

# AcuLink 810 Data Acquisition Server 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 AcuLink810 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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# **Chapter 1: Overview**

The AcuLink 810 is an intelligent data acquisition server and gateway that allows users to collect data from all Accuenergy meters, sensors and other third party devices.

The AcuLink collects and logs time-stamped data from connected downstream devices (serial or Ethernet), and is able to store this data locally in non volatile memory. When using Ethernet it is possible to push or pull data using HTTP or FTP protocols as well as pushing data to different web-based energy management systems or any front end software platform. There is no software required for the AcuLink as all configuration is done from the gateways web interface.

# **Chapter 2: Functional Description**

### 2.1 Hardware Specifications

- Disk Capacity: 8 GB RAM
- Interval Recording: 1-1440 minutes, user selectable
- LEDs: Power, Ethernet, WiFi, Modbus TX/RX, AcuMesh

#### 2.2 Power

Power Supply: 24VDC, 500mA

**NOTES:** This unit is to be sourced by a Class 2 power supply with the following output: 24VDC, 500mA min not to exceed 8A.

Isolation: RJ45 Ethernet 1500Vrms RS485 2500Vrms

Digital Input 5000Vrms

# 2.3 Communication

- **Protocols Supported:** Modbus RTU, Modbus TCP, BACnet MS/TP, BACnet IP, HTTP/ HTTPS, FTP, NTP, SMTP, RSTP, MQTT, MBus, SNMP, SunSpec
- LAN: 2 x RJ45 10/100 Ethernet, full half duplex, auto polarity



- WIFI: 802.11 b/g/n, 2.4GHz
- USB: USB expansion port, USB 2.0 Host

### 2.4 Inputs

- RS485 Port: RS485 Modbus, supports up to 32 external devices (expandable)
  - Baud Rate: 9600-115200 bps
- USB Port: Modbus via RS485-USB converter, supports up to 32 external devices
- Baud Rate: 9600-115200 bps
- Digital Input: 8 pulse counters
  - Input Voltage Range: 8-28Vdc
  - Input Current (Max): 8mA
  - Start Voltage: 15V
  - Stop Voltage: 5V
  - Pulse Frequency (Max): 100Hz, 50% Duty Ratio (5ms ON and 5ms OFF)

#### 2.5 Environment

• North America: -25 to 70 degrees Celsius, 90% RH, non-condensing



# **Chapter 3: Appearance and Dimensions**

Physical Size: 6.3" x 3.5" x 1.23" (159.9mm x 90mm x 32.2mm)







# **Chapter 4: Installation**

# 4.1 Installation Checklist

The following materials are required for the AcuLink 810 installation:

- AcuLink 810 Data Acquisition Server
- Ethernet Cat 5 Cable (Required for LAN or direct computer to AcuLink 810 connection)
- Power Supply (24V)
- WIFI Antenna

#### 4.1.1 Optional Hardware:

- Additional Modbus RTU devices
- 2 wire Modbus/RS485 connection

#### 4.1.2 LAN Information

- Ethernet 10/100MB connection point (router/switch)
- IP address and subnet mask (Check with system administrator)
- Gateway Address (Check with system administrator)
- DNS server address (Check with system administrator)



# 4.1.3 Installation Safety Requirements and Considerations

- Field wiring must have a rating of higher than 70°C; Stranded wiring
- Intend for indoor use
- Altitude: 2000 meters
- Overvoltage Category: II
- Pollution Degree: 2

# 4.2 Powering the unit

• The power supply of the AcuLink 810 is rated for 24Vdc.







# **Chapter 5: LED Description**

There are a total of 13 LEDs on the AcuLink 810 data acquisition server and each represent different functions pertaining to the unit.



With the exception of the blue power LED, the remaining LEDs can be divided into three groups:

# 5.1 AcuMesh LEDs

The AcuMesh has a total of six LEDs which are related to the AcuMesh status.

- RSSI
  - There are three RSSI LEDs which indicate the signal strength of the incoming signal.
    - 3 LEDs would indicate Excellent signal strength
    - 2 LEDs would indicate good signal strength
    - 1 LED would indicate poor signal strength
    - 0 LED would indicate bad sing





- ASSOC
  - Indicates that the transceiver is powered on or it is communicating. The Red LED is ON when powered, and briefly ON or flashing during RF transmission.
- RX
  - Indicates that the transceiver is receiving data.
- TX
  - Indicates that the transceiver is transmitting data.



#### 5.2 WiFi LEDs

The WiFi has a total of 3 LEDs which are related to the WiFi status.

- AP MODE
  - when ON Indicates that the WiFi is working in Access Point Mode
- STATION MODE
  - when ON indicates that the WiFi is working in Station Mode
- STATUS

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• When ON indicates that the WiFi is working and functioning properly.





# 5.3 RS485 LEDs

The RS485 has a total of 3 LEDs which are related to the RS485 status.

- COMM OK
  - When ON indicates that all RS485 and USB devices in RS485 network are online and is represented by a green LED.

#### COMM ISSUE

- When ON indicates that some of the devices in the RS485 network are offline and is represented by a yellow LED
- NO COMM
  - When ON indicates that all RS485 devices in the RS485 network are offline and is represented by a red LED







# Chapter 6: Initializing the AcuLink 810

The AcuLink 810 has a web interface that users can access to configure the gateway settings and view device data. The AcuLink 810 gateway has two Ethernet ports and also supports communication via WIFI.

The default IP addresses and default modes are:

Ethernet 1: 192.168.8.101

Ethernet 2: DHCP

WIFI: Access Point Mode

The following will outline the methods on how to initially access the meters web interface using the different methods.

### 6.1 Accessing the AcuLink 810 Web Interface

### 6.1.1 Method 1 - Direct Connection via Ethernet

For the direct connection method, there must be an Ethernet connection from the Ethernet 1 port on the AcuLink and a computer.







Next in order to access the web interface, the computers IP address must be configured within the same subnet as the AcuLink Ethernet 1 IP address. The Ethernet 1 port has a default IP address of 192.168.8.101.

The following outlines how to change the computers IP:

• Start by accessing the control panel of the computer and select *Network and Internet*.







#### • On the left panel of the screen, select Change adapter settings.





• Double click on *Ethernet*, or right click on *Ethernet* and select *Properties*.



• The following page will open, click on Properties.







The following page will open, select *Internet Protocol Version 4 (TCP/IPv4)* and click on *Properties*.



• Select the option *Use the following IP address*: and change the IP address of the computer. The AcuLink 810 Ethernet 1 address is 192.168.8.101, the computers IP will need to be within the same subnet. The IP of the computer can be 192.168.8.xxx, where xxx can be any number ranging from 1-254. For the example an IP address of 192.168.8.10 is used.

**NOTE:** The computers IP address and the AcuLink 810 Ethernet 1 IP address cannot be the same.

Internet Protocol Version 4 (TCP/IPv4) Properties							
General							
You can get IP settings assigned autor this capability. Otherwise, you need to for the appropriate IP settings.	natically if your network supports ask your network administrator						
Obtain an IP address automatical	ly						
Use the following IP address:							
IP address:	192 . 168 . 8 . 10						
Subnet mask:	255.255.255.0						
Default gateway:							
Obtain DNS server address autor	natically						
Use the following DNS server add	resses:						
Preferred DNS server:							
Alternate DNS server:							
Validate settings upon exit	Advanced						
	OK Cancel						





- Once all settings are complete click on **OK** to confirm the network changes.
- Then open up an internet browser and type in the AcuLink 810 IP address of **192.168.8.101**, a login screen will be prompted.
- There are two Access Levels, Viewer and Admin.
  - Viewer allows users to only view and read data, the password for this user level is *view*.
  - Admin allows users to read data, as well as change and modify all settings of the AcuLink 810, the password for this user level is *admin*.

**NOTE:** The recommended internet browsers to access the 810's web interface is Google Chrome, or FireFox.



Aculink 810 Data Acquisition Server

Sign in to continue
Access Level*
◯ Viewer ◯ Admin
Password*
Enter Password here
Sign In

#### 6.1.2 Method 2 - Using WIFI to connect to the Meters Web Interface

The web interface of the AcuLink can be accessed by WIFI. Ensure that the WIFI antenna is installed on the unit.







By default the AcuLink 810 has its WIFI mode set as AP (Access Point) mode, where the AcuLink 810 acts as a wireless access point allowing other wireless devices to connect and access the gateway.

To connect to the AcuLink via AP mode, search for the SSID in the list of available wire-less networks.

The SSID will be by default **AcuLink810-WIFI-S8Pxxxxxxx**, where the **S8Pxxxxxxx** is the unique serial number of the AcuLink gateway. The serial number of the AcuLink can be found on the side of the unit. The password for the network is **accuenergy**.







- Once connected to the gateways wireless network, open up an internet browser and enter in the IP address **192.168.100.1**. The web server login screen will be prompted.
  - There are two Access Level, Viewer and Admin.
    - Viewer allows users only to view and read data, the password for this user level is *view*.
    - Admin allows users to read data, as well as change and modify the settings of the Acu-Link 810, the password for this user level is *admin*.





# 6.2 Dashboard

When logged in the to the AcuLink 810 web interface, users are directed to the Dashboard. The dashboard provides the user with a summary of all the Offline Devices as well as the Devices in Alarm. Under the alarms section of the dashboard the interface includes the Up Since time, which lets the user know the time the 810 was powered on or rebooted.

The tabs on the top of the interface allows users to access different settings within the gateway.

The header at the very top of the page allows users to view the time and date of the AcuLink 810. The footer on the bottom of the web page includes links to the Accuenergy website for further information and details.

Aculink 810 Gateway				🕞 Logout	Monday, March 30,	2020 12:31 PM	AcuLink 810 ACCUENEREY
Devices Data Log	System Settings	Protocols Templates	Maintenance	Diagnostics			
Dashboard Alarm Logs Vlodbus Devices	Contraction of the series of t	ces	Interface	Pr	ntorol	Serial Number	
ACnet Devices 1Bus Devices	MESH TEST1		Mesh	Mo	odbus RTU	MESH2	
igital Inputs	19487258E61	E3C07	Ethernet	M	Bus	GWF19487258E61E3	C07
	19495028E61	E3C07	Ethernet	ME	Bus	GWF19495028E61E3	C07
	Alarms						
	Device Name	e 0	Alarms 🗧	Interface	Protocol	Seria	I Number 🖗
	MESH-67		1	Mesh	Modbus	RTU AH18	063303
	WEB2 .163		1	Ethernet	BACnet IF	163	
	Up since Thurse	day, March 26, 2020 8:59 A	IM.				
AcuL Data J Learn	ink 810 Acquisition Server more online		Support Call or email for eng Phone: +1 416 497 Email: support@acc	gineering support 4100 wenergy.com		Resource Online guides, manuals, video available online www.accuenergy.com	s and diagrams





#### 6.2.1 About Page

Users can check the AcuLink 810 Device Information on the *About* page located on the top right corner of the dashboard. From the About page users are provided with an overview of the AcuLink 810 model number, serial number, Hardware and Firmware versions, and the Ethernet/WIFI MAX addresses.

Users have the option to enter a Name, Location, and Description for the gateway. Once configured click on *Save*.

evice Information	
Setting	Value
Name	AcuLink 810 Gateway
	Maximum 40 characters
location	Enter Location
Location	Maximum 20 characters
Description	Enter Description
Compton	Maximum 40 characters
Model	AcuLink810-X
Serial Number	S8P18120083
Hardware Version	v1.05
Firmware Version	v1.06
Last Updated	2020-04-01 12:38:01
Ethernet 1 MAC Address	
Ethernet 2 MAC Address	



# **Chapter 7: Device Templates**

The AcuLink 810 requires a device Template in order to communicate and read data from any Modbus and any BACnet device. The Modbus template supports different Modbus function codes including read coil (Function code 01), read discrete input (Function Code 02), read holding registers (Function Code 03), and read Input registers (Function Code 4). The Modbus device template also supports several data type formats to read different types of Modbus parameters.

In order for the AcuLink 810 to read device data using either Modbus or BACnet protocols a device template will first need to be installed or created. Within the AcuLink 810 web interface, users can create, modify and convert their own templates from different formats (csv, EPICS, etc). Users can view the template configuration from the **Templates** tab, from there they can create/add both Modbus and BACnet templates.

The following sections explain how to create Modbus and BACnet templates for the AcuLink 810.

### 7.1 Modbus Templates

Modbus Templates are used in the AcuLink 810 to correctly read the metering data from Accuenergy and third party Modbus devices. Before a device can be added to the gateway a Modbus template for the device must first be uploaded and installed onto the unit.

In the Modbus templates page users can view the templates and the version number currently installed on to the AcuLink under the *Installed* tab.

uLink 810 Gateway					🕞 Logout	Wednesday, February 19, 2020 3:40 PM	About	AcuLink 810	ACCUENERG
Devices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics				
Aodbus Template	Modbus	Template							
ACnet Template	Installed	Import N	ew Template	New Typical En	ergy Meter Template	Convert From CSV File			
	Official								
	Template	Name				Last Update			
	AcuDC 24	13 v1.01				2019-07-25 14:34:40			
	AcuRev 1	200 -1.01				2019-07-25 14:34:00			
	AcuRev 1	300 v1.01				2019-07-25 14:37:44			
	AcuRev 1	310 v1.01				2019-07-25 14:37:25			
	AcuRev 2	020-1DM v1.01				2019-07-25 14:36:39			
	AcuRev 2	020-1EM v1.01				2019-07-25 14:35:45			
	AcuRev 2	020-2DM v1.01				2019-07-25 14:37:07			
	AcuRev 2	020-2EM v1.01				2019-07-25 14:36:19			
	Acuvim II	v1.01				2019-07-25 14:34:21			
	Acuvim-L	v1.01				2019-07-25 14:35:23			
	Previous	1 2 Next	10/page	٥					
	Customiz	ed							
	Template	Name			Last Upo	late 🗇	Acti	ons	
					his	Data			





#### **Customized Templates**

If there are customized templates on the AcuLink 810 users have the following action buttons available.

The icons have the following meaning:





The first icon allows users to download the .def template file.





The third icon allows users to create a new version based on that existing template.



The fourth icon allows users to delete the template.

# 7.1.1 Import Template

To upload a new device template click on the *Import* tab. All Accuenergy device templates can be found in the remote update section of the page. In order to use the remote upload function, users must ensure they have sufficient connection to the Internet.

For third party device templates, users can upload and install templates manually.

**NOTE:** Data log and alarm monitoring configurations will be lost after updating an existing device template.



# 7.1.2 New Template

Under the *New Template* tab users can create and build their own Modbus template. There are four steps required in building the template which include 1) Device Info, 2) Create Block, 3) Create Parameter, and 4) Save

#### 1. Device Information

Users will need to enter in a Device Model, which must be a unique model name, They will also need to enter in a device version which must also be unique.

Click on *Save Device Info* once the information has been entered correctly.

cuLink 810 Gateway				🕞 Logout	Wednesday, February 19, 2020	0 4:42 PM O About	AcuLink 810 ACCO	16
Devices Data Log	System Settings P	Protocols Templates	Maintenance	Diagnostics				
Modbus Template	Modbus Ten	mplate						
3ACnet Template	Installed 1. Device Info	Import New Template	New Typical Ener	gy Meter Template 4. Save	Convert From CSV File			
	Template Name	e*	Versie	on"				
	Test Template		1.01					
	Template name mu	ist be defined and unique	Version	for the same template must	be unique (e.g. v1.01)			
	Save Device In	nfo					Prev Net	
	Block Table							
	Index	Start Hex	Start	Count	Function	Range	Action	
				No Da	ta			

#### 2. Create Block

The second step includes creating the register blocks for the Modbus Device.

- Select the Modbus Function Code of the register block (i.e. Read Holding Registers, Read Discrete Input, Read Coils, read Input Registers)
- Enter in the starting address of the register block, this address must be in hexadecimal.
- Enter the count, i.e. the number of registers in this block.

Link 810 Gateway				6+ Logout	Wednesday, February 19,	2020 4:42 PM      Abo	out AcuLink 810 ACCULINE
Devices Data Log	System Settings P	Protocols Templates	Maintenanc	e Diagnostics			
Aodbus Template ACnet Template	< Modbus Ter	mplate					
	1. Device Info	Mew Templa     O     O     O     Create Block	te New Typica 3. Create Parameti	Energy Meter Template rr 4. Save Start*	Convert From CSV File	Count*	
	READ HOLDI	NG REGISTERS		0x 4000		20	
	Modbus function o	ode to request the block		llock starting address in hexadeci lange: 0x0 - 0xffffff	mal	Block element quantity	
	Save Block						Prev Next
	Block Table						
	Index	Start Hex	Start	Count	Function	Range	Action





Once all register block information is configured correctly click on Save Block. The saved block will then appear in the Block Table at the bottom portion of the web page. In the Block Table users have the option to edit, delete or view the details of the register block created.

AcuLink 810 Gateway						6+ Logout Wedn	nesday, February 19, 2020 4:4	4 PM O About	AcuLink 810	ACCUENER
Devices Data Log	System Settings	Protocols	Templates	Maintenani	ce Diagnostics					
Modbus Template	Modbus 1	Template								
BACnet Template	Installed	Import M	e Block 3. 0	New Typica Create Paramet	al Energy Meter Templa ter 4. Save	te Convert From C	SV File			_
	Function*				Start*		Count*			
	READ_HOL	LDING_REGISTER	RS .	•	0x 4000		20			
	Modbus functio	on code to request t	he block		Block starting address in hex Range: 0x0 - 0xffffff	adecimal	Block element quant	tγ	Prev Next	
	Block Tab	le								
	Index	Start Hex	Start Co	ount Funct	tion	Range		Action		
	0	0x4000	16384 20	READ	HOLDING_REGISTERS	Block 0: 0	x4000 - 0x4013 : 20	Detail Edit	Delete	

• If there are multiple register blocks for the Device users can continue creating them. Once all register blocks are complete click on Next to continue.

#### 3. Create Parameter

The third step includes adding the parameters required to the template.

Users will need to select what block the parameter resides in and also create a display tab to view the parameter once the template is complete.

Block: Select the block for the parameter in the drop down menu

**Select display tab(s):** in this field enter in a tab that you wish to create and can press enter to create the tab. For example this tab could be named Energy, or Real time data. This tab is where users can find the parameter they have created under once the template is complete. After the tab is created it can be selected from the drop down menu. Users can create multiple tabs in the same manner.

Label: Enter in a label for the parameter, i.e. voltage, current, temperature, etc.

**Address:** Enter in the Modbus register address for the parameter. This address must be hexadecimal.

Multiplier: Users can input a multiplier on the parameter.



**Post Label:** Users can define a post label for the parameter. The post label is used whenever the device data is downloaded or sent to an external server, where the csv file that is generated would have the post label as the header in the file.

**Data Format:** Select the data format for the parameter, some typical data types include Int, float, hex, etc.

**Byte Order:** The byte order for the parameter can be specified, i.e. some devices require the byte order to be swapped in order to read the parameter correct.

**Unit (optional):** Users can enter in the preferred unit for the parameter, this setting is optional.

AcuLink 810 Gateway		🔂 Logout	Wednesday, February 19, 2020 4:49 P	M O About	AcuLink 810	ACCUENERS)
Devices Data Log Sy:	stem Settings Protocols Templates Mainter	nance Diagnostics				
Modbus Template	Modbus Template					
BACnet Template	Installed Import New Template New Ty	pical Energy Meter Template	Convert From CSV File			
	1. Device Info 2. Create Block 3. Create Para	meter 4. Save				
	Block*					
	Block 1: 0x4000 - 0x4013 : 20 \$					
	Select the block the parameter belongs to; Add block in step 2 if needed					
	Select Display Tab(s)					
	Real Time Metering ×					
	In Device reading page, user could select to show readings for parameters of the same tab					
	Label*	Address*	Multiplier*			
	Frequency	0x 4000	1			
	Parameter name shown on webpage, e.g., 'Phase A Voltage'	Address of its beginning register Range: 0x4000 - 0x4012	e.g. 0.1			
	Post Label*	Data Format*	Byte Order*			
	Freq_Hz	FLOAT	NORMAL			٠
	Parameter name abbreviation used in log and post files headers					
	Unit					
	Hz *					
	e.g. % & kvarh					
	Save Parameter				Prev	Next

Once all parameter settings are configured click on *Save Parameter*. After the parameter
is saved users can view the parameter in the Block Table below under the Detail tab. Under the *detail* tab users can edit the existing parameter by selecting the *Edit* button, and
can delete the existing parameter by selecting the *Delete* button.





Save Par	ameter									Prev Next
Block Ta	ble									
Index	Start Hex	Start	Count	Function	1	Ra	ange		Action	n
0	0x4000	16384	20	READ_H	OLDING_REGISTERS	BI	ock 0: 0x4000 - 0	x4013 : 20	Deta	I Edit Delete
Index	Tab		Labe	I	Address Hex	Address	Multiplier	Post Label	Unit	Action
0	Real Time	Metering	Freq	uency	0x4000	16384	1	Freq_Hz	Hz	Edit Delete

Once Users have added all required parameters to the Modbus Template click on Next.

#### 4. Save

The last step is saving the device template. Users can review the Block Table and modify any parameters before saving the template. They can also click on Prev button to go back and alter any blocks or parameters as needed..

cuLink 810	Gateway						0	Logout Wei	dnesday, February	19, 2020 4:59 PM	About	AcuLink 810	ACCUENERG
Devices	Data Log	System	Settings	Protocols	Templates	Maintenance	Diagnostics						
Modbus Ter	nplate		Installed	Import	New Template	New Typical E	nergy Meter Templat	e Convert F	rom CSV File				
8ACnet Tem	plate		1. Device Configuratio Proceed to : If you leave Create Ter	Info 2. Cr on completed tave device o or refresh the inplate	eate Block 3. C ? nly if model name r page without sav	reate Parameter and version num	4. Save	d. Ifigurations will	be discarded.			Prev	Next
			Block Tab	le Chart Mar	find for	unt Exection		Ren			Action		
			0	0x4000	16384 20	READ_H	OLDING_REGISTERS	Bloc	ge :k 0: 0x4000 - 0x4	013:20	Detail	Edit Delete	
			Index	Tab		Label	Address Hex	Address	Multiplier	Post Label	Unit	Action	
			0	Real Time N	Metering	Frequency	0x4000	16384	1	Freq_Hz	Hz	Edit Delete	
			1	Real Time N	Metering	Phase A Voltage	0x4002	16386	1	Va_V	v	Edit Delete	
			2	Real Time N	Metering	Phase B Voltage	0x4004	16388	1	Vb_V	v	Edit Delete	
			3	Real Time N	Metering	Phase C Voltage	0x4006	16390	1	Vc_V	v	Edit Delete	
			4	Real Time M	Netering	Average Voltage	0x4008	16392	1	Vavg_V	v	Edit Delete	
			5	Real Time N	Metering	Line Voltage AB	0x400a	16394	1	Vab_V	v	Edit Delete	
			6	Real Time N	Metering	Line Voltage BC	0x400c	16396	1	Vbc_V	v	Edit Delete	

• After reviewing all details of the Modbus Template click on *Create Template*, users will be redirected to the *Installed* tab of the Modbus Template page where the newly created template will be seen under the *Customized Templates* at the bottom of the page.





AcuLink 810	Gateway					C+ Logout	Wednesday, February 19, 2	2020 5:03 PM	About	AcuLink 810	ACCUENERGY
Devices	Data Log	System Settings	Protocols	Templates	Maintenand	e Diagnostics					
Modbus Ter	nplate	Modbus	Template								
BACnet Tem	plate	Installed	Import	New Template	New Typica	l Energy Meter Template	Convert From CSV File				
		Official									
		Template	e Name				Last Update				
		AcuDC 24	43 v1.01				2019-07-25 14:34:40				
		AcuRev 1	200 v1.01				2019-07-25 14:34:00				
		AcuRev 1	300 -1.01				2019-07-25 14:37:44				
		AcuRev 1	310 v1.01				2019-07-25 14:37:25				
		AcuRev 2	020-1DM v1.01				2019-07-25 14:36:39				
		AcuRev 2	020-1EM v1.01				2019-07-25 14:35:45				
		AcuRev 2	020-2DM v1.01				2019-07-25 14:37:07				
		AcuRev 2	020-2EM v1.01				2019-07-25 14:36:19				
		Acuvim II	v1.01				2019-07-25 14:34:21				
		Acuvim-L	v1.01				2019-07-25 14:35:23				
		Previous	1 2 N	ext 10/page	٠						
		Customiz	ted								
		Template	e Name 🗧		Li	st Update 🖗		Actions			
		Test Temp	plate v1.01		20	20-02-19 16:58:44		± D 🕜			
		Previous	1 Next	10/page	•						

# 7.1.3 Typical Energy Meter Template

The Typical Energy Meter Template allows users to create a Modbus Template for their third party device and have the ability to post data to our cloud based energy management software *AcuCloud*. To create a device template that allows third party devices to post data to the AcuCloud software click on the *Typical Energy Meter Template* tab.

This page will have the following sections:

#### 1. Device

Under the device section users can enter in the Template name and the version number. Once all device settings are configured click on *Save Device Info*.

#### 2. Block

Users can create the required register blocks for their device, where the function, starting address in hex, and the register count must be specified. Once a block is created click on *Save Block*, users can create multiple blocks for the device template. All created blocks will appear in the block table located further down the page.





