Smart Equipment Controls (SEC) Quick Start Guide

SE-SPU1001-1, SE-SPU1002-1, SE-SPU1011-1, SE-SPU1011-1,
SE-SPU1012-1, SE-SPU1004-1, SE-FDD1001-1,
SE-ECO1001-1, SE-ECO1001-2, SE-COM1001-0

Before You Begin Configuring Your Unit Controller

Ensure you understand the application and identify the equipment configuration:

- Constant Volume

- Variable Air Volume (VAV)

- Economizer

- Hot Gas Reheat

- Dual Stage

- Four Stage

- Heat Pump

- Thermostat Controls

- Network Sensor Control

- Space Sensor Control

- Discharge Air Control

Understanding the Local LCD

After you apply power to your rooftop unit (RTU), a start-up countdown begins on the Unit Control Board (UCB) LCD. When the controller is ready, the screen is blank because no faults are present. Use the joystick and the two push buttons below the LCD, to navigate through the menus (Figure 1).
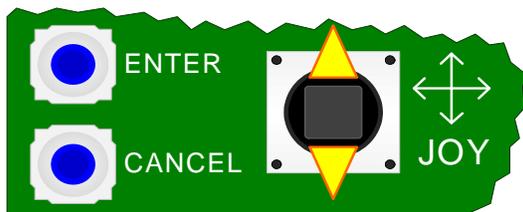

Figure 1: Joystick and Push Buttons on UCB

Up and down movements of the joystick move the > cursor and scroll through the selections in the active section of the menu (Figure 2).

Figure 2: UCB Top Level Menu

Each menu selection represents either a submenu or a property. Press Enter to display the items in the submenu or the values of the selected property.

Press Enter to display the current value of the selected property. Move up or down with the joystick to display the values of other properties.

Powering the Unit

When you apply 24 V power to the C and 24V terminals, the UCB begins a start-up sequence.

The LCD scrolls the text **Johnson Controls** on the top line and **JCI** on the bottom line (Figure 3).
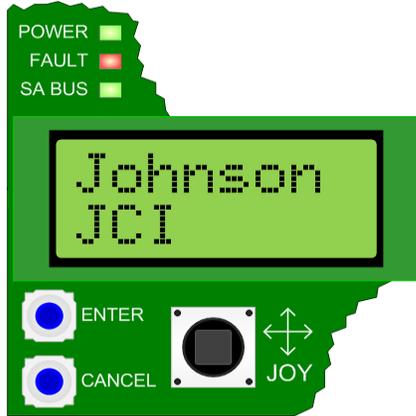

Figure 3: Powering the Unit

The display backlight and green Power LED remain lit as long as power is applied to the C and 24V terminals.

The red Fault LED lights, goes off briefly, and then flashes throughout the start-up sequence.

The green SA Bus LED lights briefly.

During the start-up sequence, the joystick, the Enter button, and the Cancel button are **not** functional.
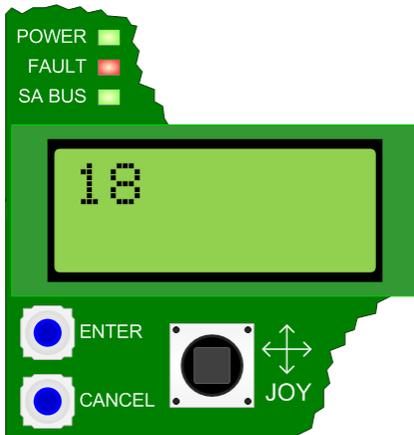
The LCD shows a countdown on the top line.

Figure 4: Start-up Countdown

After approximately 15 seconds, the green SA Bus LED does one of the following:

- Lights to indicate the UCB has not established communication and is awaiting communication from SA Bus devices

- Flashes to indicate the UCB established communication with SA Bus devices

After the start-up sequence finishes, the display shows **XxXx** on both lines if no alarm is active. The red Fault LED stops flashing and turns off. The joystick, Enter, and Cancel buttons are operational.

Commissioning with the Local LCD

Figure 5 shows the Commissioning view second level menus. The Commissioning view consists of nine main menus and several submenus.

**Figure 5: Commissioning View:
Second Level Menus**

Commissioning View Submenus

Your equipment configuration determines which menus appear in the Commissioning view. Use the joystick to move between the menu options. Press Enter to select an option. Table 1 describes the Commissioning View submenus. The * indicates the menus depend on your configuration.

