AvalAN WIRELESS

AWCLETHS

USER’S MANUAL

Current Loop/Serial to Ethernet Adapter
Thank you for choosing the AvaLAN Wireless AWCLETHS product. Here at AvaLAN we look to provide quality and satisfaction to each one of our clients.

“It is our Quality Policy to deliver products and services that meet our customers’ requirements. All team members of AvaLAN Wireless Systems are making continuous efforts to achieve the highest quality in our products and services.”

We hope to provide you with a quality product that will meet your needs. Should you have any questions you can reach us by phone or email.

The purpose of this document is to provide information regarding the AWCLETHS unit produced by AvaLAN Wireless. It will provide guidance and template material which is intended to assist the relevant management or technical staff with the performance and installation of AWCLETHS. It will provide information of the unit’s function and purpose, what settings the unit can be set at, group settings determined with DIP switches, and installation in the dispenser as well as the store. It explains in detail the proper setup of the AWCLETHS unit and answers any questions in relation to the unit.
READ THIS MANUAL BEFORE YOU BEGIN

Dispensers have both electricity and a hazardous, flammable and potentially explosive liquid. Failure to follow the below precautions and the Warning and Caution instructions in this manual may result in serious injury. Follow all rules, codes and laws that apply to your area and installation.

SAFETY PRECAUTIONS - INSTALLATION AND MAINTENANCE

Always make sure ALL power to the dispenser is turned OFF before you open the dispenser cabinet for maintenance. Physically lock, restrict access to, or tag the circuit breakers you turn off when servicing the dispenser. Be sure to trip (close) the emergency valve(s) under the dispenser BEFORE beginning maintenance.

Make sure that you know how to turn OFF power to the dispenser and submersible pumps in an emergency. Have all leaks or defects repaired immediately.

HOW TO CONTACT AVALAN WIRELESS

Problems with the installation of this kit should be referred to AvaLAN Technical Support: (650)384-0000.

INDICATORS AND NOTATIONS

⚠️ Danger indicates a hazard or unsafe practice which, if not avoided, will result in severe injury or possibly death.

⚠️ Warning indicates a hazard or unsafe practice which, if not avoided, may result in severe injury or possibly death.

⚠️ Caution indicates a hazard or unsafe practice which, if not avoided, may result in minor injury.

NOTE: Important information to consider, otherwise, improper installation and/or damage to components may occur.
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Product Overview

The AWCLETHS is the solution for network enabled dispenser connectivity. The unit connects to Current Loop, 485, and 232 fuel delivery and card readers inside of the dispenser. Units connect wirelessly to the system unit set up inside of the store. They will communicate passing data such as dispenser handle activity, fuel flow, and credit charges. The purpose of the AWCLETHS unit is to create easier solutions for the dispenser handle and card reader to link with in store system to determine fuel flow and enable POS revenue.

AWCLETHS is designed to work with multiple components of the fuel dispenser simultaneously allowing for less hardware needed inside the fuel dispenser also allowing for less wiring required for connectivity to the store. Whether wires become less functional or a store is looking for wireless connectivity, the AWCLETHS unit will be the solution needed to exceed expectations.

In the dispenser AWCLETHS will connect to the dispensers through a determined group setting marked by the dipswitch board located on the unit. This will be determined based on the size of the location and the number of dispenser’s present. The unit will connect directly to a handle and a card reader.

An AWCLETHS unit will be placed inside of the store. The AWCLETHS unit will connect to the access point through the stores network. One store unit can communicate with up to eight in-dispenser units. This being the case, if the store has more than eight dispensers, more units will be needed in-store to accommodate the data that will be passed from dispensers to the store.

Each order for the AWCLETHS will come with the necessary parts needed to complete setup, programming, and installation for both in-dispenser and in-store units. Each unit will be tested and packaged before shipping.
How To Use This Document

By following the installation instructions and performing the steps in the sequence presented, you will be assured of a successful install.

NOTE: This kit may require installation of several wiring and hardware assemblies. Any installation or modification must comply with the requirements of the National Electrical Code (NFPA 70), the Automotive and Marine Service Station Code (NFPA 30A) and any other applicable codes.

NOTE: You must wear a static wrist strap, securely attached to an earth ground when handling any circuit board, electronic component or assembly, or when reaching into the site controller or dispenser computer enclosure. Do not use power tools.

