LEVITON

Energy Management Hub and 3-Phase Meter
EMX Data Acquisition System

Cat. No. A8810-41M/41R

Installation Guide

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WARNINGS AND CAUTIONS

WARNINGS:

- TO AVOID FIRE, SHOCK OR DEATH, turn off all power supplying equipment before working on or inside the equipment. Use a properly rated voltage sensing device to confirm power is off.
- RISK OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH. CAREFULLY READ AND FOLLOW INSTRUCTIONS:
- This equipment MUST be installed and serviced by qualified electrical personnel with the requisite knowledge, training and experience related to the installation and operation of this equipment.
- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- Product may use multiple voltage/power sources. Be sure all sources of power have been disconnected before servicing.
- Do not depend on this product for voltage indication.
- Only install this product on insulated conductors.

CAUTIONS:

- This product is not intended for life or safety applications.
- Do not install this product in hazardous or classified locations.
- The installer is responsible for conformance to all applicable codes.
- Mount this product inside a suitable fire and electrical enclosure.
- If the collector is connected directly to a source of voltage, the pulse isolator will immediately burn out and become non-responsive.

1.1 Recommended Installation Hardware

Not all installations will be the same, but in general we recommend that you have the following available:

- Power Drill
- Large Phillips Head – Number 2
- Small Flathead 2.5mm or 1/8”
- Laptop – Windows PC with Ethernet Port
- Cable Glands and Weatherproof Sealant
- Digital Multimeter
- CAT 5 Cable
- Belden™ 1120A Twisted Shielded Pair wire
- Wire Strippers
- Mounting Screws (4)

1.2 Packing List

The following Items are included with the panel:

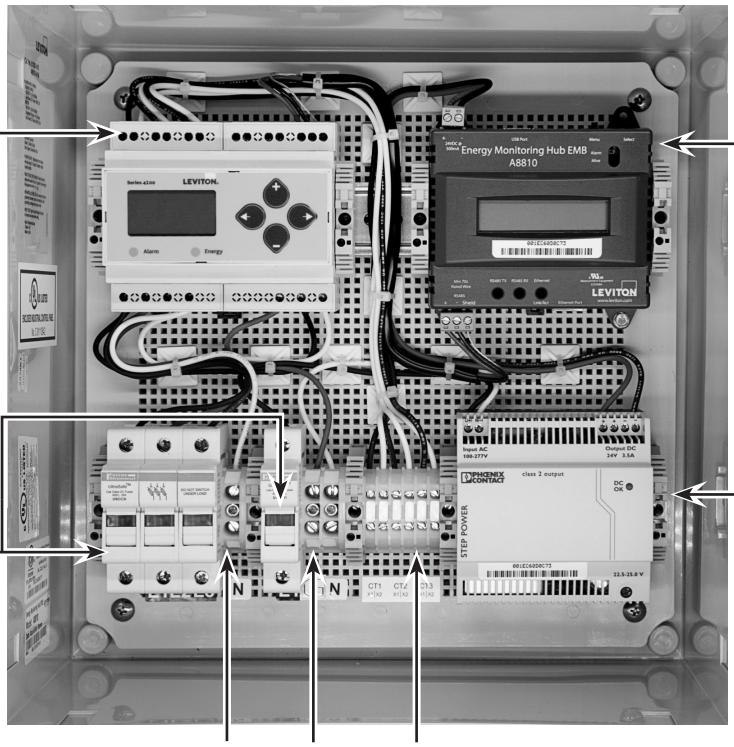
- Enclosure Mounting Tabs
- Short Ethernet Patch Cable
- Ethernet Cable 7’
- Calibration Certificates, Operating Manuals, Engineering Drawings, and Wiring Diagrams are located on the inside of the enclosure door.
- This enclosure is packed for protection during transit. Please inspect all materials upon receipt to ensure no damage has occurred in transit. Please report any damage to your product to your vendor immediately. Packing material must be removed for operation. Please discard, recycle, or reuse these materials appropriately.

Technical Support

For technical support, contact Leviton at 800-959-6004, or via email at meters@leviton.com

1.3 Product Overview

The EMX panel comes fully assembled, wired and ready for installation.



2.1 Mounting the Enclosure

2.1.1 Mount the enclosure in a location according to and compliant with local electric code.

2.1.2 Mounting Tabs and screws are provided with the enclosure. The provided screws are intended to be used to mount the tabs to the enclosure. User to provide additional mounting hardware as needed.

2.1.3 Create knockout holes for any necessary power, current transformer and communications lines in the bottom of the enclosure.