# AcuLink 810 Data Aquisition Server

Aculink 810 Gateway Devices Data Log Sy	stem Settings Protocols Templates Mainten	De Logour Wednesday, Februa	ary 19, 2020 5:07 PM <b>O</b> About Aculink 810 <b>ACCUENER67</b>									
Modbus Template 8ACnet Template	C Modbus Template	sical Energy Meter Template Convert From CSV Fib	e									
	Device Template Name*	Version*	Cloud Model									
	Typical Energy Meter Test	1.01	Typical Energy Meter									
	Template name must be defined and unique Save Device Info	and Device table										
	Block											
	Function*	Start*	Count*									
	READ_HOLDING_REGISTERS +	0x 4000	20									
	Modius function code to request the block	Blockstanting address in hexadecimel Range: Dub : Outmit	Black clonent quantity									
	Save											
	Configuration completed? Proceed to save device only if model name and vers If you leave or refresh the page without saving it to Crimate Tompdole	ion number have been defined. database, all locally saved configurations will be discar	ded.									

#### 3. Parameter Table

The parameter table has all the parameters that are supported on our cloud based software. Users can find and locate the same parameters within the table that are supported on their third party device and configure it to their template by clicking on the **Edit** button next to that parameter.

On the edit page users will need to select the block, starting address, multiplier, data type and byte order of the parameter.

After these settings are configured click on *Save*.

									pe Logos	<ul> <li>Wednesday, February 19, 2020 5;</li> </ul>
ster	n Settings	Protocols	remplates	Mainter	nanio	Edit		×		
	Block Ta	ble				Block*		í		
	Index	Start Hex	Start	Count	10	Block 1: 0x4000 - 0x4013 : 20			'n	
	0	0x4000	16384	20	RE	Salact the block the parameter belongs to: Add block in step 2 if needed		- 1	Delute	
	Paramet	ler Table				Select Display Tab(s)		_		
	Label			Post La	bel	Basic Metering				Action
	Frequenc	or :		Frog H		Label		_	10	TAL
						Frequency				
	Phase A I	Line-to-Neutral 1	Voltage	Vo_V		Parameter name shown on webpage			9	Ede
	Phase B L	Line-to-Neutral \	Voltage	Vb_V		Address*			10	TAN
	Phone C I	Line-to-Neutral V	Voltage	WV		0x 4000		_	0	10
	-		and a second			Address of its beginning register Range (buld00) - 0u8117		- 1		
	Phase A-	6 Line-to-Line Vi	oltage	VAD_V		Multiplier*		- 1	9	Edt
	Phase B.	C Line to Line V	ottage	VDC_V		1			9	For
	Phase C-	A Line-to-Line V	onage	Vca_V		eg 01		- 1	12	6.01
	Average	Line-to-Line Volt	and a	Marca N		Post Label		_		100
						Freq_Hz				
	Average	Line-to-Neutral	Voltage	Whange !!	v	Parameter name addresiation used in log and post files headers			17	Edit
	Phase A I	Line Current		la_A		Data Format*			9	1.01
	Phase B I	Line Current		ID,A		FLOAT		٠	10	Telt
						Byte Order*				
	Pruse C I	tase Current		KA.		NITERAL			0	Ter
	Average	Line Current		lavo,A			Cancel	Save	19	Edit
								-		





When all desired parameters have been configured and added to the template, click on the Create *Template* button.

Users will be redirected to the *Installed* tab on the Modbus Template page, where the newly created Typical Energy Meter Template will be seen under the *Customized* templates at the bottom of the page.

AcuLink 810 Gateway		6 Logout	Wednesday, February 19, 2020 5:07 PM	About AcuLink 810     ACCUENERSY
Devices Data Log	System Settings Protocols Templates M	faintenance Diagnostics		
Modbus Template	Installed Import New Template	New Typical Energy Meter Template	Convert From CSV File	
BACnet Template	Official			
	Template Name		Last Update	
	AcuDC 243 v1 01		2019-07-25 14:34:40	
	AcuBey 1200 - 101		2019-07-25 14-34-00	
	AcuRey 1200 v101		2019-07-25 14:37:44	
	ArcRev 1310 us os		2010-07-25 14:27:25	
	Arc. Dec 2020-10M-101		2019-07-25 14:37:25	
	An Dec 2020 10M 4101		2019-07-23 14:30:35	
	Acciney 2020-16M (1.01		2019-07-25 14:55:45	
	Acurey 2020-2DM (101		2019-07-25 14:37:07	
	ACUREV 2020-2EM v1.01		2019-07-25 14:36:19	
	Acuvim II v1.01		2019-07-25 14:34:21	
	Acuvim-L v1.01		2019-07-25 14:35:23	
	Previous 1 2 Next 10/page	÷		
	Customized			
	Template Name	Last Update	Action	U
	Test Template v1.01	2020-02-19 16:	58:44 🛃 🗈	
	Typical Energy Meter Test v1.01	2020-02-19 17:	11:42	
	Previous 1 Next 10/page 4	•		

# 7.1.4 Creating Template from CSV

The AcuLink 810 supports a CSV to Modbus template converter directly from its web interface. To access this converter click on the Convert From CSV File tab on the Modbus Template page.

Users can enter in the desired name and version number for the Template.

Under the CSV file section users will need to upload a CSV file containing all device register information for their device.

A sample CSV file can be downloaded directly from the interface where users can edit and use it to build their own file. The CSV file must be in the same format as the sample file in order to successfully convert the file into a template file.





# AcuLink 810 Data Aquisition Server

uLink 810 Gateway						G+ Logout	Wednesday, February 19, 2	020 5:13 PM	O About	AcuLink 810	ACCUENERGY
Devices Data Lo	og Syster	m Settings	Protocols	Templates	Maintenance	Diagnostics					
Modbus Template		Modbus	Template								
BACnet Template		Installed	Import	New Template	New Typical En	ergy Meter Template	Convert From CSV File				
		Template N	ame"		Vers	sion*	-	CSV File*			
		CSV Conv	ert Test		1.	01		sample.cs	W		Browse

# The sample CSV file:

Q	(× - ) =										
-	Home Insert Page Layout	Form	ulas Data	Review	View						
ſ	Cut Calibri	+ 11 -	A A	= = >	-	Wrap Text	General	•		No	rmal
Pi	aste	- K	- <u>A</u> -		律	Merge & Center 🝷	\$ - % ,	00. 0.	Condition	al Format Che	eck Cell
	Clipboard F	ont	5	A	lianment	5	Number	rs.	Formatting	* as table *	
	1141 × 6 fr	1							×		
E V			0	D	-	-	C		1 - 7		IV.
1	A	B	dataEormat	D butoOrdor	clope	P	cloudEpablod	H	block	tab	ĸ
2	Frequency	16294	LOAT	NORMAL	siope	Frog Hz	EALSE		16294/10)	Racio Motorina	
2	Phase A Line to Neutral Voltage	16296	FLOAT	NORMAL	1	vi	TRUE	M2	16294(10)	Basic Metering	
4	Phase R Line to Neutral Voltage	16300	FLOAT	NORMAL	1	1/2	TRUE	V	16294(10)	Basic Metering	
4	Phase 6 Line to Neutral Voltage	16200	FLOAT	NORMAL	1	V2	TRUE	V	16204(10)	Basic Metering	
5	Average Line to Neutral Voltage	16202	FLOAT	NORMAL	1	Vooug V	TRUE	V	16294(10)	Basic Metering	
7	Sustam Active Dewer Demend	16450	FLOAT	NORMAL	0.001	DMD D kin	TRUE	V LAA	16450(6)	Domond	
0	System Active Power Demand	16450	FLOAT	NORMAL	0.001	DMD_P_KW	TRUE	kwar	16450(6)	Demand	
0	System Reactive Power Demand	16452	FLOAT	NORMAL	0.001		TRUE	kVdi	16450(6)	Domand	
10	System Apparent Power Demand	16454	LUNITOD	NORMAL	0.001	ED IAD WAR	TRUE	LAND.	16456(10)	Enorm	
11	System Import Active Energy	16450	UINT32	NORMAL	0.1		TRUE	k)A/b	16456(10)	Energy	
11	System Export Active Energy	16450	UINT22	NORMAL	0.1	EP_EAP_KWII	TRUE	kwarb	16456(10)	Energy	
12	System Import Reactive Energy	16460	LIINT22	NORMAL	0.1	EQ_IVIP_Kvarh	TRUE	kyarb	16456(10)	Energy	
10	System Export Reactive Energy	16462	UINT22	NORWAL	0.1	EQ_EXP_KVarn	TRUE	KVdrn	16456(18)	Energy	
14	System Not Active Energy	16464	UNIT22	NORMAL	0.1	EP_TOTAL_KWI	TRUE	KVVII k)A/b	16456(10)	Energy	
15	System Net Active Energy	16460	LUNT22	NORMAL	0.1	EP_INET_KWIT	TRUE	kwarb	16456(10)	Energy	
17	System Not Reactive Energy	16470	UNIT22	NORMAL	0.1	EQ_TOTAL_KVall	TRUE	kvarh	16456(10)	Energy	
10	System Net Reactive Energy	16470	INT32	NORWAL	0.1		TRUE	kvarn	16456(18)	Energy	
10	System Apparent Energy	17050	UINT22	NORMAL	0.1	EDA INAD KIAIA	FALSE	KVAII k)Mb	17052(20)	Energy	
19	Phase A Import Active Energy	17954	UINT22	NORMAL	0.1	EPa_INIP_KWI	FALSE	kw/h	17952(30)	Energy	
20	Phase A Export Active Energy	17954	UINT32	NORMAL	0.1	EPa_EXP_KWN	FALSE	KVVII k)A/b	17952(30)	Energy	
21	Phase B Import Active Energy	17930	UINT22	NORWAL	0.1	EPD_IVIP_KWI	FALSE	KVVII	17052(30)	Energy	
22	Phase B Export Active Energy	17060	UINT22	NORMAL	0.1	EPU_EAP_KWI	FALSE	KVVII k)A/b	17052(30)	Energy	
25	Phase C Import Active Energy	17960	UINT22	NORMAL	0.1	EPC_INIP_KWII	FALSE	k win	17952(30)	Energy	
24	Phase & Import Reactive Energy	17902	UINT32	NORMAL	0.1	EPC_EAP_KWII	FALSE	kvvii	17052(30)	Energy	
25	Phase A Import Reactive Energy	17904	UINT22	NORWAL	0.1	EQa_IVIP_KVarn	FALSE	kvarh	17052(30)	Energy	
20	Phase A Export Reactive Energy	17900	UINTS2	NORWAL	0.1	EQa_EXP_KVall	FALSE	kvarn	17952(50)	Energy	
2/	Phase B Import Reactive Energy	17908	UINT32	NORMAL	0.1	EQD_IMP_Kvarh	FALSE	kvarn	17952(30)	Energy	
28	Phase & Export Reactive Energy	17970	UINT32	NORMAL	0.1	EQD_EXP_KVarn	FALSE	kvarn	17952(30)	Energy	
29	Phase C Import Reactive Energy	17972	UINT32	NORMAL	0.1	EQC_IVIP_KVarn	FALSE	kvarn	17052(30)	Energy	
30	Phase C Export Reactive Energy	17974	UINT32	NORMAL	0.1	EQU_EXP_KVarn	FALSE	kvarn	17052(30)	Energy	
31	Phase A Apparent Energy	17976	UINT32	NORMAL	0.1	ES8_KVAN	FALSE	KVAN	17052(30)	Energy	
32	Phase & Apparent Energy	17978	UINT32	NORMAL	0.1	ESD_KVAN	FALSE	KVAh	17952(30)	Energy	
33	Phase C Apparent Energy	11980	01/01/32	NUKIVIAL	0.1	ESU_KVAN	FALSE	KVAN	1/952(30)	energy	
34											



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Once all information and CSV file have been uploaded click on the Upload button.

Users will be redirected to the *Installed* tab on the Modbus Template page where the newly converted Modbus template will be seen under the *Customized* templates located at the bottom of the page.

ul ink 810 Gateway	У					60 Logout	Wednesday, February 19, 2020 5:16 P	M O About	AcuLink 810	ACCUENER
Devices Data	a Log Syst	em Settings Protocols	Templates	Maintenance	Diagnostics					
lodbus lemolate		Official			.,,					_
ACnet Template		Template Name					Lact Undate			
		AcuDC 243 v1.01				2	2019-07-25 14:34:40			
		AruRey 1200 -101			2019-07-25 14:34:00					
		AcuBey 1300 v101				,	2019-07-25 14:37:44			
		AcuRey 1310 v101				2	2019-07-25 14:37:25			
		AcuRev 2020-1DM v1.01				2	2019-07-25 14:36:39			
		AcuRey 2020-1EM v1.01					2019-07-25 14:35:45			
		AcuRev 2020-2DM +1.01				2	2019-07-25 14:37:07			
		AcuRev 2020-2EM v1.01				2	2019 07 25 14:36:19			
		Acuvim II v101				2	2019-07-25 14:34:21			
		Acuvim-L v1.01				2	2019-07-25 14:35:23			
		Previous 1 2 No	t 10/page							
		Customized								
		Template Name			Last Up	date	Actions			
		CSV Convert Test v1.01			2020-0	2-19 17:16:3	4	a 🖬		
		lest lemplate v1.01			2020-0.	(-19 16:58)#				
	Typical Energy Meter Tes	1/101		2020-0	-19 17:11:4	2 🛃 🖸	<b>a</b>			
		Previous 1 Next	10/page							

#### 7.2 BACnet Template

BACnet Templates are used in the AcuLink 810 to correctly read the metering data from Accuenergy and third party BACnet devices. Before a device can be added to the gateway a BACnet template for the device must first be uploaded and installed onto the unit.

On the Templates page select **BACnet Template**.

In the BACnet templates page users can view the templates and the version number currently installed on to the AcuLink under the *Installed tab*.

ACCUENERGY				
ADMIN Dashboard	BACnet Template           Installed         Import         Convert From EPICS File			
DEVICE	Official			
Modbus Device	Template Name			Last Update
BACnet Device	AcuRey 1310 BACnet v001			2019-07-19 10:08:38
Digital Input				
DATA MANAGEMENT	Acuvim II BAChet voor			2019-07-19 1007/57
Download	Previous 1 Next 10/page 0			
Delete	Customized			
LOG	Template Name		Last Update	Actions
Alarm Log		No Data		
Event Log				





# 7.2.1 Import Template

To upload a new device template click on the *Import* tab. Users can upload a BACnet template manually or can download templates from our remote server. To import a template manually users must ensure that the device template is in *.def* format as no other formats are excepted on the AcuLink 810.

Alternatively users can download a BACnet template from our remote server by clicking on the *Check* button. A template can be installed directly from our server to the AcuLink 810.

ACCUENERGY		
ADMIN	BACnet Template	
Dashboard	Installed Import Convert From EPICS File	
DEVICE	Firmware Update File*	
Modbus Device	Choose file Browse	
BACnet Device		
Digital Input	Upload	
DATA MANAGEMENT	Remote Update	
Download	Filter	
Delete	All •	
LOG	Template Name	Last Undate
Alarm Log		
Event Log	1 v1	2019-11-08 16:39:26 Install
ACUMESH MANAGEMENT	AcuRev 1310 BACnet v0.01	2019-07-19 10:08:38 Installed
Local Node Configuration	Acuvim II BACnet v0.01	2019-07-19 10:07:57 Installed
Scan & Configuration	EPICS TEST v0.00	2019-07-26 17:01:20 Install
Communication Diagnostics		
CONFIGURATION	Test v1	2019-09-25 11:20:03 Install
System	Test1 v2	2019-07-19 16:04:02 Install
Date & Time	Test	2010 07 10 15 21 52
Network	16275 2010	2019-07-19 15:21:55
Email	Test3 vaoz	2019-07-19 16:02:05 Install

**NOTE:** If users are updating or editing an existing template the Data log and alarm monitoring configurations will be lost after updating an existing device template.

# 7.2.2 Convert from EPICS File

The AcuLink 810 supports a template converter that convert the EPICS file from BACnet devices into a .def BACnet template supported on the AcuLink. Under the Convert from EPICS File tab users can enter in the template name, version number and upload the EPICS file.


Delete	BACnet Template			
LOG	Installed Import Convert From	EPICS File		
Alarm Log	Create a new device template b	ased on an EPICS file		
Event Log	Template Name*	Version*	EPICS File*	
ACUMESH MANAGEMENT	BACnet Template	1.01	TestEPICS_FinalEPICS.tpi	Browse
Local Node Configuration	Hoload			
Scan & Configuration				
Communication Diagnostics				
CONFIGURATION				

Once the name, version and EPICS file has been uploaded users can click on **Upload**. Users will be able to configure and specify which parameter they want to include in the BACnet template, once the parameters are configured click on **Save** at the bottom of the page.

BACnet Template	Select Points To Create Template			×	
Installed Import Convert From EPICS File	<ul> <li>Label</li> </ul>	Object ID	Object Type		
Create a new device template based on an EPICS Template Name*	Frequency	1	0		
BACnet Template 1.01	•	1	0	pi	Browse
	Phase A Voltage	2	0		
	0	1	0		
	Phase B Voltage	3	0		
		1	0		
	Phase C Voltage	4	0		
		1	0		
	<ul> <li>Average Voltage</li> </ul>	5	0		
		1	0		
	Line Voltage AB	6	0		
	٥	1	0		
	Line Voltage BC	7	0		
	٥	1	0		
	<ul> <li>Line Voltage CA</li> </ul>	8	0		
	٥	1	0		
	<ul> <li>Average Line Voltage</li> </ul>	9	0		
	٥	1	0		
	<ul> <li>Average Current</li> </ul>	10	0		



Users will be redirected to the *Installed* tab in the BACnet Template page where the newly converted template file will be seen under the *Customized* templates located at the bottom of the page.

Jomisoau	A space way and	
elete	BACnet Template	
G	Installed Import Convert From EPICS File	
rm Log	Official	
int Log	Template Name	Last Update
UMESH MANAGEMENT	AcuRev 1310 BACnet v0.01	2019-07-19 10:08:38
al Node Configuration	Acuvim II BACnet v0.01	2019-07-19 10:07:57
in & Configuration		
mmunication Diagnostics	Previous 1 Next 10/page +	
NFIGURATION	Customized	
item	Template Name	Last Update Actions
te & Time	BACnet Template v1.01	2019-12-19 11:59:14 🛃 🛅
twork		
ail	Previous 1 Next 10/page •	
irm Notification		



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# **Chapter 8: System Settings**

## 8.1 Network

All network related configurations can be found on the *Network* page under the *System Status* tab. Users can configure all Ethernet (ports 1 & 2), WiFi, DNS, and RSTP configurations from this page.

### 8.1.1 Ethernet

There are two Ethernet ports on the AcuLink 810, by default Ethernet port 1 has a static IP where as Ethernet port 2 is configured for DHCP.

Default Ethernet port 1 settings:

- IP Address 192.168.8.101
- Submask 255.255.255.0
- Gateway 192.168.8.101

Default Ethernet port 2 settings:

• DHCP enabled

The **Interface Status** on the network page lets users know what is connected or disconnected, for example the image below shows both interface status as **Connected** which implies that both Ethernet 1 and Ethernet 2 have an Ethernet cable connected to the port.

AcuLink 810 Gateway		0 Logout	Tuesday, March 10, 2020 8:01 PM	O About AcuLink 810	ACCUENERG
Devices Data Log Sys	tem Settings Protocols Templates	Maintenance Diagnostics			
Date & Time Network Remote Access Email Alarm notification User Management Firmware Update	Ethernet 1   DHCP Enable*  DHCP Enable*  Auto  Manual Interface Status  Connected  IP*  192.168.1.52	Mask* 255255250	Gateway" 192.168.1.1		
	Mut bi (p address Ethernet 2 >> DHCP Enable* Auto Manual Interface Status Connected IP* 192.168.2214 Hort bin address	Mutte je address Mask* 255.255.0	Gateway* [92,162,2,1		



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### 8.1.2 WiFi

There are two WiFi modes in the AcuLink 810, Access point and station.

**NOTE:** When using WiFi ensure that the provided antenna is installed on the AcuLink 810 unit.

- Access Point Mode Is the default WiFi configuration for AcuLink 810, where the gateway will act as a wireless access point and will allow other wireless devices to connect and access the AcuLink 810.
  - In Access Point mode, users can configure the SSID, Network Key and IP of the AcuLink 810 as well as the DHCP DNS servers.
  - The default AP mode settings:
    - SSID AcuLink810-WIFI-SERIAL#810
    - Network Key accuenergy
    - IP 192.168.100.1

**NOTE:** For steps on how to access the web interface via WiFi AP mode refer to chapter 6 section 6.1.2.

AcuLink 810 Gateway							🕀 Logout	Tuesday, March 10, 2	2020 8:01 PM	O About	AcuLink 810	ACCUENERGY
Devices Data Lo	g System	Settings	Protocols	Templates	Mainter	ance Diagnostics						
Date & Time		Ethernet	t2 -									
Network		WiFi 🔻										
Remote Access Email		Enabled										
Alarm notification		O Enabl	le 🔿 Disable									
User Management		Mode*										
Firmware Update		Access	Point		¢							
		SSID*				Network Key*			IP*			
		AcuLin	k810-WIFI-S8P	20200207				<i>S</i>	192.168	100.1		
		Maximum 4	40 characters			Maximum 40 characters			Must be ip a	ddress		
		DNS 1*				DNS 2						
		8.8.8.8				8.8.4.4						
		Must be valid	ip or domain			Must be valid ip or domain						





- **Station Mode:** The AcuLink 810 will behave like a wireless client and bridge to another wireless network that is available.
  - In Station mode, users can select the Wireless network to connect to in the SSID drop down menu. Once the desired wireless network is configured enter the Network Key for the wireless network that the AcuLink 810 will bridge to.
  - Users can configure a static WiFi IP by manually entering in the IP, submask, and gateway of the WiFi network. Alternatively the WiFi can be configured for DHCP where the IP, submask, and gateway of the WiFi network is automatically assigned to the AcuLink 810.

cuLink 810 Gateway						(+ Logout	Tuesday, March 10, 2020 8:01 PM	O About	AcuLink 810	ACCUEN	-7G)
Devices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics						
Date & Time Network Pennote Access Email Jahrn notification Jahrn Management Firmware Update	C Enabled" Station SSID* AcuOP1 DHCP Enal DHCP Enal Interface S Connects	<ul> <li>Disable</li> <li>bisable</li> <li>Manual</li> <li>tatus</li> <li>d</li> </ul>		Refresh	Network K SID Matemum 40	ey' • characters	80				
	IP*			Ma	ik*		Gateway*				
	192.168.1	.81		2	5.255.255.0		192.168.1.1				
	Must be in ad	áress		Mas	he is address		Must he in addre				

### 8.1.3 HTTP Proxy

The AcuLink 810 supports HTTP proxy configuration which allows users to post data to their servers via a proxy server.

To configure the HTTP proxy enter in the proxy url and port number.

HTTP Proxy Enable*	
Enable O Disable	
HTTP Proxy Server URL*	HTTP Proxy Server Port*
1.2.3.4	3128
	Range: 1 - 65535





## 8.1.4 RSTP

The RSTP protocol allows users to create an Ethernet daisy chain using the two Ethernet ports of the AcuLink 810. The 810 can be daisy chained to a network switch/router, other AcuLink 810, and other devices supporting the RSTP protocol.

On the 810 web interface the RSTP protocol can be enabled in the network configuration page. Once enabled users will notice there is only one setting for both Ethernet ports as both ports would now be using the RSTP configured IP address instead of two unique IP addresses.

AcuLink 810 Gateway			🕪 Logout Tuesday, N	farch 31, 2020 10:40 AM	O About	AcuLink 810	ACCUENERGY
Devices Data Log	System Settings Protocols Templates	Maintenance Diagnostics					
Date & Time Network Remote Access Email Alarm notification User Management Firmware Update	Network Configuration  RSTP Enable  Ethernet RSTP  DECP Enable*  Auto  Manual  Interface Status  Disconnected  IP*  192.168.132  Mut be ip address	Mask* 255.255.255.0 Must be jo address		Gateway* 192.168.1.1 Mut be ip address			
	WIFI A						
	DNS 1*	DNS 2					
	8.8.8.8	8.8.4.4					
	Must be valid ip or domain	Must be valid ip or domain					
	HTTP Proxy 🗠						

Users can configure the AcuLink IP manually or by setting the DHCP as Auto.

NOTE: When the RSTP is enabled users will not be able to configure Ethernet 1 and Ethernet 2, there is only 1 IP for the AcuLink using RSTP protocol.

### **Network Topology**

Users can can daisy chain up to 32 devices using the RSTP protocol. This can cut down the amount of network switches required in different applications and allows the use of 1 network switch/router to be used with up to 32 devices. Each device can be accessed by configuring a unique IP address or having the IP addresses assigned automatically by the network.







## 8.1.5 Default Routing Interface

The AcuLink 810 supports a routing default interface setting which allows users to configure which port to use for primary routing to external networks. Since there are multiple ways the user can connect such as Ethernet1/2, WIFI, RSTP, this setting will establish which one is used for the main routing. The other interfaces can be used for local routing if the users has them connected.

