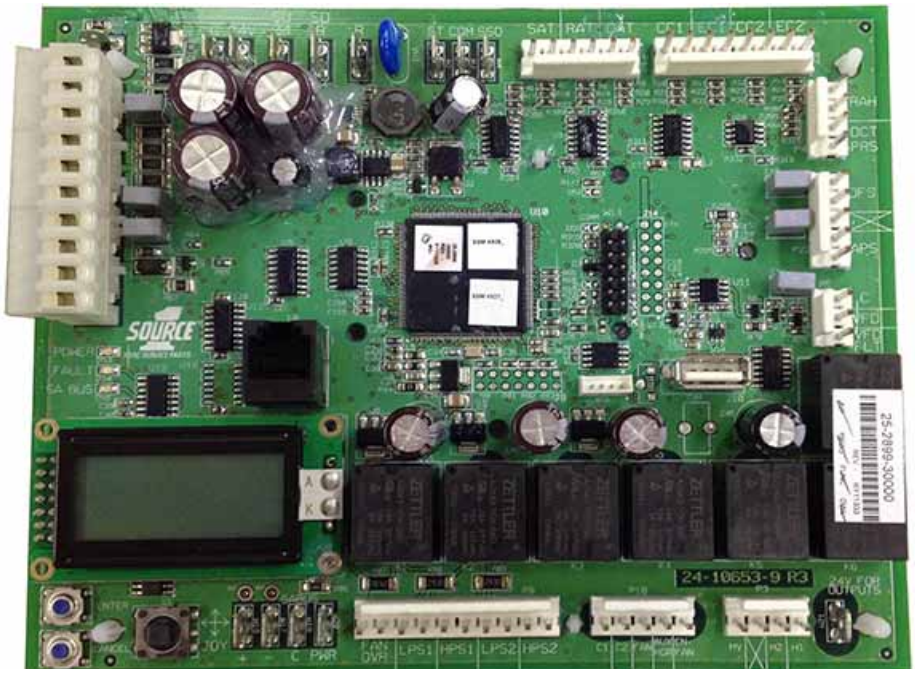
Smart Equipment Control (SEC)

Technical Bulletin



Smart Equipment Control Board (SEC) 2-Stage

Smart Equipment Control Board (SEC) Single Stage with Optional Communication Board

Document Introduction

SMART Equipment Controls is a unified platform for controllers in commercial unitary, chiller and air handling

products manufactured by Johnson Controls. This product line introduces the SMART Equipment Controls (SEC) unit control board (UCB) as the primary system control. This controller incorporates basic compressor

protection, indoor blower control and advanced features such as integration of ventilation control.

The SEC board allows flexibility for comfort control input from:

- a wall thermostat
- thermistor sensors included with the unit
- a communicating NetSensor
- communicated sensor values when BAS integration is utilized

Basic technician access to the control parameters of individual SEC boards is made

through the on-board joystick, enter or cancel buttons and the 2-line by 8-character display. For

the technician and end-user, the use of the MAP Gateway device permits web browser access to

individual and networked SEC boards. An on-board USB port for fl ash drive connection

allows back-up and restoration of control parameters as well as SEC board firmware upgrade.

Networking-capable options for unit integration to building automation systems have a

communication sub-board added to the UCB, this sub-board is the termination point for the network cable. BACnet MSTP is the standard communication protocol for networking-capable

SEC board options. Other supported protocols are Modbus, and N2. Current outlook for LON protocols does not look favorable for the HVAC market, therefore the SEC platform design will not support LON as one of the native protocols. The LON protocol will be supported with external MSTP to LON gateway. A gateway manufacture will be certified and available through UPGnet.

Unit control board is the main controller for the roof top unit. The modular design of SEC platform will allow additional controllers based on the configuration of the roof top unit. Other controllers that are supported and provided as communicating controller to the UCB through a Sensor & Actuator communicating bus. This communication will allow a plug and play mechanism of other controllers without any needs of external programming or hardware setup. This feature is especially important during the repair and replacement of the controls. Other types of controllers are; UCB-2 (additional stages of cooling and heating), 4-stage (additional support for 4 stage units), Economizer controller, and FDD (Fault Detection Diagnostic).

Related Documentation

Table 1: Related Documentation

For Information On	See Document	LIT or Part Number
Features, Benefits, and Applications of SEC	Smart Equipment Controls (SEC) Product Bulletin	LIT-12011934
Setting up the Fault Code Capability Sensor	NS Series Network Sensors with Fault Code Capability Installation Instructions	Part No. 24-10094-76
Inspecting the System, Design Application, and Warranty Information	Start-Up and Service Data Setup Guide	LIT-12011916
Configuring and Commissioning your Unit	Smart Equipment Controls (SEC) Quick Start Guide	LIT-12011938
Operating Modes and Strategies of the SEC	Smart Equipment Controls (SEC) Sequence of Operation Overview Technical Bulletin	LIT-12011950
Reviewing BACnet® Interoperability for the Unit Control Board (UCB)	Unit control Board (UCB) Protocol Implementation Conformance Statement	LIT-12011996
Product Overview, Features, and Benefits of the Economizer Controller	SE-ECO1001-0 Economizer Controller Catalog Page	LIT-1900885
Product Overview, Features, and Benefits of the Fault Detecting Diagnostics Board	SE-FDD1001-0 Fault Detection Diagnostics (FDD) Board Catalog Page	LIT-1900886
Product Overview, Features, and Benefits of the Four Stage Expansion Control Board	SE-SPU1004-0 Four-Stage Expansion Control Board Catalog Page	LIT-1900884

Table 1: Related Documentation (Continued)

For Information On	See Document	LIT or Part Number
Product Overview, Features, and Benefits of the Series Unit Control Boards (UCBs)	SP-SPU Series Unit Control Boards (UCBs) Catalog Page	LIT-1900883
Configuring Settings, Performing a Parameters within SEC, Menu navigation, Fault Tables	Smart Equipment Controls (SEC) Technical Bulletin	LIT-12011998

Mobile Access Portal (MAP) Gateway

The Mobile Access Portal (MAP) Gateway provides a wireless mobile user interface to Smart Equipment. The MAP Gateway gives you access to any Smart Equipment device that is on a connected BACnet MS/TP field bus. The intuitive, browser-based interface displays the same menus as the UCB local display. This document does not differentiate between procedures performed from either the MAP Gateway or the UCB local display because the menu options and parameters are the same.

For additional information on MAP Gateway, refer to the Mobile Access Portal Gateway Product Bulletin LIT-12011884.

Unit Control Board Overview

Screen Layout

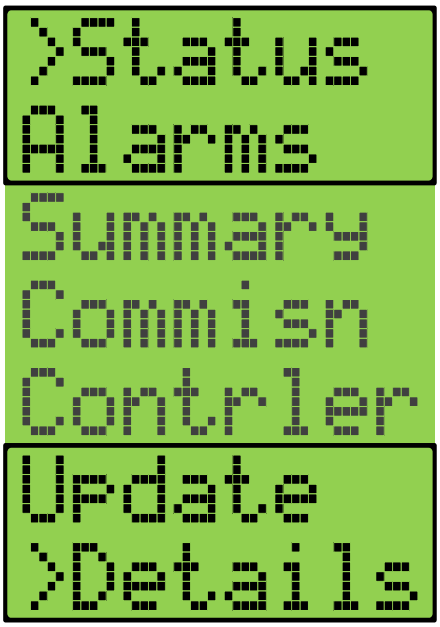


Figure 1: UCB Main Level Menus

Status Menu

The Status menu displays the current states and parameters for the unit.

Demand Ventilation Mode (DVent-Mode)

You can enable or disable the DVent-Mode. This option is controlled by the Indoor Air Quality (IAQ). The DVent-Mode is calculated by the differential between the IAQ and Outdoor Air Quality (OAQ). An economizer board must be present for this option to enable.

Operational Setpoint (OprST)

The OprST displays the current operational setpoint. The OprST may be based on the Return Air Temperature (RAT) thermistor or Supply Air Temperature (SAT) thermistor input, SA Bus network sensor or FC bus communicated value sources.

Supply Air Temperature (SAT)

The SAT displays the current UCB thermistor input. The default is 60.7°F.

Return Air Temperature (RAT)

The RAT displays the current UCB thermistor input. The default is 73.0°F.

Operational Supply Humidity (OprSH)

OprSH displays the space humidity. The reading may come from the UCB RAH 0 to 10 VDC input, SA Bus Network Sensor, or FC Bus communicated value. The default is 49.6%. You require input to the UCB RAH pins, humidity from the network sensor, or a communicated value.

Return Air Humidity (RAT)

RAT displays the Return Air Humidity. You must have an input to the UCB RAH pins, humidity from the network sensor, or a communicated value.

Operational Outdoor Air Temperature (OprOAT)

Enthalpy calculated from OAH 0-10 VDC input to the economizer board and OprOAT; 0B/# indicated if OAH 0-10 VDC input to the economizer board is not present.

Operational Outdoor Air Humidity (OprOAH)

The buffered outdoor air humidity in use; may be from economizer board OAH 0-10 VDC input or FC BUS communicated value sources; ?Unrel indicates OAH input is currently not present.

Operational Outdoor Air Quality (OprOAQ)

The buffered outdoor air quality in use; may be from economizer board OAQ 0-10 VDC input or FC BUS communicated value sources; ?Unrel indicates OAQ input is currently not present.

Operational Indoor Air Quality (OprIAQ)

The buffered indoor air quality in use; may be from economizer board IAQ 0-10 VDC input, SA BUS NetSensor or FC BUS communicated value sources; ?Unrel indicates IAQ input is currently not present.

Alarms Menu

No Events

No notification in the active alarm register.

Alarm Description

Most recent notification in the active alarm register.

Summary Menu

HVAC Zone Fan

Cooling (Clg)

Cooling and Heating Hidden if Number of Heat Pump Stages Installed > 0.

Heating (Htg)

Heat Pump. Only present when Number of Heat Pump Stages Installed > 0.

Economizer (Econ)

Demand Ventilation (DVent)

Power Exhaust (PowerEx)

Hot Gas Reheat. This is present when Hot Gas Reheat Enabled For Operation = Yes.

Sensors

Network

Commissioning Menu

HVAC Zone

The source of occupied/unoccupied status.

Indoor Fan (Fan)

UCB FAN 24 VAC output status.

Cooling (Clg)

UCB C1 24 VAC output status

Heating (Htg)

UCB H1 24 VAC output status

Economizer (Econ)

Yes indicates economizer free cooling is available, No indicates economizer free cooling is not availble; indication depends on FreeClg-Mode effective and current outdoor/indoor conditions.

Demand Ventilation (DVent)

Demand Ventilation mode selection; Disabled permits no demand ventilation function, Controlled by IAQ requires IAQ input, Diff between IAQ and OAQ requires IAQ and OAQ inputs.

Power Exhaust (PowerEx)

1. Hot Gas Reheat (again only present when Hot Gas Reheat Enabled For Operation = Yes)

2. WarmupCooldown (only present when Thermostat Only Control Enabled = No)

3. Title 24 Load Shed

4. Defrost (only present when Number of Heat Pump Stages Installed > 0)

Network

Single Zone VAV (only present when SZ VAV Enabled is Enabled).

Controller Menu

Firmware (Firm)

FirmVer - UCB firmware revision and UCB firmware status. Firm-S - UCB firmware status.

Time

Set the time zone. The default is Central.

Network

DevName - device name that appears on the FC BUS BACnet network. BASCom - BACnet indicated with communication sub-board option. Comm-S - effective when an optional communication sub-board is present; Waiting For Pol indicates FC BUS network communication is not present, Active indicates FC BUS network communication is present. Address - effective with communication sub-board option; FC BUS BACnet network address. OprBaudRate - effective with communication sub-board option; FC BUS baud rate to be used. BaudRate - effective with communication sub-board option; FC BUS baud rate in use. DeviceId - device ID number that appears on the FC BUS BACnet network; adjustment increments of 1s.

Miscellaneous (Misc)

Language - laguage used in the UCB parameter display. Units - IP uses Imperial units of measure in the UCB parameter display (°F, "wc, etc.), SI uses metric units of measure in the UCB parameter display (°C, kPA, etc.).

System Controllers (SysCntlrs)

The update menus displays the following information: Misc - Relearn, #NetSensors, EconCntlr, 4StgCntlr, FDDMCntlr and FDDSCntlr. UCB - UCB firmware revision, UCB software application revision and UCB hardware revision. Econ - economizer board firmware revision, economizer board software application revision and economizer board hardware revision.

Update Menu

The update menus displays the following information: View Version (ViewVer), Load Firmware (LoadFirm), Backup, Restore, Full Clone, Part Clone, Factory Default (FactryDft), Date and Time (DateTime) also can Export Trends to a USB Stick. Use the flash drive to save settings and update the control.

Details Menu

Unit

The unit menu displays the name, model number, serial number, and reset lockout (ResetLO). The control name, model number, and serial number have a 14-character maximum. The default setting for the ResetLO is On. This resets all active hard lockout alarms.

Setpoints

This menu displays the current values for all the setpoints in use.

Zone

This menu displays all the current values for either the indoor or outdoor zone.

Control

This menu lists all the current values for the control; indoor fan, cooling (Clg), heating (Htg), heat pump, economizer, power exhaust, demand ventilation, air monitoring station, hot gas reheat and smoke control.

Service

This menu lists the current information for the inputs which includes: sensors, coil sensors, thermostat, binary inputs, unit protection, and network inputs. Information for the outputs both relay and analog. The Factory options displays the current control configuration data (for example, cooling stages set to 2, no heating stages).

Self Test

This menu contains the controls to execute a diagnostic test for the rooftop equipment.

View Results

This menu lists the results of the Self Test and can be used to identify any equipment failures.

Detailed Procedures

Turning On the Unit

1. After you apply 24 VAC power to the C and 24V terminals, the UCB begins the startup sequence. The display backlight lights and begins to scroll Johnson Controls, JCI. The power LED lights up and remains lit.
2. The Red FAULT LED lights up and flashes intermittently thereafter. The green SA Bus LED briefly lights up.
3. The local display begins a countdown sequence after power is applied. During the countdown sequence the green SA Bus LED does one of the two following actions:
   a. lights to indicate the UCB is awaiting communication from SA Bus devices, such as the economizer board or network sensor or
   b. flashes to indicate the UCB established communication with SA Bus devices.
4. 4.The local display is blank with the completion of a successful boot-up sequence. Use the joystick to navigate to the menu options.

Active Alarms when Turning On the Unit

1. When alarms are active after the startup sequence, the display shows #1 text on the top line and scrolls the most recent alarm on the bottom line.
2. If more than one alarm is active, the display scrolls through each alarm in the active alarm register. The display shows up to five alarms scrolling through each from most recent alarm to oldest alarm.

3. The red FAULT LED light flashes when active alarms are present and goes off when all active alarms are cleared.
4. Use the joystick and navigation arrows to scroll through the menu options.

Using the USB Port

1. After you insert a compatible flash drive into the UCB USB port, *USB:Wait* appears.
2. Shortly thereafter, the UCB displays the number of files and folders transferring over to the flash drive (Figure 2).

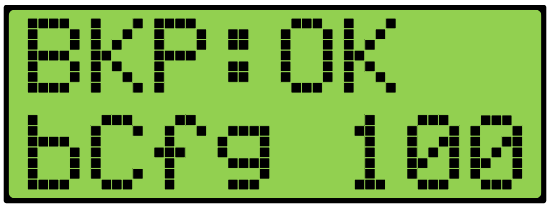


Figure 2: USB Flash Drive Back-up Complete

3. You can leave the flash drive connected for other functions. Press the cancel button or move the Joystick to resume menu navigation.

Using the USB Back-up Function

Note: This procedure presumes the USB flash drive is still connected to the UCB.

1. From the Update > Backup menu, press Enter. The backup is in progress (Figure 3).

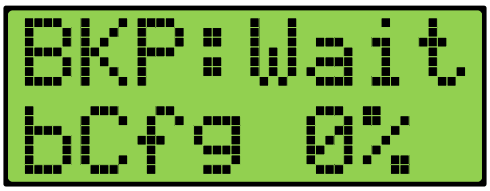


Figure 3: Back-up in Progress

Note: During the back-up process, the ":" flashes.

2. After the backup completes, a comma separated value (.csv) restoration file is created in the top level of the flash drive. The file name is drawn from the date and time settings in the UCB at the time you create the file. The restoration file size is generally less than 30 KB. Figure 4 shows an example of the .csv file name structure.

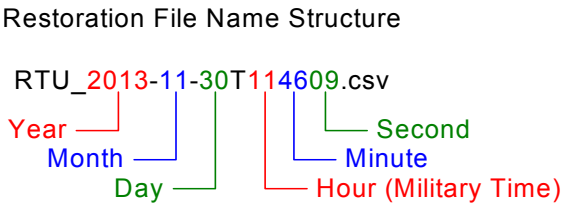


Figure 4: Restoration File Name Structure

Restore Function

Restoration files must be placed in the top level of the flash drive storage. The unit serial numbers on the UCB and the restoration file must match in order to successfully restore the information.

1. Insert your flash drive into the USB port. Navigate to the Update > Backup menu and press "ENTER" (Figure 5).

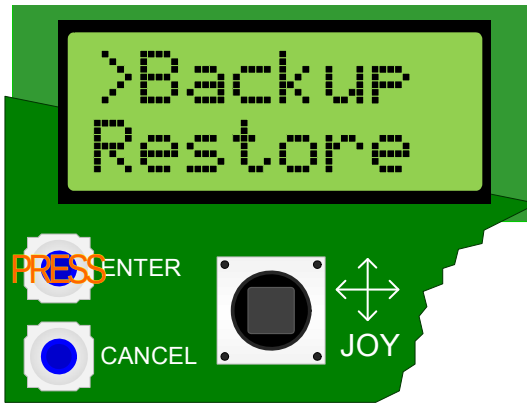


Figure 5: Backup Menu Option

2. BKP: Wait appears while the backup is in progress. During the backup procedure, the colon (:) flashes on the top line and the percentage increases on the bottom line of the display.
3. The backup completes in approximately 30 seconds and BKP: OK appears on the screen. The percentage shows 100.

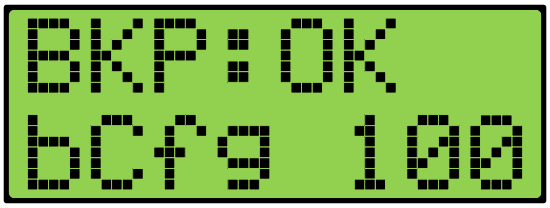


Figure 6: Backup Complete

4. You may remove the flash drive from the USB port.

After the backup completes, a comma separated value (.csv) restoration file is created in the top level of the flash drive. The file name is drawn from the date and time settings in the UCB at the time you create the file. The restoration file size is generally less than 30 KB. Figure shows an example of the .csv file name structure.

Failed Restore Attempt

If the USB drive is removed before the firmware upload is allowed to complete it will require that the user perform two updates/upload procedures to successfully complete and update all the necessary files. If power is lost during the upload process the user will only be required to repeat only one update/upload procedure.

Updating SSE Software

1. A USB Flash Drive must be plugged into the UCB. It must contain the appropriate software file (ending in ".pkg"). This is at the top level of the flash drive.
2. On the UCB, at the display, push the joystick "down" until the display has a line showing: >Update.

Figure 7: Display Update

3. Push the "ENTER" button. The first line should now display: >View Ver.
   - If you want to verify the version in the UCB, push the "ENTER" button now. The current version will be displayed. Push the Cancel button to return to displaying ">Update"
4. Push the joystick down until the display is showing: >Backup
5. Push the "ENTER" button. Wait until the top line says "BKP: OK" and the second line says 100%
6. Push the Cancel button. The display should now show: >Update
7. Push the "ENTER" button. The display should now show: >View Ver
8. Push the joystick down. The first line should now display: >LoadFirm
9. Push the "ENTER" button. The top line should display: >1.0.0.1101.secusb.pkg or the current firmware version.
10. If not, push the joystick down (or up) so the carrot (>) points to the appropriate file
11. Push the "ENTER" button. Push again to Confirm.
12. The UCB and economizer will now be reprogrammed with the selected software, if they are different. Wait until the everything is complete, and the control has done a Restart (as if power was just applied).
13. On the UCB, at the display, push the joystick "down" until the display has a line showing: >Update
14. Push the "ENTER" button. The first line should now display: >View Ver
15. Push the joystick down until the display is showing: >Restore
16. Push the "ENTER" button.
17. Push the joystick down until the display line starts with: >RTUxxxx and ends with .csv
18. The UCB will now read back the stored setup. When it is done, the control will Restart. When that is complete, the new software version will be running.Push the "ENTER" button. Push again to Confirm.

