



Programmer's Guide
to
Serial-Stat™ Network Communications

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Introduction

This document describes the ASCII command functions used to communicate with the XCI family of serial adapters and thermostats. These commands facilitate control and feedback of all thermostat functions that are normally available from the front panel by using a simple set of ASCII commands. This permits the use of any standard communication program to be used as the interface for controlling as many as thirty-two thermostats with a single adapter and serial port.

Conventions used in this document

All command functions are transmitted to the serial adapter using the specified sequence of ASCII characters followed by the carriage return key. The carriage return key is referred to as the **↵Enter** key on most computer keyboards and terminals. The examples provided for each function consist of the command to be transmitted to the adapter along with the corresponding response. Unless otherwise indicated, all commands apply to all adapters and all communicating thermostats. All address values are provided in decimal notation.

Communications Configuration

The serial port setting to use the adapter is **9600 BAUD, 8 BITS, NO PARITY, and 1 STOP BIT**. Pins 2, 3, and 7 are used on the 25-pin serial port connector for communications with the host computer. We have designed the adapter so that you can attach it directly to the serial port connector found on most IBM compatible computers. Do not use a null modem cable when converting to a nine pins because the adapter pins 2 and 3 are already configured as a null modem.

Network Communications

The XC-SSA2 adapters incorporate an RS-485 port for communications between multiple adapters to facilitate construction of very large thermostat networks. All commands for the adapter network are the same as described in this document with two minor differences.

First, all commands destined for the RS-485 network should begin with the character '>' followed by the adapter address. The adapter address must correspond to the switch configuration found on each adapter. The device designated as network master must terminate the packet with a 16-bit checksum prior to retransmitting the packet over the RS-485 bus. Adapters designated as slaves will evaluate this checksum to determine if any errors occurred during network transmission. No response will be received if the transmission contained errors.

Second, all results will begin with the character '<' followed the command response terminated with a comma and the 16-bit checksum. It is recommended that the checksum be evaluated to determine the integrity of the response. The method for calculating the packet checksum is described in a separate document known as the XCI Programmer's Guide to the Checksum Calculations.

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READ COMMANDS

Valid addresses for all READ Commands: 1 - 255

RAS **Read All States**

Function This command is used to retrieve the most commonly requested data from a thermostat with the use of a single command. Response to this command is a text string containing the results normally returned by individual read commands.

Syntax RASaddress

Return value ASCII responses to the following individual READ commands:
RIT,ROT,RMS,RFM,RDS,RCD,RCN,RHD,RHN,RSS

Remarks None.

Example Retrieve the current state from the thermostat located at decimal address seventeen (17). The current temperature is 76 F.

Command RAS17

Reply 76,0,HEAT,FAN ON,DAY,72,78,68,64,HEAT,0

RCD **Read Cool Day**

Function This command is used to retrieve the cool setpoint used by the thermostat when it is in the Day/Occupied mode.

Syntax RCDaddress

Return value Range: 60°F to 108°F (16°C to 40°C).

Remarks The value returned by this command is scaled to °F or °C according to the setting assigned by the WTS command.

Example Retrieve the current Day cool setpoint from the thermostat at decimal address one hundred fifty-five (155). The setpoint is currently 86°F

Command RCD155

Reply 86

RCH **Read Cool High**

Function This command is used to retrieve the maximum cool setpoint allowed by the thermostat when the value is changed with the up/down pushbuttons. The factory default value is 108°F (40°C).

Syntax RCHaddress

Return value Range: 60°F to 108°F (16°C to 40°C).

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command.

Example Retrieve the current maximum cool setpoint allowed by the thermostat at decimal address sixteen (16). The maximum cool setpoint is currently 108°F

Command RCH16

Reply 108

RCL **Read Cool Low**

Function This command is used to retrieve the minimum cool setpoint allowed by the thermostat when the value is changed with the up/down pushbuttons. The factory default value is 60°F (16°C).

Syntax *RCLaddress*

Return value Range: 60°F to 108°F (16°C to 40°C).

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command.

Example Retrieve the current minimum cool setpoint allowed by the thermostat at decimal address sixteen (16). The minimum cool setpoint is currently 60°F. The adapter is set to echo all commands.

