

# E-ALDS

## Addressable Leak Detection Sensor

## Installation Guide



The E-ALDS is an Addressable Leak Detection Sensor that will monitor and report the presence of liquid anywhere that the liquid detection sensing cable is placed. When connected to an E-16D/5D/2D (SYSTEM) with CAT5/5e/6/6a/7 (CATx) cable (minimum 24AWG) using one of the RJ45 Sensor ports, alerts can be sent to users indicating the location of the presence of liquid and the web interface can also provide detail as to the location of liquid on the sensor.

**Parts Required:**

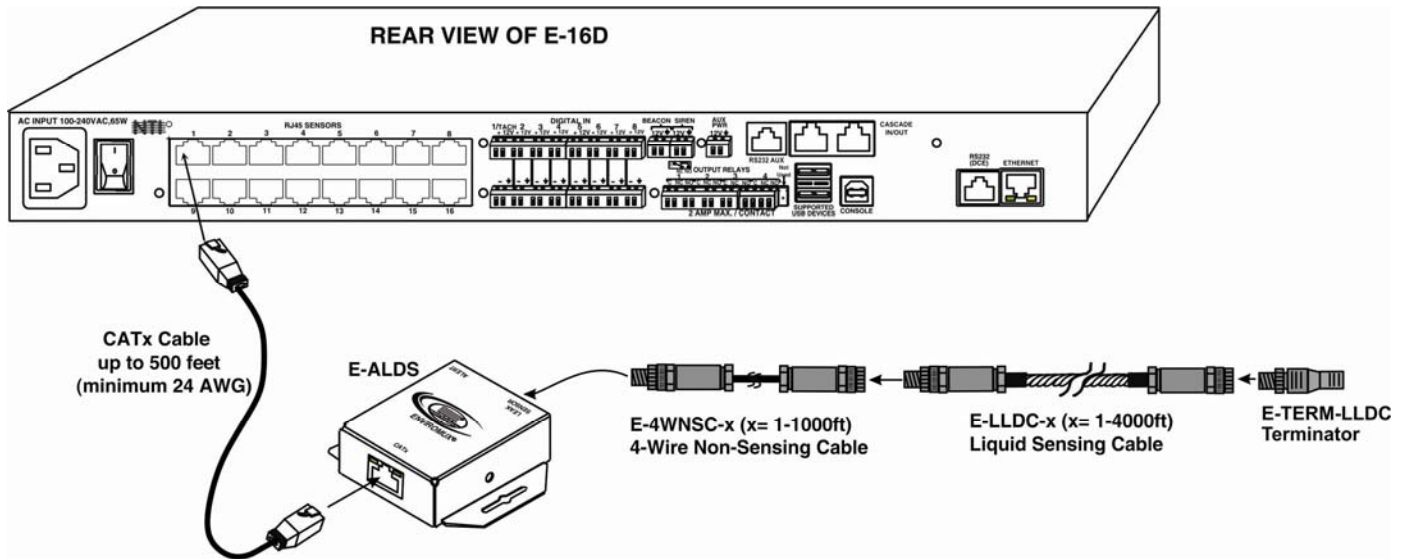
- 1- E-ALDS Addressable Leak Detection Sensor (Includes 1 E-TERM-LLDC Terminator)
- 1- Length of 24AWG CATx cable (up to 500 ft) to connect the E-ALDS to the SYSTEM (sold separately)
- 1- Available RJ45 Sensor Port on an E-16D/5D/2D
- 1- E-LLDC-x Liquid Sensing Cable (available in lengths 10/25/50/100 feet and custom lengths up to 4000 feet)(sold separately)

**Optional Parts (sold separately):**

- E-4WNSC-x 4-Wire Non-Sensing cable (available in lengths 10/25/50/100 feet and custom lengths up to 1000 feet)