Note: If the software update fails, reset the unit and perform the upgrade again.

Read The Version On The Economizer

1. With Econ and UCB attached together (see Step 1 above).
2. Push the joystick "down" (or up, if you go past) until the display shows: >Controller

Figure 8: Display Update

3. Push the "ENTER" button. The first line should now display: >Firm
4. Push the joystick down until the display shows: >SysCntlrs
5. Push the "ENTER" button. The first line should now display: >Misc
6. Push the joystick down until the display shows: >Econ
7. Push the "ENTER" button. The first line should now display: >EconMainVer
8. Push the "ENTER" button again. The second line should now display the version of software installed in the Economizer.

Alarm Appendix

Alarm List

Alarms are categorized into three groups based on severity: critical, service priority, and service. Table 2 describes the alarm.

Table 2: Alarms

Severity	Alarm	How It Happens
Critical	C1 Locked Out Due to High Pressure	Three HPS1 trips within two hours.
	C2 Locked Out Due to High Pressure	Three HPS2 trips within two hours.
	C3 Locked Out Due to High Pressure	Three HPS3 trips within two hours.
	C4 Locked Out Due to High Pressure	Three HPS4 trips within two hours.
	C1 Locked Out Due to Low Pressure	Three LPS1 trips within one hour.
	C2 Locked Out Due to Low Pressure	Three LPS2 trips within one hour.
	C3 Locked Out Due to Low Pressure	Three LPS3 trips within one hour.
	C4 Locked Out Due to Low Pressure	Three LPS4 trips within one hour.
	C1 Locked Out Due to Coil Freeze	Three FS1 trips within two hours. (Evap Coil Temp < Evap Coil Temp Cutout SP)
	C2 Locked Out Due to Coil Freeze	Three FS2 trips within two hours. (Evap Coil Temp < Evap Coil Temp Cutout SP)
	C3 Locked Out Due to Coil Freeze	Three FS3 trips within two hours. (Evap Coil Temp < Evap Coil Temp Cutout SP)
	C4 Locked Out Due to Coil Freeze	Three FS4 trips within two hours. (Evap Coil Temp < Evap Coil Temp Cutout SP)
	Exhaust Fan VFD Failure	EX VFD BI trips (must be set up as Exhaust or Variable Frequency Fan)
	HS1 Locked Out Due to Limit Switch	Three LS1 trips within one hour.
	HS2 Locked Out Due to Limit Switch	Three LS2 trips within one hour.
	HS3 Locked Out Due to Limit Switch	Three LS3 trips within one hour.
	Unit Shutdown Due to Smoke, etc.	SD input loses 24 VAC.
	Supply Fan VFD Failure	Fan VFD Input trips (must be set up as NOT Single Speed)
	No Heat-Cool Due to Unreliable Space-T	Input Unreliable
	4-Stage Communication Failure	4-Stage board goes from Online to Offline.
	Economizer Communication Failure	Economizer board goes from Online to Offline.
	Outputs Disabled Due to Low Input V	Blackout Conditions
	Outputs Limited Due Brownout Input V	Brownout Conditions
	Unit Locked Out Due to APS	Three APS trips within 1.5 hours. (if APS is installed or based on Duct Pressure if Variable Speed Fan enabled).
	Unit Locked Out Due to Supply Fan OL	Three FAN OVR trips within two hours.
	Unit Locked Out Due to High Duct-P	Duct Static Pressure is greater than the High Duct Static Pressure Setpoint.
Service Priority	Evaporator Coil Temp 1 Sensor Failure	Input unreliable and Number of Cooling Stages >= 1
	Condenser Coil Temp 1 Sensor Failure	Input unreliable and Number of Cooling Stages >= 1
	Evaporator Coil Temp 2 Sensor Failure	Input unreliable and Number of Cooling Stages >= 2
	Condenser Coil Temp 2 Sensor Failure	Input unreliable and Number of Cooling Stages >= 2

Table 2: Alarms (Continued)

Severity	Alarm	How It Happens
Service Priority (Continued)	Evaporator Coil Temp 3 Sensor Failure	Input unreliable and Number of Cooling Stages >= 3
	Condenser Coil Temp 3 Sensor Failure	Input unreliable and Number of Cooling Stages >= 3
	Evaporator Coil Temp 4 Sensor Failure	Input unreliable and Number of Cooling Stages >= 4
	Condenser Coil Temp 4 Sensor Failure	Input unreliable and Number of Cooling Stages >= 4
	Building Pressure Sensor Failure	Input unreliable
	Outdoor Air Temperature Sensor Failure	Input unreliable
	Return Air Temperature Sensor Failure	Input unreliable and Variable Speed Fan
	Supply Air Temperature Sensor Failure	Input Unreliable AND (Econ Comm Status = Online OR Mixed Air Sequencer = DAT Control)
	Unit Shutdown Due to Supply Fan Overload	FAN OVR Trip (but less than three in one hour as that would cause 'Unit Locked Out Due to Supply Fan OL')
	Main Controller Calibration Error	Missing Cal Data
	FDDM Controller Calibration Error	Missing Cal Data
	Econ Controller Calibration Error	Missing Cal Data
	4-Stage Controller Calibration Error	Missing Cal Data
	Unit Shutdown Due to Air Proving Switch	Cmd but no proof for >= 90 seconds (if this happens less than three in 1.5 hours; otherwise that would cause 'Unit Locked Out Due to APS')
	FDDS Controller Calibration Error	Missing Cal Data
Service	Duct Pressure Sensor Failure	Input Unreliable and Variable Speed Fan
	Return Air Humidity Sensor Failure	Input unreliable
	Outdoor Air Humidity Sensor Failure	Input unreliable
	Supply Humidity Sensor Failure	Input unreliable
	Indoor Air Quality Sensor Failure	Input unreliable
	Outdoor Air Quality Sensor Failure	Input unreliable
	Fresh Air Intake Sensor Failure	Input unreliable
	Mixed Air Temp Sensor Failure	Input unreliable
	Space Indoor temp Sensor Failure	Input unreliable
	Space Offset Sensor Failure	Input unreliable
	C1 Shutdown Due to High Pressure	HPS1 Trip
	C2 Shutdown Due to High Pressure	HPS2 Trip
	C3 Shutdown Due to High Pressure	HPS3 Trip
	C4 Shutdown Due to High Pressure	HPS4 Trip
	C1 Shutdown Due to Low Pressure	LPS1 Trip
	C2 Shutdown Due to Low Pressure	LPS2 Trip
	C3 Shutdown Due to Low Pressure	LPS3 Trip
	C4 Shutdown Due to Low Pressure	LPS4 Trip
	C1 Shutdown Due to Coil Freeze	FS1 Trip (Evap Coil Temp < Evap Coil Temp Cutout SP)
	C2 Shutdown Due to Coil Freeze	FS2 Trip (Evap Coil Temp < Evap Coil Temp Cutout SP)
	C3 Shutdown Due to Coil Freeze	FS3 Trip (Evap Coil Temp < Evap Coil Temp Cutout SP)
	C4 Shutdown Due to Coil Freeze	FS4 Trip (Evap Coil Temp < Evap Coil Temp Cutout SP)

Table 2: Alarms (Continued)

Severity	Alarm	How It Happens
Service (Continued)	Low Outdoor Air Temp Cooling Cutout	OAT < OAT Cooling Cutout
	Econ Economizing When it Should Not	Economizer Damper % Command > Min OA Position + FDD Damper Min Position Tolerance
	Econ Not Economizing When It Should	Economizer Damper % Command < Min OA Position + FDD Damper Min Position Tolerance
	Economizer Damper Not Modulating	ABS(Economizer Damper % Command - Economizer Damper Position) > FDD Economizer Damper Allowed Error
	Economizer Letting In Excess Outdoor Air	(Economizer Damper % Command > Min OA Position + FDD Damper Min Position Tolerance AND Ramp Min OA) **OR** (Economizer Damper % Command > FDD Damper Min Position Tolerance AND Ramp Closed)
	HS1 Shutdown Due to Limit Switch	LS1 Trip
	HS2 Shutdown Due to Limit Switch	LS2 Trip
	HS3 Shutdown Due to Limit Switch	LS3 Trip
	HS1 Off Due to Gas Valve	H1 with no GV1 for >=6 minutes
	HS2 Off Due to Gas Valve	H2 with no GV2 for >=6 minutes
	HS3 Off Due to Gas Valve	H3 with no GV3 for >=6 minutes
	Dirty Filter	DFS Trip
	FDD 1 Communication Failure	FDD Master Online -> Offline
	FDD 2 Communication Failure	FDD Subordinate Online -> Offline
	Unit has Received a Purge Request	PURGE-S on Econ trip
	Excessive Supply Air Temp Cooling	SAT < Excessive SAT Cooling Sp AND SAT Limit for Cooling Enable
	HS1 Gas Valve Failure	GV1 on without H1 for >= 5 seconds
	HS2 Gas Valve Failure	GV2 on without H2 for >= 5 seconds
	HS3 Gas Valve Failure	GV3 on without H3 for >= 5 seconds
	Excessive Supply Air Temp Heating	SAT > Excessive SAT Heating SP AND SAT Air Temp Limit for Heat Enabled
	Space Temperature Cooling Alarm	Space Temp > Operating Cooling SP for more than 60 minutes
	C1 Refrigerant Flow Restriction	FDD Alarm, see Table 3.
	Hot H20 FS Open to Prevent Coil Freeze	Hydronic Heating Enabled **and** (HW Freeze BI trip and Unreliable OAT) **or** HW Freeze BI trip **and** OAT is less than 40°F
	Hot H20 FS Opened When It Should Not	Hydronic Heating Enabled **and** OAT is greater than 40°F and HW Freeze BI trip
	Space Temperature Heating Alarm	Space Temp is less than Operating Heating SP for more than 60 minutes.
	Not Economizing - No Supply Air Sensor	Free Cooling Available and MA Sequencer = DAT Control and SAT Unreliable **or** SAT Unrealiable and MA Sequence = Zone Control and MA State = Mech and Free Cooling Available **or** Tstat Only and Mech and Free Cooling Available
	Using Return Instead of Space Temp	Effective Zone Source = Return Air Temp and Not TStat Only
	Air Proving Switch is Stuck Closed	APS is closed, but fan command is not given

FDD Understanding

Fault Detection Diagnostics is the integral tool to maintaining HVAC systems at their optimal performance and reliability. In addition, FDD supports continuous commissioning through its continuous performance monitoring functionality. Studies indicate that the use of FDD can result in 10-30% energy savings on an ongoing basis, support efficient maintenance practices, extend equipment life, and provide more consistent occupant comfort and indoor air quality.

For past ten years outside of Johnson Controls, other studies and implementation of FDD have been more in a central tool format. Today we are utilizing the JCI industry several years of experience and data collection and implementing new algorithms embedded into our SMART Equipment Control platform. These FDD are programmed and are continuously running within the Economizer section and refrigeration sections of Johnson Controls/York package equipment.

Definition of FDD is best described as Fault Diagnosis which is pinpointing one or more root causes of problems, to the point where corrective action can be taken. Some also call this as "fault isolation". This does emphasizes the distinction from fault isolation vs. fault detection. In a most common terminology "fault diagnosis" often includes fault detection, so "fault isolation" emphasizes the distinction.

Detection + Isolation = Diagnosis (FDD)

Equipment layer within the Smart Building architecture is a key to our SMART Equipment FDD intelligence. It is a foundation of providing key information of the equipment and providing that information through out the system for further evaluations and actions. When we have FDD embedded at the equipment level, which has intelligence the advantage is the complete access to internal state of the equipment and it can behave in real time. This is epically important when the algorithms are focused around refrigeration circuits. Continuous changes in data point and thermodynamics of the equipment is very challenging to identity and isolate the refrigeration problems. Having FDD this close to the equipment will create a much precise and accurate information with the outcome of lowering energy cost, operating cost and increasing comfort level.

Some key advantages of embedded FDD at equipment layer are:

1. Visibility to performance of all unit components and how they interact together (e.g. fully integrated economizer control, simultaneous heating and cooling, low refrigerant, foul tubes, etc..)
2. Excellent place to insert unit-level performance models and analytical algorithms in the factory (e.g. overall unit control expectations)

Current FDD option for Johnson Controls/York Package Equipment:

Description

The SE-FDD1001-0 Fault Detection Diagnostics (FDD) board is new and unique for the light commercial product lines. The FDD controller lets the package equipment to predict faults before they become a major failure, cause comfort issues, or result in efficiency problems. Embedded algorithms continuously run within the FDD controller. The algorithms monitor the types of inputs, to precisely indicate the faults and recommend how to correct them. This new innovative feature comes optional with the Smart Equipment Controls (SEC) product line for Series 5 to 40, as well as the new Series 12R. The FDD controller meets all of the pending California Energy Code Regulations (Title 24).The FDD controller meets all of the pending California Energy Code Regulations (Title 24) for rooftop units (RTU) with an enabled economizer.

During the startup process, the FDD controller calculates the efficiency and capacity of the equipment, and generates a baseline for future measurements. The algorithms provide this type of information during the equipment life cycle. You can view this information from the unit control board (UCB) local display, Mobile Access Portal (MAP), or through a building management system (BMS) connection. These two indices's, efficiency and capacity, enable you to make smart decisions regarding your equipment. You can quickly and easily see when it is not performing at the baseline efficiency level.

Refer to the Smart Equipment Controls (SEC) Product Bulletin (LIT-12011934) for important product application information.

Table 3: FDD Alarms

Severity	BACnet State Number	FDD Alarm	Diagnosis	Recommendation
Service	235 236 237 238	**C1, C2, C3, C4 Refrigerant Low**	The system has lower than expected sub-cooling. This may indicate there is less refrigerant charge in the system than expected.	Consider adding refrigerant.
	239 240 241 242	**C1, C2, C3, C4 Excessive Refrigerant Flow**	The low side pressure is high, the superheat is low, and the sub-cooling is low. There is excessive refrigerant flow into the evaporator. The superheat is low with a TxV unit. There is excessive refrigerant flow into the evaporator.	The TxV is overfeeding the refrigerant into the evaporator. One possible cause is something may be holding the TxV open when conditions would cause it to close, if it were functioning properly.
	243 244 245 246	**C1, C2, C3, C4 Inefficient Compressor**	The low side pressure is far higher than would be expected in a normally operating system. The compressor appears to have lost significant pumping capacity.	If the compressor is a scroll compressor, consider reversing the direction of rotation. If the compressor cannot pump refrigerant at its design capacity, the compressor needs to be replaced.
	247 248 249 250	**C1, C2, C3, C4 Refrigerant Flow Restriction**	Superheat is high and sub-cooling is high. The system has excessive refrigerant in the condenser and insufficient refrigerant in the evaporator. There is an excessive restriction to refrigerant flow.	Find and correct the excessive restriction to the refrigerant flow. The cause may be a plugged filter drier or it may be a restricted or faulty TxV.
			ET is low and SH and SC ore high and COA is greater than goal and not high.	There is a refrigerant flow restriction combined with either an over charged system or a dirty condenser or inoperable condenser fan.
			ET is low and SH and SC are high and COA is high	There is a refrigerant flow restriction combined with either an over charged system or a dirty condenser or inoperable condenser fan.
	251 252 253 254	**C1, C2, C3, C4 High Side Heat Transfer Problem**	Condenser is hot and there is not indication of over charge. Also consider doing a standing pressure test for non-condensable to explain these results.	It is difficult for the condenser to reject heat. Possible causes include a dirty condenser coil or a condenser fan problem. Also consider doing a standing pressure test for non-condensable to explain these results.

Table 3: FDD Alarms (Continued)

Severity	BACnet State Number	FDD Alarm	Diagnosis	Recommendation
Service (Continued)	255 256 257 258	**C1, C2, C3, C4 Low Side Heat Transfer Problem**	The evaporator is colder than expected an the superheat is too low. There is no indication that the system is over charged with refrigerant.	Consider cleating the evaporator coil or increasing indoor airflow by replacing filters, cleaning fan, adjusting fan belt or resolving return or supply.
			The evaporating temperature (suction pressure) is low. The sub-cooling is lower than expected. This may indicate that there is less refrigerant charge in the system than expected.	Consider cleating the evaporator coil or increasing indoor airflow by replacing filters, cleaning fan, adjusting fan belt or resolving return or supply.
			The evaporating temperature (suction pressure) is low. The supply air is colder than expected. This may indicate lower than expected airflow through the unit. The sub-cooling is lower than expected, this may indicate that there is less refrigerant charge in the system than expected.	Consider cleating the evaporator coil or increasing indoor airflow by replacing filters, cleaning fan, adjusting fan belt or resolving return or supply.
	259 260 261 262	**C1, C2, C3, C4 Reduce Evaporator Airflow**	The evaporating temperature (suction pressure), superheat and sub-cooling are all higher than expected.	Consider reducing the amount of airflow through the units to reduce the excessive heat load on the evaporator.
	263 264 265 266	**C1, C2(Continued), C3, C4 Add Charge**	The system has lower than expected sub-cooling and the evaporating temperature (suction pressure) is low. this may indicate there is less refrigerant charge in the system than expected. The system has lower than expected sub-cooling and the evaporating temperature (suction pressure) is low. This may indicate there is less refrigerant charge in the system than expected.	Consider adding refrigerant.
	267 268 269 270	**C1, C2, C3, C4 Insufficient Refrigerant Flow**	Superheat is getting high and sub-cooling is high. The system as excessive refrigerant in the condenser and insufficient refrigerant in the evaporator. There is some excessive restriction to refrigerant flow.	There is more restriction to flow than expected, but perhaps not so much as would require an expensive repair. Consider slightly over charging the system to bring down the superheat. Otherwise, find and correct the excessive restriction to the refrigerant flow. The cause may be a plugged filter dryer or it may be a restricted or faulty TxV.

Table 3: FDD Alarms (Continued)

Severity	BACnet State Number	FDD Alarm	Diagnosis	Recommendation
Service (Continued)	271 272 273 274	**C1, C2, C3, C4 Recover Charge**	The system has higher than expected subcooling. This may indicate there is more refrigerant charge in the system than expected.	Consider recovering refrigerant.
			The system has higher than expected subcooling and the condensing temperature (discharge pressure) is higher than expected at the ambient temperature. This may indicate there is more refrigeratnt charge in the system than expected.	Consider recovering refrigerant.
			Superheat is getting high and subcooling is high. The system has excessive refrigerant in the condenser and insufficient refrigerant in the evaporator. This is some excessive restriction to refrigerant flow.	There is more restriction to flow than expected, but perhaps not so much as would require an expensive repair. Consider slightly over charging the system to bring down the superheat. Otherwise, find and correct the excessive restriction to refrigerant flow. The cause may be a plugged filter dryer or it may be a restricted or faulty TxV.
	299 300 301 302	**C1, C2, C3, C4 Non-Condensables Present**		
	199 200 201 202	**C1, C2, C3, C4 Liquid Temp Greater Than Cond Temp**		Check LT>CT sensors. If confident in SP and ST sensors, add charge.