2.1.3.1 To maintain the warranty and integrity of the panel, all holes/punch outs for conduit and wires should only be drilled in the bottom of the enclosure and properly sealed to prevent exposure to moisture.

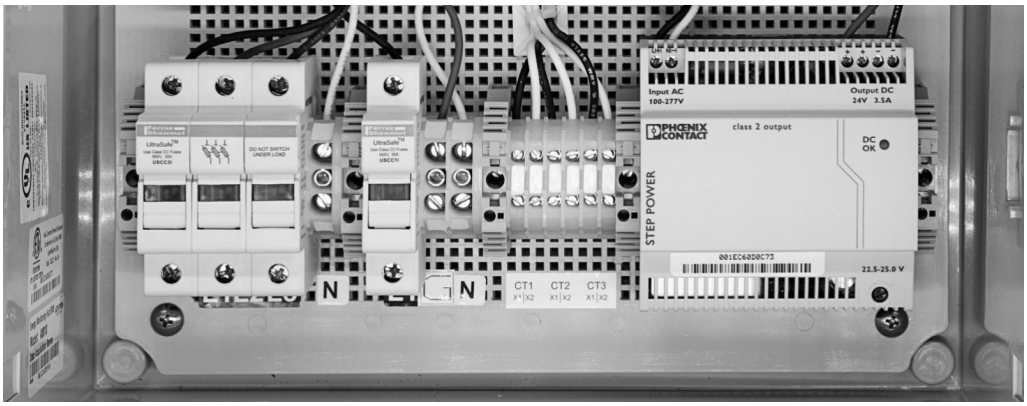
2.1.3.2 To prevent interference, it is recommended that sense voltage and CT wiring are separated and run through different knock outs.

2.1.4 The enclosure does have the ability to be padlocked externally. This is recommended to maintain security and device integrity.

2.2 Connecting Input Power

2.2.1 Per local electrical code and site specifications connect power to voltage sense input and panel power input.

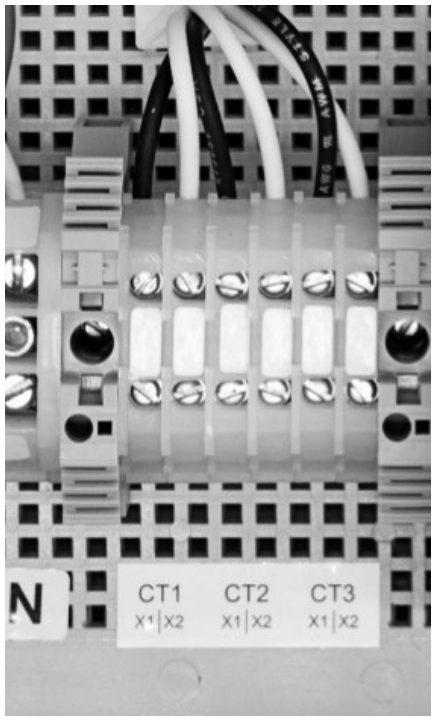
2.2.2 There are separate power inputs for meter reference voltage and panel power to allow the hub and meter to remain powered if the circuits being monitored need to be off.



2.3 Connecting Current Transformers

2.3.1 CT inputs are located next to the power input section on the lower DIN rail.

2.3.2 CT should be wired per manufacturer directions indicated below. CT terminals are clearly labeled CT1 (X1/X2), CT2 (X1/X2), and CT3 (X1/X2).



2.4 Observe correct CT orientation

Diagram 1: 1-Phase Line-to-Neutral 2-Wire System 1CT

Use System Type 10 (1L + 1n)

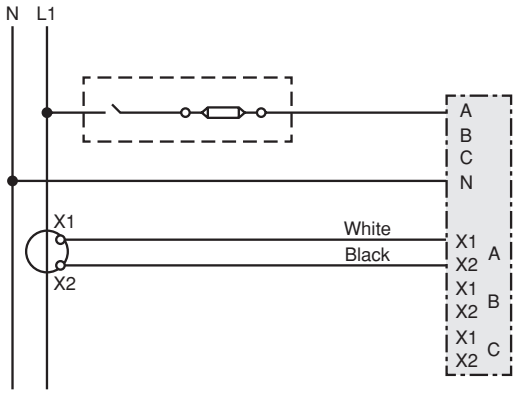


Diagram 2: 1-Phase Line-to-Line 2-Wire System 1CT

Use System Type 11 (2L)

