



Acuvim-L Series Power Meter L-WEB User's Manual

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The information contained in this document is believed to be accurate at the time of publication, however, Accuenergy assumes no responsibility for any errors which may appear here and reserves the right to make changes without notice. Please ask the local representative for latest product specifications before ordering.

Please read this manual carefully before installation, operation and maintenance of the AcuRev 1310 series meter. The following symbols in this manual are used to provide warning of danger or risk during the installation and operation of the meters.



Electric Shock Symbol: Carries information about procedures which must be followed to reduce the risk of electric shock and danger to personal health.



Safety Alert Symbol: Carries information about circumstances which if not considered may result in injury or death.

Prior to maintenance and repair, the equipment must be de-energized and grounded. All maintenance work must be performed by qualified, competent accredited professionals who have received formal training and have experience with high voltage and current devices. Accuenergy shall not be responsible or liable for any damages or injuries caused by improper meter installation and/or operation.

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1

Table of Contents

1. Introduction to Ethernet.....	4
2. Functional Description of the Ethernet module	4
3. Appearance and Dimensions	5
4. Installation Method	6
5. Definition of RJ45	7
6. Initializing the Ethernet module	8
7. Cable.....	17
8. Connection method.....	18
8.1 Direct Connect to a Computer	18
8.2 Direct Connect to Router/Switch.....	21
9. Description of Modbus-TCP Protocol	22
9.1 Protocol	22
9.1.1 Data Frame Format.....	22
9.1.2 Modbus Application Header (MBAP Header) Field	22
9.1.3 Function Field	23
9.2 Format of communication	23
9.2.1 Explanation of frame	23
10. Web Interface Readings and Parameter Settings.....	28
10.1 User Access Login.....	28
10.2 Dashboard.....	29
10.3 Metering web page	30
Basic Metering:	30
Power & Energy:	31
Min/Max:.....	32
Harmonics:	33
Phase Angles:	34
Sequence:	35
I/O:.....	36

10.4 Status web page	37
Trend Log:.....	37
Energy:.....	39
Data Preview:.....	40
Data Log:.....	41
Alarm Log:.....	42
SOE Log:.....	42
PQ Event Log:	43
10.5 About	44
10.6 Settings web page	45
Meter	45
Communication	49
Network:.....	49
Email	51
Time/Date	54
Data Log	56
Post Channel.....	58
AcuCloud.....	63
BACnet/IP.....	65
SNMP	66
DNP	68
Management.....	72
Parameter Reset	72
Module Reboot	72
Change Password	73
SSH.....	73
Debug Diagnostic	73
Diagnostic File.....	74
Network Diagnostic.....	75
Module Firmware Update	77
Manual Update	77
Remote Update.....	78

1. Introduction to Ethernet

Ethernet was originally developed by Xerox and then further developed by DEC and Intel. This networking technology uses Carrier Sense Multiple Access with Collision Detection (CDSM/CD) protocol and provides transmission speeds up to 100Mbps.

Ethernet is not a network but more of a standard. It is the most current communication standard Local Area Network(LAN). This standard defines the type of cable that is used and the method of Signal Processing.

2. Functional Description of the Ethernet module

The L-WEB module supports the Modbus-TCP protocol. When connected to the Acuvim L series meter, it is a slave device that can only respond to queries. The default value for the Modbus Port is 502, however the user defined range is 2000~5999.

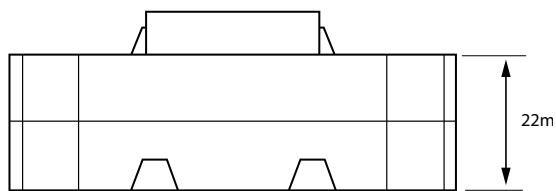
This module supports the SMTP protocol, which allows the user to send emails based on a specific time interval or when a triggered event occurs. It can send mail from encrypted servers and servers that use different SMTP ports.

The L-WEB module supports the HTTPS protocol, it is used as an HTTPS server where the default value of the protocol port is 443. Using the HTTPS protocol, the L-WEB can send post requests to both HTTP and HTTPS servers.

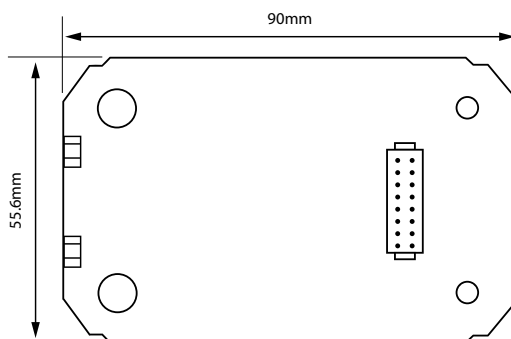
The following are all the protocols supported by the L-WEB module:

- Modbus TCP
- SNMP
- DNP 3.0
- SMTP, SNTTP
- HTTP/HTTPs
- FTP
- sFTP
- BACnet

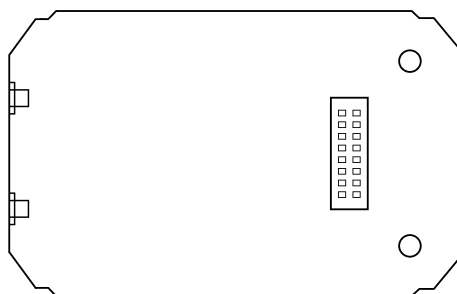
3. Appearance and Dimensions



(Side View)

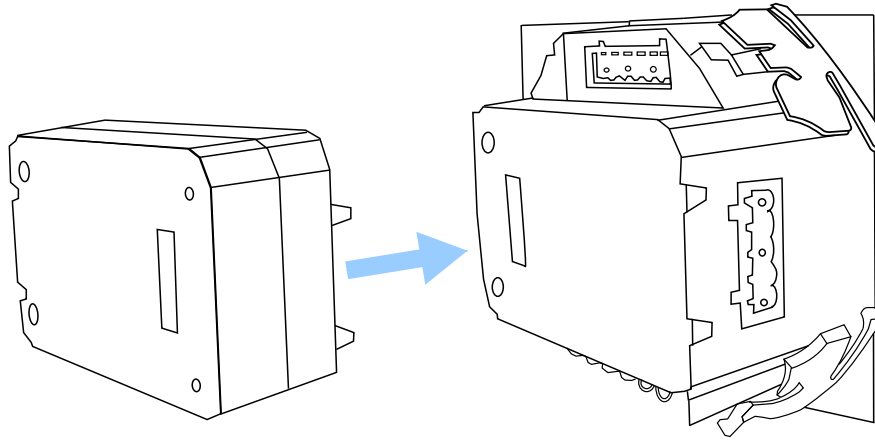


(Top View)



(Bottom View)

4. Installation Method



The L-WEB module is linked to the Acuvim L series meter by a communication plug. Other extended modules such as the IO modules can be linked to the Acuvim L series meter through the L-WEB module.

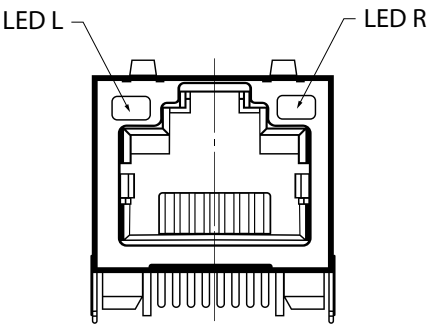
1. Remove cover from the back of the Acuvim L series meter which will expose the socket.
2. Insert the installation clips to the grooves in the Acuvim L series meter and then press the L-WEB module lightly to establish a linking between meter and module.
3. Tighten the installation screws.

NOTE: Installation with power to the meter is forbidden.

NOTE: If using extended I/O modules with L-WEB module, ensure that the L-WEB module is attached to the meter first followed by the I/O modules. If the L-WEB module is not connected first it will not be able to communicate with the Acuvim L meter.

5. Definition of RJ45

The L-WEB uses a standard RJ45 connector to access the Ethernet network. The mechanical and electrical characteristics of the connector are consistent with the requirements of IEC 603-7.



(Top View)

Script	ID	Content
1	TX+	Tranceive Data+
2	TX-	Tranceive Data-
3	RX+	Receive Data+
4	n/c	Not connected
5	n/c	Not connected
6	RX-	Receive Data-
7	n/c	Not connected
8	n/c	Not connected

LED_L (Yellow): Displays the speed status. When the LED is on it indicates 100Mbps, while an 'off' LED represents a speed of 10Mbps.

LED_R (Green): Displays the link and activity status. When the LED is 'on' it indicates the link status. When the LED is flashing it indicates that there is activity.

6. Initializing the Ethernet module

The default settings in the Acuvim L series meter are as followed:

DHCP: Manual

IP Address: 192.168.1.254

Subnet Mask: 255.255.255.0

Gateway: 192.168.1.1

Primary DNS Server: 8.8.8.8

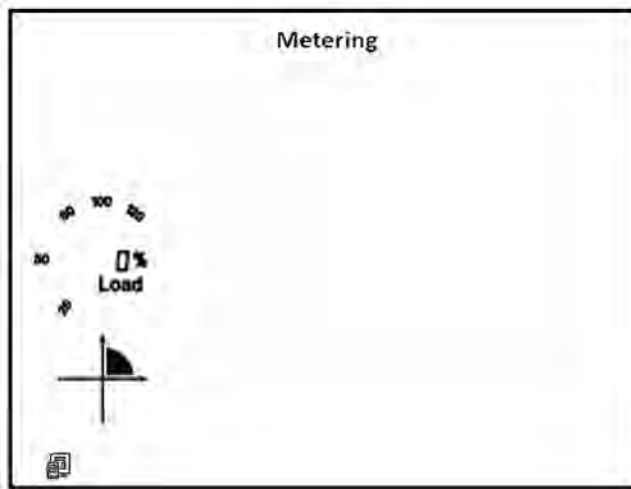
Secondary DNS Server: 8.8.4.4

Modbus Port: 502

HTTP Port: 80

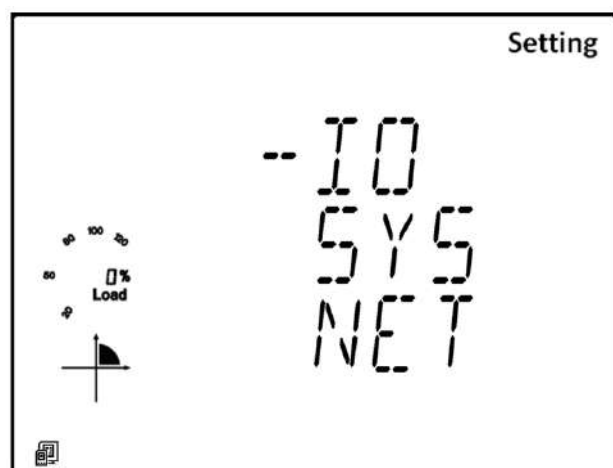
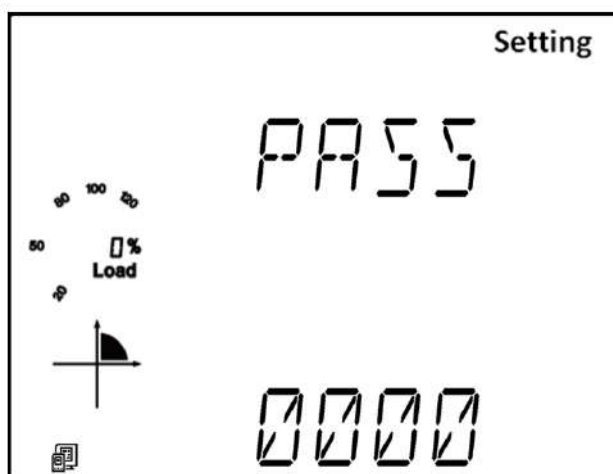
This information can be found by using the buttons from the meter display. The following is how to configure the Ethernet module settings from the display:

- Press the 'H' and 'V/A' buttons simultaneously on the Acuvim L series. Release the buttons and the meter will enter the meter selecting mode, as indicated by the flashing 'Meter' cursor.



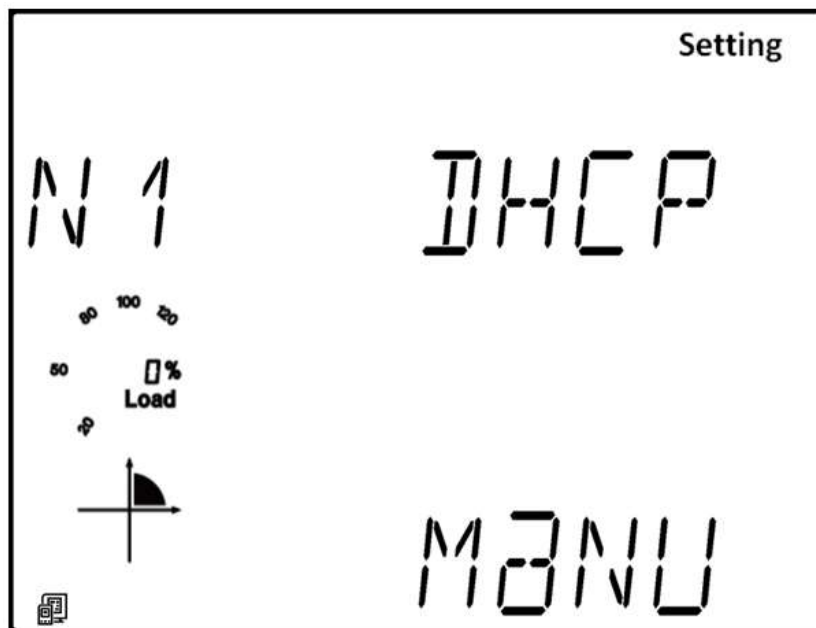
Chapter 6: Initializing the Ethernet module

- Press the 'P' or 'E' button to move the cursor to 'Setting'. Press 'V/A' button to enter the parameter setting mode. The device address page is the first page of the 'Setting' mode. It will show the Modbus address of the meter for a second before prompting for the password of the device. Press 'V/A' button to confirm password and enter the parameter setting page. Press the 'P' or 'E' button to move the cursor to 'NET' and press the 'V/A' button to enter the Ethernet module settings.



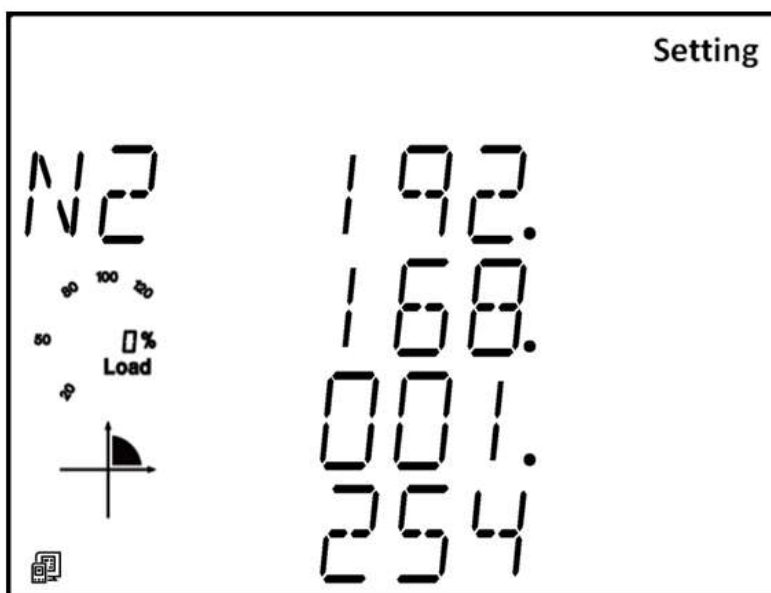
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- The first page of the NET Settings will be the 'N1' setting page. This is the meters **DHCP** setting screen, and by default this is configured as Manual. Setting this configuration to Auto will allow the router to assign the meter with an IP address, while Manual will allow the user to configure the IP address.
 - Press the 'V/A' button to enter edit mode.
 - Press 'P' or 'E' to change the setting and press 'V/A' to confirm.

NOTE: If the DHCP is selected as Auto, the Ethernet module needs to be rebooted before it can be assigned with the new IP address.

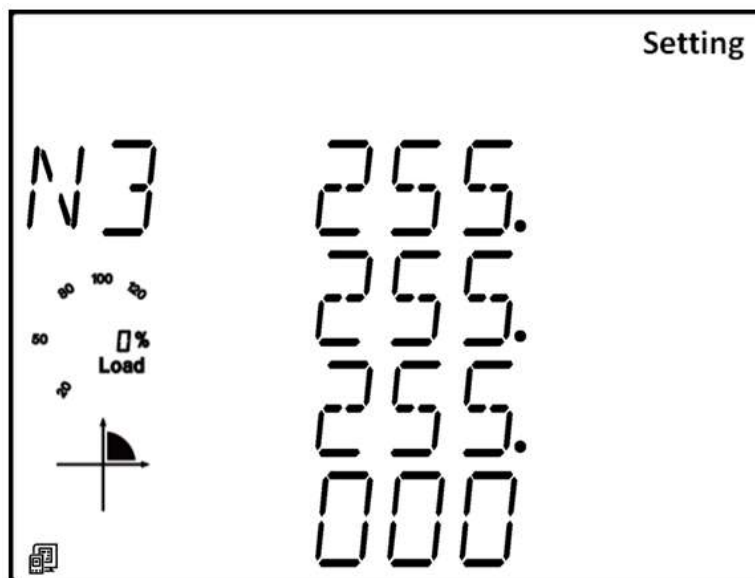


Chapter 6: Initializing the Ethernet module

- Press 'E' to get to page 'N2', this is the **IP address** setting of the meter and will be the IP address to access the web interface of the module. Users can configured the IP address if the DHCP is configured as Manual.
- Press 'V/A' to configure the IP address. The cursor of the first digit will begin to flash.
- Press the 'H' button to scroll through the digits, press the 'P' or 'E' to change the value of the flashing cursor.
- Once the IP is configured users can press 'V/A' to confirm.