Table 3: FDD Alarms (Continued)

Severity	BACnet State Number	FDD Alarm	Diagnosis	Recommendation
Service (Continued)	171 172 173 174	**C1, C2, C3, C4 Basic Data Not Available**	An important sensor measurement is not available. Potential sensors include: SP, LP or DP, ST, LT, AMB, RWB, RA or RAH. Find which data point is not being collected and resolve the problem. Diagnostics should function thereafter.	Minimum sensor input data is not available. (SP, LP or DP, ST, LT, AMB, RWB or RA/RAH)
			The return air web bulb temperature measurement is not available. Find the cause of the missing data and resolve the problem. Diagnostics should function thereafter.	Return air web-bulb temperature is not available.
			The return air temperature and humidity measurement are not available. Find the cause of the missing data and resolve the problem. Diagnostics should function thereafter.	Return air temperature and return air humidity are not available.
			The return air temperature measurement is not available. Find the cause of the issue and resolve the problem. Diagnostics should function thereafter.	Return air temperature is not available.
	303 304 305 306	**C1, C2, C3, C4 Unit Off**	The compressor appears to not be running because of the differences in the suction and liquid pressures are too small to prove operation, or the compressor has nearly no pumping capacity.	The pressure difference is not large enough to make the condensing temperature more than 20°F above the evaporating temperature.
	175 176 177 178	**C1, C2, C3, C4 Return Air Wet-Bulb Temp Out of Range**	For fixed orifice only	The valid range of ambient temperature in the charge chart is between 55 to 115°F. The target superheat value is not available.
	179 180 181 182	**C1, C2, C3, C4 Ambient Temp Too Low**	The measured ambient temperature ins either less than 55°F, a limit in the diagnostic software, the sensor placement is incorrect, reading a low temperature or there is a faulty ambient temperature sensor.	The ambient temperature is too low to make reasonable diagnosis.

Table 3: FDD Alarms (Continued)

Severity	BACnet State Number	FDD Alarm	Diagnosis	Recommendation
Service (Continued)	183 184 185 186	**C1, C2, C3, C4 Ambient Temp Too High**	The measured ambient temperature is either over 115°F, a limit in the diagnostic software or the sensor placement is incorrect, reading a high temperature or there is a faulty ambient temperature sensor.	The ambient temperature is too high to make reasonable diagnosis.
	187 188 189 190	**C1, C2, C3, C4 Return Air Wet-Bulb Temp Too Low**	The return air wet bulb temperature or the return air dry bulb temperature measurement is not valid. The current reading indicated the relative humidity is less than zero. Find the cause of the invalid data and resolve the problem in order for diagnostics to function.	The RWB is lower than RWB corresponding to 0% RAH for given RA.
	191 192 193 194	**C1, C2, C3, C4 Return Air Wet-Bulb Temp Too High**	The measured return air wet bulb temperature is either over 76°F, a limit in the diagnostic software, or the sensor placement is incorrectly reading a high humidity, or there is a faulty return wet bulb.	The RWB is either above 76°F or higher than the RWB corresponding to 95% RAH for given RA.
	195 196 197 198	**C1, C2, C3, C4 Condensing Temp Less Than Ambient**	The condensing temperature is below the ambient temperature. This indicates either the ambient sensor placement is incorrect, reading a high temperature, there is a faulty ambient temperature sensor or the condenser is wet and experiencing evaporative cooling.	The condensing temperature is below the ambient temperature. This indicates either a bad sensor or the information was not entered properly. Check the sensors and/or verify data was entered correctly.
	203 204 205 206	**C1, C2, C3, C4 Suction Temp Less Than Evap Temp**	The suction temperature is less than the evaporator temperature. This indicates either the suction pressure or the suction line temperature or the refrigerant type expectation is invalid.	The suction temperature is below the evaporator temperature. This indicates either a bad sensor or the information was not entered properly. Check the sensor and/or verify the data was entered correctly.
	207 208 209 210	**C1, C2, C3, C4 Evap Temp Greater Than Ambient Temp**	The evaporating temperature is above the ambient temperature. this indicates either a bad suction pressure sensor or ambient temperature sensor.	The evaporating temperature is above the ambient temperature. This indicates either a bad sensor or the information was not entered properly. Check the sensor and/or verity the data was entered correctly.
	211 212 213 214	**C1, C2, C3, C4 Liquid Temp Less Than Ambient Temp**	The liquid temperature is below the ambient temperature. this indicates either a bad discharge pressure sensor or ambient temperature sensor.	The liquid temperature is below the ambient temperature. This indicates either a bad sensor or the information was not entered properly. Check the sensor and/or verity the data was entered correctly.

Table 3: FDD Alarms (Continued)

Severity	BACnet State Number	FDD Alarm	Diagnosis	Recommendation
Service (Continued)	215 216 217 218	**C1, C2, C3, C4 Invalid Suction or Ambient Temp**	ST is high compared to ambient.	
	219 220 221 222	**C1, C2, C3, C4 Invalid RA Dry-Bulb or Wet-Bulb Temp**	Diagnostic module detects that the return air wet bulb temperature is warmer than the return dry wet bulb temperature. Suspect sensors interchanged or one or both sensors are faulty. RWB is not less than RA.	
	223 224 225 226	**C1, C2, C3, C4 Invalid Liquid and Suction Pressure**	The diagnostic module has data indicating that the suction pressure is higher than the discharge pressure. There may be a faulty pressure sensor or the pressure sensors have been interchanged.	LP is less than SP. Verify that the liquid line pressure hose is connected to the liquid line pressure setting, and the suction pressure hose is connected to the suction line pressure setting.
	227 228 229 230	**C1, C2, C3, C4 Invalid Suction Temp**	Tool set-up error, we don't measure discharge temperature with a module.	ST is greater than Ct. Make sure the suction temperature sensor is not mounted on the discharge line.
	279 280 281 282	**C1, C2, C3, C4 Return Air Dry-Bulb Temp Too Low**	The measured return air temperature in either less than 62°F, a limit in the diagnostic software or the sensor placement is incorrect, reading a low temperature or there is a faulty return air temperature sensor.	RA is too low for a reasonable diagnosis.

Table 3: FDD Alarms (Continued)

Severity	BACnet State Number	FDD Alarm	Diagnosis	Recommendation
Service (Continued)	283 284 285 286	**C1, C2, C3, C4 Return Air Dry-Bulb Temp Too High**	The measured return air temperature in either more than 84°F, a limit in the diagnostic software or the sensor placement is incorrectly reading a high temperature, or there is a faulty return air temperature sensor.	RA is too high for a reasonable diagnosis.
	314 315 316 317	**C1, C2, C3, C4 EI Below 75% Expected Performance**	The efficiency of the system has degraded to a point where action is recommended. Efficiency is increased by reducing the high side pressure or increasing the low side pressure.	Efficiency index is below 75% of ideal.
	275 276 277 278	**C1, C2, C3, C4 CI Below 75% Expected Performance**	The capacity of the system has degraded to a point where action is recommended. Capacity is increased by increasing the low side pressure or by reducing the superheat.	Capacity Index is below 75% of ideal.
	322 323 324 325	**C1, C2, C3, C4 EI+CI Below 75% Expected Performance**	The efficiency and capacity o the system has degraded to a point where action is recommended. Efficiency is increased by reducing the high side pressure or increasing the low side pressure or by reducing the superheat.	Efficiency and Capacity Index are both below 75% of ideal.
	287 288 289 290	**C1, C2, C3, C4 FDD Not Functioning Sensor Unreliable**		A local A1 reading is Unreliable (disconnected sensor). This error is on a per circuit basis.
	291 292 293 294	**C1, C2, C3, C4 FDD Not Monitoring Conditions Unreliable**		Error reading the RWB, RDB, or OAT information.
	295 296 297 298	**C1, C2, C3, C4 FDD Not Monitoring Equipment Data**		There is an error with reading the equipment information.

Table 4: SE UCB Display Menu Guide

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed
Status	Unit-S	Idle (Unit Status)
	Econ-S	Disabled (Economizer Status)
	ExF-S	Off-Idle (Exhaust Fan Status)
	Fan-S	Off -Idle (Fan Status)
	Clg-S	Off-Idle (Cooling Status)
	Htg-S	Off-Idle (Heating Status)
	HGR-S	Off-Idle (Hot Gas Reheat Status)
	DVent-Mode	Disabled (Demand Vent Mode)
	OprST	(73.0 F) (Space Temperature Input)
	SAT	(60.7 F) (Supply Air Thermistor Input)
	RAT	(73.0 F) (Return Air Thermistor Input)
	OprSH	(49.6 %H) (Space Humidity Input)
	RAH	(49.6 %H) (Return Air Humidity Input)
	OprOAT	(73.0F) (Outdoor Air Temperature Input)
	OprOAH	(71 %H) (Outdoor Air Humidity Input)
	OprOAQ	(989ppm) (Outdoor Air Quality Input)
	OprIAQ	(477ppm) (Indoor Air Quality Input)
Alarms	No Events	(No active alarm)
	Alarm Description	(most recent Alarm)
	Alarm Description	(2nd most recent Alarm)
	Alarm Description	(3rd most recent Alarm)
	Alarm Description	(4th most recent Alarm)
	Alarm Description	(5th most recent Alarm)
Summary	HVAC Zone	OccSrc Local Input (Occ/UnOcc Status Source)
		OprVAVClg-Sp 60 F (VAV Operating Cool Setpoint)
		VAVOprHtg-Sp 68F (VAV Operating Heat Setpoint)
		OprCVClg-Sp 72 F (CV - Operating Cool Setpoint)
		CVOprHtg-Sp 68 F (CV - Operating Heat Setpoint)
		OprSZVAVClg-Sp 72 F (SZ VAV Operating Clg Sp)
		Opr ST 73.0 F (Space Temperature Input)
		Opr SH 49.6 %H (Space Humidity Input)
		OprIAQ 477ppm (Indoor Air Quality Input)
	Fan	Fan (UCB FAN 24 VAC output status)
		FanCtl-Type Single Speed (ID Blwr/Unit Op Mode)
		FanOn Occ Yes (CV Constant Fan in Occupied Mode)
		FanVFD 0 % (UCB VFD 2-10 VDC output status)
		DctPrs-Sp 1.50"/w (VAV Supply Duct Press Setpt)
		DctPrs 1.50"/w (VAV UCB Dct Prs 0-5 VDC input)
	Clg	C1 Off (UCB C1 24 VAC output status)
		C2 Off (UCB C2 24 VAC output status)
		C3 Off (4stg C3 24 VAC output status)
		C4 Off (4stg C4 24 VAC output status)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed
Summary (Continued)	Clg (Continued)	StgClgCmd 0% (Staged Cooling Command)
	Htg	H1 Off (UCB H1 24 VAC output status)
		H2 Off (UCB H2 24 VAC output status)
		H3 Off (4stg H3 24 VAC output status)
		HWV 0% (4stg HWV 24 VAC output status)
		StgHtgCmd 0% (Staged Heating Command)
	Heat Pump	Clg-S Off-Idle (Cooling Status)
		Htg-S Off-Idle (Heating Status)
		C1 Off (UCB C1 24 VAC output status)
		C2 Off (UCB C2 24 VAC output status)
		RevVlv Off (Reversing Valve)
		AuxHtg Off (Auxiliary Heat)
		Mode Cooling (Mode)
	Econ	Econ-Free No (Free Cooling availability)
		FreeClg-Mode Dry Bulb Tempe (Changover Method)
		Econ 0 % (ECON 2-10 VDC output status)
		LowAmb-MinPos 0 % (Econ "Occ" Lo Amb Min Pos)
		EconOAT-SpEn 55 F (DryBulb Free Cool Setpoint)
		EconOAEnth-Sp 27 B/# (S Enthlp Free Cool Setpoint)
		OA-Enth 20B/# (OS Air Enthalpy Calculated)
		OprOAH 19 %H (OS Air Humidity in use)
		Opr OAT 70.7 F (OS Air Temperature in use)
		RA-Enth 20B/# (RA Air Enthalpy Calculated)
		RAH 19.4 %H (UCB RAH 0-10 VDC input)
		RAT 70.4 F (UCB RAT Thermistor input)
	Dvent	DVent-Mode Disabled (Dmand Vent mode select)
		DVentIAQ-Sp 1000ppm (Demand Vent Set Point)
		DVentDiff-Sp 600ppm (IAQ - OAQ diff Set Point)
		OprIAQ 477ppm (IAQ currently in use)
		OprOAQ 989ppm (OAQ currently in use)
	Power Exhaust	ExFType None (Power Exh Fan mode selection)
		ExFan Off (EX-Fan 24 VAC output status)
		Bldg-Sp 100"/w (Bldg Pressure Set Pt for Exh)
		BldgPres .164"/w (Bldg Pressure 0-5 VDC input)
		Econ 0 % (ECON 2-10 VDC output status)
		EconDmpPosFanOn 60 % (Position Ex-Fan 24vac On)
		EconDmpPosFanOff 20 % (Position Ex-Fan 24vac Off)
		EAD-O 0 % (ModDmpr EX-VFD 2-10vdc outpt status)
		ExFanVFD 0 % (VFD EX-VFD 2-10vdc output status)
	Hot Gas Reheat	HGR Off (Hot Gas Reheat)
		HGRHum-Sp 60degF (Hot Gas Reheat Humididty Setpoint)
		HGRUnoccHum-SP 70degF (HGR Unocc Hum Sp)
		RAH (49.6 %H) (R A Humidity 0-10 VDC input)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed
Summary (Continued)	Sensor	SAT (60.7 F) (S A Temp Thermistor input)
		RAT (73.0 F) (R A Temp Thermistor input)
		RAH (49.6 %H) (R A Humidity 0-10 VDC input)
		Opr OAT (73.0 F) (OS Air Temperature input)
		OprOAH (19 %H) (OS Air Humidity input)
		OprOAQ (989ppm) (OS Air Quality input)
	Network	Comm-S Wired (FCBusCommStatus)
Commission	HVAC Zone	OccMode External Occupancy Mode
		OffDurUnocc Yes (Off During Unoccupied)
	Indoor Fan	FanOn Occ Yes (CV ConstantFanOccupied Mode)
		DctPrs-Sp 1.50"/w (VAV Supply Duct Press Setpoint)
		Fan Only-% Cmd 50 % (CV IntelliSpeed Fan Only)
		1ClgStg-% Cmd 70 % (CV IntelliSpeed 1 Stg Cool)
		2ClgStg-% Cmd 80 % (CV IntelliSpeed 2 Stg Cool)
		3ClgStg-% Cmd 90 % (CV IntelliSpeed 3 Stg Cool)
		4ClgStg-% Cmd 100 % (CV IntelliSpeed 4 Stg Cool)
		1HtgStg-% Cmd 100 % (CV IntelliSpeed 1 Stg Heat)
		2HtgStg-% Cmd 100 % (CV IntelliSpeed 2 Stg Heat)
		3HtgStg-% Cmd 100 % (CV IntelliSpeed 3 Stg Heat)
	Clg	Clg-En Yes (Cooling Enabled/Disabled)
		LeadLag-En No (Equalized Comp Runtime)
		ClgOcc-Sp 72 F (CV - Occ Cooling Setpoint)
		ClgUnocc-Sp 80 F (CV - UnOcc Cooling Setpoint)
		SATUp-Sp 60 F (VAV - Upper S A Temp Setpoint)
		SATLo-Sp 55 F (VAV - Lower S A Temp Setpoint)
		SATRst-Sp 72 F (VAV - S A Temp Reset Setpoint)
		SZVAVClgOcc-Sp 72 F (SZ VAV Occ Clg Sp)
		SZVAVClgUnocc-Sp 80 F (SZ VAV Unocc Clg Sp)
	Htg	Htg-En Yes (Heating Enabled/Disabled)
		CVHtgOcc-SP 68 F (CV - Occ Heating Setpoint)
		CVHtgUnocc-Sp 60 F (CV - UnOcc Heating Setpoint)
		HtgOcc-En Yes (VAV Occ Heating Enable)
		VAVHtgOcc-SP 68 F (VAV - Occ Heating Setpoint)
		HtgUnocc-En No (VAV UnOcc Heating Enable)
		VAVHtgUnocc-Sp 60 F (VAV UnOcc Heating Setpt)
		HydReverse No (Hydronic Heat Valve Reverse Acting)
		HydH1SA-Sp 120 F (Hydronic Heating Stage #1 Sp)
		HydH2SA-Sp 150F (Hydronic Heating Stage #2 Sp)
		SATTempHydHt-En No (Hyd Heat SAT Tempering Enabled)
		SATTempHydHt-Sp 40F (Hyd Heat SAT Tempering Sp)
	Econ	Econ-En Yes (Permit Free Cooling operation)
		FreeClg-Sel Auto (FreeCoolChangeoverMethod)
		EconOAT-SpEn 55 F (DryBLbFreeCoolCngOvrSetPt)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed
Commission (Continued)	Econ (Continued)	EconOAEnth-Sp 27 B/# (S Enthlp FreColCngOvrSetPt)
		LowAmb-Sp 0 F (Econ"Occ" MinPosLoAmbSetPt)
		LowAmb-MinPos 0 % (Econ"Occ"LoAmbMinPos)
		EconMechStp Option B (Econ Mech Setup)
		EconFltDetectEn Yes (Econ Fault Detection En)
		EconAlrmDly 600s (FDD Econ Alarm Delay)
		EconPosErr 8% (FDD Econ Damper Allow Error)
		EconMinErr 5% (FDD Damper Min Pos Tolerance)
	Dvent	DVent-Mode Disabled (DmandVentModeSelect)
		DVentMaxEconPos 50 % (Max Econ Position)
		DVentIAQ-Sp 1000ppm (Demand Vent IAQ SetPt)
		DVentDiff-Sp 600ppm (IAQ-OAQ DifferenceSetPt)
		IAQRange 2000ppm (ID SetPt w/Co2 Sensor Inst)
		OAQRange 2000ppm (OD SetPt w/Co2 Sensor Inst)
	Power Exhaust	EconDmpPosFanOn 60 % (PositionExFan 24vac On)
		EconDmpPosFanOff 20 % (PositionExFan 24vac Off)
		Bldg-Sp . 100"/w (BldgPressureSetPt for Exh)
		ExDmpPosFanOn 80 % (PositionExFan 24vac On)
		ExDmpPosFanOff 20 % (PositionExFan 24vac Off)
		ERV-En No (Econ&PwrEx intergration w/ ERV)
		ERVUnoccFan-En No (ERV Unoccupied Fan Enabled)
	Hot Gas Reheat	HGR-En No (Hot Gas Reheat Enabled)
		HGRUnocc-En No (HGR Unocc Enabled)
		HGRAltWrite No (HGR Alternate Writeable)
		HGRAlt-En No (HGR Alternate Enabled)
		HGRHum-Sp 60degF (Hot Gas Reheat Humididty Setpoint)
		HGRUnoccHum-SP 70degF (HGR Unocc Hum Sp)
	WarmupCooldown	OptStrt-En No (Optimal Start Enabled)
		EarlyStrtPeriod 60min (Early Start Period)
		UseOccSched Yes (Use Occupancy Schedule)
	Title 24 Load Shed	LoadShedRateLim 0.066 (Rate Limiter)
		LoadShedAdjust 4 (Load Shed Adjust)
		LoadShedEnable No (Load Shed Enable)
	Defrost	TestDefrostEnable No (Test Defrost Enable)
		CompDelayEnable No (Compressor Delay Enable)
		DefrostCurveSel Curve 1 (Defrost Curve Select)
	Network	DevName UCBApp (FCBusBACnetNtwrkName)
		BASCom BACnet (CommSubboard operation)
		Address 4 (FCBusBACnetNetworkAddress)
	SZ VAV	DATClgMinSP 54F (DAT Cooling Min Sp)
		DATMaxHtgSP 105F (DAT Heating Max SP)
		DATSATSP 70F (DAT Satisfied SP)
		SZVAVMinFanSpd 66% (Minimum Fan Speed)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed	
Controller	Firm	FirmVer 3.0.0.1070 (Firmware Revision)	
		Firm-S Firmware Version (Firmware Status)	
	Time	TimeZone Central	
		Time	
		Date	
	Network	DevName UCBApp (FC Bus BACnet network name)	
		BASCom BACnet (Comm Sub-board operation)	
		Description	
		Comm-S Waiting For Pol (FC Bus comm status)	
		FcBusMode Wired (FC Bus Comm Mode)	
		Address 4 (FC BUS BACnet network address)	
		OprBaudRate Auto (FC BUS baud rate to be used)	
		BaudRate Auto (FC BUS baud rate in use)	
		DeviceId 1 (FC BUS BACnet network Dev ID #)	
	Misc	Language English	
		Units IP (units of measure to be used)	
	SysCntrls	Misc	Relearn False (clear SA BUS devices in Memory)
			#NetSensors 0 (# of NetSensors n SA BUS com)
			EconCntlr Not Present (Econ Brd Comm status)
			4StgCntlr Not Present (4stg Brd Comm status)
			FDDMCntlr Not Present (Refr Circ 1-2 status)
			FDDSCntlr Not Present (Refr Circ 3-4 status)
		UCB	UCBMainVer 3.0.0.1070 (Firmware Revision)
			UCBAppVer 11.2.0.1018 (Software App Rev)
			UCBHardVer (Hardware Revision)
		Econ	EconMainVer 3.0.0.1070 (Firmware Revision)
			EconAppVer 11.2.0.1018 (SoftwareAppRev)
			EconHardVer (Hardware Revision)
		4Stg	4StgMainVer 3.0.0.1070 (Firmware Revision)
			4StgAppVer 11.2.0.1018 (SoftwareAppRev)
			4StgHardVer (Hardware Revision)
		FDDM	FDDMMainVer 3.0.0.1070 (Firmware Revision)
			FDDMAppVer 11.2.0.1018 (SoftwareAppRev)
			FDDMHardVer (Hardware Revision)
		FDDS	FDDSMainVer 3.0.0.1070 (Firmware Revision)
			FDDSAppVer 11.2.0.1018 (SoftwareAppRev)
			FDDSHardVer (Hardware Revision)
Update	View Ver	3.0.0.1070 Firmware OK.	
	LoadFirm	No Package Present Error	
	Backup	BKP:Wait bCfg 0%	
	Restore	>serialflash/BackupConfig	
	Full Clone	>serialflash/BackupConfig	
	Part Clone	>serialflash/BackupConfig	