Users can select the default routing interface as:

- Ethernet 1
- Ethernet 2
- WIFI only valid if WIFI is configured for station mode
- Bridge (RSTP) only valid if RSTP is enabled

AcuLink 810 Gateway						
Devices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics	
Date & Time	< Network	Configurati	on			
Network	BSTP I	nable				
Remote Access		indore				
Email	Default Inte	erface				
Alarm notification	Ethernet 1			÷		



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#### 8.2 Time & Date

The **Date & Time** page under the **System Settings** tab is where users can configure the local time of the gateway. The AcuLink 810 supports NTP (Network Time Protocol) where it can synchronize its time to NTP servers across the network.

**NOTE:** In order to synchronize the AcuLink 810's time to the NTP time servers an internet connection is required.

If users to not want to sync the device time to an NTP server they can disable the NTP setting and configure the time and date manually.

- **Time Sync:** Users can force the time to update to the NTP on the AcuLink 810 by clicking the Sync button.
- NTP Time Servers: The AcuLink 810 supports can be synced with up to 3 time servers. By default the gateway uses 0.u.pool.ntp.org time server. Users can remove and add their own time servers as needed.

Examples of North American NTP 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:* Users can select the timezone where the gateway is installed in the drop down menu. Alternatively users can simply click on the region/country on the map displayed to select the desired timezone.

Once the time and date is configured users will notice the desired time displayed on the top right corner of the web interface.





# Chapter 8: System Settings



### 8.3 Remote Access

The AcuLink 810 supports a remote access function that allows users to access the AcuLink 810 web interface. By accessing the interface remotely users will have full functionality as well as access to all gateway settings and device readings. This feature allows users to access the AcuLink 810 web interface through an HTTPS web server easily through a URL without any network port forwarding. Users simply register for remote access on the web server and a remote access URL is provided where they can configure settings and view meter data. This is useful as the gateway device may be installed on remote sites where the end user may be miles away from the actual device.

The remote access configuration can be found on by clicking on the *System Settings* tab and selecting *Remote Access*.

Users must first register for remote access by clicking on *Manual Register*. Once successfully registered, enable remote access and click on *Save*.

**NOTE:** In order to successfully register for remote access there must be an internet connection provided to the AcuLink 810.



# AcuLink 810 Data Aquisition Server



When first enabling remote access and registering the status will be displayed as offline, users may click on the **Refresh Status** button to see the status turn to online. Once the status is online the remote access user interface can be accessed by clicking on the remote access url or by using the copy button and pasting the url into a new tab on the internet browser.

The remote access login credentials are the same as if the user were to login to the interface locally. The default login credentials for the *User* access level the password is **view**, and for the *Admin* access level the password is **admin**.







#### 8.4 User Management

In the user management page the current password for the admin or viewer access level can be changed.

**NOTE:** Only users logged in with Admin access level can change the password for either Admin or Viewer access levels.

For the viewer access level the default password is *view*.



#### For the admin access level the default password is *admin*.

AcuLink 810 Gateway	Ge Logout Tuesday, March 10, 2020 12:18 PM () About AcuLink 810	VERGY
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Date & Time Network Remote Access Email Alarm notification User Management	User Management User* Viewer O Admin Current Password*	
Firmware Update	Maximum 20 characters New Password* newpassword Maximum 20 characters Repeat New Password newpassword Password T	



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# **Chapter 9: Protocols**

## 9.1 Modbus

This chapter outlines to users how to add devices from the AcuLink 810 web interface using the Modbus protocol.

The AcuLink 810 supports both Modbus RTU and Modbus TCP protocols.

## 9.1.1 RS485 Devices

The AcuLink 810 gateway supports RS485 serial communication. Users can set up an RS485 connection to the AcuLink with any Accuenergy or third party device. If connecting multiple devices or 'daisy-chaining' the devices together, ensure that a unique device address (Modbus Slave ID) is configured for each RS485 device. The AcuLink 810 can support up to 32 external RS485 devices.

**NOTE:** A termination resistor at the end of the RS485 network is optional when daisy-chaining multiple devices. If using a resistor a termination value of 150 ohms can be used.







## 9.1.2 USB Devices

The AcuLink 810 has a USB port that allows for an additional 32 Modbus RTU devices. Users can connect the additional using an RS485 to USB converter cable.



## 9.1.3 Adding Modbus RTU Device

By default the RS485 and USB port of the AcuLink 810 and configured for the Modbus protocol. Users can configure the protocol of the RS485 and USB ports from the Interface Assignment page under the Protocols tab.

**NOTE:** Users will not be able to change the Interface assignment of the USB or RS485 port if there is a device added on the 810 with one of the selected protocols. The device must be deleted from the AcuLink in order to change the protocol of the ports.





# AcuLink 810 Data Aquisition Server

AcuLink 810 (	Sateway			G Logout	Tuesday, March	31, 2020 3:51 PM	About	AcuLink 810	ACCUENERGY
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics			
Interface As AcuMesh	signment	< Interface	Assignmen	t					
Modbus BACnet		O Modbus Delete Modbu	RTU O BACI	net MS/TP 3 with RS485 to edit.					
SNMP		Port USB* O Modbus Delete configu	RTU OBAC	net MS/TP					

With the Modbus RTU protocol selected, to add a Modbus RTU device via RS485 or USB navigate to the *Modbus Devices* page under the *Devices* tab. Click on *Add Device*, the following fields will need to be configured:

Device Name: Enter the device name.

**Serial Number:** Enter the serial number of the device being added, the serial number must be unique consisting of only letters and numbers.

**Template:** User will need to select the Modbus template for the device. For information regarding the Modbus Device template see section 7.3 of the user manual.

Protocol: Select RTU as the protocol

Port: Select either RS485 or USB

Modbus ID: Enter the device address (Modbus Slave ID) of the device, the range is from 1-247

Baud Rate: Select the baud rate of the device, the range is from 9600-115200

Data Bit: Select the number of data bits, either 7 or 8

Parity: Select the parity of the device from the drop-down list

Stop Bit: Select the number of Stop Bits

**Request Timeout:** Select a timeout period for the AcuLink 810 to wait for a response from the device, the range is 1-60 seconds, default for Modbus RTU is 0.5.

**NOTE:** Users cannot add device with the same device address (Modbus Slave ID). The device address must be unique for each device in the RS485 network.

Click **Save** once all settings are entered correctly.



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Dashboard	Add Modbus Device
Alarm Logs	
Vodbus Devices	Device Name"
ACnet Devices	Test
/Bus Devices	Maximum 40 characters
igital Inputs	Serial Number*
	AH11223344
	Must be unique in this AcuLink 810 device
	Maximum 20 characters
	Template*
	Acuvim II +
	Protocol*
	O RTU O TCP
	Port*
	P5485 ¢
	10403
	Modbus ID*
	1
	Must be unique in this AcuLink 810 device
	Range: 1 - 246
	Baud Rate*
	19200 +
	Data Bit*
	8
	Parity*
	None ¢
	Stop Bit*
	1 4
	Request Timeout*
	0.5 seconds
	Range: 0.1 - 5

After the device is added, it can be found in the *Modbus Devices* pages. A device that is successfully connected and communicating with the gateway will have display a green *ON* status under the status column. Whiles a device that is offline will display a red *OFF* warning symbol under the status menu.

**NOTE:** After adding a new device to the gateway it may take up to 3-4 minutes for the status to show 'ON'. If after 3-4 minutes the device is showing an 'OFF' status, double-check the configuration settings to ensure everything is set correctly.





# AcuLink 810 Data Aquisition Server

1	Terementer entre per						
shiboard	Modbus Devices						
rm Logs	Add Device Search Device						
deus Devices	Device Name	Interface	Protocol	Serial Number	Status	Alarma	Action
us Devices	Among L M2, 111	Liberari	Madburt ICD	211	di cau		-
pital Inputs	ACONTI E VO GET	timemet	modous ici-	261	C CM	0	
	Acuvim II TCP.94	Ethernet	Modbus TCP	94	OON	0	
	MESH-69	Mesh	Modbus RTU	AH18063288	() ON	0	
	ME5H-67	Mesh	Modbus RTU	AH18063303	( ON	1	
	MESH-68	Mesh	Modbus RTU	AH18063309	(O ON	0	
	MESH-65	Mesh	Modbus RTU	AH18063310	O ON	0	
	MESH-70	Mesh	Modbus RTU	AH18092324	( ON	0	
	Bridge Meter 1	Ethernet	Modbus TCP	Bridge1	OON	0	
	Bridge Meter 10	Ethernet	Modbus TCP	Bridge 10	() ON	0	
	Bridge Meter 20	Ethernet	Modbus TCP	Bridge20	(O ON	0	Ξ
	CSV Convert Test	Ethernet	Modbus TCP	CSV	OON	0	
	£3118052569	R5485	Modbus RIU	£3118052569	() ON	0	
	New Template Test	Ethernet	Modbus TCP	NEW	O ON	0	
	Remote Template Test	Ethernet	Modbus TCP	Remote	() ON	0	
	Typical Energy Meter Test	Ethernet	Modbus TCP	Typical	() ON	0	

If users need to change the configuration of an added device, they can simply click on the device and then select the *Configuration*. From this page users can re-configure the device name, port type, baud rate, parity, etc.

Dashboard Marm Logs Modbus Devices JACnet Devices VBus Devices Digital Inputs	Modbus Device - E3T16090333           Reading         Alarm         Configuration           Device Name*         E3T16090333					
3ACnet Devices MBus Devices Digital Inputs	Device Name*					
MBus Devices Digital Inputs	E3T16090333					
Digital Inputs						
	Maximum 40 characters					
	Template*					
	AcuRev 1310 +					
	Protocol*  RTU TCP Port*					
	RS485 ¢					
	Modbus ID*					
	201					
	Must be unique in this Aculink 810 device Range 1 - 246					
	Baud Kate*					
	19200					
	Data Bit*					
	8 \$					





## 9.1.4 TCP Devices

The AcuLink 810 can support up to 100 Modbus TCP devices where the devices will need to be on the same network as the gateway.



## 9.1.5 Adding Modbus TCP Device

To add a Modbus TCP device click on *Add Device* from the *Modbus Devices* page under the *Devices* tab. The following fields will need to be configured:

Device Name: Enter the device name of the TCP device

**Serial Number:** Enter the serial number of the device, the serial number must be unique and consisting of only letters and numbers.

**Template:** Select the Modbus template for the TCP device, for more information regarding Modbus templates see sections 7.3 of the user manual.





# AcuLink 810 Data Aquisition Server

Protocol: Select TCP as the protocol

IP Address: Enter the IP address of the device

Port: Enter the Modbus port of the device

Modbus ID: Enter the Modbus address of the device

Request Timeout: Enter the timeout setting, default for TCP is 3 seconds

Click *Save* once all settings are entered correctly.

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Dashboard	Add Modbus Device
Alarm Logs	
Modbus Devices	Device Name*
BACnet Devices	Test
MBus Devices	Maximum 40 characters
Digital Inputs	Serial Number*
	AH11223344
	Must be unique in this AcuLink 810 device
	Maximum 20 characters
	Template*
	Acuvim II 🗢
	Protocol*
	RTU O TCP
	IP Address*
	192.168.1.94
	Must be ip address
	Port*
	502
	Range: 1 - 65535
	Modbus ID*
	1
	Range: 1 - 246
	Request Timeout*
	3 seconds
	Range: 0.1 - 5
	Save Cancel





After the device is added, it can be found in the **Modbus Devices** pages. A device that is successfully connected and communicating with the gateway will have display a green **ON** status under the status column. Whiles a device that is offline will display a red **OFF** warning symbol under the status menu.

**NOTE:** After adding a new device to the gateway it may take up to 3-4 minutes for the status to show 'ON'. If after 3-4 minutes the device is showing an 'OFF' status, double-check the configuration settings to ensure everything is set correctly.

Attant Logs       Add Device Texts       Exercite Devices         Macillo adversion       Evel Consents       Interface ?       Protocol ?       Serial Number ?       Status ?       Alarms ?         Macillo adversion       Evel consents ?       Interface ?       Protocol ?       Serial Number ?       Status ?       Alarms ?         Macillo adversion       Evel consents ?       Interface ?       Protocol ?       Serial Number ?       Status ?       Alarms ?         Macillo adversion LV3 221       Ethernet Modbus TCP       94       OON       0         Advini II TCP .94       Meth       Modbus RTU       Al18053288       OON       0         MESH 69       Meth       Modbus RTU       Al18053303       OON       0         MESH 69       Meth       Modbus RTU       Al18052369       OON       0         Bridge Meter 10       Ethernet <t< th=""><th>Dashboard</th><th>Modbus Devices</th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	Dashboard	Modbus Devices						
Notice Test         Interface         Protocel         Serial Number         Status         Alarms           ACnet Devices         Rike Devices         ON         0           Rike Devices         Rike Devices         Rike Devices         Rike Devices         Rike Devices         94         ON         0           Rike Devices         Rike Devices         Rike Devices         Rike Devices         94         ON         0           MitSH Fel9         Mesh         Modbus RTU         AltBo53808         ON         1           MESH-69         Mesh         Modbus RTU         AltBo53808         ON         0           MESH-68         Mesh         Modbus RTU         AltBo53808         ON         0           MESH-70         Mesh         Modbus RTU         AltBo53301         ON         0           Ridge Meter 10         Ethernet         Modbus TCP         Ridge10         ON         0           Ridge Meter 20         Ethernet         Modbus TCP         Ridge20         ON         0           Ridge Meter 20         Ethernet <td>Jarm Logs</td> <td>Add Davies   Fauch Davies</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Jarm Logs	Add Davies   Fauch Davies						
Accert Devices         Device Name         Interface         Protocol         Serial Number         Status         Alarms           Bus Devices         Acumin LV3_221         Ethernet         Modbus TCP         221         © ON         0           Acumin LV3_221         Ethernet         Modbus TCP         94         © ON         0           MESH-69         Mesh         Modbus RTU         AH18063288         © ON         1           MESH-67         Mesh         Modbus RTU         AH18063303         © ON         0           MESH-68         Mesh         Modbus RTU         AH18063303         © ON         0           MESH-65         Mesh         Modbus RTU         AH18063309         © ON         0           MESH-66         Mesh         Modbus RTU         AH18063309         © ON         0           MESH-65         Mesh         Modbus RTU         AH18063309         © ON         0           MESH-66         Mesh         Modbus RTU         AH18063309         © ON         0           MESH-65         Mesh         Modbus RTU         AH18063264         © ON         0           Bridge Meter 10         Ethernet         Modbus TCP         Bridge10         © ON         0	lodbus Devices	Add Device Search Device						
Buil Devices     Advaim L V3. 221     Ethernet     Modbus TCP     221     © ON     0       Advaim II TCP.94     Ethernet     Modbus TCP     94     © ON     0       MESH-69     Mesh     Modbus RTU     AH18063288     © ON     0       MESH-69     Mesh     Modbus RTU     AH18063303     © ON     1       MESH-66     Mesh     Modbus RTU     AH18063303     © ON     0       MESH-67     Mesh     Modbus RTU     AH18053303     © ON     0       MESH-68     Mesh     Modbus RTU     AH18053303     © ON     0       MESH-69     Mesh     Modbus RTU     AH18052309     © ON     0       Bridge Meter 10     Ethernet     Modbus TCP     Bridge10     © ON     0       Bridge Meter 20     Ethernet     Modbus TCP     Bridge20     © ON     0       CSV Convert Test     Ethernet     Modbus TCP     Remote     © ON     0       ET18052569     R5485     Modbus TCP     NEW <td>ACnet Devices</td> <td>Device Name</td> <td>Interface ©</td> <td>Protocol</td> <td>Serial Number</td> <td>Status</td> <td>Alarms</td> <td>Action</td>	ACnet Devices	Device Name	Interface ©	Protocol	Serial Number	Status	Alarms	Action
Acuvim II TCP-94     Ethernet     Modbus TCP     94     © ON     0       MESH-69     Mesh     Modbus RTU     AH18053288     © ON     1       MESH-67     Mesh     Modbus RTU     AH1805308     © ON     0       MESH-67     Mesh     Modbus RTU     AH1805308     © ON     0       MESH-67     Mesh     Modbus RTU     AH1805309     © ON     0       MESH-68     Mesh     Modbus RTU     AH1805309     © ON     0       MESH-69     Mesh     Modbus RTU     AH1805309     © ON     0       MESH-69     Mesh     Modbus RTU     AH1805309     © ON     0       MESH-70     Mesh     Modbus RTU     AH1805310     © ON     0       Bridge Meter 10     Ethernet     Modbus RTU     AH1805224     © ON     0       Bridge Meter 20     Ethernet     Modbus TCP     Bridge10     © ON     0       CSV Convert Test     Ethernet     Modbus TCP     Bridge20     © ON     0       New Template Test     Ethernet     Modbus TCP     NEW     © ON     0       New Template Test     Ethernet     Modbus TCP     NEW     © ON     0       New Template Test     Ethernet     Modbus TCP     NEW     ©	Bus Devices	Acuvim L V3 .221	Ethernet	Modbus TCP	221	ON	0	
MESH-69     Mesh     Modbus RTU     AN18053288     © ON     0       MESH-67     Mesh     Modbus RTU     AN1805303     © ON     1       MESH-63     Mesh     Modbus RTU     AN1805303     © ON     0       MESH-63     Mesh     Modbus RTU     AN1805309     © ON     0       MESH-63     Mesh     Modbus RTU     AN1805310     © ON     0       MESH-63     Mesh     Modbus RTU     AN1805324     © ON     0       MESH-70     Mesh     Modbus RTU     AN18053224     © ON     0       Bridge Meter 1     Ethernet     Modbus RTU     AN1809224     © ON     0       Bridge Meter 10     Ethernet     Modbus TCP     Bridge10     © ON     0       Bridge Meter 20     Ethernet     Modbus TCP     Bridge20     © ON     0       CSV Convert Test     Ethernet     Modbus TCP     NEW     © ON     0       New Template Test     Ethernet     Modbus TCP     NEW     © ON     0       Remote Template Test     Ethernet     Modbus TCP     NEW     © ON     0	gital inputs	Acuvim II TCP .94	Ethernet	Modbus TCP	94	() ON	0	
MESH-67     Mesh     Modbus RTU     AH18053303     © ON     1       MESH-68     Mesh     Modbus RTU     AH18053309     © ON     0       MESH-65     Mesh     Modbus RTU     AH18053303     © ON     0       MESH-63     Mesh     Modbus RTU     AH18053309     © ON     0       MESH-63     Mesh     Modbus RTU     AH18053300     © ON     0       MESH-70     Mesh     Modbus RTU     AH18052324     © ON     0       Bridge Meter 1     Ethernet     Modbus RTU     AH1802324     © ON     0       Bridge Meter 10     Ethernet     Modbus TCP     Bridge10     © ON     0       Bridge Meter 20     Ethernet     Modbus TCP     Bridge20     © ON     0       CSV Convert Test     Ethernet     Modbus TCP     CSV     © ON     0       E3T18052569     RS485     Modbus RTU     E3T18052569     © ON     0       New Template Test     Ethernet     Modbus TCP     NEW     © ON     0       Render Tennplate Test     Ethernet     Modbus TCP     NEW     © ON     0		MESH-69	Mesh	Modbus RTU	AH18063288	(U ON	0	
MESH-68     Mesh     Modbus RTU     AH18063309     © ON     0       MESH-65     Mesh     Modbus RTU     AH18063310     © ON     0       MESH-70     Mesh     Modbus RTU     AH18063310     © ON     0       Bridge Meter 1     Ethernet     Modbus RTU     AH1802324     © ON     0       Bridge Meter 1     Ethernet     Modbus TCP     Bridge 10     © ON     0       Bridge Meter 10     Ethernet     Modbus TCP     Bridge 10     © ON     0       Bridge Meter 20     Ethernet     Modbus TCP     Bridge 30     © ON     0       CSV Convert Test     Ethernet     Modbus TCP     CSV     © ON     0       E3T18052569     RS485     Modbus TCP     NEW     © ON     0       New Template Test     Ethernet     Modbus TCP     NEW     © ON     0       Remote Tomplate Test     Ethernet     Modbus TCP     NEW     © ON     0		MESH-67	Mesh	Modbus RTU	AH18063303	() ON	11	
MESH-65     Mesh     Modbus RTU     AH18063310     © ON     0       MESH-70     Mesh     Modbus RTU     AH1802324     © ON     0       Bridge Meter 1     Ethernet:     Modbus TCP     Bridge 1     © ON     0       Bridge Meter 10     Ethernet:     Modbus TCP     Bridge 10     © ON     0       Bridge Meter 20     Ethernet:     Modbus TCP     Bridge 30     © ON     0       CSV Convert Test     Ethernet:     Modbus TCP     CSV     © ON     0       E1T18052569     RS485     Modbus RTU     E3T18052569     © ON     0       New Template Test     Ethernet:     Modbus TCP     NEW     © ON     0       Remote Template Test     Ethernet:     Modbus TCP     Remote     © ON     0		MESH-68	Mesh	Modbus RTU	AH18063309	() ON	0	
MESH-70     Mesh     Modbus RTU     AH1802324     © ON     0       Bridge Meter 1     Ethernet     Modbus TCP     Bridge 1     © ON     0       Bridge Meter 10     Ethernet     Modbus TCP     Bridge 10     © ON     0       Bridge Meter 20     Ethernet     Modbus TCP     Bridge 30     © ON     0       CSV Convert Test     Ethernet     Modbus TCP     CSV     © ON     0       E3T18052569     RS485     Modbus RTU     E3T18052569     © ON     0       New Template Test     Ethernet     Modbus TCP     NEW     © ON     0       Remote Tomplate Test     Ethernet     Modbus TCP     Remote     © ON     0		MESH-65	Mesh	Modbus RTU	AH18063310	(U ON	0	
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Bildge Meter 10     Ethernet     Modbus TCP     Bridge 10     O     O       Bridge Meter 20     Ethernet     Modbus TCP     Bridge 20     O     O       CSV Convert Test     Ethernet     Modbus TCP     CSV     O     O       E111052559     R545     Modbus RTU     E311052569     O     O     O       New Template Test     Ethernet     Modbus TCP     NEW     O     O       Remote Template Test     Ethernet     Modbus TCP     NEW     O     O		Bridge Meter 1	Ethernet	Modbus TCP	Bridge1	(U ON	0	
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CSV Convert Test     Ethernet     Modbus TCP     CSV     © ON     0       E1T10052569     R5485     Modbus RTU     E3T10052569     © ON     0       New Template Test     Ethernet     Modbus TCP     NEW     © ON     0       Remote Template Test     Ethernet     Modbus TCP     Remote     © ON     0       Dipied Test     Ethernet     Modbus TCP     Remote     © ON     0		Bridge Meter 20	Ethernet	Modbus TCP	Bridge20	() ON	0	
E3T18052569     R5485     Modbus RTU     E3T18052569     O     O       New Template Test     Ethernet     Modbus TCP     NEW     O     O       Remote Template Test     Ethernet     Modbus TCP     Remote     O     O       Tamical Energy Meter Test     Ethernet     Modbus TCP     Tamical     O     O		CSV Convert Test	Ethernet	Modbus TCP	CSV	() ON	0	
New Template Test         Ethernet         Modbus TCP         NEW         O ON         0           Remote Template Test         Ethernet         Modbus TCP         Remote         O ON         0           Tanical Energy Mater Test         Ethernet         Modbus TCP         Tanical         O ON         0		E3T18052569	RS485	Modbus RTU	E3T18052569	ON	0	
Remote Template Test         Ethernet         Modbus TCP         Remote         O         0           Tunical Energy Meter Test         Ethernet         Modbus TCP         Tunical         OON         0		New Template Test	Ethernet	Modbus TCP	NEW	(U ON	0	8
Typical Energy Meter Test Ethernet Modbus TCP Typical (0 ON 0		Remote Template Test	Ethernet	Modbus TCP	Remote	() ON	0	
		Typical Energy Meter Test	Ethernet	Modbus TCP	Typical	OON	0	

If users need to change the configuration of an added device, they can simply click on the device and then select the *Configuration*. From this page users can re-configure the device name, port type, IP address, Modbus ID, etc.



# AcuLink 810 Data Aquisition Server

AcuLink 810 Gateway		
Devices Data Log	System Settings Protocols Templates Maintenance Di	iagnostics
Dashboard Alarm Logs Modbus Devices	Kodbus Device - 94 Reading Alarm Configuration	
BACnet Devices MBus Devices Digital Inputs	Device Name* Acuvim II TCP :94 Maximum 40 characters Template* Acuvim II.JO1 : Protocol* IP Address*	
	192.168.1.94 Mutt be ip address <b>Port*</b> 502 Runge: 1 - 65535	
	Modbus ID* 3 Ronger 1 - 206 Request Timeout*	
	3.0 seconds Banne: 0.1 - 5	

## 9.1.6 Modbus Gateway Function

The AcuLink 810 supports a Modbus Gateway Function, where users can add a Modbus RTU device and use it as a gateway. Users must choose the device template as *Modbus Gateway Function Only*.

The Modbus Gateway Function allows users to forward a Modbus TCP request to the corresponding meter. A *Modbus Gateway Function Only* device allows the user to read/write to the Modbus registers of this device via Modbus Gateway function. Unlike other Modbus devices, the AcuLink 810 does not periodically collect data for Modbus Gateway devices.

### **Adding Modbus Gateway Device**

To add a Modbus Gateway device, select add device. Under the **Template** setting select *Modbus Gateway Function Only*. Select **RTU** as the protocol and enter in the communication settings for that RTU device (baud rate, parity, Modbus ID, etc).

Click on Save once all information is entered in correctly.