Command RCL16

Reply RCL16:60

RCN **Read Cool Nigh**

Function This command is used to retrieve the cool setpoint used by the thermostat when it is in the Night/Unoccupied mode.

Syntax *RCNaddress*

Return value Range: 60°F to 108°F (16°C to 40°C).

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command.

Example Retrieve the current Night cool setpoint from the thermostat located at decimal address fifteen (15). The setpoint is currently 80°F

Command RCN15

Reply 80

RCS **Read Clock Scheduler**

Function This command will determine whether the adapter scheduler is active or inactive.

Syntax RCS

Return value 0=OFF | 1=ON

Remarks Available only with XC-SSA2/CLK. Details for using the adapter scheduler are described in another document. Refer to the "Guide to Programming XCI Adapter Schedules" for additional information.

Example Retrieve the status of the adapter scheduler. The scheduler was previously activated using the command WCSD1.

Command RCS

Reply 1

RDS	<u>R</u>ead <u>D</u>ay/<u>N</u>ight <u>S</u>tatus
------------	--

Function	This command is used to retrieve the state of the Day/Night button. It is used to determine which pair of heat/cool setpoints in active use by the thermostat.	
Syntax	RDS <i>address</i>	
Return value	DAY	NIGHT
Remarks	None.	
Example	Retrieve the Day/Night setting from the thermostat located at decimal address one hundred eighty-two (182). The thermostat is currently set to night mode.	
	Command	RDS182
	Reply	NIGHT

REV	<u>R</u>Ead <u>A</u>dapter <u>V</u>ersion
------------	--

Function	This command is used to report the adapter model and firmware version number. Model numbers are XC-SSA, XC-SSA2 and XC-SSA2/CLK.	
Syntax	REV	
Return value	Text string representing the adapter model and version number.	
Remarks	This information is only required for technical support. However, it may be used as a mechanism for functional verification of adapter modes of operation.	
Example	Read the adapter model and version number from the serial thermostat adapter connected to the communications port. The adapter is the version that must be polled by the host computer for updates.	
	Command	REV
	Reply	XC-SSA v1.05

RFM	<u>R</u>ead <u>F</u>an <u>M</u>ode
------------	---

Function	This command is used to retrieve the thermostat fan mode currently active.	
Syntax	RFM <i>address</i>	
Return value	FAN AUTO	FAN ON
Remarks	None.	
Example	Retrieve the Fan mode from the thermostat located at decimal address ninety-eight (98). The adapter is currently is currently set to echo all commands.	
	Command	RFM98
	Reply	RFM98:FAN AUTO

RHD **Read Heat Day**

Function This command is used to retrieve the heat setpoint used by the thermostat when it is in the Day/Occupied mode.

Syntax RHD*address*

Return value Range: 38°F to 88°F (3°C to 30°C).

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command.

Example Retrieve the current Day heat setpoint from the thermostat located at decimal address two hundred forty-five (245). The setpoint is currently 65°F

Command RHD245

Reply 65

RHH **Read Heat High**

Function This command is used to retrieve the maximum heat setpoint allowed by the thermostat when the value is changed with the up/down pushbuttons. The factory default value is 88°F (30°C).

Syntax RHH*address*

Return value Range: 38°F to 88°F (3°C to 30°C).

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command.

Example Retrieve the current maximum cool setpoint allowed by the thermostat located at decimal address sixteen (16). The maximum cool setpoint is currently 108°F.

Command RCH16

Reply 108

RHL **Read Heat Low**

Function This command is used to retrieve the minimum heat setpoint allowed by the thermostat when the value is changed with the up/down pushbuttons. The factory default value is 38°F (3°C).

Syntax RHL*address*

Return value Range: 38°F to 88°F (3°C to 30°C).

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command.

Example Retrieve the current minimum heat setpoint allowed by the thermostat located at decimal address sixteen (16). maximum setpoint is currently 60°F

Command RHL16

Reply 60

RHN	<u>R</u>ead <u>H</u>eat <u>N</u>ight
------------	---

Function This command is used to retrieve the heat setpoint used by the thermostat when it is in the Night/Unoccupied mode.

Syntax RHN*address*

Return value Range: 38°F to 88°F (3°C to 30°C).

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command.

