AUTOMATED LOGIC CONTROLLER W/ E-TOUCH

Standard Program

**ADDISON**
DEDICATED OUTDOOR AIR SPECIALISTS

Controller - System

Start-up Instructions

Introduction

These start up instructions will guide you through the necessary procedures to start-up the unit equipped with an **ALC Controller**. Prior to turning on the **I/O Pro 812u controller**, all required connections must be made to the input and output terminal blocks (located on the right side of controller). Refer to the **wiring diagram** included with the unit for the connections specific to this unit.

After all the **wired connections** for the unit have been made and power to the unit has been turned on, connect the Equipment Touch display to the blue connector that is pre-wired to the controller at the RNET terminals at the top at the top of the left hand side of the controller.

**RNET Connection for the Touch interface. This will be factory wired to a BLUE connection point.**
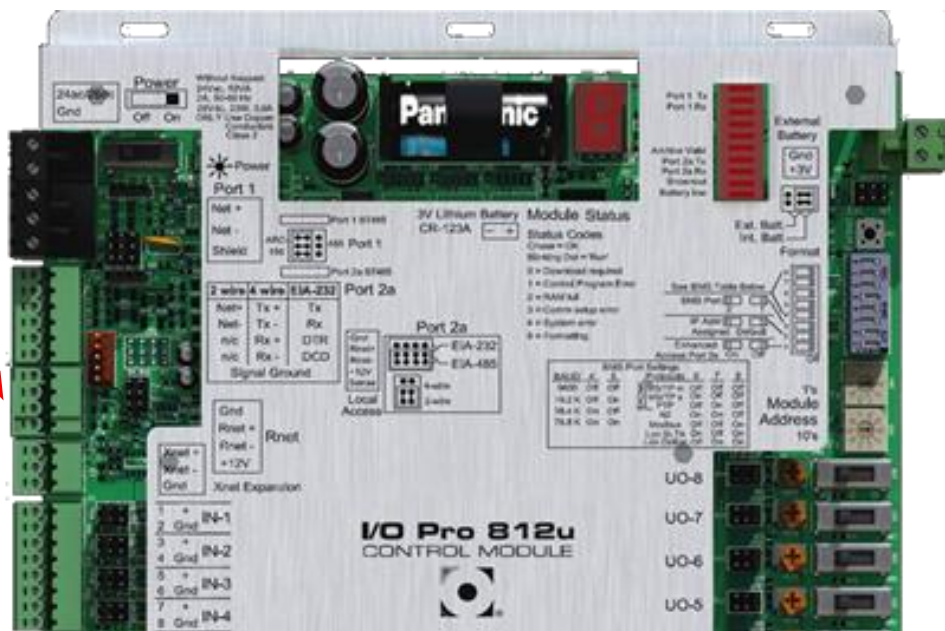

RNET connection for Equipment Touch.

NOTE: To wall mount the Equipment Touch remove the factory installed cable and wire +24VAC to TB4 "K3" and wire Gnd to TB4 "K4". If there is a ZS sensor installed wire Rnet+ and Rnet- to the ZS sensor Rnet+ and Rnet – terminals, otherwise wire to TB5 Rnet+ and Rnet-

Power On Switch, located in upper left hand corner. Make sure all electrical connections are connected before turning on.
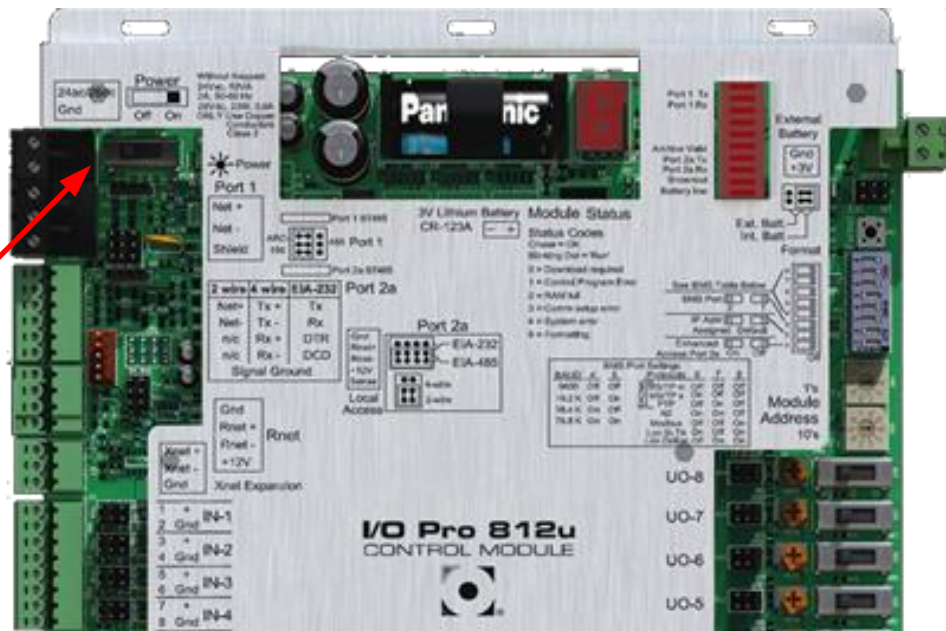
The **ALC** controller can now be turned on by the switch on the upper left-hand side of the controller. At this point, the **ALC** controller will go through a built-in start-up diagnostic, which can take approximately **10** seconds to complete. After this, the sensors and controls will become fully available and the Equipment Touch display will show the "**Standby**" screen.
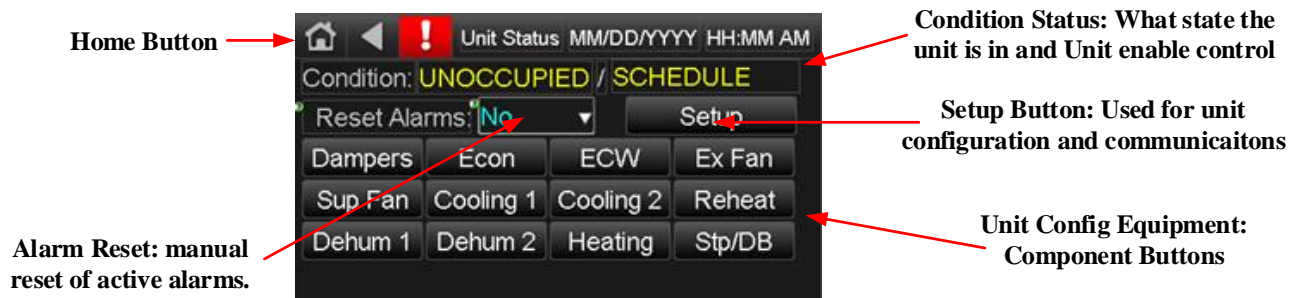
Standby Screen
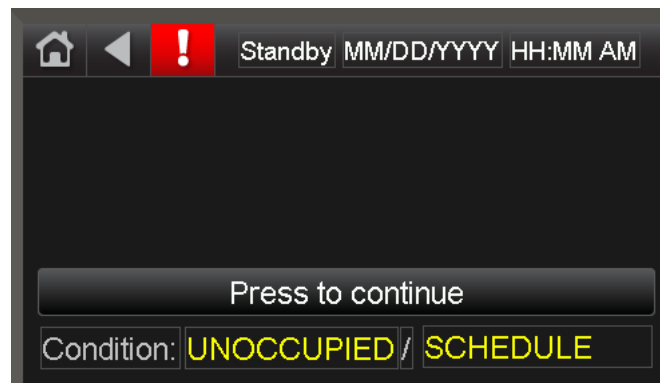
- Shows the program name, version number, date of version issue, and the operational condition/mode.
- The Standby Screen appears during a pre-determined idle time and configurable on ALC View Builder setup
- The 'House' icon located on the upper left hand corner opens the "Unit Status" Screen.
- The exclamation mark icon located on the upper left hand corner of the screen shows alarm status information.

