



## RELIANCE

Guidance Sign and Gate Sign

# User Manual

UM-4007, Rev. 6.4, 2024/01/19

  
**ADB  
SAFEGATE**



## 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.

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**Liability**

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**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.

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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.

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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.



**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

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#### 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 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 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**

### 1.1.8 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**

### 1.1.9 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**

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## 2.0 About this Manual

This document includes RELIANCE™ airfield sign information with focus on safety, installation and maintenance procedures. For more information, see [www.adbsafegate.com](http://www.adbsafegate.com).

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### Note

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

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## 3.0 Introduction



### 3.1 LED Signs for Airfield Guidance and Gate

#### Compliance with Standards

<b>ICAO</b>	Annex 14 Volume I (current edition)
<b>EASA</b>	CS-ADR-DSN (current edition)
<b>Australia</b>	MOS 139
<b>NATO</b>	STANAG 3316
<b>STAC</b>	SPE/STAC/SE/E/VIS/6008
<b>AENA</b>	DIN/DSEYN/PPT/022-02/12
<b>ROS/MAK</b>	
<b>CE</b>	
<b>UKCA</b>	

#### Uses

<b>Information Sign</b>	Informational Direction, Destination, and Boundary signs - black inscription on a yellow background. Designed to guide pilots to a particular point on the airfield by identifying runway exits, taxiway directions, taxiway intersections, taxiway ending, and inbound/outbound destinations, boundaries.
<b>Mandatory Sign</b>	Mandatory Instruction sign – white inscription on a red background. Designed to identify holding positions, runway intersections, and prohibit aircraft entry into designated areas.
<b>Location Sign</b>	Runway and Taxiway Location signs - yellow inscription on a black background and only where it is a stand-alone sign shall have a yellow border. Designed to identify taxiway and runway location on which the aircraft is located.
<b>Runway Distance Remaining Sign</b>	Runway Distance Remaining Signs - white inscription on a black background. Designed to provide enhanced situational awareness to the pilots for determining the remaining runway distance available.
<b>Aircraft Stand Identification Sign</b>	Gate and Stand Identification signs - black inscription on a yellow background. Designed to identify to the pilots the particular gate/stand location.

#### Features and Benefits

LED Technology and durable design features provide a long lasting sign with enhanced operational efficiency.

- Long lasting LED light source
- Low power consumption
- Environmentally friendly
- Durable and vibration resistant
- Dramatically reduce maintenance costs and airport operation interruptions
- Available with fail-open monitoring

- Designed for harsh environments
- Anodized aluminum housings
- Stainless-steel hardware and fixings
- Built-in surge and lightning protection
- UV-resistant legend panel resists fading
- Ultra strong polycarbonate legend panel withstands jet blasts and impacts
- LED strip and electronics box tested and certified for IP67 protection
- Sign enclosure tested and certified for IP54 protection
- Available with 322 km/h or 480 km/h wind load compliant options

### Construction

- Sign housing/frame made from aluminum
- Mounting feet and poles made from aluminum
- Electronics box made from aluminum
- Legend panel front of UV-resistant polycarbonate

### Operating Conditions

Operating Condition	Symbol	Specification
Operating temperature	T <sub>A</sub>	-40 °C to +70 °C
Storage temperature	T <sub>STG</sub>	-60 °C to +80 °C
Humidity	RH	Up to 100%

### Power Consumption

Power Factor (PF) typically >95%. Use the table to calculate CCR load and transformer sizing. For circuits or signs operating as low as 6.3A, the VA consumption may increase up to 5%.

Sign Size (mm) (Height x Length)	Electrical Supply	VA Load	Minimum Transformer Size (W) <sup>1</sup>
700 × 1150	6.6 A	20	45
700 × 1300	6.6 A	23	45
700 × 1600	6.6 A	27	45
700 × 1800	6.6 A	30	45
700 × 2100	6.6 A	35	45
700 × 2500	6.6 A	40	65
700 × 2650	6.6 A	42	65
700 × 3000	6.6 A	47	65
900 × 1150	6.6 A	29	45
900 × 1300	6.6 A	33	45
900 × 1600	6.6 A	40	65
900 × 1800	6.6 A	42	65
900 × 2100	6.6 A	48	65
900 × 2500	6.6 A	47	65



Sign Size (mm) (Height x Length)	Electrical Supply	VA Load	Minimum Transformer Size (W) <sup>1</sup>
900 x 2650	6.6 A	50	65
900 x 3000	6.6 A	56	65
1300 x 1300	6.6 A	33	45
900 x 900 Gate	230 VAC	22	N/A
1200 x 1200 Gate	230 VAC	32	N/A
700 x 1300 Gate	230 VAC	TBD	N/A

**Notes**

<sup>1</sup> Maximum 40m of 2.5mm<sup>2</sup> (AWG14) secondary cable and no ILCMS.

### Electrical Supply

RELIANCE™ Airfield Signs are available in parallel and series versions. RELIANCE™ Gate Signs are available in parallel only.

Power	Requirements
Constant Current Regulator (Series system)	2.8-6.6 A, 50/60 Hz 3-7 step CCR
Mains Power System (Parallel system)	120-240 VAC, 50/60 Hz

### Dimensions and Weight

Dimensions are the overall outer dimensions of the sign frame. The visible face of the sign legend panel is 100 mm less than the height and width of the sign frame. When installed and mounted onto poles and Y-shaped feet, the total sign height increases by approximately 100 mm.

Sign Size (mm) (Height x Length)	Weight (kg) (322 km/h)	Weight (kg) (480 km/h)
700 x 1150	24.8	24.8
700 x 1300	26.5	26.5
700 x 1600	31.0	35.0
700 x 1800	33.7	37.7
700 x 2100	41.2	41.2
700 x 2500	46.0	50.0
700 x 2650	51.4	51.4
700 x 3000	60.0	60.0
900 x 1150	28.8	33.3
900 x 1300	31.0	35.5
900 x 1600	36.0	44.5
900 x 1800	39.7	48.2
900 x 2100	48.2	52.7
900 x 2500	53.9	62.4
900 x 2650	56.4	64.9
900 x 3000	61.9	66.4
1300 x 1300	44.0	48.0

Sign Size (mm) (Height x Length)	Weight (kg) (322 km/h)	Weight (kg) (480 km/h)
900 x 900 Gate	21.0	N/A
1200 x 1200 Gate	32.5	N/A
700 x 1300 Gate	24.5	N/A



**Note**

900 x 900 mm gate sign is used to display the gate/stand number only. 1200 x 1200 mm gate sign is used to display the gate/stand number and coordinates.

### 3.2 Power and Monitoring Versions

- Non-MON: Standard 6.6A series powered signs. Dimmable intensity controlled by the input current from the CCR.
- MON: Monitored 6.6A series powered signs with integrated fail open technology. For use with CCR lamp fault detection monitoring or ILCMS monitoring. Dimmable intensity controlled by the input current from the CCR.
- VAC: 120-240Vac voltage powered 50/60Hz signs. Constant intensity provided at all voltages.

## 4.0 Installation

This section describes the different steps for successful installation of the sign.

Site planning and preparation is required before installation, according to ICAO Annex 14. For example, there are requirements for placement near runways, taxiways and intersections, and requirements for mounting on solid, flat, level surfaces.

### 4.1 Standard Hardware and Preparation

Signs are delivered with mounting hardware including poles, frangible couplings, mounting profiles, clamps, and mounting bases.

#### Unpacking and Handling the Sign

The sign is shipped ready for installation. Handle equipment carefully to prevent damage to the sign and/or components.

Upon receipt, note any exterior damage to the carton that might indicate possible equipment damage. Open the carton and inspect the signs and components within the carton.

If you note any damage to any equipment, file a claim with the carrier immediately. The carrier may need to inspect the equipment.



#### CAUTION

- Use caution when lifting the sign from the carton to prevent accidental damage to the sign.
- Do not use the electronics box as a lifting point for the sign. This will cause damage to the electronics box and mounting hardware.

#### Poles and Frangible Couplings Measurement

The sign length determines the number of poles required and delivered for installation. When installed, the total sign height mounted on poles increases by 100 mm.

The sign length and height dimensions in the table refers to the outer dimensions of the frame. The length and height of the face are 100 mm less the values below.

**Table 1: Wind load requirement ICAO 322 km/h (Mode 2)**

Sign size (mm)	Number of poles	Frangible coupling	C-C distances (mm)
700 x 1150	2	FC 1.3	700
700 x 1300	2	FC 1.6	850
700 x 1600	2	FC 1.8	1150
700 x 1800	2	FC 1.8	1350
700 x 2100	3	FC 1.3	830
700 x 2500	3	FC 1.6	1030
700 x 2650	4	FC 1.3	730
700 x 3000	4	FC 1.6	850
900 x 1150	2	FC 1.8	700
900 x 1300	2	FC 2.2	850
900 x 1600	2	FC 2.2	1150
900 x 1800	2	FC 2.6	1350
900 x 2100	3	FC 2.2	830

**Table 1: Wind load requirement ICAO 322 km/h (Mode 2) (Continued)**

Sign size (mm)	Number of poles	Frangible coupling	C-C distances (mm)
900 x 2500	3	FC 2.2	1030
900 x 2650	3	FC 2.6	1100
900 x 3000	4	FC 2.2	850
1300 x 1300	2	FC 2.6	850

**Table 2: Wind load requirement ICAO 480 km/h (Mode 3)**

Sign size (mm)	Number of poles	Frangible coupling	C-C distances (mm)
700 x 1150	2	FC 2.6	700
700 x 1300	2	FC 2.6	850
700 x 1600	3	FC 2.2	580
700 x 1800	3	FC 2.2	680
700 x 2100	3	FC 2.6	830
700 x 2500	4	FC 2.2	680
700 x 2650	4	FC 2.6	730
700 x 3000	4	FC 2.6	850
900 x 1150	3	FC 2.6	350
900 x 1300	3	FC 3.1	425
900 x 1600	4	FC 2.6	380
900 x 1800	4	FC 2.6	450
900 x 2100	4	FC 3.1	550
900 x 2500	5	FC 3.1	515
900 x 2650	5	FC 3.1	550
900 x 3000	5	FC 3.1	640
1300 x 1300	4	FC 3.1	280

### Mounting Information

The mounting distances between the poles are dependent on the sign length. The mounting bases and poles are mounted in foundations, preferably concrete, installed on the surface of the sign location. The number of foundations required is equal to the number of poles.

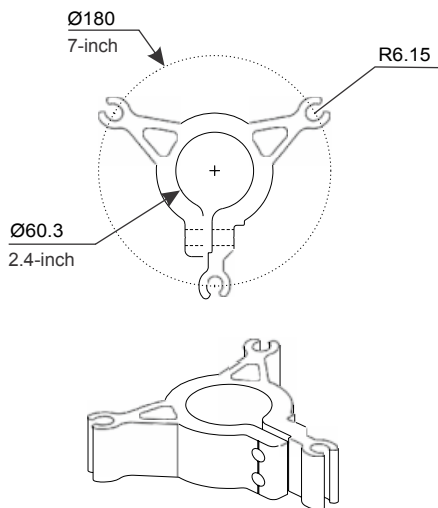
General recommendations, dimensions and appearance of mounting bases:

- Three M12 anchor bolts per base to fasten them to the foundation.

**i Note**

- To choose the correct anchor bolt and length, always refer to the anchor bolt manufacturer's specification for uses with the appropriate type, tensile strength, and thickness of the concrete foundation, or asphalt surface the sign will be mounted on.
- For many concrete foundations, a recommended length of 100 mm is sufficient. However, it is always the responsibility of the installation team to ensure the correct type and length of anchor bolt is used and the anchor bolt manufacturer's recommended installation procedures are followed.

- The anchor bolts must be installed on a diameter of 180 mm with 120° spacing to mate with the base.
- Use the correct Center to Center (C-C) mounting distance, to layout anchoring points on the surface according to the sign length and where the sign is to be installed. For information, see [Table 1](#) and [Table 2](#).



### Poles and Frangible Couplings Delivery

Poles with their respective frangible couplings are assembled at the factory. All poles are shipped in the same crate and packaged in groups of 2, 3 or 4 poles, to help indicate which sign they are to be used with.

Frangible couplings are not universal, meaning there are different models intended to be used with different sign sizes. Check the label in the lower left corner at the back of the sign to make sure that the sign is installed with the correct frangible coupling. Make sure to verify the latest recommended frangible coupling, depending on RELIANCE Sign model, and apply what is indicated in the spare parts. See [RELIANCE Sign](#) and [www.adbsafegate.com](http://www.adbsafegate.com).

For information regarding the number of poles for each sign length, see [Poles and Frangible Couplings Measurement](#).

[Figure 1](#) shows an example of the relation between the pole, the frangible coupling and the mounting base. The pole and frangible coupling are assembled before delivery.

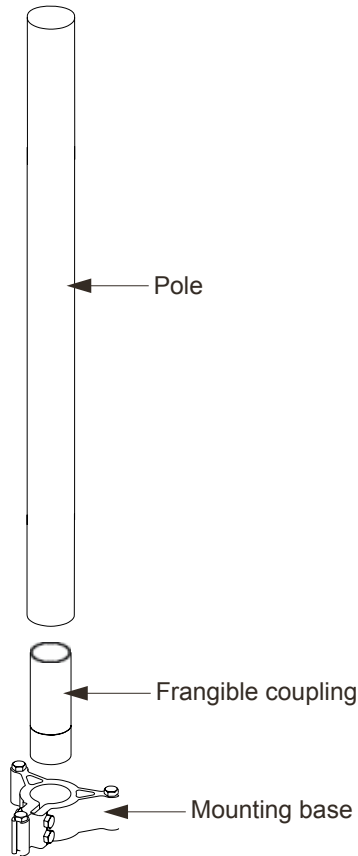


**Note**

Frangible couplings are not universal, meaning there are different models intended to be used with different sign sizes.

---

**Figure 1: Pole, frangible coupling and mounting base**



**4.1.1 Tools to use**

The standard tools listed below are required or recommended when installing a sign, but keep in mind that other tools may be needed depending on installation site.

- Socket set (16 mm, 17 mm, 18 mm, 19 mm) with a 15 cm or 6" extension bar
- Torx key T20 and T30
- Spanner 25 mm and 27 mm
- Small flat screwdriver to be used when installing power cable
- Spirit level
- Tape measure

Once site preparation is complete, the correct poles and frangible couplings must be identified for a sign installation.