Example Retrieve the current Night heat setpoint from the thermostat located at decimal address one hundred fifty-five (155). The setpoint is currently 67°F

Command RHN155

Reply 67

RIS	<u>R</u>ead <u>I</u>ndoor <u>S</u>ensor
------------	--

Function Indoor temperatures are measured by the thermostat using a local sensor or as many as six remote indoor sensors. This command is used to determine whether a local or remote sensor is being used to measure indoor temperature.

Syntax RIS*address*

Return value LOCAL | REMOTE

Remarks The remote sensor values are averaged prior to being displayed by the thermostat. The temperature values measured by each sensor are not individually available.

Example Determine if a remote indoor sensor is connected to the thermostat located at decimal address eighteen (18). A remote sensor is connected and the adapter is currently configured to echo all commands.

Command RIS18

Reply RIS18:REMOTE

RIT	<u>R</u>ead <u>I</u>ndoor <u>T</u>emperature
------------	---

Function This command is used to retrieve the indoor temperature displayed by the thermostat. The value displayed is the integral part of the true temperature plus 0.25°C

Syntax RIT*address*

Return value Range: 28°F to 124°F (0°C to +48°C).

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command

Example Read the indoor temperature displayed by the thermostat located at decimal address seventy-five (75). The value returned will be 82°F.

Command RIT75

Reply 82

RLF **Read LED Filter**

Function This command is used to retrieve the state of the Filter LED. The filter LED on the thermostat is energized by the an external HVAC controller, not by the thermostat. This command is used to determine whether the system has illuminated the LED on the thermostat.

Syntax RLF*address*

Return value ON | OFF

Remarks The filter LED is only available on the HPT-1 and HPT-2 thermostats.

Example Determine if the connected HVAC controller has issued a call to 'change air filter' on the thermostat at decimal address two hundred thirty-five (235).

Command RLF235

Reply ON

RLW **Read LED Wrench**

Function This command is used to retrieve the state of the Wrench LED. The wrench LED on the thermostat is energized by the an external HVAC controller, not by the thermostat. This command is used to determine whether the system has illuminated the LED on the thermostat.

Syntax RLW*address*

Return value ON | OFF

Remarks The wrench LED is only available on the HPT-1 and HPT-2 thermostats.

Example Determine if the connected HVAC controller has issued a call to 'service' on the thermostat at decimal address two hundred thirty-five (235).

Command RLW235

Reply OFF

RMC **Read Multiple Command**

Function This command allows a user to construct a single command using any combination of read commands described in this document. The size of this command is limited to twenty-four (24) characters.

Syntax RMC*addressCmdCmdCmdCmdCmdCmd*

Return value Any valid responses to individual READ commands.

Remarks The RMC command allows construction of a single command similar to the RAS command.

Example Retrieve the current operating mode and all current day mode setpoints for the thermostat located at decimal address ninety-eight (98). The current temperature is 76 F.

Command RMC98ITMSDSFMCDHD

Reply 76,HEAT,DAY,FAN AUTO,74,68

RMS	<u>Read Mode Status</u>
------------	--------------------------------

Function This command is used to retrieve the thermostat mode of operation currently active.

Syntax RMS*address*

Return value

OFF	HVAC control is disabled.
AUTO	Thermostat automatically switches between heat and cool.
COOL	Cool only.
HEAT	Heat only.
EHEAT	Emergency Heat - Heat Pump Units only

Remarks None.

Example Retrieve the operating mode for the thermostat located at decimal address ninety-eight (98).

Command RMS98
Reply AUTO

ROL	<u>Read Online List</u>
------------	--------------------------------

Function This command is used to retrieve the thirty-two thermostat address values that can be accessed by the adapter. This list is used by the various timer modes and system update features offered by the adapters.

Syntax ROL

Return value Address values of thermostats connected to the adapter.

Remarks A thermostat address will not be added to the list until the adapter has completed on successful communication with the thermostat.

** It is extremely **IMPORTANT** to clear the list and attempt communication with each thermostat left remaining on the bus whenever a thermostat address is changed or removed from the network. See WOL command.

Example Access the online list and determine if thermostat 5 has been installed.