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed	
Update (Continued)	FactryDft	Confirm	
	Dat e Ti me	>Hour 1 (0 through 23)	
		Minute 1 (0 through 59)	
		Day 11 (1 through 31)	
		Month 1 (1 through 12)	
		Year 2000 (1900 through 2155)	
Details	Unit	Unit-S Idle (Unit Status)	
		Name (Unit Name)	
		Model# (Unit Model Number)	
		Serial# (Unit Serial Number)	
		ModelName (Model Name)	
		ResetLO (Reset Lockouts)	
		UnitEn (Unit Enable)	
		HdwrReset (Hardware Reset)	
	Setpoints	OprST (Operational Space Temperature)	
		OprOcc (Operational Occupancy)	
		RAT 70.4 F (UCB RAT Thermistor input)	
		OprCVClg-Sp 72 F (CV - Operating Cool Setpoint)	
		CVOprHtg-Sp 68 F (CV - Operating Heat Setpoint)	
		ClgOcc-Sp 72 F (CV - Occ Cooling Setpoint)	
		ClgUnocc-Sp 80 F (CV - UnOcc Cooling Setpoint)	
		CVHtgOcc-SP 68 F (CV - Occ Heating Setpoint)	
		CVHtgUnocc-Sp 60 F (CV - UnOcc Heating Setpoint)	
		SAT (60.7 F) (S A Temp Thermistor input)	
		DctPrs 1.50"/w (VAV UCB Dct Prs 0-5 VDC input)	
		OprVAVClg-Sp 60 F (VAV Operating Cool Setpoint)	
		VAVOprHtg-Sp 68F (VAV Operating Heat Setpoint)	
		DctPrs-Sp 1.50"/w (VAV UCB Dct Prs 0-5 VDC input)	
		SATUp-Sp 60 F (VAV - Upper S A Temp Setpoint)	
		SATLo-Sp 55 F (VAV - Lower S A Temp Setpoint)	
		SATRst-Sp 72 F (VAV - S A Temp Reset Setpoint)	
		VAVClgUnocc-Sp 80F (Unocc Cooling Setpoint)	
		HtgOcc-En Yes (VAV Occ Heating Enable)	
		VAVHtgOcc-SP 68 F (VAV - Occ Heating Setpoint)	
		HtgUnocc-En No (VAV UnOcc Heating Enable)	
		VAVHtgUnocc-Sp 60 F (VAV UnOcc Heating Setpt)	
	Zone	Indoor	OprST (Operational Space Temp)
			OprOcc (Operational Occupancy)
			OprIAQ 477ppm (IAQ 0-10vdcInput in use)
			OprSH (Operational Space Humidity)
			OprFanReq (Operating Fan Request)
			OprSSO (Operational Space Temp SP Offset)
			SSO (Space Temp Offset Input)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu			Default Settings and Condition(s) for Parameter To Be Displayed	
Details (Continued)	Zone (Continued)	Indoor (Continued)	SSORange 3.0 (Space Temp Offset Range)	
			STSrc (Space Temp Source)	
			STAlarmOffset 5F (Space Temp Alarm Offset)	
			STAlarmDelay 3600s (Space Temp Alarm Delay)	
			OccSrc (Occupancy Source)	
			TempOccTimeout 7200s (Temporary Occ Timeout)	
			OccMode External (Occ InitiationMethod)	
			IAQSrc Local Input (IAQ Input Source)	
			SH Source Local Input(SpaceHumidInptSource)	
			FanReqSrc Local Input(ID BlowerInputSource)	
			SSO Src Local Input (SSO Input Source)	
			OffDurUnocc Yes (Off During Unoccupied)	
			UseOccSched Yes (Use Occupancy Schedule)	
		Outdoor	OprOAT 73.0 F (OutdoorAirTemp in use)	
			OprOAH 19 %H (OutdoorAirHumidity in use)	
			OA-Enth 20 B/# (Calculated Enthalpy)	
			OprOAQ 990ppm (OutdoorAirQuality in use)	
			OATSrc Local Input (OutdoorAirTemp source)	
			OAHSrc Local Input (OA Humidity source)	
			OAQSrc Local Input (OutdoorAirQuality source)	
	Control	Indoor Fan	Status	Fan Off (FAN 24vac output status)
				Fan VFD 0% (VFD 2-10vdc output status)
				FanCtl-Type Single Speed (UnitOpMode)
				APS Off (APS input status)
				DctPrs 1.50"/w (DuctPres 0-5vdc input)
				SAT 60.7 F (UCB SAT thermistor input)
				FanOverload Normal (FanOvrInptStatus)
				FanVFDFlt Normal (FLT24vacInptStatus)
				Fan-RT .0 hr (Accumulated Fan runtime)
				DFS Normal (DFS 24vac input status)
			Setup	LowAmbFanPrerunCool 60sec
				FanOnDlyCool 0sec (CoolFanOnDelay)
				FanOffDlyCool 30sec (CoolFanOffDelay)
				FanOnDlyHeat 30sec (HeatFanOnDelay)
				FanOffDlyHeat 60sec (HeatFanOffDelay)
				FanOn Occ Yes (OccupiedConstantFan)
				FanOffStartHeat Yes (FanOff atHeatStart)
				Fan Only-% Cmd 50 % (CV IS Fan Only)
				1ClgStg-% Cmd 70 % (CV IS 1 Stg Cool)
				2ClgStg-% Cmd 80 % (CV IS 2 Stg Cool)
				3ClgStg-% Cmd 90 % (CV IS 3 Stg Cool)
				4ClgStg-% Cmd 100 % (CV IS 4 Stg Cool)
				1HtgStg-% Cmd 100 % (CV IS 1 Stg Heat)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Control (Continued)	Indoor Fan (Continued)	Setup (Continued)	2HtgStg-% Cmd 100 % (CV IS 2 Stg Heat)
				3HtgStg-% Cmd 100 % (CV IS 3 Stg Heat)
				DctPrs-Sp 1.50"/w (DuctPres setpoint)
				DctShutdownSp 4.50"/w (DuctPressLimit)
		Clg	Status	Clg-S Off-Idle (Cooling Status)
				#ClgStgs 2 (# of cooling stages)
				SAT 60.7 F (SAT thermistor input)
				StgClgCmd 0% (Staged Cooling Command)
			Stage 1	C1-S Off - Idle (Compressor Stage Status)
				C1 Off (C1 24vacOutputStatus)
				C1-En Yes (C1 24vacOutputEnabled)
				C1OnTmr 0 min (C1MinRuntimeRemain)
				C1ASCDTmr 0 min (C1 ASC TimeRemain)
				C1RunTim . 0 hr(C1 outptAccumRuntime)
				EC1 42 F (EC1 thermistor input)
				CC1 96 F (CC1 thermistor input)
				SLP-1 (Suction Pressure 1)
				LLP-1 (Liquid Pressure 1)
				SLT-1 (Suction Temperature 1)
				LLT-1 (Liquid Temperature 1)
				C1-EI (Efficiency Index 1)
				C1-CI (Capacity Index 1)
				C1-CondTempOvrAmb (Condensing Temp over Ambient 1)
				C1-EvapTempValue (Evap Temp Value Circuit 1)
			Stage 2	C2-S Off - Idle (Compressor Stage Status)
				C2 Off (C2 24vacOutputStatus)
				C2-En Yes (C2 24vacOutputEnabled)
				C2OnTmr 0 min (C2MinRuntimeRemain)
				C2ASCDTmr 0 min (C2 ASC TimeRemain)
				C2RunTim . 0 hr(C2 outptAccumRuntime)
				EC2 42 F (EC2 thermistor input)
				CC2 96 F (CC2 thermistor input)
				SLP-2 (Suction Pressure 2)
				LLP-2 (Liquid Pressure 2)
				SLT-2 (Suction Temperature 2)
				LLT-2 (Liquid Temperature 2)
				C2-EI (Efficiency Index 2)
				C2-CI (Capacity Index 2)
				C2-CondTempOvrAmb (Condensing Temp over Ambient 2)
				C2-EvapTempValue (Evap Temp Value Circuit 2)
			Stage 3	C3-S Off - Idle (Compressor Stage Status)
				C3 Off (C3 24vacOutputStatus)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Control (Continued)	Clg (Continued)	Stage 3 (Continued)	C3-En Yes (C3 24vacOutputEnabled)
				C3OnTmr 0 min (C3MinRuntimeRemain)
				C3ASCDTmr 0 min (C3 ASC TimeRemain)
				C3RunTim . 0 hr(C3 outptAccumRuntime)
				EC3 42 F (EC3 thermistor input)
				CC3 96 F (CC3 thermistor input)
				SLP-3 (Suction Pressure 3)
				LLP-3 (Liquid Pressure 3)
				SLT-3 (Suction Temperature 3)
				LLT-3 (Liquid Temperature 3)
				C3-EI (Efficiency Index 3)
				C3-CI (Capacity Index 3)
				C3-CondTempOvrAmb (Condensing Temp over Ambient 3)
				C3-EvapTempValue (Evap Temp Value Circuit 3)
			Stage 4	C4-S Off - Idle (Compressor Stage Status)
				C4 Off (C4 24vacOutputStatus)
				C4-En Yes (C4 24vacOutputEnabled)
				C4OnTmr 0 min (C4MinRuntimeRemain)
				C4ASCDTmr 0 min (C4 ASC TimeRemain)
				C4RunTim . 0 hr(C4 outptAccumRuntime)
				EC4 42 F (EC4 thermistor input)
				CC4 96 F (CC4 thermistor input)
				SLP-4 (Suction Pressure 4)
				LLP-4 (Liquid Pressure 4)
				SLT-4 (Suction Temperature 4)
				LLT-4 (Liquid Temperature 4)
				C4-EI (Efficiency Index 4)
				C4-CI (Capacity Index 4)
				C4-CondTempOvrAmb (Condensing Temp over Ambient 4)
				C4-EvapTempValue (Evap Temp Value Circuit 4)
			Setup	Clg-En Yes (Cooling Enabled/Disabled)
				MinRtCoolStg 3min (MinCompRunTime)
				LeadLag-En No (EqualCompRuntime)
				LowAmbFanPrerunCool 60 sec
				ClgOATCutout-En Yes (LowAmbComp LO)
				ClgOATCutout 45 F (LoAmbCompLO StPt)
				ClgAdapTunEn Yes (Cooling Auto Tune Enable)
				SATCoolLimit-En Yes (Enable SAT Limit)
				SATCoolLimit-Sp 50 F (SAT Limit SetPt)
				EconLoad-En No (EconLoadingEnabled)
				AllCompOff-Econ No (SuplmntEconoEnable)
				LowAmb-En No (Low Ambient Enabled)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Control (Continued)	Clg (Continued)	Setup (Continued)	LowAmb10On5OffSp 45F(LoAmbOpSetPt)
				TempHumCtrl-En No (CntrlOperEnable)
				TempHum-Sp 50 %H (*effectsOprClg-SP)
				MaxTempHumSpOff 3.0 F
				TempHumValPerDegOff 5 %H
				MornC-En No (Morning Cooldown Enabled)
				MornCRAT-Sp 74F (Morning Cooldown SP)
		Htg	Status	Htg-S Off-Idle (Heating Status)
				Htg-Type Staged (HeatingControlMethod)
				#HtgStgs 1 (# of Heating Stages)
				HWV 0% (Hydronic HWV % Command)
				StgHtgCmd 0% (Staged Heating Command)
			Stage1	H1-S Off-Idle (Heating Stage Status)
				H1 Off (1st Stg Heat output status)
				H1OnTmr 0 min (RemainMinRunTime)
				H1ASCDTmr 0 min (Remain ASCD Time)
				H1RunTim .0 hr (accum H1 RunTime)
			Stage2	H2-S Off-Idle (Heating Stage Status)
				H2 Off (2st Stg Heat output status)
				H2OnTmr 0 min (RemainMinRunTime)
				H2ASCDTmr 0 min (Remain ASCD Time)
				H2RunTim .0 hr (accum H2 RunTime)
			Stage3	H3-S Off-Idle (Heating Stage Status)
				H3 Off (3st Stg Heat output status)
				H3OnTmr 0 min (RemainMinRunTime)
				H3ASCDTmr 0 min (Remain ASCD Time)
				H3RunTim .0 hr (accum H3 RunTime)
			Setup	Htg-En Yes (Heating Oper Enabled)
				SATHtgLimit-En Yes (SA HtgLimitEnabled)
				SATHtgLimit-Sp 135 F (SA HtgLimitSetPt)
				HtgOATCutout-Sp 75 F (HtgOAT CO SetPt)
				HtgAdapTunEn Yes (Heating Auto Tune Enable)
				HydH1SA-Sp 120 F (Hyd H1 SAT SetPt)
				HydH2SA-Sp 150 F (Hyd H2 SAT SetPt)
				SATTempHydHt-En No(HydHtgSA Temper)
				SATTempHydHt-Sp 40 (Hyd Heat Temp Sp)
				HydReverse No (ModHt 2-10vdcAction)
				MornW-En No (VavMornWrmupEnable)
				MornWRAT-Sp 71F(MornWrmupRA SetPt)
		Heat Pump	Status	Clg-S Off-Idle (Cooling Status)
				Htg-S Off-Idle (Heating Status)
				C1 Off (UCB C1 24 VAC output status)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu			Default Settings and Condition(s) for Parameter To Be Displayed	
Details (Continued)	Control (Continued)	Heat Pump (Continued)	Status (Continued)	C2 Off (UCB C2 24 VAC output status)
				RevVlv Off (Reversing Valve)
				AuxHtg Off (Auxiliary Heat)
				Mode Cooling (Mode)
			Stage 1	C1-S Off - Idle (Compressor Stage Status)
				C1 Off (C1 24vacOutputStatus)
				C1-En Yes (C1 24vacOutputEnabled)
				C1OnTmr 0 min (C1MinRuntimeRemain)
				C1ASCDTmr 0 min (C1 ASC TimeRemain)
				C1RunTim . 0 hr(C1 outptAccumRuntime)
				EC1 42 F (EC1 thermistor input)
				CC1 96 F (CC1 thermistor input)
				SLP-1 (Suction Pressure 1)
				LLP-1 (Liquid Pressure 1)
				SLT-1 (Suction Temperature 1)
				LLT-1 (Liquid Temperature 1)
				C1-EI (Efficiency Index 1)
				C1-CI (Capacity Index 1)
				C1-CondTempOvrAmb (Condensing Temp over Ambient 1)
				C1-EvapTempValue (Evap Temp Value Circuit 1)
			Stage 2	C2-S Off - Idle (Compressor Stage Status)
				C2 Off (C2 24vacOutputStatus)
				C2-En Yes (C2 24vacOutputEnabled)
				C2OnTmr 0 min (C2MinRuntimeRemain)
				C2ASCDTmr 0 min (C2 ASC TimeRemain)
				C2RunTim . 0 hr(C2 outptAccumRuntime)
				EC2 42 F (EC2 thermistor input)
				CC2 96 F (CC2 thermistor input)
				SLP-2 (Suction Pressure 2)
				LLP-2 (Liquid Pressure 2)
				SLT-2 (Suction Temperature 2)
				LLT-2 (Liquid Temperature 2)
				C2-EI (Efficiency Index 2)
				C2-CI (Capacity Index 2)
				C2-CondTempOvrAmb (Condensing Temp over Ambient 2)
				C2-EvapTempValue (Evap Temp Value Circuit 2)
			Setup	Clg-En Yes (Cooling Enabled/Disabled)
				Htg-En Yes (Heating Oper Enabled)
				MinRtCoolStg 3min (MinCompRunTime)
				LeadLag-En No (EqualCompRuntime)
				LowAmbFanPrerunCool 60 sec
				ClgOATCutout-En Yes (LowAmbComp LO)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Control (Continued)	Heat Pump (Continued)	Setup (Continued)	ClgOATCutout 45 F (LoAmbCompLO StPt)
				SATCoolLimit-En Yes (Enable SAT Limit)
				SATCoolLimit-Sp 50 F (SAT Limit SetPt)
				SATHtgLimit-En Yes (SA HtgLimitEnabled)
				SATHtgLimit-Sp 135 F (SA HtgLimitSetPt)
				ClgAdapTunEn Yes (Cooling Auto Tune Enable)
				HtgAdapTunEn Yes (Heating Auto Tune Enable)
				EconLoad-En No (EconLoadingEnabled)
				AllCompOff-Econ No (SuplmntEconoEnable)
				LowAmb-En No (Low Ambient Enabled)
				LowAmb10On5OffSp 45F(LoAmbOpSetPt)
				TempHumCtrl-En No (CntrlOperEnable)
				TempHum-Sp 50 %H (*effectsOprClg-SP)
				MaxTempHumSpOff 3.0 F
				TempHumValPerDegOff 5 %H
		Econ	Status	Econ 0 % (ECON 2-10vdc output status)
				Econ-Free No (FreeCooling available)
				FreeClg-Mode Dry Bulb (ChngoverMode)
				MAT 71 F (MAT thermistor input)
				OA-Enth 20 B/# (CalcOA enthalpyInput)
				OprOAH 19 %H (OA Humidity in use)
				Opr OAT 73.0 F (OA Temp in use)
				RA-Enth 20B/# (RA enthalpy input)
				RAH 19.4 %H (RA Humidity0-10vdcInput)
				RAT 70.4 F (UCB RAT thermistorInput)
				SAH 71 %H (SA Humidity 0-10vdcInput)
			Setup	Econ-En Yes (EconoFreeCoolingEnable)
				FreeClg-Sel Auto(FreClgChngOvrMethod)
				Econ-MinPos 20 % (OccEconoMinPos)
				EconOAT-SpEn 55 F (DryBlbChgOvrSetPt)
				EconOAEnth-Sp 27 B/# (EnthCngOvrSetPt)
				LowAmb-Sp 0 F (LoAmbMinPossSetPt)
				LowAmb-MinPos 0%v(OccLoAmbMinPos)
				IAQEcon-MaxPos 50%(DVentMaxEconPos)
				LowSpeedFan-MinPos 25%(OccLoFanPos)
				EconMechStp Option B (Econ Mech Setup)
		Power Exhaust	Status	ExFan Off (EX-FAN 24vacOutputStatus)
				ExFanVFD 0 % (EX VFD2-10vdc Output)
				ExFanVFDFlt Normal (VFD FLT24vacInput)
				ExFan-RT .0 hr(24vacOutputAccRunTime)
				EAD-O 0 % (EXVFD2-10vdcOutptStatus)
				BldgPres .164"/w(BldgPress0-5vdcInput)
				Bldg-Sp 100"/w(ExDmprBldgPresSetPt)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Control (Continued)	Power Exhaust (Continued)	Setup	ExFType None(PwrExFanModeSelection)
				EconDmpPosFanOn 60 % (FanOnPosition)
				EconDmpPosFanOff 20 % (FanOffPosition)
				ExDmpPosFanOn 80 % (FanOnPosition)
				ExDmpPosFanOff 20 % (FanOffPosition)
				ERV-En No(Econ&PwrExIntrgrationW/ERV)
				ERVUnoccFan-En No (ERV Unocc Fan Enabled)
		Demand Vent	DVent-Mode Disabled (DemandVentiMode)	
			OprIAQ 477ppm (IAQ 0-10vdcInput in use)	
			DVentMaxEconPos 50 % (IAQ Econ-MaxPos)	
			DVentIAQ-Sp 1000ppm (OccIAQEconOperSetPt)	
			DVentDiff-Sp 600ppm(Occ Diff IAQ/OAQ SetPt)	
			IAQRange 2000ppm (ppm@10vdcIAQ Output)	
			OAQRange 2000ppm (ppm@10vdcOAQ Output)	
		AirMon Station	MOAFlow-Sp10CFM(OcMinOAflowSetPt)	
			Fr Air 7129CFM (FR AIR 0-10vdc Input)	
			MOA-Range 10000CFM(Cfm/10vdcOutpt)	
		Hot Gas Reheat	HGR-S Off-Idle (HGR Status)	
			HGR Off Hot Gas Reheat	
			HGR-En No (Hot Gas Reheat Enabled)	
			HGRUnocc-En No (HGR Unocc Enabled)	
			HGRAltWrite No (HGR Alternate Writeable)	
			HGRAlt-En No (HGR Alternate Enabled)	
			HGRHum-Sp 60degF (Hot Gas Reheat Humididty Setpoint)	
			HGRUnoccHum-SP 70degF (HGR Unocc Hum Sp)	
		Smoke Ctrl	OprPurgeCmd False (ActivePurgeCmd)	
			PurgeCmdSrc RATemp(PurgeCmdSource)	
			Purge False (Purge Input status)	
			NetPurge ?Unrel (PurgeCommandStatus)	
			SD Normal (SD 24 VAC input status)	
	Service	Inputs	Sensors	ST 60.5 F (UCB ST ThermistorInput)
				SSO .0 F (UCB SSO 0-20,000 Ω input)
				IAQ 477ppm (IAQ 0-10 VDC Input)
				RAH 49.6 %H (UCB RAH 0-10vdcInput)
				OAT 73.0 F (UCB OAT ThermistorInput)
				OAH 49.6 %H (OAH 0-10vdc Input)
				OAQ 477ppm (OAQ 0-10vdc Input)
				SAT 60.7 F (UCB SAT ThermistorInput)
				RAT 73.0 F (UCB RAT ThermistorInput)
				SAH 49 %H (SAH 0-10 vdcInput)
				DctPrs 1.50"/w(DCT PRS 0-5vdcInput)
				BldgPres .164"/w (BldgPres 0-5vdc Input)
				MAT 71 F (MAT thermistor input)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Service (Continued)	Inputs (Continued)	Sensors (Continued)	Fr Air 7129CFM (FR AIR 0-10vdc Input)
				UCB24VForOutputs 24
				EconDampPos (AI-IN 0-10vdc Input)
			Coil Sensors	EC1 42 F (EC1 Thermistor Input)
				CC1 96 F (CC1 Thermistor Input)
				EC2 41 F (EC2 Thermistor Input)
				CC2 117 F (CC2 Thermistor Input)
				EC3 42 F (EC3 Thermistor Input)
				CC3 96 F (CC3 Thermistor Input)
				EC4 41 F (EC4 Thermistor Input)
				CC4 117 F (CC4 Thermistor Input)
			Thermostat	Y1-Tstat Off (24vac input to Y1 term)
				Y2-Tstat Off (24vac input to Y2 term)
				Y3-Tstat Off (24vac input to Y3 term)
				Y4-Tstat Off (24vac input to Y4 term)
				W1-Tstat Off (24vac input to W1 term)
				W2-Tstat Off (24vac input to W2 term)
				W3-Tstat Off (24vac input to W3 term)
				G-Tstat Off (24vac input to G term)
				Tstat-Only Yes (T-Stat Input Only)
			Binary Inputs	Limit Normal (Limit 24vac input status)
				Lim2 Normal (Limit 24vac input status)
				Lim3 Normal (Limit 24vac input status)
				MV No (MV pin 24vac input status)
				GV2 No (GV2 pin 24vac input status)
				GV3 No (GV3,4 pin 24vac input status)
				HPS1 Normal (HPS1 24vac input status)
				LPS1 Normal (LPS1 24vac input status)
				FS1 Normal (Freeze Protect1 status)
				HPS2 Normal (HPS2 24vac input status)
				LPS2 Normal (LPS2 24vac input status)
				FS2 Normal (Freeze Protect2 status)
				HPS3 Normal (HPS3 34vac input status)
				LPS3 Normal (LPS3 34vac input status)
				FS3 Normal (Freeze Protect3 status)
				HPS4 Normal (HPS4 44vac input status)
				LPS4 Normal (LPS4 44vac input status)
				FS4 Normal (Freeze Protect4 status)
				FanOvrload Normal(24VAC input status)
				APS Off (AirProving Switch input status)
				DFS Normal (DrtyFltr Switch input status)
				SD Normal (Smoke Detect input status)
				Purge False (Purge 24vac input status)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Service (Continued)	Inputs (Continued)	Binary Inputs (Continued)	ExFanVFDFlt Normal (24vac input status)
				FanVFDFlt Normal (24vac input status)
				OCC Unoccupied (24vac input status)
				TempOcc (Temporary Occupancy)
			Safeties	HPS1-LO Normal (HiPress1 switch status)
				LPS1-LO Normal(LoPress1 switch status)
				FS1-LO Normal (Freeze Protect1 status)
				HPS2-LO Normal (HiPress2 switch status)
				LPS2-LO Normal (LoPress2 switch status)
				FS2-LO Normal (Freeze Protect2 status)
				HPS3-LO Normal (HiPress3 switch status)
				LPS3-LO Normal (LoPress3 switch status)
				FS3-LO Normal (Freeze Protect3 status)
				HPS4-LO Normal (HiPress4 switch status)
				LPS4-LO Normal (LoPress4 switch status)
				FS4-LO Normal (Freeze Protect4 status)
				LimitLO Normal (HeaT Limit status)
				Lim2LO Normal (HeaT Limit status)
				Lim3LO Normal (HeaT Limit status)
			Network Inputs	NetST ?Unrel (FC Bus Space Temp)
				NetSSO ?Unrel (FC BusSpaceSetPtOffset)
				NetSH ?Unrel (FC BusSpaceHumidity)
				NetOcc Not Set (FC BusOccupncyStatus)
				NetTempOcc False(TempOccCommand)
				NetIAQ ?Unrel (FC Bus IAQ value)
				NetFanReq ?Unrel (FC BusFanOn reqst)
				NetOAT ?Unrel (FC Bus OA Temp)
				NetOAH ?Unrel (FC Bus OA Humidity)
				NetOAQ ?Unrel (FC Bus OA Quality)
				NetPurge ?Unrel (FC BusPurge Comand)
				DirLoadshd (Direct Loadshed)
				Redline (Redline)
				LoadShedEnable (Load Shed Enable)
				LoadShedRateLim (Load Shed Rate Limit)
				LoadShedAdjust (Load Shed Adjust)
		Outputs	Relay	C1 Off (1st Cool 24 VAC output)
				C2 Off (2nd+ Cool 24 VAC output)
				C3 Off (3rd+ Cool 24 VAC output)
				C4 Off (4th+ Cool 24 VAC output)
				H1 Off (1st Heat 24 VAC output)
				H2 Off (2nd+ Heat 24 VAC output)
				H3 Off (3rd+ Heat 24 VAC output)
				ExFan Off (EX-Fan 24 VAC output)