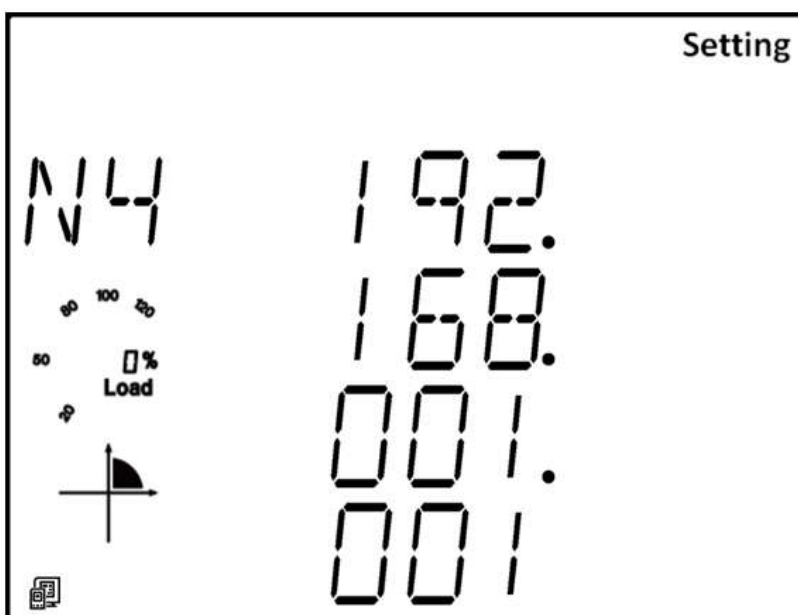


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- Press 'E' to get to '**N3**' page, this is the meters Submask setting.
 - Press 'V/A' to enter edit mode and configure the sub mask address. The cursor of the first digit will begin to flash.
 - Press the 'H' button to scroll through the digits, and press 'P' or 'E' to change the value of the flashing cursor.
 - Once the sub mask has the correct address press 'V/A' to confirm.



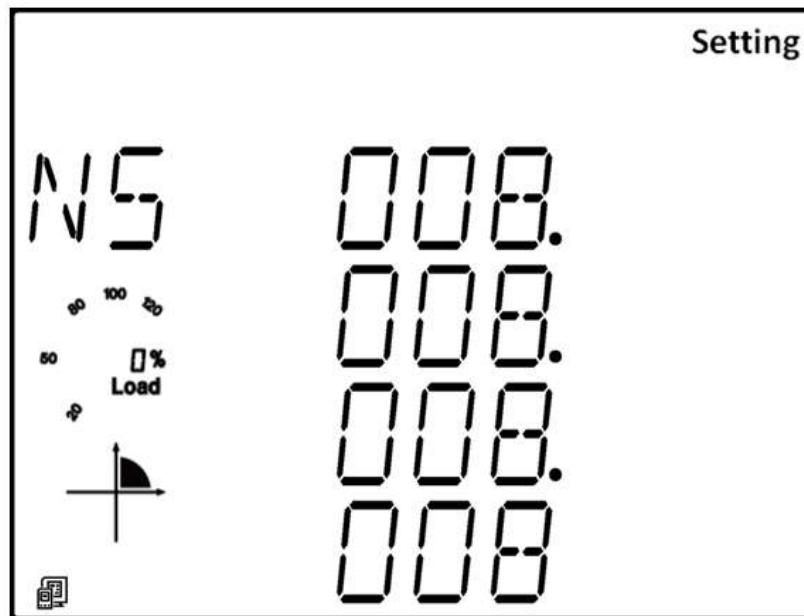
Chapter 6: Initializing the Ethernet module

- Press 'E' to get to 'N4' page, this is the meters **Gateway** setting.
 - Press 'V/A' to enter edit mode and configure the gateway IP address. The cursor will begin to flash on the first digit.
 - Press the 'H' button to scroll through the digits, and then press the 'P' or 'E' to change the value of the flashing cursor.
 - Once the gateway is configured press 'V/A' to confirm.



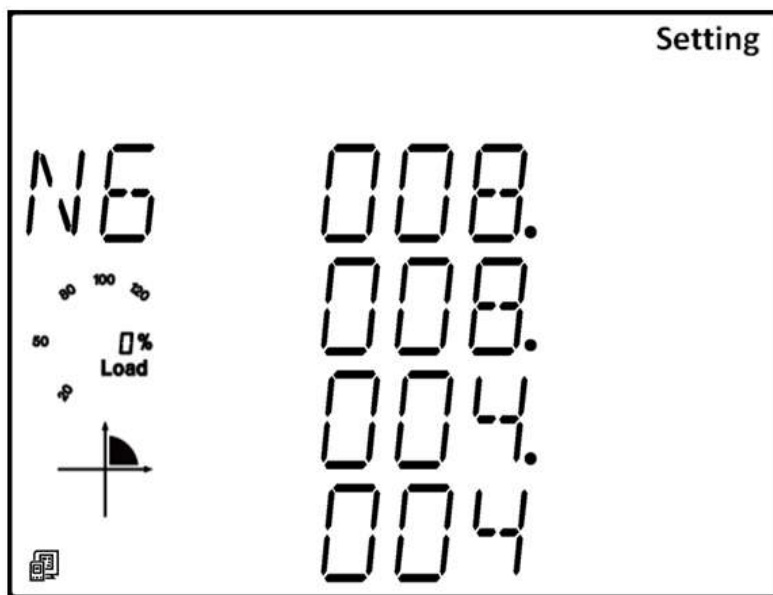
-
- Press 'E' to get to 'N5' page, this is the meters **Primary DNS Server** settings.
 - Press 'V/A' to enter edit mode and configure the DNS address, the cursor of the first digit will begin to flash.
 - Press the 'H' button to scroll through the digits.
 - Press the 'P' or 'E' to change the value of the flashing cursor.
 - Once the primary DNS server address is entered press 'V/A' to confirm.

NOTE: The DNS parameters must be set correctly to use the SMTP, FTP/HTTP Post and Acu-Cloud functions.

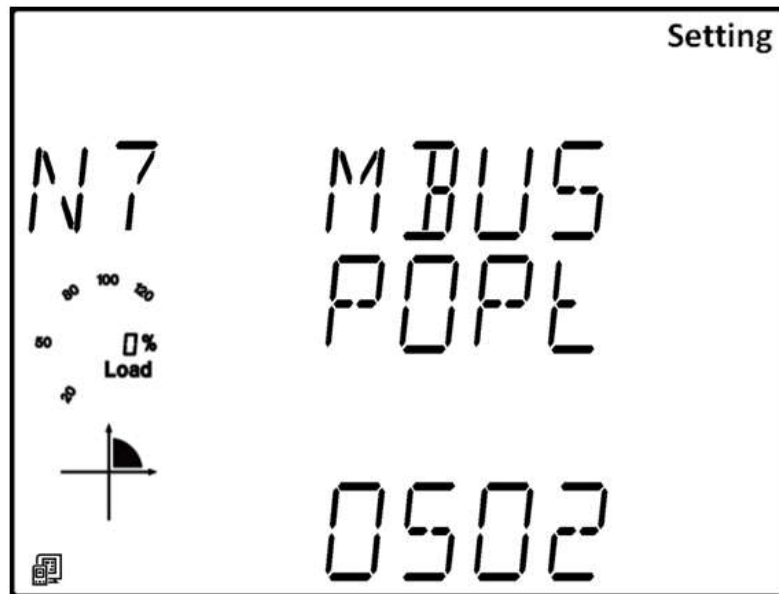


Chapter 6: Initializing the Ethernet module

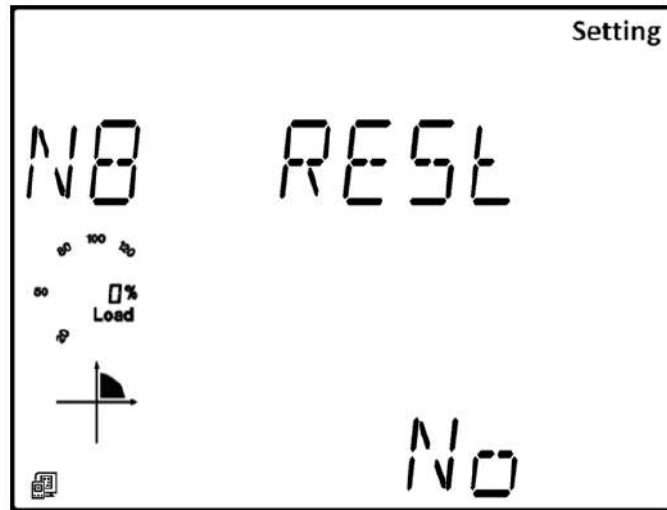
- Press 'E' to get to 'N6' screen, this is the **Secondary DNS Server** setting.
 - Press 'V/A' to enter edit mode and configure the DNS address. The cursor of the first digit will begin to flash.
 - Press the 'H' button to scroll through the digits
 - Press the 'P' or 'E' to change the value of the flashing cursor.
 - Once the secondary dns server address is entered press 'V/A' to confirm.



- Press 'P' to get to 'N7', this is the **Modbus Port** setting.
 - Press 'V/A' to enter edit mode and configure the Modbus Port. The cursor of the first digit will begin to flash.
 - Press the 'H' button to scroll through the digits.
 - Press the 'P' or 'E' to change the value of the flashing cursor.
 - Once the Modbus port setting is configured press 'V/A' to confirm.



- Press 'P' to get to 'N8', this is the network reset setting. After making any changes to the NET settings (N1-N7), users must reboot the Ethernet module from this page for the settings to take effect.
 - To perform the reboot press 'V/A' to enter edit mode, the cursor will begin to flash.
 - Press the 'P' or 'E' button to change the setting to 'Reset' and press 'V/A' to confirm to reset.
 - The cursor will return to 'No' once successful.



7. Cable

An RJ45 cable is needed to connect the meter to the network.

A shielded twisted pair cable(standard 568A or standard 568B) is recommended as reference to the EIA/TIA standard.

8. Connection method

8.1 Direct Connect to a Computer

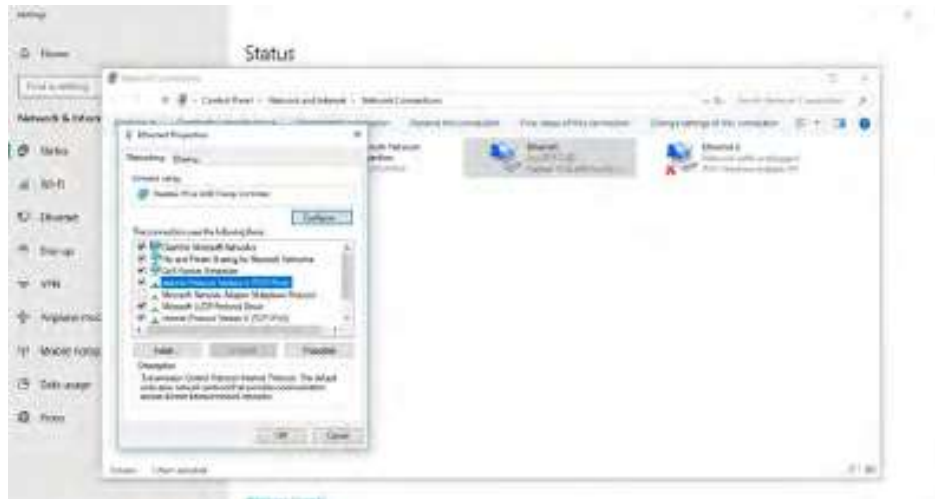
The L-WEB can be connected to a computer using a crossover cable(standard 568A). The L-WEB module supports Modbus-TCP and HTTPS Functions for this method of connection.

To connect meter directly to the computer, the following can be done using a computer running the Windows OS:

- Manually connect the meter via Ethernet cable to the computer
- Right click on the connection icon
- Select "Open Network and Internet Settings"



- Select the icon that says Internet Protocol Version 4 TCP/IP



- The Internet Protocol Version 4(TCP/IP) Properties box will pop up. Click on “Use the following IP address” and enter in an IP number so that meter and computer are in the same local network range. For example, if the meter has IP address of 192.168.1.254, then the computer must be assigned with a IP 192.168.1.xxx, where xxx can be any number but cannot be the same as the value the meter has.



- Once you have entered in the IP address, press the Tab key on your keyboard to automatically populate the sub mask setting for the computer.
- Before selecting the OK button make note of the IP address you have assigned to the meter and then press OK.

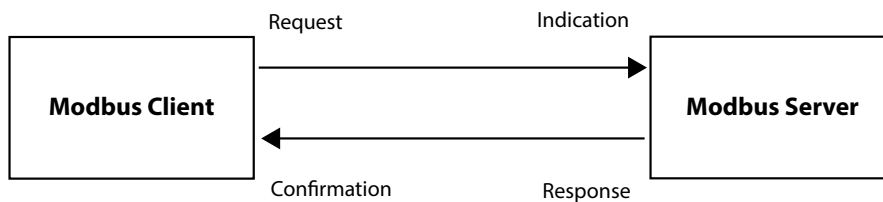
NOTE: The meters DHCP setting must be set to Manual in order to connect to the meters web interface using a direct meter to computer connection.

8.2 Direct Connect to Router/Switch

The AXM-WEB-PUSH can be connected to a router or switch using a patch cable. The DHCP can be configured to Auto to have the router assign the meter with an IP address or the DHCP can be configured to Manual to set an IP address using the information in Chapter 5.

9. Description of Modbus-TCP Protocol

The Modbus-TCP protocol is used as one of the communication protocols in the L-WEB. The protocol establishes a master and slave connection in Ethernet. The master device (client) first sets up a TCP-IP link with slave device (server). The master device then sends a request to the slave device and the slave device in return sends a response to the master device. The figure below shows how the Modbus-TCP protocol works.



9.1 Protocol

9.1.1 Data Frame Format

MBAP Header	Function	Data
7x8-Bits	8-Bits	Nx8-Bits

9.1.2 Modbus Application Header (MBAP Header) Field

Modbus application header field is the start of the data frame, and consists of seven bytes.

Field	Length	Description
Transaction Identifier	2 Bytes	Identification of a Modbus Request/Response transaction
Protocol Identifier	2 Bytes	Modbus protocol = 0
Length	2 Bytes	Number of following bytes
Unit Identifier	1 Byte	Slave address, in the range of 0~247 decimal.

Chapter 9: Description of Modbus-TCP Protocol

9.1.3 Function Field

The function code field of a message frame contains eight bits. Valid codes are in the range of 1-255. When a message is sent from a client to a server device, the function code field tells the server what kinds of action to perform.

Code	Meaning	Action
02	Read Digital Input (DI) Status	Obtain current status of Digital Input
03	Read Data	Obtain current binary value in one or more registers
16	Write Multiple-registers	Place specific value into a series of consecutive multiple-registers

9.1.4 Data Field

The data field is constructed using sets of two hexadecimal digits, in the range of 00 to FF. The data field of messages sent from a master to slave contains additional information which the slave must use to take the action defined by the function code. This can include information such as the register addresses, the quantity of registers to query and the count of the actual number of data bytes. For example, if the master requests a slave to read a group of holding registers(function code 03), the data field specifies the starting register and how many registers are to be read.

If the master needs to write data(function code 10 hexadecimal) to a group of registers in the slave, the data field specifies the starting register, how many registers to write, the count of data bytes to follow in the data field and the data to be written into the registers.

9.2 Format of communication

9.2.1 Explanation of frame

Transaction identifier hi	Transaction identifier lo	Protocol identifier hi	Protocol identifier lo	Length hi	Length lo	Unit identifier
00H	00H	00H	00H	00H	06H	01H

Fun	Data start reg hi	Data start reg lo	Data #of regs hi	Data #of regs lo
03H	40H	00H	00H	48H

The meaning of each abbreviated field above is:

Transaction identifier hi: High byte of transaction identifier

Transaction identifier lo: Low byte of transaction identifier

Protocol identifier hi: High byte of protocol identifier

Protocol identifier low: Low byte of protocol identifier

Length hi: High byte of length

Length lo: Low byte of length

Unit identifier: Slave address

Fun: Function code

Data start register hi: High byte of starting register address

Data start register lo: Low byte of starting register address

Data #of registers hi: High byte of number of registers

Data #of registers lo: Low byte of number of registers

Read Status of DI (Function code 02)

1=On 0=Off

There are 28 DIs in the Acuvim L series meter starting at address 0000H.

