



RELIANCE Elevated Light
Elevated Runway Guard Light L-804(L) (SL-RGL-E)

User Manual

UM-0102, Rev. 1.3, 2024/05/30



A.0 Disclaimer / Standard Warranty

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 C22.2 No.180:13 (R2018) regulations. The CSA directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

All Products Guarantee

ADB SAFEGATE will correct by repair or replacement per the applicable guarantee below, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives ADB SAFEGATE written notice of such defects after delivery of the goods to Buyer. Refer to the Safety section for more information on Material Handling Precautions and Storage precautions that must be followed.

ADB SAFEGATE reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. ADB SAFEGATE further reserves the right to require the return of such goods to establish any claim.

ADB SAFEGATE's obligation under this guarantee is limited to making repair or replacement within a reasonable time after receipt of such written notice and does not include any other costs such as the cost of removal of defective part, installation of repaired product, labor or consequential damages of any kind, the exclusive remedy being to require such new parts to be furnished.

ADB SAFEGATE's liability under no circumstances will exceed the contract price of goods claimed to be defective. Any returns under this guarantee are to be on a transportation charges prepaid basis. For products not manufactured by, but sold by ADB SAFEGATE, warranty is limited to that extended by the original manufacturer. This is ADB SAFEGATE's sole guarantee and warranty with respect to the goods; there are no express warranties or warranties of fitness for any particular purpose or any implied warranties of fitness for any particular purpose or any implied warranties other than those made expressly herein. All such warranties being expressly disclaimed.

Standard Products Guarantee

Products manufactured by ADB SAFEGATE are guaranteed against mechanical, electrical, and physical defects (excluding lamps) which may occur during proper and normal use for a period of two years from the date of ex-works delivery, and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.



Note

See your applicable sales agreement for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

FAA Certified products manufactured by ADB SAFEGATE

ADB SAFEGATE L858 Airfield Guidance Signs are warranted against mechanical and physical defects in design or manufacture for a period of 2 years from date of installation, per FAA AC 150/5345-44 (applicable edition).

ADB SAFEGATE LED products (with the exception of obstruction lighting) are warranted against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years from date of installation, per FAA EB67 (applicable edition). These FAA certified constant current (series) powered LED products must be installed, interfaced and powered with and through products certified under the FAA Airfield Lighting Equipment Program (ALECP) to be included in this 4 (four) year warranty. This includes, but is not limited to, interface with products such as Base Cans, Isolation Transformers, Connectors, Wiring, and Constant Current Regulators.



Note

See your sales order contract for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

Liability



WARNING

Use of the equipment in ways other than described in the catalog leaflet and the manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in the manual.

ADB SAFEGATE cannot be held responsible for injuries or damages resulting from non-standard, unintended uses of its equipment. The equipment is designed and intended only for the purpose described in the manual. Uses not described in the manual are considered unintended uses and may result in serious personal injury, death or property damage.

Unintended uses, includes the following actions:

- 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.
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards if not in contradiction with the general rules.
- 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.

Copyright Statement

This manual or parts thereof may not be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, nor otherwise, without the author's prior written consent.

This manual could contain technical inaccuracies or typographical errors. The author reserves the right to revise this manual from time to time in the contents thereof without obligation of the author to notify any person of such revision or change. Details and values given in this manual are average values and have been compiled with care. They are not binding, however, and the author disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights. The information given does not release the buyer from making their own experiments and tests.

TABLE OF CONTENTS

1.0 Safety	1
1.1 Safety Messages	1
1.1.1 Introduction to Safety	2
1.1.2 Intended Use	3
1.1.3 Material Handling Precautions: Storage	3
1.1.4 Operation Safety	3
1.1.5 Maintenance Safety	4
1.1.6 Material Handling Precautions, ESD	4
1.2 Safety instructions	4
2.0 About this manual	5
2.1 Abbreviations and Terms	5
3.0 Introduction	7
3.1 RELIANCE IQ Elevated Runway Guard Light	7
3.2 Delivery of the light	7
3.3 Description of the light	7
3.3.1 Electrical supply	8
3.3.2 RELIANCE IQ and selection of isolation transformer	8
3.3.3 Transformer selection guidelines	9
4.0 Installation	11
4.1 Install/remove the light from its support	11
4.2 Adjust the light	13
4.2.1 Adjustment on FAA standing	13
4.2.2 Adjustment on IEC standing	14
4.3 Applying a system solution	15
5.0 Operation	17
5.1 Technology description	17
5.1.1 RELIANCE Intelligent Lighting Technology	17
5.1.2 RELIANCE Monitoring Option	17
5.1.3 RELIANCE IQ and the 2A Concept	17
5.1.4 Sensor Interface Unit (SIU)	17
5.1.5 Network Concentrator Unit (NCU)	17
5.1.6 Series Circuit Modem (SCM)	17
5.1.7 Series Circuit Filter (SCF)	17
5.1.8 Control System Interface	18
5.2 Programming RELIANCE IQ	18
5.2.1 Hardware Equipment Set-up	18
5.2.2 Software Programming	20
5.3 Connection in a Series Circuit	24
5.3.1 Operational characteristics	24
5.3.2 Power on or Default state	24
5.3.3 Safe state	24
5.3.4 Command memory	24
5.3.5 SoftON/SoftOFF	24
6.0 Maintenance	25
6.1 Basic Maintenance Program	25
6.2 Workshop maintenance	25
6.2.1 Replace the glass	26
6.2.2 Replace LED PCB	26
7.0 Spare parts	27
7.1 RELIANCE IQ elevated light 110/230V	27
7.2 RELIANCE IQ elevated light version 1, trafo convertor	28
7.3 RELIANCE IQ elevated light version 2, high-power convertor & Mon	29

8.0 Accessories	31
9.0 SUPPORT	33
9.1 ADB SAFEGATE Website	34
9.2 Recycling	34
9.2.1 Local Authority Recycling	34
9.2.2 ADB SAFEGATE Recycling	34

List of Figures

Figure 1: Base plate and coupling	11
Figure 2: Horizontal adjustment	13
Figure 3: Vertical adjustment	13
Figure 4: Horizontal adjustment	14
Figure 5: Vertical adjustment	14
Figure 6: RGL-E Monitored solution	15
Figure 7: RGL-E solution with summary alarm outputs	15
Figure 8: RGL-E solution with alarm presentation	16
Figure 9: LPC and SCM unit	18
Figure 10: PC and SCM unit	19
Figure 11: Back of the LPC and RELIANCE IQ product	19
Figure 12: Series circuit connection	24

List of Tables

Table 1: Maintenance tasks 25

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.



ELECTROSTATIC SENSITIVE DEVICES

This equipment may contain electrostatic devices.

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.
 - CSA - C22.2 No.180:13 (R2018) Series isolating transformers for airport lighting
 - 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 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

1.1.5 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

1.1.6 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

1.2 Safety instructions



Prior to the commencement of work all electrical services must be isolated from the supply and connected to earth.

Full details of the work involved must be given to the authorized person responsible for the electrical engineering services at the airport with regard to the duration of the work and so on.

It is recommended that prior to starting any cutting work the nature and location of services such as cable ducts and so on. Should be identified any installation or maintenance work should only be carried out by trained and experienced personnel.

High intensity! Do not stare directly into the light beam at close distance.

2.0 About this manual

This document includes RELIANCE Runway Guard Light-Elevated (RGL-E) information with a focus on safety, installation and maintenance procedures.

For more information, see www.adbsafegate.com.



