



# Installation and Maintenance Manual

## HPS Basestation

## Preface

- Please read carefully and understand the contents of this manual.
- Failure to read the manual may result in serious injury, or serious damage to equipment.
- Make sure these instructions are always accessible for all users and ensure that you have read and understood the contents.

## Document Information

Name : **05\_CEDD\_HPS\_Basestation\_Installation\_Maintenance\_Manual\_03-70092**

For the latest version of this document see <https://www.tkh-airportsolutions.com/airfield-products/> or scan:



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# Contents

1. About this manual .....	5
1.1 Symbols used.....	5
1.2 Storing the manual .....	6
1.3 Limitations of the Document .....	6
1.4 Terms and Abbreviations .....	7
1.5 Trademarks .....	7
1.6 Liability and Warranty.....	7
1.7 Manufacturer Details .....	8
2. Safety .....	9
2.1 Qualified Personnel.....	9
2.2 Intended Use.....	9
2.3 General safety rules .....	10
2.4 Electrical hazards.....	11
2.5 Transport and Storage .....	12
2.6 Lifting and Carrying .....	13
2.7 Installation and Maintenance .....	13
3. About the CEDD HPS Basestation .....	14
3.1 About CEDD.....	14
3.2 About the CEDD HPS Basestation .....	14
3.3 Operation Information and Specifications .....	15
3.4 Dimensions .....	16
3.5 CEDD HPS Basestation: Components .....	17
3.6 More Information .....	17
4. Inspection.....	18
4.1 Inspect the transport box.....	18
4.2 Inspect the contents of the transport box.....	18
4.3 Visually Inspect the CEDD HPS Basestation.....	18
5. Installation .....	19
5.1 Installation Safety.....	19
5.2 Location Requirements .....	20
5.3 Acclimatization .....	21
5.4 Power Supply Requirements .....	22
5.5 Mounting Requirements .....	23
5.6 Installation Instructions – Wall Mounting.....	25
5.7 Installation Instructions – Electrical Connections.....	27
6. Operation and Commissioning.....	31
7. Maintenance.....	32

7.1	Maintenance Safety .....	32
7.2	Preventive Maintenance - Cleaning .....	32
7.3	Corrective Maintenance – Basestation Repair .....	33
7.4	Corrective Maintenance - Replacing a Fan Bracket .....	33
7.5	Replacing a CEDD HPS Basestation.....	36
8.	Troubleshooting .....	40
9.	Taking Out of Service.....	41
9.1	Disposal .....	41

# 1. About this manual

This manual contains information about the installation, de-installation, maintenance and troubleshooting of the CEDD HPS Basestation. The CEDD HPS Basestation distributes energy to the CEDD AGL LED fixtures and communicates bidirectionally by means of the CEDD cable. The CEDD HPS Basestation must be part of a stationary indoor installation. This manual also contains guidance for taking the product out of service and its safe disposal.

## 1.1 Symbols used

The following marking conventions are used in this manual to draw attention to specific topics or actions:



**DANGER!** - This sign indicates a hazardous situation that, if not avoided, will result in death or serious injury.



**WARNING** - This sign indicates a hazardous situation that, if not avoided, could result in death or serious injury.





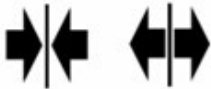



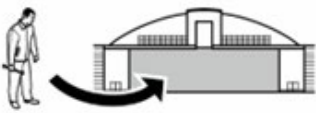


**CAUTION** - This sign indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.



**NOTICE** - is used in this manual to indicate a situation that could result in damage to property or equipment.

The following symbols are used in pictures for explanation or an action:

<p>Correct / Incorrect</p> 	<p>Look / See</p> 	<p>Location / position</p> 	<p>Movement</p> 
<p>Connect / Disconnect</p> 	<p>Photobiological safety</p> 	<p>ESD warning</p> 	
<p>Work carried out on runway</p> 		<p>Work carried out in workshop</p> 	

The following symbols are used on equipment and in this manual to warn of potential hazards:



**DANGER of electrical shock or arc flash.** Failure to observe this warning will result in serious injury or death.



**WARNING or CAUTION:** where this symbol is used on the equipment, it is mandatory to consult the manual to find out the nature of potential hazards and any actions which have to be taken to avoid them.

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## 1.2 Storing the manual

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- This manual is a part of your product. Store the manual in a location that can be easily accessed by personnel working on the product.
- It is the responsibility of the company operating this equipment to ensure that its personnel is provided with a copy of this manual.

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## 1.3 Limitations of the Document

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TKH Airport Solutions reserves the right to revise this document without notification.

The data provided in this document is based on the most recent information at the time of publication. TKH Airport Solutions is continually seeking to ensure that its products are developed to the latest technological standards. As a result, it is possible that there may be some differences between the product and the information in this manual.

For further information regarding adjustment, maintenance or repair which is not described in this document, please contact the Customer Service department of TKH Airport Solutions.

The information in this document concentrates solely on use of the products as intended by the manufacturer.

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## 1.4 Terms and Abbreviations

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This document may include the terms and abbreviations as listed below.

AGL	Airfield Ground Lighting
BUID	Basestation Unique Identification
CEDD	Contactless Energy and Data Distribution
EASA	European Aviation Safety Agency
HPS	High Power System
ICAO	International Civil Aviation Organization
IEC	International Electrotechnical Committee
LED	Light Emitting Diode
NUID	Node Unique Identification

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## 1.5 Trademarks

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CEDD® is a registered trademark of USE System Engineering Holding B.V. in the European Union. Other product names mentioned may be trademarks of TKH Airport Solutions B.V., USE System Engineering Holding B.V., or their affiliated companies.

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## 1.6 Liability and Warranty

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TKH Airport Solutions cannot be held responsible for injuries or damage resulting from non-standard, unintended use, faulty or improper installation of its equipment, or failure to follow the instructions and safety guidelines in this manual. The safety of any system incorporating the HPS Basestation is the responsibility of any site installation, commissioning, maintenance, and operational personnel using the system.

### NOTICE

Disregarding the safety instructions in this manual will result in the loss of warranty in case of damage.

Refer to the general TKH Airport Solutions Terms and Conditions document supplied with your sales order contract for a complete liability and warranty description.

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## 1.7 Manufacturer Details

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### TKH Airport Solutions

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For service requests, please contact the TKH Airport Solutions Customer Service department:

- Email: [service@tkhairportsolutions.com](mailto:service@tkhairportsolutions.com)



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## 2. Safety

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When performing installation, maintenance, or service activities, always carry out these activities with the greatest caution to avoid injuries or damage to the CEDD HPS Basestation. All activities may only be performed by qualified and authorized personnel (see below). It is the responsibility of those in charge of preparing and/or supervising such work to take the necessary actions to ensure safe working conditions.

Always work safely and comply with procedures, regulations and local standards. If any of the warnings or safety requirements in this document conflict with existing local regulations, then the strictest regulation must take precedence.

Thoroughly read and observe all safety instructions in this document.



**WARNING:** Switch the main power off at the location of the CEDD HPS Basestation when any installation, maintenance or replacement is done on the CEDD HPS Basestation. Or use a Break Out Box to ensure power is off at the CEDD AGL system.



**WARNING:** Disregarding the safety instructions in this manual could result in serious injury or death.

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### 2.1 Qualified Personnel

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Only qualified and authorized personnel are allowed to install, operate or maintain this equipment.

The term 'qualified personnel' is defined here as individuals who thoroughly understand the equipment and its safe installation, operation or maintenance. Qualified personnel are physically capable of performing the required tasks, are familiar with all relevant and local safety rules and regulations, and have been trained to safely install, operate or maintain the equipment. It is the responsibility of the company installing, operating or maintaining this equipment to ensure that its personnel meet these requirements.

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### 2.2 Intended Use

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The CEDD HPS Basestation is designed and intended only for the purpose of Airfield Ground Lighting (AGL) at airfields and airports as described in this manual. It powers the devices (nodes, e.g. LED fixtures) connected to the CEDD cable and communicates with the nodes. Each node is connected contactless (no galvanic contact) to the CEDD Cable system. Intended use also includes the observance of all procedures, inspection and maintenance instructions described in this manual.

Any other usage that is not described in this manual is considered unintended use. Unintended use includes but is not limited to the following actions:

- allowing unskilled personnel to perform any task on or with the equipment.
- making changes to the equipment that have not been recommended or described in this manual or using parts that are not approved by TKH Airport Solutions.

- using materials or auxiliary equipment that are inappropriate or incompatible with TKH Airport Solutions equipment.
- failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards, provided that they are not in violation of national regulations.



**WARNING:** Using this equipment in ways other than described in the manual could result in serious injury or death and/or material damage.

The CEDD HPS Basestation may only be used with CEDD system components approved by TKH Airport Solutions:

- CEDD Cable
- CEDD Nodes, such as LED Fixtures
- CEDD HPS Terminator
- CEDD Master CMS
- CEDD Master AM



**NOTICE:** It is not allowed to connect the CEDD HPS Basestation to components other than approved CEDD components.

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## 2.3 General safety rules

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Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.

