Programmer's Guide to Net/X™ Network Communications

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Introduction

This document describes the ASCII command functions used to communicate with the Net/X family of serial controllers 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 controller and serial port.

Conventions used in this document

All command functions are transmitted to the serial controller 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 controller along with the corresponding response. Unless otherwise indicated, all commands apply to all controllers and all communicating thermostats. All address values are provided in decimal notation.

Communications Configuration

The serial port setting to use the controller is **9600** BAUD, **8** BITS, **N**O 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 controller so that you can attach it directly to the serial port connector found on most PC compatible computers. Do not use a null modem cable when converting to a nine pins because the controller pins 2 and 3 are already configured as a null modem.

Network Communications

Some NT-SSAx controllers incorporate an RS-485 port for communications between multiple controllers to facilitate construction of very large thermostat networks. All commands for the controller 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 controller address. The controller address must correspond to the switch configuration found on each controller. 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. Controllers 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 Net/X Programmer's Guide to the Checksum Calculations.

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WRITE COMMANDS

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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 **RAS***address*

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 **RCD***address*

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 **RCH***address*

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

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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 **RCL***address*

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 controller is set to echo all commands.

Command RCL16
Reply RCL16:60

RCN Read Cool Night

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

Syntax **RCN***address*

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 controller scheduler is active or inactive.

Syntax **RCS**

Return value **0**=OFF | **1**=ON

Remarks Available only with the NT-SSAxx/CLK controllers. Details for using the controller scheduler are described in another document. Refer to the "Guide to Programming NET/X Controller Schedules" for additional information.

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

Command RCS
Reply 1

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RDS Read Day/Night Status

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***address*

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 REad Controller Version

Function This command is used to report the controller model and firmware version number.

Syntax **REV**

Return value Text string representing the controller 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 controller modes of operation.

Example Read the controller model and version number from the serial thermostat controller connected to the communications port. The controller is the version that must be polled by the host computer for updates.

Command REV
Reply NT-SSA32/CLK v2.09

RFM Read Fan Mode

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

Syntax **RFM***address*

Return value **FAN AUTO** | **FAN ON**

Remarks None.

Example Retrieve the Fan mode from the thermostat located at decimal address ninety-eight (98). The controller is currently is currently set to echo all commands.

Command RFM98
Reply RFM98:FAN AUTO

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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

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RHN Read Heat Night

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 Read Indoor Sensor

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 controller is currently configured to echo all commands.

Command RIS18
Reply RIS18:REMOTE

RIT Read Indoor Temperature

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

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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

RLT Read Lockout Timer

Function This command is used to retrieve the value of the temporary lockout (override) timer and the two setpoints active during the timer period. This command only applies to thermostats with the keyboard lockout switch engaged.

Syntax **RLT***address*

Return value Comma delimited response which includes the following three fields:

Period Value for the lockout period. Range: 0 to 255 minutes.

Cool The active cool setpoint.

Heat The active heat setpoint.

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

Example Determine if the thermostat located at decimal address eighteen (18) has been been placed into temporary override/

Command RLT18
Reply 0,75,65

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

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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***address*CmdCmdCmdCmdCmdCmd

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 Read Mode Status

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

RNA Read Next Alarm

Function This command will reply with the next schedule to be broadcasted by the controller scheduler.

Syntax **RNA**

Return value Time, date and function information for the schedule

Remarks Available only with the NT-SSAxx/CLK controllers. Details for using the controller scheduler are described in another document. Refer to the "Guide to Programming NET/X Controller Schedules" for additional information.

Example Retrieve the next schedule of the controller scheduler. The scheduler was previously activated using the command WCSD1.

Command RNA
Reply 19:00:00,19:00,00-00-00,4,5,1,0,64,70,73

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ROL Read Online List

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

Syntax **ROL**

Return value Address values of thermostats connected to the controller.

Remarks A thermostat address will not be added to the list until the controller 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 1,2,3,4,5,6,7,8,9,10,11,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0

ROS Read Outdoor Sensor

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 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 Read Outdoor Temperature

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

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RSC Read System Clock

Function This command is used to report the time value maintained by the controller 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 Available only with the NT-SSAxx/CLK controllers.

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

Command RSC
Reply RSC:13:55:35

RSD Read System Date

Function This command is used to report the date value maintained by the controller 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 Available only with the NT-SSAxx/CLK controllers.

Example Read the value of the day calendar from the controller. The controller 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 **RSN***address*

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

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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 **RSS***address*

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 controller 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 controller does not contain a real-time clock.

Syntax **RSU**

Return value

0=OFF	**1**=ON

Remarks Available only with the NT-SSAxx/CLK controllers.

Example Read the status of system update mode.

Command RSU
Reply 1

RTC Read Timer Command

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

Syntax **RTC***address*

Return value Timer Schedule fields as described in the "Guide to Programming NET/X Controller Schedules."

Remarks Available only with the NT-SSAxx/CLK controllers.

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

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RTS Read Temperature Scale

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

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 controller. The scale was configured by WTS for degrees Fahrenheit.