Note

It is very important to read this document before any work is started.

2.1 Abbreviations and Terms

Abbreviation	Term
ASP-SC	Airfield Smart Power SafeControl
A-SMGCS	Advanced Surface Movement Guidance and Control System
CAA	Civil Aviation Authority
CCR	Constant Current Regulator
FAA	Federal Aviation Administration
ICAO	International Civil Aviation Organization
IEC	International Electrotechnical Committee
LED	Light Emitting Diode
LMS	Light Monitor and Switch unit
NATO	North Atlantic Treaty Organization
NCU	Network Concentrator Unit
OMNI	Omni-directional light
SCF	Series Circuit Filter
SCM	Series Circuit Modem
SMGCS	Surface Movement Guidance and Control System
SSU	System Switch Unit
STAC	Service Technique de l'Aviation Civile (France)
STANAG	Standardization Agreement (NATO)

3.0 Introduction

The purpose of the runway guard light is to warn pilots, and drivers of vehicles when they are operating on taxiways, that they are about to enter an active runway. The RELIANCE IQ Runway Guard Light-Elevated (RGL-E) is an alternately flashing yellow LED-based light fixture. The light fixture is available for connection in a series or parallel circuit.

The RELIANCE IQ RGL-E has integrated IQ technology for flashing, monitoring and control.

The light has many advantages and special features:

- LED-based light source
- Individual control and monitoring
- 2A concept based features
- Design for harsh environments
- Optical head adjustment
- CCR compatibility
- One external connector
- Light intensity control using photocell

3.1 RELIANCE IQ Elevated Runway Guard Light

- Elevated Runway Guard Light L-804(L) (SL-RGL-E)



3.2 Delivery of the light

Each unit is supplied completely assembled, tested and sealed, ready for installation.

The light is available in a 6.6A constant current version or in VAC version and can be supplied with either 2" NPS or 2" BSP breakable couplings.

Each unit is individually packed in a durable cardboard box, labeled with its reference name and code.

3.3 Description of the light

The RELIANCE IQ RGL-E is an alternately flashing yellow taxiway light fixture.

3.3.1 Electrical supply

Electrical power	Designation
6.6 A / 2A constant current	RELIANCE Mon (6.6 A) / IQ (6.6/2 A)
90-260 Vac constant voltage	RELIANCE RGL-E.....+VAC

3.3.2 RELIANCE IQ and selection of isolation transformer

An Isolation Transformer in a series system has a specified current ratio (normally 6.6/6.6 A) that is considered to be fixed as long as the load does not exceed the nominal wattage of the transformer.

Most manufacturers specify a certain *spare capacity* (20-30%).

When the load exceeds the nominal wattage, the transformer begins to saturate, the current ratio drops as a function of the overload. To avoid this current drop (intensity drop) the nominal wattage should not be exceeded. It is even more important in a system with RELIANCE IQ where the IQ function adds a secondary load for its power consumption.

When dimensioning the isolation transformer size for a 2A-system (i.e. a series circuit with SLIQ2A that only is supposed to run at 2A), it is important to know that the regular method by adding up the total wattage on the isolation transformer secondary side, cannot be used. This is because a standard isolation transformer 6.6A/6.6A is marked with a maximum wattage running at 6.6A. Following the Lenz Law of Induction, it can be seen that the dimensioning property of a transformer is instead the total voltage, not the wattage, of the secondary side of the transformer in a 50/60Hz series circuit system. That will get the consequence in a 2A-system, that the wattage marked on a 6.6A/6.6A isolation transformer must generally be multiplied by the factor 0.3 to be able to find the total wattage that can be supplied from the transformer without saturating.

The secondary load of an isolation transformer in a RELIANCE IQ system includes:

- Lamp load
- Cable losses (extension)
- IQ function load (Option)

3.3.2.1 Lamp load

The lamp load is the total wattage of the lamp or lamps connected in series.

3.3.2.2 Cable losses (Extension)

The (extension) cable between the isolation transformer and the lamp adds losses that cannot always be ignored, for example:

2.8-6.6A Operation	
2.5 mm ² Cu-wire:	0.6 W/m
4 mm ² Cu-wire:	0.4 W/m
2A Operation	
2.5 mm ² Cu-wire:	0.06 W/m
4 mm ² Cu-wire:	0.04 W/m



Note

Cable lengths should not exceed 100 m.

3.3.2.3 IQ function load

The IQ function load can be divided into:

Stationary lamp load:	32 W	This load must be considered, when calculating the total CCR load.
Dynamic IQ load:	12 W	This load has to be included when calculating the secondary load of the transformer.
Total load:	44 W	This load must be considered, only when calculating the secondary load of the Isolation Transformer.

3.3.3 Transformer selection guidelines

	Cable area 2.5 mm ²	Cable area 4 mm ²	Total load (W)	Transformer (W)
MONITORED	* Calculate standard cable losses		32	min 65 *
RELIANCE IQ				
	<50 m		74	100
	50-100 m		104	150
		<50 m	64	100
		50-100 m	84	100
RELIANCE IQ (2A)				
	<50 m		47	200
	50-100 m		50	200
		<50 m	46	200
		50-100 m	48	200

4.0 Installation

This section describe the different steps for successful installation of the light. Before you start, make sure you have read and understand [Safety instructions](#).

The following tools and accessories are required for installation and removal of the unit:

Standard tools and accessories:

- Allen key
- Socket wrench
- A wrench/spanner of 50 mm
- One brush or cloth



CAUTION

For safety measure, the light feature must be connected to protective earth.



Note

Provided that the base intended to receive the light fixture has been properly installed, no other specific tool is required.

The installation steps refer to:

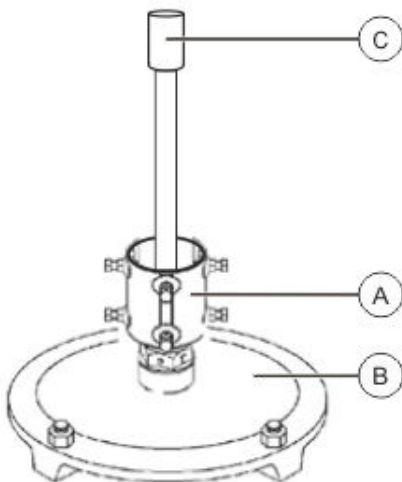
1. Installing/removing the light from its support
2. Adjusting the light
3. Applying a system solution

4.1 Install/remove the light from its support

Install

1. Open the box and verify that the characteristics of the light fixture correspond to your design requirements, such as type, actual installation position, color, direction and electrical supply.
2. Prepare the installation by fixing the appropriate coupling (A) to the base plate (B), then pull out the power supply cable (C), see [Figure 1](#).

Figure 1: Base plate and coupling



3. Carefully clean all contact surfaces of the light fixture and the support.

4. Connect the light to an earth connection by using the hole foreseen in Figure 1 as indicated with an arrow, OR make sure the mounting system (pole + base plate) is well grounded.
5. Attach the light to the fixing accessory. For vertical and horizontal adjustment, see [Adjustment on IEC standing](#) and [Adjustment on FAA standing](#).
6. Lock the light fixture with the setting screws using a wrench.