- Make this manual available to personnel installing, operating, or maintaining this equipment.
- Only qualified personnel are allowed to install, operate or maintain this equipment (see Qualified Personnel on page 8).
- Always use the required personal protective equipment (PPE).
- Never look directly in the light source while the fixture is switched on.
- Always follow safe electrical work practices.
- Follow all applicable safety procedures required by your company, industry standards and government or other regulatory agencies.
- Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you to operate the system safely and efficiently.
- Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects.
- Protect equipment with safety devices as specified by applicable safety regulations.
- Use this equipment only in the environments for which it is rated.
- Never operate equipment with a known malfunction. If a malfunction occurs, turn the equipment OFF immediately.
- In any of the following cases the equipment must be taken out of service and locked away from unauthorized use. This is necessary:
  - If the housing or the electrical wiring is visibly damaged
  - If the housing or the electrical wiring has loose parts
  - If the equipment malfunctions
  - after storage under unfavourable circumstances (for example outdoors or in moist environments)
  - After excessive transportation stress (for example in damaged or defective packaging)

## 2.4 Electrical hazards

The CEDD AGL system components (e.g. CEDD cable, CEDD AGL LED Fixtures, and CEDD HPS Terminator) should not be touched or worked on if the CEDD AGL system is operational (meaning constant current AGL series circuit energized). The constant current AGL series circuit must be de-energized before any (maintenance/service) work on the CEDD AGL system and its components can start. Before any work can start the CEDD HPS Basestation must be switched off, and must be protected against accidental re-energizing.

When installing this equipment always follow these safety rules:



Switch the power supply **OFF** at the location of the CEDD HPS Basestation when any installation, maintenance or replacement is done on the CEDD HPS Basestation.

The use of a disconnecting device is mandatory. The **OFF** position must be clearly marked and the disconnection device must be easily accessible. A switch or other disconnecting device for functional purposes may be provided.



Never open the equipment while the power supply is switched ON.

Never touch exposed electrical connections on this equipment while the power supply is switched ON.

Do not attempt to operate or service electrical equipment if standing water is present.

When working on the equipment always wear appropriate protective clothing.

This equipment contains electrostatic sensitive devices that can be damaged by an electrostatic discharge.



Protect the equipment from electrostatic discharge.

Before touching any component of the cabinet, 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 or synthetic fiber clothing. They must be laid down on conductive surfaces.

When installing or de-installing the equipment, follow the additional safety instructions in in Chapter 5, Installation Safety on page 19 and Chapter 7 Maintenance Safety on page 32.

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## 2.5 Transport and Storage

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### Transport

- Use extreme care when moving heavy products. Verify that the moving equipment is rated to handle the weight. When loading or unloading, ensure that the products are carefully balanced and secured using a safety strap.
- No more than 6 packaged products may be placed on one transport pallet.

### Storage and reforming

- If the equipment is stored before installation, it must be protected from the weather and kept free of condensation and dust.
- Keep the equipment in the original packing it was shipped in, until it is going to be installed.
- If the equipment is stored for longer than 6 months before installation, it must be temporarily energized. This reforming procedure should be done at least once every 12 months, in an environment free of condensation and dust.
  1. Unpack the equipment.
  2. Follow the installation procedure in Wall-mounting Instructions on page 25.
  3. Follow the connection procedure in Connecting Instructions on page 28.

### NOTICE

The CEDD power output must be short-circuited.

4. Switch the equipment on and wait for at least 1 hour.
5. Switch the equipment off.
6. Wait for 15 minutes.
7. Follow the disconnecting procedure in Replacing a CEDD HPS Basestation on page 33.
8. Repack the equipment in its original packaging.

## 2.6 Lifting and Carrying

The CEDD HPS Basestation weighs approximately 20 kg.

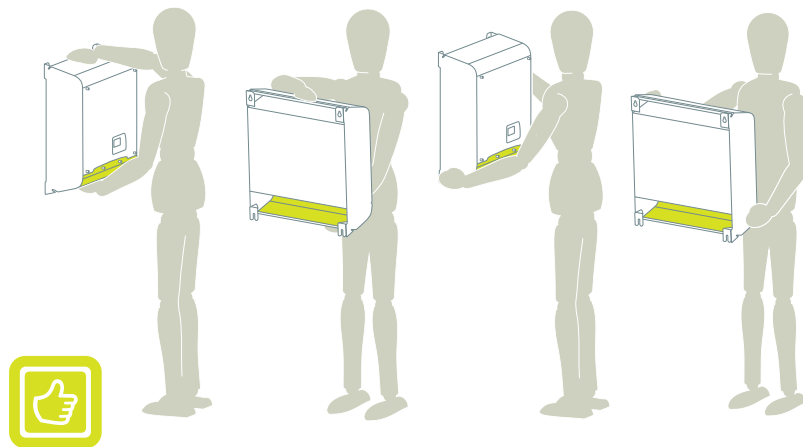
The images below indicate the points where the CEDD HPS Basestation can be lifted and carried safely.



Use two hands to get a good grip to lift and carry the CEDD HPS Basestation.

Keep the CEDD HPS Basestation close to your body while moving.

Keep the CEDD HPS Basestation at a reasonable height so you can see where you are going.



## 2.7 Installation and Maintenance

Read the safety instructions in Chapter 5 Installation Safety on page 19 and Chapter 7 Maintenance Safety on page 32 before installing or maintaining the CEDD HPS Basestation.

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### 3. About the CEDD HPS Basestation

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#### 3.1 About CEDD

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CEDD is an innovative contactless energy and communication technology. Energy and data transport are combined in a two-wire cable system, a Basestation, and contactless user points. With this structured cable concept, lighting on airfields can easily be installed or replaced without making electrical contact with the power or data cable.

The CEDD system has been specifically designed for the operation of Airfield Ground Lighting (AGL) systems on airports, with the highest possible reliability.

#### 3.2 About the CEDD HPS Basestation

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The CEDD HPS Basestation is a key component of the CEDD AGL system. The CEDD HPS Basestation distributes energy to the CEDD AGL LED fixtures and communicates bidirectionally by means of the CEDD cable. Bidirectionally means that the CEDD HPS Basestation sends assignments to the fixtures and the fixtures send information about their status back to the CEDD HPS Basestation. Each fixture is connected to the CEDD cable without galvanic contact.

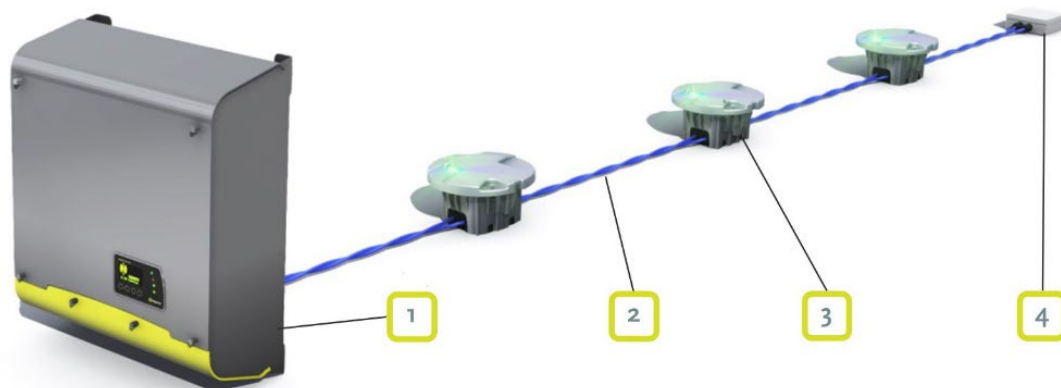
HPS means High Power System. The CEDD HPS Basestation has been designed to supply a power up to 2.3 kW to the connected circuit.

The CEDD HPS Basestation is typically controlled remotely but for maintenance purposes can also be operated locally.

##### 3.2.1 Position in the CEDD AGL System

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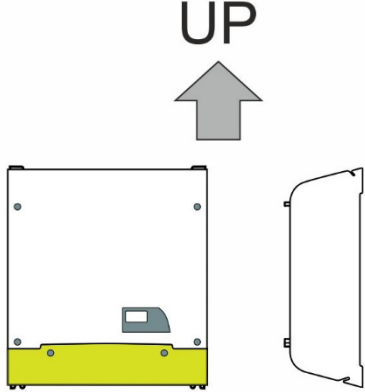
A typical CEDD AGL System consists of a CEDD HPS Basestation (1) that provides power to the CEDD AGL LED fixtures (3) and bi-directional communication to all the CEDD AGL LED fixtures connected to the CEDD cable (2). A CEDD HPS Terminator (4) matches the correct characteristic impedance of the CEDD cable with the connected CEDD AGL LED fixtures. A CEDD AGL system can have multiple CEDD HPS Basestations that communicate with one or multiple CEDD Masters.



### 3.3 Operation Information and Specifications

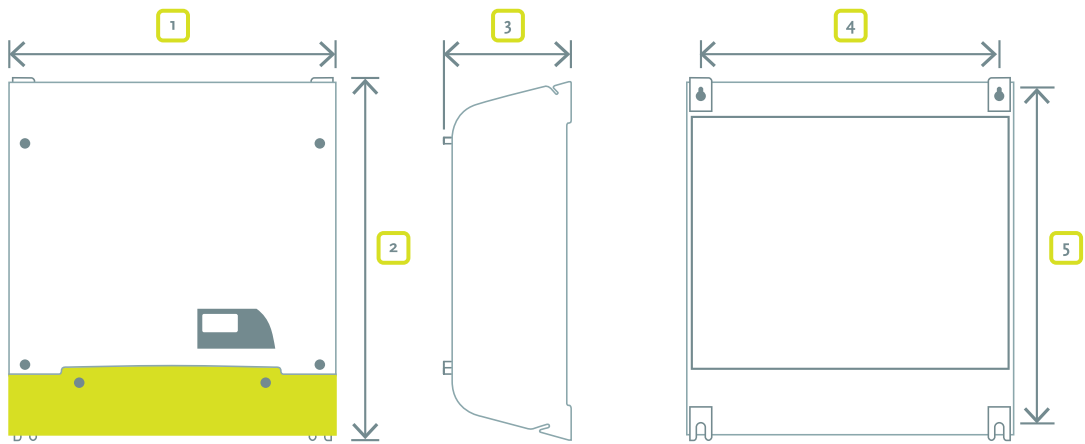
The CEDD HPS Basestation must be part of a fixed (stationary) installation. The CEDD HPS Basestation is not a mobile appliance. The CEDD HPS Basestation is intended for indoor use only for dedicated airfield installation. Other CEDD components such as fixtures and the terminator are intended for outdoor use.

