SUNSEEKER Manual

Artn.: 320103020001 SUNSEEKER 200
Artn.: 320104013501 SUNSEEKER 135

With our **unique, fully automated sun tracker,** we achieve the technically maximum performance in the PV segment. The controller, specially developed by our engineers, ensures that our HEPA tracking system is optimally aligned with the sun to **guarantee maximum charging efficiency** everywhere. The maximum daily yield of the Sunseeker is **up to 250% higher** than that of a conventional flat panel

Since the flat panel can absorb limited solar radiation in the morning and evening hours due to the low angle, the highest output is reached during a short period around midday. Since the **Sunseeker is permanently aligned 100% towards the sun,** the panel can perform to its full potential from sunrise to sunset. **This results in up to two and a half times more energy (250%)** compared to a flat-mounted panel!

CONSTANT PEAK | HIGHEST PERFORMANCE IN THE INDUSTRY | HIGH-END ACTUATORS
SMART SENSOR AUTOMATIC FOLDING/UNFOLDING FEATURE | FLEX PV
READY FOR USE – FULLY ASSEMBLED IN A BOX

Energy where you need it:
Stay self-sufficient with our HEPA SUNSEEKER 135. The integrated 12/24 V charge controller charges your battery or power station easily and reliably. **Ideal for caravans, motorhomes, boats, yachts and commercial vehicles.** (Of course, patents have been filed for our invention.)

WWW.HEPA-SOLAR.COM HEPASOLAR HEPA.SOLAR @HEPASOLAR

HEPA SOLAR

SUNSEEKER 135

TECHNICAL DETAILS

FEATURES

Fully assembled ready to use in a cardboard box
135 W Flex-PV
Aluminum profile frame
Combiner box
Gearbox
Controller
Light & Wind sensor
4 Actuators
Remote control

DETAILS

Automatic set-up and retraction feature with brightness & wind sensor	
Auto-alignment to the sun (inclination and angle)	
Inclination angle	0 – 45°
Rotation	up to 300°
Rotation speed	5° per second
Tracking	every 5 seconds
Snow load	100 kg/m²
Maximum wind load	25 m/s

EFFICIENCY

Maximum Yield	up to 250% (compared to a flat panel)
Self-consumption / day	approx. 2Wh

ELECTRICAL SPECIFICATIONS

Actuator power	30 W
Actuator voltage	12 V
Actuator current	2,5 A
Number of motors	4
Controller voltage	12 V
Controller current	5 A
Number of controllers	1

MECHANICAL SPECIFICATIONS

Operative temperature	-20 to 60 °C
SUNSEEKER 135 dimensions	1.335 x 530 x 174 mm
With an optional PVC frame	1.635 x 830 x 230 mm
Weight	23 kg
Safety class	IP65
Installation	easy

OTHER

Safety standard	CE
Warranty	5 years
APPLICATIONS	RV, Motorhome, Boat, Yacht, Utility vehicles

PACKAGING

1 Set
Fully assembled ready to use, delivered in a cardboard box

HEPA SUNSEEKER 200

TECHNICAL DETAILS

FEATURES

Fully assembled ready to use in a cardboard box
200 W Flex-PV
Aluminum profile frame
Combiner box
Gearbox
Controller
Light & Wind sensor
4 Actuators
Remote control

DETAILS

Automatic set-up and retraction feature with brightness & wind sensor	
Auto-alignment to the sun (inclination and angle)	
Inclination angle	0 – 45°
Rotation	up to 300°
Rotation speed	5° per second
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ELECTRICAL SPECIFICATIONS

Actuator power	30 W
Actuator voltage	12 V
Actuator current	2,5 A
Number of motors	4
Controller voltage	12 V
Controller current	5 A
Number of controllers	1

MECHANICAL SPECIFICATIONS

Operative temperature	-20 to 60 °C
SUNSEEKER 135 dimensions	1.170 x 960 x 144 mm
With an optional PVC frame	1.480 x 1.340 x 145 mm
Weight	25 kg
Safety class	IP65
Installation	easy

OTHER

Safety standard	CE
Warranty	5 years
APPLICATIONS	RV, Motorhome, Boat, Yacht, Utility vehicles

PACKAGING

1 Set
Fully assembled ready to use, delivered in a cardboard box

Installation and Operating Manual

1. Overview

Thank you for choosing the Hepa Solar SUNSEEKER. This manual contains important safety instructions for the installation, maintenance, and operation of your system. Users and installers must read and fully understand the safety and installation instructions in this manual before installation and use. Installers are required to inform end users accordingly to ensure that all instructions are clearly understood.

