L-849 Voltage/Current, Style C
LED Runway Indentifier Light (REIL)

User Manual

96A0361, Rev. T, 2020/09/03

ADB SAFEGATE

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CE certification

The equipment listed as CE certified means that the product complies with the essential requirements concerning safety and hygiene. The European directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

ETL certification

The equipment listed as ETL certified means that the product complies with the essential requirements concerning safety and FAA Airfield regulations. The FAA directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

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Note

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Note

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- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine ADB SAFEGATE replacement parts or accessories.
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- Using materials or auxiliary equipment that are inappropriate or incompatible with your ADB SAFEGATE equipment.
- Allowing unskilled personnel to perform any task on or with the equipment.

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1.0 Safety

Introduction to Safety

This section contains general safety instructions for installing and using ADB SAFEGATE equipment. Some safety instructions may not apply to the equipment in this manual. Task- and equipment-specific warnings are included in other sections of this manual where appropriate.

1.1 Safety Messages

HAZARD Icons used in the manual

For all HAZARD symbols in use, see the Safety section. All symbols must comply with ISO and ANSI standards.

Carefully read and observe all safety instructions in this manual, which alert you to safety hazards and conditions that may result in personal injury, death or property and equipment damage and are accompanied by the symbol shown below.

	WARNING Failure to observe a warning may result in personal injury, death or equipment damage.
	DANGER - Risk of electrical shock or ARC FLASH Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage. ARC Flash may cause blindness, severe burns or death.
	WARNING - Wear personal protective equipment Failure to observe may result in serious injury.
	WARNING - Do not touch Failure to observe this warning may result in personal injury, death, or equipment damage.
	CAUTION Failure to observe a caution may result in equipment damage.

Qualified Personnel

	Important Information The term **qualified personnel** is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain and repair the equipment. It is the responsibility of the company operating this equipment to ensure that its personnel meet these requirements. Always use required personal protective equipment (PPE) and follow safe electrical work practice.

1.1.1 Introduction to Safety

CAUTION

Unsafe Equipment Use
This equipment may contain electrostatic devices, hazardous voltages and sharp edges on components

- Read installation instructions in their entirety before starting installation.
- Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.
- Read and carefully follow the instructions throughout this manual for performing specific tasks and working with specific equipment.
- Make this manual available to personnel installing, operating, maintaining or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards and government or other regulatory agencies.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Protect components from damage, wear, and harsh environment conditions.
- Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning prior to returning power to the circuit.

Failure to follow this instruction can result in serious injury or equipment damage

Additional Reference Materials

Important Information

- IEC - International Standards and Conformity Assessment for all electrical, electronic and related technologies.
- IEC 60364 - Electrical Installations in Buildings.
- FAA Advisory: AC 150/5340-26 (current edition), Maintenance of Airport Visual Aid Facilities.
- Maintenance personnel must refer to the maintenance procedure described in the ICAO Airport Services Manual, Part 9.
- ANSI/NFPA 79, Electrical Standards for Metalworking Machine Tools.
- National and local electrical codes and standards.

1.1.2 Intended Use

CAUTION

Use this equipment as intended by the manufacturer
This equipment is designed to perform a specific function, do not use this equipment for other purposes

- Using this equipment in ways other than described in this manual may result in personal injury, death or property and equipment damage. Use this equipment only as described in this manual.

Failure to follow this instruction can result in serious injury or equipment damage

1.1.3 Material Handling Precautions: Storage

CAUTION

Improper Storage
Store this equipment properly

- If equipment is to be stored prior to installation, it must be protected from the weather and kept free of condensation and dust.

Failure to follow this instruction can result in equipment damage

1.1.4 Material Handling: Heavy Equipment

DANGER

Unstable load
Use caution when moving heavy equipment

- Use extreme care when moving heavy equipment.
- Verify that the moving equipment is rated to handle the weight.
- When removing equipment from a shipping pallet, carefully balance and secure it using a safety strap.

Failure to follow this instruction can result in death, serious injury, or equipment damage

1.1.5 Material Handling Precautions: Fasteners

DANGER

Foreign Object Damage - FOD
This equipment may contain fasteners that may come loose - torque properly.

- Only use fasteners of the same type as the one originally supplied with the equipment.
- Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create safety risk .
- You need to know what base the light fixture will be installed in, in order to chose the correct gasket, bolts and nuts.
- Bolt type, length, and torque value are determined by type of base, height of spacers used, and clamp force required in FAA Engineering Brief No 83 (latest revision).
- Due to the risk of bolts vibrating loose, do not use any type of washer with the fixing bolts (such as split lock washers) other than an anti-vibration washer. Anti-vibration washers as defined in FAA EB 83 (latest edition) must be used. For installations other than FAA, use the base can manufacturer's recommendations.
- Always tighten the fasteners to the recommended torque. Use a calibrated torque wrench and apply the recommended adhesive type.
- Obey the instructions of the adhesives necessary for the fasteners.

Failure to follow these warnings may cause the fasteners to loosen, damage the equipment, potentially to loosen the equipment. This can lead to a highly dangerous situation of FOD, with potential lethal consequences.

Note

To minimize the risk of errors, the ADB SAFEGATE Sales Representative will have information on which gasket goes with which base. This information is also provided in the product Data sheets, the User Manuals and the Spare Part Lists.

CAUTION

Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create multiple safety risks.

To obtain a safe and watertight installation the O-ring and retaining bolt stated in the document must be used.

You need to know what base the light fixture will be installed in, in order to choose the correct gasket, bolts and nuts.

Failure to follow these cautions can result in equipment damage or aircraft FOD.

1.1.6 Operation Safety

CAUTION

Improper Operation

Do Not Operate this equipment other than as specified by the manufacturer

- Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.
- Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.
- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Never touch exposed electrical connections on equipment while the power is ON.

Failure to follow these instructions can result in equipment damage

1.1.7 Laser Safety Information

Safedock system is an Advanced Visual Docking Guidance System, an aircraft parking aid for airport and aircraft safety and efficiency. The design is according to strict airport industry standards for the safety of, and use by authorised airport personnel.

CAUTION

The chapter Operating Procedures must be distributed to all airlines using the system.

- Airport Operations, Maintenance and other Authorised Personnel
- This information is a summary of the safety requirements on operation and maintenance personnel based on general electrical and laser safety precautions.

CAUTION

It is very important for authorised personnel to study this section before any operation or maintenance work on the system is commenced.

- Safedock system should only be used by airport operations and maintenance personnel who have been properly trained in the use of the system. ADB SAFEGATE takes no responsibility for incorrect use of the system. All warnings contained in the text of this manual must be strictly observed.
- Airport operations and maintenance personnel are strongly advised to observe the following symbols and safety advisories.

CAUTION

Laser Safety

Store this equipment properly

- Safedock system is a Class 1 laser product, which means that it is safe under foreseeable conditions of operation, including the use of optical instruments for intra beam viewing.
- The Laser Scanning Unit compartment of the Pilot Display unit contains a Laser Range Finder, which is a Class 1M laser product. A Class 1M laser product is safe under foreseeable conditions of operation, but may be hazardous, if the user employs optical instruments within the beam, e.g. binoculars or telescope.

Failure to follow this instruction can result in permanenet eye injury.

CAUTION

Invisible Laser Radiation

Store this equipment properly

- The laser output from this system is within Class 1 limits (USA FDA 21 CFR 1040.10 – 11 and IEC 60825-1, 2nd Edition: 2007) as long as the range finder is installed and operated as specified by ADB SAFEGATE.
- If operated in any other fashion than described, the range finder is capable of emitting radiation up to Class 1M limits.

Failure to follow this instruction can result in permanenet eye injury.

CAUTION

Eye Safety
Store this equipment properly

- ADB SAFEGATE accepts no liability for the misuse of its equipment or for the consequences of this misuse.
- ADB SAFEGATE recommends that eye safety procedures be followed in accordance with ANSI Z136.1 – 1993 or IEC 60825-1 during maintenance.
- The laser beam exiting the window of the Safedock enclosure is within Class 1 limit for eye safety, when the product is operated as specified by ADB SAFEGATE.
- To provide eye safety the user is advised to treat this laser unit as a Class 1 M laser product. Class 1 M denotes lasers or laser systems that can produce a hazard if viewed through light collecting optics such as binoculars.

Failure to follow this instruction can result in permanenet eye injury.

Table 1: Laser Information

For the laser the following values apply:

- Pulse width ~ 10 ns
- Wavelength 905 nm

CAUTION

If the laser by any reason should be switched on and used outside the docking system, safety procedures may include, but are not necessarily limited to the following:

- Do not stare into the laser beam.
- Do not view the beam with binoculars or other devices that collect light.
- Do not point the laser at people.

CAUTION

Do not point the laser range finder at the sun.

1.1.8 Maintenance Safety

DANGER

Electric Shock Hazard
This equipment may contain electrostatic devices

- Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.
- Disconnect and lock out electrical power.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

Failure to follow these instructions can result in death or equipment damage

1.1.9 Material Handling Precautions, ESD

CAUTION

Electrostatic Sensitive Devices
This equipment may contain electrostatic devices

- Protect from electrostatic discharge.
- Electronic modules and components should be touched only when this is unavoidable e.g. soldering, replacement.
- Before touching any component of the cabinet you shall bring your body to the same potential as the cabinet by touching a conductive earthed part of the cabinet.
- Electronic modules or components must not be brought in contact with highly insulating materials such as plastic sheets, synthetic fiber clothing. They must be laid down on conductive surfaces.
- The tip of the soldering iron must be grounded.
- Electronic modules and components must be stored and transported in conductive packing.

Failure to follow this instruction can result in equipment damage

1.1.10 Arc Flash and Electric Shock Hazard

DANGER

Series Circuits have Hazardous Voltages
This equipment produces high voltages to maintain the specified current - Do NOT Disconnect while energized.

- Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks.
- Only persons who are properly trained and familiar with ADB SAFEGATE equipment are permitted to service this equipment.
- An open airfield current circuit is capable of generating >5000 Vac and may appear OFF to a meter.
- Never unplug a device from a constant current circuit while it is operating; Arc flash may result.
- Disconnect and lock out electrical power.
- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in the product manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved ADB SAFEGATE replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check the interlock systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with airfield electrical equipment.

Failure to follow these instructions can result in death or equipment damage

2.0 L-849(L) REIL-L

Description: LED Runway End Identification Light

The LED REIL-L provides a visual indication to pilots of the runway threshold during an approach. It can be powered by a voltage source or by a constant current regulator. The REIL-L is available as a high-intensity single-step light (L-849A) and a low-intensity single-step light (L-849C). The L-849C is recommended when there are lower levels of background illumination in the surrounding area. It also offers improved safety with very low voltage internal to the REIL-L vs. 2000V DC in traditional xenon flash lamp units. The LED REIL-L also eliminates expensive xenon flash lamp replacement.

2.1 About this manual

2.1.1 Introduction

Provides the purpose, scope, and applicability of the technical manual.

The manual shows the information necessary to:

- Example: Install and maintain said equipment.

2.1.2 How to work with the manual

1. Become familiar with the structure and content.
2. Carry out the actions completely and in the given sequence.

3.0 Introduction

The LED REIL is a Runway End Identifier Light with LED array flashing light system that provides a visual indication of the runway threshold to pilots during an approach for landing. The system is composed of two sequenced flashers that operate simultaneously to produce short duration flashes twice a second. Each REIL assembly is composed of a separate LED optical flash head assembly and an individual control cabinet.

The LED REIL system may be operated either by local or remote control. The REIL flash system (style C) operates at low intensity. The system can be powered by a 120/240 Vac power supply or by a 6.6 A or 20 A series circuit.

The LED REIL systems electronic package housed in the control cabinet is the same for both REIL units with some minor variations due to primary/secondary unit design.

3.1 Runway End Identification Light

Compliance with Standards

FAA:	L-849(L) Style A, C or E AC 150/5345-51 (Current Edition) and the FAA Engineering Brief No. 67. ETL Certified.
ICAO:	Annex 14, Vol. 1, para. 5.3.8

Uses

LED REIL provides a visual indication to pilots of the runway threshold during an approach.

L-849(L) Style A
- Unidirectional, high intensity / one brightness step

L-849(L) Style C
- Unidirectional, low intensity, one brightness step

L-849(L) Style E
- Unidirectional, three brightness steps

Operating Conditions

Temperature:	-40 °F to +131 °F (-40 °C to +55 °C)
Humidity:	0 to 100% (including conditions where condensation takes place in the form of water or frost)
Altitude:	0 to 10,000 ft (3,000 m)
Wind:	Velocities up to 150 knots
Exposure:	Withstands windblown rain, sand, dust particles,and a salt-laden atmosphere

Power Supply

The LED REIL system operates from a 240 VAC (2-wire) or 120/240 VAC (3-wire), ±10%, 50/60 Hz power supply. The system can also operate from a series lighting circuit using a 6.6 A/6.6 A or 20 A/ 6.6 A L-830/L-831 isolation transformer at each unit.

Maximum Power Requirements		
Style	**Each Unit**	**Total**
Voltage-driven		
A/E	171 VA	342 VA
C	45 VA	90 VA
Current-driven		

Maximum Power Requirements		
Style	**Each Unit**	**Total**
A/E	108 VA [1]	216 VA [2]
C [3]	53 VA [4]	106 VA [2]
C [5]	86 VA [6]	172 VA [2]

Notes

1 Use 200 W isolation transformer each unit

2 This is total CCR load and includes isolation transformer losses.

3 Without current sensing

4 Use 30/45 W isolation transformer each unit

5 With current sensing

6 Use 100 W isolation transformer each unit

4.0 Installation

WARNING

Read the instructions in their entirety before starting installation.

Failure to observe a warning may result in personal injury, death or equipment damage.

This section provides installation instructions for the L-849 I and V, Style C, REIL with LED optical flash heads

4.1 REIL-C Installation

See Figure 12 . The ADB Safegate FAA Type L-849 I and V, Style C, REIL with LED optical flash heads consists of two unidirectional light units, located one on each side of the runway. These light units flash twice a second to provide a visual indication to pilots of the runway threshold during an approach for landing.