General operation information can be found below or on the datasheet of the CEDD HPS Basestation. In case not mentioned, other specifications are compliant with IEC 61010-1 section 1.4.1 Normal Environmental Conditions.

Technical Specifications	
Power AC mains input:	230 Vac, 50 / 60 Hz   13.0 A @ 230 Vac
Logic AC mains input:	230 Vac, 50 / 60 Hz   0.6 A @ 230 Vac
Ambient air operating temperature:	+5 °C (41 °F) to +50 °C (122 °F) <sup>(1)</sup>
Recommended ambient air operating temperature:	+20 °C (68 °F) / +30 °C (+86 °F)
Weight:	approx. 20 kg
Sheltered environment to be installed in:	IP 54
Operation position: (note: drawing is indicative only)	

<sup>(1)</sup> The maximum output power can be delivered at ambient temperatures up to 31 °C (87.8 °F), decreasing linearly by 50 W/°C up to 50 °C (122 °F).

### 3.4 Dimensions

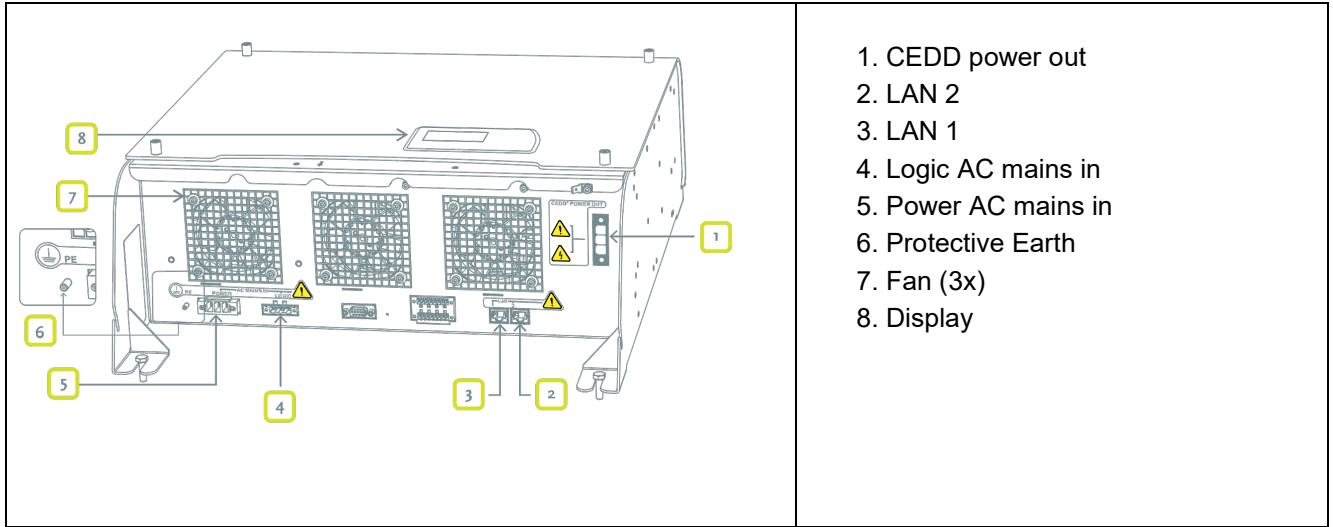


Outer dimensions		
Pos.	Description	Values
1	Width	480 mm
2	Height	545 mm
3	Depth	193 mm
4	Horizontal screw hole distance	430 mm
5	Vertical screw hole distance	500 mm

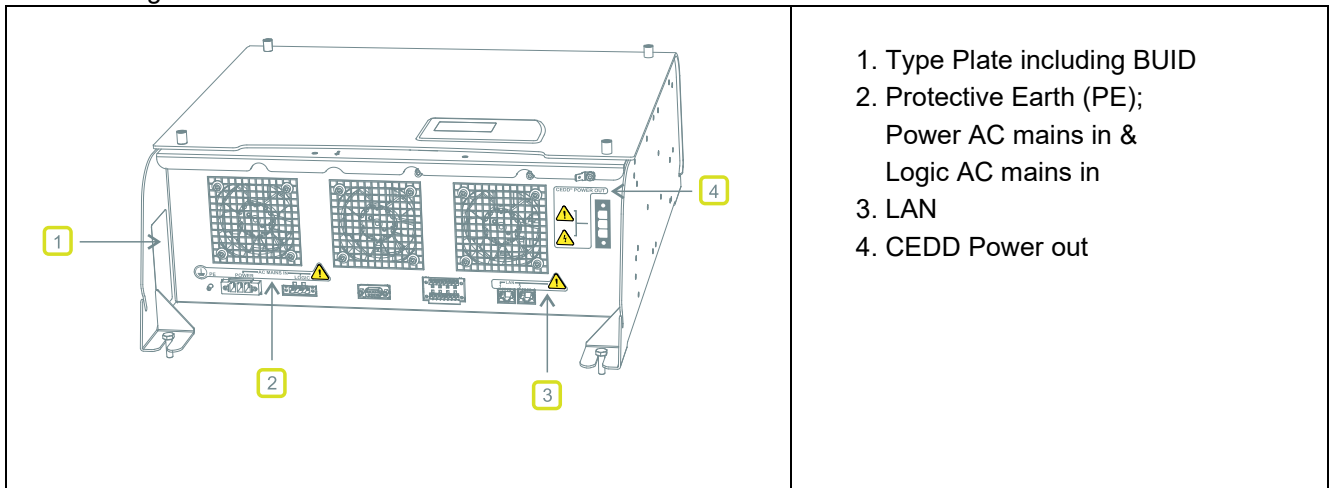


### 3.5 CEDD HPS Basestation: Components

#### CEDD HPS Basestation:



The following labels are located on the bottom of the CEDD HPS Basestation:



Make sure the labels are always legible. Replace labels if they are damaged or illegible.

### 3.6 More Information

- For all technical data refer to the datasheet for your product at <https://www.tkh-airportsolutions.com/airfieldproducts/> or scan:

- If you have any questions about installation or maintenance, please contact TKH Airport Solutions Customer Service on [service@tkh-airportsolutions.com](mailto:service@tkh-airportsolutions.com).



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## 4. Inspection

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Before installation, the transport box and CEDD HPS Basestation must be inspected for damage and defects.

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### 4.1 Inspect the transport box

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If the transport box appears to be damaged, keep the transport box and cushioning material until the contents of the box have been checked for completeness, and the CEDD HPS Basestation has been checked mechanically and electrically.

#### NOTICE

If the CEDD HPS Basestation has been damaged during transport, put the product and all other parts back into the transport box and contact your shipper and carrier.

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### 4.2 Inspect the contents of the transport box

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#### NOTICE

Do not open the sealed bag containing the CEDD HPS Basestation yet.

The transport box must contain the following items:

- A sealed bag containing:
  - CEDD HPS Basestation
  - Silica gel pouch
  - CEDD HPS Basestation Connector kit containing:
    - Würth Logic mains in connector 691340400003
    - Phoenix Contact Power AC mains in connector PC 5/ 3-GF-7,62 (Art. No.: 1720806)
    - Weidmüller CEDD power out connector 1813580000 (3 pin)
- A zip-bag containing:
  - CEDD HPS Basestation Installation and Maintenance Manual 03-70092 (this manual)
  - Factory Acceptance Test Report 03-70100

Inspect the contents of the transport boxes. If any item is missing, contact TKH Airport Solutions Customer Service: [service@tkh-airportsolutions.com](mailto:service@tkh-airportsolutions.com).

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### 4.3 Visually Inspect the CEDD HPS Basestation

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#### NOTICE

Follow the acclimatization procedure before opening the sealed bag of the CEDD HPS Basestation. See Acclimatization on page 21.

Unpack and inspect all parts. If there is any visible damage or defect, contact your local TKH Airport Solutions agent, or TKH Airport Solutions Customer Service: [service@tkh-airportsolutions.com](mailto:service@tkh-airportsolutions.com).

## 5. Installation

This chapter contains instructions for mounting the CEDD HPS Basestation vertically.

Before installing the CEDD HPS Basestation read the Installation Safety instructions below.

### NOTICE

Disregarding these safety instructions will result in the loss of warranty in case of damage. TKH Airport Solutions is not liable for any injuries to personnel or any equipment damage.

### 5.1 Installation Safety

#### WARNING

Install all electrical connections according to local safety codes.

Use only electrical wiring of sufficient gauge and suitable insulation to conduct the rated currents. All wiring must meet local safety codes.

Route electrical wiring along a protected path. Make sure the wires will not be damaged by moving equipment.

#### WARNING

Protect components from damage, wear and harsh environmental 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, re-install them immediately after installation has been completed and check them for proper functioning prior to returning power to the circuit.

#### WARNING

Always tighten the bolts to the recommended torque. Use a calibrated torque wrench and apply the recommended locking agent.