**NOTE:** Only Modbus RTU devices can be used as a Modbus Gateway Function on the AcuLink 810.





	System Settings Protocols Templates Maintenance Diagnostics
ashboard	Add Modbus Device
larm Logs	
Addbus Devices	Device Name*
ACnet Devices	Gateway Device
1Bus Devices	Maximum 40 characters
igital Inputs	Serial Number*
	AH1249234
	Must be unique in this AcuLink 810 device Maximum 20 characters
	Template*
	Modbus Gateway Function Only
	Protocol*  RTU TCP Port*
	RS485 ¢
	Modbus ID*
	Modbus ID* 23
	Modbus ID* 23 Motthe unique in this Aculink 810 device Renges 1 - 246
	Modbus ID* 23 Matthe unique in this AcaUnik 810 device Renges 1 - 246 Baud Rate*
	Modbus ID* 23 Mut be unique in this Aculink 810 device Regge: 1-246 Baud Rate* 38400 2
	Modbus ID* 23 Mot be unique in this Aculink 810 device Renge 1 - 246 Baud Rate* 38400 2 Data Bit*

### 9.2 AcuMesh

Certain models of the AcuLink 810 supports AcuMesh which allows for a wireless RS485 network. The gateway has a built in AcuMesh into its hardware which allows the 810 to connect wirelessly via RS485 to gather information from both Accuenergy and third party Modbus devices using AcuMesh transceivers/modules.







There are two AcuMesh models for the AcuLink 810:

- AcuLink-868 (868 MHz) is used mostly in Europe, Middle East, Africa, and certain parts of Asia.
- The AcuLink-900 (900 MHz) is mainly used in North and South America, Oceania, and also certain parts of Asia.

### NOTE: The AcuLink 810-X model does not support AcuMesh

To configure the AcuMesh settings on the AcuLink 810 click on the *Protocols* tab and select *AcuMesh*.

## 9.2.1 Local Configuration

In order for the AcuLink to add other AcuMesh devices, the local AcuMesh settings must be configured first. The local configuration page refers to the AcuMesh unit built into the AcuLink 810.

The following can be configured on the local configuration page:

**Node Name:** Users can configure the name of the AcuMesh node in this settings, the maximum range is up to 14 characters

**Local MAC Address:** The built in AcuMesh transceiver will have a local MAC address that is used to identify the unit, this is non configurable.

**Network Hop:** By default the network hop is set to 4 and represents the amount of times the AcuMesh will scan the mesh network for devices. The range for this setting is from 1-7.

**Network ID:** The network ID is a hex number that is used as an AcuMesh Network Identifier. By default the network ID is 7FFF, and the range is 0-7FFF (Hex).

**NOTE:** Only transceivers with the same matching network ID can discover and communicate with each other.

**Encryption Enable:** Users have the option to put a password on the AcuMesh device. All radio AcuMesh would need to have the same password in order to communicate in the AcuMesh network.

**Encryption Key:** The encryption key is a hex number where the max amount of characters is 32.





AcuLink 810 Gateway				C+ Logout	Tuesday, March 31, 2020 5:00 PM	O About	AcuLink 810	ACCUENERGY
Devices Data Log	System Settings Protocols T	mplates Maintena	ance Diagnostics					
Interface Assignment AcuMesh Modbus	AcuMesh Configuration	& Remote Configuratio	on Diagnostics					
BACnet MQTT SNMP	Node Name* AcuLink_810 Maximum 14 characters Local MAC Address		Network ID*					
	0013a2004103ad9d Encryption Enable*		7fff Range: 0x0 - 0xffff					
	Encryption Key							
	Network Hop* 4 Range: 1 - 7							

## 9.2.2 Scan & Remote Configuration

Once the Local Configuration has been set, users can then scan for remote radio AcuMesh transceivers. Click on the *Scan & Remote Configuration* tab on the AcuMesh configuration page, users will be directed to the following page.

The Local configuration will appear under the Node Scan section. This will show the Network ID that will be scanned, the Encryption, and the Channel Mask that is being used.

The network Hops configuration is the number of times the mesh network will be scanned, the range is from 1-7 network hops.

AcuLink 810 Gateway			🕀 Logout	Tuesday, March 31, 2020 5:06 PM	About	AcuLink 810	ACCUENERGY
Devices Data Log	System Settings Protocols	Templates Maintenanc	e Diagnostics				
Interface Assignment	AcuMesh Configura	tion					
Modbus	Local Configuration	Scan & Remote Configuration	Diagnostics				
BACnet MQTT SNMP	Nodes Scan Scanning Network ID: 7ff Encryption: Off Channel Mask: 3ffffff Network Hops*						
	Arrige: 1 - 7 Start Scan Start Scan AcuMesh Nodes Config Selected Remote Node Name	) with Default Network Configuration Node:	Stop Scan	MAC Addr	-55		





			Scannir	ig hop 1, scan m	ust be manually stopped.		×
Devices Data Lo	og System Set	ttings Protocols	Templates	Maintenance	Diagnostics		
Interface Assignment	Sca Env Cha	inning Network ID: 7fff ryption: Off annel Mask: 3fffffff					
AcuMesh	Mat	twork Hone					
Modbus		WOIK Hops					
BACnet	4						
SNMP		94.1					
		2			Stop Scan		
	Acu	aMesh Nodes					
		Node Name		Number of	rf Hops	MAC Address	
		MESH 72		1		0013a200414f9d48	
		AcuLink		1		0013a20040f8b632	
		MCSIL67		1		0013a2004126c393	
		MESH_74		1		0013a2004166f1a0	
		MESH_65		1		0013a200414f9eac	
		MESH_69		1		0013a2004166f555	
		MESH_68_		1		0013a200414f9ec3	
		MESH_/S		1		0013a2004166f15e	
		Test1		1		0013a20040f8b74b	
		Test 13		1		0013a20040f8b5f8	

Click on Start Scan to search for remote AcuMesh transceivers.

All devices found during the scan will have the AcuMesh Node name, the number of network hops that the Mesh device was discovered in, and the MAC address displayed on the interface.

Users can simply click on the check box next to the Node name to configure the radio Mesh transceiver, or if users wish to configure multiple Mesh devices they can select the check box next to the Node name and then click on the *Config Selected Remote Nodes* button.

cuLink 810 G	Gateway					C# Logo	at Tuesday, March 31, 2020 5:10 PM	About	AcuLink 810	ACCUENERGY
Devices	Data Log	System Setting	ps Protocols	Templates	Maintenance	Diagnostics				
		Channe	el Mask: 3fffffff							
Interface As:	signment	< Netwo	rk Hops*							
AcuMesh		4								
Modbus		Range 1	-7							
BACnet						Contraction of the local division of the loc				
CNARD		Start	Scan Start Scar	with Default Ne	twork configuration	Scop Scan				
SIMMP.		AcuMe	sh Nodes							
		Conf	ig Selected Remote	Nodes						
			Node Name		Number of	Hops	MAC Address			
			MESH_72		1		0013a200414f9d48			
			AcuLink		1		0013a20040f8b632			
			MESH_67		1		0013a2004126c393			
			MESH_74		1		0013a2004166f1a0			
		0	MESH_65		1		0013a200414/9eau			
			MESH_69		1		0013a2004166f555			
		8	MESH_68_		1		0013a200414f9ec3			
			MESH_75		1		0013a2004166f15e			





The following settings on the remote AcuMesh transceivers can be configured:

**Network ID:** The network ID is a hex number that is used as an AcuMesh Network Identifier. By default the network ID is 7FFF, and the range is 0-7FFF (Hex).

**NOTE:** Only transceivers with the same matching network ID can discover and communicate with each other.

Destination MAC Address: The MAC Address of the remote transceivers

**Encryption Enable:** Users have the option to put a password on the AcuMesh device. All radio AcuMesh would need to have the same password in order to communicate in the AcuMesh network.

**Encryption Key:** The encryption key is a hex number where the max amount of characters is 32.

Advanced Options:

Baud Rate: Select the baud rate of the device, range is from 9600-115200

Parity: Select the parity of the device from the drop down list

Stop Bit: Select the number of Stop Bits

Link 810 Gateway			C Logout	Tuesday, March	31, 2020 5:10 PM	About	Acul,ink 810	ACCUEN	
Devices Data Log	System Settings Protocols Tem	plates Maintenan	ce Diagnostics						
iterface Assignment	AcuMesh Configuration						Back To Acu	Mesh Sca	
cuMesh lodbus	Local Configuration Scan &	Remote Configuration	Diagnostics						
ACnet IQTT	AcuMesh Config - Selected	Remote Nodes	Destination MAC Address!						
IMP.	7fff		0013a2004103ad9d						
	Range: 0x0 + 0xffff		Range: 0x0 - 0x111111111111						
	Advanced 👳								
	Baud Rate*		Parity*		Stop Bit*				
	9600	•	None	٠	0			٠	
	Encryption Enable*  Encryption Enable Encryption Key								
	Enter Encryption Key								





### 9.2.3 AcuMesh Diagnostics

The AcuMesh diagnostics page allows the user to troubleshoot the AcuMesh connection from the AcuLink 810 to the remote AcuMesh transceivers. The test sends packets at a certain interval and tests whether the AcuLink 810 gets a response from the slave AcuMesh transcievers.

Transmission Interval: Is the sending interval of the packet, the range is 1-100 seconds.

Number of Packets: Is the number of packets sent in each test query.

**Remote AcuMesh Node Selection:** Users can choose which AcuMesh transceiver they want to test from the drop down selection.

AcuLink 810 C	Gateway						🕪 Logout	Tuesday, March 31, 2020 5:22 PM	O About	AcuLink 810	ACCUENERGY
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics					
Interface As	signment	AcuMes	h Configuratio	on							
AcuMesh Modbus		Local Co	nfiguration S	can & Remote	Configuration	Diagnostics					
BACnet		Transmissi	on Interval*								
SNMP		2									
		Range: 1 - 10 Number O	0 f Packets*								
		10									
		Range: 1 - 10	00								
		Remote Ad	uMesh Node Se	ection*							
		0013a2004166f555									

The test result will be displayed showing the success rate and average delay of the packets sent.

AcuLink 810 Gateway		↔ Logout Tuesday, March 31, 2020 5:26 PM ① About AcuLink 810
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Interface Assignment	AcuMesh Configuration	
AcuMesh Modbus	Local Configuration Scan & Remote Configuration Diagnostics	
BACnet	Transmission Interval*	Test Result
MQTT	2	Packets Sent
SNMP	Range: 1 - 100	10
	Number Of Packets*	Packets Received
	10	10
	Range: 1 - 1000	Packets Lost
	Remote AcuMesh Node Selection*	0
	0013a2004166f555	Average Delay
		0.152 s
		Success Rate





## 9.2.4 Adding AcuMesh Device

To add an AcuMesh device, select *Add Device* from the *Modbus Devices* page. The following fields need to be configured:

Device Name: Enter a device name

**Serial Number:** Enter the serial number of the device, the serial number must be unique and consisting of only letters and numbers.

Template: Select the correct device model

Protocol: Select RTU as the protocol

Port: Select AcuMesh as the port type

Modbus ID: Enter in the Modbus ID that corresponds to the Modbus device

**AcuMesh MAC Address:** Select the AcuMesh MAC address of the remote mesh transceiver of the Modbus device. Users can click on Go to AcuMesh Scan & Configuration page to discover remote Mesh transceivers.

Request Timeout: The default timeout setting for an AcuMesh device is 10 seconds.

Devices D	ata Log	System Settings	Protocols	Templates	Maintenance	Dia		
Dashboard		Add Mo	dbus Device					
Alarm Logs		Device Na	me*					
Modbus Devices		MESLUD	DACE			Ť		
ACnet Devices		Mesh Di	EVICE					
ABus Devices		Serial Nun	Maximum 40 characters					
Digital Inputs		MECH						
		IVIESH	un in this Acutinty Of	0 device				
		Maximum 20	characters	odevice				
		Template*						
		Acuvim I	L			¢		
		Protocol*						
		O RTU	C TCP					
		Port*						
		AcuMest	ı			¢		
		Modbus II	)*					
		12						
		Must be uniq	ue in this AcuLink 81	0 device				
		Range: 1 - 24	6					
		AcuMesh	MAC Address*					
		0013a20	040f8b74b - Test	1		¢		
		Go To Acu	Mesh Scan & Co	nfiguration Pag	e			
		Request T	imeout*					
		10			seco	onds		
		Range: 2 - 60	6					



After the device is added, it can be found in the *Modbus Devices* pages. A device that is successfully connected and communicating with the gateway will have display a green *ON* status under the status column. Whiles a device that is offline will display a red *OFF* warning symbol under the status menu.

**NOTE:** After adding a new device to the gateway it may take up to 3-4 minutes for the status to show 'ON'. If after 3-4 minutes the device is showing an 'OFF' status, double-check the configuration settings to ensure everything is set correctly.

shboard	Modbus Devices						
rm Logs dbus Devices	Add Device Search Device						
Cnet Devices	Device Name	Interface 🗧	Protocol	Serial Number	Status	Alarms	Action
Bus Devices	Acuvim L V3.221	Ethernet	Modbus TCP	221	() ON	0	<b>a</b>
ital inputs	Acuvim II TCP .94	Ethernet	Modbus TCP	94	(ON	0	
	MESH-69	Mesh	Modbus RTU	AH18063288	(O) ON	0	
	MESH-67	Mesh	Modbus RTU	AH18063303	() ON	1	ô
	MESH-68	Mesh	Modbus RTU	AH18063309	() ON	0	8
	MESH-65	Mesh	Modbus RTU	AH18063310	() ON	0	
	MESH-70	Mesh	Modbus RTU	AH18092324	() ON	0	<b>a</b>
	Bridge Meter 1	Ethernet	Modbus TCP	Bridge1	(ON	0	
	Bridge Meter 10	Ethernet	Modbus TCP	Bridge10	() ON	0	
	Bridge Meter 20	Ethernet	Modbus TCP	Bridge20	() ON	0	
	CSV Convert Test	Ethernet	Modbus TCP	CSV	() ON	0	
	E3T18052569	RS485	Modbus RTU	E3T18052569	() ON	0	
	New Template Test	Ethernet	Modbus TCP	NEW	() ON	0	
	Remote Template Test	Ethernet	Modbus TCP	Remote	(U ON	0	
	Tunical Energy Meter Test	Ethernet	Modbus TCP	Typical	CON	0	

If users need to change the configuration of an added device, they can simply click on the device and then select the *Configuration*. From this page users can re-configure the device name, port type, AcuMesh MAC addrees, Modbus ID, etc.



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AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Devices Data Logi Dashboard Alarm Logs Modbus Devices BACnet Devices MBus Devices Digital Inputs	System Settings Protocols     Reading Alarm   Configuration   Device Name*      McSH-69   Maximum 40 characters   Template*    Acuvim II   Protocol*   RTU   TCP   Port*    AcuMesh   G9   Must be unique in this Aculink 810 device   Rage: 1-286
	AcuMesh MAC Address*
	Go To AcuMesh Scan & Configuration Page Request Timeout*
	10.0 seconds
	Range: 2 - 60
	Save

## 9.2.5 Search Modbus Device

There is a search device function in the AcuLink 810 gateway that allows the user to search for all Modbus devices. The search criteria is based on the template model, Modbus slave ID, baud rate, parity and port. The search function can be useful for adding several devices in a large RS485/USB daisy chain as well as a large Mesh network.

To access the search function click on *Search Device* on the *Modbus Device* page.

**NOTE:** 'Search Device' only supports the devices connected via Modbus RTU protocol.

The following search criteria will need to be specified:

Template: Select the Modbus template for the device

**Port:** Select the port to scan for the Modbus search, users can select RS485, USB, and Acu-Mesh.

Modbus ID Start: Specify the starting slave address for the search





Modbus ID End: Specify the ending slave address for the search

**Baud Rate:** Select the baud rate(s) for the Modbus device search. Users can select multiple baud rates in the search.

Data Bit: Select the data bit, this can be set as 7 or 8.

**Stop Bit:** Select the number of stop bits, can be set as 0 or 1.

**Parity:** Select the parity for the Modbus search. Users can select multiple parity in the search.

**Request Timeout:** Select the request timeout, for RS485 and USB the default timeout is 0.5 seconds, for AcuMesh the timeout is 10 seconds.

Click on *Scan* once the search credentials are configured.

**NOTE:** Depending on the range of Modbus IDs, baud rate and parity selected the search may take several minutes to complete.

ishboard	Con Modbus Device	
dhus Davisas	Template*	
inet Devices	Acuvim II	\$
Bus Devices	Port*	
gital Inputs	RS485	•
	Modbus ID Start*	Modbus ID End*
	1	246
	Baud Rate*	
	Baud Rate* 9600 2 19200 2 38400 Data Bit* 8	57600 ] 115200
	Baud Rate <sup>4</sup> 9600 2 19200 2 38400 Data Bit <sup>+</sup> 8 Parity <sup>*</sup> 2 None Odd Even Stop Bit <sup>+</sup>	\$7600 115200
	Baud Rate <sup>4</sup> 9600 2 19200 2 38400 Data Bit <sup>+</sup> 8 Parity <sup>*</sup> 2 None 0dd Even Stop Bit <sup>+</sup> 1	\$
	Baud Rate* 9600 2 19200 2 38400  Data Bit* 8 Parity* 2 None 0dd Even Stop Bit* 1 Request Timeout*	\$7600 D 115200
	Baud Rate* 9600 2 19200 2 38400 Data Bit* 8 Parity* 2 None 0 0d Even Stop Bit* 1 Request Timeout* 0.5	57600 115200 • seconds





When the scan is complete all devices found will be displayed. Users have the option to individually add each found device and can also add all devices found by clicking on the add all button.

If a device is found that is already added to the AcuLink 810 it will be displayed as *Added* in the search.

If a device is found with the same Modbus ID as a device that is already added on the AcuLink 810 it will be displayed as *Conflict* in the search.

The search results show the device serial number and Modbus slave ID associated with the device. If the search is done on a AcuMesh network the AcuMesh MAC address is also displayed in the search.

AcuLink 810 Gateway	🔂 Logout Wednesday, April 1, 2020 4:29 PM 🕥 About	AcuLink 810 ACCUENERGY
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Dashboard Alarm Logs Modbus Devices BACnet Devices MBus Devices Digital Inputs	Status: Completed Scanning device: Acuvin II Add All Devices To Device List	Back To Device List
	Device AH18063310 is found. Modbus ID is 65. AcuMesh MAC Address is 0013a200414f9eac	Added
	Device AH18063303 is found. Modbus ID is 67. AcuMesh MAC Address is 0013a2004126c393	Added
	Device AH18063309 is found. Modbus ID is 68. AcuMesh MAC Address is 0013a200414f9ec3	Add To Device List
	Device AH18063288 is found. Modbus ID is 69. AcuMesh MAC Address is 0013a2004166f555	Added
	Device AH18092324 is found. Modbus ID is 70. AcuMesh MAC Address is 0013a2004166f511	Add To Device List
	Device AH18092277 is found. Modbus ID is 71. AcuMesh MAC Address is 0013a2004166f212	Add To Device List
	Device AH18092278 is found. Modbus ID is 72. AcuMesh MAC Address is 0013a200414/9d48	Add To Device List
	Device AH18092273 is found. Modbus ID is 73. AcuMesh MAC Address is 0013a2004166f23f	Add To Device List
	Device AH18092293 is found. Modbus ID is 74. AcuMesh MAC Address is 0013a2004166f1a0	Add To Device List
	Device AH18092318 is found. Modbus ID is 75. AcuMesh MAC Address is 0013a2004166f15e	Add To Device List

## 9.3 Modbus Polling

The AcuLink 810 supports Modbus polling for the Digital Input registers. The user can select **Protocols**, then the subheading **Modbus** in order to access the *Modbus Configuration* page.

**Modbus TCP Port:** The default is 502, the range is 2000-5999. This is also the port used for Modbus Gateway Function devices.

Modbus ID: The Modbus ID for the AcuLink 810 is 247, this cannot be changed.





# AcuLink 810 Data Aquisition Server

Interface Assignment	Modbus Configur	Modbus Configuration				
Modbus	Modbus TCP Port*					
BACnet	502					
MQTT	Default: 502, Range: 2000 - 5	999				
SNMP	Modbus ID					
SNMP	Modbus ID 247					
SNMP	Modbus ID 247 DI Table					
SNMP	Modbus ID 247 DI Table Name	Data Type	Register Address (Dec)	Register Address (Hex)		
SNMP	Modbus ID 247 DI Table Name Digit Input 1	Data Type UINT32	Register Address (Dec) 8192	Register Address (Hex) 0x2000		
SNMP	Modbus ID 247 DI Table Digit Input 1 Digit Input 2	Data Type UINT32 UINT32	Register Address (Dec) 8192 8194	Register Address (Hex)       0x2000       0x2002		

The DI Modbus Registry Map is listed below:

Name	Data Type	Register Address (Dec)	Register Address (Hex)
Digital Input 1	UINT32	8192	0x2000
Digital Input 2	UINT32	8194	0x2002
Digital Input 3	UINT32	8196	0x2004
Digital Input 4	UINT32	8198	0x2006
Digital Input 5	UINT32	8200	0x2008
Digital Input 6	UINT32	8202	0x200A
Digital Input 7	UINT32	8204	0x200C
Digital Input 8	UINT32	8206	0x200E



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## 9.4 BACnet

The AcuLink 810 supports the BACnet protocol via the BACnet MS/TP and BACnet IP. The gateway can also be configured as a BACnet gateway, as well as a BBMD (BACnet Broadcast Messaging Device). The following section will provide an overview on configuring the BAC-net protocol on the AcuLink 810 from the web interface.

## 9.4.1 BACnet MS/TP

In order to use the BACnet MS/TP, the protocol must be changed to BACnet for RS485 and/or USB devices. This can be changed from the *Interface Assignment* page under the *Protocols* tab.

### **NOTE:** Users can have one port selected as Modbus and the other selected as BACnet.



From the *Protocols* page select *BACnet*. In the BACnet page under the *Acquisitor* tab users can configure the BACnet MS/TP settings pertaining to RS485 and USB.

The following fields can be configured for BACnet MS/TP over both USB and RS485:

**Client APDU Timeout:** Is the time in seconds that the client will wait for a response after sending a request. The default time is 3 seconds, and the range is 250 milliseconds to 6 seconds.

**Client APDU Retries:** Is the number of time the client will retry a request when a response is not received. The default setting is 2, the range is from 0-10.

**MS/TP MAC Address:** Is used to address devices on the BACnet network, the default address is 1 and the range is 1-127.

**Max Master:** Defines the amount of allowable addresses (1-127) for the MS/TP master nodes on the network, the default is 127 and the range is 1-127.





**Max Info Frames:** Is the maximum amount of information frames sent to a node before it has to pass the token. The default is 1 and the range is from 1-100 information frames.

Baud Rate: Select the baud rate, the default is 19200 and the range is from 9600-11520.

AcuLink 810 Gateway		0+ Logout Wednesday	y, April 1, 2020 1:28 PM  About AcuLink 810  ACCUENERS
Devices Data Log	System Settings Protocols Templates Ma	intenance Diagnostics	
Interface Assignment Modbus BACnet	C BACnet Configuration		
MQTI	Client APDU Timeout*	Client APDU Retries*	
SNMP	3 seconds	¢ 2	•
	Defaults 3 seconds	Default: 2	
	MS/TP over RS485		
	RS485 MS/TP MAC Address*	RS485 Max Master*	RS485 Max Information Frames"
	1	127	1
	Range: 1 = 127	Rarige: 1 - 127	Range: 1 - 100
	RS405 Baud Rate*		
	38400	•	
	MS/TP over USB		
	USB MS/TP MAC Address*	USB Max Master*	USB Max Information Frames*
	1	127	1
	Range: 1 - 127	Range: 1 - 127	Range: 1 ~ 100
	USB Baud Rate*		
	38400	•	

#### BACnet MS/TP via RS485







#### **BACnet MS/TP via USB**



### 9.4.2 Adding BACnet MS/TP device

With the BACnet MS/TP protocol selected for either USB and/or RS485, users can add a BACnet device to the AcuLink 810 on the BACnet **Devices** page located under the **Devices** tab.

Click on Add Device, the following fields will need to be configured:

- Device Name: Enter the device name of the meter
- Serial Number: Enter the serial number of the device, the serial number must be unique and consisting of only letters and numbers.





- Device Model: Select the device model from the drop-down list
- Port: Users can select either RS485 or USB
- **Device Instance:** Enter the device instance number, the range is 0-4194302. It must be unique in this AcuLink 810 device.

Click *Save* once all settings are entered correctly.

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Dashboard Alarm Logs Modhus Devices	Add BACnet Device Device Name*
BACnet Devices	AcuRev 1312
MBus Devices	Maximum 40 characters
Digital Inputs	Serial Number*
an analasan da Santa	E3T12345678
	Must be unique in this AcuLink 810 device Maximum 20 characters
	Template*
	AcuRev 1310 BACnet 🗢
	Type*
	USB \$
	Device Instance*
	26000
	Range: 0 - 4194302
	Save

After the device is added, it can be found in the *BACnet Devices* section under the *Devices* tab.