Unpacking and Inspection

Complete the following steps:

1. Before opening any cartons, count the number of cartons and verify the carton count against the supplied packing list.
2. Inspect the cartons for damage made during transit.
3. File claim information with the carrier on the bill of lading.
4. Retain cartons suspected of damage for future claim purposes.

NOTE: You must wear an anti-static wrist strap, PN 916962 or equivalent, when removing electronic components from static packages. Attach the wrist strap securely to an earth grounding point to prevent possible damage from static electricity.

5. Remove all equipment from the shipping cartons and carefully inspect for visible damage.

NOTE: Any damage should be brought to the attention of the carrier and claims made immediately. Return all equipment to the respective cartons for protection until actual installation is made. Save all cartons until it is certain that return shipments are not required.
Returning Damaged Components

Parts or components returned to the factory under warranty or for repair are subject to damage if not packaged properly. Complete the following steps to return parts or components to the production facility.

1. Place electronic components in an anti-static bag and in the original shipping cartons for return shipment to the production facility.

**NOTE:** If original shipping cartons are not available use a sturdy cardboard container and suitable packing materials such as anti-static polyethylene foam or bubble pack, to ensure the component is firmly packed.

2. Include a Return Parts Tag with the defective component describing the particular problem with the part.

3. Make sure adequate insurance is provided when returning parts to the factory.

**WARNING**

If the parts or components arrive at our factory in a damaged condition and it is determined that the damage is a direct result of inadequate or improper packaging, the damage will not be covered under the original warranty and the customer or distributor will be held responsible for the cost of repairs necessary to correct or replace the damaged parts.
Safety Information

Read NFPA 30A and NFPA 70 (U.S. Installations)

Before installing the equipment, the installer must read, understand and follow this manual, NFPA 30A, NFPA 70, and applicable federal, state and local codes and regulations. Failure to do so may adversely affect the safe use and operation of the equipment.

CSA C22.1 (Canadian Installations)

For installation in Canada the installer must read and understand this manual, CSA C22.1 (Canadian Electrical Code) and applicable federal, provincial and local codes and regulations.

Emergency Power Cutoff

NFPA30A requires that an emergency power cutoff be installed. An emergency power cutoff is a single control that removes AC power from all site fueling equipment and submersible pumps. Make sure the control is accessible, labeled clearly, and installed away from dispensers. Make sure all station employees know where the Emergency Power Cutoff is located and how to operate it.

Electrical Circuits

Some of the procedures in this manual involve removal and connection of components during installation or service. Remove power from the distribution box before executing these procedures.

Installation Location

Equipment may be installed in a variety of locations; all the cabinets and required wire-ways must be located in an intrinsically safe enclosed space.

Ensure that all cabinets are located in an area that offers easy access for service, and free air space for cooling 3” away from other equipment.

Environmental Requirements

Care should be taken to ensure that the temperature of the cabinets does not exceed the operational ranges of -40°C to 70°C (-40°F to 158°F).

Power Requirements

The DC power source to the AWCLETHS device must have an input voltage of 24VDC.
Conformity with Standards

Ensure that all National, State, and local standards and codes are observed in site preparations, wiring, and installation.

Power Wiring

⚠️ Warning: USE THE SUPPLIED POWER CABLE ONLY.
Using other cables will void your warranty.

Emergency Stop Circuit

It is recommended that the electrical wiring for the AvaLAN AWCLETHS be run through the Emergency Stop circuit at the site so that all electrical power is cut whenever the Emergency Stop button is pressed. The Emergency Stop Circuit wiring should be configured according to local electrical regulations.

Codes

Confirm that all equipment is installed in accordance with the US National Electrical Code (NFPA 70), the automotive and Marine Service Station Code (NFPA 30A), and any other applicable state and local codes. For installations outside the US follow all applicable local and international codes.

Requirements

REQUIRED TOOLS
The only tool we require is an Anti-Static Wrist Strap. No other tools are required.

REQUIRED PARTS

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AWCLETHS</td>
<td>Serial to Ethernet Adapter</td>
</tr>
</tbody>
</table>
DIP Switch Settings

This DIP Switches determine the group settings for the dispenser handle and the card reader. There is a total of 4 group settings possible based on the number of dispensers on site. Dispensers are configured in groups of 8. (For a site with more than 8 dispensers, they will be set to different groups.) Each group of 8 dispensers communicates with one store AWCLETHS.