Command ROL
Reply 1,2,3,4,5,6,7,8,9,10,11,0

ROS	<u>Read Outdoor Sensor</u>
------------	-----------------------------------

Function The thermostat measures outdoor temperature using a sensor attached to the same bus as the remote indoor sensors. This command is used to determine whether a remote sensor is available to the thermostat for displaying outdoor temperature.

Syntax ROS*address*

Return value YES | NO

Remarks This command has been modified slightly to support a feature unique to the XC-SSA2 adapters. Issuing the command ROS0 will report whether an outdoor sensor is being used anywhere on the thermostat network. Review the WOS command for a full description of this feature.

Example Determine if an outdoor sensor is connected to the thermostat located at decimal address two hundred thirty-five (235).

Command ROS235
Reply YES

ROT	<u>Read Outdoor Temperature</u>
------------	--

Function This command is used to retrieve the outdoor temperature displayed by the thermostat. The outdoor temperature value is only valid when an outdoor sensor is connected to the thermostat. See ROS command.

Syntax ROT*address*

Return value Range: -50°F to 124°F (-48°C to +48°C)

Remarks The value returned is scaled to °F or °C according to the setting assigned by the WTS command

Example Read the outdoor temperature from the thermostat located at decimal address one hundred (100). The value returned will be 102°F

Command ROT100

Reply 102

RSC	<u>Read System Clock</u>
------------	---------------------------------

Function This command is used to report the time value maintained by the adapter clock.

Syntax RSC

Return value 24 Hour format HH:MM:SS where:

HH	Hours	Range: 0-23
MM	Minutes	Range: 0-59
SS	Seconds	Range: 0-59

Remarks This command is only available on the XC-SSA2/CLK adapter.

Example Read the value of the time-of-day clock from the adapter. The adapter is configured to echo all commands.

Command RSC

Reply RSC:13:55:35

RSD	<u>Read System Date</u>
------------	--------------------------------

Function This command is used to report the date value maintained by the adapter clock.

Syntax RSD

Return value Format is YY-MM-DD.DOW where

YY	Year	Range: 0-99
MM	Month	Range: 1-12
DD	Day Of Month	Range: 1-31
DOW	Day Of Week	Range: 1-7

Remarks This command is only available on the XC-SSA2/CLK adapter.

Example Read the value of the day calendar from the adapter. The adapter is configured to echo all commands.

Command RSD

Reply RSD:11-15-95

RSN **Read Serial Number**

Function This command retrieves the thermostat model, firmware version and electronic serial number assigned during factory configuration.

Syntax *RSNaddress*

Return value Text representing the thermostat version and serial number.

Remarks This command will be used primarily for technical support.

Example Read the serial number string from the thermostat located at decimal address nine (9).

Command RSN9
Reply SST-1: SN123654

RSS **Read Stage Status**

Function This command retrieves the energized state of the thermostat heat or cool relays. This information is useful when determining whether the HVAC equipment is actively heating or cooling the space. Values for the stage relays for Heat range from 0 to 3 for Cool range from 0 to 2.

Syntax *RSSaddress*

Return value	HEAT,0	COOL,0
	HEAT,1	COOL,1
	HEAT,2	COOL,2
	HEAT,3	

Remarks

Example Read the stage status of the thermostat located at decimal address nine (9).

Command RSS9
Reply HEAT,1

RSU **Read System Update**

Function This command instructs the adapter to broadcast the system date and time out to the RS-485 network. The update interval is thirty (30) seconds. This feature is disabled using the WSU command. This command will be ignored if the adapter does not contain a real-time clock.

Syntax RSU

Return value	0=OFF	1=ON
---------------------	-------	------

Remarks Only available on the XC-SSA2/CLK adapter.

Example Read the status of system update mode.

Command RSU
Reply 1

RTC	<u>Read Timer Command</u>
------------	----------------------------------

Function This command is used to retrieve a thermostat schedule stored in adapter memory.

Syntax *RTCaddress*

Return value Timer Schedule fields as described in the "Guide to Programming XCI Adapter Schedules."

Remarks Available only using the XC-SSA2/CLK adapter.

Example Retrieve the third schedule from the timer list. It is located at decimal address two.

Command RTC2

Reply 06:00,00-00-00,4,1,1,1,65,68,72,E496

RTS	<u>Read Temperature Scale</u>
------------	--------------------------------------

Function This command retrieves the temperature scale assigned to the adapter.