If you have any questions, please contact our technical support team. Installation and operation require specialized technical knowledge and must only be performed by qualified personnel. During installation, all safety precautions described in this manual, as well as all applicable federal, state, and local laws and regulations, must be followed. Failure to comply with these safety instructions may result in serious injury, death, or property damage.

Please retain this manual for future reference, maintenance and service purposes, resale, or proper disposal of the components.

1.1 Disclaimer

Hepa Solar reserves the right to modify this installation manual without prior notice and makes no warranties, express or implied, regarding the information contained herein. The product warranty will be void if the customer fails to comply with the installation requirements specified in this manual.

Hepa Solar assumes no liability for injuries, including but not limited to personal injury, property damage, or financial loss resulting from improper installation, operation of the components, or any handling that does not comply with the instructions in this manual.

This manual is intended solely as a reference guide for the installation of the components.

1.2 Warnings

The limited product warranty will be void if any hardware not supplied or approved by Hepa Solar is connected to the module.

1.3 Additional Information

For further technical assistance, please contact your designated Hepa Solar technical representative.

2. Safety

Warning: Please read and fully understand all safety instructions before installing, wiring, operating, or servicing any components. This module generates direct current (DC) when exposed to sunlight or other light sources. Direct contact with energized parts of the module, such as terminals—whether connected or not—may result in serious injury or fatal electric shock.

2.1 Safety Rules

- All installation work must comply with local codes and all applicable national and international electrical standards.
- Use insulated tools to reduce the risk of electric shock.
- If the SUNSEEKER is installed or operated during rainy conditions, high winds, or in damp environments (e.g., early morning dew), appropriate protective measures must be taken to prevent damage to the equipment and personal injury.
- Children and unauthorized persons must be kept away from the SUNSEEKER installation and storage areas.
- Do not install or operate damaged components.
- Direct contact with the surface of the PV panel may cause electric shock if the surface material is damaged or worn.
- Do not attempt to repair or modify any part of the SUNSEEKER without prior coordination with Hepa Solar and/or its authorized distributors. Hepa Solar assumes no liability for damage to the device, the vehicle, or personal injury resulting from failure to follow these safety instructions.
- Do not clean the SUNSEEKER using corrosive chemicals.
- Covers and enclosures must remain closed at all times.
- Do not disassemble the device or remove any components.
- Do not concentrate or focus artificial light sources onto the PV panel.
- Use only equipment, connectors, and cables that are compatible with the SUNSEEKER.
- Components must not be connected or disconnected while current is flowing or while an external power source is present.

2.2 Safe Transport

- Do not move or lift the SUNSEEKER by pulling on the connectors or connection cables.
- Do not place heavy objects on the SUNSEEKER.
- Do not drop the SUNSEEKER and prevent objects from falling onto it.
- Use extreme care when handling, transporting, and installing the SUNSEEKER.
- Do not disassemble the SUNSEEKER or remove any rating labels, nameplates, or factory-installed fasteners.
- Do not paint or coat the top surface of the SUNSEEKER.
- Do not strike, impact, or abrade the SUNSEEKER.
- Do not handle or transport the SUNSEEKER in wet conditions unless appropriate personal protective equipment (PPE) and protective measures are used.
- Do not expose the SUNSEEKER to direct sunlight for extended periods prior to installation to avoid unnecessary performance degradation.
- Keep the module away from sharp objects. Scratches or surface damage may compromise electrical safety and component integrity.

2.3 Safe Installation

- Use appropriate personal protective equipment (PPE), such as insulated gloves and insulated tools, to avoid direct contact with DC voltages of 20 V or higher.
- Do not wear metallic accessories (e.g., jewelry, watches) during installation to prevent damage to components and the risk of electric shock.
- During installation, use an opaque covering to shield the module from light in order to interrupt power generation.
- Do not connect or disconnect components while under electrical load.
- Do not install the module during rain, snow, or high-wind conditions.
- Observe all safety instructions for other system components, including cables, connectors, charge controllers, terminal blocks, rechargeable batteries, and related equipment.
- Use only connectors that are compatible with the module terminals. The product warranty will be void if connectors are removed or replaced without prior authorization.