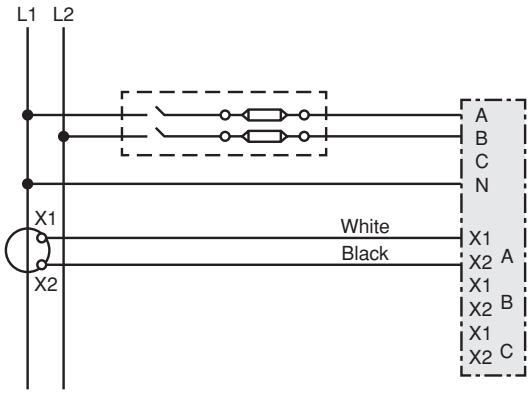


Diagram 3: 1-Phase Direct Voltage Connection 2CT

Use System Type 12 (2L + 1n)

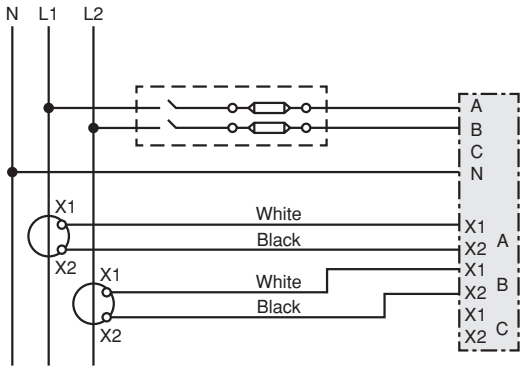


Diagram 4: 3-Phase 3-Wire 3 CT no PT

Use System Type 31 (3L)

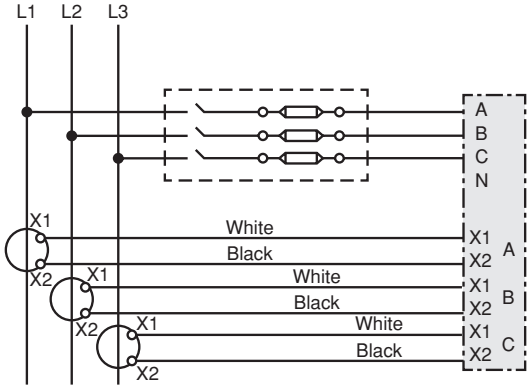


Diagram 5: 3-Phase 4-Wire Wye Direct Voltage Input Connection 3 CT

Use System Type 40 (3L + 1n)

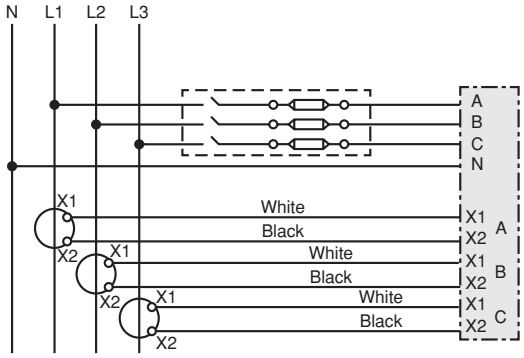
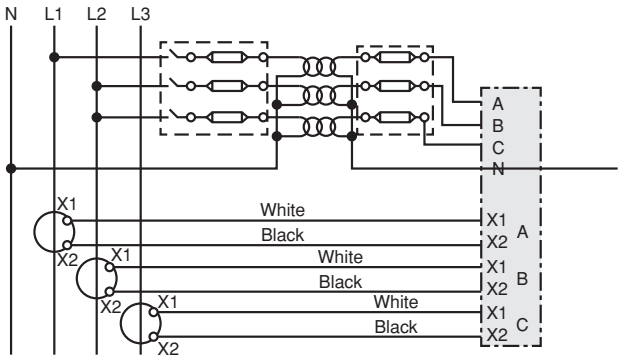


Diagram 6: 3-Phase 4-Wire Wye Connection 3CT 3 PT

Use System Type 40 (3L + 1n)



3.1 Introduction

The Leviton EMX comes with multiple internal components that are essential to operation. The following describes these components and outlines basic installation instructions.

3.2 Phoenix Contact Power Supply

Description: The Phoenix Power Supply provides DC power to the components within the cabinet, and, if needed, external devices that you may wish to power. There are no installation steps required, however the following are some product details.

