Delivering the Ultimate Energy Management Solution for Restaurants and Convenience Stores

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SBE SUPPORT CONTACTS

- Jim Parker – Director of Deployment – 1st contact for all install support

  480-297-5240 or jparker@smallboxenergy.com
- Jake B Parsons – Technical Support Manager – Jim's back-up for install support

  480-568-8675 or jparsons@smallboxenergy.com
- Matt Berbner – Product Manager – Jim will refer you to Matt depending on needs

  480-247-0011 or mberbner@smallboxenergy.com

Web Access

Login Information: Will be provided by SBE CSM

URLS

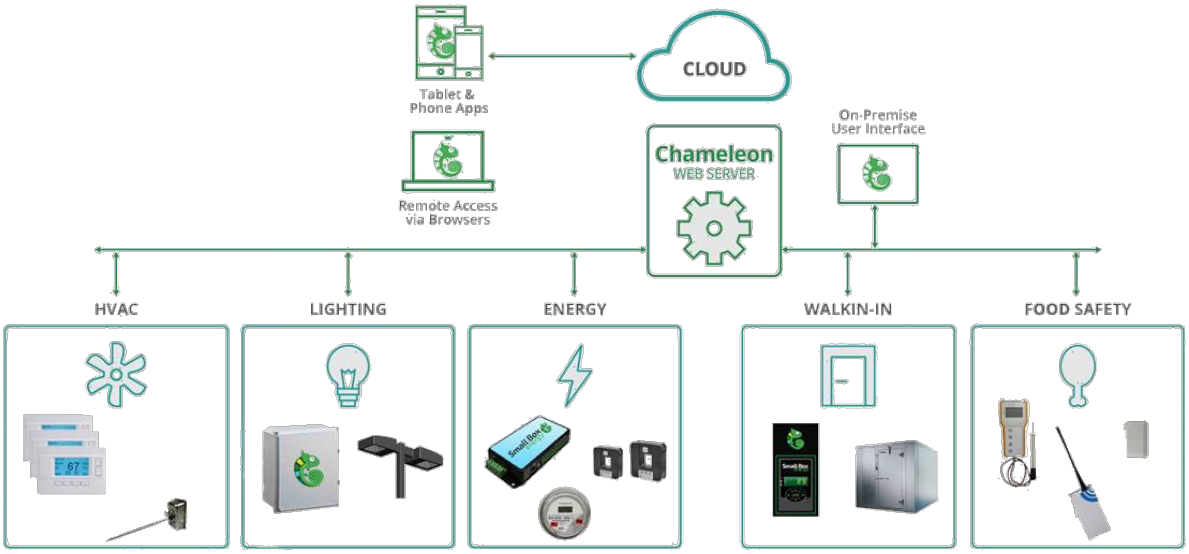
Mobile Install Link

https://www.appsheet.com/newshortcut/d5086ba3-2efc-4d16-bba7-5237d1091dd5

Browser Link

https://www.appsheet.com/start/d5086ba3-2efc-4d16-bba7-5237d1091dd5

SYSTEM OVERVIEW



Web server: Used to communicate to all devices through remote access

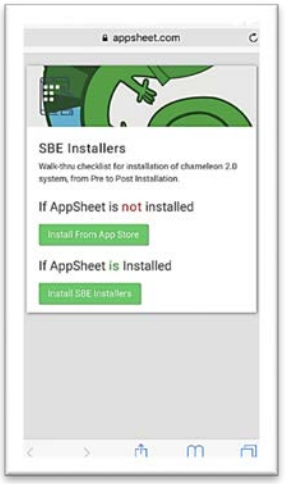
HVAC: Gives remote visibility and control, allows for remote setting of scheduling and temperature set points

Food Safety: Alarm and alert high or low temperatures

Energy: Metered power consumption

Walk-in Refrigeration: Control and monitoring of refrigeration units

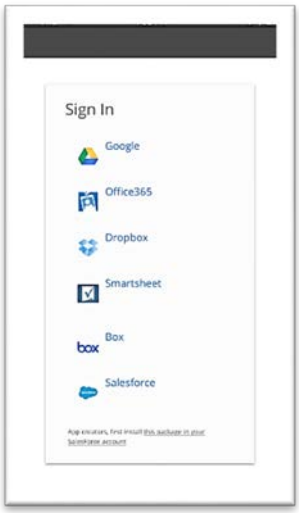
SBE Installation app



Mobile Install Link (Allows mobile users to install the app on their devices)
https://www.appsheet.com/newshortcut/d5086ba3-2efc-4d16-bba7-5237d1091dd5