3. Mechanical and Electrical Characteristics

- The specified electrical performance data of the components were measured under Standard Test Conditions (STC): irradiance of 1,000 W/m^2, air mass spectrum (AM) 1.5, and a cell temperature of 25 °C (77 °F). This installation manual includes the specific electrical and mechanical performance parameters of the solar modules. The nameplate of each component is also marked with the key electrical performance parameters under STC conditions. The maximum system voltage for all component families is 1,500 V.

- In certain conditions, the current or voltage generated by the component may exceed the optimal operating current or operating voltage specified under STC. Therefore, when determining component ratings and load limits, the open-circuit voltage (Voc) and short-circuit current (Isc) of the component under STC must be multiplied by a factor of 1.25.

4. Prevention and General Safety Rules

- Store the SUNSEEKER in a dry, well-ventilated environment.
- The SUNSEEKER must be transported in the packaging carton provided by Hepa Solar and kept in its original packaging until installation.
- Retain the packaging and handle it with care. Exercise particular caution when opening the packaging, during transport, and while in storage.
- Do not apply excessive mechanical stress to the SUNSEEKER components and do not twist or deform them.
- Do not carry or lift the SUNSEEKER by the cables or connectors.
- Do not stand, walk, or jump on the SUNSEEKER.
- Keep the SUNSEEKER away from sharp objects. Scratches may directly compromise the safety and integrity of the device.
- Do not place the SUNSEEKER in locations without stable support or on unsecured surfaces.
- Do not modify or alter the bypass diode wiring or connection method.
- Keep all electrical interfaces clean and dry.

5. Product Identification

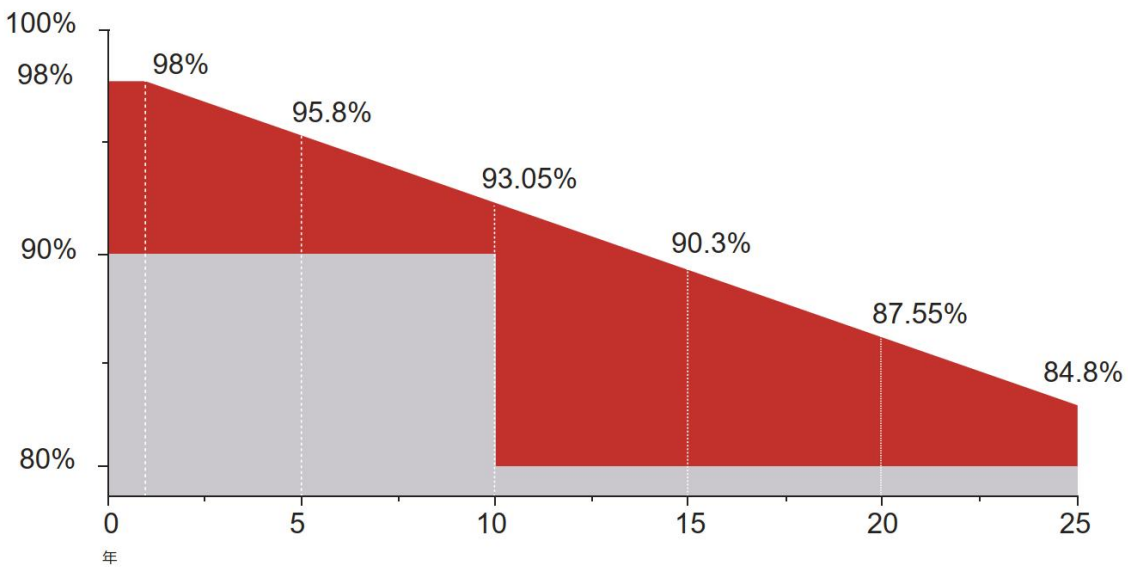
- Each component is marked with a unique serial number, for example in the form of a barcode or an alphanumeric code.
- A nameplate located on the rear side of the PV module displays the model number, key electrical characteristics, safety ratings, and applicable certification marks.