The following query is to read 4 DI statuses of AXM-IO1 module with logic address of 1 in the Acuvim L series meter.

Chapter 9: Description of Modbus-TCP Protocol

Query

Transaction identifier hi	Transaction identifier lo	Protocol identifier hi	Protocol identifier lo	Length hi	Length lo	Unit identifier
00H	00H	00H	00H	00H	06H	01H

Fun	Data start reg hi	Data start reg lo	Data #of regs hi	Data #of regs lo
02H	00H	00H	00H	04H

Response

The response includes the MBAP header, function code, quantity of data characters and the data.

An example response from the meter to read the status of 4 DIs (DI1=On, DI2=On, DI3=On, DI4=On) is shown below. The status of each corresponds to the last 4 bits of the data.

Transaction identifier hi	Transaction identifier lo	Protocol identifier hi	Protocol identifier lo	Length hi	Length lo	Unit identifier
00H	00H	00H	00H	00H	04H	01H

Fun	Byte count	Data
02H	01H	0FH

The content of the data is,

7	6	5	4	3	2	1	0
0	0	0	0	1	1	1	1

MSB

LSB

Read Data (Function Code 03)

Query

This function allows the user to obtain the measurement results of the Acuvim L series meter.

Below is an example to read 6 registers corresponding to the device clock of the meter, starting at 1040H.

Transaction identifier hi	Transaction identifier lo	Protocol identifier hi	Protocol identifier lo	Length hi	Length lo	Unit identifier
00H	00H	00H	00H	00H	06H	01H

Fun	Data start reg hi	Data start reg lo	Data #of regs hi	Data #of regs lo
03H	10H	40H	00H	06H

An example response is provided to read the time (2006-12-18 14:15:20).

Transaction identifier hi	Transaction identifier lo	Protocol identifier hi	Protocol identifier lo	Length hi	Length lo	Unit identifier
00H	00H	00H	00H	00H	0FH	01H

Fun	Byte count	Data1 hi	Data1 lo	Data2 hi	Data2 lo	Data3 hi	Data3 lo	Data4 hi	Data4 lo	Data5 hi	Data5 lo	Data6 hi	Data6 lo
03H	0CH	07H	D6H	00H	0CH	00H	12H	00H	0EH	00H	0FH	00H	14H

Preset/Reset Multi-Register(Function Code 16)

Query

This function code allows the user to modify the contents of a register. The example below is a request to an Acuvim L series meter with device address 1 to preset the CT1(500) and CT2(5) registers. The CT1 data address is 1008H and CT2 is at 1009H.

Chapter 9: Description of Modbus-TCP Protocol

Transaction identifier hi	Transaction identifier lo	Protocol identifier hi	Protocol identifier lo	Length hi	Length lo	Unit identifier
00H	00H	00H	00H	00H	0BH	01H

Fun	Data start reg hi	Data start reg lo	Data #of regs hi	Data #of regs lo	Byte count	Value 1 hi	Value 1 lo	Value 2 hi	Value 2 lo
10H	10H	08H	00H	02H	04H	01H	F4H	00H	05H

Response

The normal response to the command request is to retransmit the message as received after the relay output status has been altered.

Transaction identifier hi	Transaction identifier lo	Protocol identifier hi	Protocol identifier lo	Length hi	Length lo	Unit identifier
00H	00H	00H	00H	00H	06H	01H

Fun	Data start reg hi	Data start reg lo	Value hi	Value lo
10H	10H	08H	00H	02H

10. Web Interface Readings and Parameter Settings

The L-WEB module supports the HTTPS protocol to allow users to access the meters web interface. The user will need to access the L-WEB web interface to configure the module and to further use its functions. The web interface allows for remote initial setup of the Acuvim L meter.

The L-WEB web interface allows for different user access levels.

10.1 User Access Login

Enter the correct IP address of the module in the search bar of the internet browser to access the web interface of the L-WEB.

NOTE: *The recommend internet browser for the L-WEB is either Google Chrome or Firefox.*

The user will be redirected to a login web page where users will have to enter in the Access Level and enter appropriate password for that level.

The **User** access level is ideal for users who need only to take readings and view status from the meter.

The default password for the User level is **view**.

It is recommended that no more than 5 users are logged in at the same time for this level to ensure optimal performance of web interface.

The **Admin** access level is ideal for users who need access to configurations on the meter, the web interface and to view readings.

The default password for the Admin level is **admin**.

The L-WEB web interface will only allow one admin to be logged in at a time. If another user logs in at this access level, the previous user will be logged out.

Chapter 10: Web Interface Readings and Parameter Settings



The two different access levels are summarised below:

Access Level	Default Password	Read Parameter/Status	Configure Settings
User	view	Yes	No
Admin	admin	Yes	Yes

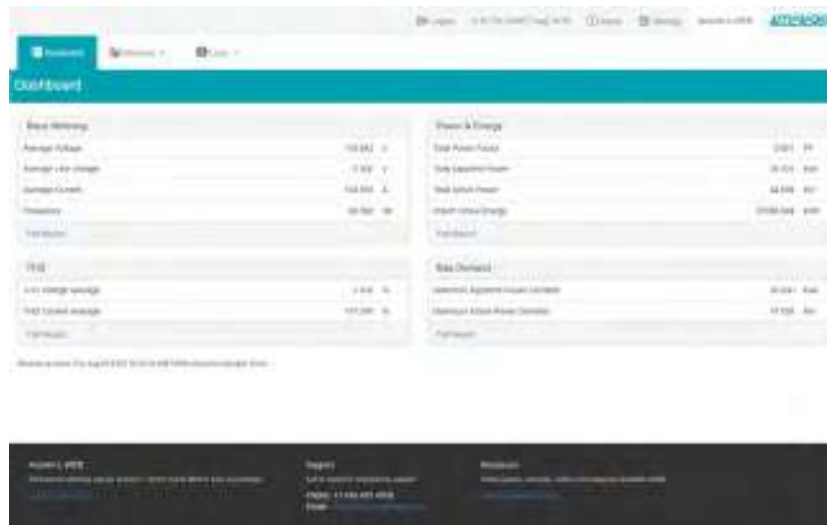
10.2 Dashboard

In the dashboard, the user will find the tabs to access different pages in the web interface such as 'Metering', 'About', and 'Settings'. The dashboard is the first page the user will see once they have entered the correct password for the appropriate access level. The dashboard is the same for both access levels.

The dashboard displays selected parameters from the different groups of metering parameters such as "Basic Metering", "Power & Energy", 'THD' and "Max Demand". Clicking on "Full report" under any one of these four metering parameter groups will take the user to the web page which contains all the parameters supported by that metering parameter group.

The dashboard also displays how long the L-WEB module has been connected to the network since the last reboot of the module in the bottom left corner of the page.

The parameters on this page are updated every 5 sec.



10.3 Metering web page

Click on the 'Metering' tab to visit the metering data web pages. There are 8 kinds of metering parameter web pages. They are 'Basic Metering', 'Power & Energy', 'Min/Max', 'THD', 'Harmonics', 'Phase Angles', 'Sequence', and 'I/O'. Each web page shows data from the Acuvim L series meter.

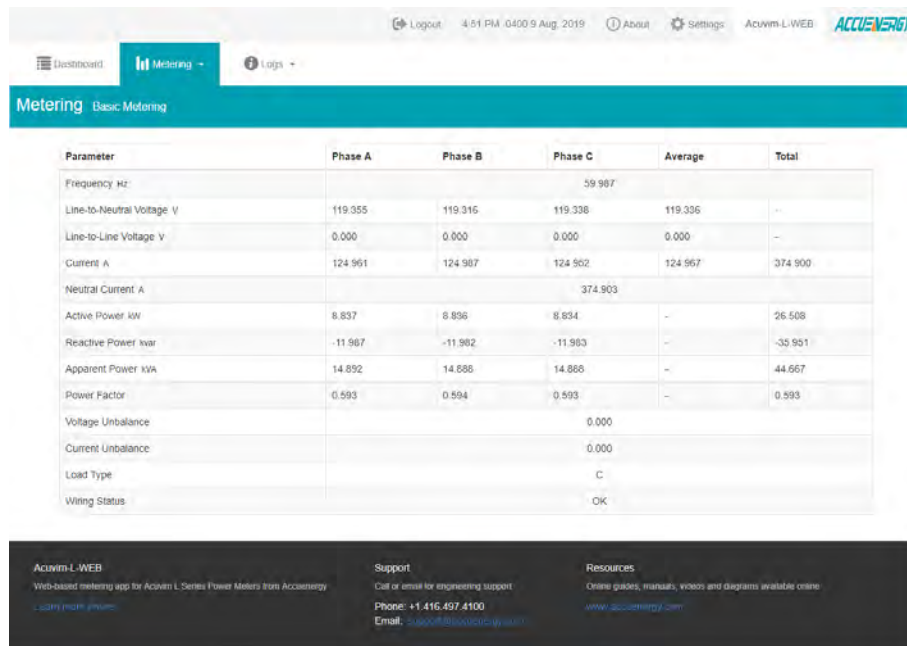
Basic Metering:

The Basic Metering web page includes the data of real-time parameters for the Acuvim L series meter. This includes the Line Voltages, Phase Voltages, Current, Neutral Current, Active, Reactive and Apparent Power, Power Factor, Frequency, Load type and Wiring status.

The parameters on this page are updated every 5 seconds.

The values displayed in this web page will depend on the wiring configuration mode of the meter. For example, if the meter is configured as '3LL' then the metering web page will display '0.00' for the Phase Voltages/Powers.

Chapter 10: Web Interface Readings and Parameter Settings



Parameter	Phase A	Phase B	Phase C	Average	Total
Frequency Hz:	59.987				
Line-to-Neutral Voltage V	119.355	119.316	119.338	119.336	--
Line-to-Line Voltage V	0.000	0.000	0.000	0.000	--
Current A	124.961	124.987	124.952	124.967	374.900
Neutral Current A	374.903				
Active Power kW	8.837	8.896	8.834	--	26.568
Reactive Power kvar	-11.967	-11.982	-11.983	--	-35.931
Apparent Power kVA	14.892	14.886	14.866	--	44.667
Power Factor	0.593	0.594	0.593	--	0.593
Voltage Unbalance	0.000				
Current Unbalance	0.000				
Load Type	C				
Wiring Status	OK				

Acuvim L-WEB
Web-based metering app for Acuvim L Series Power Meters from Accuenergy
[Learn more about...](#)

Support
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Phone: +1 416 497 4100
Email: support@accuenergy.com

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www.accuenergy.com

Power & Energy:

The Power & Energy web page shows the energy data for the Acuvim L series meter such as the Active and Reactive energy that is consumed and delivered as well as the Apparent energy per phase.

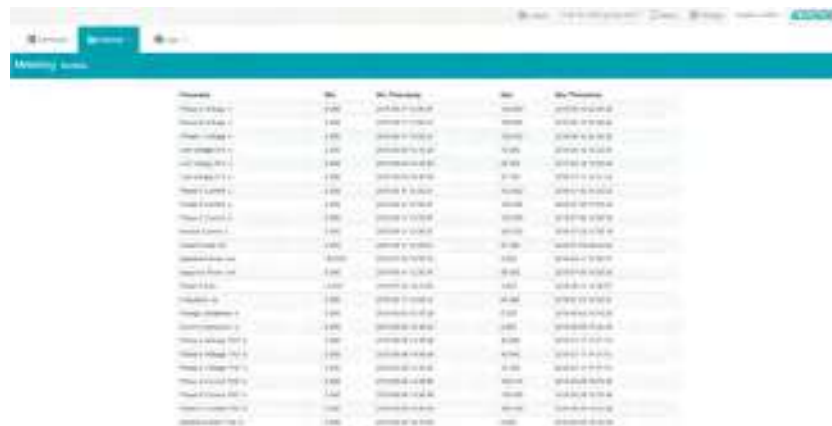
This web page also shows the Demand parameters for the Active, Reactive and Apparent Power as well as the three phase Current demands.

The parameters in this web page are updated every 5 seconds.

Min/Max:

The Min/Max page shows the maximum and minimum statistics that the meter has recorded since the lifetime of the meter or from the last time the min/max statistics were reset. This page also shows the timestamps they were recorded at.

The parameters in this web page are updated every 10 seconds.



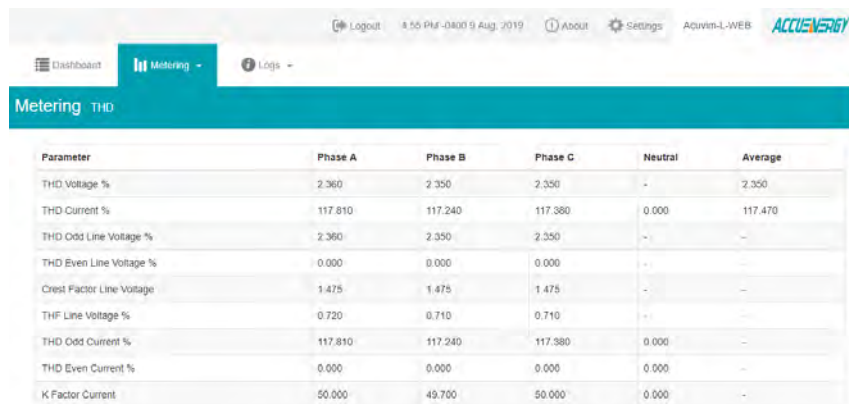
The screenshot shows a web interface with a table of recorded statistics. The table has columns for Parameter, Min, Min Timestamp, Max, and Max Timestamp. The parameters listed include Voltage (Line, Phase, Neutral), Current (Line, Phase, Neutral), Power (Line, Phase, Neutral), Energy (Line, Phase, Neutral), and Power Factor (Line, Phase, Neutral). The values are numerical, and the timestamps are in YYYY-MM-DD HH:MM:SS format.

Parameter	Min	Min Timestamp	Max	Max Timestamp
Voltage Line Voltage %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Voltage Line Voltage V	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Voltage Phase Voltage %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Voltage Phase Voltage V	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Voltage Neutral Voltage %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Voltage Neutral Voltage V	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Current Line Current %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Current Line Current A	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Current Phase Current %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Current Phase Current A	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Current Neutral Current %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Current Neutral Current A	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Line Power %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Line Power W	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Phase Power %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Phase Power W	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Neutral Power %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Neutral Power W	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Energy Line Energy %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Energy Line Energy kWh	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Energy Phase Energy %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Energy Phase Energy kWh	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Energy Neutral Energy %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Energy Neutral Energy kWh	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Factor Line Power %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Factor Line Power PF	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Factor Phase Power %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Factor Phase Power PF	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Factor Neutral Power %	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00
Power Factor Neutral Power PF	2.360	2019-08-09 10:00:00	2.360	2019-08-09 10:00:00

THD:

The THD web page shows the power quality data such as the THD, THFF, Crest Factor and K Factor for both the voltage and current.

The parameters in this web page are updated every 15 seconds.



The screenshot shows a web interface with a table of power quality data. The table has columns for Parameter, Phase A, Phase B, Phase C, Neutral, and Average. The parameters listed include THD Voltage %, THD Current %, THD Odd Line Voltage %, THD Even Line Voltage %, Crest Factor Line Voltage, THF Line Voltage %, THD Odd Current %, THD Even Current %, and K Factor Current. The values are numerical, and the table is organized into a clear, readable format.

Parameter	Phase A	Phase B	Phase C	Neutral	Average
THD Voltage %	2.360	2.350	2.350	-	2.350
THD Current %	117.810	117.240	117.380	0.000	117.470
THD Odd Line Voltage %	2.360	2.350	2.350	-	-
THD Even Line Voltage %	0.000	0.000	0.000	-	-
Crest Factor Line Voltage	1.475	1.475	1.475	-	-
THF Line Voltage %	0.720	0.710	0.710	-	-
THD Odd Current %	117.810	117.240	117.380	0.000	-
THD Even Current %	0.000	0.000	0.000	0.000	-
K Factor Current	50.000	49.700	50.000	0.000	-

Chapter 10: Web Interface Readings and Parameter Settings

Harmonics:

The Harmonics web page will show the harmonics of the voltage and the current waveform being measured. It will display the harmonics of each phase in a graphical and tabular format. Select between voltage and current to view their respective harmonics as well as between the 2nd-31st harmonics or 32nd-63rd from the drop down list.