3.2.1 Model Number: STEP-PS/277AC/24DC/3.5 - 2904945
3.2.2 Nominal Input Voltage Range: 100 VAC – 277 VAC
3.2.3 Nominal Output Voltage: 24 VDC
3.2.4 Nominal Output Current: 3.5A

3.3 Leviton 4DUMR Power Meter

Description: The Leviton 4DUMR is a revenue grade, bi-directional, power meter that provides information about the electrical performance of the monitored circuit.

Configuration of the meter assumes that the meter has arrived with factory default settings. In the steps below you will: Set up communication parameters, voltage and current information, and system information. All of this can be done with the push buttons on the meter.

Important: Note now whether you have Split Core or Rogowski "Rope" CT as it will alter the steps that follow.

3.3.1 General Set Up Screen Navigation Instructions

3.3.1.1 Press + or – repeatedly until SETUP screen appears.

3.3.1.2 Press → to get to the PASWD screen.

3.3.1.3 Press → to move through the digits. Use the + to – buttons to enter your desired password (the default is 00000).

3.3.1.4 Press → to move to the first Setup screen S COM.

3.3.1.5 Use + or – to select the parameter screen you want to set.

3.3.1.6 After you set the parameters you want use + or – to select the next Setup screen or ← to exit the Setup screens (return to SETUP).

3.3.2 Enter Modbus® Communication Parameters

Important: Your hardware provider may have specific instructions regarding which Modbus address to use. The following are default instructions.

3.3.2.1 Navigate to the S COM (set communications) Setup screen.

3.3.2.2 Press → to go to the ADDR screen and through the address digits. Use + or – to select the Modbus address (default is 001).

Leave at 001 unless otherwise instructed

3.2.2.3 Press → to accept the value and go to the BAUD screen. Use + or – to select the baud rate (default is 19200).

Press – once to change to 9600.

3.2.2.4 Press → to go to the PAR screen. Use + or – to select the parity (default is NONE).

Leave PAR at NONE unless otherwise instructed.

3.2.2.5 Press → to go back to the S COM screen.

3.3.3 Enter CT (Current Transformer) output voltage and input current ranges

Split Core CT Instructions

3.3.3.1 From S COM screen, press – to Navigate to the S CT (Set Current Transformer) Setup screen.

3.3.3.2 Press → to go to the CT V screen. Use + or – to select the voltage mode Current Transformer output voltage. (Options are 1.00 and .33. Default is 1.00).

3.3.3.3 Press to go to the SCT SZ screen and through the digits. Use + or – to select the CT size in amps (default is 100).

3.3.3.4 Press → to accept the value and go back to the S CT screen.

Rogowski "Rope" CT Instructions

3.3.3.5 From S COM screen, press – to Navigate to the S CT (Set Current Transformer) Setup screen.

3.3.3.6 Press → to go to the CT SZ screen and through the digits. Use + or – to select the CT size in amps (default is 100).