Unit Status Screen:

The "**Unit Status**" screen displays the date and time, the operational condition/mode of the unit, including its menu items. It is the main access to applicable screens.
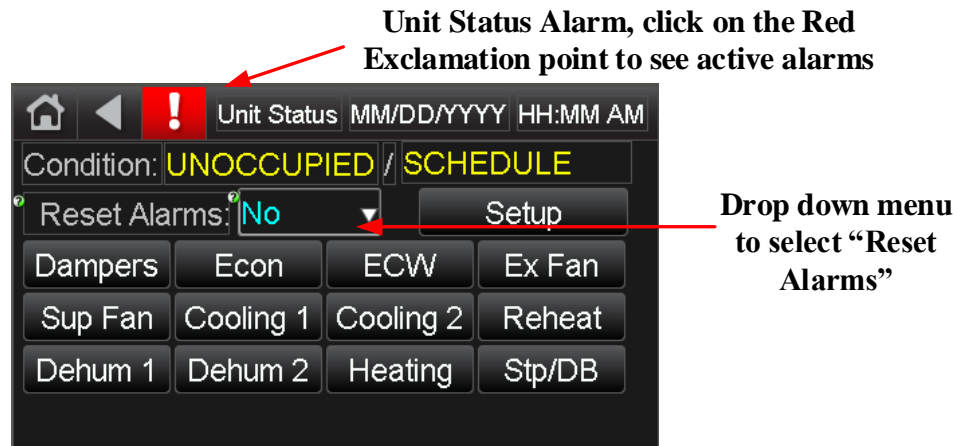
Home Button →

Condition Status: What state the unit is in and Unit enable control

Setup Button: Used for unit configuration and communicaitons

Unit Config Equipment: Component Buttons

Alarm Reset: manual reset of active alarms.

- **To access the menu items, press the SETUP button. This will require a admin password to open, user Password is "1952".**

Password Enter Screen:

Password will display here

Keypad

Press Cancel to Exit without entering password

Delete characters entered

Press done to accept the entered password

- **NOTE: Some changes will require a <u>FACTORY PASSWORD</u> because these are factory specific configuration and are not meant to be changed unless authorization has been given. <u>Factory password</u> protected changes must be performed by an authorize service tech, please contact the manufacturer's technical service representative is assistance is required.**

Reset Alarms:

Unit Status Alarm, click on the Red Exclamation point to see active alarms

Drop down menu to select "Reset Alarms"

- Press the rectangular drop-down menu as shown in the above screen, then select "Yes."

Refreshing the Screen

- Many items on the screens will automatically update as their values change. However, if a change occurs which causes the screen layout to change (i.e. show or hide a line) then it will be necessary to manually refresh the screen in order to see the change.

- An example of this is the **"RESET ALARMS: [NO]"** option (see "**Alarms and Safeties**" later in this document), which will appear toward the top of the "Unit Status" screen. When the alarm is reset these notifications are supposed to disappear. But, since the Equipment Touch does not have built-in screen refreshing, it must be performed manually.

- To do this, change to a different screen by pressing the button "[DAMPER]", "[FANS]", "[COOLING]" or any other link. Then go back to the "Unit Status" screen and the change will have taken affect.

Start-up Settings, Controls, and Options

Procedures for setting up the date and time, schedule of occupancy, modifying parameters of operation, and selecting options. **For specific operational information for this unit, refer to the Sequence of Operations provided separately.**

F rom the "**Unit Status**" screen, most of the status, controls, and configuration screens can be directly accessed. Press the corresponding buttons to navigate through the different screen options equipped in unit configuration.

The controller will be pre-configured from the factory with the necessary options for the unit to operate properly. However, some items may need to be modified in the field as required. This can be achieved in the field through the Equipment Touch display.

Tech Settings Screen

To access the "**Tech. Setting**" screen from the "**Unit Status**" screen, press the "**Tech Setting**" button to will require the administrator password to be entered. Contact the Addison Technical Service Manager for the password ("xxxx").
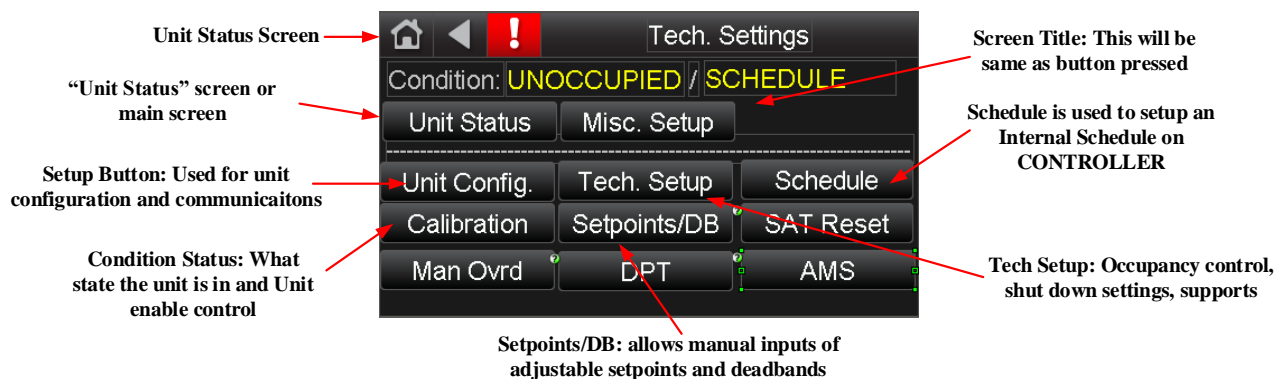