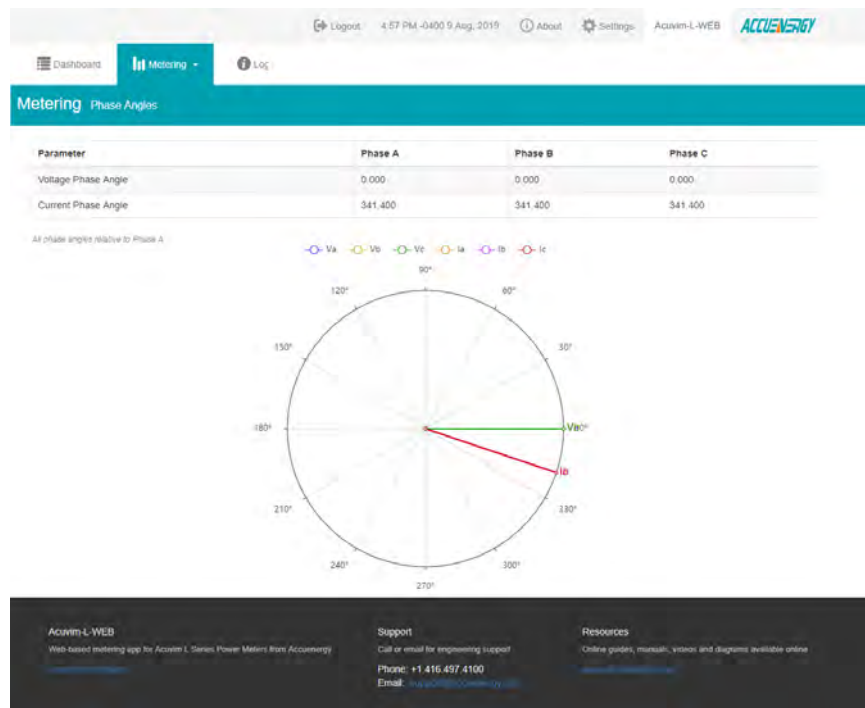
The parameters in this web page are updated every 15 seconds.



Phase Angles:

The Phase Angles web page will show the phase angles of the voltage and current waveform being measured which can be used for remote troubleshooting. This page provide a visual diagram of the phase angles with respect to the voltage connected to the Phase A voltage input.

The parameters in this web page are updated every 5 seconds.

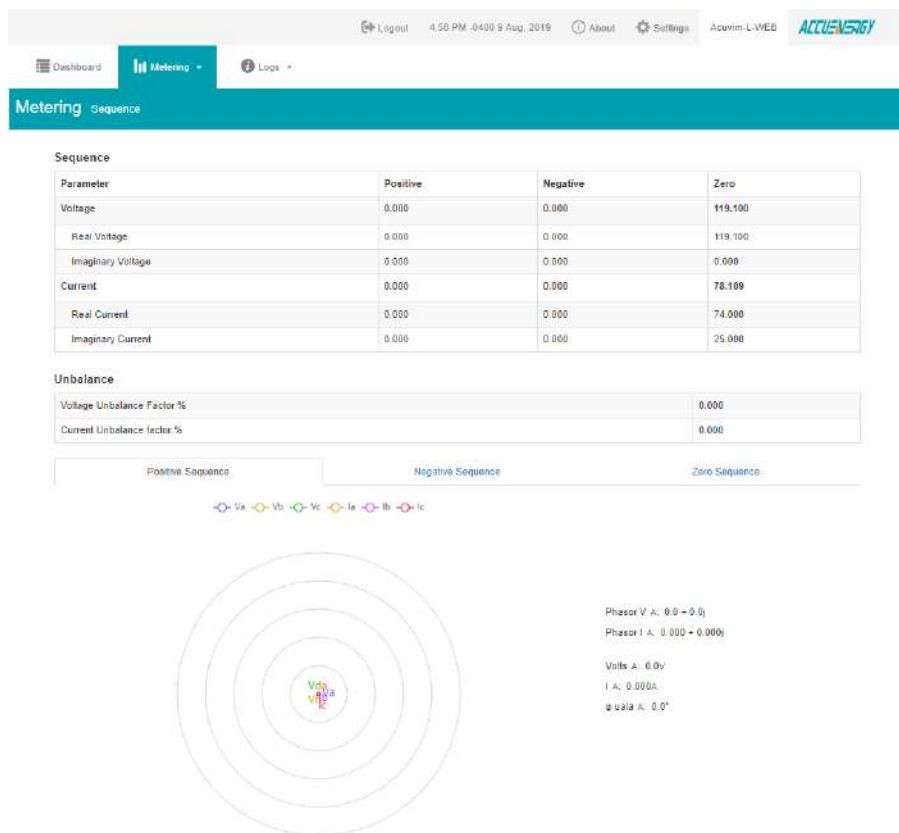


Chapter 10: Web Interface Readings and Parameter Settings

Sequence:

The Sequence web page will show the positive, negative and zero components of the voltage and current waveform being measured.

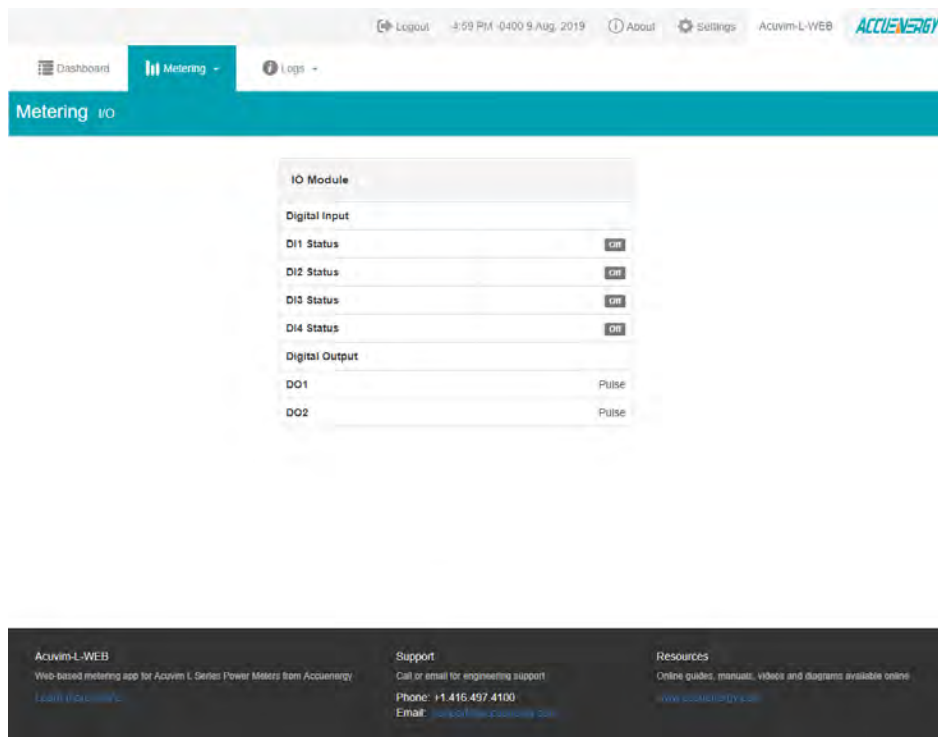
The parameters in this web page are updated every 15 seconds.



I/O:

The I/O web page will display the status of the I/O modules that are connected and their DI and DO values.

The parameters in this web page are updated every 5 seconds.



The screenshot shows the Accuim-L-WEB web interface. At the top, there is a navigation bar with 'Dashboard', 'Metering', and 'Logs' tabs. The 'Metering' tab is active, and the 'I/O' sub-tab is selected. The main content area displays the status of the I/O modules. The 'Digital Input' section shows four modules (DI1, DI2, DI3, DI4) with status indicators (ON/OFF). The 'Digital Output' section shows two modules (DO1, DO2) with status indicators (Pulse).

I/O Module	
Digital Input	
DI1 Status	ON
DI2 Status	ON
DI3 Status	ON
DI4 Status	ON
Digital Output	
DO1	Pulse
DO2	Pulse

The footer contains three sections: 'Accuim-L-WEB' (Web-based metering app for Accuim L Series Power Meters from Accuenergy, [Learn More](#)), 'Support' (Call or email for engineering support, Phone: +1.416.497.4100, Email: [sales@accuenergy.com](#)), and 'Resources' (Online guides, manuals, videos and diagrams available online, [www.southcoast.com](#)).

Chapter 10: Web Interface Readings and Parameter Settings

10.4 Status web page

Click on the 'Logs' tab to visit the metering logs web pages.

There are five kinds of logs that can be viewed, they are "Trend Log", "Data Log", "Alarm Log", "SOE Log" and "PQ Event Log". Each web page shows data from the Acuvim L series meter.



Device Information	
Setting	Value
Device Model	Acuvim L-DAS
Device Serial Number	4010001180
Device Firmware Version	0.0.0
Device Hardware Version	0.0.1
Device Model	Acuvim L-VSD
Device Serial Number	4010001180
Device Hardware Version	0.0.1
Device Firmware Version	0.0.0
Device MAC Address	EE:00:0A:25:3C:30
Device Status	Up

Trend Log:

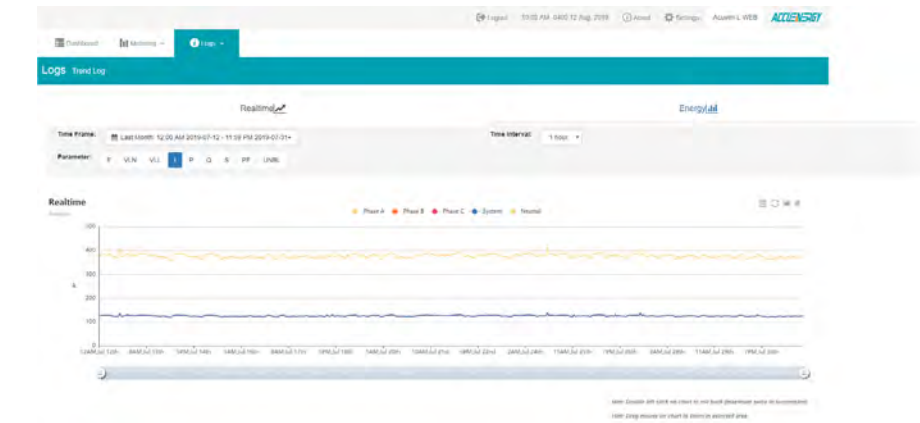
The Trend Log web page includes the real-time and energy trend diagram. The real-time trend log diagram can be selected to show the following parameters phase voltage, line voltage, current, active power, reactive power, apparent power and power factor for each phase as well as the totals. The energy trend log shows the imported and exported active energy, reactive energy, total energy, net energy and apparent energy.

The data of the trend log can be previewed and downloaded as a .csv file by clicking the '**Data Review**'  and '**Data**'  icons on the right top side of the diagram. The trend log diagram can also be saved as an image by clicking the '**Image**'  icon.

Realtime:

The real time parameters can be trended at different time intervals depending on the Time Frame selected. Listed below are the time intervals for each possible time frame setting:

Time Frame	Time Intervals
Last 10 minutes	5 second 15 seconds 1 minute
Last 1 Hour	1 minute
Today	15 minutes 1 hour
Yesterday	15 minutes 1 hour
Last 7 days	15 minutes 1 hour 1 day
Last 30 days	1 hour 1 day
Last Month	1 hour 1 day
Custom Range	Dependent on range specified

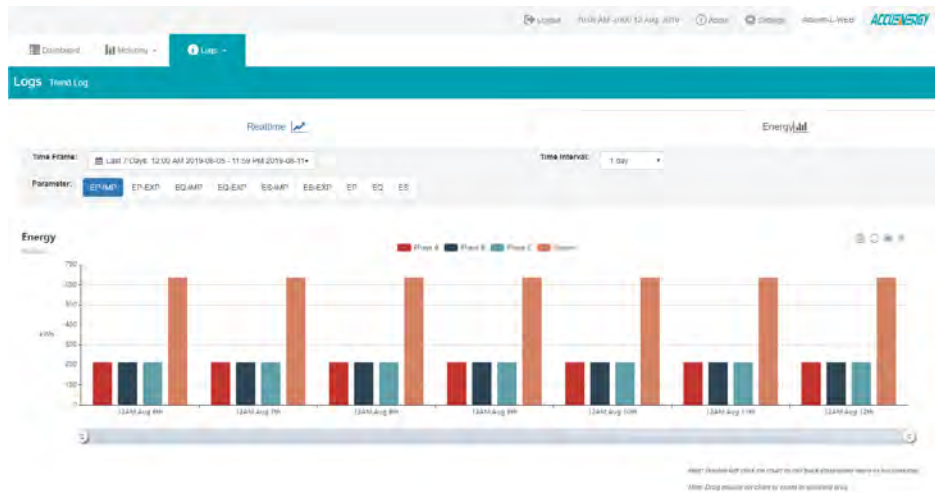


Chapter 10: Web Interface Readings and Parameter Settings

Energy:

Similarly the energy parameters can be trended at different time intervals depending on the Time Frame selected. The table below displays the time intervals:

Time Frame	Time Intervals
Last 1 Hour	1 minute
Today	15 minutes 1 hour
Yesterday	15 minutes 1 hour
Last 7 days	15 minutes 1 hour 1 day
Last 30 days	1 hour 1 day
This Month	1 hour 1 day
Last Month	1 hour 1 day
Last year	1 day 1 month
Custom Range	Dependent on range specified



Data Preview:

The data preview allows the user to view the graphical data in tabular form.

User can also download this data into a csv file for further examination.

The screenshot shows the 'Logs Trend Log' interface with the 'Time Frame' set to 'Last Month' (12:00 AM 2019-07-12 to 11:59 PM 2019-07-31) and the 'Time Interval' set to '1 Hour'. The 'Parameter' is 'P'. The 'Data Preview' table shows energy data for Phase A, Phase B, Phase C, and System over a 1-hour period.

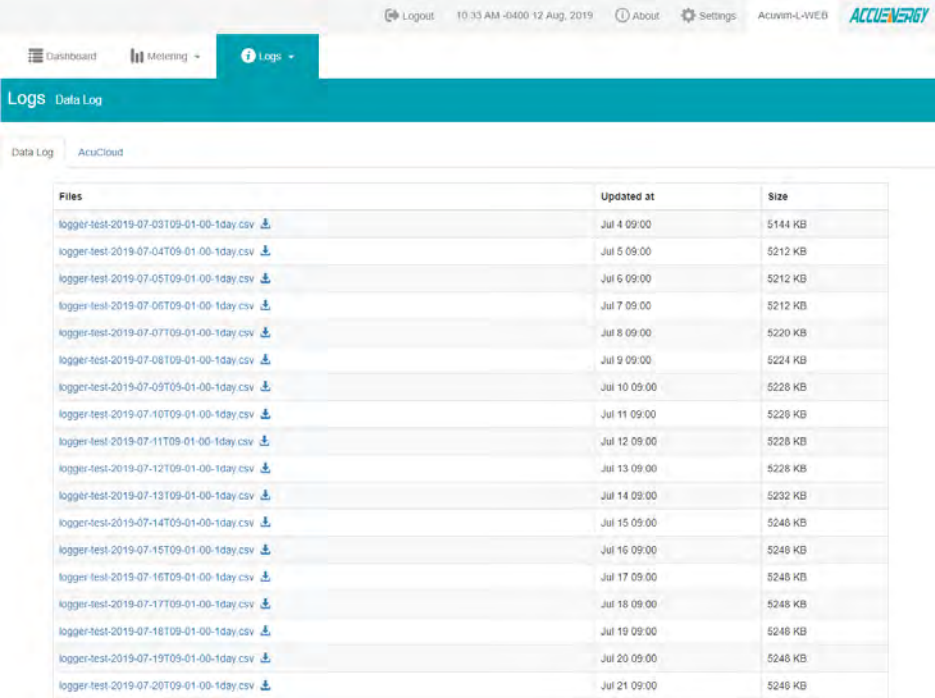
Time	Phase A	Phase B	Phase C	System
12AM Jul 12th	8.8	8.8	8.8	26.5
1AM Jul 12th	8.8	8.8	8.8	26.5
2AM Jul 12th	8.9	8.9	8.9	26.6
3AM Jul 12th	8.9	8.9	8.9	26.6
4AM Jul 12th	8.8	8.8	8.8	26.5
5AM Jul 12th	8.8	8.8	8.8	26.5
6AM Jul 12th	8.9	8.9	8.9	26.6
7AM Jul 12th	8.9	8.9	8.9	26.6
8AM Jul 12th	8.9	8.9	8.9	26.6
9AM Jul 12th	8.8	8.8	8.8	26.5
10AM Jul 12th	8.8	8.8	8.8	26.5
11AM Jul 12th	8.8	8.8	8.8	26.5
12PM Jul 12th	8.8	8.8	8.8	26.5
1PM Jul 12th	8.9	8.8	8.8	26.5
2PM Jul 12th	8.9	8.9	8.9	26.7

Chapter 10: Web Interface Readings and Parameter Settings

Data Log:

The data log web page includes all the data files for data log and Acuccloud.

You can select the between Data Log and AcuCloud by clicking on the tab located on the left side of the web page. Once the Data log is selected, the log file for will show on the screen with the update time and file size. To download the file, click on the download icon  to save the file in the computer. The data log will be saved as a compressed csv file.

