



Synergize[®] RF Network
Intelligent Load Control (ILC) Device
Installation Instructions

Y99854-3-TUM
Revision B
www.Aclara.com

Proprietary Notice

This document contains information that is private to Aclara Technologies LLC, an Ohio limited liability company, and/or that is private to Aclara Meters LLC, a Delaware limited liability company (individually or collectively “Aclara”). This information may not be published, reproduced, or otherwise disseminated without the express written authorization of Aclara.

Any software or firmware described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license.

Disclaimer

The information in this document is subject to change without notice and should not be construed as a commitment by Aclara. Aclara assumes no responsibility for any errors that may appear in this document.

No responsibility is assumed for the use or reliability of software on equipment that is not supplied by Aclara.

Metrum Cellular, STAR, Synergize, and TWACS are registered trademarks of Aclara Technologies LLC.

**Aclara Technologies LLC
Confidential and Proprietary
Copyright 2018-2019. All Rights Reserved.**

Warnings, Cautions, and Notes

Always consult and adhere to all local and national safety codes, regulations, and standards. WARNING, CAUTION and Note statements are used throughout this manual to emphasize important and critical information to help you ensure safety and prevent product damage. These statements are defined below.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious physical injury.



CAUTION

Indicates a situation, which, if not avoided, could result in damage to equipment, damage to software, loss of data or invalid results.

NOTE Indicates important supplemental information.

FCC / IC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving enclosure.
- Increase the separation between the equipment and receiver.
- Connect the equipment to a circuit different from that to which the receiver is connected.
- Contact Aclara for help.



CAUTION

Any changes or modification made to this device without the expressed, written approval of Aclara Technologies LLC may void the user's authority to operate this device.

Antennas

Only the antenna provided with this device is authorized to be used without additional approvals from Aclara, the FCC, and ISED.

FCC / IC RF Exposure Guide

Aclara Technologies LLC low power RF devices and their antennas must be fixed-mounted on outdoor permanent structures providing a separation distance of at least 20 cm from all persons during normal operation. This device is not designed to operate in conjunction with any other antennas or transmitters. No other operating instructions for satisfying RF exposure compliance are needed.

Rated Output Power

	Conducted Power	Radiated Power with Max Gain Antenna*
Standard Range	29.5 dBm +/- 1dB	29.5 dBm EIRP
	0.8913 W average	0.8913 W average
*Max antenna gain = 0 dBi		

Field Calibration Procedure

Aclara Technologies LLC low power RF devices have passed through extensive testing and calibration procedures while in the factory. Therefore, no additional calibration or adjustment is required in the field.

Avertissements, mises en garde et remarques

Toujours consulter et respecter les codes, règlements et normes de sécurité locaux et nationaux. Des AVERTISSEMENTS, MISES EN GARDE et remarques sont utilisés tout au long de ce guide pour souligner l'information importante et critique qui vous aidera à assurer la sécurité et à prévenir les dommages au produit. Ces énoncés sont définis ci-dessous.

AVERTISSEMENT



indique une situation potentiellement dangereuse qui, si elle n'était pas évitée, pourrait entraîner la mort ou des blessures graves.

MISE EN GARDE



indique une situation qui, si elle n'était pas évitée, pourrait entraîner des dommages à l'équipement, des dommages au logiciel, des pertes de données ou des résultats invalides.

REMARQUE indique des informations supplémentaires importantes.

Conformité FCC / IC

Cet équipement a été testé et il est conforme aux limites pour un appareil numérique de Classe B, en vertu de l'article 15 des règlements de la FCC. Ces limites sont conçues pour offrir une protection raisonnable contre l'interférence nuisible dans une installation résidentielle. Cet équipement génère, utilise et peut émettre de l'énergie de fréquences radio et, s'il n'est pas installé ou utilisé conformément aux instructions, il peut causer une interférence nuisible aux communications radio. Il n'existe toutefois aucune garantie que de telles interférences ne se produiront pas dans une installation particulière. Si cet appareil cause des interférences nuisibles à la réception des signaux de radio ou de télévision, ce qui peut être détecté en mettant l'appareil sous et hors tension, l'utilisateur peut tenter de neutraliser l'interférence de l'une ou l'autre des façons suivantes :

- Réorienter ou repositionner l'antenne de réception.
- Augmenter la distance séparant l'équipement du récepteur.
- Brancher l'appareil dans une prise sur un circuit électrique différent de celui sur lequel le récepteur est branché.
- Consulter le fournisseur ou un technicien radio ou télévision expérimenté.