3.3.3.7 Press → to accept the value and go back to the S CT screen.

3.3.4 To Enter the service type to be monitored

3.3.4.1 Navigate to the S SYS (Set System) Setup screen.

3.3.4.2 Press → to go to the SYSTM screen. Use + or – to select the configuration (default is 3L-1N). Options are:

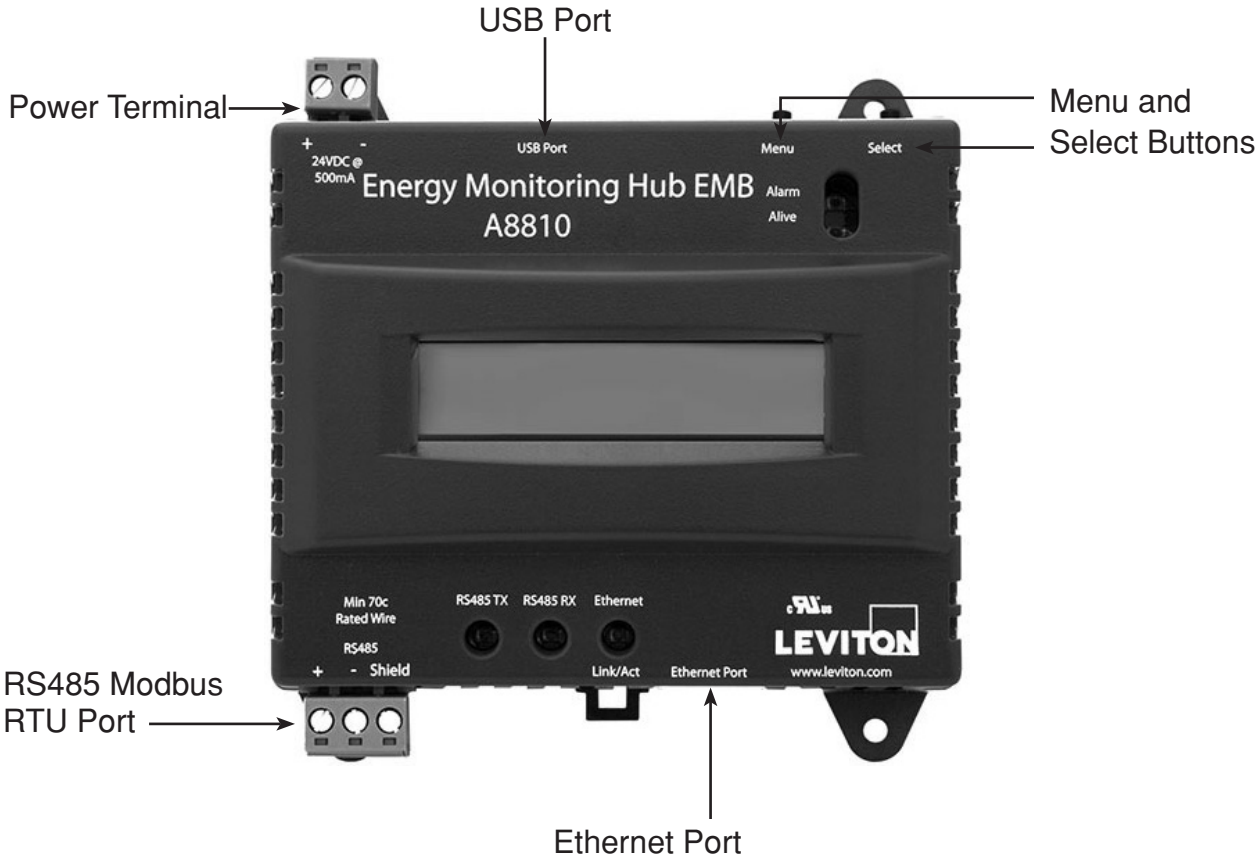
- 3L-1N
- 3L
- 2L-1N
- 2L
- 1L-1N

3.3.4.3 Press → to go back to the S SYS screen.

3.4 Commissioning the A8810 Engergy Monitoring Hub

Description: The A8810 is the data hub used to collect data from a variety of devices power meters, gas meters, water meters, and other sensors. This site data is consolidated in the EMH and using the user defined upload channels, it is uploaded to cloud based software like Building Manager Online, to an FTP site, or as a .CSV file.

3.4.1 Terminals and Port Diagram



3.4.2 LED Description

Alive: Blinks once per second while the system is operating correctly

Alarm: Blinks to indicate a problem

Ethernet Link/Act: Will be On when connected to a hub or network switch and Off when not connected. Blinks when LAN traffic is being sent or received

RS485 TX: Will blink slowly once per second during normal operation.

RS485 RX: Will blink when external Modbus devices communicate with the AcquiSuite.

3.5 Step by Step Commissioning

The following is a basic setup to enable Remote Access to the A8810 Hub to complete the configuration process.
Confirm the DAS is properly connected to the computer or a LAN, and both are powered on.

