

AcuLink 810 Data Acquisition Gateway & Server User Manual



Copyright © 2024 V: 2.1.2

This manual may not be altered or reproduced in whole or in part by any means without the expressed written consent of Accuenergy.





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 data acquisition server. The following symbols in this manual are used to provide warning of danger or risk during the installation and operation of the equipment.



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.





Table of Contents

Chapter 1: Introduction to AcuLink 8106
1.1 Module Types6
1.2 Functional Overview
Chapter 2: Installation
2.1 Appearance and Dimensions8
2.2 Installation Checklist9
2.2.1 Optional Hardware:9
2.2.2 LAN Information9
2.2.3 Installation Safety Requirements and Considerations
2.2.4 Powering the Unit10
Chapter 3: LED Status Descriptions11
3.1 AcuMesh LEDs11
3.2 Wi-Fi LEDs
3.3 RS485 LEDs13
Chapter 4: Initializing the AcuLink 81014
4.1 Accessing the AcuLink 810 Webpage14
4.1.1 Method 1 - Ethernet Direct Connection14
4.1.2 Method 2 - Wi-Fi Wireless Connection
4.1.3 Login AcuLink 81019
4.2 Dashboard20
4.2.1 About Webpage21
Chapter 5: Device Templates23
5.1 Modbus Templates23
5.1.1 Import Template24
5.1.2 New Template25
5.1.3 Typical Energy Meter Template30
5.1.4 Creating Template from CSV32
5.2 BACnet Template
5.2.1 Import Template35
5.2.2 Convert from EPICS File



Chapter 6: System Settings	38
6.1 Network	38
6.1.1 Ethernet	38
6.1.2 Wi-Fi	39
6.1.3 HTTP Proxy	41
6.1.4 RSTP	41
6.1.5 Default Routing Webpage	42
6.2 Whitelist Management	43
6.3 Time & Date	44
6.4 Remote Access	45
6.5 User Management	46
6.5.1 General	46
6.5.2 User Configuration	47
6.5.3 Role Configuration	47
6.5.4 Password Policy	48
6.5.5 Password Management	49
6.6 Certificate Management	49
6.7 Configuration Management	49
6.8 Emergency Mode	51
Chapter 7: Protocols	52
7.1 Modbus	52
7.1.1 RS485 Devices	52
7.1.2 USB Devices	53
7.1.3 Adding Modbus RTU Device	53
7.1.4 TCP Devices	56
7.1.5 Adding Modbus TCP Device	56
7.1.6 Modbus Gateway Function	59
7.2 AcuMesh	60
7.2.1 Local Configuration	60
7.2.2 Scan & Remote Configuration	62
7.2.3 AcuMesh Diagnostics	65
7.2.4 Adding AcuMesh Device	66



	7.2.5 Search Modbus Device	69
	7.3 Modbus Polling	71
	7.4 BACnet	72
	7.4.1 BACnet MS/TP Assignment	72
	7.4.2 Adding BACnet MS/TP Device	74
	7.4.3 BACnet IP Configuration	76
	7.4.4 Adding BACnet IP Device	77
	7.4.5 Search BACnet Device	79
	7.4.6 BACnet Gateway	81
	7.4.7 BBMD	82
	7.5 MQTT Protocol	83
	7.5.1 MQTT General Settings	83
	7.5.2 MQTT Authentication	84
	7.5.4 Last Will & Testament	85
	7.5.5 Device Publishing	86
	7.6 Azure loT	87
	7.6.1 Creating Azure IoT Device on Azure Portal Server	88
	7.6.2 Create an IoT Devices /IoT Edge Device in the Azure Portal	89
	7.6.3 Retrieving Connection String in the Azure Portal	91
	7.6.4 Configure AcuLink 810 from Azure	91
	7.7 SNMP	92
	7.7.1 MIB File	93
	7.8 MBus	94
	7.8.1 Adding MBus Device	94
	7.9 Virtual Device	98
	7.9.1 Adding Virtual Parameter	99
	7.10 Google IoT	
	7.10.1 General	101
	7.10.2 SSL/TLS	102
	7.10.3 Device to Publish	102
Cha	apter 8: Device Readings	104
	8.1 Parameter Configuration	105





8.2 Writing to Modbus Device107
Chapter 9: Digital Inputs
9.1 Device Alarm
9.2 Alarm Log114
9.3 Email Alarm Notifications114
Chapter 10: Data Logging 117
10.1 Data Loggers117
10.1.1 Rapid Logger118
10.2 Post Channels
10.2.1 HTTP Post Method120
10.2.2 FTP Post Method121
10.2.3 SFTP Post Method122
10.3 Downloading Data123
10.4 AcuCloud
10.5 Post Historical Data127
Chapter 11: Network Diagnostics 129
Chapter 12: Maintenance 134
12.1 System Status
12.2 Event Log
Chapter 13: Firmware Update 135
13.1 Auto Firmware Update135
13.2 Manual Update135
13.3 Remote Update138
Chapter 14: Reset Button 140



5

Chapter 1: Introduction to AcuLink 810

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 810 collects and logs time-stamped data from connected downstream serial or Ethernet devices and can store the data in its local 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 energy management system or any end user software platform. There is no software installation required for the AcuLink 810, all configuration is done from the gateway's webpage.

1.1 Module Types

AcuLink 810-X: Standard data acquisition server and gateway with one 2.4 GHz Wi-Fi connector and no built- in AcuMesh.

AcuLink810-900: Based on AcuLink810-X, AcuLink810-900 includes one 2.4 GHz Wi-Fi connector and a built-in 900MHz AcuMesh used in regions including North and South America, Oceania, and certain parts of Asia.

AcuLink810-868: Based on AcuLink810-X, AcuLink810-868 includes one 2.4 GHz Wi-Fi and a builtin 868MHz AcuMesh used mostly in regions including Europe, Middle East, Africa, and certain parts of Asia.

1.2 Functional Overview

Hardware Specifications

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

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
- Communication
- Protocol Support: Modbus RTU, Modbus TCP, BACnet MS/TP, BACnet IP, HTTP/ HTTPS, FTP, SFTP, NTP, SMTP, RSTP, MQTT, MBus SNMP, SunSpec
- LAN: 2 x RJ45 10/100 Ethernet, full half duplex, auto polarity
- Wi-Fi: 802.11 b/g/n, 2.4GHz
- USB: USB expansion port, USB 2.0 Host

Inputs

- RS485 Port: RS485 Modbus supports up to 32 external devices (expandable)
- Baud Rate: 9600-115200 bps
- USB Port: Modbus via RS485-to-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)

Environment

• North America: -25° to 70°C (-13°F to 158°F), 90% RH, non-condensing



Chapter 2: Installation

2.1 Appearance and Dimensions

Physical Size: 6.3" x 3.5" x 1.27" (159.9mm x 90mm x 32.2mm)

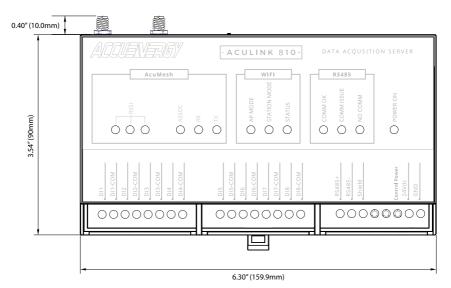
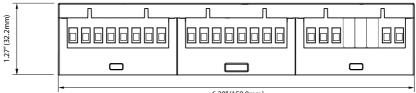


Figure 2-1 AcuLink 810 Layout (Front View)



6.30" (159.9mm)



8

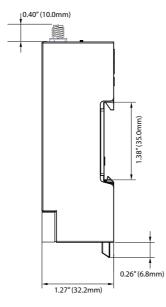


Figure 2-2 AcuLink 810 Layout (Top and Side View)

2.2 Installation Checklist

The following materials are required for the AcuLink 810 installation:

- AcuLink 810 Data Acquisition Server & Gateway
- Ethernet Category 5 cable (required for LAN or direct computer to AcuLink 810 connection)
- Power supply (24Vdc)
- Wi-Fi Antenna
- AcuMesh Antenna

2.2.1 Optional Hardware:

- · Additional Modbus RTU devices
- Two wire Modbus/RS485 connection

2.2.2 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)



2.2.3 Installation Safety Requirements and Considerations

- Field wiring must have a rating of higher than 70°C(158°F); stranded wiring
- Intended for indoor use
- Altitude: 2,000 meters
- Overvoltage Category: II
- Pollution Degree: 2

2.2.4 Powering the Unit

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

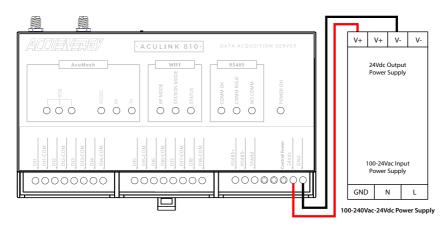


Figure 2-3 AcuLink 810 Power Supply





Chapter 3: LED Status Descriptions

There are total of thirteen (13) LEDs on the AcuLink 810 data acquisition server and gateway, and each represents different functions pertaining to the unit.



Figure 3-1 AcuLink 810 LEDs

The LEDs are divided into three groups plus a blue LED that indicates the power status of the AcuLink 810. The groups are AcuMesh LED, Wi-Fi LED, and RS485 LED.

3.1 AcuMesh LEDs

A total of six LED indicators are dedicated to the AcuMesh status states.

RSSI

- There are three RSSI LEDs that light up green to indicate the signal strength of the incoming signal.
- Three green LEDs indicates an excellent signal strength.
- Two green LEDs indicates a good signal strength.
- One green LED indicates a poor signal strength.
- No LED lights indicates a very poor to no signal strength.

ASSOC

- Solid red LED light indicates that the transceiver is powered ON or is communicating.
- A brief flashing red LED light happens during a RF transmission.



RX

• Yellow LED light indicates that the transceiver is receiving data.

ТΧ

• Green LED light indicates that the transceiver is transmitting data.

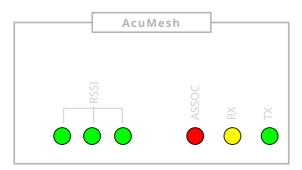


Figure 3-2 AcuLink 810 AcuMesh LEDs

3.2 Wi-Fi LEDs

The Wi-Fi has a total of three LEDs which are related to the Wi-Fi status states.

AP MODE

• When illuminated green, it signifies that the Wi-Fi is operating in Access Point Mode.

STATION MODE

• Green illumination indicates that the Wi-Fi is functioning in Station Mode.

STATUS

· Green illumination indicates that the Wi-Fi is working and functioning properly.





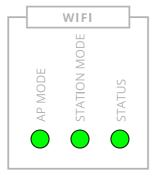


Figure 3-3 AcuLink 810 Wi-Fi LEDs

3.3 RS485 LEDs

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

сомм ок

• Green illuminated LED light indicates that all RS485 and USB devices in the RS485 network are online.

COMM ISSUE

Yellow illuminated LED light indicates that some of the devices are online and some devices are offline in the RS485 network.

NO COMM

• Red illuminated LED light indicates that all RS485 devices in the RS485 network are offline.

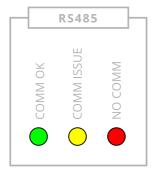


Figure 3-4 AcuLink 810 RS485 LEDs





Chapter 4: Initializing the AcuLink 810

The AcuLink 810 has a remote webpage that users can access to configure the gateway settings and view device data. The AcuLink 810 gateway has two Ethernet ports and supports communication with a 2.4GHz Wi-Fi connector.

The default IP addresses and modes are:

Ethernet 1: 192.168.8.101

Ethernet 2: DHCP

Wi-Fi: Access Point Mode

The following outlines the different methods that can be used when accessing the AcuLink 810 webpage for the first time. Each method below will explain the step-by-step instructions to set up the webpage.

4.1 Accessing the AcuLink 810 Webpage

4.1.1 Method 1 - Ethernet Direct Connection

For the direct connection method, there must be an Ethernet connection from the AcuLink 810's Ethernet 1 port to a computer.

ACCENERGY	ACULINK 810.	DATA ACQUSITIO	DN SERVER
AcuMesh		R5485	2
		O COMM CK	O POWER ON
011 011-com 012-com 012-com 013-com 014-com	015 015-00M 015-00M 016-00M 016-00M 018-00M 018-00M	R5485+ 85485- Shield	Zand Power Zandc GND
00000000	00000000	0000	0000

Figure 4-1 AcuLink 810 Ethernet Direct Connection to PC

To access the webpage, the computer IP address must be configured within the same subnet as the AcuLink 810 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 computer's IP:

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

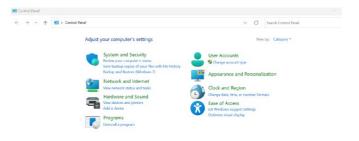


Figure 4-2 Windows Control Panel

2. Select Network and Sharing Center

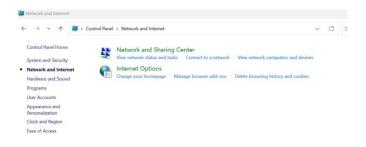


Figure 4-3 Windows Network and Internet Settings



3. From the left panel of the screen, select Change adapter settings.

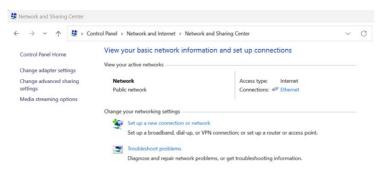


Figure 4-4 Windows Change Adapter Settings

4. Double-click Ethernet, or right-click Ethernet and select Properties from the menu.



Figure 4-5 Windows Network Status

5. The following window will open, click on Properties button.



Figure 4-6 Windows Ethernet Status



161

6. The Ethernet Properties window will open. Select **Internet Protocol Version 4 (TCP/IPv4)** and click on the **Properties** button.

Connect using:		
Intel(R) Etheme	et Controller (3) 1225-V	
		Configure
This connection uses	the following items:	
QoS Packet	Scheduler ocol Version 4 (TCP/IPv4)	
Internet Prot Microsoft Ne Microsoft LL Internet Prot	ocol Version 4 (TCP/IPv4) twork Adapter Multiplexor Proto DP Protocol Driver ocol Version 6 (TCP/IPv6)	
Microsoft Ne	ocol Version 4 (TCP/IPv4) twork Adapter Multiplexor Proto DP Protocol Driver ocol Version 6 (TCP/IPv6)	Properties

Figure 4-7 Windows Ethernet Properties

7. 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 computer's 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 to 254. For example, an IP address of 192.168.8.10 can be used.

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

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.					
Obtain an IP address autom	atically				
O Use the following IP address					
IP address:	192	. 168	. 8	. 10	
Subnet mask:	255	. 255	. 255	. 0	
Default gateway:					1
Obtain DNS server address - O Use the following DNS server Preferred DNS server: Alternate DNS server:			•		
Validate settings upon exit					nced

Figure 4-8 Windows TCP/IPv4 Properties





Once all settings are complete click on the **OK** button to confirm the network changes. Next, open an internet browser and from the address bar type in the AcuLink 810 IP address **192.168.8.101**. The browser will redirect to the login screen and the user will be prompted to enter the sign-in credentials.

4.1.2 Method 2 - Wi-Fi Wireless Connection

The AcuLink 810 webpage can be accessed wirelessly with a Wi-Fi connection. Ensure the Wi-Fi antenna is installed on the AcuLink 810 before enabling.

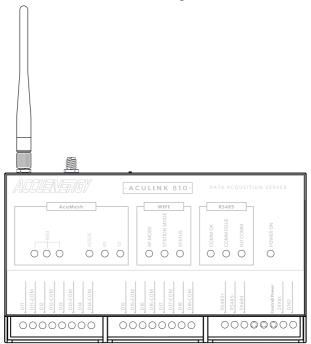


Figure 4-9 AcuLink 810 Wi-Fi Antenna

By default, the AcuLink 810 has its Wi-Fi mode set as AP (Access Point) mode. This mode allows the AcuLink 810 to act as a wireless access point for other wireless devices to connect and access the gateway.

To connect to the AcuLink 810 AP mode, search for the SSID in the list of available wireless networks.





The SSID will be by default **AcuLink810-WiFi-S8Pxxxxxxx**, where the **S8Pxxxxxxxx** is the unique serial number for the AcuLink gateway. The serial number of the AcuLink 810 can be found on the side of the unit. The password for the network **accuenergy**.

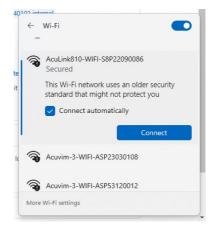


Figure 4-10 Connect AcuLink 810 Wi-Fi on Windows

Once connected to the gateway's wireless network, open an internet browser and in the address bar enter the IP address 192.168.100.1. The browser will redirect the web server login screen and the user will be prompted to enter the sign-in credentials.

4.1.3 Login AcuLink 810

To log into the webpage, a username and password must be entered. The default username is **admin**, and the password is also **admin**.

NOTE: For the best performance, the recommended internet browsers to access the AcuLink 810 webpages are Google Chrome, or Firefox.





ACCUENERGY	
Aculink 810 Data Acquisition Serve	ər
Sign in to continue	
Access Level*	
Viewer Admin	
Password*	
Enter Password here	
Sign In	
Sign In	

Figure 4-11 AcuLink 810 Login Window

4.2 Dashboard

After signing into the AcuLink 810 webpage, users are directed to the **Dashboard** webpage. The Dashboard provides the user with a summary of all the offline devices as well as devices under the Alarms section. The Alarms section includes the **Up Since** time, which shows the last time when the AcuLink 810 was powered on or rebooted.

The menu tabs on the top of the webpage allow users to access different settings within the gateway.

The header at the very top of the webpage displays the time and date of the AcuLink 810. The footer on the bottom of the webpage includes contact information and links to the Accuenergy website for further details.





uLink 810 Gateway		🕪 Logout	Wednesday, February 7, 2024	4:27 PM O About AcuLink 810	
Devices Data Log	System Settings Protocols 1	emplates			
ashboard	Dashboard				
Jarm Logs	Offline Devices				
Adbus Devices	Device Name	Interface 🗧	Protocol	Serial Number	
ABus Devices	AHB22070452	RS485	Modbus RTU	AHB22070452	
ligital Inputs	E3T16090972	RS485	Modbus RTU	E3T16090972	
firtual Devices	E3T18102365	R\$485	Modbus RTU	E3T18102365	
	E3T19052339	R\$485	Modbus RTU	E3T19052339	
	EHM19100047	RS485	Modbus RTU	EHM19100047	
	19495028E61E3C07	Ethernet	MBus	GWF.19495028.3C.07	
	Alarms				
	Device Name	Alarms 🗧 Interfac	e Protocol	Serial Number	
			No Data		
	Up since Monday, February 5, 2	024 8:31 AM			
AcuLini	k 810	Support	F	ssource	
	quisition Server	Call or email for engineering supp Phone: +1 416 497 4100		vine guides, manuals, videos and diagrams ailable online	
		Email: Support@accuentrgy.com		anable change w// acculencingy.com	

Figure 4-12 AcuLink 810 Dashboard

4.2.1 About Webpage

The AcuLink 810 Device Information section can be found under the **About** webpage. The About menu tab is located on the top right corner of the dashboard. This webpage provides an overview of the AcuLink 810 model number, serial number, Hardware and Firmware versions, and the Ethernet/Wi-Fi MAC addresses.

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



AcuLink 810 Data Acquisition Gateway & Server

Device Information		
Setting	Value	
Name	AcuLink 810 Test Maximum 40 characters	
Location	Enter Location Maximum 20 characters	
Description	AcuLink 810 Test Description Maximum 40 characters	
Model	AcuLink810-X	
Serial Number	S8P22090086	
Hardware Version	v1.09	
Firmware Version	v0.72	
Last Updated	2023-12-14 09:02:28	
Ethernet 1 MAC Address	ec:c3:8a:21:0d:a9	
Ethernet 2 MAC Address	ec:c3:Ba:21:0d:aa	
WiFi MAC Address	00:25:ca:84:e8:6d	

Figure 4-13 AcuLink 810 About Webpage





Chapter 5: Device Templates

The AcuLink 810 requires a device template to communicate and read data from any Modbus or 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), read input registers (Function Code 4) and write single holding register (Function Code 06). The Modbus device template also supports several data type formats to read different types of Modbus parameters.

A device template needs to be created first before using the AcuLink 810 to read device data over the Modbus or BACnet protocol. Within the AcuLink 810 webpage, users can create, modify, and convert custom templates using different formats (CSV, EPICS, etc.). Users can view the template configuration from the **Templates** menu tab, from where they can create or add both Modbus and BACnet templates.

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

5.1 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 must first be uploaded and installed onto the unit.

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

kouLink 810 Tes	11									60 Logout	Monday, December 4, 2023 9:02 AM	0 Abos
Devices	DataLog	Syste	em Settings	Protocols	Templates	Maintenance	Diagnostics					
Modbus Temp	state		Modbus T	femplate								
			Installed	import	New Template	New Typical Er	ergy Meter Template	Convert From CSV File				
			Official									
			Template f	Name				Last Update C				
			AcuDC 243	v1.82				2020-06-11 14:54:29				
			AcuRev 120	20-1.02				2020-06-12 13:52:50				
			AcuRev 130	20.v1.02				2020-06-17 14:12:42				
			AcuRev 131	10-104				2022-11-24 15:34:58				
			AcuRev 200	20-1DM v162				2020-06-18 14:57:15				
			AcuRev 202	20-1EM v102				2020-06-18 14:57:50				
			AcuRev 202	20-2DM +162				2020-06-18 14:55:49				
			AcuRev 202	20-2EM v102				2020-06-11 17:58:30				
			AcuRev 210	00 v1 00				2021-02-01 13:30:51				
			Acustim II v	162				2020-06-08 12:15:27				
			Previous	1 2 N	ext 10 page							
			Customize	d								
			Template I	Neme			Last Update		Actions			







Customized Templates

If there are custom templates on the AcuLink 810 users will have the following action buttons available with the following meaning:



Allows users to download the '.def' format template file.



Allows users to create a new template based on that existing template.



Allows users to create a new version based on that existing template.



Allows users to delete the template.

5.1.1 Import Template

To upload a new device template, click on the **Import** menu tab. All Accuenergy device templates can be found in the Remote Update section of the webpage. To use the remote upload function, users must ensure they have a connection to the internet. For third party device templates, users can upload and install templates manually.

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

icuLink 810 Test	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Modbus Template	c Modbus Template
	Installed Import New Template New Typical Energy Meter Template Convert From CSV File
	Template File*
	Choose file Browse
	Upload
	Remote Template
	Check

Figure 5-2 AcuLink 810 Import Modbus Templates



24

5.1.2 New Template

Under the **New Template** menu tab users can create and build their own Modbus template. There are four steps required in building the template which includes:

- 1) Device Info
- 2) Create Block
- 3) Create Parameter
- 4) Save

1. Device Information

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

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

AcuLink 810 Test						0+ Logout Mon
Devices Data Log Sys	tem Settings Protocols	Templates Maintenar	nce Diagnostics			
Modbus Template	< Modbus Template					
	Installed Import	New Template New Typic	cal Energy Meter Temp	late Convert From CSV File		
	1. Device Info 2. Crea	ite Block 3. Create Parame	eter 4. Save			
	Template Name		Version			
	Test Template		1.0			
	Template name must be defined a	ind unique	Version for the same temp	late must be unique (e.g. v1.01)		
	Save Device Info					Prev Next
	Block Table					
	Index Start	t Hex Star	rt Count	Function	Range	Action
				No Data		

Figure 5-3 AcuLink 810 Device Information

2. Create Block

The second step involves the creation of the register blocks for the Modbus Device.

- 1. Select the Modbus Function Code of the register block (i.e. Read Holding Registers, Read Discrete Input, Read Coils, Read Input Registers, Write Single Register, Write Multiple Registers, Write Multiple Coils)
- 2. Select either hexadecimal or decimal format under Address Format, then in the Start field, enter the starting address of the register block.
- 3. Enter the number of registers in this block in the Count field.