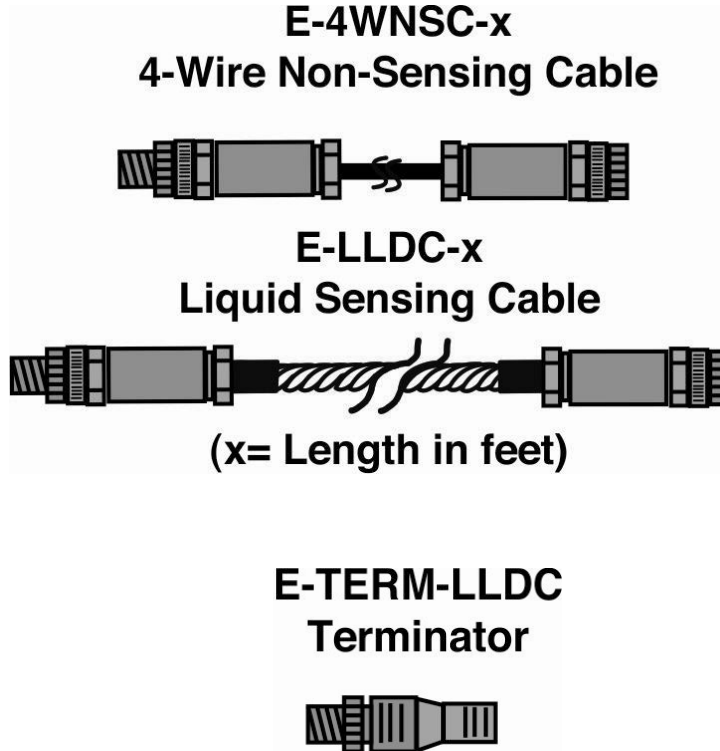
**Basic Installation**

1. Mount the E-ALDS as desired.
2. If being used (optional), connect the 4-Wire Non-Sensing cable (sold separately) to the E-ALDS.
3. Connect the Liquid Sensing cable to the Non-Sensing cable (or directly to the E-ALDS) and secure it to the surface(s) where liquid is to be sensed.
4. Be sure to connect the Terminator to the end of the Liquid Sensing cable, otherwise the sensor will not work.
5. Connect a CATx cable between the "CATx" port on the E-ALDS and any "RJ45 Sensor" port on the E-xD.



## **Components**

The E-ALDS can be installed using multiple lengths of both 4-Wire Non-Sensing Cable and Liquid Sensing Cable. Additional lengths can be located well away from each other and still be sensed by the SYSTEM.



The E-4WNSC-x is the 4-Wire Non-Sensing cable and we recommend a maximum total combined length of 1000 feet.

The E-LLDC-x is the Liquid Sensing cable which has a maximum combined length of 4000 feet total for any configuration.

This cable can be placed anywhere that liquid needs to be sensed. To assure proper sensitivity it should be secured at various intervals as needed to make intimate contact with the surface where leaks are to be detected.

An E-TERM-LLDC Terminator is necessary to complete the loop at the end of the configuration. The last component in the configuration must be a Terminator.

## Monitoring

Log in to the web interface of the SYSTEM and view the Summary Page.

Sensors					
Conn.	Description	Type	Value	Status	Action
5	<a href="#">Sensor #5.1</a>	ALDS Leak Location	No Leak	Normal	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
5	<a href="#">Sensor #5.2</a>	ALDS Continuity	Normal	Normal	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
5	<a href="#">Sensor #5.3</a>	ALDS Total Length	1435.6ft	N/A	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Calculate</a>

Click here to update the Total Length Value after installation of the cable is complete.

**Description-** The Summary Page will list the E-ALDS as three sensors for a single sensor connector. By default, they will be listed under "Description" as "Sensor #x.1, Sensor #x.2 and Sensor #x.3 (x= the RJ45 Sensor connector the E-ALDS is connected to) as shown in the image above. This description can be customized under on the sensor configuration page (page 5).

**Leak Location-** Indicates how far down the Liquid Sensing cable that the liquid is being sensed. "No Leak" means no leak is being sensed.