### 4.1.2 External electrical Connections

It is recommended to consider the routing of external electrical cables to power signs. Cable passages and junction boxes may need to be built into the foundations where signs are to be installed.

Signs are designed with one entrance point for power cable. The point is located on the bottom surface of the converter box, at the back of the sign. The cable gland at the entrance point accept cables measuring 7 to 13 mm in diameter. Connection terminal for the power cable is located next to the cable entrance, see [Figure 2](#).

To ground the sign after installation, attach a ring type crimp terminal to the ground wire and then fasten it to the back of the sign using the grounding screw. M5 head screw is located near the base of the converter box and is marked with a grounding symbol. It is also possible to ground the sign via the terminal block inside the converter box.



#### CAUTION

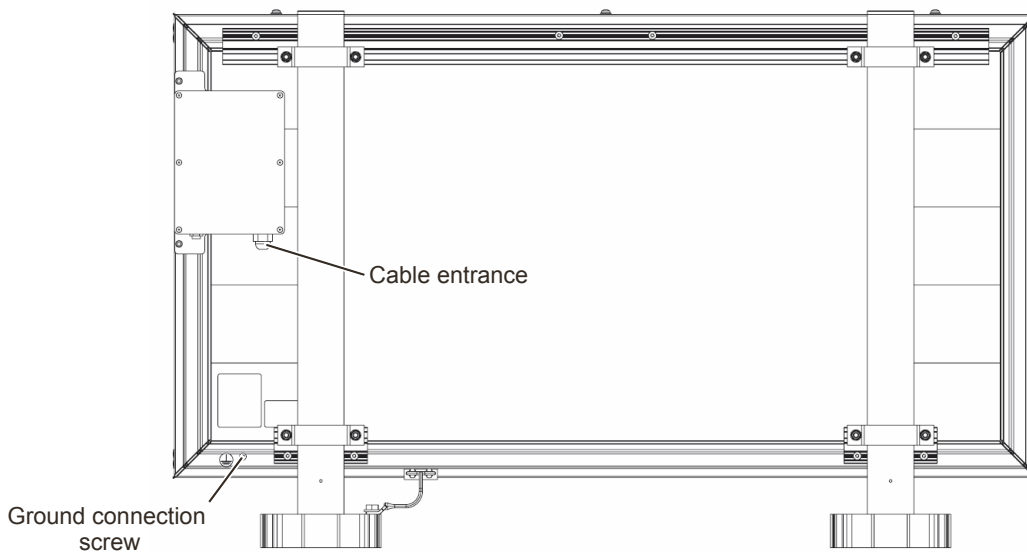
The RELIANCE Sign with fail-open monitoring is not to be connected to transformers larger than 200 W. A correct circuit installation and calibration of the CCR is crucial to achieve an accurate fail open monitoring.



#### Note

Signs are not supplied with external wiring, as cabling requirements differ from site to site.

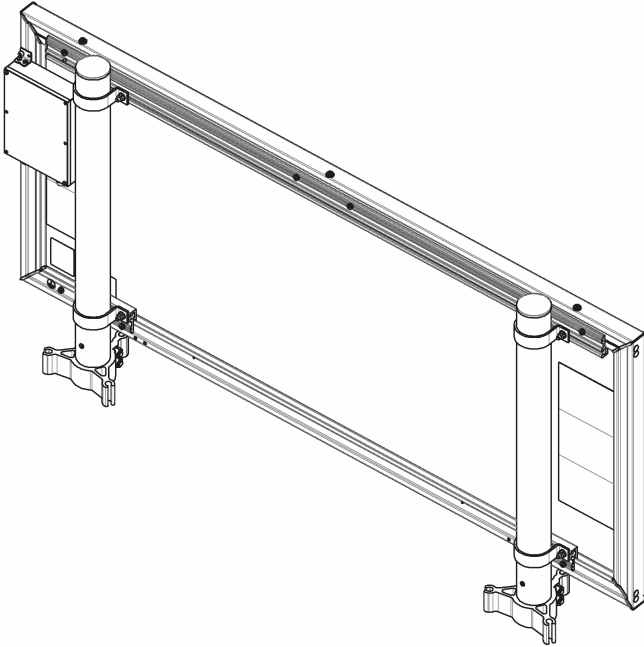
**Figure 2: Cable entrance and ground connection**



## 4.2 Mounting the Sign

Prepare the installation site. Make sure that the correct poles and frangible couplings are used at installation, see [Poles and Frangible Couplings Measurement](#).

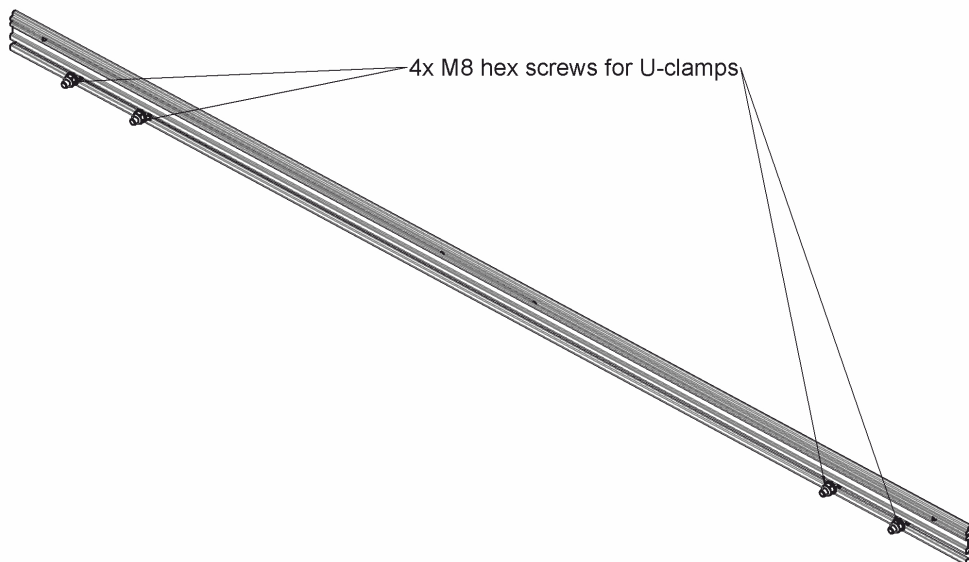
**Figure 3: Back of the assembled sign**



### Installation

1. Install the mounting bases and poles for the sign.
2. On the upper mounting profile, slide on and position the four screws to hold the u-clamps.

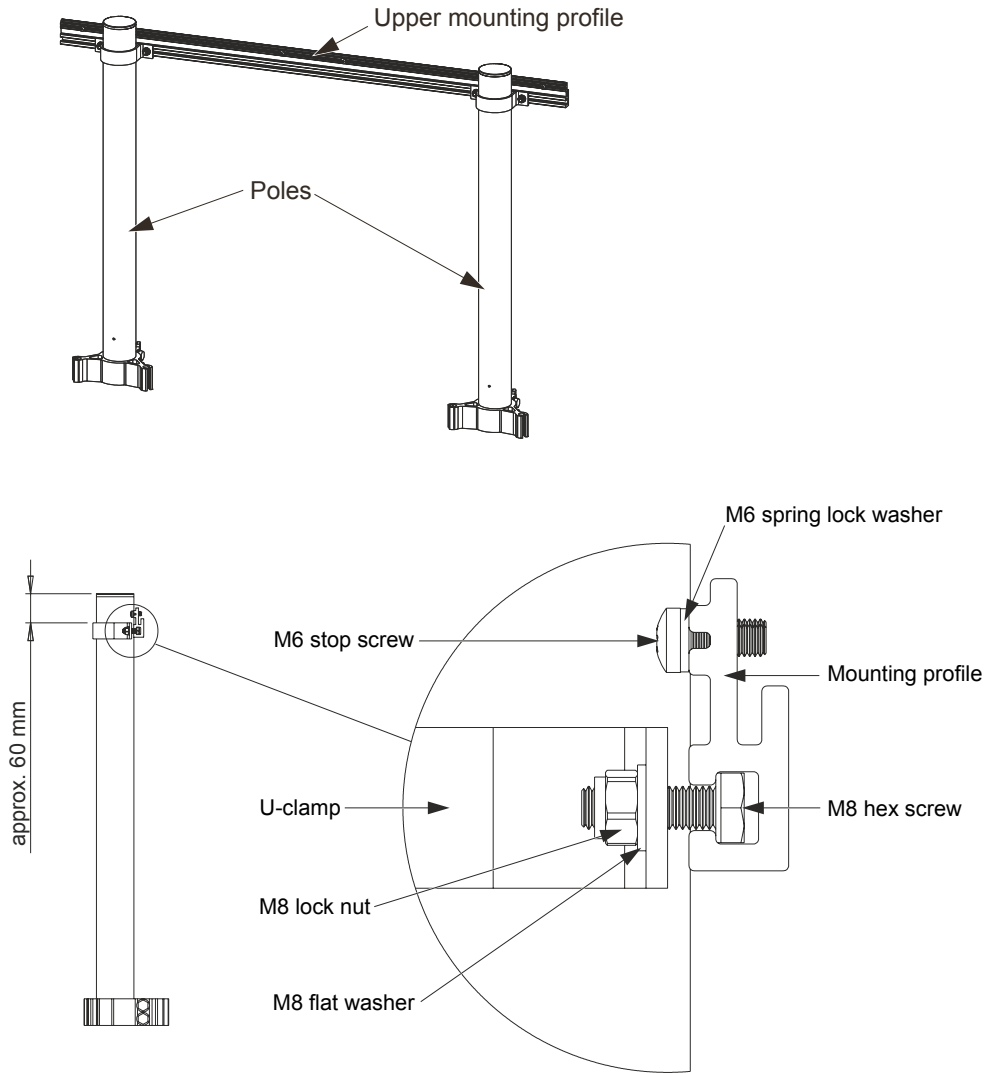
**Figure 4: Slide the screws into position**





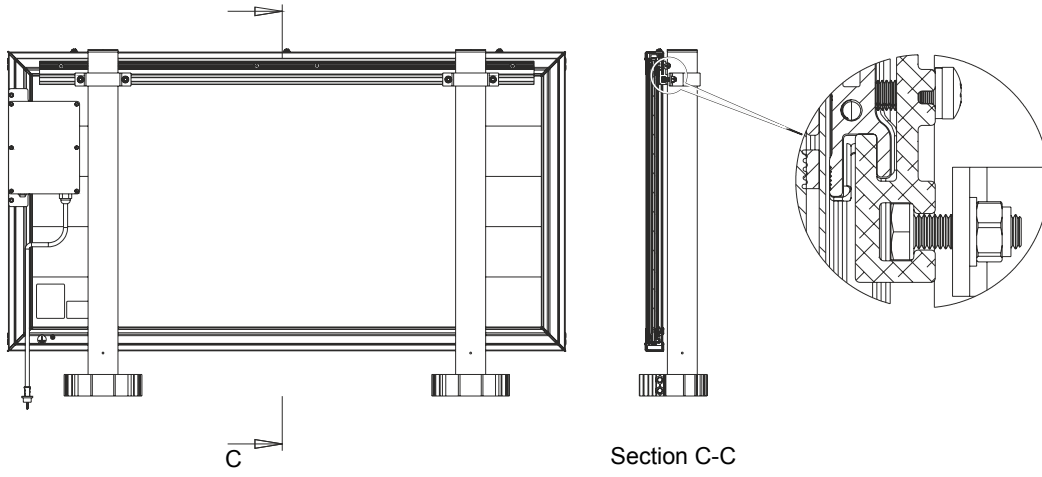
- Center and level the upper mounting profile and attach on the poles by using u-clamps, washers, bolts and lock nuts. Recommended torque: 8Nm.

**Figure 5: Mounting profile on poles**



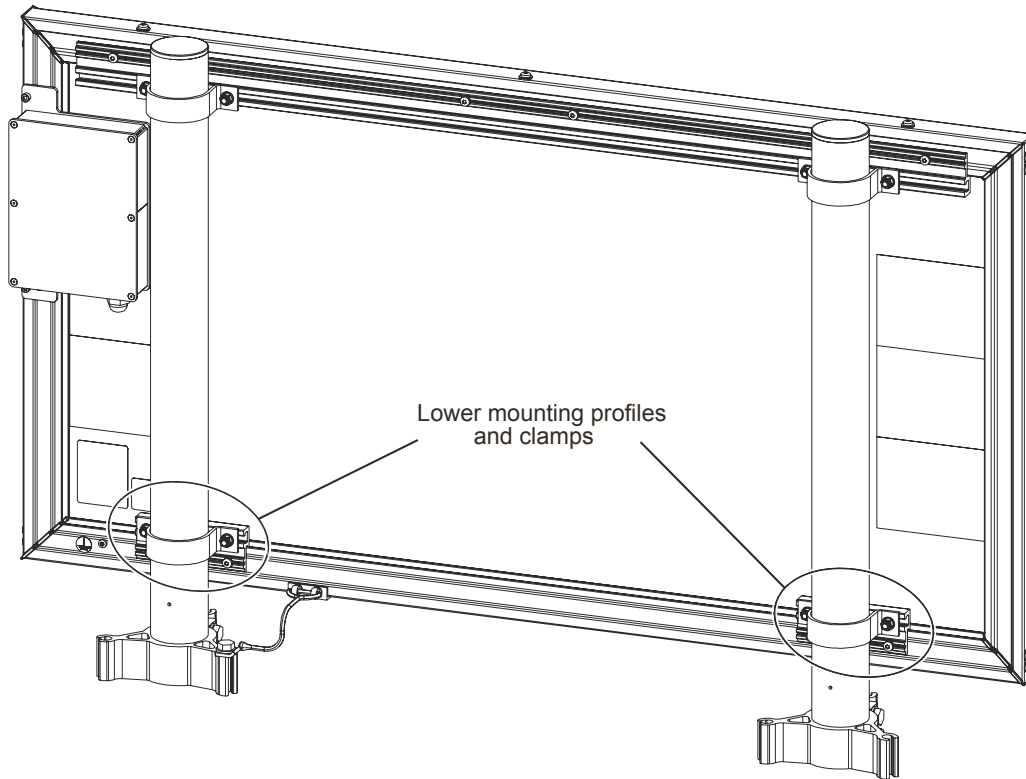
4. Hang the sign on the mounting profile. The flange of the sign match the track in the mounting profile.

