SIEMENS

USER GUIDE

INTELLIGENT LIGHT OUT DETECTOR (iLOD), A80271

MAY 2024

DOCUMENT NO. SIG-00-03-05-005
VERSION C.2

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PRINTED IN THE U.S.A.

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FCC RULES COMPLIANCE

The equipment covered in this manual has been tested and found to comply with the limits for Class A digital devices, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

DOCUMENT HISTORY

Version	Release Date	Sections Changed	Details of Change(s)
A	Feb 2004	--	Initial Release
A.1	Oct 2005		Deleted Input Current specifications and added Power Consumption data to Section 1.2.1.
B	Sept 2006		Updated to include SEAR IIi information and iLOD replacement procedures. New artwork.
B.1	June 2014		Rebrand for Siemens.
C	January 2024	1.0 & 1.2 1.1 1.4.1 1.4.2 and 1.4.5 1.4.7 1.4.8 2.2.1 2.3.1 2.4.3	Updated Warning and text to include Argus support. Figures added to show new and old iLOD models. Added section for iLOD revisions and software versions. Updated power requirements. Updated Caution and text to include Argus support. Updated mechanical specifications. Updated environmental specifications. Updated text to include Argus support. Updated note for clarity. Added Argus installation information and screen examples.
C.1	April 2024	2.3.1	Changed first line of note in Section "Lamp Wire Routing" to “Siemens recommends looping the current sensor wire multiple times when monitoring low current devices.”
C.2	May 2024	1.0	Added Caution note concerning correct use of the iLod.

NOTES, CAUTIONS, AND WARNINGS

Throughout this manual, notes, cautions, and warnings are frequently used to direct the reader's attention to specific information. Use of the three terms is defined as follows:

⚠ WARNING

WARNING

INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY. WARNINGS ALWAYS TAKE PRECEDENCE OVER NOTES, CAUTIONS, AND ALL OTHER INFORMATION.

⚠ CAUTION

CAUTION

REFERS TO PROPER PROCEDURES OR PRACTICES WHICH IF NOT STRICTLY OBSERVED, COULD RESULT IN A POTENTIALLY HAZARDOUS SITUATION AND/OR POSSIBLE DAMAGE TO EQUIPMENT. CAUTIONS TAKE PRECEDENCE OVER NOTES AND ALL OTHER INFORMATION, EXCEPT WARNINGS.

NOTE

NOTE

Generally used to highlight certain information relating to the topic under discussion.

If there are any questions, contact Siemens Mobility, Inc. Application Engineering.

ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS

Static electricity can damage electronic circuitry, particularly low voltage components such as the integrated circuits commonly used throughout the electronics industry. Therefore, procedures have been adopted industry-wide which make it possible to avoid the sometimes invisible damage caused by electrostatic discharge (ESD) during the handling, shipping, and storage of electronic modules and components. Siemens Industry, Inc. has instituted these practices at its manufacturing facility and encourages its customers to adopt them as well to lessen the likelihood of equipment damage in the field due to ESD. Some of the basic protective practices include the following:

- Ground yourself before touching card cages, assemblies, modules, or components.
- Remove power from card cages and assemblies before removing or installing modules.
- Remove circuit boards (modules) from card cages by the ejector lever only. If an ejector lever is not provided, grasp the edge of the circuit board but avoid touching circuit traces or components.
- Handle circuit boards by the edges only.
- Never physically touch the circuit board or connector contact fingers or allow these fingers to come in contact with an insulator (e.g., plastic, rubber, etc.).
- When not in use, place circuit boards in approved static-shielding bags, contact fingers first. Remove circuit boards from static-shielding bags by grasping the ejector lever or the edge of the board only. Each bag should include a caution label on the outside indicating static-sensitive contents.
- Cover workbench surfaces used for repair of electronic equipment with static dissipative workbench matting.
- Utilize only anti-static cushioning material in equipment shipping and storage containers.

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LIST OF FIGURES

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1.0 ILOD – INTRODUCTION

⚠ WARNING

WARNING

THE iLOD IS A NON SAFETY CRITICAL DEVICE THAT SHOULD NOT BE USED IN ANY APPLICATION WHERE IT WOULD BE REQUIRED TO PERFORM A SAFETY CRITICAL FUNCTION, OR WHERE IT MIGHT INTERFERE WITH OTHER SAFETY CRITICAL EQUIPMENT OPERATION.

⚠ CAUTION

CAUTION

THE iLOD IS DESIGNED TO RELIABLY DETECT CURRENT DRAW AND EXTRAPOLATE OPERATIONAL STATUS OF A DEVICE THAT ELECTRICALLY BEHAVES THE SAME AS A 10 VOLT, 18 OR 25 WATT INCANDESCENT LAMP FILAMENT. USE OF THE iLOD TO MONITOR OTHER TYPES OF DEVICES MAY GIVE UNDESIRED RESULTS.

The iLOD (A80271), or Intelligent Light Out Detector adds programmable current sensing functionality to the SEAR II, SEAR IIi, and Argus Event Recorders. The iLOD includes two current sensing Hall-effect sensors with analog-digital conversion circuitry and a processor that communicates with the SEAR II, SEAR IIi, or Argus over an Echelon network.

The following figures show the iLOD (A80271) from a front and side view.

