Q.5.62
June 2019

KE2 Edge Manager (KE2-EM35)

Overview, Installation, and Setup Instructions V1.21 pn 21634

Contents:

Connecting up to 35 KE2 Therm controllers and sensors in one view, and letting you access and control each individual device.

KE2 Therm's Edge Manager - 35 is the perfect addition to your Refrigeration Network.

When the KE2-EM35 is connected to the same network as KE2 Therm devices, it immediately and automatically scans and finds all KE2 Therm controllers – Ethernet and Serial (Modbus)*, or KE2 Wireless Sensors.

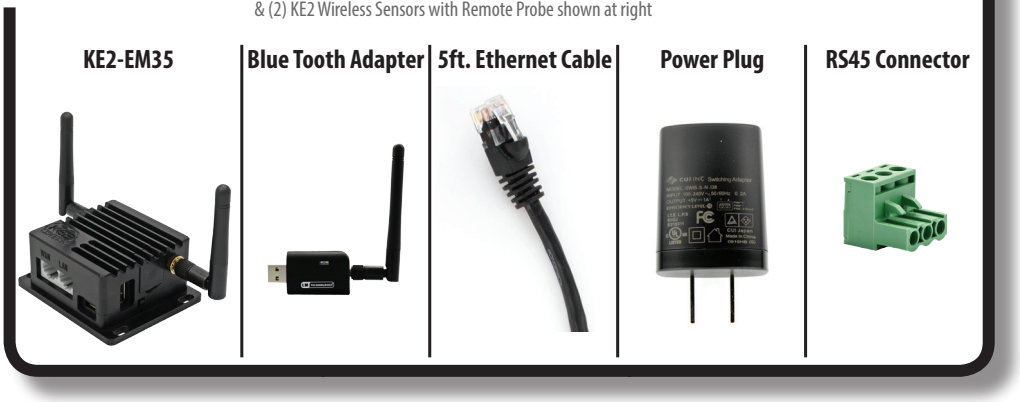
- Display a Local Area Dashboard showing controllers connected to the customer's network
- Connect controllers to KE2 SmartAccess customer portal without requiring controller upgrades
- Send e-mail Alarms to multiple e-mail recipients
- View Serial (Modbus) devices in a webpage, make changes to setpoints, and receive alerts via e-mail or text message
- Local data logging with option for Advanced data logging to MQTT server, SQL server or Amazon services
- Wirelessly tether to the local network (Wirelessly connect a controller to existing Wi-Fi)
- BACnet Integration
- Statically assign IP addresses to both WAN and LAN ports

The KE2-EM35 allows customers to locally view all of their controllers/sensors in a single view, without a recurring fee. Additionally, enables customers to access their controllers over the Internet, by functioning as a conduit to KE2 SmartAccess (available for a nominal monthly charge.)

** Serial (Modbus) devices must be enabled, see Page 8.*

KE2-EM35

Kit pn 21634 - includes the KE2-EM35 & Accessories shown below
Kit pn 21660 - includes the KE2-EM35 & Accessories shown below, plus (3) KE2 Wireless Sensors pn 21632, & (2) KE2 Wireless Sensors with Remote Probe shown at right



Wireless Sensors

(Sold separately, in 10-packs or included in KE2-EM35 Kit pn 21660)

KE2 Wireless Sensor

pn 21632 - Individual Sensor
pn 21687 - 10-pack of Sensors

KE2 Wireless Sensor w. Remote Probe

pn 21633 - Individual Sensor
pn 21688 - 10-Pack of Sensors

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Options for Connecting to the KE2-EM35:

The diagrams on the following pages depict some of the ways to connect with the KE2-EM35. Please review the Option summaries below to help choose the best setup for your needs. KE2 Wireless Sensors can be used with any of the options described above. A sample illustration is shown on page 6.

Option 1 :
Serial (Modbus) controllers only - NO Internet

Basic Process:
Daisy chain powered controllers to EM35 adapter. Assign unique addresses. Power to the KE2-EM35. No Ethernet connections.

Features/Access:
- Access to controllers locally from KE2-EM.
- Connect via wireless or LAN port to see connected controllers on Dashboard.
- No alerting
- No KE2 SmartAccess.

Option 2:
Serial (Modbus) controllers only - WITH Internet

Basic Process:
Daisy chain powered controllers to KE2-EM35 adapter. Assign unique addresses. Power to the KE2-EM35. ***Internet provided by connecting WAN port to customer network or tethering to existing in house Wi-Fi.***

Features/Access:
- Access to controllers locally from KE2-EM35.
- Connect via wireless or LAN port to see connected controllers on Dashboard.
- Enable WAN access to navigate to the KE2-EM35 from local network.
- Alerting and publish to KE2 SmartAccess.
- Using the KE2-EM35, Serial (Modbus) controllers can now be added to BAS via BACnet IP.

Option 3:
Factory 10.10.x.x / DHCP controllers on LAN - NO Internet.

Basic Process:
One controller, or multiple, connected to a switch, then connected to LAN port.

Features/Access:
- Access to controllers locally from KE2-EM35.
- Connect via wireless or plugged into shared switch with connected controllers to see them on Dashboard.
- No alerting
- No KE2 SmartAccess.

Option 4:
Read Factory Assigned 10.10.x.x / DHCP on LAN - WITH Internet

Basic Process:
One controller, or multiple, connected to a switch, then connected to LAN port. ***Internet provided by connecting WAN port to customer network or tethering to existing in house Wi-Fi.***

Features/Access.
- Access to controllers locally from the KE2-EM35.
- Connect via wireless or LAN port to see Dashboard of connected controllers.
- Enable WAN access to navigate to the KE2-EM from local network.
- Alerting and publish to KE2 SmartAccess.
- Using the EM35 IP based controllers can now be added to BAS via BACnet IP with the exception of OEM Compressor Sequencer and the KE2 Controlled Environment.

Option 5:
Controllers connected and addressed on the customer network - WITH Internet

Basic Process:
WAN port of the KE2-EM35 is connected to the same network or tethered to existing in-house Wi-Fi. This should give the KE2-EM35 Internet access.

Features/Access.
- Controllers exist on the customer network and can be accessed individually from any network connected devices.
- Access to controllers locally from the KE2-EM35.
- Connect via wireless or LAN port to see Dashboard of connected controllers.
- Enable WAN access to navigate to the KE2-EM from local network.
- Alerting and publish to KE2 SmartAccess.
- Using the EM35 IP based controllers can now be added to BAS via BACnet IP with the exception of OEM Compressor Sequencer and the KE2 Controlled Environment.

Option 1 & Option 3 Combined :
Because neither connects to the Internet, they can be combined

Option 2, Option 4, & Option 5 Combined :
Because all three connect to the Internet, they can be combined

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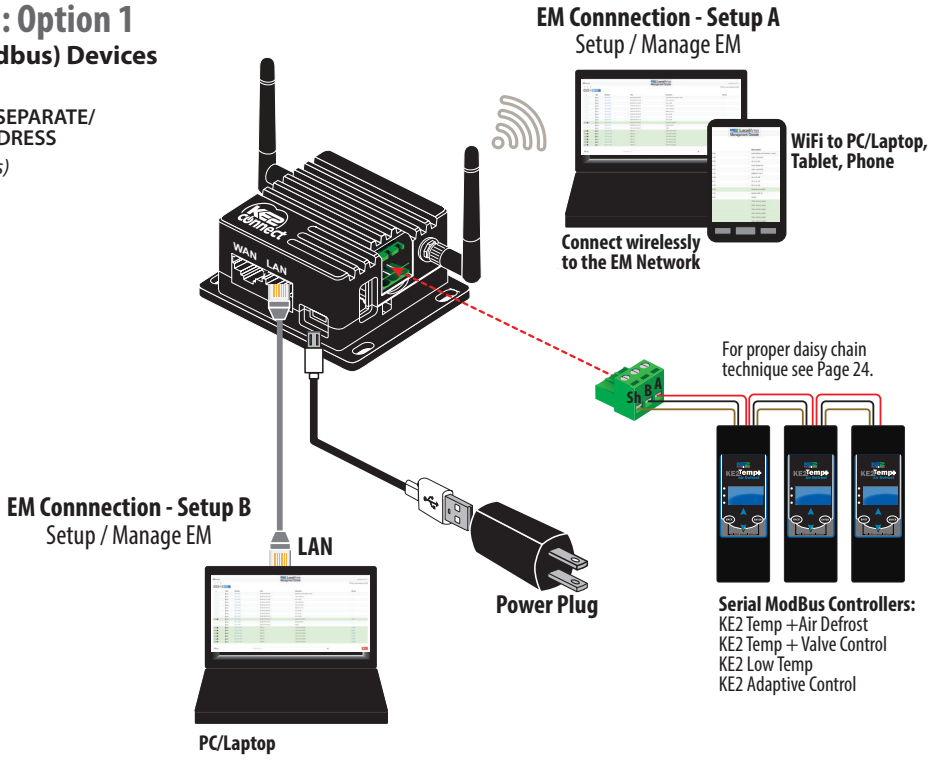
Installing the KE2-EM35: Option 1

Connecting Only Serial (Modbus) Devices - NO Internet

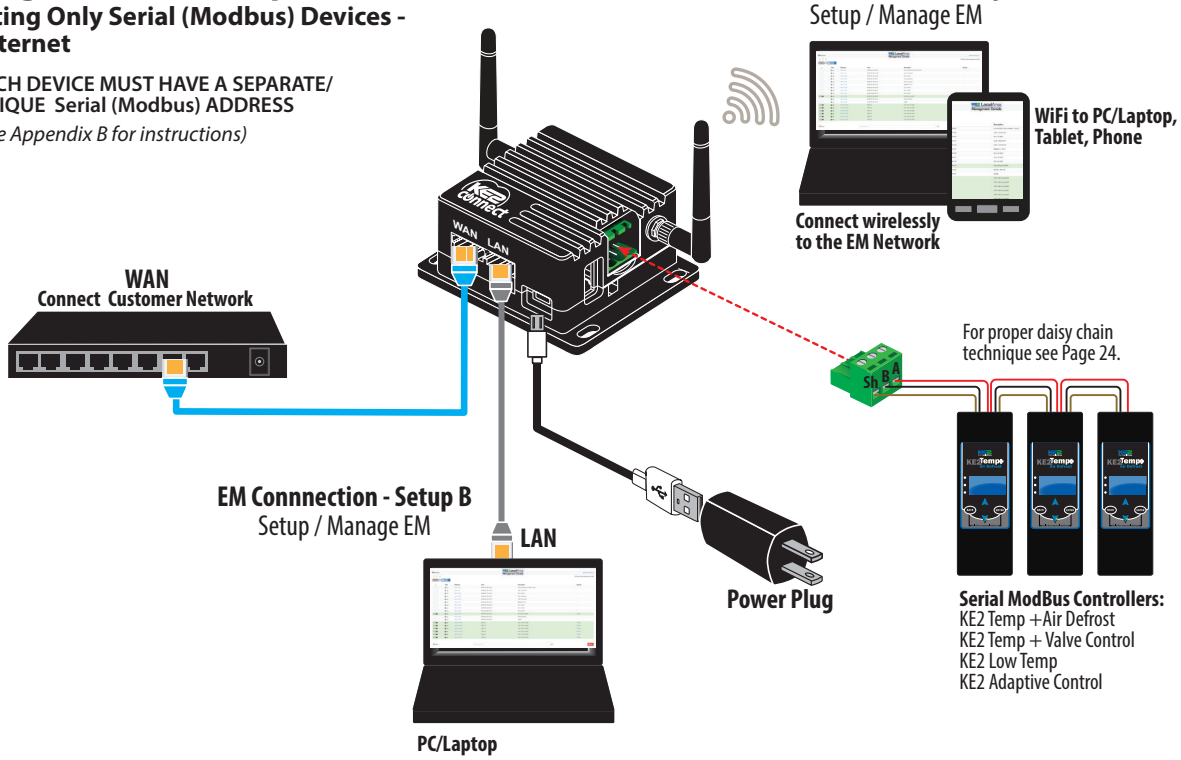
EACH DEVICE MUST HAVE A SEPARATE/ UNIQUE Serial (Modbus) ADDRESS
(See Appendix B for instructions)