Figure 1: L-849 REIL ASSEMBLY

Note

The baseplate that the assembly is mounted on is not a part of the REIL assembly.

Refer to Table 2 for the L-849 optical assembly type and style.

Table 2: Optical Assembly Styles

FAA Type/Style	Power (V)	Optical Assembly Style (C)
L-849V, C	voltage	Unidirectional, low intensity

4.1.1 L-849C REIL: Required Equipment

Refer to Table 3 for required equipment that is supplied. Refer to Table 6 for required equipment that is not supplied. Refer to the *Parts* section for ordering information.

Table 3: Required Equipment Supplied

Description	Quantity
Control cabinet with flash	head 1
Instruction manual	1 per order

Table 4: Required Equipment Not Supplied

Description	Quantity
Wire, input power. Refer to Table 5 .	As required
Wire, remote control (AWG 16, minimum, 600 V)	As required
Wire, interconnection individual control cabinets (AWG 16, minimum, 600 V)	As required
Remote control device	As required
Ground rods and AWG 6 solid copper ground wire	As required
External circuit breaker for 120/240 Vac input power	1
Base pads, cement for mounting cabinets	As required
Silicone grease for pipe thread installation	As required
Conduit elbow, 2-in. (50.8 mm) diameter	2
Conduit elbow coupling to attach frangible coupling to elbow	2
Base flange, 6 ¼-in. (158.75 mm) diameter. Not required if conduit elbow coupling is used. (62B0107)	2
L-867 base, 12-in. (304 mm) diameter.	. 1
L-823 connector, male and female, kit	1
L-823 male connector	As required
Level	1

Table 5 provides distance and wire size for incoming power to the REIL.

Table 5: External Power AWG Wire Size

Distance from Transformer to Individual Control Cabinet		AWG Wire Size
L-849V, C Feet	L-849V, C Meters	Minimum
2000	609.6	10
1300	396.24	12
800	243.84	14
500	152.4	16

4.2 Installation of the Control Cabinets

Unpack the individual cabinets, and open the cabinet doors by depressing the “red” button at the bottom of the door lever and then insert a medium width bladed screw driver in the slot and rotate the screwdriver counter clockwise and turn the handle, approximately ¼ turn clockwise to unlock and open the door.

Note

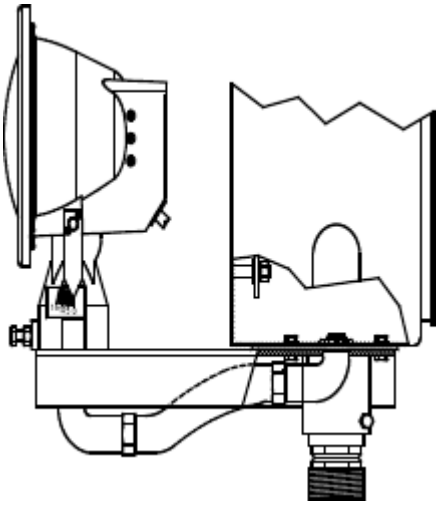
The ADB Safegate LED L-849V,C REIL uses the same enclosure for both the primary and secondary units.

Make sure all components in the enclosures are in place and fastened to the panel assembly. The ON/OFF service switch in the cabinets should be in the OFF position. If all components are in place, close the door and tighten the bolts.

Mounting Options

The standard mounting is with a single leg mounting. See Figure 13 and Figure 14 .

Figure 2: L-849 REIL Standard Single Leg Mounting Configuration

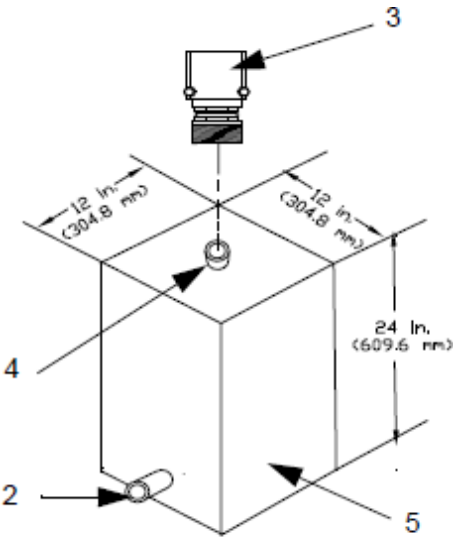


Note

Mount the LED L-849 REIL cabinet directly onto the existing frangible coupling supplied with the assembly.

Figure 14 is given only as guide. Check local codes and the airport project plans and specifications for installation requirements. See FAA AC 150/5345-51 (Current Edition) for additional mounting instructions.

Figure 3: Single-Leg Control Cabinet



1. L-849C Assembly (not shown)
2. Two-Inch Elbow for External Wires
3. Frangible Coupling (supplied)
4. Use Two-Inch Threaded Coupling if Flange Not Used.
5. Concrete Foundation

4.2.1 Mounting the Control Cabinets

To install the L-849 REIL control cabinets, perform the following procedure:

Note
For a voltage driven system: A customer-supplied external circuit breaker should be separately connected to the input power supply lines.

1. Install a customer-supplied 2-inch (50.8 mm) conduit elbow in the concrete pad for external wiring routing into the bottom mounting hub of the cabinet.

   Note
   Depth of the concrete foundation should be a minimum of 6 in. (152.4 mm) below frost line.

2. Install a customer-supplied 2-inch (50.8 mm) threaded coupling on the threaded end of the conduit elbow.

   Note
   Make sure the coupling is installed level and square with the concrete pad. Level by adjusting slip-fitters on pipe extending downward from cabinet. An alternate method is to use a 6 1/4-inch (158.7 mm) base flange, and bolt the flange to the concrete pad over the conduit elbow flush with top of pad.

   When the base flange is used, make sure the flange can be installed level with the concrete pad. Use shims on the flange if further leveling of unit is required. Make sure the conduit is flush with the top of the concrete pad.

3. Coat the threaded end of frangible coupling with silicone grease and thread onto base flange or conduit elbow coupling.
4. Loosen the hex head screws in the mounting hub and mount cabinet on frangible coupling.
5. Place a level on the flash head support arm.

   Note
   Level by adjusting slip-fitters on the pipe extending downward from the cabinet.

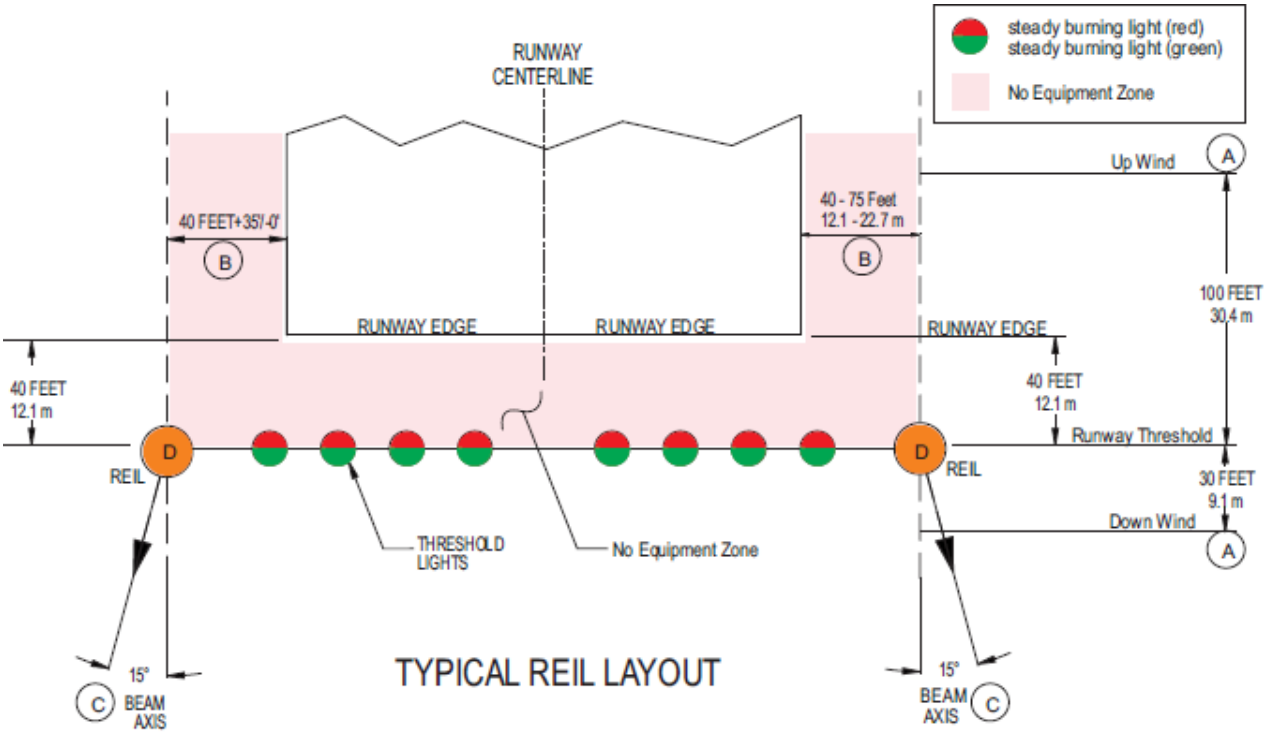
6. Tighten the hex head screws in the mounting hub against the frangible coupling when the flash head support arm is level.

Note

To properly aim the light unit, the flash head support arm must be level and parallel to the runway centerline when the cabinets are installed.

7. Tighten the hex head screws against the hub.

Figure 4: Typical Layout for REIL



A. The optimum location for each REIL light unit is in line with the runway threshold at 40 feet (12.1m) from the runway edge. A variance of 100 feet (30.4m) upwind and a 30 feet (9.1m) downwind longitudinal tolerance is permitted from the runway threshold in locating the REIL light units.

B. Space the light unit equally from the runway centerline. When adjustments are necessary, the difference in the distance of the units from the runway centerline shall not exceed 10 feet (3m).

C. The beam centerline (aiming angle) of each light unit is aimed 15 degrees outward the line parallel to the runway centerline and inclined at an angle of 10 degrees above the horizontal. If angle adjustments are necessary, provide an optical baffle and change the angles to 10 degrees horizontal and 20 degrees vertical.

D. Both units elevation are placed within 3 feet (0.9m) of the horizontal plane through the runway centerline.

See also: AC 150/5340-30 -- Figure 78

4.2.2 Electrical Connections

See L-849V Style C LED Wiring Schematics on page 30 for external wire connections to the flash units.

Note

All electrical wiring must be made in accordance with the National Electrical Code and local codes.

Wiring between the flash head and the individual control cabinet is connected and supplied with the unit. Proper wire size information for the external connections is given in Table 5 . It is recommended that external lightning arrestors be added to incoming power lines as local conditions require.

WARNING

Disconnect power to the lighting circuit before attempting to make any electrical connections. Coordinate a power outage with air traffic personnel before turning power to the airport lighting system off.

Failure to observe a warning may result in personal injury, death or equipment damage.

L849 Current Driven Units

Install a L-867 base can to house the L-830 or L-831 isolation transformer.

L849 Voltage Driven Units that Use Current Sensing for the Remote Control

Install a L-867 base can next to the primary unit.

Grounding Units

See L-849V Style C LED Wiring Schematics on page 30. Ground the Primary and Secondary Units by connecting a No. 6 bare solid copper wire at the earth ground lug provided inside the cabinets (hinged side) and route the wire through the conduit to the grounding rod. The ground resistance shall not exceed 25 ohms with the power feeder neutral disconnected. If necessary, additional ground rods shall be installed and interconnected to obtain the required resistance. The ground wires shall be connected to the ground rods by either an exothermic process (Erico Products Corporation, Cadweld, Burndy Corporation, Thermoweld or equivalent) or by brazing.

CAUTION

Pipe straps shall not be used for grounding purposes. Ground connections and lugs must be the best commercial type.

Cabinet and Remote Control Wiring

Refer to the guidelines below when wiring the cabinet and the remote control.

1. Install interconnecting power and control wiring (AWG 16 minimum, 600 V) between terminal block TB1 in each cabinet. See L-849V Style C LED Wiring Schematics on page 30.

   CAUTION

   It is important for proper operation that the cable for the reset wiring be shielded.

   - If the current sensing option is not used, make remote control circuitry connections (AWG 16 minimum, 600 V) to Primary terminal block TB1 terminals 7 through 9.

     Note

     When the current sensing option is used, remote control is not possible and terminals TB1, 4 through 8 are not used.

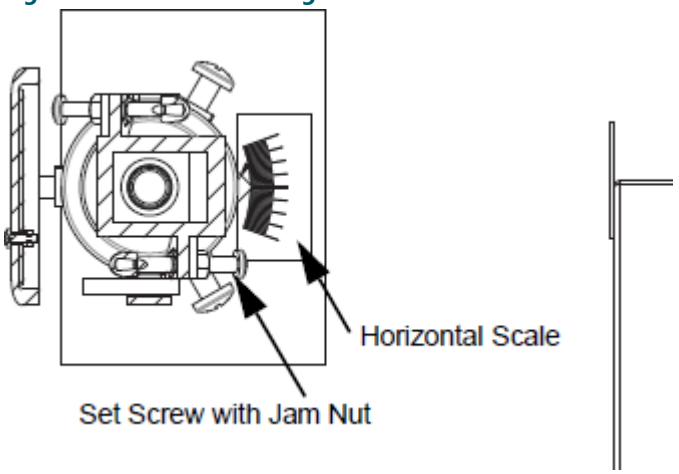
2. Check for proper installation and firm connections.
3. Tighten all connections.