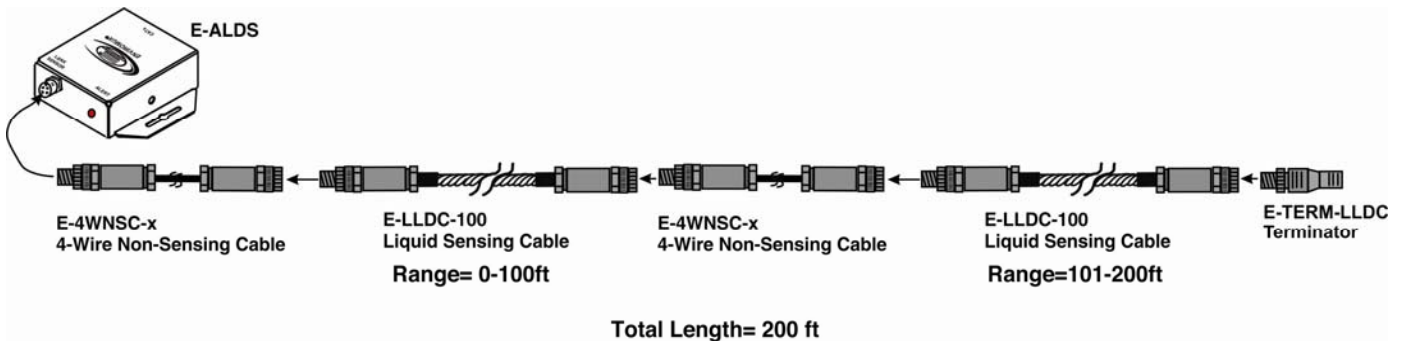
**Continuity-** Indicates the status of the sensor. The sensor must be completely intact and assembled with the Terminator at the end in order to function. If the Value is "Break", then either one of the wires in the loop is broken or the loop has been disconnected. The loop consists of the wires in the 4-Wire Non-Sensing cable, the wires in the Liquid Sensing cable, and the Terminator. If the Value is "Normal", then the loop is intact and ready to sense.

**Total Length-** Indicates how much total length is being monitored by the E-ALDS. The total length includes just the Liquid Sensing cable. Length is calculated as follows:

The leak location is based on the measured point from the beginning of the sensing cable. If two sensing cables are used with just a non-sensing cable between them, then the dimensional point where the first sensing cable ends is where the second cable begins.

For example, if you have two 100 foot sensing cables separated by a 100 foot non-sensing cable, then if the Leak Location is reported to be at "130", the leak will be approximately 30 ft down the length of the second sensing cable. The 100 feet of non-sensing cable is ignored by the E-ALDS.

**Note:** After all connections have been made for the E-ALDS, click on the "Calculate" to get the Total Length Value to update. If any changes are made to the configuration, this must be selected again to make the update to the value.



## Sensor and Alert Configuration

The sensor parameters for the E-ALDS are individually treated the same as other contact sensors.

The Leak Location alerts and the Continuity alerts are configurable as described in the E-xD product manual under Contact Sensors.

### Sensor #5.1 Configuration (Type: ALDS Leak Location)

<b>[-] Sensor Settings</b>	
<b>Description</b>	<input type="text" value="Sensor #5.1"/> Descriptive name for the sensor
<b>Normal Status</b>	<input type="text" value="No Leak"/> Select the normal status for the sensor
<b>Enable Disconnection Alert</b>	<input type="checkbox"/> Enable alert if not connected
<b>Refresh Rate</b>	<input type="text" value="10"/> <input type="text" value="Sec"/> The refresh rate at which the sensor view is updated
<b>[+] Group Settings</b>	
<b>[+] Schedule Settings</b>	
<b>[+] Critical Alert Settings</b>	
<b>[+] Data Logging</b>	
<input type="button" value="Save"/>	
<b>Alert Simulation</b>	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

Configuration page for Leak Location

### Sensor #5.2 Configuration (Type: ALDS Continuity)

<b>[-] Sensor Settings</b>	
<b>Description</b>	<input type="text" value="Sensor #5.2"/> Descriptive name for the sensor
<b>Normal Status</b>	<input type="text" value="Normal"/> Select the normal status for the sensor
<b>Enable Disconnection Alert</b>	<input type="checkbox"/> Enable alert if not connected
<b>Refresh Rate</b>	<input type="text" value="10"/> <input type="text" value="Sec"/> The refresh rate at which the sensor view is updated
<b>[+] Group Settings</b>	
<b>[+] Schedule Settings</b>	
<b>[+] Critical Alert Settings</b>	
<b>[+] Data Logging</b>	
<input type="button" value="Save"/>	
<b>Alert Simulation</b>	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