Syntax RTS

Return value FAHRENHEIT | CELSIUS

Remarks The temperature scale cannot be determined by reading a thermostat. It must be assigned during system configuration.

Example Read the temperature scale from the adapter. The scale was configured by WTS for degrees Fahrenheit.

Command RTS

Reply FAHRENHEIT

RTV	<u>Read Timer Value</u>
------------	--------------------------------

Function This command retrieves the interval, in seconds, used by the adapter to report thermostat values.

Syntax RTV

Return value BCD value for the polling interval in seconds. Range: 0 and 5-255 seconds.

Remarks Review the WTV command for a detailed description of the Timer Value command.

Example Read the timer counter value from the adapter. The count was configured by WTC for ten (10) seconds.

Command RTV

Reply 10

RVM	<u>R</u>ead <u>V</u>erbose <u>M</u>ode
------------	---

Function This command is used to retrieve the format for adapter responses to Read/Write commands. The various formats are detailed by the WVM command.

Syntax RVM

Return value OFF,FAST | OFF,VERBOSE | ECHO,FAST | ECHO,VERBOSE

Remarks None.

Example Read the adapter response. The mode was previously configured with the command WVMD3

Command RVM

Reply ECHO,VERBOSE

WRITE COMMANDS

Valid addresses for all RIGHT Commands: 0 - 255

WCD **Write Cool Day**

- Function** This command is used to change the cool setpoint used by the thermostat whenever it is in the Day/Occupied mode.
- Syntax** **WCD***address***D***data*
- Data** BCD value for new setpoint. Range: 60°F to 108°F (16°C to 40°C).
- Return value** See RCD command for valid responses.
- Remarks** Provide the BCD value for a new setpoint as the data parameter.
- Example** Set the Cool-Day setpoint for the thermostat located at decimal address sixty-nine (69) to 89°F. The adapter is configured to echo all commands.
- Command** WCD69D89
Reply WCD69D89:89

WCH **Write Cool High**

- Function** This command is used to change the maximum cool setpoint allowed by the thermostat when the value is changed with the up/down pushbuttons. The factory default value is 108°F (40°C).
- Syntax** **WCH***address***D***data*
- Data** BCD value for new setpoint limit. Range: 60°F to 108°F (16°C to 40°C).
- Return value** See RCH command for valid responses.
- Remarks** Provide the BCD value for a new setpoint as the data parameter.
- Example** Set the maximum cool setpoint for the thermostat located at decimal address sixty-eight (68) to 99°F.
- Command** WCH68D99
Reply 99

WCL **Write Cool Low**

- Function** This command is used to change the minimum cool setpoint allowed by the thermostat when the value is changed with the up/down pushbuttons. The factory default value is 60°F (16°C).
- Syntax** **WCL***address***D***data*
- Data** BCD value for new setpoint. Range: 60°F to 108°F (16°C to 40°C).
- Return value** See RCL command for valid responses.
- Remarks** Provide the BCD value for a new setpoint as the data parameter.
- Example** Set the minimum cool setpoint for the thermostat located at decimal address sixty-seven (67) to 72°F.
- Command** WCL67D72
Reply 72

WCN	<u>W</u>rite <u>C</u>ool <u>N</u>ight
------------	--

- Function** This command is used to change the cool setpoint used by the thermostat whenever it is in the Night/Unoccupied mode.
- Syntax** **WCN***address***D***data*
- Data** BCD value for new setpoint. Range: 60°F to 108°F (16°C to 40°C).
- Return value** See RCN command for valid responses.
- Remarks** None.
- Example** Set the Cool-Night setpoint for the thermostat located at decimal address thirty-five (35) to 85°F.
- Command** WCN35D85
Reply 85

WCS	<u>W</u>rite <u>C</u>lock <u>S</u>cheduler
------------	---

- Function** This command is used to enable the scheduler used to change thermostat settings in accordance with timers downloaded to the adapter. The adapter saves this value into non-volatile memory and uses it as the default value anytime the adapter is reset due to loss of power.
- Syntax** **WCSD***data*
- Data** **0**=OFF | **1**=ON
- Return value** See RTS command for valid responses.
- Remarks** Available only with XC-SSA2/CLK.
- Example** Send the command to enable the adapter scheduler. The adapter is configured for ECHO,VERBOSE mode.
- Command** WCSD1
Reply WCSD1:1