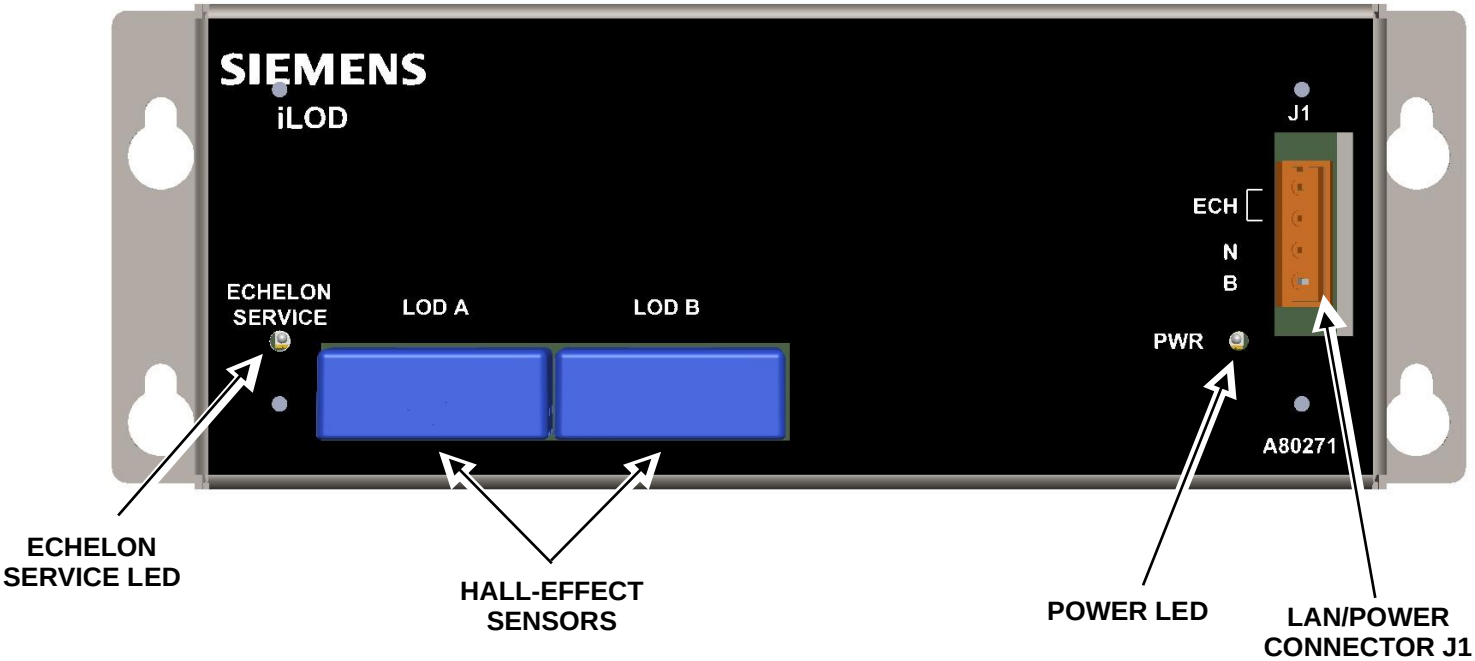


Figure 1: iLOD, A80271, Front View

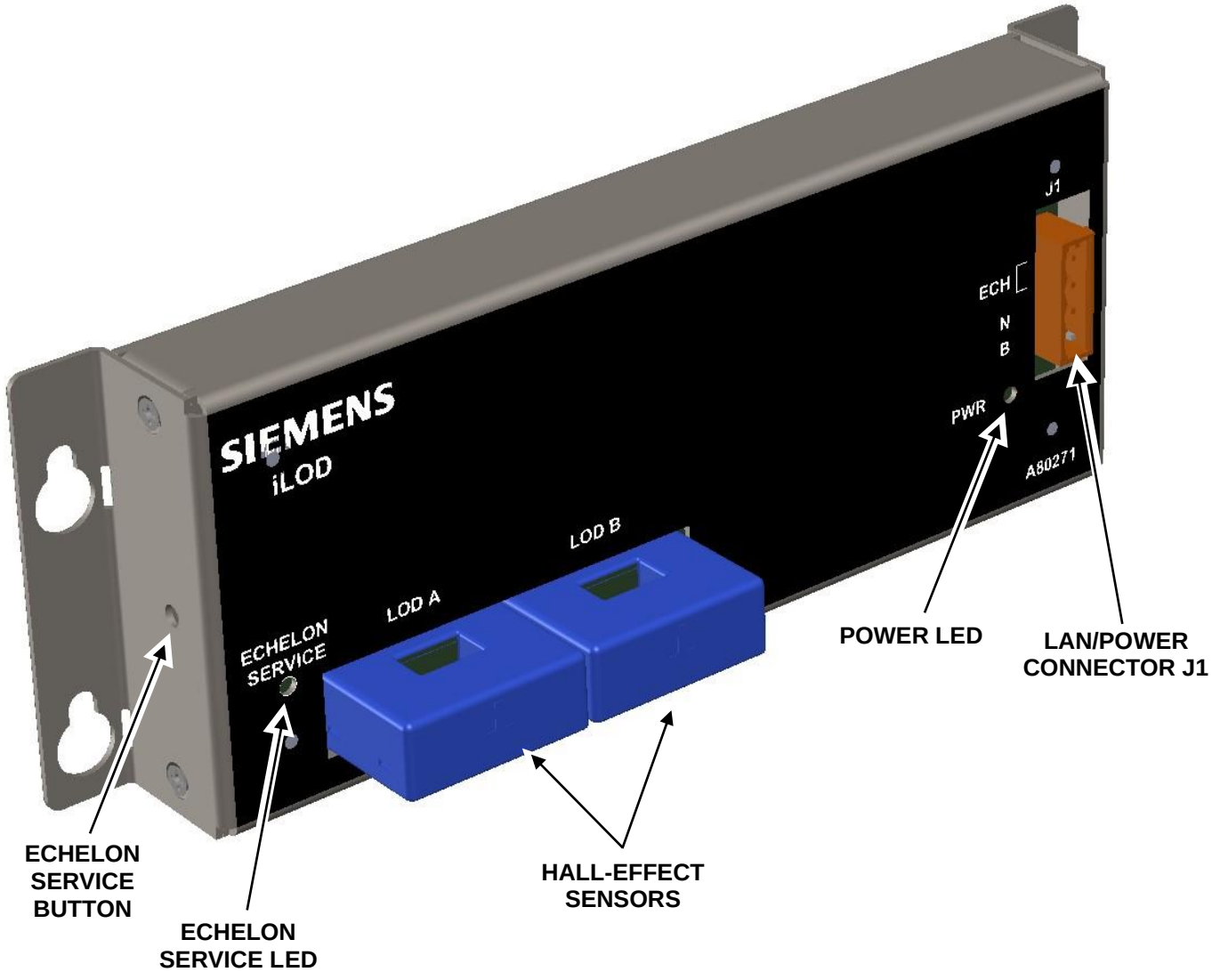


Figure 2: iLOD, A80271, Side View

1.1 ILOD REVISIONS

The revision A model iLOD is shown in the following figure. The latest iLOD model, revision C (shown above), replaces the revision A and revision B models but their functionality is the same.

The revision C model includes improved hall effect sensors and upgraded internals that improve performance and address obsolete parts. The revision C also allows lamp wires to go in either direction through the sensor and removes the need for the resistors on the Echelon twisted-pair wiring.

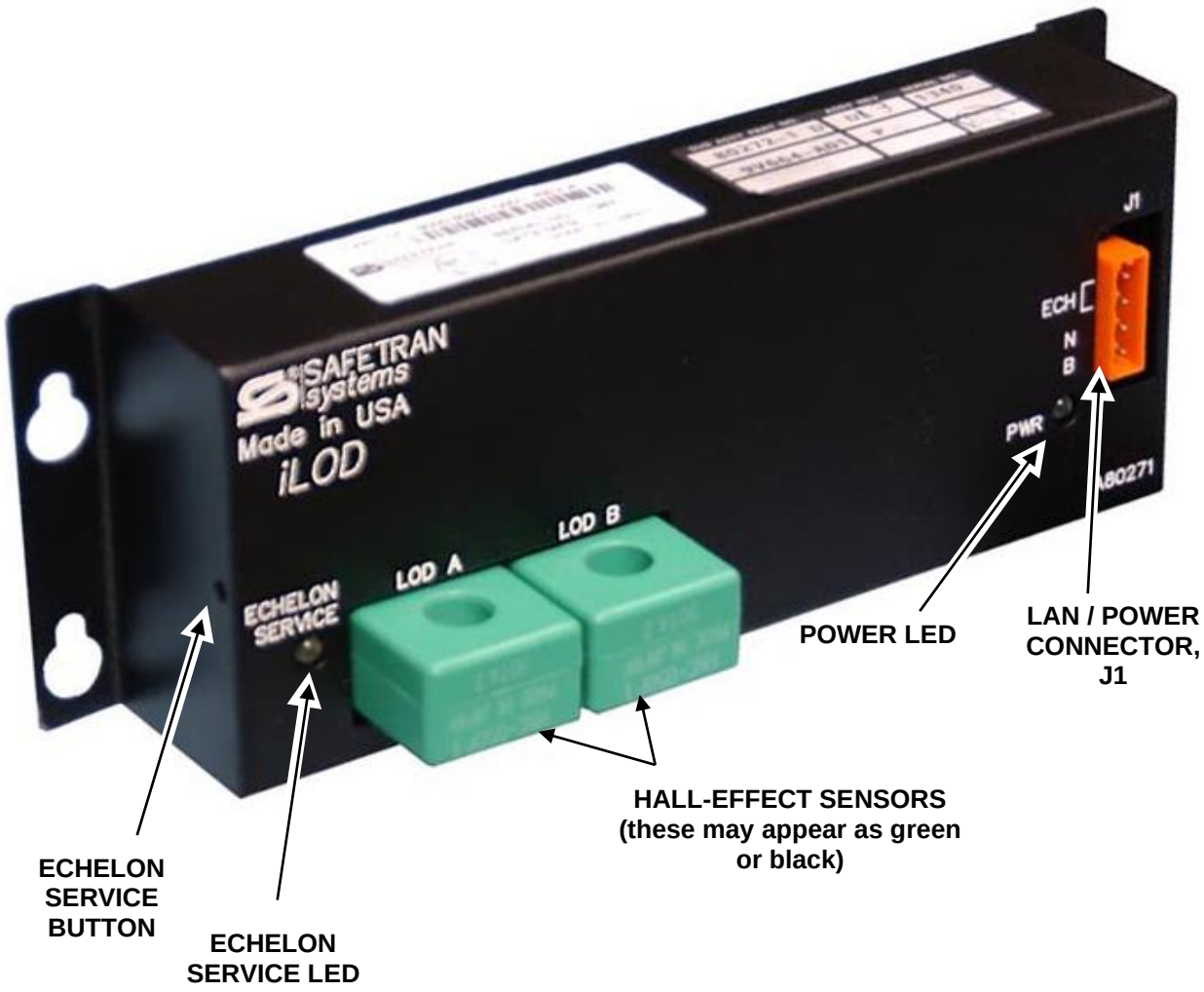


Figure 3: iLOD, A80271, Revision A

1.1.1 Software Versions

Revision A and revision B hardware run software version 9V664-A01x.

Revision C hardware runs software 9VE65-A01x.

1.2 TYPICAL CONNECTIONS DIAGRAMS

1.2.1 Connections between the iLOD and SEAR II

The following figure shows typical iLOD and SEAR II interconnections.