Remove

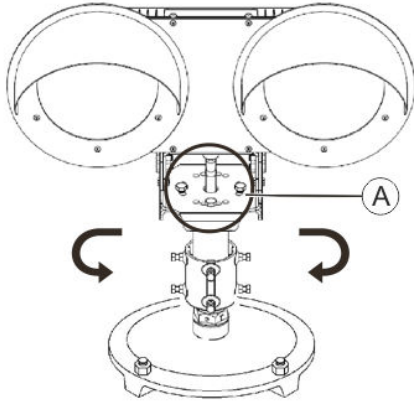
1. Loosen, without removing, the setting screws on the frangible coupling with a wrench.
2. Remove the light from its support.
3. Disconnect the light plug from the power supply cable plug.

4.2 Adjust the light

4.2.1 Adjustment on FAA standing

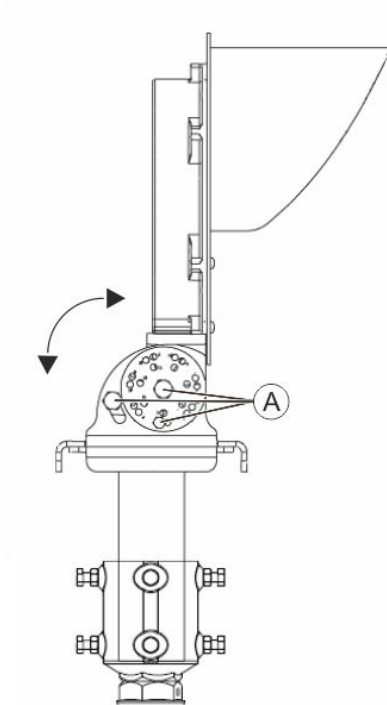
1. Adjust the light to the horizontal using the horizontal setting screws (A), see [Figure 2](#).

Figure 2: Horizontal adjustment



2. Adjust the light to the vertical using the vertical setting screws (A), see [Figure 3](#).

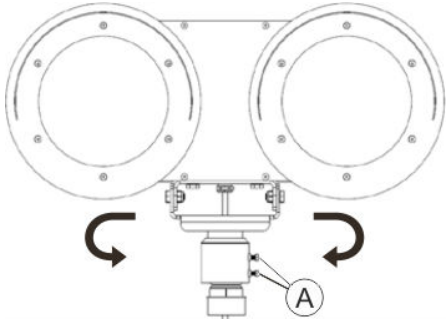
Figure 3: Vertical adjustment



4.2.2 Adjustment on IEC standing

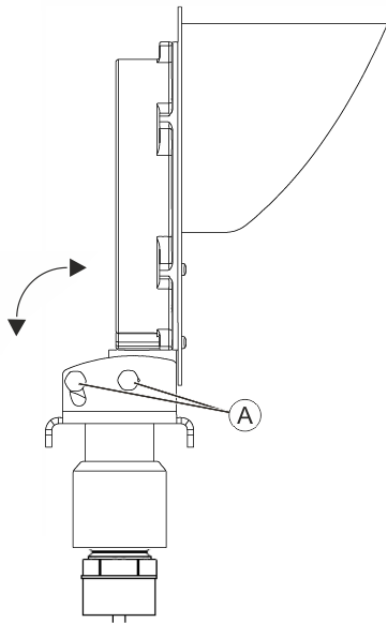
1. Adjust the light to the horizontal using the horizontal setting screws (A), see [Figure 4](#).

Figure 4: Horizontal adjustment



2. Adjust the light to the vertical using the vertical setting screws (A), see [Figure 5](#).

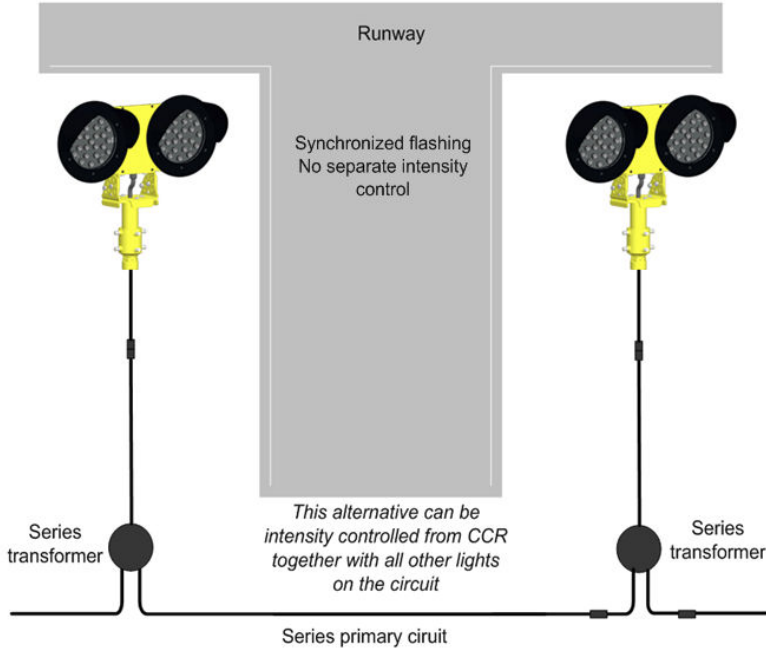
Figure 5: Vertical adjustment



4.3 Applying a system solution

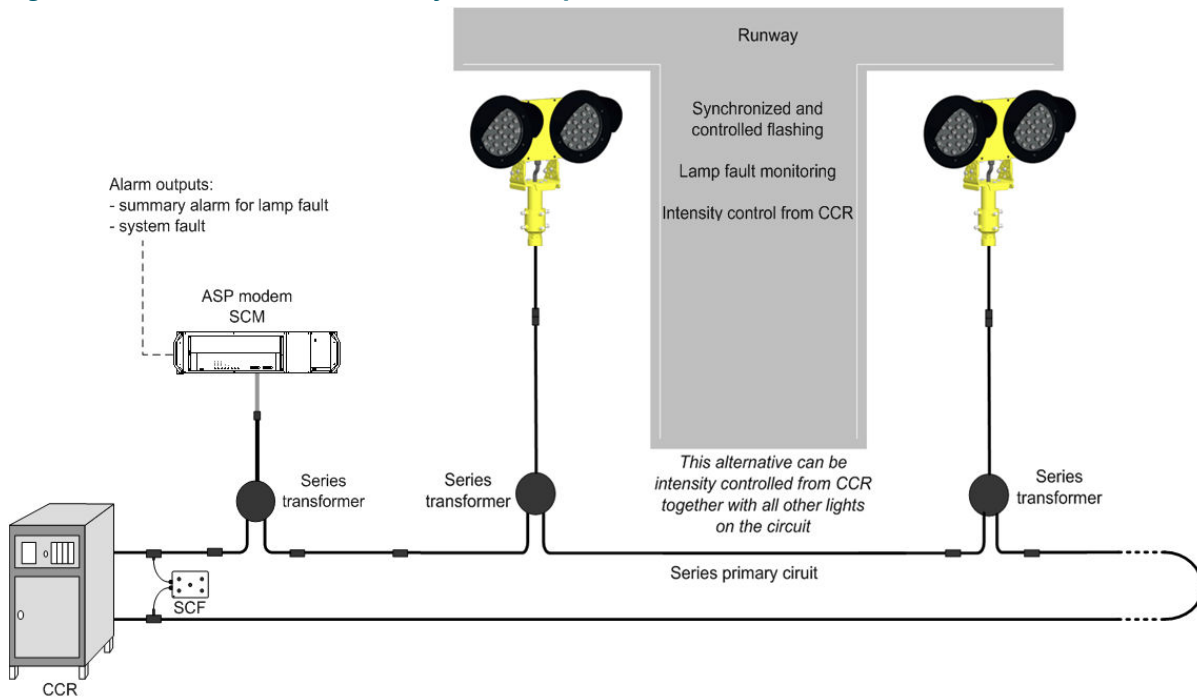
When installing the light, different system solutions can be applied, see [Figure 6](#).