Failure to observe the above warning can cause the bolts to loosen, which will damage and potentially loosen the equipment. This can lead to highly dangerous situations with potentially fatal consequences.

#### WARNING

Condensation damages the CEDD HPS Basestation and can cause serious injury or death. See Acclimatization on page 20 on how to prevent condensation.

## 5.2 Location Requirements



The CEDD HPS Basestation must be installed by qualified personnel in a restricted access location.

A restricted access location is an area for equipment where access can only be gained:

- by qualified and authorized users
- by use of a special tool, lock and key which is controlled by the authority responsible for the location

The CEDD HPS Basestation must be installed in an environment meeting international requirements for Protection rating IP-54 or better (according to IEC-60529) and pollution degree II or better (according to IEC-61010-1). This sheltered environment must protect against water, oil, explosive vapours, smoke, dust, salt content, corrosive substances, earthquakes, air blast, vibration, and impact.

For adequate cooling of the equipment, the recommended ambient air operating temperature in the location is +20 °C to + 30 °C (68 °F to 86 °F).



The Power and Logic AC Mains inputs must be connected permanently to the AC Mains supply.

The CEDD HPS Basestation must be part of a fixed (stationary) installation. The CEDD HPS Basestation is not a mobile appliance.

According to safety class 1 (IEC-61140) requirements, all parts of the cabinet and chassis of the CEDD HPS Basestation are connected to the protective earth terminal of both power connectors. It is required to connect the earth terminals to the protective earth.

Make sure that the CEDD HPS Basestation is properly connected to the protective earth before connecting mains power. The CEDD HPS Basestation is a system with a high touch current. It is highly recommended to connect the CEDD HPS Basestation cabinet to the protective earth using the cabinet's protective earth connection.

Do not disconnect the protective earth either inside or outside of the CEDD HPS Basestation.

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## 5.3 Acclimatization

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The CEDD HPS Basestation must be gradually acclimatized to the surrounding environment to prevent condensation on the inside and outside surfaces of the equipment.

When the equipment is brought indoors, it must be allowed to gradually reach thermal equilibrium with the indoor environment before removing the sealed shipping bag. If sufficient time is allowed for the hardware to gradually acclimatize to the indoor environment, there should be no issues with long-term reliability of the product.

Follow these guidelines to properly acclimatize the CEDD HPS Basestation:

- Before installation store the equipment in the sealed shipping bag, preferably in the full packaging, to minimize condensation.
- Move the equipment to the final installation location and wait until the location requirements for temperature and humidity are met. Do not place the equipment close to perforated tiles or other direct sources of forced air convection.
- Allow the packaged equipment to acclimatize for 24 hours. If there are visible signs of condensation after 24 hours, remove the shipping bag and acclimatize the equipment for a further 12 to 24 hours until no visible condensation remains.



### WARNING

Failure to follow these guidelines may result in serious personal injury or death and/or damage to the CEDD HPS Basestation.

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## 5.4 Power Supply Requirements

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The CEDD HPS Basestation has two mains power supply inputs: Power AC mains and Logic AC mains.

- Power AC mains in: supplies power to the CEDD nodes (for example LED fixtures).
- Logic AC mains in: supplies power to the control electronics.

The Power and Logic AC Mains inputs must be connected permanently to the AC Mains supply.

In most operation states the Logic AC mains requires far less power than the Power AC mains. The separate power inputs enable the installer to supply the control electronics with a low power UPS. In case of short mains power failure or voltage dips, short downtimes of the lighting can be achieved, because the control electronics continue operation. This may result in a lighting downtime as short as 0.5 seconds longer than the duration of the power failure or the voltage dip.

If no UPS is applied, a short power failure may result in a restart of the control electronics. This will result in a downtime of the lighting of 20 to 30 seconds (typically 25 seconds).



Each power cable used for power supply to the CEDD HPS Basestation must be protected against overload and short circuit current by a circuit breaker. The circuit breakers must have a nominal current of 16 A and be type B according to IEC 60898.

The use of a disconnecting device is mandatory. This device has to simultaneously switch and isolate the Power AC mains in and the Logic AC mains in. The neutral contact must be made first and broken last to prevent live contacts being connected without neutral contact.

The OFF position of the disconnecting device must be clearly marked and the disconnection device must be easily accessible. A switch or other disconnecting device for functional purposes may be provided.

The Power AC mains in and the Logic AC mains should have identical phase, a common neutral and a common earth connection.

Within the power supply circuit both protective earth conductors must have equal potential and both null conductors must have equal potential.

## 5.5 Mounting Requirements

The CEDD HPS Basestation Printed Circuit Board Assemblies (PCBAs) are mounted inside a rugged protecting cabinet. The operational position is vertical. The CEDD HPS Basestation must be mounted against a wall or on U-profiles that support all four corners of its cabinet. The wall must be able to support the weight of the equipment (see Wall-mounting instructions on page 25).



Use the CEDD HPS Basestation only in the vertically mounted operating position. Do not use the CEDD HPS Basestation in a horizontal position as this may cause thermal and condensation problems.

Do not mount a CEDD HPS Basestation vertically above another. This will adversely affect the cooling air flow for the equipment, as the upper equipment will take in warm air from the outlet of the lower equipment.

The CEDD HPS Basestation must have sufficient airflow to ensure adequate cooling.

### Back-to-back mounting

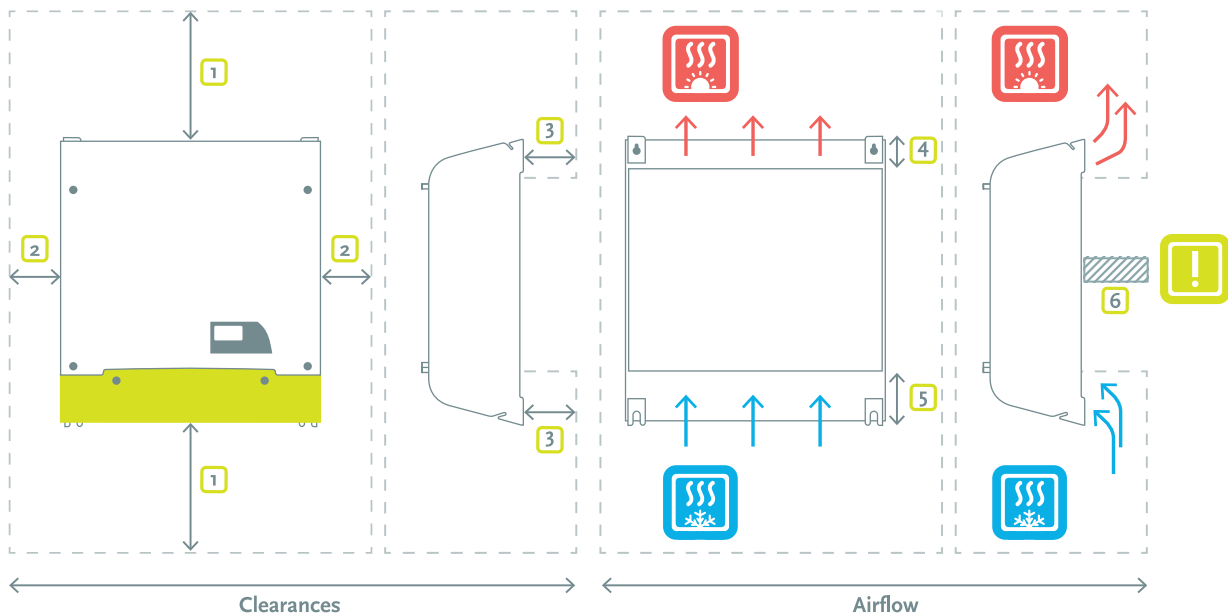
In a back-to-back arrangement it is recommended to mount the CEDD HPS Basestations on an H-profile structure. This allows cool air to flow into the base of the equipment, and warm air to flow out of the top of the equipment; the middle horizontal bar (6 in the drawing below) blocks the return of warm air from the back of the equipment. There should be no horizontal bars blocking air flow to the top or bottom of the equipment.

### Wall mounting

When mounted on a wall, minimum clearances are required (see table below). Clearance from the wall must be created by mounting on vertical constructive profiles, leaving the space (minimum 80 mm) between the cabinet and the wall at the top and bottom open for airflow. The cabinet should not be mounted on horizontal profiles, which would reduce airflow around the intake and outlet.

### Clearances for adequate airflow

Pos.	Description	Values
1	Top and bottom clearance	Min. 250 mm
2	Left and right clearance	Min. 100 mm
3	Distance from the wall	Min. 80 mm
4	Hot air exhaust	50 mm
5	Cool air intake	90 mm
6	Airflow block	Needed to prevent recirculation of warm air from outlet to inlet



The CEDD HPS Basestation's cooling air intake and outlet areas must be kept free from obstruction



## 5.6 Installation Instructions – Wall Mounting



The suspension materials and the structure supporting the CEDD HPS Basestation must be capable of supporting a weight of 80 kg.

Ensure that the structure supporting the CEDD HPS Basestation provides adequate strain reliefs for all the connected cables. These are typically mounted on a mounting plate below the cabinet.

The rigidity of the support structure must meet the requirements of the electrical safety standard IEC 61010-1 and applicable local regulations.



Ensure that all mounting materials are appropriate for the weight of the CEDD HPS Basestation and the material that it is mounted on.