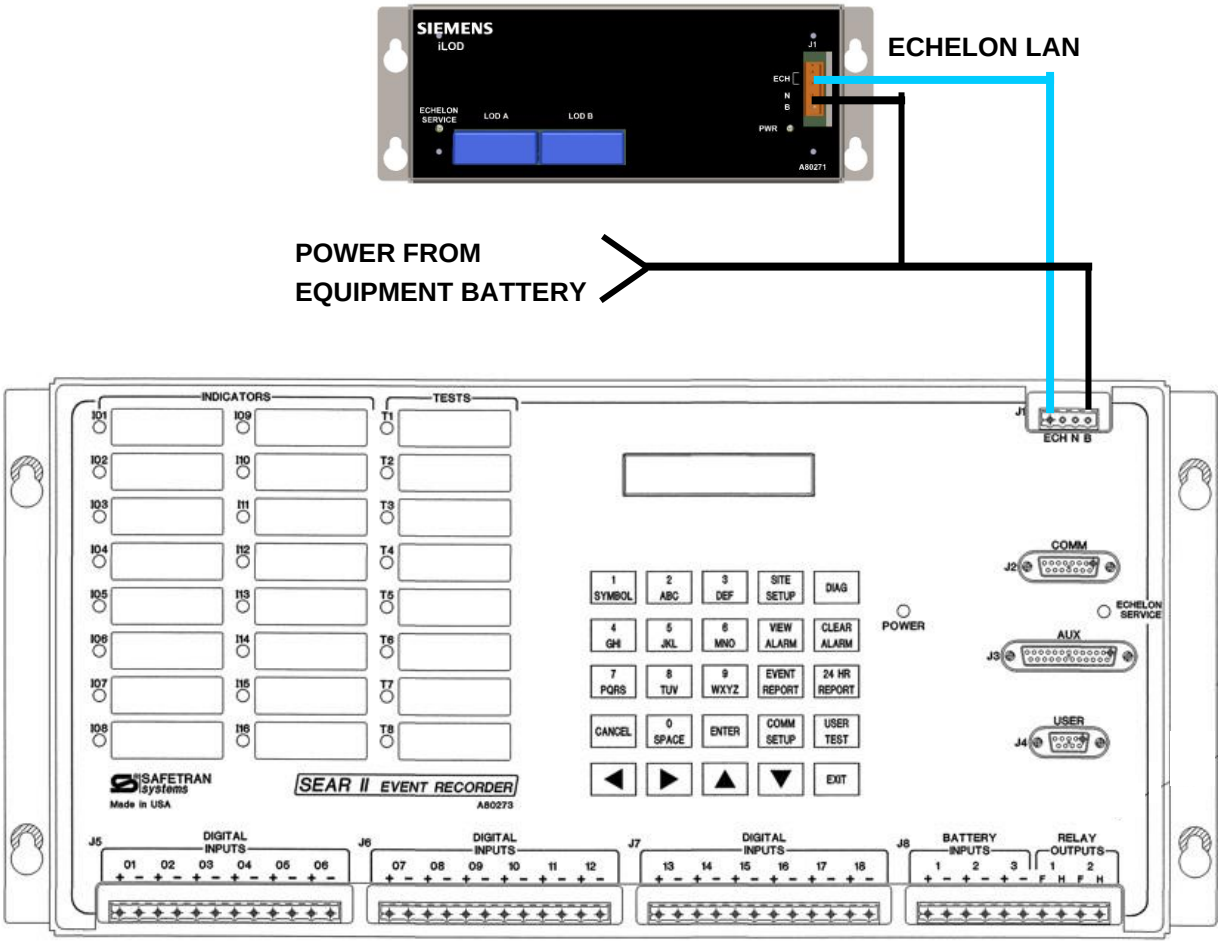


Figure 4: Typical iLOD and SEAR II Interconnections

1.2.2 Connections between the iLOD and SEAR IIi

The following figure shows typical iLOD and SEAR IIi interconnections.

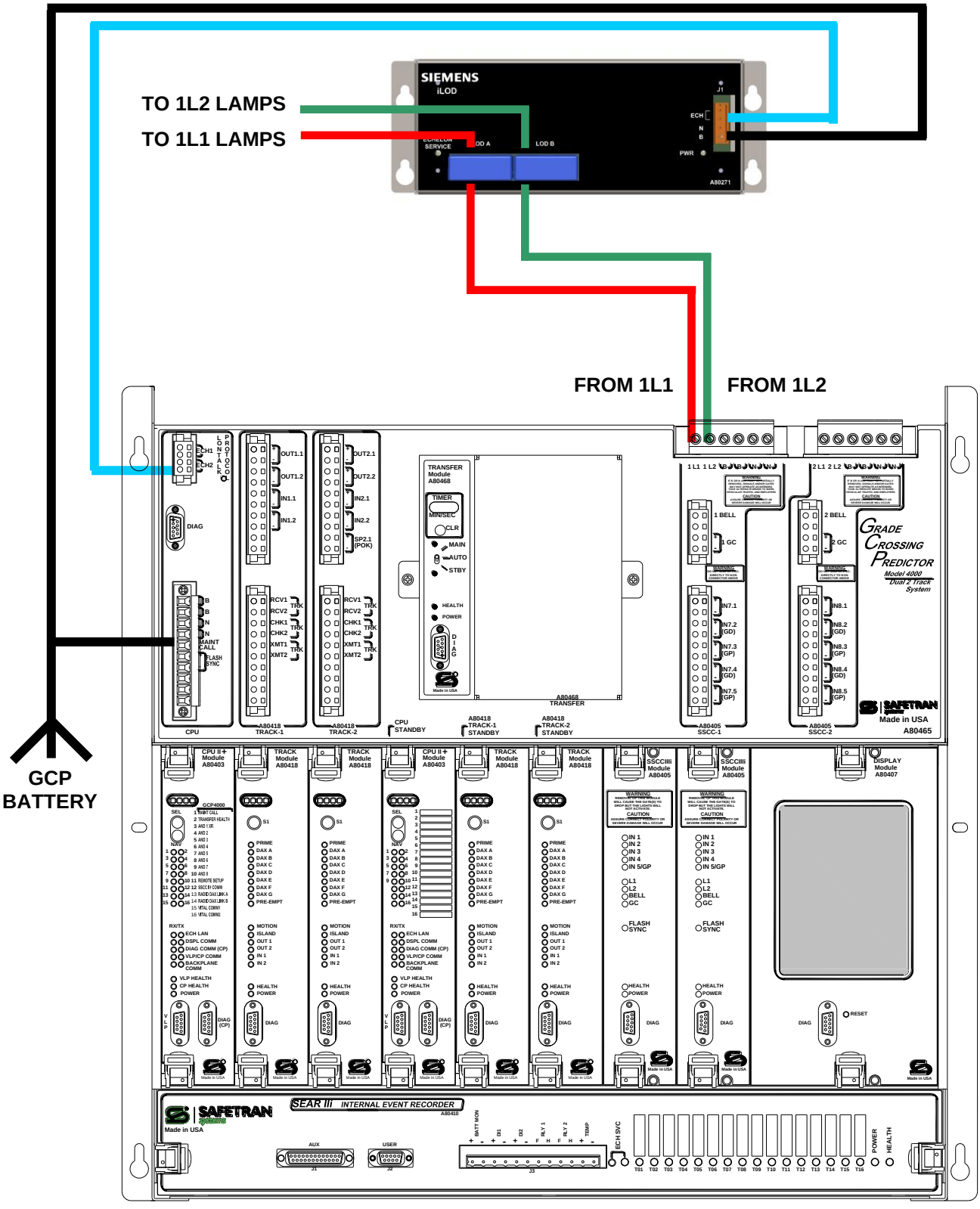


Figure 5: Typical iLOD and SEAR IIi Interconnections

1.2.3 Connections between the iLOD and Argus

The following figure shows typical iLOD and Argus interconnections.