4.2.3 Flash HeadsAiming

Horizontal Aiming Adjustments

To adjust the horizontal setting, perform the following procedure:

Figure 5: Horizontal Aiming

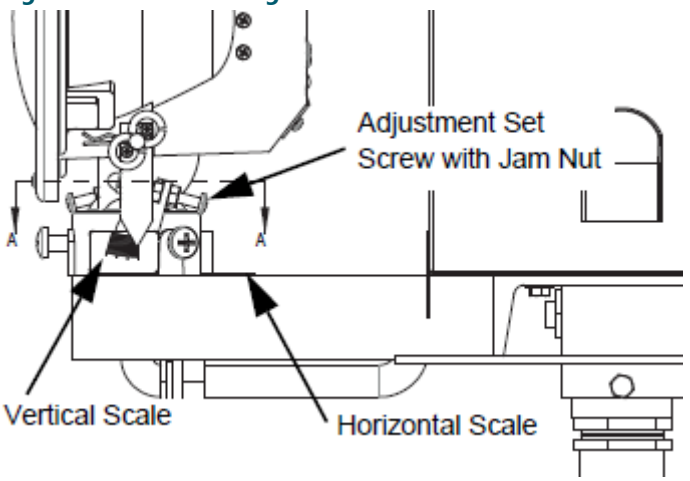


1. See Figure 16. Using a 9/16 open end or box wrench loosen all 3 hex head set screws and 3 jam nuts. Manually rotate the head assembly and orientate the beam axis of the flash head to a maximum of 15 degrees outward from a line parallel to the runway centerline. Reference Figure 15.
2. Hand-tighten all 3 screws and jam nuts when adjustment is completed. Check the alignment pointer to verify that the required horizontal angle is correct. Repeat the adjustment procedure if the angle is not correct.

   Vertical Aiming Adjustment

   To adjust the vertical setting, perform the following procedure:

   Figure 6: Vertical Aiming



3. See Figure 17. Loosen the two adjustment hex set screws and jam nut using a 7/16 open end or box wrench so that both set screws are not in contact with the head. One vertical adjustment screw is located on the backside of the fixture, as shown in Figure 17, and the other adjustment screw is location on the front side of the fixture.
4. Manually pivot the head assembly backward or forward to adjust the vertical beam setting to the required angle above horizontal. 15 Degrees maximum.
5. Holding the head assembly at the selected vertical angle on the scale, tighten the 2 hex bolts up against the head assembly and then tighten the two jam nuts to lock the adjustment screws against the head assembly. Check the alignment pointer to verify that the required vertical angle is correct. Repeat the adjustment procedure if the angle is not correct.

4.3 Installation Checkout

This subsection describes procedures for installation checkout. See Figures in the *Wiring Schematics* section.

4.3.1 Wiring Checkout

Refer to the guidelines below when checking out wiring.

- All grounding connections to equipment, housing, structures, and ground rods shall be thoroughly checked. The ground resistance of all ground rods shall be within the limits specified in project plans and specifications.

WARNING

All power should be off while resistance checks are being made. A potential of 240 Vac may be present, which can be lethal.

Failure to observe a warning may result in personal injury, death or equipment damage.

- All power and control wiring shall be carefully and thoroughly verified. Using an ohmmeter, check all wires to make sure that proper connections are made.

CAUTION

If the system is turned on and wiring is connected improperly, all or part of the system can be damaged and void the warranty.

4.3.2 Connector, Plug, and Jack Checkout

Carefully check all connections plug and jack connections, and other wiring disconnects for proper mating. Check all terminal board connections for tightness.

4.3.3 Safety Switch Checkout

Check the Primary and Secondary cabinets and flash heads for complete closure and latching, making sure that the interlock safety switches are depressed.

4.4 Initial Startup and Preliminary Test

WARNING

Before applying power to any part of the system, carefully read and observe at all times the safety instructions in the *Safety* section in this manual.

Failure to observe a warning may result in personal injury, death or equipment damage.

Refer to the guidelines below upon initial startup and preliminary testing.

In each LED L-849 REIL control cabinet insure that the control switches are set to OFF. Turn on power to the REIL (engage external circuit breaker for voltage powered applications or turn on CCR for series circuit powered applications) and verify that the following is present on TB1 in the control cabinet:

- L-849I: Place a clamp-on ammeter probe around TB1-14. Insure 2-8 to 6.6A (for 5-step CCRs) or 4.8A-6.6A (for 3-step CCRs) is present and matches the CCR step setting.
- L-849V: For 120/240Vac powered REILS, verify the following voltages are present in each cabinet:
  - TBI-14 to TBI-16: 120Vac
  - TBI-15 to TBI-16: 120Vac
  - TBI-14 to TBI-15: 240Vac
  - For 240VAC powered REILS, verify the following voltage is present in each cabinet:
  - TBI-14 to TBI-15: 240Vac
- If the optional external failure indicator is used, set the Misfire Threshold switch SW1 on the Flasher Control Board to the desired consecutive misfire alarm level. SW1 may be set from 1 to 7. Set SW1 to zero if the external failure indicator is not used.
- Turn the Primary unit ON, followed by the Secondary unit. Check the L-849 REIL system in all modes of operation. Refer to REIL Startup Procedure in the Operation section.

  Check the remote control operations, if used. For current sensing, set the activation levels as follows:
- L-849 C (One-Step)
  - Set the constant current regulator (CCR) to the step setting where REIL operation is desired.
  - Place the rotary switch in REMOTE position.
  - On the LED REIL control board, 44A6724, in the Primary Unit, push the SET HIGH push button for 4 seconds. The LED D20 will light. Release the buttons.
  - The board is now programmed for the desired current to activate the unit.
  - The REIL will shut off at lower current steps.

Note
The Primary unit is the only unit that require programming.

5.0 Operation

WARNING

Improper Operation

- Read the instructions in their entirety before starting installation.
- Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

Failure to observe a warning may result in personal injury, death or equipment damage.

This section provides instructions for operating the L-849V, Style C Runway End Identifier Lights (REIL).

The L-849 REIL system may be operated by local or remote control. Remote control is by switch or radio receiver/decoder unit. For maintenance purposes, a rotary selector switch is provided inside the Primary individual control cabinet for local control.

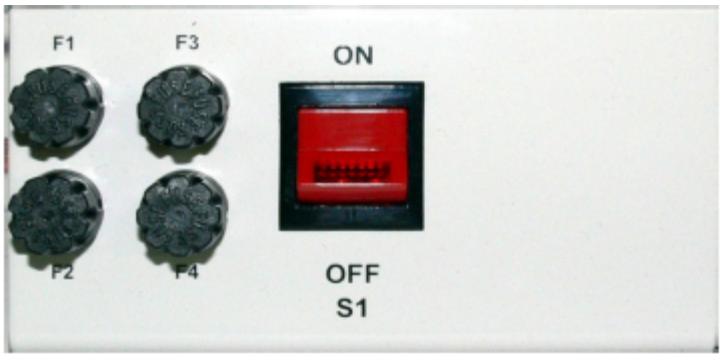
5.1 Operational Modes

Refer to Table 6 . A rotary selector switch, found in the L-849C individual control cabinet, has three settings: REMOTE, OFF and ON. These settings can control the flashing lights locally or turn control of the lights over to a remote location. The REMOTE setting on the rotary selector switch turns control of the system over to a remote control system that can turn the flashing lights on or off.

Table 6: L-849 Style C REIL Modes of Operation

- PCB Rotary Switch S1 Position (Primary Cabinet)	Remote Control Panel Setting	Operational Results	Note
ON	All settings	Flashers operate	
OFF	All settings	System off—no flashing	
REMOTE	OFF	System off—no flashing (except when current sensing is present)	
REMOTE	ON	Flashers operate	

Figure 7: S1 Panel



Secondary Unit

Primary Unit

5.1.1 Flasher Control PCB 44A6724 Operation

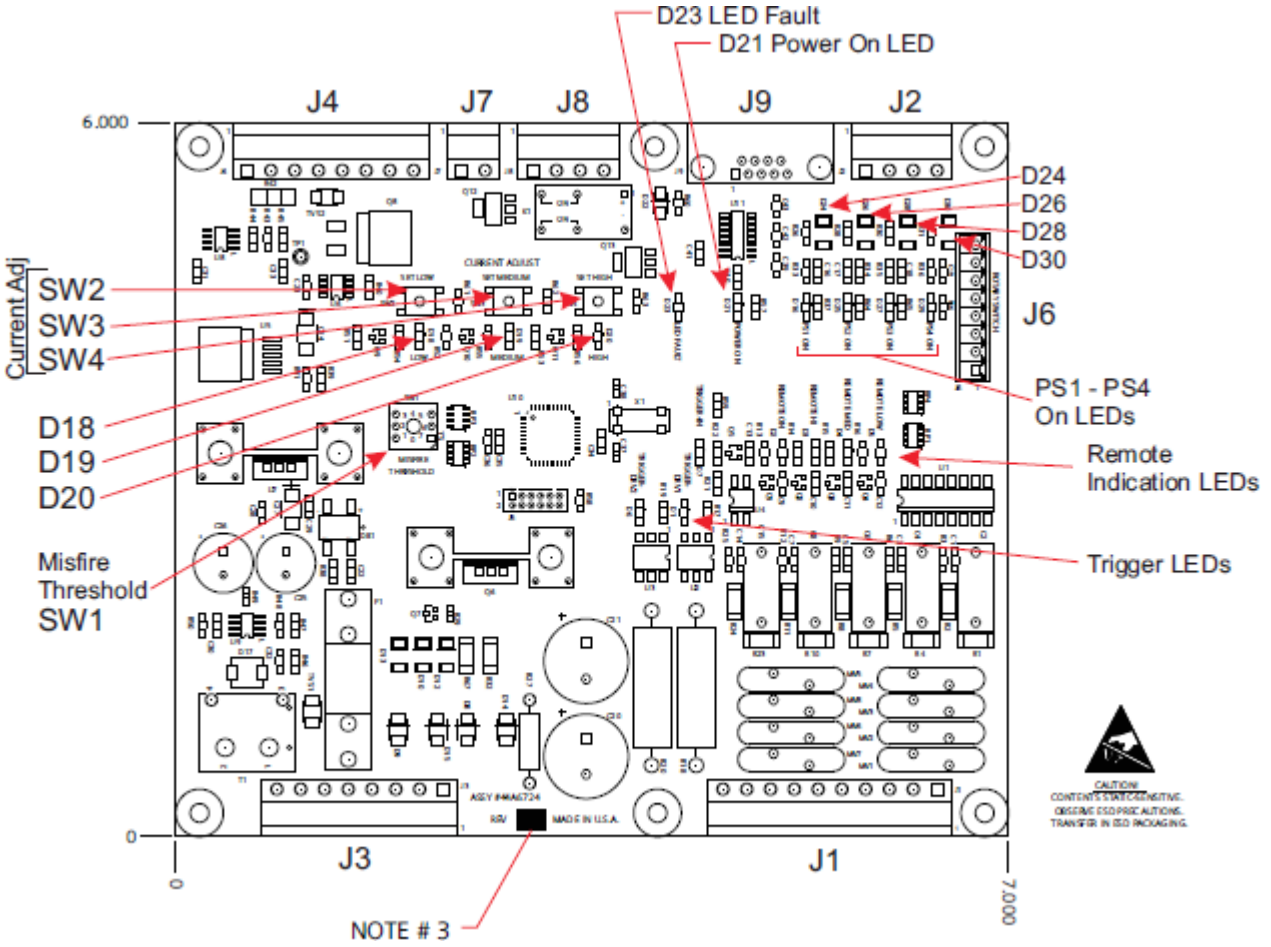


Table 7: Control Board Controls and Indicators

ID	Name	Indication	Description
D1	Trigger Driver 1	Green	Activated on the Primary Unit only. Flashes when a trigger pulse is output from the Primary Unit.
D6	Trigger Driver 2	OFF	Not used for REIL applications.
D7	Trigger In	Green	Activated on the Secondary Unit only. Flashes when a trigger pulse is received from the Primary Unit.
D2	Remote On	Green	Illuminates when a Remote-On command has been input into the unit.
D3	Remote Hi	Green	Illuminates when a Remote-High intensity command has been input into the unit.
D4	Remote Med	Green	Illuminates when a Remote-Medium intensity command has been input into the unit. Not used in a Style A REIL.
D5	Remote Low	Green	Illuminates when a Remote-Low intensity command has been input into the unit. Not used in a Style A REIL.
D16	PS1 On	Green	Illuminates when power is being output to LED Power Supply PS1.
D25	PS2 On	Green	Illuminates when power is being output to LED Power Supply PS2. Not used in a Style A REIL

Table 7: Control Board Controls and Indicators (continued)

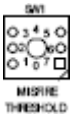
ID	Name	Indication	Description
D27	PS3 On	Green	Illuminates when power is being output to LED Power Supply PS3. Not used in a Style A REIL.
D29	PS4 On	Green	Illuminates when power is being output to LED Power Supply PS4. Not used in a Style A REIL.
SW1	Misfire Threshold		Position 0 - Turns off fault tracking / produces no fault indication. Position 1 - 7 sets the fault count, which is the number of misfires per 100 consecutive flashes. Misfires beyond the switch setting will activate the output fault contact closure and will illuminate LED D23.
D23	LED Fault	Green	Dependant on the position of SW1 - illuminates on the fault count selected.
SW2	Low	--	Low intensity Current Sensing adjustment control. Not used in a Style A REIL.
SW3	Med	--	Medium intensity Current Sensing adjustment control. Not used in a Style A REIL.
SW4	High	--	High intensity Current Sensing adjustment control.
D18	Low	Green	Illuminates when the circuit is operating in the Low current setting and operating within the proper current range. Not used in a Style A REIL.
D19	Medium	Green	Illuminates when the circuit is operating in the Medium current setting and operating within the proper current range. Not used in a Style A REIL.
D20	High	Green	Illuminates when the circuit is operating in the High current setting and operating within the proper current range.
D21	Power On	Green	Illuminates when the +5VDC power supply is operating properly on the Control board.