Table 1:   Commissioning View Submenus (Part 1 of 4)

Level 2	Level 3 (LCD Screen Name)	Level 4 (Default Values)	Available Values
HVAC Zone	Occupancy Mode (OccMode)	OccMode (external)	Schedule
Indoor Fan	Continuous Supply Fan Operation in Occupancy Mode (FanOn Occ)	FanOn Occ Yes	Yes or No
	*Duct Pressure Setpoint (DctPres-Sp)	DctPrs-Sp 1.50"/w	.00"/w to 4.99/w
	*Occupied: No Heat or Cool % Command (Fan Only-% Cmd)	Fan Only-%Cmd 50%	0 to 100%
	*Occupied: One Stage of Cool% Command (1ClgStg-%Cmd)	1ClgStg-%Cmd 70%	0 to 100%
	Occupied: Two Stage of Cool % Command (2ClgStg-%Cmd)	2ClgStg-%Cmd 80%	0 to 100%
	Occupied: Three Stage of Cool % Command (3ClgStg-%Cmd)	3ClgStg-%Cmd 90%	0 to 100%
	Occupied: Four Stage of Cool % Command (4ClgStg-%Cmd)	4ClgStg-%Cmd 100%	0 to 100%
	*Occupied: One Stage of Heat % Command (1HtgStg-%Cmd)	1HtgStg-%Cmd (100%)	0 to 100%
	Occupied: Two Stage of Heat % Command (2HtgStg-%Cmd)	2HtgStg-%Cmd (100%)	0 to 100%
	Occupied: Three Stage of Heat % Command (3HtgStg-%Cmd)	3HtgStg-%Cmd (100%)	0 to 100%

Table 1: Commissioning View Submenus (Part 2 of 4)

Level 2	Level 3 (LCD Screen Name)	Level 4 (Default Values)	Available Values
Cooling (Clg)	Cooling Mode Enabled For Operation (Clg-En)	Clg-En Yes	Yes or No
	Lead/Lag Equalize Cooling Stage Runtime Enabled (LeadLag-En)	LeadLag-En No	Yes or No
	*VAV Cooling Supply Air Temp Upper Setpoint (SATUp-Sp)	SATUp-Sp 72°F	41 to 72°F
	*VAV Cooling Supply Air Temp Lower Setpoint (SATLo-Sp)	SATLo-SP 55°F	40 to 69°F
	*VAV Supply Air Temp Reset Setpoint (SATRst-Sp)	SATRst-Sp 72°F	40 to 85°F
	*CV Occupied Cooling Setpoint (ClgOcc-Sp)	ClgOcc-Sp 72°F	45 to 98°F
	CV Unoccupied Cooling Setpoint (ClgUnocc-Sp)	ClgUnocc-Sp 85°F	46 to 99°F
Heating (Htg)*	*Heating Mode Enabled for Operation (Htg-En)	Htg-En Yes	Yes or No
	*VAV Occupied Heating Enabled (HtgOcc-En)	HtgOcc-En No	Yes or No
	*VAV UnOccupied Heating Enabled (CVHtgUnocc-En)	CVHtgUnOcc-En No	Yes or No
	*VAV Unoccupied Heating Setpoint (VAVHtgOcc-Sp)	VAVHtgOcc-Sp 60°F	Yes or No
	*CV Occupied Heating Setpoint (CVHtgOcc-Sp)	CVHtgOcc-Sp 68°F	46 to 99°F
	*CV Unoccupied Heating Setpoint (CVHtgUnocc-Sp)	CVHtgUnocc-Sp 60°F	45 to 98°F

Table 1: Commissioning View Submenus (Part 3 of 4)

Level 2	Level 3 (LCD Screen Name)	Level 4 (Default Values)	Available Values
*Economizer (Econ)	Economizer Enabled for Operation (Econ-En)	Econ-En Yes	Yes or No
	Free Cooling Selection (FreeClg-Sel)	FreeClg-Sel Auto	Dry Bulb Temperature, single enthalpy, dual enthalpy
	Economizer Outdoor Air Temp Enable Setpoint (EconOAT-SpEn)	EconOAT-SpEn 55°F	40 to 80°F
	Economizer Outdoor Air Enthalpy Setpoint (EconOAEnth-Sp)	EconOAEnth-Sp 27 B/#	10 B/3 to 50 B/#
	Low Ambient Economizer Setpoint (LowAmb-Sp)	LowAmb-Sp 0°F	0 to 60°F
	Low Ambient Economizer Minimum Position (LowAmb-MinPos)	LowAmb-MinPos 0%	0 to 100%
	Maximum IAQ Ventilation Economizer Position (IAQEcon-MaxPos)	IAQEcon-MaxPos 50%	0 to 100%
*Demand Ventilation (Dvent)	Demand Ventilation Mode of Operation (DVent-Mode)	DVent-Mode Disabled	Controlled by IAQ (Difference between IAQ and OAQ)
	Demand Ventilation Maximum Economizer Position (DVentMaxEconPos)	DVentMaxEconPos 50%	0 to 100%
	Demand Ventilation Indoor Air Quality (DVentIAQ-Sp)	DVentIAQ-Sp 1000 ppm	0 to 5000 ppm
	Demand Ventilation Differential Setpoint (DVentDiff-Sp)	DVentDiff-Sp 600 ppm	0 to 5000 ppm
	Indoor Air Quality Sensor Range (IAQRange)	IAQRange 2000 PPm	0 to 5000 ppm
	Outdoor Air Quality Sensor Range (OAQRange)	OAQRange 2000 ppm	0 to 5000 ppm

Table 1:   Commissioning View Submenus (Part 4 of 4)