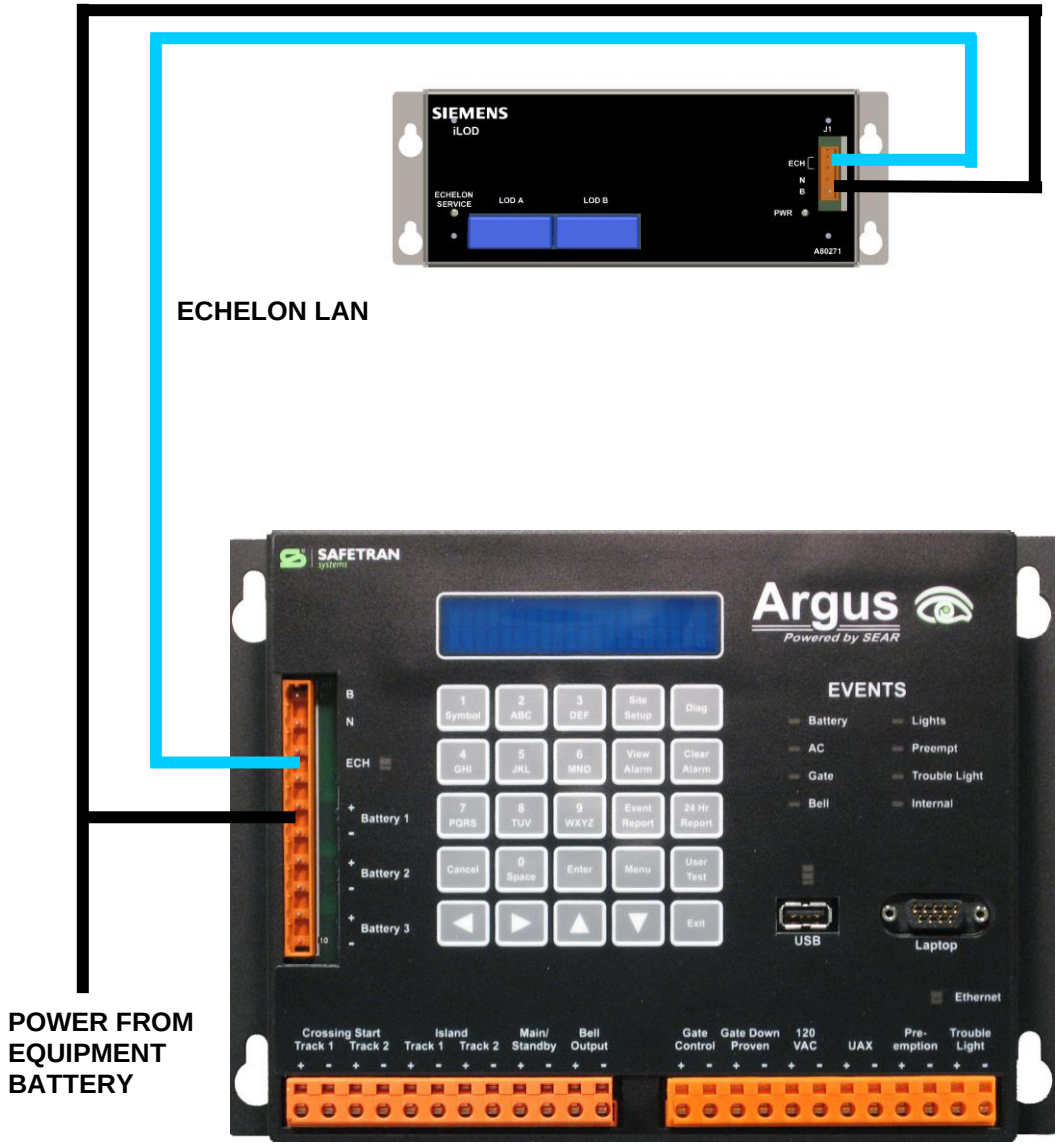
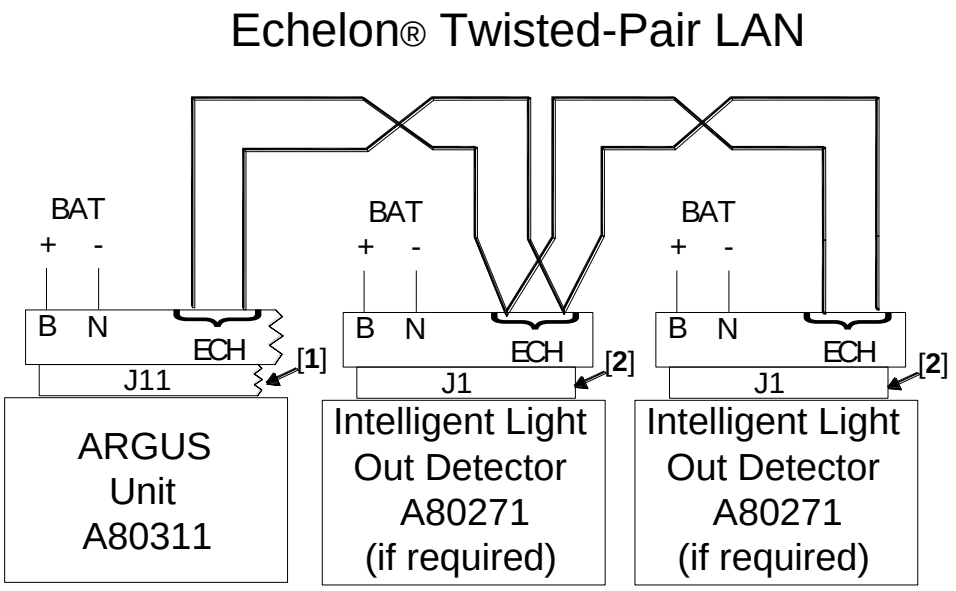


Figure 6: Typical iLOD and Argus Interconnections



ARGUS LAN Connections
4-2-07

NOTES:
[1] 10-Pin Power/Echelon/Battery Monitor connector (J11) (polarity of ECH leads is arbitrary).
[2] 4-Pin Power/Echelon connector (J1) (polarity of ECH leads is arbitrary).

Figure 7: Typical Argus LAN Connections

1.3 SYSTEM OVERVIEW

The iLOD works by using Hall-effect sensors to measure the current. Depending on how it is configured through the SEAR II, SEAR IIi, or Argus, the iLOD samples current levels at regular intervals and sends messages to the SEAR II, SEAR IIi, or Argus over the Echelon network.

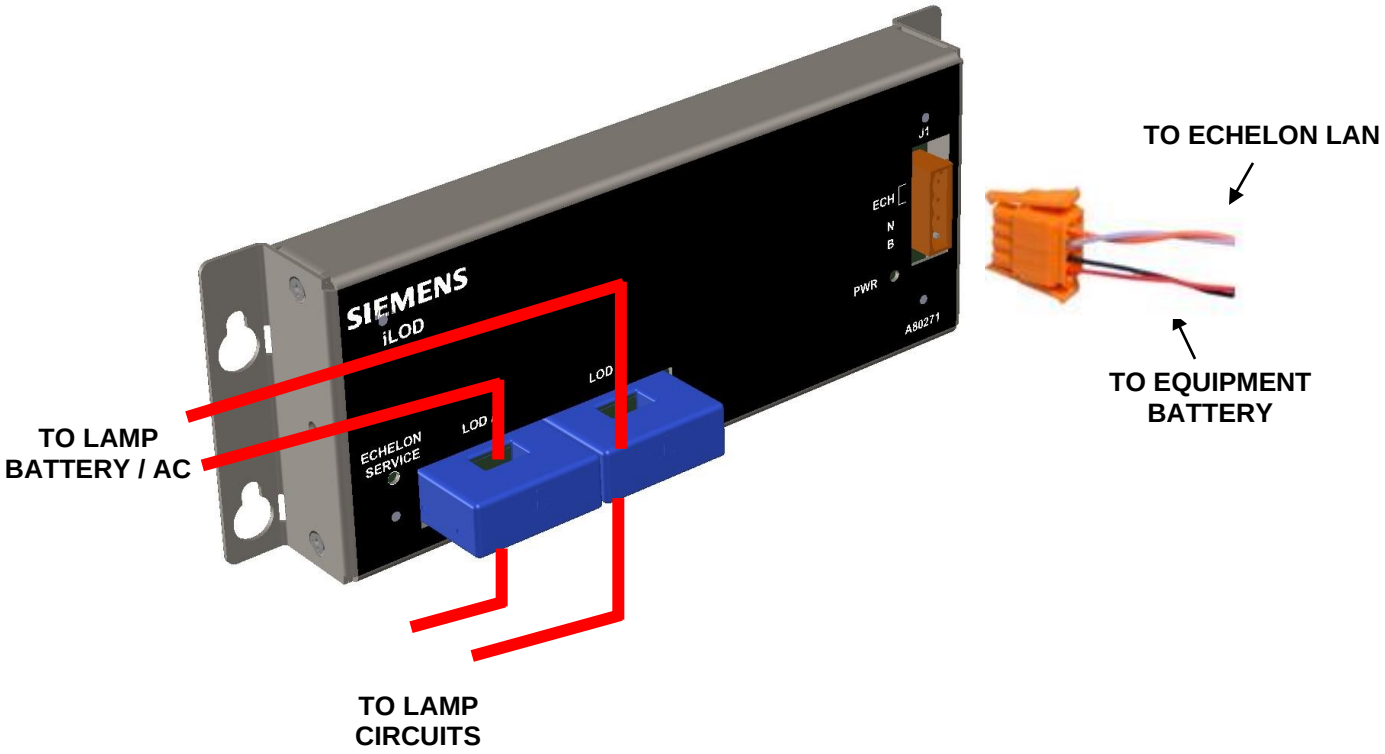


Figure 8: iLOD Function

1.4 SPECIFICATIONS

The following subsections detail the specifications for the iLOD.

1.4.1 Power Requirements

Input Voltage	9 - 30 VDC (customer supplied)
Power Consumption	0.25 A @ 13.2 V
	0.35 A @ 9.0 V
	0.20 A @ 16.5 V

1.4.2 Echelon® LonTalk™ Interface

Data Transfer Rate	1.25 Mbps
Transmission Medium	Level 4 (NEMA) twisted pair cable, shielded or unshielded, solid or stranded.
Topology	Bus (direct daisy-chain).
Number of Nodes	No more than eight (including any terminations used) in any 16-meter (53 feet) length of transmission cable, sixteen maximum total per network segment.
Termination	Normally not needed.
Network Length	53 feet (16 m) recommended maximum, 426 feet (130 m) absolute maximum per network segment (with certain restrictions).

⚠ CAUTION

CAUTION

DUE TO THE NATURE OF THE ECHELON LAN INTERFACE, THE SEAR II, SEAR IIi, ARGUS, AND ALL OTHER DEVICES CONNECTED TO THE ECHELON LAN SHOULD BE CONTAINED ENTIRELY WITHIN THE SAME SIGNAL CASE OR BUNGALOW.

1.4.3 Monitored Inputs

Two Hall-effect current sensor inputs (0 to 30 amps, AC/DC).