3.5.1 DHCP Enabled Mode

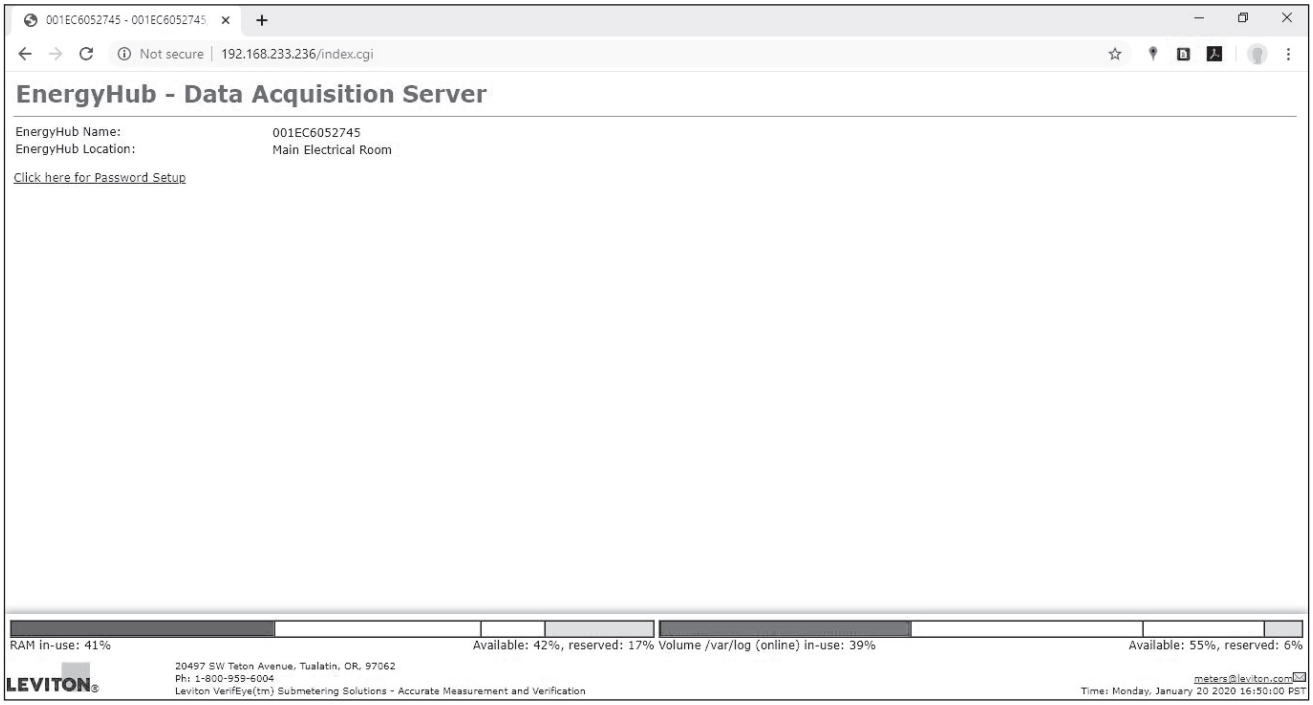
3.5.1.1 Confirm that DHCP is enabled on the computer. For most computers, this is the default setting.

3.5.1.2 To confirm you have established connection to the device, do a ping to the IP address shown in the DAS's LCD display. If no packets were lost, the connection is working and you are ready to proceed.

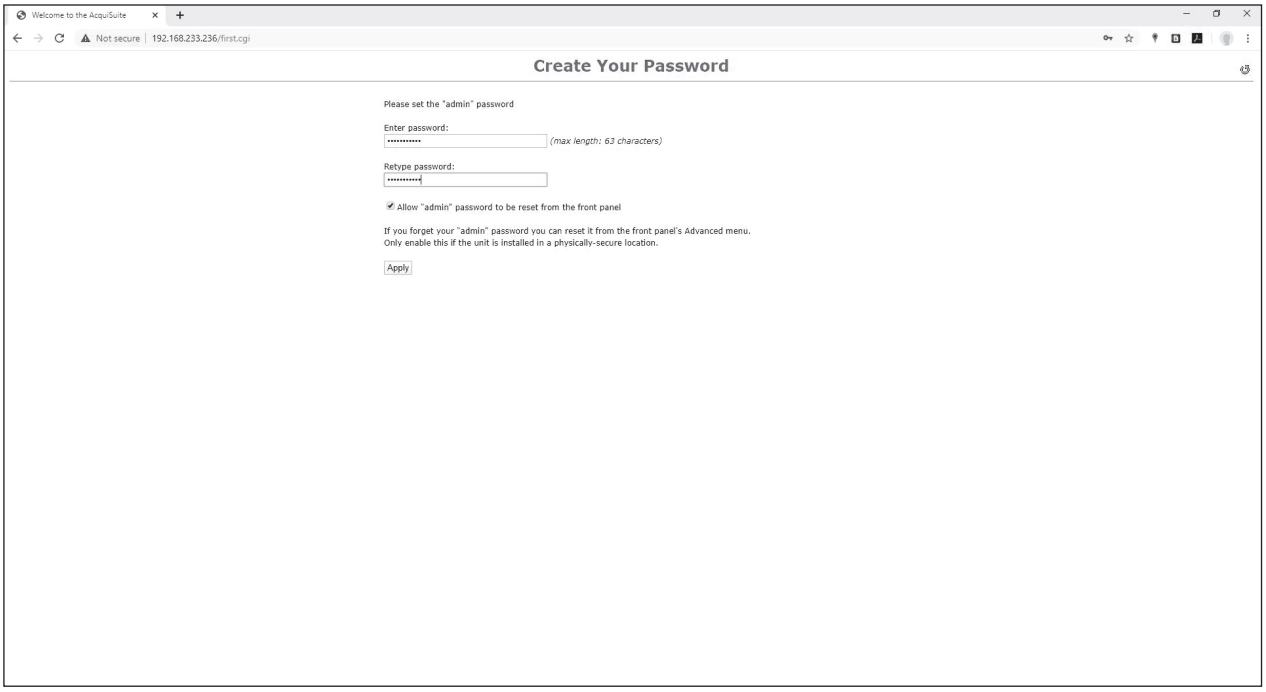
3.5.1.3 Open a browser and type the IP address, shown on the LCD display of the EMB Hub, in the address bar.