**Figure 6: Placement of sign on poles**



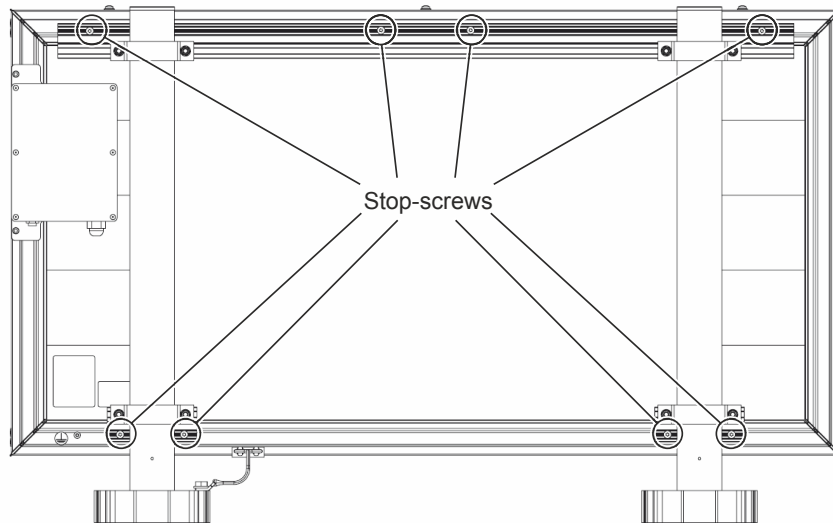
5. Mount the lower mounting profiles on the poles by using u-clamps, washers, bolts and lock nut. Recommended torque: 8Nm.

**Figure 7: Placement of lower mounting profiles and clamps**



6. Fasten the stop screws on the mounting profiles. Recommended torque: 2Nm.

**Figure 8: Illustrative example of stop-screw positions, may vary depending on type and size of sign**



## 4.3 Mounting a Tether Wire

### 4.3.1 For Signs with Pre-Drilled Holes for a Tether Wire

The sign should always be secured using a tether wire. There are two positions prepared for tether wire installation. These are located on the bottom frame and 300 mm from the edge of the sign on each side.

Choose which of the prepared tether wire locations to use based on the sign's specific installation.

Before you start, ensure power is disconnected from the sign.

#### Tools to use

- Wrench

#### Installation

1. Choose which of the prepared tether wire locations to use based on the sign's specific installation site.
2. Place the bracket on the lower frame.

**Figure 9: Place the bracket**



3. On the back, mount the two eye bolts with a washer between the eye bolt and bracket.

**Figure 10: Mount washers and eye bolts**



4. On the front, mount the washers and lock nuts.

**Figure 11: Mount washers and lock nuts**



5. Gently tighten the lock nuts, using a wrench to keep the eye bolt fixed.
6. Fasten the tethering wire bracket to the mounting base of the pole or in the foundation.

#### **4.3.2 For Signs without Pre-Drilled Holes for a Tether Wire**

The sign should always be secured using a tether wire. There are two positions prepared for tether wire installation. These are located on the bottom frame and 300 mm from the edge of the sign on each side.

Choose which of the prepared tether wire locations to use based on the sign's specific installation.

Before you start, ensure power is disconnected from the sign.

### Tools to use

- Drill of  $\varnothing 6.5$  mm
- Double-sided tape 30 × 45 mm
- Alcohol based detergent
- Cloth

### Installation

1. With an alcohol-based detergent, clean the lower profile surface where the bracket shall be mounted.
2. Place a thin piece of double-sided tape on the inside of the bracket.
3. Peel off the protective cover from the double-sided tape on the bracket.

**Figure 12: Peel off the protective cover**



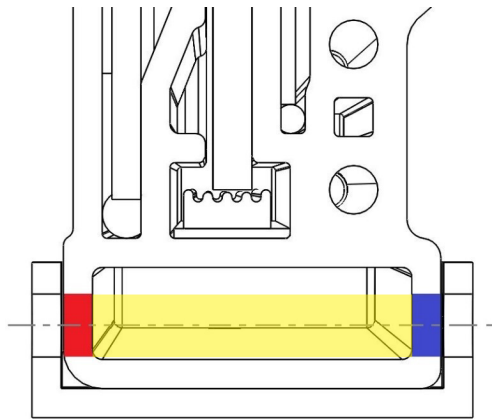
4. Mount the bracket at its intended place on the lower profile.

**Figure 13: Place the bracket**



5. Drill the parallel holes, one side at a time, through the front and back of the lower profile using the holes of the bracket for guidance.

**Figure 14: Drill holes through the profile**



6. On the back, mount the two eye bolts with a washer between the eye bolt and bracket.

**Figure 15: Mount washers and eye bolts**



7. On the front, mount the washers and lock nuts.

**Figure 16: Attach washers and tighten lock nuts**



8. Gently tighten the lock nuts, using a wrench to keep the eye bolt fixed.

9. Fasten the tethering wire bracket to the mounting base of the pole or in the foundation.

## 4.4 Electrical Connection

Before you start, make sure that the sign is unpowered.

### Tools to use

- Torx T20
- Small flat screwdriver for electrical connection
- Spanner SW25 mm

### Installation

1. Run the power cable through the cable gland.
2. Open the converter box and attach the leads to the appropriate terminal.
3. Close the converter box, make sure the gasket is intact and in place.
4. Tighten the cable gland.
5. Energize the power circuit to which the sign is connected and check for proper operation.

## 4.5 Bird Deterrent Spikes SG19216 (optional)

Bird deterrent spikes for mounting on a sign is optional.

### Tools to use

- Snips, or appropriate tool, to cut the bird spike in sections
- Outdoor adhesive
- Cleaning equipment

### Installation

1. Cut the bird spike sections into appropriate lengths.
2. If needed, make cut-outs or holes for the fasteners on the top-surface.
3. Clean the top-surface of the sign.
4. Attach the bird spike sections using an outdoor adhesive.

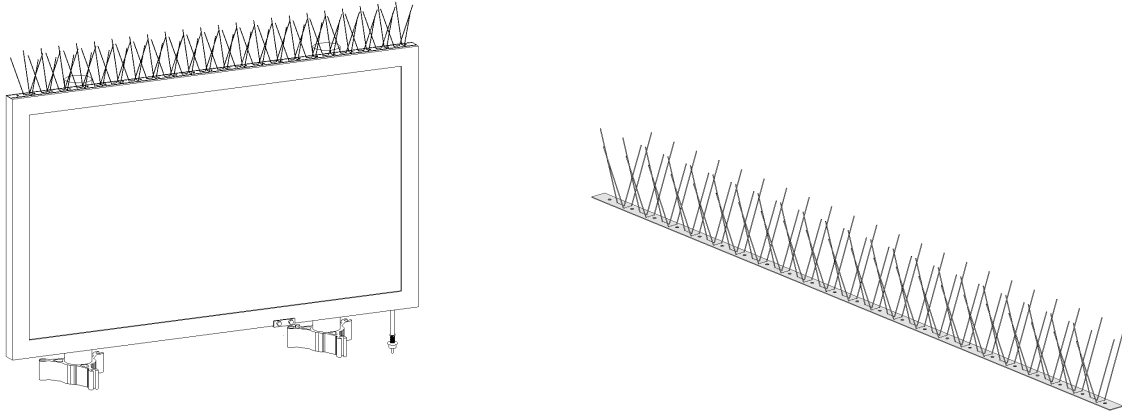




**NOTICE**

Do not use fasteners when attaching the bird spikes as it can effect the weather resistance of the sign.

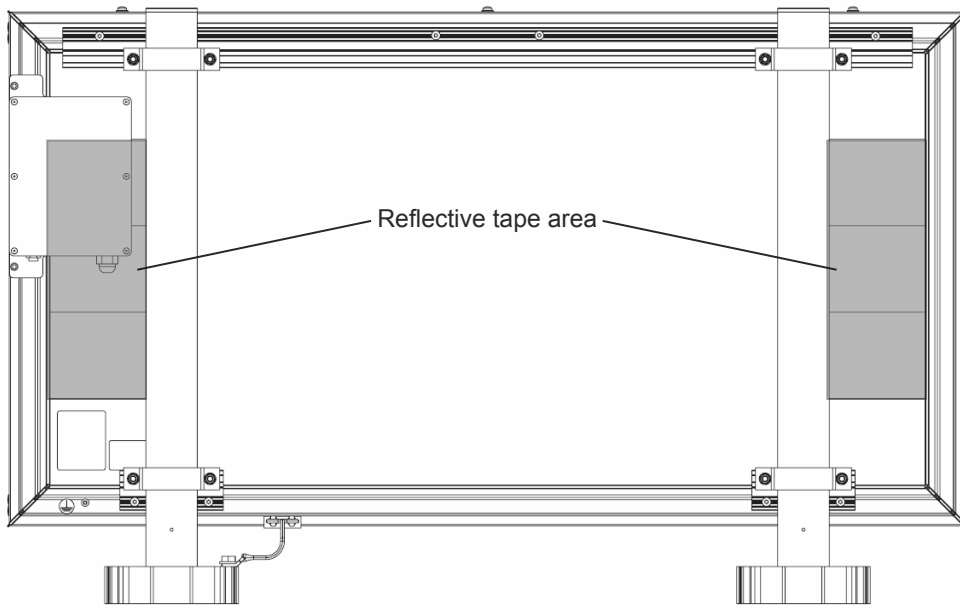
**Figure 17: Bird spike**



**4.6 Reflective Tape**

The signs are delivered with two reflective tapes, one for each side of the back of the sign. The reflective tapes are placed at the outer parts on the back of the sign.

**Figure 18: Reflective tape area**



**4.7 Gate Sign**

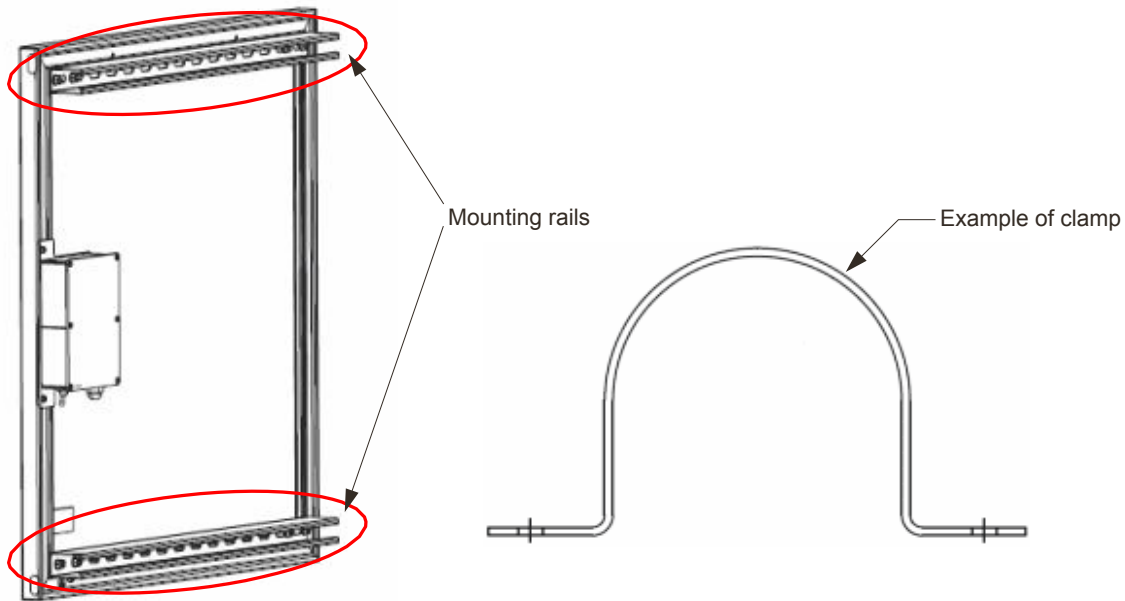
The gate sign, Airfield Stand Identification Sign (ASIS), is designed for various mounting positions. The sign is delivered with two mounting rails to enable site mounting. U-clamp and hardware are not included with the sign.

Install the sign using appropriately sized U-clamps with T-bolts or rail-nuts. The mounting rail factory assembled with the sign is Walraven Rapidstrut Fixing Rail, dimensions are 41 x 41 x 2.0 mm.

### Installation

1. Run the power cable through the cable gland.
2. Open the electronics box and attach the leads to the appropriate terminal contacts.
3. Tighten the cable gland.
4. Energize the power circuit to which the sign is connected and check for proper operation.

**Figure 19: Mounting rails and clamp**



## 5.0 Operation

The sign units are usually connected to the airfield power system and made available to other airport power control systems if required, for example ADB SAFEGATE RELIANCE Airfield Lighting Control Systems (ALCS).

The sign units are easy to read in daylight, in darkness, and with limited visibility. The high readability is a result of a high quality front panel, a unique painting technique and customized light distribution inside the sign. The combination of robust aluminum construction, state-of-the-art electronics, and outstanding lifetime of the light sources, makes the sign uniquely versatile and suitable for airport environments around the world.

**Figure 20: Sign front example**



### Note

According to EU regulations for Energy labeling (EU) 2019/2015 and Ecodesign (EU) 2019/2020, this product can only be used for the purpose of providing visual aids on the airfield. The contained light source is not intended to be used in any other application.