Figure 8: Current Driven Type C, LED REIL Interior Assembly

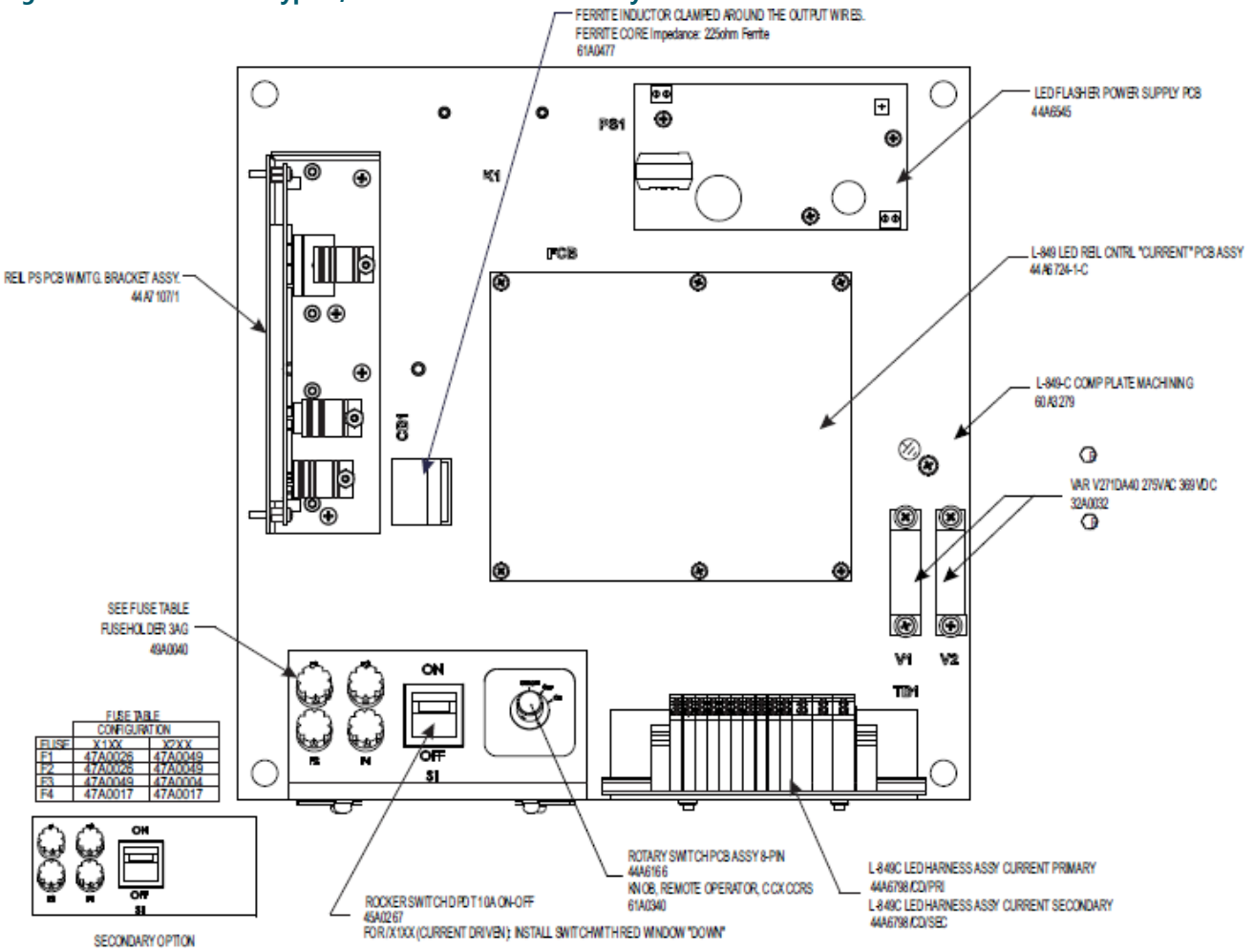
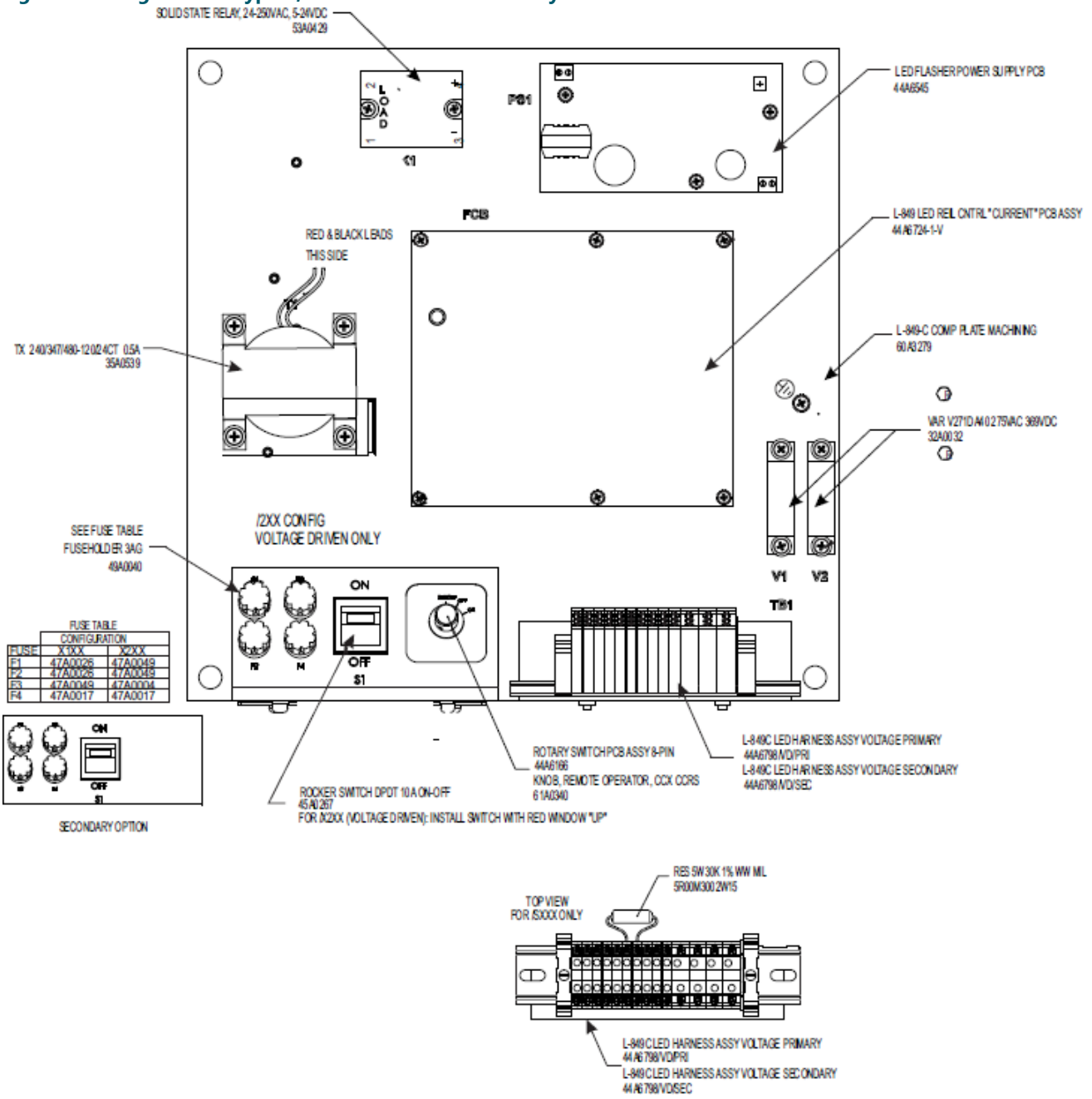


Figure 9: Voltage Driven Type C, LED REIL Interior Assembly



5.2 Operating Procedures

This subsection provides information on the L-849 REIL and power adapter startup procedures.

5.2.1 Current Monitoring Option

For unit with the current sensing option:

1. Turn the series field circuit on.
2. Set the constant current regulator (CCR) to the desired step for the REIL to initialize.

3. In the LED REIL Primary with the rotary switch in Remote, find the control board, 44A6724, push the SET HIGH push button for 4 seconds. The LED D20 will light. Release the button.
4. The board is now programmed to come on at the desired current step.

   The REIL will shut off at lower current steps.

5.2.2 REIL Startup Procedure

- Make sure that the ON/OFF service switch S1 on the input module in the LED L-849 REIL cabinet is set to the ON position.
- Make sure that the rotary control switch on Primary oscillator PCB in the control cabinets is set to:
  - REMOTE position for remote or current sensing operation. -OR-
  - ON position for local operation for L-849 REIL.
- Make sure that the Primary and Secondary cabinet doors are properly closed to activate interlock switch S3 on door.

  For voltage driven units, the REIL system should start flashing when the external circuit breaker is engaged (power is supplied to the input power terminals of the Primary and Secondary).

  For current driven units without current sensing: the REIL system will start flashing when the series circuit is energized for both the Primary and Secondary.

  For current driven units with current sensing: the REIL system will start flashing when the series circuit is energized for both the Primary and Secondary using the desired current step set in the procedure 4.2.1.

Note
Only the Primary Unit requires programming.

5.2.3 Changing Step Modes (Primary only)

Changing from a 3-step setting to a single-step setting:

- Press the CURRENT ADJUST button SET HIGH and SET LOW for 4 seconds. The HIGH LED will blink for 2 seconds and turn off.
- Set the constant current regulator (CCR) to the step setting where REIL operation is desired.
- On the LED REIL control board, 44A6724, in the Primary Unit, turn the rotary switch to the 'Remote' position. Push the SET HIGH push button for 4 seconds. The LED D20 will light for 2 seconds and turn off. Release the button.
- The board is now programmed for the desired current to activate the unit.
- The REIL will shut off at lower current steps.

5.2.4 Shutdown Procedure

When it is necessary to shut down the control cabinet, open the cabinet door and place the ON/OFF switch in the OFF position. When the entire system is to be shut down, disengage the external circuit breaker (voltage units) or place the ON/OFF switch in both control cabinets in the OFF position.

6.0 Maintenance and Repair

WARNING

Electric Shock

- Read the instructions in their entirety before starting maintenance.
- Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

Failure to observe a warning may result in personal injury, death or equipment damage.

This section provides preventive maintenance for L-849 Runway End Identifier Lights (REIL) system.

6.1 Maintenance Schedule

To keep the L-849 REIL system operating efficiently, follow a preventive maintenance schedule. Refer to Table 8 .

Table 8: L-849 REIL Maintenance

Interval	Maintenance Task	Action
Daily	Check LED operation and flashing sequence.	
Bimonthly	Check operation of controls.	If controls malfunction, replace controls.
	Check cleanliness of lens.	If dirty clean or replace lamps as required.
	Check LED light engine for fractures or cracks.	If LEDs are cracked or fractured, replace and replace the glass lens.
	Check LED light engine alignment.	If light engine is misaligned, realign light engine.
	Check operation of interlocks.	If interlocks malfunction, replace interlocks.
	Check for vegetation or other obstruction near LED engine.	Use herbicide or manually to remove vegetation.
Semi-Annually	Check cabinets for cleanliness and moisture.	If cabinets are moist, wipe dry.
	Check seals on enclosures.	Replace worn or deteriorated seals.
	Check electrical connections and contacts for tightness.	If contacts are loose, replace contacts.
	Check alignment and leveling of LED Light Engine.	If engine is misaligned or not level, realign and level as required.
	Check wires for cracks and deterioration.	If wires are cracked or deteriorated, replace wires.
	Check for rigidity of support structures.	Tighten all mounting hardware.
Annually	Check power distribution equipment.	If power distribution equipment is faulty, replace equipment.
	Check insulation resistance of cable.	If reading is less than 500 V on meter or leaking to ground, replace cable.
	Check resistance of grounding system.	If resistance is high, repair by doing such things as replacing rods and cables.
	Check need for painting.	Touch up all chips or repaint entire enclosure.

6.1.1 Replacing LED Light Engine

To remove and replace the LED Light Engine see Figure 10 and then proceed as follows:

Note

Individual LED's can not be replaced.

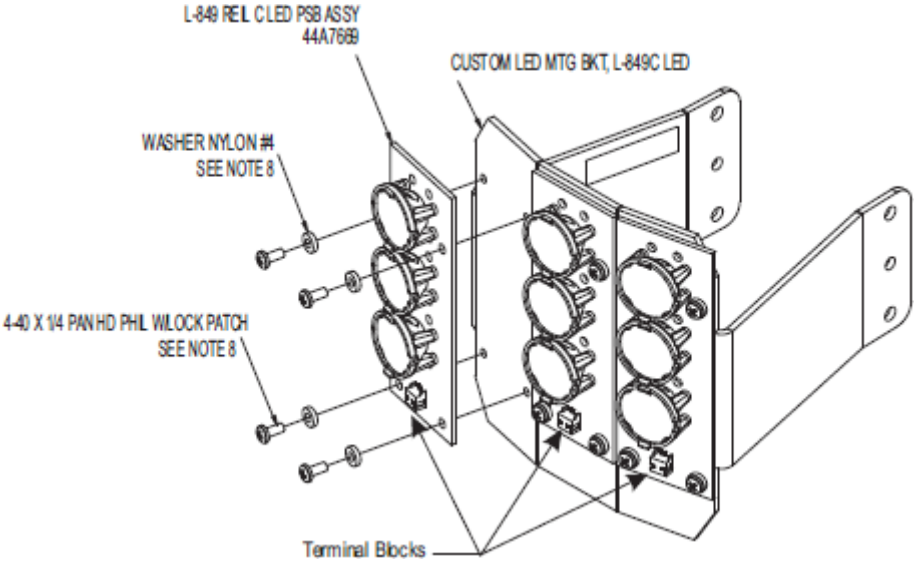
Note
LED light engines must be replaced in both the master and slave units.

1. Turn the power off in the control cabinet by placing the On/Off service switch in the OFF position or by disengaging the external circuit breaker.
2. Remove the screws that secure the Outer Ring to the front of the head assembly and then remove the outer ring, lens, and gasket.
3. Disconnect the LED PCB assembly power leads from the terminal block, 3 times.
4. Remove the group of four 4-40x1/4" pan head screws securing each LED PCB assembly.
5. Clean both surfaces of the lens with a damp cotton cloth.
6. Install the three new LED PCB assemblies with the four screws and washers.
7. Connect the LED PCB assembly power leads to the terminal blocks.
8. Install a new gasket (4071.14.943) with the "top" marking orientated to the top of the head. Install the lens, and outer ring. Install and tighten the mounting screws.

