	X					X ¹	X
High Motor Temperature Comp 2	40134	5	X					X ¹	X
High Motor Temperature Comp 3	40134	6							
High Motor Temperature Comp 4	40134	7							
Phase Loss At Compressor 1	40134	8	X ⁷		X ⁵	X ³			X
Phase Loss At Compressor 2	40134	9	X ⁷		X ⁵	X ³			X
Phase Loss At Compressor 3	40134	10							
Phase Loss At Compressor 4	40134	11							
Phase Reversal At Compressor 1	40134	12	X ⁷						X
Phase Reversal At Compressor 2	40134	13	X ⁷						X
Phase Reversal At Compressor 3	40134	14							
Phase Reversal At Compressor 4	40134	15							
Oversvoltage On Compressor 1	40135	0	X ⁷						X
Oversvoltage On Compressor 2	40135	1	X ⁷						X
Oversvoltage On Compressor 3	40135	2							
Oversvoltage On Compressor 4	40135	3							
Undersvoltage On Compressor 1	40135	4	X ⁷						X
Undersvoltage On Compressor 2	40135	5	X ⁷						X
Undersvoltage On Compressor 3	40135	6							
Undersvoltage On Compressor 4	40135	7							
Condenser Pressure Sensor Fault	40135	8			X ⁶	X ⁴			

1. AGS C Vintage Only
2. AGS B Vintage Only
3. ACZ Dual Circuit Only
4. ACZ Single Circuit Only
5. AGZ Dual Circuit Only
6. AGZ Single Circuit Only
7. Solid State Starter Option required. Not available on WMC chillers
8. Should be "No Start - Interlock Switch" on WMC chillers

Description	Holding Register	Bit	WSC WPV WMC WCC HDC	WDC WMC HSC TSC	AGZ	ACZ	WGZ TGZ	AGS	WGS
Condenser Pressure Sensor Fault Circuit 1	40135	9	X		X ⁵	X ³	X	X	X
Condenser Pressure Sensor Fault Circuit 2	40135	10	X		X ⁵	X ³	X	X	X
Condenser Pressure Sensor Fault Circuit 3	40135	11						X ²	
Condenser Pressure Sensor Fault Circuit 4	40135	12							
No Condenser Water Flow	40135	13	X				X		X
High Condenser Pressure	40135	14			X ⁶	X ⁴			
High Condenser Pressure Circuit 1	40135	15	X		X ⁵	X ³	X	X	X
High Condenser Pressure Circuit 2	40136	0	X		X ⁵	X ³	X	X	X
High Condenser Pressure Circuit 3	40136	1						X ²	
High Condenser Pressure Circuit 4	40136	2							
No Compressor Stop Comp 1	40136	3	X						
No Compressor Stop Comp 2	40136	4	X						
No Compressor Stop Comp 3	40136	5							
No Compressor Stop Comp 4	40136	6							
Discharge Temperature Sensor Fault Circuit 1	40136	7	X					X	X
Discharge Temperature Sensor Fault Circuit 2	40136	8	X					X	X
Discharge Temperature Sensor Fault Circuit 3	40136	9						X ²	
Discharge Temperature Sensor Fault Circuit 4	40136	10							
High Discharge Temperature Circuit 1	40136	11	X						X
High Discharge Temperature Circuit 2	40136	12	X						X
High Discharge Temperature Circuit 3	40136	13							
High Discharge Temperature Circuit 4	40136	14							
Entering Condenser Water Temperature Sensor Fault	40136	15					X		X
No Evaporator Water Flow	40137	0	X		X	X	X	X	X
Evaporator Water Freeze Protect	40137	1			X		X	X	X
Low Evaporator Pressure	40137	2			X ⁶	X ⁴			
Low Evaporator Pressure Circuit 1	40137	3	X		X ⁵	X ³	X	X	X
Low Evaporator Pressure Circuit 2	40137	4	X		X ⁵	X ³	X	X	X
Low Evaporator Pressure Circuit 3	40137	5						X ²	
Low Evaporator Pressure Circuit 4	40137	6							
Evaporator Pressure Sensor Fault	40137	7			X ⁶	X ⁴			
Evaporator Pressure Sensor Fault Circuit 1	40137	8	X		X ⁵	X ³	X	X	X
Evaporator Pressure Sensor Fault Circuit 2	40137	9	X		X ⁵	X ³	X	X	X
Evaporator Pressure Sensor Fault Circuit 3	40137	10						X ²	
Evaporator Pressure Sensor Fault Circuit 4	40137	11							
Ground Fault Protection 1	40137	12	X ⁷		X ⁶		X	X ¹	X
Ground Fault Protection 2	40137	13	X ⁷		X ⁶		X	X ¹	X
Ground Fault Protection 3	40137	14							
Ground Fault Protection 4	40137	15							
Below Minimum Lift Pressure Circuit 1	40138	0						X	X
Below Minimum Lift Pressure Circuit 2	40138	1						X	X
Below Minimum Lift Pressure Circuit 3	40138	2						X ²	
Below Minimum Lift Pressure Circuit 4	40138	3							
Liquid Line Pressure Sensor Fault Circuit 1	40138	4						X	
Liquid Line Pressure Sensor Fault Circuit 2	40138	5						X	
Liquid Line Pressure Sensor Fault Circuit 3	40138	6						X ²	
Liquid Line Pressure Sensor Fault Circuit 4	40138	7							
Liquid Line Refrigerant Temperature Sensor Fault Circuit 1	40138	8						X	
Liquid Line Refrigerant Temperature Sensor Fault Circuit 2	40138	9						X	
Liquid Line Refrigerant Temperature Sensor Fault Circuit 3	40138	10						X ²	
Liquid Line Refrigerant Temperature Sensor Fault Circuit 4	40138	11							
Re-Start Fault	40138	12			X ⁶	X ⁴			