## 6.0 Maintenance

The sign units require minimal maintenance. A routine inspection is recommended to be performed with the following checks:

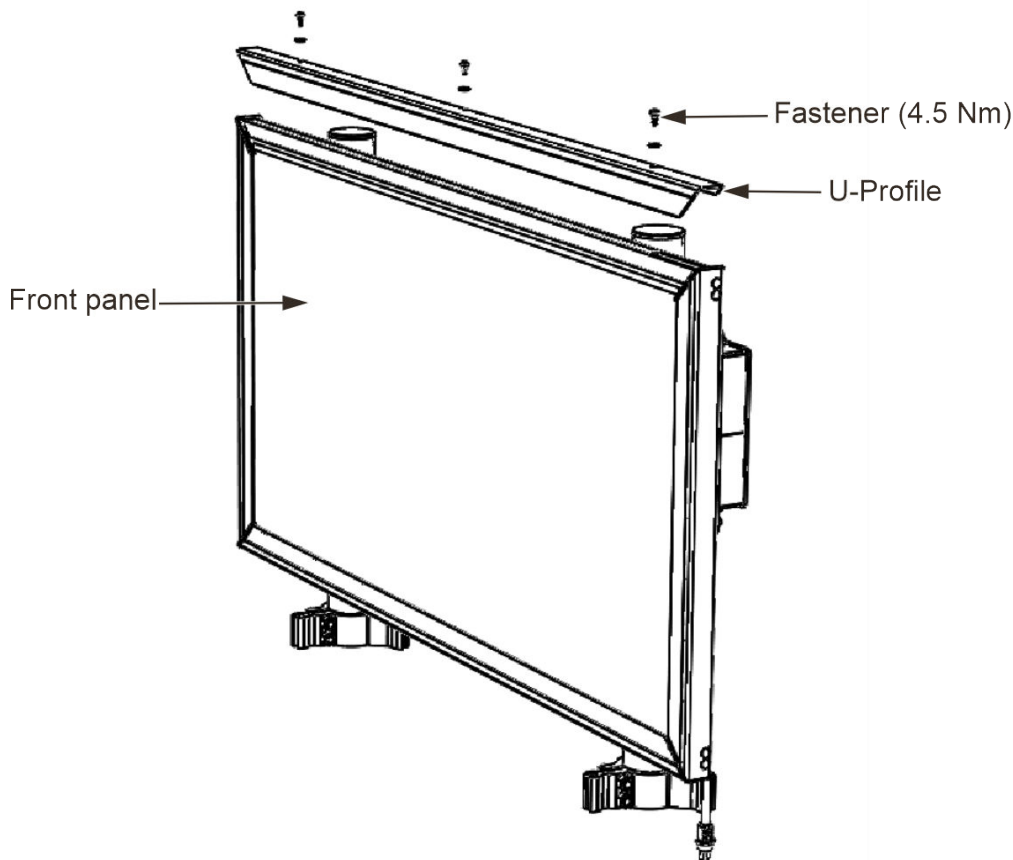
Interval	Maintenance Task	Action
Daily	Check for good sign illumination	Inspect, troubleshoot, and replace components as necessary
	Check legend for legibility and lack of obstructions	Remove obstructions and clean the legend panel as needed
Monthly	Check for dirty panels	Clean with mild soap and water to remove any dirt, dust, or debris
	Check for vegetation covering panel	Remove vegetation
6 Months	Power off the sign and check for loose wire connections	Secure or repair wire connections
	Check for cracked or deteriorated wires	Repair or replace damaged wires
	Verify the sign is level	Adjust the sign legs as necessary
	Inspect and clean the interior of the sign, ensure the sign drain is not blocked	Clean with mild soap and water to remove any dirt, dust, or debris
	Inspect and clean the channel in the sign frame where the legend panel rests	Clean with mild soap and water to remove any dirt, dust, or debris
Annually	Check the sign frame for scratches, corrosion, or paint flaking off	Remove corrosion and touch-up paint as needed
	Check for discolored or faded panels	Clean or replace panels as needed
	Check for deteriorated gaskets	Replace damaged gaskets as needed
	Check sign and mounting hardware for damage and tightness. Inspect frame hardware, mounting rails, poles, pole clamps, and bird spikes (if necessary)	Tighten or replace hardware and components as needed

The following sections describe how to perform various maintenance tasks.

## 6.1 Replace a Front Panel

Before you start, make sure that the sign is turned off and not energized.

**Figure 21: Front panel overview**



1. Remove the fasteners holding the U-profile on top of the sign.
2. Remove the U-profile.
3. Remove the front panel by lifting it straight up.
4. Before installing the new legend panel, ensure that the printed side of the new legend panel and the front side of the internal light diffusing panel are both free of dust, dirt, fingerprints, etc. Thoroughly clean both panels using warm water with a mild dish soap or a specialized plastic/acrylic cleaner. Do not use solvents as solvents will damage these components.



### Note

Any moisture or contamination on the legend panel or the light diffusing panel can hinder performance of the sign.

5. Before reassembling the sign, remove any visible moisture, dust, dirt, sand, or debris from the lower profile of the sign.
6. Remove the plastic protection layer off the new front panel and insert the panel from the top.
7. Place and align the top U-profile on the sign.



**Note**

Make sure that the corner gaskets are in correct positions after mounting.

8. Gently tighten the fasteners to firmly fixate the U-profile.

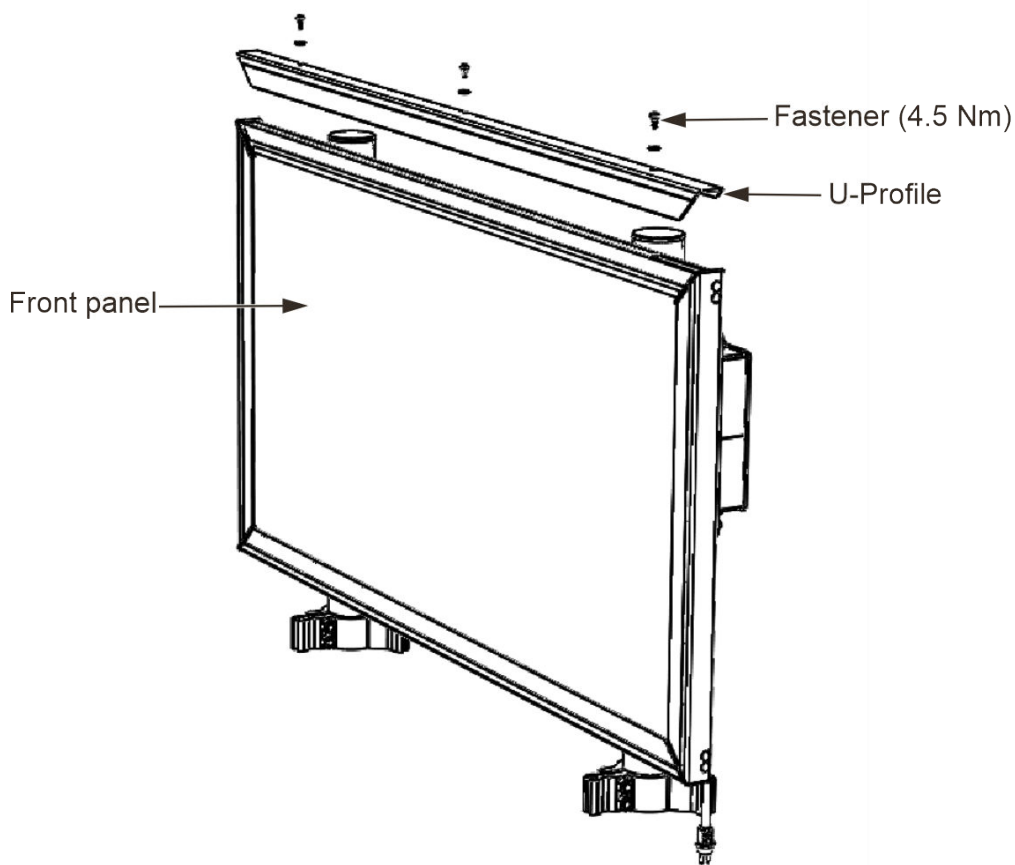
## 6.2 Replace an LED strip



**CAUTION**

The light source contained in this luminaire shall only be replaced by the manufacturer, service agent, or similar qualified person.

**Figure 22: Front panel overview**



1. Before you start, make sure that the sign is turned off and not energized.
2. Remove the fasteners at the top of the sign.
3. Remove the U-profile and sealing-tape covering the cut-out, the LED-strip with cables is then visible on top of the profile, [Figure 23](#).

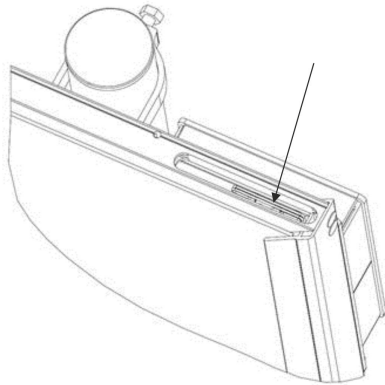


**Note**

Be careful not to damage the connector or to cut yourself on any sharp edge in the cut-out.

---

**Figure 23: Cut-out**



4. Disconnect the LED-cable.
5. Lift the revealed LED-strip end up, which slightly bends the LED-strip, [Figure 24](#).
6. Pull out the LED-strip through the cut-out, [Figure 24](#). For easier removal of the LED strip, ensure the sign is not twisted or contorted.

**Figure 24: Pull out LED-strip**





7. Insert a new LED-strip by carefully sliding it into its proper position, [Figure 25](#). For easier installation, lubricate the under side of the LED strip with water using a wet cloth.

**Figure 25: Insert LED-strip**



8. Reconnect the LED cable and place the connector and wires on top of the LED-strip within the cut-out.  
 9. Place a strip of LED cut-out sealing tape covering the cut-out and progressing down the sides.  
 10. Place and align the top U-profile on the sign.



**Note**

Make sure that the corner gaskets are in correct positions after mounting.

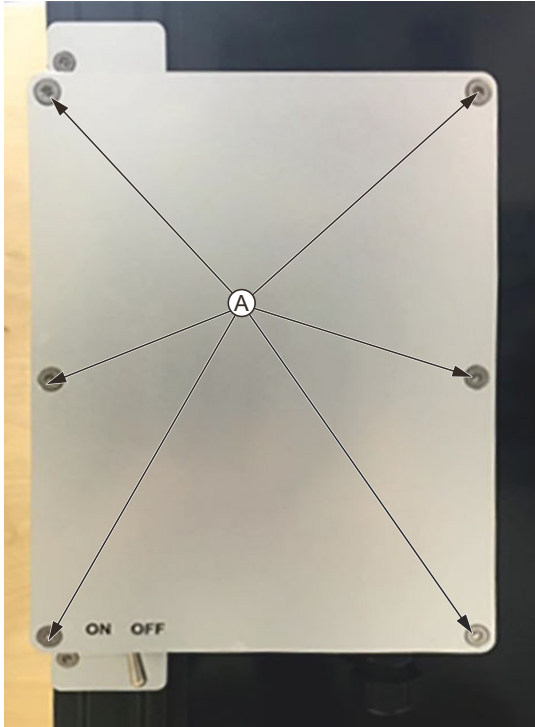
11. Gently tighten the fasteners to firmly fixate the U-profile.

## 6.3 Replace an LED Adapter Card

Before you start, make sure that the sign is turned off and not energized.

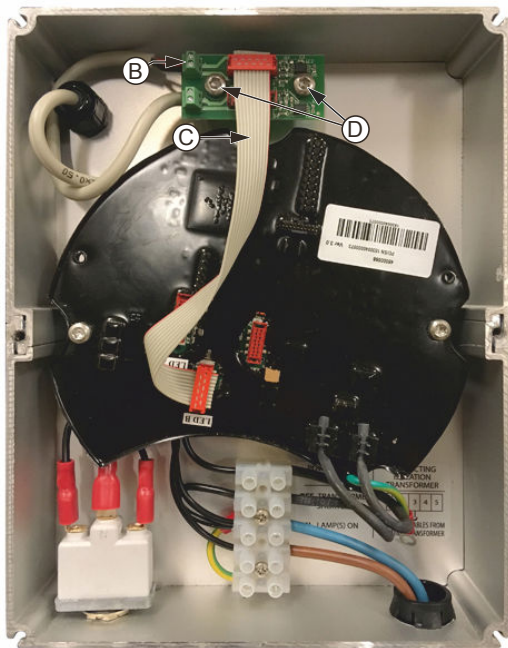
1. On the Electronic box, remove the six countersunk screws (A), then lift off the lid, [Figure 26](#).

**Figure 26: Electronic box lid**



2. Release the two small screws (B), then remove the red and black wire attached to the LED strip. See [Figure 27](#).

Figure 27: Remove the wires



3. Remove the grey LED cable (C) from the adapter card. See [Figure 27](#).
4. Remove the two screws (D) holding the adapter card, then replace the adapter card with a new one. See [Figure 27](#).

### Important

Use the adapter card included with the LED strip spare part kit. The parameters are specified for the particular version of the LED strip and length and height of the sign.

5. Place the new adapter card in its position and attach it with the two screws (D), [Figure 27](#).
6. Attach the grey LED cable (C), with the colored wire to the right, to the B-channel on the converter. See [Figure 27](#).

### Note

Make sure that the B-channel on the converter is used to power the LED-strip.

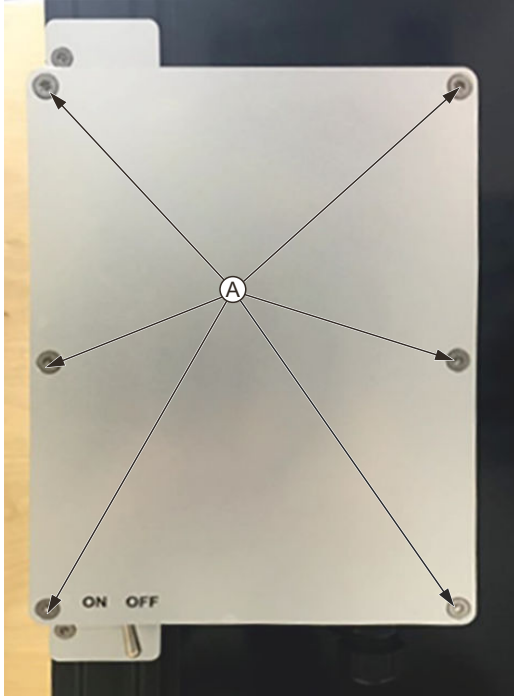
7. Attach the wires (B) to the adapter card, black to (-) and red to (+). See [Figure 27](#).
8. Close and attach the lid to the box, fastening with the six countersunk screws (A). See [Figure 26](#).

## 6.4 Replace a Converter (6.6A series circuit signs)

Before you start, make sure that the sign is turned off and not energized.