AcuLink 810 Test G Logout Monday, December 4, 2023 9:18 AM Devices Data Log System Settings Modbus Template Kodbus Template Installed Import New Template New Typical Energy Meter Template Convert From CSV File 2. Create Block 3. Create Parameter 4. Save 1. Device Info Address Forma Function READ_HOLDING_REGISTERS Hex 0x 4000 Count 20 Min Value: Prev Next Block Table

AcuLink 810 Data Acquisition Gateway & Server

Figure 5-4 AcuLink 810 Create New Modbus Templates

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

AcuLink 810 Test							69 Logout	Monday, December 4, 2023 9:16 AM
Devices Data Log Syste	em Settings P	Protocols Temple	ates Mair	ntenance Diagnostics				
Modbus Template	Modbus Ten	nplate						
	Installed	Import New Tem	plate New	Typical Energy Meter Template	Convert From CSV File			
	1. Device Info	2. Create Block	3. Create P	arameter 4. Save				
	Function*			Address Format		Start		
	READ_HOLDI	NG_REGISTERS	4	Hex	٠	0x 4000		
	Modbus function co	ode to request the block				Block starting address in hexadec Range: 0x0 - 0xffffff	mal	
	Count							
	20							
	Block element quan Min Value: 1	ntity						
	Save Block						Prev	Vext
	Block Table							
	Index Sta	rt Hex Start	Count	Function	Range	Action		
	0 0x4	4000 16384	20	READ_HOLDING_REGISTERS	Block 0: 0x4000 - 0:	x4013 : 20	Edit Delete	

Figure 5-5 AcuLink 810 Saved Modbus Templates

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





3. Create Parameter

The third step includes adding parameters required for the template.

Users need to select what block the parameter resides in and 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, input the desired tab name and press 'Enter' for tab creation. Examples include 'Energy' or 'Real-time Data.' Upon completing the template, users can locate their created parameters under the designated tab. Subsequently, select the tab from the drop-down menu. Multiple tabs can be created using the same method.

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

Address: Enter in the Modbus register address for the parameter. This address can be either hexadecimal or decimal format.

Multiplier: Users can input a numerical multiplier on the parameter.

Post Label: Users can define a post label name for the parameter. The post label is used whenever the device data is downloaded or sent to an external server, where the generated CSV file will 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, and hex.

Byte Order: Allows for the parameter to be specified for devices that may require the byte order to be swapped to read the parameter correctly.

Unit: An optional field that users can either select a provided unit or input a customized unit.





AcuLink 810 Gateway			
Devices Data Log	System Settings Protocols Templates Main	tenance Diagnostics	
Motiva Templote	Loncer Mr. 2 Cares Bar. 2 Core of A Bar. 2 The Core of A Core of A The Core of A Core of A The Core of A Core of A The Core of A Core of A Core of A The Core of A Core of A Core of A The Core of A Core of A Core of A The Core of A Core of A Core of A The Core of A Core of A Core of A Core of A The Core of A Core of A Core of A Core of A The Core of A Core of A Core of A Core of A Core of A The Core of A Core of A The Core of A Co	ypical Energy Meter Template Convert From CSV P	Address
	Multipler 1 +0.01 Post Label	Data Format*	Byte Order*
	Freq_Hz	R.O.ST 8	NORMAL
		uction Runge Add_yci_cland_itidSTERS Biox & belock	Pin Bar
	0 0x4000 16384 1 R		

Figure 5-6 AcuLink 810 Create Parameters

Once all parameter settings are configured click on the **Save Parameter** button. Users can then view the parameter under the Block Table and clicking the **Detail** button. Under the Detail section users can modify the existing parameter by clicking the **Edit** button and users can remove the existing parameter by selecting the **Delete** button.

Save Pa Block T	arameter able					Prev
Index	Start Hex	Start	Count	Function	Range	Action
0	0x4000	16384	1	READ_HOLDING_REGISTERS	Block 0: 0x4000 - 0x4000 : 1	Detail Edit Delete

Figure 5-7 AcuLink 810 Save Parameters

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 the **Prev** button to go back and alter any blocks or parameters as needed.





Modbus	Template									
Installed	i Import	New Temp	olate Ne	w Typical Energy	gy Meter Template	Convert From	m CSV File			
1. Devic	e Info 2. Cr	eate Block	3. Create	Parameter	4. Save					
Configurat	ion completed	17								
proceed to	save device o	nly if model	name and v	ersion number	have been defined.					
f you leav	e or refresh the	e page witho	ut saving it	to database, al	l locally saved config	gurations will be	e discarded.			
Create T	emplate									Prev
Block Ta	ble									
Index	Start Hex	Start	Count	Function		Range	•		Action	
0	0x4000	16384	20	READ_HOLD	DING_REGISTERS	Block	0: 0x4000 - 0x4	013 : 20	Detail	Edit Delete
Index	Tab		Label		Address Hex	Address	Multiplier	Post Label	Unit	Action
0	Real Time I	Vetering	Freque	ency	0x4000	16384	1	Freq_Hz	Hz	Edit Delete
1	Real Time I	Metering	Phase	A Voltage	0x4002	16386	1	Va_V	v	Edit Delete
2	Real Time I	Metering	Phase	B Voltage	0x4004	16388	1	Vb_V	v	Edit Delete
3	Real Time I	Vetering	Phase	c Voltage	0x4006	16390	1	Vc_V	v	Edit Delete

Figure 5-8 AcuLink 810 Save Modbus Templates

After reviewing all details of the Modbus template click on the **Create Template** button, users will be redirected back to the **Installed** menu tab of the Modbus Template webpage where the newly created template can be seen under the **Customized** section at the bottom of the webpage.

uLink 810 Test				December 4, 2023 1
Devices Data Log System	m Settings Protocols Templates Maintenance Dia	ignostics		
Modbus Template	AcuRev 2100 v1.00	2021-02-01 13:30:5		
	Acuvim II v1.02	2020-06-08 12:15:2	1	
	Previous 1 2 Next 10/page			
	Customized			
	Template Name	Last Update	Actions	
	Starline v0.01	2019-07-24 13:53:20	土 D 📴 🗖 🖿	
	SunGrow_SP00019_fronius_format <001	2019-08-08 10:53:42	🛓 D 🧭 🛢 🖻	
	SunSpecInverter v0.01	2019-08-08 10:54:18	土 D 🧭 💷 🖿	
	Sungrow_final v0.01	2019-07-24 13:53:49	🛨 D 🧭 🖬 🖻	
	Superstatic440 v1.00	2022-03-22 10:51:43	🛓 🕽 🧭 🔳 🖻	
	Superstatic440-Supercal531 v1.00	2022-03-22 10:51:59	🛓 D 🕜 🗐 🖪	
	TESTDataAireDAP3 v0.01	2019-08-07 16:41:10	🛓 D 🕜 🗿 🖥	
	TESTofMMODofBASI v0.01	2019-07-24 15:46:34	🛓 D 🤓 💷 🖿	
	TESTsmallDataAireDAP3 v0.01	2019-08-07 16:44:24	🛓 🗅 😢 🖬 🖿	
	Test Template v1.0	2023-12-04 10:15:22	🛓 D 📴 🗖 🖥	
	Previous 1 18 19 20 21 22 27 Ne	xt 10/page •		

Figure 5-9 AcuLink 810 Installed Modbus Templates





5.1.3 Typical Energy Meter Template

The Typical Energy Meter Template webpage allows users to create a Modbus Template for thirdparty devices and has the ability to post data to the cloud-based energy management software **AcuCloud**. To create a device template that allows third-party devices to post data to the AcuCloud software, users need to click on the **Typical Energy Meter Template** menu tab.

This webpage 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 the Save Device Info button.

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 the **Save Block** button, users can create multiple blocks for the device template. All created blocks will appear in the block table located further down the webpage.

AcuLink 810 Test			(# Logout	Monday, December 4, 21
Devices Data Log Syste	m Settings Protocols Templates Mainten	ance Diagnostics		
Modbus lemplate	Modbus Template	ical Energy Meter Template Convert From CSV File		
	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	Version for the same template must be unique (eg. v1.01)		
	Function*	Address Format	Start	
	READ_HOLDING_REGISTERS 0	Hex. 0	0x 4000	
	Modeus function code to request the block		Block starting address in treadecimal Range: Oxl + Oxfffff	
	20			
	Block element quantity Min Value: 1			
	Save Block			



3. Parameter Table

The parameter table has all the parameters that are supported on the AcuCloud 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 the parameter.

On the Edit webpage 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 the Save button.

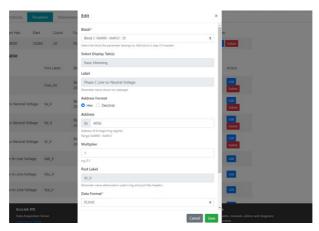


Figure 5-11 AcuLink 810 Edit Parameter Table

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

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



AcuLink 810 Test			
Devices Data Log Sys	tem Settings Protocols Templates Maintenance	Diagnostics	
Modbus Template	Modbus Template		
	Installed Import New Template New Typical Ene	rgy Meter Template Convert From CSV File	
	Official		
	Template Name 0	Last Update	
	AcuDC 243 v102	2020-05-11 14:54:29	
	AcuRev 1200 v102	2020-05-12 13:52:50	
	AcuRev 1309 v1.02	2020-06-17 14:12:42	
	AcuRev 1310 v104	2023-11-24 15:34:58	
	ApuRev 2020-1DM v1.02	2020-05-18 14:57:15	
	AcuRev 2020-1EM v102	2020-05-18 14:57:50	
	AcuRev 2020-2DM v1.02	2020-06-18 14:56:49	
	AcuRev 2020-2EM stop	2020-06-11 17:58:30	
	AcuRev 2100 v100	2021-02-01 13:30:51	
	Acuvim II v102	2020-06-08 12:15:27	
	Previous 1 2 Next Hipage 0		
	Customized		
	Template Name 3	Last Update	Actions
	401WGLOR v1.00	2022-03-21 17:20:55	🔺 🖸 🔐 🔲 🖿
	A10DerisSocomecTEST vs.cn	2019-08-07 12:20:27	🔺 D 🔐 🔲 🖻
	A10DerisSocomecTEST2 v0.01	2019-08-07 12:21:06	🔺 D 🖉 🖬 🗈
	ADAM4017 vs.c1	2019-08-07 16:19:14	🔺 D 🥨 🔲 🖿
	Acuvim II V3 v0.02	2023-03-31 17:15:13	🔺 D 🖉 🔳 🖿
	Acuvim I, V4 vo.04	2023-04-14 09:05:45	🔺 D 🕼 🔳 🖻
	Advantech/V4ADAM6017 vo.m	2019-06-19 17:02:22	🔺 D 🕼 🔲 🖻
	Advantech/4ADAM6012_volat	2019-07-25 16:27:31	🔺 D 🥨 🔳
	Alpha_CXC_DC v0.01	2019-08-01 11:52:10	🔺 D 🖉 🔳 🗈
	Ametek_JEMSTAR v0.01	2019-08-07 14:40:57	🔺 D 🥨 🔲 🖻
	Previous 1 2 3 27 Next Pirpup		

Figure 5-12 AcuLink 810 Customized Templates

5.1.4 Creating Template from CSV

The AcuLink 810 supports a CSV-to-Modbus template converter directly from its webpage. To access this converter, click on the **Convert From CSV File** menu tab on the Modbus Template webpage.

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 webpage 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 to successfully convert the file into a Modbus template file.

Installed Import New Template	New Typical Energy Meter Template	Convert From CSV File		
femplate Name	Version		CSV File*	
CSV Convert Test	1.01		sample.csv	Browse







Below is the sample CSV file for the CSV-to-Modbus template converter.

AutoSave 🔵 off	A B ₽ १×С	••••			
Home Insert	Draw Page Layout	Formulas Data	Review View Automate 🖓 Tell me		N. 763
Paste Cut	Calibri (Body)	• 12 • A A	프 = =	General ~	· 📰 • 🗊 •
Paste Sormat	B I <u>U</u> → ⊞	• <u>&</u> • <u>A</u> •	🚍 🚍 🗏 🖽 🏝 🧱 Merge & Center 🗸	\$ ~ % 9 50 -30	Conditional Format Formatting as Table
Possible Data Lo	ee Some features might b	a lost if you save this w	orkbook in the comma-delimited (csv) format. To pre	ecorve these features, save it in	an Excel file format

	В										M	N	
label	address	dataFormat	byteOrder	slope	postLabel	cloudEnable	c units	block	tab				
Frequency	16384	FLOAT	NORMAL	1	Freq_Hz	FALSE	Hz	16384(10)	Basic Metering				
Phase A Line	16386	FLOAT	NORMAL	1	V1	TRUE	v	16384(10)	Basic Metering				
Phase B Line	16388	FLOAT	NORMAL	1	V2	TRUE	v	16384(10)	Basic Metering				
Phase C Line	16390	FLOAT	NORMAL	1	V3	TRUE	v	16384(10)	Basic Metering				
Average Line	16392	FLOAT	NORMAL	1	Vnavg_V	TRUE	v	16384(10)	Basic Metering				
System Activ	16450	FLOAT	NORMAL	0.001	DMD_P_kW	TRUE	kW	16450(6)	Demand				
System Reac	16452	FLOAT	NORMAL	0.001	DMD_Q_kvar	TRUE	kvar	16450(6)	Demand				
System Appa	16454	FLOAT	NORMAL	0.001	DMD_S_kVA	TRUE	kVA	16450(6)	Demand				
System Impo	16456	UINT32	NORMAL	0.1	EP_IMP_kWI	TRUE	kWh	16456(18)	Energy				
System Expo	16458	UINT32	NORMAL	0.1	EP_EXP_kWh	TRUE	kWh	16456(18)	Energy				
System Impo	16460	UINT32	NORMAL	0.1	EQ_IMP_kva	TRUE	kvarh	16456(18)	Energy				
System Expo	16462	UINT32	NORMAL	0.1	EQ_EXP_kvar	TRUE	kvarh	16456(18)	Energy				
System Tota	16464	UINT32	NORMAL	0.1	EP_TOTAL_k	TRUE	kWh	16456(18)	Energy				
System Net	16466	INT32	NORMAL	0.1	EP_NET_kW	TRUE	kWh	16456(18)	Energy				
System Tota	16468	UINT32	NORMAL	0.1	EQ_TOTAL_	TRUE	kvarh	16456(18)	Energy				
System Net I	16470	INT32	NORMAL	0.1	EQ_NET_kva	TRUE	kvarh	16456(18)	Energy				
System Appa	16472	UINT32	NORMAL	0.1	ES_kVAh	TRUE	kVAh	16456(18)	Energy				
Phase A Imp	17952	UINT32	NORMAL	0.1	EPa_IMP_kW	FALSE	kWh	17952(30)	Energy				
Phase A Expo	17954	UINT32	NORMAL	0.1	EPa_EXP_kW	FALSE	kWh	17952(30)	Energy				
Phase B Imp	17956	UINT32	NORMAL	0.1	EPb_IMP_kW	FALSE	kWh	17952(30)	Energy				
Phase B Expo	17958	UINT32	NORMAL	0.1	EPb_EXP_kW	FALSE	kWh	17952(30)	Energy				
Phase C Imp	17960	UINT32	NORMAL	0.1	EPc_IMP_kW	FALSE	kWh	17952(30)	Energy				
Phase C Expc	17962	UINT32	NORMAL	0.1	EPc_EXP_kW	FALSE	kWh	17952(30)	Energy				
Phase A Imp	17964	UINT32	NORMAL	0.1	EQa IMP kv	FALSE	kvarh	17952(30)	Energy				
Phase A Expo	17966	UINT32	NORMAL	0.1	EQa EXP kv	FALSE	kvarh	17952(30)	Energy				
Phase B Imp	17968	UINT32	NORMAL	0.1	EQb_IMP_kv	FALSE	kvarh	17952(30)	Energy				
Phase B Expo	17970	UINT32	NORMAL	0.1	EQb EXP kv	FALSE	kvarh	17952(30)	Energy				
Phase C Impo	17972	UINT32	NORMAL	0.1	EQc IMP kv	FALSE	kvarh	17952(30)	Energy				
Phase C Expc	17974	UINT32	NORMAL	0.1	EQc_EXP_kva	FALSE	kvarh	17952(30)	Energy				
Phase A App	17976	UINT32	NORMAL	0.1	ESa kVAh	FALSE	kVAh	17952(30)	Energy				
Phase B App	17978	UINT32	NORMAL	0.1	ESb kVAh	FALSE	kVAh	17952(30)	Energy				
Phase C Appa	17980	UINT32	NORMAL	0.1	ESc_kVAh	FALSE	kVAh	17952(30)	Energy				
					-								

Figure 5-14 AcuLink 810 Modbus Template Example

Once all information and CSV file have been uploaded, users need to click on the **Upload** button.

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





AcuLink 810 Data Acquisition Gateway & Server

AcuRev 1200 v1.02	2020-06-12	13:52:50
AcuRev 1300 v1.02	2020-06-17	14:12:42
AcuRev 1310 v1.04	2023-11-24	15:34:58
AcuRev 2020-1DM v1.02	2020-06-18	14:57:15
AcuRev 2020-1EM v1.02	2020-06-18	14:57:50
AcuRev 2020-2DM v1.02	2020-06-18	14:56:49
AcuRev 2020-2EM v1.02	2020-06-11	17:58:30
AcuRev 2100 v1.00	2021-02-01	13:30:51
Acuvim II v1.02	2020-06-08	12:15:27
Previous 1 2 Next 10/page +		
Customized		
Template Name ≑	Last Update ≑	Actions
CG-EM26-96-STD2.0 v1.00	2022-03-22 10:52:31	🛓 D 🧭 🖬 🛓
CG-EM30-96 v1.00	2022-03-22 10:54:26	
CM4000 v0.01	2019-08-07 16:48:48	🛃 🗋 🕜 💼 🖪
CM4000_Deprecated v0.01	2019-08-07 11:00:58	🛃 🖸 🕜 🛅 🖪

Figure 5-15 AcuLink 810 Customized Modbus Templates (CSV Uploaded)

5.2 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 webpage select **BACnet Template**.

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





BACnet Template			
Installed Import Convert From EPICS File			
Official			
Template Name 🗘	Last Update 🗘		
ACUREV2100-WEB2 v1.00	2023-03-13 13:34:44		
AXM-WEB2 v1.00	2023-03-13 13:38:03		
AcuRev 2100 v1.00 2023-03-13 13:33:32			
AcuRev1310 v1.00	1310 v1.00 2023-03-13 13:44:29		
Acuvim II v1.00	2023-03-13 13:41:33		
Previous 1 Next 10/page +			
Customized			
Template Name 🌐	Last Update 🗘	Actions	
AcuRev 2100 v0.01	2023-03-01 16:46:46	20	
Contemporary-Control-BASRT-B v1.00	2022-04-28 10:49:56	🛓 💼	
DENT-Instruments-PS12HD v1.00	2022-04-28 11:55:39	🛓 💼	
SONTEX-SUPERCAL-5 v1.00	2022-04-28 11:56:02	🛓 🗇	

Figure 5-16 AcuLink 810 Installed BACnet Templates

5.2.1 Import Template

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

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

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics BACnet Template
Modbus Template	C C C C C C C C C C C C C C C C C C C
ACnet Template	
	Installed Import Convert From EPICS File
	Template File*
	Template File*
	Choose file Browse
	Upload
	Remote Template
	Check

Figure 5-17 AcuLink 810 Import BACnet Templates

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





5.2.2 Convert from EPICS File

The AcuLink 810 features a template converter designed to transform EPICS files from BACnet devices into a .def BACnet template compatible with the AcuLink 810 system. In the "**Convert From EPICS File**" menu tab, users are prompted to input the template name, version number, and upload the EPICS file for processing.

Vodbus Template IACnet Template	BACnet Template	180		
	Template Name	Version	EPICS File*	
	Enter Template Name	Enter Version	Choose file	Browse
	Upload			

Figure 5-18 AcuLink 810 Covert BACnet Templates from EPICS File

Once the name, version and EPICS file has been selected users can click on the **Upload** button. Users will then be prompted to specify which parameter to include in the BACnet template. Once the parameters are selected click on the **Save** button located at the bottom of the webpage.

Settings Protocols Templates Meint	mance I S	elect Points To Create Ter	mplate		×
ACnet Template		2 Label	Object ID	Object Type	
Installed Import Convert From EPICS File		Freq_rms	1	0	
implate Name	Version	Ua_rms	2	0	
test	1.01	Ub_rms	3	0	Exerce
Upload		Uc_rms	4	0	
		Uavg_ms	5	0	
		Uab_rms	6	0	
		Ubc_rms	7	0	
		Uca_rms	8	0	
		Ulavg_rms	9	0	
		Ia_rms	10	0	
		D_ms	11	0	
		k_rms	12	0	
		lavg_rms	13	0	
		ln_rms	14	0	
		Pa_rms	15	0	
		Pb_rms	16	0	
		Pe_rms	17	0	
		P_rms	18	0	
		Ga_rms	19	0	
				Cancel Sa	toe puldes, manuals, videos and diagrams a corine

Figure 5-19 AcuLink 810 BACnet Select Points to Create Template

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





AcuLink 810 Gateway			
Devices Data Log	System Settings Protocols Templates Maintenand	ce Diagnostics	
Modbus Template BACnet Template	BACnet Template Installed Import Convert From EPICS File Official		
	Template Name 🗧	Last Update 🗦	
	ACUREV2100-WEB2 v1.00	2023-03-13 13:34:44	
	AXM-WEB2 v1.00	2023-03-13 13:38:03	
	AcuRev 2100 v1.00	2023-03-13 13:33:32	
	AcuRev1310 v1.00	2023-03-13 13:44:29	
	Acuvim II v1.00	2023-03-13 13:41:33	
	Previous 1 Next 10/page 0		
	Customized		
	Template Name	Last Update 🗧	Actions
	test v1.01	2024-02-05 15:46:51	🔺 🔟
	Previous 1 2 Next 10/page =		

Figure 5-20 AcuLink 810 Customized BACnet Templates





Chapter 6: System Settings

6.1 Network

All network-related configurations can be found on the **Network** page under the **System Status** menu tab. Users can configure all Ethernet 1 port, Ethernet 2 ports, Wi-Fi, DNS, and RSTP configurations from this page.

6.1.1 Ethernet

There are two Ethernet ports on the AcuLink 810, by default Ethernet port 1 has a static IP address whereas 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 webpage lets users know what is connected or disconnected, for example the image below shows both Ethernet interface status as **Connected** which indicates that both Ethernet 1 and Ethernet 2 have a RJ45 Ethernet cable connected to the respective ports.

JLink 810 0	Jateway							
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics		
Date & Time		< Network C	onfiguration					
lemote Acc mail	055	C RSTP E	nable face (Outbound 1	(raffic)				
uarm notific					•			
Jser Manag Certificate N	ement fanagement	Ethernet F	RSTP -					
	n Management	OHCP Ena						
irmware Up	date	Interface 5						
		IP			Mask		Gateway	
		192.168.1	1.52		255.	255.255.0	192.168.8.1	
		Must be ip ar	ddress		Must be	ip address	Must be ip address	

Figure 6-1a AcuLink 810 Network Interface Setting-1





Date & Time	Disconnected		
Network	IP	Mask	Gateway
Remote Access	192.168.8.101	255.255.255.0	192.168.8.1
Email Alarm notification	Must be lp address	Must be ip address	Must be ip address
User Management Certificate Management Whitelist Configuration Management Firmware Update	Ethernet 2 v DHCP Enable* • Auto Manual Interface Status	р	
	Connected	192.168.62.161	
	WiFi A		
	DNS 1	DNS 2	
	8.8.8.8	8844	

Figure 6-1b AcuLink 810 Network Interface Setting-2

6.1.2 Wi-Fi

There are two Wi-Fi modes in the AcuLink 810, Access Point and Station.

NOTE: When using Wi-Fi ensure that the included antenna is installed on the AcuLink 810 unit prior to use.

Access Point Mode: This is the default Wi-Fi 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 need configure the SSID, Network Key and IP of the AcuLink 810 as well 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 webpage via Wi-Fi AP mode refer to chapter 4 section 4.1.2.





	192.108.8.101	200.200.200.0	192.106.6.1
late & Time	Must be ip address	Must be ip address	Must be ip address
etwork			
mote Access	Ethernet 2 🗠		
mail larm notification	WiFi ~		
ser Management	Enabled*		
ertificate Management	O Enable O Disable		
hitelist	Mode*		
onfiguration Management irmware Update	Access Point 4		
	SSID	Network Key	IP
	AcuLink810-WIFI-S8P20120034	80	192.168.100.1
	Maximum 40 characters	Maximum 40 characters	Must be ip address
	DNS 1	DNS 2	
	8.8.8	8.8.4.4	
	Must be valid to or domain	Must be valid ip or domain	
	Must be value of or oprised		

Figure 6-2 AcuLink 810 Wi-Fi Access Point Mode Setting

Station Mode: The AcuLink 810 will behave like a wireless client and a 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 wireless network is selected enter the Network Key to bridge the AcuLink 810.