   Note
   Check the gasket for any signs of deterioration such as cracks or tears. If the gasket is damaged, replace with a new gasket.

9. Insure all screws are tight before reinstalling the door and turning on the power.
10. Restore power to return the unit to service.

Figure 10: LED Engine Optical Replacement Kit 94A0729



See the Spare Parts List for part numbers and full description of other parts.

6.2 Replacing the PCB

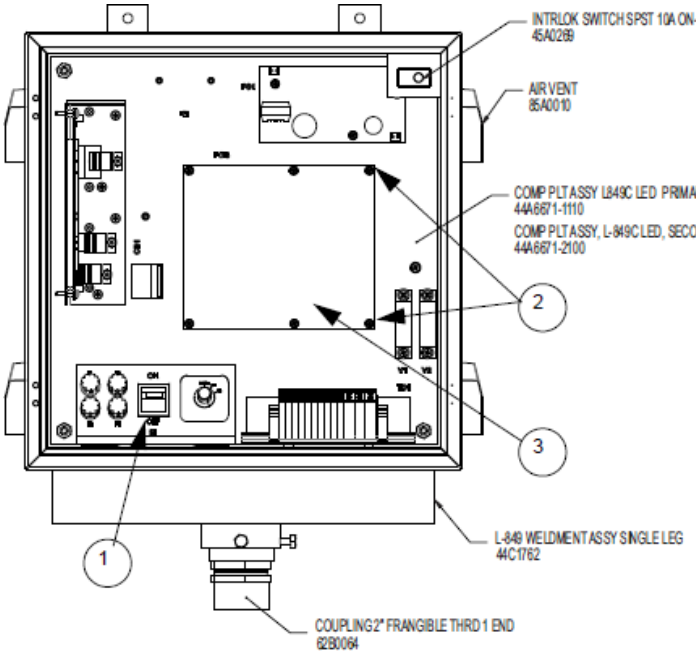
CAUTION

ELECTROSTATIC SENSITIVE DEVICES
This equipment may contain electrostatic sensitive devices.

- Protect from electrostatic discharge.
- Electronic modules and components should be touched only when this is unavoidable e.g. soldering, replacement.
- Before touching any component of the cabinet you should bring your body to the same potential as the cabinet by touching a conductive earthed part of the cabinet.
- Electronic modules or components must not be brought in contact with highly insulating materials such as plastic sheets, synthetic fiber clothing. They must be laid down on conductive surfaces.
- The tip of the soldering iron must be grounded.
- Electronic modules and components must be stored and transported in conductive packing.

Failure to follow this instruction can result in equipment damage.

Figure 11: REIL C Cabinet Interior



1. Turn off the power to the REIL. Turn the switch (s1) to OFF. (1)
2. Disconnect all wire connectors.
3. Use electrostatic protection.
4. Remove the six screws holding the PCB and the PCB. (2)
5. Replace the PCB. (3)
6. Replace the PCB screws.
7. Reconnect the wire connectors.
8. Restore power to the REIL. Turn (S1) ON.

6.2.1 Changing from the 3-step setting to a single-step setting

Note
New PCBs are set as 3-step at the factory.

Press the CURRENT ADJUST button SET LOW for 4 seconds. The LOW LED D18 will blink for 2 seconds and then turn off.

6.3 Troubleshooting

This section provides troubleshooting information for L-849C LED Runway End Identifier Lights (REIL) system. This information covers only the most common problems that may be encountered. If the problem cannot be solved with the information given here, contact your local ADB Safegate representative for help.

WARNING

When it is absolutely mandatory that an interlock be bypassed to trace a fault or correct a malfunction, authorized maintenance personnel may perform the bypass by pressing in the activator and turning it clockwise for the specific test to be made. Immediately after completing the test, the interlock shall be restored to working condition.

Failure to observe a warning may result in personal injury, death or equipment damage.

When the current sensing option is present, turning the rotary switch S2 to OFF does not remove power to the flashers unless the ON/OFF switch S1 is turned to OFF. Therefore always turn ON/OFF switch S1 to the OFF position before attempting to service the control cabinet.

Table 9: REIL Troubleshooting Procedures

Problem	Possible Cause	Solution
1. No flashing in either individual control cabinets	No input power	L-849V: Check voltage at terminal block TB1 terminals 14 and 15. L-849I: Verify input current is present at TB1 terminals 14 and 15.
	Blown fuse F1 or F2 in Primary Cabinet	Replace fuse. Determine why fuse has blown and repair.
	L-849V: External circuit breaker trips each time it is turned on	Lightning arrestor V1 or V2 is shorted. Replace lightning arrestor.
	No power to Flasher Control Board.	Fuse F3 blown. Replace F3.
2. One individual control cabinet flashes, but the other one does not	Secondary unit is turned off. Blown F1, F2 or F3 fuse in non-flashing unit.	Turn Secondary unit ON Replace fuse. Determine why fuse has blown and repair.
	LED Optical Assembly defective.	Replace Optical Assembly.
	Current driven REIL- Failed Power Supply PS5.	Verify that 240VDC is present at PS5 terminals E5 (+) to E6 (-). Replace power supply if correct voltage is not present.
	Flasher Control PCB failed.	Replace PCB.
	Loose external wire connection.	With the power off and using an ohmmeter, check continuity of each wire.
3. Light flashes intermittently	Flasher Control PCB failing.	Replace Flasher Control PCB.
	LED Optical Assembly failing	Replace the assembly.
4. Operates in Local control but not In Remote	Fuse F4 blown. No 120VDC is present for remote control signals.	Replace F4. Determine reason for short in external remote control circuitry.
5. Light output is dimmer in one of the Flashers.	One of the LED Power Supply PCBs, PS1, PS2, PS3 or PS4 has failed.	On the suspected failing board, verify presence of 70VDC ± 5VDC at J2 + to -. Replace board if voltage is incorrect.

Table 10: Protection Devices

	Device	Designation	Value	Function
	On/Off Switch	S1	--	Incoming power switch. Illuminates red if input power is present.
Current	S1 Panel Fuse	F1, F2	10A, Slow Blow P/N 47A0026	Incoming power protection.
	S1 Panel Fuse	F3	2A, 250V,Slow Blow P/N 47A0049	Protection on the 240VDC output of Power Supply PS5.
	S1 Panel Fuse	F4	1A, Slow Blow P/N 47A0017	120VDC remote control source protection.
voltage	S1 Panel Fuse	F1, F2	2A, 250V,Slow Blow P/N 47A0049	Incoming power protection.
	S1 Panel Fuse	F3	2A, 250V,Slow Blow P/N 47A0004	Protection on the 120Vac secondary of T1, terminals 6-7.
	S1 Panel Fuse	F4	1A, Slow Blow P/N 47A0017	120VDC remote control source protection.
	Control Board Fuse	F1	1A, 250V, Slow Blow, 3AG, P/N 47A0017	Incoming power protection on the Control Board, 44A6724.
	Flasher Power Supply Board Fuse	F1	2A, 250V, Slow Blow, 5x20mm, 47A0215	Incoming power protection on the Flasher Power Supply Board, 44A6545.