Installing the KE2-EM35: Option 2

Connecting Only Serial (Modbus) Devices - WITH Internet

EACH DEVICE MUST HAVE A SEPARATE/ UNIQUE Serial (Modbus) ADDRESS
(See Appendix B for instructions)



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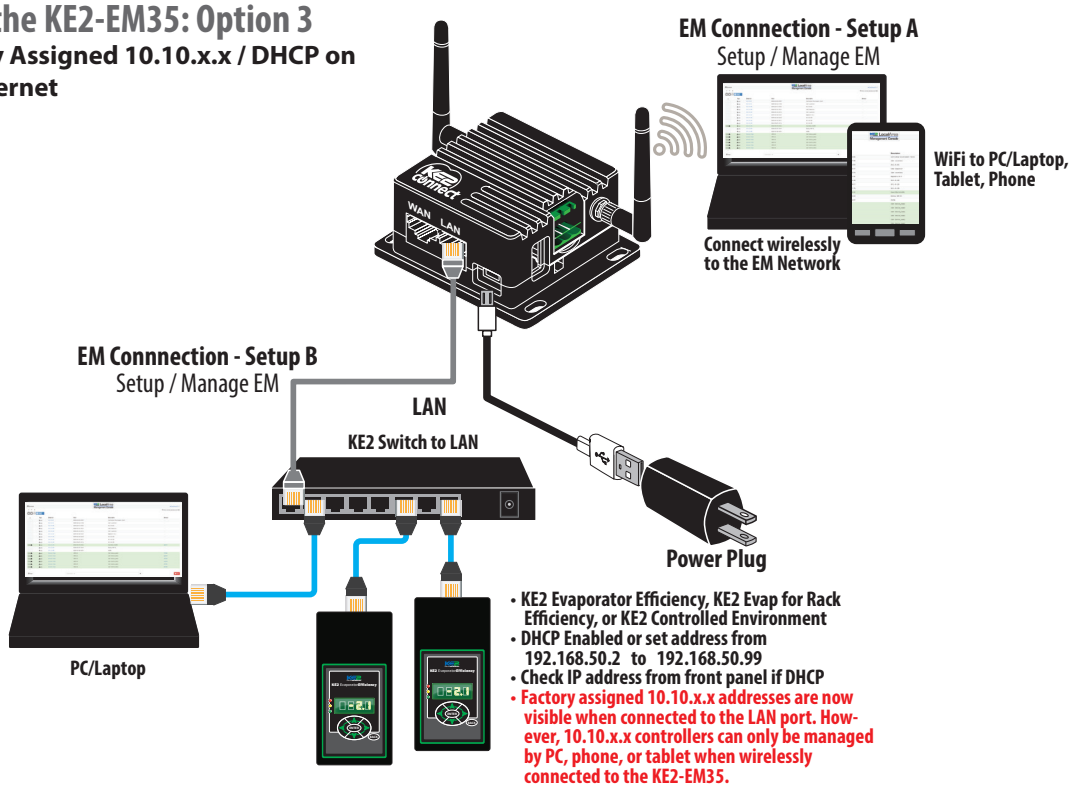
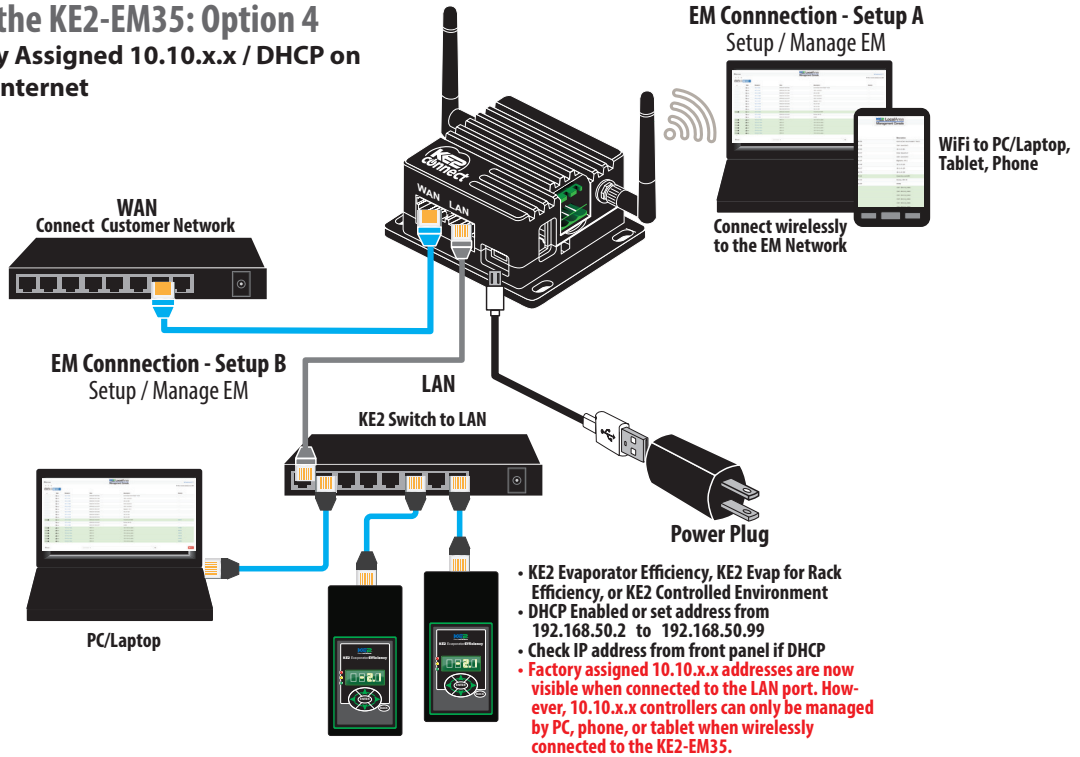
Installing the KE2-EM35: Option 3
Read Factory Assigned 10.10.x.x / DHCP on LAN - NO Internet



Installing the KE2-EM35: Option 4
Read Factory Assigned 10.10.x.x / DHCP on LAN - WITH Internet



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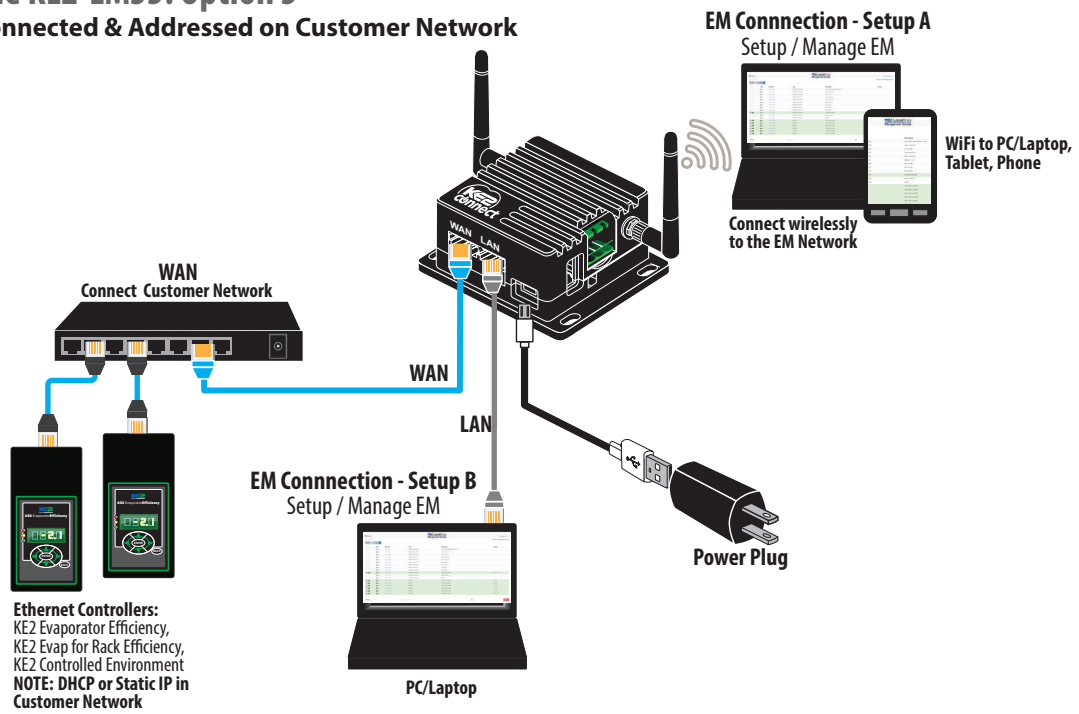
Installing the KE2-EM35: Option 5