Level 2	Level 3 (LCD Screen Name)	Level 4 (Default Values)	Available Values
*Power Exhaust (PowerEx)	*Building Pressure Setpoint (Bldg-Sp)	Bldg-Sp .100%	-.250 to .250 in/w
	*Exhaust Damper Position for Exhaust Fan to Turn On (ExDmpPosFanOn)	ExDmpPosFanOn 80%	20 to 99%
	*Economizer Damper Position for Exhaust Fan to Turn Off (EconDmpPosFanOff)	EconDmpPosFanOff 20%	20 to 99%
	*Economizer Damper Position for Exhaust Fan to Turn On (EconDmpPosFanOn)	EconDmpPosFanOff	-.249 in/w to .249 in/w
	*Economizer Damper Position for Exhaust Fan to Turn Off (ExDampPosFanOff)	ExDampPosFanOff 20%	10 to 89%
	*ERV Enabled ERV-En	ERV-En No	Yes or No
	*ERV Unoccupied Fan Enabled ERVUnoccFan-En	ERVUnoccFan-En No	Yes or No
*Hot Gas Reheat (HGR)	*Hot Gas reheat Enabled for Operation (HGR-En)	HGR-En Open	Open or Closed
	*Hot Gas Reheat Humidity Setpoint (HGRHum-Sp)	HGRHum-Sp 50%H	0 to 100%H
	*Hot Gas Reheat Alternate Operation Enabled (HGRAltWrite)	HGRAltWrite No	Yes or No
Network	Device Name (DevName)	DevName UCBApp	None
	BAS Communication (BASCom)	BASCom BACnet	None
	Address (Address)	Address 4	0 to 127

Validating your Configuration

Use the Details > Service > Inputs menu to ensure that your configuration parameters are correct. This view shows the input values for each input. You can view the Sensors and Coil Sensors values.

If no input value appears, the input states **No Input**. This is a convenient way to verify that all your configuration parameters are set and reading properly.

IMPORTANT: Remember to save your configuration parameters using the Update > Backup feature with the USB port on the UCB. See _Connecting your Flash Drive_ and _Performing a System Configuration Backup_ for more information.

Connecting your Flash Drive

When you connect your flash drive to the USB port on the UCB, **USB:Wait** appears (Figure 6).

Figure 6: USB Port Connection

Note: If you do not see **USB:Wait** after you connect your flash drive to the UCB, ensure it is properly connected. If it is properly connected, and you do not see the **USB:Wait** text, your flash drive may not be compatible with the UCB.

After a few seconds, the top line of the UCB displays **USB:OK** (Figure 7). The Scan number indicates the files and folders in the top level of the flash drive.

Figure 7: USB Scan

You can keep the flash drive connected to the UCB after the scan completes.

Press the enter button, press the cancel button, or move the joystick up or down to navigate through the display menu.

Performing a System Configuration Backup

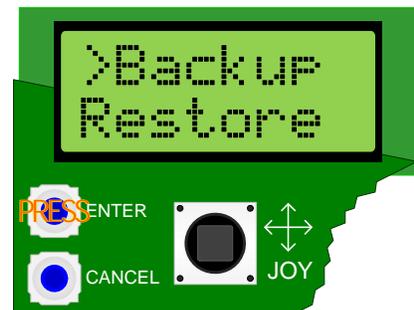Insert your flash drive into the USB port. Navigate to the Update > Backup menu and press Enter (Figure 8).

Figure 8: Backup Menu Option

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.

The backup completes in approximately 30 seconds and **BKP:OK** appears on the screen. The percentage shows 100.

Figure 9: Backup Complete

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.

Restoration File Name Structure

Figure 10: Restoration File Name Structure

You can restore the backup file to the unit and retrieve the configuration after you perform an upgrade or use the Upgrade > Restore feature to make setpoint changes.

Use the Partial Cloning feature to use the configuration parameters from one unit, as stored in the backup file, to update the data on another unit. Use the Upgrade > Part Clone feature on the unit you wish to update by using the backup file from the previously configured unit.

Note: Use the Full Cloning feature only when you are replacing the UCB board.

Performing an Auto-Update

Starting with version 3.1, the UCB automatically updates an economizer board, or other auxiliary board, when connected to the UCB. The auto-update begins within 5 minutes of unit startup if the UCB detects that the auxiliary board has a different version of software. The display shows the progress of the update with control doing a Restart when completed. The auto-update feature will also update the UCB if any of the software becomes corrupt.

Also starting with version 3.1, the UCB automatically performs a backup of the system, prior to any updates, and then restores that backup once the update has completed. While this feature implies that it is no longer required to do a backup prior to updating the system, performing periodic backups is still recommended.

Metasys® System Compatibility

SEC is compatible with *Metasys*® system software or with BACnet® integration using any other third-party BACnet BMS. You must update your dictionary to provide all the valid enumeration sets for objects within SEC. The latest Metasys 7.0.2.1300 version has the required dictionary updates, all previous versions experience dictionary issues with some BACnet objects. The objects are mainly associated with SEC feature sets. General rooftop objects such as fan status and setpoints, do not experience dictionary issues.