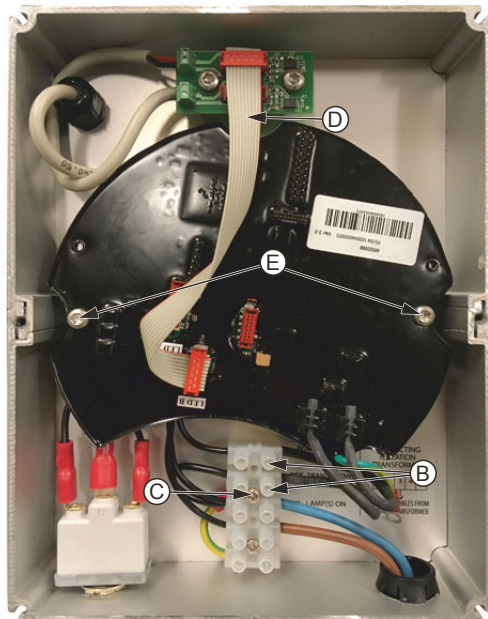
1. On the Electronic box, remove the six screws (A), then lift off the lid, see [Figure 28](#).

**Figure 28: Electronic box**



2. Release the upper right two screws (B) on the terminal block, then remove the two black wires connected to the converter. See [Figure 29](#).

**Figure 29: Converter**

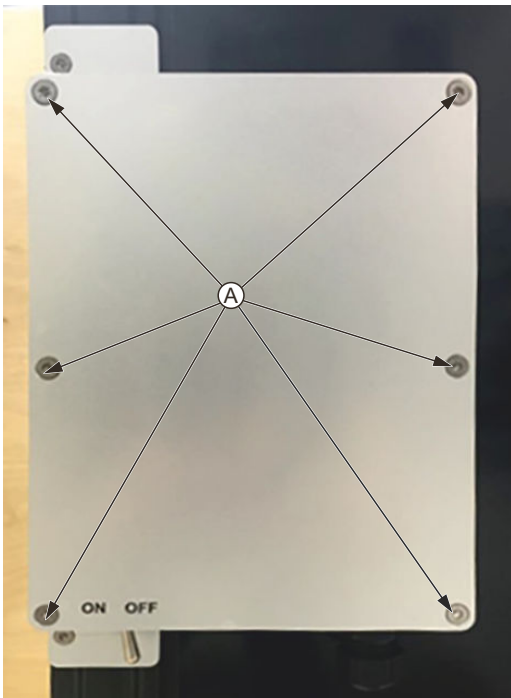


3. Remove the center screw (C) holding the terminal block to release the converter earthing wire. See [Figure 29](#).
4. Remove the grey LED cable (D) from the adapter card. See [Figure 29](#).
5. Remove the two screws (E) attaching the converter to the electronics box. See [Figure 29](#).
6. Remove the old converter from the electronics box, then attach the new one using the two screws (E). See [Figure 29](#).
7. Attach the earthing cables under the terminal block using the center screw (C). See [Figure 29](#).
8. Attach the two black wires from the converter to the two upper right screws (B) of the terminal block. See [Figure 29](#).
9. Attach the grey LED cable (D), with the colored wires to the right, to the adapter card and the B-channel. See [Figure 29](#).
10. Close and attach the lid to the box using the six countersunk screws (A). See [Figure 28](#).

## 6.5 Replace a Converter (VAC parallel circuit signs)

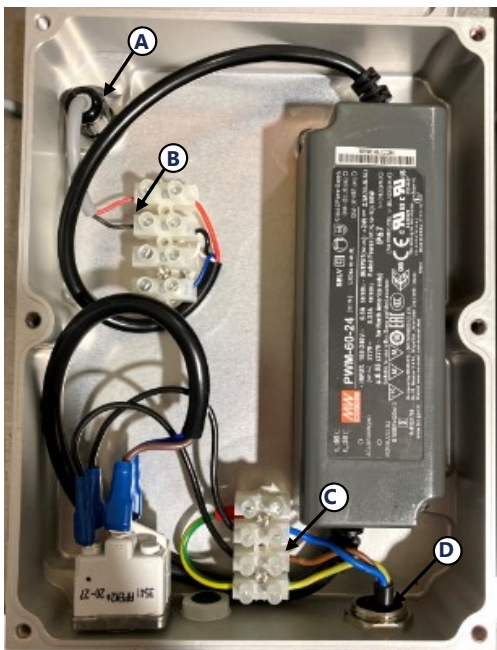
Before you start, make sure that the sign is turned off and not energized.

**Figure 30: Electronic box**



1. On the Electronic box, remove the six screws (A), then lift off the lid. Refer to [Figure 30](#).
2. Release the upper two screws (B) on the converter side of the terminal block, then remove the two wires. Refer to [Figure 31](#)

**Figure 31: Electronic Box Interior**



3. Disconnect the lower converter wires with quick-slide terminals from the ON-OFF safety switch.

4. Remove the converter from the electronics box, then install the new one in the same orientation.
5. Connect the lower converter wires with quick-slide terminals to the ON-OFF safety switch. Refer to [Figure 31](#).
6. Connect the two upper converter wires to the converter side of the terminal block. Refer to [Figure 31](#).
7. Attach the electronics box cover using six M5 screws with pre-installed thread locker.



**Note**

Make sure the sealing gasket is properly installed between the electronics box and cover to prevent dust and water ingress.

8. Tighten the M5 screws to 6 Nm.



**WARNING**

Do not over-tighten M5 screws, over-tightening may cause damage to the electronics box and/or water ingress into the enclosure.



**WARNING**

Do not under-tighten M4 screws, under-tightening may cause water ingress into the enclosure.

9. Restore power to the sign and test for proper operation.

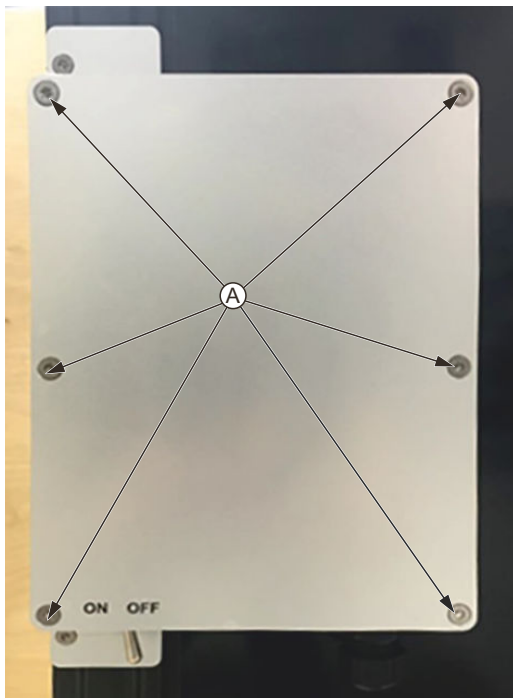
## 6.6 Replace the Complete Electronics Box



**CAUTION**

Before you start, make sure that the sign is turned off and not energized.

**Figure 32: Electronic box**



1. Remove the old electronics box:

- a. Remove six countersunk screws and cover from the electronics box. Discard the screws. Refer to [Figure 32](#).

**Figure 33: 6.6A Signs**

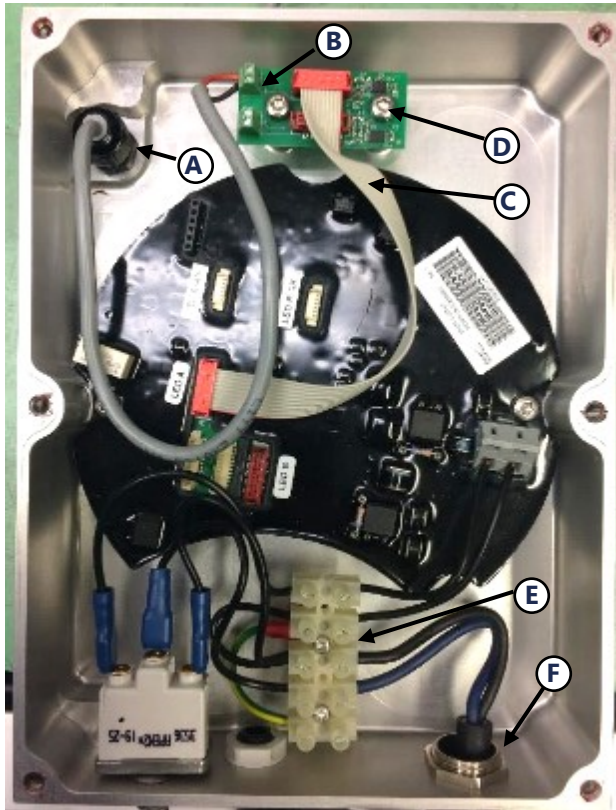
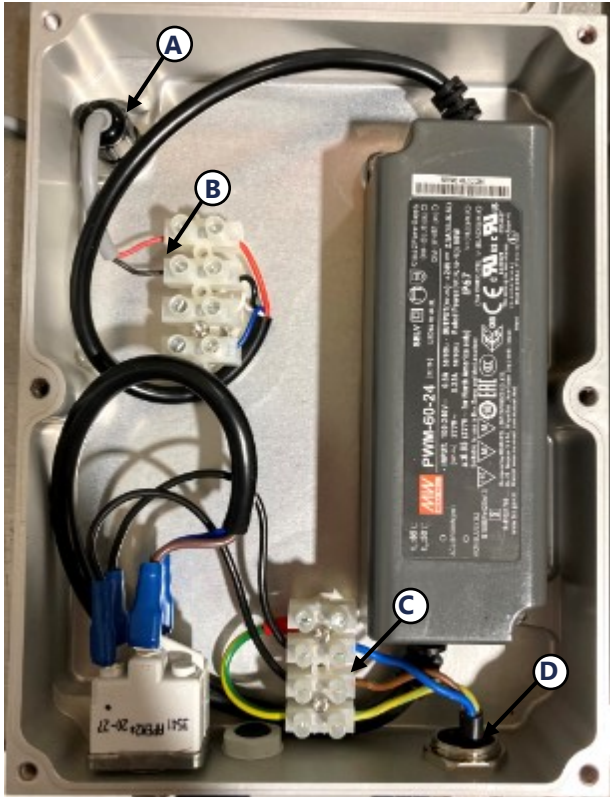




Figure 34: VAC Signs



- b. Loosen the cable gland (A) so that the LED cable will freely pull through the gland while removing the electronics box. Refer to [Figure 33](#) and [Figure 34](#).
- c. Loosen the two screws (B) and disconnect the LED cable (red and black wires). Refer to [Figure 33](#) and [Figure 34](#).
- d. Loosen the two screws (E) for 6.6A signs or (C) for VAC signs and disconnect the Power cable from the terminal block. Refer to [Figure 33](#) and [Figure 34](#).

- e. Loosen the cable gland (F) for 6.6A signs or (D) for VAC signs and release the power cable from the electronics box. Refer to [Figure 33](#) and [Figure 34](#).

**Figure 35: Electronic Box Front**



- f. Remove the two M4 screws (A) securing the electronics box to the frame and detach the electronics box from the sign frame. Retain these screws, they will be reused later. Refer to [Figure 35](#). If your sign has an electronics box that is riveted to the frame, detach the electronics box from the mounting brackets by removing the screws.



**Note**

Make sure the LED cable pulls freely through the cable gland while removing the electronics box.

2. Install the new electronics box:

- a. Insert the LED cable from the back of the sign through the LED cable gland of the electronics box, do not tighten the cable gland at this time.

**Figure 36: Electronic Box in Sign Frame**



- b. Attach the electronics box to the sign frame using two M4 screws (A). Refer to [Figure 36](#). If your sign has an electronics box that is riveted to the frame, reattach the electronics box to the mounting brackets using four M5 screws.



**Note**

Make sure the LED cable does not get pinched between the sign frame and the electronics box.

- c. Tighten the M4 screws to 2,5 Nm or M5 screws to 4,0Nm.



**CAUTION**

Do not over-tighten M4 screws, over-tightening may cause damage to the sign frame.

Figure 37: 6.6A signs

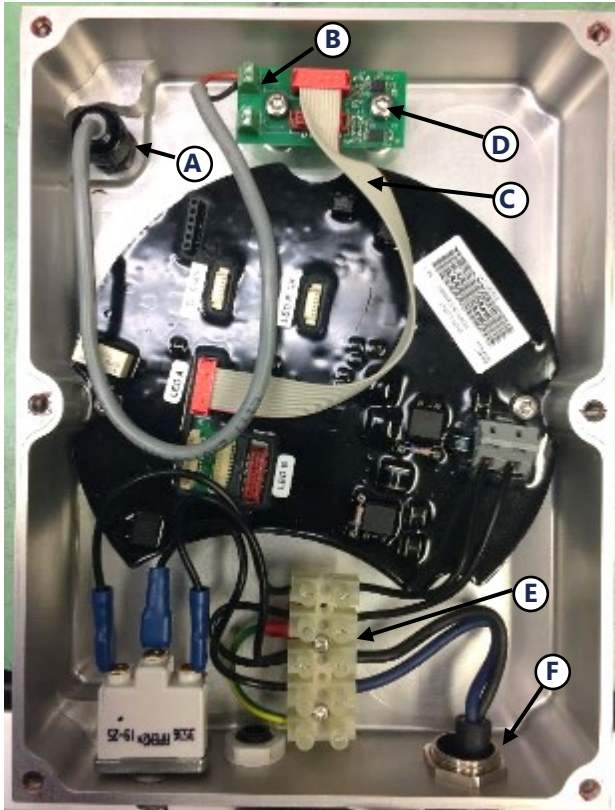
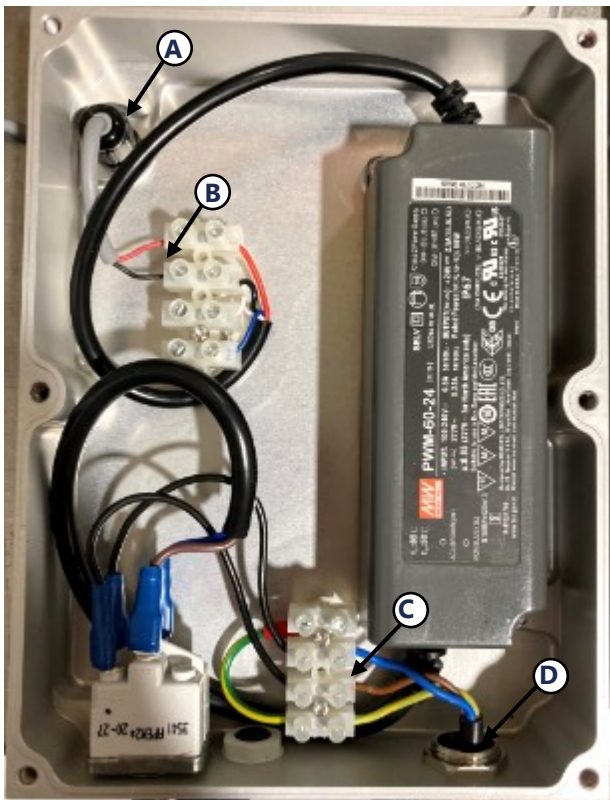


Figure 38: VAC signs



d. Tighten the cable gland (A) so that the LED cable is secure within the cable gland. Refer to [Figure 37](#) and [Figure 38](#).