MISE EN GARDE Tout changement ou toute modification à cet appareil sans l'approbation écrite expresse d'Aclara Technologies LLC peut annuler l'autorisation de l'utilisateur d'utiliser cet appareil.

Antennes

L'antenne fournie avec ce compteur est la seule qui puisse être utilisée sans l'approbation d' Aclara, the FCC et l' ISED.

Guide d'exposition aux RF FCC / IC

Les appareils RF à faible puissance Aclara Technologies LLC ainsi que leurs antennes doivent être montés de manière fixe sur des structures intérieures ou extérieures permanentes qui se trouvent à au moins 20 cm des personnes pendant le fonctionnement normal. Cet appareil n'est pas conçu (et il n'a aucun branchement externe) pour être utilisé en association avec toute autre antenne ou tout transmetteur. Aucune autre instruction d'utilisation n'est requise pour assurer la conformité aux règles d'exposition aux RF.

Puissance de Sortie Nominale

	Puissance Conduite	Puissance Rayonnée Avec Antenne à Gain Maximum*
Gamme Standard	29.5 dBm +/- 1dB	29.5 dBm +/- 1dB
	0.8913 W moyenne	Puissance Isotrope Rayonnée Equivalente 0.8913 W moyenne
*Gain d'antenne maximal = 0 dBi		

Procédure de calibration sur place

Les appareils RF à faible puissance Aclara Technologies LLC ont été soumis à des tests étendus et multi-tâches et à des procédures de calibration complexes en usine. Par conséquent, ils ne requièrent pas de calibration ni d'ajustement supplémentaire sur place.

Installation Notes

Relay Connection

The ILC device 24 VAC relay port is only designed to accept a maximum 5 A. This limit applies even if the relay component supports 12 A. 24 VAC/5 A port loads must be protected with dedicated 5 A breakers. 208-277 VAC/30 A port loads must be protected with dedicated 30 A breakers.

RF Location

The ILC device contains an internal radio antenna intended only for outdoor use. Install the ILC device in an area where structures, trees, or hills provide minimum obstructions. Refer to *MTU Installation Requirements (Y20255-TEB)* for additional information.

Power Source

The ILC device must be sourced from a dedicated 5 amp breaker.

Introduction

Use these instructions in conjunction with standard utility safety guidelines and procedures when installing Aclara's Intelligent Load Control (ILC) device.

Utility supplied high voltage field wiring must use copper conductor only and have a +90° C rating. All field wiring should comply with local and national codes.

To ensure a rainproof seal, make sure that the door is completely closed and screw is fully seated. It is the installer and utility's responsibility to ensure the door is secured with an anti-tamper seal or lock.



Safety Warning



Any work near high voltage can present a danger of electrical shock. Your personal safety may be compromised if Aclara equipment is used in a manner not specified by Aclara. All wiring must be installed in accordance with local and national codes.

Required Tools

In addition to standard hand tools, the following special tools are required to perform this procedure:

- 0-10 in-lbs. torque-limiting screwdriver

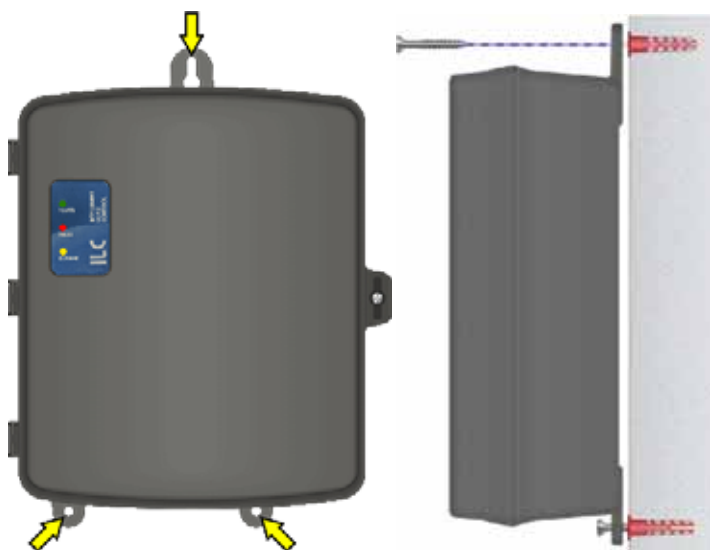
Installation Instructions

NOTES Only copper conductors should be used. Wire gauge is load dependent for relays, and Aclara specifies a range of 30 to 10 AWG, with the maximum size being 10 gauge for relay terminals. Minimum wire gauge should be determined by the particular relay, the National Electric Code (NEC), and local standards.

AclaraONE version 1.4 or greater is required for full Intelligent Load Control functionality.

The following procedure describes how to install an ILC device.

1. Using the appropriate hardware for the mounting surface, secure the ILC device at the desired location by the three mounting tabs.



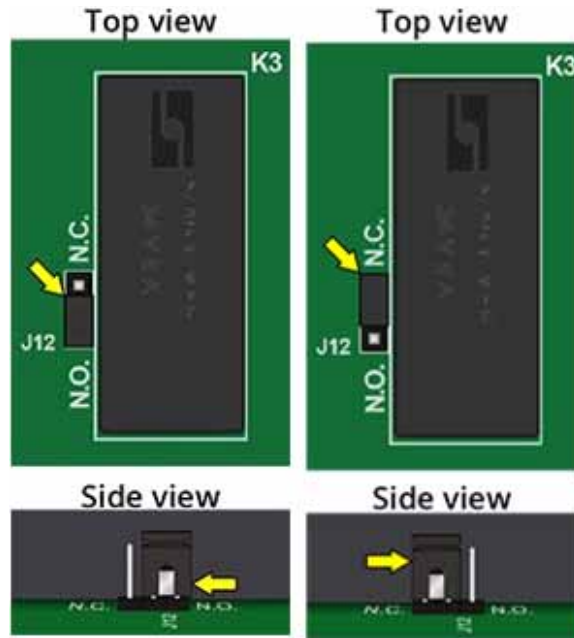
-
2. Open the door, and remove the four screws securing the high voltage barrier to the enclosure.



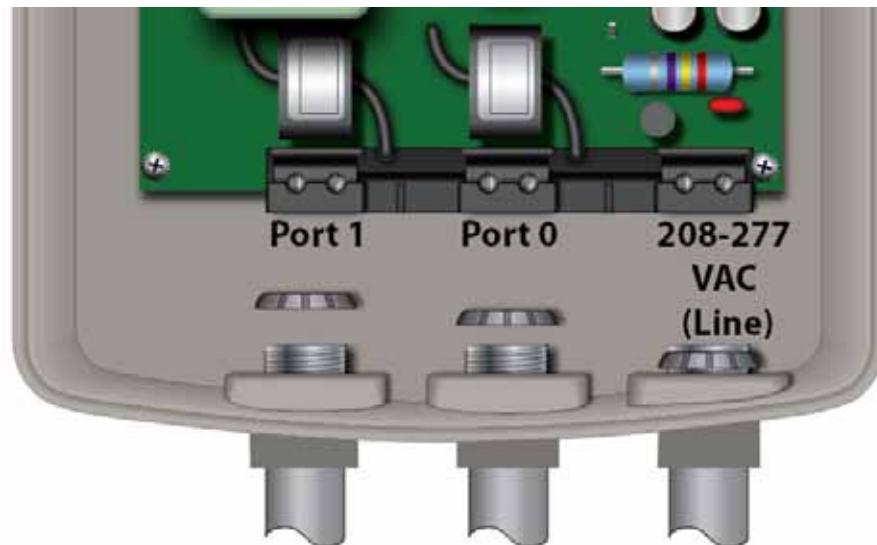
3. Configure the 24 volt relays by moving the associated jumper to set the desired configuration.

ILC devices are shipped from the factory with the 24 volt relays configured as normally closed relays. If normally open relays are desired, move the associated jumper so that it shorts the center and N.O. pins. Refer to the table and images below for more information.