1.4.4 Visual Indicators

Light-emitting Diodes	ECHELON SERVICE (yellow LED when flashing indicates a non-configured device).
	POWER (green LED indicates power applied).

1.4.5 Switches

Echelon Service	ECHELON SERVICE (The Neuron® Service push-button switch is used to install the iLOD as a node to the SEAR II/SEAR IIi/Argus).

1.4.6 External Interface Connectors

J1	ECH N B (keyed 4-pin male connector for Echelon LonTalk interface, and DC Power input and return to unit).
LOD A, LOD B	Sensors for external current sensing.

1.4.7 Mechanical

Mounting	Equipment rack, shelf, or wall.
Width	8.9 inches
Height	2.0 inches
Depth	1.7 inches
Weight	1.0 lbs. (455 grams) (approximate)

1.4.8 Environmental

Temperature	-40°F to +160°F (-40°C to +70°C)
Humidity	95%, non-condensing

1.4.9 Reliability / Protections

Surge Protection/ Isolation	Secondary surge protection meets all AREMA recommendations for isolation and grounding. Primary surge protection is strongly recommended on all external interfaces (note: Echelon® LonTalk™ LAN Interface is *not* an external interface).

1.5 APPLICABLE DOCUMENTS

Document Number	Document Name
SIG-00-02-07	Installation and Operation Manual for the Event Analyzer Recorder (SEAR II) A80273
SIG-00-08-13	SEAR IIi Internal Event Recorder Field Manual
SIG-00-06-05	Installation and Operation Manual for the Argus Event Recorder, A80311

1.6 ORDERING INFORMATION

For iLOD ordering information call Siemens Mobility, Inc. Customer Service at 1-800-793-7233.

1.7 TECHNICAL SUPPORT

For iLOD Technical Support call Siemens Mobility, Inc. Customer Service at 1-800 793-7233.

2.0 INSTALLATION

2.1 APPLICATION CONSIDERATIONS

The iLOD is intended to detect lamp failure by sensing a decrease in the current drawn through lamp circuits. Typically, the monitored lamp circuit consists of a flashing lamp array at a railroad grade crossing. The iLOD is capable of measuring both steady current and flash current. In a crossing application, the iLOD is used to measure the flashing lamp current.

2.2 PHYSICAL MOUNTING

The iLOD can be mounted on a shelf, a wall, or a backboard. Two mounting tabs with key holes are provided for mounting screws and the unit may be attached vertically or horizontally.

2.2.1 Echelon® Wiring

The Echelon connection between the iLOD and the SEAR II, SEAR IIi, or Argus should be implemented with twisted pair cable. Refer to the Echelon wiring guidelines found in the specific SEAR II, SEAR IIi, or Argus manual (listed in Section 1.5) for specific limitations on Echelon network wiring.

2.2.2 Power Source

The unit can be powered from any available battery and will accept voltages in the 9-30 VDC range. The iLOD power circuits are electrically isolated to 2000 VRMS at 60 Hz.

2.3 iLOD PLACEMENT IN LAMP CIRCUIT

To obtain a correct current reading in a flashing lamp circuit, the iLOD sensors must be located correctly in the circuit wiring, in relation to the lamps and other circuit components. The following figure shows the correct iLOD sensor placement in a flasher-relay based crossing lamp circuit.

⚠ WARNING

WARNING

DURING iLOD INSTALLATION OR REPLACEMENT, THE LAMP WIRES PASSING THROUGH THE SENSORS OF THE OLD iLOD(S) WILL BE DISCONNECTED.

IF THESE WIRES ARE CONNECTED TO THE FLASHER RELAY OR THE CROSSING CONTROLLER, OR IF THEIR REMOVAL WILL AFFECT THE CROSSING WARNING DEVICES IN ANY WAY, HAVE SOMEONE FLAG THE CROSSING BEFORE PROCEEDING.

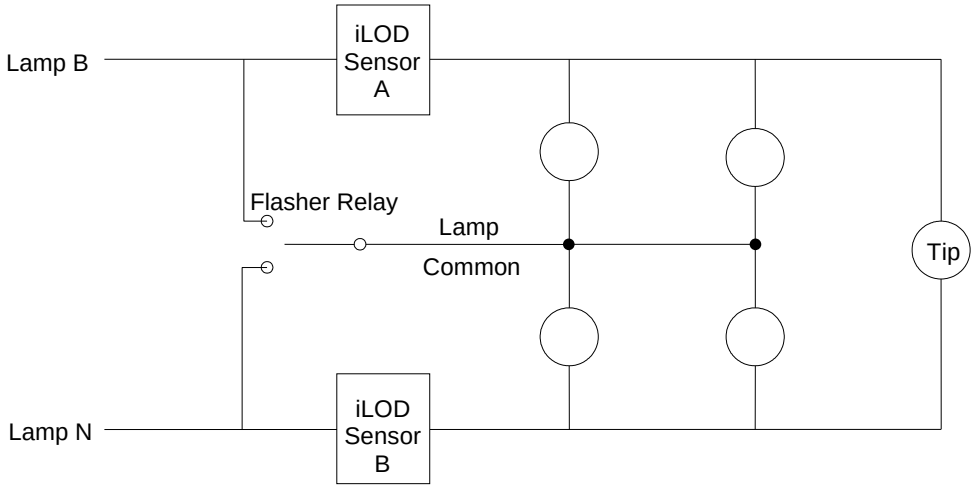


Figure 9: Correct iLOD Placement in Flasher-Relay Based Crossing Lamp Circuit

For comparison, the following figure illustrates two examples of common incorrect iLOD sensor placement in a flasher-relay based lamp circuit.

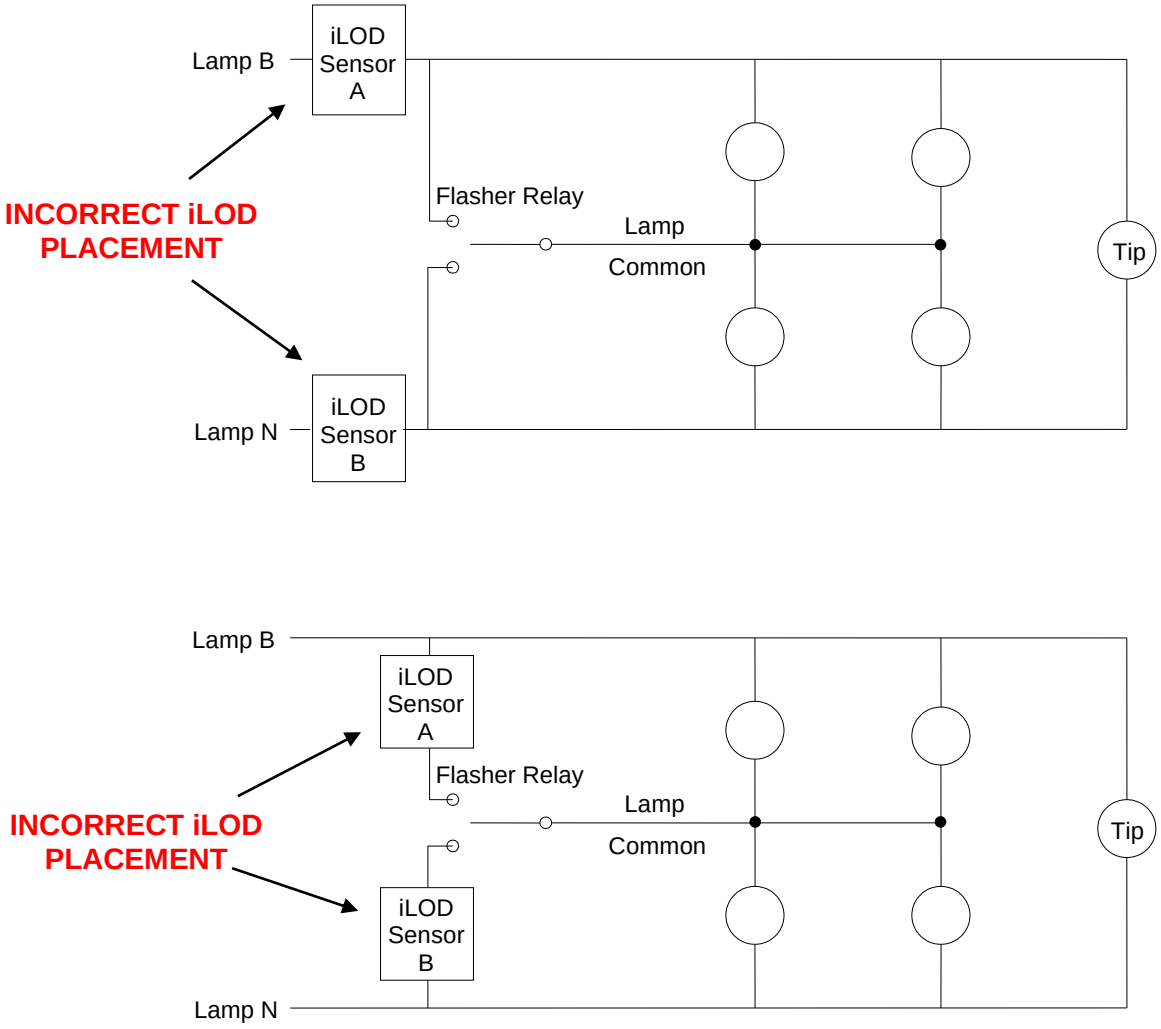


Figure 10: Incorrect iLOD Placement in Flasher-Relay Based Crossing Lamp Circuit

The following figure illustrates the correct iLOD sensor placement in a lamp circuit when the lamps are driven by a Solid State Crossing Controller (SSCC).