Command RTS
Reply FAHRENHEIT

RTV Read Timer Value

Function This command retrieves the interval, in seconds, used by the controller 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 controller. The count was configured by WTC for ten (10) seconds.

Command RTV
Reply 10

RVM Read Verbose Mode

Function This command is used to retrieve the format for controller 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 controller response. The mode was previously configured with the command WVMD3

Command RVM
Reply ECHO,VERBOSE

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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 controller 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

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WCN Write Cool Night

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 Write Clock Scheduler

Function This command is used to enable the scheduler used to change thermostat settings in accordance with timers downloaded to the controller. The controller saves this value into non-volatile memory and uses it as the default value anytime the controller 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 the NT-SSAxx/CLK controllers.

Example Send the command to enable the controller scheduler. The controller is configured for ECHO,VERBOSE mode.

Command WCSD1
Reply WCSD1:1

WDA Write Device Address

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 controller will be configured to respond to and address value of zero. Only one thermostat can be attached to the controller 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 controller to become decimal nine (9). The controller is configured to echo all commands.

Command WDA0D9
Reply WDA0D9:OK

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WDS Write Day/Night Status

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 Write Fan Mode

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 Write Heat Day

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

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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 **WHH***address***D***data*

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 **WHL***address***D***data*

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 **WHN***address***D***data*

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

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WMC Write Multiple Command

Function This command allows a user to develop any combination of write commands needed for a particular environment. The multiple command only uses the 2nd and 3rd letters of the individual write commands. This single command can replace as many as eight individual write commands.

Syntax **WMC***address***C1C2..Cn**

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 Write Mode Status

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

Syntax **WMS***address***D***data*

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 controller is configured to echo all commands.

Command WMS98DA
Reply WMS98DA:AUTO

WOL Write Online List

Function This command is used to remove the thirty-two thermostat address values that can be accessed by the controller. The online list is used by the various timer modes and system update features controlled by the controller.

Syntax **WOL**0**D**0

Data 0

Return value OK.

Remarks A thermostat address will not be added to the list until the controller 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

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WOS Write Outdoor Sensor

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 controller.

Using this command with a non-zero value for the address fields will instruct the controller to query the designated thermostat for an outdoor sensor. If a sensor is found, then the controller will read the outdoor temperature from that thermostat and broadcast the value to all thermostats connected to the controller. 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 controller to disable this feature.

Syntax **WOS***address***D***address*

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 NT-SSA2 controllers.

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 Write System Clock

Function This command is used to set the controller time clock.

Syntax **WSCD***data*

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

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

Return value See RSC command for valid responses.

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

Available only with the NT-SSAxx/CLK controllers.

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

Command WSCD15:00:00
Reply 13:55:35

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WSD Write System Date

Function This command is used to set the controller date.

Syntax **WSDD***data*

Data Text representing a new date setting for the controller 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 NET/X Command Center interface.

Available only with the NT-SSAxx/CLK controllers.

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

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

WSU Write System Update

Function This command instructs the controller 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 controller does not contain a real-time clock. The controller saves this value into non-volatile memory and uses it as the default value anytime the controller 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 controller in non-volatile memory. It will be the default value anytime the controller is reset by loss of power.

Example Change the system update flag on the master controller.

Command WSUD1
Reply OK

WTC Write Timer Command

Function This command is used to change a thermostat schedule stored in controller memory.

Syntax **WTC***address***C1C2…Cn**

Data Timer Schedule fields as described in the "Guide to Programming NET/X Controller Schedules."

Return value Dependent upon number of fields changed.

Remarks Available only using the NT-SSA2/CLK controller.

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

Command WTC2SC18:00SD98-04-05.03
Reply OK,OK

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WTS Write Temperature Scale

Function This command assigns the temperature scale to the controller used for setting and reporting temperature values. The controller saves this value into non-volatile memory and uses it as the default value anytime the controller is reset due to loss of power.

Syntax **WTSD***data*

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 controller configuration.

Example Change the controller temperature scale so that all temperatures and setpoints are interpreted and reported as degrees Celsius.

Command WTSDC
Reply CELSIUS

WTV Write Timer Value

Function This command instructs the controller to report the results of the RAS command for each thermostat in the online list using the interval provided. The controller saves this value into non-volatile memory and uses it as the default value anytime the controller is reset due to loss of power.

A data value of zero instructs the controller to disable polling. If not zero, the controller will poll each thermostat in the online list after the reported interval has elapsed. The controller 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***data*

Data BCD value for the polling interval. 0 = Disable Polling, 5-255 seconds.

Return Value 0-255

Remarks This command instructs the controller 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 controller then starts back at the beginning of the list and repeats.

Any command received by the controller causes the elapsed interval timer to start the elapsed timer waiting for the full period elapses before issuing the RAS command.

Example Configure the controller to report thermostat values every fifteen (15) seconds.

Command WTVD15
Reply 15
Fifteen seconds later the first thermostat will be reported.

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WVM Write Verbose Mode

Function This command controls the manner in which the controller will respond to Read/Write commands. The controller saves this value into non-volatile memory and uses it as the default value anytime the controller 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 controller back to the sender. The controller 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 controller 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 controller.

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

Command WVMD3
Reply ECHO,VERBOSE

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