Figure 6: RGL-E Monitored solution



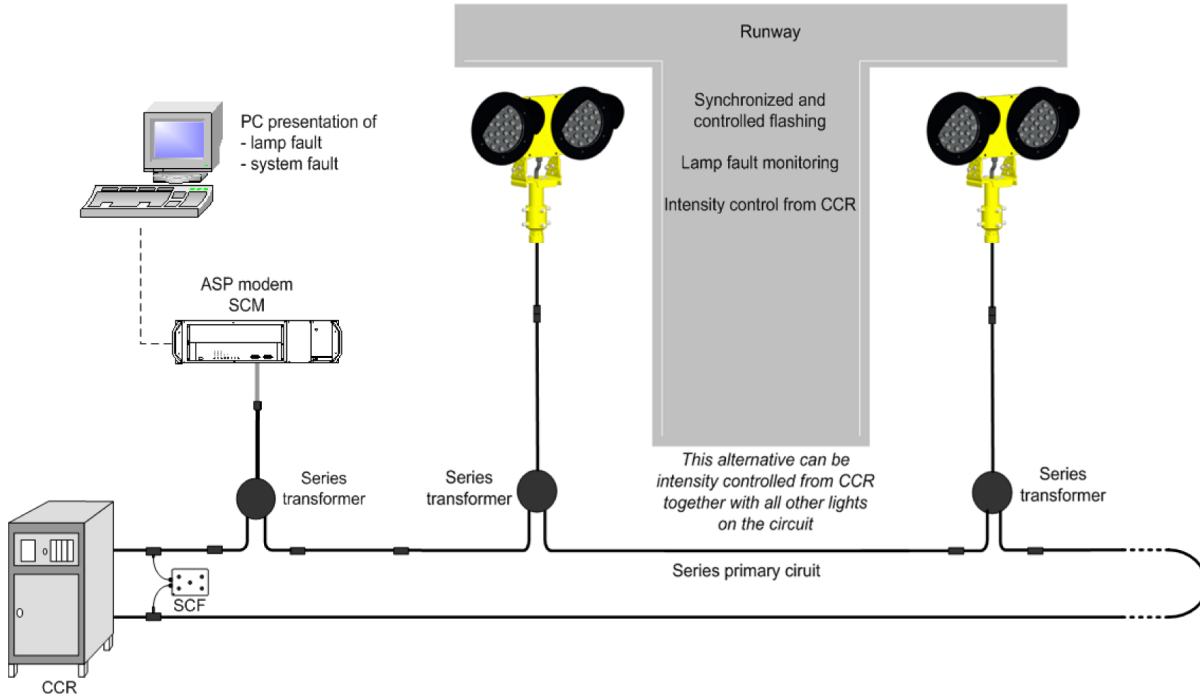
With summary alarm outputs for lamp faults and system fault, see [Figure 7](#).

Figure 7: RGL-E solution with summary alarm outputs



With alarm presentation, on a PC, of individual lamp and system faults, see [Figure 8](#).

Figure 8: RGL-E solution with alarm presentation



5.0 Operation

This section describe the different technologies that enable the operation of the RGL-E light and instructions regarding programming and connection of the light. Before you start, make sure you have read and understand [Safety instructions](#).

5.1 Technology description

5.1.1 RELIANCE Intelligent Lighting Technology

ADB SAFEGATE RELIANCE Airport Lighting Control and Monitoring Systems (ALCMS) is designed to provide individual monitoring of airfield lighting using the series circuit as a means of communicating status information from airfield lights and sensors. The same concept is used for lighting control providing the foundation for SMGCS or A-SMGCS, which includes for example automation of stop bars with or without sensors, taxiway guidance (routing) in combination with status monitoring. For more information, see RELIANCE IL documentation.

5.1.2 RELIANCE Monitoring Option

The monitoring option is available. You can use the monitoring option with the Lamp Fault Detection of Constant Current Regulators or with Individual Light Control and Monitoring Systems (ILCMS) that check the status of the light by performing a continuity test on the secondary of the ILCMS remote module. The monitoring option does a check on the light. In case of a failure of the light, the failure is detected by the electronics embedded in the light.

5.1.3 RELIANCE IQ and the 2A Concept

RELIANCE IL, using the IQ concept, is designed to provide selective switching and/or monitoring of airfield lighting by use of an addressable switching unit inside each individually controlled light. A RELIANCE IQ light is connected to the secondary side of a standard series circuit isolation transformer. Communications to/from a RELIANCE IQ light uses a unique power line communication technique developed by ADB SAFEGATE where the communication signals are superimposed on the series circuit current.

In a 2A system the CCR is set at a low constant current and RELIANCE IL manages the intensity level of every single RELIANCE IQ light fixture. Furthermore the RELIANCE IQ light fixtures can have different light intensity levels in the same circuit.

5.1.4 Sensor Interface Unit (SIU)

Sensors for presence- and direction detection of aircraft and vehicles on the airfield can easily be interfaced to RELIANCE IL using a SIU. The SIU communicates the detect/no-detect status signals as well as its own status to the series circuit in the same manner as the RELIANCE IQ. The SIU is also connected to the secondary side of a standard isolation transformer using a standard 2-pin FAA-style connector. Connection to the sensor is established using an IP68 rated 7-pin connector. The SIU can also supply the sensor with DC-voltage from a built-in current to voltage converter.

5.1.5 Network Concentrator Unit (NCU)

The NCU concentrates all incoming status information from the field, both lamp and sensor statuses. The NCU includes redundant capability.

5.1.6 Series Circuit Modem (SCM)

The SCM is an interface to the series circuit which receives command from an NCU. The SCM connects to the series circuit via a standard isolation transformer and to an NCU via standard RS485 or RS232 serial communication.

5.1.7 Series Circuit Filter (SCF)

The SCF is connected across the Constant Current Regulator (CCR) series circuit output and is used to contain the communication signalling within the airfield circuit and minimize feedback into the regulator.

5.1.8 Control System Interface

The NCU operates as RELIANCE IL main interface interpreting commands sent from the Host/Supervisor System and in turn controlling the appropriate RELIANCE IQ as directed. It maintains all lighting and error status, sensor detections as reported from the airfield components and is the central point of RELIANCE IL as operated from each vault. Individual lights can be grouped in lighting segments spanning one or more series circuits, for example an interleaved stop bar. In turn, the NCU provides alarm status for percentage and adjacent lamp failure within those defined lighting segments per requirements for low visibility operations. Airfield lighting and RELIANCE IL component status are constantly monitored and updated to the Host/Supervisor system upon occurrence.

5.2 Programming RELIANCE IQ

RELIANCE IQ is delivered as a pre-programmed unit with field position information and monitor/control parameter settings.

The RELIANCE IQ can also be programmed during maintenance or updated remotely from the sub-station if installed in a circuit using the Wake on Circuit function.