Dashboard	BACnet Devices						
Alarm Logs Modbus Devices	Add Device Search	Device					
BACnet Devices	Device Name	Interface	Protocol	Serial Number	Status	Alarms	Action
ABus Devices	WEB2 .163	Ethernet	BACnet IP	163	ON	1	
ngital imports	WEB2 .94	Ethernet	BACnet IP	294	ON	0	8
	Annin L VO BACTER	Ethomat	RACost IR	IV2PACNet	di civi	0	



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**NOTE:** After adding a new device to the gateway it may take up to 3-4 minutes for the status to show 'ON'. If after 3-4 minutes the device is showing an 'OFF' status, double-check the configuration settings to ensure everything is set correctly.

If users need to change the configuration of an added device, they can simply click on the device and then select the *Configuration*. From this page users can re-configure the device name, port type, and Device Instance.

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Dashboard	BACnet Device - 163
Alarm Logs Modbus Devices	Reading Alarm Configuration
BACnet Devices	Device Name*
MBus Devices Digital Inputs	WEB2.163
	Maximum 40 characters Template*
	AXM-WEB2 \$
	Type*
	USB ¢
	Device Instance*
	233
	Range: 0 - 4194302

### 9.4.3 BACnet IP

The AcuLink 810 supports BACnet IP devices, users must configure and enable BACnet IP from the **BACnet** page in the **Protocols** menu.

BACnet IP Client Enable: Enable BACnet IP

**BACnet IP Client Interface:** Select which interface the BACnet IP network is on, users can select Ethernet 1, Ethernet 2, or WIFI.

ACnet IP Client Enable*			
Enable 🔵 Diabled			
ACnet IP CLient Interface*			
Ethernet 1 192.168.1.18	2 🔹		



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# 9.4.4 Adding BACnet IP device

With the BACnet IP enabled, users can add a **BACnet device** to the AcuLink 810 on the BACnet **Devices** page located under the Devices tab.

Click on Add Device, the following fields will need to be configured:

- Device Name: Enter the device name of the meter
- Serial Number: Enter the serial number of the device, the serial number must be unique and consisting of only letters and numbers.
- Template: Select the device model from the drop-down list



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- Type: Select the type as IP
- Port: Enter in the BACnet port configured for the device, the range is from 47808-49000.
- **Device Instance:** Enter the device instance number, it must be unique in this AcuLink 810 *device. The range is 0-4194302.*

**NOTE:** Ensure that BACnet IP Client is enabled in the BACnet Configuration page in order to add a BACnet IP device to the AcuLink 810.

Click on *Save* once all fields are configured.

Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics
Dashboard Alarm Logs Modbus Devices BACnet Devices MBus Devices Digital Inputs		Add BAC	net Device ne* TEST haracters ber*			
		Must be uniqu Maximum 20 c Template* AXM-BIP Type*	e in this AcuLink 81 haracters	0 device		\$ \$
		Device Port	*			
		47808				
		Range: 47808	49000			
		Device Inst	ance*			
		810				
		Range: 0 - 419	4302			





After the device is added, it can be found in the **BACnet Devices** section under the **Devices** menu.

Devices Data Log	System Settings Protocols	Templates Maintena	ance Diagnostics				
Jashboard Jarm Logs	Add Device Search Device	œ					
ACnet Devices	Device Name	Interface 🗆	Protocol	Serial Number	Status	Alarms	Action
MBus Devices Digital Inputs	WEB2 .163	Ethernet	BACnet IP	163	() ON	1	ā
	WEB2 .94	Ethernet	BACnet IP	294	() ON	0	â
	Acuvim L_V3 BACnet	Ethernet	BACnet IP	LV3BACNet	(U ON	0	8

**NOTE:** After adding a new device to the gateway it may take up to 3-4 minutes for the status to show 'ON'. If after 3-4 minutes the device is showing an 'OFF' status, double-check the configuration settings to ensure everything is set correctly.

If users need to change the configuration of an added device, they can simply click on the device and then select the *Configuration*. From this page users can re-configure the device name, port type, and Device Instance and Device port.

Devices Data Log	System Settings Protocols Templates Maintenance	Diagnostic					
Dashboard	BACnet Device - LV3BACNet						
Alarm Logs Modbus Devices	Reading Alarm Configuration						
BACnet Devices	Device Name*						
MBus Devices	Acuvim L V3 BACnet						
Digital Inputs	Maximum 40 characters						
	Template*						
	L-WEB	\$					
	Туре*						
	IP	\$					
	Device Port*						
	47808						
	Range: 47808 - 49000						
	Device Instance*						
	221						





# 9.4.5 Search BACnet Device

The AcuLink 810 supports a search function that allows users to add devices to the AcuLink 810 automatically by searching the BACnet network. This feature can be found on the **BAC**-*net Device* page under the **Device** tab.

Click on Search Device, the following search criteria will need to be specified:

Interface: Users can select Ethernet, RS485, or USB for the device search.

**NOTE:** In order to use RS485 or USB for search ensure that the interface assignment is selected as BACnet. Also in order to use Ethernet or WIFI in the BACnet search ensure that BACnet IP is enabled on the AcuLink 810.

**Search From (Device Instance):** Enter the starting instance number in the search, the range is 0-4194302.

**Search To (Device Instance):** Enter the ending instance number in the search, the range is 0-4194302.

Click on *Scan* once the search criteria is entered in correctly.

AcuLink 810 Gateway				🕞 Logout	Wednesday, April 1, 2020 4:51 PM	About	AcuLink 810	ACCUENERGY
Devices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics			
Dashboard Alarm Logs Modbus Devices BACnet Devices	Scan BAG Interface* Eth	Cnet Device		÷			Back To	Device List
MBus Devices	Port*							
Digital Inputs	47808							
	Range: 1 - 655 Search From	35 m (Device Insta	nce)*	Se	arch To (Device Instance)*			
	0				4194302			
	Range: 0 - 419	4302		Ra	nge: 0 - 4194302			

**NOTE:** Depending on the range and amount of devices in the network the search may take several minutes to complete.

Users can individually add the found devices to the BACnet device list after the scan is complete. In order to add the BACnet device the template must be added and installed on to the AcuLink 810. For more information on BACnet template see section 7.4 of the user manual.

If a device is found with a Device Instance that is already added to the gateway the search will display *Conflict*.

If a device is found that is already added the search will display Added.





### 9.4.6 BACnet Gateway

Aculink 810 can also work as a BACnet gateway device allowing the AcuLink 810 to read both Modbus and BACnet devices simultaneously in a BACnet network. Users have the ability to have both Modbus and BACnet devices simultaneously via USB and RS485 ports on the AcuLink 810, as well as both Modbus TCP, BACnet IP, and MBus devices.

To configure the BACnet gateway setting click on the *Protoclols* tab and select BACnet. From the BACnet page select the *Gateway* tab. The following fields can be configured for the BACnet gateway settings:

Gateway Enable: Select Enable to set the 810 as a BACnet gateway

**UPD Port:** The default port is 47808, users can configure from 47808-49000.

Device Object Name: Users can configure the object name for the gateway

**Device Instance:** Configure a unique device instance number for the AcuLink 810.

**Network Number:** The network number identifies a network within a BACnet system. The default number is 1 and the range is from 1-65534.

Advertised APDU Timeout: The default APDU timeout is 3 seconds, and the range is from 3-60 seconds.

Advertised APDU Retries: The default APDU retry is 2, and the range for the setting is 0-10.

AcuLink 810 Gateway		G Logout Wednesday, Ap	ril 1, 2020 5:20 PM O About	AcuLink 810	ACCUENERGY
Devices Data Log	System Settings Protocols Templates Mainter	nance Diagnostics			
Interface Assignment AcuMesh Modbus BACnet MQTT SNMP	Acquisitor Gateway BBMD Gateway Enable* © Enable © Disable Remote BACnet Virtual Device List				
	UDP Port*	Network Number*			
	47808	1			
	Range: 47808 - 49000	Range: 1 - 65534			
	Device Object Name*	Device Instance*			
	AcuLink810	26000			
	Maximum 40 characters	Range: 0 - 4194302			
	Advertised APDU Timeout*	Advertised APDU Retries*			
	3 seconds	2 0			
	Default: 3 seconds	Default: 2			





The **Remote BACnet Virtual Device List** allows users to see what devices are accessible via the BACnet gateway. The list provides the user with the device name, serial number, protocol that it is using via the 810 and the instance number assigned to it in the BACnet network. The Bacnet virtual list can be exported as a .csv file for user reference.

					1	C+ Logout	Wednesday, April 1, 2020 5:
tem Settings Protocols Templates Maintenance	Remote BACnet	Virtual Device			×		
BACnet Configuration	Serial Number	Name	Protocol	Instance	Î		
Acquisitor Gateway BBMD	163	WEB2 .163	BACnet IP	26012	- 1		
Gateway Enable*	221	Acuvim L V3 .221	Modbus ICP	26004	- 10		
• Enable O Disable	294	WEB2 .94	BACnet IP	26013	- 11		
Remote BACnet Virtual Device List	94	Acuvim II TCP .94	Modbus TCP	26019	- 1		
UDP Port*	AI 110063288	MCSI1-69	Modbus RTU	26001	- 11		
47803	AH18063303	MESH-67	Modbus RTU	26002	- 11		
Range 47808 - 49000	AH18063310	MESH-65	Modbus RTU	26003	- 11		
Device Object Name*	Bridge1	Bridge Meter 1	Modhus TCP	26005	- 11		
AcuLink810	Bridge 10	Bridge Meter 10	Modbus TCP	26005	- 8		
Maximum 40 characters	Bridge20	Bridge Meter 20	Modbus TCP	26007	- 11		
Advertised APDU Timeout*	CSV	CSV Convert Test	Modbus TCP	26011	- 11		
Defaults 3 seconds	DF16010283	AcuDC 213 - 202	Modbus RTU	26020	- 11		
	E3T16090333	E3T16090333	Modbus RTU	26016	1		
	E3T18052569	E3T18052569	Modbus RTU	26015	- 11		
	LV3BACNet	Acuvim L V3 BACnet	BACnet IP	26014	- 1		
	MESH13	MESH TEST2	Modbus RTU	26018			
	MESH2	MESH TEST1	Modbus RTU	26017	- 1		
	NEW	New Template Tert	Modbur TCD	26008			
Save			Clos	e Export (	sv		

# 9.4.7 BBMD

In BACnet IP systems there are several broadcast messages that are used, however, these messages are normally blocked since most BACnet IP devices are connected via IP routers. BBMD stands for BACnet Broadcast Management Device and is used to allow for IP broadcasting to locate and communicate with other BACnet devices.

**BBMD Mode:** Users can select the following options for BBMD:

- Allowing incoming FDR: Foreign Device Registration allows the AcuLink 810 to send its broadcast message to a BBMD.
- Full BBMD: allows the AcuLink to send broadcast messages to other BBMDs.
- Disable: Disables BBMD
- BBMD Address List: Users can enter the IP address of the BBMD.





### 9.5 MQTT Protocol

The AcuLink 810 supports the MQTT protocol where the gateway can publish device data to a subscriber using an MQTT broker. The MQTT broker is a central server where all MQTT clients would connect to. The broker/server manages all message topics and updates new messages to all clients that are subscribed to a particular topic (AcuLink 810). All related MQTT settings can be configured in the **MQTT** page under the **Protocols** tab.

### 9.5.1 MQTT General Settings

Under the *General* tab in the MQTT page, users can enable the MQTT protocol and configure the broker settings.

Enable MQTT: Select Enable to use MQTT protocol

Broker Address: Enter the broker address of the MQTT server

Broker Port: Enter the port number for the MQTT Broker

Client ID: Enter the Client ID for the AcuLink 810; must be a unique ID number

**Keep Alive:** The client communicates a time interval in seconds to the broker, "Keep-Alive" is the maximum length of time in seconds that the broker and the client cannot communicate with each other.

Timeout: Enter the timeout setting time in seconds.

Once all settings are configured click *Save*. The connection to the broker can be tested by using the *Test MQTT* button.

nterface Assignment	< MQTT Configuration <						
cuMesh	Conserved University SSLITE Last Will and Testamont Devices to Device to Device						
fodbus	General Oser Credentian SSQ105 Cask will and restament Devices to Publish						
ACnet	MQTT Enable*						
IQTT	C Enable Disable						
NMP	Broker Address*						
	test.mosquitto.org						
	Broker Port*						
	1003						
	Client ID:						
	1.						
	Keep Alive*						
	60 s						
	Timeout*						
	30 s						
	Clean Session*						
	Test MQTT						





# 9.5.2 MQTT Authentication

The User Credential tab allows users to configure a User Name and Password authentication if the broker is able to support it.

terface Assignment	MQTT Configuration
cuMesh lodbus	General User Credential SSL/TLS Last Will and Testament Devices to Publish
ACnet	Username
IQTT	Enter Username
	Password Enter Password 🔯

# 9.5.3 MQTT Encryption

The SSL/TLS tab allows users to use the MQTT protocol with encryption.

In this page users will be able to upload the required certificate and key files.

AcuLink 810 Gatew	iay					😝 Logou	t Wednesday, April 1, 20	20 9:04 PM	O About	AcuLink 810	ACCUENERGY
Devices Da	ata Log	System Settings	Protocols	Templates	Maintenance	Diagnostics					
Interface Assignm AcuMesh	ient	< MQTT Co	nfiguration	NAL 551715	Last Will and	Testament Device	r to Dublish				
Modbus BACnet		Enable SSL	Bischle	330/10	Lost will allo	restament perce				_	
SNMP		CA File	Disable								
		Choose fil	8		Browse						
		Choose fil	6		Browse						
		Key File									
		Choose fil	e		Browse						





# 9.5.4 Last Will & Testament

The AcuLink supports Last Will and Testament messages via the MQTT protocol. These settings can be configured under the *Last Will & Testament* tab.

The last will and testament message is used to notify other clients regarding other disconnected clients. The message is an MQTT message that contains a topic, a QoS level and a payload.

Topic: Refers to the path used to access the MQTT message.

**QoS:** Stands for Quality of Service and refers to the reliability of the message delivery between the publisher and subscriber. There are three types of quality of service:

- **1. QoS 0** is the lowest level, and is defined as "at most once" delivery. This level has the fastest message delivery but the success rate of delivery is not reliable.
- **2. QoS 1** is defined as "at least once" delivery. These types of messages are reliable and are guaranteed, however the messaged may be sent as duplicates several times.
- **3. QoS 2** Is the highest level, and is defined as "exactly once" delivery. These messages are more reliable and are guaranteed to be sent once without any duplicates. This type of messaging sends the most reliable message however it has a slower message delivery. Each client can optionally specify its own LWT message when it connects to a broker. The broker stores this message so that if the client disconnects ungracefully, the broker will send the disconnected client's LWT message to all the other clients that are subscribed to that last will message topic.

AcuLink 810 Gateway	G+ Logout Wednesday, April 1, 2020 9:15 PM O About AcuLink 810 ACULINASTO
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Interface Assignment AcuMesh Modbus BACnet MQTT SNMP	Configuration     General User Credential SSL/TLS Last Will and Testament Devices to Publish     Last Will Enable*     Enable Disable*
21.000	Topic* Enter Topic Qos* Qos 0 =





# 9.5.5 Device Publishing

Under the *Devices to Publish* tab users can configure the sending interval and devices data they want to publish to the broker.

**Base Topic:** Users can enter in the Topic, is usually a base topic followed by the serial number of the device.

**NOTE:** To read the Digital Input via MQTT the base topic that should be inputted is base topic + DigitInput.

**QoS:** Users can configure the quality of service level, where Qos 0 is the lowest level and Qos 2 is the highest level.

**Retained:** Users have the option retain messages or not. If a client retains messages that was published to topic, a second client that is subscribed to the same topic will be able to see the retained message.

Interval: Users can select the publishing interval, the range is from 10-600 seconds.

**Select Devices to Publish:** Users can select Modbus RTU/TCP devices, BACnet MS/TP or IP devices, MBus devices and the Digital Input counter to publish to the MQTT broker.

Devices Data Log	System Settings Protocols Templates	s Maintenance Diagnostics		
Interface Assignment AcuMesh	MQTT Configuration	TLS Last Will and Testament	Devices to Publish	
Modbus	Base Topic"			
BACnet	/AcuLink810/S8P20200207/			
SNMP	Topic should be 'Base Topic + / + device serial nu Qos*	mber'		
	Retained* Ves No Interval*			
	60 seconds Select Devices To Publish Select All I Di Counter Modbus	٠		
	Acuvim L V3 .221 #221     ME5H-65 #AH18063310     CSV Convert Test #CSV     ME5H TEST2 #ME5H13     Typical Energy Meter Test #Typical BACnet	Acuvim II TCP .94 #94 Bridge Meter 1 #Bridge1 AcuDC 243 - 202 #DF16010283 MESH TEST1 #MESH2	MESH-69 #AH18063288     Bridge Meter 10 #Bridge10     E3T16090333 #E3T16090333     New Template Test #NEW	MESH-67 #AH18063303 Bridge Meter 20 #Bridge20 E3118052569 #E3118052569 Remote Template Test #Remote
	WEB2.163 #163	WEB2 .94 #294	Acuvim L_V3 BACnet #LV3BACNet	
	MBus Master 54 #192.168.1.54			





### 9.6 SNMP

The AcuLink 810 supports the Simple Network Management Protocol (SNMP) which allows for reporting the 810 device data to the management station. The *SNMP* settings can be found on the SNMP page under the *Protocols* tab.

SNMP Enable: Select Enable for the SNMP protocol

SNMP Version: Users can select either SNMPv2c or SNMPv3.

Version 2: requires a read only community string to be configured.

Version 3: requires authentication and privacy protocol.

Port: The default SNMP port is 161, the range is 16100-16199

The AcuLink also supports SNMP trap notifications, where the user can receive a trap notification for any alarms that are triggered for devices on the AcuLink.

Trap Enable: Select enable for trap notifications

**Trap Target 1-4:** Users can configure up to 4 trap targets, where the trap targets must be an IP address.

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 queued 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.

AcuLink 810 Gateway				6+ Logout	Wednesday, April 1, 2020 10:45 PM	6 About	AcuLink 810	ACCUENERS)
Devices Data	Log System Settings Protocols	Templates Mainten	ance Diagnostics					
Interface Assignment AcuMesh Modibus BACnet MQTT SNMP	SNMP SNMP Enable* SNMP tenable* SNMP Version* SNMPv2c SNMPv2c Configuratio RO Community Entar RO Community Entar RO Community	•]	Port* 161 Oxfault 161, Ranger 16100 - 16190					
	Trap Enable* C Enable Disable Trap Target 1		Trap Target 2		Trap Target 3			
	Enter Trap Target 1		Enter Trap Target 2		Enter Trap Target 3			
	Must be ip address Trap Target 4		Must be ip address		Must be ip address			
	Enter Trap Target 4							
	Must be ip address							
	Report Buffer Size		Report Hold Time					
	30		0					
	Range: 0 - 30		Range: 0 + 300					





### 9.6.1 MIB File

The SNMP MIB file includes all the device data objects required to read the device on a SNMP system. The MIB file of the AcuLink 810 can be downloaded directly from the web interface in the SNMP page. When downloading the *SNMP* file it will be downloaded as a zip folder including the individual MIB files are all device models on the AcuLink 810.

Report Burlet Size	Report Hold Time	
30	0	
Range: 0 - 30	Range: 0 - 300	

#### 9.7 MBus

The AcuLink supports MBus devices, where the user can add MBus devices to the AcuLink 810 via an Mbus TCP/IP master. Mbus meters are typically used for reading water, gas and electricity.

AcuLink 810 Ga	ateway						G Logout	Friday, April 3, 2020 10:17 AM	O About	AcuLink 810	ACCUENERGY
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics					
Dashboard Alarm Logs Modbus Devi	ces	K MBus Do	evices ce Search N	faster							
BACnet Devic	es	Master N	ame			IP Addre	ss 🗇		Action		
MBus Devices						No	Data				
Digital Inputs											

# 9.7.1 Adding MBus Device

To add an MBus device select *MBus* under the *Devices* tab.Users will first need to add the MBus master device, click on *Add Device*.

Enter in the following:

Master Name: Enter the master name

Master IP Address: Enter the IP address of the master device

Master Port: Enter the port number for the master device, the range is 1-65535.

Click on Save once complete.





AcuLink 810 Gateway							🕪 Logout	Friday, April 3, 2020 10:22 AM	O About	AcuLink 810	ACCUENERGY
Devices Data Log	System	m Settings	Protocols	Templates	Maintenan	ce Diagnostics					
Dashboard Alarm Logs	•	Add Mas	ster			Master IP Address*		Master Port*			
Modbus Devices BACnet Devices		Test Mast	ter			192.168.1.55		10001			
MBus Devices		Maximum 16	characters			Must be ip address		Range: 1 - 65535			
Digital Inputs											

The added master will show up on the MBus Device page.

AcuLink 810 G	ateway						6 Logout	Friday, April 3, 2020 10:21 AM	About	AcuLink 810	ACCUENERGY
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics					
Dashboard Alarm Logs Modbus Devi	ices	< MBus De Add Devi	evices	laster							
BACnet Devic	ces	Master N	lame 🗧			IP Address			Action		
MBus Device	5	Test Mast	er			192.168.1.55					
Digital Inputs	5										

Alternatively Users can Search for the master device. Click on Search Master.

The following is required for the search criteria:

Start IP Address: Enter the starting IP range for the search

End IP Address: Enter the ending IP range for the search

Master Port: Enter the master port, range is 1-65535

Click on *Scan* once the search criteria is completed.

When the scan has completed all masters discovered in the search will appear, users have the option to add them individually or can use the add all button to add all discovered MBus masters.





AcuLink 810 Gateway		00 Logou	t Friday, April 3, 2020 10:26 AM ( About A	AcuLink 810 ACCUENERD
Devices Data Log Dashboard	System Settings Protocols Templates	Maintenance Diagnostics		Back To Device List
Alarm Logs Modbus Devices	Start IP Address*	End IP Address*	Master Port*	
BACnet Devices	192.168.1.50	192.168.1.55	10001	
M8us Devices	Must be ip address	Must be ip address	Range: 1 - 65535	
Digital Inputs	Add All Devices To Device List			
	Device Master 54 is found. IP address	is 192.168.1.54.		Add To Device List
	Device Master 55 is found. IP address	i is 192.168.1.55.		Add To Device List

To add the MBus slave devices click on the Master from Mbus page, users will be redirected to the following page.

From this page users can change the Master name, however the IP and master port cannot be modified. From here users can add Mbus devices to the AcuLink 810.

shboard	<	MBus Dev	vice - 192.	168.1.54							Back	To Device List
rm Logs		Master Nam	ie"		Master IP /	Address		Master Port		Data Logger		
Cnet Devices	Master Name* Master 54 Masimum 16 characters Serial Number Enter Serial Number		192.168.1	.54		10001		Select Data Logger				
lus Devices		Maximum 16 ch	haracters									
lus Devices gital Inputs		Serial Numb	ver		Secondary	Address		Medium		Status		
		Enter Seria	serial Number		Enter Sec	ondary Address		Select Medium	•	Select Status		٠
		Serial Nun	nber	Device Primary	Address	Device Secon	ndary Addres	s Medium	Read Time	Status	Alarms	Action
							No Dat	ta				
		_	_		-							

### **Scanning for MBus Devices**

Users can run a scan to search for all available Mbus slaves on the master by selecting *Scan For Slave*.

Serial Number	Device Primary Ad	dress Device Secondary Address	Medium	Read Time	Status	Alarms	Action
		No Data					
Scan For Slave	Manual Add Device	Add All Devices To Device List					
Device GWF.19	487258.3C.07 is found. Se	condary address is 19487258E61E3C07.				Add To	Device List





Once the slave device is added it will show up on this page under the *Added Slaves* section. The serial number, device primary address, and device secondary address will be displayed. The status ON will indicate the meter is online, OFF will indicate the meter is offline.

Users can delete the device from this page as well by clicking on the delete button under the Action column. If there are several Mbus devices that have been added, users can use the filter credentials to sort and filter the MBus devices, users can sort and filter by serial number, secondary address, medium, and status.

Digital Inputs	Serial Number	Secondary	Address Medi	ium		Status		
	GWF.19487258.3C.07	19487258	E61E3C07 Wa	ter	۰	ON		•
	Serial Number Device P	rimary Address	Device Secondary Address	Medium	Read Time	Status	Alarms	Action
			No Data					
	Scan For Slave Manual Add	Device Add All De	vices To Device List					
	Device GWF.19487258.3C.07 is	found. Secondary ad	dress is 19487258E61E3C07.				Add To	Device List

#### **Adding MBus Device Manually**

Users can also add Mbus devices manually, using this method the secondary address is required. Once the address is entered, click on *Add*.

Master Marter Sd	192 168 1 54	ress	Master Port	Data Logger	
Maximum 16 characters Serial Number	Secondary Ad	dress	Medium	Status	
Enter Senal Number	Enter Second	lary Address	Select Medium	Select Status	
Scan For Slave Manual Add	Device Add All Devic	Secondary Addres	s .07	Cancel Add	





#### **Data Logging for MBus devices**

Logging for MBus devices can be done directly from the MBus device page. Under the **Data** Logger drop down menu, users can select which data logger to use for the MBus device. Alternatively users can also specify which MBus devices to log under the Data Loggers configuration page (Data Log>Data Loggers).

ashboard	MBus Device - 192.168.1.54						Back To D	Device
larm Logs	Master Name*	Master IP Address	Master Port	Master Port Data Logger				
odbus Devices ACnet Devices	Master 54	192.168.1.54	10001	10001 Select Data Logger		a Logger	۰	
Bus Devices	Maximum 16 characters				Select Dat			
Digital Inputs	Serial Number	Secondary Address	Medium		Data Logger			
	Enter Serial Number	Enter Secondary Address	Select Medium	•	Data Logger	3	÷	
	Serial Number Device P	rimary Address Device Secondary A	Address Medium	Read Time	Status	Alarms	Action	
	GWF.19487258.3C.07 0	19487258E61E3C07	Water	2020-04-27 16:51:04	(ON	0		
	Scan For Slave Manual Add Dev	ca Add All Devicer To Device List						
	Scan For Slave Manual Add Devi	ce Add All Devices to Device List						





# **Chapter 10: Device Readings**

The device readings can be seen directly on the AcuLink 810 interface. The device data updates every minute on the interface. To view the device readings click on the *Devices* tab and select either *Modbus/BACnet Devices*.