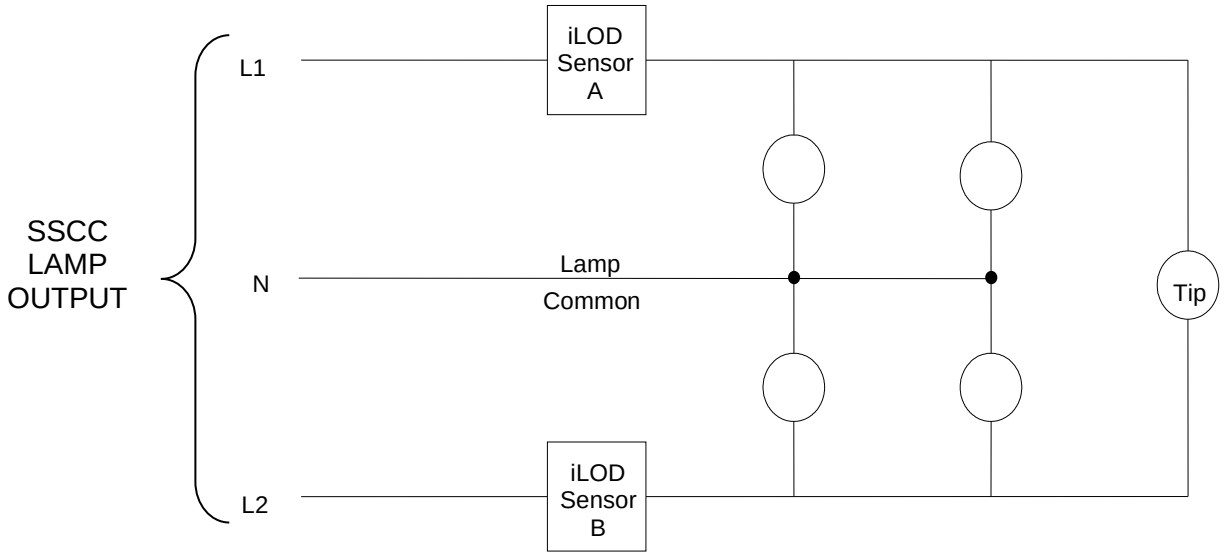


Figure 11: Correct iLOD Sensor Placement in SSCC Driven Lamp Circuit

2.3.1 Lamp Wire Routing

In flasher-relay based systems, the lamp wires for multiple lamp circuits may be routed through the same iLOD sensor, provided that the current flow through the wires is in the same direction.

In an SSCC driven system, a separate iLOD sensor must be used for each lamp circuit, with a single wire through each iLOD sensor.

NOTE

NOTE

Siemens recommends looping the current sensor wire multiple times when monitoring low current devices. This is because the current draw may be so low that a single wire looped through the sensor would not provide sufficient current to register above the sensor noise floor.

2.4 iLOD SOFTWARE CONFIGURATION

To configure the SEAR II, SEAR IIi, or Argus to work with the iLOD, use either:

- a computer terminal running a terminal emulation program such as HyperTerminal.
- the SEAR II keypad, the Argus keypad, or SEAR IIi interface and display (local user interface).

Refer to the relevant documentation as required:

- Installation and Operation Manual for the Event Analyzer Recorder (SEAR II) A80273, SIG-00-02-07.
- Installation and Operation Manual for the Argus Event Recorder, A80311, SIG-00-06-05.
- GCP 4000 Reference Manual, SIG-00-02-02.

2.4.1 Configuring the iLOD through a Terminal Emulation Program on the SEAR II/IIi

To access the configuration settings in computer terminal mode, select:

Main Menu > Configuration > Modules > Add Module > iLOD >

Once the iLOD is selected, name the module and choose ‘Yes’ in response to:

Edit Settings: [YES]^v

The screen shown in the following figure will appear. Use the arrow keys to select the appropriate iLOD channel, 1 or 2, and then select option A:

A) Edit Input

To edit the name, wire tag, or electrical parameters for the iLOD, use the arrow keys to select ‘Manual Entry’. The iLOD channel names and parameters may then be changed.

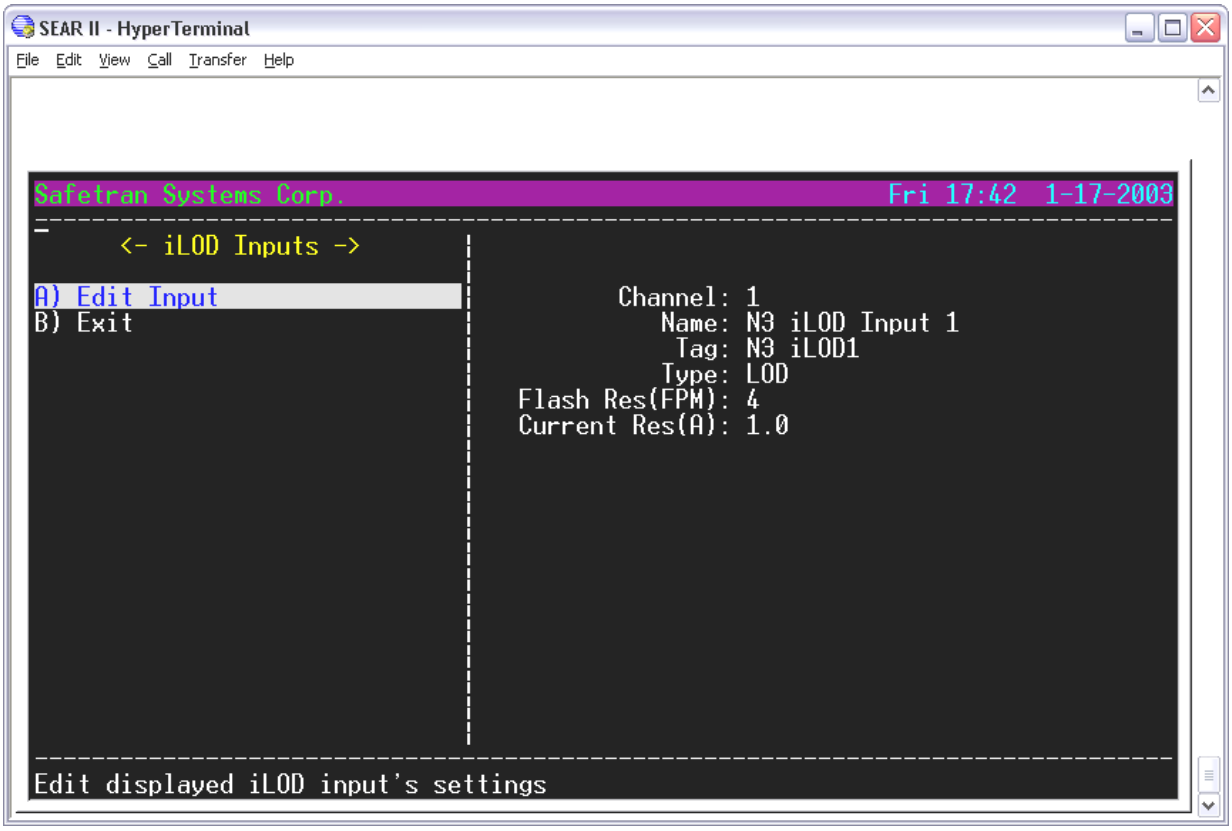


Figure 12: Add Module Screen for iLOD

Enter the flash rate in Flashes per Minute to set the message resolution for the lamps being monitored. This means that if the flash rate varies by as much as this number per minute, then an event message will go to the SEAR II or SEAR IIi.

Enter the current resolution to determine how much of a shift in current will generate a message to the SEAR II or SEAR IIi.

When entries are complete, select 'Exit.' The SEAR II or SEAR IIi will look for the Echelon ID message from the iLOD. When the 'Waiting for service message…' appears on the screen, push the Echelon service button on the iLOD.

If this does not work, power down the equipment and check the Echelon connections.

NOTE

NOTE

Following the iLOD installation and configuration, perform the Field Calibration procedure provided in Section 3.1.3.

2.4.2 Installing the iLOD through a SEAR II/SEAR IIi LUI

To install the iLOD using the local user interface (LUI) on the SEAR II or the SEAR IIi interface on the GCP 4000 display, push the '**MENU**' key and then use the up and down arrow keys to select '**CONFIGURATION**' and then '**MODULES**', as shown in the following figures.