6. Product Description – SUNSEEKER 135: Flexible Solar Module AP-135-F8PK (135 W)

Warranty

- Linear Power Output Warranty: 25 years
- Product Warranty: 10 years

Linear Power Output Warranty:



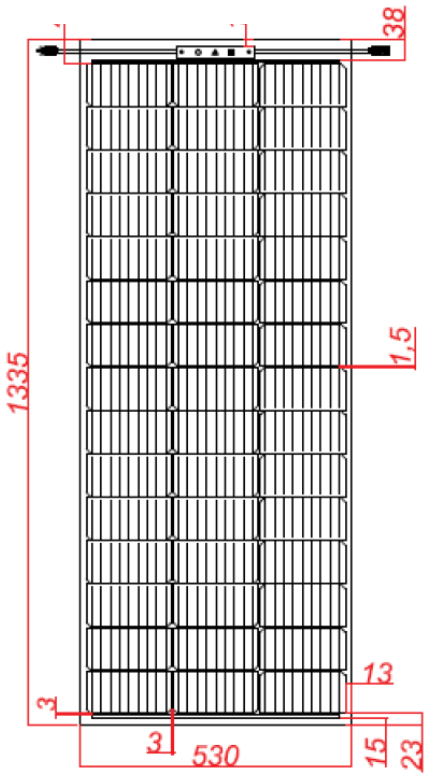
Features

- Flexibility
  Flexible and adaptable due to specialized materials and advanced manufacturing processes.
- Aesthetic Design
  Half-cell design with high visual consistency.
- Easy Installation
  Lightweight, frameless, and glass-free design.
- Weight
  Only 2 kg (4.4 lb) per module.
- Certifications
  Quality management system certified to ISO 9001:2015
  TÜV SÜD tested quality

Electrical Data (STC – Standard Test Conditions)

Parameter	Value
Maximum Power (Pmax)	135 W
Voltage at Pmax (Vmp)	21,76 V
Current at Pmax (Imp)	6,21 A
Open-Circuit Voltage (Voc)	25,5 V
Short-Circuit Current (Isc)	6,46 A
Module Efficiency	19,1 %
Operating Temperature Range	−40 °C to 85 °C (−40 °F to 185 °F)
Maximum System Voltage	600 VDC
Maximum Series Fuse Rating	20 A
Power Tolerance	0 ~ +5 W

Panel Measures (mm)



STC Conditions: Irradiance 1,000 W/m^2, cell temperature 25 °C (77 °F), AM = 1.5

Mechanical Data

Feature	Value
Cell Type	Monocrystalline
Cell Size	166 × 83 mm
Number Of Cells	45
Module Dimensions	1335 × 530 × 3 mm (52.6 × 20.9 × 0.12 in)
Weight	2 kg (4.4 lb)
Backsheet	White
Protecion Class	IP67
Connection Cable	4 mm^2, 350 mm (13.8 in) each
Connector	MC4-compatible

Temperature Coefficients

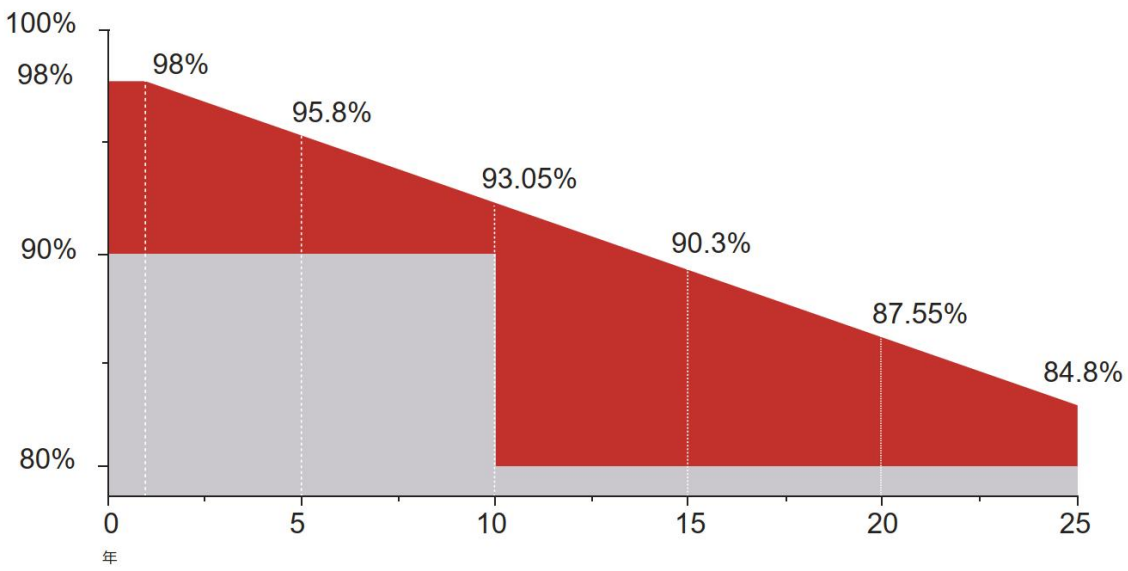
- Pmax: −0.38 % / °C
- Voc: −0.28 % / °C
- Isc: +0.020 % / °C
- NOCT (Nominal Operating Cell Temperature): 45 ± 2 °C (113 ± 3.6 °F)

