



Primary Connector Kit (PRK) installation instructions

## User Manual

AM06.930e, Rev. A, 2022/05/25





## 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 FAA Airfield regulations. The FAA directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

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ADB SAFEGATE will correct by repair or replacement per the applicable guarantee above, 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.

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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 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.

### 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.

	<b>WARNING</b> Failure to observe a warning may result in personal injury, death or equipment damage.
	<b>DANGER - Risk of electrical shock or ARC FLASH</b> 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.
	<b>WARNING - Wear personal protective equipment</b> Failure to observe may result in serious injury.
	<b>WARNING - Do not touch</b> Failure to observe this warning may result in personal injury, death, or equipment damage.
	<b>CAUTION</b> Failure to observe a caution may result in equipment damage.

### Qualified Personnel

	<b>Important Information</b> The term <b>qualified personnel</b> 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.
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### 1.1.1 Introduction to Safety



#### CAUTION

##### Unsafe Equipment Use

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

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

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

### Additional Reference Materials



#### Important Information

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

### 1.1.2 Intended Use



#### CAUTION

##### Use this equipment as intended by the manufacturer

This equipment is designed to perform a specific function, do not use this equipment for other purposes

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

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



### 1.1.3 Material Handling Precautions: Storage



#### CAUTION

##### Improper Storage

Store this equipment properly

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

**Failure to follow this instruction can result in equipment damage**

### 1.1.4 Material Handling 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.**

### 1.1.5 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**

### 1.1.7 Arc Flash and Electric Shock Hazard



## DANGER

### Series Circuits have Hazardous Voltages

This equipment produces high voltages to maintain the specified current - Do NOT Disconnect while energized.

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

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



## 2.0 Primary Connector Kit (PRK) installation instructions

### 2.1 Safety precautions

- **AGL equipment should be installed only by competent personnel.**

Operating and maintenance personnel should refer to IEC standard 61821, ICAO Airport Services Manual Part 9, "Airport Maintenance Practices" and to FAA Advisory Circular AC 150/5340-26 "Maintenance of Airport Visual Aid Facilities" for instructions on safety precautions. Personnel must always observe the safety regulations. The equipment has been designed and manufactured to allow safe and secure operation, however, the listed rules must be strictly observed.

- **Prior to installation and disconnection, de-energize all cables and equipment.**
- **Inspect all parts for rating and compatibility.**

### 2.2 Selection table

A watertight connection is only assured if properly installed as instructed in this manual and the dimensions of the cables / wires match the connector type as listed in below table

Cable type	Outer diameter	Conductor size	Connector kit Type
Screened = <b>S</b>	Cable 8.0 – 11.5mm = <b>1</b>	AWG 6 or 10mm <sup>2</sup> = <b>A</b>	<b>PRK – X – Y – Z</b> Cable type _____ Outer diameter _____ Conductor size _____
Unscreened = <b>U</b>	Cable 10.0 – 14.5mm = <b>2</b>	AWG 8 or 6mm <sup>2</sup> = <b>B</b>	
	Cable 14.0 – 18.5mm = <b>3</b>		

### 2.3 Assembly of Cable in connector kit

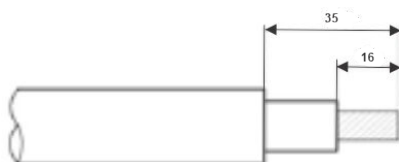
Sequence		Description
Unscreened cable	Screened cable	
1	1	Clean the cable end to be inserted into the connector kit housing over some 15 mm (6") to 20 mm (8") with a solvent.
2	2	Prepare / strip the cable as shown in the drawings below:



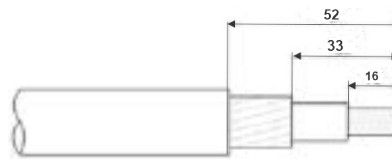
#### CAUTION

Do not overstrip and cut into conductors/insulation.

Unscreened cable

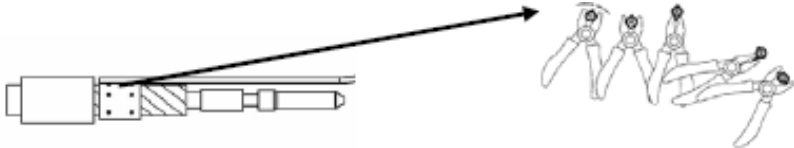



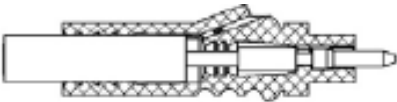
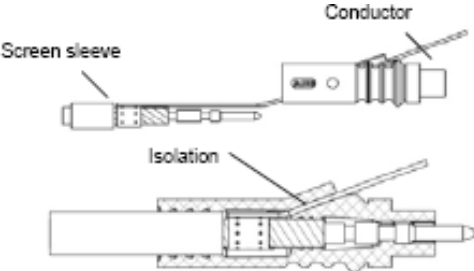