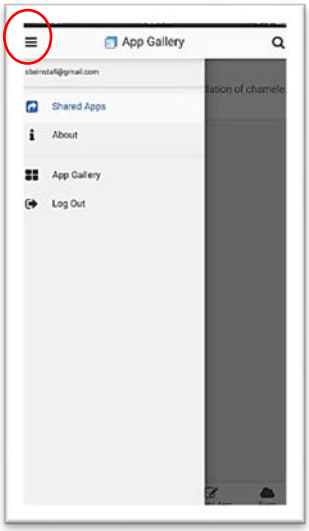
Browser Link
https://www.appsheet.com/start/d5086ba3-2efc-4d16-bba7-5237d1091dd5

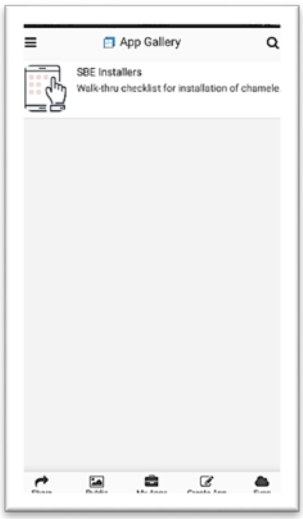
User name and password are google email credentials specific to your organization and should be provided by your DM. The same credentials are used by every user in your organization. Follow steps below to install the app on your mobile device:



iOS:

- Send this link to your mobile device so you can click on it from your mobile device https://www.appsheet.com/newshortcut/d5086ba3-2efc-4d16-bba7-5237d1091dd5
- Tap Install AppSheet
- Tap Install from App Store
- Open AppSheet
- **Choose Google**
- Choose Use Another Account
- Enter the email address provided by your DM and tap Next
- Enter the password provided by your DM and tap Next



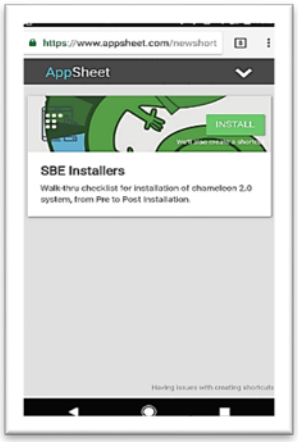


- Tap on the top left
- Choose Shared Apps
- Tap on SBE Installers
- Allow it to access your location
- Proceed to “Now that you’ve installed the app:”

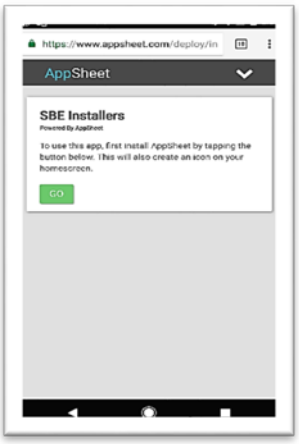
Android:

- Send this link to your mobile device so you can click on it from your mobile device https://www.appsheet.com/newshortcut/d5086ba3-2efc-4d16-bba7-5237d1091dd5