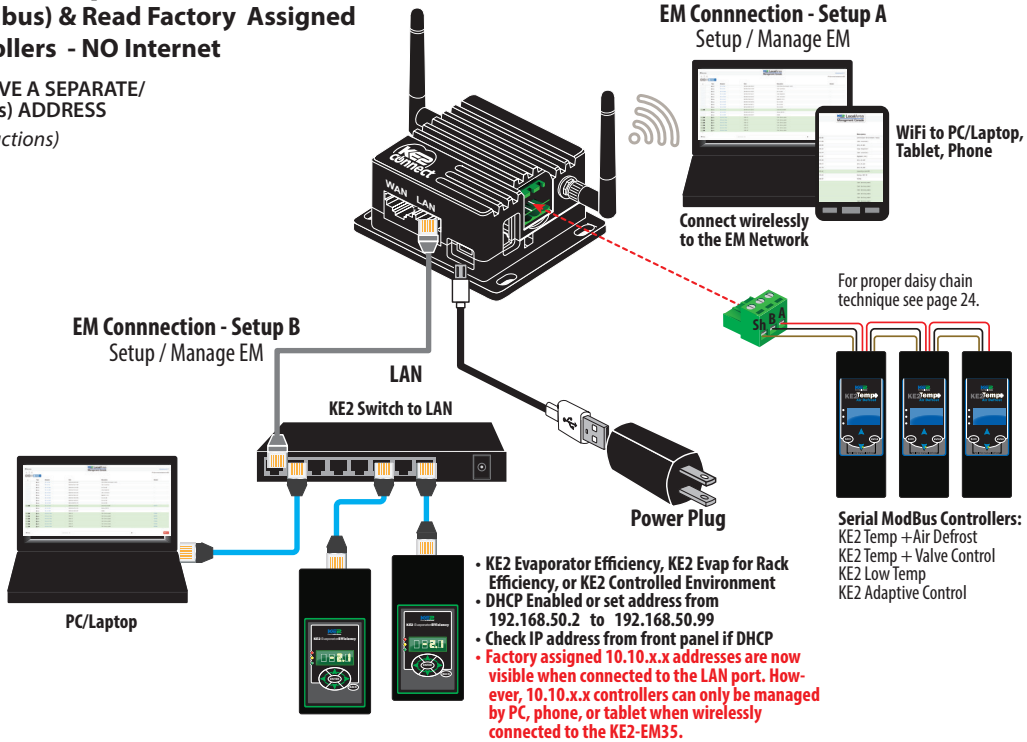
Controllers Connected & Addressed on Customer Network



Installing the KE2-EM35: Option 1 & 3 Combined

Connecting Serial (Modbus) & Read Factory Assigned 10.10.x.x / DHCP Controllers - NO Internet

EACH DEVICE MUST HAVE A SEPARATE/ UNIQUE Serial (Modbus) ADDRESS
(See Appendix B for instructions)



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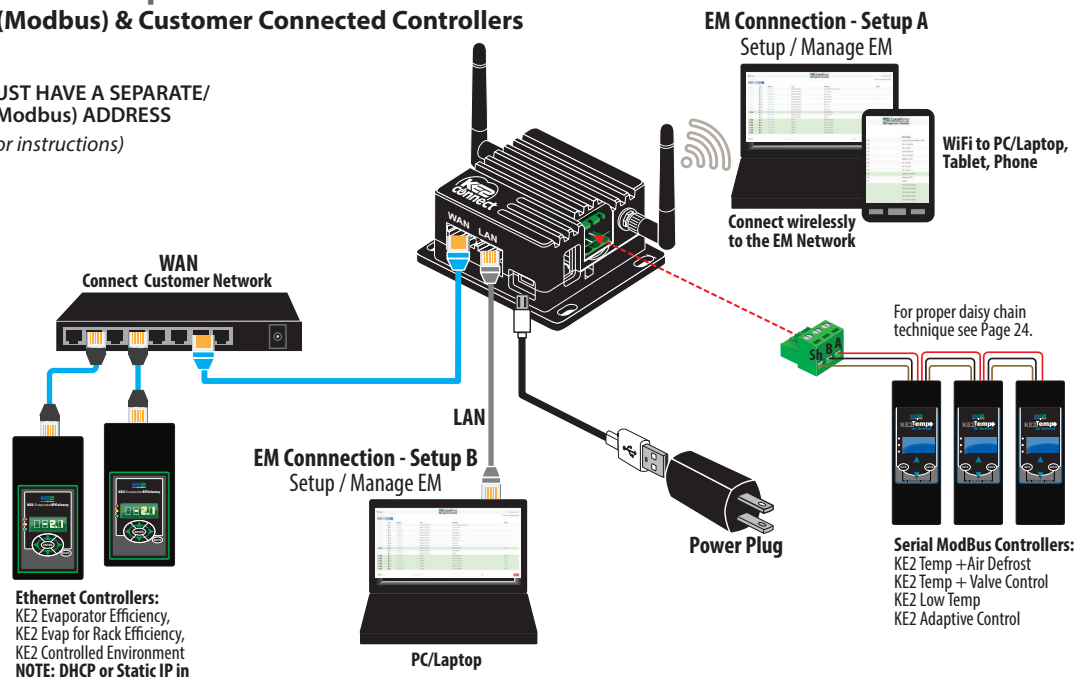
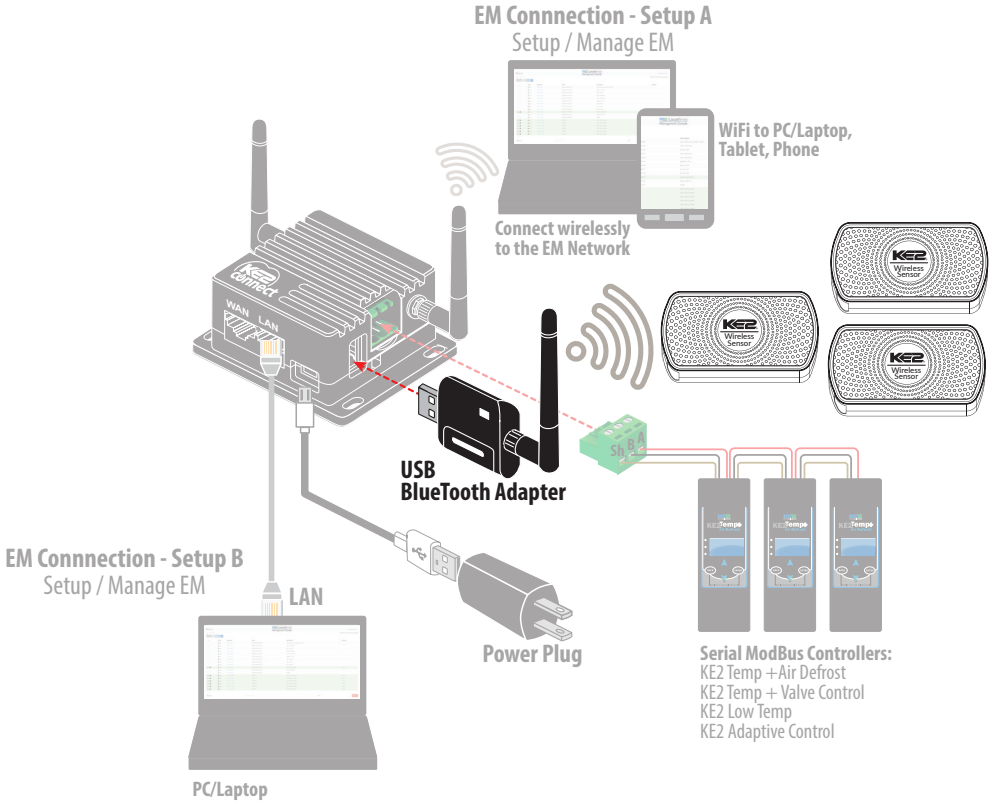
Installing the KE2-EM35: Option 2 & 4 & 5 Combined
Connecting Serial (Modbus) & Customer Connected Controllers

EACH DEVICE MUST HAVE A SEPARATE/ UNIQUE Serial (Modbus) ADDRESS
(See Appendix B for instructions)



Example Showing KE2 Wireless Sensors **(Available will all Options)**



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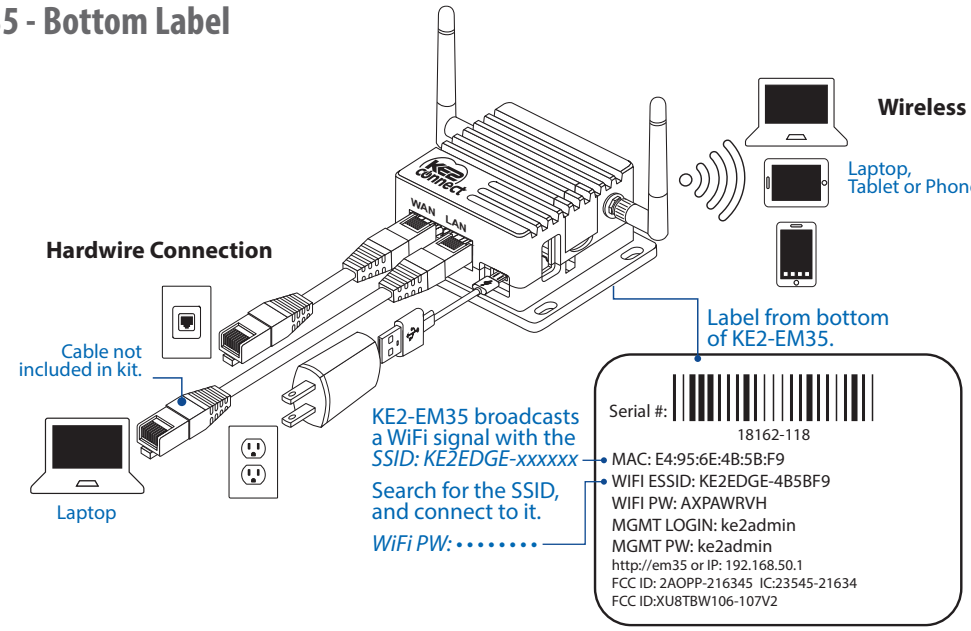
The KE2-EM35 - Bottom Label



Access the Local Dashboard:

To access the Local Dashboard, connect to the KE2-EM35 wireless SSID or cabled to the LAN.

1. Since it is an Ethernet device, speaking TCP/IP, users can connect to it by simply launching their preferred web browser, and typing in the address bar: **192.168.50.1** This brings the user to their local dashboard.

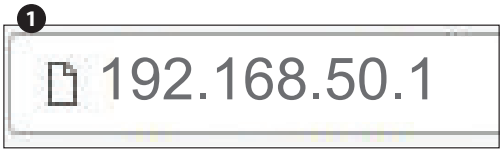
   For multiple KE2-EM35's on the same network enable WAN access and document the IP address or statically assign one.

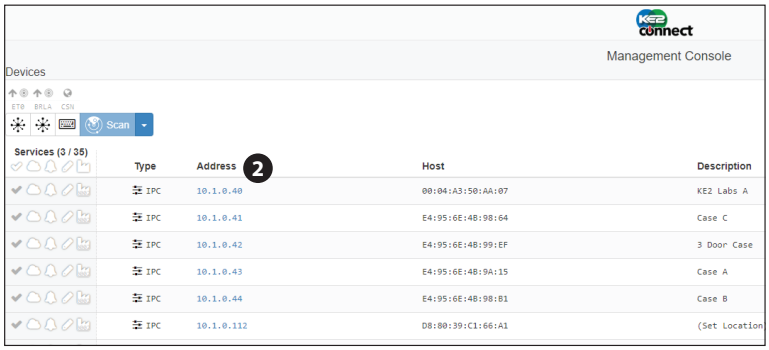
2. For controllers on the network, simply click on the IP address of the controller, to immediately connect to that controller's Home Page.

3. The user's web browser will launch a new tab, and open the controllers MasterView, giving immediate access to view the controller, as well as make changes.

4. To return to the dashboard, either click on the Dashboard tab, or close the current tab

   Similar to the controllers themselves, the KE2-EM35 can also be viewed online, using either port forwarding or through a Virtual Private Network (VPN).