NOTE

NOTE

This example describes installation using the GCP 4000 display. To install the iLOD using the GCP 5000 display module and a web browser, refer to the GCP 5000 Application Guidelines, SIG-00-13-04.

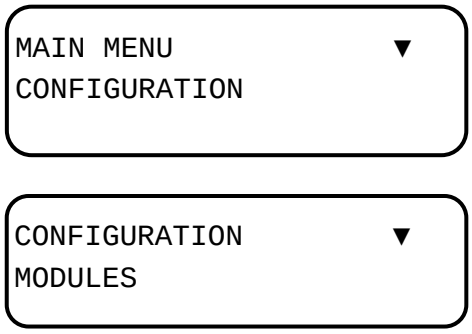


Figure 13: GCP 4000 Display Main Menu

After selecting '**MODULES**,' select '**ADD MODULE**' and then use the down arrow key to select '**iLOD**', as shown in the following figures.

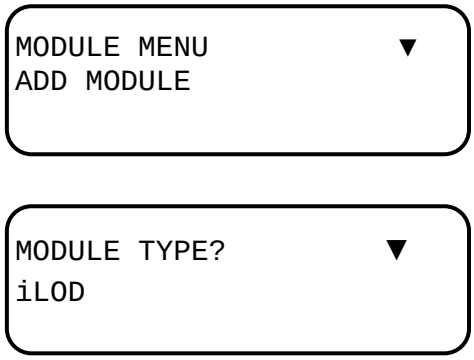


Figure 14: Add Module Display for iLOD

After selecting iLOD, the SEAR II/SEAR IIi software will ask for a name for the new iLOD, suggesting 'iLOD#,' where # is the number of times an iLOD module has been added. After accepting the suggested name or an edited version, press 'ENTER'. The prompt '**EDIT SENSOR NAMES**' is displayed, as shown in the following figure.

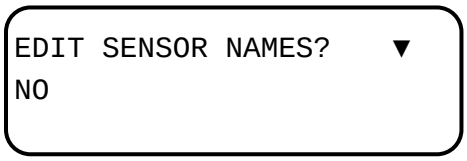


Figure 15: Edit Sensor Names Display for iLOD

If '**NO**' is selected, the SEAR II/SEAR IIi will accept the default name and parameters for the iLOD, save the configuration data and wait for the Echelon service button on the iLOD to be pressed.

To edit the names of the two iLOD sensors, use the up or down arrow key to display '**YES** ', and then press '**ENTER**".

The wire tags for the two sensors plus the '**FLASH RES**' and '**CURRENT**' settings may also be manually edited. Unless these two parameters are changed, they will default to a Flash Resolution of 4 FPM, and a Current Resolution of 1.0 Amperes.

When entries are completed, press the '**EXIT**' button. The display will indicate that settings are being saved and then display the prompt '**HIT THE ECHELON BUTTON…**'

NOTE

NOTE

Following the iLOD installation and configuration, perform the Field Calibration procedure provided in Section 3.1.3.

2.4.3 Installing the iLOD through an Argus LUI

The system can be expanded through the Echelon LonTalk LAN to add an iLOD module. Each module can be named and the modules' I/O can also have user-defined names, tags, and states. Note that, by default, there are no Echelon modules interfaced to the Argus.

2.4.3.1 Terminal Screens

The following procedure describes how to install the iLOD using the local user interface on the Argus:

- On the Terminal Main Menu, select the **Change Settings** function, and then the **Modules** option from the sub-menu. An editable Module screen will be displayed, as shown in the following figure.

  If no modules have been added, the screen will look like Figure 16 (A). If modules have been previously added, the screen may look like the example in Figure 16 (B).
- Use the down or right arrow keys to move to the next field. Use the up or left arrow keys to move back to a previous field. Press ENTER to select from the options: ADD, EDIT, INSTALL or REMOVE.
  - Selecting the ADD option presents a screen for choosing a module type.
  - Selecting the EDIT option presents a screen to modify/enter module data.
  - Selecting the INSTALL option prompts the user to press the Echelon Service button on the device being installed. **After adding a module, the user must select its INSTALL option and press the Echelon Service button or the module will not be actively connected.**
  - If the REMOVE option is selected the module will be removed and its slot number will show <NONE>.

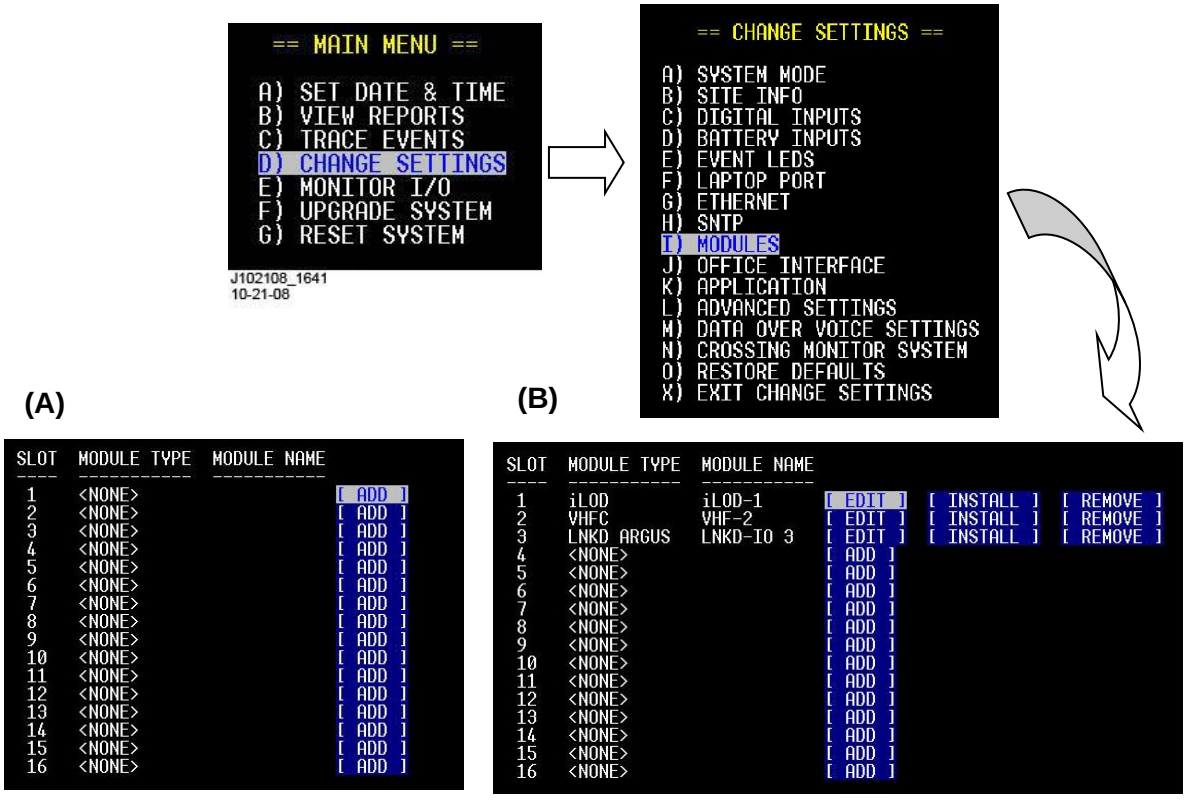


Figure 16: [Terminal] Module Screens

2.4.3.2 Add iLOD Module

In most cases modules are automatically installed by the CDL application. Additional modules can be manually installed using the following sequences. To add a networked module, it must first be wired into the Echelon network and powered on. Once a module has been added to the Echelon configuration it can only be removed using the REMOVE option.

To add a module:

- use the arrow keys to highlight the ADD option for the slot number you wish to use (shown in the previous figure) The following screen is displayed.

Figure 17: Module Type Screen

- Use left and right arrows to cycle through the module types: iLOD, VHF RADIO, GCP3000+ or LINKED ARGUS.
- When the iLOD module type appears, press ENTER or the down arrow.
- When the **iLOD Module Type** is selected, the parameter screen **iLOD Module Edit** appears. Use the down/up arrow keys to traverse the menu options. Enter parameters via the keyboard or use left and right arrows for selection options where applicable. Refer to the following table for iLOD parameter details.

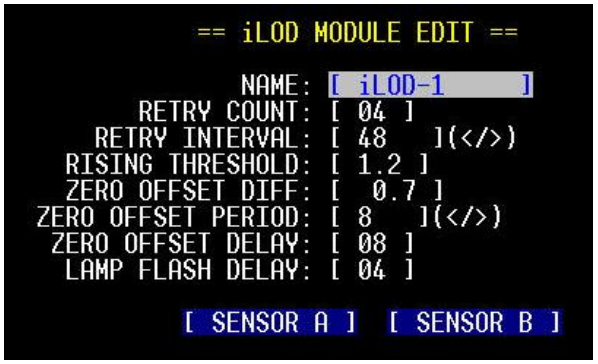


Figure 18: iLOD Module Edit Screen

- After the initial settings are complete, select the corresponding sensor: **SENSOR A** or **SENSOR B** and press Enter. The following parameter screen will appear (the example screen is Sensor A). Refer to the following table for iLOD parameter details. Use the down/up arrow keys to traverse the menu options. Enter parameters via the keyboard or use left and right arrows for selection options where applicable.