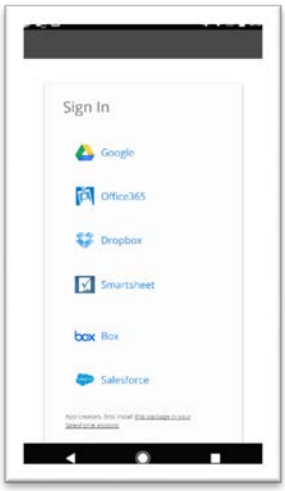
- Tap Install



- Tap GO
- Install AppSheet

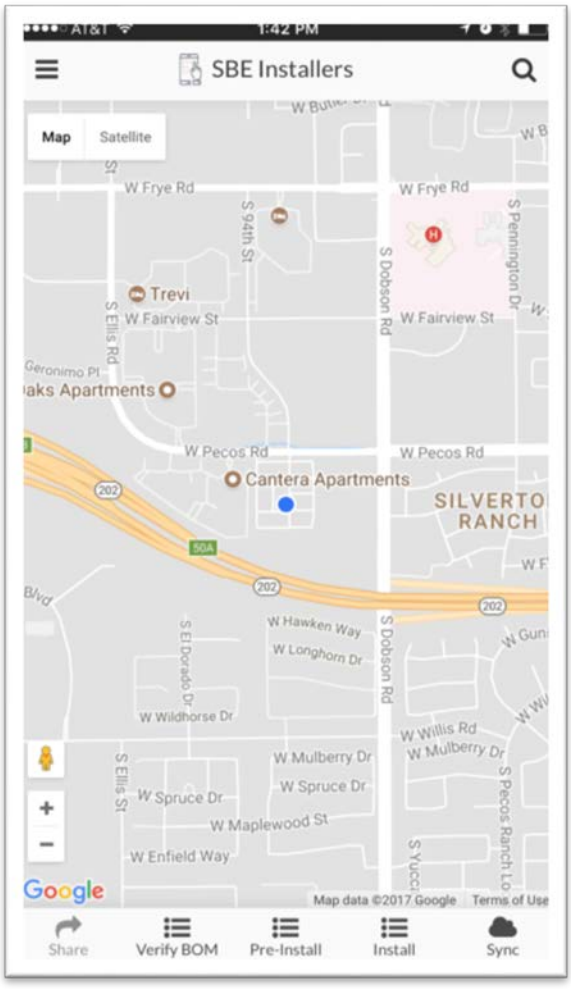


- Open AppSheet



- Choose Google
- Choose Use Another Account
- Enter the email address provided by your DM and tap Next
- Enter the password provided by your DM and tap Next

Now that you've installed the app:
The default screen should be your current location.



The app UI like the installation process is divided up into 3 sections/steps:

- Verify BOM – used to verify equipment specked against the actual equipment needed. The values in this section determine what the next two sections look like. For instance, if a location only has 2 thermostats noted in this section, the previous two sections will only ask for information on 2 thermostats etc. Many times, this section may have no changes necessary.
- Pre-Install – used to collect information on the location prior to any equipment being installed.
- Install – used to collect information after all equipment is installed.

Within each section, you'll be presented with a store number, map icon, phone icon, text bubble, and a right arrow on the far right. Use the map icon to open your mobile devices default navigation app and provide directions to the location. Use the phone and/or text icon to call and/or text the store contact on file. Use the right arrow to begin the process of completing the install step for that location.

When inside of any of the sections/steps, use the green pencil at the bottom, right to edit or input values in the information fields.

PRE-INSTALL SURVEY

- Review all product to be installed. Visually inspect store equipment that will have devices installed
- Record any and ***ALL*** visual defects of equipment that will be monitored or controlled
    1. HVAC: Units reaching set points dirty filters
    2. Food Safety: Reach-in units in good or bad condition
    3. Lighting: Are all the lights to be controlled working
- Take required pictures and load into pre-install check sheet using the App on your phone
    - HVAC thermostats and set points
    - Walk-in refrigeration, Cooler and Freezer
    - Current Lighting Control, Time Clocks and Photo Control and existing contactors
- Review listed items with the Manager and have them sign off to acknowledge any Pre-Install issues
- Submit check sheet through the Chameleon web form

Tech Tip 1: Completing the Pre-Install Survey

Webserver System

Web Server

- Find a suitable location for the web server next to LCP
- Secure 6” din rail to wall
- Snap in webserver to din rail
- Plug power for webserver to outlet

Cradle Point (Optional)

- Confirm via the store manager or the Site Audit form whether the cradle point should be used.
- Cradle point should only be installed if client has not provided connectivity access.
- Confirm use of Cradle point with DM before installing.
- If needed, mount cradle point near webserver and connect to system.

Router

- Mount router near IT cabinet
- Power on the router
- Connect to internet following the internet connection process on page 10
- Connect Ethernet cable from tablet to LAN of router
- Connect Ethernet cable from Web Server to LAN of router

Ethernet Switch (Optional)

- Mount optional Ethernet switch near web server for additional Ethernet ports
- Connect Ethernet cables to switch

Plug Strip (Optional)

- Only if extra power access is needed

Gesy Temperature Monitoring Receiver - 2.0

- Find a 110v outlet in an area in the kitchen central to the wireless temperature sensors, or next to the LCP if in the same area
- Mount receiver with antenna pointing downward
- Power device by plugging into outlet
- After steps above connect Modbus communication from Gesy receiver to webserver