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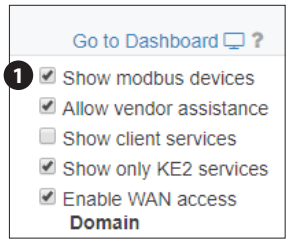
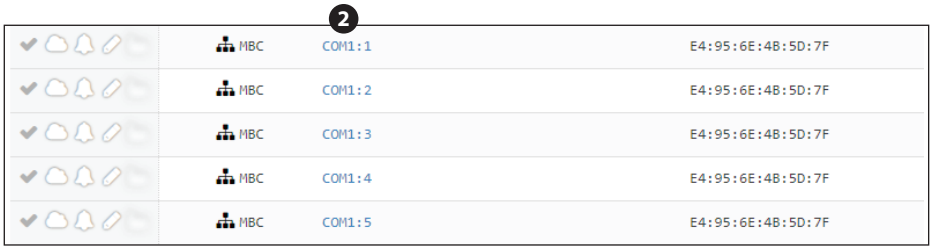
Serial (Modbus) Access:

1. Serial (Modbus) support is NOT enabled by default. When using Serial (Modbus) controllers please check the box to **Show modbus devices** found in the upper right of the Management Console page.



2. For Serial (Modbus) devices you can access the web page for the controller by clicking on **COM1:x** from either the **Management Console** or the **Dashboard** for published devices.

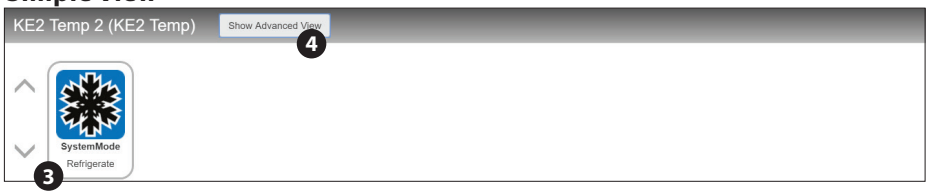


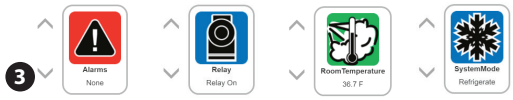
When you open the **COM1:x** you will see the web page in either **Simple** or **Advanced** View

Simple View

3. In Simple View you will see the System State as individual icons. This is the current state of the device.

4. To access Advanced View click on the **Show Advanced View.**





Advanced View

5. Click on the **?** in any of the set-point areas to show the limits for those setpoints.
For example **Room Temperature**.

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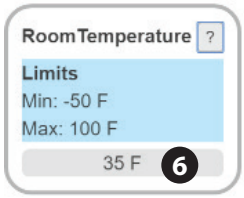
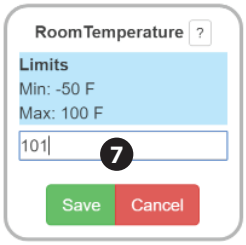
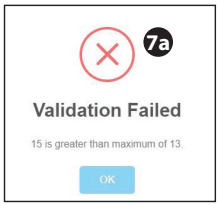
6. Click within the grey area to make changes to a setpoint.

7. Setting a setpoint outside of the limits

7a. will return a **"Validation failed"** message.



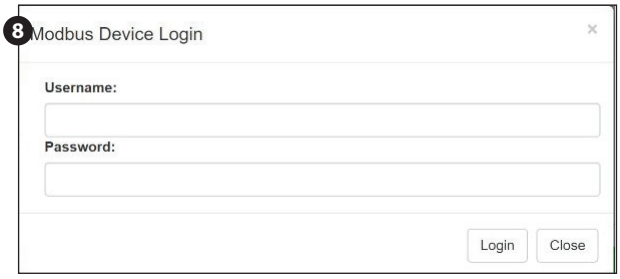




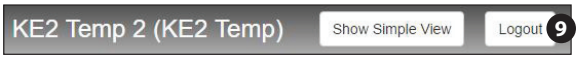
8. For any changes to Serial (Modbus) setpoints or device_name changes you will be prompted for the **Modbus Device Login.**

   Defaults are **ke2admin** & **ke2admin**, unless they were changed on the authentication screen.

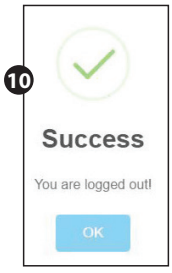
   NOTE: This is a one time login for your active session. The first setpoint that's changed prompts you for the password. Additional setpoint changes on that controller, or other Serial (Modbus) controller's, will not prompt for the password.



9. For security purposes, **Logout** when finished making all Serial (Modbus) changes.



10. The **Success** image will display to verify that you have successfully logged out.



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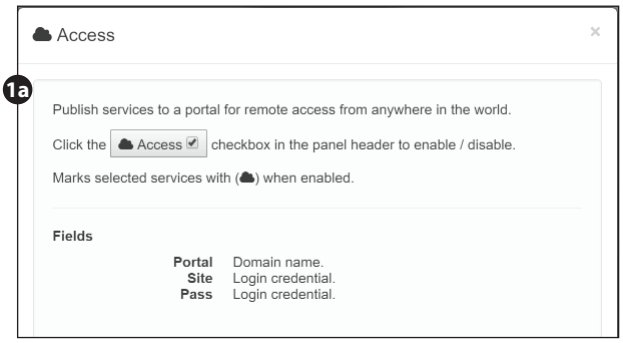
Remote Access Setup

KE2-EM35 provides the user with simple remote access to KE2 Therm's Smart Access portal, which provides quick and easy, real time access to your refrigeration systems 24/7. No port forwarding. No VPN. All the KE2-EM35 needs is a physical connection to the network router with a cat 5e/6 cable or wirelessly tethered.

KE2 Smart Access automatically connects to your personal web portal, providing a dashboard of the controllers you publish with the KE2-EM35.



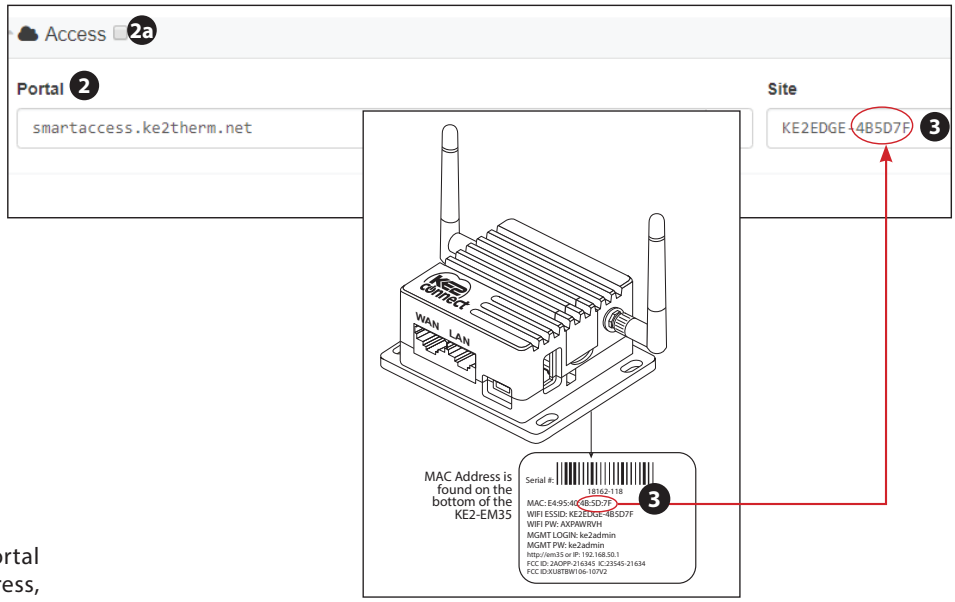
1 For questions pertaining to the **Access** feature, click on the **?** near the top right on the screen.

1a A description of the **Access** page features is displayed.

2 **Portal:** The portal is the internet address used to access the controllers remotely. This should NEVER be changed without directions from KE2 Therm. Changing it may result in loss of remote access.

2a Check the box to enable Access.

3 **Site:** The default Site for all EM35 devices **KE2EDGE-*and the last 6 digits of MAC Address***. KE2 Therm recommends changing this to something easily remembered by the person who will be accessing the controllers remotely.



4 **Pass:** The default Pass for the Portal on the KE2-EM35 is the Mac Address, separated by dashes, rather than colons.

For example if the KE2-EM35's Mac Address is E4:95:40:4B:5D:7F the Password is E4-95-40-4B-5D:7F

KE2 Therm recommends changing this as well.

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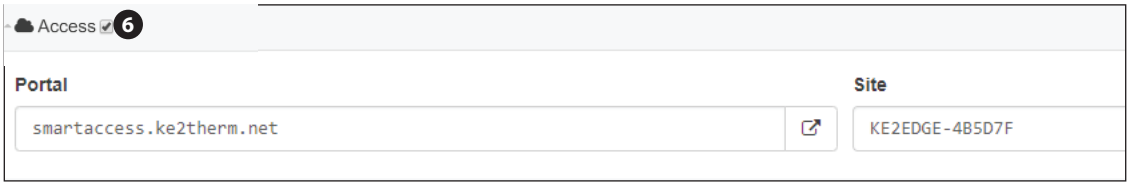
5 To publish controllers to KE2 Smart Access click the cloud to the left of the controller you want to publish.

6 Clicking on the arrow next to your portal name (or entering smartaccess.ke2therm.net in your web browser) will take you to the site.



Sample screenshot when accessing via cell phone.

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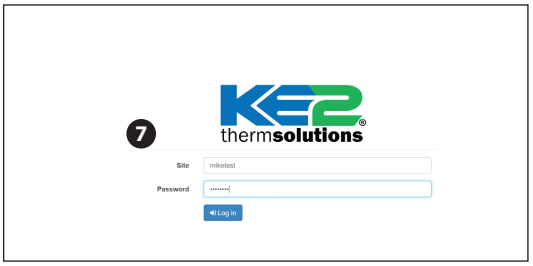
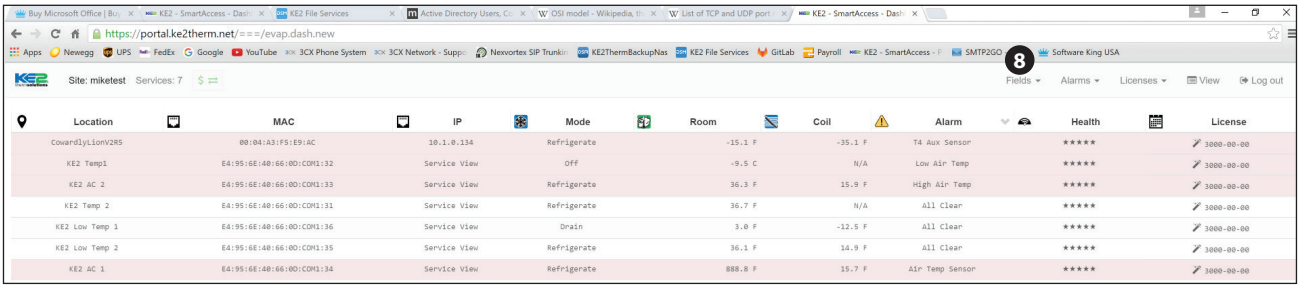
7 Use the site name and credentials you setup, (Steps 3 and 4 on page 10) to access your site.