WDA	<u>W</u>rite <u>D</u>evice <u>A</u>ddress
------------	--

- Function** This command is used to change the address to which a thermostat will respond.
- Syntax** **WDA***old address***D***new address*
- Data** Old Address Range: | 0-255
 New Address Range: | 1-255
- Return value** OK
- Remarks** All thermostats connected to the adapter will be configured to respond to and address value of zero. Only one thermostat can be attached to the adapter when using this command with an address of zero.

WARNING

Be extremely cautious when using this command!

- Example** Configure the new address for the thermostat connected to the adapter to become decimal nine (9). The adapter is configured to echo all commands.
- Command** WDA0D9
Reply WDA0D9:OK

WDS	<u>W</u>rite <u>D</u>ay/<u>N</u>ight <u>S</u>tatus
------------	---

Function This command is used to change the state of the Day/Night mode. It is used to control which pair of heat/cool setpoints is in active use by the thermostat.

Syntax **WDS***address***D***data*

Data **D**=Day | **N**=Night

Return value See RDS command for valid responses.

Remarks None.

Example Change the thermostat located at decimal address one hundred (100) to the night setpoint.

Command WDS100DN

Reply NIGHT

WFM	<u>W</u>rite <u>F</u>an <u>M</u>ode
------------	--

Function This command is used to change the active thermostat fan mode.

Syntax **WFM***address***D***data*

Data **A**=Fan Auto | **O**=Fan On

Return value See RFM command for valid responses.

Remarks None.

Example Select fan=ON for the thermostat located at decimal address forty-nine (49).

Command WFM49DO

Reply FAN ON

WHD	<u>W</u>rite <u>H</u>eat <u>D</u>ay
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Function This command is used to change the heat setpoint used by the thermostat whenever it is in the Day/Occupied mode.

Syntax **WHD***address***D***data*

Data Range: 38°F to 88°F (3°C to 30°C).

Return value See RHD command for valid responses.

Remarks Provide the BCD value for the new control setpoint.

Example Change the heat day setpoint for the thermostat located at decimal address forty-five (45) to 64°F.

Command WHD45D64

Reply 64

WHH **Write Heat High**

Function This command is used to change the maximum heat setpoint allowed by the thermostat when the value is changed with the up/down pushbuttons. The factory default value is 88°F (30°C).

Syntax *WHHaddressDdata*

Data Range: 38°F to 88°F (3°C to 30°C).

Return value See RHH command for valid responses.

Remarks Provide the BCD value for a new setpoint.

Example Set the maximum heat setpoint for the thermostat located at decimal address sixty-nine (69) to 85°F.

Command WHH69D85

Reply 85

WHL **Write Heat Low**

Function This command is used to change the minimum heat setpoint allowed by the thermostat when the value is changed with the up/down pushbuttons. The factory default value is 38°F (3°C).

Syntax *WHLaddressDdata*

Data Range: 38°F to 88°F (3°C to 30°C).

Return value See RHL command for valid responses.

Remarks Provide the BCD value for a new setpoint.

Example Set the minimum cool setpoint for the thermostat located at decimal address sixty-nine (69) to 45°F.

Command WHL69D45

Reply 45

WHN **Write Heat Night**

Function This command is used to change the heat setpoint used by the thermostat whenever it is in the Night/Unoccupied mode.

Syntax *WHNaddressDdata*

Data Range: 38°F to 88°F (3°C to 30°C).

Return value See RHN command for valid responses.

Remarks Provide the BCD value for a new setpoint.

Example Change the Heat-Night setpoint for the thermostat located at decimal address one-hundred ten (110) to 68°F.