Port	Relay	Jumper
Port 1	K1	J11
Port 2	K3	J12



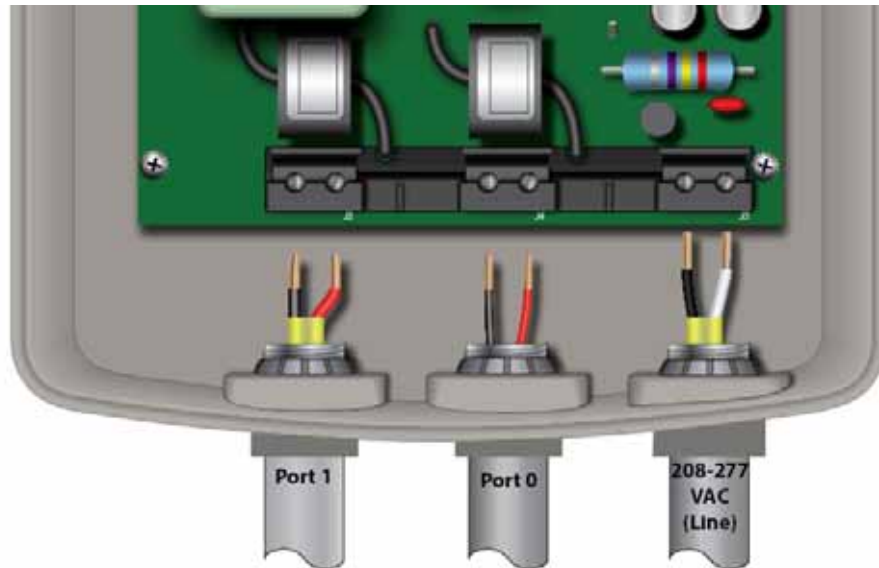
4. Connect appropriately sized conduit to the openings for the supply line and desired load connections using compatible conduit fittings, such as the Hubbell P050NGYA for ½" conduit.



The ILC device supports 50/60Hz input power for 208 to 277VAC. Refer to the following table for Port 0 and Port 1 configuration values.

Port	Y99850-401	Y99850-501	Y99850-601
0	24 VAC/5 A	24 VAC/5 A	208-277 VAC/30 A
1	208-277 VAC/30 A	24 VAC/5 A	208-277 VAC/30 A