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Service (Continued)	Outputs (Continued)	Relay (Continued)	CN-Fan Off (CN-Fan 24 VAC output)
				CF2 Off (CF2 24 VAC output)
				Fan Off (Fan 24 VAC output)
				VAV Box Off (VAV Box)
				HGR Off (HGR Command)
				X-Out Off (X term 24 VAC output)
			Analog	FanVFD 0 % (VFD 2-10 VDC output)
				Econ 0 % (Econ 2-10 VDC output)
				ExFanVFD 0 % (ExFan 2-10 VDC output)
				HWV 0 % (HWV VDC output)
		Factory	Standard	#ClgStgs 2 (# of Cooling Stages)
				#HtgStgs 0 (# of Heating Stages)
				#HtPumpStgs 0 (# of Heat Pumps)
				#RefrigSys 0 (#Refrig Circuits)
				Htg-Type Staged (Heating Control Method)
				FanCtl-Type Single Speed (I D Blower Type)
				APSSetup None (Air Proving Switch Operation)
				HGR-En No (HGR Enabled)
				HGP-Inst No (Hot Gas Bypass Installed)
				BASCom BACnet (Comm sub-board present)
				Freeze-Sp 26.0 F (Evap freeze protect setpt)
				DFSINst (Dirty Filter Switch Installed)
				FanOffDlyCool (Fan Off Delay for Cool)
				FanOnDlyCool 0sec (CoolFanOnDelay)
				FanOffDlyHeat 60sec (HeatFanOffDelay)
				FanOnDlyHeat 30sec (HeatFanOnDelay)
				LowAmb-En No (Low Ambient Enabled)
				LowAmbFanPrerunCool (Low Ambient Fan Prerun Time)
				LowAmb10On5OffSp 45F(LoAmbOpSetPt)
				LeadLag-En No (EqualCompRuntime)
				Tstat-Only Yes (T-Stat Input Only)
				ClgOATCutout 45 F (LoAmbCompLO StPt)
			FDD	UnitType
				EER
				SubcoolGoal
				RefrigType
				HiSidePortLoc
				EvapCoil-Type
				CondCoil-Type
				InMeterDev-Type
				OutMeterDev-Type
				UnitCap

Table 4: SE UCB Display Menu Guide (Continued)

Menu/Sub Menu		Default Settings and Condition(s) for Parameter To Be Displayed		
Details (Continued)	Service (Continued)	Factory (Continued)	FDD	FanPower
				SuperHeatGoal
				Altitude
			Economizer	Econ-MinPos 20 % (OccEconoMinPos)
				LowSpeedFan-MinPos 25%(OccLoFanPos)
				ExFType None (ExHaust Fan Mode/Type)
			Misc	SZVAVEn No (Single Zone VAV Enabled)
				CntrlType CV (Rooftop Controller Type)
				EquipType RTU (Rooftop Equipment Type)
				PumpOut-En Disabled (Pump Out Enabled)
Self Test	Start (Begins the Self Test Sequence)			
	Pause (Causes the sequence to hold any outputs ON for 10 minutes. This excludes safety trips)			
	TestStatus (Displays current state of the Self Test Sequencer)			
	Reset (Erases the previous Self Test results and prepares the Self Test Sequencer for another test run)			
	Cancel (Stops the Self Test Sequencer and returns the SEC to normal operation)			
View Results	FanResult Pass-Fail (APS On Early or APS Off)			
	C1Result Pass-Fail-Warning			
	C2Result Pass-Fail-Warning			
	C3Result Pass-Fail-Warning			
	C4Result Pass-Fail-Warning			
	H1Result Pass-Fail-Warning			
	H2Result Pass-Fail-Warning			
	H3Result Pass-Fail-Warning			
	EconResult Pass-Fail (Damper)			
	ExhResult Warning-Pass (BSP not dropped)			

Table 5: SE RTU BACnet Modbus

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Writeable Flag
Unit Status	Unit-S	29803	280	#N/A	0	#N/A	0	0
Name	Name	29804	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Model No.	Model#	29805	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Serial No.	Serial#	29806	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Firmware Version	FirmVer	29807	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Exhaust Fan Type	ExFType	29503	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Reset Lockouts	ResetLO	29826	80	#N/A	0	#N/A	0	1
Single Zone VAV Enable	SZVAVEn	29908	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Write able Flag
Hardware Reset	HdwrReset	29909	126	#N/A	0	#N/A	0	1
Y1 - Thermostat	Y1-Tstat	29504	281	#N/A	0	#N/A	0	0
Y2 - Thermostat	Y2-Tstat	29505	282	#N/A	0	#N/A	0	0
Y3 - Thermostat	Y3-Tstat	29506	283	#N/A	0	#N/A	0	0
Y4 - Thermostat	Y4-Tstat	29507	284	#N/A	0	#N/A	0	0
W1 - Thermostat	W1-Tstat	29508	285	#N/A	0	#N/A	0	0
W2 - Thermostat	W2-Tstat	29509	286	#N/A	0	#N/A	0	0
W3 - Thermostat	W3-Tstat	29510	287	#N/A	0	#N/A	0	0
G - Thermostat	G-Tstat	29511	288	#N/A	0	#N/A	0	0
X-OUT	X-Out	29513	289	#N/A	0	#N/A	0	0
Thermostat Only Control	Tstat-Only	29514	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Fan Status	Fan-S	29550	302	#N/A	0	#N/A	0	0
Supply Fan Pct Output	FanVFD	29551	157	X10	0	Signed	0	0
Fan VFD Fault	FanVFDFlt	29552	303	#N/A	0	#N/A	0	0
Supply Fan Overload	FanOvrload	29553	304	#N/A	0	#N/A	0	0
Fan Accumulated Runtime	Fan-RT	29554	9	X10	0	Unsigned	0	1
Fan Control Type	FanCtl-Type	29555	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Air Proving Switch Setup	APSSetup	29556	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Air Proving Switch	APS	29557	305	#N/A	0	#N/A	0	0
Fan On Delay for Cool	FanOnDlyCool	29558	90	#N/A	0	#N/A	0	1
Fan Off Delay for Cool	FanOffDlyCool	29559	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Fan On Delay for Heat	FanOnDlyHeat	29560	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Fan Off Delay for Heat	FanOffDlyHeat	29561	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Dirty Filter Switch	DFS	29562	306	#N/A	0	#N/A	0	0
Fan Command	Fan	29563	307	#N/A	0	#N/A	0	0
Supply Air Temperature	SAT	29564	158	X10	0	Signed	0	0
Duct Static Pressure	DctPrs	29565	159	X100	0	Signed	0	0
Duct Pressure Setpoint	DctPrs-Sp	29566	10	X100	0	Signed	0	1
Duct Pressure Shutdwn Sp	DctShutdownSp	29567	11	X100	0	Signed	0	1
Cont SF Oper in Occ Mode	FanOnOcc	29568	91	#N/A	0	#N/A	0	1
Trn Off Cnt Fn Opr St Ht	FanOffStartHeat	29569	92	#N/A	0	#N/A	0	1
Occ No Heat or Cl Pct Sp	FanOnly-%Cmd	29570	12	X10	0	Signed	0	1
Occ 1 Stage of Cl Pct Sp	1ClgStg-%Cmd	29571	13	X10	0	Signed	0	1

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Write able Flag
Occ 2 Stges of Cl Pct Sp	2ClgStg-%Cmd	29572	14	X10	0	Signed	0	1
Occ 1 Stage of Ht Pct Sp	1HtgStg-%Cmd	29573	17	X10	0	Signed	0	1
Occ 2 Stges of Ht Pct Sp	2HtgStg-%Cmd	29574	18	X10	0	Signed	0	1
Occ 3 Stges of Cl Pct Sp	3ClgStg-%Cmd	29819	15	X10	0	Signed	0	1
Occ 4 Stges of Cl Pct Sp	4ClgStg-%Cmd	29820	16	X10	0	Signed	0	1
Occ 3 Stges of Ht Pct Sp	3HtgStg-%Cmd	29821	19	X10	0	Signed	0	1
SZ VAV Minimum Fan Speed	SZVAVMinFan Spd	29913	73	X10	0	Signed	0	1
Clg Mode Ena For Oper	Clg-En	29575	93	#N/A	0	#N/A	0	1
Number of Cooling Stages	#ClgStgs	29576	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Cooling Status	Clg-S	29577	308	#N/A	0	#N/A	0	0
Min Runtime Clg Stage	MinRtCoolStg	29578	20	X10	0	Unsigned	0	1
Compressor Lead-Lag Enable	LeadLag-En	29579	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Low Ambient Fan Pre-run Time For Cooling	LowAmbFanPr erunCool	29580	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
OAT Cooling Cutout Ena	ClgOATCutout-En	29581	94	#N/A	0	#N/A	0	1
OAT Cooling Cutout	ClgOATCutout	29582	21	X10	0	Signed	0	1
Economizer Loading Ena	EconLoad-En	29583	95	#N/A	0	#N/A	0	1
All Stgs Clg Off in Econ	AllCompOff-Econ	29584	96	#N/A	0	#N/A	0	1
Low Ambient Cooling Stages 10 on 5 off Setpoint	LowAmb10On 5OffSp	29585	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Temp/Hum (Ret) Cntrl Ena	TempHumCtrl-En	29586	97	#N/A	0	#N/A	0	1
Temp/Humidity Sp	TempHum-Sp	29587	22	X10	0	Signed	0	1
Max Temp / Hum Sp Offset	MaxTempHum SpOff	29588	23	X10	0	Signed	0	1
Temp-Hum Value-Deg Offst	TempHumValP erDegOff	29589	24	X10	0	Signed	0	1
SAT Limit for Clg Ena	SATCoolLimit-En	29590	98	#N/A	0	#N/A	0	1
SAT Limit for Cooling Sp	SATCoolLimit-Sp	29591	25	X10	0	Signed	0	1
Freeze Condition Setpoint	Freeze-Sp	29592	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Write able Flag
Condenser Fan 1	CN-Fan	29593	309	#N/A	0	#N/A	0	0
Condenser Fan 2	CF2	29594	310	#N/A	0	#N/A	0	0
Unit Type	UnitType	29595	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
EER	EER	29596	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Subcooling Goal	SubcoolGoal	29597	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Refrigerant Type	RefrigType	29598	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
High Side Port Location	HiSidePortLoc	29599	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Evaporator Coil Type	EvapCoil-Type	29600	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Condenser Coil Type	CondCoil-Type	29601	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Indoor Metering Device Type	InMeterDev-Type	29602	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Outdoor Metering Device Type	OutMeterDev-Type	29603	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
VAV Clg SA Temp Upper Sp	SATUp-Sp	29604	26	X10	0	Signed	0	1
VAV Cig SA Temp Lower Sp	SATLo-Sp	29605	27	X10	0	Signed	0	1
VAV SA Temp Reset Sp	SATRst-Sp	29606	28	X10	0	Signed	0	1
VAV Oper Clg SA Temp Sp	OprVAVClg-Sp	29607	160	X10	0	Signed	0	0
CV Occupied Cooling Sp	ClgOcc-Sp	29608	29	X10	0	Signed	0	1
CV Unoccupied Cooling Sp	ClgUnocc-Sp	29609	30	X10	0	Signed	0	1
CV Operating Cooling Sp	OprCVClg-Sp	29610	161	X10	0	Signed	0	0
Unit Capacity	UnitCap	29886	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Fan Power	FanPower	29887	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Super Heat Goal	SuperHeatGoal	29888	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Altitude	Altitude	29889	31	X10	0	Signed	0	1
Cooling Adaptive Tuning Enable	ClgAdapTunEn	29882	100	#N/A	#N/A	#N/A	#N/A	1
Refrig Systems Installed	#RefrigSys	29890	32	X10	0	Unsigned	0	1
DAT Cooling Min SP	DATClgMinSP	29907	74	X10	0	Signed	0	1
Pump Out Enable	PmpOut-En	29921	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Staged Cooling Command	StgClgCmd	29922	263	X10	0	Signed	0	0
Low Ambient Enable	LowAmb-En	29928	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
C1 Stage Command	C1	29611	311	#N/A	0	#N/A	0	0
C1 Stage Status	C1-S	29615	312	#N/A	0	#N/A	0	0
C1 Stage Enabled	C1-En	29619	101	#N/A	0	#N/A	0	1