6.4 L-849V Style C LED Wiring Schematics

Figure 12: L-849I Style C LED FLASHER (REIL) (Current Driven) External Wiring

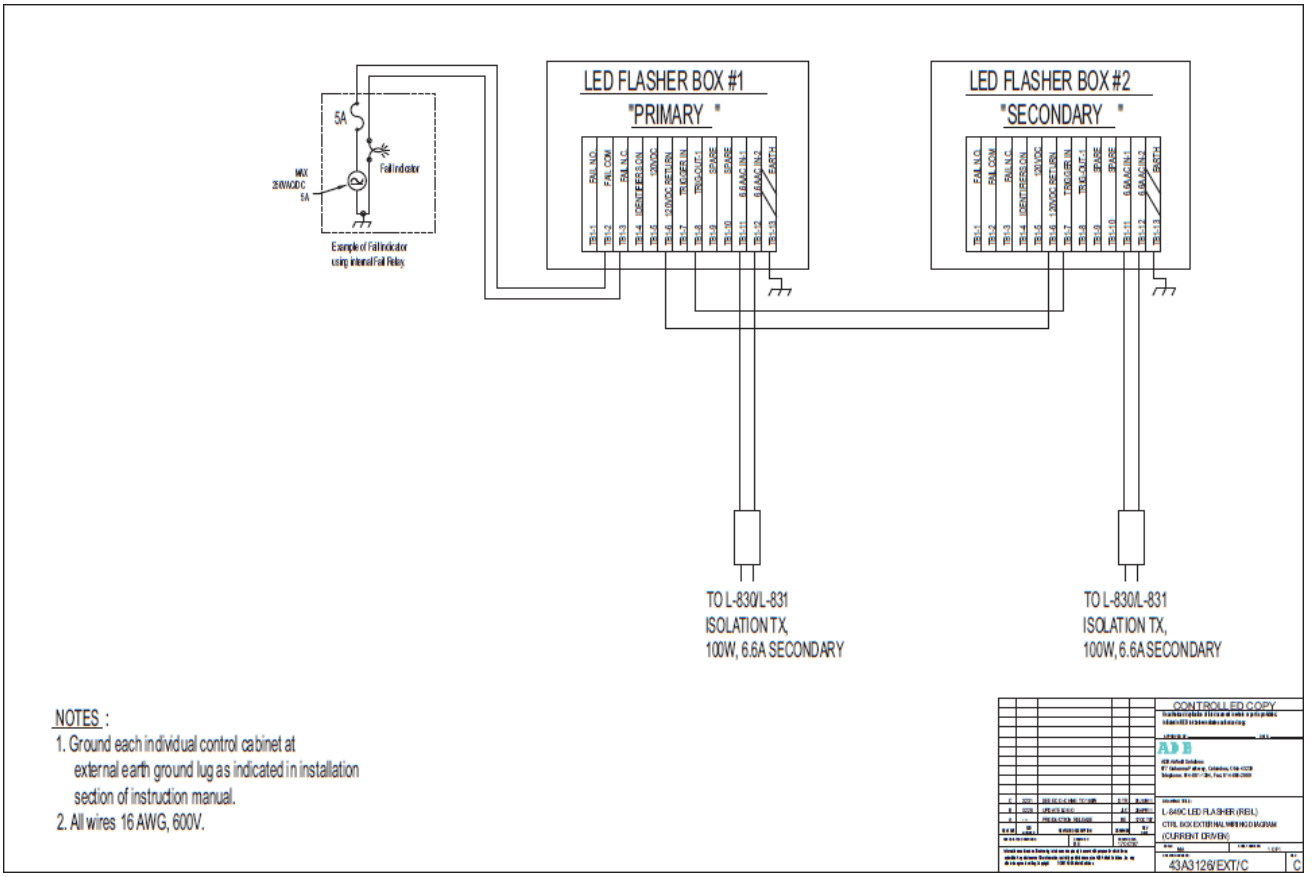


Figure 13: L-849I Style C LED Flasher (REIL) Current Driven Internal Wiring

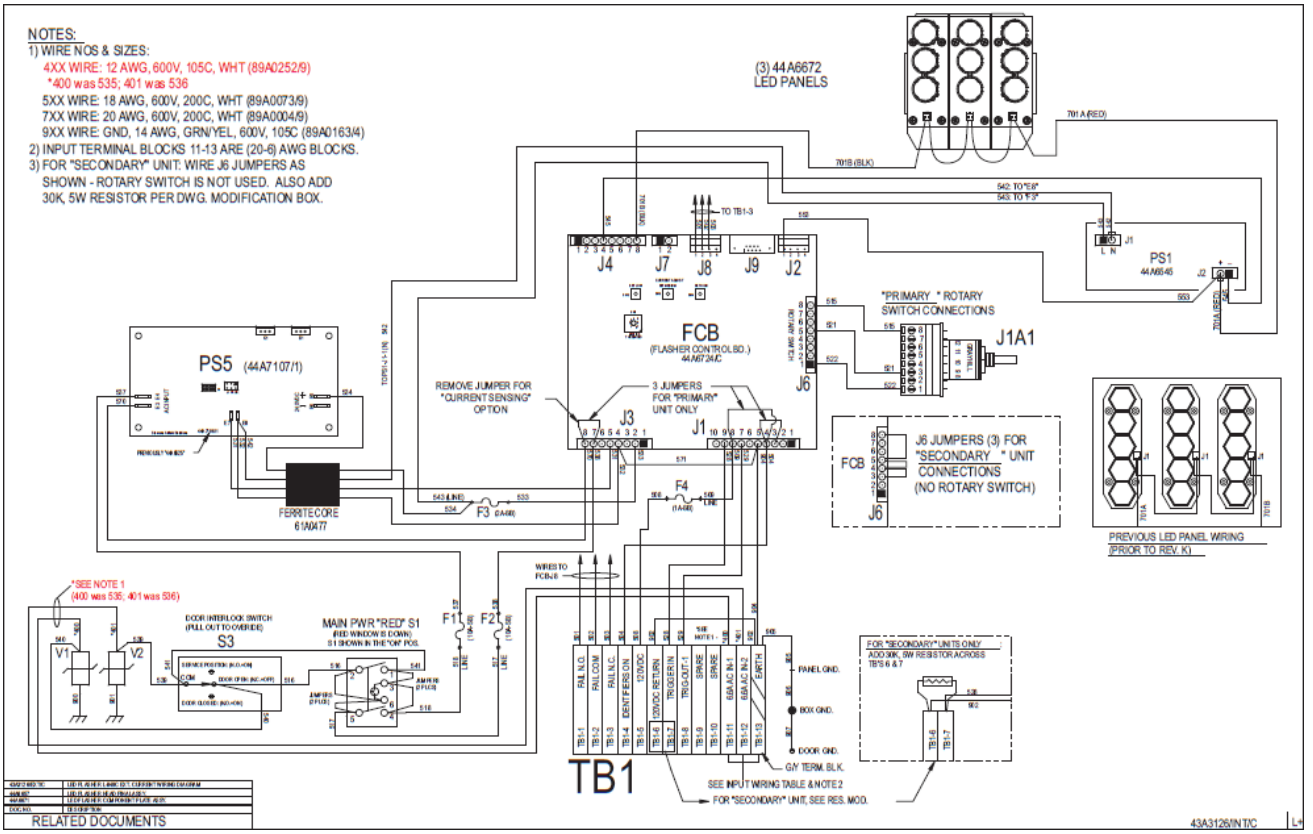


Figure 14: L-849V Style C LED Flasher (REIL) VoltageDriven External Wiring

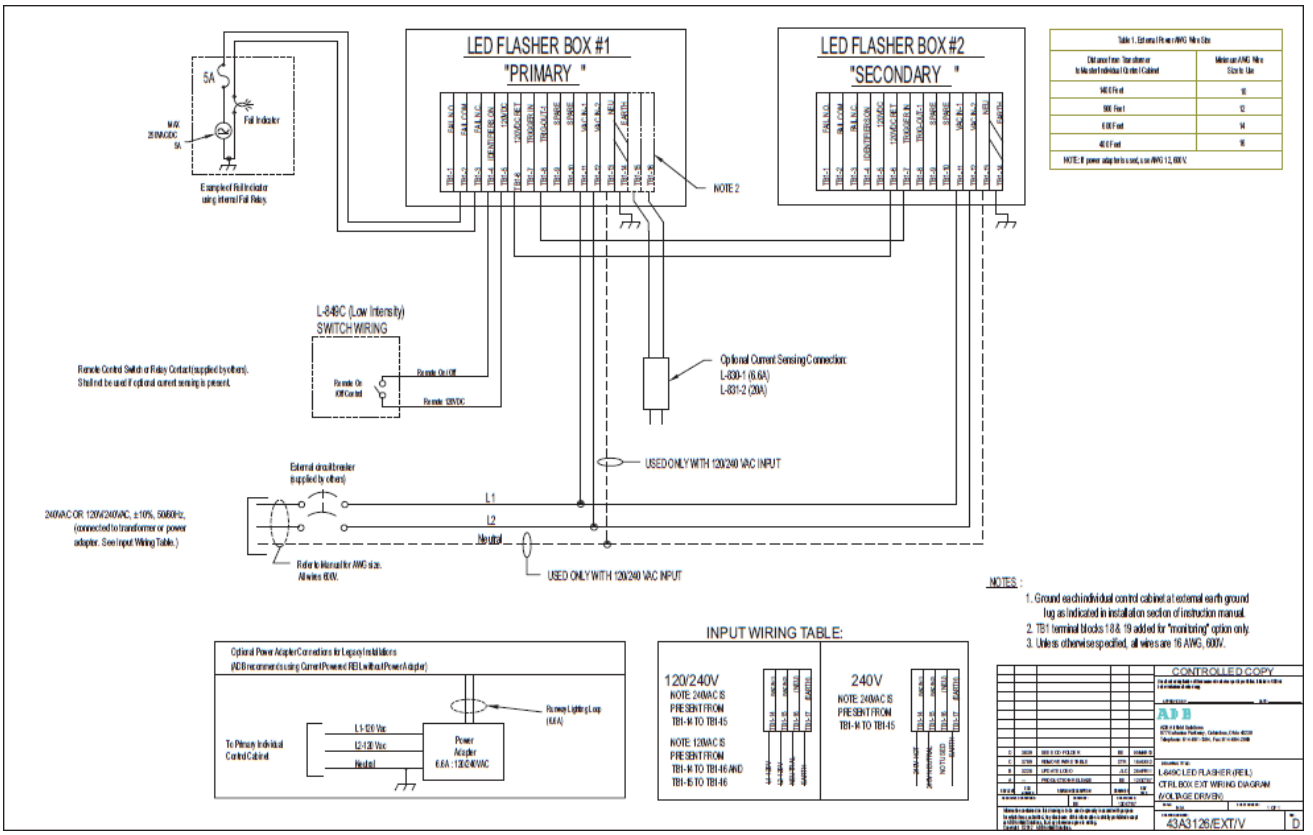


Figure 15: L-849V Style C LED Flasher (REIL) Voltage Driven Internal Wiring

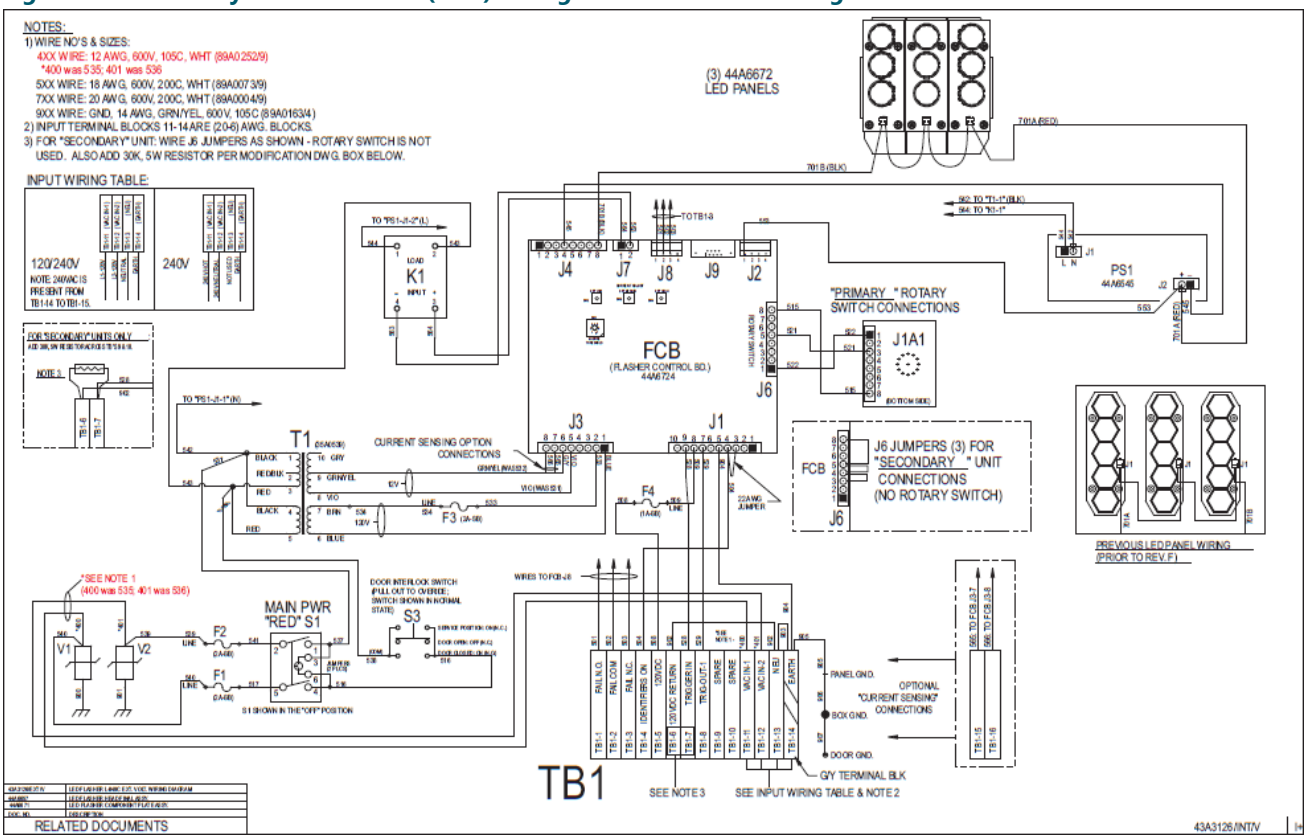


Figure 16: L-849 C Runway End Identifier Lights Typical Installation Details

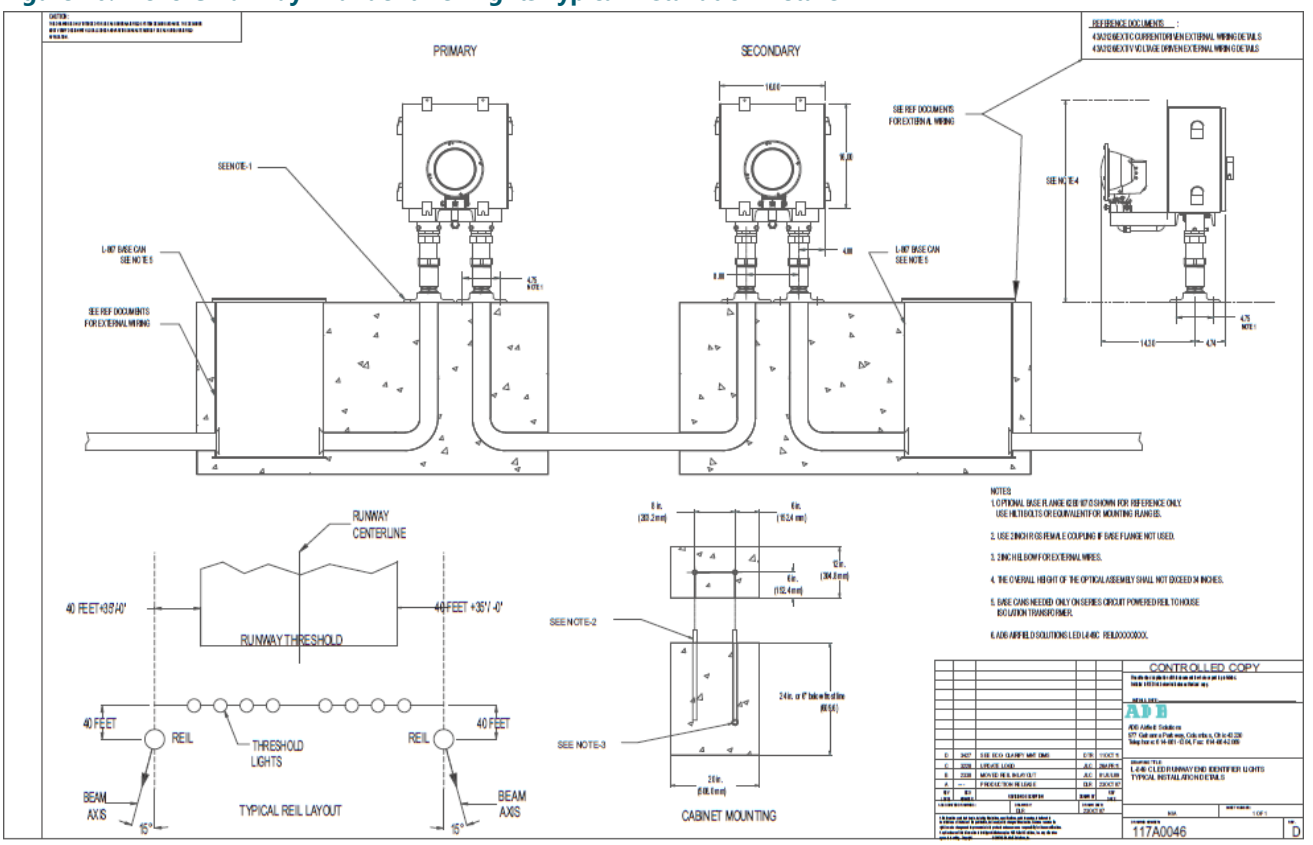
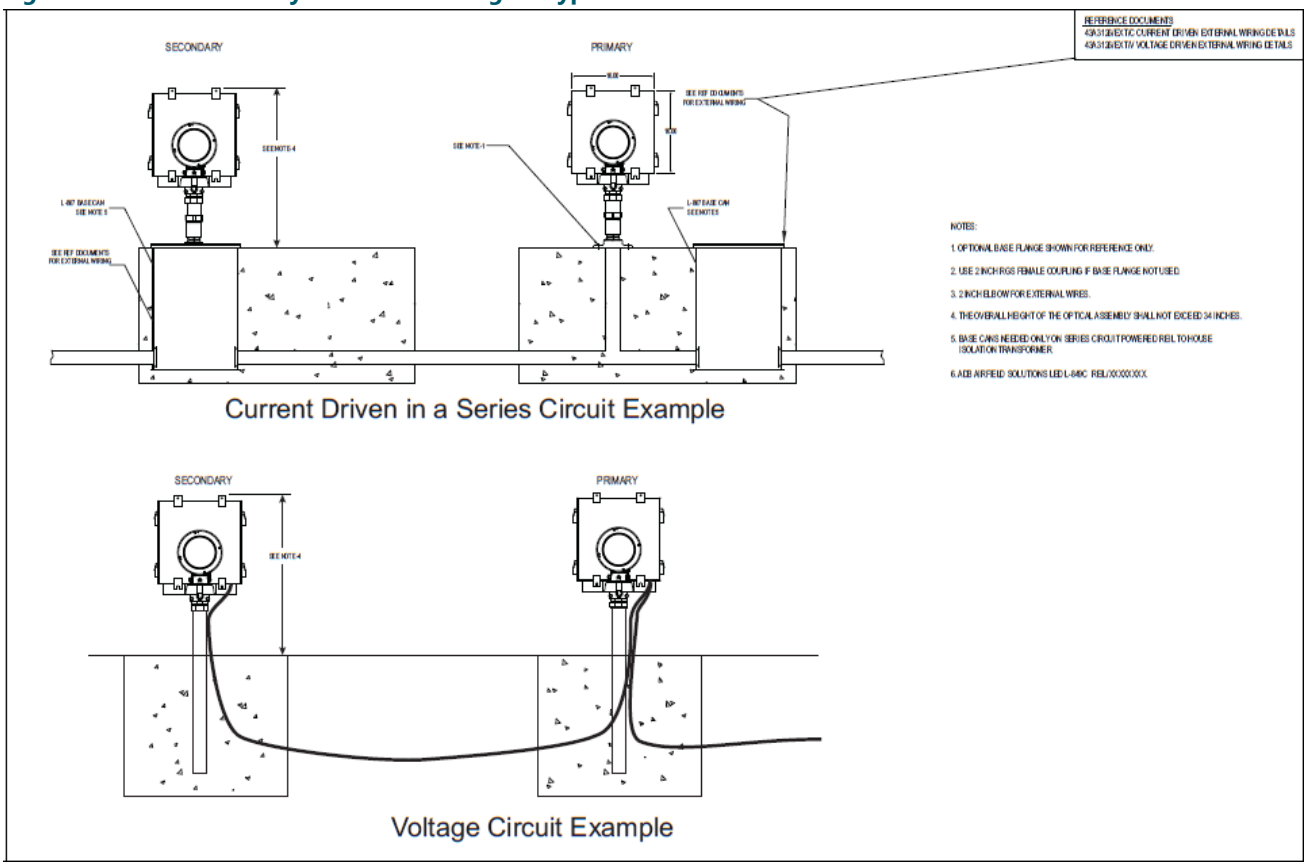


Figure 17: L-849 C Runway End Identifier Lights Typical Installation Details



7.0 REIL-C Parts

To order parts, call ADB Safegate Customer Service or your local representative. Use the parts lists, and the accompanying illustration, to describe and locate parts correctly.