Users can configure a static Wi-Fi IP by manually entering the information into the IP, Submask, and Gateway fields of the Wi-Fi network. Alternatively, the Wi-Fi can be configured for DHCP where the IP, Submask, and gateway of the Wi-Fi network is automatically assigned to the AcuLink 810.

Enterprise Wi-Fi: This option allows the AcuLink 810 to connect using an enterprise level Wi-Fi network which is common in many colleges, universities, hospitals, and other institutions. Users can connect to an enterprise level Wi-Fi network by selecting the WPA/WPA2 Enterprise check box and then entering in the username and password.

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Date & Time Network	C Ethernet 2 A
Remote Access	WiFi v
Email Alarm notification User Management Certificate Management Whitelist Configuration Management	Enabled* O Enable Disable Mode* Enable Country Code
Firmware Update	North America D
	SSID Select from WIP list Manual Input
	Acrvim-3-WIFI-ASP23000168 C Refresh SSID







6.1.3 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.

TTP Proxy Enable Enable Disable		
ITTP Proxy Server URL	HTTP Proxy Server Port	
1.2.3.4	3128	
	Range: 1 - 65535	

Figure 6-4 AcuLink 810 HTTP Proxy Setting

6.1.4 RSTP

The RSTP protocol allows users to create an Ethernet daisy chain using the two Ethernet ports located on the AcuLink 810. When using the daisy chain feature it is able to connect to a network switch/router, other AcuLink 810, and other devices that supports the RSTP protocol.

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

Users can configure the AcuLink 810 IP manually or by setting the DHCP as Auto.

cuLink 810 Gateway					
Devices Data Log	System Settings Pre	otocols Templates	Maintenance Diagnostics		
Date & Time	Network Config	guration			
Network	RSTP Enable				
Remote Access					
Email	Default Interface	(Outbound Traffic)			
Alarm notification			٥		
User Management	Esta and DOTO				
Certificate Management	Ethernet RSTP	¥			
Whitelist	DHCP Enable*				
Configuration Management	O Auto O Ma	anual			
Firmware Update	Interface Statu				
	Disconnected				
	IP		Mask	Gateway	
	192.168.1.52		255.255.255.0	192.168.8.1	
	Must be ip address		Must be ip address	Must be ip address	

Figure 6-5 AcuLink 810 Network RSTP Setting

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





Network Topology

Daisy chain connection is supported in the RSTP protocol. This can reduce the number of network switches required in different applications and allows the use of one network switch/router to be used with multiple devices. Each device can be accessed by configuring a unique IP address or have the IP addresses assigned automatically by the network.

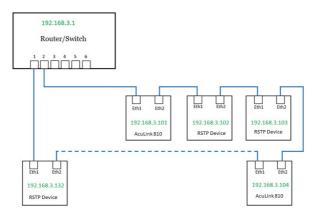


Figure 6-6 AcuLink 810 Network Topology

6.1.5 Default Routing Webpage

The AcuLink 810 default webpage setting allows users to configure which port to use for primary routing to external networks. Since there are multiple ways that the user can connect such as Ethernet1, Ethernet 2, Wi-Fi, or RSTP, this setting will establish which one to use for the main routing. The other webpages can be used for local routing if the users have them connected.

Users can select the default routing webpage as:

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





AcuLink 810 G	ateway					
Devices	Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics
Date & Time		Network C	Configuration	1		
Network		RSTP E	nable			
Remote Acce	ess					
Email		Default Inte	face (Outbour	nd Traffic)		
Alarm notific	ation	Ethernet 1			٥	

Figure 6-7 AcuLink 810 Default Routing Webpage

6.2 Whitelist Management

The AcuLink 810 supports the access control function, also known as the IP whitelist.

When enabled, only the selected IP addresses can access the gateway's webpage. Users can enter in an IPv4 address along with a description for the address. There is a maximum of twenty IP addresses that can be added to the IP Whitelist.

AcuLink 810 Gateway										
Devices Data	.og System	Settings	Protocols	Templates	Maintenance	Diagnostics				
Date & Time Network Remote Access Email Alarm notification User Management Certificate Managem	¢	Whitelist Ena Enable (Add Whitel	Disable	From IP	,	io IP	From Port	To Port	Protocol	Action
Whitelist Corfiguration Manag		1		192.168.63.	a () 1	92.168.63.71	Any	Any	Any	2

Figure 6-8 AcuLink 810 Whitelist Management

When adding the whitelist users have the option to configure a specific IP or IP range, port, protocol, and description.

		Edit Whitelist	×	
		IP Range*		
		O Yes 🔿 No		
		From Address		
From IP	To IP	192.168.63.1		
192.168.63.1	192.168	Must be ip address		
	192.100	To Address		
		192.168.63.71		
		Must be ip address		
		Port Range*		
		O Any O Yes O No		
		Protocol*		
		Any CTCP UDP CICMP		
		Description		
		Enter Description		
		-	Cancel Confirm	

Figure 6-9 AcuLink 810 Edit Whitelist





6.3 Time & Date

The **Date & Time** page under the **System Settings** menu 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: An internet connection is required before synchronizing the AcuLink 810's time to the NTP time servers.

If users do 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 on the AcuLink 810 to update to the NTP by clicking the **Sync** button.

NTP Time Servers: The AcuLink 810 can be synced with up to three NTP servers. By default, the gateway uses 0.us.pool.ntp.org time server. Users can remove or 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: <u>http://www.pool.ntp.org/en/</u>

Time Zone: Users can select the time zone where the gateway is installed from the drop-down menu. Alternatively, users can simply click the region directly on the map to select the desired time zone.

Once configured, users will notice the desired time and date displayed on the top right corner of the webpage.





Devices Data Log	System Settings Protocols	Templates Maint	enance Diagnostics		
Data & Time Network Biarota Access Email Alaran notification User Management Colficiate Management Whiteist Colficiate Management Firmware Update	Date & Time Configurat NTP Enable Device Clock 2024/2025 0106 AM NTP Server 1 0.04 points org Manuella Configuration Manuella Configurati	tion	NTP Server 2 Enter NTP Server 2 Mateman 40 characters	Sync .	NTP Server 3 Door KTP Server 3 Vacanon 43 Diversion

Figure 6-10 AcuLink 810 Date & Time Configuration

6.4 Remote Access

The AcuLink 810 includes a remote access function that allows users to access the AcuLink 810 webpage. By accessing the webpage 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 webpage 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 then provided allowing users to configure device settings and view meter data. This is useful as the gateway device may be installed on remote sites where the end user may be far away offsite from the actual device.

The remote access configuration can be found by clicking on the **System Settings** menu 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 the **Save** button.

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

When first enabling remote access and registering, the status will remain offline until the user clicks on the **Refresh Status** button to turn the status online. The remote access user webpage will then be accessible by clicking on the remote access URL or by using the **Copy** button to paste the URL into a new tab address bar on the internet browser.

The remote access login credentials are the same as the local login webpage. The default login credentials for the webpage are username **admin** and password **admin**.





ACCUENERGY
Aculink 810 Data Acquisition Server
Sign in to continue
User Name
Enter User Name
Password
Enter Password
Sign In

Figure 6-11 AcuLink 810 Login Webpage

6.5 User Management

The AcuLink 810 supports the creation of different users for the webpage. Each user roles to determines what permission and functions are available when logged in. To access the user configuration page, users need to click on the **User Management** menu tab.

6.5.1 General

Under the **General** menu tab, the Max Concurrent Logins and Session Timeout settings can be configured. The maximum number of concurrent login setting allows the user to configure how many users can be logged into the webpage at the same time. If the user limit is exceeded, the first user that logged in will be logged out of the webpage (first in, first out method). The range for this setting is from 1 to 10, the default setting is 1.

The session timeout setting represents how long in minutes the user can access the webpage before it times out. When the session timeout limit is reached users will be logged out of the webpage and redirected back to the login page. The session timeout is set to ten minutes by default, and it can be set from 0 to 60 minutes, where 0 indicates the user will never timeout of the webpage.

Devices Data Log	System Settings	Protocols Te	mplates	Maintenano	e Dia	ignostics		
Date & Time Network Remote Access	Cuser Manag	gement User Configuration	Role C	onfiguration	Passwo	rd Policy	Password Management	API Token Managemen
Email Alarm notification	Max Concurre							
User Management	Range: 1 - 10							
Certificate Management Whitelist	Session Time	out						
Configuration Manageme	int 10					minutes		
Firmware Update	0 for never timeo Range: 0 - 00	wf.						







46

6.5.2 User Configuration

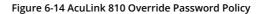
The user configuration table provides information regarding the access level, such as the register date, expiration date and last login time. If the correct permission is available on the account, users will have the option to lock an account, edit users, and delete users.

Devices Data Log	System Settings	Protocols	Templates Maintenance	Diagnostics				
bate & Time letwork temote Access imali Jarm notification	C User Manage General U Add User	ment	ion Role Configuration	Password Policy Pa	ssword Management API Tr	oken Managem	ent	
iser Management	Username 0	Role	Register Date	Expiration Date	Last Login Time	Status	Lock	Action
Certificate Management Vhitelist	view	view	2021-06-0118:52:34	no restrict		Active	Lock	.
Configuration Management	admin	admin	2021-06-01 18:52:34	no restrict	2024-02-05 10:27:20	Active	Lock	a

Figure 6-13 AcuLink 810 User Configuration

New users can be added where a username, password, role, and option to override the password policy is available. The role determines the type of access the user will have on the user level. When entering a password, users have the option to override the password rules set in the Password Policy section (see section 6.5.4) for the AcuLink 810 login webpage, this includes character length and complexity of the password (i.e. capital letters, number, special characters, etc.).

ite & Time	 User Management 		
etwork mote Access	General User Configuration	Role Configuration Password Policy Password Management API Token Management	int
nail arm notification	Username		
er Management	develop		
ertificate Management	Password	Repeat Password	
vitelist			
nfiguration Management nware Update	Role*		
	admin		
	Override Password Policy		



6.5.3 Role Configuration

The role configuration setting allows for the configuration and creation of different user roles for user levels. These roles determine whether the user will have edit, view, or access to certain features on the webpage. By default, there are two roles available, **Admin** and **View**. The Admin role permits the user to view and configure all settings whereas the View role allows users to only view meter readings.





Devices Data Log	System Settings	Protocols		nplates	Maintenance D	Diagnostics						
Date & Time	User Manag	ement										
ietwork	The second			(
lemote Access	General U	Jser Conf	iguration	Role Cor	nfiguration Passa	word Policy	Password	Management	API Token Mar	hagement		
imail	Add Role											
Alarm notification	Add Hote											
	Role Name	User	Device	Data Log	System Settings	Protocol	Templates	Maintenance	Diagnostics	Reboot	Firmware Update	Action
Jser Management				Data Log								
Narm notification Jser Management Certificate Management Whitelist	Role Name 🗧		Device edit		System Settings edit	Protocol edit	Templates edit	Maintenance edit	Diagnostics edit	Reboot edit	Firmware Update edit	Action

Figure 6-15 AcuLink 810 Role Configuration

When adding a new role, it is possible to specify which sections have view or edit access on the AcuLink 810 webpage.

Date & Time	User Management				
Network Remote Access	General User Configuration	Role Configuratio	n Password Policy Password Management	it API Token Management	
Email	Role Name				
Alarm notification User Management	admin				
Certificate Management	User*		Device*	Data Log*	
Whitelist	Edit		Edit	Edit	
Configuration Management Firmware Update	System Settings*		Protocol*	Templates*	
	Edit	٥	Edit	Edit	
	Maintenance*		Diagnostics*	Reboot*	
	Edit	۰	Ede	Edit	
	Firmware Update*				
	50t				

Figure 6-16 AcuLink 810 Edit Role

6.5.4 Password Policy

The password policy provides users with a method to ensure that all passwords created follow specific criteria. The password policy lists specific rules to be set to enforce user password strength to mitigate risky security exposure. When creating a user password there is an option to override the password policy if desired.

	User Management					
ate & Time stwork	¢			[
emote Access	General User Configu	ration Role Co	nfiguration	Password Policy	Password Management API Token Management	
mail Marm notification	Upper and Lower Case	Required		If required, passwor	d must contain both upper and lower case characters	
User Management	Numbers and Letters	Required		If required, passwor	d must contain at least an alphabet and a number	
Certificate Management Whitelist	Special Characters	Required		If required, passwor e.g. !@#\$%^	d must contain at least one non-alphanumeric character	
Configuration Management	Password History	1		User cannot reuse any of their previous N passwords		
	Pessword Pistory	Range: 1 - 32		1 means no restriction		
	Minimum Password Age	0	days	User must use a par	isword for this many days before changing it again	
	minimum Password Age	Range: 0 - 90		0 means no restricti	on	
	Password Expires	0	days	Days until a user's p	assword expires	
	massword Expires	Range: 0 - 90		0 means never expire	9	







6.5.5 Password Management

The Password Management webpage allows users to change the password for the different **user levels** created.

uLink 810 Gateway					
Devices Data Log	System Settings Protocols Terr	plates Maintenance Diagnostics			
Date & Time	User Management				
letwork					
Remote Access	General User Configuration	Role Configuration Password Policy	Password Management	API Token Management	
inal	Usename				
Narm notification	admin				
Jser Management					
Certificate Management	Password	Repeat Password			
rhitelist	Enter Password	Enter Repeat Password			
onfiguration Management					
Firmware Update					

Figure 6-18 AcuLink 810 Password Management

6.6 Certificate Management

From the AcuLink 810 webpage, there is a certificate management section that allows users to view the web page certificate details. Users can also generate a new self signed certificate, generate a certificate signed request, and import/export the certificates.

Devices Data Log Sy	stem Settings Protocols	Templates Maintenance	Diagnostics		
Date & Time	Certificate Managemen	t			
Network					
Remote Access	Import Generate New Se	elf-Signed Certificate Genera	te CSR Export		
Email	Certificate Issuer				
Alarm notification					
User Management	Common Name	S8P20120034	Company Name	Accuenergy (CANADA) Inc.	
Certificate Management	Division Name		City	Toronto	
Whitelist					
Configuration Management	State	ON	Country Code	CA	
Firmware Update					
	Certificate Subject				
	Common Name	S8P20120034	Company Name	Accuenergy (CANADA) Inc.	
	Division Name		City	Toronto	
	State	ON	Country Code		

Figure 6-19 AcuLink 810 Certificate Management

6.7 Configuration Management

The AcuLink 810 has a configuration management webpage that allows users to export and import the current system settings, device configuration and user information. This is useful if users have more than one gateway that needs to be programmed with the same settings and eliminates any error when trying to configure another gateway. Users can also restore all the previously configured devices by importing a backup file to the AcuLink 810. This is particularly beneficial when performing a factory reset to the gateway and preventing the need to manually add devices back to the AcuLink 810.

NOTE: Exporting and importing configuration files between different versions is not supported and may result in problems or failure to the device.





Export Configuration: Users can export and save the web settings by clicking on the "export" button.

The following settings are saved in the configuration file:

- · All Gateway settings (General, IO, Alarm, Custom Read, Waveform)
- Network settings (Only DNS1, DNS2, TCP Port, HTTP Proxy)
- All Email settings
- All Time/Date settings
- All Data Log settings
- All Post Channel settings
- All BACnet settings
- All SNMP settings
- User Management settings (username/passwords, etc)
- Debug Information (SSH, and Debug Configuration)
- Username/ Password
- Device configuration

The settings that are not included or affected by the Configuration Management file is:

- Most Network settings (RSTP, DHCP, IP, Submask, Gateway, HTTP Port for both Ethernet 1 and Ethernet 2, all Wi-Fi settings)
- AcuCloud
- IP Whitelist
- Remote Access

<	Configuration Management
	Import Configuration
	Import
	Export Configuration
	Export
	Caution: Exporting and importing configuration files between different versions is not supported and may result in problems and failures in your meter.

Figure 6-20 AcuLink 810 Configuration Management

Import Configuration: Users can import the backup file and select which part they would like to be restored in the pop-up window. The available options are "Import User", "Import Devices" and "Import App Configuration".

Import User: All saved user and password configuration will be restored.





Import Devices: All the configured devices will be added back to the gateway.

NOTE: The interface must be assigned to the same protocol as the devices in the backup file if the "Import App Configuration" is not checked together with "Import Devices".

Import App Configuration: All the web settings will be restored excluding the exceptions in the "exception" list.

Options	×
Import User Import Devices Import App Configuration Please select at least one option.	
	Cancel Confirm

Figure 6-21 AcuLink 810 Import Configurations

6.8 Emergency Mode

AcuLink 810 supports emergency mode which will allow users to download data/configuration settings and update the firmware when the gateway fails to bootup normally due to the disk being full or failed to open database. In emergency mode the web page will guide the users step-by-step with limited functions available.

Step One: Import or export the configuration file. Clear existing configuration and reset the configuration to default. A prompt will appear warning all configuration settings will be reset. Press 'Confirm' to proceed.

Step Two: Data log management allow users to download or delete data logs.

Step Three: Firmware upload/update allow users to update firmware.

Step One
Import Configuration Import
Export Configuration Export
Reset Configuration

Figure 6-22 AcuLink 810 Emergency Mode Operations





Chapter 7: Protocols

7.1 Modbus

This section outlines how to add devices from the AcuLink 810 webpage using the Modbus protocol.

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

7.1.1 RS485 Devices

The AcuLink 810 gateway supports RS485 serial communication. Users can set up a serial RS485 connection to the AcuLink 810 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.

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.

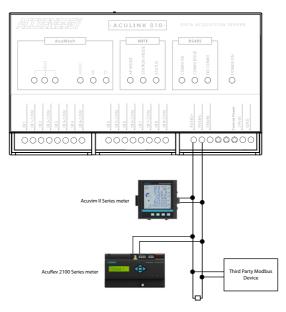


Figure 7-1 AcuLink 810 RS485 Network



52

7.1.2 USB Devices

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

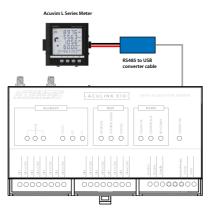


Figure 7-2 AcuLink 810 Modbus RTU Connection

7.1.3 Adding Modbus RTU Device

Before adding a Modbus RTU device, users will need to assign the correct protocol for the RS485 and USB ports from the **Interface Assignment** webpage under the **Protocols** menu tab. By default, the RS485 and USB ports for the AcuLink 810 are configured to use the Modbus protocol.

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 AcuLink 810 with one of the protocols already selected. The device must first be deleted from the AcuLink 810 to change the protocol of the ports.

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Interface Assignment AcuMesh Modbus BACnet MQTT Aurue IbT SNMP Google IoT	Interface Assignment For 85485* Modsus RTU BAChet MS(TP) Deter Mode and exceeding and each MS485 to each Per UBP* Modsus RTU BAChet MS(TP)

Figure 7-3 AcuLink 810 Protocols Settings Webpage





AcuLink 810 Data Acquisition Gateway & Server

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

Device Name: Enter a name for the device.

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 5.3 of this 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 to 247.

Baud Rate: Select the baud rate of the device, the range is from 9600 to 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 from 1 to 60 seconds, default for Modbus RTU is 0.5.

Auto Save Logger: Select a logger for the meter from the drop-down list.

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

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

Auto Save Logger: Provides users with a default data log channel to prevent data loss. This ensures data are logged even if a user completes the data post configuration without setting up a valid data log.



54

beholent	Add Modbus Device						
klarm Loga	Device Name*						
Auditus Devices	Test						
IACriet Devices	Next Mainum 40 darages						
ribus Devices	Serial Number"						
igital inputs	AH11223344						
	Art 1223344 Mut te unque in this Acularis EIC device						
	Maximum 22 characters						
	Template*						
	Adapter 1						
	Protocol"						
	O RTU () TCP						
	Port"						
	15485						
	Modibus ID*						
	Must be unique in this Acutoria 810 denice Kanger 1 - 245						
	Baud Rate"						
	19200						
	Data Bit*						
	8						
	Parity"						
	Nore						
	Step Bit"						
	Request Timeout*						
	0.5	seconds					
	Range 0.1 - S						

Figure 7-4 AcuLink 810 Modbus Device Setting

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

NOTE: After adding a new device to the gateway, it may take up to four minutes for the status to show **'ON'**. If after four minutes the device still shows an 'OFF' status, check the configuration settings again to ensure everything is set correctly.

Dashboard	Modbus Devices						
Narm Logs Aodbus Devices	Add Device Search	Device					Download List
BACnet Devices	Device Name	Interface 🗧	Protocol 0	Serial Number	Status -	Alarms 2	Action
MBus Devices Digital Inputs	AH822070452	R\$485	Modbus RTU	AH822070452	0.014	0	
Virtual Devices	E3716090972	R\$485	Modbus RTU	E3T16090972	O OFF	0	
	E3T18102365	RS485	Modbus RTU	E3T18102365	O OFF	0	
	E3719052339	R\$485	Modbus RTU	E3T19052339	O ON	0	
	EHM19100047	RS485	Modbus RTU	EHM19100047	C OFF	0	

Figure 7-5 AcuLink 810 Modbus Device List

If changes to the configuration of the added device is needed, click on the device and then select the **Configuration**. From this webpage users can reset the device name, port type, baud rate, parity, and other fields. Click the **Save** button to confirm the changes.





810 Gateway	
vices Data Log	System Settings Protocols Templates Maintenance Diagnostics
ishboard arm Logs	Modbus Device - E3T19052339
fodbus Devices	Reading Alarm Configuration
ACnet Devices	
Bus Devices	Device Name
Ngital Inputs	E3T19052339
Irtual Devices	Maximum 40 characters Template*
	AcuRev 1310 0
	Protocol*
	O RTU O TCP
	Port
	R5485 0
	Modbus ID
	39
	Matt be unique in this AcuLink #10 device Range: 1 - 246
	Baud Rate*
	19200 8
	Data Bit*
	8 0
	Parity*
	None 0

Figure 7-6 AcuLink 810 Modbus RTU Setting

7.1.4 TCP Devices

The AcuLink 810 can support up to 100 Modbus TCP devices for devices on the same network as the gateway.

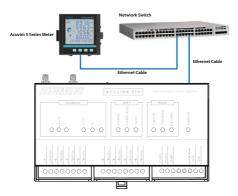


Figure 7-7 AcuLink 810 Modbus TCP Connection

7.1.5 Adding Modbus TCP Device

To add a Modbus TCP device, users need to click on **Add Device** button from the **Modbus Devices** webpage under the **Devices** menu 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 5.3 of this user manual.

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 three seconds Click the **Save** button once all settings are entered correctly.

Auto Save Logger: Select a logger for the meter in the drop-down list.

Devices Data Log	System Settings Protocols Templates Maintenanc	e Dia
Dashboard	Must be unique in this AcuLink 810 device Maximum 20 characters	
Alarm Logs		
Modbus Devices	Template*	
BACnet Devices	Acusim II	•
MBus Devices	Protocol*	
Digital Inputs	RTU O TCP	
Virtual Devices	IP Address	
		_
	192.168.1.94	
	Must be ip address	
	Port	
	502	
	Range: 1 + 65535	
	Modbus ID	
	1	
	Range: 1 - 246	
	Request Timeout	
		econds
	Range: 0.1 - 5	
	Auto Save Logger	
	Logger 1	٠

Figure 7-8 AcuLink 810 Modbus TCP Setting

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





NOTE: After adding a new device to the gateway, it may take up to four minutes for the status to show **'ON'**. If after four minutes the device still shows an 'OFF' status, check the configuration settings again to ensure everything is set correctly.

Devices	Data Log	System Settings	Protocols	Templates	Maintenance Diagn	ostics			
Dashboard		< Modbus D	evices						
Marm Logs		Add Devic	Search De	vice					Download List
ACnet Device		Device Na	me C	Interface C	Protocol	Serial Number	Status 🗧	Alarms	Action
MBus Devices Digital Inputs		AH822070	452	R\$485	Modbus RTU	AHB22070452	() ON	0	
ritual Devices		E3T16090	972	R\$485	Modbus RTU	E3T16090972	O ON	0	
		E3T181023	65	RS485	Modbus RTU	E3T18102365	OFF	0	
		E3T19052	139	R\$485	Modbus RTU	E3T19052339	O ON	0	
		EHM19100	047	RS485	Modbus RTU	EHM19100047	() ON	0	

Figure 7-9 AcuLink 810 Modbus Device Status

If changes to the configuration of the added device is needed, click on the device and then select the **Configuration**. From this webpage users can reset the device name, port type, IP address, Modbus ID, and other fields. Click the **Save** button to confirm the changes.