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Description	Holding Register	Bit	WSC WPV WMC WCC HSC HDC TSC	AGZ	ACZ	WGZ TGZ	AGS	WGS
Re-Start Fault Circuit 1	40138	13		X ⁵	X ³	X	X ¹	X
Re-Start Fault Circuit 2	40138	14		X ⁵	X ³	X	X ¹	X
Re-Start Fault Circuit 3	40138	15						
Re-Start Fault Circuit 4		0						
Leaving Evaporator Water Temperature Sensor Fault	40139	1		X		X	X	X
Leaving Evaporator Water Temperature Sensor Fault Comp 1	40139	2	X					
Leaving Evaporator Water Temperature Sensor Fault Comp 2	40139	3	X					
Leaving Evaporator Water Temperature Sensor Fault Comp 3	40139	4						
Leaving Evaporator Water Temperature Sensor Fault Comp 4	40139	5						
Mechanical High Pressure	40139	6		X ⁶	X ⁴			
Mechanical High Pressure Circuit 1	40139	7	X	X ⁵	X ³	X	X	X
Mechanical High Pressure Circuit 2	40139	8	X	X ⁵	X ³	X	X	X
Mechanical High Pressure Circuit 3	40139	9					X ²	
Mechanical High Pressure Circuit 4	40139	10						
Low Oil Net Pressure Comp 1	40139	11	X					
Low Oil Net Pressure Comp 2	40139	12	X					
Low Oil Net Pressure Comp 3	40139	13						
Low Oil Net Pressure Comp 4	40139	14						
High Oil Feed Temperature Comp 1	40139	15	X					
High Oil Feed Temperature Comp 2	40140	0	X					
High Oil Feed Temperature Comp 3	40140	1						
High Oil Feed Temperature Comp 4	40140	2						
Low Oil Feed Temperature Comp 1	40140	3	X					
Low Oil Feed Temperature Comp 2	40140	4	X					
Low Oil Feed Temperature Comp 3	40140	5						
Low Oil Feed Temperature Comp 4	40140	6						
Oil Feed Temperature Sensor Fault Comp 1	40140	7	X					
Oil Feed Temperature Sensor Fault Comp 2	40140	8	X					
Oil Feed Temperature Sensor Fault Comp 3	40140	9						
Oil Feed Temperature Sensor Fault Comp 4	40140	10						
Low Oil Level Circuit 1	40140	11					X	X
Low Oil Level Circuit 2	40140	12					X	X
Low Oil Level Circuit 3	40140	13					X ²	
Low Oil Level Circuit 4	40140	14						
High Oil Pressure Difference Circuit 1	40140	15					X	X
High Oil Pressure Difference Circuit 2	40141	0					X	X
High Oil Pressure Difference Circuit 3	40141	1					X ²	
High Oil Pressure Difference Circuit 4	40141	2						
Oil Feed Pressure Sensor Fault Comp 1	40141	3	X					
Oil Feed Pressure Sensor Fault Comp 2	40141	4	X					
Oil Feed Pressure Sensor Fault Comp 3	40141	5						
Oil Feed Pressure Sensor Fault Comp 4	40141	6						
Oil Sump Pressure Sensor Fault Comp 1	40141	7	X					
Oil Sump Pressure Sensor Fault Comp 2	40141	8	X					
Oil Sump Pressure Sensor Fault Comp 3	40141	9						
Oil Sump Pressure Sensor Fault Comp 4	40141	10						
Oil Sump Temperature Sensor Fault Comp 1	40141	11	X					
Oil Sump Temperature Sensor Fault Comp 2	40141	12	X					
Oil Sump Temperature Sensor Fault Comp 3	40141	13						