5.2.1 Hardware Equipment Set-up

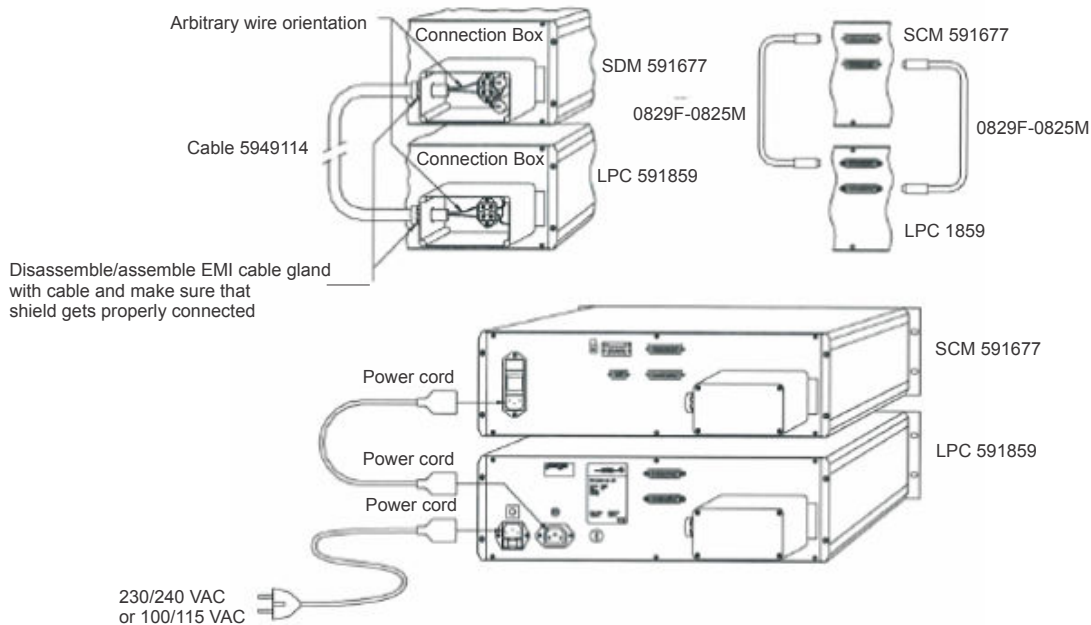
The following hardware is required for RELIANCE IQ programming:

- SCM – Series Circuit Modem
- LPC – RELIANCE IQ/Sensor Interface Unit (SIU) Programming Control unit
- Cable(s) – power and communication
- PC – including AMT, the software maintenance tool for programming

Connect the LPC unit to the SCM unit

The following are instructions how to set up the hardware equipment required for RELIANCE IQ programming.

Figure 9: LPC and SCM unit

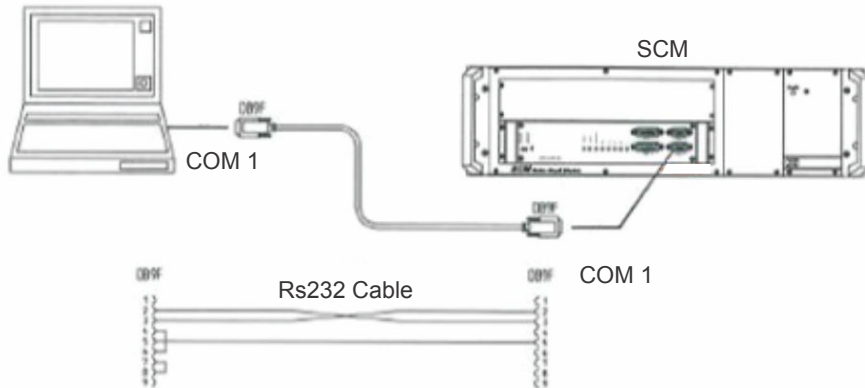


1. Make sure the voltage selector is in the appropriate position: 120 or 240 V.
2. Connect the LPC unit to the SCM unit using the cables supplied. Connections are made at the rear of each unit.

Connect a PC to the SCM unit

Using the cable supplied (RS-232), connect the shorter cable end with LOAD/RESET (591836) to the PC and the longer cable end to the LPC.

Figure 10: PC and SCM unit



Note

For more information, see the marking on the LOAD/RESET box.

Connect the LPC to a RELIANCE IQ product

- Using the cable supplied (594115), connect to **Output 1** or **Output 2** to a RELIANCE IQ product.



Note

The short circuit plug should be connected to the output NOT in use, either Output 1 or Output 2. The two outputs are connected in series to give equal functionality.

- Make sure the **Remote button** (2) on the LPC is NOT pressed in (off) before you start programming.
- Turn on the **Power** button (3).

Figure 11: Back of the LPC and RELIANCE IQ product



5.2.2 Software Programming

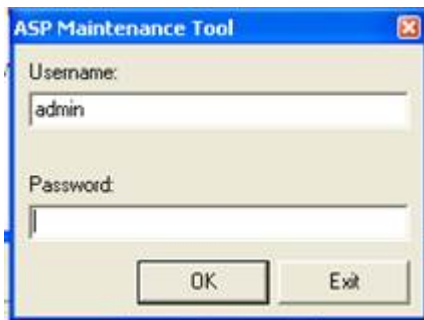
AMT software, the RELIANCE Intelligent Lighting maintenance tool, is required for RELIANCE IQ product configuration. The following are instructions how to use AMT software (version 3.3 or later) for RELIANCE IQ product configuration.

Program a RELIANCE IQ product

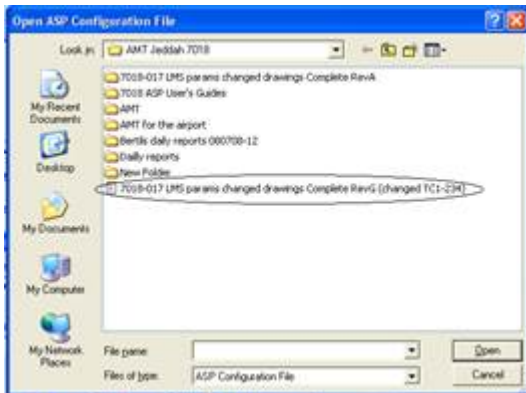
1. Make sure that the **Remote button** on the LPC is **NOT** pressed in (off) before you start programming.
2. Start the AMT program on the PC. If the **Can't open COM port** window appears, click **OK**.



3. Enter Username and Password, for example **guest** and **adbsafegate**, then click **OK**.



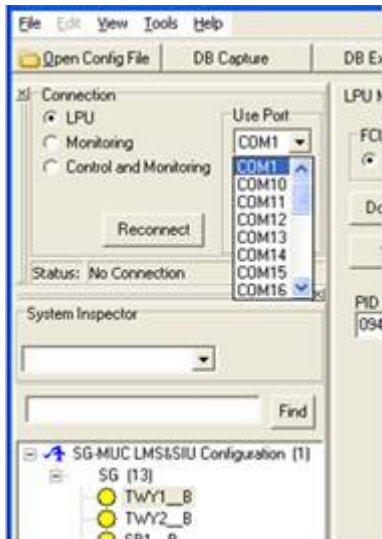
4. Chose the text file with the required airport and light to use, then click **Open**.



5. If required, select to use the correct COM-port.

i Note

To check which COM-port is in use on your PC, go to windows **Start**, right-click on **My computer**, then select **Properties**. Select the Hardware tab and click **Device Manager**. Select Ports (COM & LPT) to view the COM-port in use, for example USB to Serial bridge (COM 2).