Devices Data Log	System Settings Protocols Templates	Maintenance Diagnostics	
lashboard Ilarm Logs	Modbus Device - E3T19052339		
fodbus Devices	Reading Alarm Configuration		
ACnet Devices	Device Name		
/Bus Devices	E3T19052339		
Ngital Inputs	Maximum 40 characters		
firtual Devices	Template*		
	AcuRev 1310		
	Protocol*		
	O RTU O TCP		
	Port*		
	R\$485		
	Modbus ID		
	39		
	Must be unique in this AcuLink B10 device		
	Rarge: 1 - 246		
	Baud Rate*		
	19200	•	
	Data Bit*		
	8	٥	
	Parity*		
	None		
	Stop Bit*		
	1		
	Request Timeout		
	0.5	seconds	
	Ranne: 0.1 - 5		

Figure 7-10 AcuLink 810 Modbus Device Edit





7.1.6 Modbus Gateway Function

The AcuLink 810 supports a Modbus gateway function to 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, and other fields).

Click on the **Save** button once all information is entered in correctly.

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

Devices D	ata Log Syster	n Settings	Protocols	Templates	Maintenance	Diagnostics	
Dashboard		Add Mod	bus Device				
Alarm Logs		Device Nar	not				
Modbus Devices							
BACnet Devices MBus Devices		Gateway Device					
		Maximum 40	characters				
Digital Inputs		Serial Num	ber*				
		AH12492	34				
		Must be uniqu Maximum 20	ie in this AcuLink 8 characters	10 device			
		Template*					
		Modbus	Gateway Functio	on Only		\$	
		Protocol*					
		O RTU	TCP				
		Port*					
		RS485				¢	
		Modbus ID					
		23					
		Must be unique Range: 1 - 240	ie in this AcuLink 8 i	10 device			
		Baud Rate					
		38400				÷	
		Data Bit*					

Figure 7-11 AcuLink 810 Modbus Gateway Function Setting





7.2 AcuMesh

Models AcuLink 810-900 and AcuLink 810-868 supports AcuMesh, which allows for a wireless Modbus RS485 mesh network. The gateway includes a built-in AcuMesh transceiver in its hardware which allows the AcuLink 810 to connect wirelessly to other serial RS485 devices such as Accuenergy and third-party Modbus devices that are paired with AcuMesh devices to gather information.



Figure 7-12 AcuLink 810 AcuMesh Network

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 certain parts of Asia.

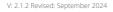
NOTE: The AcuLink 810-X model is Wi-Fi capabilities but does not support AcuMesh mesh network functionality.

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

7.2.1 Local Configuration

For the AcuLink to add other AcuMesh paired devices, the local AcuMesh network settings must be configured first. The local configuration webpage refers to the AcuMesh unit built into the AcuLink 810-900 and AcuLink 810-868.







The following can be configured on the local configuration webpage:

Node Name: Users can configure the name of the AcuMesh node in these 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 number of times the AcuMesh will scan the mesh network for devices. The range for this setting is from 1 to 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 to 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 devices would need to have the same password to communicate within the AcuMesh network.

Encryption Key: The encryption key is a hex number with a maximum number of characters is 32.

Devices Data Log	System Settings Protocols	Templates Maintenance Diagnostics	
Interface Assignment AcuMesh Modbus	AcuMesh Configuration	n & Remote Configuration Diagnostics	
BACnet MQTT Azure IoT SNMP	Node Name Not Configured Maximum 14 characters		
Google IoT	Local MAC Address 0013a2004216f498	Network ID 7fff	
	Encryption Enable* Enable Disable Encryption Key	Range: Ord - Outff	
	Enter Encryption Key Network Hop 7 Range: 1 - 7		

Figure 7-13 AcuLink 810 AcuMesh Local Configuration





7.2.2 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** menu tab on the AcuMesh Configuration webpage to be redirected to the webpage to setup the remote AcuMesh paired devices.

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 to 7 network hops.

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Interface Assignment	AcuMesh Configuration
AcuMesh	Local Configuration Scan & Remote Configuration Diagnostics
Modbus BACnet	
MOTT	Managed Remote Nodes
Azure IoT	Config Selected Managed Nodes Reset Selected Managed Nodes Remove Selected Managed Nodes Refresh
SNMP	Status Node Name Number of Hops MAC Address Action
Google IoT	No Data
	Nodes Scan Scanning Network ID: 711 Encryption: Off Channel Mask: fffffff77ff Network Hops 4 Regis 1-7 Start Scan with Dafault Methods: Configuration Start Scan with Dafault Methods: Configuration

Figure 7-14 AcuLink 810 AcuMesh Scan and Remote Configuration

Click on the Start Scan button to search for any remote AcuMesh transceivers.

			1	Scanning hop 2, scan must be manually sto	opped.
Devices Data Log	System Settings Protocols	Templates Mair	tenance Diagnostics		
Interface Assignment	AcuMesh Configurat	ion			
AcuMesh	-				
Modbus	Local Configuration	Scan & Remote Configura	ation Diagnostics		
BACnet	Managed Remote Nodes				
MQTT Azure IoT		ed Nodes Reset Select	ed Managed Nodes Remove S	Selected Managed Nodes	Refresh
SNMP	Status	Node Name	Number of Hops	MAC Address	Action
Google IoT			No Data	1	
	Nodes Scan Scanning Natheron Lito, Bai Encryption: Off Channel: Mask: (fffffffff) Network: Hops 4 4 Reget: 1-7 C C C C C C C C C C C C C C C C C C C		Stop Scan Manage Salivated Nodes		
	Managed	Node Name	Number of Hops	MAC Address	Action
	No	3d17_5068	1	0013a20041063d17	a +
	□ No	1E9F_3401	1	0013a20041551e9f	68 0 +
	No No	v0.69	1	0013a20042184dcb	a +

Figure 7-15 AcuLink 810 AcuMesh Scan



62

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

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

Devices Data Log	System Settings Protoco	ls Templates Main	ntenance Diagnostics		
Interface Assignment	AcuMesh Configur	ation			
AcuMesh	I Constant				
Modbus	Local Configuration	Scan & Remote Configur	ation Diagnostics		
BACnet	Managed Remote Nod	es			
MQTT Azure IoT		Reset Select	ted Managed Nodes Remove	Selected Managed Nodes	Refresh
SNMP	Status	Node Name	Number of Hops	MAC Address	Action
Google IoT			No Dat		
	Nodes Scan				
	Encryption: Off Channel Mask: ######### Network Hops 4	171111			
	Range: 1 - 7				
	Start Scan Start S	can with Default Network Co	onfiguration Stop Scan		
	AcuMesh Nodes				
	Config Selected Node	Reset Selected Nodes	Manage Selected Nodes		
	Managed	Node Name	Number of Hops	MAC Address	Action
	No	3d17_5068	1	0013a20041063d17	🕜 💼 🕂
	O No	1E9F 3401	1	0013a20041551e9f	🚾 o 🛨

Figure 7-16 AcuLink 810 AcuMesh Device Selection

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 to 7FFF hex.

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

Destination MAC Address: The MAC Address of the remote AcuMesh transceivers.

Encryption Enable: Users have the option to put a password for the AcuMesh device. All radio AcuMesh devices will need to have the same password to communicate within the AcuMesh network.

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





Advanced Options:

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

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

Stop Bit: Select the number of stop bits.

Devices Data Log	System Settings Protocols Templates Ma	ntenance Diagnostics	
nterface Assignment	AcuMesh Configuration		
AcuMesh Aodbus	Local Configuration Scan & Remote Configu	ation Diagnostics	
ACnet IQTT	AcuMesh Config - 0013a20041063d17		
Izure IoT	Node Name		
SNMP	3d17_5068		
Google IoT	Maximum 14 characters		
	Local MAC Address	Network ID	Destination MAC Address
	0013a20041063d17	888	0013a2004216f498
		Range: 0x0 - 0xffff	Range: 0x0 - 0xfffffffffffffffff
	Advanced 🔺		
	Encryption Enable*		
	Encryption Key		
	Enter Encryption Key		



Managed Nodes

Users can select which AcuMesh devices to manage from the list of all discovered transceivers. The managed nodes will only allow users to see AcuMesh transceivers that are added to the AcuLink 810 managed list section. The AcuMesh transceiver must first be added from the discovered list before it can appear under the managed list section.

For example, if there is a network of 50 AcuMesh devices discovered, but only ten AcuMesh devices are added to the AcuLink 810managed list. Then only these ten transceivers will appear under the managed list section.

Users can click on the green plus icon under the Action column to add a device to the managed list. Alternatively, the check boxes can be used to select multiple transceivers and the **Manage Selected Nodes** button can be used to add multiple transceivers to the managed nodes list.





Соп	fig Selected Nodes	Reset Selected Nodes	Manage Selected Nodes		
	Managed	Node Name	Number of Hops	MAC Address	Action
	No	MESH_69	1	0013a2004166f555	2 6
	No	MESH_68	1	0013a200414f9ec3	6 1
	No	MESH_67	1	0013a2004126c393	6
	No	MESH_65	1	0013a200414f9eac	C

Figure 7-18 AcuLink 810 AcuMesh Nodes Management

Reset Nodes

Users can perform a soft reboot of the discovered AcuMesh transceivers. This can be very useful as sometimes communication is dropped due to timeouts and requires a reboot to initialize and restore the communication. The yellow button under the Action column will allow users to reset the AcuMesh nodes. If multiple nodes require a reset, select the check boxes to pick multiple transceivers and then click the **Reset Selected Nodes** button to reset all selected nodes.

Con	fig Selected Nodes	Reset Selected Nodes	Manage Selected Nodes		
	Managed	Node Name	Number of Hops	MAC Address	Action
	No	MESH_69	1	0013a2004166f555	6 +
	No	MESH_68	1	0013a200414f9ec3	🗹 🖬 +
	No	MESH_67	1	0013a2004126c393	e +
	No	MESH_65	1	0013a200414f9eac	8 - +

Figure 7-19 AcuLink 810 AcuMesh Nodes Reset

7.2.3 AcuMesh Diagnostics

The AcuMesh diagnostics webpage allows the user to troubleshoot the AcuMesh network connection in the AcuLink 810 to the remote AcuMesh transceivers. The test sends packets at regular intervals to test whether the AcuLink 810 receives a response from the slave AcuMesh transceivers.

Transmission Interval: Is the sending interval of the packet, the range is from 1 to 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 Data Acquisition Gateway & Server

levices Data Log	System Settings Protocols Templates Maintenance Diagnostics
terface Assignment	AcuMesh Configuration
cuMesh	
fodbus	Local Configuration Scan & Remote Configuration Diagnostics
ACnet	Transmission Interval
IQTT	2
zure loT	# Range: 1 - 100
NMP	
ioogle IoT	Number Of Packets
	10
	Range: 1 - 1000
	Remote AcuMesh Node Selection

Figure 7-20 AcuLink 810 AcuMesh Diagnostics

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

AcuLink 810 Gateway	· · · · · · · · · · · · · · · · · · ·	
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
Azure IoT	Range: 1 - 100	5
SNMP	Number Of Packets	Packets Received
Google IoT		5
	10	
	Range: 1 - 1000	Packets Lost
	Remote AcuMesh Node Selection	0
	0013a20041063d17	Average Delay
		0.047 s
		Success Rate

Figure 7-21 AcuLink 810 AcuMesh Diagnostics Test Result

7.2.4 Adding AcuMesh Device

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

Device Name: Enter a name for the 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 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** hyperlink to discover remote AcuMesh transceivers.

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

Devices	Data Log	System Set	ings	Protocols	Templates	Maintenance	Diagnostic
Dashboard		Ad	Mo	dbus Device			
Alarm Logs			ce Na	me*			
Modbus De	vices		ESH DE				
BACnet Dev	ices		_	characters			
MBus Devic	es		al Num				
Digital Inpu	ts	N	SH				
				ue in this AcuLink 8	10 device		
				characters			
		Ten	plate*				
		A	uvim I				٥
		Pro	ocol*				
		0	TU C	TCP			
		Por					
		A	uMesh	0			\$
		Mo	lbus ID)*			
		1					
			be uniq 8: 1 - 24	ue in this AcuLink 8 6	10 device		
		Acu	Vlesh I	MAC Address*			
		0	13a20	040f8b74b - Tes	t1		¢
		Go	o Acul	Mesh Scan & Co	onfiguration Pag	e	
		Rec	uest Ti	meout*			
		1				se	conds
		Ran	e: 2 - 60				

Figure 7-22 AcuLink 810 Add AcuMesh Device

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

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





Devices	Data Log	System Settings	Protocols	Templates	Maintenance Diagno	ostics			
Dashboard		< Modbus D	levices						
Alarm Logs Modbus Dev	ices	Add Device	Search De	vice					Download Lis
BACnet Devi	ces	Device Na	me C	Interface 0	Protocol C	Serial Number	Status 🗧	Alarms 0	Action
MBus Device Digital Inputs		AHB22070	452	RS485	Modbus RTU	AHB22070452	(Ú ON	0	
Virtual Devic	es	E3T160909	972	RS485	Modbus RTU	E3T16090972	(U ON	0	
		E3T181023	65	RS485	Modbus RTU	E3T18102365	(U OFF	0	
		E3T190523	39	RS485	Modbus RTU	E3T19052339	(U ON	0	
		E3T190550	88	Mesh	Modbus RTU	E3T19055068	(U ON	0	
		EHM19100	047	RS485	Modbus RTU	EHM19100047	(U ON	0	

Figure 7-23 AcuLink 810 Modbus Device List

If users need to change the configuration of an added device, the user can click on the device on the list and then select the **Configuration** menu tab. From this webpage users can reset the device name, port type, AcuMesh MAC address, Modbus ID, and other fields.

uLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Dashboard Alarm Logs Modbus Devices BACnet Devices MBus Devices	Modbus Device - E3T19055068 Reading Alarm Configuration Device Name E3T19055068
Digital Inputs /irtual Devices	Maximum 40 characters Template*
	Protocol* Prot CD Port* Anathen Modbus ID 13 Must brease in this Acularis B10 device Ranger 1 - 240 AcuMesh MAC Address*
	0015200100417-3477-3588 C Ge To AcaNesh Sean & Configuration Page Request Timesout
	5.0 seconds
	Regel 2 - 60

Figure 7-24 AcuLink 810 Modbus Device Edit





7.2.5 Search Modbus Device

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

To access the search function, users need to click on **Search Device** on the **Modbus Device** webpage.

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', or 'AcuMesh'.

Modbus ID Start: This will match starting slave address for the search.

Modbus ID End: This will match 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: Sets the data bit to either 7 or 8.

Stop Bit: Sets the number of stop bits to be either 0 or 1.

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

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

Click on the **Scan** button 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.





AcuLink 810 Data Acquisition Gateway & Server

Dashboard	Scan Modbus Device	Diagnostics	
Varm Logs	< C		
Modbus Devices	Template*		
BACnet Devices	AcuRev 1310	•	
MBus Devices Digital inputs Virtual Devices	Port*		
	RS485	•	
	Modbus ID Start	Modbus ID End	
	1	246	
	Range: 1 - 246	Range: 1 - 246	
	Baud Rate*		
	9600 2 19200 38400 57600 115200		
	Data Bit*		
	8	٠	
	Parity*		
	☑ None □ Odd □ Even		
	Stop Bit*		
	1	•	
	Request Timeout		
	0.5 secon	ids	
	Range: 0.1 - 5		

Figure 7-25 AcuLink 810 Scan Modbus Device

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 Devices To Device List** button.

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

If a found device has an identical Modbus ID as a device that is already added to the AcuLink 810 it will be displayed as **Conflict** in the search results.

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.



Figure 7-26 AcuLink 810 Scan AcuMesh Device





7.3 Modbus Polling

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

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

Devices Data Log	g System Settings Protoco	ols Templates M	aintenance Diagnostics	
interface Assignment AcuMesh	Modbus Configura Modbus TCP Port	tion		
Modbus				
BACnet	502			
MQTT	Default: 502, Range: 2000 -	5000		
Azure IoT	Modbus ID			
SNMP	247			
Google IoT	DI Table			
	Name	Data Type	Register Address (Dec)	Register Address (Hex)
	Digit Input 1	FLOAT	8192	0x2000
	Digit Input 2	FLOAT	8194	0x2002
	Digit Input 3	FLOAT	8196	0x2004
	Digit Input 4	FLOAT	8198	0x2006
	Digit Input 5	FLOAT	8200	0x2008
	Digit Input 6	FLOAT	8202	0x200a
	Digit Input 6			
	Digit Input 7	FLOAT	8204	0x200c

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

Figure 7-27 AcuLink 810 Digital Input Modbus Data Polling

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





7.4 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 BACnet protocol on the AcuLink 810 from the webpage.

7.4.1 BACnet MS/TP Assignment

To use the BACnet MS/TP, the protocol must be assigned as BACnet for RS485 and USB devices from the **Interface Assignment** webpage under the **Protocols** menu tab.

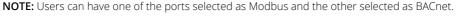




Figure 7-28 AcuLink 810 BACnet MS/TP Assignment

From the Protocols webpage select **BACnet** from the left side panel. In the BACnet webpage under the **Acquisitor** menu 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: 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: The number of times the client will retry a request when a response is not received. The default setting is 2 retries, and the range is from 0 to 10 retries.

MS/TP MAC Address: Used to address devices on the BACnet network, the default address is 1 and the range is from 1 to 127.

Max Master: Defines the number of allowable addresses for the MS/TP master nodes on the network, the default is 127 and the range is 1 to 127.

Max Info Frames: The maximum amount of information frames sent to a node before it passes





the token. The default is 1 and the range is from 1 to 100 information frames.

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

Link 810 Gateway			
Devices Data Log	System Settings Protocols Templates M	faintenance Diagnostics	
terface Assignment cuMesh odbus	Acquisitor Gateway BBMD		
ACnet	Client APDU Timeout*	Client APDU Retries*	
IQTT izure loT	3 seconds	2	٠
NMP	Default: 3 seconds	Default: 2	
oogle IoT	MS/TP over RS485		
	RS485 MS/TP MAC Address	RS485 Max Master	RS485 Max Information Frames
	1	127	1
	Range: 1 - 127	Range: 1 - 127	Range: 1 - 100
	RS485 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	•	

Figure 7-29 AcuLink 810 BACnet Setting



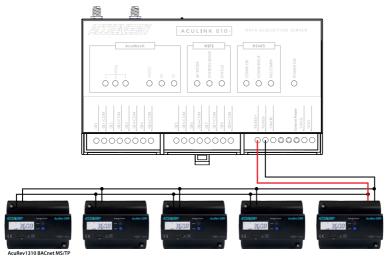


Figure 7-30 AcuLink 810 BACnet MS/TP via RS485 Protocol





BACnet MS/TP via USB

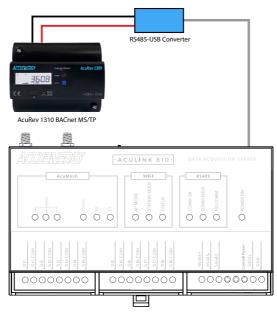


Figure 7-31 AcuLink 810 BACnet MS/TP via RS485 to USB Converter

7.4.2 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** webpage located under the **Devices** menu tab.

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

- Device Name: Enter a name for 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 from 0 to 4194302. It must be unique to this AcuLink 810 device.
- Auto Save Logger: Select logger for the meter from drop-down list.



74

Click Save once all settings are entered correctly.

EHM19100047	
Maximum 40 characters	
Serial Number	
EHM19100047	
Must be unique in this AcuLink 810 device Maximum 20 characters	
Template*	
AcuRev 2100	
Type*	
R\$485	6
Device Instance	
4	
Range: 0 - 4194302	
Auto Save Logger	
Logger 1	

Figure 7-32 AcuLink 810 Add BACnet Device

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

BACnet Devices						
Add Device Search	Device					Download List
Device Name	Interface	Protocol ≑	Serial Number	Status 🗘	Alarms	Action
EHM19100047	RS485	BACnet MS/TP	EHM19100047	(U ON	0	

Figure 7-33 AcuLink 810 BACnet Device List

NOTE: After adding a new device to the gateway, it may take up to four minutes for the status to show **'ON'**. If after four minutes the device still shows an **'OFF'** status, check the configuration settings again to ensure everything is set correctly.





If changes to the configuration of the added device is needed, click on the device and then select the **Configuration**. From this webpage users can reset the device name, port type, and Device Instance. Click the **Save** button to confirm the changes.

Device Name			
EHM1910004	7		
Maximum 40 charae	cters		
Template*			
AcuRev 2100			¢
Type*			
RS485			\$
Device Instance			
4			
Range: 0 - 4194302			

Figure 7-34 AcuLink 810 BACnet Device Edit

7.4.3 BACnet IP Configuration

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

BACnet IP Client Enable: Enable the BACnet IP protocol.

ACnet IP Client Enable*	
Enable 🔵 Diabled	
ACnet IP CLient Interface*	
Ethernet 1 192.168.1.182	\$

Figure 7-35 AcuLink 810 BACnet IP Configuration





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

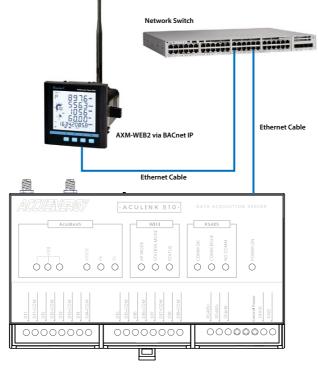


Figure 7-36 AcuLink 810 BACnet IP Networks

7.4.4 Adding BACnet IP Device

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

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

- Device Name: Enter the 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.





- Type: Select the type as IP.
- Port: Enter in the BACnet port configured for the device, the range is from 47808 to 49000.
- **Device Instance:** Enter the device instance number, it must be unique in this AcuLink 810device. The range is from 0 to 4194302.
- · Auto Save Logger: Select logger for meter from drop-down list.

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

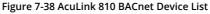
Click on the **Save** button once all fields are configured.

Device Name		
EHM19100047		
Maximum 40 characters		
Serial Number		
EHM19100047		
Must be unique in this Acul	ink 810 device	
Maximum 20 characters		
Template*		
AcuRev 2100		•
Туре"		
IP		٠
Device Port		
502		
Range: 47808 - 49000		_
Device Instance		
4		
Range: 0 - 4194302		_
Auto Save Logger		
Logger 1		

Figure 7-37 AcuLink 810 BACnet Device Editing

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

ashboard Iarm Logs Iodbus Devices	Add Device Search	h Device					Download List
ACnet Devices	Device Name	Interface 0	Protocol C	Serial Number	Status 🗧	Alarms 0	Action
IBus Devices igital Inputs	AHB22070452	RS485	BACnet MS/TP	AHB22070452	U OFF	0	
irtual Devices	EHM19100047	RS485	BACnet MS/TP	EHM19100047	(U ON	0	







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

If changes to the configuration of the added device is needed, click on the device and then select the **Configuration**. From this webpage users can reset the device name, port type, and Device Instance and Device port. Click on the **Save** button to confirm the changes.

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Dashboard Alarm Logs Modbus Devices	Configuration
BACnet Devices	Device Name
MBus Devices Digital Inputs Virtual Devices	EHM19100047 Maximum 40 characters Template* Accillers 2100 ©
	Type*
	RS485 \$
	Device Instance
	4
	Range: 0 - 4194302

Figure 7-39 AcuLink 810 BACnet Device Configuration

7.4.5 Search BACnet Device

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

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

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

NOTE: To use RS485 or USB for search ensure that the interface assignment is selected as BACnet. Also, to use Ethernet or Wi-Fi 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 from 0 to 4194302.

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





Click on the Scan button once the search criteria has been entered correctly.

Devices Data Log	System Settings Protocols	Templates Main	Itenance Diagnostics	
Dashboard	< Scan BACnet Device			
larm Logs fodbus Devices	Interface*			
ACnet Devices	RS485	•		
/Bus Devices	Search From (Device Instance	•)	Search To (Device Instance)	
Digital Inputs	0		4194302	
Virtual Devices	Range: 0 - 4194302		Range: 0 - 4194302	

Figure 7-40 AcuLink 810 Search BACnet Device Setting

NOTE: Depending on the range and number 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. To add the BACnet device the template must be added and installed on to the AcuLink 810.

If a found device is already added to the AcuLink 810 the search will display **Added** in the search results.

If a found device has a device instance already added to the gateway the search will display **Conflict** in the search results.