Command WHN110D68

Reply 68

WMC	<u>Write Multiple Command</u>
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Function	This command allows a user to develop any combination of write commands needed for a particular environment. The multiple command only uses the 2 nd and 3 rd letters of the individual write commands. This single command can replace as many as eight individual write commands.
Syntax	WMC <i>addressC1C2..Cn</i>
Data	Any valid write commands to a single thermostat.
Return value	Dependent upon each command and verbose mode setting. See read commands corresponding to each write command for valid responses.
Remarks	The total command is limited to twenty-four (24) characters.
Example	Write the current operating modes and setpoints for the thermostat located at decimal address ninety-eight (98). Use the sequence Mode State = Auto, Fan Mode = Auto, Day/Night = Day, Cool Day = 72, Cool Night = 78 Command WMC98MSAFMODSDCD72CN78 Reply OK,OK,OK,OK,OK

WMS	<u>Write Mode Status</u>
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Function	This command is used to change the active thermostat mode of operation.
Syntax	WMS <i>addressDdata</i>
Data	O =Off C =Cool H =Heat A =Auto E =Emergency Heat
Return value	See RMS command for valid responses.
Remarks	None.
Example	Change the mode for the thermostat located at decimal address ninety-eight (98) to AUTO. The adapter is configured to echo all commands. Command WMS98DA Reply WMS98DA:AUTO

WOL	<u>Write Online List</u>
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Function	This command is used to remove the thirty-two thermostat address values that can be accessed by the adapter. The online list is used by the various timer modes and system update features controlled by the adapter.
Syntax	WOL0D0
Data	0
Return value	OK.
Remarks	A thermostat address will not be added to the list until the adapter has successfully communicated with the thermostat. Issue the RAS command to add a thermostat to the list.
Example	Clear the online list. Command WOL0D0 Reply OK

WOS	<u>Write Outdoor Sensor</u>
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Function The thermostat measures outdoor temperature using a remote sensor attached to the same bus as the remote indoor sensors. This command is used to activate the outdoor temperature update feature.

The Outdoor Sensor command was previously available in read-only form. With this addition of this write command, only one remote sensor is required in order to display the outdoor temperature on all thermostats connected to the adapter.

Using this command with a non-zero value for the address fields will instruct the adapter to query the designated thermostat for an outdoor sensor. If a sensor is found, then the adapter will read the outdoor temperature from that thermostat and broadcast the value to all thermostats connected to the adapter. The interval for this query/broadcast transaction is every thirty (30) seconds.

Using this command with a zero value for the address fields will instruct the adapter to disable this feature.

Syntax **WOS***addressDaddress*

Data Use the non-zero address value for the thermostat to which the physical outdoor sensor is connected.

Return value YES | NO

Remarks This command is available only with XC-SSA2 adapters.

The ROS command has been modified slightly to allow the value zero for the address field. This is used to determine if the outdoor temperature update mode is active.

See ROS command for valid responses.

Example Determine if an outdoor sensor is connected to the thermostat located at decimal address two hundred thirty-five (235).

Command WOS235D235

Reply YES

WSC	<u>Write System Clock</u>
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Function This command is used to set the adapter time clock.

Syntax **WSCD***data*

Data Text representing a new clock setting for the adapter time clock
Format is HH:MM:SS where:

HH	Hours	Range: 0-23
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MM	Minutes	Range: 0-59
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SS	Seconds	Range: 0-59
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Return value See RSC command for valid responses.

Remarks Time must be provided in twenty-four hour format.

Example Set the adapter time-of-day clock to 3:00 PM. Commands are not echoed.

Command WSCD15:00:00

Reply 13:55:35

WSD	<u>Write System Date</u>
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Function This command is used to set the adapter date.

Syntax **WSDD***data*

Data Text representing a new date setting for the adapter time clock.

Format is YY-MM-DD.DOW where:

YY	Year	Range: 0-99
MM	Month	Range: 1-12
DD	Day Of Month	Range: 1-31
DOW	Day Of Week	Range: 1-7

Return Value See RSD command for valid responses.

Remarks Sunday will be used as the first day of the week by the XCI Command Center interface.

Example Set the adapter date to May4, 1997. The adapter is configured to echo all commands.

Command WSDD12-29-95.02

Reply WSDD12-29-95.02:12-29-95.02

WSU	<u>Write System Update</u>
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Function This command instructs the adapter to broadcast the system date and time out to the RS-485 network. The update interval is thirty (30) seconds. This command will be ignored if the adapter does not contain a real-time clock. The adapter saves this value into non-volatile memory and uses it as the default value anytime the adapter is reset due to loss of power.