7. Product Description – SUNSEEKER 200: Flexible Solar Module AP-200-F8PH (200 W)

Warranty

- Linear Power Output Warranty: 25 years
- Product Warranty: 10 years

Linear Power Output Warranty:



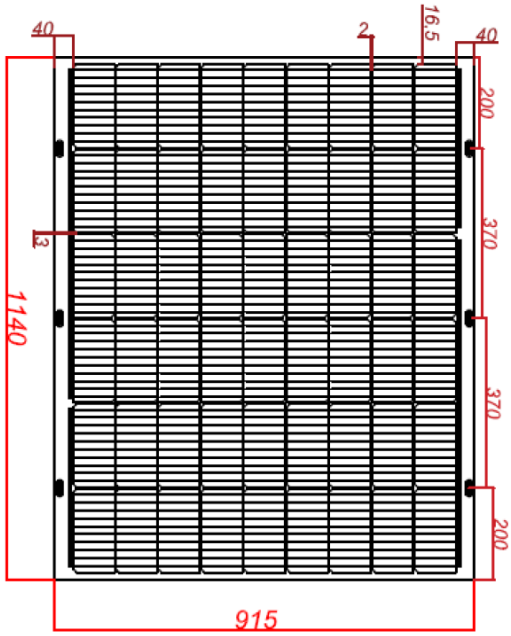
Features

- Flexibility
  Flexible and adaptable due to specialized materials and advanced manufacturing processes.
- Aesthetic Design
  Half-cell design with high visual consistency.
- Easy Installation
  Lightweight, frameless, and glass-free design.
- Weight
  Only 2 kg (4.4 lb) per module.
- Certifications
  Quality management system certified to ISO 9001:2015
  TÜV SÜD tested quality

Electrical Data (STC – Standard Test Conditions)

Parameter	Value
Maximum Power (Pmax)	200 W
Voltage at Pmax (Vmp)	15.3 V
Current at Pmax (Imp)	13.1 A
Open-Circuit Voltage (Voc)	18.55 V
Short-Circuit Current (Isc)	13.7 A
Module Efficiency	19.2%
Operating Temperature Range	−40 °C to 85 °C (−40 °F to 185 °F)
Maximum System Voltage	600 V DC
Maximum Series Fuse Rating	25 A
Power Tolerance	0 to +5 W
Application Class	Class A

Panel Measures (mm)



STC Conditions: Irradiance 1,000 W/m^2, cell temperature 25 °C (77 °F), AM = 1.5

Mechanical Data

Feature	Value
Cell Type	Monocrystalline
Module Dimensions	1140 × 915 × 3 mm
Number of Cells	54
Weight	3.3 kg (7.3 lb)
Backsheet Material	White
Junction Box	IP67
Connection Cable	4 mm^2, 400 mm each (15.7 in)
Connector	MC4 compatible

Temperature Coefficients

- Pmax: −0.38 % / °C
- Voc: −0.28 % / °C
- Isc: +0.020 % / °C
- NOCT (Nominal Operating Cell Temperature): 45 ± 2 °C (113 ± 3.6 °F)

8. Installation Instructions

Caution: The ignition / terminal 15 must be connected to enable automatic retraction of the SUNSEEKER when the vehicle is started.