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics		
Dashboard	scan BACnet Device		Back To Device Lis
Alarm Logs Modbus Devices	Device 100 is found. Vendor is Accuenergy (CANADA) Inc. Model is ACUREV2100-WEB2. Address is 192.168.1.249.	Add To Device List	
BACnet Devices	Device 221 is found. Vendor is Accuenergy (CANADA) Inc. Model is Acuvim-L-WEB. Address is 192.168.1.221.	Added	
Digital Inputs	Device 254 is found. Vendor is Accuenergy (CANADA) Inc. Model is AXM-WEB2. Address is 192,168.1.94.	Added	
Virtual Devices	Device 24001 is found. Vendor is Accuenergy (CANADA) Inc., Model is Acuvim II. Address is 192.168.1.52.	Add To Device List	
	Device 24003 is found. Vendor is Accuenergy (CANADA) Inc Model is Acuvim-L-V3. Address is 192.168.1.52.	Add To Device List	
	Device 24008 is found. Vendor is Accuenergy (CANADA) Inc., Model is Acuvim II. Address is 192.168.1.52.	Add To Device List	
	Device 24009 is found. Vendor is Accuenergy (CANADA) Inc., Model is Acuvim II. Address is 192.168.1.52.	Add To Device List	
	Device 24010 is found. Vendor is Accuenergy (CANADA) Inc Model is Accuvim II. Address is 192.168.1.52.	Add To Device List	
	Device 24011 is found. Vendor is Accuenergy (CANADA) Inc Model is Typical Energy Meter Test. Address is 192.168.1.52.	Add To Device List	
	Device 24012 is found. Vendor is Accuenergy (CANADA) Inc., Model is New Template Test. Address is 192.168.1.52.	Add to Device List	
	Device 24013 is found. Vendor is Accuenergy (CANADA) Inc., Model is Acuvim L V3_TOU. Address is 192.168.1.52.	Add To Device List	
	Device 24014 is found. Vendor is Accuenergy (CANADA) Inc Model is WEB2. Address is 192.168.1.52.	Add to Device List	
	Device 24015 is found. Vendor is Accuenergy (CANADA) Inc Model is Acuvim-L-WEB. Address is 192.168.1.52.	Add To Device List	
	Device 24016 is found. Vendor is Accuenergy (CANADA) Inc., Model is Acuvim II. Address is 192.168.1.52.	Add To Device List	

Figure 7-41 AcuLink 810 Search BACnet Device List





7.4.6 BACnet Gateway

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

To configure the BACnet gateway setting click on the **Protocols** menu tab, then select **BACnet** from the left menu, and select the **Gateway** menu tab. The following fields can be configured for the BACnet gateway settings:

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

UDP Port: The default port is 47808, users can configure from 47808 to 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 to 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 from 0 to 10 retries.

AcuLink 810 Gateway			69 L:	ogout	Wednesday, April 1, 2020 5:20 PM	O About	AcuLink 810	ACCUENERS
Devices Data Log	System Settings Protocols Templates Mainten	ance Diagnostics						
Interface Assignment AcuMesh Modbus	BACnet Configuration Acquisitor Gateway BBMD							
BACnet MQTT SNMP	Gateway Enable* Enable Disable Remote EACnet Virtual Device List.							
	UDP Port* 47808	Network Number*						
	Range: 47808 - 49000 Device Object Name*	Range: 1 - 65534 Device Instance*						
	AcuLink810 Maximum 40 characters	26000 Range 0 - 4194302						
	Advertised APDU Timeout*	Advertised APDU Retries*						
	Default 3 seconds	2 Default 2						

Figure 7-42 AcuLink 810 BACnet Gateway Function Setting



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 is used via the AcuLink 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.

Serial Number	Name	Protocol	Instance	Î
163	WEB2 .163	BACnet IP	26012	
221	Acuvim L V3 .221	Modbus TCP	26004	
294	WEB2 .94	BACnet IP	26013	
94	Acuvim II TCP .94	Modbus TCP	26019	
AH18063288	MESH-69	Modbus RTU	26001	
AH18063303	MESH-67	Modbus RTU	26002	
AH18063310	MESH-65	Modbus RTU	26003	
Bridge1	Bridge Meter 1	Modbus TCP	26005	
Bridge10	Bridge Meter 10	Modbus TCP	26006	
Bridge20	Bridge Meter 20	Modbus TCP	26007	
CSV	CSV Convert Test	Modbus TCP	26011	
DF16010283	AcuDC 243 - 202	Modbus RTU	26020	
E3T16090333	E3T16090333	Modbus RTU	26016	
E3T18052569	E3T18052569	Modbus RTU	26015	
LV3BACNet	Acuvim L_V3 BACnet	BACnet IP	26014	
MESH13	MESH TEST2	Modbus RTU	26018	
MESH2	MESH TEST1	Modbus RTU	26017	
NEW	New Template Test	Modbur TCD	26002	*

Figure 7-43 AcuLink 810 Remote BACnet Virtual Device List

7.4.7 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 to an IP router. 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 810 to send broadcast messages to other BBMDs.
- Disable: Disables BBMD
- BBMD Address List: Users can enter the IP address of the BBMD.





AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Interface Assignment AcuMesh	Acquisitor Gateway BBMD
Modbus BACnet MQTT	BBMD Mode*
SNMP	Allowing incoming FDR BBMD Address List Add Address
	Enter Address 1 Remove
	Must be ip address

Figure 7-44 AcuLink 810 BACnet BBMD Setting

7.5 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 will 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** webpage under the **Protocols** menu tab.

7.5.1 MQTT General Settings

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

Enable MQTT: Select Enable to use the 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 the **Save** button. The connection to the broker can be tested by using the **Test MQTT** button.

Interface Assignment AcuMesh Modbus BACnet	General User Credential SSL/TLS Last Will and Testament Devices to Publish			
MQTT	MQTT Enable*			
SNMP	Enable Disable			
	Broker Address*			
	test.mosquitto.org			
	Broker Port*			
	1883			
	Client ID*			
	1			
	Keep Alive"			
	60 s			
	Timeout*			
	30 s			
	Clean Session*			
	🔿 Yes 💿 No			
	Test MQTT			

Figure 7-45 AcuLink 810 MQTT Setting

7.5.2 MQTT Authentication

The User Credential tab allows users to configure a Username and Password authentication if the broker can support it.

evices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
erface Assignment uMesh	MQTT Configuration	
odbus	General User Credential SSL/TLS Last Will and Testament D	Devices to Publish
Cnet	Username	
ттс		
ure IoT	Enter Username	
IMP	Password	
ogle IoT	Enter Password	







7.5.3 MQTT Encryption

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

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

File Name Identifier: For each file type. AcuLink 810 displays a valid filename to help users select the correct file for uploading.

evices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnos	stics
Interface Assignment AcuMesh Modbus BACnet MQTT Azure IoT SNMP	CA File*	User Credential		Last Will and T	festament	Devices to Publish
Soogle IoT	Choose file Cert File* Choose file Key File* Choose file		Bro	wse		

Figure 7-47 AcuLink 810 MQTT Encryption Setting

7.5.4 Last Will & Testament

The AcuLink 810 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:

- **QoS 0:** 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 less reliable.
- QoS 1: 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.

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 sent are the most reliable, 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.

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
nterface Assignment	MQTT Configuration
cuMesh odbus	General User Credential SSL/TLS Last Will and Testament Devices to Publish
ACnet	Last Will Enable*
IQTT	🖸 Enable 🧶 Disable
zure IoT NMP	Торіс
ioogle IoT	Enter Topic
-	Qos*
	Qos 0 ¢

Figure 7-48 AcuLink 810 MQTT Last Will and Testament Setting

7.5.5 Device Publishing

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

All Meters Use One Topic: If selected as Yes users can use one topic for reading all published devices, however if **No** is selected users will need to configure a base topic.

Topic: Users will enter in the topic used to read all devices.

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

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





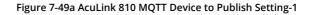
retained message.

Interval: Users can select the publishing interval; the range is from 10 to 600 seconds.

Payload Format: Users can select from two different payload formats.

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

System Settings	Protocols	Templates	Maintenance	Diagnostics
public				
Topic should be	Base Topic + / + /	device serial numbe	e	
Qos*				
Oes 0				
O Yes O N	0			
Interval*				
30 seconds			٠	
Payload Form	at*			
Payload Form	it Template 1		0	
	<pre>c public Topic should be Qos* Qos 0 Retained* Yes N Interval* 30 seconds Payload Form</pre>	<pre>c public Topic shuld be "lane Topic +/+ c Gos" Qos 0 Retained* Yes O No Interval*</pre>	<pre>c public Tapes should be Tapes */* device senial number Oos* Device Tapes and the Tapes */* device senial number Device Tapes */* device senial number Tapes */* Device Senial */* Networks* Payload Format*</pre>	Coddic Tarac should be "fase Tarac" / should be "fase Tarac" Gost Gost Betained" S to Interval" Mounda. Physical Format"



{ "device_sear": "Au393234", "device_sear": "Au393234", "device_sear": "Auxivit", "wollier": "Auxivit", "wollier": "Auxivit": "wollier": "228.6" "yours": "phase.8vit" "wollier": "138.7" } }		
Select Devices To Publish Select All Denable Log Digital Inputs Modbus		
AH822070452 #AH822070452 E3T16090972 #E3T1609 EHM19100047 #EHM19100047 BACnet	0972 🗌 E3T18102365 #E3T18102365	E3T19052339 #E3T19052339
MBus		
Virtual		

Figure 7-49b AcuLink 810 MQTT Device to Publish Setting-2

7.6 Azure loT

The **Azure** Internet of Things (**IoT**) is a collection of Microsoft cloud services that allow the user to have reliable device to cloud communication. **Azure IoT hub** is a managed **IoT** service which is hosted in the cloud and allows for bi-directional communication between **IoT** applications and the devices. This cloud-to-device connectivity means that you can receive data from your devices, but you can also send commands back to the device. The AcuLink 810 supports **Azure IoT** device posting where users can send Modbus, BACnet, MBus, and Virtual Devices to the IoT Hub.





Once connected on Azure, users can also configure settings on the AcuLink 810 from Azure via device twin. The following settings need to be configured.

Azure IoT Enable: Allow users to enable or disable Azure IoT

Primary Connection String: Enter in the primary connection string for the IoT Hub. Secondary Connection String: Enter in the secondary connection string for the IoT Hub.

Interval: Select how often to post to the IoT Hub, the range is from 10 to 600 seconds.

Enable SSL: When the AcuLink 810 connects to Azure X509 IoT device/IoT Edge device, users can enable SSL where they can upload a certificate and key file for encrypted posts.

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

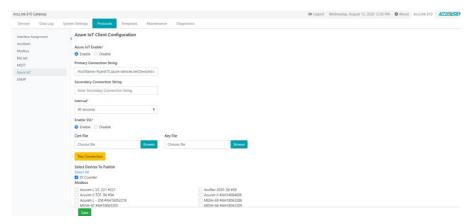


Figure 7-50 AcuLink 810 Azure IoT Client Configuration

7.6.1 Creating Azure IoT Device on Azure Portal Server

1. Sign into the Azure Portal (https://portal.azure.com).

2. From the Azure homepage, select the + Create a resource button, and then enter 'IoT Hub' in the Search the Marketplace field.

3. Select IoT Hub from the search results, and then select **Create**.





88

- 4. On the **Basics** menu tab, complete the fields as follows:
 - Subscription: Select the subscription to use for your hub.
 - **Resource Group:** Select a resource group or create a new one. To create a new one, select **Create new** and fill in the name you want to use. To use an existing resource group, select that resource group from the drop-down menu. For more information, see Manage Azure Resource Manager resource groups.
 - **Region:** Select the region in which you want your hub to be located. Select the location closest to you. Some features, such as IoT Hub device streams are only available in specific regions. For these limited features, you must select one of the supported regions.
 - **IoT Hub Name:** Enter a name for the IoT hub. This name must be globally unique. If the name you enter is available, a green check mark appears.

	+ Add connection 💿 Switch authentication method	
IoT hubs IoT Plug and Play Settings	Ryan810	18
Notification Center	Host name	
	Ryan810.azure-devices.net	D
	Shared access policy name	
	registryReadWrite	D
	Shared access policy key	
	••••••	0
	Connection String	

Figure 7-51 Azure IoT Hub Server Configuration

7.6.2 Create an IoT Devices /IoT Edge Device in the Azure Portal

In IoT Hub in the Azure portal, IoT Edge devices are created and managed separately from IoT devices that are not edge enabled.

- 1. Sign into the Azure Portal and navigate to IoT hub.
- 2. In the left panel, select IoT devices/IoT Edge from the menu.
- 3. Select New/Add an IoT Edge device.
- 4. Provide a descriptive device ID. Use the default settings to auto-generate authentication keys and connect the new device to the hub.
- 5. Select an authentication type.

Users can select Symmetric key or X.509 CA signed.





AcuLink 810 Data Acquisition Gateway & Server

Azure IoT Explorer (preview)	
Home > Ryan810 > Devices > Create a new identity	
🗟 Create 🛛 X Cancel	
Device ID * O	
test_add_device	
Authentication type * Symmetric key () X509 self-signed () X509 CA signed	
Auto-generate keys	
Connect this device to IoT hub	

Figure 7-52 Create a Device on Azure IoT Hub Server

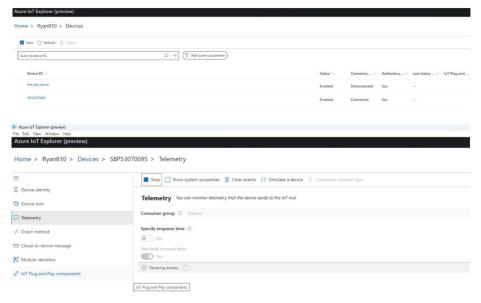


Figure 7-53 Azure IoT Hub Server Device List



90

7.6.3 Retrieving Connection String in the Azure Portal

SAS IoT device/IoT Edge device:

When users are ready to set up their device, users will need the connection string that links the user's physical device with its identity in the IoT hub.

- 1. From the **IoT devices/IoT Edge** webpage in the portal, click on the device ID from the list of IoT Edge devices.
- 2. Copy the value of either Primary Connection String or Secondary Connection String.

X.509 IoT device/IoT Edge device:

Connection string is defined as: "HostName=<host_name>;DeviceId=<device_id>;x509=true"

7.6.4 Configure AcuLink 810 from Azure

AcuLink 810 support device twins desired properties to synchronize device configuration or conditions, where the AcuLink 810 can configure the NTP and Azure IoT configuration from the Azure portal.

The configuration is defined in desired properties:

```
{
```

"properties": { "desired": {

"ntpConfig": {

"enable": true,

"ntpServer1": "0.us.pool.ntp.org",

"ntpServer2": "",

"ntpServer3": "",

"timeZone": "America/Toronto",

"lastUpdateTimestamp": 1595876093

},





```
"azureConfig": {
```

"azureloTEnable": true,

"primaryConnectionString": "HostName=AcuLink810.azure-devic es.net;DeviceId=810pc;x509=true",

"secondaryConnectionString": "",

"sslEnable": true

},

"existingProperty": "otherNewValue",

```
"otherOldProperty": null
```

```
}
```

```
}
```

7.7 SNMP

The AcuLink 810 supports the Simple Network Management Protocol (SNMP) which allows for reporting the AcuLink 810 device data to the management station. The SNMP settings can be found on the **SNMP** webpage 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 from 16100 to 16199.

The AcuLink 810 also supports SNMP trap notifications, where the user can receive a trap notification for any alarms that are triggered for devices on the AcuLink 810.

Trap Enable: Select enable for trap notifications.





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

Buffer Size: Enter the size of the buffer for the number of notifications will be stored before being sent to the management station. A maximum of thirty (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 to 30 seconds.

AcuLink 810 Gateway				CP Logout Wednesday, August 12, 2020 3:59 PM C About Acubink 610	ALLOCATION
Devices Data Log	System Settings Protocols Templates Ma	aintenance Diagnostics			
Interface Assignment AcuMesh Modbus BACnet MQTT Acure IoT	SNMP SNMP Enable* © Enable SNMP Version* SNMP-2c	Port* • 161			
SNMP		Default: 161, Range: 16100 - 16199			
	SNMPv2c Configuration				
	RO Community				
	Enter RO Community				
	Trap Enable* Enable Disable				
	Trap Target 1*	Trap Target 2	Trap Target 3		
	192.168.1.195	Enter Trap Target 2	Enter Trap Tanget 3		
	Must be ip address	Must be ip address	Must be to address		
	Trap Target 4				
	Enter Trap Target 4				
	Must be ip address				
	Report Buffer Size*	Report Hold Time*			
	30	0			
	Range 0 - 30	Rangel 0 - 300			
	Download MIB File				
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
	Save				

Figure 7-54a AcuLink 810 SNMP Setting-1

7.7.1 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 webpage in the **SNMP** webpage. When downloading the SNMP file, it will be downloaded as a zip folder including the individual MIB files that are all device models on the AcuLink 810.

port Buffer Size	Report Hold Time
30	0
nge: 0 - 30	Range: 0 - 300
Download MIB File	
Save	
Jave	







7.8 MBus

The AcuLink 810 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 Gateway						
Devices Data Log	System Settings	Protocols Template	s Maintenance	Diagnostics		
Dashboard	K MBus Devic	ces				
Alarm Logs						and the second second
Modbus Devices	Add Device	Search Master				Download List
BACnet Devices	Master Nam	ie ÷		IP Address	Action	
MBus Devices				No Data		
Digital Inputs						
Virtual Devices						

Figure 7-55 AcuLink 810 MBus Setting

7.8.1 Adding MBus Device

To add a MBus device, select **MBus** under the **Devices** menu tab. Users will first need to add the MBus master device, click on the **Add Device** button. Enter in the following:

Master Name: Enter the name for the master device.

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

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

Click on the **Save** button once complete.

cuLink 810 Gateway				🕪 Logout Wea
Devices Data Log	System Settings Protocols Template	es Maintenance Diagnostics		
Dashboard	Add Master			
Alarm Logs Modbus Devices	Master Name*	Master IP Address*	Master Port*	
BACnet Devices	Master 55	192.168.1.55	10001	
MBus Devices	Maximum 16 characters	Must be ip address	Range: 1 - 65535	
Digital Inputs	Data Logger			
Virtual Devices	Data Logger 1	•		

Figure 7-56 AcuLink 810 Add a MBus Device





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

AcuLink 810 Gateway			
Devices Data Log	System Settings Protocols Temp	lates Maintenance Diagnostics	
Dashboard Alarm Logs Modbus Devices	MBus Devices Add Device Search Master		Download List
BACnet Devices	Master Name	IP Address	Action
MBus Devices Digital inputs	Mbus Test	192.168.63.7	
Digital inputs Virtual Devices			

Figure 7-57 AcuLink 810 MBus Device List

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 with a range from 1 to 65535.

Click on the **Scan** button once the search criteria has been completed.

When the scan has completed, all masters discovered will appear in the search results, users will have the option to add them individually or can use the **Add All Devices To Devices List** button to add all discovered MBus masters.

Alarm Logs Star Modbus Devices	rt IP Address*	End IP Address*	Master Port*	
	92.168.1.50	192.168.1.55	10001	
MBus Devices Must	t be ip address	Must be ip address	Range: 1 - 65535	
Digital Inputs Ac	dd All Devices To Device List			
Virtual Devices	Device Master 54 is found. IP address is 19	22 168 1 54		Added

Figure 7-58 AcuLink 810 Search Master Device

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





From this webpage 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.

cuLink 810 Gateway					G Logout V
Devices Data Log Syste	m Settings Protocols Templates	Maintenance Diagnostics			
Dashboard Alarm Logs Modbus Devices	MBus Device - 192.168.1.55 Master Name*	Master IP Address	Master Port	Data Logger	
BACnet Devices	Master 55	192.168.1.55	10001	Select Data Logger 0	
MBus Devices	Maximum 16 characters				
Digital Inputs	Serial Number	Secondary Address	Medium	Status	
Virtual Devices	Enter Serial Number	Enter Secondary Address	Select Medium 🔶	Select Status 🕈	
	Serial Number Device Primary	Address Device Secondary Add	ress Medium Read Time	Status Alarms Action	
		No	Data		
	Delete Selected Force to Read Selected	rted			
	Scan For Slave Manual Add Device	Add All Devices To Device List			
	No device found				

Figure 7-59 AcuLink 810 MBus Device Setting

Scanning for MBus Devices

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

No Data Delete Selected Force to Read Selected Scan For Slave Manual Add Device Add All Devices To Device List Device, GWE 19/49/028 3C 07 is found Secondary address is 10/49/028E41EFC07 Comparison of the secondary address is 10/49/028E41EFC07	ime Status Alarms Actio	Medium Read Time	Device Secondary Add	Device Primary Address	Serial Number				
Scan For Slave Manual Add Device Add All Devices To Device List			No I						
	Delete Selected Force to Read Selected								
Device GWE 19495028 3C 07 is found Secondary address is 19495028E61E3C07	Scan For Stave Manual Add Device Add All Devices To Device List								
bene diministration a formally address is respected each.	Device GWF.19495028.3C.07 is found. Secondary address is 19495028E61E3C07. Add To Device List								

Figure 7-60 AcuLink 810 MBus Device Scanning

Once the slave device is added it will show up on this webpage 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 webpage by clicking on the trash icon button under the Action column. If there are several Mbus devices added, users can use the filter to sort and filter the MBus devices by serial number, secondary address, medium, and status.





Dashboard	MBus Device - 192.168.1.5	5							Back To Device Lis
Narm Logs	Master Name*	Master IP Address		Master Port		Data Logger			
Vodbus Devices SACnet Devices	Master 55	192.168.1.55		10001		Select Data	Logger	•	
Vibus Devices	Maximum 16 characters								
Digital Inputs	Serial Number	Secondary Addres	· · · · · ·	Medium		Status			
irtual Devices	Enter Serial Number	Enter Secondary	Address	Select Medium		Select State	s	٠	
	Serial Number	Device Primary Address	Device Secondary Ad	idress Medium	Read Time	Status	Alarms	Action	
	GWF.19495028.3C.07	0	19495028661E3C07	Water	2020-08-12 16:20	105 (O ON	0		

Figure 7-61 AcuLink 810 MBus Master Device Configuration

Users can perform a force read for the selected MBus devices; this will provide users with the latest data from the device. The read time will be updated to notify users of the read.

ashboard	MBus Device - 192.168.1.55				Back To Device Lis
larm Logs fodbus Devices	Master Name*	Master IP Address	Master Port	Data Logger	
ACnet Devices	Master 55	192.168.1.55	10001	Select Data Logger 0	
Bus Devices	Maximum 16-characters				
igital inputs	Serial Number	Secondary Address	Medium	Status	
intual Devices	Enter Serial Number	Enter Secondary Address	Select Medium 0	Select Status 0	
	Serial Number Devic	e Primary Address Device Second	ary Address Medium Read Time	Status Alarms Action	
	GWF.19495028.3C.07 0	19495028E61E3	C07 Water 2020-08-12	7:15:05 OON 0	

Figure 7-62 AcuLink 810 MBus Master Device Added

Adding MBus Device Manually

Users can add Mbus devices manually by entering the secondary address (required). Once the address is entered, click on **Add**.

Serial Number	Device Primary Address	Bevice Secondary Address	Medium	Read Time	Status	Alarms	Action
GWF.19495028.3	C.07 null	19495028E61E3C07	Water	2024-02-12 11:38:05		0	
Delete Selected	ce to Read Selected						
Scan For Slave Man	ual Add Device Add All Device	s To Dev Scan For Slave				3	<
No device found		Address Type					
		Secondary Address	O Primar	y Address			
					Cancel	Start Scan	

Figure 7-63 AcuLink 810 Add MBus Device Manually





Data Logging for MBus Devices

Data logging for MBus devices can be done directly from the **MBus Device** webpage. 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 webpage (Data Log > Data Loggers).