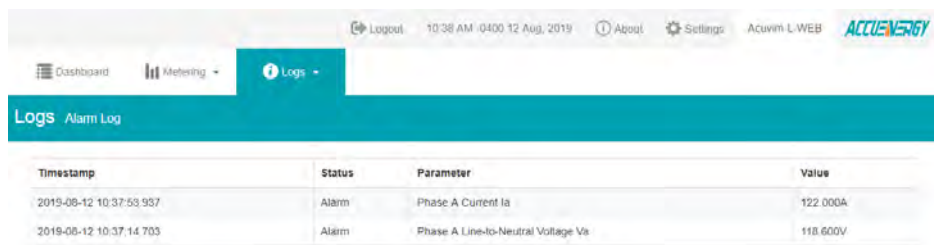


Files	Updated at	Size
logger-test-2019-07-03T09-01-00-1day.csv 	Jul 4 09:00	5144 KB
logger-test-2019-07-04T09-01-00-1day.csv 	Jul 5 09:00	5212 KB
logger-test-2019-07-05T09-01-00-1day.csv 	Jul 6 09:00	5212 KB
logger-test-2019-07-06T09-01-00-1day.csv 	Jul 7 09:00	5212 KB
logger-test-2019-07-07T09-01-00-1day.csv 	Jul 8 09:00	5220 KB
logger-test-2019-07-08T09-01-00-1day.csv 	Jul 9 09:00	5224 KB
logger-test-2019-07-09T09-01-00-1day.csv 	Jul 10 09:00	5228 KB
logger-test-2019-07-10T09-01-00-1day.csv 	Jul 11 09:00	5228 KB
logger-test-2019-07-11T09-01-00-1day.csv 	Jul 12 09:00	5228 KB
logger-test-2019-07-12T09-01-00-1day.csv 	Jul 13 09:00	5228 KB
logger-test-2019-07-13T09-01-00-1day.csv 	Jul 14 09:00	5232 KB
logger-test-2019-07-14T09-01-00-1day.csv 	Jul 15 09:00	5246 KB
logger-test-2019-07-15T09-01-00-1day.csv 	Jul 16 09:00	5248 KB
logger-test-2019-07-16T09-01-00-1day.csv 	Jul 17 09:00	5248 KB
logger-test-2019-07-17T09-01-00-1day.csv 	Jul 18 09:00	5248 KB
logger-test-2019-07-18T09-01-00-1day.csv 	Jul 19 09:00	5248 KB
logger-test-2019-07-19T09-01-00-1day.csv 	Jul 20 09:00	5248 KB
logger-test-2019-07-20T09-01-00-1day.csv 	Jul 21 09:00	5248 KB

Alarm Log:

The Alarm Log web page provides the user with a summary of the alarm events that have occurred with the meter. It will show the status of up to 16 alarm events indicating the status, parameter, value and timestamp of the alarm event.

Once all 16 alarm events are full, the newest alarm event will then wrap around to alarm 1. The parameters in the alarm status web page are updated every 10 seconds.



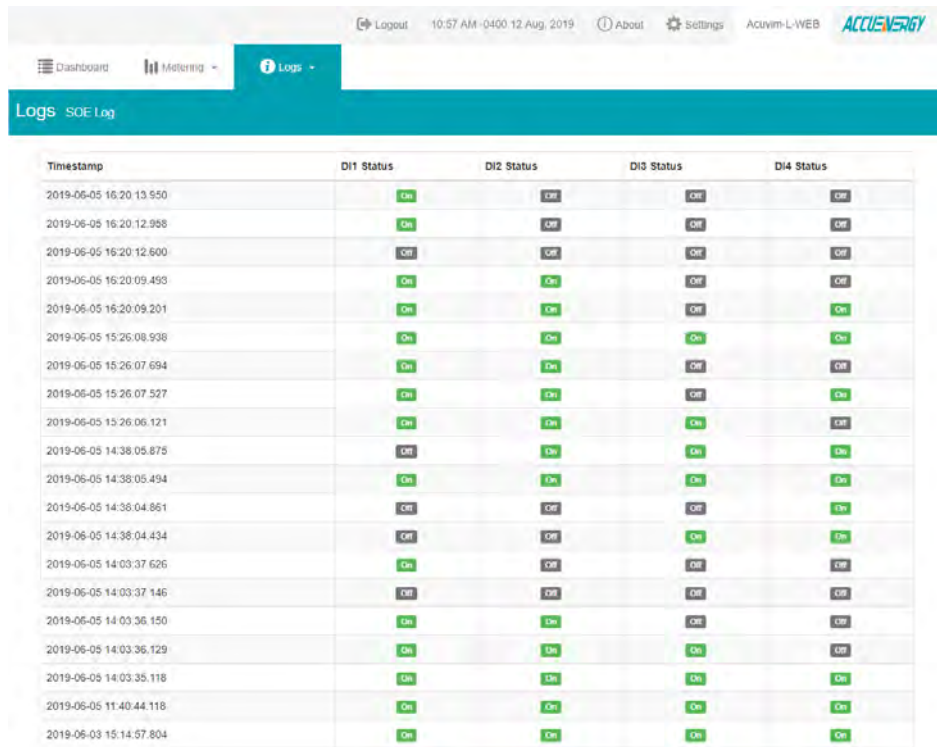
Timestamp	Status	Parameter	Value
2019-08-12 10:37:53.937	Alarm	Phase A Current Ia	122.000A
2019-08-12 10:37:14.703	Alarm	Phase A Line-to-Neutral Voltage Va	118.600V

SOE Log:

The SOE web page will display the Sequence of Event log for the enabled I/O module that is attached to the Acuvim L series meter with timestamps and will display the DI status for up to 20 SOE events. The SOE must be enabled from the Acuvim software.

The SOE log parameters are updated every 10 sec.

Chapter 10: Web Interface Readings and Parameter Settings



Timestamp	DI1 Status	DI2 Status	DI3 Status	DI4 Status
2019-06-05 16:20:13.550	On	Off	Off	Off
2019-06-05 16:20:12.988	On	Off	Off	Off
2019-06-05 16:20:12.600	Off	Off	Off	Off
2019-06-05 16:20:09.493	On	On	Off	Off
2019-06-05 16:20:09.201	On	On	Off	On
2019-06-05 15:26:08.938	On	On	On	On
2019-06-05 15:26:07.694	On	On	Off	Off
2019-06-05 15:26:07.527	On	On	Off	On
2019-06-05 15:26:06.121	On	On	On	Off
2019-06-05 14:38:05.875	Off	On	On	On
2019-06-05 14:38:05.494	On	On	On	On
2019-06-05 14:38:04.861	Off	Off	Off	On
2019-06-05 14:38:04.434	Off	Off	On	On
2019-06-05 14:03:37.626	On	Off	Off	Off
2019-06-05 14:03:37.146	Off	Off	Off	Off
2019-06-05 14:03:36.150	On	On	Off	Off
2019-06-05 14:03:36.129	On	On	On	Off
2019-06-05 14:03:35.118	On	On	On	On
2019-06-05 11:40:44.118	On	On	On	On
2019-06-03 15:14:57.804	On	On	On	On

PQ Event Log:

Note: Only Acuvim-DL meter and Acuvim-EL meter support PQ Event Logs.

PQ event log will display the power quality issues detected by Acuvim L meter. The event log will include the timestamp and the reason of triggering the PQ Event log.

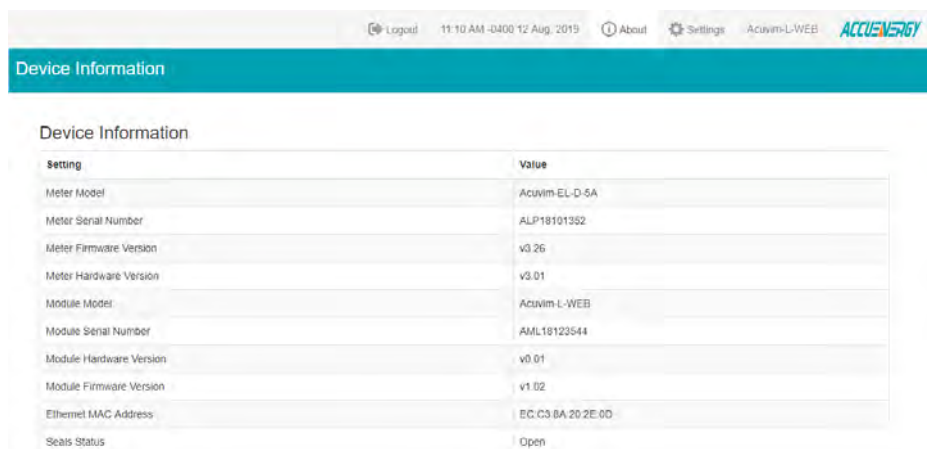
Dashboard Metering Logs		Logout 10:59 AM -0400 12 Aug. 2019 About Settings Acuvim L-WEB ACCUENERGY
Logs PQ Event Log		
Timestamp	Reason	
2019-07-30 15:55:32.857	Over Current (Ia/Ib/Ic)	
2019-07-30 12:06:09.022	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-07-30 12:04:28.024	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-07-30 12:04:19.023	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-07-24 12:10:44.022	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-07-24 11:35:53.021	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-07-24 10:41:16.021	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-07-24 09:28:11.024	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-07-22 10:22:51.828	Voltage Fail (Va/Vb/Vc)	
2019-07-11 11:42:00.312	Voltage Fail (Va/Vb/Vc)	
2019-07-01 08:41:32.024	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-06-26 18:04:16.918	Voltage Fail (Va/Vb/Vc)	
2019-06-12 16:32:54.020	Voltage Sag (Va/Vb/Vc) Voltage Fail (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-06-11 12:05:41.024	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-06-10 09:25:23.021	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	
2019-06-06 14:36:56.029	Voltage Sag (Va/Vb/Vc) Phase Sequence Error (V/I)	

Note: The voltage sag and voltage fail share a common rated value. The voltage sag, voltage fail and over current share the common Half-cycle threshold.
Note: The function of power quality eventlog is available for 3LN wiring. The meter which is Hops-CT type is not supports for the power quality eventlog.

10.5 About

The About tab located at the top right corner of the web interface allows users to view the Device Information page. This page provides users with information about the Acuvim L series meter and the L-WEB module. The Device Information contains the model of the Acuvim L meter, serial number, firmware version and the meter addresses. It also contains the serial number, firmware version, hardware version and the MAC addresses of the L-WEB module.

Chapter 10: Web Interface Readings and Parameter Settings



Setting	Value
Meter Model	Acuvim-EL-D-5A
Meter Serial Number	ALP18101352
Meter Firmware Version	v3.26
Meter Hardware Version	v3.01
Module Model	Acuvim-L-WEB
Module Serial Number	AML18123544
Module Hardware Version	v0.01
Module Firmware Version	v1.02
Ethernet MAC Address	EC:C3:8A:20:2E:0D
Seals Status	Open

10.6 Settings web page

Meter

The basic metering configurations needed to set up the meter can be applied from the web interface by clicking on Settings and selecting the 'Meter' tab.

Device Description: A description for the meter can be provided in this field which will display on the Dashboard page.

Voltage Wiring: Select the type of wiring that the meter will be monitoring from the modes in the drop down list.

Current Wiring: Select the number of CT's that will be connected to the meter to measure the current.

PT1: Enter the rated input of the potential transformer that is connected to the meter. Possible range is from 50 to 1,000,000V. By default PT1 is 400.

PT2: Enter the rated output of the potential transformer. Possible range is from 50 to 400V. The default PT2 setting is 400.

NOTE: If the voltage input is connected directly to the meter and there are no PTs (Potential Transformers) stepping down the voltage to the meters voltage input then the PT1 and PT2 settings can be left as the default of 400.

CT1: Enter the rated input of the current transformer that is used with the meter. Possible ranges for the CT1 are from 1 to 50000A.

The default settings for CT1 are dependent on the current input type of the Acuvim II meter. The following table displays the default CT1 values for the different Current input options.

Acuvim L Current Input	Default CT1 Value
1A	1
5A	5
333mV	1
RCT	1000
80mA/100mA/200mA	1

CT2: Select the rated output of the current transformer from the drop down list. By default this setting is already configured.

NOTE: CT2 is configurable only for 5A and mA current inputs, 5A can be either 5A or 1A and mA can be either 80mA, 100mA or 200mA.

Neutral Current Reading: Select the mode of the neutral current readings for the meter. By default the meter is in calculated mode which will require phase current to calculate the neutral current. Configuring the meter in Measure mode does not require any calculation. The neutral current will be measured directly by meter.

I A Direction: Represents the flow of direction for the Phase A current being measured, configure this setting to troubleshoot issues related to incorrect polarity of readings such as real power, Power Factor and etc.

I B Direction: Represents the flow of direction for the Phase B current being measured, configure this setting to troubleshoot issues related to incorrect polarity of readings such as real power, Power Factor and etc.

I C Direction: Represents the flow of direction for the Phase C current being measured, configure this setting to troubleshoot issues related to incorrect polarity of readings such as real power, Power Factor and etc.

Chapter 10: Web Interface Readings and Parameter Settings

Wiring Detection: Enable wiring detection to check if the wiring of the CTs and voltage input is correct.

Demand Calculation: Demand calculating mode can be set as sliding window, fixed window, rolling window and thermal according to user. When using the sliding window interval method, user selects an interval from 1 to 30 minutes, which is the period of the calculation. The demand updates every 1 minute as the window slides once. Thermal demand method calculates the demand based on a thermal response which mimics a thermal demand meter. User selects the period for the calculation and the demand updates at the end of each period.

- **Sliding Window Demand**

You select an interval from 1 to 30 minutes, which is the period of the calculation. The demand updates every 1 minute as the window sliding once.

- **Fixed Window Demand**

You select a period time from 1 to 30 minutes, which is the period of the calculation. The demand updates once as the period time.

- **Rolling Window Demand**

You select a period time from 1 to 30 minutes, which is the period of the calculation. And you select an interval time, which is the rolling time. The period time is must the rolling time integer times. The demand updates once as the rolling time over.

- **Thermal Demand**

Thermal demand method calculates the demand based on a thermal response which mimics the thermal demand meter. You select the period for the calculation and the demands update at the end of each period.

Energy Reading: User can choose primary energy or secondary energy by pressing key or via communication. The energy will be reset when user switch the mode of energy calculation (primary energy or second energy). And accumulate the energy again.

Reactive Energy Calculation Method: There are two ways to calculate reactive energy(power): Mode 0: real reactive energy; Mode 1: general reactive energy

[Logout](#)
11:23 AM, 0400 12 Aug 2019
[About](#)
[Settings](#)
[Acqwin-L-Web](#)

Meter
Communications
Management
Network Diagnostic
About / Firmware

Settings
Meter
Save

Meter Password

Default 0000, Range 0-9999

Comm Port

Meter Address

Default 1, Range 1-247

Baud Rate

Parity

Ext. Port

Meter Address

Default 1, Range 1-247

Baud Rate

Parity

Voltage Wiring

PT1

Default 400, Range 50-1,000,000

CT1

Default 5, Range 1-50,000

Current Wiring

PT2

Default 400, Range 50-400

CT2

Neutral Current Reading

I A Direction
☒ Positive
☐ Negative

I B Direction
☒ Positive
☐ Negative

I C Direction
☒ Positive
☐ Negative

Wiring Detection
☐ Enable
☒ Disable

Demand Calculation

Averaging Interval Window

mins

Sub-Interval

mins

PF Convention

Angle Calculation

Energy Reading

Reactive Energy Calculation Method

Back Light Timeout

mins

Default 1, Range 1-120

Save

Chapter 10: Web Interface Readings and Parameter Settings

Communication

The basic metering configurations needed to set up the meter can be applied from the web interface by clicking on Settings and selecting the 'Meter' tab.

The communication setting web page will allow the user to configure settings related to the Ethernet network. The functions that the L-WEB support can be configured from this web page by selecting the corresponding tab such as Emails, Time/Date, Datalog, HTTP/FTP Post, AcuCloud Post for communicating with the AcuCloud software, SNMP, BACnet and DNP3.

Network:

DHCP: Select 'Manual' to manually configure the IP address to access the meter. If set to 'Manual', you'll also need to set the Subnet Mask and Gateway.

Select 'Auto' to have the meter assigned a IP address automatically. With this selection the Subnet Mask, Gateway and DNS servers will also be automatically assigned.

NOTE: After changing DHCP to Auto, check the display of the meter to obtain the new IP address that has been assigned after the L-WEB has completed its reboot and the router has assigned the meter with an IP address.

IP Address: If the DHCP is configured to Manual, the IP address can be configured from this page.

Subnet Mask: If the DHCP is configured to Manual, the Subnet Mask can be configured from this page.

Gateway: If the DHCP is configured to Manual, the Gateway can be configured from this web page.

DHCP DNS Server 1: Enter the address of the DNS 1 server in this page.

DHCP DNS Server 2: Enter the address of the DNS 2 server in this page.

Allow HTTP: Enable this setting so that the L-WEB can be accessed through HTTP at port 80.

HTTPS Port: Enter the HTTPS port number of the meter. By default, this setting is configured to 443. The range can be from 6000 to 9999.

NOTE: This setting should never be configured to 80.

Modbus TCP Port: Enter the Modbus port number of the meter. By default, this setting is configured to 502. The range can be from 2000 to 5999.

Proxy Server Enabled: Enable this setting so that the L-WEB can act as an intermediary to communicate with another server.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB will need to be rebooted from the 'Management' page.