Configuration page for Continuity

The E-ALDS Total Length sensor (below) is configurable for "Cable Resistance Value". On the average, the resistance value (in Ohms) for each foot of sensing cable is 2.8. The E-ALDS uses this value to determine how to report the location of a leak. This reporting can vary in terms of accuracy, depending upon how accurate the 2.8 ohms actually is. Each spool of sensing cable may have a slightly different ohm-per-foot measurement. The "Cable Resistance Value" provides an opportunity to "fine tune" the accuracy of the total cable length and subsequent reported leak location.

### E-16D 48V ALDS Total Length Configuration (Type: ALDS Total Length)

**Sensor Settings**

**Description:** E-16D 48V ALDS Total L  
Descriptive name for the sensor

**Units:** ft  
Select the units for the sensor

**Cable Resistance Value:** 2.8000  
Sensor cable resistance value (in Ohms) per feet of sensor cable. Default: 2.8

### Configuration page for Total Length

The default value is 2.8000 ohms. To determine if this needs to be changed, check the Total Length reported on the summary page. If the Total Length reported does not match the calculated length of cable in your configuration, then adjust the resistance value (ideally in 10ths or 100ths of an ohm), click "Save", and then click "Calculate" on the summary page. Depending upon how the total length changes, you will know whether to increase the resistance value, decrease the resistance value, or leave it alone.

When in an alarm state, the Leak Location will be indicated in bold red text. Alert messages will be sent as per the configuration you have set.

If multiple leaks are being sensed at the same time, you will receive notification of the location for the leak **closest to E-ALDS**. Once that leak is cleared, you will receive notification of the next leak closest to the E-ALDS. This will continue until all leaks are cleared.

If the sensor is in alert status, the user has the option to either **acknowledge** the alert or **dismiss** it. If the user acknowledges the alert, no additional alert messages will be sent during that alert status cycle. If the user dismisses the alert, another alert message will be sent once the "notify again after" time designated on the configuration page elapses.

The **Configure** button allows the user to configure parameters of the sensor.

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Unit: ALDS Model: ENVIROMUX-5D  
Uptime: 14 days, 1 hours, 47 mins  
Current Time: 11-12-2018 10:55:00 AM

Home > Sensors List > View Sensor

**Monitoring**  
Administration  
Smart Alerts  
Log  
Support  
Logout

**Sensor #5.1 Status**

Type: ALDS Leak Location Connector:5

**714.3ft**

Status: Alarm

Handle Alert:

Last alert was at:	11-12-2018 10:54:05 AM	717.8
Lowest Reading:	11-08-2018 11:38:33 AM	0.0
Highest Reading:	11-06-2018 11:53:12 AM	730.4
Total Alert Time:	8m 36s	
Total Normal Time:	332h 47m 40s	

[Clear Records](#)

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### Sensor in an alarm state

When a continuity break is sensed, it will be indicated on the Summary Page,

Sensors					
Conn.	Description	Type	Value	Status	Action
4	<a href="#">E-16D 48V ALDS Leak Location</a>	ALDS Leak Location	No Leak	Normal	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
4	<a href="#">E-16D 48V ALDS Continuity</a>	ALDS Continuity	Break	<b>Alarm</b>	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
4	<a href="#">E-16D 48V ALDS Total Length</a>	ALDS Total Length	Break	N/A	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Calculate</a>

### Summary Page showing a break in the sensing configuration

and a view of the Continuity sensor will boldly indicate it. This status will be caused by either a break in the Sensing cable, Non-sensing cable, or a missing Terminator.