Dashboard	MBus Device - 192.168.1.5	5						
arm Logs	Master Name*	Master IP Address	Mas	ter Port		Data Logger		
lodbus Devices ACnet Devices	Master 55	192.168.1.55	10	001		Select Data	Logger	ė
Bus Devices	Maximum 16 characters					Select Data		
gital Inputs	Serial Number	Secondary Addres	s Med	dium		Data Logger Data Logger		
rtual Devices	Enter Serial Number	Enter Secondary	Address	Select Medium	۰	Select State	15	٥
	Serial Number	Device Primary Address	Device Secondary Addre	ess Medium	Read Time	Status	Alarms	Action
	GWF.19495028.3C.07	0	19495028E61E3C07	Water	2020-08-12 16:29	:05 () ON	0	
	Delete Selected Force to Re Scan For Slave Manual Add No device found	ad Selected Device Add All Devices To	o Device List					

Figure 7-64 AcuLink 810 MBus Datalog Selecting

7.9 Virtual Device

The AcuLink 810 supports the creation of a virtual device which allows users to create a device based on certain calculations/formulas of the devices already added to the AcuLink 810. Select **Virtual Devices** under the **Devices** menu tab and click on **Add Virtual Device**.

cuLink 810 Gateway			
Devices Data Log System Sett	ngs Protocols Templates Mainten	ance Diagnostics	
Alarm Logs Add	al Devices Virtual Device m 22 Virtual Devices		
	ce Name	Serial Number	Action
Digital Inputs		No Data	







Users will be required to enter a device name for the virtual device. Once the name is entered for the device, click on the **Add Virtual Parameter** button to start creating and adding the virtual parameters.

AcuLink 810 Gateway		De Logout Wednesday, August 12, 2020 444 PM O About AcuLink 810 ACCUSNER67
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Dashboard	Add Virtual Device	
Alarm Logs Modbus Devices	Device Name*	
BACnet Devices	Test Virtual Device	
MBus Devices	Malmun 45 characters	
Digital Inputs Virtual Devices	Add Virtual Device Parameter Maximum 52 Parameter	

Figure 7-66 AcuLink 810 Add Virtual Device

7.9.1 Adding Virtual Parameter

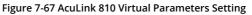
The following settings will need to be configured to add the Virtual parameters.

- Parameter Name Enter a parameter name for the virtual device.
- Unit Enter the unit that will be used for the virtual parameter.
- Parameter Type Can be selected as either 'Realtime' or 'Accumulative'.

Calculated Meter Formula - The meter formula can be created by clicking on the **Select Device Parameter** button. This will allow users to select existing parameters from Modbus, BACnet and MBus devices already added to the AcuLink 810. Once users have the parameters selected from the existing device click on **Select**, users will notice the parameter is added into the meter formula bar. Users also have the option to add math operators to their calculated meter formula such as addition (+), subtraction (-), multiplication (*), and division (/).

Users can add another parameter to the virtual device by clicking on the **Add Virtual Device Parameter**, and it can have up to fifty (50) Virtual Parameters per virtual device. Once all parameters are added, click on the **Save** button.

AcuLink 810 Gateway Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	😢 Logout Wednesday, August 12, 2020 4:46 PM 🔮 About Aculunk 810 Acul
Look Data Gang San Lang San La	Vertication Tester Add Virsal Decircie Tester Name Tester Name Reality For Ends Decircie Content Figst Statument Figst Content Name Endy Your Decircie Director Name Contenter Name Director Name	







Facility Rower Total		
Parameter Type* O Realtime	Select Device Parameter	×
Accumulative	First Device	
Calculated Mater Formula*	Acuvim II TCP .94 - 94	*
criter Calculated Weter Formula formula is expression, eg. "Soevice 1 serarparameter 1 name"+0.11"Soevice 2 serarparam	First Parameter	
Delete	Power	*
	Phase A Active Power	÷
Add Virtual Device Parameter	Phase B Active Power	
Maximum 50 Parameters	Phase C Active Power	
		Press enter to select
	Phase A Reactive Power	
	Phase B Reactive Power	
	Phase C Reactive Power	
	C	•

Figure 7-68 AcuLink 810 Select Virtual Parameters

Once the device is created it can be seen from the **Virtual Device** webpage, to view the readings click on the **Virtual Device** hyperlink from the left menu.

Under the **Readings** menu tab users can view the virtual device readings.

Devices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics	
Dashboard Alarm Logs Modbus Devices BACnet Devices	Virtual De Add Virtua Maximum 32 V Device Na	I Device		Serial Number		Action
MBus Devices Digital Inputs	Test Virtua				alDevice.Test Virtual Device	Action
/irtual Devices						

Figure 7-69 AcuLink 810 Virtual Device List

Users can edit the virtual device in the Configuration menu tab, from here the user can edit the parameter name, unit, parameter type, calculated meter formula, and delete virtual parameters.

NOTE: The virtual Device Name cannot be modified in the Configuration menu tab.

uLink 810 Gateway 🕒 Logout Friday, May 29, 2020 11:17 AM 🕕 About AcuLink 810 ACUENSS. Data Log Protocols < Reading Configuration Alarm Logs Voltage Sum MBus Devices Parameter 1 -Unite Phase Voltage Sur Parameter Type* O Realtime Accumulative Calculated Meter Formula "\$221:Average Line-to-Neutral Voltage"+ "\$94:Average Line-to-Neutral Voltage"+ 5*2+ "\$LV3BACnet:Average Voltage Delete

Figure 7-70 AcuLink 810 Virtual Device Configuration





7.10 Google IoT

The Google Internet of Things (**IoT**) is a collection of Google Cloud services that allow the user to have reliable device to cloud communication. **Google IoT Hub** is a managed **IoT** service which is hosted in the cloud and allows for bi-directional communication between **IoT** applications and the devices. This cloud-to-device connectivity means that you can receive data from your devices, but you can also send commands back to the device.

7.10.1 General

Configure all the basic settings in this webpage:

Broker Address: This is the endpoint to which your device will connect to communicate with Google's IoT core. It typically is mqtt.googleapis.com.

Broker Port: The port number is used to establish the connection with the broker. For Google IoT, it's commonly set to 8883 for secure MQTT communication.

Google Cloud Project ID: The project ID is a unique identifier assigned to each project created in the Google Cloud Platform.

Cloud Region: This parameter specifies the Google Cloud region where the user's IoT Core registry is located. Common regions include us-central1, urope-west1, and asia-east1.

Registry ID: A registry is a logical container for the devices. The user should create a registry within the project and provide its unique name.

Device ID: The device ID is a unique identifier for the user's individual IoT device. It should be associated with a registry.

General SSL/TLS Devices to Pul	xish	
Google IoT Enable*		
🔾 Enable 🔵 Disable		
Broker Address	Broker Port	
mqtt.googleapis.com	8883	
Example: mqtt.googleapis.com	Example: 8883	
Cloud Region	Google Cloud Project ID	
us-central1	accuenergy-iot	
Example: us-central1	Example: accuenergy-mqtt-test	
Registry ID	Device ID	
aculink810	nacun810	
Example: my-registry	Example: test	







7.10.2 SSL/TLS

The user shall upload the security key in this webpage to establish secure communication with Google IoT server.

Google CA File: This file contains the certificate authority (CA) public key used to establish a secure connection with Google's IoT core. Ensure it is correctly configured on your device.

Private Key File: This file stores your device's private key for secure communication. Keep this file secure and configure it properly.

Google Io	T Configu	ration		
General	SSL/TLS	Devices to Publish		
CA File*				
Choose file		Browse		
Key File*				
Choose file		Browse		

Figure 7-72 AcuLink 810 Google IoT SSL/TLS Configuration

7.10.3 Device to Publish

Users will use this webpage to configure the device which they would like to push data to the Google IoT server.

Topic: This is the communication channel within the Google IoT system, where IoT devices publish messages in the cloud.

Qos: Select the Qos in the drop-down menu to choose the communication quality with the IoT server.

Interval: Use this to select the frequency for pushing data to the server.

Payload Format: Select the data format that the user would like to use for the data being pushed to the server.

Select Devices To Publish: User will check the box next to the meter which they would like to push data to the server.





Google IoT Configu	ration	
General SSL/TLS	Devices to Publish	
Торіс		
/devices/nacun810/eve	nts	
Example: /devices/DEVICE_ID/er	vents	
Qos*		
Qos 0		\$
Interval*		
60 seconds		¢
Payload Format*		
Payload Format Template 1		\$
<pre>{ "device_name": "AH1S "device_model" "Acu "timestamp": 1571414 "online": true, "readings": [{ param": "phase "value": "120.0 }, { "param": "phase "phase "phase</pre>	imII", 434, A_volt" v"	

Figure 7-73 AcuLink 810 Google IoT Device to Publish Configuration





Chapter 8: Device Readings

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

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

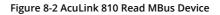
Users can immediately force read parameters to the current webpage by clicking the "Refresh" button.

Reading Type		
Basic Metering	Configure	
Display Writable Parameter Only		
Refresh Parameters v		
Refresh		
Hint: It may take few minutes to refresh the	parameters.	
Parameter		Value
Frequency		60.011 Hz
Phase A Line-to-Neutral Voltage		121.957 v
Phase B Line-to-Neutral Voltage		121.968 v
Phase C Line-to-Neutral Voltage		121.957 v

Figure 8-1 AcuLink 810 Device Readings

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

Digital Imputs Portugal Devices No Parameter Value	A 100 March 1	and control of the spectrum.	and the second sec			
Varindovi Carcolo Varindovi Ca	Data Log Sys	stem Settings	Protocols Templates	Maintenance Diagnostics		
MBus Devices Realings * Digital Inputs * * Virtual Devices No Parameter Value	s revices	Reading		3.3C.07		
Virtual Devices No Parameter Value	ices					
No Parameter Value	uts	Readings		٥		
	vices	No	Parameter		Value	
1 Fabrication number 19495028		1	Fabrication number		19495028	
2 Volume 0.203 m*3		2	Volume		0.203 m^3	





104

8.1 Parameter Configuration

Use the **Configure** function to configure each parameter on the list and allow it to display on the AcuLink 810 or to record on the data log.

Reading Type			
Basic Metering	¢ Co	onfigure	
Display Writable Parameter C	nly		
Refresh Parameters 💌			
Refresh			
Hint: It may take few minutes to	refresh the parameters.		
Parameter			Value
Phase A Line Current			57.192 A
Phase B Line Current			62.281 A
Phase C Line Current			59.119 A

Figure 8-3 AcuLink 810 Parameter Configuration

Select the "Reading Type" then click the Configure button, the following webpage will then show up.

Users can check which parameters to be included, as well the option to create custom labels.

Reading Type				
Basic Metering	Back To Device Readin	g		
Parameter	Customized Label	Included in Log Unselect All	Use Custom	ized Label for
rarameter	Customized Laber	included in Log Unselect All	Display Select All	DataLog Select All
Phase A Line Current	Enter Custom Parameter 0	۵		
Phase B Line Current	Enter Custom Parameter 1	۵		
Phase C Line Current	Enter Custom Parameter 2	۵		
Average Line-to-Neutral Voltage	Enter Custom Parameter 3	۲		
Phase A Line-to-Neutral Voltage	Enter Custom Parameter 4	•		

Figure 8-4 AcuLink 810 Parameter Definition





AcuLink 810 Data Acquisition Gateway & Server

- Included in Log Select if the parameter needs to be included in the data log file.
- **Customized Label** Where users can create a custom label for the parameter listed in the template.
 - Display: Display the customized label on the AcuLink 810 reading webpage.
 - DataLog: Display the customized label on the AcuLink 810 data log file.

Parameter Definition - E3T190	56118			
Reading Type				
Basic Metering	Back To Device Reading			
Parameter	Customized Label	Included in Log Unselect All	Use Custom	ized Label for
			Display Select All	DataLog Select All
Phase A Line Current	test label of phase A line current		2	
Phase B Line Current	test label of phase B line current		•	•
Phase C Line Current	Enter Custom Parameter 2			
Average Line-to-Neutral Voltage	Enter Custom Parameter 3			
Phase A Line-to-Neutral Voltage	Enter Custom Parameter 4			
Save				

Figure 8-5 AcuLink 810 Parameter Definition (Display, Datalog)

Click the **Save** button after everything is set up, then click on the **Back To Device Reading** button. In the readings webpage to see the custom labels implemented.

Reading Type			Bacl
Basic Metering	♦ Configure		
Display Writable Parameter Only			
Refresh Parameters 🔺			
Parameter		Value	
test label of phase A line current		56.349 A	
test label of phase B line current		61.448 A	
Phase C Line Current		58.261 A	
Average Line-to-Neutral Voltage		122.398 v	
Phase A Line-to-Neutral Voltage		122.383 v	

Figure 8-6 AcuLink 810 Device Reading Webpage

When downloading the data log file, the name in the header will be changed according to the custom label configured.





Chapter 8: Device Readings

	А	В	С	D	E	F
1	Time	test label of phase A line current	test label of phase B line current	Ic_A	Vnavg_V	Va_V
2	2023-11-29T00:00:00-0500	58.997	64.296	60.997	123.52	123.506
3	2023-11-29T00:01:00-0500	58.919	64.231	60.929	123.587	123.575
4	2023-11-29T00:02:00-0500	58.849	64.163	60.859	123.575	123.561
5	2023-11-29T00:03:00-0500	58.841	64.145	60.838	123.595	123.582
6	2023-11-29T00:04:00-0500	58.79	64.106	60.802	123.911	123.897
7	2023-11-29T00:05:00-0500	58.859	64.166	60.874	123.848	123.836
8	2023-11-29T00:06:00-0500	58.841	64.15	60.838	123.796	123.783
9	2023-11-29T00:07:00-0500	58.81	64.125	60.828	123.773	123.76
10	2023-11-29T00:08:00-0500	58.925	64.218	60.929	123.93	123.918
11	2023-11-29T00:09:00-0500	58.946	64.265	60.934	123.986	123.973
12	2023-11-29T00:10:00-0500	58.992	64.308	60.997	123.89	123.878
13	2023-11-29T00:11:00-0500	58.881	64.205	60.877	123.81	123.796
14	2023-11-29T00:12:00-0500	58.94	64.241	60.935	123.445	123.432
15	2023-11-29T00:13:00-0500	58.806	64.116	60.817	123.585	123.572
16	2023-11-29T00:14:00-0500	59.099	64.371	61.079	123.489	123.477
17	2023-11-29T00:15:00-0500	59.09	64.36	61.064	123.44	123.427
18	2023-11-29T00:16:00-0500	58.914	64.217	60.917	123.456	123.444
19	2023-11-29T00:17:00-0500	58.911	64.191	60.898	123.372	123.359

Figure 8-7 AcuLink 810 Datalog File

8.2 Writing to Modbus Device

Adding the device

After the template with Modbus Function code 16/15 is created, add a new device with the template. Then specify the connection method (Protocol) to that Modbus device (Modbus RTU/ Modbus TCP).

NOTE: Refer to chapter 7 on how to add or create Modbus Templates on the AcuLink 810.

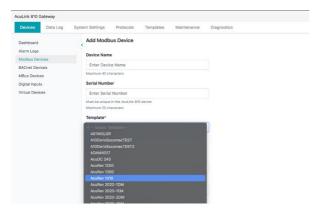


Figure 8-8 AcuLink 810 Add Devices





Users will be able to view the device connected under the Modbus device list. In this example, the writing template is connected to an AcuRev 1310 meter.

evices Data Log	System Settings	Protocols	Templates Mai	intenance Diagnostic	28			
ashboard	Modbus De	evices						
arm Logs odbus Devices	Add Device	Search Device						Download List
Acnet Devices	Device Nam	ie C I	nterface 🗧	Protocol 0	Serial Number	Status 🗧	Alarms 🗧	Action
Bus Devices gital Inputs	AHB220704	52 1	25485	Modbus RTU	AHB22070452	() ON	0	
rtual Devices	E3T1609093	72 1	R\$485	Modbus RTU	E3T16090972	() ON	0	
	E3T1810236	15 1	R\$485	Modbus RTU	E3T18102365	(U OFF	0	
	E3T190523	39 1	R\$485	Modbus RTU	E3T19052339	() ON	0	
	EHM191000	47 1	R\$485	Modbus RTU	EHM19100047	() ON	0	

Figure 8-9 AcuLink 810 Modbus Device List

Click on the device to view all parameters, the writable parameters will have the blue write icon located next to the value as seen below.

cuLink 810 Gateway		
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Dashboard Alarm Logs Modbus Devices	Modbus Device - Write Reading Alarm Configuration	
BACnet Devices	Reading Type	
MBus Devices	Settings Parameter Define	
Digital Inputs Virtual Devices	Select Reading Type	
virtual Devices	Relay Output	
	Settings	Value
	Frequency	1.000000 🕼
	Protocol 1	0.000000 😰
	Parity 1	3.000000 😰
	Password	0.000000
	Address 1	210.000000
	Baud Rate 1	19200.000000 📝
	Voltage Wiring	0.000000 😭
	Current Wiring	0.000000 🕼
	PT1 (High bit)	0.000000
	PT1 (Low)	4000.000000 🗭
	PT2	4000.000000 💕
	сті	400.000000 🗭

Figure 8-10 AcuLink 810 Reading Type Selection

The blue Write icon button next to the value allows the user to update and write a register value into the device. For example, by clicking the write icon button for CT1 parameter, a "Change Modbus Register Value" prompt will appear. The user can then edit the value from 5000 to 10000. Click on the **Submit** button to confirm the change.





Wining Mode	0 12	
CT2	333 @	
сп	Change Modbus Register Value	×
CTN Value	New Value	
PT2	1000	
PTI		
		Cancel Submit

Figure 8-11 AcuLink 810 Change Modbus Register Value

uLink 810 Gateway							
Devices Data Log	System Settings Protocols Template	s Maintenance Diagnostics					
lashboard	Modbus Device - E3T19052339						
larm Logs fodbus Devices	Reading Alarm Configuration						
ACnet Devices	Reading Type						
IBus Devices ligital Inputs	Configuration © Configure						
tual Devices	Display Writable Parameter Only						
	Refresh Parameters 🗠						
	Parameter	Value					
	Wiring Mode	0 7					
	CT2	333 🕼					
	CT1	1000 🔐					
	CTN Value	11					
	PT2	400.000006 📝					
	PT1	400.000006 [2					

Figure 8-12 AcuLink 810 Reading Modbus Register Values After Change



Chapter 9: Digital Inputs

The AcuLink 810 has eight (8) digital input (DI) channels. Each digital input can be used as an input pulse counter or a digital status monitor.

Each channel has two terminals, a DI terminal and a DI COM terminal. The digital input channels are dry contact inputs, meaning that a voltage supply is required to generate a pulse or digital status.

The image below shows a closed circuit on digital inputs 1 and 6. The positive output is connected to the DI1 and DI6 channel inputs and negative output is connected to the DI1-COM and DI6-COM common input respectively.

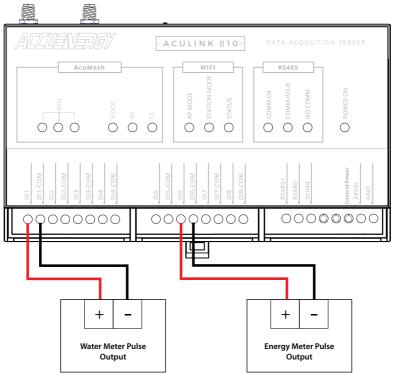


Figure 9-1 AcuLink 810 Digital Input Connections





On the AcuLink 810 webpage, the Digital Inputs connected are shown as seen below.

The Type column indicates whether the DI channel is configured for Pulse or Digital Status. A channel labeled as "counter" is configured for pulse input, while a channel labeled as "Status" is configured for Digital Status input.

uLink 810 Gateway								🕀 Logout	Monday, December 4, 2023 4:31 PM	Abou
Devices Data Log	System Settings Protocols	Templates Maint	enance Diag	nostics						
Dashboard Alarm Logs Modbus Devices BACnet Devices	C Digital Input	Description	Count	Multiplier	Reading	Unit	Status	Туре		
MBus Devices	Digital Input 1	Channel 1	15	10.000	150.000	р		Counter		
Digital Inputs	Digital Input 2	Channel 2	2	5.000	10.000	s		Counter		
/irtual Devices	Digital Input 3	Channel 3					OFF	Status		
	Digital Input 4	Channel 4		1.000	0.000			Counter		
	Digital Input 5	Channel 5		1.000	0.000			Counter		
	Digital Input 6	Channel 6		1.000	0.000			Counter		
	Digital Input 7	Channel 7		1.000	0.000			Counter		

Figure 9-2 AcuLink 810 Digital Input Webpage

Users can switch between pulse counter and digital status by enabling the **Manual Edit** slider. The digital input channel settings can also be modified, details such as the channel description, count, multiplier, and unit can be configured.

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

	Distal Issue						
lashboard Iarm Logs Rodbus Devices ACnet Devices	 Digital Input Manual Edit Digital Input 		Count	Multiplier	Reading	Unit	Sive
/Bus Devices	Digital Input				0.000		
ligital Inputs	1	Water Meter	1	0.234	0.000	mL	
irtual Devices		Maximum 40 characters	Range: 0 - 4294967295	Range: 0.001 - 100000		Maximum 20 characters	
	Digital Input	Gas Meter	0	1.267	0.000	m3	
	2	Maximum-40 characters	Range: 0 - 4294967295	Range: 0.001 - 100000		Maximum 20 characters	
	Digital Input Channel 3 0 1.000 0.000 5						
	3	Maximum 40 characters	Range 0 - 4294967295	Range: 0.001 - 100000		Maximum 20 characters	
	Digital Input	Alarm Status	0	1.000	0.000		
	4	Maximum 40 characters	Range 0 - 1	Range: 0.001 - 100000		Maximum 20 characters	
	Digital Input	Power Status	0	1.000	0.000		
	5	Maximum 40 characters	Ranger 0 - 1	Range: 0.001 - 100000		Maximum 20 characters	
	Digital Input	Channel 6	0	1.000	0.000		•
	6	Maximum 40 characters	Range: 0 - 4294967295	Range: 0.001 - 100000		Maximum 20 characters	
	Digital Input	Channel 7	0	1.000	0.000		•
		Maximum 40 characters	Range: 0 - 4294967295	Range: 0.001 - 100000		Maximum 20 characters	

Figure 9-3 AcuLink 810 Digital Input Editing



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

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

9.1 Device Alarm

To configure over/under alarms in the AcuLink 810, users must log in with administrative access. Alarms can be added to all devices including Modbus, BACnet and MBus devices.

Dashboard	Modbus Devices						
Alarm Logs Modbus Devices	Add Device Sear	th Device					Download Lis
BACnet Devices	Device Name	Interface 0	Protocol C	Serial Number	Status 🗉	Alarms 0	Action
MBus Devices Digital Inputs	AHB22070452	R\$485	Modbus RTU	AHB22070452	() OFF	0	
Virtual Devices	E3T16090972	RS485	Modbus RTU	E3T16090972	(Ú ON	0	
	E3T18102365	R\$485	Modbus RTU	E3T18102365	() OFF	0	
	E3T19052339	RS485	Modbus RTU	E3T19052339	(U ON	0	
	E3T19055068	Mesh	Modbus RTU	E3T19055068	() ON	0	8
	EHM19100047	RS485	Modbus RTU	EHM19100047	() OFF	0	

Figure 9-4 AcuLink 810 Modbus Devices

Devices Data Log	System Settings	Protocols Templa	es Maintenance	Diagnostics			
Dashboard	< Modbus D	evice - E3T1905233	Э				
Narm Logs							
Modbus Devices	Reading	Alarm Configuration	1				
3ACnet Devices	Add Alarm						
dBus Devices							
Digital Inputs	Label	Parameter	Min	Max	Value	Status	Action
/irtual Devices				No Data			

Figure 9-5 AcuLink 810 Device Alarms

To create a device alarm, users need to select the device from the **Devices** webpage, then select the **Alarm** menu tab. Click the "Add Alarm" button to be redirected to the following webpage to configure.

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 Value' field. Any value lower than the minimum value will trigger the alarm.





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

Click on the **Save** button 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.

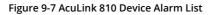
AcuLink 810 Gateway Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
Dashbard Alam Luga Mohata Davias BiChat Davias Dajhal Inoxi Dajhal Inoxi Virtual Devices	Modbus Device - EXT19052339 mader Configuration Add Alarm Obvice Status Alarn Device Status Alarn Image: Configuration Margin: Configuration

Figure 9-6 AcuLink 810 Edit Device Alarm

Once the alarm has been configured, it will appear in the Parameter list under the Alarms menu tab. This webpage will give you a summary of the alarm by letting the user know the alarm maximum and minimum values, the parameter alarm mode and the status of the alarm. Users can delete the alarm and reconfigure the alarm setting under the Action column.