Screened cable

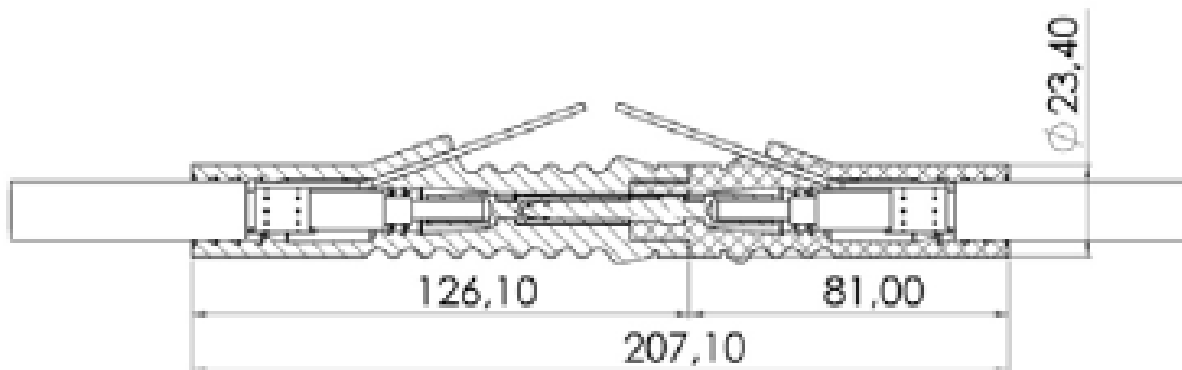


3	3	Crimp the conductor into the crimp barrel of the pin / socket contact of the kit. Recommended crimping tools		
		Connector type	Crimping tool	ADB order nr
		Primary only	TBM-25-S	8981.13.010
			Hydr.35.KN (+AWG6 & 8)	8981.13.015

Recommended amount of crimps : Two at 90 degrees to each other

Sequence		Description
Unscreened cable	Screened cable	
	4	<p>Gradually press the screen sleeve around the cable screen as shown below. Apply Grease at the cable/contact assy and if available the earth conductor and its transparent sleeve [The transparent sleeve has to be positioned closest to the crimped ring],</p> 
		<p> <b>CAUTION</b> Ensure no sharp edges are on the screen sleeve after the "pressing" action is complete.</p>
4	4	<p>Slide the above cable/pin or cable/receptacle assy into the respective connector housings. For the receptacle, use the plastic "paw" as a guide and to prevent grease from getting into the socket contact :</p> 
		<p>In case of screened cable, make sure that the conductor connected to the screen sleeve is pushed through the isolation as shown below.</p>
		<p> <b>Note</b> For a good, watertight connection, make sure to perform this assembly in one smooth single sequence. <i>Repeated sliding in both directions may jeopardize the water tightness.</i></p>
Unscreened cable		Screened cable
		

## 2.4 Assembly of plug and receptacle



1. While making electrical contact between plug and receptacle, air captured between the two parts of the water seal may resist complete insertion. This is especially the case when one or both parts are lubricated. To overcome the phenomenon proceed as follows:
  - a) Fold a piece of paper or electrical tape ( with adhesive sides together)
  - b) Place inside the receptacle and insert the plug.
  - c) Pull out the folded paper or tape.
2. Apply 2 layers of self vulcanizing tape (Scotch 23, 130C or similar) around the joint of the connectors, ½ overlapped, extending at least 25 to 38mm (1 to 1 ½”) in order to keep it dry and clean, and hence preventing water and dirt being drawn into the water seal when the connector gets separated. Wrap another layer of electrical tape (Scotch 33+ or equivalent - e.g. heat shrink sleeve) over the rubber tape.

## 2.5 Disconnection

To separate plug and receptacle, remove the tape and pull apart without bending. Do not pull on the cables.

## 2.6 Use restriction notice

This manual has been compiled with all possible care and in view of providing a valuable and practical tool to the Airport Installation and Maintenance personnel.

We encourage customers to address us their comments and proposals for improving further the contents of this manual. Communications should be addressed to ADB Safegate's representative in your country or to ADB Safegate's " **After Sales department** ": **ADB Safegate BV. 585, Leuvensesteenweg, B-1930 Zaventem – Belgium Tel. 32 2 722 17 11 Fax 32 2 722 17 64**

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