**Note: This indicates the presence of a break, not the location of the break.**

### Sensor #5.2 Status

**Type: ALDS Continuity    Connector:5**

**Break**

**Status: Alarm**

Handle Alert: Dismiss ▼ Apply Changes

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Last alert was at:	11-14-2018 10:43:19 AM	3.0
Total Alert Time:	26m 45s	
Total Normal Time:	380h 18m 59s	

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Configure

### Status Page for Continuity showing Break

## ADDITIONAL INFORMATION

### Test the Installation

After installation of rope style leak detection sensor in its desired location, **it is very important** to test the sensor to verify correct installation. This applies to **all** rope-style leak detection sensors.

#### To test the rope style leak detection sensor;

1. Configure the sensor (refer to the ENVIROMUX manual). (Normal Status set to "Open", Sampling Period set to 5 seconds.)
2. Place approximately one table spoon of tap water across the sense cable so that the 2 thin sensing wires are connected by mutual contact with the water. Do NOT use distilled water as water must be conductive.
3. Monitor the sensor (see the ENVIROMUX Summary Page) to see the sensor "Value" change from "Open" (dry) to "Closed" (wet). (How quickly the change occurs is based on the amount of impurities in the water, so allow up to 30 seconds).
4. Dry the exposed area of the sensor and the sensor "Value" should change back to "Open" within 30 seconds.

**If the sensor fails to behave in this manner, contact NTI for support.**

This completes the testing of the sensor.

### Liquid Detection Rope Maintenance

For periodic maintenance, you can clean the rope with isopropyl alcohol without completely removing the rope from its installed location.

1. Remove the section that you want to clean from its self-adhesive clips.
2. Soak the alcohol in a dye-free rag and proceed to wipe it around the rope, squeezing firmly while pulling the rag down the length of the rope.
3. Flip the rag every several feet and re-saturate the rag with alcohol when needed.
4. After cleaning a section of the rope, you can replace it and continue to clean the next section in similar fashion.
5. Replace the rag if it becomes too dirty.

If the rope is still giving you problems after you have cleaned it with isopropyl alcohol or if you think the rope needs a good scrubbing, you can clean it with warm soapy water. You will have to remove the rope from its installed location. It may be helpful to label the sections of the rope or note their locations before you start for an easier re-installation.

1. Gather Dawn dish soap, a large bucket or plastic bin, warm water, soft-bristled scrub brushes, and clean rags.
2. Add dish soap to the bucket of water, approximately 1 cup of detergent to 1 gallon of warm water. To determine if the solution is concentrated enough, place your finger and thumb in the water and rub them together. You should feel a slick/slimy residue. If you do not feel a residue, add more detergent to the water and gently mix to distribute the soap.
3. Submerge a section of the rope in the water. Using a scrub brush or rag, scrub along all sides of the rope with firm pressure.
4. Remove the section of the rope from the soapy solution and rinse it in a bucket of clean, fresh water.
5. Ensure that there are no oily deposits along the length of the rope. If the rope does not appear clean, submerge it in water and scrub again, repeating steps (3) to (5).
6. Hang the clean rope up to dry. Try to point the connectors down, so water cannot pool inside the connectors. The drying process may take 6-8 hours, depending on the room conditions.
7. When the rope is completely dry, reinstall it in its original location.

## TIPS FOR PLACEMENT

### Install Sensing Cable on Floors

E-LLDC-x Liquid Sensing Cable is durable, flexible, and designed to mitigate false alarms. Run leak detection sensing cable around a room's perimeter, encapsulate critical equipment within the room, and route the cable in a serpentine pattern under raised floors. For a serpentine installation, a good rule of thumb is to allow .25 feet of sensing cable for every square foot of space you'd like to protect.