Internet connection for system router

1. In the office area, there will be a AT&T or Wayport labeled blue Box. Near that box, will be a 24port switch inside a black Surface mount enclosure
2. Run and connect Ethernet cable from WAN port of router to any port between 5-40, (preferred port 21) on clients switch

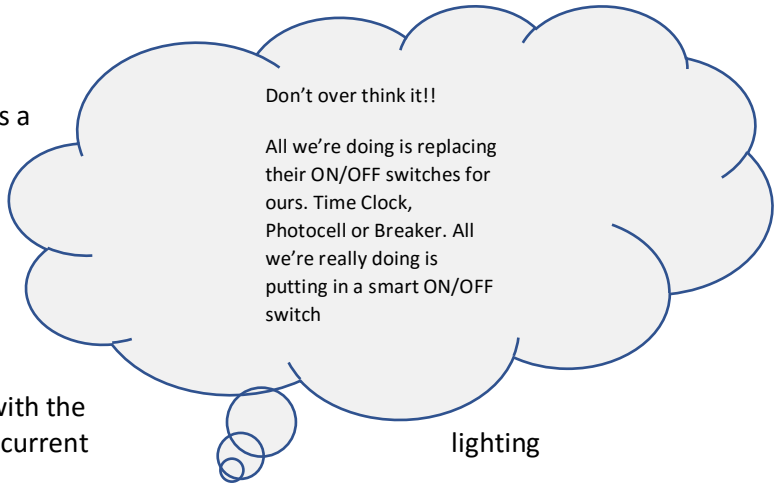
Mimo Tablet

1. Attach Mounting bracket to back of Mimo Tablet
2. Mount tablet to wall near 110v outlet
3. Run and connect ethernet cable from supplied router to Mimo Tablet
4. Power on tablet. (home page should automatedly load)

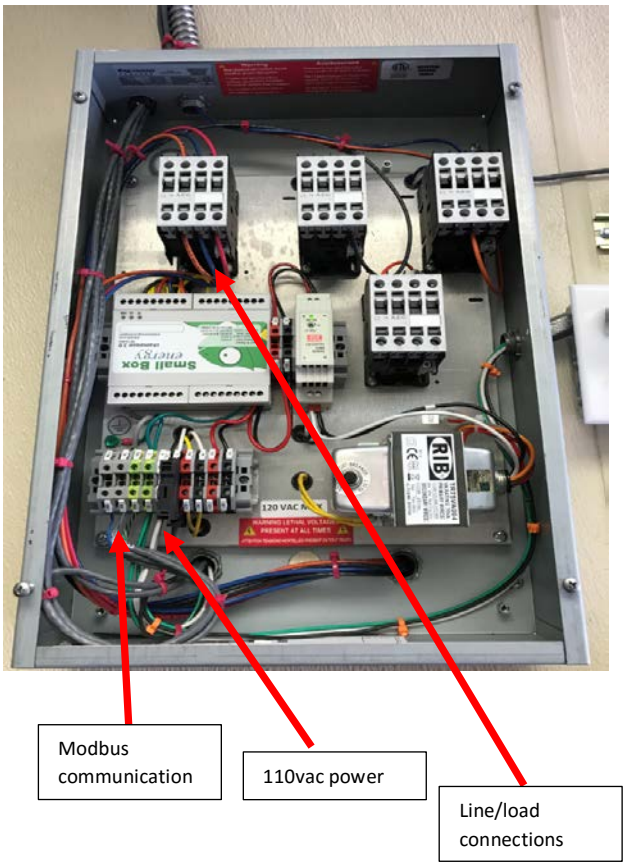
Note: If home page does not load, reload page by pressing the reload web address on the screen

Lighting Control Panel

1. Locate current lighting control. Typically, this is a time clock or a photo cell.
   - Time clocks for exterior lighting are usually mounted in the manager's office
   - Photocells are always on the roof
2. Mount lighting panel
   - Using the mounting hardware provided with the LCP mount in an accessible location near current control
3. Connect 110v to power lighting control
   - From the breaker panel run 110v power to the lighting control panel
   - label breaker EMS
4. Connect Modbus communication
   - From the lighting panel run a 3-conductor wire (recommendation is a wire that has Black, Red, and Ground or Shield) to the power meter
   - Connect the Red wire to "RS+" of the Modbus terminal
   - Connect the Black wire to "RS-" or the Modbus terminal
   - Connect the Green or Shielded wire to Ground terminal, RSG
5. Cutting over the lighting
   - Run line/load from lighting panel lighting contactor to controls of current lighting
   - Remove time clock or photocell control from system
   - Test connection to ensure functionality of lighting