Syntax **WSUD***data*

Data **0=ON** | **1=OFF**

Return value See RSU command for valid responses.

Remarks This value is saved by the adapter in non-volatile memory. It will be the default value anytime the adapter is reset by loss of power.

Example Change the system update flag on the master adapter.

Command WSUD1

Reply OK

WTC	<u>Write Timer Command</u>
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Function This command is used to change a thermostat schedule stored in adapter memory.

Syntax **WTC***addressC1C2...Cn*

Data Timer Schedule fields as described in the "Guide to Programming XCI Adapter Schedules."

Return value Dependent upon number of fields changed.

Remarks Available only using the XC-SSA2/CLK adapter.

Example Change the date/time for adapter schedule 2 to 6:00 PM on May 5th, 1998.

Command WTC2SC18:00SD98-04-05.03

Reply OK,OK

WTS	<u>Write Temperature Scale</u>
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Function	This command assigns the temperature scale to the adapter used for setting and reporting temperature values. The adapter saves this value into non-volatile memory and uses it as the default value anytime the adapter is reset due to loss of power.
Syntax	WTSD <i>data</i>
Data	C =Celsius F =Fahrenheit
Return value	See RTS command for valid responses.
Remarks	The temperature scale cannot be determined by directly reading a thermostat. The scale must be assigned during adapter configuration.
Example	Change the adapter temperature scale so that all temperatures and setpoints are interpreted and reported as degrees Celsius. Command WTSDC Reply CELSIUS

WTV	<u>Write Timer Value</u>
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Function	This command instructs the adapter to report the results of the RAS command for each thermostat in the online list using the interval provided. The adapter saves this value into non-volatile memory and uses it as the default value anytime the adapter is reset due to loss of power. A data value of zero instructs the adapter to disable polling. If not zero, the adapter will poll each thermostat in the online list after the reported interval has elapsed. The adapter will report the thermostat's response starting with header consisting of a tag, colon delimiter, and the thermostat address. This header will be followed by the comma delimited response to each read commands as follows: ADDR Address:RIT,ROT,RMS,RFM,RDS,RCD,RCN,RHD,RHN,RSS
Syntax	WTVD <i>data</i>
Data	BCD value for the polling interval. 0 = Disable Polling, 5-255 seconds.
Return Value	0-255
Remarks	This command instructs the adapter to report the state for each thermostat found in the online list (See WOL). These values are reported for only one thermostat at the completion of each interval. For example, if using an interval of five seconds, the state of the first thermostat in the list is reported when five seconds has elapsed. The state of the second thermostat in the list is reported when ten seconds has elapsed. The state of each thermostat in the list is reported in this manner until the last thermostat in the list has been reported. The adapter then starts back at the beginning of the list and repeats. Any command received by the adapter causes the elapsed interval timer to start the elapsed timer waiting for the full period elapses before issuing the RAS command.
Example	Configure the adapter to report thermostat values every fifteen (15) seconds. Command WTVD15 Reply 15 Fifteen seconds later the first thermostat will be reported.

WVM	<u>Write Verbose Mode</u>
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Function This command controls the manner in which the adapter will respond to Read/Write commands. The adapter saves this value into non-volatile memory and uses it as the default value anytime the adapter is reset due to loss of power.

The first consideration is known as ECHO mode. This mode is used to echo each command received by the adapter back to the sender. The adapter response will include the command received followed by a colon delimiter and the response to the command. The mode opposite to ECHO is known as OFF.

The second consideration is known as VERBOSE mode. In this mode, the adapter will report the results of a write command by issuing the corresponding read command. This would be the same as issuing both the write and read commands for each write command. The mode opposite VERBOSE is known as FAST.

Syntax `WVMD`*data*

Data Number associated with these response methods are:

0	OFF	FAST
1	ECHO	FAST
2	OFF	VERBOSE
3	ECHO	VERBOSE

Return value See RVM command for valid responses.

Remarks In FAST mode, the control software is responsible for issuing the appropriate read command to verify that the thermostat changed in accordance with the write command issued to the adapter.

Example Configure the adapter to echo all commands and read the thermostat to verify the results of any write command.

Command WVMD3

Reply ECHO,VERBOSE