8 Select the **Fields** drop down to customize the dashboard.

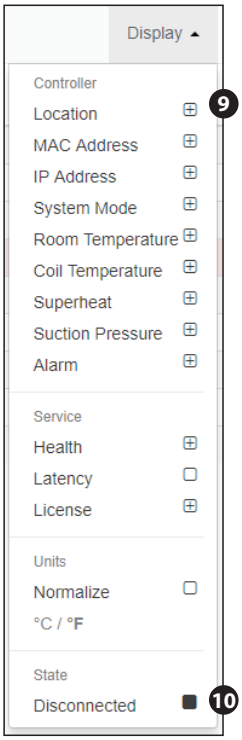
Upon sign in your site will look like this.



9 Show only the fields that are important to you, by clicking on the field name, and checking or un-checking the boxes.

10 Get alerts when your controller no longer checks in with KE2 SmartAccess server.

By checking the **Disconnected** box under State, an e-mail will be sent if the controller does not check in with our server for a matter of 10 minutes.



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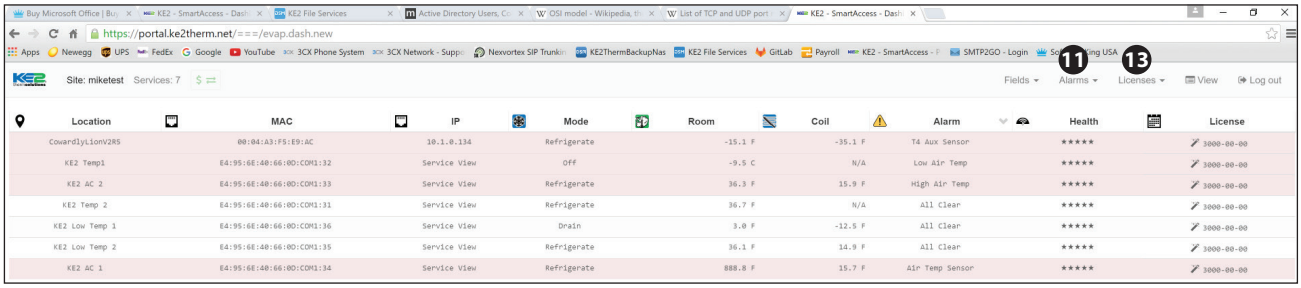


11 To setup **Alarms** notifications select the Alarms drop down

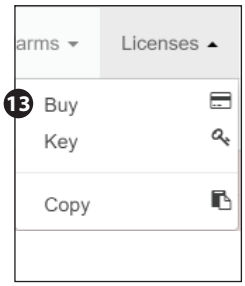
12 and enter the e-mail addresses.

When a controller / sensor goes into alarm, an e-mail notification is sent to everyone on the list.

NOTE: This is not required if Alarm notifications were already setup on the KE2-EM35.

13 Click the **Licenses** drop down to easily purchase KE2 Smart Access.

For additional information on KE2 Smart Access see bulletin Q.1.34. KE2 Smart Access Customizing and Setup.



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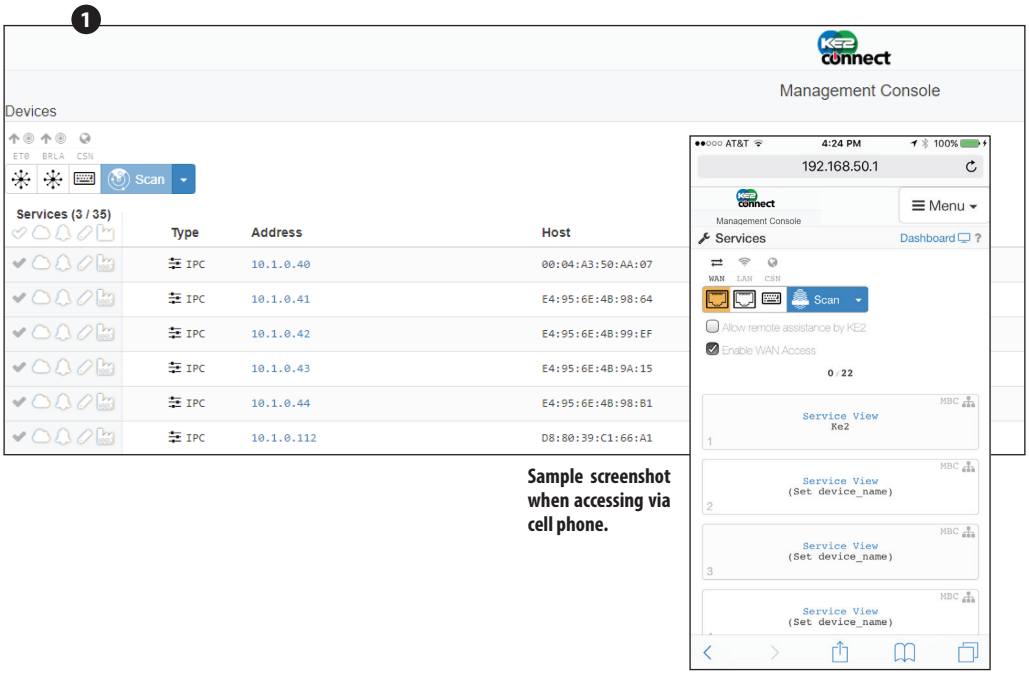
Manage E-mail Alerts:

Designed to simplify e-mail notifications, the KE2-EM35 provides:

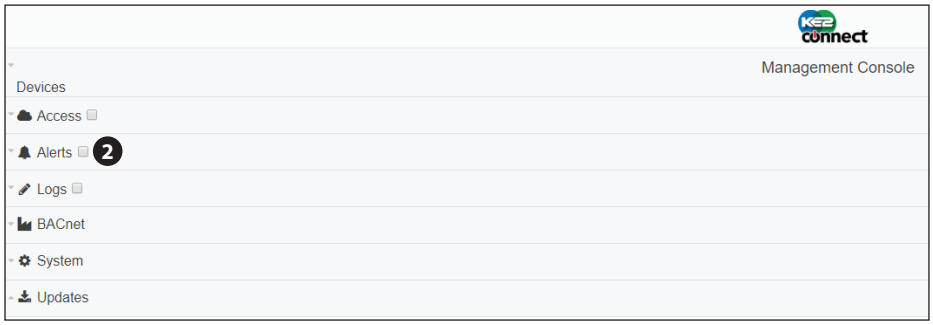
- Single-point to enter e-mail information, up to 35 controllers / wireless sensors
- Manage the e-mail addresses receiving alerts
- Set who the e-mail is from
- Elect to either use KE2 Therm's e-mail server, or a customer provided server

1 Navigate to the **Manage** screen.



Sample screenshot when accessing via cell phone.

2 To enable alerting, click the box next to **Alerts**



2a For questions pertaining to the Alerts, click on the **?** near the top right on the screen.

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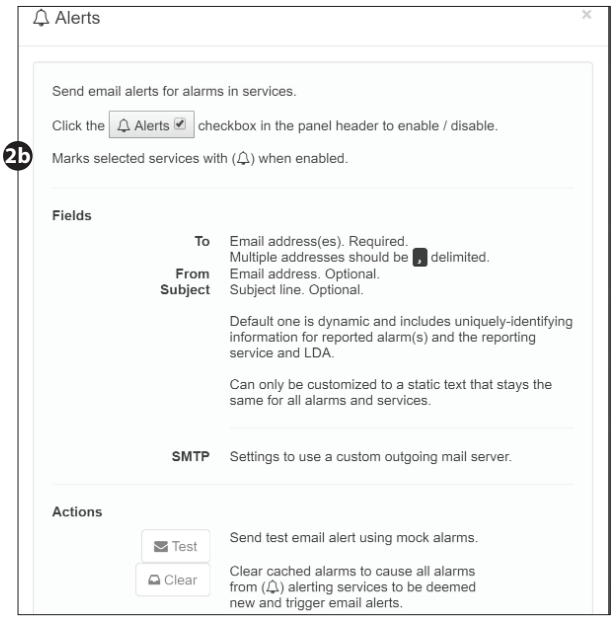
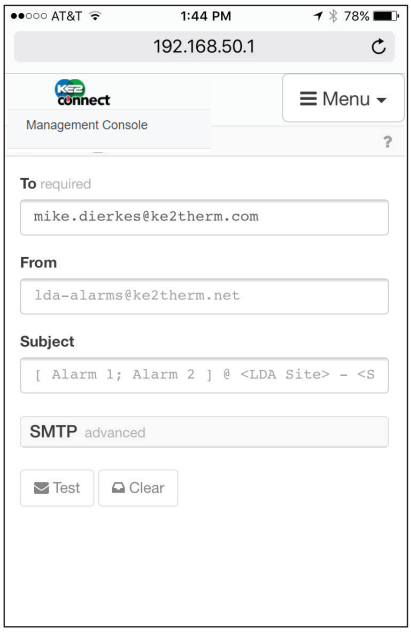
2b A description on the Alerts feature is displayed.



3 The field expands to enter an e-mail address as well as define the **From** e-mail and **Subject** line if desired.

Sample screenshot when accessing via cell phone.



3a To:
The e-mail addresses receiving the e-mail alerts should be entered into this field. Multiple addresses should be separated with a comma as shown.

3b From:
If the default sender creates confusion for the party (parties) receiving the e-mails, it can be changed to reflect the desired information.

4 **Please note:** Only selected controllers will send alerts. Click the bell to the left of the device you would like to receive e-mails from when in alarm state.

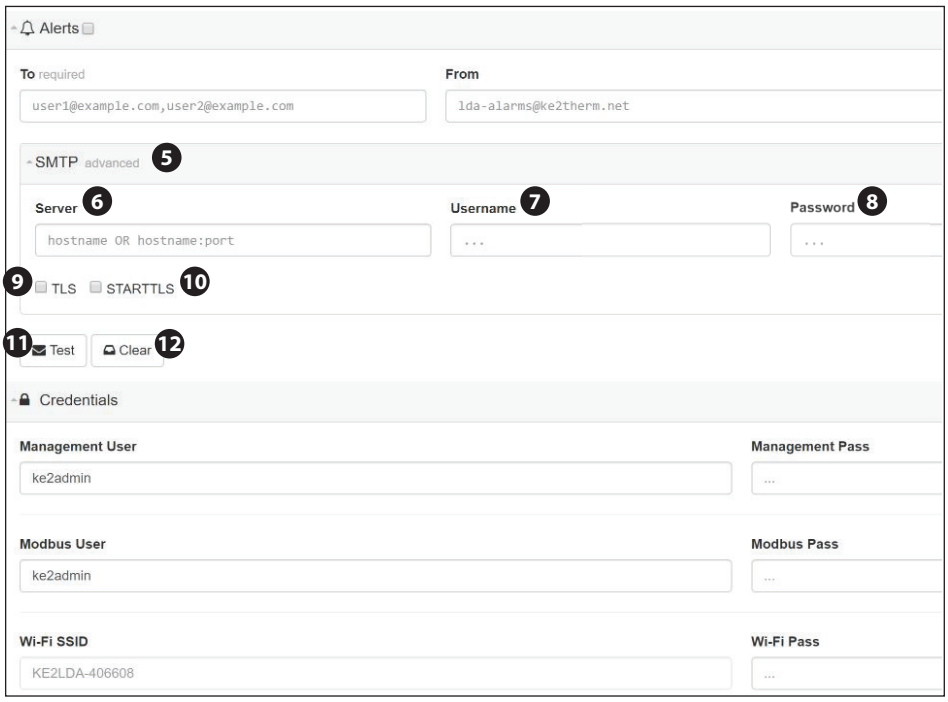
KE2 EdgeManager (KE2-EM35)

Overview, Installation, and Setup Instructions

5 When customers choose to use their own e-mail server as the e-mail relay, the **SMTP advanced** section should be expanded. It can be expanded by clicking anywhere on the gray bar.