### The following tools are needed:

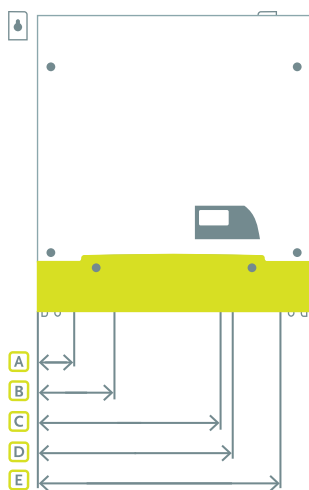
- Open ended wrench 10 mm
- Metric tap set 6 mm
- Drill with drill bit 5 mm



**The example below is a guide to mounting the CEDD HPS Basestation on a metal structure. Other support structures may require different actions and materials.**

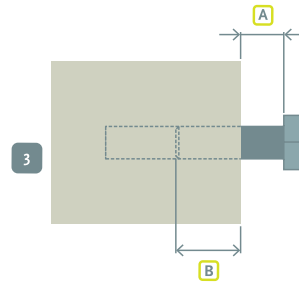
1. Drill four holes at the distances specified in Dimensions on page 16 and tap the holes using M6 taps. Make sure you apply the clearances required for adequate airflow; see Wall-mounting Clearances.
2. Drill holes for attaching the strain reliefs of all the connecting cables. The strain reliefs should be mounted as close as possible to the CEDD HPS Basestation.

### Center-to-center distances

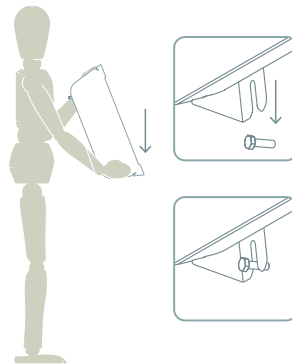


	mm	Function
A	77	Power AC mains in
B	137	Logic AC mains in
C	349	LAN 1
D	369	LAN 2
E	449	CEDD Power out

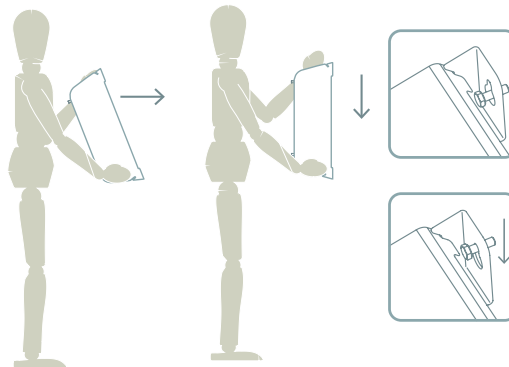
3. Screw the supporting bolts into the holes (min. 6 mm (B)), leaving a space of 4 to 8 mm (A) between the head of the bolt and the support structure.



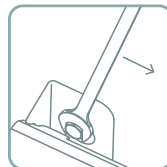
4. Place the CEDD HPS Basestation: let the lower mounting slots of the CEDD HPS Basestation slide slowly and smoothly onto the lower bolts.



5. Place the upper mounting slots over the highest bolts and carefully lower the CEDD HPS Basestation onto the four bolts.



6. Fasten the four supporting bolts: use a wrench to hand-tighten the four supporting bolts clockwise until the CEDD HPS Basestation is fixed.



## 5.7 Installation Instructions – Electrical Connections



Before you begin connecting the CEDD HPS Basestation ensure that the power on the Power AC mains and the Logic AC mains cables is shut off. The circuit breakers must be in the OFF position.

The use of a disconnecting device is mandatory. The OFF position must be clearly marked and the disconnection device must be easily accessible. A switch or other disconnecting device for functional purposes may be provided.



Do not open the top cover: highly dangerous voltages may become accessible. These voltages are also present when the CEDD HPS Basestation is NOT connected to the mains power supply. Opening the top cover will also void the warranty.



All cables must be protected with strain reliefs against mechanical force applied to the cable.



If stranded wires are used for the Power AC mains in and/or Logic AC mains in, they must be provided with appropriate wire ferrules<sup>1</sup>.

The CEDD power out cable must be provided with appropriate wire ferrules<sup>1</sup>.

The Protective Earth (PE) cable must be provided with a M4 ring tongue terminal. Applying this crimp terminal is not part of this manual.

Materials necessary to connect the Protective Earth to the CEDD HPS Basestation are not included in the connector kit.

### The following tools are needed:

- Phillips PH2 screwdriver
- Pozidriv PZ2 screwdriver
- Slotted SL3 screwdriver
- Open-ended wrench 10 mm
- M4 (7mm) hex socket with a ratcheting socket wrench (or equivalent)

### The following materials are needed:

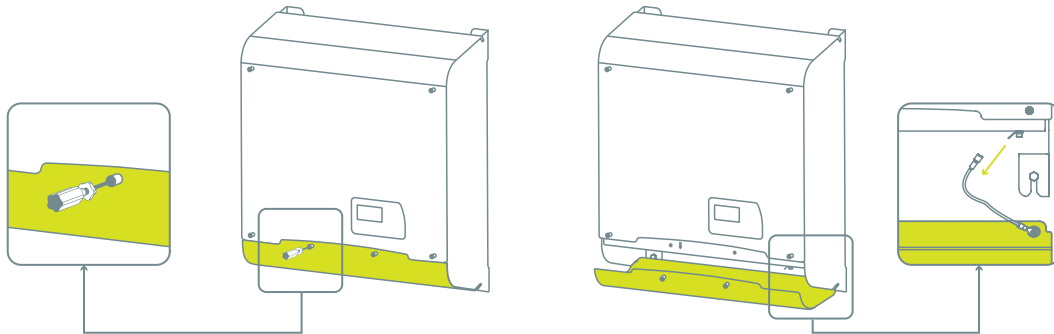
- The CEDD HPS Basestation Connector kit delivered with the product<sup>2</sup>.
- Cables:
  - Power AC mains-in supply cable for use with connector Phoenix Contact PC 5/ 3-STF1-7,62 (Art. No. 1777846)
  - Logic AC mains-in supply cable for use with connector Würth 691340400003
  - CEDD Cable for use with connector Weidmüller 1924630000
  - Protective Earth cable
  - STP cable for LAN 1 with connector RJ45 (jack) - if present
  - STP cable for LAN 2 with connector – RJ45 (jack) - if present

<sup>1</sup> Applying these wire ferrules is not part of this manual.

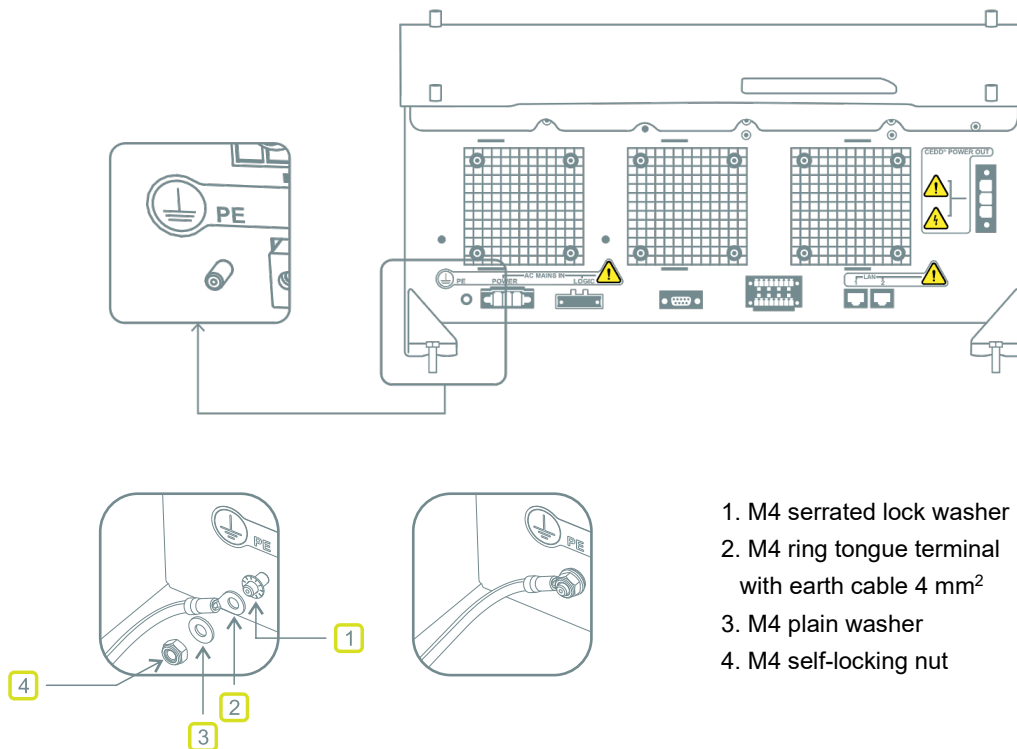
<sup>2</sup> The connector kit can also be ordered separately using article number U20-00277.