Figure 19: iLOD Channel Edit Screen

- When complete, press Escape to return to the **iLOD Module Edit** screen.
- Select **SENSOR B** and enter its parameters.
- When complete, press Escape to return to the **iLOD Module Edit** screen, and then press Escape again to return to the module selection screen. If there are no more modules to add, select the INSTALL option for the iLOD module and press its Echelon Service button when prompted.
- When complete, press Escape to save all selections and return to the Change Settings menu.

Table 1: iLOD Parameter Settings and Descriptions

Setting	Default	Description
Name	iLOD-X	The name assigned to the iLOD module used in Event Log entries and reports. The name may be up to 10 characters in length.
Echelon Retry Count	4	No longer supported. Keep the default value.
Echelon Retry Interval (ms)	48	No longer supported. Keep the default value.
Rising Threshold (A)	1.2	No longer supported. Keep the default value.
Zero Offset Max Delta (A)	0.7	No longer supported. Keep the default value.
Zero Detection Count	8	No longer supported. Keep the default value.
Zero Offset Delay (ms)	8	No longer supported. Keep the default value.
Lamp Flash Delay (ms)	4	No longer supported. Keep the default value.
For each iLOD Sensor Channel (Sensor A and Sensor B)		
Sensor Name	iLOD-X.Y	The name assigned to the iLOD sensor used in Event Log entries and reports. The name may be up to ten characters in length.
Algorithm	Light Out	Either “Light Out” or “Steady Current”. The iLOD uses the “Light Out” algorithm to determine the current and flash rate on flashing crossing lamps. The iLOD uses the “Steady Current” algorithm to monitor a steady current signal that is not flashing.

Setting	Default	Description
Current Delta (A)	1.0	The required difference, in amps, from the previously reported current before the iLOD will report a new current to the Argus.
Zero Offset Mode	Argus Update	No longer supported. Keep the default value.
Wire Loops	1	No longer supported. Keep the default value.
Trigger Level (A)	1.0	No longer supported. Keep the default value.
For each Sensor using the "Light Out" Algorithm		
FPM Delta	4	The required difference, in flashes per minute, from the previously reported flash rate before the iLOD will report a new flash rate to the Argus.
For each Sensor using "Steady Current" Algorithm		
Sample Size	16	The number of current samples the iLOD will average together to determine the stead current value.
Sample Period (ms)	40	The time period, in milliseconds, between samples.

3.0 MAINTENANCE

3.1 ILOD REPLACEMENT PROCEDURE

The following list shows the main steps required to replace an iLOD. Each step is described in detail in the following sections. A laptop is not needed for this procedure.

1. Remove the existing iLOD(s) and install the new iLOD(s).
2. Follow the module replacement steps on the SEAR menus to correctly install and configure the new iLOD(s) into the SEAR network.
3. Follow the field calibration steps to allow the iLOD(s) to properly measure current for this site.

3.1.1 Removing Existing iLOD and Installing a New iLOD

If there is more than one iLOD at the crossing, repeat the steps in this subsection for all iLODs **before** moving on.

1. Remove the power/Echelon connector from J1 on the iLOD. This connector will be reconnected to J1 on the new iLOD.
2. Loosen the iLOD mounting screws and remove the unit from the wall. At this point, the lamp wire(s) should still be passing through the sensors on the old iLOD. Position the old iLOD out of the way.
3. Install the new iLOD in the same mounting position as the old iLOD and tighten the mounting screws.
4. Connect the power/Echelon connector to J1 on the new iLOD.

⚠ WARNING

WARNING

THE LAMP WIRES PASSING THROUGH THE SENSORS OF THE OLD iLOD(S) WILL BE DISCONNECTED IN STEP 5 OF THIS PROCEDURE.

IF THESE WIRES ARE CONNECTED TO THE FLASHER RELAY OR THE CROSSING CONTROLLER, OR IF THEIR REMOVAL WILL AFFECT THE CROSSING WARNING DEVICES IN ANY WAY, HAVE SOMEONE FLAG THE CROSSING BEFORE PERFORMING STEP 5.

5. Remove the lamp wire(s) passing through sensor A of the old iLOD and pass the wire(s) through sensor A of the new iLOD. If there is more than one wire passing through the sensor, it is very important that the wires are run in the same direction through the sensor of the new iLOD.

NOTE

NOTE

If ring terminals are attached to the wires, the ring terminals are usually too large to fit through the sensors. If so, they must be cut from the wire, the wire removed from the old iLOD sensor and fed through the new sensor. A new ring terminal must then be crimped onto the wire.

6. Repeat step 5 for sensor B.

3.1.2 Module Replacement Procedure on SEAR

The module replacement procedure ensures that the new iLOD is configured and working properly on the SEAR II/SEAR IIi Echelon network.

NOTE

NOTE

A small, pointed object such as a pen or pencil will be needed to press the Echelon service button on the iLOD when performing this procedure.

NOTE

NOTE

All key presses in the following procedure may be performed from either the SEAR II front panel keypad or the SEAR IIi interface screen on the GCP 4000 display module, as applicable.

1. Press the MENU key. The MAIN MENU is presented.
2. Press the down arrow key until “CONFIGURATION” is shown on line two of the display. Then, press ENTER. The CONFIGURATION menu is presented.
3. Press the down arrow key until “MODULES” is shown on line two of the display. Then, press ENTER. The MODULE MENU is presented.
4. Press the down arrow key until “REPLACE MODULE” is shown on line two of the display. Then, press ENTER. The prompt “MODULE TO REPLACE?” is displayed.
5. Use the arrow keys to select the iLOD replaced. If more than one iLOD was replaced, be sure to select the correct one from the list. Once the name of the iLOD replaced is on line two of the display, press ENTER. The prompt “HIT ECHELON BUTTON” appears on the top display line and the message “WAITING FOR SRVC MSG” appears on line two of the display.
6. Using a pen or pencil, press the Echelon service button on the side of the iLOD. After the button is pressed, several messages will appear on line two of the display ending with “INSTALLED” and the display will revert to the “MODULE MENU”.

NOTE

NOTE

If there was a problem during installation, verify the following:

- The Echelon wires are connected correctly.
- Power is applied to the iLOD.
- The new iLOD is not faulty.

Repeat the “REPLACE MODULE” procedure if necessary.

7. Repeat steps 4 through 6 for any other iLODs that were replaced.
8. At the MODULE MENU, press the EXIT key. The CONFIGURATION menu will be presented.
9. Press the EXIT key. The prompt “SAVE CONFIGURATION CHANGES?” is displayed.
10. Using the arrow keys, select YES then press ENTER. If there is an application program loaded, it will be re-compiled and the configuration will be saved.
11. This completes the module replacement procedure.

3.1.3 Field Calibration Procedure on SEAR

The field calibration procedure for an iLOD sets the internal threshold levels used by the iLOD software to detect flashing lamp current. These levels are site specific. It is also used by the application program to determine the number of lamps and the current draw that is present for a properly operating crossing.

This procedure is not the same as factory calibration. Factory calibration is performed on the iLOD units before shipment.

NOTE

NOTE

All key presses in the following procedure may be performed from either the SEAR II front panel keypad or the SEAR IIi interface screen on the GCP 4000 display module, as applicable.

1. Press the MENU key. The MAIN MENU is presented.
2. Press the down arrow key until “SITE SETUP” is shown on line two of the display. Then, press ENTER. The prompt “SITE SETUP MENU” is displayed.
3. Press the down arrow key until “LAMP CALIBRATIONS” is shown on line two of the display.

NOTE

NOTE

If the site has Gate Tip Sensors installed, when asked to flash the lamps, make sure the gates are level before pressing ENTER. The current reading is allowed to “settle” for 15 seconds.

Press ENTER. A prompt to begin flashing the lamps is displayed.

4. If there is an application program loaded into the SEAR, enter the number of flashing lamps for each iLOD sensor when requested.

NOTE

NOTE

A pair of flashing lamps counts as one lamp and each tip light counts as one flashing lamp. Count only the lamps that go through that sensor. The lamp count may be on the site plans.

5. Depending on the configuration of the crossing, it may be necessary to repeat this procedure with AC power to the crossing turned off. At some installations the procedure may be repeated more times depending on configuration (split tracks, etc.).
6. When the procedure is complete, the display will return to the SITE SETUP MENU.

4.0 TROUBLESHOOTING

If the iLOD power LED does not light as expected, check the power connections and the voltage level at the iLOD.

If the SEAR II, SEAR IIi, or Argus does not appear to receive configuration data from the iLOD when the Echelon service button is pressed, but the yellow Echelon service LED flashes, check the Echelon cable connections carefully. If the problem persists, or if the yellow Echelon service LED fails to light, try another iLOD.

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