Note for operation on caravans / travel trailers:
The 12 V onboard power supply generated by standard voltage converters installed in caravans is often unstable. Ensure that a stable 12 V power supply is available before operating the SUNSEEKER.

Roof Load & Manufacturer Approval

- Before installation, verify the permissible roof load and roof suitability with the vehicle manufacturer.
- Installation is permitted only if manufacturer approval has been granted.
- After installation, a leak-tightness inspection should be carried out by a qualified service provider.

Before starting installation, ensure that the vehicle roof is sufficiently stable. During installation and when accessing the roof, do not exceed the maximum permissible roof load of the RV.
For this purpose, consult the vehicle manufacturer.

Space Requirements

Ensure that sufficient space is available both for the SUNSEEKER in its folded (retracted) position and for its operating range (rotation radius).

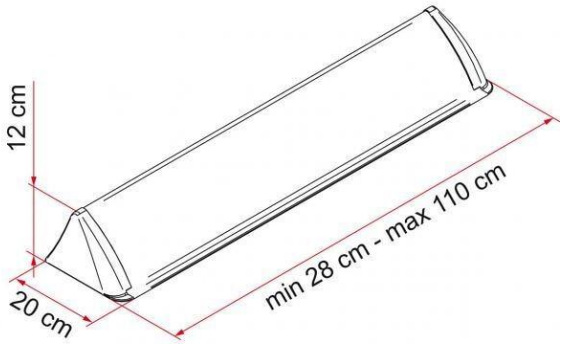
Manual Functional Test Before Roof Mounting

Please test the functionality of the **SUNSEEKER** in advance by connecting **12V DC, 12 A**.
To trigger the light sensor, a daylight lamp such as this one is required:

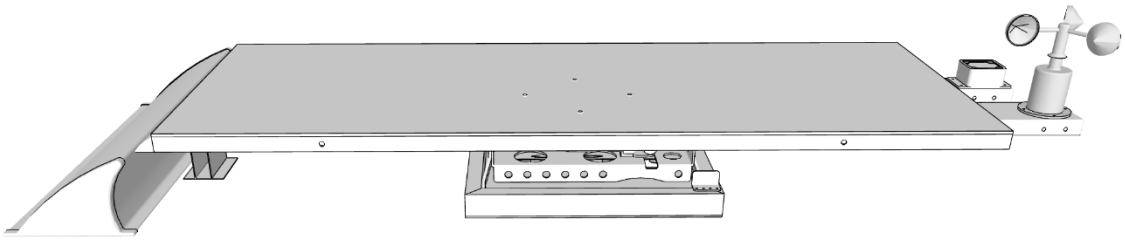
9. Wind Deflector & Aerodynamics

- The use of a wind deflector is mandatory to reduce lift forces while driving.
- Select the mounting position so that roof vents, hatches, or satellite systems are not obstructed or affected.

We additionally recommend the **FIAMMA wind deflector** (NOT INCLUDED IN DELIVERY).
Fiamma part number: 06289-01



It is length-adjustable and suitable for the SUNSEEKER 135 and SUNSEEKER 200 models.



We recommend using DEKASYL MS-5 (white) adhesive for all bonding applications.

High-Tack Adhesive and Sealant

DEKASYL MS-5 is an MS polymer–based adhesive with high bonding strength and high initial tack, suitable for creating elastic bonds between components. Due to its strong adhesive properties, clamping times can be reduced or clamps can be eliminated entirely.
In addition, DEKASYL MS-5 can also be used as a sealant when bonding similar materials (with comparable stiffness) or when mechanical fastening methods are used.

Your Benefits:

- Free of solvents, isocyanates, and PVC
- Excellent UV resistance and long-term aging resistance
- High initial bonding strength
- Generally good adhesion without primer on a wide range of substrates
- Permanently elastic within a temperature range of −40 °C to +120 °C (−40 °F to +248 °F)
- Neutral, odorless, and fast curing
- Paintable after skin formation (wet-on-wet); this generally does not impair curing
- Compatible with most industrial coating and paint systems, including alkyd resin and dispersion paints
  (Due to the wide variety of industrial paints available, a compatibility test is recommended)