To connect the CEDD HPS Basestation, follow the steps below:

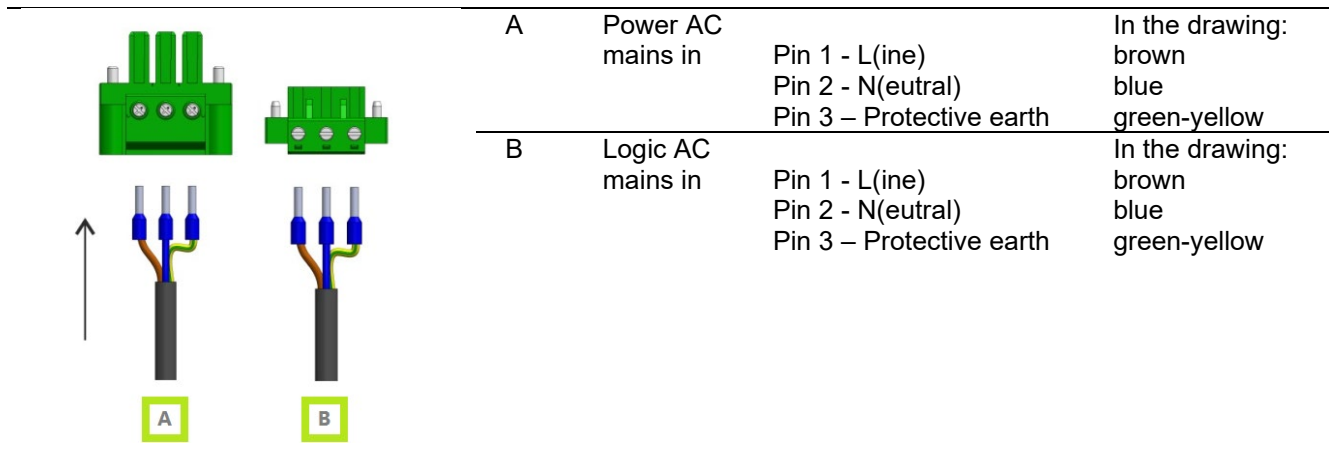
1. **Remove the bottom panel** by loosening two screws at the front using a Philips PH2 screwdriver. Detach the protective earth wire.



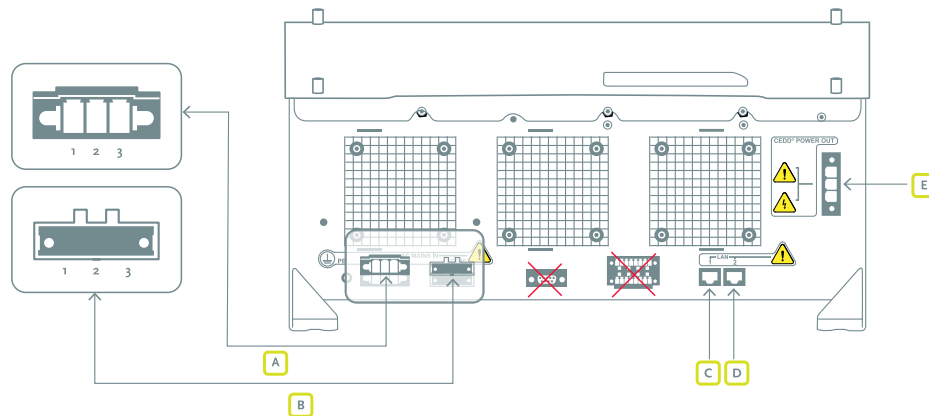
2. For ease of installation, it is advised to **remove the fan bracket** as explained in steps 3 to 5 of chapter 7.4.
3. **Connect the cabinet to the protective earth** using an M4 (7 mm) hex socket tightened to 2 Nm with a ratcheting socket wrench (or equivalent). Ensure protective earth cable is directed towards the side panel to prevent collision with the fan bracket.



4. **Connect Power AC mains in (A) and Logic AC mains in (B) wires to the cable connectors and tighten using a slotted SL3 screwdriver.**



5. **Plug in and hand-tighten the Power AC mains in (A) and Logic AC mains in (B) connectors to the CEDD HPS Basestation. Tighten the 2 connector flange screws using a slotted SL3 screwdriver.**

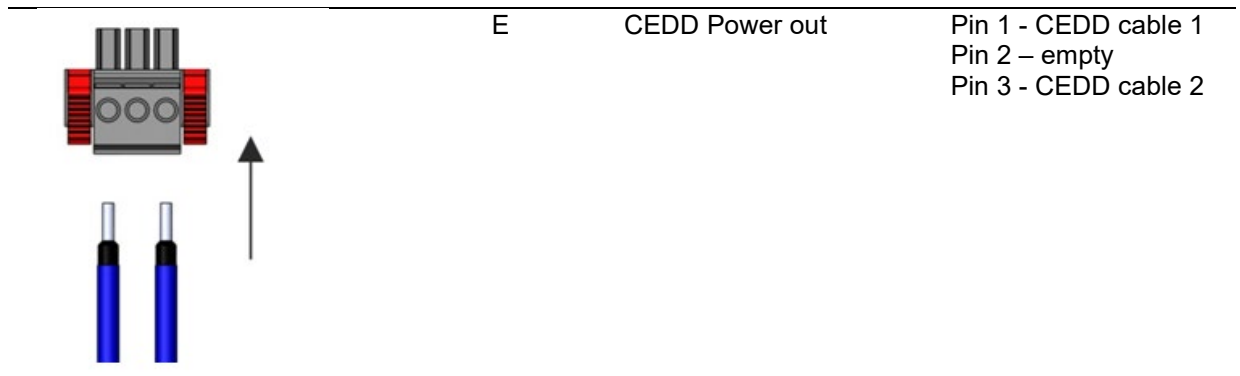


Do not plug anything into the service connectors (marked with a red cross).

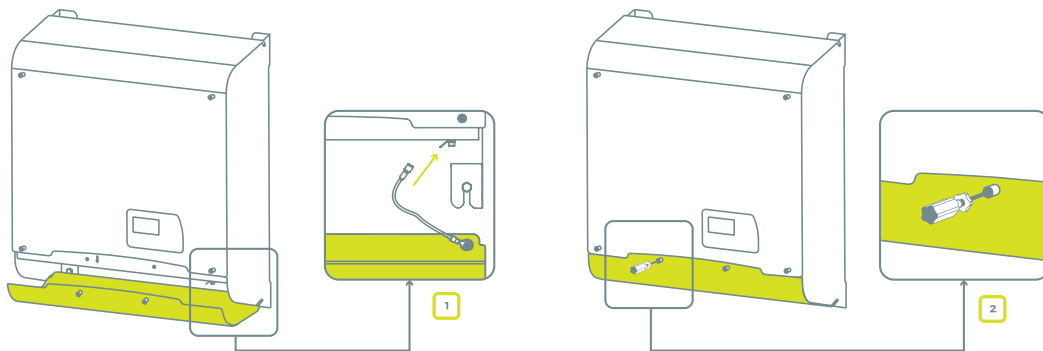
6. **Connect the RJ45 connectors of the STP cables to the LAN ports LAN1 (C) and/or LAN2 (D).**

C	LAN 1	RJ45 connector
D	LAN 2	RJ45 connector

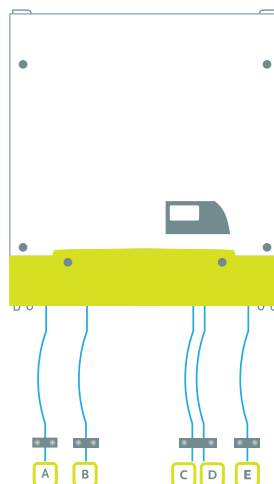
7. **Mount the CEDD Cable** into the cable connector (E). Use a Pozidriv PZ2 screwdriver to fasten the wires in the connector.



8. **Connect the CEDD cable to the CEDD power out port** of the CEDD HPS Basestation. Make sure that the red clips are pressed towards the CEDD HPS Basestation, to lock the cable connector.
9. If the fan bracket was removed in step 2, then **remount the fan bracket** as explained in steps 6 to 13 of chapter 7.4.
10. **Remount the bottom panel:** Attach the protective earth wire (1) and mount the bottom panel by fastening the two screws at the front (2) using a Phillips PH2 screwdriver.



11. **Fixate cables:** Use strain reliefs to fasten the cables with a little overlength between the strain relief and the CEDD HPS Basestation cabinet.



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## 6. Operation and Commissioning

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After completing the installation, the CEDD HPS Basestation may be commissioned.

Refer to the applicable Operating and Commissioning manual for information on the commissioning procedure for the project.

### NOTICE

The CEDD AGL LED fixtures cannot be controlled directly after installation. In order to work properly, the CEDD HPS Basestation must first be configured. The configuration can be installed locally (on 1 CEDD HPS Basestation) or distributed using a CEDD Master (1 or more CEDD HPS Basestations).

## 7. Maintenance

### 7.1 Maintenance Safety

Before you begin, read these warnings carefully.



Before performing any maintenance, switch off the equipment, disconnect and lock out the electrical power.

The use of a disconnecting device is mandatory. The OFF position must be clearly marked and the disconnection device must be easily accessible. A switch or other disconnecting device for functional purposes may be provided.



Wait at least 15 minutes after de-energizing the CEDD HPS Basestation before performing maintenance.

Only trained and qualified personnel is allowed to maintain the equipment.

### 7.2 Preventive Maintenance - Cleaning

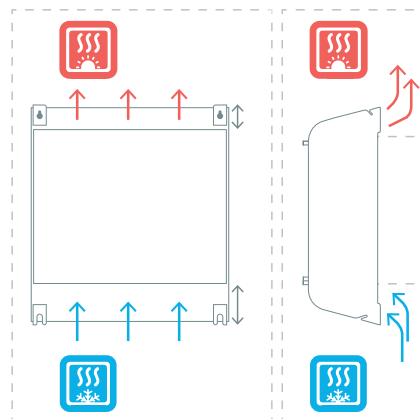
Preventive maintenance of the CEDD HPS Basestation is limited to cleaning the outside of the cabinet.



Under no circumstances should fluid be allowed to enter the CEDD HPS Basestation.