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Oil Sump Temperature Sensor Fault Comp 4	40141	14							
Phase Voltage Protection	40141	15			X ⁶	X ⁴			
Starter Fault Compressor 1	40142	0	X					X	X
Starter Fault Compressor 2	40142	1	X					X	X
Starter Fault Compressor 3	40142	2						X ²	
Starter Fault Compressor 4	40142	3							
No Starter Transition Comp 1	40142	4	X					X ¹	
No Starter Transition Comp 2	40142	5	X					X ¹	
No Starter Transition Comp 3	40142	6							
No Starter Transition Comp 4	40142	7							
No Oil Pressure Start Comp 1	40142	8	X						
No Oil Pressure Start Comp 2	40142	9	X						
No Oil Pressure Start Comp 3	40142	10							
No Oil Pressure Start Comp 4	40142	11							
Low Subcooling Circuit 1	40142	12						X ²	X
Low Subcooling Circuit 2	40142	13						X ²	X
Low Subcooling Circuit 3	40142	14						X ²	
Low Subcooling Circuit 4	40142	15							
Surge High Suct SH - Running Comp 1	40143	0	X						
Surge High Suct SH - Running Comp 2	40143	1	X						
Surge High Suct SH - Running Comp 3	40143	2							
Surge High Suct SH - Running Comp 4	40143	3							
Surge High Suct SH - Starting Comp 1	40143	4	X						
Surge High Suct SH - Starting Comp 2	40143	5	X						
Surge High Suct SH - Starting Comp 3	40143	6							
Surge High Suct SH - Starting Comp 4	40143	7							
Suction Temperature Sensor Fault Circuit 1	40143	8	X					X	X
Suction Temperature Sensor Fault Circuit 2	40143	9	X					X	X
Suction Temperature Sensor Fault Circuit 3	40143	10						X ²	
Suction Temperature Sensor Fault Circuit 4	40143	11							
Vanes Open No Start Comp 1	40143	12	X ⁸						
Vanes Open No Start Comp 2	40143	13	X ⁸						
Vanes Open No Start Comp 3	40143	14							
Vanes Open No Start Comp 4	40143	15							
Expansion Alarm	40144	0	X					X	X
COMP SHUTDOWN - Comp Fault 1	40144	1							
COMP SHUTDOWN - Comp Fault 2	40144	2							
COMP SHUTDOWN - Comp Fault 3	40144	3							
COMP SHUTDOWN - Comp Fault 4	40144	4							
C-Stop - General Comp Fault 1			X ⁸						
C-Stop - General Comp Fault 2			X ⁸						
C-Stop - Communication Fault 1			X ⁸						
C-Stop - Communication Fault 2			X ⁸						
C-Stop - Interlock Fault 1			X ⁸						
C-Stop - Interlock Fault 2			X ⁸						
C-Stop - Bearing Fault 1			X ⁸						
C-Stop - Bearing Fault 2			X ⁸						
C-Stop - Motor Fault 1			X ⁸						
C-Stop - Motor Fault 2			X ⁸						
C-Stop - Drive Fault 1			X ⁸						
C-Stop - Drive Fault 2			X ⁸						
C-Stop - Internal Control Err 1			X ⁸						

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Description	Holding Register	Bit	WSC WDC WPV WMC WCC HSC HDC TSC	AGZ	ACZ	WGZ TGZ	AGS	WGS
C-Stop - Internal Control Err 2			X ⁸					
Warn - Chiller Capacity Limited			X ⁸					
U-Stop - Check Valve Fault 1			X ⁸					
U-Stop - Check Valve Fault 2			X ⁸					
U-Stop - LB Valve Fault 1			X ⁸					
U-Stop - LB Valve Fault 2			X ⁸					

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Use [Table 10](#) to find and access Modbus network parameters via the MicroTech II Chiller Unit Controller. Data points are

listed alphabetically along with the path(s) to the corresponding keypad menu screen.