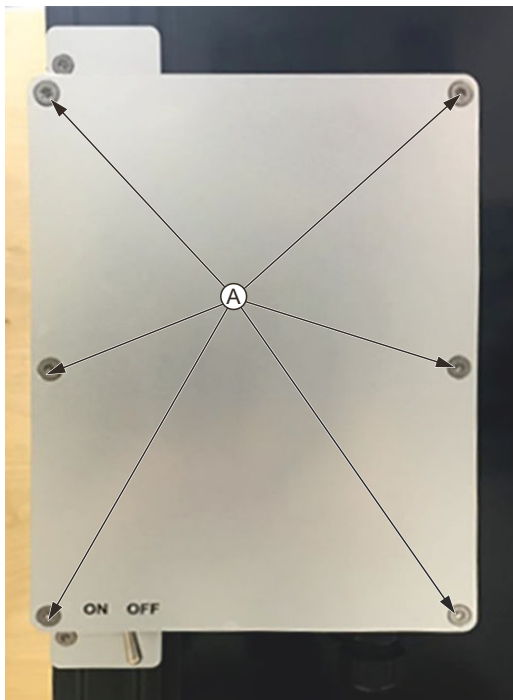
- e. Insert the power cable through the cable gland (F) for 6.6A signs or (D) for VAC signs ensuring a small amount of the cable's outer sleeve is visible inside the electronics box. Refer to [Figure 37](#) and [Figure 38](#).
- f. Connect the power cable to the terminal block (E) for 6.6A signs or (C) for VAC signs. [Figure 37](#) and [Figure 38](#). For 6.6A series circuit signs, continue with the next step. For VAC parallel circuit signs, continue with step (i).
- g. Remove the LED adapter card from the old electronics box by disconnecting the gray LED cable (C) and removing two small screws (D). Refer to [Figure 37](#).
- h. Install the LED adapter card onto the new electronics box using two small screws (D) and connecting the gray LED cable (C). Refer to [Figure 37](#).



**Note**

Make sure that the B-channel on the converter is used to power the LED strip.

- i. Connect the LED cable (red and black wires) and tighten the two screws (B). For 6.6A signs connect black to (-) and red to (+) on LED adapter card, for VAC signs connect red to red and black to black wires to the VAC converter. Refer to [Figure 37](#) and [Figure 38](#).
- j. If replacing an electronics box without a converter, refer now to section [Replace a Converter \(6.6A series circuit signs\)](#) or [Replace a Converter \(VAC parallel circuit signs\)](#) for instructions to move the converter from the old electronics box to the new electronics box.



- k. Attach the electronics box cover using six M5 screws with pre-installed thread locker.



**Note**

Make sure the sealing gasket is properly installed between the electronics box and cover to prevent dust and water ingress.

- l. Tighten the M5 screws to 6 Nm.



### CAUTION

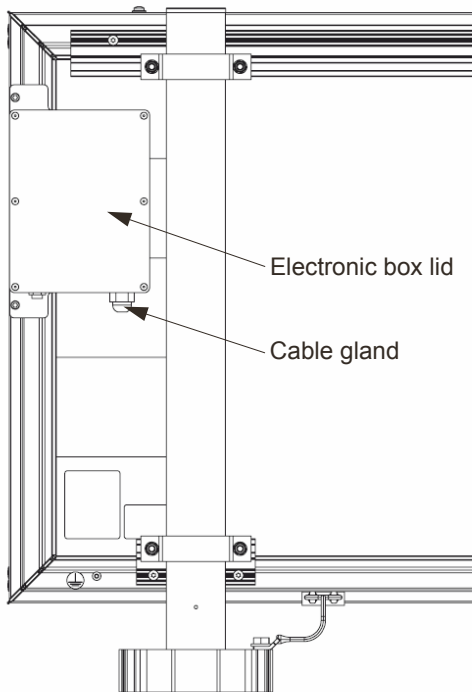
Do not over-tighten M5 screws, over-tightening may cause damage to the electronics box and/or water ingress into the enclosure.

---

m. Restore power to the sign and test for proper operation.

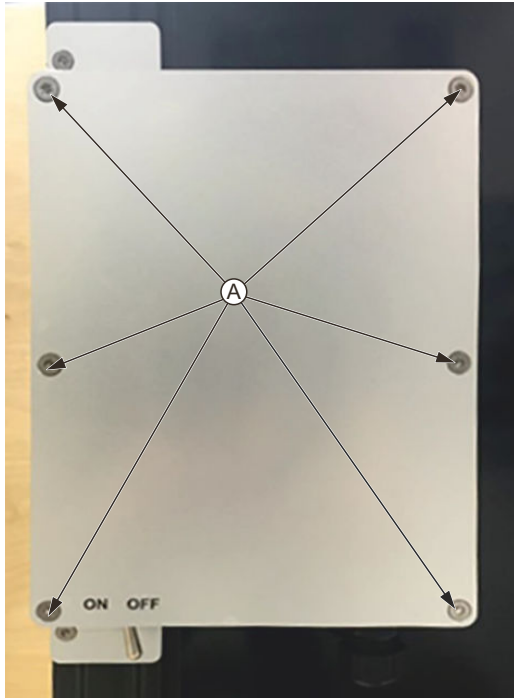
## 6.7 Replace a Damaged Power Cable

Figure 39: Electronic box overview



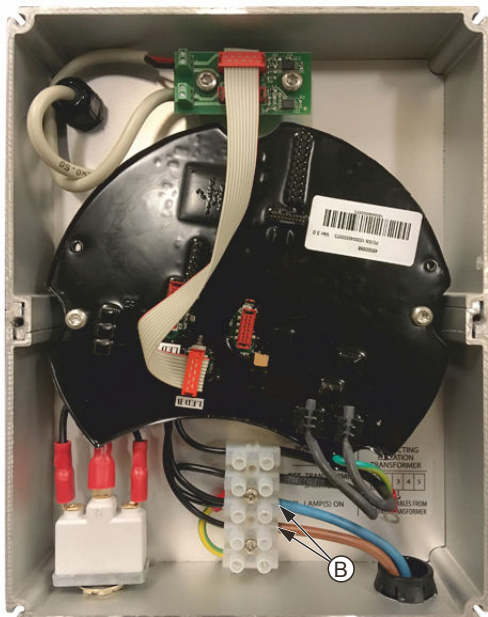
1. Disconnect the sign from the transformer.
2. On the Electronic box, remove the six screws (A), then lift off the lid. See [Figure 40](#).

Figure 40: Remove the lid



3. Remove the screws holding the cables from the terminal block (B) inside the converter box. See [Figure 41](#).

Figure 41: Terminal block

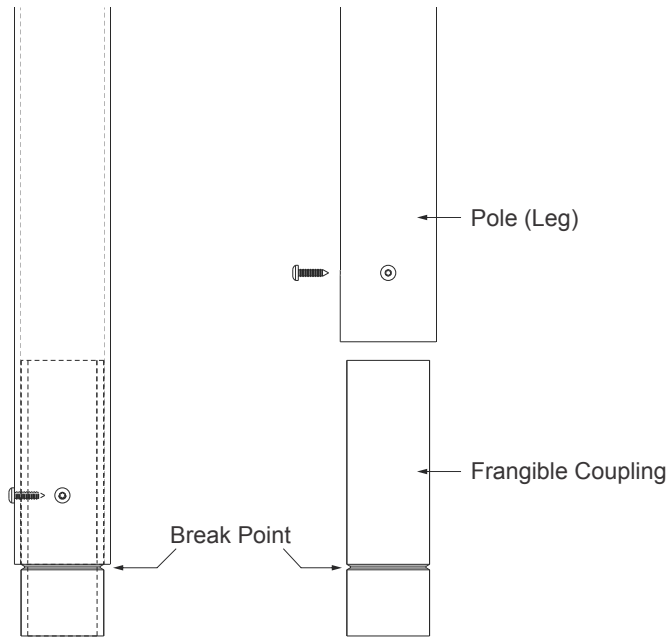


4. Loosen the cable gland, thereby releasing the cable.
5. Pull the open end of the new cable through the cable gland.

6. Connect the cable to the terminal block (B) inside the converter box (see [Internal Wiring - 6.6A Series Powered LED](#)).
7. Tighten the cable gland.
8. Close and attach the lid to the box using the six countersunk screws (A). See [Figure 39](#).

## 6.8 Replace a Frangible Coupling

**Figure 42: Frangible coupling overview**



1. Remove the sign from the poles.
2. Remove the frangible coupling from the pole by loosen the two screws at the base. Save the screws to the new coupling.
3. Insert the new frangible coupling in the pole with the break-off point located at the end of the pole.
4. Drill new holes, Ø 4.5 mm, in the frangible coupling, using the holes in the pole for guidance, then fasten with the two screws.
5. Insert the pole with the attached frangible coupling in the base.
6. Repeat this procedure on the remaining poles.



### Note

A frangible coupling will break when hit with sufficient force. If one frangible coupling breaks all remaining frangible couplings must be replaced.

---



## 6.9 Reset the Fail-open Converter

### Parts

- Fuse resistor spare part kit: 6132.00.250 (20 pcs).

### Information

- A converter with 1 connector has 2 fuse resistors.

### Reset / replace the fuse resistors

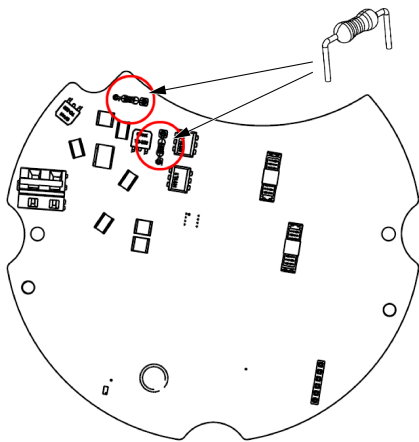


#### CAUTION

Make sure that the power on the circuit is turned OFF

1. On the sign, turn the power switch off.
2. Locate the fuse resistors.

**Figure 43: Fuse resistors**



3. Remove the fuse resistors by pulling away from the converter.



#### Note

Always replace both fuse resistors at the same time. Make sure to dispose the old fuse resistors

4. Place the legs of the new fuse resistors in the sockets.
5. Assemble the electronics box and turn the power switch on. Power ON the circuit to perform the functional test.



## 7.0 Troubleshooting

Troubleshooting can solve the most common issues that can occur on the sign. If an issue cannot be solved, contact ADB SAFEGATE Support, see [SUPPORT](#).

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

The following sections describes how to perform troubleshooting.

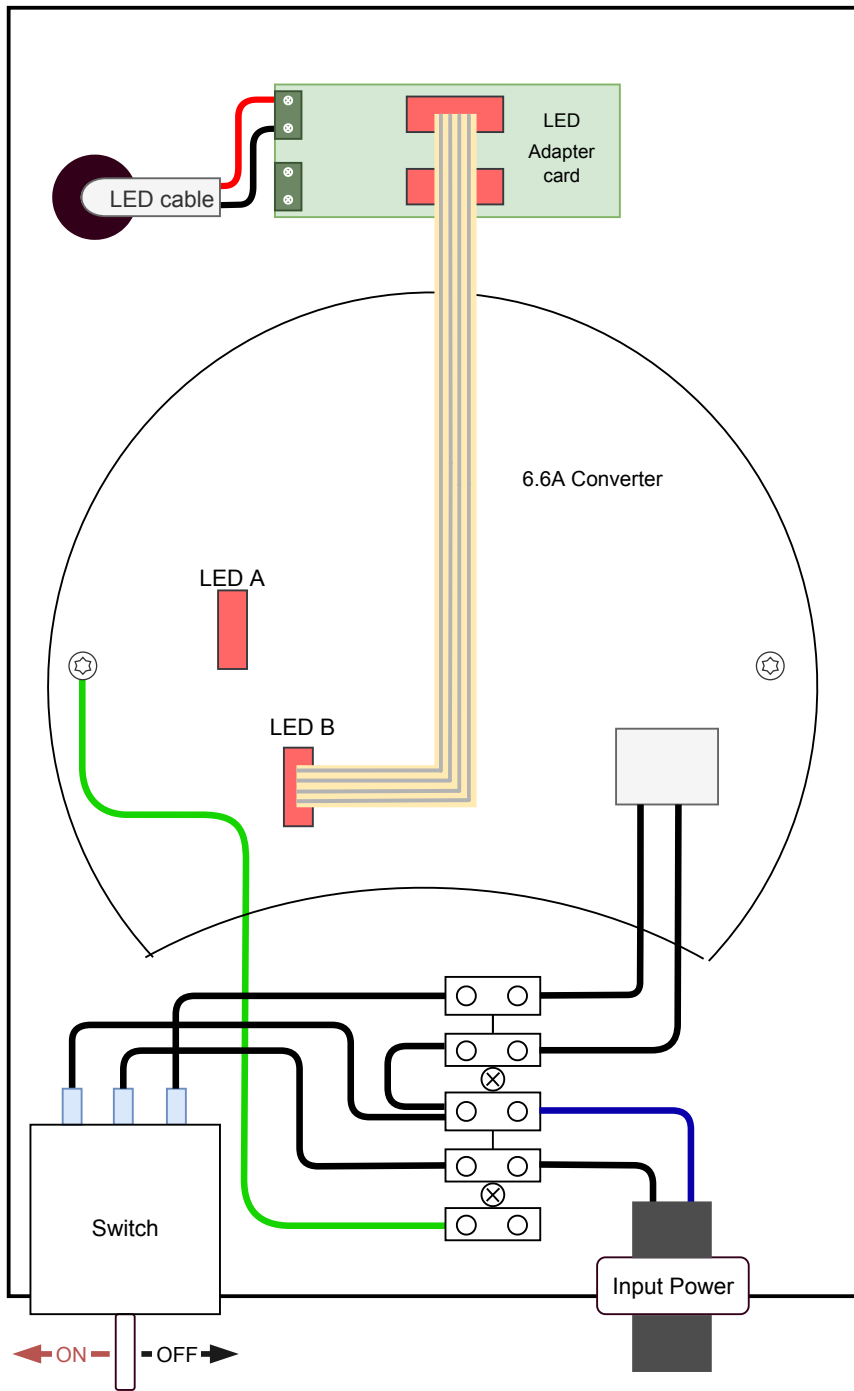
### 7.1 The Sign does not light up correctly

Issue	Possible reason	Possible action
Only parts or sections of the sign do not light up.	Damaged LED-strip.	Change LED-strip to a spare.
No part of the sign lights up.	Insufficient input power.	Check using a clamp meter that the input power to the sign is correct. If there is no input power some possible reasons are damaged power cable on the sign or an issue with the transformer.
	Faulty component or loose wiring in the electronics box.	Verify that the sign switch is set to ON. Replace the switch if it is faulty.  Verify, with the cable disconnected from the power, that the wiring in the converter box is the same as in the internal wiring diagrams <a href="#">series</a> and <a href="#">voltage</a> and that the cables are securely installed in the terminal block.
	Fuse resistor has blown (Fail-Open monitored signs only)	Replace the fuse resistor.
The upper right corner is much darker than the rest of the sign.	No contact between the LED-strip and the light panel due to for example that the LED-cable is clamped between the panel and strip.	Remove the U-profile. Look at the LED-strip inside the cut-out and remove anything preventing contact between the LED-strip and the light panel.
	Damaged LED-strip.	Change LED-strip to a spare.