Ordering Code

REIL / X X X X X 0 X X

Style
A = High-intensity, one brightness step
C = Low-intensity, one brightness step
E = Three brightness steps

Input Power
1 = Current-driven[1]
2 = Voltage-driven

Current Sensing Option[2]
0 = Without current sensing[3]
1 = With current sensing

Flash Head Mounting
0 = Integrated with enclosure (Style A, C, or E)
1 = Separate mounting on a 2" EMT (Style C only)

Enclosure Mounting
1 = Single leg
2 = Two legs

0

Enclosure Type
1 = Steel (Painted Aviation Orange)
2 = Stainless Steel (Not ETL Certified)

LED Configuration
0 = Style C
1 = Style A/E (48 LEDs)

Note:

1 The current-driven REIL is only available with the current-sensing option. A current-driven REIL cannot be ordered without current sensing.

2 The current sensing option provides ON/OFF control for Style A, Style C or 3-step intensity control for Style E of the REIL system depending on the current level in the series lighting circuit. The current-driven (powered by a CCR) doesn't require a separate isolation transformer – The input current from the isolation transformer that powers the Primary cabinet is also used for current sensing control. The current sensing input of a voltage-driven REIL can be connected to 6.6 A or 20 A series circuits with an appropriate 6.6/6.6 A or 20/6.6 A isolation transformer.

3 The without current sensing option is only available with the voltage driven REIL.

7.1 Control Panel Assembly Part Numbers and Ordering Codes

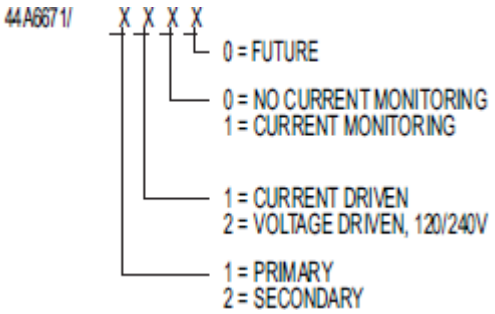


Figure 18: REIL Assembly

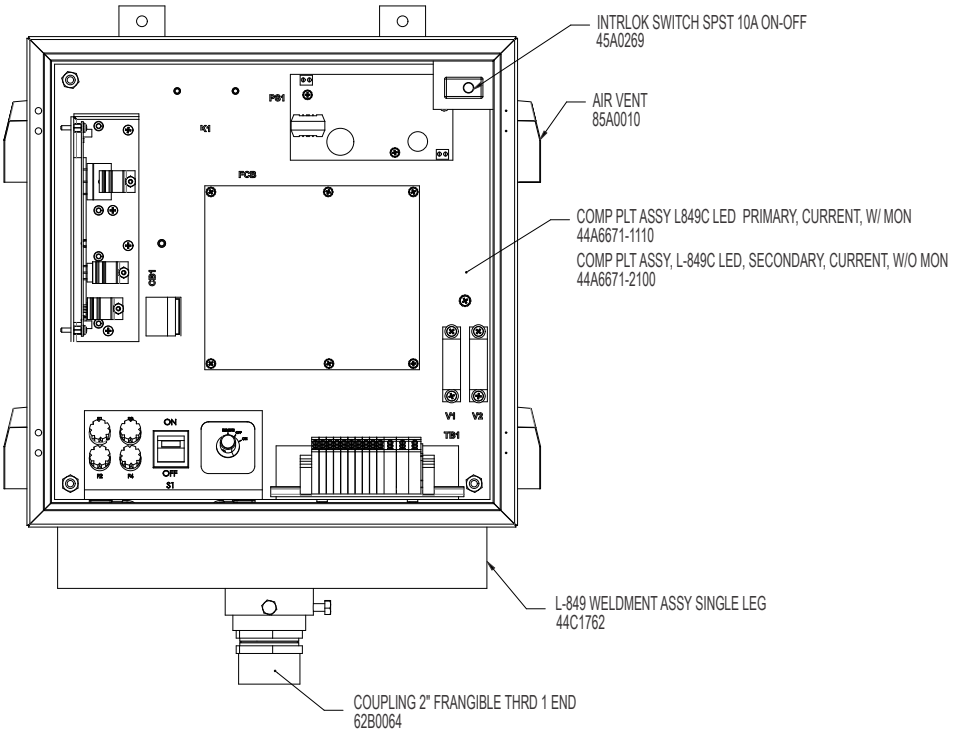


Figure 19: REIL Assembly 2-pole

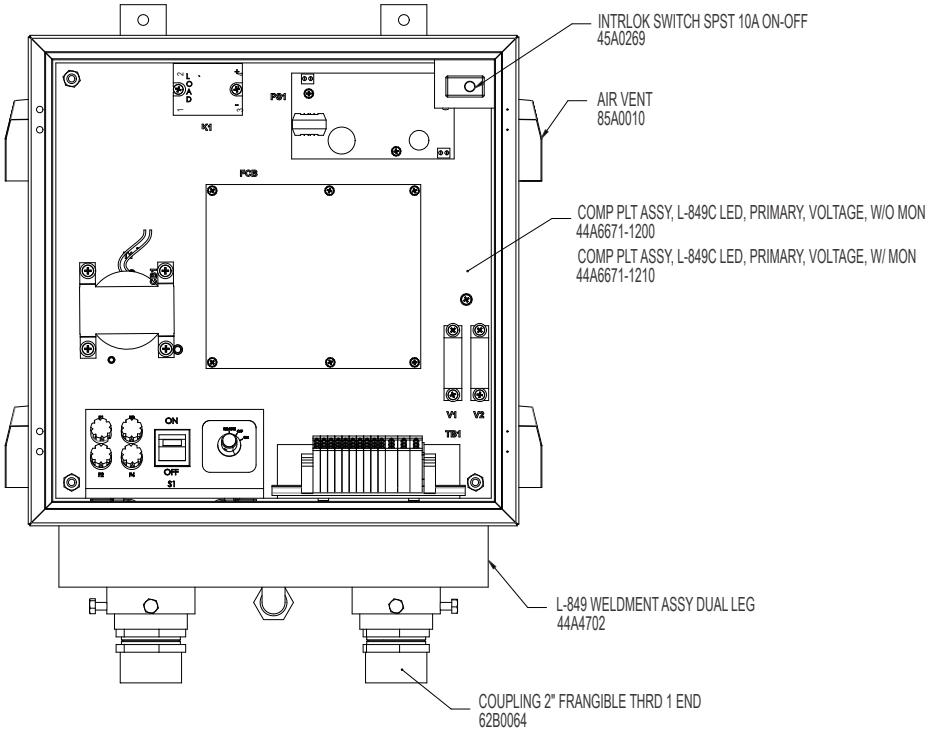
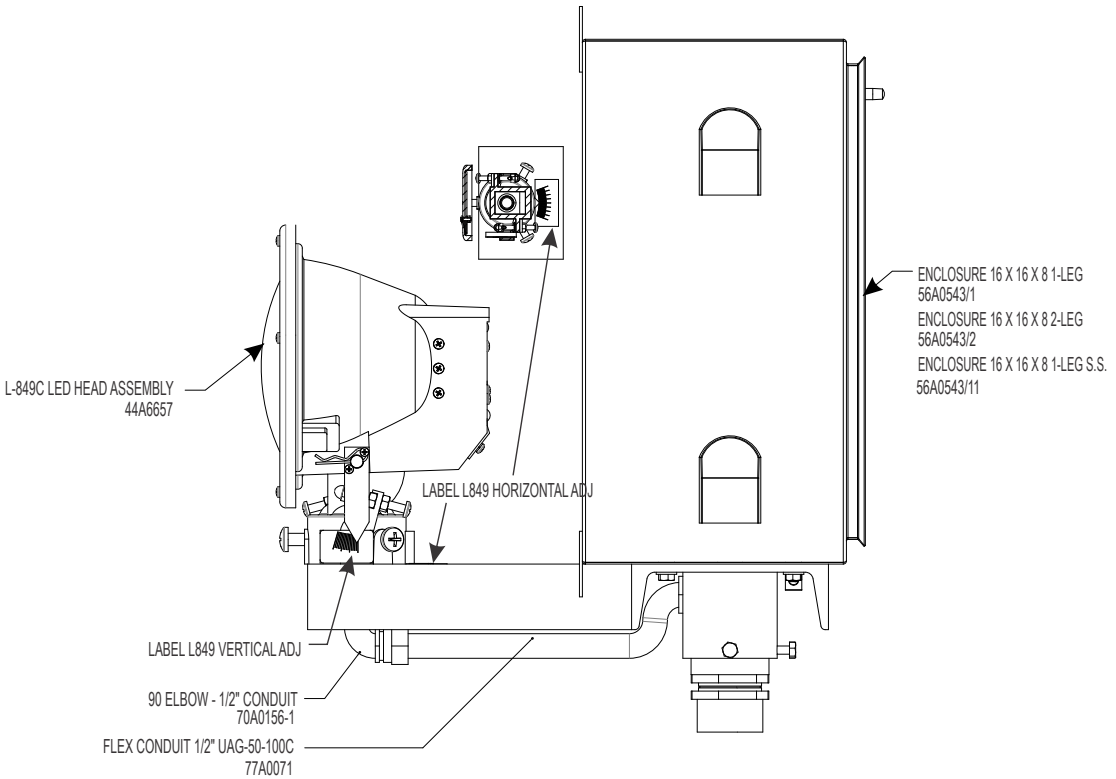


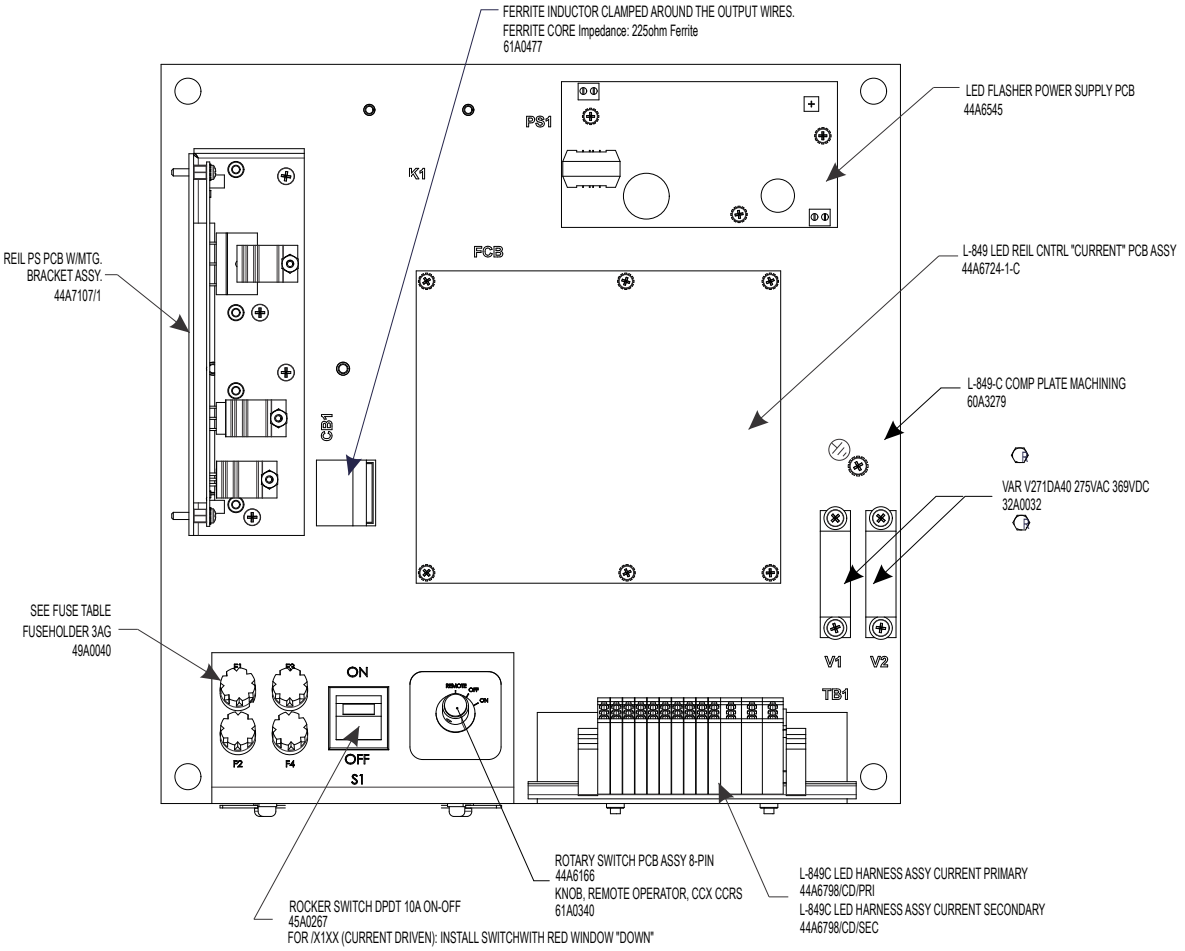
Figure 20: REIL Side View



Note

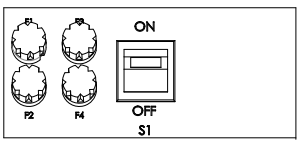
The same control panel is used in each individual control cabinet.