Once expanded, the appropriate information should be entered from the customer supplied E-mail server.

ADVANCED: Consult your IT department for proper settings. KE2 Therm has no way of knowing your settings.



6 **Server: hostname or hostname:port**
The Host is the address of the e-mail server being used to relay the e-mail alarm. The Port defines the specific port used by the e-mail server when routing mail. This is TCP25 by default.

7 **Username:** Enter the username for the account being used for authentication to the e-mail server.

8 **Password:** The credentials for the Username being used for authentication.

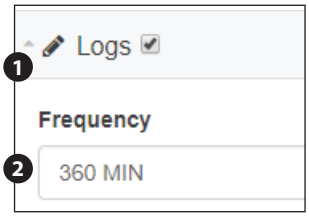
9 **TLS:** This option is selected when using secure e-mail.

10 **STARTTLS:** This option will upgrade insecure connections to SSL/TLS.

11 When the proper information has been entered, the e-mail service can be tested using the **Test** button.

12 Clears alarms on published controllers. Will re-send e-mails for controllers in alarm.

Data Logging



1 Check box to enable Logging

Frequency defaults to 360 minutes. This allows for 1 full year of logging for 35 devices

2 Frequency is NOT recommended to be set lower than 5 minutes. This setting will render 5 days of logs per device.

3 Each device is still limited to 2.8 MB of storage on the EM35. Click the pencil Icon to the left of the devices you would like to log.

4 Enabling fewer than 35 devices for logging does not increase the available space for logging.

EM35 Data Logging		Each device is limited to 2.8MB of memory on the EM35 3
Increment	Guaranteed	
6 Hours	1 year	Each device is "guaranteed" 1460 lines on .csv file.
3 hours	6 months	
1.5 hours	3 months	Once the 2.8 MB has been reached, oldest entries fall off to record new lines
1 hour	2 months	
30 minutes	1 month	
15 minutes	15 days	
10 minutes	10 days	
5 minutes	5 days	

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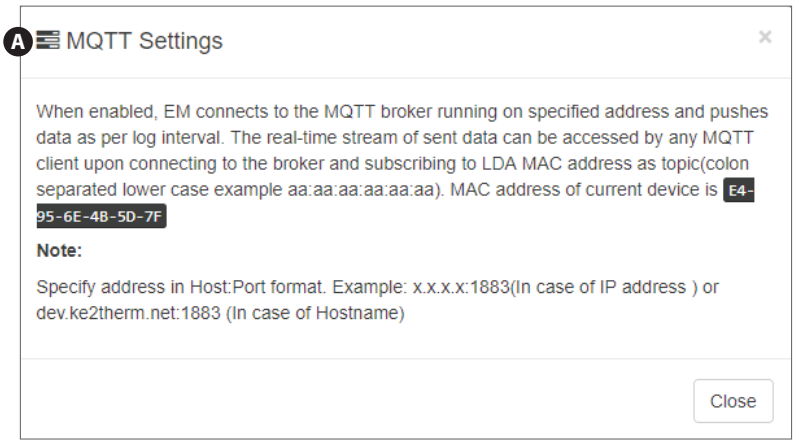
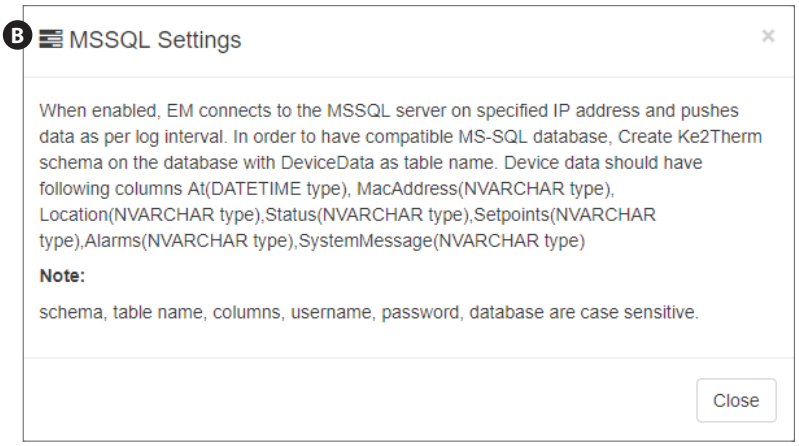
Overview, Installation, and Setup Instructions

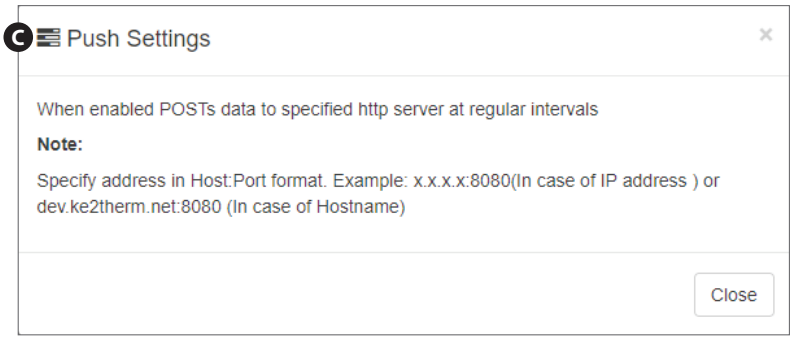
Advanced Logging

Logging to local servers or Amazon online account.

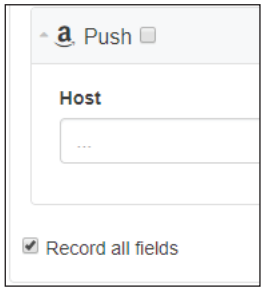
- Option A: MQTT Settings
- Option B: MSSQL
- Option C: Push Settings







- Record all available fields for controllers/ sensors to Advanced Logging Servers.



KE2 EdgeManager (KE2-EM35)
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BACnet Managing BACnet sub devices

■ Literature on using BACnet with the KE2-EM35 is found at the web address:

http://ke2therm.com/literature/literature-ke2-edge-managers/

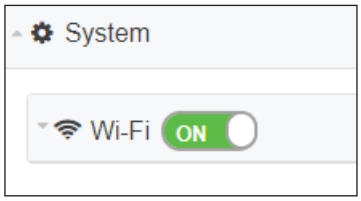
Or, connect to the literature using the QR code at right.

■ For BACnet Objects List, contact ***information@ke2therm.com***

Link to literature

System

- **Wi-Fi ON/OFF switch.** The KE2-EM35 doesn't have an external switch like the KE2-LDA. Turn Wi-Fi ON/OFF
- **Tether + AP and Tether options**
- **Process to Tether**
  - Tether + AP or Tether. What's the difference?
- **Tether + AP -** Recommended to wire to LAN, but it can be done wirelessly. Will complete the tether to Wi-Fi and present the EM's SSID to connect to in the future.
- **Tether Only -** Must be wired to the LAN to complete the Tether and give the KE2-EM35 a connection to the Internet. There will no longer be a Wi-Fi SSID to connect to. To manage the KE2-EM35 will require a hard wired connection to the LAN.



Tethering Option 1: Tethering + AP Mode

A Scan for available Wi-Fi profiles by clicking in the **Wi-Fi** box

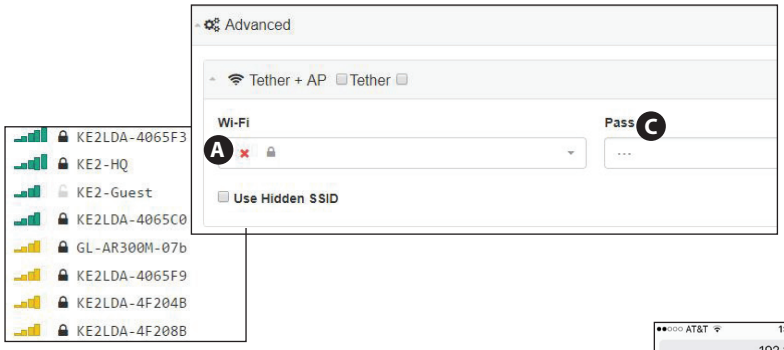
B Pick the appropriate Wi-Fi profile to connect.

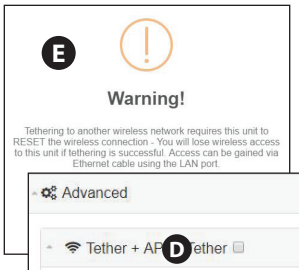
C Enter the password.

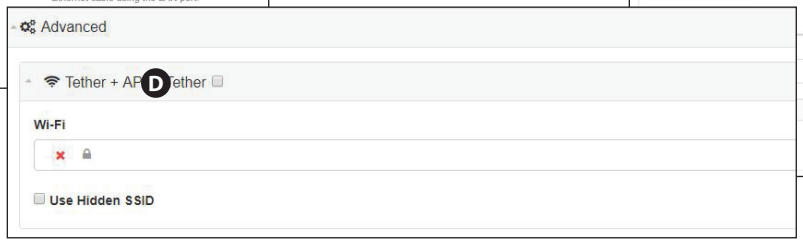
D Check the **Tether + AP** box.

E As the warning states, you could be disconnected from Wi-Fi during the scan.

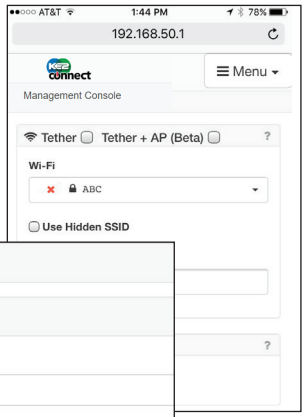
This will make the EM35 SSID, KE2EDGE-xxxxxx, available after the tethering process. It can take up to 30 seconds. This can be performed from a mobile device. May require manual reconnect to EM35 SSID.