<table>
<thead>
<tr>
<th>DISPENSER</th>
<th>Group</th>
<th>Dispenser</th>
<th>DIP 7</th>
<th>DIP 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 to 8</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9 to 16</td>
<td>ON</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>17 to 24</td>
<td>OFF</td>
<td>ON</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>25 to 32</td>
<td>ON</td>
<td>ON</td>
<td></td>
</tr>
</tbody>
</table>

DIPS 1 and 2 set the manufacturer groups. DIP 1 will be for Wayne. DIP 2 is for Gilbarco. And combinations of DIPS 1 and 2 will be determined for other manufacturers.

<table>
<thead>
<tr>
<th>MANUFACTURER</th>
<th>DIP 1</th>
<th>DIP 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wayne</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>Gilbarco</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>P3</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>P4</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

FIGURE 1

FIGURE 2
Wiring Ports

At the bottom of the AWCLETHS board are three sections crucial to the setup of the unit. The 24V DC port powers the unit. The GND Rx Tx ports are for the Serial 232 setting. The + and - ports are for the Serial 485 setting. The CL+ CL- ports are for the Current Loop setting. Each port will need to correspond with the shunts placed on the serial pins on page 12-14.

FIGURE 3
Serial 232 Instructions for Setup

Step 1. The first step in setting your AWCLETHS unit is setting your pin shunts in the correct port. For Serial 232 setting, place shunts in the order shown in the image below.

Step 2. Check the DIP switches and adjust them to the appropriate setting for the dispenser. (See page 10 for DIP switch instructions.)

Step 3. Insert three wires into the GND, Rx, and Tx openings in each ports group of openings.

Step 4. Apply power to the 24V DC ports.
Serial 485 Instructions for Setup

Step 1. The first step in setting your AWCLETHS unit is setting your pin shunts in the correct port. For Serial 485 setting, place shunts in the order shown in the image below.

Step 2. Check the DIP switches and adjust them to the appropriate setting for the dispenser. (See page 10 for dip switch instructions.)

Step 3. Insert wires into the + and - openings in each ports group of openings.

Step 4. Apply power to the 24V DC ports.

FIGURE 5
Current Loop Instructions

Step 1. The first step in setting your AWCLETHS unit is setting your pin shunts in the correct port. For Current Loop setting, place shunts in the order shown in the image below.

Step 2. Check the DIP switches and adjust them to the appropriate setting for the dispenser. (See page 10)

Step 3. Set mA pins to required setting of equipment. (See mA chart located on page 15)

Step 4. If the unit is going in the store, set it to the Client setting. If the unit will be in the gas pump, set it to the Master setting.

Step 5. Insert wires into CL+ and CL -

Step 6. Apply power to the 24V vDC ports.
Setting Current Level

On the CLETH unit there are two areas where mA can be set for the dispenser. There are two separate four-pin squares that are used to set mA flow for port 1 and port 2. This is not needed for Serial Settings 232 and 485.

![Current Level Settings](image)

**FIGURE 7**
Master/Client Settings

There are two separate six-pin rectangles that are set to determine the master/client setting. An AWCLETHS unit going inside of a dispenser, it will be set to the MASTER setting. If the unit will be in the store, the unit will be set to the CLIENT setting. Not needed for Serial Settings 232 and 485.

FIGURE 8
Wayne In-store Setup

Step 1. The first step in setting your AWCLETHS unit is setting your pin shunts in the correct port. For Serial 232 setting, place shunts in the order shown in the image below. This should be the setting for both ports.

Step 2. Check the DIP switches and adjust them to the appropriate setting for the dispenser. (See page 10)

Step 3. Set mA pins to required setting of equipment. (See mA chart located on page 15)

Step 4. Set both ports to the Client setting.

Step 5. Insert wires into GND, Rx, and Tx wiring ports for both sides.

Step 6. Apply power to the 24V DC ports.
Wayne In-Dispenser Setup

Step 1. The first step in setting your AWCLETHS unit is setting your pin shunts in the correct port. Set Port 1 to Current Loop and Port 2 to Serial 485.