Table A: *Reference Table for TECH SETTINGS Screen.*

Navigation Button	Description	Password	Reference
Unit Status	"Main" Screen – home button navigation	N/A	Page 4
Tech Setup	Occupancy Control, SF Min Setting, Enable Settings	1952	Page 7
Misc. Setup	BAS, ModStat, Archive, Config	1952	Page 8
Calibration	Allows Manual +/- of sensor readings – Used for testing of unit and sensor calibration	1952	Page 10
Unit Config.	Shows Unit Information, Serial number, Operational Configuration, Factory Options	1952	Page 11
Setpoints/DB	Adjustment to "adjustable" setpoints. Note: some setpoints/DBs are not adjustable from factory.	1952	Page 12

Tech. Setup Screen

Tech setup allows for unit override controls and certain operational parameters. Parameters that can adjust/changed in tech setup are **occupancy control**, unit enable (override current controls/conditions), supply fan minimum run settings, ZAT/SAT reset on/off, and emergency heat enable.
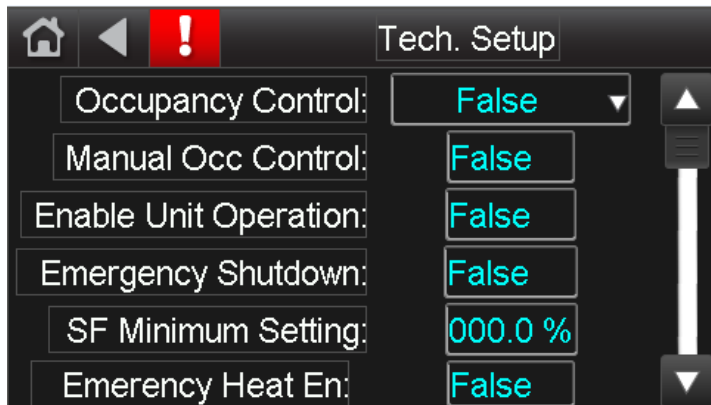
Scroll Menu Exploded

Occupancy Control:	False ▼
Manual Occ Control:	False
Enable Unit Operation:	False
Emergency Shutdown:	False
SF Minimum Setting:	000.0 %
Emerency Heat En:	False
Comp Disable:	False
HTG Supports RH:	False
ZAT/SAT Reset:	False
SF Oper Occ/Un:	False ▼
DIG1 Minimum Setting:	000.0 %
FDD Alarms Enabled:	False

Tech. Setup

|	
Occupancy Control:	False ▼
Manual Occ Control:	False
Enable Unit Operation:	False
Emergency Shutdown:	False
SF Minimum Setting:	000.0 %
Emerency Heat En:	False

Occupancy Control – Drop down menu

Occupancy control by the Equipment Touch is the default setting and used for stand-alone operation. Press the "**Occupancy Control**" rectangular button, a drop-down list will appear, select the options as indicated below. The "**Occupancy Control**" parameter dictates where the control of the Occupied Mode of the unit originates, and has the following options:

- **Local Schedule –** internal schedule on ALC – see below on setup of local schedule
- **BAS Control –** building automated system controls unit enable – this can be setup thru the BAS Setup – see Table B
- **24/7 Operation –** runs continuously, unit does not have an Unoccupied mode unless a signal is sent to turn unit off
- **S/S Switch –** on/off signal control, could be a switch or a digital input (DI)
- **CO2 Occupancy –** CO2 sensor enabled control. When the CO2 level reaches a certain level, the unit can override or operate under this mode. NOTE: This will require a CO2 Zone sensor for reading space CO2.
- **Manual Override –** select to manually force Occupied or Unoccupied Mode.

Local Schedules

From the "**Tech. Settings**" screen, press the "Schedules" button, from here you can create a LOCAL schedule that will be saved in the ALC. Access to the "**Schedules**" screen requires the user password "1952" to be entered.
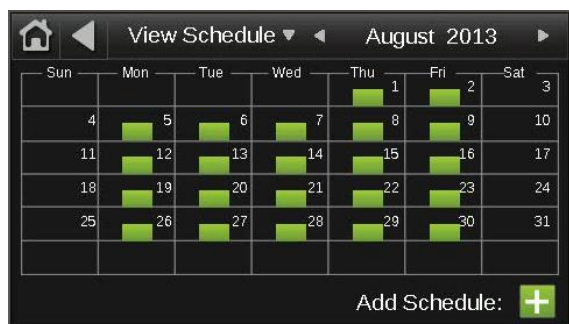
To add a Schedule, simply perform the following steps:
Click on the Plus sign next to Add Schedule
1. Create a Schedule Name
2. Choose: On Schedule (Occupied) or Off Schedule (Unoccupied)
3. Choose Schedule Type: Dated, Weekly, or Continuous
4. Choose Schedule Priority Type: Normal or Override
5. Determine Start and End Time & Date of Schedule
6. Save your schedule. System will upload to ALC controller box.

Misc. Setup Screen

On the "**Unit Status**" screen, press the "**Setup**" button to access the "**Misc. Setup**" screen. Access to the "**Misc. Setup**" screen will require the administrator password to be entered.
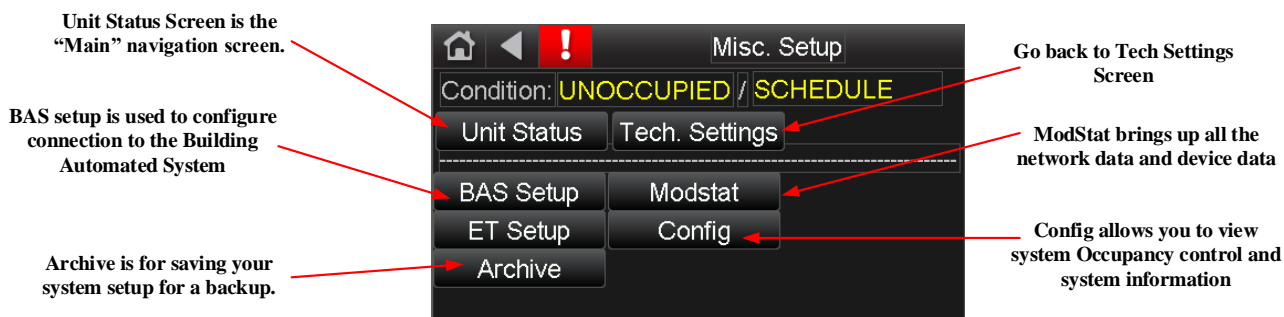
Unit Status Screen is the "Main" navigation screen.