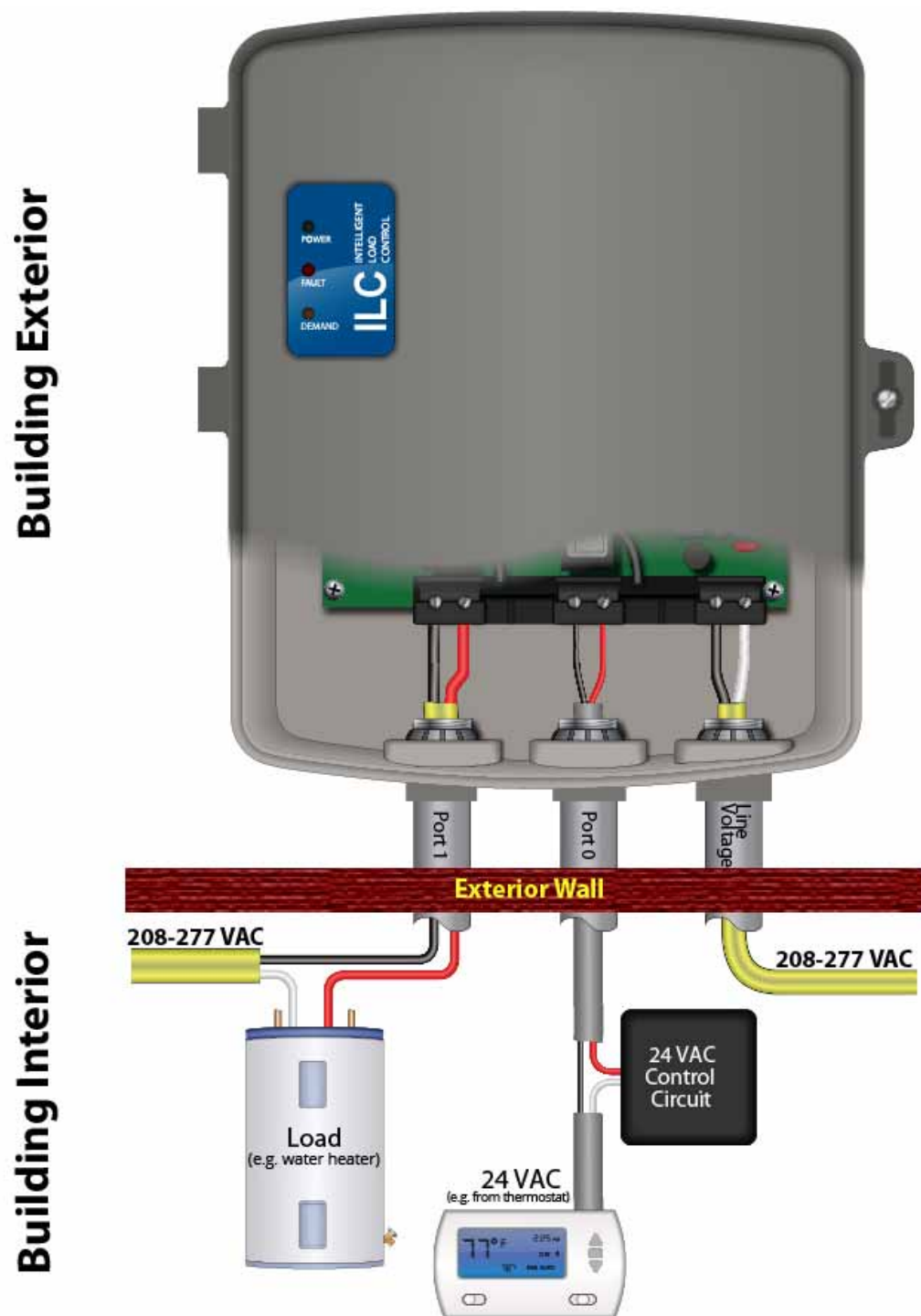
-
5. Refer to the wiring diagram when routing the desired load wires through the appropriate conduit. Remove approximately .28-.31 inches (7.0-8.0 mm) of insulation from the end of each wire, so as to make a good connection without leaving any copper exposed.



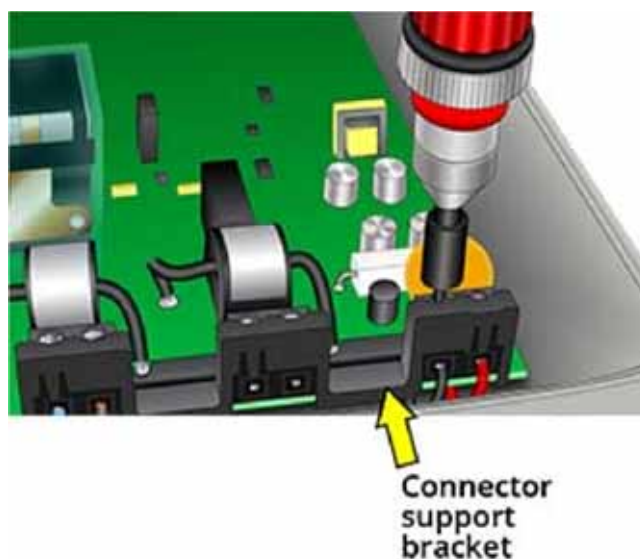
NOTE ILC device tamper detection requires that the input power and any connected relay ports use the same electric service phase. Failure to connect power and loads to the same phase may result in failure to report a load control event and/or erroneous tamper events. The selected ILC service phase may use a 208 VAC - 277 VAC connection.

Wiring Diagram

The following image provides a system and wiring overview that may be helpful for successfully installing the ILC device.