Step 2. Check the DIP switches and adjust it to the appropriate setting for the dispenser. (See page 10)

Step 3. Set mA pins to required setting of equipment. (See mA chart located on page 15)

Step 4. Set Port 1 to Master setting and leave Port 2 open.

Step 5. Insert wires into CL+ and CL - for Port 1 and the - and + wiring ports on Port 2 side.

Step 6. Apply power to the 24V DC ports.

FIGURE 10
Gilbarco In-store Setup

Step 1. The first step in setting your AWCLETHS unit is setting your pin shunts in the correct port. For Current Loop setting, place shunts in the order shown in the image below.

Step 2. Check the DIP switches and adjust it to the appropriate setting for the dispenser. (See page 10)

Step 3. Set mA pins to required setting of equipment. (See mA chart located on page 15)

Step 4. Set both ports on the Client setting as shown below.

Step 5. Insert wires into CL+ and CL- ports on both sides.

Step 6. Apply power to the 24V DC ports.
Gilbarco Dispenser Setup

Step 1. The first step in setting your AWCLETHS unit is setting your pin shunts in the correct port. For Current Loop setting, place shunts in the order shown in the image below.

Step 2. Next, check the DIP switches and adjust it to the appropriate setting for the dispenser. (See page 10)

Step 3 Set mA pins to required setting of equipment. (See mA chart located on page 15)

Step 4. If the unit is going in the store, set it to the Client setting. If the unit will be in the gas pump, set it to the Master setting.

Step 5. Insert wires into CL+ and CL-

Step 6. Apply power to the 24V DC ports.

FIGURE 12
Associated AvaLAN Products

- AvaLAN Access Point
  - AW58EMVAP
- AvaLAN In-Dispenser Unit
  - AW584EMVSU
- Power Distribution Ethernet Switch
  - AWHEX5P
What’s In The Box

- Current Loop to Serial Adapter
- Mounting Bracket
- Power Cable
- Mounting Adhesive
- Screws
- Commander Connectors
- Mounting Adhesive (3M VHB™)
- Screws
In-Store Setup Direct Controller Connected

The AWCLETHS unit will be set up inside the store and will connect to many different components to provide wireless access to the dispensers. The ports will directly connect to the Forecourt Controller. Port 1 goes to the pump section and Port 2 goes to the payment section. Ethernet will connect to the store network which will connect through the AvaLAN Wireless Access Point to the dispenser CLETHS.
In-Store Setup with Distribution Box

Port 1 of CLETHS will connect to the Distribution box. This will pass the dispenser fuel data through the Distribution box to the commander. The payment information will pass from the CLETHS unit directly to the commander. Ethernet will connect to the store network which will connect through the AvaLAN Wireless Access Point to the dispenser CLETHS.

*Depending on Manufacturers, Port 2 (payment data) can be set to Serial 232 or Current Loop.

**FIGURE 15**
How to Setup In-Store with a Commander

This connection method will allow the user to connect to a Commander without the need of a Distribution Box. Included with the each CLETH unit is a Commander Connector that wires to the CLETH unit and has a female CAT6 connector. The CLETH will be setup as shown in the graphic below. Port 1 and 2 will be set to Serial 232. DIPS will be consistent with the dispenser and group settings of the site. Wire ports 1 and 2 in the Serial 232 screw terminals. When this setup is complete, connect to the Commander with an Ethernet Cable.
In-Dispenser Setup

1. Set CLETHS unit to MASTER setting (see figure 3).
2. Set to Serial 232, Serial 485, or Current Loop.
3. Set DIPS for the dispenser group (see Figure 1).
4. Connect port one wires to dispenser handle (The two handles are daisy chained so the wires need to only connect to one).
5. Connect port two wires to card reader (The two card readers are already connected so the wires only connect to one card reader).
6. Connect ethernet cable to AvaLAN Access Point.
7. Apply power through the 24V DC ports.

FIGURE 16
In-dispenser Setup

FIGURE 17
Installation Overview

FIGURE 18

6” long x 3.25” wide x 1.25” deep

INSTALLATION NOTES:

NOTE: Keep minimum 3” away from other equipment on all sides.