Go back to Tech Settings Screen

BAS setup is used to configure connection to the Building Automated System

ModStat brings up all the network data and device data

Config allows you to view system Occupancy control and system information

Archive is for saving your system setup for a backup.

Table B: *Reference Table for MISC. SETUP Screen.*

Navigation Button	Description	Password	Reference
BAS Setup	Set Time and Date, IP & Communication protocols	1952	Page 9
Modstat	System Data, Network Information, Board information	1952	Page 10
Archive	Saves/Backup of program changes.	1952	Page 15

BAS Setup Screen: Communication Screen and Router Screen
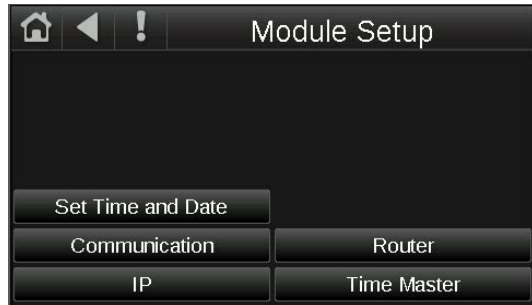
Module Setup:
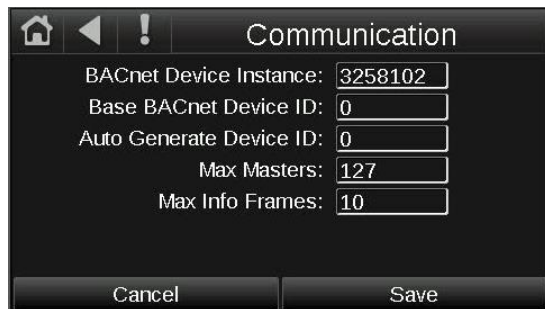**Set Time and Date Button:** *Allows you to set time and date format*
Communication Button: *BACnet instance for downloading Clipping files*
IP Button: *Allows changing of network addresses*
Router Button: *Displays connection types*
**Time Master Button:** *allows time sync mode*

Communication Screen:

Addison's default BACnet device instance # is "**2402**" Perform the following steps to setup the BACnet communications interface:
a) Press the rectangular box to be changed.
b) A numerical keypad will pop up. Input the correct numerical value.
c) Perform the same steps for the other variables.
d) Press the "Save" button. The data will download to the ALC controller
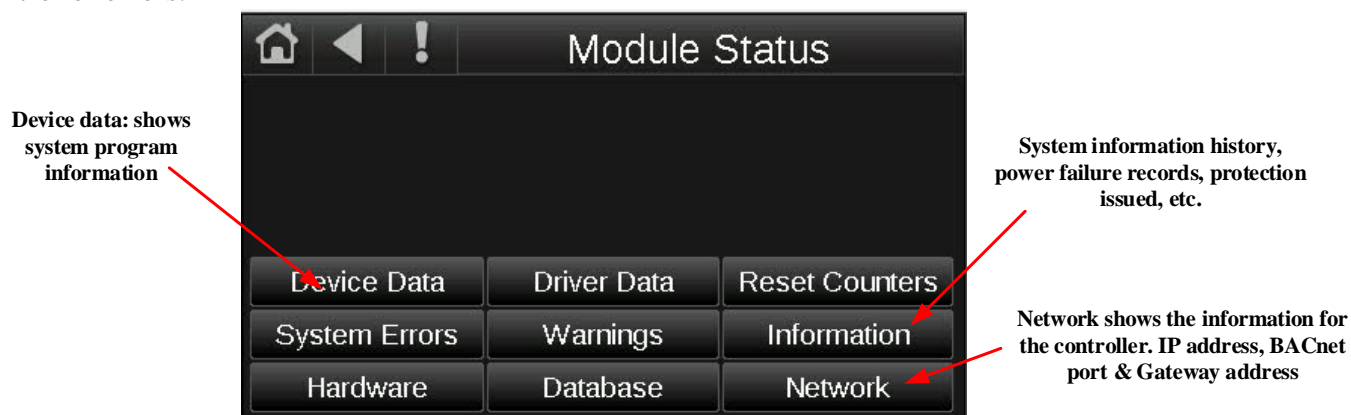
Router Screen:
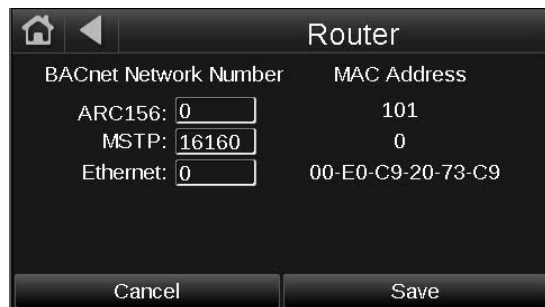
NOTE: The communication network being utilized in the field may differ from the factory default. If this is the case, this screen can be used to modify the factory settings.   Contact the manufacturer's Technical Service Representative or refer to the **IOM** for more information.

Perform the following steps to setup the Router interface:

1. Press the rectangular box to be changed.
2. A numerical keypad will pop up. Input the correct network number.
3. Perform the same steps for the other variables.
4. Press the "Save" button. The data will download to the ALC controller.

Module Status Screen: Network information and Device Data

Module Status will allow you to get all the network and system information for the controller. This will help with trouble shooting any network issues, show all shut down time stamps and any system controller errors.

Device data: shows system program information

System information history, power failure records, protection issued, etc.

Network shows the information for the controller. IP address, BACnet port & Gateway address

(Module Status screen buttons: Device Data, Driver Data, Reset Counters, System Errors, Warnings, Information, Hardware, Database, Network)

Archive Button: - save unit parameter changes/factory reload

The "Archive" button allows the user to save any changes done to original parameter or configuration settings. **SEE "ARCHIVE" SECTION FOR MORE INFORMATION.**