Tech Tip 9: Don't Over Think the Lighting Panel



Power Meter

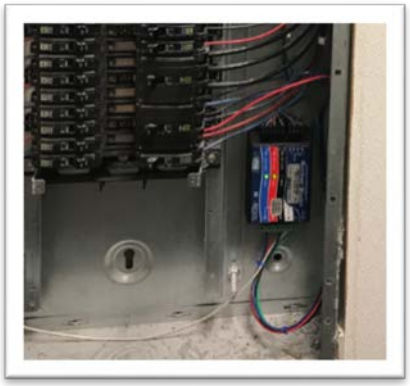
1. Locating main service feeders
   - Main service feeders are the main power feed to the building including all electrical subpanels. These are usually located within the customer side of the MDP or Switch Gear. The service main can be located outside of the building or with in the building footprint depending on structure layout.
2. Installing the CT's or Current transducers
   a) Split core CT's

   - Unbolt the screws holding the CT together
   - Remove jumper bar at CT
   - Wrap the open end of the CT around the power buss bar for "A" phase of power
   - Reinsert jumper bar and re-bolt CT together
   - Repeat this process for phases "B" and "C"
   - Label each set of wire leads for which phase they are attached
     - Black= Phase "A"
     - Red= Phase "B"
     - Blue= Phase "C"
   - Route CT Wires to meter and connect

   b) Rope CT's

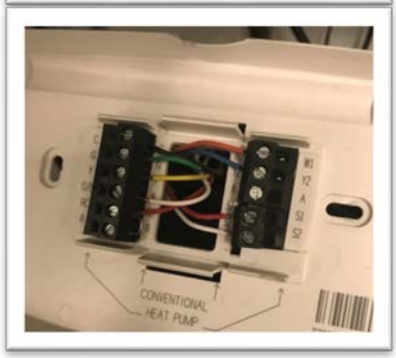
   - Un-fasten the connected CT
   - Wrap the CT around the power buss bar for "A" phase of power
   - Re-fasten CT together
   - Repeat this process for phases "B" and "C"
   - Label each set of wire leads for which phase they are attached
     - Black= Phase "A"
     - Red= Phase "B"
     - Blue= Phase "C"
   - Connect 24vdc for the DC terminals of the lighting panel to each Rope CT. This can be daisy chained between the CT's
   - Route CT Wires to meter and connect
3. Connecting CT's to Meter
   - At the meter. Connect the white wire of CT "A" to terminal lug "A" marked with a white dot
   - Connect the black wire of CT "A" to terminal lug "A" marked with a black dot
   - Follow the same Steps for CT's "B" and "C"
4. Installing and powering the meter
   - Once the meter is mounted with-in the electrical panel, connect three phase power to the meter from open or unused breaker
     - Green to ground
     - White to Neutral

- Black to Phase “A”
- Red to Phase “B”
- Blue to Phase “C”



5. Communication
   - From the webserver or lighting panel run a 3-conductor wire (recommend a wire that has Black, Red, and Ground or Shield) to the power meter
   - Connect the Red wire to “B+”
   - Connect the Black wire to “A-”
   - Connect ground wire to “C”
   - Turn power on to the meter
6. Testing
   - Each Status light should blink green
   - If- solid green= no connection
   - If flashing Red = Ct flipped in wrong direction, this can be reversed by switching the white and black wires at the meter
   - Once all status lights are blinking green your good to go

Thermostats



1. Identify wires in original thermostat
   - Remove cover plate of thermostat
   - Note connections by taking a picture
   - Identify 24vac power by testing wires connected to terminal Rc/Rh
   - Identify Common by testing wire connected to terminal X, C, or Rx

Note: if thermostat is battery powered there may not have a ground wire present at the thermostat. If this is the case, a new wire must be run from HVAC unit to the thermostat.