Table 10: Chiller Unit Controller Keypad Menu Path

Data Point	Keypad Menu Path	WSC WPV HDC WMC	WDC HSC TSC WCC	AGZ	ACZ	AGS	WGZ TGZ	WGS
Active Alarm	No Keypad Equivalent	X		X	X	X	X	X
Active Setpoint	Menu\Set\Unit SPs (3)	X		X		X	X	X
Actual Capacity	No Keypad Equivalent	X		X		X	X	X
Actual RPM	No Keypad Equivalent	X						
Alarm Digital Output	No Keypad Equivalent	X		X	X	X	X	X
Capacity Limit Output	No Keypad Equivalent	X		X	X	X	X	X
Capacity Limit Setpoint	No Keypad Equivalent	X		X	X	X	X	X
Cavity Temperature	No Keypad Equivalent	X						
Chiller Enable	Menu\Set\Unit SPs (1)	X		X	X	X	X	X
Chiller Limited	No Keypad Equivalent	X		X	X	X	X	X
Chiller Local/Remote	No Keypad Equivalent	X		X	X	X	X	X
Chiller Mode Output	No Keypad Equivalent	X		X		X	X	X
Chiller Mode Setpoint	Menu\Set\Unit SP (1)	X		X		X	X	X
Chiller Power	No Keypad Equivalent	X						
Clear Alarms	No Keypad Equivalent	X		X		X	X	X
Compressor 2 Active Capacity Limit	No Keypad Equivalent	X						
Compressor 2 VFD Speed	No Keypad Equivalent	X						
Compressor Current	No Keypad Equivalent	X						X
Compressor Discharge Temperature	Menu\View\Comp (5)	X				X		X
Compressor Percent RLA	No Keypad Equivalent	X						X
Compressor Power	No Keypad Equivalent	X						X
Compressor Run Hours	Menu\View\Compressor	X		X	X	X	X	X
Compressor Select	No Keypad Equivalent	X		X	X	X	X	X
Compressor Starts	Menu\View\Compressor	X		X	X	X	X	X
Compressor Status	No Keypad Equivalent	X						
Compressor Suction Line Temperature	Menu\View\Unit\Refrigerant (2)	X				X	X	X
Compressor Voltage	No Keypad Equivalent	X						X
Condenser Entering Water Temperature	Menu\View\Unit\Water	X					X	X
Condenser Flow Switch Status	No Keypad Equivalent	X					X	X
Condenser Leaving Water Temperature	Menu\View\Unit Water	X					X	X
Condenser Pump Run Hours	No Keypad Equivalent	X						
Condenser Refrigerant Pressure	Menu\View\Unit\Refrigerant (1)	X		X	X	X	X	X
Condenser Saturated Refrigerant Temperature	Menu\Unit\Refrigerant (1)	X		X	X	X	X	X
Condenser Water Flow Rate	No Keypad Equivalent	X						X
Condenser Water Pump Status	No Keypad Equivalent	X					X	X
Cool Setpoint	Menu\Set\Unit SPs (3)	X		X		X	X	X
Design RPM	No Keypad Equivalent	X						
Evaporator Entering Water Temperature	Menu\View\Unit\Water	X				X	X	X
Evaporator Flow Switch Status	No Keypad Equivalent	X		X	X	X	X	X
Evaporator Leaving Water Temperature for Unit	Menu\View\Unit Water OR Menu\View\Comp (2)	X		X		X	X	X
Evaporator Leaving Water Temperature for Compressor	Menu\View\Comp	X		X		X		
Evaporator Pump Run Hours	No Keypad Equivalent	X						
Evaporator Refrigerant Pressure	Menu\View\Comp (2)	X		X	X	X	X	X
Evaporator Saturated Refrigerant Temperature	Menu\Unit\Refrigerant (1)	X		X	X	X	X	X
Evaporator Water Flow Rate	No Keypad Equivalent	X						
Evaporator Water Pump Status	No Keypad Equivalent	X		X		X	X	X
Heat Recovery Entering Water Temperature	No Keypad Equivalent	X						
Heat Recovery Leaving Water Temperature	No Keypad Equivalent	X						
Heat Setpoint	Menu\Set\Unit SPs (3)	X						
Ice Setpoint	Menu\Set\Unit SPs (3)	X		X		X	X	X

Data Point	Keypad Menu Path	WSC WPV HDC WMC	WDC HSC TSC WCC	AGZ	ACZ	AGS	WGZ TGZ	WGS
IGV Percentage Open	No Keypad Equivalent		X					
Inverter Temperature	No Keypad Equivalent		X					
Liquid Line Refrigerant Pressure	No Keypad Equivalent					X		
Liquid Line Refrigerant Temperature	Menu\View\Unit\Refrig (2) Liquid Line=		X			X	X	
Maximum RPM	No Keypad Equivalent		X					
Minimum RPM	No Keypad Equivalent		X					
Oil Feed Pressure	Menu\View\Comp (3)		X					
Oil Feed Temperature	Menu\View\Comp (4)		X					
Oil Sump Pressure	No Keypad Equivalent		X					
Oil Sump Temperature	Menu\View\Comp (4)		X					
Outdoor Air Temperature	No Keypad Equivalent			X	X	X		
Pump Select	No Keypad Equivalent		X					
Run Enabled	Menu		X	X	X	X	X	X



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