Users can simply click on the device they wish to view the data under the *Readings* tab. Depending on the device users can click on the *Reading Type* drop-down menu and select different types of parameters to read from the device.

AcuLink 810 Gateway		🕪 Logout Wednesday, April 1, 2020 11:26 PM 🚯 About AcuLink 810 ACCUENT
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Dashboard Alarm Logs Modbus Devices	Kodbus Device - 94	Back To Device List
BACnet Devices	Reading Type	
MBus Devices Digital Inputs	Energy \$	
	Parameter	Value
	System Import Active Energy	20497.700305 kWh
	System Export Active Energy	13802.200206 kWh
	System Import Reactive Energy	18722.400279 kvarh
	System Export Reactive Energy	27981.600417 kraft
	System Total Active Energy	34299.900511 kWh
	System Net Active Energy	6695.500100 kWh
	System Total Reactive Energy	46704.000696 kvarh
	System Net Reactive Energy	-9259.200138 kvarh
	System Apparent Energy	58140.100866 kvah
	Phase A Import Active Energy	0.00000 kWh

For *MBus Devices* users will need to first click on the MBus master and then select the MBus devices they wish to view the readings for.

AcuLink 810 Gateway		Logout Friday, April 3, 2020 10:51 AM      About AcuLink 810     ACCUENSION
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Dashboard Alarm Logs Modbus Devices	MBus Slave Device - GWF19495028E61E3C07     Reading Alarm	Back To Master Device
BACnet Devices MBus Devices	Reading Type Readings	
Digital Inputs	Parameter	Value
	Fabrication number	19495028
	Volume	0.171 m^3





# **Chapter 11: Digital Inputs**

The AcuLink 810 has 8 Digital Input channels. Each Digital Input can be used as an input pulse counter.

Each channel has two terminals, a DI terminal and a DI COM terminal. In pulse output circuits, a closed loop is required for the pulse to be generated.

In the image below you will see a closed circuit on Digital Inputs 1 and 6. The positive output is connected to the DI channel input and negative output is connected to the DI Common input.







### On the AcuLink 810 web interface, the Digital Inputs connected are shown as seen below.

Dashboard Narm Logs Modbus Devices RACraet Devices	Vigital Input	t	cription	Count	Multiplier	Rea	ding Unit
1Bus Devices	Digital Input 1	Wate	er Meter	1	0.234	0.23	14 mL
gital Inputs	Digital Input 2	Gas	Meter	4	10.266	41.0	064 m3
	Digital Input 3	Char	nnel 3	171	1.000	171	.000 \$
	Digital Input 4	Char	nnel 4	4	1.000	4.00	0
	Digital Input 5	Char	nnel 5	5	1.000	5.00	00
	Digital Input 6	Test		6	1.000	6.00	00
	Digital Input 7	Char	nnel 7	7	1.000	7.00	00
	Digital Input 8	Char	nnel 8	8	1.000	8.00	00
Devices Data Log	System Settings Pr	otocols Templates	Maintenance [	Diagnostics			
evices Data Log shboard arm Logs odbus Devices Creat Devices	System Settings Pro	otocols Templates	Maintenance (	Diagnostics	Multiplier	Reading	SUnit
evices Data Log Ishboard arm Logs odbus Devices (Cnet Devices aux Devices	System Settings Pri Digital Input Manual Edit Digital Input Digital Input	Description	Maintenance C Count	Diagnostics	Multiplier	Reading	S Unit
evices Data Log shboard arm Logs adbus Devices Cnet Devices gital Inputs	System Settings Pri Digital Input Digital Input Digital Input 1	Description	Maintenance C Count	Diagnostics	Multiplier 0.234	Reading 0.234	S Unit mL
evice Data Log shboard arm Logs dobus Devices Cret Devices Bus Devices gital Inputs	System Settings Pro	Description Water Meter Maximu 40 characters	Maintenance ( Count 1 Range 0 - 425490	Diagnostics N 17285 R	Multiplier 0.234 Langer: 0.001 - 100000	Reading 0.234	S Unit Maximum 20 characters
evice Data Log shboard wm Logs ddtus Devices Cret Devices graal Inputs	System Settings Pro Digital Input Digital Input Digital Input 1 Digital Input 2	Description Water Meter Maximum 40 characters Gas Meter Maximum 40 characters	Maintenance C Count 1 Range 0 - 429496 4 Range 0 - 429496	Diagnostics N	Multiplier 0.234 10.266 10.266	Reading 0.234 41.064	S Unit Maximum 20 characters m3 Maximum 20 characters
evice Data Log shboard wm Logs ddus Devices Cret Devices graal inputs	System Settings Pri Digital Input Digital Input Digital Input 1 Digital Input 2 Digital Input 2 Digital Input 3	Description Water Meter Maximum 40 characters Gas Meter Maximum 40 characters Channel 3	Maintenance C Count 1 Range 0 - 429496 4 Range 0 - 429496 121	Diagnostics	Multiplier 0.234 10.266 Innge 0.001 - 100000 10.266	Reading 0.234 41.064 171.000	S Unit Maximum 20 characters Mainum 20 characters S
everce Data Log shboard arm Logs odbus Devices Kinet Devices getal inputs	System Settings Pri Digital Input Digital Input Digital Input 1 Digital Input 2 Digital Input 3	Description Water Meter Maximum 40 characters Gas Meter Naximum 40 characters Channel 3 Maximum 40 characters	Maintenance C Count 1 Range 0 - 429490 4 Range 0 - 429490 121 Range 0 - 429490	Diagnostics	Multiplier 0.234 10.266 10.000 1.000	Reading 0.234 41.064 171.000	S Unit Masimum 20 characters Manumum 20 characters S Maaimum 20 characters
Acrices Data Log ashboard arm Logs ardbus Devices Acriet Devices getal Inputs	System Settings Pri Digital Input Digital Input Digital Input 1 Digital Input 2 Digital Input 3 Digital Input 4	Description Water Meter Maximum 40 characters Gas Meter Maximum 40 characters Channel 3 Maximum 40 characters Channel 4	Maintenance C Count 1 Range 0 - 429490 4 Range 0 - 429490 1271 Range 0 - 429490 4	Diagnostics	Multiplier 0.234 10.266 Image 0.001 - 100000 10.000 I.000 I.000	Reading 0.234 41.064 171.000 4.000	S Unit Maximum 20 characters Maximum 20 characters S Maximum 20 characters
verice Data Log ashboard am Logi addus Devices KCnet Devices gital Inputs	System Settings Pri Digital Input Digital Input Digital Input 1 Digital Input 2 Digital Input 3 Digital Input 4	Description Water Meter Maximum 40 characters Channel 3 Maximum 40 characters Channel 4 Maximum 40 characters	Maintenance C Count 1 Range 0 - 429496 4 Range 0 - 429496 171 Range 0 - 429496 4 Range 0 - 429496	Diagnostics	Multiplier 0.234 10.266 Inger 0.001 - 100000 10.000 Inger 0.001 - 100000 1.000 Inger 0.001 - 100000	Reading 0.234 41.064 171.000 4.000	S Unit Maximum 20 characters Maximum 20 characters S Maximum 20 characters Maximum 20 characters

When the *Manual Edit* slider is enabled, the user has the ability to manually configure each Digital Input's Description, Count, Multiplier, Reading, and Unit, respectively.

If the user manually edits DI, all changes must be saved in order for them to take effect.





# Chapter 12: Alarms

# 12.1 Device Alarm

To configure over/under alarms in the AcuLink 810, users must log in with Admin access. Alarms can be added to all devices including Modbus, BACnet and MBus devices. To create a device alarm select the device from the Devices page, then select the Alarm tab.

Devices Data Log	System Settings	Protocols Template	s Maintenance	Diagnostics				
Dashboard Alarm Logs Modbus Devices	< Modbus De Add Device	Search Device						
BACnet Devices	Device Nam	e 🗘	Interface	Protocol	Serial Number	Status	Alarms	Action
MBus Devices	Acuvim L V3	.221	Ethernet	Modbus TCP	221	(U ON	0	8
Digital Inputs	Acuvim II TC	P.94	Ethernet	Modbus TCP	94	ON	0	Û
	MESH-69		Mesh	Modbus RTU	AH18063288	() ON	0	ō
	MESH-67		Mesh	Modbus RTU	AH18063303	(U ON	1	
	MESH-68		Mesh	Modbus RTU	AH18063309	(U ON	0	ā
	MESH-65		Mesh	Modbus RTU	AH18063310	(U ON	0	
cuLink 810 Gateway					🚱 Logout 🛛 Thursday, April	12, 2020 2:30 AM	About AcuLink	810 <b>ACCUENER</b>
Devices Data Log	System Settings Pr Modbus Dev	otocols Templates	Maintenance E	Nagnostics			Pa	ate Tax Dansien Liet
Alarm Logs	· · _						Da	ck to Device List
Modbus Devices	Reading A	larm Configuration						
BACnet Devices	Add Alarm							
MBus Devices	Aug Alarm							
Digital Inputs	Label	Parameter	Min	Max	Value	Status	Action	
				No Data				

### Click on Add Alarm

Label: Users can configure the label for the alarm

Parameter: Select the Parameter you wish to monitor for over/under limit

**Minimum:** Enter the minimum value the parameter should be at in the Min field. Any value lower than the Min value will trigger the alarm

**Maximum:** Enter the maximum value the parameter should have before it triggers the alarm in the Max field

Click on *Save* to create the device alarm.

**NOTE:** Alarms are scanned every minute, if there is a change in data a couple seconds apart the AcuLink 810 may not be able to register the alarm.





# AcuLink 810 Data Aquisition Server

Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics
)ashboard Alarm Logs		< Modbus	Device - 22	1		
Iodbus Dev	ices	Reading	Alarm	Configuration		
ACnet Devi //Bus Device	ces s	Add Alar	m			
Digital Input	5	Label				
		Frequenc	/			
		Maximum 40	haracters			
		Parameter*				
		Frequenc	/			*
		Min Value				
		45				
		Range: -21474	83648 - 21474836	47		
		Max Value				
		65				
		Range: -21474	83648 - 21474836	47		

Once the alarm has been configured, it will appear under the Parameter list in the Alarms tab. This page will give you a summary of the alarm and will let users know the alarm max/min, the parameter being alarmed and the status of the alarm. Users can delete the alarm and re-configure the alarm setting under the Action tab.

If the parameter is in alarm mode, the value will be displayed in red and the Alarm status will show a red caution symbol. The AcuLink 810 will also display when devices are in alarm mode from the Dashboard as well as the devices page.

AcuLink 810 G	Sateway										
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics					
Dashboard Alarm Loos		< Modbus	Device - AH	18063303							
Modbus Dev	vices	Reading	Alarm	Configuration							
BACnet Devi	ices	Add Alan	m								
MBus Device	es										
Digital Input	ts	Label		Parameter			Min	Max	Value	Status	Action
		Low Volta	ge	Phase A Line-ti	o-Neutral Voltage		10	125	0.000000		6



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Alarm Logs	< Value of the second s						
Modbus Devices	Offline Devices						
BACnet Devices	Device Name	Inte	erface	Protocol	Se	rial Number	
MBus Devices	Bridge Meter 1	Ethe	ernet	Modbus TCP	Bri	dge1	
Digital Inputs	Bridge Meter 10	Ethe	ernet	Modbus TCP	Bri	dge10	
	Bridge Meter 20	Ethe	ernet	Modbus TCP	Bri	dge20	
	MESH TEST1	Mes	h	Modbus RTU	ME	SH2	
	19487258E61E3C07	Ethe	ernet	MBus	GV	VF19487258E61E	3C07
	19495028E61E3C07	Ethe	ernet	MBus	GV	VF19495028E61E	3C07
	Alarms						
	Device Name	Alarms 🗘	Interf	ace 🗘	Protocol	Seri	al Number
	MESH-67	1	Mesh		Modbus RTU	AH1	8063303
	WEB2 163	1	Ethore	t	RACnet IP	162	
	Up since Wednesday, April 1	1, 2020 4:48 PM	Eulern	ie.	DAGING	105	
iLink 810 Gateway	Up since Wednesday, April 1	1, 2020 4:48 PM	Euleri		Deschick P		
ilink 810 Gateway Devices Data Log	Up since Wednesday, April 1 System Settings Protocols Temp	1, 2020 4:48 PM	Diagnostics	451			
NLink 810 Gateway Devices Data Log Jashboard Jarm Logs	Up since Wednesday, April 1 System Settings Protocols Tem Modbus Devices	, 2020 4:48 PM	Diagnostics	ne c			
Link 810 Gateway Devices Data Log Iashboard Jarm Logs Kone Devices	Up since Wednesday, April 1 System Settings Protocols Temp Modbus Devices Add Device Search Device Device Name	, 2020 4:48 PM	Diagnostics	Serial Number -	Status	Alarms	Action
ILink 810 Gateway Devices Data Log Databboard Jashboard Jashboard Anothe Devices ABus Devices	Up since Wednesday, April 1 Up since Wednesday, April 1 System Settings Protocols Temp Modbus Devices Add Device Search Device Device Name = Acuvim L V3.221	, 2020 4:48 PM	Diagnostics Protocol = Modbus TCP	Serial Number = 221	Status -	Alarms 0	Action
ILIIIIk 810 Gateway Devices Data Log Jashboard Jashboard Jashboard Acher Devices ACher Devices Aggital Inputs	Up since Wednesday, April 1 Up since Wednesday, April 1 System Settings Protocols Temp Modbus Devices Add Device Search Device Device Name © Acuvim L V3.221 Acuvim II TCP.94	, 2020 4:48 PM	Diagnostics Protocol D Modbus TCP Modbus TCP	Serial Number 5 221 94	Status - ON ON	Alarms a 0	Action
ILIIIK 810 Gateway Devices Data Log Jashboard Jarm Logs Admet Devices Admet Devices Albus Devices Ngital Inputs	Up since Wednesday, April 1 Up since Wednesday, April 1 System Settings Protocols Temp Modbus Devices Add Device Search Device Device Name © Acuvim I. V3. 221 Acuvim II TCP.94 MtSH-69	, 2020 4:48 PM	Diagnostics Protocol D Modbus TCP Modbus TCP Modbus RTU	Serial Number - 221 94 AH18053288	Status =	Alarms 0 0 0	Action
Link 810 Gateway Devices Data Log lashboard Larm Logs ACnet Devices Ribus Devices Bibus Devices sigital Inputs	Vp since Wednesday, April 1 Vp since Wednesday, April 1 System Settings Protocols Temp Modbus Devices Add Device Search Device Device Name C Acuvim IL V3. 221 Acuvim IL V3. 221 Acuvim IL TCP. 94 MESH-69 MESH-67	, 2020 4:48 PM	Diagnostics Protocol  Protocol  Modbus TCP Modbus TCP Modbus RTU	Serial Number - 221 94 AH18063288 AH18063303	Status =	Alarms - 0 0 1	Action
Link 810 Gateway Devices Data Log lashboard fodbus Devices ACnet Devices Blut Devices sigital Inputs	Vp since Wednesday, April 1 Up since Wednesday, April 1 System Settings Protocols Tem Modbus Devices Add Device Search Device Device Name 3 Acuvim L V3.221 Acuvim IL TCP.94 MESH-69 MESH-65	, 2020 4:48 PM	Diagnostics Protocol = Modbus TCP Modbus TCP Modbus RTU Modbus RTU	Serial Number - 221 94 AH18053288 AH18053303 AH18053310	Status =	Alarms = 0 0 1 0	Action
Link 810 Gateway Devices Data Log lakhboard Iakhboard Achet Devices Blut Devices Iglut Inputs	Up since Wednesday, April 1 Up since Wednesday, April 1 System Settings Protocols Tem Modbus Devices Add Device Sourch Device Device Name = Acuvim IL V3.221 Acuvim IL V3.221 Acuvim IL V3.221 Acuvim IL TCP.94 MESH-69 MESH-65 Bridge Meter 1	, 2020 4:48 PM	Diagnostics  Protocol  Modbus TCP  Modbus RTU  Modbus RTU  Modbus RTU  Modbus RTU	Serial Number - 221 94 AH18053288 AH18053303 AH18053310 Bridge1	Status = 0 0N 0 0N 0 0N 0 0N 0 0N 0 0N 0 0N 0 0N 0 0F	Alarms : 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Action 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Link B10 Gateway Devices Data Log Itashboard Itashboard Acons Devices Blus Devices Blus Devices Igiptal Inputs	Up since Wednesday, April 1 Up since Wednesday, April 1 Modbus Devices Add Device Search Device Device Name = Acuvim IL V3.221 Acuvim IL V3.221 Acuvim IL V3.221 Acuvim IL V3.221 MESH-69 MESH-65 Bridge Meter 1 Bridge Meter 10	A 2020 4-48 PM	Protocol C Modbus TCP Modbus RTU Modbus RTU Modbus RTU Modbus RTU Modbus RTU Modbus RTU	Serial Number - 221 94 AH18053288 AH18053303 AH18053310 Bridge1 Bridge10	Status = 0 0 N 0 0 N 0 0 N 0 0 N 0 0 N 0 0 N 0 0 F 0 0 F	Alarms = 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Action 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

### 12.2 Alarm Log

When the alarm is triggered, the user will be able to see the triggering detail under the Alarm Logs page.

From here users can search and filter all device alarms by entering in the interval, serial number and monitor ID into the search criteria. Click on reset to clear the filtered search.



	Alarmion										
Jhboard	<										
dbus Devices	Interval				Serial	Number		Mo	nitor ID	•	
Cnet Devices	Enter Interval				Ente	er Serial Number		E	nter Mo	nitor ID	
lus Devices	Search Reset										
gital Inputs	Timestamp	Monitor ID	Device Name	Serial Number	Monitor Labe	Parameter	Status	Min	Max	Value	Reason
	2020-04-01 16:49:31	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz	٠	40	50	59.990	OVERFLOW
	2020-04-01 16:49:01	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz	٠	40	50	0.000	UNDERFLOW
	2020-04-01 16:27:33	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz	٠	40	50	59.960	OVERFLOW
	2020-04-01 16:27:03	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz		40	50	0.000	UNDERFLOW
	2020-04-01 16:11:32	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz	٠	40	50	59.980	OVERFLOW
	2020-04-01 16:11:03	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz	٠	40	50	0.000	UNDERFLOW
	2020-04-01 15:30:32	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz		40	50	60.000	OVERFLOW
	2020-04-01 15:30:03	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz	٠	40	50	0.000	UNDERFLOW
	2020-03-26 09:00:02	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz		40	50	60.000	OVERFLOW
	2020-03-26 08:59:32	6	WEB2 .163	163	Frequency Hig	h Frequency / Hz		40	50	0.000	UNDERFLOW

### **12.3 Email Alarm Notifications**

The AcuLink 810 can send emails based on Reports or if there is an alarm event. To configure the AcuLink 810 to send emails, log in to the AcuLink 810 web interface with Admin access. To configure alarm emails click on the System Settings tab and select Email.

The user must first configure their Email server and details in order for the gateway to send the emails.

Email Server: Enter the SMTP Server for the email account

Email Port: Enter the outgoing port number the SMTP uses to send emails

TLS/SSL: Users can choose to turn on/off the TLS encryption or keep it on auto.

Sender Name: Enter the sender name of the email

From Email Address: Users can specify the email addresss they receive the email form

Username: Enter the email address for the emails authentication

Password: Enter the password for the email address in Username

Click on *Save* once all settings are configured.



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Date & Time	Email Configuration	
Network	Email Server*	Email Port*
Remote Access	ssl.digitalhosting.ca	587
Alarm notification User Management Firmware Update	Must be valid ip or domain TLS/SSL* Auto On Off Sander Name	Range: 1 - 65535
	Alarm v0.19 Firmware Testing	rvan@accuenergv.com
	Maximum 40 characters	.,
	Username*	Password
	ryan@accuenergy.com	

Next users must configure the alarm notification settings receive the email addresses when the alarm is triggered. This can be done on the *Alarm notification* page.

Enable the alarm notification and configure the follwoing:

*Recipinets 1-3:* Enter the name of the email address in the Email Recipient field. There can be a maximum of 3 email recipients.

*Email Interval:* Select the email interval, by default it is 5 minutes, the range is from 1-10 minutes.

Click *Save* to confirm the settings. Users can test the emails by clicking on the *Test Emails* button, this will let the user know if the AcuLink can reach the emails listed in the recipients list or not. If successful a test email will be received.

If emails were configured for alarm events, the recipients will also receive an email to be notified.

AcuLink 810 Gateway					De Logout	Thursday, April 2, 2020 3:44	M O About	AcuLink 810	ACCUENERGY
Devices Data Log	System Settings Protoco	ols Templates I	Maintenance	Diagnostics					
Date & Time Network Remote Access Email Alarm notification	Alarm Notificatio	on Configuration	Reci	pient 2		Recipie	rt 3		
User Management Firmware Update	test@accuenergy.co	m	Er	ter Recipient 2		Enter	Recipient 3		
	5 Range: 1 - 10		mins						
	Save : Test En	nails							





# Chapter 13: Data Logging

# 13.1 Data Loggers

The AcuLink 810 supports data logging to its internal memory, which has 8GB of memory. When the memory is full the oldest data log entries will be overwritten. To configure the AcuLink 810 to log the device data click on the Data Log tab and select Data Loggers.

The AcuLink 810 has 3 data loggers, where the user can either save device data to its internal memory as well as post the data to an external HTTP/FTP server. The three loggers allow users to have different types of loggers with different logging intervals, log file formats, etc as desired by the user.

- Data Log Enable: Select Enable to enable the data log
- Post Channel: Select the Post Channel from the drop-down list:
  - None: AcuLink 810 will log and store the data on its memory
  - Post Channel 1/2/3: AcuLink 810 will log and push the data to the configured post channel. Users will not be able to select the post channel if it is disabled.

**NOTE:** For more information on configuring the Upload Protocol refer to section 7.10.2 of the user manual for the post channel configuration.

- **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 UTC Timestamp or Time interval Format. An example of each file name format is shown next to each setting.
- Log Interval: Select how frequently the module will log data to the file from the dropdown list. The logging interval can be from 1 minute to 1 month. For logging intervals faster than 1 minute please see Rapid logger in section 7.10.2 of the user manual.
- Log File length: Select the length of the log file, it can be from 1 minute to 1 month. The log file length is in reference to the post channels sending interval, for example if the log interval is 1 minute and the log file length is 5 minutes the log file will be sent to the external server every 5 minutes. If the user is only configuring the logger to save data on the 810's internal memory the log file length setting is irrelevant and can be ignored.

NOTE: The log interval must be less than or equal to the log file length.





- Log File Name Prefix: Provide a name for the log file which will be appended to the beginning of the log file. By default *logger1* will be appended to the beginning of the log file. If configuring Data *Logger 2* the default name prefix is *logger2*, and if configuring Data Logger 3 the default name prefix is *logger3*.
- Select the device(s) to log the data for. Users have the option to log Modbus, BACnet, and MBus devices.

When all of the settings are entered correctly, click on *Save*.

**NOTE:** For more information on downloading and deleting the data logs, please refer to the 'Data Management' section of the user manual.

uLink 810 Gateway				6 Logout Tuesday, March	h 31. 2020 12:49 PM	About AcuLink 810	ACCUENERG
Devices Data Log	System Settings Protocols Templa	tes Mainten	ance Diagnostics				
Data Loggers	Data Logger Configuration						
Post Channels							
AcuCloud	Data Logger 1 Data Logger 2	Data Logger 3	Rapid Logger				
Data Log Management	Data Longer 1 Enable						
	Fnable     Disable						
	Post Channel						
	Post Channel 1	•					
	Timestamp Format*						
	Local Time String eo. 2017-01-01 10:0	0					
	UTC Seconds eg. Number of seconds to	hat have elapsed since	e 1970-01-01 00:00:00 Coore	dinated Universal Time			
	ISO8601 Format eg. 2017-01-01T10:00	0-0500					
	Log File Name Format*						
	O UTC Timestamp ep. logger1-AN10000	001-1551741960-1ml	n.csv				
	<ul> <li>Time interval Format eg-logger1-AN</li> </ul>	10000026-2019-03-0	4T23-56-000000-1min.csv				
	Log Interval		Log File Length		Log File Name F	Prefix*	
	1 minute	٥	5 minutes	\$	logger1		
	Note: Must not be shorter than 5 minutes if yo AcuMesh Modbus Device below	u selected			Maximum 20 charad	ters	
	Devices						
	Select up to 32 modbus & bacnet devices, curr	rently selected 4 device	es.				
	Modbus						
	Acuvim L V3 .221 #221	Acuvim II T	CP .94 #94	MESH-69 #AH18063288	MESH-6	7 #AH18063303	
	MESH-68 #AH18063309	MESH-65 #	AH18063310	MESH-70 #AH18092324	Bridge M	Aeter 1 #Bridge1	
	Bridge Meter 10 #Bridge10	Bridge Met	ter 20 #Bridge20	CSV Convert Test #CSV	C E3T1605	0333 #E3T16090333	
	E3118052569 #E3118052569	MESH TEST     Typical Ene	2 #MESH13 innv Meter Test #Tunica	MESH TEST1 #MESH2	New Ier	nplate Test #NEW	
	BACnet	- Typical cite	igy meter test - typica				
	WEB2 .163 #163	WEB2 .94 #	294	Acuvim L_V3 BACnet #LV3B	ACNet		
	MBus						





# 13.1.1 Rapid Logger

The AcuLink 810 supports the rapid logging function, where the user has the ability to log data at intervals as fast as 1 second.