SKU: 6252234

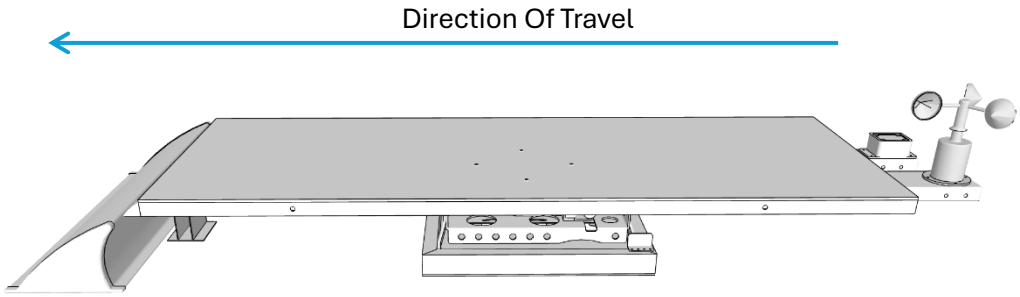
10. Bonding the Mounting Plate+

Adhesive Installation

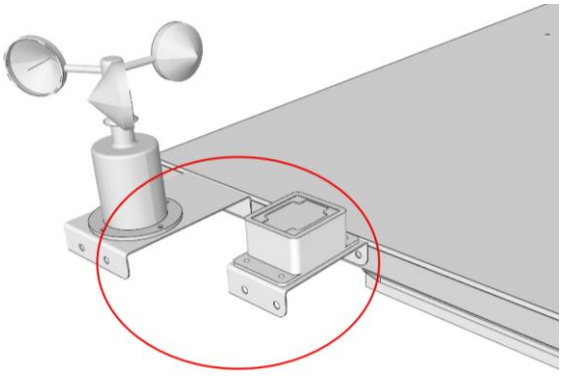
- Prepare the bonding surface by sanding, degreasing, and applying primer if required.
- Use only approved adhesive systems (e.g., Sika, Dekalin).
- Perform bonding work only at ambient temperatures between +10 °C and +35 °C (50 °F to 95 °F).
- Observe the specified curing time.

After carefully measuring and confirming the position, bond the mounting plate to the roof.

Ensure that the SUNSEEKER is installed only in the direction of travel. The side opposite the sensors must ALWAYS face the direction of travel.