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Writeable Flag
Hot Gas Bypass Present	HGP-Inst	29623	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
C1 Stage Acc Runtime	C1RunTim	29627	33	X10	0	Unsigned	0	1
C1 Min On Time Remaining	C1OnTmr	29631	162	X1	0	Unsigned	0	0
C1 ASCD Time Remaining	C1ASCDTmr	29635	163	X1	0	Unsigned	0	0
C1 High Pressure Limit	HPS1	29639	313	#N/A	0	#N/A	0	0
C1 High Pressure Lockout	HPS1-LO	29643	314	#N/A	0	#N/A	0	0
C1 Low Pressure Limit	LPS1	29647	315	#N/A	0	#N/A	0	0
C1 Low Pressure Lockout	LPS1-LO	29651	316	#N/A	0	#N/A	0	0
C1 Freeze Condition	FS1	29655	317	#N/A	0	#N/A	0	0
C1 Freeze Cond Lckout	FS1-LO	29659	318	#N/A	0	#N/A	0	0
C1 Evaporator Coil Temp	EC1	29663	164	X10	0	Signed	0	0
C1 Condenser Coil Temp	CC1	29667	165	X10	0	Signed	0	0
C1 Clg Circ Test Status	ClgCktTestS-1	29829	343	#N/A	0	#N/A	0	0
C1 Suction Line Pressure	SLP-1	29671	178	X10	0	Signed	0	0
C1 Liquid Line Pressure	LLP-1	29675	179	X10	0	Signed	0	0
C1 Suction Line Temp	SLT-1	29679	180	X10	0	Signed	0	0
C1 Liquid Line Temp	LLT-1	29683	181	X10	0	Signed	0	0
C1 Superheat	C1-SuperHeat	29687	182	X10	0	Signed	0	0
C1 Subcooling	C1-SubCool	29691	183	X10	0	Signed	0	0
C1 Cond Temp over Amb	C1-CondTempOvrAmb	29695	184	X10	0	Signed	0	0
C1 Efficiency Index	C1-EI	29699	185	X10	0	Signed	0	0
C1 Capacity Index	C1-CI	29703	186	X10	0	Signed	0	0
C1 Evap Temp Val Circuit	C1-EvapTempValue	29833	187	X10	0	Signed	0	0
C1 Cnd Temp Ovr Amb High	C1-CondTempOAHigh	29849	188	X10	0	Signed	0	0
C1 Cond Temp ovr Amb Low	C1-CondTempOALow	29853	189	X10	0	Signed	0	0
C1 Superheat High	C1-SuperheatHigh	29857	190	X10	0	Signed	0	0
C1 Superheat Low	C1-SuperheatLow	29861	191	X10	0	Signed	0	0
C1 Subcool High	C1-SubcoolHigh	29865	192	X10	0	Signed	0	0

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Writeable Flag
C1 Subcool Low	C1-SubcoolLow	29869	193	X10	0	Signed	0	0
C1 Evaporating Temp High	C1-EvapTempHigh	29873	194	X10	0	Signed	0	0
C1 Evaporating Temp Low	C1-EvapTempLow	29877	195	X10	0	Signed	0	0
C2 Stage Command	C2	29612	319	#N/A	0	#N/A	0	0
C2 Stage Status	C2-S	29616	320	#N/A	0	#N/A	0	0
C2 Stage Enabled	C2-En	29620	102	#N/A	0	#N/A	0	1
C2 Stage Acc Runtime	C2RunTim	29628	34	X10	0	Unsigned	0	1
C2 Min On Time Remaining	C2OnTmr	29632	166	X1	0	Unsigned	0	0
C2 ASCD Time Remaining	C2ASCDTmr	29636	167	X1	0	Unsigned	0	0
C2 High Pressure Limit	HPS2	29640	321	#N/A	0	#N/A	0	0
C2 High Pressure Lockout	HPS2-LO	29644	322	#N/A	0	#N/A	0	0
C2 Low Pressure Limit	LPS2	29648	323	#N/A	0	#N/A	0	0
C2 Low Pressure Lockout	LPS2-LO	29652	324	#N/A	0	#N/A	0	0
C2 Freeze Condition	FS2	29656	325	#N/A	0	#N/A	0	0
C2 Freeze Cond Lckout	FS2-LO	29660	326	#N/A	0	#N/A	0	0
C2 Evaporator Coil Temp	EC2	29664	168	X10	0	Signed	0	0
C2 Condenser Coil Temp	CC2	29668	169	X10	0	Signed	0	0
C2 Clg Circ Test Status	ClgCktTestS-2	29830	344	#N/A	0	#N/A	0	0
C2 Suction Line Pressure	SLP-2	29672	196	X10	0	Signed	0	0
C2 Liquid Line Pressure	LLP-2	29676	197	X10	0	Signed	0	0
C2 Suction Line Temp	SLT-2	29680	198	X10	0	Signed	0	0
C2 Liquid Line Temp	LLT-2	29684	199	X10	0	Signed	0	0
C2 Superheat	C2-SuperHeat	29688	200	X10	0	Signed	0	0
C2 Subcooling	C2-SubCool	29692	201	X10	0	Signed	0	0
C2 Cond Temp over Amb	C2-CondTempOvrAmb	29696	202	X10	0	Signed	0	0
C2 Efficiency Index	C2-EI	29700	203	X10	0	Signed	0	0
C2 Capacity Index	C2-CI	29704	204	X10	0	Signed	0	0
C2 Evap Temp Val Circuit	C2-EvapTempValue	29834	205	X10	0	Signed	0	0
C2 Cnd Temp Ovr Amb High	C2-CondTempOAHigh	29850	206	X10	0	Signed	0	0

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Write able Flag
C2 Cond Temp ovr Amb Low	C2-CondTempOA Low	29854	207	X10	0	Signed	0	0
C2 Superheat High	C2-SuperheatHigh	29858	208	X10	0	Signed	0	0
C2 Superheat Low	C2-SuperheatLow	29862	209	X10	0	Signed	0	0
C2 Subcool High	C2-SubcoolHigh	29866	210	X10	0	Signed	0	0
C2 Subcool Low	C2-SubcoolLow	29870	211	X10	0	Signed	0	0
C2 Evaporating Temp High	C2-EvapTempHigh	29874	212	X10	0	Signed	0	0
C2 Evaporating Temp Low	C2-EvapTempLow	29878	213	X10	0	Signed	0	0
C3 Stage Command	C3	29613	327	#N/A	0	#N/A	0	0
C3 Stage Status	C3-S	29617	328	#N/A	0	#N/A	0	0
C3 Stage Enabled	C3-En	29621	103	#N/A	0	#N/A	0	1
C3 Stage Acc Runtime	C3RunTim	29629	35	X10	0	Unsigned	0	1
C3 Min On Time Remaining	C3OnTmr	29633	170	X1	0	Unsigned	0	0
C3 ASCD Time Remaining	C3ASCDTmr	29637	171	X1	0	Unsigned	0	0
C3 High Pressure Limit	HPS3	29641	329	#N/A	0	#N/A	0	0
C3 High Pressure Lockout	HPS3-LO	29645	330	#N/A	0	#N/A	0	0
C3 Low Pressure Limit	LPS3	29649	331	#N/A	0	#N/A	0	0
C3 Low Pressure Lockout	LPS3-LO	29653	332	#N/A	0	#N/A	0	0
C3 Freeze Condition	FS3	29657	333	#N/A	0	#N/A	0	0
C3 Freeze Cond Lckout	FS3-LO	29661	334	#N/A	0	#N/A	0	0
C3 Evaporator Coil Temp	EC3	29665	172	X10	0	Signed	0	0
C3 Condenser Coil Temp	CC3	29669	173	X10	0	Signed	0	0
C3 Clg Circ Test Status	ClgCktTestS-3	29831	345	#N/A	0	#N/A	0	0
C3 Suction Line Pressure	SLP-3	29673	214	X10	0	Signed	0	0
C3 Liquid Line Pressure	LLP-3	29677	215	X10	0	Signed	0	0
C3 Suction Line Temp	SLT-3	29681	216	X10	0	Signed	0	0
C3 Liquid Line Temp	LLT-3	29685	217	X10	0	Signed	0	0
C3 Superheat	C3-SuperHeat	29689	218	X10	0	Signed	0	0
C3 Subcooling	C3-SubCool	29693	219	X10	0	Signed	0	0

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Write able Flag
C3 Cond Temp over Amb	C3-CondTempOvrAmb	29697	220	X10	0	Signed	0	0
C3 Efficiency Index	C3-EI	29701	221	X10	0	Signed	0	0
C3 Capacity Index	C3-CI	29705	222	X10	0	Signed	0	0
C3 Evap Temp Val Circuit	C3-EvapTempValue	29835	223	X10	0	Signed	0	0
C3 Cnd Temp Ovr Amb High	C3-CondTempOAHigh	29851	224	X10	0	Signed	0	0
C3 Cond Temp ovr Amb Low	C3-CondTempOALow	29855	225	X10	0	Signed	0	0
C3 Superheat High	C3-SuperheatHigh	29859	226	X10	0	Signed	0	0
C3 Superheat Low	C3-SuperheatLow	29863	227	X10	0	Signed	0	0
C3 Subcool High	C3-SubcoolHigh	29867	228	X10	0	Signed	0	0
C3 Subcool Low	C3-SubcoolLow	29871	229	X10	0	Signed	0	0
C3 Evaporating Temp High	C3-EvapTempHigh	29875	230	X10	0	Signed	0	0
C3 Evaporating Temp Low	C3-EvapTempLow	29879	231	X10	0	Signed	0	0
C4 Stage Command	C4	29614	335	#N/A	0	#N/A	0	0
C4 Stage Status	C4-S	29618	336	#N/A	0	#N/A	0	0
C4 Stage Enabled	C4-En	29622	104	#N/A	0	#N/A	0	1
C4 Stage Acc Runtime	C4RunTim	29630	36	X10	0	Unsigned	0	1
C4 Min On Time Remaining	C4OnTmr	29634	174	X1	0	Unsigned	0	0
C4 ASCD Time Remaining	C4ASCDTmr	29638	175	X1	0	Unsigned	0	0
C4 High Pressure Limit	HPS4	29642	337	#N/A	0	#N/A	0	0
C4 High Pressure Lockout	HPS4-LO	29646	338	#N/A	0	#N/A	0	0
C4 Low Pressure Limit	LPS4	29650	339	#N/A	0	#N/A	0	0
C4 Low Pressure Lockout	LPS4-LO	29654	340	#N/A	0	#N/A	0	0
C4 Freeze Condition	FS4	29658	341	#N/A	0	#N/A	0	0
C4 Freeze Cond Lckout	FS4-LO	29662	342	#N/A	0	#N/A	0	0
C4 Evaporator Coil Temp	EC4	29666	176	X10	0	Signed	0	0

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Writeable Flag
C4 Condenser Coil Temp	CC4	29670	177	X10	0	Signed	0	0
C4 Clg Circ Test Status	ClgCktTestS-4	29832	346	#N/A	0	#N/A	0	0
C4 Suction Line Pressure	SLP-4	29674	232	X10	0	Signed	0	0
C4 Liquid Line Pressure	LLP-4	29678	233	X10	0	Signed	0	0
C4 Suction Line Temp	SLT-4	29682	234	X10	0	Signed	0	0
C4 Liquid Line Temp	LLT-4	29686	235	X10	0	Signed	0	0
C4 Superheat	C4-SuperHeat	29690	236	X10	0	Signed	0	0
C4 Subcooling	C4-SubCool	29694	237	X10	0	Signed	0	0
C4 Cond Temp over Amb	C4-CondTempOvrAmb	29698	238	X10	0	Signed	0	0
C4 Efficiency Index	C4-EI	29702	239	X10	0	Signed	0	0
C4 Capacity Index	C4-CI	29706	240	X10	0	Signed	0	0
C4 Evap Temp Val Circuit	C4-EvapTempValue	29836	241	X10	0	Signed	0	0
C4 Cnd Temp Ovr Amb High	C4-CondTempOAHigh	29852	242	X10	0	Signed	0	0
C4 Cond Temp ovr Amb Low	C4-CondTempOALow	29856	243	X10	0	Signed	0	0
C4 Superheat High	C4-SuperheatHigh	29860	244	X10	0	Signed	0	0
C4 Superheat Low	C4-SuperheatLow	29864	245	X10	0	Signed	0	0
C4 Subcool High	C4-SubcoolHigh	29868	246	X10	0	Signed	0	0
C4 Subcool Low	C4-SubcoolLow	29872	247	X10	0	Signed	0	0
C4 Evaporating Temp High	C4-EvapTempHigh	29876	248	X10	0	Signed	0	0
C4 Evaporating Temp Low	C4-EvapTempLow	29880	249	X10	0	Signed	0	0
Htg Mode Enabled For Opr	Htg-En	29707	105	#N/A	0	#N/A	0	1
Heating Status	Htg-S	29708	347	#N/A	0	#N/A	0	0
SAT Limit for Htg Enable	SATHtgLimit-En	29709	106	#N/A	0	#N/A	0	1
SAT Limit for Htg Sp	SATHtgLimit-Sp	29710	37	X10	0	Signed	0	1
OA Temp Htg Cutout Sp	HtgOATCutout-Sp	29711	38	X10	0	Signed	0	1

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Write able Flag
Hot Water Freeze Stat	FSHW	29712	348	#N/A	0	#N/A	0	0
Gas Valve 1 Input	MV	29713	349	#N/A	0	#N/A	0	0
Gas Valve 2 Input	GV2	29714	350	#N/A	0	#N/A	0	0
Gas Valve 3 Input	GV3	29715	351	#N/A	0	#N/A	0	0
Heat Limit 1 Switch	Limit	29716	352	#N/A	0	#N/A	0	0
Heat Limit 1 Sw Lockout	LimitLO	29717	353	#N/A	0	#N/A	0	0
Heat Limit 2 Switch	Lim2	29718	354	#N/A	0	#N/A	0	0
Heat Limit 2 Sw Lockout	Lim2LO	29719	355	#N/A	0	#N/A	0	0
Heat Limit 3 Switch	Lim3	29720	356	#N/A	0	#N/A	0	0
Heat Limit 3 Sw Lockout	Lim3LO	29721	357	#N/A	0	#N/A	0	0
VAV Occupied Htg Enabled	HtgOcc-En	29722	107	#N/A	0	#N/A	0	1
VAV Occupied Htg Sp	VAVHtgOcc-SP	29723	39	X10	0	Signed	0	1
VAV UnOccupied Htg Ena	HtgUnocc-En	29724	108	#N/A	0	#N/A	0	1
VAV Unoccupied Htg Sp	VAVHtgUnocc-Sp	29725	40	X10	0	Signed	0	1
VAV Operating Heating Sp	VAVOprHtg-Sp	29726	250	X10	0	Signed	0	0
Morning Warmup Enabled	MornW-En	29822	109	#N/A	0	#N/A	0	1
Wrmup-Return Air Temp Sp	MornWRAT-Sp	29823	41	X10	0	Signed	0	1
VAV Box Heat Command	VAV	29727	358	#N/A	0	#N/A	0	0
CV Occupied Heating Sp	CVHtgOcc-SP	29728	42	X10	0	Signed	0	1
CV Unoccupied Heating Sp	CVHtgUnocc-Sp	29729	43	X10	0	Signed	0	1
CV Operating Heating Sp	CVOprHtg-Sp	29730	251	X10	0	Signed	0	0
Morning Cooldown Enabled	MornC-En	29891	110	#N/A	0	#N/A	0	1
Cldwn-Return Air Temp Sp	MornCRAT-Sp	29892	44	X10	0	Signed	0	1
Optimal Start Enabled	OptStrt-En	29893	111	#N/A	0	#N/A	0	1
Occupancy BI Enabled	OccBI-En	29894	112	#N/A	0	#N/A	0	1
Early Start Period	EarlyStrtPeriod	29895	45	X10	0	Unsigned	0	1
Heating Adaptive Tuning Enable	HtgAdapTunEn	29881	114	#N/A	#N/A	#N/A	#N/A	1
DAT Max Heating SP	DATMaxHtgSP	29905	75	X10	0	Signed	0	0
DAT Satisfied SP	DATSatSP	29906	76	X10	0	Signed	0	0
Staged Heating Command	StgHtgCmd	29923	264	X10	0	Signed	0	0

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Write able Flag
Number of Heating Stages Installed	#HtgStgs	29731	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Heating Stage 1 Command	H1	29732	359	#N/A	0	#N/A	0	0
Heating Stage 1 Status	H1-S	29735	360	#N/A	0	#N/A	0	0
Heating Stage 1 Runtime	H1RunTim	29738	48	X10	0	Unsigned	0	1
Heating Stage 2 Command	H2	29733	361	#N/A	0	#N/A	0	0
Heating Stage 2 Status	H2-S	29736	362	#N/A	0	#N/A	0	0
Heating Stage 2 Runtime	H2RunTim	29739	49	X10	0	Unsigned	0	1
Heating Stage 3 Command	H3	29734	363	#N/A	0	#N/A	0	0
Heating Stage 3 Status	H3-S	29737	364	#N/A	0	#N/A	0	0
Heating Stage 3 Runtime	H3RunTim	29740	50	X10	0	Unsigned	0	1
HW Heat Valve Pct Output	HWV	29741	252	X10	0	Signed	0	0
HW Heat Valve Rev Acting	HydReverse	29742	115	#N/A	0	#N/A	0	1
HW Htg Stage 1 SAT Sp	HydH1SA-Sp	29743	51	X10	0	Signed	0	1
HW Htg Stage 2 SAT Sp	HydH2SA-Sp	29744	52	X10	0	Signed	0	1
HW Heat SAT Tempring Ena	SATTempHyd Ht-En	29745	116	#N/A	0	#N/A	0	1
HW Heat SAT Tempering Sp	SATTempHyd Ht-Sp	29746	53	X10	0	Signed	0	1
Econ Enabled For Oper	Econ-En	29747	118	#N/A	0	#N/A	0	1
Econ Damper Pct Output	Econ	29748	253	X10	0	Signed	0	0
Econ Free Cooling Avail	Econ-Free	29749	369	#N/A	0	#N/A	0	0
Economizer Status	Econ-S	29750	370	#N/A	0	#N/A	0	0
Free Clg Current Mode	FreeClg-Mode	29751	371	#N/A	0	#N/A	0	0
Free Cooling Selection	FreeClg-Sel	29752	119	#N/A	0	#N/A	0	1
Econ OA Temp Enable Sp	EconOAT-SpEn	29753	55	X10	0	Signed	0	1
Econ OA Enthalpy Sp	EconOAEnth-Sp	29754	56	X10	0	Signed	0	1
Low Ambient Econ Sp	LowAmb-Sp	29755	57	X10	0	Signed	0	1
Low Ambient Econ Min Pos	LowAmb-MinPos	29756	58	X10	0	Signed	0	1
Econ Damper Position	EconDampPos	29824	254	X10	0	Signed	0	0
Mixed Air Temperature	MAT	29760	255	X10	0	Signed	0	0
Return Air Humidity	RAH	29761	138	X10	0	Unsigned	0	0