6. Set the connection to **LPU**.

i Note



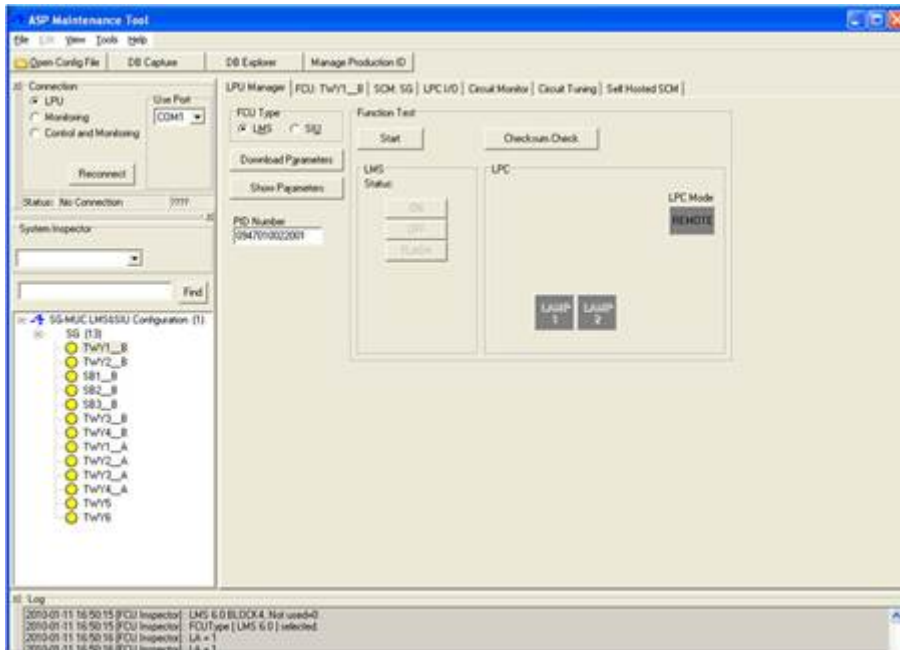
If an **RS232 Error** window appears, click **OK**.

7. Check the **LPU** tab (default) appears in the upper area of the window.



Note

Product may require configuration of both sides or only one side. Parameter name __A is for A-side and __B is for B-side of RELIANCE IQ.



- 8. From the configuration list, select the circuit name, for example SG (11) and then the light parameter name to configure, for example SB1_B.
- 9. Check the bottom of a RELIANCE IQ for the Production ID (PID) number.

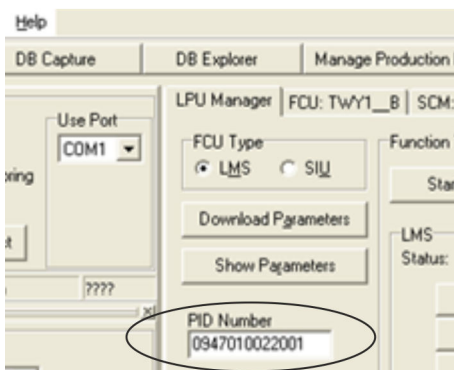


- 10. From the LPU Manager tab, enter the PID number in the text field, manually or by using a bar code reader.



Note

The number corresponds to the product information number found on the bottom of the RELIANCE IQ, as in the previous step.



11. To start an automatic parameter download, click **Download Parameters**.



12. Click **Continue** to confirm parameter download.



13. The SCM unit should now sound and configuration progress information appear in the log at the bottom of the window.

Note If there is no sound from the SCM during configuration, check settings for example COM port or cables.

14. When downloading the parameters is complete, a checksum check is performed to ensure the RELIANCE IQ has received the new parameters without fault. If the unit without fault, click **OK** and the unit is now ready to use.



15. Disconnect the RELIANCE IQ product cable.

16. Turn off the SCM, LPC for at least 30 seconds to fully power down the RELIANCE IQ or when no more RELIANCE IQ products are to be configured.

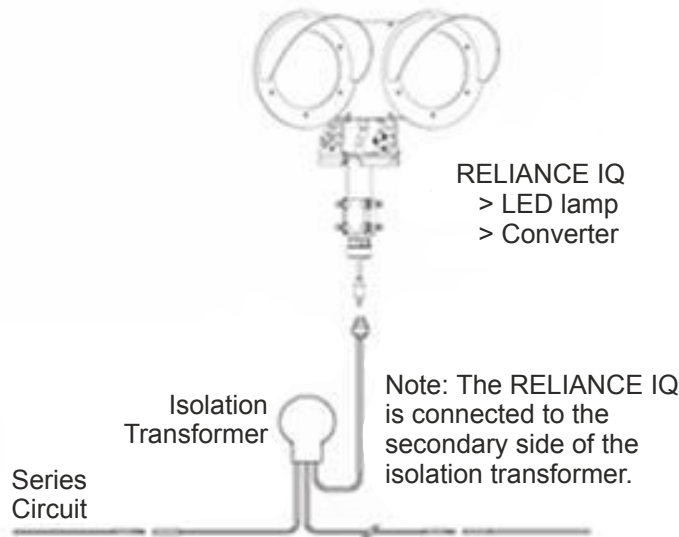
17. Turn on the LPC to power up the RELIANCE IQ, for example an RGL set to flash as default, should flash.

5.3 Connection in a Series Circuit

5.3.1 Operational characteristics

The extent of use of all RELIANCE IQ functionality is determined by the application. All functionality described in this document is not necessarily used at a specific installation. This section is a summary of common functionality available in RELIANCE IQ.

Figure 12: Series circuit connection



5.3.2 Power on or Default state

IQ is configured to set the lamp to a predefined state when the series circuit is energized. This feature is called Default state and the options are LAMP ON, LAMP OFF or LAMP FLASHING. The option to select depends on the light function for a RELIANCE IQ light fixture and the operative requirements.

5.3.3 Safe state

If communication between the RELIANCE IQ and the SCM is interrupted or lost, IQ functionality, after a programmable timeout, sets the lamp to a predefined state known as Safe state. Safe state can be set to **LAMP ON, LAMP OFF, LAMP FLASHING** or **no change**.

5.3.4 Command memory

When current in the series circuit is lost, for example if a CCR is turned off or for any other reason, RELIANCE IQ remembers the current lamp status for a limited amount of time. The IQ can be configured, once current is restored in the circuit, to set the lamp to the previous state, typically the last commanded state before a power loss. This feature, when enabled, overrides the default state.

It is possible to apply a condition based on the amount of time current was lost. The RELIANCE IQ sets the lamp to the default state if current was restored beyond this time limit. The time limit is programmable from 1 to 20 seconds approximately.

5.3.5 SoftON/SoftOFF

The RELIANCE IQ can be programmed to delay the physical turning on or off of the lamp upon reception of a command from the SCM. The purpose of **SoftON/SoftOFF** is to mitigate the sudden load change to which the CCR is subjected when a large portion of the load is commanded on or off with a single command. The command acknowledge from the RELIANCE IQ is unaffected, and thereby neither is the response time. Without this feature it may not be possible to turn on/off all or most of the lights on a circuit with a single command, without the CCR tripping because of over- or under current.

The physical delay is programmable on an individual level in 10ms increments. There is no response time impact when **SoftON/SoftOFF** is enabled.

6.0 Maintenance

This section describe the different steps for the maintenance of the light. Before you start, make sure you have read and understand [Safety instructions](#).

Find out the location of the light unit that needs maintenance. If the purpose is to replace an existing light unit with new one, make sure that corresponding unit is available.



WARNING

When a light has been removed from its base, the base must either be fitted with a cover or a reserve light put in its place.

It is recommended that only authorized personnel disassemble lights with prior agreement from ADB Safegate.

6.1 Basic Maintenance Program

There are recommended maintenance tasks to ensure that the equipment is in correct operating condition.