The screenshot shows the 'Settings' page for the 'Communications' tab. The page has a top navigation bar with 'Meter', 'Communications', 'Management', 'Network Diagnostic', and 'Module Firmware'. Below this is a sub-header 'Settings Communications' with a 'Save' button. The 'Network' sub-tab is selected, showing options for 'Email', 'Time/Date', 'Data Log', 'Post Channel', 'AcuCloud', 'BACnet/IP', 'SNMP', and 'DNP'. The 'Ethernet DHCP' section has radio buttons for 'Manual' (selected) and 'Auto'. Below this are three input fields: 'Ethernet IP Address' (192.168.1.221, Default: 192.168.1.254), 'Ethernet Subnet Mask' (255.255.255.0, Default: 255.255.255.0), and 'Ethernet Gateway' (192.168.1.1, Default: 192.168.1.1). The 'Ethernet Working Status' is 'Disconnected'. The 'DNS Server 1' field is 8.8.8.8 (Default: 8.8.8.8). The 'DNS Server 2' field is 8.8.4.4 (Default: 8.8.4.4). The 'HTTP Enable' section has radio buttons for 'Disable' (selected) and 'Enable'. The 'HTTPS Port' field is 443 (Default: 443, Range: 6000-9999). The 'Modbus TCP Port' field is 502 (Default: 502, Range: 2000-5999). The 'HTTP Proxy Enable' section has radio buttons for 'Disable' (selected) and 'Enable'. A 'Save' button is at the bottom left.

Chapter 10: Web Interface Readings and Parameter Settings

Email

The L-WEB supports the SMTP protocol where users can setup the email function to enable the meter to send emails based on a specific time interval or whenever there is an alarm or SOE event or a combination of both. The Email configuration page can be accessed by clicking on the 'Email' tab on the settings page. Users must know their SMTP server provider and details regarding their SMTP server, which can be provided by users' IT personnel.

There are three modes available for sending emails that the user can enable.

The first mode is '**Triggered Sending**' where emails are sent immediately when there is a new alarm, SOE, or waveform event.

The second mode is '**Timed Sending**' where users can receive emails at a certain period of time based on the time interval configured. The email will include the data that is selected to be sent.

The third mode is when both of the above are enabled.

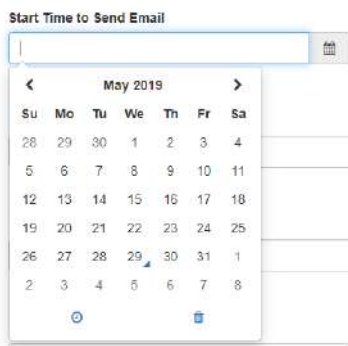
To use this function the following settings need to be configured:

SMTP Enabled: Select 'Enable' to enable and to further configure the settings related to the SMTP function.

Start Time to Send Email: Select the date and time for when the emails should begin to send.

Click on the  icon to configure the time and date.

Click on the  icon in the bottom right to clear the time and date.



SMTP Server: Enter the URL of a valid SMTP server. I.E. mail.accuenergy.com or smtp.gmail.com

SMTP Port: Enter the port number associated with the SMTP server.

SMTP From: Enter a name or phrase which will appear to let you know who the mail is from. I.E. 'Technical Support'

SMTP Username: Enter the SMTP user name for the SMTP server set above.

SMTP Password: Enter the SMTP user password for the user set above.

SMTP To Address 1,2,3: Enter up to three recipients that you wish to have the email sent to in 'SMTP To Address 1', 'SMTP To Address 2' and 'SMTP To Address 3'.

Test Address 1,2,3: Test the if the email can be sent to 'SMTP To Address 1', 'SMTP To Address 2', 'SMTP To Address 3'.

NOTE: The test function will only show the true result once the settings are saved and a reboot is performed on the module.

After configuring the above settings, the next step is to select the content for the emails.

The screenshot shows the 'Settings Communications' page in the AccuEnergy web interface. The page has a top navigation bar with links for 'Meter', 'Communications', 'Management', 'Network Diagnostic', and 'Module Firmware'. The 'Communications' tab is active. Below the navigation bar, there is a 'Settings Communications' section with a 'Save' button. The settings are organized into several sections: 'SMTP Enable' with a 'Disable' button and an 'Enable' radio button selected; 'Start Time to Send Email' with a date and time picker set to '1:52 PM -0400 12 Aug. 2019'; 'SMTP Server' with a text input field containing 'ssl.digitalhosting.ca' and a note 'note: maximum 40 characters'; 'SMTP Port' with a text input field containing '587'; 'SMTP From' with a text input field containing 'Technical Support' and a note 'note: maximum 40 characters'; 'SMTP Subject' with a text input field containing 'Email Test' and a note 'note: maximum 30 characters'; 'SMTP Username' with a text input field containing 'test@accuenergy.com' and a note 'note: maximum 40 characters'; 'SMTP Password' with a masked text input field and a note 'note: maximum 32 characters'; 'SMTP To Address 1' with a text input field containing 'test123@accuenergy.com' and a note 'note: maximum 40 characters'; 'SMTP To Address 2' with an empty text input field and a note 'note: maximum 40 characters'; and 'SMTP To Address 3' with an empty text input field and a note 'note: maximum 40 characters'. At the bottom of each address field, there is a 'Test Address' button.

Chapter 10: Web Interface Readings and Parameter Settings

The content of the emails can either be time based triggered or event based triggered.

For receiving emails on a time based under Enable Periodic Email Reporting:

Enter a time between 5-1440 minutes in the 'Set time interval'

- Check off the box beside the parameters for the content the user should receive.
 - **Metering Data:** Report on Real-time voltage, current, power and etc.
 - **Energy Data:** Report on energy parameters.
 - **Harmonics Data:** Report on the voltage and current harmonics from 2nd to 63rd.
 - **Sequence & Phase Angles:** Report on the positive, negative and zero components of the voltage and current waveform.
 - **Min/Max:** Report on the maximum and minimum statistics that the meter has recorded since the lifetime of the meter or from the last reset of the min/max statistics.
 - **Alarm:** Report of the alarm log.
 - **SOE Record:** Report of the SOE log.
 - **PQ Event Data:** Report of PQ Event.

The user will receive an email with csv file attachment.

For receiving emails on a event based select either Alarm Event, SOE Record or PQ Event Data under the Enable Real-time Email Reporting.

The user will receive an email with csv file attachment corresponding to the triggered event selected.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the configurations to take effect.

The screenshot displays a web interface for configuring email reporting. At the top, there is a section for 'Enable Periodic Email Reporting' with a 'Set Rate (interval)' dropdown set to '5' and a 'Range (1-1440)' label. Below this, a table lists data types to be included in periodic emails, with checkboxes for 'Metering Data', 'Energy Data', 'Harmonics Data', 'Sequence & Phase Angles', 'Min/Max', 'Alarms', 'SCB Records', and 'PQ Event Data'. A second section, 'Enable Real-time Email Reporting', includes checkboxes for 'Include Alarm Event', 'Include SCB Records', and 'Include PQ Event Data'. A green 'Save' button is located at the bottom left of the form.

Time/Date

The device clock of the Acuvim L series meter can be set through the web interface of the L-WEB module. The L-WEB module also supports the SNTP (Simple Network Time Protocol) protocol so that the module can update the meter's device clock by synchronizing with a time server.

The module can sync with up to 3 time servers. If a time server is down, the module will synchronize with the second or third time server if they are configured.

The settings for the time and date can be found by clicking on the 'Settings' and selecting the 'Communications' tab. Users can select 'Time/Date' to configure the time settings.

Chapter 10: Web Interface Readings and Parameter Settings

The following must be configured to set the time/date and NTP settings:

SNTP Enabled: Select enable to further configure the settings related to the NTP (Network Time Protocol) function

Device Clock: Configure the date and time on the meter

- Click on the  icon to configure the date and time.
- Click on the  icon in the bottom right to clear the time and date.

Sync Time: Click on Force Update to have the L-WEB sync its time with the SNTP server

SNTP Server 1;2;3: Enter up to 3 SNTP servers in the "SNTP Server 1", "SNTP Server 2" and "SNTP Server 3" fields.

Examples of North American SNTP servers are:

0.us.pool.ntp.org

1.us.pool.ntp.org

2.us.pool.ntp.org

3.us.pool.ntp.org

For more NTP servers based on region, visit the following site:

<http://www.pool.ntp.org/en/>

Time Zone: Select the time zone the meter is in or the time zone in which you would like the meter's time to be synchronized to from the drop down list. Users can also select the timezone by clicking on the region in the map.

Click 'Save' after configuring the time settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the settings to take effect.

The screenshot shows the L-WEB web interface. At the top, there's a navigation bar with 'Meter', 'Communications', 'Management', 'Network Diagnostic', and 'Module Firmware'. Below this is a 'Settings' section with a 'Communications' sub-tab. The 'Time/Date' sub-tab is selected. The 'SNTP Enable' section has radio buttons for 'Disable' and 'Enable' (selected). Below it is a 'SNTP Interval (minutes)' input field set to '0'. There are three 'SNTP Server' input fields, each with a note 'note: maximum 40 characters'. The first server is '0.us.pool.ntp.org'. A 'Time Zone' dropdown menu is set to 'America/Toronto (EST)'. At the bottom, there's a world map with a cursor pointing to North America.

Data Log

The L-WEB supports logging data onto its on board memory.

The data can be downloaded as a .csv file from the datalog page in the logs section or by using a HTTP/FTP client.

Logger Enable: To use the data log function to log the data onto the module, select 'Enable' to view and configure the settings that are applicable.

Timestamp Format: Select the format of the timestamp for the data that is logged. The format for the timestamp can be based on the Local Time, UTC Seconds or based on ISO8601 Format.

Log File Name Format: Select the format of the log file name for the data that is logged. The format for the log file name can be based on the UTC timestamp or based on Time Interval Format.

Log Interval: Select how frequently the meter will log data to the file that will be uploaded to the server from the drop down list. The logging interval can be from 15 second to 1 month.

Chapter 10: Web Interface Readings and Parameter Settings

Log File Name Prefix: Provide a name for the log file posted to post channel which will be appended to the beginning of the log file if "Time Interval Format" is selected as the Post File Name Format. By default "logger1" will be appended to the beginning of the log file.

Log File Length: Select the length of the local log file as from 1 minute to 1 month of data from the drop down list.

Backup File Length: Select the length of the backup log file as 1 day, 7 days or 1 month of data from the drop down list.

Settings Communications Save

Network Email Time/Date **Data Log** Post Channel AcuCloud BACnet/IP SNMP DNP

Logger Enable

☐ Disable

☒ Enable

Timestamp Format

☒ Local Time String (e.g., 2017-01-01 10:00)

☐ UTC Seconds (Number of seconds that have elapsed since 1970-01-01 00:00:00 Coordinated Universal Time)

☐ ISO8601 Format (e.g., 2017-01-01T10:00:0500)

Log File Name Format

☐ UTC Timestamp (e.g., logger1-1404570000.csv)

☒ Time Interval Format (e.g., logger1-2017-01-10T12-00-3day.csv)

Log Start Time

9:01 AM -0400 3 Jul 2019

Log Interval

15 seconds

Log File Name Prefix

logger-test

e.g., logger1-2017-10-01T09-46-1day.csv

Log File Length

5 minutes

Backup File Length

1 day

SFTP Enable

☒ Disable

☐ Enable

Save

SFTP Enable: To download the logged data from the module using a FTP client, select Enable. The log file will then be available to be downloaded using a FTP client using the following credentials:

Host: sftp://IPaddressofthemeter

Username: sftpuser

SFTP Password: accuenergy

Port: 22

By default the password for retrieving the backup log files is accuenergy. The user can configure any password or can reset to the default of accuenergy by clicking on the "Reset SFTP Password".

NOTE: After enabling the SFTP function the user must reboot the communication module in order to access the data logs with the default password of 'accuenergy'.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the changes to take effect.

Post Channel

The L-WEB supports the HTTP and FTP Post functions to send data from the meter to a HTTP/FTP server. The L-WEB can post .csv files to three different HTTP or FTP servers using HTTP Post or FTP Post.

In the case when there is no connection to the server, the L-WEB will store the posts and send it out after the connection is restored. A maximum of 3000 files will be buffered on module. The Clear Post Channel Logs button will allow users to clear the buffered files on meter.

The L-WEB can post data to a server at intervals of time ranging from 1 minute to 1 month.

The settings for configuring the post channels to post the data can be found by clicking on 'Settings' and then selecting 'Communications' tab. Click "Post Channels" to configure any of the three post channels.

Chapter 10: Web Interface Readings and Parameter Settings

Post Channel 1 Enable: Enable the Post Channel 1 in order to configure the settings needed to post data via the HTTP(S)/FTP post functions

Post Method: Select the method for posting the files, the user can choose HTTP/HTTPS or FTP

Post Name Fixed: This configuration needs to be enabled in order for user to control the name of the file that will be posted. Otherwise file name will be based on the Log File Name Format configuration from the Data Log settings

Post File Name: Users can enter a name for the file that will be posted as if 'Post Name Fixed' is enabled

If the HTTP/HTTPS post method is selected:

HTTP/HTTPS URL: Enter the URL for the HTTP/HTTPS server. The URL needs to begin with the prefix http:// or (https://)

HTTP/HTTPS Port: Enter the port number the server will be listening on

HTTP/HTTPS Meter ID: Enter a name or description for the meter to be identified on the server

If the FTP post method is selected:

FTP URL: Enter the URL for the FTP server. The URL needs to begin with the prefix ftp://

FTP Port: Enter the port number the server will be listening on

FTP Username: Enter the username required to log into the FTP server

FTP Password: Enter the password required to log into the FTP server

NOTE: The 'TEST Post Channel' button should only be utilized after clicking the 'Save' button otherwise a fail response will be observed. If a fail response occurs after clicking 'Save' confirm the network settings or credentials for the server.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the settings to take effect.

The screenshot shows the AccuEnergy L-WEB interface. At the top, there's a navigation bar with 'Meter', 'Communications', 'Management', 'Network Diagnostic', and 'Module Firmware'. Below this is a 'Settings' section with a 'Communications' sub-tab. The 'Post Channel' sub-tab is selected. Under 'Post Channel 1', there are three tabs: 'Post Channel 1', 'Post Channel 2', and 'Post Channel 3'. The 'Post Channel 1 Enable' section has 'Enable' selected. The 'Post Method' is set to 'HTTP / HTTPS'. The 'Post Name Fixed' is set to 'Enable'. The 'Post File Name' field contains 'ecc38a202e0d.csv'. The 'HTTP / HTTPS URL' field contains 'http://10.108.65.147:8000/post'. The 'HTTP / HTTPS Port' is set to '8000'. The 'HTTP / HTTPS Meter ID' is set to 'accu_ecc38a20xxxx'. There are buttons for 'Test Post Channel 1' and 'Clear Post Channel 1 Logs'. A 'Save' button is at the bottom.

Select the Post Channel 2 tab to configure the settings for post to a second server.

Post Channel 2 Enable: Enable the Post Channel 2 in order to configure the settings needed to post data via the HTTP(S)/FTP post functions

Post Method: Select the method for posting the files, the user can choose HTTP/HTTPS or FTP

Post Name Fixed: This configuration needs to be enabled in order for user to control the name of the file that will be posted. Otherwise file name will be based on the Log File Name Format configuration from the Data Log settings

Post File Name: User can enter a name for the file that will be posted as if Post Name Fixed is enabled

If the HTTP/HTTPS post method is selected:

HTTP/HTTPS URL: Enter the URL for the HTTP/HTTPS server. The URL needs to begin with the prefix http:// or (https://)

Chapter 10: Web Interface Readings and Parameter Settings

HTTP/HTTPS Port: Enter the port number the server will be listening on

HTTP/HTTPS Meter ID: Enter a name or description for the meter to be identified on the server

If the FTP post method is selected:

FTP URL: Enter the URL for the FTP server. The URL needs to begin with the prefix ftp://

FTP Port: Enter the port number the server will be listening on

FTP Username: Enter the username required to log into the FTP server

FTP Password: Enter the password required to log into the FTP server

NOTE: The "TEST Post Channel 2" button should only be utilized after clicking the 'Save' button otherwise a fail response will be observed. If a fail response occurs after clicking 'Save' confirm the network settings or credentials for the server.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the settings to take effect.

The screenshot shows the AccuEnergy L-WEB interface. At the top, there's a navigation bar with links for Meter, Communications, Management, Network Diagnostic, and Module Firmware. Below this is a 'Settings' section with a 'Communications' tab. The 'Post Channel' sub-tab is selected, showing three channels. 'Post Channel 2' is active. Under 'Post Channel 2 Enable', the 'Enable' radio button is selected. The 'Post Method' dropdown is set to 'HTTP / HTTPS'. In the 'Post Name Fixed' section, the 'Disable' radio button is selected. The 'HTTP / HTTPS URL' field contains 'http://test', the 'HTTP / HTTPS Port' field contains '65535', and the 'HTTP / HTTPS Meter ID' field contains 'test'. There are buttons for 'Test Post Channel 2', 'Close Post Channel 2 Logs', and a green 'Save' button at the bottom.

Select the Post Channel 3 tab to configure the settings for post to a second server.