**Example:** *If you have a 10,000 square foot, rectangular facility, you would need roughly 2,500 linear feet of sensing cable to protect it (10,000 x .25).*

Secure the sensing cable to the floor with self-adhesive clips (E-CLPxx-LD) - keep the following guidelines in mind to avoid complications:

1. Do not install sensing cable that is damaged or dirty - while the cable is designed to mitigate false alarms, visibly dirty cable will need to be cleaned before installation. If your sensing cable needs to be cleaned, refer to the **Liquid Detection Rope Maintenance** section on page 8.
2. Do not run sensing cable through contaminants - ie. dirty or greasy areas. The floor must be clean of contaminants for the sensing cable to function properly and for self-adhesive clips to adhere. If necessary, clean the floor before installation.
3. Avoid laying sensing cable in the direct downstream of air conditioning units - these units discharge moisture, which will skew leak detection readings. Place the cable 4 to 6 feet (1.2 to 1.8m) away from air conditioning units to avoid false alarms and contamination.
4. Tools or heavy objects can damage sensing cable. Avoid rolling, dropping, or setting heavy items on sensing cable. Whenever possible, install sensing cable out of the way of foot traffic.
5. Use self-adhesive clips (E-CLPxx-LD) to secure the sensing cable. These clips are cable clips with a self-adhesive backing that hold sensing cable securely in place without pinching or binding the cable, which can cause false alarms.
  - A. Clips should be placed 5 to 6 feet apart throughout an installation, and 3 feet apart when cable is routed in front of CRAC units.
  - B. Additional clips may be needed to maintain placement around corners or curves.
  - C. Because the E-CLPxx-LD clip's adhesive backing does not work well on porous concrete floors, apply a drop of silicone or another nonconductive adhesive to help secure the clip to the floor.
  - D. Ensure the sensing cable is installed directly on the floor, and there are no gaps between the cable and the floor. Use additional clips as necessary to avoid large gaps.

### Install Sensing Cable on Pipes

Since E-LLDC-x Liquid Sensing Cable is very flexible, it can be installed around pipes. This can help pinpoint leaks in a wide variety of applications. Verify whether your pipe installation is horizontal or vertical. Cable is installed differently in each application.

#### **If sensing cable is installed on horizontal pipes:**

Run the cable along the bottom of the pipe and secure it with cable ties or tape every two to three feet (0.6 to 0.9m).

#### **If sensing cable is installed on vertical pipes:**

Wrap the cable around the pipe at a 30 - 45 degree angle, repeating the angle at appropriate spacing as you move down the pipe. Use cable ties every 3 to 5 feet (0.9 to 1.5m) to secure the cable to the pipe.

**Note:** If the sensing cable is installed on chilled water lines, wrap the pipes with insulation after installing the cable. This helps control condensation, which can trigger alarms.



## SPECIFICATIONS

<b>E-ALDS</b>	
Max. Sensing Cable Length	4000 feet
Max. Non-sensing Cable Length	1000 feet
Leak Location Accuracy	20 to 1500 feet: $\pm (1\text{ft} + 0.5\%$ of sensing cable length) 1500 to 4000 feet: $\pm 1\%$ of sensing cable length
Audio Alarm	Built-in Piezo buzzer- 70dB at 1 foot
Current Draw	13mA @ 5VDC, 18mA @ 12VDC
Power Source	E-2D/5D/16D
Connection to E-2D/5D/16D	CATx cable up to 500 feet long
Sensing Cable Connection	M12 4-Pin
Dimensions (WxDxH)	3.21x2.5x1.22 In. (82x64x31mm)
Operating Temperature	32 to 158°F (0 to 70°C)
Regulatory Approvals	CE, RoHS
<b>Sensing Cable</b>	
Material Sensed	Detects any conductive liquid
Minimum Puddle	0.6" (15mm) diameter
Minimum Depth	>0.1" (2.5mm)
Cable Connection	M12 4-Pin
Available Lengths	10/25/50/100 feet and custom lengths up to 4,000 feet
Bend Radius	0.375" (9.53 mm)
Operating Temperature	32 to 167°F (0 to 75°C).
Regulatory Approvals	CE, RoHS
MTBF	10,869,188 hrs
<b>Non-Sensing Cable</b>	
Cable Connection	M12 4-Pin
Available Lengths	10/25/50/100 feet and custom lengths up to 1,000 feet
Cable Diameter	0.136 in. (3.45 mm)
Conductors	22 AWG stranded bare copper
Cable Jacket	Plenum-grade PVC
Operating Temperature	14 to 140°F (-10 to 60°C)
Regulatory Approvals	CE, RoHS