Table 1: Maintenance tasks

Weekly	<ul style="list-style-type: none"> • Visual inspection of the light fixture. • Removal of dust from external surfaces of the light fixture.
Monthly	<ul style="list-style-type: none"> • Check of the optical window, check for mechanical damage. • Check for proper fixing of the light fixture in its base.
Yearly	<ul style="list-style-type: none"> • Detailed inspection of the light fixture. • Check of the body resistance, check for mechanical damage (for example cracks around prism windows). • Clean of the optical windows.

A daily function check is referred to in the document:

ICAO, Airport Services Manual Part 9, Airport Maintenance Practice and FAA AC 150/5340-26A, Maintenance of airport visual aids facilities.

The light fixture is designed for outdoor operation, however storing the light fixture outside without using it is a risk for damage to light fixture components. For a longer storage time (more than a week), it is recommended to store the light fixture indoors in a dry and dust free environment and at room temperature. Proper storage ensures trouble free replacement procedures. It is strongly recommended not to store any electrical equipment outside.

6.2 Workshop maintenance

Before you start, make sure you have read and understand [Safety instructions](#).

The workshop maintenance refers to following:

- Replacing the glass
- Replacing the LED Printed Circuit Board (PCB)

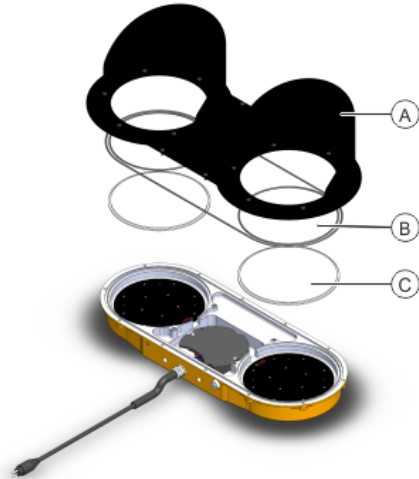
6.2.1 Replace the glass

Remove

1. Disassemble the front plate (A).
2. Remove the O-ring gaskets and the washer gaskets (B).
3. Remove the glass (C).

Replace

1. Place new the glass (C) with the milled surface up in position.
2. Place new O-ring gaskets and washer gaskets (B) in position.
3. Place the front plate (A) in position.
4. Fasten the screws on the front plate with a torque of 6.5Nm.



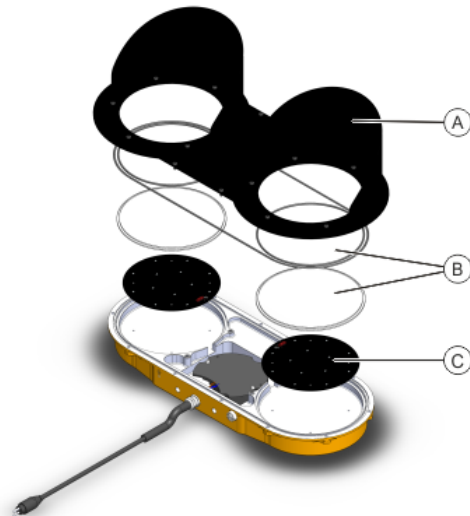
6.2.2 Replace LED PCB

Remove

1. Disassemble the front plate (A).
2. Remove the gaskets and the glass (B).
3. Unscrew the light fixture screws in the LED PCB.
4. Disconnect the cable to the LED PCB (C) and remove the LED PCB.

Replace

1. Connect the cable to the LED PCB (C) unit and place it in position.
2. Fasten the screws on the LED PCB.
3. Assemble the glass and the gaskets (B).
4. Fasten the screws on the front plate (A).



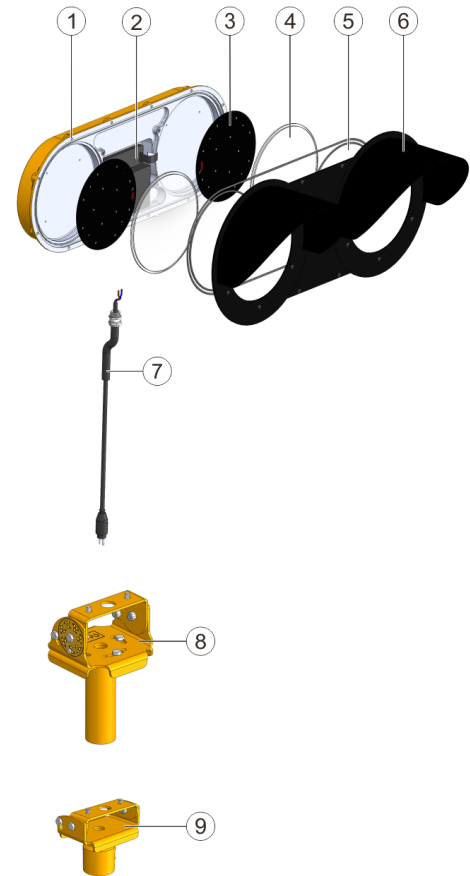
7.0 Spare parts

Spare parts are available for Airfield Lighting lights.

Note
Contact ADB SAFEGATE for assistance with ordering spare parts.

7.1 RELIANCE IQ elevated light 110/230V

Description	Quantity per		Order Code SGE.SPXXXXX
	fitting	code	
1 Housing	1	1	15531
1, 2, 7 Converter unit 90-260 VAC 50/60Hz	1	1	15645
3 LED-pcb ¹	2	2	15534
4 Front glass	2	2	15535
5 Gasket kit (1x463 mm, 2x204 mm and 4 bonded seals)	1	10	15536
6 Front plate with visors	1	1	15537
7 230 VAC cable with cable gland and protective tube	1	10	15646
8 FAA stand	1	1	15540
9 IEC stand	1	1	15539

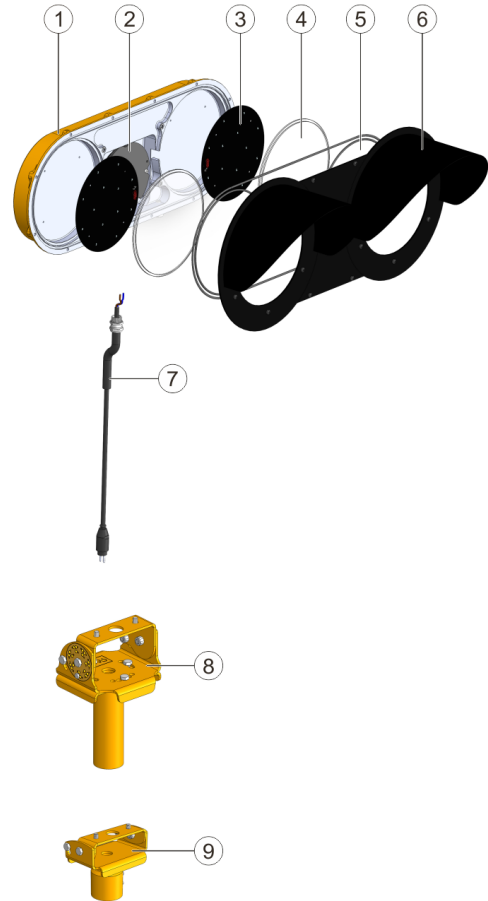


Notes

¹ No longer available.