3.5.1.4 This will open the web browser interface of the EMB Hub.

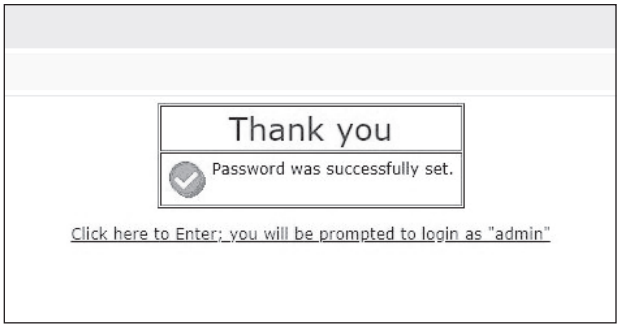
3.5.1.5 At initial setup a password must be created. Click on the "click here for Password Setup" to create the admin user password.



3.5.1.6 Enter the desired admin user password in both boxes and click the Apply button.



3.5.1.7 A Thank You message will be displayed, confirming that the password was successfully set. Click on the line below to proceed to the login screen.



3.5.1.8 To initiate Remote Access

- Expand Networking
- Select Setup
- Check Allow “Remote Access”:
- Click Apply

3.5.1.9 Once Remote Access Successfully Connects you will receive the message “R-Access Online”.

Record

- Serial Number:
- Pin #:

3.5.1.10 Call provider and provide Serial Number and Pin Number. This will enable Remote Access to the A8810 user interface to complete s ystem configuration.

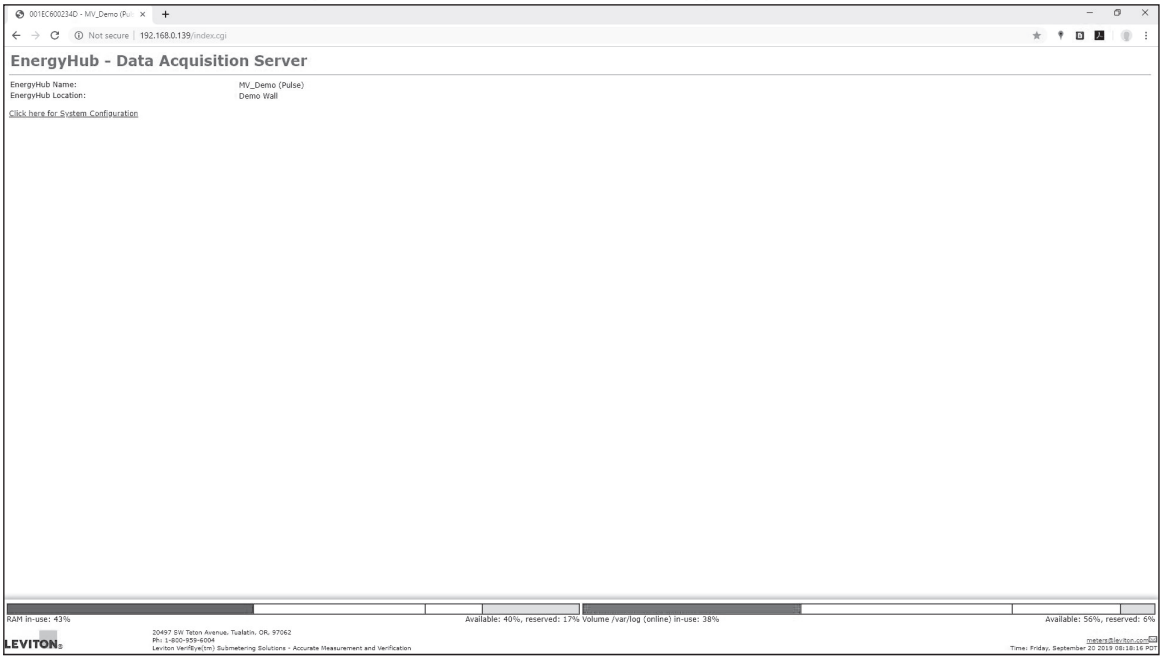
3.6 Static IP Enabled Mode

Confirm the DAS is properly connected to the computer, and both are powered on.