2. Connecting SBE Thermostat
   - Remove wires from old thermostat connections
   - Reattach to wires to new thermostat
     - G= Fan
     - RC/RH= 24v power
     - Y1= Cooling stage 1
     - Y2= Cooling Stage 2
     - W1= Heating Stage 1
     - W2=Heating Stage 2
     - C= common
     - RS1/RS1= Remote room temperature sensor
     - RS2/RS2= Discharge temperature sensor
     - Reattach face plate to power thermostat
3. Configuration of thermostats
   a) Set time
      - Press MENU
      - Set the time and date
      - Press done when complete
   b) Change schedules to “N”
      - From the MENU screen press and hold the two center buttons at the bottom of the screen to access the configuration menu
      - Press select the system settings in the configuration menu
      - Down arrow to Sched Enable and change to “N”
      - Press done after change
   c) Change sensors to out
      - Down arrow to the Remote Sensors Tab
      - Press Select
      - Down arrow to RS2 Location
      - Change to “out”
      - Press done after changes
   d) Set cooling and heating stages
      - Scroll to Mechanical Settings tab
      - Press select.

- Down arrow to 2nd Stage heat. Change to “y” (Always set this)
- Down arrow to 2nd Stage Cool. Change to “y” (Always set this)
- Press done when completed

e) Disable Filter Status
- From the MENU screen arrow, down to user settings and press select.
- Down arrow to Filter Service and press select.
- Press – until it says “Service Interval Disabled”
- Press done when completed

f) Return to home screen
- Press done several times unit screen returns home page

g) Calibrate room/discharge sensors
- Press menu and scroll to user settings
- Press select.
- Down arrow to sensor calibration
- Adjust room sensors and discharge sensors based on readings from laser temperature gun.
- Press done until you return to home screen.

Food Safety

1. Mounting the Receiver
    - Find a location near the kitchen or were the Sensors will be installed
    - Using the supplied bracket install on wall (antenna pointed down)
    - Plug receiver into power source
    - Connect Modbus cable to Web Server

2. Wireless Temperature Sensors
    - Create a label for each Sensor to be placed and apply to the front of the sensor
    - Record 5-digit ID from back of Sensor
    - Apply two-sided sticky tape to back of Sensor (recommended 3M exterior adhesive)
    - Clean area where sensor will be placed toughly
    - Attach sensor to area
    - Take picture of where sensor is located for future reference for that location

Connecting to webserver

- Note the MAC address on the label located on the side of the Web server
- Connect an Ethernet cable from your laptop to your Ethernet switch
- Connect an Ethernet cable from the webserver and Cell router or Ethernet switch, this should already be determined by client IT
- Connect laptop to same LAN network via Ethernet switch
- Send Web Server MAC to the SBE Deployment Manager to configure

Note: DM will guide you on when to start next steps, preferred connection of webserver early in install process to allow DM to confirm communication with webserver and ability to name devices in webpages

Commissioning Devices to system

1. Accessing the webserver from laptop
    - Open web browser
    - Input IP address given to you by your DM
    - Enter, this should open the internal Webpages for commissioning

2. Adding a device
    - Open the device tab
    - Open I/O Control (this is your lighting panel)
    - Scroll to bottom of page and add 21 in the add device tab
    - Select add device
    - Repeat this process for the rest of the Modbus devices using the Modbus address list below
        - I/O (lighting panel): **21**
        - Wattnode (Power Meter): **50**
        - Freezer controls- Cooler: **30**
        - Freezer Controls- Freezer: **31**
        - Remote Temps (Wireless receiver): **1**

Note: Once device is commissioned, check status of device. Tx: should rise in value while Err: stays static, if this is not the case then there is a wiring issue between the devices and the Web Server

Adding Thermostats

1. Adding thermostats to ZigBee network
    - At thermostat, press menu
    - Press and hold the 2 center buttons 2-3 seconds until second set of menus appear
    - Using the down arrow, scroll down to “Zigbee Install”, press select
    - When prompted “Add Zigbee Thermostat” select YES
    - Select done to return to first menu
    - Scroll down to Zigbee network and open. This will tell you if the thermostat was commission to the Zigbee channel
    - Refresh internal Webserver pages and open Zigbee tab. You should see the values for the thermostat you added

Checkout

- Complete all information requested from the checkout application link that is provided at the beginning of this manual.

Optional Photocell: This would be for extra control of exterior lighting

1. Mounting: Mount photocell on top ob building facing north
2. Connections: Run Low volt three conductor wire from LCP to photocell location.
3. Connect wires at photocell
    - Black= Power to (line) photocell
    - Red= Switch leg (load) from photocell
    - White= Netural
4. Connect wires at LCP from Pigtail
    - Black= Power to (line) photocell
    - Red= Switch leg (load) from photocell
    - White= Netural