- Rapid Data Logger Enable: Select Enable to begin the rapid logging function
- Post Channel: Select the Post Channel from the drop-down list:
  - None: AcuLink 810 will log and store the data on its memory
  - Post Channel 1/2/3: AcuLink 810 will log and push the data to the configured post channel. Users will not be able to select the post channel if it is disabled.
- **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. An example of each time format is shown next to each setting.
- 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 UTC Timestamp or Time interval Format. An example of each file name format is shown next to each setting.
- Log Interval: Select how frequently the module will log data to the file from the dropdown list. The logging interval can be from 1 second to 30 seconds.
- Log File Length: Select the length of the log file, it can be from 1 minute to 1 month. The log file length is in reference to the post channels sending interval, for example if the log interval is 1 minute and the log file length is 5 minutes the log file will be sent to the external server every 5 minutes. If the user is only configuring the logger to save data on the 810's internal memory the log file length setting is irrelevant and can be ignored.
- Log File Name Prefix: Provide a name for the log file which will be appended to the beginning of the log file. By default the prefix for the rapid logger is loggerRapid.
- Devices: The user can select the device for the rapid logger.

NOTE: Only Modbus devices connected via RS485 can be logged using the Rapid Logger.



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lata Loggers	Data Logger Configuration			
ist Channels cuCloud	Data Logger 1 Data Logger 2 Data Logg	er 3 Rapid Logger		
ta Log Management	Rapid Data Logger Enable*  Enable Disable  Post Channel			
	Post Channel 1 \$			
	<ul> <li>Local Time String eg. 2017-01-01 10:00</li> </ul>			
st Channels	UIC Seconds eg, Number of seconds that have elapsed ISO8601 Format eg. 2017-01-01710:00-0500	since 1970-01-01 00:00:00 Coordinated Univ	rsal Time	
ost Channels cuCloud ata Log Management	UIC Seconds on Number of seconds that have elegated ISO8601 Format og. 2017-01-01710.00-0500 Log File Name Format* UIC Timestamp og. logger1-AN1000001-1551741990-1. Time interval Format og. logger1-AN1000001-2019-03	since 1970-01-01 00.00.00 Coordinated Univ min.csv -04723-56-000000-1min.csv	rsal Time	
ist Channels ruCloud Ita Log Management	UIC Seconds on Number of seconds that have elegated ISO8601 Format og.2017-01-01710-00-0500 UIC Timestamp og logger1-AN10000001-1551741960-1 Time interval Format og logger1-AN10000001-1551741960-1 Log Interval	since 1970-01-01 000000 Coordinated Univ min.cpv 04723-56-000000-1min.cpv Log File Length	tal Time Log Fi	le Name Prefix*
ost Channels cuCloud ata Log Management :	UIC Seconds vs. Number of accords that have elegated ISO8601 Format vs. 2017-01-01710-00-0500 Log File Name Format* UIC Timestamp vs. logger1-AN10000001-1551741960-1 Time interval Format vs. logger1-AN10000006-2019-03 Log Interval 1 second •	nincey 01723-56-00000-1min.cov Log File Length 1 minute	Log Fi S logg	ie Name Prefix* erfapid

### **13.2 Post Channels**

The AcuLink 810 supports 3 Post Channels that will allow users to post device data to external HTTP/FTP servers. To configure the HTTP/FTP data forward from the web interface click on the Data Log tab and select Post Channels.

To configure the post channels select the corresponding post channel tab.

#### 13.2.1 HTTP Post Method

The HTTP post method allows the user to post meter data to an HTTP/HTTPS server.

Post Channel Enable: Select Enable to enable the post channel data forward

Post Method: Select HTTP/HTTPS from the drop-down menu

**Post Name Fixed:** Select Yes or No to enable a fixed post name, if yes selected enter in the post name. There is a maximum of 40 characters allowed for the fixed post name.

**HTTP/HTTPS URL:** Select HTTP or HTTPS prefix from the drop-down menu before entering in the URL. Next enter in the URL of the server.





HTTP/HTTPS Port: Enter the correct port for the HTTP server.

HTTP/HTTPS Meter ID: Enter in the meter ID.

Once the settings are entered correctly click on *Save*. After the settings are saved, users can use the *Test Post Channel* button to test whether the AcuLink 810 can successfully reach the HTTP/HTTPS server.

**NOTE:** If users receive a fail message, please verify the server URL, port number and double-check the network connectivity.

If the AcuLink 810 loses its network connection the gateway can back up 3000 post files on its internal memory, after 3000 post files the data will start to over write from the oldest post file. Users can clear the cached post files by using the *Clear Post Channel Logs* button.

in coggers	Post Channel Configuration				
ist Channels					
cuCloud	Post Channel 1 Post Channel 2 Post Channel 3				
ata Log Management	Post Channel 1 Enable*				
	Enable O Disable				
	Cannot be disabled. This Post Channel is used by Data Logger 1, Data Logger d.				
	Post Method*				
	HTTP/HTTPS +				
	Dost Name Sized*				
	Ves No				
	Post File Name				
	Enter Post File Name				
	Maximum 40 characters				
	HTTP/HTTPS URL*	HTTP/HTTPS Port*			
	http:// ~ 18.188.85.147/post	800			
	Must be valid ip or domain	Range: 1 - 65535			
	HTTP/HTTPS Meter ID*				
	v0.18				
	Maximum 40 characters				
	Test Deet Channel - Class Deet Channel Laws				
	lest Post Channel Clear Post Channel Logs				





### 13.2.2 FTP Post Method

The FTP post method allows the user to post meter data to an FTP server.

Post Channel Enable: Select Enable to enable the post channel data forward

Post Method: Select FTP protocol

FTP URL: Enter in the FTP URL

FTP Port: Enter the FTP port number

FTP Username: Enter the username to access the FTP server

FTP Password: Enter the password to access the FTP server

Once all settings are entered correctly, click on *Save*. Users can use the *Test Post Channel* button to determine whether the 810 can reach the FTP server.

**NOTE:** If users receive a fail message, please verify the server URL, port number, username, password and double-check the network connectivity.

Similar to the HTTP posting method, for FTP if the AcuLink 810 loses its network connection the gateway can back up 3000 post files on its internal memory, after 3000 post files the data will start to over write from the oldest post file. Users can clear the cached post files by using the *Clear Post Channel Logs* button.

Data Loggers	Post Channel Configuration				
Post Channels					
AcuCloud	Post Channel 1 Post Channel 2 Post Channel 3				
Data Log Management	Post Channel 3 Enable*				
	Enable  Disable				
	Cannot be disabled. This Post Channel is used by Data Logg	ter 3.			
	Post Method*				
	ETP	÷			
	FTP URL*	FTP Port*			
	ftp:// 18.188.85.147	1002			
	Must be valid ip or domain	Range: 1 - 65535			
	FTP Username*	FTP Password*			
	admin	<i>∞</i>			
	Meximum 10 characters	Maximum 40 sharesteer			





### 13.3 Downloading Data

Under the **Data Log** tab, the user has the option to download data that has already been logged.

Clicking Data Log Management (Download Log):

- Device: The user can select the device to download data from
- Interval: The user can choose the interval from which to download
- Download: The user can download the selected file from the device (CSV format)

Data Loggers	Data Log Management
Post Channels AcuCloud	Download Log
Data Log Management	Device* Acuvim L V3 .221 - 221 (Modbus Device)  Cogged from 2020-03-16 to 2020-03-20 Interval*
	2020-03-16 - 2020-03-20

The user also has the ability to delete previously stored logs.

- Device: The user can select the device to erase data from
- Delete: This will erase all data from the device selected

Delete Log	
Device*	
Select Device	÷
Delete	





### 13.4 AcuCloud

This chapter will provide instructions on connecting the AcuLink 810 gateway device to the AcuCloud EMS software so that the selected devices connected to the gateway can send their data to the software. This process requires the user to have an existing AcuCloud account, if the user does not have an account they can sign up for AcuCloud directly on our website at: https://www.accuenergy.com/products/acucloud-energy-management-software-ems/

This procedure requires users to add the gateway to the software in which a token will be generated through AcuCloud and will act as verification when sending data from the gateway. Finally this generated token will be used to configure the gateway from the AcuLink 810 web interface.

Once the token has been successfully added, the user will be able to monitor, compare and trend the data from devices connected to the gateway.

NOTE: Only Modbus devices connected to the AcuLink 810 can be posted to AcuCloud.

Under the *Data Log* tab select *AcuCloud*, the user will first need to select **Enable** under AcuCloud Enable.



• Then copy the Module Serial Number that appears below.





• Next, the user will need to login to AcuCloud with Admin access in order to add devices.



• Adding a new device can be done under the *Facilities* tab by selecting the desired facility and clicking on the *Devices* tab.

ACCUENERGY			⊥User Management 🛕 Alerts 土 Ex	port Data 🗠 Forward Da	ta 🗏 Logs - 🤊 Help
	INFO DEVICES REPOR	TS ENERGY	HEATMAP TARIFF CONFIG TARIFF ANAL	LYSIS COST ANALYSIS	SCHEDULE
› Demo › Toronto Office	Demo		+ NEW DEVICE + NEW CALCULATED M	NETER + NEW SINGLE P	ARAMETER DEVICE
	* All times are shown in the An	nerica/Toronto time zo Meter Type	serial Number	Last Received Data	Action
	Demo-AcuvimII_test	Physical	77af81fd-fe7b-4e78-8574-bc735b3789ad	-	IMPORT
	Device: aaaaaaa3	Physical	88888883		IMPORT
	test3	Physical	t34t34t3tret		IMPORT
	810test	Physical	qweeeee		IMPORT

Clicking on the + New Device button, the details need to be entered:

- Select the name of the facility in which the device will belong to from the **Facility** drop down list.
- Select the AcuLink 810 from the Choose a Model drop down list.
- Select This is a gateway Device box.





- Provide a name for the device under **Device Name**.
- Paste the serial number that was copied from the AcuLink 810 web interface under the Serial Number field.
- Provide a description for the location of the device under Location.
- Click SUBMIT.

ACCUENERGY		L User Management	Alerts	📥 Export Data	🖻 Forward Data	🛛 Logs -	? Help
<ul> <li>Accuenergy (Ca_  ∨</li> <li>FACILITIES +</li> <li>A bemo</li> <li>A Toronto Office</li> </ul>	Pacility         Demo         Choose a Model         AcuLink810         Gateway         Imis is a gateway device         Device Name         AcuLink 810         Serial Number         SsP20200207         Location         Toronto					• •	

Once the gateway has been successfully added, a token will be returned on the ensuing page. The user will need to copy the token that is provided as it will be used in the next step to configure the gateway to send its data to AcuCloud.

Add a	New Device	
	Copy this token to the meter to finish registration. Device Token 4b7d1865=4ba0=417d=90f9=8190c2a3a69b	
		COPY TOKEN TO CLIPBOARD FINISH





Go back to the AcuLink 810 web interface and paste the token that was generated into the AcuCloud **Token** field.

- Click Save
- Then click on Test AcuCloud to see if the AcuLink can reach the AcuCloud server.

**NOTE:** If the test connection fails, please check the network settings of the AcuLink 810 and also make sure the AcuCloud URL and token are entered in correctly.



The AcuLink 810 gateway is now successfully configured to report to the AcuCloud EMS software. Once a report is created in the AcuLink 810 then the report for the devices it was created for will be posted to AcuCloud.

Check to see if AcuCloud is receiving data from the gateway by going to the **Devices** page in AcuCloud and observing whether the name of the selected devices from the gateway appear in AcuCloud with a Last Received Data timestamp as seen below.



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## Chapter 13: Data Logging

AFFILENEDEV		1 User	Management 🔥 Alert	s 📥 Export Data 🛛	😂 Forward Data 🗐 Logs 🖌 🤋 Help
ACCULALAU/					<b>∞ 1</b> ·
🏟 Accuenergy (Ca  🗸	AcuLink 810 Demo	Physical	S8P20190528	2020-01-23	IMPORT
FACILITIES +	AcuRev 2020	Physical	EH12345678	2019-08-22	IMPORT
› 섬 Demo	11	Physical	11	2019-10-23	IMPORT
> 🛃 Toronto Office	Acuvim II TCP	Physical	TCP	2019-10-30	IMPORT
	LL-WEB	Physical	AML11223344	2019-12-12	IMPORT
	Mesh66	Physical	66	2019-10-30	IMPORT
	DF16010283	Physical	DF16010283	2020-03-17	IMPORT
	Acuvim II_Test_v1.34	Physical	AM17071069	2019-12-20	IMPORT
	Acuvim II Demo	Physical	AN20190502	16:45	IMPORT
	Acuvim L-WEB	Physical	AML12345678	2019-11-11	IMPORT
	Test Power Meter	Physical	AM18041830	2020-01-23	IMPORT





# **Chapter 14: Network Diagnostics**

The AcuLink 810 network diagnostics page can be used to monitor the status of the gateway device.

In the Network Status Tab, under Diagnostics, users can see the Ethernet Network, Routing Table, DNS Server, and Network Stat.

**NOTE:** To see the **WiFi Network Status**, the AcuLink 810 must be configured for Station Mode.

Network Status	Network Status	
RSTP Status	Faharant Maturada	
Host Lookup	Ethernet Network	
Connection Test	eth0 Link encap:Ethernet HWaddr ec:c3:8a:20:20:02	
connection rest	inet addr:102.168.1.52 Ecast:0.0.0.0 Mask:255.255.255.0	
NTP Sync Test	RX packets:20116 errors:0 dropped:376 overruns:0 frame:0	
Debug	TX packets:82003 errors:0 dropped:0 overruns:0 carrier:0	
	collisions:0 txqueuelen:1000 RX butes:3045234 (28,9 MIB) TX bytes:45646860 (43,5 MIB)	
	ethi Link encap:Ethernet HWaddr ec:3:83:20:20:03	
	UP & BOUPINGLOGILIS CLEAST MULTICAST MULTICAST MULTICAST AUXIMUS AND A	
	RX packets:28095 errors:0 dropped:0 overruns:0 frame:0	
	TX packets:10258 errors:0 dropped:0 overruns:0 carrier:0 collider:0:00 transmine:1000	
	Rx bytes:427323 (4.0 Mis) TX bytes:769728 (751.6 Kis)	
	10 Link encepitocal toopback inst addr-127.0.0.1 Mask-255.0.0.0	
	UP LOOPBACK RUNNING HTU:65536 Metric:1	
	Refresh Network Status	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics  To anticipation of descering descering descering and anticipation of the section of the sectio	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics TX packets/374 errors/0 dropped/0 overruns/0 certier/0 collisions/	
Devices Data Log Network Status	System Settings Protocols Templates Maintenance Diagnostics TX patients 11:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1	
Devices Data Log Network Status RSTP Status	System Settings Protocols Templates Maintenance Diagnostics  Tx packets14754 errors10 dropped:0 overruns10 certier10 collision:0 trajecelent1 K tytes1242565 (11.8 Hills) Tx tytes1245655 (11.8 Hills)  Tun0 Link encep:UNSPEC Insader 00-00-00-00-00-00-00-00-00-00-00-00-00-	
Devices Data Log Network Status RSTP Status Host Lookup	System Settings Protocols Templates Maintenance Diagnostics Tx packets/374 errors/0 dropped/0 verruns/0 carrier/0 collisions/0 tompuedent RX bytes/1246955 (11.8 HIB) Tx bytes/1246955 (11.8 HIB) tun0 Link encap:URDPC Haaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-	
Devices Data Log Network Status RSTP Status Host Lookup Connection Test	System Settings Protocols Templates Maintenance Diagnostics  System Settings Protocols Templates Maintenance Diagnostics  Txp petersis/4 encessis/0 dropped/0 everymail0 carsier:0  (	
Devices Data Log Network Status RSTP Status Host Lokup Connection Fet NTP Sync Test	System Settings     Protocols     Templates     Maintenance     Diagnostics       System Settings     Protocols     Templates     Maintenance     Diagnostics       X     packets:4354     errors10 dropped:0 overruns10 carrier:0     carlist:0       x     Rt bytes:125655 (11.8 HLB)     Tk bytes:12456935 (11.8 HLB)       tun0     Link encap:URSPIC     Maintenance     Diagnostics       tun0     Link encap:URSPIC     Canadia do -do-do-do-do-do-do-do-do-do-do-do-do-do-	
Devices Data Log Network Status RSTP Status Host Lokup Connection Test NTP Sync Test Debug	System Settings Protocols Templates Maintenance Diagnostics Tx packets/374 errors/0 dropped/0 verruns/0 carrier/0 collisions/0 temped/0 temped/0 verruns/0 carrier/0 tun0 Link enclisions/0 temped/0 verruns/0 carrier/0 vertical dor/10.1.1.5 Prt-9/10.1.1.5 Mak/25.55.0.0 vertical dor/10.1.5 Prt-9/10.1.5 Mak/25.55.0.0 vertical dor/10.1.5 Mak/25.55.0.0 vertical dor/10.55 Mak/25.55.0.0 vertical dor/10.1.5 Mak/25.55 Mak/	
Devices Data Log Network Status Host Lokup Connection Test NTP Sync Test Debug	System Settings Protocols Templates Maintenance Diagnostics System Settings Protocols Templates Maintenance Diagnostics TX packets/x754 errors/0 dropped/0 overrus/0 carrier/0 collisions/ temporalenal RX bytes/1245035 (11.8 HIB) TX bytes/12450355 (11.8 HIB) tun0 Link enceptuk/DEC Madder 00-00-00-00-00-00-00-00-00-00-00-00-00-	
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Devices Data Log Network Status RSTP Status Host Lokup Connection Test NTP Sync Test Debug	System Settings Protocols Templates Maintenance Diagnostics  Tx packets/374 errors/0 dropped/0 verrus/0 cerriter/0 collisions/0 temped/0 verrus/0 cerriter/0 cerriter/0 verrus/0 cerriter/0 cerriter/	
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Devices Data Log Network Status RSTP Status Host Lookup Connection Teat Debug	System Settings Protocols Templates Maintenance Clagnostics System Settings Protocols Templates Maintenance Clagnostics TX packets:1274 errors10 dropped:0 verruns10 carrier10 collisions1 temporedent RX bytes:12649955 (11.8 HB) TX bytes:12459555 (11.8 HB) tun0 Link encaptito(FV madds (-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0	
Devices Data Log Network Status Host Lokup Connection Test NTP Sync Test Debug	System Settings     Protocols     Templates     Maintenance     Didgnostics       System Settings     Protocols     Tix packets1474 errors10 dropped10 vorrenus10 carrier10 collisions1 temporelen1     Didgnostics	