3.6.1. On the EMB Hub, click the “Menu” button to select the “TCP/IP Config” option.
3.6.2 Click the “Select” button to enter the “TCP/IP Menu”.
3.6.3 Select the “DHCP+UPnP on/off” option by scrolling through options using the “Menu” button and using “Select” button to enter.
3.6.4 Disable the DHCP+UPnP by clicking the “Menu” button, and navigating back to the “TCP/IP Config” Menu.
3.6.5 Scroll through options (using “Menu” button) and select “IP Address” option using the “Select” Button.
3.6.6 Confirm the IP address is 192.168.40.50
3.6.7 Scroll through the menu options and select “Previous Menu”, to return to the home menu options. This change will require a reboot.
3.6.8 Click “Select” button to execute the reboot.
3.6.8.1 The DAS default network configuration is:
- IP
- Address: 192.168.40.50
- Netmask: 255.255.255.0
- Gateway: 192.168.40.1

3.6.8.2 Configure the computer with the following static IP settings:
- IP
- Address: 192.168.40.1
- Netmask: 255.255.255.0
- Gateway: 192.168.40.1

3.6.9 Open a browser and type the IP address, shown on the LCD display of the EMB Hub, on the address bar.
3.6.10 This will open the web browser interface of the EMB Hub.
3.6.11 At initial setup a password must be created. Click on the “click here for Password Setup” to create the admin user password.



4 FINAL STEPS

4.1 Final Steps and Support

Before leaving the site, please ensure that the following steps have been completed:

- Enclosure is mounted and powered per code
- AC Power is terminated to local code
- Bottom knockouts are appropriately sealed and weatherproofed
- RS485 communication is terminated properly to terminal
- Power Supply Light DC OK is Green
- Meter LCD is on and cycling through information.
- A8810 Hub LCD shows Ready and IP Address is displayed
- A8810 Hub “Alive Light” is blinking
- System documentation is returned to panel door sleeve for future reference

5 STANDARD STATEMENTS

FCC STATEMENT:

This device complies with Part 15 of the FCC Rules and ISED License-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by Leviton could void the user's authority to operate the equipment.
These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This Class A digital apparatus complies with Canadian CAN ICES-3(A)/NMB-3(A)

FCC SUPPLIER'S DECLARATION OF CONFORMITY:

This device manufactured by Leviton Manufacturing Co., Inc. 201 North Service Road, Melville, NY 11747. www.leviton.com. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Belden is a trademark of Belden, Inc.

Leviton Manufacturing Co., Inc.

201 North Service Road, Melville, NY 11747

Visit Leviton's website at www.leviton.com

Specifications and price subject to change at any time without notice.

FOR CANADA ONLY

For warranty information and/or product returns, residents of Canada should contact Leviton in writing at **Leviton Manufacturing of Canada ULC** to the attention of the **Quality Assurance Department, 165 Hymus Blvd, Pointe-Claire (Quebec), Canada H9R 1E9 or by telephone at 1 800 405-5320.**

LIMITED 5 YEAR WARRANTY AND EXCLUSIONS

Leviton warrants to the original consumer purchaser and not for the benefit of anyone else that this product at the time of its sale by Leviton is free of defects in materials and workmanship under normal and proper use for 5 years from the purchase date. Leviton's only obligation is to correct such defects by repair or replacement, at its option. **For details visit www.leviton.com or call 1-800-824-3005.** This warranty excludes and there is disclaimed liability for labor for removal of this product or reinstallation. This warranty is void if this product is installed improperly or in an improper environment, overloaded, misused, opened, abused, or altered in any manner, or is not used under normal operating conditions or not in accordance with any labels or instructions. **There are no other or implied warranties of any kind, including merchantability and fitness for a particular purpose**, but if any implied warranty is required by the applicable jurisdiction, the duration of any such implied warranty, including merchantability and fitness for a particular purpose, is limited to 5 years. **Leviton is not liable for incidental, indirect, special, or consequential damages, including without limitation, damage to, or loss of use of, any equipment, lost sales or profits or delay or failure to perform this warranty obligation**. The remedies provided herein are the exclusive remedies under this warranty, whether based on contract, tort or otherwise.

For Technical Assistance Call: 1-800-824-3005 (USA Only) or 1-800-405-5320 (Canada Only) www.leviton.com