Post Channel 3 Enable: Enable the Post Channel 3 in order to configure the settings needed to post data via the HTTP(S)/FTP post functions

Post Method: Select the method for posting the files, the user can choose HTTP/HTTPS or FTP

Post Name Fixed: This configuration needs to be enabled in order for user to control the name of the file that will be posted. Otherwise file name will be based on the Log File Name Format configuration from the Data Log settings

Post File Name: User can enter a name for the file that will be posted as if Post Name Fixed is enabled

If the HTTP/HTTPS post method is selected:

HTTP/HTTPS URL: Enter the URL for the HTTP/HTTPS server. The URL needs to begin with the prefix http:// or (https://)

HTTP/HTTPS Port: Enter the port number the server will be listening on

HTTP/HTTPS Meter ID: Enter a name or description for the meter to be identified on the server

If the FTP post method is selected:

FTP URL: Enter the URL for the FTP server. The URL needs to begin with the prefix ftp://

FTP Port: Enter the port number the server will be listening on

FTP Username: Enter the username required to log into the FTP server

FTP Password: Enter the password required to log into the FTP server

NOTE: The "TEST Post Channel 3" button should only be utilized after clicking the 'Save' button otherwise a fail response will be observed. If a fail response occurs after clicking 'Save' confirm the network settings or credentials for the server.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the settings to take effect.

Chapter 10: Web Interface Readings and Parameter Settings

The screenshot shows the 'Settings' page for 'Communications'. The 'Post Channel' tab is selected, and 'Post Channel 3' is the active sub-tab. The 'Post Channel 3 Enable' section has 'Enable' selected. The 'Post Method' is set to 'FTP'. The 'FTP URL' is 'ftp://test', 'FTP Port' is '65535', 'FTP Username' is 'test', and 'FTP Password' is masked. There are buttons for 'Test Post Channel 3' and 'Clear Post Channel 3 Log'. A 'Save' button is at the bottom.

AcuCloud

The L-WEB module can directly interface with the Accuenergy Cloud software AcuCloud. The L-WEB will post data to the cloud software every five minutes.

AcuCloud will require the serial number of the L-WEB module which will then provide a token that will be used to configure the L-WEB so it can send its data to AcuCloud.

The settings for the AcuCloud post function can be found by clicking on the 'Settings' tab and selecting 'Communications'. Select 'AcuCloud' to access the settings to configure the L-WEB to send data to the cloud.

AcuCloud Enable: Select 'Enable' to enable the function and to further configure the settings related to AcuCloud.

AcuCloud Token: Copy and paste the token provided by the AcuCloud software into this field.

NOTE: The "TEST AcuCloud" button should only be utilized after clicking the 'Save' button otherwise a fail response will be observed. If a fail response occurs after clicking 'Save', please

double check the serial number entered in AcuCloud, the token pasted in the web page as well as the time and network settings of the meter.

Users can use the 'Link to AcuCloud' to access the cloud software and configure the required settings on that platform. Users must have sufficient access to add devices on their account in order to correctly configure the meter on the software. For inquiries on creating your AcuCloud account please contact Accuenergy Technical Support.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page for the settings to take effect.

The L-WEB will post the data continuously every 5 minutes after the reboot.

The screenshot shows the 'Settings' page for 'Communications' in the AccuEnergy L-WEB interface. The top navigation bar includes 'Logout', '2:19 PM - Wed 12 Aug, 2019', 'About', 'Settings', 'AcuWeb L-WEB', and the 'ACCUENERGY' logo. The main navigation tabs are 'Meter', 'Communications', 'Management', 'Network Diagnostic', and 'Module Firmware'. The 'Settings' section has a 'Save' button. Under 'Communications', the 'AcuCloud' tab is selected. The 'AcuCloud Enable' section has radio buttons for 'Disable' and 'Enable' (selected). Below this, the 'Module Serial Number' is 'AML18123544' with a 'Copy' button. The 'AcuCloud Token' is '6f57396f-2a90-48e4-b8fb-d40b934bb43c'. At the bottom of this section are 'Test AcuCloud' and 'Close AcuCloud Panel Logo' buttons. A 'Save' button is at the bottom of the page.

Chapter 10: Web Interface Readings and Parameter Settings

BACnet/IP

The L-WEB module supports the BACnet/IP protocol. The settings for the BACnet/IP protocol can be found on the web by clicking on the 'Settings' tab and selecting 'Communications'. Once on the communications page select "BACnet/IP" to access the settings to configure the AXM-WEB2 to communicate with a BACnet client.

BacNet Enabled: Select Enable to enable the BACnet protocol.

BACnet Port: Enter the BACnet or UDP port number. Default port is 47808.

Device Instance: Enter the instance number for the device in the BACnet system. It must be unique within the system.

Device Name: Enter a name for the device to distinguish it from other devices within the network.

The screenshot shows the 'BACnet/IP' configuration page in the AccuEnergy L-WEB interface. The 'BACnet Enable' option is set to 'Enable'. The 'BACnet Port' is 47808. The 'Device Instance' is 1. The 'Device Name' is 'Test'. The 'Location' and 'Description' fields are empty. The 'Enable Foreign Device Function' option is set to 'Enable'. There is an 'EPICS file download' button at the bottom.

Under the "Enable Foreign Device Function", select 'Enable' to communicate with a BACnet device from another subnet.

- Enter the IP of the BACnet Broadcast Management Device(BBMD) under the 'BBMD IP' field for the device which will receive broadcast messages on one subnet and forward them to another subnet.

- Enter BACnet Port of the BBMD in "BBMD Port"
- Enter a value between 5-1440 min in the "Time To Live" for how often the foreign device will register in the BBMD's foreign device table.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the settings to take effect.

Enable Foreign Device Function unsaved changes

☐ Disable
☒ Enable

BBMD IP	BBMD Port	Time To Live
		Enter time in minutes

[EPICS file download](#)

SNMP

The L-WEB module supports the Simple Network Management Protocol(SNMP) protocol for reporting the metering data to the management station. The L-WEB uses a public community string for read-only access. By default the module will communicate using SNMP port 161. The L-WEB also supports 'traps' to send unsolicited messages to up to four management stations.

The settings for the SNMP protocol can be found by clicking on the 'Settings' tab and selecting 'Communications'. From the communications page select the 'SNMP' tab to access the settings to configure the L-WEB for communication with a SNMP management station.

SNMP Enable: Select 'Enable' to enable the function and to further configure the settings related to the SNMP protocol.

SNMP Port: By default the SNMP Port is configured to 161. The SNMP Port can be any value from ranging from 16100 to 16199.

Read Only Community: By default the community string is Public, this configuration is similar to a password which allows only authorized users to access the meters data.

Trap Enable: Select 'Enable' so that the meter will send a message to the management station when an event is triggered. The event could be a change in Digital Input Status. The notification can then be sent to up to 4 stations.

Chapter 10: Web Interface Readings and Parameter Settings

Trap Target 1: Enter the IP address and port number of station number 1 that should be notified when there is an event.

Trap Target 2: Enter the IP address and port number of station number 2 that should be notified when there is an event.

Trap Target 3: Enter the IP address and port number of station number 3 that should be notified when there is an event.

Trap Target 4: Enter the IP address and port number of station number 4 that should be notified when there is an event.

Report Buffer Size: Enter the size of the buffer for the amount of notifications will be stored before being sent to the management station. A maximum of 30 notifications can be stored.

Report Hold Time: Enter the time in seconds for how long the notification will be in queue before it gets sent to the management station. By default, this setting is configured to 0 so the notification will be sent immediately after an event occurs. This setting could be configured from 0-30 seconds.

Click 'Save' after changing any settings. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the settings to take effect.

The screenshot shows the 'Settings' page for 'Communications' in the AccuEnergy L-WEB interface. The page has a top navigation bar with 'Mobile', 'Communications', 'Modbus/RS485', 'Network Diagnostic', and 'Module Firmware'. Below this is a sub-navigation bar with 'Settings', 'Communications', and a 'Save' button. The main content area is divided into two columns. The left column contains 'SNMP Enable' (with 'Disable' and 'Enable' radio buttons), 'Read Only Community' (with a text field containing 'public' and a note 'only maximum 6 characters and maximum 20 characters'), 'Trap Enable' (with 'Disable' and 'Enable' radio buttons), 'Trap Target 1' (with a text field containing '192.168.1.102'), 'Trap Target 2' (with an empty text field), 'Trap Target 3' (with an empty text field), 'Report Buffer Size' (with a text field containing '30' and a note 'range 0-30'), and a 'Save for changes' button. The right column contains 'SNMP Port' (with a text field containing '161' and a note 'Default: 161, Range: 16-65535'), 'Trap Target 2' (with an empty text field), 'Trap Target 4' (with an empty text field), and 'Report Hold Time' (with a text field containing '0' and a note 'range 0-30'). A 'Save' button is at the bottom left of the form.

DNP

The L-WEB supports the DNP communications protocol. The Distributed Network Protocol (DNP) is an open protocol used in the electric utility industry for communication and interoperability among substation computers, Remote Terminal Units (RTUs), Intelligent Electronic Devices (e.g. meters), and master stations.

The settings for the DNP protocol can be found by clicking on the 'Settings' tab and selecting 'Communications'. Select 'DNP' to access the settings to configure the L-WEB to communicate with a DNP master.

The screenshot shows the 'Settings - Communications' page with the 'DNP' tab selected. The configuration is divided into several sections:

- DNP Enable:** Radio buttons for 'Disable' and 'Enable' (selected).
- TCP/IP Mode:** A dropdown menu set to 'TCP & UDP'.
- Local TCP Port:** A text input field with '20000' and a range of '20000-22000'.
- Local UDP Port:** A text input field with '20000' and a range of '20000-22000, 0 to disable UDP'.
- Destination IP address:** A text input field with '*****' and a note: 'note: use "*****" to allow all incoming requests:'. Range: '1-65535'.
- Dual endpoint IP port:** A text input field with '20000' and a range of '1-65535'.
- Destination UDP port for initial unsolicited null responses:** A text input field with '20000' and a range of '1-65535'.
- Destination UDP port for response:** A text input field with '20000' and a range of '1-65535'.
- Link address:** A text input field with '4' and a range of '1-65519'.
- Source address validation:** Radio buttons for 'Disable' (selected) and 'Enable'.
- Master link address:** A text input field with '3' and a range of '1-65519'.
- Self address support:** Radio buttons for 'Disable' (selected) and 'Enable'.
- Sends confirmed user data frames:** Radio buttons for 'Never' (selected), 'Only for multiframe message fragments', and 'Always'.
- Time sync period:** A text input field with '1800' and a range of '1-86400 (seconds)'.
- Supports Unsolicited Reporting:** Radio buttons for 'Disable' and 'Enable' (selected).
- Number of Unsolicited Retries:** Radio buttons for '0', '10' (selected), and 'inf'.
- Unsolicited response trigger Condition:** A series of six rows, each with a text input field set to '0' and a range of '0-255'. The conditions are: 'Num of class 1 events', 'Num of class 2 events', 'Num of class 3 events', 'Hold time after class 1 events', 'Hold time after class 2 events', and 'Hold time after class 3 events'.
- Support for broadcast functionality:** Radio buttons for 'Disable' (selected) and 'Enable'.

Chapter 10: Web Interface Readings and Parameter Settings

DNP Enable: Select 'Enable' to enable the function and to further configure the settings related to the DNP function.

TCP/IP Mode: By default the TCP/IP is set as TCP&UDP, it can be changed to TCP dual endpoint mode or UDP only.

Local TCP Port: Enter the port number for the local TCP server.

Local UDP Port: Enter the port number for the local UDP server.

Destination IP address: The default IP address is set as *.*.* to allow all incoming requests.

Dual endpoint IP port: Enter the port number for the endpoint IP server.

Destination UDP port for initial unsolicited null responses: Enter the port number of the destination UDP server for the initial unsolicited null responses.

Destination UDP port for response: Enter the port number of the destination UDP server for response.

Link address: Enter the address number of the slave device.

Master link address: Enter the address number of the master device.

Source address validation: By default the validation is disabled, select 'Enable' to enable the destination address validation.

Supports Unsolicited Reporting: Select 'Enable' to enable the function and further configure the settings related to the unsolicited report.

Number of Unsolicited Retries: Number of retries can be selected as '0', '10' and 'infinite'.

Unsolicited response trigger Condition(Num of class # events): Enter the number of events for each class to setup the trigger point. The unsolicited response will be triggered once the number the class events reaches the configured triggering number. The range is from 0-255.

Unsolicited response trigger Condition(Hold time after class # events): Enter the threshold holding time for each class, the unsolicited response will be triggered once the event holding time is longer or equal to the threshold time. The range is from 0-86400000 milliseconds.

Support for broadcast functionality: In DNP there three broadcasting addresses that are supported. Enabling this setting would allow the module to respond to requests (from the client) sending them to the broadcasting addresses.

DNP3 Point Configuration

Users can assign certain parameters to either class 1, class 2 or class 3.

The scale factor is a multiplier that can be applied to a certain parameter when viewing the readings.

An offset can be applied to the reading.

The dead band can be set for each parameter, where if the value of the parameter exceeds the dead band value a DNP event will occur.

DNP3 Point Configuration

Analog-Input: Basic Not Selected Analog-Input: Basic Analog-Input: Demand Analog-Input: Energy Analog-Input: Sequence Phase Analog-Input: THD Analog-Input: Volt Harmonics Analog-Input: Current Harmonics Binary-Input: DI Status Counter: DI Counter Binary-Output: DO Status		Batch Modify					
		Class 1	Class 2	Class 3	Scale Factor	Scale Offset	Deadband
		☐	☐	☐	1	0	0
		☐	☐	☐	1	0	0
		☐	☐	☐	1	0	0
3	Phase C Line-to-Neutral Voltage	☐	☐	☐	1	0	0
4	Average Line-to-Neutral Voltage	☐	☐	☐	1	0	0
5	Phase A-B Line-to-Line Voltage	☐	☐	☐	1	0	0
6	Phase B-C Line-to-Line Voltage	☐	☐	☐	1	0	0
7	Phase C-A Line-to-Line Voltage	☐	☐	☐	1	0	0
8	Average Line-to-Line Voltage	☐	☐	☐	1	0	0
9	Phase A Line Current	☐	☐	☐	1	0	0
10	Phase B Line Current	☐	☐	☐	1	0	0
11	Phase C Line Current	☐	☐	☐	1	0	0
12	System Neutral Current	☐	☐	☐	1	0	0
13	Total Line Current	☐	☐	☐	1	0	0
14	Average Line Current	☐	☐	☐	1	0	0
15	Phase A Active Power	☐	☐	☐	1	0	0
16	Phase B Active Power	☐	☐	☐	1	0	0
17	Phase C Active Power	☐	☐	☐	1	0	0
18	System Active Power	☐	☐	☐	1	0	0
19	Phase A Reactive Power	☐	☐	☐	1	0	0

Chapter 10: Web Interface Readings and Parameter Settings

Users can use the 'Batch Modify' button to apply certain settings to all parameters instead of individually configuring each point. Once the configuration in the batch modify is complete click on 'save changes'.

DNP3 Point Configuration

Modify type: 10 points

Batch Modify

Description	Class 1	Class 2	Class 3	Scale Factor	Scale Offset	Offset Bias
	☐	☐	☐	100	00	0

Save Changes

Batch Modify

Point Number	Description	Class 1	Class 2	Class 3	Scale Factor	Scale Offset	Offset Bias
1	System Frequency	☐	☐	☐	100	00	0
2	Phase A to N Voltage	☐	☐	☐	100	00	0
3	Phase B to N Voltage	☐	☐	☐	100	00	0
4	Phase C to N Voltage	☐	☐	☐	100	00	0
5	Line to Line Voltage	☐	☐	☐	100	00	0
6	Phase A to N Voltage	☐	☐	☐	100	00	0
7	Phase B to N Voltage	☐	☐	☐	100	00	0
8	Phase C to N Voltage	☐	☐	☐	100	00	0
9	Line to Line Voltage	☐	☐	☐	100	00	0

After all DNP settings are complete, click on 'Save'. Users will be prompted to reboot the L-WEB immediately or later. If later is chosen the L-WEB must be rebooted from the 'Management' page in order for the settings to take effect.

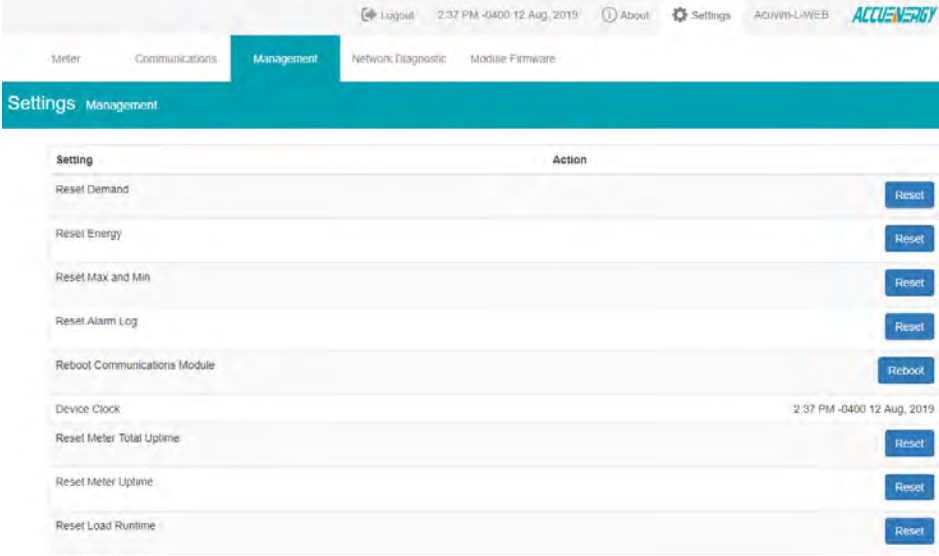
Management

Parameter Reset

The Management web page allows the user to clear and reset certain parameters in the meter.