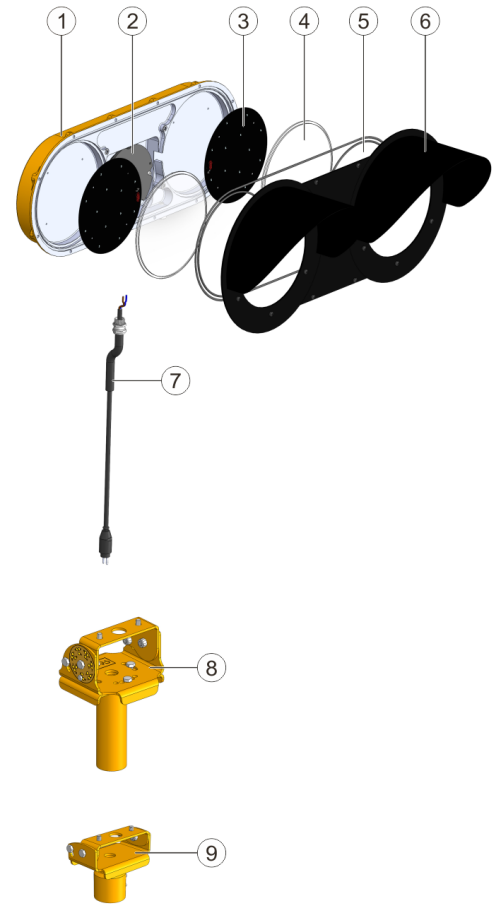
7.2 RELIANCE IQ elevated light version 1, trafo convertor

Description	Quantity per		Order Code SGE.SPXXXXX
	fitting	code	
1 Housing	1	1	SGE.SP15531
1, 2a, 3, 7, 10 Housing with IQ converter unit 6.6A/2A 50Hz, cable (style 1/L-823 connector), cable gland and protection tube, LED board and connector	1	1	SGE.SP19183
1, 2b, 3, 7, 10 Housing with IQ converter unit 6.6A/2A 60Hz, cable (style 1/L-823 connector), cable gland and protection tube, LED board and connector	1	1	SGE.SP19184
4 Front glass	2	2	SGE.SP15535
5 Gasket kit (1x463 mm, 2x204 mm and 4 bonded seals)	1	10	SGE.SP15536
6 Front plate with visors	1	1	SGE.SP15537
7 Cable (style 1/L-823 connector) with cable gland and protection tube	1	10	SGE.SP15538
8 FAA stand	1	1	SGE.SP15540
9 IEC stand	1	1	SGE.SP15539



7.3 RELIANCE IQ elevated light version 2, high-power convertor & Mon

Description	Quantity per		Order Code	
	fitting	code	Code ending '1'	Code ending '2'
1 Housing ¹	1	1	SGE.SP15531	
1, 2a, 3, 7, 10 Housing with IQ converter unit 6.6A/2A 50Hz, cable (style 1/L-823 connector), cable gland and protection tube. LED board and connector	1	1	SGE.SP19183	N/A
1, 2a, 7 Housing with IQ converter unit 6.6A/2A 50Hz, cable (style 1/L-823 connector), cable gland and protection tube.	1	1	N/A	SP.013239
1, 2a, 3, 7, 10 Housing with IQ converter unit 6.6A/2A 50Hz, cable (style 1/L-823 connector), cable gland and protection tube. LED board and connector	1	1	SGE.SP19184	N/A
1, 2a, 7 Housing with IQ converter unit 6.6A/2A 60Hz, cable (style 1/L-823 connector), cable gland and protection tube	1	1	N/A	SP.013240
1, 2c, 7 Housing with MON converter unit 6.6A/2A 50Hz, cable (style 1/L-823 connector), cable gland and protection tube			N/A	SP.013241
1, 2d, 7 Housing with MON converter unit 6.6A/2A 60Hz, cable (style 1/L-823 connector), cable gland and protection tube			N/A	SP.013242
3 LED-board & LED Cable 150mm (IQ HPC Convertor)	2	2	SP.013243	
3 LED-board & LED Cable 150mm (Fail Open)	2	2	N/A	SP.013247
4 Front glass	2	2	SGE.SP15535	
5 Gasket kit (1x463mm, 2x204mm and 4 bonded seals)	1	10	SGE.SP15536	
6 Front plate with visors ¹	1	1	SGE.SP15537	
7 Cable (style 1/L-823 connector) with cable gland and protection tube	1	10	SGE.SP15538	
8 FAA stand ¹	1	1	SGE.SP15540	
9 IEC stand ¹	1	1	SGE.SP15539	
10 LED cable ¹	2	10	SGE.SP18650 (180mm)	SPEW00070-150-01 (150mm)



Notes

1. If original LED boards are already replaced by SP013243 LED board, please use LED cable SPEW00070-150-01.

8.0 Accessories



Note

Mounting options not included - Must be ordered separately

Mounting Option	Code
For Standard IEC RGL	
2" BSP FRANGIBLE COUPLING	IDM11555
Tripod stand with - 2" BSP thread	SGE.SP12534

9.0 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

Technical Support – Global

Customers in Europe, the Middle East, Africa or Asia Pacific are more than welcome to our portal for technical support. 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. In the Americas, we also offer live technical support.

Live Technical Support – Americas

If at any time you have a question or concern about your product, contact ADB SAFEGATE's US-based technical support specialists, available 24 hours a day, seven days a week, to assist you via phone.

ADB SAFEGATE Americas Technical Service & Support (US & Canada) : **+1-800-545-4157**

ADB SAFEGATE Americas Technical Service & Support (Canada): **+1-905-631-1597**

ADB SAFEGATE Americas Technical Service & Support (International): **+1-614-861-1304**

We can also be reached via email during regular business hours:

Airfield and Gate: **techservice.us@adbsafegate.com**

Gate: **gateservice.us@adbsafegate.com**

We look forward to working with you!

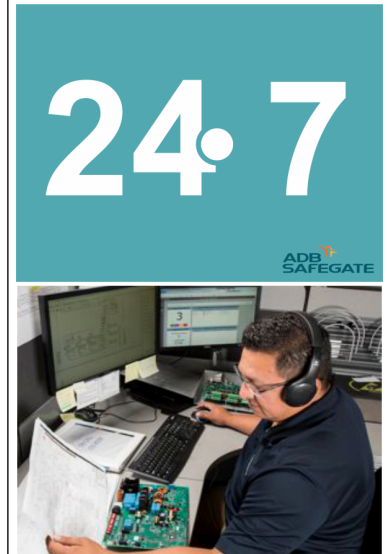
Before You Call

When you have an airfield lighting or system control system problem, prior to calling, please ensure the following:

- Review the product's manual and troubleshooting guide.
- Be located with the product ready to troubleshoot.
- Have all necessary information available: airport code/company name, customer id number, contact phone number/email address, product/part number.
- Have a *True RMS* meter available and any other necessary tools.

When calling about an issue with Safedock A-VDGS, we can serve you better if you collect the following information before you call:

- Relevant information regarding the issue you are calling about, such as gate number, flight number, aircraft type and time of the event.
- What, if any, actions have been taken to resolve the issue prior to the call.
- If available, provide a CCTV recording of the incident to aid in aligning the information from the Safedock log file.



Note

For more information, see www.adbsafegate.com, contact ADB SAFEGATE Support via email at support@adbsafegate.com or

Europe: +32 2 722 17 11

Americas: +1 614 861 1304. Press 3 for technical service or press 4 for sales support.

China: +86 (10) 8476 0106

Middle East and Africa: +971 4 452 7575

9.1 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.

9.2 Recycling

9.2.1 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.

9.2.2 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.



Powering Your Airport Performance from Approach to Departure

adbsafegate.com

Copyright © ADB SAFEGATE, all rights reserved