6. Secure the wires in place by carefully tightening the connector screws to 7.0-8.9 in-lbs.



WARNING

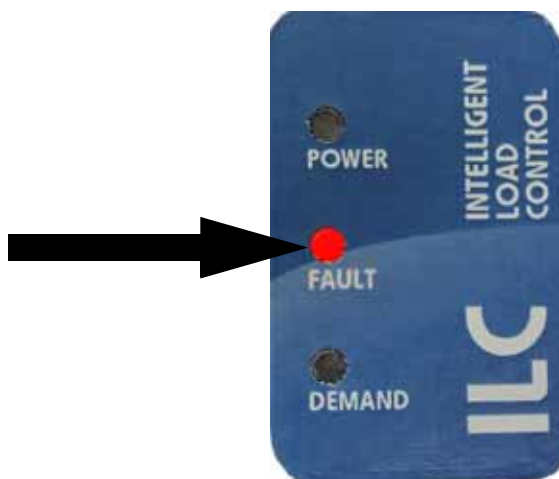
Over-tightening the screws or allowing the connector to move while tightening the screws may damage the connector or PC board connection.

7. Reinstall the inner cover by torquing four screws to 10 in-lbs., and close the other door without locking it.
8. Re-apply power to the ILC device, and verify the green Power LED is on. The amber Demand LED may be lit for at least the first five minutes.



CAUTION

A flashing Fault LED indicates one or more wires are connected incorrectly. Disconnect power and examine all wiring immediately. Correct any wiring issues before proceeding. Attempting to operate the ILC device with incorrect wiring may cause severe damage to the unit.



9. If the fault LED light is not illuminated, verify the door is closed and torque the screw to 1 in-lb with a low speed driver (below 400 rpm). Secure the door screw with a utility approved lock or security seal. The door screw will accept cables and locks up to .070" in diameter.



Troubleshooting

The ILC device contains LEDs that provide the installer with information needed to verify that the system is wired correctly. These LEDs are visible through the holes in the inner cover of the ILC device as shown in the following image.



Observing a solid blue light through the inner cover vents (within 5 minutes of power up) indicates the system has successfully connected to the network.

A blinking red light indicates that the ILC device is wired incorrectly.

Refer to the following table for a complete list of the ILC device LEDs and their significance.

Synergize RF ILC LEDs and Their Meanings				
LED Function	Viewing Capability	LED Color	Status	Notes
Power-On Indicator	Green LED - visible externally	Solid green	Local power condition	Green LED may be off during normal operation
Load Control Active	Amber LED - visible externally	Solid amber	Utility performing load control	
Connection Error	Red LED - visible externally	Solid red	Under voltage or under frequency	If load is connected to Port 0 and/or Port 1, check load voltage and frequencies
		Blinking red	Loads across relays wired incorrectly (unit not energized)	Remove power from loads and ILC, and correct wiring. Request a remote reset (register #35) if re-powering unit does not extinguish LED.
Initial Time Sync	Blue LED - located inside inner cover on communication board	Blinking Blue	End point requesting time from network	Network connection not verified. Blue light may be visible through top vent slots of inner cover.
		Solid Blue	End point received time from network	Connected to network. Blue light may be visible through top vent slots of inner cover.
		Off	End point powered for more than five minutes	Connected to network. Blue light may be visible through top vent slots of inner cover. Blue light LED goes off after unit powered for five minutes. Network may or may not have connected.

Support

There are several ways to get help when you have a question, an issue, or would like to speak with Aclara's Support personnel.

- Aclara Connect

Aclara's customer portal (<https://connect.aclara.com>) enables you to access our frequently-updated knowledge database, easily access product documentation, submit and track your Support cases and RMAs, access Aclara University's Online Learning Center (OLC) and learning library, track your orders, join communities and groups, join in discussions with other Aclara customers and Aclara personnel, and much more. If you do not have access to Aclara Connect, email support@aclara.com and request access.

- Aclara University

Aclara's on-demand training makes content available to you in a convenient, cost-effective online environment. The OLC has recordings of several webinars, streaming educational videos, software simulations, and short videos which walk you through a specific task. Access the OLC by going the Training tab of Aclara Connect and clicking the Online Learning Center link.

- Technical Support

Email support@aclara.com or call 1-800-892-9008 to speak with an Aclara representative.

Returning Product

To return Aclara products for repair, complete an RMA Request on Aclara Connect (<https://connect.aclara.com>), providing as much detail about the problem as possible. If you have any questions regarding your return, please call 1-800-892-9008 or email rma@aclara.com.