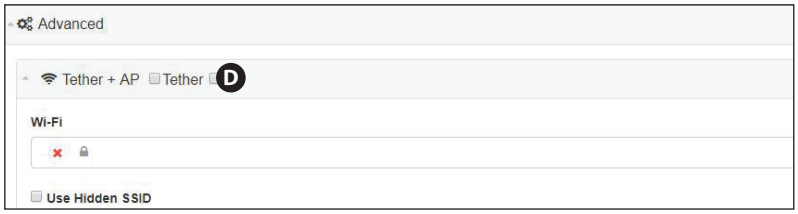
Sample screen when accessing via cell phone.



Tethering Option 2: Tethering to Available SSID

A to C Follow the steps from Option 1

D Check the **Tether** box.



Tethering Option 3: Tethering to Hidden SSID

A Check the box **Use Hidden SSID**

B Enter the SSID

C Enter the password.

D Then, check the box for **Tether + AP** or **Tether.**

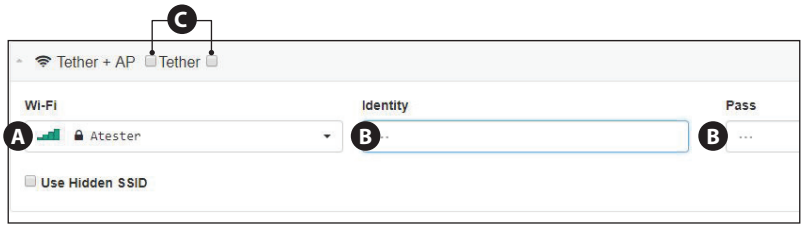
Tethering with 802.1x Authentication

A Click in the **Wi-Fi** section, and select the **SSID** that uses **802.1x Authentication**

B Enter **Identity** and **Password**.

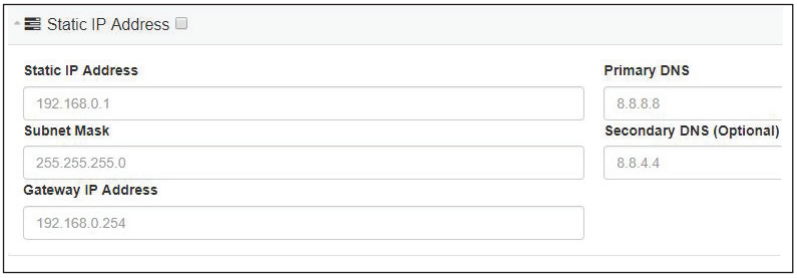
C Check the **Tether + AP**, or the **Tether** box to complete the connection.

(If using **Tether** only please wire into LAN)



Static WAN - Assign a static IP Address to the WAN Port

All fields must be keyed in if not designated as optional, anything displayed in a field is strictly a place holder.



1 Enter desired IP Address

2 Enter Subnet Mask

3 Enter Default Gateway

4 Enter Primary DNS

5 Check the box to statically assign IP address

Static LAN - Assign a static IP Address to the LAN Port

Similar to Static WAN All, fields must be keyed in if not designated as optional, anything displayed in a field is strictly a place holder.

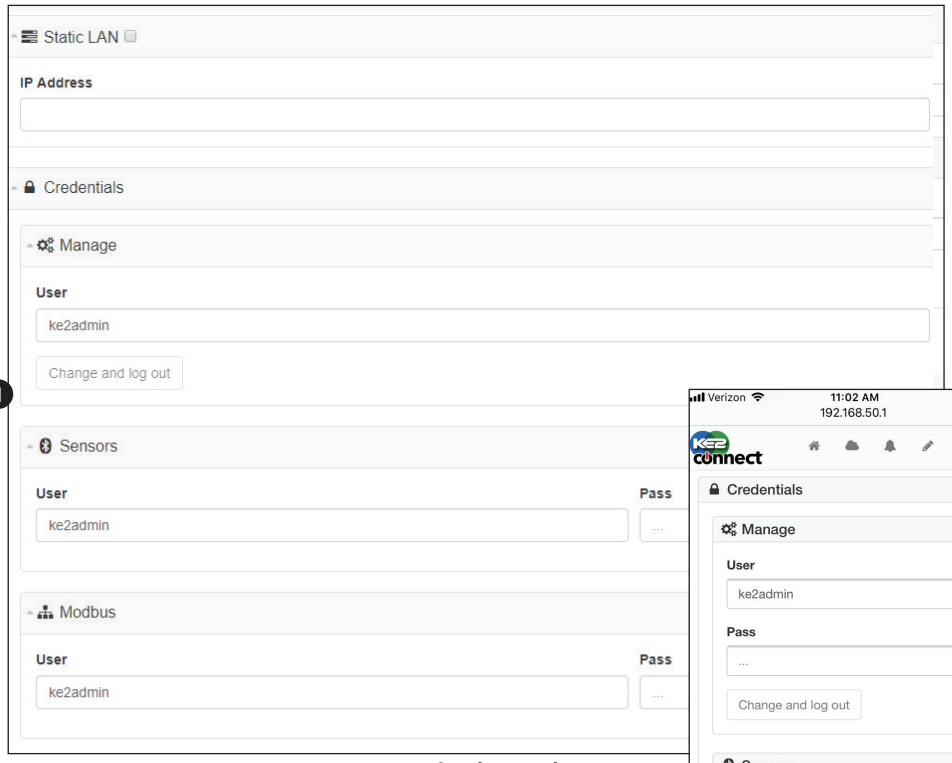
1 Enter desired IP Address

2 Enter Subnet Mask

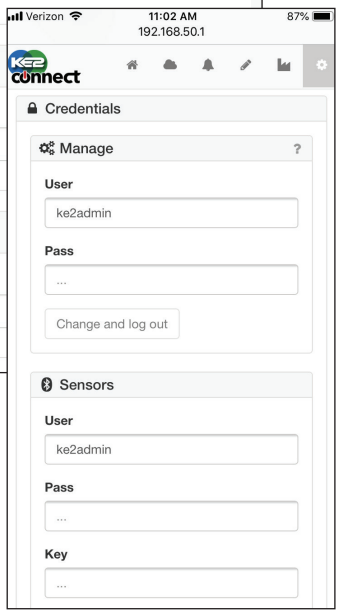
3 Check the box to statically assign IP address

KE2 EdgeManager (KE2-EM35)
Overview, Installation, and Setup Instructions

Credentials: for Manage, Sensors & Serial (Modbus)

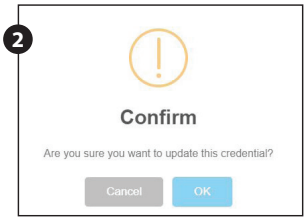


1 In the **Credentials** section, for user security purposes, the **Management User** name and **Management Password**, **Sensor User** name and **Sensor Password**, and the **Modbus User** name and **Modbus Password** for the KE2-EM35, can all be changed.

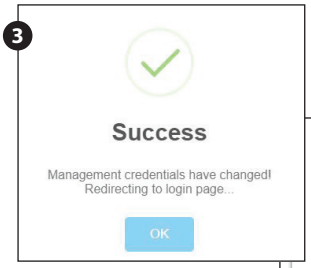


Sample screenshot when accessing via cell phone.

2 When changing the **Management User Credentials**, **Management User**, or **Management Password**, the changes are made independent of each other. You must re-authenticate, with the new credentials, after each change.



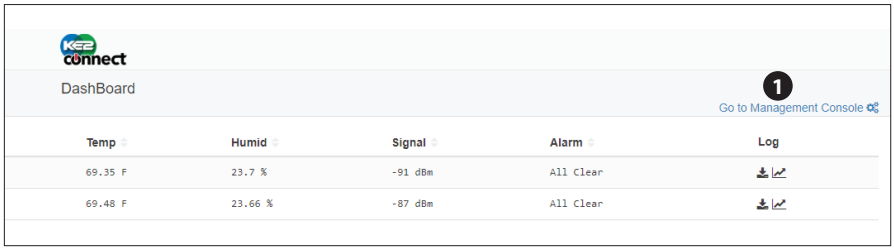
3 You will be prompted to confirm, then redirected to the Login page.

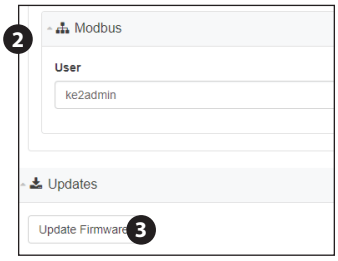


NOTE: If login credentials are misplaced, the only option is to hold the reset button, and reset the KE2-EM35 to factory settings, i.e. ke2admin for all User and Passwords. This will also reset the wireless credentials, to those listed on the back label of the KE2-EM35.

Field Update Process

1. From the dashboard click **Go to Management Console**. Use current login credentials.
2. This brings you to the Management Console.
3. Click **Update Firmware** button.

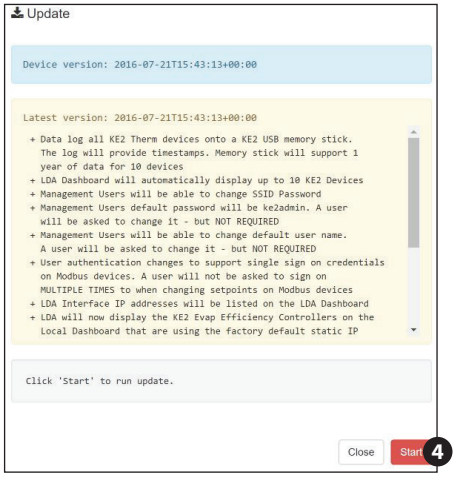


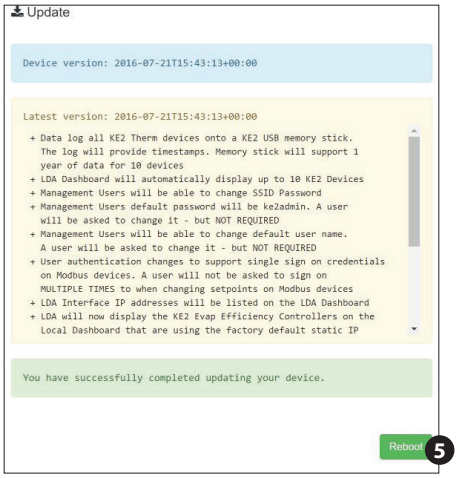


4. Click **Start**
5. Click **Reboot**.

   During the update and reboot process the LEDs will blink in sequence.

   IMPORTANT: Do not power cycle the KE2-EM35 during this process.