1) Installation and use shall be in accordance with the Flammable and Combustible Liquids Code, NFPA 30

2) This device will connect to the Wayne Fuel Dispenser’s 24VDC power panel

3) The cables provided with the product shall be reliably routed separate (>50mm) from other wiring/cabling within the dispenser, unless all wiring insulation is rated for the highest circuit voltage.

4) The Earthing conductor shall be minimum 18AWG and copper only.

5) Only use the supplied cable to power device.

6) The power supply should be Class 2 or equivalent.
Installation Procedure

When possible, mount the AWCLETHS with access to the wiring trough where the dispenser communication wires are located. Figure 12.1 shows a typical placement of the AWCLETHS.

⚠️ DANGER: Keep a minimum of 3” clearance between the radio (including from the antennae) and any other equipment.

⚠️ DANGER: DO NOT USE POWER TOOLS FOR INSTALLATION.

NOTE: The mounting location may require different placement than shown.

Shutdown the Site
___ 1. Stop all pumps, one at a time, allowing current customers to complete their transactions.
___ 2. Shutdown the site and tape off the pumps and run EOD.
___ 3. Attach anti-static wrist strap.

Mounting the AWCLETHS
___ 1. Attach the mounting kit plate to the back of the AWCLETHS.
    Find a mounting location with a minimum of 3” clearance from other equipment.
Troubleshooting Guide

1. Check Port 1 on the store-side AWCLETHS to make sure that the RED LED is blinking - this indicates that the AWCLETHS is hearing the NeXGen - if it’s not blinking then problem could be:
   - Error with the in-store Current Loop wiring
   - Error in NeXGen’s setup
   - Error in AWCLETHS’s jumper/DIP setup:
     * Pump DIP switch setting for correct manufacturer
     * Current Loop serial jumper setting
     * Current Loop Client jumper setting
   - Defective NeXGen Current Loop transmitter
   - The D-Box having a bad Current Loop receiver
   - Defective AWCLETHS

2. Check Port 1 of dispenser-side AWCLETHS to make sure that the GREEN LED is blinking - this indicates the data from in-store AWCLETHS is getting across the network to the in-dispenser AWCLETHS - if it’s not blinking then problem could be:
   - Error indicating that DIPs 7/8 are not correctly set to same setting on all in-dispenser AWCLETHS and the in-store AWCLETHS
     * Note: Up to 8 in-dispenser AWCLETHS can share 1 in-store AWCLETHS. There are 4 settings for DIPs 7/8 which allows up to 32 in-dispenser AWCLETHS which would require 4 in-store AWCLETHS.
   - Error in wireless setup
     * Check to make sure USB procedure was followed
     * Check connection signal strength LEDs on in-dispenser wireless radio
     * Check mounting location of AP is within the store retail area with windows between the AP and dispensers
     * Check the CLOUD to confirm signal strength of the in-dispenser wireless radio is strong enough (RSSI >-85)
   - Error in the network connection between the AWCLETHS units
     * Check that AWCLETHS POWER switch is being used in-store to power the AWCLETHS
     * Check network connections are basic and logical to IT best practices
     * Advanced store networks may require that AWCLETHS POWER switch and in-dispenser radios be registered in the upcoming Allied Store Network Management CLOUD. Registration ensures that the AWCLETHS can find each other even if the advanced store network is using VLANs or a firewall to create isolation between secure/insecure segments
Troubleshooting Guide

3. Check port 1 of the dispenser-side AWCLETHS that the RED LED is blinking - this indicates that the AWCLETHS is hearing the dispenser’s response to the NeXGen - if it’s not blinking then problem could be:
   - Error in the configuration of the NeXGen’s setup for that dispenser
   - Error in the configuration of the dispenser to respond to NeXGen’s polling
   - Error in dispenser wiring setup
   - Error in AWCLETHS setup:
     * for current level jumpers
     * pump DIP switch setting for correct manufacturer
     * Current Loop serial jumper setting
     * Current Loop Master jumper setting
   - Defective dispenser
   - Defective AWCLETHS

4. Check Port 1 on the store-side AWCLETHS that the GREEN LED is blinking - this indicates that the in-store AWCLETHS is sending the data to NeXGen - if it’s not blinking then the problem could be:
   - The D-Box having a bad Current Loop receiver
   - NeXGen Current Loop receiver not working correctly
   - NeXGen’s protocol timeout setting is too short