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Writeable Flag
Supply Air Humidity	SAH	29762	256	X10	0	Signed	0	0
Return Air Enthalpy	RA-Enth	29763	257	X10	0	Signed	0	0
Econ Min OAD Pos	Econ-MinPos	29759	77	X10	0	Signed	0	1
Excess Outdoor Air	ExcessOutAirFlt	29809	372	#N/A	0	#N/A	0	0
Not Econ When Should	NotEconFlt	29810	373	#N/A	0	#N/A	0	0
Damper Not Modulating	EconDampFlt	29811	374	#N/A	0	#N/A	0	0
Econ When Should Not	EconWhenShouldNotFlt	29812	375	#N/A	0	#N/A	0	0
Econ Dmp Min Pos LS Fan	LowSpeedFan-MinPos	29808	54	X10	0	Signed	0	1
EconMech Setup	EconMechStp	29912	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Econ Fault Detection Ena	EconFltDetectEn	29915	132	#N/A	0	#N/A	0	1
FDD Economizer Alarm Delay	EconAlrmDly	29916	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
FDD Economizer Damper Allowed Error	EconPosErr	29917	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
FDD Damper Min Position Tolerance	EconMinErr	29918	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
HGR Enabled For Oper	HGR-En	29789	123	#N/A	0	#N/A	0	1
HGR Command	HGR	29790	379	#N/A	0	#N/A	0	0
HGR Status	HGR-S	29791	380	#N/A	0	#N/A	0	0
HGR Humidity Setpoint	HGRHum-Sp	29792	68	X10	0	Signed	0	1
HGR Alternate Oper Ena	HGRAlt-En	29793	124	#N/A	0	#N/A	0	1
Hot Gas Reheat Alternate Operation Writeable	HGRAltWrite	29794	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
HGR Unocc Humidity Sp	HGRUnoccHum-SP	29903	78	X10	0	Signed	0	1
HGR Enabled For Unocc Mode	HGRUnocc-En	29904	133	#N/A	0	#N/A	0	1
Exhaust Fan Enable	ExFan-En	29774	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Exhaust Fan Command	ExFan	29775	376	#N/A	0	#N/A	0	0
Exhaust Fan VFD Output	ExFanVFD	29776	258	X10	0	Signed	0	0
Exhaust Fan Status	ExF-S	29777	377	#N/A	0	#N/A	0	0
Exhaust Fan VFD Fault	ExFanVFDFlt	29778	378	#N/A	0	#N/A	0	0
Exhaust Fan Acc Runtime	ExF-RunTim	29779	259	X10	0	Unsigned	0	0
Building Pressure Sp	Bldg-Sp	29780	63	X1000	0	Signed	0	1
Building Static Pressure	BldgPres	29781	260	X1000	0	Signed	0	0
Exhaust Damper Output	EAD-O	29782	261	X10	0	Signed	0	0

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Write able Flag
Exh Dmp Pos Exh Fan-On	ExDmpPosFanOn	29783	64	X10	0	Signed	0	1
Exh Dmp Pos Exh Fan-Off	ExDmpPosFanOff	29784	65	X10	0	Signed	0	1
Econ Dmp Pos-Exh Fan On	EconDmpPosFanOn	29785	66	X10	0	Signed	0	1
Econ Dmp Pos-Exh Fan Off	EconDmpPosFanOff	29786	67	X10	0	Signed	0	1
ERV Enabled	ERV-En	29787	121	#N/A	0	#N/A	0	1
ERV Unoccupied Fan Ena	ERVUnoccFan-En	29788	122	#N/A	0	#N/A	0	1
Dmd Vent Mode of Oper	DVent-Mode	29765	120	#N/A	0	#N/A	0	1
Dmd Vent Max Econ Pos	DVentMaxEconPos	29766	60	X10	0	Signed	0	1
Dmd Vent IAQ Sp	DVentIAQ-Sp	29767	61	X10	0	Signed	0	1
Dmd Vent Differential Sp	DVentDiff-Sp	29768	62	X10	0	Signed	0	1
Outdoor Air Flow Sp	MOAFlow-Sp	29795	69	X10	0	Signed	0	1
Outdoor Air Flow	Fr	29796	262	X10	0	Signed	0	0
OA Intake Max Sensor Rng	MOA-Range	29797	70	X10	0	Signed	0	1
Occupancy Input Source	OccSrc	29515	290	#N/A	0	#N/A	0	0
Operational Occupancy	OprOcc	29517	292	#N/A	0	#N/A	0	0
Occupancy Enable Mode	OccMode	29518	82	#N/A	0	#N/A	0	1
Net Temp Occ Request	NetTempOcc	29519	83	#N/A	0	#N/A	0	1
Net Occupancy Request	NetOcc	29520	84	#N/A	0	#N/A	0	1
Temp Occupancy Timeout	TempOccTimeout	29521	85	#N/A	0	#N/A	0	1
Operational Space Temp	OprST	29522	135	X10	0	Signed	0	0
Space Temperature Source	STSrc	29523	293	#N/A	0	#N/A	0	0
Space Temp Alm Sp Offset	STAlarmOffset	29524	0	X10	0	Signed	0	1
Space Temp Alrm Time Dly	STAlarmDelay	29525	86	#N/A	0	#N/A	0	1
Net Override Space Temp	NetST	29526	1	X10	0	Signed	0	1
Oper Indoor Air Quality	OprIAQ	29527	136	X10	0	Signed	0	0
Indoor Air Quality Src	IAQSrc	29528	294	#N/A	0	#N/A	0	0
Indoor Air Qual Snsr Rng	IAQRange	29529	2	X10	0	Signed	0	1
Net Ovrd Indoor Air Qual	NetIAQ	29530	3	X10	0	Signed	0	1
Oper Space Humidity	OprSH	29531	137	X10	0	Signed	0	0

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Writeable Flag
Space Humidity Source	SHSrc	29532	295	#N/A	0	#N/A	0	0
Space Humidity/RAH Input	RAH	29828	138	X10	0	Signed	0	0
Net Ovrd Zone Humidity	NetSH	29533	4	X10	0	Signed	0	1
Operating Fan Request	OprFanReq	29534	296	#N/A	0	#N/A	0	0
Fan Request Source	FanReqSrc	29535	297	#N/A	0	#N/A	0	0
Net Ovrd Fan Request	NetFanReq	29536	87	#N/A	0	#N/A	0	1
Oper Space Temp Sp Offst	OprSSO	29537	140	X10	0	Signed	0	0
Space Temp Sp Offset Src	SSOSrc	29538	298	#N/A	0	#N/A	0	0
Space Temp Sp Offst Inpt	SSO	29539	141	X10	0	Signed	0	0
Net Ovrd Space Sp Offset	NetSSO	29540	5	X10	0	Signed	0	1
Occupancy BI Input	OCC	29516	291	#N/A	0	#N/A	0	0
Return Air Temperature	RAT	29764	139	X10	0	Signed	0	0
Temporary Occupancy Enable	TempOCC	29825	81	#N/A	0	#N/A	0	1
SP LoadShed Enable	LoadShedEnable	29883	127	#N/A	0	#N/A	0	1
SP LoadShed Rate Limit	LoadShedRateLim	29884	71	X1000	0	Unsigned	0	1
SP LoadShed Adjust	LoadShedAdjust	29885	72	X10	0	Unsigned	0	1
Time to Next Occ Period	TimeToNextOcc	29837	142	X10	0	Unsigned	0	0
Operating Mode	OprMode	29838	299	#N/A	0	#N/A	0	0
Clg Weighting Param 1	ClgWeight1	29839	143	X100	0	Signed	0	0
Clg Weighting Param 2	ClgWeight2	29840	144	X100	0	Signed	0	0
Htg Weighting Param 1	HtgWeight1	29841	145	X100	0	Signed	0	0
Htg Weighting Param 2	HtgWeight2	29842	146	X100	0	Signed	0	0
EWMA Cooling Demand	EWMAClgDmd	29843	147	X100	0	Signed	0	0
EWMA Heating Demand	EWMAHtgDmd	29844	148	X100	0	Signed	0	0
Corrected Return Time	CorrRetTime	29845	149	X10	0	Unsigned	0	0
Uncorrected Return Time	UncorrRetTime	29846	150	X10	0	Unsigned	0	0
Wrmup-Cldwn Start Time	WarmCoolStrtTime	29847	151	X10	0	Unsigned	0	0
Wrmup-Cldwn Start Temp	WarmCoolStrtTemp	29848	152	X10	0	Signed	0	0
Off During Unoccupied	OffDurUnocc	29914	88	#N/A	0	#N/A	0	1
Direct Loadshed	DirLoadshd	29910	128	#N/A	0	#N/A	0	1

Table 5: SE RTU BACnet Modbus (Continued)

Property Description	Property	BACNET POINT INFO	MODBUS POINT INFO					
		BACOid	Modbus Register Address	Modbus Scale Factor	Modbus Boolean Flag	Modbus Signed Flag	Modbus Offset	Modbus Writeable Flag
Redline	Redline	29911	129	#N/A	0	#N/A	0	1
PID Tuning Reset	PIDTunRst	29919	130	#N/A	0	#N/A	0	1
Operational OA Temp	OprOAT	29541	153	X10	0	Signed	0	0
OA Temperature Source	OATSrc	29542	300	#N/A	0	#N/A	0	0
Net Ovrd OA Temperature	NetOAT	29543	6	X10	0	Signed	0	1
Operational OA Humidity	OprOAH	29544	154	X10	0	Signed	0	0
Outdoor Air Enthalpy	OA-Enth	29545	155	X10	0	Signed	0	0
Net Override OA Humidity	NetOAH	29546	7	X10	0	Signed	0	1
Operational OA Quality	OprOAQ	29547	156	X10	0	Signed	0	0
OA Quality Source	OAQSrc	29548	301	#N/A	0	#N/A	0	0
Net Override OA Quality	NetOAQ	29549	8	X10	0	Signed	0	1
Operating Purge Command	OprPurgeCmd	29798	381	#N/A	0	#N/A	0	0
Purge Command Source	PurgeCmdSrc	29799	382	#N/A	0	#N/A	0	0
Local Purge Cmd Input	Purge	29800	383	#N/A	0	#N/A	0	0
Net Ovrd Purge Command	NetPurge	29801	125	#N/A	0	#N/A	0	1
Smoke Detector	SD	29802	384	#N/A	0	#N/A	0	0
Econ Controller	EconCntlr	29813	385	#N/A	0	#N/A	0	0
4 Stage Controller	4StgCntlr	29814	386	#N/A	0	#N/A	0	0
FDD Master Controller	FDDMCntlr	29815	387	#N/A	0	#N/A	0	0
FDD Subordinate Controller	FDDSCntlr	29816	388	#N/A	0	#N/A	0	0
Device Name	DevName	29818	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
End of Line Switch On	EOL-On	29827	390	#N/A	0	#N/A	0	0
Number of Heat Pump Stages	#HtPumpStgs	29898	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Defrost Curve Selection	DefrostCurveSel	29899	117	#N/A	0	#N/A	0	1
Defrost State	DefrostState	29899	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Reversing Valve	RevVlv	29900	366	#N/A	0	#N/A	0	0
Auxiliary Heat	AuxHtg	29901	367	#N/A	0	#N/A	0	0
Heat Pump Mode	Mode	29902	368	#N/A	0	#N/A	0	0

Table 6: N2 Protocol Mapping Table

Point Type	Point Address	Long Name	Short Name	Value	Units
ANALOG INPUTS (*Denotes OPERATOR-DEFINED AI)					
AI	1	Space Humidity/RAH Input	RA-H		%RH
AI	2	Return Air Temperature	RA-T		deg F
AI	3	Supply Air Temperature	SA-T		deg F
AI	4	Duct Static Pressure	DUCT-P		in wc
AI	5	C1 Evaporator Coil Temp	EVAP1-T		deg F
AI	6	C1 Condenser Coil Temp	COND1-T		deg F
AI	7	C2 Evaporator Coil Temp	EVAP2-T		deg F
AI	8	C2 Condenser Coil Temp	COND2-T		deg F
AI	9	C3 Evaporator Coil Temp	EVAP3-T		deg F
AI	10	C3 Condenser Coil Temp	COND3-T		deg F
AI	11	C4 Evaporator Coil Temp	EVAP4-T		deg F
AI	12	C4 Condenser Coil Temp	COND4-T		deg F
AI	13	C1 Suction Line Pressure	SLP-1		psi
AI	14	C1 Liquid Line Pressure	LLP-1		psi
AI	15	C1 Suction Line Temp	SLT-1		deg F
AI	16	C1 Liquid Line Temp	LLT-1		deg F
AI	17	C2 Suction Line Pressure	SLP-2		psi
AI	18	C2 Liquid Line Pressure	LLP-2		psi
AI	19	C2 Suction Line Temp	SLT-2		deg F
AI	20	C2 Liquid Line Temp	LLT-2		deg F
AI	21	C3 Suction Line Pressure	SLP-3		psi
AI	22	C3 Liquid Line Pressure	LLP-3		psi
AI	23	C3 Suction Line Temp	SLT-3		deg F
AI	24	C3 Liquid Line Temp	LLT-3		deg F
AI	25	C4 Suction Line Pressure	SLP-4		psi
AI	26	C4 Liquid Line Pressure	LLP-4		psi
AI	27	C4 Suction Line Temp	SLT-4		deg F
AI	28	C4 Liquid Line Temp	LLT-4		deg F
AI	29	Mixed Air Temperature	MA-T		deg F
AI	30	Supply Air Humidity	SA-H		%RH
AI	31	Operational Space Temp	OPRST		deg F
AI	32	Oper Space Humidity	OPRSH		%RH
AI	33	Building Static Pressure	BLDG-P		in wc
ANALOG OUTPUTS (*Denotes OPERATOR-DEFINED AO)					
AO	1	Supply Fan Pct Output	SFPCT-O		%
AO	2	HW Heat Valve Pct Output	HWVLV-O		%
AO	3	Econ Damper Pct Output	OAD-O		%
AO	4	Exhaust Fan VFD Output	EFVFD-O		%
AO	5	Exhaust Damper Output	EAD-O		%

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
BINARY INPUTS (*Denotes OPERATOR-DEFINED BI)					
BI	1	Y1 - Thermostat	Y1-TSTAT		Off/On
BI	2	Y2 - Thermostat	Y2-TSTAT		Off/On
BI	3	Y3 - Thermostat	Y3-TSTAT		Off/On
BI	4	Y4 - Thermostat	Y4-TSTAT		Off/On
BI	5	W1 - Thermostat	W1-TSTAT		Off/On
BI	6	W2 - Thermostat	W2-TSTAT		Off/On
BI	7	W3 - Thermostat	W3-TSTAT		Off/On
BI	8	G - Thermostat	G-TSTAT		Off/On
BI	9	Occupancy BI Input	OCC-S		SE RTU Unocc/Occ
BI	10	Fan VFD Fault	FNVFDFLT		Normal/Alarm
BI	11	Supply Fan Overload	FAN-OL		Normal/Alarm
BI	12	Air Proving Switch	APS		Off/On
BI	13	Dirty Filter Switch	FILTER-S		Normal/Alarm
BI	14	C1 Stage Status	COMP1-S		SE RTU DX Cooling Circuit 1 Status
BI	15	C1 High Pressure Limit	HPS1-S		Normal/Alarm
BI	16	C1 Low Pressure Limit	LPS1-S		Normal/Alarm
BI	17	C1 Freeze Condition	FS1-S		Normal/Alarm
BI	18	C2 Stage Status	COMP2-S		SE RTU DX Cooling Circuit 1 Status
BI	19	C2 High Pressure Limit	HPS2-S		Normal/Alarm
BI	20	C2 Low Pressure Limit	LPS2-S		Normal/Alarm
BI	21	C2 Freeze Condition	FS2-S		Normal/Alarm
BI	22	C3 Stage Status	COMP3-S		SE RTU DX Cooling Circuit 1 Status
BI	23	C3 High Pressure Limit	HPS3-S		Normal/Alarm
BI	24	C3 Low Pressure Limit	LPS3-S		Normal/Alarm
BI	25	C3 Freeze Condition	FS3-S		Normal/Alarm
BI	26	C4 Stage Status	COMP4-S		SE RTU DX Cooling Circuit 1 Status
BI	27	C4 High Pressure Limit	HPS4-S		Normal/Alarm
BI	28	C4 Low Pressure Limit	LPS4-S		Normal/Alarm
BI	29	C4 Freeze Condition	FS4-S		Normal/Alarm
BI	30	Gas Valve 1 Input	GV1-S		Off/On
BI	31	Gas Valve 2 Input	GV2-S		Off/On
BI	32	Gas Valve 3 Input	GV3-S		Off/On
BI	33	Heat Limit 1 Switch	LIM1-SW		Normal/Alarm
BI	34	Heat Limit 2 Switch	LIM2-SW		Normal/Alarm
BI	35	Heat Limit 3 Switch	LM3-SW		Normal/Alarm
BI	36	Heating Stage 1 Status	H1-S		SE RTU Heating Stage 1 Status
BI	37	Heating Stage 2 Status	H2-S		SE RTU Heating Stage 1 Status
BI	38	Heating Stage 3 Status	H3-S		SE RTU Heating Stage 1 Status
BI	39	Exhaust Fan Status	EXHFAN-S		SE RTU Exhaust Fan
BI	40	Exhaust Fan VFD Fault	EFVFDFLT		Normal/Alarm

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
BI	41	HGR Status	HGR-S		SE RTU Hot Gas Reheat
BINARY OUTPUTS (*Denotes OPERATOR-DEFINED BO)					
BO	1	X-OUT	X-C		Off/On
BO	2	Fan Command	FAN-C		Off/On
BO	3	Condenser Fan 1	CF1-C		Off/On
BO	4	Condenser Fan 2	CF2-C		Off/On
BO	5	C1 Stage Command	COMP1-C		Off/On
BO	6	C2 Stage Command	COMP2-C		Off/On
BO	7	C3 Stage Command	COMP3-C		Off/On
BO	8	C4 Stage Command	COMP4-C		Off/On
BO	9	VAV Box Heat Command	VAVBOX-C		Off/On
BO	10	Heating Stage 1 Command	H1-C		Off/On
BO	11	Heating Stage 2 Command	H2-C		Off/On
BO	12	Heating Stage 3 Command	H3-C		Off/On
BO	13	Reversing Valve	REVVLV-C		Off/On
BO	14	Auxiliary Heat	AUXHTG-C		Off/On
BO	15	Exhaust Fan Command	EXHFAN-C		Off/On
BO	16	HGR Command	HGR-C		Off/On
PARAMETERS (* Denotes MONITOR ONLY Parameters)					
York RTU					
ADI	1	Unit Status	UNIT-S		SE RTU Unit Status
ADI	2	Reset Lockouts	RESETLO	Off	Off/Reset
ADI	109	Hardware Reset	HDW-RST		No/Yes
HVAC Zone					
ADI	3	Occupancy Input Source	OCCSRC		Effective Occupancy Source
ADI	4	Temporary Occupancy Ena	TEMPOCCEN		No/Yes
ADI	5	Operational Occupancy	OPROCC		Occ Effective
ADI	6	Occupancy Enable Mode	OCCENMODE	External	SE Occupancy Mode
ADI	7	Net Temp Occ Request	NETTMPOC	Unreliable]	False/True
ADI	8	Net Occupancy Request	NETOCCRQ	Unreliable]	Occ Sensor
ADI	9	Temp Occupancy Timeout	TMPOCCTO	120	min
ADI	10	Space Temperature Source	STSRC		Effective Input Source
ADF	2	Space Temp Alm Sp Offset	STALMOFF	5	°F delta
ADI	11	Space Temp Alrm Time Dly	STALMDLY	60	min
ADF	3	Net Override Space Temp	NETST	Unreliable]	deg F
ADF	4	Oper Indoor Air Quality	OPRIAQ		ppm
ADI	12	Indoor Air Quality Src	IAQSRC		Effective Input Source 2
ADF	5	Indoor Air Qual Snsr Rng	IAQRANGE	2000	ppm
ADF	6	Net Ovrd Indoor Air Qual	NETIAQ	Unreliable]	ppm
ADI	13	Space Humidity Source	SHSRC		Effective Input Source 2
ADF	8	Net Ovrd Zone Humidity	NETSH	Unreliable]	%RH