Calibration Screen: control sensor readouts and manual adjustments

Use Calibration screen to see all sensor value and to apply an offset. The value shown represents the current value PLUS the offset given. This screen is used for testing purposes to enable an operational state or to calibrate a sensor reading.
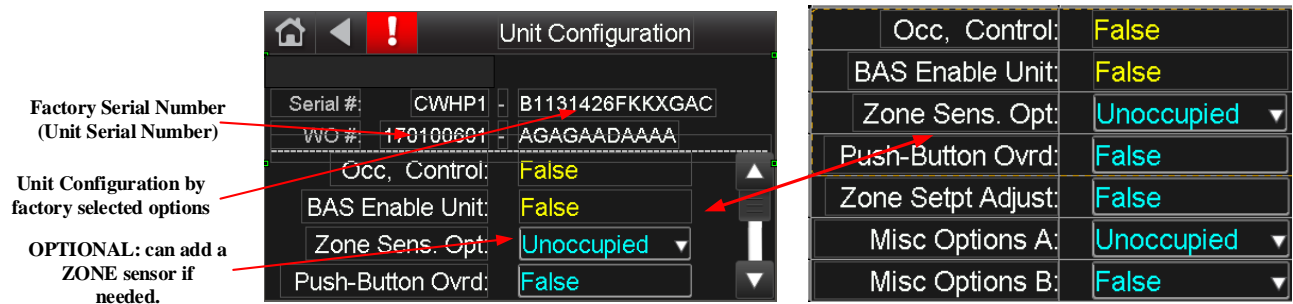
Name	Offset	Value
ZAT	+00.0	000.0 °F
Z-RH	+00.0	000.0 %rh
CO2	000	0000 ppm
IN0-1 NO CFG	+00.0	000.0 °F
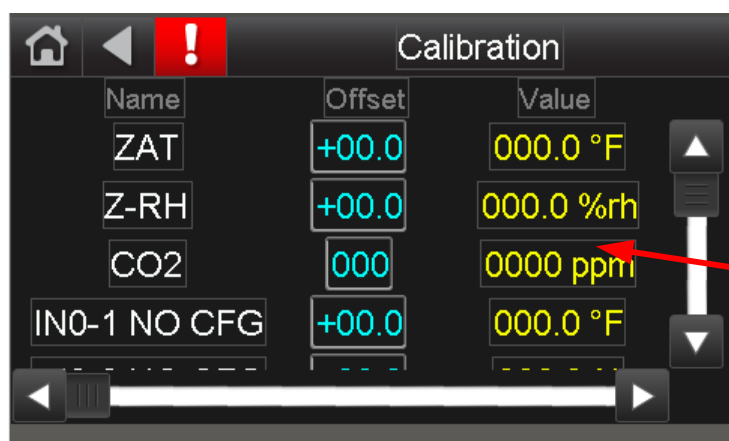
Name	Offset	Value
ZAT	+00.0	000.0 °F
Z-RH	+00.0	000.0 %rh
CO2	000	0000 ppm
IN0-1 NO CFG	+00.0	000.0 °F
IN0-2 NO CFG	+00.0	000.0 %
SAT	+00.0	000.0 °F
IN0-4 NO CFG	+00.0	000.0 %
IN0-5 NO CFG	+00.0	000.0 °F
IN0-6 NO CFG	+00.0	000.0 °F
IN0-7 NO CFG	+00.0	000.0 °F
IN0-8 NO CFG	+00.0	000.0 °F
IN0-9 NO CFG	+00.0	000.0 °F
IN0-10 NO CFG	00000	00000 cfm
IN0-10 NO CFG	+00.00	+00.00 in H2O
IN0-11 NO CFG	00000	00000 cfm
IN0-11 NO CFG	+00.00	+00.00 in H2O

NOTE: The "Calibration" screen displays the CURRENT VALUE + OFFSET. If the offset is zero, the value is the current sensor reading.

Unit Configuration Screen

Under the "Unit Configuration" screen you can select options for miscellaneous controls that are FACTORY options. This screen also displays the Addison S/N, Factory S/N, Zone sensor set up (optional), and maintenance options.

Factory Serial Number (Unit Serial Number)

Unit Configuration by factory selected options

OPTIONAL: can add a ZONE sensor if needed.

The (3) charts below show all the available options for the 3 selectable drop-down menus. These options can be added to the unit or may have come from the factory.

Zone Sensor Selection Drop-Down

Value	BACnet Text	Alarm/Fault
1	A = None	None
2	B = ZAT Only	None
3	C = ZAT w/ CO2	None
4	D = ZAT w/ Z-RH	None
5	E = ZAT, CO2, Z-RH	None
6	F = ZAT w/ Alt. CO2	None
7	G = ZAT w/ Alt. Z-RH	None
8	H = ZAT,ZRH,Alt. CO2	None
9	J = ZAT,CO2,Alt.Z-RH	None
10	K = ZAT,Alt.CO2,Alt.Z-RH	None
11	L = Alt. CO2 Only	None
12	M = Alt. ZAT Only	None
13	N = Alt. Z-RH Only	None
14	P = Alt. CO2 & ZAT	None
15	Q = Alt. CO2 & Z-RH	None
16	R = Alt. ZAT & Z-RH	None
17	S = Alt CO2&ZAT&Z-RH	None

Misc. Options A

Value	BACnet Text	Alarm/Fault
1	A = NONE	None
2	B = CFI	None
3	C = COS	None
4	D = SD	None
5	E = CFI, COS	None
6	F = CFI, SD	None
7	G = COS, SD	None
8	H = CFI, COS, SD	None

Misc. Options B

| Value	BACnet Text	Alarm/Fault
1	A = NONE	None
2	B = EMR	None
3	C = EMSD	None
4	D = S/S SWITCH	None
5	E = EMR, S/S SWITCH	None
6	F = EMSD, S/S SWITCH	None