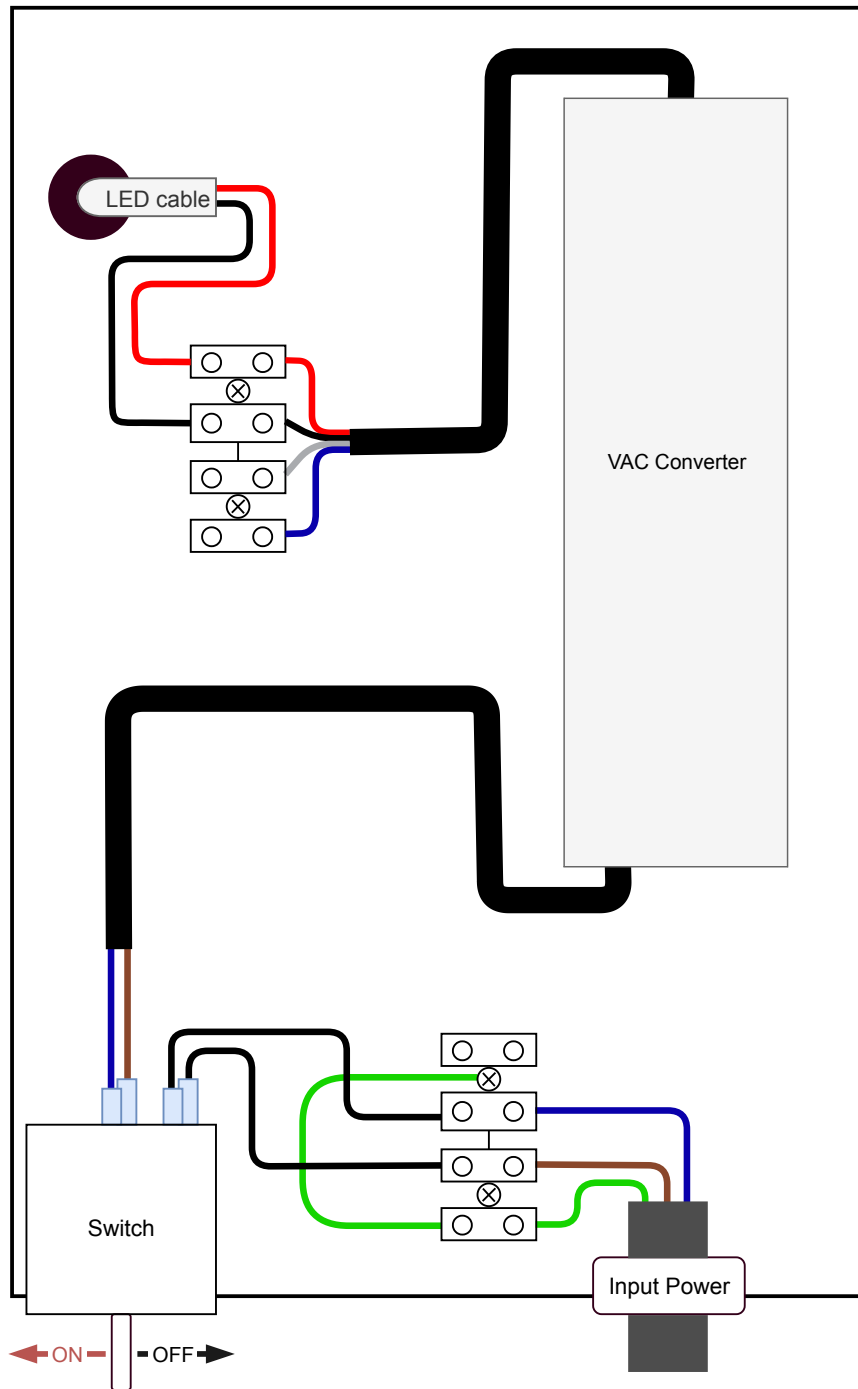
### 7.2 The Sign has mechanical Issues

Issue	Possible reason	Possible action
The front panel looks bad or message is hard to read.	The front panel is dirty.	Remove the front panel. and clean the inside and outside, using warm water and a mild dish soap or a specialized polycarbonate or plastic cleaner. Do not use solvents.
	Light panel is dirty.	Remove the front panel and thoroughly clean the light panel with warm water and mild dish soap or a specialized acrylic or plastic cleaner. Do not use solvents.
	Front panel is damaged.	Replace the front panel with a spare.
The sign is skew after a collision.	Collected water inside the sign	Remove any collected water on the front panel or the light barrier by using a soft cloth. Verify that the drainages are not blocked by dirt. Verify that all gaskets are in good condition, including the sealing washers and LED-cutout tape. Verify that all screws are fastened firmly in place.
	A non-permanent deformation.  Fasteners for the frame have loosened.	Remove the sign from its poles and let the sign recover for ~1 hour.  Re-tighten the frame fasteners by hand. These are located under the plastic domes on the sign sides.

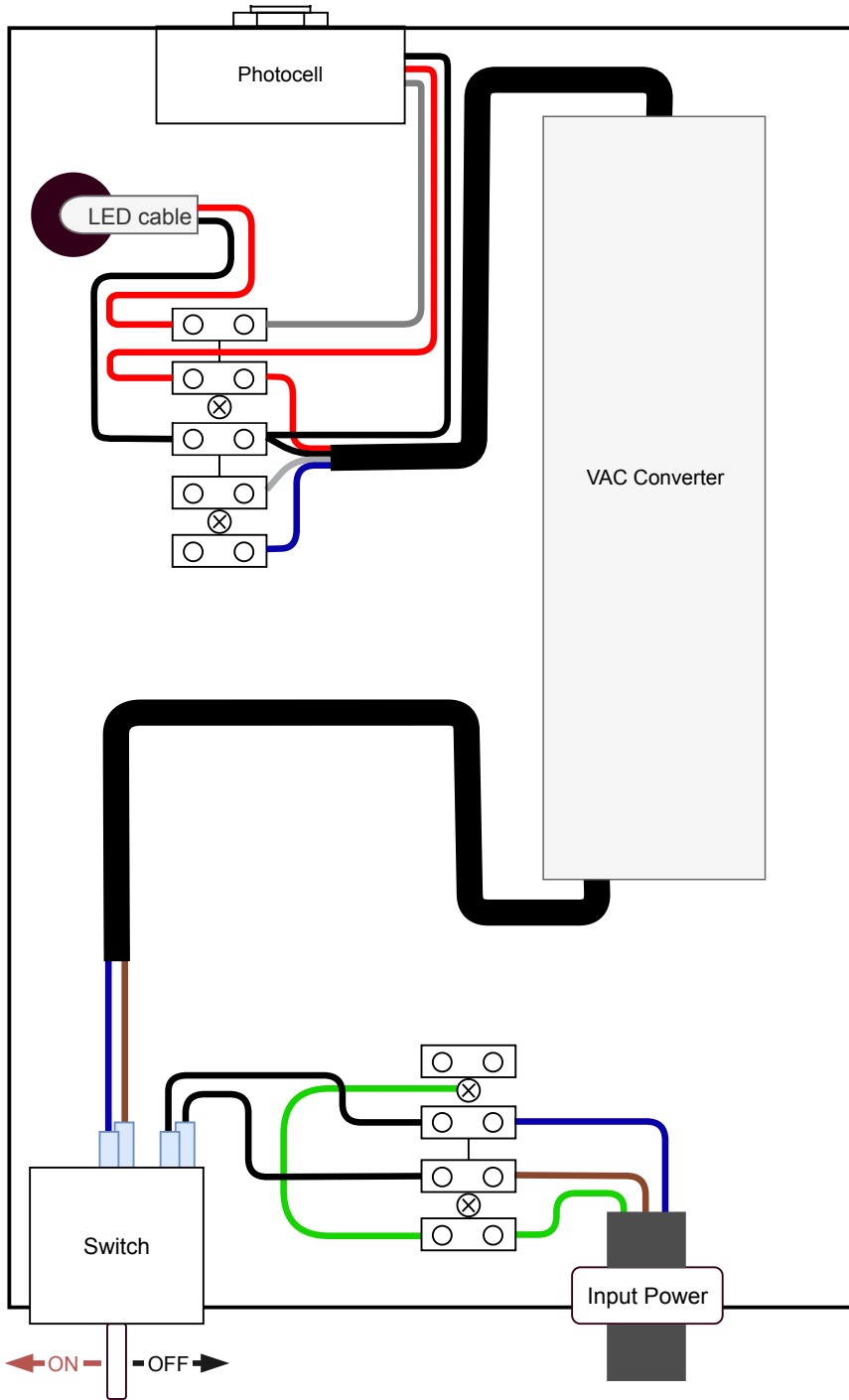
### 7.3 Internal Wiring - 6.6A Series Powered LED



## 7.4 Internal Wiring - Voltage Powered LED Guidance



### 7.5 Internal Wiring - Voltage Powered LED Gate



## 8.0 Spare Parts

### 8.1 RELIANCE Sign

This spare part list covers both Guidance signs and Gate signs.

To select the correct spare part, make sure which sign version you have. Complete product information can be found on the product label which is located on the back of the sign.

#### Construction

Figure 44: Sign front

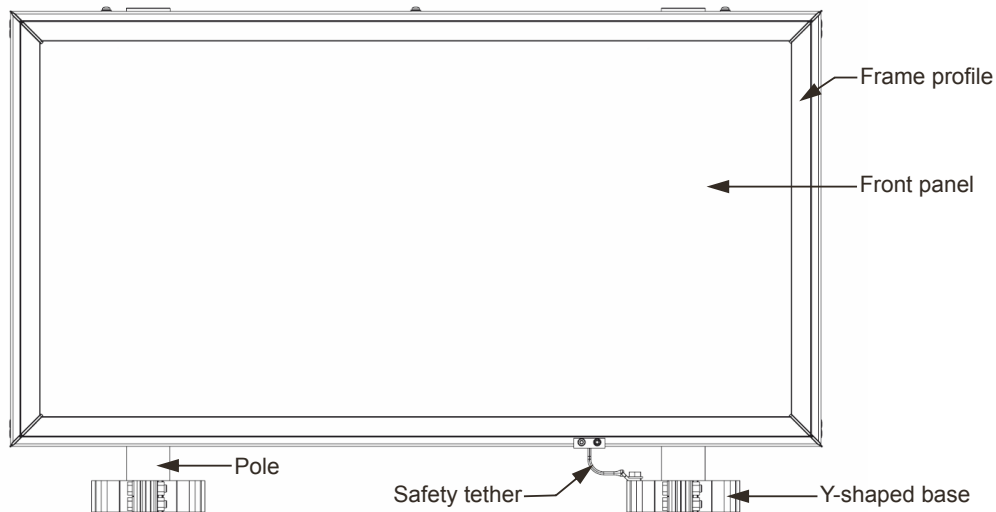
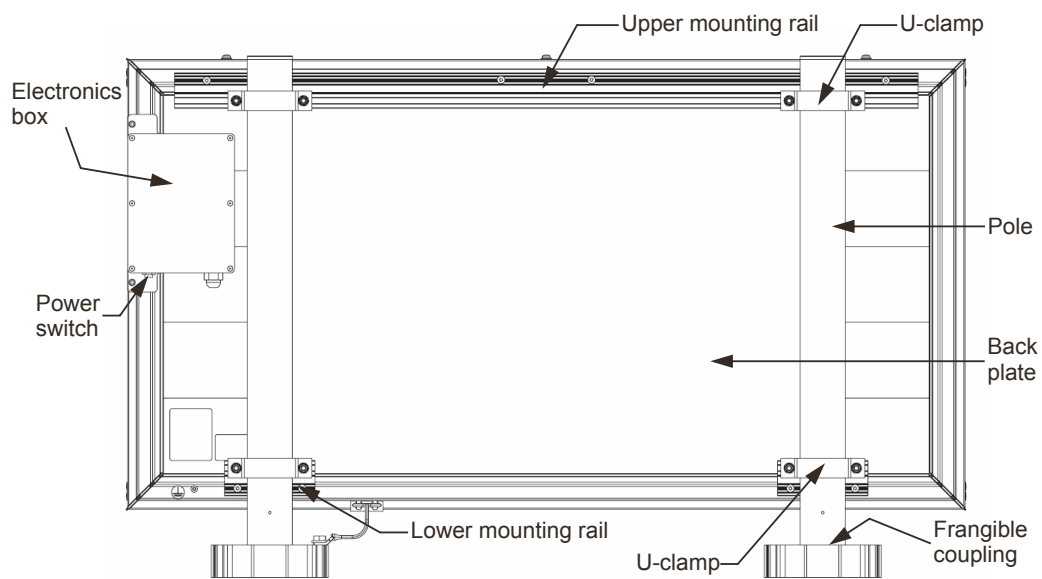


Figure 45: Sign back



## RELIANCE Sign Components

**Table 3: Installation**

Description	Order code
Y-shaped, 3 bolt, mounting base	SG13993
Pole for 700 mm height signs	SG13994
Pole for 900 mm height signs	SG13995
Pole for 1300 mm height signs	SP013250
U-clamp, diameter 70 mm, includes mounting hardware (Airfield Sign), 10 pcs	SG25836
Corner gasket sealing kit (includes corner gaskets, sealing washers, and bolts), 100 pcs (25 signs)	SG25837
LED cut-out sealing tape, 50 mm x 10 m	SP012954
Safety tether M6	SG25755
Bird deterrent spikes, 1 m length (Stainless Steel)	SG19216
Side profile panel seal kit for 700 mm sign (Enough for 1 sign), 2 pcs <sup>1</sup>	SG27000
Side profile panel seal kit for 900 mm sign (Enough for 1 sign), 2 pcs <sup>1</sup>	SG27001
Side profile panel seal kit for 1300 mm sign (Enough for 1 sign), 2 pcs	SP013251
Secondary Lead Assembly, Style 1, 150 cm, 2 x 2,5 mm <sup>2</sup>	KDC501.2.150

**Notes**

<sup>1</sup> Signs produced 2021 and later include side profile panel seals. Signs produced before 2021 can be retrofitted with side profile panel seals.