To clean the outside of the CEDD HPS Basestation:

1. Remove any dirt on the cabinet with a soft, moist cloth.  
If necessary, add a mild detergent (water and 1% soap).
2. Check the cooling air inlets and outlet and remove any obstructions or dust on the outside of the cabinet.





3. If the display window is dirty, clean it with adhesive tape (Scotch Mending Tape No. 810 or equivalent).

## NOTICE

Do not use cleaning fluids, such as alcohol, ketone, aromatic solvents or paste, on the display window. This can damage the polarized surface of the OLED display.

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### 7.3 Corrective Maintenance – Basestation Repair

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When it is necessary to replace or repair malfunctioning components the whole CEDD HPS Basestation must be de-installed and returned to TKH Airport Solutions Customer Service. An exception is made for the fan bracket as explained in chapter 7.4.

To de-install and replace the CEDD HPS Basestation, follow the instructions in chapter 7.5.

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### 7.4 Corrective Maintenance - Replacing a Fan Bracket

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When one or multiple fans malfunction, they should be replaced with new fans supplied by TKH Airport Solutions. It is advised to keep one or more spare fan brackets in storage.

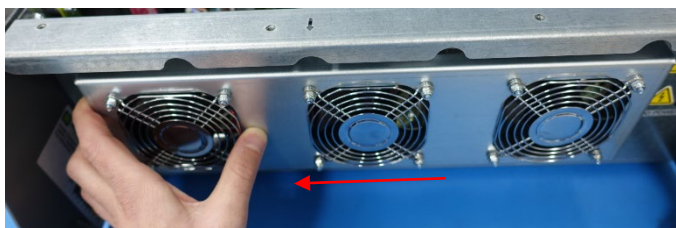
Replacing a fan bracket can be done by performing the following steps:

1. Power down the CEDD HPS Basestation in question. Wait at least 15 minutes for the Basestation to be de-energized.



If the CEDD HPS Basestation is not properly de-energized there is a risk of electrical shock.

2. Remove the bottom cover of the CEDD HPS Basestation. Disconnect the earth cable.
3. Loosen and remove the fan bracket screw and the serrated lock washer with external teeth, using a Philips screwdriver size 2.
4. Move the fan bracket to the left and release it with both hands.



5. Hold the bracket in one hand and use the other hand to unplug the cable between the fan bracket and the CEDD HPS Basestation.

**NOTICE**

Make sure not to drop the fan bracket as this may damage the cable and connectors, leading to a malfunctioning of the CEDD HPS Basestation.

Do not touch any electrical components on the inside of the CEDD HPS Basestation, to protect the Basestation from electrostatic damage.

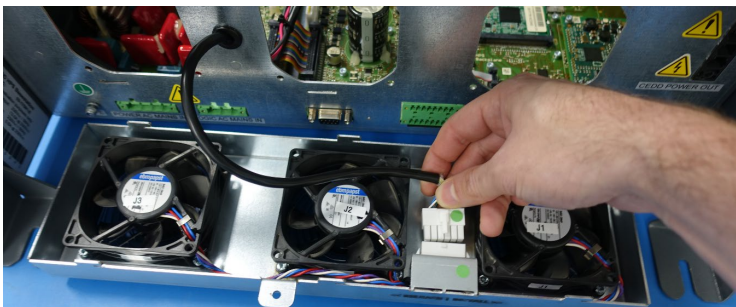


*Bottom view of a CEDD HPS Basestation without fan bracket installed. The black cable was connected to the fan bracket.*



*Fan bracket*

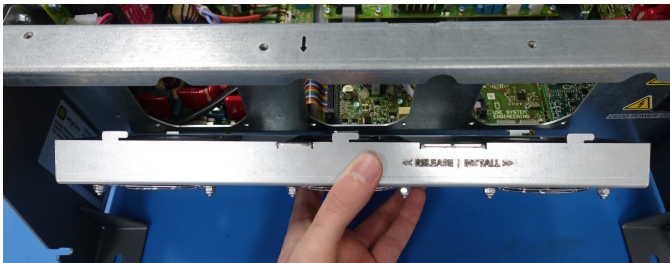
6. Take the new fan bracket. Make sure the text 'Release | Install' on the front of the fan bracket is readable and pointing towards you.



7. Hold the bracket in one hand, use the other hand to connect and guide the cable into the fan bracket. Guide the cable behind the middle fan.



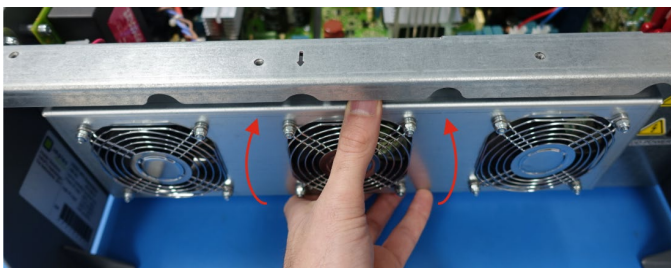
8. Place the 'lower' fan bracket hooks into the slots of the CEDD HPS Basestation.



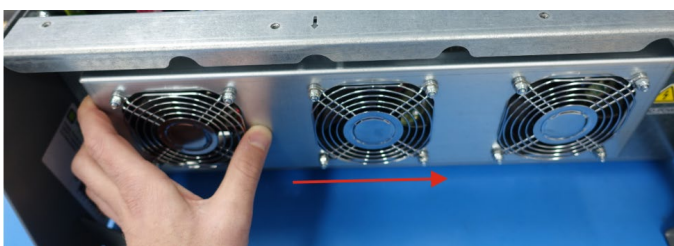
**NOTICE**

Make sure the cable does not get trapped between the fan bracket and the CEDD HPS Basestation.

9. Tilt the fan bracket to fit the upper fan bracket hooks into the slots of the CEDD HPS Basestation, while the lower hooks remain in the lower slots.



10. Push the bracket to the right to 'Install' the fan bracket (and push to the left to 'Release' again).



11. Check whether the fan bracket fixation hole is concentric with the center frame.



12. Secure the fan bracket with a new M4 x 10 screw and M4 serrated lock washer with external teeth. Torque: 2 Nm. Make sure that the serrated lock washer is between the bracket and the screw.



Not properly securing the fan bracket might lead to an electrical shock.

13. Store or scan the CEDD HPS Basestation and Fan Bracket serial numbers.
14. Place and secure the bottom cover of the CEDD HPS Basestation (hand tight).
15. Energize the CEDD HPS Basestation
16. Check the display for possible errors. If no errors were found, the replacement is expected to be successful.
17. Update traceability; link the serial number of the CEDD HPS Basestation with the newly placed fan bracket serial number. Return the faulty products to TKH Airport Solutions.

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## 7.5 Replacing a CEDD HPS Basestation

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If the CEDD HPS Basestation is not properly de-energized there is a risk of electrical shock.

### The following tools are needed:

- Phillips PH2 screwdriver
- Slotted SL3 screwdriver
- Ratcheting socket wrench (or equivalent) with M4 (7 mm) hex socket
- Open-ended wrench 10 mm



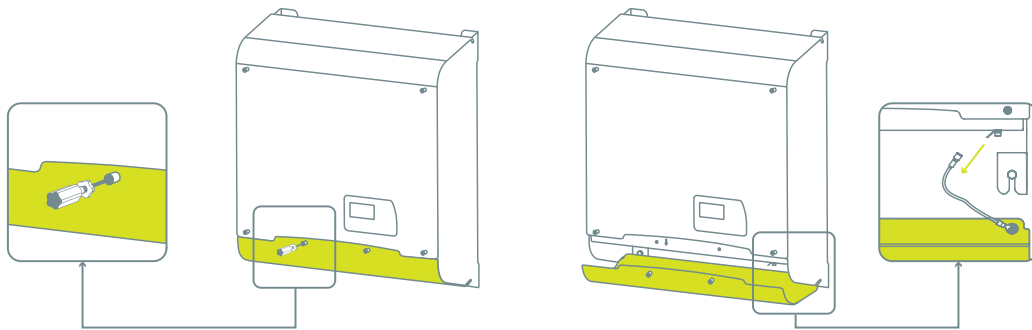
Perform the following steps to replace a CEDD HPS *Basestation*:

1. **Switch off the Power AC mains and Logic AC mains** to de-energize the CEDD HPS Basestation.

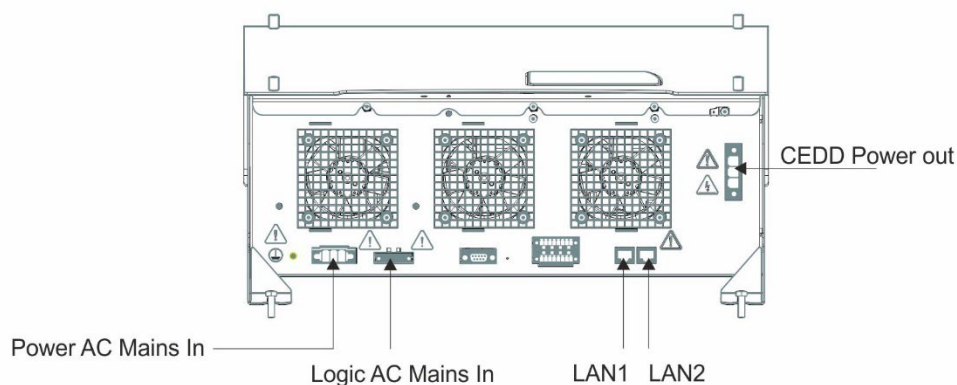


Wait at least 15 minutes after de-energizing the CEDD HPS Basestation.