Set Points Screen

The "Setpoints/Deadband" screen allows you to adjust any setpoints that need to be adjusted thru field test and balancing. These setpoint come preset to a factory setting during the initial program unless requested otherwise. Admin password is required to access and change any setpoints.
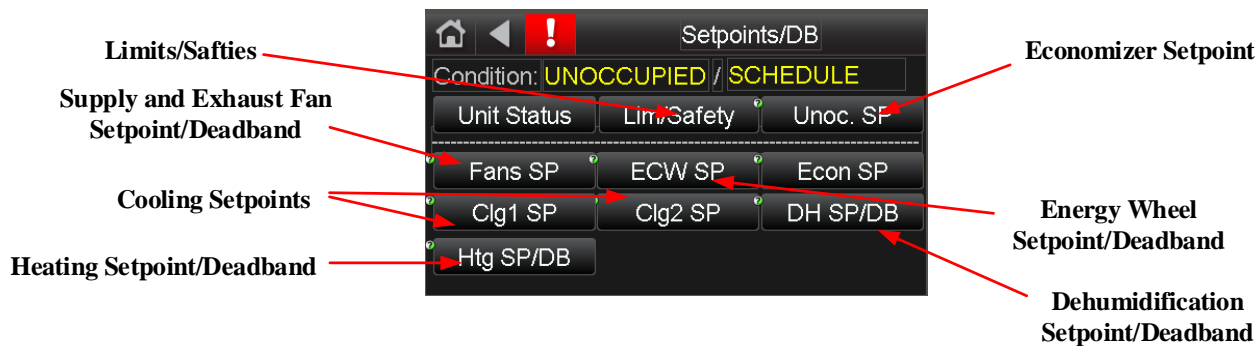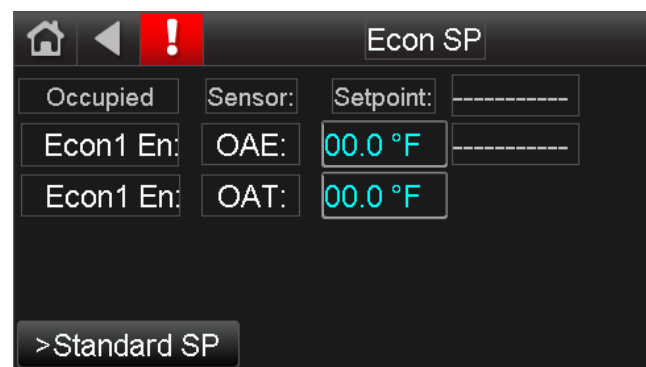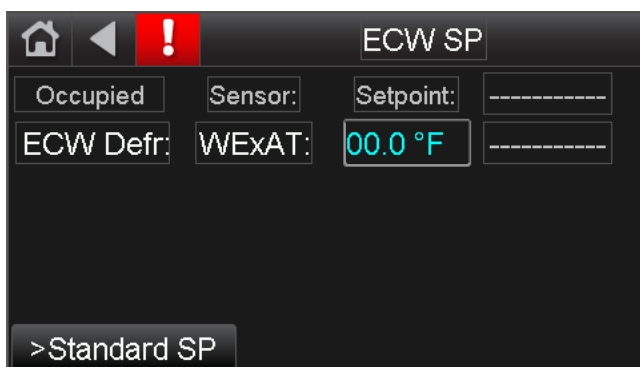

Below is the setpoint screens available from the "Setpoints/DB" screen. These setpoints are all adjustable the Sensor is NOT adjustable and is for information only.

Cooling Setpoint/Deadband
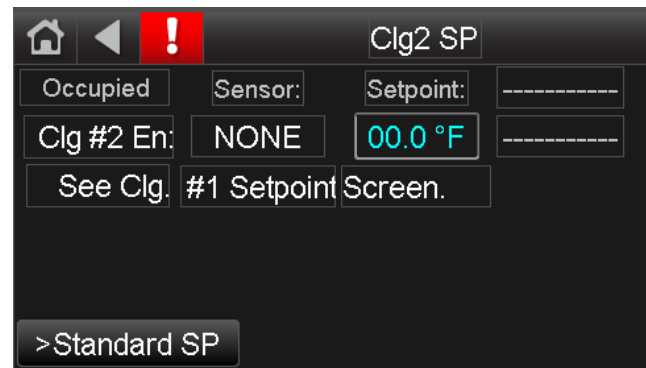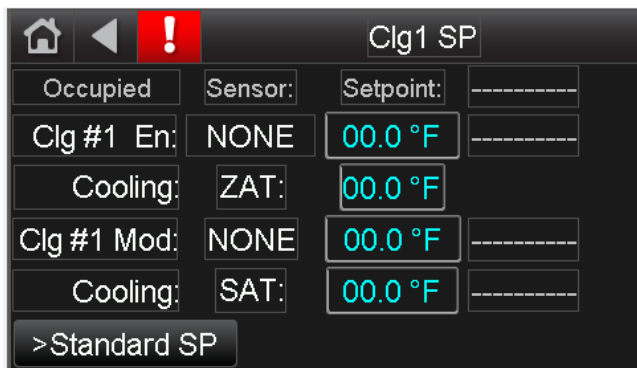
Energy Wheel & Economizer Setpoint/Deadband

Supply & Exhaust Fan Setpoint/Deadband

Occupied	Sensor:	Setpoint:
Bldg Static Press:	ZNDPT	0.00 in H2O
Supply Fan Mod:	DPT	00.0 in H2O
Supply Fan Mod:	AMS	00000 cfm
Exhaust Fan Mod:	DPT	00.0 in H2O
Exhaust Fan Mod:	AMS	00000 cfm

Dehumidification Setpoint/Deadband

Occupied	Sensor:	Setpoint:	-----------
Dehumidify:	False	00.0	False
Dehumidify:	SAT:	00.0	°F
-----------	-------	-----------	-----------
Deadband:	Sensor:	Upper(+):	Lower(-):
Reheat:	SAT:	00 °F	00 °F

Heating Setpoint/Deadband

Occupied	Sensor:	Setpoint:	-----------
Htg #1 En:	NONE	00.0 °F	-----------
Heating:	ZAT:	00.0 °F	-----------
Heating:	SAT:	00.0 °F	-----------
-----------	-----------	-----------	-----------
Deadband:	Sensor:	Upper(+):	Lower(-):
Heating:	SAT:	00 °F	00 °F

Limits and Safety Setpoint:

The "Limits/Safety SP" screen allows you to see the lower and upper limits of the deadbands. These deadbands are editable and the standard values are set from the factory. An admin password is required to access the "Limits/Safety SP" screen.

The sensor tag is not adjustable and for information purposes only. The sensors are set from factory and can only be changed or modified when instructed to do so by technical service. If you have any questions, please call technical service.

Limits/Safety SP	Sensor:	Setpoint:
Clg Mode Lo Limit:	False	00.0 °F
DH Mode Lo Limit:	False	00.0 °F
Htg Mode Hi Limit:	False	00.0 °F
Safeties	----------	----------

Clg1 SP

Clg Mode Lo Limit:	False	00.0 °F
DH Mode Lo Limit:	False	00.0 °F
Htg Mode Hi Limit:	False	00.0 °F
Safeties	----------	----------
Comp Disable:	OAT:	000 °F
Upper Freeze:	NONE	000 °F
Middle Freeze:	NONE	000 °F
Lower Freeze:	NONE	000 °F
ECW Defrost:	WExAT:	00.0 °F

Default Limits: all values are degrees Fahrenheit

- **Cooling Mode Lo Limit: 40 to 65**
- **Dehumidification Mode Lo Limit: 55 to 90**
- **Heating Mode Upper Limit: 40 to 70**
- **Compressor Disable OAT: 0 to 50**
- **Upper Freeze Protection: 28 to 55**
- **Middle Freeze Protection: 28 to 55**
- **Lower Freeze Protection: 28 to 55**
- **ECW Defrost WExAT: 0 to 20000**