**Table 4: Mounting Rails (includes mounting bolts and washers)**

Description	Order code
Upper Mounting Rail 1150 mm Sign	SP012944
Upper Mounting Rail 1200 mm Sign	SP012945
Upper Mounting Rail 1300 mm Sign	SP012946
Upper Mounting Rail 1600 mm Sign	SP012947
Upper Mounting Rail 1800 mm Sign	SP012948
Upper Mounting Rail 2100 mm Sign	SP012949
Upper Mounting Rail 2500 mm Sign	SP012950
Upper Mounting Rail 2650 mm Sign	SP012951
Upper Mounting Rail 3000 mm Sign	SP012952
Lower Mounting Rail (1pc per pole)	SP012953

**Table 5: Electronic Box Parts**

Description	Order code
Converter LED 6.6A	SP013245
Converter LED 6.6A, Fail-Open	SP013246
Converter LED VAC (230V)	SG18028
Electronics Box 6.6A complete with electronics, mounting hardware, with converter, no LED adapter card (Guidance Sign)	SP013107
Electronics Box 6.6A complete with electronics, mounting hardware, with fail-open converter, no LED adapter card (Guidance Sign)	SP013166
Electronics Box 6.6A complete with electronics, mounting hardware, no converter, no LED adapter card (Guidance Sign)	SP012983



**Table 5: Electronic Box Parts (Continued)**


Description	Order code
Electronics Box VAC complete with electronics, mounting hardware, with converter (Guidance Sign)	SP.013064
Electronics Box VAC complete with electronics, mounting hardware, no converter (Guidance Sign)	SP.013065
Electronics Box VAC complete with electronics, mounting hardware, with converter (Gate Sign)	SP.013066
Electronics Box VAC complete with electronics, mounting hardware, no converter (Gate Sign)	SP.013067
LED cable (between converter and adapter card), 180 mm, 10 pcs	SGE.SP18650
LED cable (between LED and adapter card), 600 mm, 5 pcs	SP.013244
Photocell with cable and gland (Gate Sign)	SG24504
Fuse Resistor for Fail-Open Sign, 20 pcs	6132.00.250
On/Off switch with sealing washer, 6.6A	SG24835
On/Off switch with sealing washer, VAC	SG27011

**Table 6: LED Strip for Guidance Signs**

Sign Size (mm) (Height x Width)	LED strip + adapter card (6.6A signs)	LED strip (VAC signs)
700 x 1150	SP013133	SG27003
700 x 1300	SP013134	SG27004
700 x 1600	SP013135	SG27005
700 x 1800	SP013136	SG27006
700 x 2100	SP013137	SG27007
700 x 2500	SP013138	SG27008
700 x 2650	SP013139	SG27009
700 x 3000	SP013140	SG27010
900 x 1150	SP013141	SG27003
900 x 1300	SP013142	SG27004
900 x 1600	SP013143	SG27005
900 x 1800	SP013144	SG27006
900 x 2100	SP013145	SG27007
900 x 2500	SP013146	SG27008
900 x 2650	SP013147	SG27009
900 x 3000	SP013148	SG27010
1300 x 1300	SP013142	SG27004

**Table 7: LED Strip for Gate Signs**

Sign Size (mm) (Height x Width)	LED strip (VAC signs)
900 x 900	SG17949
1200 x 1200	SG17950

 **NOTICE**  
For VAC signs, adapter card is not used.



**Note**

In case of broken or damaged LED strip, replace the LED strip including adapter card according to spare part list above.

In case of broken converter, replace with a new converter according to spare part list above.

**Important**

It is important to use the provided LED strips and the adapter card included in the LED module spare part kit since it is specific for the dimension of the sign.

**Table 8: Frangible Couplings for Wind Load Requirement ICAO 322 km/h (FAA Mode 2)**

Sign Size (mm) (Height x Width)	Poles	For Y-shaped Feet (3-Bolt Mounting Base)
700 x 1150	2	SG13979 (1.3)
700 x 1300	2	SG13980 (1.6)
700 x 1600	2	SG13981 (1.8)
700 x 1800	2	SG13981 (1.8)
700 x 2100	3	SG13979 (1.3)
700 x 2500	3	SG13980 (1.6)
700 x 2650	4	SG13979 (1.3)
700 x 3000	4	SG13980 (1.6)
900 x 1150	2	SG13981 (1.8)
900 x 1300	2	SG13982 (2.2)
900 x 1600	2	SG13982 (2.2)
900 x 1800	2	SG13983 (2.6)
900 x 2100	3	SG13982 (2.2)
900 x 2500	3	SG13982 (2.2)
900 x 2650	3	SG13983 (2.6)
900 x 3000	4	SG13982 (2.2)
1300 x 1300	2	SG13983 (2.6)

**Table 9: Frangible Couplings for Wind Load Requirement ICAO 480 km/h (FAA Mode 3)**

Sign Size (mm) (Height x Width)	Poles	For Y-shaped Feet (3-Bolt Mounting Base)
700 x 1150	2	SG13983 (2.6)
700 x 1300	2	SG13983 (2.6)
700 x 1600	3	SG13982 (2.2)
700 x 1800	3	SG13982 (2.2)
700 x 2100	3	SG13983 (2.6)
700 x 2500	4	SG13982 (2.2)
700 x 2650	4	SG13983 (2.6)
700 x 3000	4	SG13983 (2.6)
900 x 1150	3	SG13983 (2.6)
900 x 1300	3	SG13984 (3.1)

**Table 9: Frangible Couplings for Wind Load Requirement ICAO 480 km/h (FAA Mode 3) (Continued)**

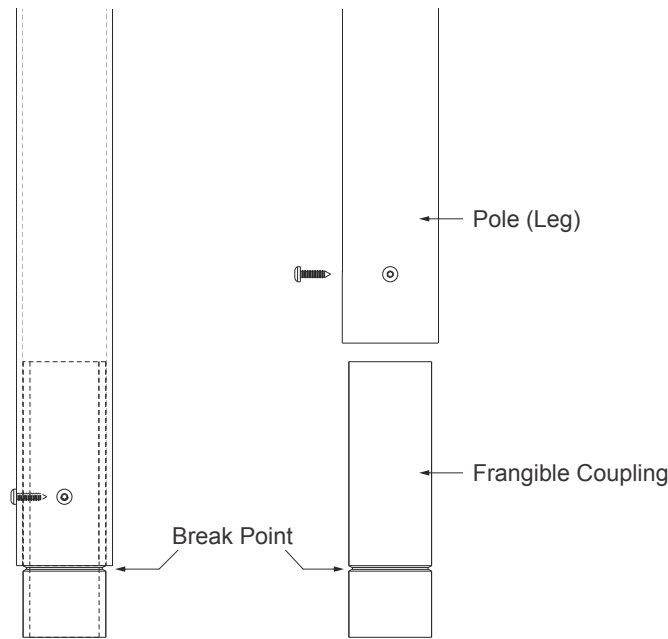
Sign Size (mm) (Height x Width)	Poles	For Y-shaped Feet (3-Bolt Mounting Base)
900 x 1600	4	SG13983 (2.6)
900 x 1800	4	SG13983 (2.6)
900 x 2100	4	SG13984 (3.1)
900 x 2500	5	SG13984 (3.1)
900 x 2650	5	SG13984 (3.1)
900 x 3000	5	SG13984 (3.1)
1300 x 1300	4	SG13984 (3.1)



**Note**

At replacement of frangible couplings, mount in existing poles.

Insert the end of the frangible coupling, which is 150 mm from the break-off point, into the pole until the end of the pole is centered over the break off point of the frangible coupling. Fasten by reusing the self-threading screws supplied with the original assembly.



**Table 10: Front Panel for Guidance Signs**

Sign Size (mm) (Height x Width)	Ordering Code
700 x 1150	SG17923
700 x 1300	SG17924
700 x 1600	SG17925
700 x 1800	SG17926
700 x 2100	SG17927
700 x 2500	SG17928

**Table 10: Front Panel for Guidance Signs (Continued)**

<b>Sign Size (mm) (Height x Width)</b>	<b>Ordering Code</b>
700 x 2650	SG17929
700 x 3000	SG17930
900 x 1150	SG17931
900 x 1300	SG17932
900 x 1600	SG17933
900 x 1800	SG17934
900 x 2100	SG17935
900 x 2500	SG17936
900 x 2650	SG17937
900 x 3000	SG17938
1300 x 1300	SP013248

**Table 11: Front Panel for Gate Signs**

<b>Sign Size (mm) (Height x Width)</b>	<b>Ordering Code</b>
900 x 900	SG17939
1200 x 1200	SG17940

## 8.2 Ordering Codes

### Guidance Sign

#### Guidance Sign

R L S N □ □ □ □ □ □ □ □ □ □

#### Application

2 = 322 km/h (mode 2)  
3 = 483 km/h (mode 3)

#### Height

2 = 1300 mm <sup>1</sup>  
7 = 700 mm  
9 = 900 mm

#### Length

1 = 1150 mm  
2 = 1300 mm  
3 = 1600 mm  
4 = 1800 mm  
5 = 2100 mm  
6 = 2500 mm  
7 = 2650 mm  
8 = 3000 mm

#### Intensity

D = Dimmable

#### Options

0 = No option

#### Sides

1 = One-sided

#### Frame Color

G = Grey  
Y = Yellow  
B = Black

#### Power and Monitoring

S = 2.8 - 6.6 A, no monitoring  
M = 2.8 - 6.6 A, fail-open monitoring  
V = VAC

#### Standard

I = ICAO

#### Connector type

0 = No options

#### Cable leads

0 = No options

#### Version

1 = First version

#### Notes

<sup>1</sup> Only available as 1300 x 1300 mm for a runway distance remaining sign.  
Compliant with NATO STANAG 3316 for runway distance remaining signs.

## Gate Sign

### Gate Sign

#### Application

G = Gate Sign

#### Height

2 = 1200 mm<sup>1</sup>

7 = 700 mm<sup>1</sup>

9 = 900 mm<sup>1</sup>

#### Length

2 = 1200 mm<sup>1</sup>

3 = 1300 mm<sup>1</sup>

9 = 900 mm<sup>1</sup>

#### Intensity

D = Dimmable

#### Options

0 = No option

#### Sides

1 = One-sided

#### Frame Color

G = Grey

Y = Yellow

B = Black

#### Power and Monitoring

V = VAC

#### Standard

I = ICAO

#### Connector type

0 = No options

#### Cable leads

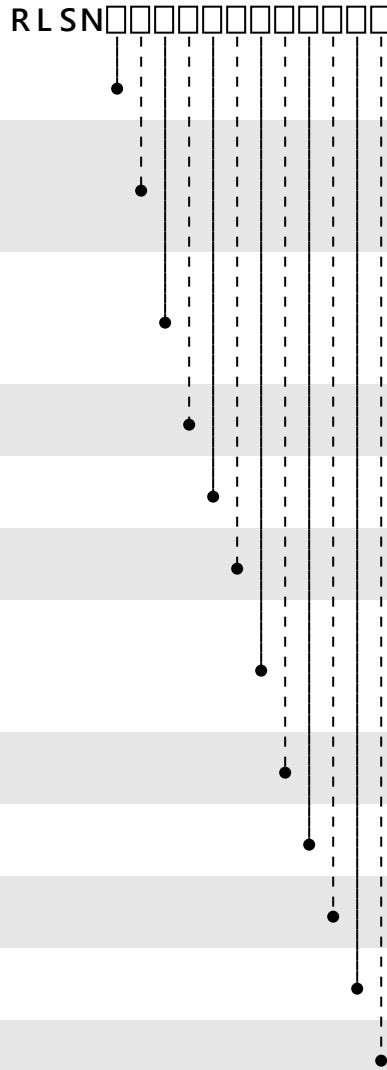
0 = No options

#### Version

1 = First version

#### Notes

<sup>1</sup> Only available as 900 x 900, 1200 x 1200, and 700 x 1300 mm



## 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

#### 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**

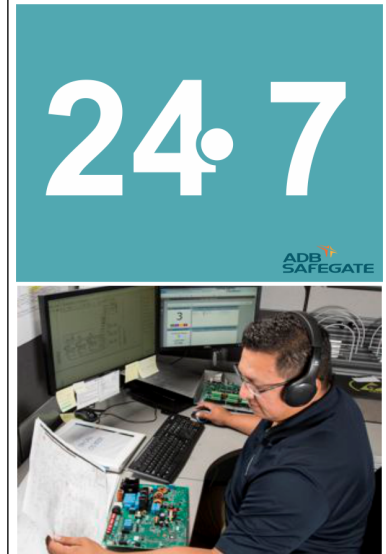
**ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304**

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, 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.



#### Note

For more information, see [www.adbsafegate.com](http://www.adbsafegate.com), or contact ADB SAFEGATE Support via email at [support@adbsafegate.com](mailto: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](http://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

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