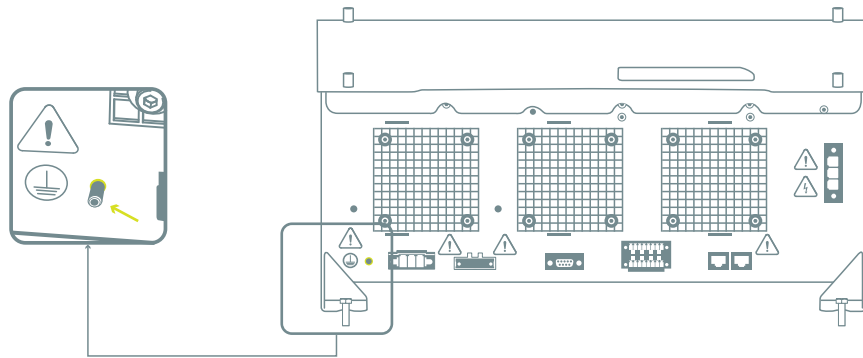
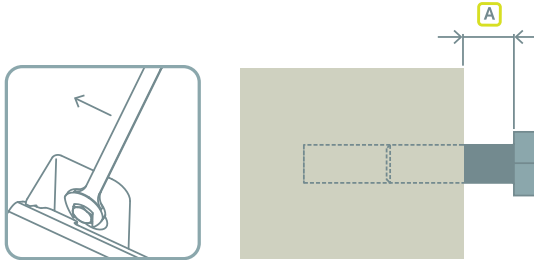
2. **Check the warranty seal.**  
If the warranty seal is broken, the warranty is void.
3. **Remove the bottom panel** by loosening two screws at the front using a Phillips PH2 screwdriver..



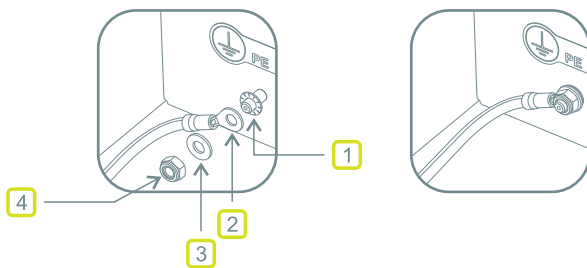
4. For ease of (de)installation, it is advised to **remove the fan bracket** as explained in steps 3 to 5 of chapter 7.4.
5. **Detach the protective earth wire.**
6. **Disconnect all the port connections:**
  - Power AC mains in: unscrew the two connector flange screws using a slotted SL3 screwdriver
  - Logic AC mains in: unscrew the two connector flange screws using a slotted SL3 screwdriver
  - LAN1 and LAN2: disconnect STP cable (if applicable)
  - CEDD Power out: press down firmly on the red clips, pull back the clips, then remove the connector from the CEDD HPS Basestation



7. **Disconnect the protective earth** of the cabinet using an M4 (7 mm) hex socket with a ratcheting socket wrench (or equivalent).
8. **Loosen the four supporting bolts** of the CEDD HPS Basestation using an open-ended wrench (10 mm), making sure there is space of 4 to 8 mm (A) to allow the cabinet to be lifted.



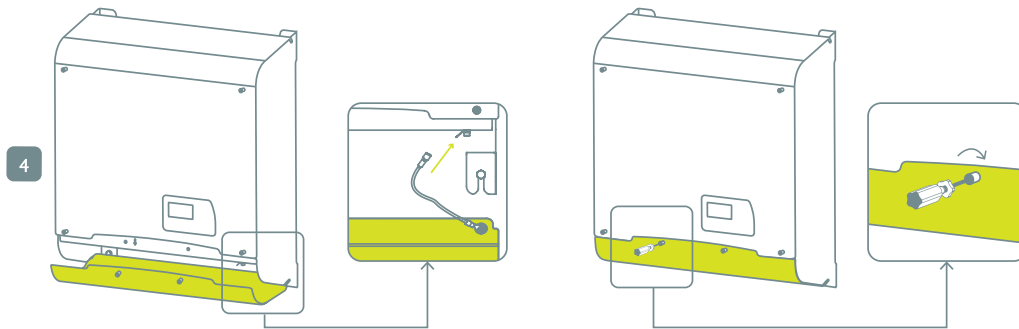
9. **Re-attach the protective earth wire** using an M4 (7 mm) hex socket tightened to 2 Nm with a ratcheting socket wrench (or equivalent).



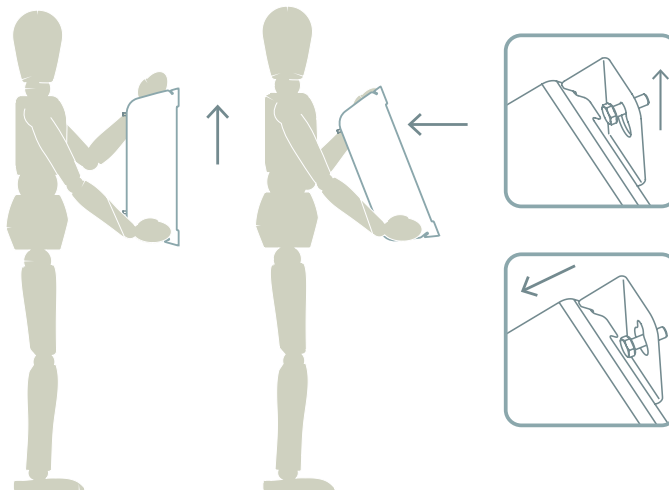
1. M4 serrated lock washer
2. M4 ring tongue terminal with earth cable 4 mm<sup>2</sup>
3. M4 plain washer
4. M4 self-locking nut

10. If the fan bracket was removed in step 4, then **remount the fan bracket** as explained in steps 6 to 13 of chapter 7.4.

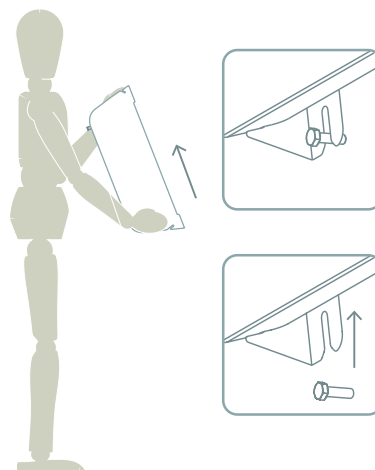
11. **Remount the bottom panel** by fastening two screws at the front using a Philips PH2 screwdriver.



12. **Slide the CEDD HPS Basestation upwards** and carefully pull the cabinet away from the top 2 supporting bolts:



13. **Continue to lift the cabinet** until the lower mounting slots are free of the 2 lower bolts.



14. **Pack the equipment carefully in the original packaging**, free from condensation and dust, and return it to TKH Airport Solutions. If the original packaging is not available, please contact TKH Airport Solutions Customer Service for instructions.

15. If you need to install a new CEDD HPS Basestation, go to Installation Instructions on page 19.

## 8. Troubleshooting

Improper or incorrect wiring is the cause of most problems. The first step in troubleshooting is therefore always to check all wiring for loose connections or possible shorts/opens. The next step is to check for the most common failures.

Solve a problem by following the corresponding corrective action. If the problem remains, contact the assembler of the system.

### Common failures

No.	Failure	Possible Cause	Corrective Action(s)
1	CEDD HPS Basestation shows warning or error messages.	Messages are displayed to diagnose if the system functions correctly and are not necessarily instrument failures.	Contact TKH Airport Solutions Customer Service <a href="mailto:service@tkh-airportsolutions.com">service@tkh-airportsolutions.com</a> for an explanation of messages.
2	Fixtures connected to the CEDD HPS Basestation do not work.	No Power AC mains power or no Logic AC mains power	Switch off the CEDD HPS Basestation, wait for 2 minutes, then switch it on again. Check whether the front panel display is illuminated. <ul style="list-style-type: none"> <li>• If not, refer to failure #1</li> <li>• If illuminated, check whether the cooling fans are running (wait 30 seconds after turning on the device).</li> </ul> Make sure that the Power AC mains and the Logic AC mains power supplies have been connected correctly. Check whether sufficient AC power is supplied (230 V $\pm$ 10%). If the supplied power is sufficient, contact TKH Airport Solutions
3	Front panel display is not illuminated (no display) after power on.	No Logic AC mains power	Make sure that the Power AC mains power supply has been connected correctly. Check whether sufficient AC power is supplied (230 V $\pm$ 10%). If the supplied power is sufficient, contact TKH Airport Solutions
4	Front panel key is unresponsive.	Keyboard connection is loose or keyboard is broken.	Do not disassemble the CEDD HPS Basestation. Contact the installer of the system.

For a full list of the error messages that can appear in the front panel display, see the CEDD AGL System Instructions.



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## 9. Taking Out of Service

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1. De-install the product as described in Replacing a CEDD HPS Basestation on page 36.
2. Return the product to TKH Airport Solutions for maintenance, repair or disposal. Contact TKH Airport Solutions Customer Service for the correct address.

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### 9.1 Disposal

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All electrical and electronic products must be disposed of separately from normal waste at the end of their useful life.

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### Company profile:

TKH Airport Solutions offers a complete range of LED-based airfield ground lighting products that are designed to be easy to install, operate, and maintain, and are compliant with international aviation standards. Our products meet the needs of our customers and contribute to a better future for the aviation industry. Being part of the TKH Group, our company can build on a history of more than 90 years in smart connectivity, energy distribution and AGL.

#### More information:

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