Archive Program

To access the Archive Page, press the "Home" icon on the upper left hand corner, select Unit Config using the right hand vertical slider button. Choose the Archive page.
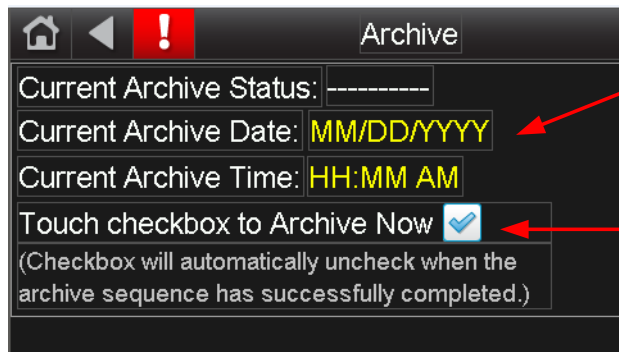
Show the current date

**MUST check the "ARCHIVE NOW" box to save the NEW CHANGES**

The Archive page functions:

• Current Archive Status: Valid or Invalid

• Current Archive Date

• Current Archive number

• Checkbox to archive memory and show archive completion (by the system automatically unchecking the checkbox -to show completion of archive process).

This screen shows the operational condition/mode of the unit, the archive status, the current archive number, the current archive date, and the time before archiving is available if an archive has just been performed.

The controller has the ability to store two program archives in memory. One slot is filled upon program installation (which usually occurs in the factory). The second can be filled by a field-initiated archive.

An archiving event should take less than **30** seconds to complete. The red "**Archive Valid**" LED bar (located on the top right corner of the controller) will turn off then light up when the archive event is complete.
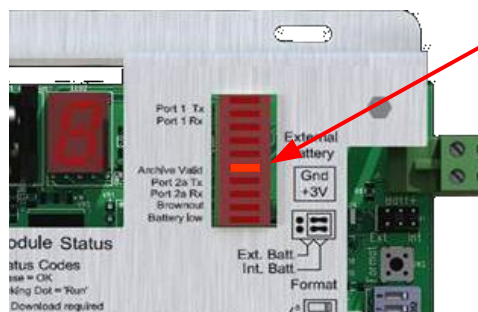
**Status LED
Archive Valid**

Restore from Archive

The controller checks the memory configuration of the program during power up. If the program is identified as corrupt, the controller restores it from the last archive. In addition, if the battery fails to power the device during a power outage and controller memory is lost, the controller will restore the program from the last archive upon power up.

The factory or field archives can also be manually restored in the field.

To restore the Factory archive, follow these steps:

1. Power down the controller.
2. Turn the rotary address switches to 0, 0 (zero, zero).
3. Press the Format button and turn on power.
4. Four status LEDs should light. When "3" shows on the Module Status LED turn power off.
5. Set rotary address switches back and power on controller.
6. "Archive Valid" LED bar will light when complete.

To restore the Field archive, follow these steps:

1. Power down the controller.
2. Turn the rotary address switches to 0, 1 (zero, one).
3. Press the Format button and turn on power.
4. Four status LEDs should light. When "3" shows on the Module Status LED turn power off.
5. Set rotary address switches back and power on controller.
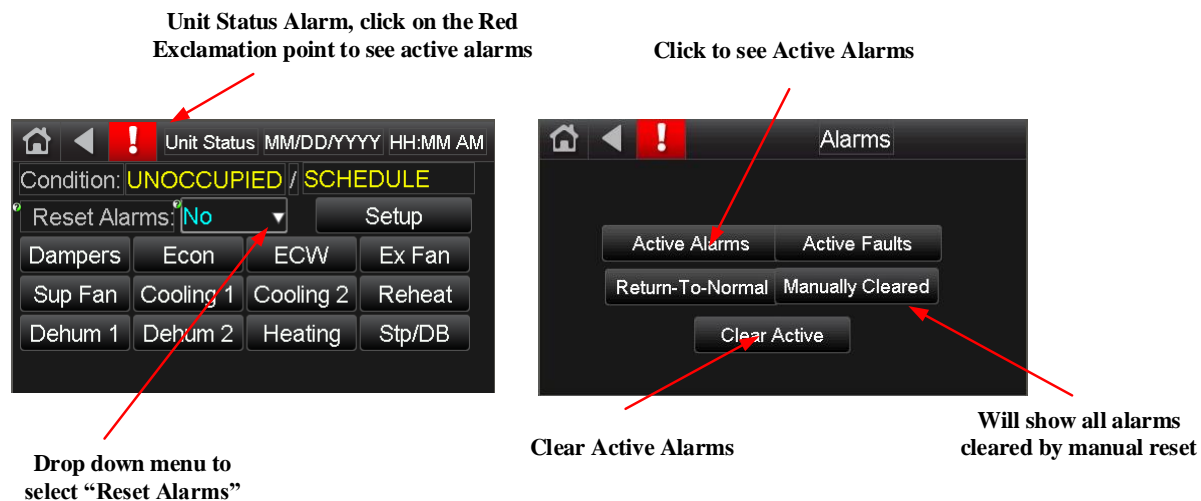6. "Archive Valid" LED bar will light when complete.
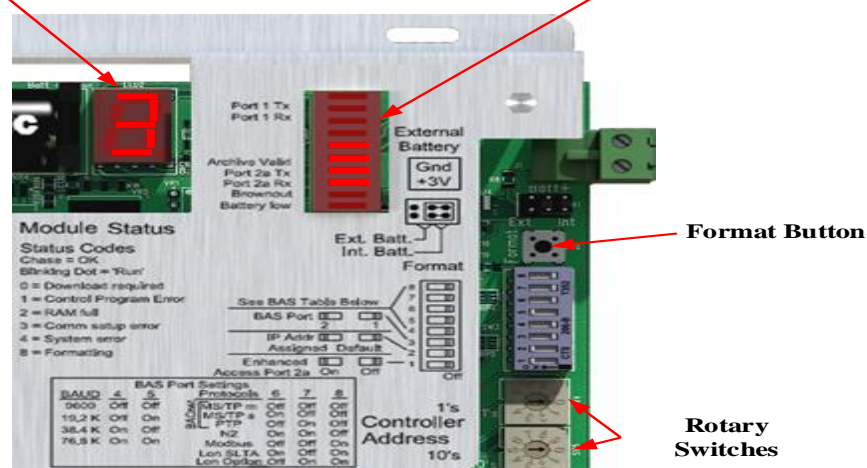
Alarms and Safeties

Alarms inform the end user that there is an operational problem with the unit. Some alarms will result in the unit shutting down, some will only shut down the affected equipment, and some are informational only. The 100 most recent alarms (active or cleared) can be viewed on the "Alarm Status" screen on the Equipment Touch.