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** webpage.

cuLink 810 Gateway									
Devices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics				
Dashboard	Modbus D	evice - E3T1	9052339						
Alarm Logs									
Modbus Devices	Reading	Alarm Co	onfiguration						
BACnet Devices	Add Alarm								
MBus Devices	Add Alarm								
Digital Inputs	Label	Para	meter		Min	Max	Value	Status	Action
Virtual Devices	Current	Bhar	e A Line Current		20	25	18.602		12







Dashboard	Dashboard				
Alarm Logs Modbus Devices BACnet Devices	Offline Devices	Interface		Protocol	Serial Number
MBus Devices	AHB22070452	R\$485		Modbus RTU	AHB22070452
Digital Inputs Virtual Devices	E3T18102365	RS485		Modbus RTU	E3T18102365
	EHM19100047	RS485		Modbus RTU	EHM19100047
	Alarms				
	Device Name 🗘	Alarms 0	Interface 0	Protocol 0	Serial Number 0
	E3T19052339	1	RS485	Modbus RTU	E3T19052339
	Up since Thursday, February	8, 2024 9:24 AM			

Figure 9-8 AcuLink 810 Device Alarm Dashboard

9.2 Alarm Log

When the alarm is triggered, the user will be able to see the triggering detail under the **Alarm Log** webpage.

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 the Reset button to clear the filtered search.

Dashboard	< Alarm Log										
Narm Logs	Interval				Se	erial Number		Мо	nitor ID		
Aodbus Devices BACnet Devices ABus Devices	Enter Interval	set				Enter Serial Number		E	nter Mo	nitor ID	
Digital Inputs /irtual Devices	Timestamp	Monitor	ID Device Name	Serial Number	Monitor Labe	el Parameter	Status	Min	Max	Value	Reason
	2024-02-12 11:46:27	1	E3T19052339	E3T19052339	Current	Phase A Line Current / A		20	25	18.602	UNDERFLO
	2024-02-12 11:46:10	1	E3T19052339	E3T19052339	Current	Phase A Line Current / A		1	5	18.836	OVERFLOW

Figure 9-9 AcuLink 810 Alarm Logs

9.3 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 into the AcuLink 810 webpage with administrative access. To configure the alarm emails, users need to click on the **System Settings** menu tab and select Email.





The user must first configure their email server and details 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 or off the TLS encryption or keep it on auto.

Sender Name: Enter the name of the email sender.

From Email Address: Users can specify the email address from the email receiver.

Username: Enter the email address for the email's authentication.

Password: Enter the password for the email address in Username.

Click on the Save button once all settings are configured.

Devices Data Log	System Settings Protocols	Templates Maintenance Di	iagnostics
Date & Time Network Remote Access	Email Configuration	Email Por	rt
Email	smtp.gmail.com	587	
Alarm notification User Management Certificate Management Whitelist	Must be valid ip or domain TLS/SSL* Auto On Off Sender Name	Range: 1 - 6 From Em	ail Address
Configuration Management	Simon	zihaoch	nen442@gmail.com
Firmware Update	Maximum 40 characters Username zihaochen442@gmail.con Maximum 40 characters		

Figure 9-10 AcuLink 810 Email Configuration

Next, configure the alarm notification settings for the email addresses recipients when the alarm is triggered. This can be done by clicking on the **Alarm notification** hyperlink from the left menu.

Enable the alarm notification and configure the following:

Recipients 1 to 3: Enter the name of the email address in the Email Recipient fields. There can be a maximum of three email recipients.

Email Interval: Select the email interval, by default it is five minutes, the range is from 1 to 10 minutes.





Click the **Save** button 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 810 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, an email notification will be sent to the recipients.

AcuLink 810 Gateway							
Devices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics		
Date & Time Network Remote Access Email	Enable*	fication Conf	iguration				
Alarm notification	Recipient 1			Recipi	ent 2	Recipient 3	
User Management	nacun.liu@a	ccuenergy.com		Enter	Recipient 2	Enter Recipient 3	
Certificate Management Whitelist	Email Interval						
Configuration Managemen	t 5		n	nins			
Firmware Update	Range: 1 - 10						

Figure 9-11 AcuLink 810 Alarm Notification Configuration





Chapter 10: Data Logging

10.1 Data Loggers

The AcuLink 810 supports data logging to its 8 GB of internal memory. When the memory has reached full capacity the first data log entries will be overwritten with the latest entries.

The AcuLink 810 has three 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 data loggers allow users to configure different types of loggers with different logging intervals, log file formats, and other settings as desired.

To configure the AcuLink 810 to log the device data click on the **Data Log** menu tab and select **Data Loggers**.

- 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.
- **Timestamp Format:** Select the format for 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 for 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 File Format: For users sending external data to HTTP or FTP servers they have the
 option to select the type of file format for the log files. The two formats are CSV and JSON.

NOTE: The log data is saved directly to the AcuLink 810 memory, and the CSV file will be created when downloading the log. JSON is only supported when posting the log file to an HTTP or FTP server.

- **Log Interval:** Select how frequently the module will log data to the file from the drop-down list. The logging interval can be from one minute to one month. For logging intervals faster than one minute please see Rapid logger in section .10.1.1 of the user manual.
- Log File length: Select the length of the log file, it can be from one minute to one month. The log file length is in reference to the post channels sending interval, for example if the log interval is one minute and the log file length is five minutes the log file will be sent to the external server every five minutes. If the user is only configuring the logger to save data on



the AcuLink 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 logger2 the default name prefix is logger2, and if configuring data logger3 the default name prefix is logger3.
- Select the type of devices to log the data. Users have the option to log Modbus, BACnet, and MBus devices.

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

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

AcuLink 810 Gateway			
Devices Data Log	System Settings Protocols Templates Maint	enance Diagnostics	
Data Loggers Post Channels AcuCloud Data Log Management	Data Logger Configuration Data Logger 1 Data Logger 2 Data Logger 1 Data Logger 1 Data Logger 1	3 Rapid Logger	
Post Historical Data	Enable Disable Post Channel - Stlext Prot Channel Log File Name Format* UTC Timestamp eq. logger1-AN10000001-1551741566- Time Interval Format eq. logger1-AN100000078-2019-01 Log File Format		
	jion 🗘	logger1	
	 Include description and unit Log File Length 	Maximum 20 characters	
	1 minute •	1 minute	
	Devices Currently selected 5 devices.	Note: Must not be shorter than 5 minutes if you selected AcuMesh Modbus Device below	

Figure 10-1 Data Log Configuration

10.1.1 Rapid Logger

The AcuLink 810 supports the rapid logging function for Modbus devices using the serial RS485 port, where the user can log data at intervals as fast as one 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





118

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 drop-down 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 one minute to one month. The log file length is in reference to the post channels sending interval, for example if the log interval is one minute and the log file length is five minutes the log file will be sent to the external server every five minutes. If the user is only configuring the logger to save data on the AcuLink 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.

a Loggers	Data Logger Configuration				
t Channels					
Cloud	Data Logger 1 Data Logger 2	Data Logger	3 Rapid Logger		
a Log Management					
It Historical Data	Supports rapid logger or rapid mqtt Rapid Data Logger Enable*	poster			
	O Enable O Disable				
	Post Channel				
	Select Post Channel	۰			
	Timestamp Format*				
	Local Time String eg. 2017-01-01 10 UTC Seconds on Mathematical Seconds		since 1970-01-01 00:00:00 Coordinated Universal Time		
		100-0500			
	O ISO8601 Format eg. 2017-01-01T10	00-0500			
	Log File Name Format*				
	Log File Name Format*	00001-1551741960-			
	Log File Name Format*	00001-1551741960-			
	Log File Name Format*	00001-1551741960-			
	Log File Name Format* UTC Timestamp eg. logger1-AN100 Time interval Format eg. logger1-A	00001-1551741960-	3-04T23-56-000000-1min.csv		
	Log File Name Format* UTC Timestamp eg. logger1-AN100 Time interval Format eg. logger1-AU Log File Format	00001-1551741960- N10000026-2019-0	S-04723-58-000000-1min.csv Log File Name Prefix		
	Log File Name Format* UTC Timestamp eg (segert-skilloo Time interval Format eg, leggert-sk Log File Format ev	00001-1551741960- N10000026-2019-0	3-04723-58-000000-1min.csv Log File Name Prefix loggerRapid Maximum 20 characters		
	Log File Name Format* UTC Timestame re loggert-AN100 Time interval Format eg. loggert-A Log File Format eg. Log File Length	00001-1551741950- N10000028-2019-0 \$	3-84723-56-000009-tmin.csv Log File Name Prefix loggerRapid Maximum 20 characters Log Interval*		
	Log File Name Format* UTC Timestamp eg (segert-skilloo Time interval Format eg, leggert-sk Log File Format ev	00001-1551741960- N10000026-2019-0	3-04723-58-000000-1min.csv Log File Name Prefix loggerRapid Maximum 20 characters	•	
	Log File Name Format* UTC Timestame re loggert-AN100 Time interval Format eg. loggert-A Log File Format eg. Log File Length	00001-1551741950- N10000028-2019-0 \$	3-04723-08-000000-htelin.cvr Log File Name Prefix logger Rapid Maximum 20 dotanceters Log Interval ⁴ I scool None. Must nor the womer man 5 minutes if you selected	•	
	Log File Name Format* UTC Timestam per jugger1.44100 Time Interval Format up File Format up File Format Up File Length I missage	00001-1551741950- N10000028-2019-0 \$	1-04123-58-000000-htmin.sav Log File Name Prefix logger/Rapid Maximum 20 characters Log Interval* i second	•	
	Log File Name Format* UTC Timestame es losger1-ANICO Time interval Format es losger1-ANICO Cog File Format Cog File Cength I missie Devices	00001-1551741950- N10000028-2019-0 \$	3-04723-08-000000-htelin.cvr Log File Name Prefix logger Rapid Maximum 20 dotanceters Log Interval ⁴ I scool None. Must nor the womer man 5 minutes if you selected	•	
	Log File Name Format* UTC Timestam per jugger1.44100 Time Interval Format up File Format up File Format Up File Length I missage	00001-1551741950- N10000028-2019-0 \$	3-04723-08-000000-htelin.csv Log File Name Prefix logger Rapid Maximum 20 dotanceters Log Interval ⁴ I scool None. Must nor the womer man 5 minutes if you selected	•	

Figure 10-2 Data Log Configuration-Rapid Logger





10.2 Post Channels

The AcuLink 810 supports three Post Channels that will allow users to post device data to external HTTP/FTP/SFTP servers. To configure the HTTP/FTP/SFTP data forward from the webpage click on the **Data Log** menu tab and select **Post Channels** from the left side menu.

To configure the post channels, users need to select the corresponding Post Channel 1/2/3 tabs.

10.2.1 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 is selected enter the post name. There is a maximum of forty (40) characters allowed for the fixed post name.

Authorization: Users must enter a valid token to post data to the desired HTTP server.

HTTP/HTTPS URL: Select either the HTTP or HTTPS protocol 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 the **Save** button. 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 failure message, please verify the server URL, port number, and double-check the network connectivity.

NOTE: If the AcuLink 810 loses its network connection the gateway can back up 3,000 post files on its internal memory. After 3,000 post files the data will start to overwrite from the oldest post file. Users can clear the cached post files by using the **Clear Post Channel Logs** button.



120

AcuLink 810 Gateway	
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics
	Post Channel Configuration Post Channel 2 Post Channel 3 Post Channel 1 Trable* Post Kannel Marcha Post Kannel Fixed* Post K
	65 Madamir 40 daracters Include Header* ○ Yes © No Test Piost Channel Clear Plast Channel Logs

Figure 10-3 Post Channels HTTP Configuration

10.2.2 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' as the protocol.

FTP URL: Enter in the FTP URL.

FTP Port: Enter the FTP port number.

Enable Anonymous Mode: Username and password are not required once this mode is activated.

FTP Username: Enter the username credential to access the FTP server.

FTP Password: Enter the password credential to access the FTP server.

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





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

NOTE: Like the HTTP posting method, if the AcuLink 810 FTP loses its network connection the gateway can back up 3,000 post files on its internal memory, after 3,000 post files the data will start to overwrite from the oldest post file. Users can clear the cached post files by using the Clear Post Channel Logs button.

AcuLink 810 Gateway			Ge Logout M	londay, December 4, 2023 4:08 PM
Devices Data Log	System Settings Protocols Templates Mainten	ance Diagnostics		
Data Loggers Post Channels AcuCloud Data Log Management Post Historical Data	Post Channel 1 Post Channel 2 Post Channel Post Channel 3 Enable* Post Channel 3 Enable* Cannot be disable. Disable Cannot be disable. This Post Channel is used by Data Logger J. Post Method* FTP URL ftp:// 18.1888.51.47 Materia be valid gor domain FTP Username admin Maximum 40 characters Test Post Channel Cear Post Channel Logs	-	8	

Figure 10-4 Post Channels FTP Configuration

10.2.3 SFTP Post Method

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

Post Channel Enable: Select **Enable** to enable the post channel data forward. Post Method: Select 'SFTP' protocol.

SFTP URL: Enter in the FTP URL.

SFTP Port: Enter the FTP port number.

SFTP Username: Enter the username credential to access the FTP server.

SFTP Password: Enter the password credential to access the FTP server.



122

cuLink 810 Gateway		Ge Logout Monday, December 4, 2023 4:09
Devices Data Log	System Settings Protocols Templates Maintena	ance Diagnostics
Data Loggers	Post Channel 1 Post Channel 2 Post Channel	13
Post Channels	Post Channel 2 Enable*	
AcuCloud	💿 Enable 🔘 Disable	
Data Log Management	Cannot be disabled. This Post Channel is used by Data Logger 2.	
Post Historical Data	Post Method*	
	SFTP ¢	
	SFIF	
	SFTP URL	SFTP Port
	sftp:// 18.188.85.147	11121
	Must be valid ip or domain	Range: 1 - 65535
	SFTP Username	SFTP Password
	admin	······
	Maximum 40 characters	Maximum 40 characters
	Test Post Channel Clear Post Channel Logs	
	Clear Post Channel Logs	
	Save	

Figure 10-5 Post Channels SFTP Configuration

10.3 Downloading Data

Under the **Data Log** menu tab, the user has the option to download data that has already been logged. Click on **Data Log Management** from the left side menu to configure the **Download Log** webpage.

Device: The user can select the device to download data from.

Log Interval: The user can choose the interval from which to download.

Download: Click the Download button to download the selected file from the device as a CSV file

format.

AcuLink 810 Gateway	
Devices Data	Log System Settings Protocols Templates Maintenance Diagnostics
Data Loggers Post Channels	Data Log Management
AcuCloud	Download Log
Data Log Manageme	nt Device*
Post Historical Data	E3T19052339 - E3T19052339 (Modbus Device)
	Logged from 2024-02-09 to 2024-02-12 Time Fizame
	2024-02-09 - 2024-02-12
	Log Interval*
	1 minut 0
	Downlead
	Delete Log
	Device*
	Select Device 0
	Delete

Figure 10-6 Datalog Management Webpage

The user has the option to delete previously stored logs.





Device: The user can select the device to erase data from.

Delete: Click the Delete button to erase all data from the device selected.

10.4 AcuCloud

This section will provide instructions on connecting the AcuLink 810 gateway device to the AcuCloud EMS software to allow select devices connected to the gateway to send 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: <u>https://www.accuenergy.com/acucloud</u>

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 webpage.

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** menu tab select **AcuCloud** from the left side menu to access the AcuCloud Configuration webpage. The user then will first need to select **Enable** under AcuCloud Enable.

• Then copy the Module Serial Number that appears below.

AcuLink 810 Gateway				(+ Logout	Monday, December 4, 2023 4:18 PM
Devices Data Log Syst	em Settings Protocols Templates Maintena	nce Diagnostics			
Data Loggers Post Channels AccCloud Data Log Management Post Historical Data	AcuCloud Configuration Link to AcuCloud Acudoud Enable* Acudoud Enable* Acudoud Enable* Self9371233 Copy Taken				
		#AH822093401	EHM22101075 #EHM22101075		
	Log Interval 3 minutes	Log File Length 5 minutes 0			







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

ACCUENTSON AC	cuenergy-D)ev		Accuenergy Dev
			Facilities Map	
+			Manager and State and Stat	
Googe	The Colorado	15	ere Correction of the second s	Indust Secular (May Star 1998 Score), Mills (1999 Score) (Sec
	as Co	Jnited States	en Orage Participation (Construction of the Construction of the Co	Name and the second state of the second state

Figure 10-8 AcuCloud Home Page

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

Facilities Devices Meter Points Alerts Portfolio			
Facilities in Accuenergy-Dev			
facility o	S Type :	T Devices :	Offline Devices :
AcuCloud_810_test_nacun	Diher	3	0
AcuCloud, Acuflev2100, Nacun	Other	1	0
acutioud_api6_mater_points	Other	1	1
AsuCloud, Billing, LTM	Other	4	0
AcuCloud_multi_mater	Other	3	0
Ass/CLoud_total_test	Other	2	0
AssLW810.RD	Other	2	0
Api, Test	Other	6	0
	Other	2	0

Figure 10-9 AcuCloud Device Lists

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

- Select the name of the facility in which the device will be added 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 webpage under the Serial Number field.
- Provide a description for the location of the device under Location.
- Click the **SUBMIT** button.

Even menu menu menu menu menu menu menu me	
*Af hafe are segmed. Failing F	
*Af hafe are segmed. Failing F	
Failing Assume of Assume o	
Accession of a second of a sec	
Model Accurates Servery The Team of the Servery from Servery from Ser	
Accient3 • Group Group The spread when Second Secon	
Series Se	
B This is growy drive Even future Servar fu	
Exercise Exercise Exercise Exercise Exercise Exercise Exercise	
SAPSIZTODS Enris Musie Essistions Essistions Learein	
Sea Kuster 1. Michael Landin	
safescitores Logation	
Location	
test binch	
Subscription Tier	
Free	

Figure 10-10 AcuCloud Add Device

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



Figure 10-11 AcuCloud Device Token

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

- Click the Save button.
- Then click on **Test AcuCloud** button to see if the AcuLink 810 can reach the AcuCloud server.

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





AcuLink 810 Gateway						0+ Logout	Monday, February 12, 2024 1:15 PM	O About	AcuLink 810	ACCUSINENT
Devices Data Log	System Settings Protocols Terr	plates Mainte	nance Diagnostics							
Data Loppen Post Dannels AncCarl Inter Log Management Post Historical Data	AcuCloud Configuration use AcuCloud Fouhi Configuration (use Configuration (use) Configuration (use) Configur	Copy 945056ad not supported by AcuC E317609097		n02365 #0311en02365	C (1119052336 #(1119052336					
	Log Interval		Log File Length							
	5 minutes		5 minutes	•						
	Test AcuCoud Clear AcuCleo	d Post Logs								

Figure 10-12 AcuCloud Configuration Webpage

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

Check to see if AcuCloud is receiving data from the gateway by going to the **Devices** webpage 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.

Facilities	Devices Meter Points Alert	rs Portfolio						
Devic	es in Accuenerg	gy-Dev						
Show Per	wer Factor				+ Add De	evice + Add Culculated Meter + Add Sin	gle Parameter Device	Expert CSV
* All times	are shown in the America/Toronto time	zone.						
Device :	1 T	Facility :	Type : Y	Model : T	Serial Number : T	Last Updated :	Wring Issue	
\$9P\$307	10095	Accuentingy, Test	Gateway	ApJGink810	58P53070995	February 12th, 2024 13:15	No	
E371905	12339	Acquerergy, Test	Physical	AcuRev 1310	E3T19052239	February 12th, 2024 13:15	No	
Accuene	ngy_Test - Total	Accuency, Test	Total	CALCULATED			No	
							000	10/page

Figure 10-13 AcuCloud Device List (Devices Added)

10.5 Post Historical Data

The AcuLink 810 supports user to post logged data to their server in the scenario that AcuLink 810 is configured to log data, but the post channel is not yet setup or configured. User can select time frame and interval they need for the logged data to repost to their server.

To configure the **Post Historical Data** webpage, users need to select the corresponding tab.

Post Channel: Select the Post Channel from the drop-down list.





Post Channel 1/2/3: AcuLink 810 will push the data to the configured channel.

AcuCloud: AcuLink810 will push data to Cloud and only time frame can be selected, all other settings will be default if this post channel is selected.

- Device: Select the device for the data that user would like to push to AcuCloud.
- Time Frame: User can select the time frame for data they would like to push to the server.

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

- Log Filename Format: Select the format of the log file name for the data that to be pushed. 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 File Format: Users have the option to select the type of file format the log file is pushed as. The two formats are CSV and JSON.
- Log File Length: Select the length of the log file, it can be from one minute to one month. The log file length is in reference to the post channels sending interval, for example if the log interval is one minute and the log file length is five minutes the log file will be sent to the server every five minutes.
- Log Interval: User can select the frequency of the data pushed in the drop-down list. The minimum interval is five minutes for AcuMesh device and interval must not be shorter than the log file length.

a Loggers	Post Channel*	
Channels	Post Channel 1	•
Cloud	Device*	
a Log Management	E3T19056118 - E3T19056118 (Modbus Device)	•
Historical Data	Logged from 2023-11-27 to 2023-12-01	
	Time Frame	
	2023-11-27 - 2023-12-01	
	Timestamp Format*	
	O Local Time String eg. 2017-01-01 10:00	
	O UTC Seconds eg. Number of seconds that have elapse	since 1970-01-01 00.00:00 Coordinated Universal Time
	UTC Seconds eg. Number of seconds that have elapse ISO8601 Format eg. 2017-01-01T10:00-0500	since 1970-01-01 00:00:00 Coordinated Universal Time
	UTC Seconds og. Number of seconds that have elapse ISO8601 Format eg. 2017-01-01T10:00-0500	
	UTC Seconds eg. Number of seconds that have elapse ISO8601 Format eg.2017-01-01710.00-0500 Log File Name Format* UTC Timestamp eg.logger1-AN10000001-155174198	-Tmin.csv
	UTC Seconds og. Number of seconds that have elapse ISO8601 Format eg. 2017-01-01T10:00-0500	-Tmin.csv
	UTC Seconds eg. Number of seconds that have elapse ISO8601 Format eg.2017-01-01710.00-0500 Log File Name Format* UTC Timestamp eg.logger1-AN10000001-155174198	-Tmin.csv
	UTC Seconds so Number of seconds that have elapse ISO8601 Format eg. 2017-01-011T0a0-9500 Log File Name Format* UTC Timestamp se, logger1-AN1000001-155174190 Time interval Format eg. logger1-AN10000028-2015	-1min.csv 3-64723-56-000000-1min.csv
	UTC Seconds so Number of seconds that have elapse ISO8601 Format eg. 2017-10-011100-0500 Log File Name Format* UTC Timestamp se, logger1-AN10000021-155174190 Time interval Format eg. logger1-AN10000026-2015 Log File Format*	-Imin.cov 3-64723-36-000000-Imin.cov Log File Name Prefix
	UTC Seconds so Number of seconds that have elapse ISO8601 Format eg. 2017-10-011100-0500 Log File Name Format* UTC Timestamp se, logger1-AN10000021-155174190 Time interval Format eg. logger1-AN10000026-2015 Log File Format*	-Imin.cov 31 4172:-56-00000-Imin.cov Log File Name Prefix Enter Log File Name Prefix
	UTC Seconds eg, Number of seconds that have elapse ISO8601 Format eg, 2017-1011000-0500 Log File Name Format* UTC Timestam pe jologen*1AN10000001-155174196 Time interval Format eg, logger1-AN10000003-2019 Log File Format*	-Tmin.cov 03-64722-56-000000-Tmin.cov Log File Name Prefix Enter Log File Name Prefix Maximum 20 characters

Figure 10-14 Data Post Historical Data Setting Webpage





Chapter 11: Network Diagnostics

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

In the **Network Status** webpage under **Diagnostics** the menu tab, users can check the **Ethernet Network, Routing Table, DNS Server**, and **Network Status**.