	0.0.0.0	192.168.1.1	0.0.0.0	UG	100	0	0 eth0
1 Charles	0.0.0.0	192.168.2.1	0.0.0.0	UG	250	0	0 eth1
fork status	< 18.1.8.8	0.0.0.0	255.255.0.0	9 U	0	0	0 tun0
P Status	192.168.1.0	0.0.0.0	255.255.255	5.0 U	0	0	0 eth0
t a stress	192.168.2.0	0.0.0.0	255.255.255	5.0 U	250	0	0 eth1
Lookup	192.168.100	0.0.0.0	255.255.255	0.0	0	0	0 wlan0
nnection Test							
P Sync Test	DNS Server						
	nameserver	8.8.8.8					
9	nameserver	8.8.4.4					
	Network Stat						
	Active Inte	rnet connections (	servers and es	tablishe	d)		
	Proto Recv-	Q Send-Q Local Addr	ress	Foreign	Address		State
	tcp	0 0.0.0.0:19	99	0.0.0.0			LISTEN
	tcp	0 0 0.0.0.0:50	6	0.0.0.0			LISTEN
	tcp	0 0.0.0.0:34	6004	0.0.0.0			LISTEN
	tcp	0 0 127.0.0.1	:53	0.0.0.0			LISTEN
	tcp	0 0 192.168.10	00.1:53	0.0.0.0	.*		LISTEN
	tcp	0 0 0.0.0.0:50	92	0.0.0.0			LISTEN
	tcp	0 0.0.0.0:22	2	0.0.0.0			LISTEN
	tcp	0 0 0.0.0.0:44	\$3	0.0.0.0	.*		LISTEN
	ten	0 0.0.0.0:33	133	0.0.0.0			LISTEN
	Refresh	letwork Status			_		
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evices Data Log Syst etwork Status TP Status	Refresh N tem Settings tcp tcp tcp tcp	Protocols Tem 0 0 192.168.2 0 0 192.168.2 0 0 192.168.1 0 192.168.1 0 192.168.1 0 375 10.1.1.5:- 0 32 10.1.1.5:-	nplates M .213:51146 :3333 .52:57418 443 443	aintenano 192.168 127.0.0 18.224. 10.1.0. 10.1.0.	e 0 .2.120:5 .1:49824 174,54:3 1:50766 1:50762	Diagnosl 82 4000	ESTABLISHED TINE_WAIT ESTABLISHED FIN_WAITI CLOSING
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twices Data Log Syst twork Status 1P Status st Lookup mection Test 9 ym Test	Refresh N tem Settings tcp tcp tcp tcp tcp tcp tcp tcp	Protocols         Tem           0         0 192.168.2           0         192.168.2           0         192.168.1           0         192.168.1           0         192.168.1           0         375 10.1.1.5:           0         22.108.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1	nplates M .213:51146 .3333 .52:57410 443 .3333 443 .52:50206 .3333	aintenand 192.168 127.0.0 18.224, 10.1.0, 10.1.0, 127.0.0 10.1.0, 192.165 127.0.0	2.120:5 .1:49824 174,54:3 1:50766 1:50762 .1:49828 .1:221:5 .1:49828	Diagnost 92 4999 92	ESTABLISHED TIME_MAIT ESTABLISHED FIN_MAITI CLOSING TIME_MAIT TIME_MAIT TIME_MAIT
vvices Data Log Syst work Status 19 Status 11 Lookup Inection Test 2 Syne Test	Refresh N tem Settings tcp tcp tcp tcp tcp tcp tcp tcp tcp tcp	Protocols         Tem           0         0 192.165.2           0         0 192.165.2           0         192.165.2           0         192.165.2           0         192.165.1           0         192.161.1           0         192.161.1           0         192.161.1           0         192.162.1           0         192.162.1           0         192.162.1           0         192.166.1           0         192.168.2	nplates M 213:51146 :3333 52:57418 443 :3333 443 :52:50200 :3333 :213:33082	aintenano 192.168 127.0.0 18.224, 10.1.0. 10.1.0. 10.1.0. 192.160 127.0.0 192.168	2.120:5 .1:49824 174,54:3 1:50766 1:50766 1:50762 .1:49830 1:50769 .1.221:5 .1:49828 .2.110:5	Diagnost 92 4000 02 92	ESTABLISHED TIRE_MAIT ESTABLISHED FIN_WAITI CLOSING TIRE_MAIT TIRE_MAIT ESTABLISHED TIRE_MAIT
vices Data Log Syst work Status P Status t Lookup inaction Test ? Sync Test ug	Refresh N tem Settings tcp tcp tcp tcp tcp tcp tcp tcp	Protocols         Term           0         0122.168.2           0         127.06.1           0         0122.168.1           0         375 104.1.15;           0         0121.163.1           0         0121.163.1           0         0127.06.1           0         0121.1.15;           0         0121.161.1           0         0127.06.1           0         0122.168.1	nplates M .213:51146 .3333 .52:57418 443 443 .52:50208 .3333 .213:33082 .52:51684	aintenand 192.168 127.0.0 18.224, 10.1.0, 127.0.0 10.1.0, 192.168 127.0.0 192.168 192.168	e B .2.12015 1:49824 174,54:3 1:50766 1:50762 1:49830 1:50760 1.22115 .1:49828 .2.110:5 .1.22615	018gnost 02 4000 02 02 02	ESTABLISHED TJRE_MAIT ESTABLISHED FIN_WAITI CLOSING TJRE_MAIT TIRE_MAIT ESTABLISHED ESTABLISHED ESTABLISHED
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rvices Data Log Syst hverk Status IP Status t Lookup nnection Test 9 Sync Test bug	Refresh N term Settings tcp tcp tcp tcp tcp tcp tcp tcp tcp tcp	Detwork Status           Protocol         Terr           0         0         192,468.2           0         0         192,461.1           0         0         192,461.1           0         0         192,461.1           0         0         192,166.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1           0         0         192,164.1	hplates M 213:51146 3333 521:57410 443 443 443 3333 444 521:3338 521:50200 521:50200 521:50200 521:50200 521:50200 533 7 9	aintenano 192.168 127.0.0 18.224, 10.1.0. 192.160 192.160 192.168 192.168 192.168 192.168 192.168 192.168 192.168 0.0.0.0 0.0.0.0	C C C C C C C C C C C C C C C C C C C	Diagnost 92 4000 02 92 92 92 83	LICS ESTABLISHED THEMAIT ESTABLISHED FIN JAATI CLOSING THEMAIT ESTABLISHED ESTABLISHED ESTABLISHED ESTABLISHED
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rvices Data Log Syst hvork Status st Lookup nection Test P Sync Test Dug	Retress h t Retress h t Rep t cp t cp	Protocols         Term           0         192.168.2           0         192.168.2           0         122.8.0.1           0         32.10.1.15*.           0         32.10.1.15*.           0         122.8.0.1           0         0           0         122.0.0.1           0         192.168.2	bplates M 2233-55146 1933 5215740 443 443 443 443 423 52152020 52152020 52152020 52152020 5214588 52155900 523 5214588 52145900 523 5214588 52145900 523 00.1153 7 0 0 123 123 123 123 123 123 123 123	aintenand 192.168 127.0.0 18.224, 10.1.0, 19.10, 127.0.0 192.160 127.168 127.0.0 192.168 192.168 5.196.9 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0	Ce E .2.120:5 .1:49824 174.54:3 1:50762 .1:49830 1:50762 .1:49830 .1:221:5 .1:49828 .2.130:5 .1:49828 .2.130:5 .1:94:50 5.200:18 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2	012 002 002 002 002 002 002 002 002 002	ESTARLISHED ESTARLISHED TIM_UALT ESTARLISHED FIN_UALT TIM_UALT TIM_UALT TIM_UALT ESTARLISHED ESTARLISHED ESTARLISHED
evices Data Log Syst etwork Status TP Status sti Lookup smection Test PP Sync Test Houg	Retress h 1 constructions construc	Retwork Status           Protocols         Terr           0         0         192.168.2           0         192.9.68.1         0           0         0         192.168.2           0         192.9.68.1         0           0         3         19.1.1.5           0         19.1.1.5         0           0         19.1.1.6         0           0         19.1.1.6         0           0         192.1.66.1         0           0         192.1.66.2         0           0         192.1.66.2         0           0         192.1.66.2         0           0         192.1.66.1         0           0         192.1.66.2         0           0         192.1.66.2         0           0         192.1.66.2         0           0         192.1.66.2         0           0         0         0.0.0.0.016           0         0         0.0.0.016           0         0         0.0.0.016           0         0         0.0.0.016           0         0         0.0.0.016           0         0         0.0.01.01	hplates M 2.213-51146 1933 2.52157418 5.52157418 4.43 4.43 4.43 4.43 4.43 4.43 4.43 4.43 4.44 4.52150200 1.533 1.213-10964 5.53 5.553 5.553 5.553 5.553 5.553 5.553 5.5555 5.5555 5.555 5.555555 5.555	aintenand 192.168 177.0.0 18.224, 10.1.0, 10.1.0, 127.0.0 192.168 192.168 192.168 192.168 192.168 192.168 0.0.0.00 0.0.0.00 0.0.0.00 0.0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.00 0.0.000 0.0.000 0.0.0	Ce C .2.120:5 .1.49824 174.54:3 1:50762 1:50760 1:50760 1:49828 .2.110:5 1:49828 .2.110:5 1:49828 .2.110:5 1:49828 .2.110:5 1:49828 .2.110:5 1:49828 .2.110:5 1:49828 .2.110:5 .2.121:5 .2.21:5 .2.121:5 .2.21:5 .2.121:5 .2.21:5	02 02 4000 02 02 02 02 2 83	ICS ESTARLISHED TIM_UALT ESTARLISHED FIN_UALTI COUSTING TIM_UALTI ESTARLISHED ESTARLISHED ESTARLISHED ESTARLISHED ESTARLISHED ESTARLISHED
evices Data Log Syst twork Status TP Status st Lookup nnection Test P Sync Test bug	Retress h t Retress h t Rep t cp t cp	Protocols         Term           0         192.168.2           0         192.168.2           0         122.8.0.1           0         32.10.1.15%           0         32.10.1.15%           0         122.8.0.1           0         0           0         122.8.0.1           0         192.168.1           0         0           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.1           0         192.168.2           0         192.168.2           0         192.168.2           0         192.168.2           0         192.168.2           0         192.168.2           0         192.168.2           0         192.168.2           0 <t< td=""><td>Iplates         M           2233:51146         1933           1523:52146         444           1533:32         1233:32           1523:52100         13333           1233:3302         1233:3082           1233:352         1233:3082           1233:353         1233:3082           1233:353         1233:3084           1233:353         1233:3084           1233:3004         1233:3084           1233:004         1233:1084           1233:004         1233:123           123:123         123:123</td><td>aintenano 192.168 127.0.0 18.224, 10.1.0, 192.168 127.0.0 192.168 127.0.0 192.168 127.168 122.168 122.168 5.196.9 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0</td><td>2.12015 1.149824 1159766 1159762 1.159762 1.2215 1.149828 2.11015 1.2215 1.149828 2.211015 1.2265 2.21015 1.2265 2.200110 1.2215 1.49928 2.200110 1.2215 1.49928 2.200110 1.2215 1.49928 2.200110 1.2215 1.49928 2.200110 1.2215 1.5976 1.2265 1.2005 1.2215 1.2005 1.2215 1.2005 1.2215 1.2005 1.2215 1.2005 1.2015 1</td><td>012 002 002 002 002 002 002 002 002 002</td><td>ESTAALISHED TJHEJUAT ESTAALISHED FINLWATT CLOSING TJHEJUATT ESTAALISHED ESTAALISHED ESTAALISHED ESTAALISHED ESTAALISHED ESTAALISHED ESTAALISHED</td></t<>	Iplates         M           2233:51146         1933           1523:52146         444           1533:32         1233:32           1523:52100         13333           1233:3302         1233:3082           1233:352         1233:3082           1233:353         1233:3082           1233:353         1233:3084           1233:353         1233:3084           1233:3004         1233:3084           1233:004         1233:1084           1233:004         1233:123           123:123         123:123	aintenano 192.168 127.0.0 18.224, 10.1.0, 192.168 127.0.0 192.168 127.0.0 192.168 127.168 122.168 122.168 5.196.9 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0	2.12015 1.149824 1159766 1159762 1.159762 1.2215 1.149828 2.11015 1.2215 1.149828 2.211015 1.2265 2.21015 1.2265 2.200110 1.2215 1.49928 2.200110 1.2215 1.49928 2.200110 1.2215 1.49928 2.200110 1.2215 1.49928 2.200110 1.2215 1.5976 1.2265 1.2005 1.2215 1.2005 1.2215 1.2005 1.2215 1.2005 1.2215 1.2005 1.2015 1	012 002 002 002 002 002 002 002 002 002	ESTAALISHED TJHEJUAT ESTAALISHED FINLWATT CLOSING TJHEJUATT ESTAALISHED ESTAALISHED ESTAALISHED ESTAALISHED ESTAALISHED ESTAALISHED ESTAALISHED
ces Data Log Syst ank Status Status Icolon Test ymc Test 9	Retress h 1 tem Settings tep tep tep tep tep tep tep tep	Retwork Status           Protocols         Terr           0         0         192.168.2           0         192.9.68.1         0           0         23         10.1.151           0         32         10.1.151           0         0         192.168.2           0         32         10.1.151           0         0         192.168.2           0         0         192.168.2           0         0         192.168.2           0         0         192.168.2           0         0         192.168.2           0         0         192.168.2           0         0         192.168.1           0         0         192.168.1           0         0         192.168.1           0         0         192.168.1           0         0         192.168.1           0         0         192.168.1           0         0         192.168.1           0         0         192.168.1           0         0         192.168.1           0         0         192.168.1           0         192.168.1         0	hplates M 2213-53146 1933 251257418 252157418 252157418 252157418 252157418 25333 213130944 23333 213130944 23333 213130944 23333 70 80 123 70 80 123 70 80 123 71 80 123 723 723 723 723 723 723 723 7	aintenanc 122.165 127.0.0 11.22.4.0 10.1.0. 127.0.0 10.1.0. 127.0.0 102.168 122.168 122.168 122.168 122.168 122.168 122.168 0.0.0.0 0.0.0 0.0.	12 2.120+5 1.148924 1.148924 1.150766 1.50766 1.2215 2.101+5 2.101+5 2.101+5 5.200:10	Nagnosl 4090 02 02 02 02 02 02 2 2 83	ESTARLISHED ESTARLISHED TIM_UALT ESTARLISHE ESTARLISHE ESTARLISHED ESTARLISHED ESTARLISHED ESTARLISHED ESTARLISHED ESTARLISHED

In the **RSTP Status** tab, users can check the status of the Rapid Spanning Tree Protocol, if it is being used for the topology of the Ethernet network.

Network Status	RSTP Status
RSTP Status	Bridge Status
Host Lookup Connection Test	ctl_cllent_init: Couldn't connect to server
NTP Sync Test	Port Status
Debug	ctl_client_init: Couldn't connect to server
	Refresh Network Status





In the **Host Lookup** tab, users can use the ping function to see if the AcuLink 810 can communicate over the network it is connected to.

Network Status	< Host Lookup
RSTP Status	Name of system or domain to lookun*
Host Lookup	Name of system of domain to lookup
Connection Test	www.google.com
NTP Sync Test	Must be valid ip or domain
Debug	🗌 nslookup 🖉 ping 🗌 traceroute
	ping
	PING www.google.com (172.217.1.4) 56(84) bytes of data.
	64 bytes from iad23s25-in-f4.1e100.net (172.217.1.4): icmp_seq=1 ttl=54 time=4.25 ms
	64 bytes from yyz10s14-in-f4.le100.net (172.217.1.4): icmp_seq=2 ttl=54 time=5.04 ms
	64 bytes from yyz10s14-in-f4.1e100.net (172.17.1.4): 1cmp_seq=3 ttl=54 tlme=4.45 ms
	64 bytes from iad23325-in-f4.1e100.net (172.217.1.4): icmp_seq=5 ttl=54 time=4.97 ms
	www.google.com ping statistics
	5 packets transmitted, 5 received, 0% packet loss, time 4005ms
	rtt min/avg/max/mdev = 4.256/4.700/5.049/0.302 ms

In the **Connection Test** tab, users can test the local network connection of the AcuLink 810. The test will show SUCCESS and PASS as seen below if the network test is successful. Otherwise, the test will show FAIL if network issues are found.

Network Status	Connection Test
RSTP Status Host Lookup	This diagnostic page will attempt a connection to the specified network nodes.
onnection Test	In the process, all network settings will be tested and a report will be given with detailed results of these tests.
ITP Sync Test	Connection Result
Debug	# 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
	Start Test





In the **NTP Sync Test** tab, users can determine if the Network Time Protocol is functioning correctly, as seen below.

Vetwork Status ISTP Status	NTP Sync Test NTP Sync
onnection Test	19 Mar 15:27:04 ntpd[1762]: ntpd 4.2.8p10@1.3728-o Thu Jul 26 19:52:20 UTC 2018 (2): Starting
NTP Sync Test	19 Mar 15:27:04 https://sec.intend.lne:httpsc
Jepnð	restrict: op 1 aour ev.e.v mask v.o.v. milags 00000000 flags 000000070 restrict: op 1 aour ev.e.v. mask v.o.v. milags 00000000 flags 00000000 restrict: source template milags 4000 flags 100 restrict: op 1 addr (null) mask (null) milags 00004000 flags 000001c0 mov_fdi estimated max descriptors: 1024, initial socket boundary: 16 19 Mar 15:27:04 ntpd[1762]: Listen and roop on 0 4/wildcard 0.0.0.0:123 19 Mar 15:27:04 ntpd[1762]: Listen normally on 1 lo 127.0.0.1:123 restrict: op 1 addr 127.0.0.1 mask 255.255.255 milags 0000000 flags 00000001 19 Mar 15:27:04 ntpd[1762]: Listen normally on 2 etho 192.168.1.52:123
	restrict: op 1 addr 192.168.1.52 mask 255.255.255 mflags 00003000 flags 00000001 19 Mar 15:27:04 ntpd[1762]; Listen onrmally on 3 eth 192.168.2.213:123 restrict: op 1 addr 192.168.2.213 mask 255.255.255 mflags 00003000 flags 00000001 19 Mar 15:27:04 ntpd[1762]; Listen normally on 4 wlan0 192.168.100.1:123 restrict: op 1 addr 192.168.100.1 mask 255.255.255.255 mflags 00003000 flags 00000001 19 Mar 15:27:04 ntpd[1762]; Listen normally on 5 tun0 10.1.15:123 restrict: op 1 addr 192.168.255.255.255.255.255.255.255.255.255.25

In the **Debug** tab, users can turn ON or turn OFF SSH. From this page, users can also download the AcuLink 810 diagnostic file.

The debug diagnostic options are recommended to be all OFF, as this feature is used for troubleshooting and can affect the performance of the gateway if turned ON.

By clicking the **Download Diagnostic File** button, users can download a full overview of the AcuLink 810 network. If users are experiencing any issues with the AcuLink 810, the diagnostic file can be sent to Accuenergy technical support for further analysis.







	Debug
Vetwork Status	()y
Host Lookup	SSH*
Connection Test	On Off
NTP Sync Test	Debug Diagnostic - All Off
Debug	Turn On/Off all debug diagnostics
	On Off
	Show Detail
	Download Diagnostic File
	Save
	Save
	Save
	Save
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics BACnet Configuration
Devices Data Log nterface Assignment vcuMesh	System Settings Protocols Templates Maintenance Diagnostics  BACnet Configuration
Devices Data Log nterface Assignment kcuMesh Aodbus	System Settings Protocols Templates Maintenance Diagnostics           BACnet Configuration           Acquisitor         Gateway         BBMD
Devices Data Log nterface Assignment AcuMesh Addbus IACnet	System Settings Protocols Templates Maintenance Diagnostics BACnet Configuration Acquisitor Gateway BBMD BBMD Mode*
Devices Data Log nterface Assignment AcuMesh Adobus ACnet AQTT	Save System Settings Protocols Templates Maintenance Diagnostics BACnet Configuration Acquisitor Gateway BBMD BBMD Mode* Algonian incoming EDB
Devices Data Log nterface Assignment AcuMesh Modbus IACnet AQTT INMP	Save System Settings Protocols Templates Maintenance Diagnostics BBCnet Configuration Acquisitor BBMD BBMD Mode* Allowing incoming FDR
Devices Data Log nterface Assignment AcuMesh Modbus JACnet ACTT INMP	Save System Settings Protocols Templates Maintenance Diagnostics BBACnet Configuration Acquisitor Gateway BBMD BBMD Mode* Allowing incoming FDR  BBMD Address List Add Address
Devices Data Log nterface Assignment kcuMesh Vlodbus JACnet WQTT INMP	Save System Settings Protocols Templates Maintenance Diagnostics BACnet Configuration Acquisitor Gateway BBMD BBMD Mode* Allowing incoming FDR  BBMD Address Ist Add Address 192.168.1.164 Remove Enter Address 2 Remove





# **Chapter 15: Maintenance**

## 15.1 System Status

Users can check the AcuLink 810's memory usage under *System Status* located under the *Maintenance* tab.

The system status page provides users with an overview of the AcuLink 810 internal processing, the CPU, RAM, Disk, and RS485 usage can all be monitored.

Users can also manually reboot the device by clicking the *Reboot System* button at the bottom.

AcuLink 810 0	Sateway					
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics
System State	JS	System S	Status			
Event Log		CPU 33.375 RAM 69/499 M8				
		Disk 622 MB RS485 Usa 00%	ge			
		Reboot	t System			

#### 15.2 Event Log

Users can check the historical data of the system event by clicking on *Event Log* under the *Maintenance* menu.

Event logs can be filtered by selecting the interval and level. The level includes either Error and Info.

Users can also clear all the event logs by clicking on *Clear Logs* at the bottom of the page.





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vstem Status vent Log	<	Event Log			2002		
		Interval			Level		
		Enter Interval			Select Lev	el	•
		Search Re	set				
		Timestamp	Level	Message			
		2020-03-26 08:31:30	Error	FTP post failed, url=ftp://18.188.85.147/logger3-S8P20 connect to 18.188.85.147 port 1002: Connection refuse	200207-163-2020-0 d[10 times]	03-25T01-20-00-040	0-1min.csv, port=1002, return 7:Failed to
		2020-03-26 08:31:10	Error	HTTP post failed, url=http://18.188.85.147/post, port=8 refused[10 times]	100, httpCode=0, re	turn 7:Failed to conn	ect to 18.188.85.147 port 800: Connecti
		2020-03-26 08:30:21	Error	HTTP post failed, url=http://18.188.85.147/post, port=8 refused[10 times]	100, httpCode=0, re	turn 7:Failed to conr	ect to 18.188.85.147 port 800: Connecti
		2020-03-26 08:29:50	Error	FTP post failed, url=ftp://18.188.85.147/logger3-S8P20 connect to 18.188.85.147 port 1002: Connection refuse	200207-163-2020-0 d[10 times]	03-25T01-15-00-040	0-1min.csv, port=1002, return 7:Failed to
		2020-03-26 08:29:30	Error	HTTP post failed, url=http://18.188.85.147/post, port=8 refused[10 times]	100, httpCode=0, re	turn 7:Failed to conn	ect to 18.188.85.147 port 800: Connecti
		2020-03-26 08:28:40	Error	HTTP post failed, url=http://18.188.85.147/post, port=8 refused[10 times]	100, httpCode=0, re	turn 7:Failed to conn	ect to 18.188.85.147 port 800: Connection
		2020-03-26 08:28:10	Error	FTP post failed, url=ftp://18.188.85.147/logger3-S8P20 connect to 18.188.85.147 port 1002: Connection refuse	200207-163-2020-0 d[10 times]	03-25T01-15-00-040	0-1min.csv, port=1002, return 7:Failed to
		2020-03-26 08:27:50	Error	HTTP post failed, url=http://18.188.85.147/post, port=8 refused[10 times]	100, httpCode=0, re	turn 7:Failed to conn	ect to 18.188.85.147 port 800: Connecti
		2020-03-26	Error	HTTP post failed, url=http://18.188.85.147/post, port=8	100, httpCode=0, re	turn 7:Failed to conn	ect to 18.188.85.147 port 800: Connecti





# Chapter 16: Firmware Update

The firmware of the AcuLink 810 can be updated directly from the web interface. To do so click on the **System Settings** tab and select **Firmware Update**.

This page lists the current firmware of the gateway. There are two methods in which users can update the firmware of the 810, either by using the remote firmware function or by manually updating the firmware.

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Date & Time	Firmware Update
Network Remote Access	Current Firmware Version: v1.05
Email Alarm notification	Remote Update
User Management	Check
Firmware Update	Manual Update Firmware Update File*
	Choose file Browse
	Upload

### 16.1 Manual Update

To update the firmware manually users must have the required firmware file. Start by uploading the firmware file, the file type is .aup.

NOTE: for firmware files please contact Accuenergy Technical Support.

Sector Sector Sector	0.0						~	
ite & Time Firmware Update	• open							
etwork	← → ↑ ↓	This PC > Downloads > New folder			~ ð   S	iearch New falder	P	
Current Firmware Version: v1.05	Organize - New	teider				Ş	. 0	
	* Duck access	Name	Date modified	Type	524			
Remote Update	Cecktop	AcuLink#10-v1.05.map	2020-02-20 8:50 AM	AUP File	42,405 KB	1		
Check	Sownloads	1					- 1	
	Documents	*					- 1	
Manual Update	3D Objects	1						
Firmware Update File*	Firmware	,						
Choose file	New folder							
610014 M	VI5_3.6.7						- 1	
Upload	WIFI AP Mode							
	This PC						- 1	
	Intwork						- 1	
							- 1	
		Vie name: AcuLink810-v1.05.aup			~	AUPTILE	· v	





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AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Date & Time Network	Firmware Update Current Firmware Version: v1.05
Email Alarm notification	Remote Update Check
Firmware Update	Manual Update Firmware Update File*
	AcuLink810-v1.05.aup Browse
	Upload

### Click on Upload once the file is selected.

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Date & Time Network Remote Access Email Alarm notification	Firmware Update Current Firmware Version: v1.05 Remote Update
User Management Firmware Update	Check Manual Update 27%

After the firmware has been uploaded successfully, click on **Update**.







The firmware update will take roughly 2-5 minutes to complete.



A green banner at the top of the page will be seen notifying the user that the update was successful.

				Firmware u	update success, met	er will now restart in 1	
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics	
Date & Time	2	Firmware	e Update				
Network		<u> </u>					
		Current Fire	mware Version:	v1.05			
Remote Acce	ess						
Email							
Alarm notific	ration	*****Star	t update*****				
Marminound	ation	checking	if file exist				
User Manage	ement	check if	file exist com	plete			
Firmware Un	date	start dec	rypting and va	lidating firmwa	are update package		
		validatio	· · · ·				
		succefull	y decrypting a	nd validating t	firmware update pa	ckage /opt/data/firmware/AcuLink810-v1.05.aup	
		getting c	urrent root de	vice			
		get curre	nt root device	complete			
		getting u	pdate part				
		get updat	e part complet	e			
		getting u	pdate device				
		get updat	e device compl	ete			
		formattin	ig update devic	e			
		format up	date device co	mplete			
		creating	symlink for th	e update proces	55		
		creating	symiink compie	ce			
		get undat	e part complet				
		installin	g rootfs	-			
		extractin	g files				
		install r	ootfs complete				
		copving s	vstem files				
		copy syst	em files compl	ete			
		comparing	perm dir file	s			
		compare p	erm dir files	complete			
		adjusting	fw utils for	eMMC			
		adjust fw	utils for eMM	C complete			
		setting e	nv for new roo	tfs			
		set env f	or new rootfs	complete			
		firmware	update success				





The AcuLink 810 will reboot after the firmware update. The reboot will take approximately 1-2 minutes to complete, the user will be directed to the login screen after the reboot.

ΔΓΓΙΙΞΝΞΟΓΥ	
Aculink 810 Data Acquisition Ser	ler.
Acultic of to Data Acquisition Ser	
Sign in to continue	
Access level*	
O User View reports and settings	
O Admin Edit settings, control meter	
Password*	
Enter Password	
Sign In	
Rebooting, please wait	
Rebooting, please wait.	

#### 16.2 Remote Update

In order to user the remote firmware update there needs to be an internet connection to the AcuLink. Once there is a sufficient connection to the internet users can access Accuenergy's Remote firmware server in order to update the firmware of the AcuLink 810.

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Date & Time Network Remote Access Email Alarm notification User Management	Firmware Update Current Firmware Version: v1.04 Remote Update Check
Firmware Update	Manual Update Firmware Update File* Choose file Browse Upload

Click on the *Check* button.





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If there is an update found, it will be displayed. It will show the latest version and update detail link for the firmware.

Click on *Update* to begin the updating process.

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Date & Time Network Remote Access	Current Firmware Version: v1.04
Email Alarm notification User Management Firmware Update	Update Available! Latest Version: v1.05 Update Detail: https://firmware.accuenergy.com Update
	Manual Update Firmware Update File* Choose file Browse Upload

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Date & Time Network Remote Access	Current Firmware Version: v1.04
Email Alarm notification User Management Firmware Update	Update Available! Latest Version: v1.05 Update Detail: https://firmware.accuenergy.com
	Manual Update Firmware Update File* Choose file Upload



Acul ink 810 Gateway



## AcuLink 810 Data Aquisition Server

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Date & Time Network Remote Access	Current Firmware Update
Email Alarm notification User Management	checking if file mist Check fi file mist Check fi file mist combete
Firmware Update	<pre>dersystip valianting succefully derrysting and valideting firmmare update package /opt/data/firmmare/AcuLinkBi0-v1.05.sup getting current root device complete getting update part get update part complete getting update device formatting update device formatting update device formatting update device formatting update device creating symilah for the update process creating symilah complete getting update part getting update device formatting update device formatting update device formatting update device formatting update device formatting update part getting update part getting update part getting update part getting update part</pre>

After the update is complete the AcuLink 810 will reboot, and users will be required to login to the web interface again.

ACCUENCEGY		
Sign in to continue Access level*		
User View reports and settings Admin Edit settings, control meter		
Password*		
Enter Password		
Sign In		
0		
	Aculink 810 Data Acquisition Server  Aculink 810 Data Acquisition Server  Sign in to continue  Access level*  User View reports and settings Admin Exit settings, control meter  Password*  Enter Password  Sign In	Aculink 810 Data Acquisition Server  Sign in to continue  Access level*  Subser View reports and settings Admin Edit settings, control meter  Password*  Enter Password  Sign In  C



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# **Chapter 17: Reset Button**

On the AcuLink 810 unit, there is a reset button located on the back of the unit where the Ethernet and USB ports are. This button resets the AcuLink 810 back to default meaning that all devices, data logs, alarm/event log, and device templates will be deleted. The only Device Template that will remain after the reset is the Modbus Gateway Function, however all other Modbus templates will be removed.

After the reset all network communications will be restored back to default meaning the AcuLink will have the following network settings after the reset:

- WIFI Mode Access Point (AP) mode
- Ethernet 1 192.168.8.101
- Ethernet 2 DHCP enabled

To successfully perform a reset on the AcuLink 810 gateway press and hold the reset button for 10 seconds until all LED lights on the unit are flashing. The reset will be complete when the LED lights stop flashing.









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