The following parameters can be reset from the Management page:

- Demand
- Energy
- Max and Min
- Alarm Record
- Device Up Time
- Load Run Time

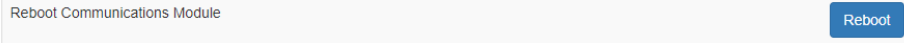


The screenshot shows the AccuEnergy Management web interface. At the top, there is a navigation bar with links for Logout, About, Settings, and a status bar showing the time and date (2:37 PM -0400 12 Aug, 2019). Below the navigation bar, there are tabs for Meter, Communications, Management (selected), Network Diagnostic, and Module Firmware. The main content area is titled 'Settings Management' and contains a table with the following rows:

Setting	Action
Reset Demand	Reset
Reset Energy	Reset
Reset Max and Min	Reset
Reset Alarm Log	Reset
Reboot Communications Module	Reboot
Device Clock	2:37 PM -0400 12 Aug, 2019
Reset Meter Total Uptime	Reset
Reset Meter Uptime	Reset
Reset Load Runtime	Reset

Module Reboot

Users can also reboot the web module which is required after any communication or meter setting is changed, if a module reboot is not performed the settings will not be saved to the meter and will go back to its default settings.



The screenshot shows a single row in a table with the text 'Reboot Communications Module' and a 'Reboot' button.

Chapter 10: Web Interface Readings and Parameter Settings

Change Password

The access level passwords can be changed from the Management page as well, all new passwords must be 6 characters or more.

Reset Admin Password	Enter old password
	Enter new password
	☐ Show password
	Save
Reset View Password	Enter old password
	Enter new password
	☐ Show password
	Save

SSH

The L-WEB module supports the SSH which can be enabled to allow users to remotely log into the meter using the SSH protocol. When enabled the status will show 'On', when disabled the status will show 'Off'.

SSH current status: Off	Enable
----------------------------	---------------------------------------

Debug Diagnostic

The debug diagnostic allows the user to enable or disable the debug logs. The current status will say 'All off' if disabled, 'All On' if enabled..

Debug Diagnostic current status: All Off Link to advanced settings	Enable	Disable
---	---------------------------------------	--

Users can click on the advanced link, to turn on or off specific debug logs. If certain debug logs are enabled the current status will show 'Partial On'.

Category	Status
RtuServer	Debug OFF
AppSuperVisor	Debug OFF
AppConfig	Debug OFF
TimeConfigurator	Debug OFF
Meter	Debug OFF
WaveForm	Debug OFF
ReadingSource	Debug OFF
Database	Debug OFF
WebServer	Debug OFF
DataLog	Debug OFF
DataPost	Debug OFF
Email	Debug OFF
Modbus Server	Debug OFF
Bacnet	Debug OFF
Snmp	Debug OFF
Dnp	Debug OFF
Common	Debug OFF

NOTE: The system performance may be affected by enabling the debug logs.

Diagnostic File

There is a diagnostic file on the L-WEB module that users can download which can be used to analyze the modules diagnostics.

NOTE: Please send the diagnostic file to Accuenergy Technical Support (support@accuenergy.com) for analysis.

Setting	Action
Reset Demand	Reset
Reset Energy	Reset
Reset Max and Min	Reset
Reset Alarm Log	Reset
Reboot Communications Module	Reboot
Device Clock	2:41 PM -0400 12 Aug 2019
Reset Meter Total Uptime	Reset
Reset Meter Uptime	Reset
Reset Load Runtime	Reset
Live API Token	eb742010-3c0f-4c4d-9544-35a38d780f
Reset API Token	Reset
Reset Admin Password	Enter old password Enter new password Show password Save

Chapter 10: Web Interface Readings and Parameter Settings

Network Diagnostic

The Network Diagnostic page can be used to monitor the network status of the module.

The screenshot shows the AccuEnergy web interface with the following components:

- Header:** Logout, 2:47 PM - 0400 12 Aug, 2019, About, Settings, Accuvin L-WEB, ACCUENERGY logo.
- Navigation:** Meter, Communications, Management, **Network Diagnostic**, Module Firmware.
- Sub-navigation:** Settings, Network Diagnostic.
- Networking Status:** Host Lookup, Connection Test.
- Ethernet Network:** Refresh button. Details for eth0 and lo interfaces.
- Routing Table:** Kernel IP routing table.
- DNS Server:** nameserver 8.8.8.8, nameserver 8.8.4.4.
- Network Stat:** Refresh button. netstat output showing TCP and UDP connections.

Ethernet Network Details:

```
eth0  Link encap:Ethernet  HWaddr EC:C3:6A:20:2E:00
      inet addr:192.168.1.221  Bcast:0.0.0.0  Mask:255.255.255.0
      UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
      RX packets:4391500  errors:0  dropped:18535  overruns:0  frame:0
      TX packets:1180240  errors:0  dropped:0  overruns:0  carrier:0
      collisions:0  txqueuelen:1000
      RX bytes:538782530 (513.7 MiB)  TX bytes:136804329 (130.5 MiB)
      Interrupt:103  Base address:0x3080  DMA chan:ff

lo    Link encap:Local Loopback
      inet addr:127.0.0.1  Mask:255.0.0.0
      UP LOOPBACK RUNNING  MTU:65536  Metric:1
      RX packets:34583  errors:0  dropped:0  overruns:0  frame:0
      TX packets:34583  errors:0  dropped:0  overruns:0  carrier:0
      collisions:0  txqueuelen:0
      RX bytes:3613887 (4.7 MiB)  TX bytes:3613887 (4.7 MiB)
```

Routing Table:

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Interface
0.0.0.0	192.168.1.1	0.0.0.0	UG	100	0	0	eth0
192.168.1.0	0.0.0.0	255.255.255.0	U	0	0	0	eth0

DNS Server:

```
nameserver 8.8.8.8
nameserver 8.8.4.4
```

Network Stat:

```
netstat: /proc/net/tcp6: No such file or directory
netstat: /proc/net/udp6: No such file or directory
  Ign Address      State
tcp      0      0  0.0.0.0:3133      0.0.0.0:*        LISTEN
tcp      0      0  0.0.0.0:80       0.0.0.0:*        LISTEN
tcp      0      0  0.0.0.0:502     0.0.0.0:*        LISTEN
tcp      0      0  0.0.0.0:443     0.0.0.0:*        LISTEN
tcp      0      0  0.127.0.0.1:3333  127.0.0.1:35571  TIME_WAIT
tcp      0      0  0.127.0.0.1:3333  127.0.0.1:35572  TIME_WAIT
tcp      0      0  0.127.0.0.1:35577  127.0.0.1:3333   ESTABLISHED
tcp      0      0  0.127.0.0.1:35576  127.0.0.1:3333   ESTABLISHED
tcp      0      0  0.192.168.1.221:443  192.168.1.146:53356 ESTABLISHED
tcp      0      0  0.127.0.0.1:35578  127.0.0.1:3333   ESTABLISHED
tcp      640    0  0.127.0.0.1:3333  127.0.0.1:35570  ESTABLISHED
tcp      0      0  0.192.168.1.221:443  192.168.1.146:53335 ESTABLISHED
tcp      640    0  0.127.0.0.1:3333  127.0.0.1:35576  ESTABLISHED
tcp      0      0  0.127.0.0.1:3333  127.0.0.1:35575  ESTABLISHED
tcp      0      0  0.127.0.0.1:3333  127.0.0.1:35573  TIME_WAIT
tcp      0      0  0.192.168.1.221:443  192.168.1.146:53394 ESTABLISHED
tcp      0      0  0.127.0.0.1:3333  127.0.0.1:35574  TIME_WAIT
tcp      0      0  0.192.168.1.221:502  192.168.1.146:51868 ESTABLISHED
tcp      0      0  0.127.0.0.1:35575  127.0.0.1:3333   ESTABLISHED
tcp      0      0  0.192.168.1.221:443  192.168.1.146:53329 ESTABLISHED
tcp      640    0  0.127.0.0.1:3333  127.0.0.1:35577  ESTABLISHED
udp      0      0  0.0.0.0:33333     0.0.0.0:*
udp      0      0  0.0.0.0:51553     0.0.0.0:*
udp      0      0  0.0.0.0:42219     0.0.0.0:*
```

In the 'Host Lookup' tab users can utilize the 'ping' function to test the reach-ability to other networks.

Settings Network Diagnostic

Networking Status Host Lookup Connection Test

www.google.com Name of system or domain name to lookup

valid ip or domain name

☐ nslookup
☒ ping
☐ traceroute

LookUp

Ping

```
PING www.google.com (172.217.1.164) 56(84) bytes of data:
64 bytes from yyz10s04-in-f4.1e100.net (172.217.1.164): icmp_seq=1 ttl=54 time=3.79 ms
64 bytes from yyz10s04-in-f4.1e100.net (172.217.1.164): icmp_seq=2 ttl=54 time=4.36 ms
64 bytes from yyz10s04-in-f4.1e100.net (172.217.1.164): icmp_seq=3 ttl=54 time=4.35 ms
64 bytes from yyz10s04-in-f4.1e100.net (172.217.1.164): icmp_seq=4 ttl=54 time=4.55 ms
64 bytes from yyz10s04-in-f4.1e100.net (172.217.1.164): icmp_seq=5 ttl=54 time=4.45 ms

--- www.google.com ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 3.794/4.299/4.537/0.274 ms
```

User can also use the 'Connection Test' function to test the local network that the module connected to. The test result will show SUCCESS and PASS if there is no issues found.

Settings Network Diagnostic

Master Communications Management Network Diagnostic Module Firmware

Networking Status Host Lookup Connection Test

This diagnostic page will attempt a connection to the specified network nodes.
In the process, all network settings will be tested and a report will be given with detailed results of these tests.

Begin Test

```
# Loop Back Address #
PING 127.0.0.1 SUCCESS
# Gateway #
PING 192.168.1.1 SUCCESS
# DNS 1 #
PING 8.8.8.8 SUCCESS
# DNS 2 #
PING 8.8.4.4 SUCCESS
TEST COMPLETE 4/4 PASS
```

Chapter 10: Web Interface Readings and Parameter Settings

Module Firmware Update

The Module Firmware web page is used for updating the firmware version on the L-WEB module. The user can check if the module they are using is up to date and update the module if needed using the remoter firmware update. Users can also manually update the firmware by uploading the firmware file. The current version of the firmware will be displayed on the Module firmware update page and can also be viewed on the 'Device Information' page of the web interface.

NOTE: Users can also contact Accuenergy Technical Support for latest firmware.

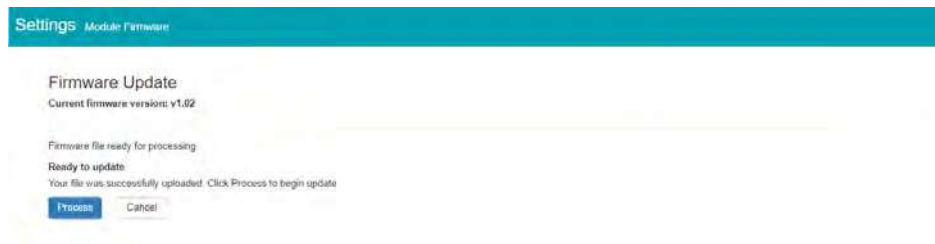


Manual Update

Select and upload the L-WEB firmware file, it is a .aup file extension.



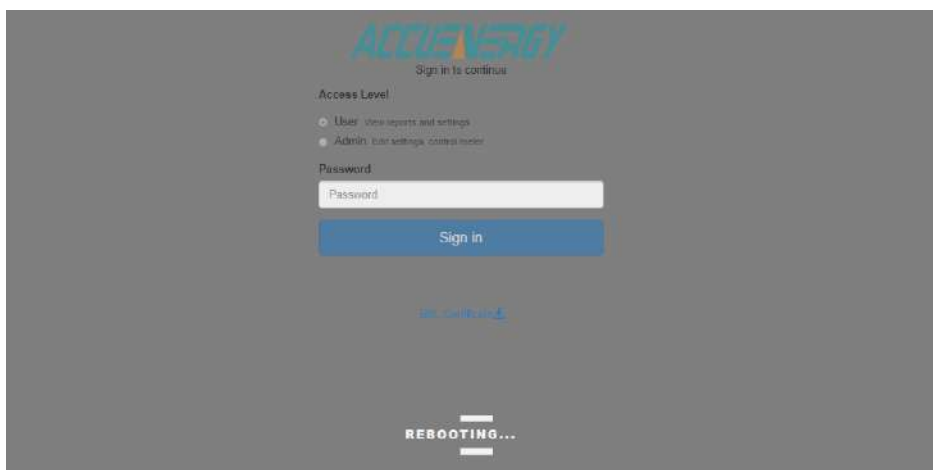
Once the upload was successfully uploaded you will see the following page confirming that the file was uploaded.



Click 'Process' to begin the update.



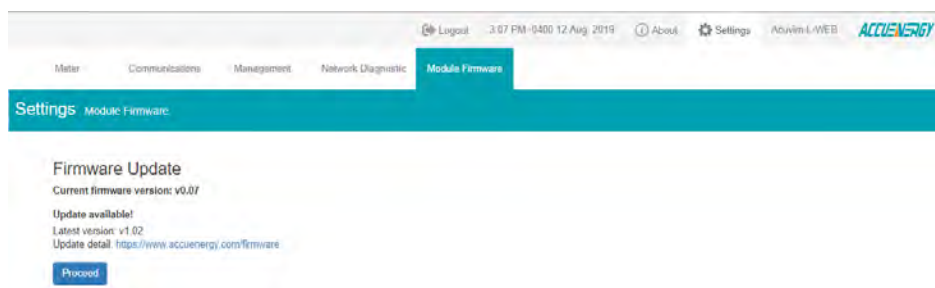
L-WEB will start to reboot when the firmware update is complete. Wait for 1-2 minutes to complete the reboot.



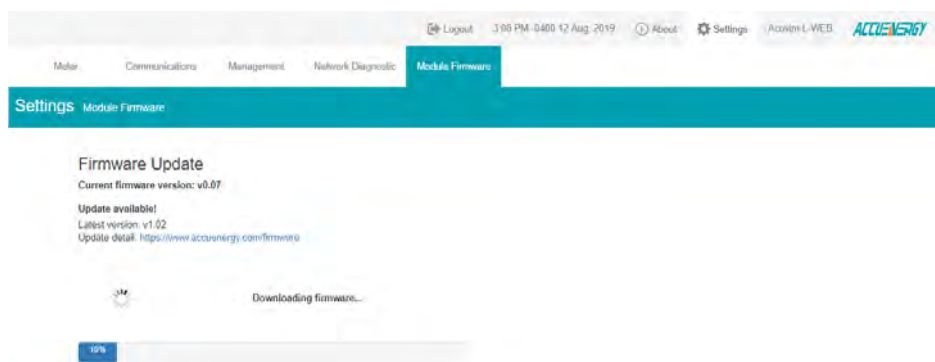
Remote Update

Users can also use the remote firmware server to update the module firmware. Click on 'Check' to verify if there is a firmware update available.

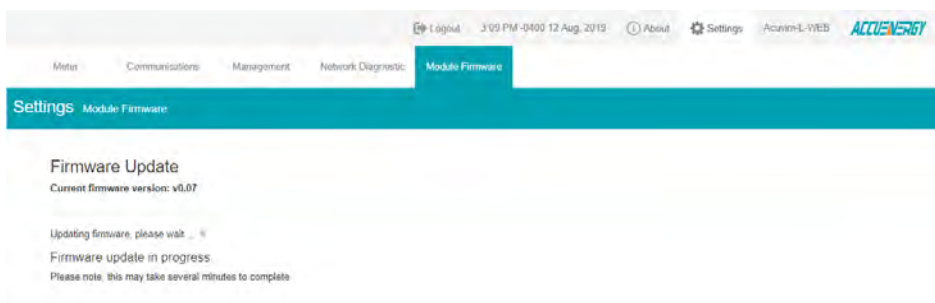
Chapter 10: Web Interface Readings and Parameter Settings



If there is a update available users can proceed to download the firmware.



Once the download is complete the updating process will begin.



When the firmware update is complete, the module will reboot. The rebooting process will take 1-2 minutes to complete.

After the module reboots, users will be able to log back into the web interface. When logged in click on the 'About' tab located on the top right corner of the web page to view the 'Device Information' page. From the Device Information page users can ensure that the meter was updated correctly to the right firmware version.

Device Information	
Device Information	
Setting	Value
Meter Model	Accuenergy EL-05A
Meter Serial Number	ALP1011362
Meter Firmware Version	v1.28
Meter Hardware Version	v0.01
Module Model	Quartz-L-002B
Module Serial Number	AA16122594
Module Hardware Version	v0.01
Module Firmware Version	v1.02
Extended MAC Address	EC 0384 26 2F 8D
Serial Status	Open