Figure 21: Component Panel (current)



FUSE TABLE

FUSE	CONFIGURATION X1XX	X2XX
F1	47A0026	47A0049
F2	47A0026	47A0049
F3	47A0049	47A0004
F4	47A0017	47A0017



SECONDARY OPTION

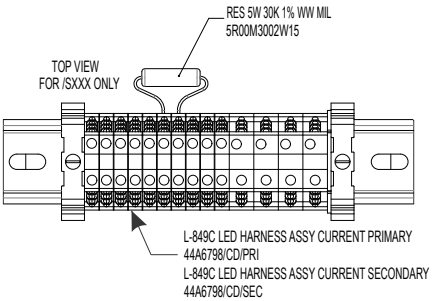
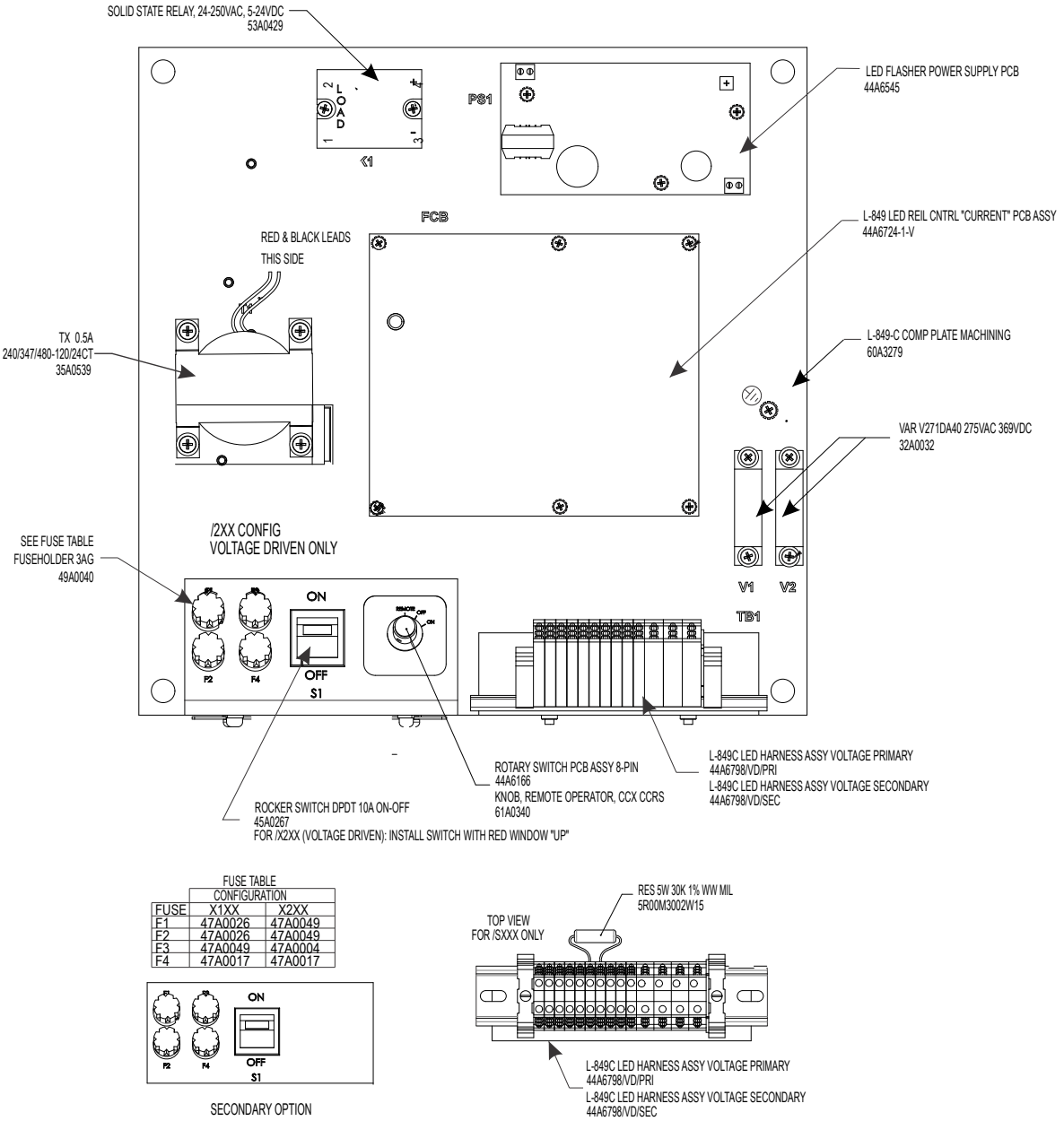


Figure 22: Component Panel (voltage)



FUSE TABLE

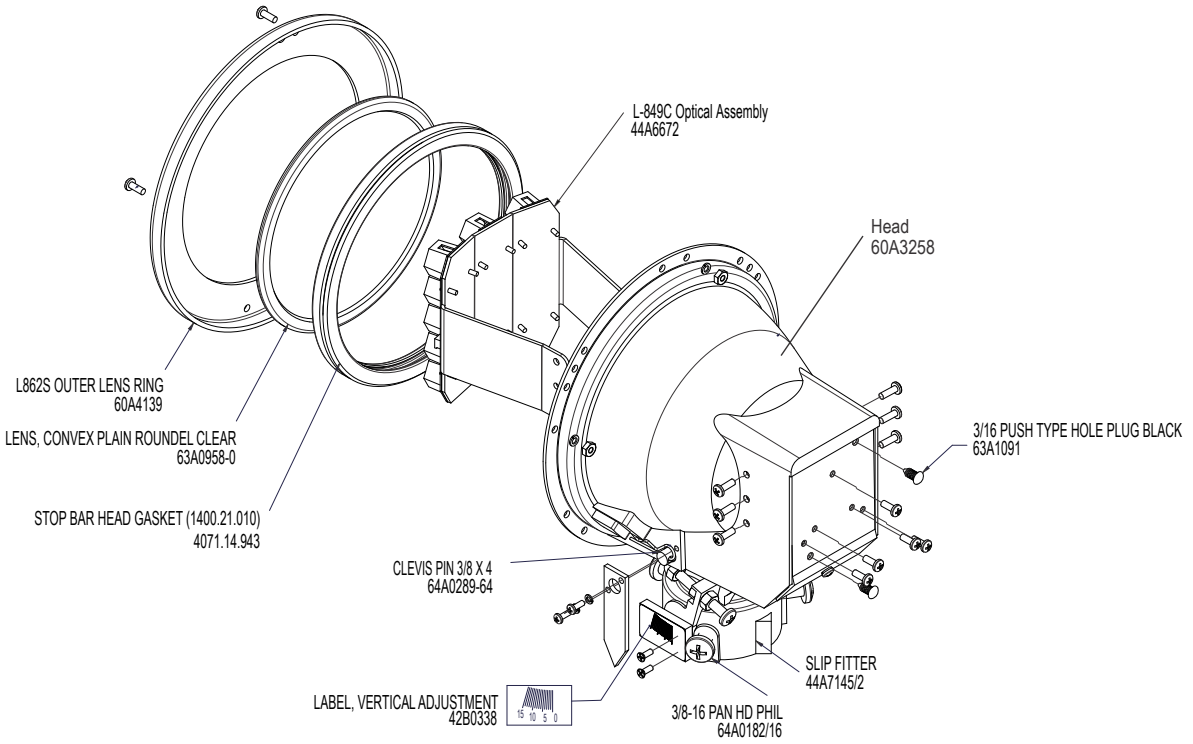
FUSE	CONFIGURATION X1XX	X2XX
F1	47A0026	47A0049
F2	47A0026	47A0049
F3	47A0049	47A0004
F4	47A0017	47A0017

SECONDARY OPTION

7.1.1 Light Head Assembly Part Numbers

See spare parts list for detailed description of parts.

Figure 23: Light Head Assembly



7.2 Spare Parts

Table 11: Spare Parts List for Voltage Powered Units

Part Number	Description	Quantity	Note
44A6724/1/V	Control Board Assembly	1	A
47A0078	Fuse, Panel, F1 and F2, 4A, SB	2	
47A0004	Fuse, Panel, F3, 2A, SB	1	
53A0429	Solid-State Relay, 24-250V AC, 5-24V DC	1	
32A0032	Lightning Arrestor 275Vac	2	
44A6545	LED Flasher Power Supply PCB	1	A
44A6672	LED Optical Assembly (units with 9 LEDs)	1	A
94A0729	LED Optical Assembly replacement kit (units with 15 LEDs)	1	A
69A2964	Head Assembly Door	1	A
47A0049	Fuse 2A 250V SLO BLO	2	
62B0064	2-inch Frangible coupling	1 OR 2	
44A7145/2	Slip Fitter	1	
47A0017	Fuse, Control Board, F1, 1A, SB	1	
47A0215	Fuse, Flasher Power Supply Board, F1, 2A, SB	1	

Table 11: Spare Parts List for Voltage Powered Units (continued)

Part Number	Description	Quantity	Note
47A0017	Fuse, Panel, F4, 1A, SB	1	
45A0269	Interlock Switch, Door, SPST, 10A	1	
Note A: Individual parts not available must be purchased as complete assembly			

Table 12: Spare Parts List for Current Powered Units

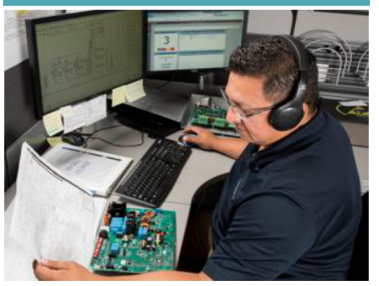
Part Number	Description	Quantity	Note
44A6724/1/C	Control Board Assembly	1	A
47A0026	Fuse, Panel, F1 and F2, 10A, SB	2	
47A0049	Fuse, Panel, F3, 2A, SB	1	
44A7107-1	Power Supply Assembly, PS5	1	A
32A0032	Lightning Arrestor 275Vac	2	
44A6545	LED Flasher Power Supply PCB	1	A
44A6672	LED Optical Assembly (units with 9 LEDs)	1	A
94A0729	LED Optical Assembly replacement kit (units with 15 LED assemblies)	1	A
69A2964	Head Assembly Door	1	A
47A0049	Fuse 2A 250V SLO BLO	2	
62B0064	2-inch Frangible coupling	1 OR 2	
44A7145/2	Slip Fitter	1	
47A0017	Fuse, Control Board, F1, 1A, SB	1	
47A0215	Fuse, Flasher Power Supply Board, F1, 2A, SB	1	
47A0017	Fuse, Panel, F4, 1A, SB	1	
45A0269	Interlock Switch, Door, SPST, 10A	1	
Note A: Individual parts not available must be purchased as complete assembly			

Appendix A: SUPPORT

Our experienced engineers are available for support and service at all times, 24 hour/7 days a week. They are part of a dynamic organization making sure the entire ADB SAFEGATE is committed to minimal disturbance for airport operations.

ADB SAFEGATE Support

Live Technical Support - Americas
If at any time you have a question or concern about your product, just contact ADB SAFEGATE's technical service department. Trained in all areas of system issues, troubleshooting, quality control and technical assistance, our highly experienced Technical support specialists are available 24 hours a day, seven days a week to provide assistance over the phone.
ADB SAFEGATE **Americas Technical Service & Support (US & Canada): +1-800-545-4157**
ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304
During regular business hours, you can also Chat with a Service Technician. We look forward to working with you!
Before You Call
When you have an airfield lighting or system control system problem it is our goal to support airfield maintenance staff as quickly as possible. To support this effort we ask that you have the following information ready before calling.



- The *airport code*
- If not with an airport, then company name (prefer customer id number)
- Contact phone number and email address
- Product with part number preferable or product number
- Have you reviewed the product's manual and troubleshooting guide
- Do you have a *True RMS* meter available (and any other necessary tools)
- Be located with the product ready to troubleshoot

Note
For more information, see www.adbsafegate.com, or contact ADB SAFEGATE Support via email at support@adbsafegate.com or
Brussels: +32 2 722 17 11
Rest of Europe: +46 (0) 40 699 17 40
Americas: +1 614 861 1304. Press 3 for technical service or press 4 for sales support.
China: +86 (10) 8476 0106

A.1 ADB SAFEGATE Website

The ADB SAFEGATE website, www.adbsafegate.com, offers information regarding our airport solutions, products, company, news, links, downloads, references, contacts and more.

A.2 Recycling

A.2.1 Local Authority Recycling

The disposal of ADB SAFEGATE products is to be made at an applicable collection point for the recycling of electrical and electronic equipment. The correct disposal of equipment prevents any potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling. The recycling of materials helps to conserve natural resources. For more detailed information about recycling of products, contact your local authority city office.

A.2.2 ADB SAFEGATE Recycling

ADB SAFEGATE is fully committed to environmentally-conscious manufacturing with strict monitoring of our own processes as well as supplier components and sub-contractor operations. ADB SAFEGATE offers a recycling program for our products to all customers worldwide, whether or not the products were sold within the EU.

ADB SAFEGATE products and/or specific electrical and electronic component parts which are fully removed/separated from any customer equipment and returned will be accepted for our recycling program.

All items returned must be clearly labeled as follows:

- For *ROHS/WEEE* Recycling
- Sender contact information (Name, Business Address, Phone number).
- Main Unit Serial Number.

ADB SAFEGATE will continue to monitor and update according for any future requirements for *EU directives* as and when *EU member states* implement new *regulations* and or *amendments*. It is our aim to maintain our *compliance plan* and assist our customers.

Company Addresses

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