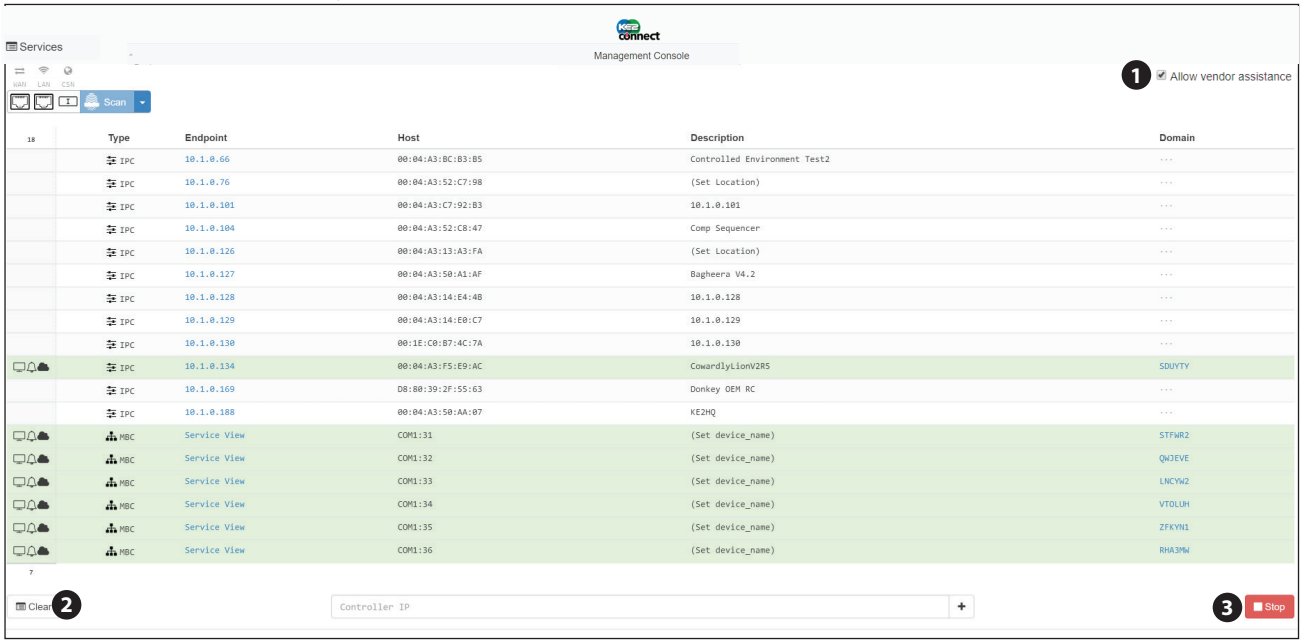


KE2 EdgeManager (KE2-EM35)

Overview, Installation, and Setup Instructions

Allowing Vendor Assist

1. It is often beneficial to allow KE2 Therm to remotely access the portal to help assist with any problems.



Clear and Stop Buttons

2. **Clear**
Clicking the **Clear** button will clear all unpublished devices and force a re-scan. This will refresh the list to show any newly connected or disconnected devices. This will give you an up to date view of connected devices without disrupting the published devices.

3. **Stop**
Clicking the **Stop** button will clear all devices and force a re-scan. You will need to republish your devices after clicking the Stop button. This would be beneficial if moving to a new network or new IP addressing scheme.

Sample screenshot when accessing via cell phone.

KE2 EdgeManager (KE2-EM35)
Overview, Installation, and Setup Instructions

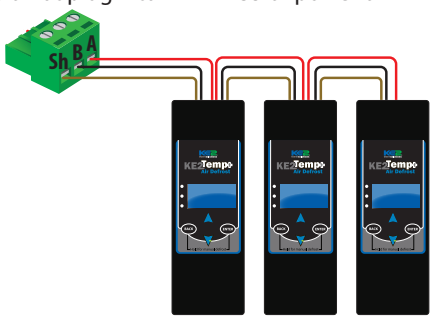
Appendix A
Serial (Modbus) Configuration -
First Installation of Serial (Modbus) Devices on KE2-EM35

RECOMMENDATIONS:
- Daisy chain the connection only.
- Maximum 1,000ft. total cable length.
- CAT-5/CAT-6 are the most cost effective solutions that meet Serial (Modbus) specifications. Use 24 gauge or better.

STEP 1- Daisy chain connections on controllers *(See Appendix B).*

STEP 2 - Finish wiring controllers to pluggable connector.

⚠ Do not plug into KE2-EM35 or power on KE2-EM35



Serial ModBus Controllers:

STEP 3 - Power on controllers.

STEP 4 - KE2 Adaptive Control & KE2 Low Temp
Change Serial (Modbus) address on each controller

⚠ Each controller's Serial (Modbus) address must be unique. Available addresses are 2-247.

- Press and hold the BACK button to access the Advanced menu.
- t5 is displayed

- Then, use the ▲ arrow until you see **Adr** (Address)

- Press ENTER and current address is displayed (default =1)

- Change the address by pressing the ▲ or ▼ arrow to change the value. Use the ENTER button to move to the next digit. Again change the value using the ▲ or ▼ arrow. Available addresses are 2 to 247.
- When address is set to the preferred value (Ex. 24), press and hold ENTER for 3 seconds to save the address.

Example

- The controller will return to the Adr screen when the setting is saved.

- The setting change can be verified by pressing the ENTER button.
- To exit, press the BACK button several times.

STEP 4 - KE2 Temp
Change Serial (Modbus) address on each controller

⚠ Each controller's Serial (Modbus) address must be unique. Available addresses are 2 to 247.

- Press and hold ENTER to access the Setpoints menu.
- t5 is displayed

- Then, use the ▼ arrow until you see **Adr** (Address)

- Press ENTER and the current address is displayed (default =1)
- Change the address by pressing the ▲ or ▼ arrow to change the value. Use the ENTER button to move to the next digit. Available addresses are 2 to 247.
- When address is set to the preferred value (ex. 123), press and hold ENTER for 3 seconds to save the address.

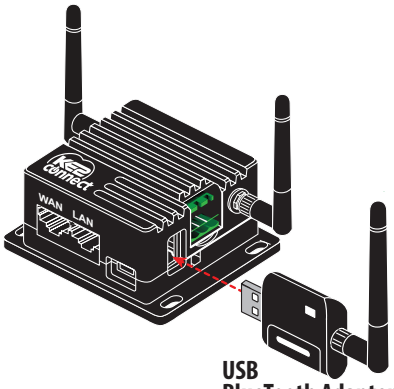
Example

- The controller will return to the **Adr** screen when the setting is saved.

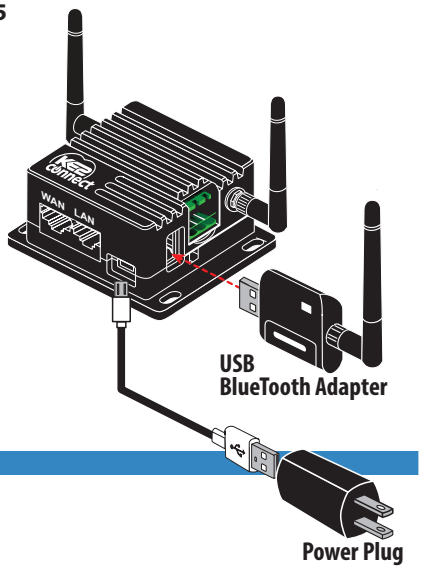
- The setting change can be verified by pressing the ENTER button.
- To exit, press the BACK button several times.

KE2 EdgeManager (KE2-EM35)
Overview, Installation, and Setup Instructions

STEP 5
Plug the USB adapter into the KE2-EM35

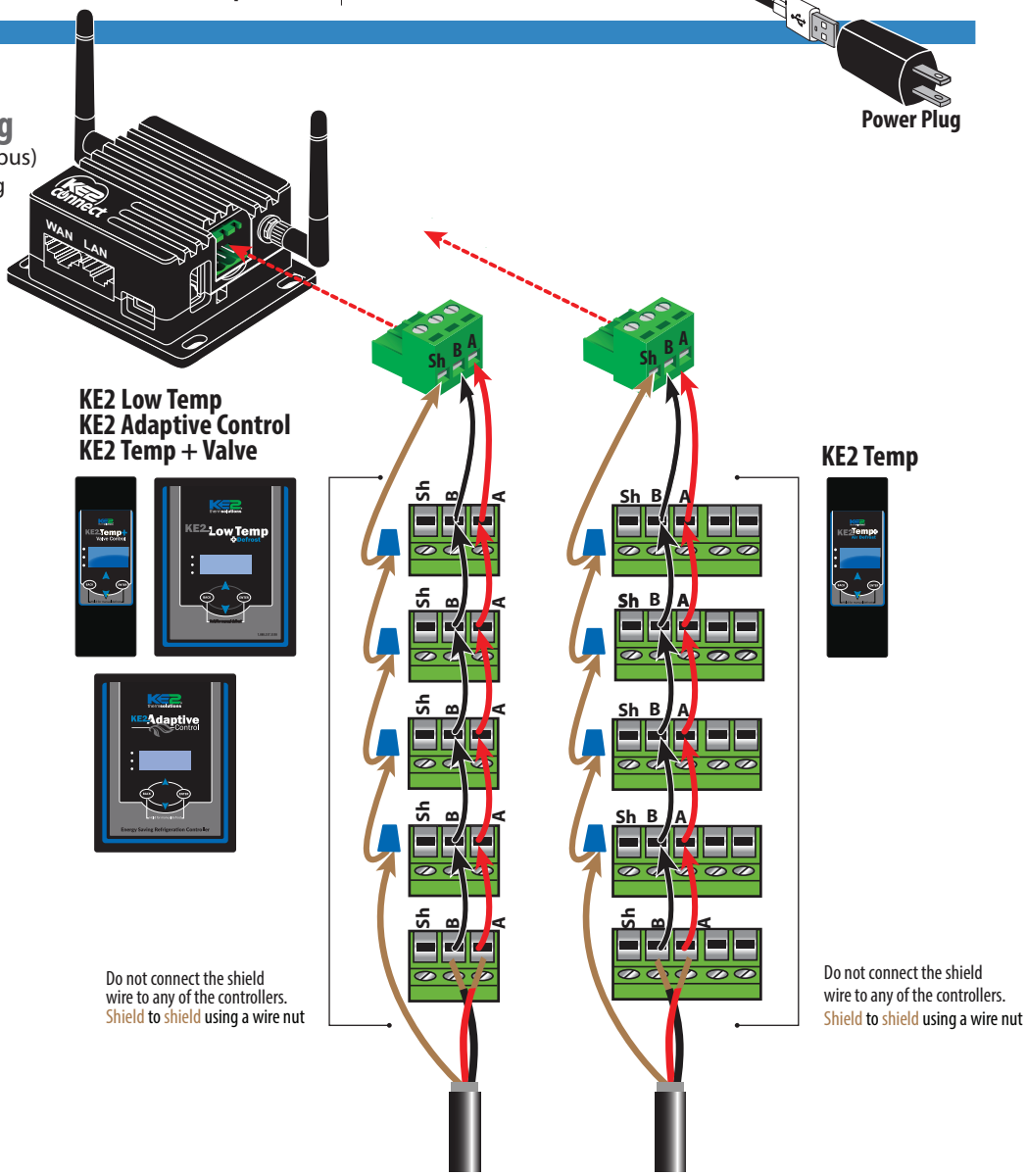


STEP 6
Power the KE2-EM35



Appendix B
Serial (Modbus) Wiring

When connecting Serial (Modbus) devices, wire the devices using the daisy chain method.



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