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
ADI	14	Operating Fan Request	OPRFNREQ		Off/On
ADI	15	Fan Request Source	FNREQSRC		Effective Input Source 2
ADI	16	Net Ovrd Fan Request	NETFNREQ	Off	Off/On
ADF	9	Oper Space Temp Sp Offst	OPRSSO		deg F
ADI	17	Space Temp Sp Offset Src	SSOSRC		Effective Input Source 2
ADF	10	Space Temp Sp Offst Inpt	SSO		°F delta
ADF	11	Net Ovrd Space Sp Offset	NETSSO	Unreliable]	°F delta
ADF	12	Time to Next Occ Period	T2NOCPER		min
ADI	18	Operating Mode	OPERMODE		Operating Mode
ADF	13	Clg Weighting Param 1	CLGWHTP1		
ADF	14	Clg Weighting Param 2	CLGWHTP2		
ADF	15	Htg Weighting Param 1	HTGWHTP1		
ADF	16	Htg Weighting Param 2	HTGWHTP2		
ADF	17	EWMA Cooling Demand	EWMACLDM		
ADF	18	EWMA Heating Demand	EWMAHTDM		
ADF	19	Corrected Return Time	CORETTM		min
ADF	20	Uncorrected Return Time	UCRETTM		min
ADF	21	Wrmup-Cldwn Start Time	WCSRTTIM		min
ADF	22	Wrmup-Cldwn Start Temp	WCSRTTMP		deg F
ADI	19	Off During Unoccupied	OFFDURUNC		No/Yes
ADI	20	Use Occupancy Schedule	USEOCCSCHD		No/Yes
ADI	110	Load Shed Active	LOADSHEDEN		No/Yes
ADF	157	Load Shed Rate Limit	LOADSHEDRT	0.666	
ADF	158	Load Shed Adjust	LOADSHEDAD	4	°F delta
ADI	111	Direct Loadshed	DIRLOADSHD		No/Yes
ADI	112	Redline	REDLINE		No/Yes
ADI	113	PID Tuning Reset	PIDTUNERST		False/True
ADI	114	Adaptive Tuning Enable	ADPTUNEN		Disable/Enable
Weather Information					
ADF	23	Operational OA Temp	OPROAT		deg F
ADI	21	OA Temperature Source	OATSRC		Effective Input Source 2
ADF	24	Net Ovrd OA Temperature	NETOAT	Unreliable]	deg F
ADF	25	Operational OA Humidity	OPROAH		%RH
ADF	26	Outdoor Air Enthalpy	OA-ENTH		btu/lb
ADF	27	Net Override OA Humidity	NETOAH	Unreliable]	%RH
ADF	28	Operational OA Quality	OPROAQ		ppm
ADI	22	OA Quality Source	OAQSRC		Effective Input Source 2
ADF	29	Net Override OA Quality	NETOAQ	Unreliable]	ppm
Fan Control					
ADI	23	Fan Status	FAN-S		SE RTU Fan Status

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
ADF	30	Fan Accumulated Runtime	FAN-RT	0	hr
ADI	24	Fan On Delay for Cool	FNONDLCL	0	sec
ADF	31	Duct Pressure Setpoint	DCTPRSSP	1.5	in wc
ADF	32	Duct Pressure Shutdwn Sp	DCTSDSP	4.5	in wc
ADI	25	Cont SF Oper in Occ Mode	FANONOCC	Yes	Yes/No
ADI	26	Trn Off Cnt Fn Opr St Ht	FNOFSTHT	Yes	Yes/No
ADF	33	Occ No Heat or Cl Pct Sp	FOPCT	50	%
ADF	34	Occ 1 Stage of Cl Pct Sp	1CSPCT	70	%
ADF	35	Occ 2 Stges of Cl Pct Sp	2CSPCT	80	%
ADF	36	Occ 3 Stges of Cl Pct Sp	3CSPCT	90	%
ADF	37	Occ 4 Stges of Cl Pct Sp	4CSPCT	100	%
ADF	38	Occ 1 Stage of Ht Pct Sp	1HSPCT	100	%
ADF	39	Occ 2 Stges of Ht Pct Sp	2HSPCT	100	%
ADF	40	Occ 3 Stges of Ht Pct Sp	3HSPCT	100	%
ADF	159	SZ VAV Minimum Fan Speed	SZVMNFNSPD	66	%
Cooling Control					
ADI	27	Clg Mode Ena For Oper	CLG-EN	Yes	No/Yes
ADI	28	Cooling Status	CLG-S		SE RTU Cooling Control Status
ADF	41	Min Runtime Clg Stage	MNRTCLST	3	min
ADI	29	OAT Cooling Cutout Ena	CLOACOEN	Yes	No/Yes
ADF	42	OAT Cooling Cutout	CLOACOSP	45	deg F
ADI	30	Economizer Loading Ena	ECNLD-EN	No	No/Yes
ADI	31	All Stgs Clg Off in Econ	CLOFFECN	No	No/Yes
ADI	32	Temp/Hum (Ret) Cntrl Ena	THCTRLEN	No	No/Yes
ADF	43	Temp/Humidity Sp	TEMPHMSP	50	%RH
ADF	44	Max Temp / Hum Sp Offset	MXTHSPOF	3	°F delta
ADF	45	Temp-Hum Value-Deg Offst	THVDGOFF	5	%RH
ADI	33	SAT Limit for Clg Ena	SATCLMEN	Yes	No/Yes
ADF	46	SAT Limit for Cooling Sp	SATCLMSP	50	deg F
ADF	47	VAV Clg SA Temp Upper Sp	SATUP-SP	60	deg F
ADF	48	VAV Cig SA Temp Lower Sp	SATLO-SP	55	deg F
ADF	49	VAV SA Temp Reset Sp	SATRSTSP	72	deg F
ADF	50	VAV Oper Clg SA Temp Sp	OPRVAVCLSP		deg F
ADF	51	CV Occupied Cooling Sp	CLGOCCSP	72	deg F
ADF	52	CV Unoccupied Cooling Sp	CLGUNCSP	85	deg F
ADF	53	CV Operating Cooling Sp	COPCLGSP		deg F
ADF	54	Altitude	ALTITUDE	0	ft
ADF	55	Refrig Systems Installed	REFSYS	4	
ADF	160	DAT Cooling Min SP	DATCLMSP	54	0 deg F
ADF	165	Staged Cooling Command	STGCLGCMD		%
ADF	168	VAV Unoccupied Clg Sp	VCLGUNCSP	85	deg F

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
Cooling Circuit (1)					
ADI	36	C1 Stage Enabled	C1-EN	Yes	Yes/No
ADF	56	C1 Stage Acc Runtime	C1-RT	0	hr
ADI	37	C1 Min On Time Remaining	C1ONTMR		min
ADI	38	C1 ASCD Time Remaining	C1ASCDTM		min
ADI	39	C1 High Pressure Lockout	HPS1-LO		Normal Lockout
ADI	40	C1 Low Pressure Lockout	LPS1-LO		Normal Lockout
ADI	41	C1 Freeze Cond Lckout	FS1-LO		Normal Lockout
Cooling Circuit (2)					
ADI	42	C2 Stage Enabled	C2-EN	Yes	Yes/No
ADF	57	C2 Stage Acc Runtime	C2-RT	0	hr
ADI	43	C2 Min On Time Remaining	C2ONTMR		min
ADI	44	C2 ASCD Time Remaining	C2ASCDTM		min
ADI	45	C2 High Pressure Lockout	HPS2-LO		Normal Lockout
ADI	46	C2 Low Pressure Lockout	LPS2-LO		Normal Lockout
ADI	47	C2 Freeze Cond Lckout	FS2-LO		Normal Lockout
Cooling Circuit (3)					
ADI	48	C3 Stage Enabled	C3-EN	Yes	Yes/No
ADF	58	C3 Stage Acc Runtime	C3-RT	0	hr
ADI	49	C3 Min On Time Remaining	C3ONTMR		min
ADI	50	C3 ASCD Time Remaining	C3ASCDTM		min
ADI	51	C3 High Pressure Lockout	HPS3-LO		Normal Lockout
ADI	52	C3 Low Pressure Lockout	LPS3-LO		Normal Lockout
ADI	53	C3 Freeze Cond Lckout	FS3-LO		Normal Lockout
Cooling Circuit (4)					
ADI	54	C4 Stage Enabled	C4-EN	Yes	Yes/No
ADF	59	C4 Stage Acc Runtime	C4-RT	0	hr
ADI	55	C4 Min On Time Remaining	C4ONTMR		min
ADI	56	C4 ASCD Time Remaining	C4ASCDTM		min
ADI	57	C4 High Pressure Lockout	HPS4-LO		Normal Lockout
ADI	58	C4 Low Pressure Lockout	LPS4-LO		Normal Lockout
ADI	59	C4 Freeze Cond Lckout	FS4-LO		Normal Lockout
Cooling Circuit Diagnostics (1)					
ADI	60	C1 Clg Circ Test Status	C1-TS		SE FDD Codes
ADF	60	C1 Superheat	C1-SUPHT		deg F
ADF	61	C1 Subcooling	C1-SUBCL		deg F
ADF	62	C1 Cond Temp over Amb	CT1O-AMB		deg F
ADF	63	C1 Efficiency Index	C1-EI		
ADF	64	C1 Capacity Index	C1-CI		
ADF	65	C1 Evap Temp Val Circuit	C1-ETVAL		deg F
ADF	66	C1 Cnd Temp Ovr Amb High	CT1OAMBH		deg F

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
ADF	67	C1 Cond Temp ovr Amb Low	CT1OAMBL		deg F
ADF	68	C1 Superheat High	C1-SUPHH		deg F
ADF	69	C1 Superheat Low	C1-SUPHL		deg F
ADF	70	C1 Subcool High	C1-SCHGH		deg F
ADF	71	C1 Subcool Low	C1-SCLOW		deg F
ADF	72	C1 Evaporating Temp High	C1-ETHGH		deg F
ADF	73	C1 Evaporating Temp Low	C1-ETLOW		deg F
Cooling Circuit Diagnostics (2)					
ADI	61	C2 Clg Circ Test Status	C2-TS		SE FDD Codes
ADF	74	C2 Superheat	C2-SUPHT		deg F
ADF	75	C2 Subcooling	C2-SUBCL		deg F
ADF	76	C2 Cond Temp over Amb	CT2O-AMB		deg F
ADF	77	C2 Efficiency Index	C2-EI		
ADF	78	C2 Capacity Index	C2-CI		
ADF	79	C2 Evap Temp Val Circuit	C2-ETVAL		deg F
ADF	80	C2 Cnd Temp Ovr Amb High	CT2OAMBH		deg F
ADF	81	C2 Cond Temp ovr Amb Low	CT2OAMBL		deg F
ADF	82	C2 Superheat High	C2-SUPHH		deg F
ADF	83	C2 Superheat Low	C2-SUPHL		deg F
ADF	84	C2 Subcool High	C2-SCHGH		deg F
ADF	85	C2 Subcool Low	C2-SCLOW		deg F
ADF	86	C2 Evaporating Temp High	C2-ETHGH		deg F
ADF	87	C2 Evaporating Temp Low	C2-ETLOW		deg F
Cooling Circuit Diagnostics (3)					
ADI	62	C3 Clg Circ Test Status	C3-TS		SE FDD Codes
ADF	88	C3 Superheat	C3-SUPHT		deg F
ADF	89	C3 Subcooling	C3-SUBCL		deg F
ADF	90	C3 Cond Temp over Amb	CT3O-AMB		deg F
ADF	91	C3 Efficiency Index	C3-EI		
ADF	92	C3 Capacity Index	C3-CI		
ADF	93	C3 Evap Temp Val Circuit	C3-ETVAL		deg F
ADF	94	C3 Cnd Temp Ovr Amb High	CT3OAMBH		deg F
ADF	95	C3 Cond Temp ovr Amb Low	CT3OAMBL		deg F
ADF	96	C3 Superheat High	C3-SUPHH		deg F
ADF	97	C3 Superheat Low	C3-SUPHL		deg F
ADF	98	C3 Subcool High	C3-SCHGH		deg F
ADF	99	C3 Subcool Low	C3-SCLOW		deg F
ADF	100	C3 Evaporating Temp High	C3-ETHGH		deg F
ADF	101	C3 Evaporating Temp Low	C3-ETLOW		deg F

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
Cooling Circuit Diagnostics (4)					
ADI	63	C4 Clg Circ Test Status	C4-TS		SE FDD Codes
ADF	102	C4 Superheat	C4-SUPHT		deg F
ADF	103	C4 Subcooling	C4-SUBCL		deg F
ADF	104	C4 Cond Temp over Amb	CT4O-AMB		deg F
ADF	105	C4 Efficiency Index	C4-EI		
ADF	106	C4 Capacity Index	C4-CI		
ADF	107	C4 Evap Temp Val Circuit	C4-ETVAL		deg F
ADF	108	C4 Cnd Temp Ovr Amb High	CT4OAMBH		deg F
ADF	109	C4 Cond Temp ovr Amb Low	CT4OAMBL		deg F
ADF	110	C4 Superheat High	C4-SUPHH		deg F
ADF	111	C4 Superheat Low	C4-SUPHL		deg F
ADF	112	C4 Subcool High	C4-SCHGH		deg F
ADF	113	C4 Subcool Low	C4-SCLOW		deg F
ADF	114	C4 Evaporating Temp High	C4-ETHGH		deg F
ADF	115	C4 Evaporating Temp Low	C4-ETLOW		deg F
Heating Control					
ADI	64	Htg Mode Enabled For Opr	HTG-EN	Yes	No/Yes
ADI	65	Heating Status	HTG-S		SE RTU Heating Control Status
ADI	66	SAT Limit for Htg Enable	SATHL-EN	Yes	No/Yes
ADF	116	SAT Limit for Htg Sp	SATHL-SP	135	deg F
ADF	117	OA Temp Htg Cutout Sp	OATHCOSP	75	deg F
ADI	67	Hot Water Freeze Stat	FSHW		Normal/Alarm
ADI	68	Heat Limit 1 Sw Lockout	LIMIT1LO		Normal Lockout
ADI	69	Heat Limit 2 Sw Lockout	LIMIT2LO		Normal Lockout
ADI	70	Heat Limit 3 Sw Lockout	LIMIT3LO		Normal Lockout
ADI	71	VAV Occupied Htg Enabled	VHTGOCEN	No	No/Yes
ADF	118	VAV Occupied Htg Sp	VHTGOCSP	68	deg F
ADI	72	VAV UnOccupied Htg Ena	VHTGUNEN	No	No/Yes
ADF	119	VAV Unoccupied Htg Sp	VHTGUNSP	60	deg F
ADF	120	VAV Operating Heating Sp	VOPHTGSP		deg F
ADI	73	Morning Warmup Enabled	MRNWRMEN	No	No/Yes
ADF	121	Wrmup-Return Air Temp Sp	WRMRATSP	70	deg F
ADF	122	CV Occupied Heating Sp	CVHTOCSP	68	deg F
ADF	123	CV Unoccupied Heating Sp	CVHTUNSP	60	deg F
ADF	124	CV Operating Heating Sp	CVHTOPSP		deg F
ADI	74	Morning Cooldown Enabled	MRNCLDEN	No	No/Yes
ADF	125	Cldwn-Return Air Temp Sp	CLDRATSP	74	deg F
ADI	75	Optimal Start Enabled	OST-EN	No	No/Yes
ADI	76	Occupancy BI Enabled	OCCBI-EN	No	No/Yes

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
ADF	126	Early Start Period	ERLYSTPD	60	min
ADF	128	Number of Limit Switches	NUMLIMSW	1	
ADF	161	DAT Max Heating SP	DATMHTSP	105	0 deg F
ADF	162	DAT Satisfied SP	DATSATSP	70	0 deg F
ADF	166	Staged Heating Command	STGHTGCMD		%
ADF	167	Proportional Heating Cmd	PROPHTGCMD		%
Heating Stage (1)					
ADF	129	Heating Stage 1 Runtime	H1-RT	0	hr
Heating Stage (2)					
ADF	130	Heating Stage 2 Runtime	H2-RT	0	hr
Heating Stage (3)					
ADF	131	Heating Stage 3 Runtime	H3-RT	0	hr
Hydronic Heat Control					
ADI	79	HW Heat Valve Rev Acting	HWVLVREV	No	No/Yes
ADF	132	HW Htg Stage 1 SAT Sp	HWH1SASP	120	deg F
ADF	133	HW Htg Stage 2 SAT Sp	HWH2SASP	150	deg F
ADI	80	HW Heat SAT Tempring Ena	SATEMPEN	No	No/Yes
ADF	134	HW Heat SAT Tempering Sp	SATEMPSP	40	deg F
Heat Pump Control					
ADI	81	Defrost Curve Selection	DEFCURVE	Curve 1	SE RTU Defrost Curves
ADI	83	Heat Pump Mode	HP-MODE	Heating	Heating/Cooling
Economizer Control					
ADI	84	Econ Enabled For Oper	ECON-EN	Yes	No/Yes
ADF	135	Econ Dmp Min Pos LS Fan	LSFNMINPOS	25	%
ADI	85	Econ Free Cooling Avail	FCAVAIL		No/Yes
ADI	86	Economizer Status	ECON-S		SE RTU Economizer Status
ADI	87	Free Clg Current Mode	FCMODE		Actual Economizer Type
ADI	88	Free Cooling Selection	FC-SEL	Auto	Economizer Type
ADF	136	Econ OA Temp Enable Sp	FCOATSP	55	deg F
ADF	137	Econ OA Enthalpy Sp	FCOAENSP	27	btu/lb
ADF	138	Low Ambient Econ Sp	LOWAMBSP	0	deg F
ADF	139	Low Ambient Econ Min Pos	LAMINPOS	0	%
ADF	140	Max IAQ Vent Econ Pos	MXIAQVENT	50	%
ADF	141	Econ Damper Position	OADMPPOS		%
ADF	142	Return Air Enthalpy	RA-ENTH		btu/lb
ADF	163	Econ Min OAD Pos	MINOA-PCT	20	%
ADI	89	Excess Outdoor Air	EXCOAALM		Normal/Alarm
ADI	90	Not Econ When Should	NOTECALM		Normal/Alarm
ADI	91	Damper Not Modulating	DMNOTALM		Normal/Alarm

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
ADI	92	Econ When Should Not	ECON-ALM		Normal/Alarm
ADI	115	Econ Fault Detection Ena	ECNFLTDET		Disable/Enable
Demand Ventilation Control					
ADI	93	Dmd Vent Mode of Oper	DMVMODE	Disabled	SE RTU DCV Mode
ADF	143	Dmd Vent Max Econ Pos	DMVMEPOS	50	%
ADF	144	Dmd Vent IAQ Sp	DMVIAQSP	1000	ppm
ADF	145	Dmd Vent Differential Sp	DVNTDFSP	600	ppm
Exhaust Fan Control					
ADF	146	Exhaust Fan Acc Runtime	EF-RT		hr
ADF	147	Building Pressure Sp	BLDG-SP	0.1	in wc
ADF	149	Exh Dmp Pos Exh Fan-On	EXDMFNON	80	%
ADF	150	Exh Dmp Pos Exh Fan-Off	EXDMFNOF	20	%
ADF	151	Econ Dmp Pos-Exh Fan On	ECNDMPFNON	60	%
ADF	152	Econ Dmp Pos-Exh Fan Off	ECNDMPFNOF	20	%
ADI	94	ERV Enabled	ERV-EN	No	No/Yes
ADI	95	ERV Unoccupied Fan Ena	ERVUNFNEN	No	No/Yes
Hot Gas Reheat (Dehumidification)					
ADI	96	HGR Enabled For Oper	HGR-EN	Yes	No/Yes
ADF	153	HGR Humidity Setpoint	HGRHUMSP	50	%RH
ADI	97	HGR Alternate Oper Ena	HGRALTEN	No	No/Yes
ADF	164	HGR Unocc Humidity Sp	HGRUNCHSP	50	%RH
ADI	116	HGR Enab For Unocc Mode	HGRUNC-EN	Disable	Disable/Enable
Air Monitor Station					
ADF	154	Outdoor Air Flow Sp	MOAFLWSP	10	cfm
ADF	155	Outdoor Air Flow	OA-FLOW		cfm
ADF	156	OA Intake Max Sensor Rng	MOARANGE	10000	cfm
ADI	117	Fresh Air Intake Enable	FRSHAIR-EN	Disable	Disable/Enable
Shutdown Input/Smoke					
ADI	98	Operating Purge Command	OPRPRG-C		False/True
ADI	99	Purge Command Source	PRGCMSRC		Effective Input Source
ADI	100	Local Purge Cmd Input	PURGE-S		False/True
ADI	101	Net Ovrd Purge Command	NETPURGE	FALSE	False/True
ADI	102	Smoke Detector	SMOKE-A		Normal/Alarm
System Controllers					
ADI	103	Econ Controller	ECONCNT		EIO Connection Status
ADI	104	4 Stage Controller	4STGCNT		EIO Connection Status

Table 6: N2 Protocol Mapping Table (Continued)

Point Type	Point Address	Long Name	Short Name	Value	Units
ADI	105	FDD Master Controller	FDDMCNT		EIO Connection Status
ADI	106	FDD Subordinate Controller	FDDSCNT		EIO Connection Status
ADI	107	Stepped Heat Controller	STPHTCNT		EIO Connection Status
Network					
ADI	108	End of Line Switch On	EOL-ON		No/Yes

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