Alarm Status

When an alarm is active, the exclamation mark background will highlight in red color. This indicates an alarm condition. To access the alarm information, press the red exclamation mark on the Home page touch screen. Press the exclamation mark twice to access the Alarms page menu.

Unit Status Alarm, click on the Red Exclamation point to see active alarms

Click to see Active Alarms

Drop down menu to select "Reset Alarms"

Clear Active Alarms

Will show all alarms cleared by manual reset

Clearing Alarms

- When an alarm event occurs, an audible alarm (touch screen setup option) will sound and the Equipment Touch will log the event on the "Active Alarms". Press the exclamation mark icon and the active alarms list will show up. To access the menu page, press the exclamation mark again. Press "Clear Active" alarms to reset alarms.
- The alarm will remain active until it is cleared. If the alarm is an automatically re-settable alarm, it will be cleared as soon as the condition which initiated it is corrected. To clear an active alarm press "Clear Active."
- If an alarm is automatically cleared, it will be removed from the "Active Alarms" section and moved to the "Returned-to-Normal" section. If the alarm is manually cleared it will be moved to the "Manually Cleared" section. Refresh the screen by pressing the "Reset Alarms" button on the Home screen.

Alarms may occur after start-up due to a variety of factors. Always check that all sensors and inputs are properly connected.

Safety Switches:

- **High Pressure Switch (HPS1):** If HPS1 is open, compressor #1 will turn off and the ALC controller will issue an alarm. After manually resetting HPS1, the HPS1 alarm will reset. Following a minimum time off delay, compressor #1 will turn on. **If the ALC controller records 3 high pressure start/restart failure incidents within 1 hour, compressor #1 is locked out and the ALC controller will issue an alarm.** The compressor lock-out can be reset in the Equipment Touch or by cycling the power of the ALC controller. Refer to the IOM for more information.
- For systems with two circuits, this is the same for compressor #2, Y2 and HPS2.
- **Low Pressure Switch (LPS1):** If LPS1 is open after the LPS1 by-pass time, the ALC controller will issue an alarm and compressor #1 turns off. After 30 seconds (fixed), the LPS1 alarm will reset. Following the minimum time-off delay, the compressor #1 will turn on. **If the ALC controller records 3 low pressure start/restart failure incidents within 24 hour, compressor #1 is locked out and the ALC controller will issue an alarm.** The compressor lock-out can be reset in the Equipment Touch or by cycling the power of the ALC controller. Refer to the IOM for more information.
- For systems with two circuits, this is the same for compressor #2, Y2 and LPS2.

Safety Shutdown:

- **Smoke Detector (Optional):** When a smoke detector (SD) is provided, it is wired directly to the ALC controller. If smoke is detected, the ALC controller will shut down the unit. The alarm can be reset in the Equipment Touch or by cycling the power of the ALC controller.
- **If a compressor fails to start 3 times in an hour due to high pressure switch lock out. The alarm can be reset in the Equipment Touch or by cycling the power of the ALC controller.**
- **If a compressor fails to start 3 times in an hour due to low pressure switch lock out. The alarm can be reset in the Equipment Touch or by cycling the power of the ALC controller.**
- **If a compressor fails to start 3 times in an hour due to DX LAT or suction line temperature lock out. The alarm can be reset in the Equipment Touch or by cycling the power of the ALC controller.**
- **If the ALC controller detects an SAT sensor failure. The alarm can be reset in the Equipment Touch or by cycling the power of the ALC controller.**

Battery

The ALC controller has a battery back-up which will maintain the program memory for a maximum of 720 hours during a loss of power to the unit. The battery has a rated life of up to 10 years but should probably be replaced every 7-8 years to be safe.

Loss of battery power will cause the program memory to be lost if the controller power is cycled or if power to the controller is lost. If this occurs, the program will be automatically restored from the last archive when power is restored.

Replacement battery type: CR123A 3V Lithium.

To replace the battery, follow these steps:

1. Archive the current program (refer to the **IOM** for more information).
2. DO NOT power down the controller.
3. Using a small flathead screwdriver, pry up each side of the black battery clip until it is free, and you can remove it.
4. Remove old battery from the controller, making note of the battery's polarity.
5. Insert the new battery into the controller, matching the polarity of the battery you removed (see image on controller case below battery for reference).
6. Push the black clip back onto the battery until you hear both sides click in place.
7. Perform a ModStat. Cycle the controller power. Perform another ModStat (to reset counters).

3V Lithium Ion Battery Location

Low Battery LED indicator
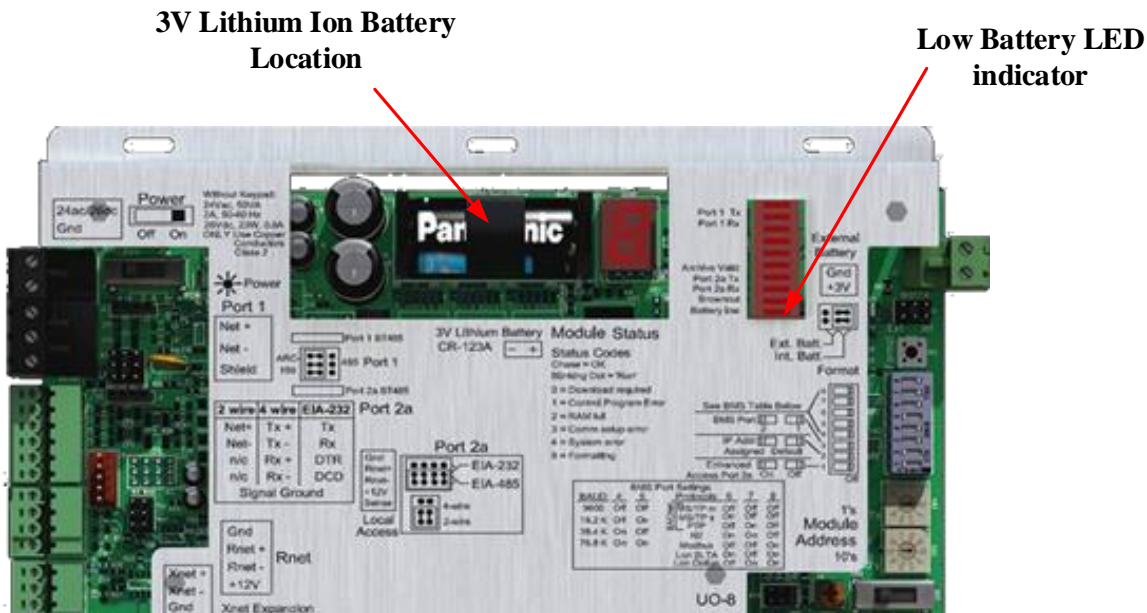
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