NOTE: To check the Wi-Fi Network Status, the AcuLink 810 must be configured for Station Mode.

uLink 810 Test		G Logou
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Vetwork Status	Network Status	
ISTP Status		
lost Lookup	Ethernet Network	
	eth0 Link encap:Ethernet HWaddr ec:c3:8a:21:0d:a9	
onnection Test	UP BROADCAST MULTICAST MTU:1500 Metric:1	
ITP Sync Test	RX packets:0 errors:0 dropped:0 overruns:0 frame:0	
	TX packets:0 errors:0 dropped:0 overruns:0 carrier:0	
fodbus Debug Log	collisions:0 txqueuelen:1000	
Abus Log	RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)	
Debug	eth1 Link encap:Ethernet HWaddr ec:c3:8a:21:0d:aa	
	inet addr:192.168.60.48 Bcast:192.168.63.255 Mask:255.255.252.0	
	UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1	
	RX packets:10605774 errors:0 dropped:622772 overruns:0 frame:0	
	TX packets:2360905 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000	
	RX bytes:923470278 (880.6 MiB) TX bytes:1424107652 (1.3 GiB)	
	lo Link encap:Local Loopback	
	inet addr:127.0.0.1 Mask:255.0.0.0	
	UP LOOPBACK RUNNING MTU:65536 Metric:1	
	RX packets:147802 errors:0 dropped:0 overruns:0 frame:0	
	TX packets:147802 errors:0 dropped:0 overruns:0 carrier:0	
	collisions:0 txqueuelen:1	
	RX bytes:61349285 (58.5 MiB) TX bytes:61349285 (58.5 MiB)	
	tun0 Link encap:UNSPEC Hwaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-	
	int addr:10.1.0.54 P-t-P:10.1.0.54 Mask:255.255.0.0	
	UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1500 Metric:1	
	RX packets:9940 errors:0 dropped:0 overruns:0 frame:0	
	TX packets:11219 errors:0 dropped:0 overruns:0 carrier:0	
	collisions:0 txqueuelen:500	
	RX bytes:1533277 (1.4 MiB) TX bytes:8801390 (8.3 MiB)	
	wlan0 Link encap:Ethernet HWaddr 00:25:ca:84:e8:6d	
	Refresh Network Status	

Figure 11-1a AcuLink 810 Network Diagnostics Status 1

Devices Data Log	Syster	n Settings Pro	tocols Temp	plates Mainte	enance		Diagnos	tics		
Network Status		Routing Table								
RSTP Status Host Lookup Connection Test NTP Sync Test		Kernel IP routi Destination 0.0.0.0 10.1.0.0 192.168.60.0 192.168.100.0	Ing table Gateway 192.168.63.1 0.0.0.0 0.0.0.0 0.0.0.0		Flag UG U U U	s Metri 250 0 250 0	0	Use Iface 0 eth1 0 tun0 0 eth1 0 wlan0		
Aodbus Debug Log Abus Log Debug		DNS Server								







Devices Data Log	System Settings			Maintenance Diagnos	tics	
letwork Status						
	< Network	Stat				
ISTP Status	Artive	Internet	connections (servers and	establ(shed)		
fost Lookup			nd-Q Local Address	Foreign Address	State	
	tcp	0	0 0.0.0.0:199	0.0.0.0:*	LISTEN	
Connection Test	tcp	0	0 0.0.0.0:80	0.0.0.0.*	LISTEN	
NTP Sync Test	tcp	0	0 0.0.0.34000	0.0.0.0:*	LISTEN	
	tcp	0	0 127.0.0.1:53	0.0.0.0:*	LISTEN	
Modbus Debug Log	tcp	0	0 192.168.100.1:53	0.0.0.0:*	LISTEN	
Mbus Log	tcp	0	0 0.0.0.0:502	0.0.0.0:*	LISTEN	
mous coy	tcp	0	0 0.0.0.0:22	0.0.0.0:*	LISTEN	
Debug	tcp	0	0 0.0.0.0:443	0.0.0.0:*	LISTEN	
	tcp	0	0 0.0.0.0:3333	0.0.0.0:*	LISTEN	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48790	TIME_WAIT	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48788	TIME_WAIT	
	tcp	8	0 192.168.60.48:443	192.168.60.105:64707	ESTABLISHED	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48768	TIME_WAIT	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48794	TIME_WAIT	
	tcp	0	0 192.168.60.48:443	192.168.60.105:64706	ESTABLISHED	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48770	TIME_WAIT	
	tcp	0	1 192.168.60.48:40586	18.188.85.147:8000	SYN_SENT	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48792	TIME_WAIT	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48780	TIME_WAIT	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48786	TIME_WAIT	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48782	TIME_WAIT	
	tcp	0	1 192.168.60.48:46290	192.168.63.24:3000	SYN_SENT	
	tcp	0	0 127.0.0.1:3333	127.0.0.1:48784	TIME_WAIT	
	tcp	0	0 192.168.60.48:443	192.168.60.105:64710	ESTABLISHED	
	tcp	0	0 192.168.60.48:443	192.168.60.105:64711	ESTABLISHED	
	udp	0	0 127.0.0.1:53	0.0.0.0:*		
	udp	0	0 192.168.100.1:53	0.0.0.0:*		
	udp	0	0 192.168.60.48:36669	8.8.8.8153	ESTABLISHED	
	udp		0 192.168.60.48:34880	8.8.4.4:53	ESTABLISHED	
	udp udp	0	0 0.0.0.0:67 0 0.0.0.0:68	0.0.0.0:*		
	udp udp	0	0 0.0.0.0:68	0.0.0.0:"		

Figure 11-1c AcuLink 810 Network Diagnostics Status 3

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

AcuLink 810 Gateway		De Logout Monday, February 12, 2024 1:18 PM O About AcuLink 810 ACUENERS
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics	
Network Status	RSTP Status	
RSTP Status	Bridge Status	
Host Lookup Connection Test	ctl_client_init: Couldn't connect to server	
NTP Sync Test	Port Status	
Modbus Debug Log Mbus Log Debug	<pre>ctl_ctient_init: Golder't connect to server</pre>	

Figure 11-2 AcuLink 810 Network Diagnostics RSTP Status

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





Devices Data Log System Settings Protocols Templates Maintenance Daspondicis Metmod: Satura Hot Lookup Hot Lookup Hot Lookup BaBaB Metro Itologo BaBaB Indicing Print Indicing Print Indicing Print Modus Debug log Phong Phong Indicing Print Indicing Print Petro Itologo Phong Indicing Print Indicing Print Indicing Print Petro Itologo Phong Indicing Print Indicing Print Indicing Print Petro Itologo Phong Indicing Print Indicing Print Indicing Print Print Indicing Print Indicing Print Indicing Print Indicing Print Print Print </th <th>AcuLink 810 Gateway</th> <th></th> <th>Ge Logout Monday, December 4, 2023 3:31 PM</th>	AcuLink 810 Gateway		Ge Logout Monday, December 4, 2023 3:31 PM
Nervice Autual * StDT Status Name of system or domain to lookup Foot Lookup 8.8.8.4 Connection Test Insocrate Modelus Debug log ping Nous Log Ping Pister free A.1.A.1.5 (exg. spect t1t=117 time=15.4 as 44 bytes free A.1.A.1.5 (exg. spect t1t=117 time=15.7 as 45 bytes free A.1.A.1.5 (exg. spect t1t=11	Devices Data Log Syst	stem Settings Protocols Templates Maintenance Diagnostics	
5 padetes transmitter, 5 vecelund, 40 padet loss, time 400mms ett mln/mg/mms/mdov = 13.730/14.975/10.770/1.000 ms	Network Status RSTP Status Host Lookup Connection Test NVIP Sync Test Modbus Debug Log Mbus Log	<pre>Host Lookup Name of system or domain to lookup BBBB Indoctup BBBB Indoctup Indo</pre>	

Figure 11-3 AcuLink 810 Host Lookup

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

AcuLink 810 Gateway		(+ Logout	Monday, February 12, 2024 1:18 PM	0 About	AcuLink 810	ACCUENERS
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics					
Network Status RSTP Status Host Lookup Connection Test NTP Sync Test	Connection Test This disprastic page will attempt a connection to the specified network nodes. In the process, all network stripping will be tested and a report will be given with detailed results of these tests. Convection hereits					
Madbus Debug Log Mbus Log Debug	F Lug Buch Admin # FPR: 21-A 13 NECESS # General # FPR: 21-A 13 NECESS # PR: 4.1.4.5 SECESS * PR: 4.1.4.5 SECESS * PR: 5.1.4.5					

Figure 11-4 AcuLink 810 Network Connection Test

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





AcuLink 810 Data Acquisition Gateway & Server

Device Data log System Service Portocolit Mainteenance Names dataset NTP System Service NTP System Service NTP System Service Connection Fest NTP System Service NTP System Service Modulo Dubu Dogo Non-Service Service Nter System Service Modulo Dubu Dogo Non-Service Service	uLink 810 Gateway								er togout	Monday, December 4, 2023 3:33 I
NameLocation C Ministry MIP Space Non-Control MIP Space Monte Debug Log 4 Sex 513327 refg(20779); resp 4 4.1.6g10[1.3720+0 Thu 7u1 20 19/52120 UTC 2018 (2)]; Starting Monte Debug Log 4 Sex 513327 refg(20779); resp 4 4.1.6g10[1.3720+0 Thu 7u1 20 19/52120 UTC 2018 (2)]; Starting Monte Debug Log 1 Sex 513327 refg(20779); resp 4 4.1.6g10[1.3720+0 Thu 7u1 20 19/52120 UTC 2018 (2)]; Starting Monte Debug Log restrict size of refg(20779); resp 4 4.1.6g10[1.3720+0 Thu 7u1 20 19/52120 UTC 2018 (2)]; Starting Monte Debug Log restrict size of refg(20779); resp 4 4.1.6g10[1.3720+0 Thu 7u1 20 19/52120 UTC 2018 (2)]; Starting 4 Sex 513327 refg(20779); resp 4 4.1.6g10[1.3720+0 Thu 7u1 20 10000000; Thgg 0000000 Thgg 00000001 Oblay restrict size is def not insize for size boundary: 16 restrict size is def not insize boundary: 16 Starting 1 sex 6 = 0.12127 refg(2077); Listen servelly in a 121 27.6.6.1123 restrict size is def not insize boundary: 16 restrict size is def not insize boundary: 16 Starting 1 sex 6 = 0.12127 refg(2077); Listen servelly in a 121 27.6.6.1123 restrict size is def not insize boundary: 16 restrict size is def not insize boundary: 16 Starting 1 sex 6 = 0.12126 fig.1.101 sex 25.55.55.55.55.55.55.55.55.55.55.55.55.5	Devices Data Log	System Settings	Protocols	Templates	Maintenance	Diagnostics				
per_claer: 4 0 mont 3 associated 24000 refia 2027 restrict: op 1 addr 130.60.201.40 mask 255.255.255.255 mflags 00004000 flags 000002c0 restrict source: 136.403.144 host restriction added	Network Status 15TP Status Host Lookup Connection Test NTP Sync Test Modbus Debug Log Mbus Log	NTP Sync 4 Dec 35 4 Dec	231:27 ntpo[20 231:27 ntpo[20 231:27 ntpo[20 231:27 ntpo[20 231:27 ntpo[20 231:27 ntpo[20 20 1 addr 10: 01 1 addr 10:	2779]: ntpd 4.2 2779]: Command 2779]: protoi p erflags 4000 (erflags 4000 (e	spioliji.3728-o tr Lien ntad deg vetision - 2,000 0, 60 mlgs 0000-000 128.528.238 ml Higs 100 mlgs 000-000 0 deg 000-000 0 deg 000 vetisi 0 so routing sock rescode 0 refia Dat	v Jul 26 19:52: usec (-19) 00 flags 0000001 flags 00000001 flags 00000001 flags 00000001 flags 0000300 Jr. 0, 0, 11:0 Jr. 0, 0, 12:0 0, 10:0 0, 12:0 0, 12	20 UTC 2018 (2): Star f0 ags coecococo 1:23 123 725 coecoco1 1:24 0 flags coecoco1 0 flags coecoco1 0 flags coecoco1 n interface updates	rting		
		peer_xmit event at	3 138.68.201.4	.62.161->138.60 9 8014 84 react	8.201.49 mode 3 1 hable .072577 dsp 7.937	502 jit 0.00000				

Figure 11-5 AcuLink 810 NTP Sync Test

In the **Modbus Debug Log** webpage users can view the Modbus packet requests from the AcuLink 810 to the connected Modbus devices. The Modbus Debug Trace can be enabled to keep track of the Modbus activity for the AcuLink 810. The Modbus debug logs can be exported and downloaded for further analysis.

cuLink 810 Gateway											G+ Logout	Monday, December 4, 2023 3:35 PM
Devices Data Log	Syster	m Settings Pro	otocols Te	mplates I	Maintenance	Diag	nostics					
Network Status RSTP Status Host Lookup Connection Test NTP Sync Test	¢	Modbus Debug Modbus Debug Enable D Interval	Trace				Туре		Slave ID	Function Code		
Modbus Debug Log		Enter Interval						¢	Enter Slave ID	Enter Function Cod	e	
Mbus Log Debug		Search Rese Timestamp	Src	Dest	Туре	Slave ID	Function Code	Data				
		2023-12-04 15:33:02.722	meter	AcuLink810	RTU_RSP	72	3	10 F0 F 70 10 F F0 70 0	0 F0 F5 F0 FF F0 F0 10 B 0 F0 F0 F5 F0 F6 F8 F0 1	F0 F0 10 F0 F0 F0 F5 F0 F6 F0 30 F0 70 10 F0 F0 F0 F0 F5 F0 FF 10 10 F0 70 10 F0 F0 F0 F5 F0 F0 F6 F0 30 10 50 F0 B8 10 F0 F0 F0 F0 F0 7D F0 FF	F0 D0 10 30 FF F0 10 10	F0 70
		2023-12-04 15:33:02.423	AcuLink810	meter	RTU_REQ	72	3	48 03 2	0 02 00 38 E0 41			
		2023-12-04 15:33:02.284	meter	AcuLink810	RTU_RSP	72	3	F1 8E 6 6F F2 0 00 00 0	5 42 F1 94 75 00 00 00 0 0 00 00 00 00 00 00 00 00 0 0 00 0	00 00 00 00 00 42 F1 92 84 4 00 00 00 00 00 00 00 00 00 00 00 00 00	0 00 00 00 4 0 00 00 00 00 0 1 00 00 00 00 0	2

Figure 11-6 AcuLink 810 Modbus Debug Log





In the **Debug** webpage, users can enable SSH connection. Users can also download the AcuLink 810 diagnostic file.

The debug diagnostic options are recommended to be set to '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.



Figure 11-7 AcuLink 810 Debug Webpage



Chapter 12: Maintenance

12.1 System Status

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

The **System Status** webpage allow users to monitor an overview of the AcuLink 810 internal processing for CPU, RAM, Disk, and RS485 usage.

Devices can also be manually rebooted by clicking the **Reboot System** button at the bottom.

AcuLink 810 Gateway								0+ Logout	Monday, February 12, 2024 119 PM	O About	AcuLink 810	ACCUENERS
Devices Data Lo	og System Sett	ngs Protocols	Templates	Maintenance	Diagnostics							
System Status	Syst	m Status										
Event Log	CPU											
	RAM											
	Disk	us										
	2 467											
		tatus : Normal 5 Usage										
	C NA T											

Figure 12-1 AcuLink 810 System Status

12.2 Event Log

Historical data of the system event can be checked y clicking on the **Event Log** button under the **Maintenance** menu tab. Event logs can be filtered by entering the Interval number and selecting a Level from the drop-down list. The level includes either 'Error' or 'Info'. Users can also clear and export the event logs by clicking the buttons at the bottom of the webpage.

System Status	Event Log					
Event Log	Interval			Level		
	Enter Interval			Select Level	٠	
	Search Reset					
	Timestamp	Level	Message			
	2023-12-05		HTTP post failed, url=http://18.188.85.147:8000/po	at and 0000 blackede 0	seture 22.7hs secured at	IDI seture of every 400 Pad
	11:28:15	Error	Request[10 times]	st, port=8000, nttpcode=0	, return 22.1ne requested c	nc returned error: 400 Bad
	2023-12-05	Error	HTTP post failed, url=http://18.188.85.147:8000/po	st, port=8000, httpCode=0	return 22:The requested U	JRL returned error: 400 Bad
	11:27:32	Ellor	Request[10 times]			
	2023-12-05 11:27:11	Error	HTTP post failed, url=http://18.188.85.147:8000/po Request[10 times]	st, port=8000, httpCode=0	, return 22:The requested U	JRL returned error: 400 Bad
	2023-12-05	Error	HTTP post failed, url=http://18.188.85.147:8000/po Request[10 times]	st, port=8000, httpCode=0	, return 22:The requested U	JRL returned error: 400 Bad







Chapter 13: Firmware Update

The AcuLink 810 firmware can directly be updated from the webpage. Click on the **System Settings** menu tab and select **Firmware Update** from the left side menu.

The **Firmware Update** webpage lists the current firmware version for the gateway. There are three methods to update the AcuLink 810 firmware, either by selecting the auto firmware update options, the remote firmware function, or by manually updating the firmware.

13.1 Auto Firmware Update

The Auto Firmware Update function allow users to configure the types of automatic firmware updates to the AcuLink 810.

- · Disable: This option disables all auto firmware updates.
- · Critical Update Only: Automatically updates the firmware for critical issues only.
- Automatically Keep Firmware to Latest Version: The firmware will automatically update whenever there is an update available for the AcuLink 810.
- **Check Time:** Set a time frame for AcuLink 810 to check whether it has the latest firmware update. If a new firmware version is available, it will automatically update the firmware to the latest version.

AcuLink 810 Test		🕪 Logout	Monday, December 4, 2023 10:57 AM
Devices Data Log Sy	tem Settings Protocols Templates Maintenance Diagnostics		
Date & Time Network Remote Access Email Alarm notification User Management Certificate Management Writelist Configuration Management. Firmware Update	Firmware Update Current Firmware Version: v0.71 Auto Immware Update * Disable (Firmware update manually executed from this page) Cincicul Update Only (Recommended Automatically update firmware when a critical and security related issue is fixed) Chack Time* constraints of the security related issue is fixed) (ot an - 10 am)		
	Remote Update Check Manual Update		

Figure 13-1 AcuLink 810 Firmware Update Webpage

13.2 Manual Update

To update the firmware manually, navigate to the Manual Update section and have the required firmware file ready. Start by clicking on the **Browse** button, and then locate the .aup firmware file. Click the **Open** button to add the file path.





NOTE: For firmware files please contact Accuenergy Technical Support.

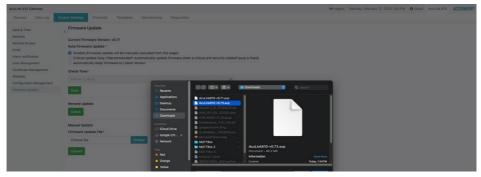


Figure 13-2a AcuLink 810 Firmware Manual Update -1

AcuLink 810 Gateway		(+ Logout	Monday, February 12, 2024 1:55 PM	O About	AcuLink 810	ACCUSINERGY
Devices Data Log	System Settings Protocols Templates Mainfenance Diagnostics					
Date & Time Natsork Remote Access Email Alarm notification User Management Configuration Management Whitelist Configuration Management Primare Update	Firmware Updat Firmw					
	AcuLinkB10-v0.73.aup Browse					
	Ublead					

Figure 13-2b AcuLink 810 Firmware Manual Update -2

Next, click on **Upload** once the file is selected.

AcuLink 810 Gateway		64 Logout	Monday, February 12, 2024 1:56 PM	O About	AcuLink 810	ACCUENERGY
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics					
Date & Time Network Remote Access Email Altern notification User Management Carification Management Whitelsis Configuration Management Primare Update	Firmware Update Concent Firmware Verview v0:1 And Firmware Verview v0:1 And Firmware Verview v0:1 And Firmware Verview v0:1 Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmware when a critical and security related issue is firmed) Conce Update Ong (Find-concent-Androvationally update firmed) Conce Update Ong (Find-concent-Androvationally update firmed) Conce Update Ong (Find-concent-Androvationally update Find-concent-Androvationally update Find-concent-Androvationally update Find-concent-Concent-Concent-Conc					
	Remote Lipdee Dest Manue Undere					







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

AcuLink 810 Gateway		0+ Logout	Monday, February 12, 2024 1:56 PM	O About	AcuLink 810	ACCUENERGY
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics					
Date & Time Network Remote Access Email Alarm notification User Management Certificate Management Whilefet Configuration Management. Firmware Update	Firmware Update Formware Update Formware Update Formware Update Formware Update Concert C					
	Remote Gydate Class Frimmer Bready to process. Ready to process. Ready to process.					

Figure 13-3 AcuLink 810 Firmware Update

The firmware update will take roughly about five minutes to complete.



Figure 13-4 AcuLink 810 Firmware Updating

A green banner at the top of the webpage will notify the user that the update was successful.

AcuLink 810 Gateway		6+ Logout	Monday, February 12, 2024 1:57 PM	0 About	AcuLink 810	ACCUENERGY
Devices Data Log	ystem Settings Protocols Templates Maintenance Diagnostics					
Date & Time Network Remote Access Email Alarm notification User Management Certificate Management Whitelist Configuration Management	Firmware Update Concert Ensware Vanion: vG/T And Firmware Update Order Upd					
Firmware Update	Interventional publications and the state process of the state of the					

Figure 13-5 AcuLink 810 Firmware Updated





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

13.3 Remote Update

To use the remote firmware update there needs to be an internet connection to the AcuLink 810 for it to access Accuenergy remote firmware server.

Click on the **Check** button.

Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics		
Doise Data Leg Data & The Helsoch Helsoch Kent Allers att Kangement Gertiftand Kangement Finnens Lipida	Version Version Version Version Persion Version Version Version Persion Version Version Version Persion Version Version Version Persion Version Version Version Version Version Persion Version Version Version Version Ver		

Figure 13-6 AcuLink 810 Firmware Remote Update Check

If an update is available, it will display "Update Available!" along with the latest version and update detail link to the firmware.

Click on **Update** to begin the updating process.

AcuLink 810 Gateway		0+ Logout	Monday, February 12, 2024 2:21 PM	O About Aculurk 810	ACCUERCRAFT
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics				
Date & Time Nation Remote Access Email Alarm extitution Carification Carificate Management Carificate Management Configuration Management Firmware Update	Formulation Formulati				
	Manual lopdane Premeer lopdane Flat* Coccus (in Second				

Figure 13-7 AcuLink 810 Firmware Remote Update Available





cuLink 810 Gateway		De Logout Monday, February 12, 2024 2.02 PM O About AcuLeix 810	ACCURACIO
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics		
Sate & Trans extension hereine State (Sate Sate Sate Sate (Sate Sate			

Figure 13-8 AcuLink 810 Firmware Remote Updating

AcuLink 810 Gateway			0+ Lopout	Monday, February 12, 2024 2:49 PM	O About Acul	a 810 ACCUERENT
Devices Data Log	System Settings Protocols Templates Maintenance Diagnostics					
Date & Time Network Remote Access Email Alarm netification User Management Certificate Management Winalisi Certification Management Firmware Update	Finance Update Oracle Monace Values n.18 AutoFinance Values n.18 AutoFinance Values n.18 Oracle Monace Values of the monace Values from the genes Oracle Monace Values of the Monaee Values of the	nd security related issue is fixed)				
	Another addresses another addresses that is a site register that is a site register addresses	en/Acal.inMSN-v1.17-aug				

Figure 13-9 AcuLink 810 Firmware Remote Updated

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



Chapter 14: Reset Button

The AcuLink 810 has a red reset button located at the top of the unit located next to the Ethernet and USB ports. This button will reset the AcuLink 810 back to its factory default. This will permanently delete all devices, data logs, alarms, event logs, and device templates. 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 on the AcuLink 810 will be restored back to its default setting:

- Wi-Fi Mode Access Point (AP) mode.
- Ethernet 1 192.168.8.101
- Ethernet 2 DHCP enabled.

NOTE: It is recommended to refer to Configuration Management in the system settings section for backing up system and device configuration before performing the factory reset.

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

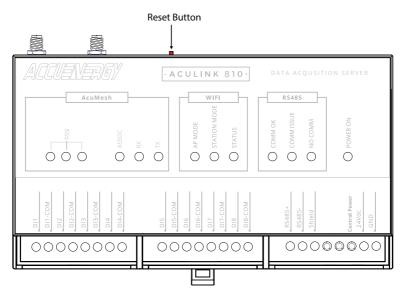


Figure 14-1 AcuLink 810 Reset Button







MAKE ENERGY USAGE SMARTER

ACCUENERGY INC.

440 Comstock Road Toronto, ON M1L 2H6, Canada

ACCUENERGY SOUTH AFRICA (PTY) LTD

Castle Walk Corporate Park, Block B, Cnr. Nossob & Swakop Street Erasmuskloof, Pretoria, 0181 South Africa TF: 1-877-721-8908 INT: +1-416-497-4100 FAX: +1-416-497-4130 E: marketing@accuenergy.com



TF: +27 (0) 87 802 6136