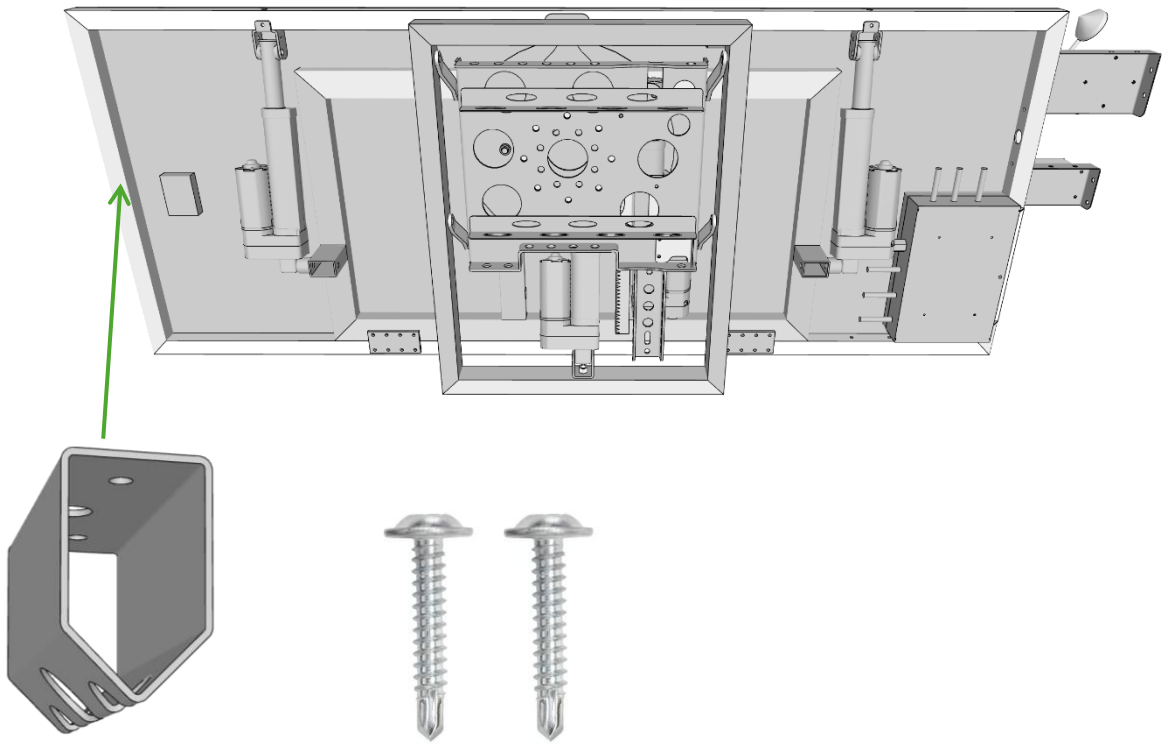


First, install the light and wind sensor as shown in the illustration.
For correct alignment, ensure that the “open” side of the brackets faces downward.

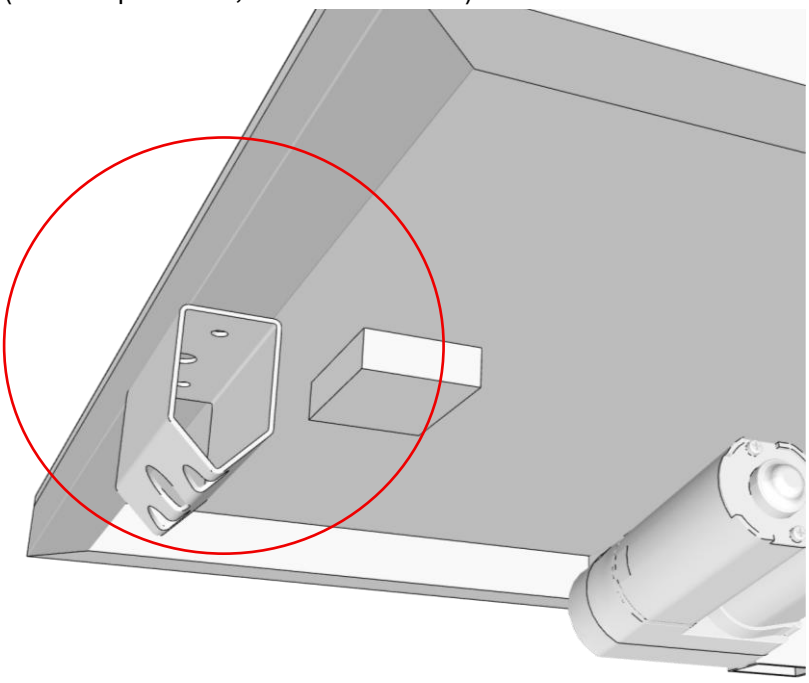


11. Installation of the Safety Lock

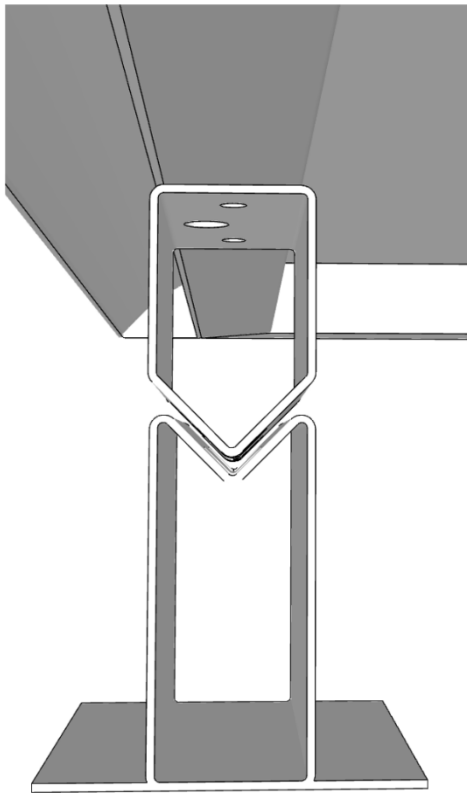
Carefully place the SUNSEEKER on its side so that the underside is facing you.



Secure the upper part of the safety lock centrally to the frame using **two self-tapping screws** (WÜRTH pan head, **4.2 mm × 13 mm**).

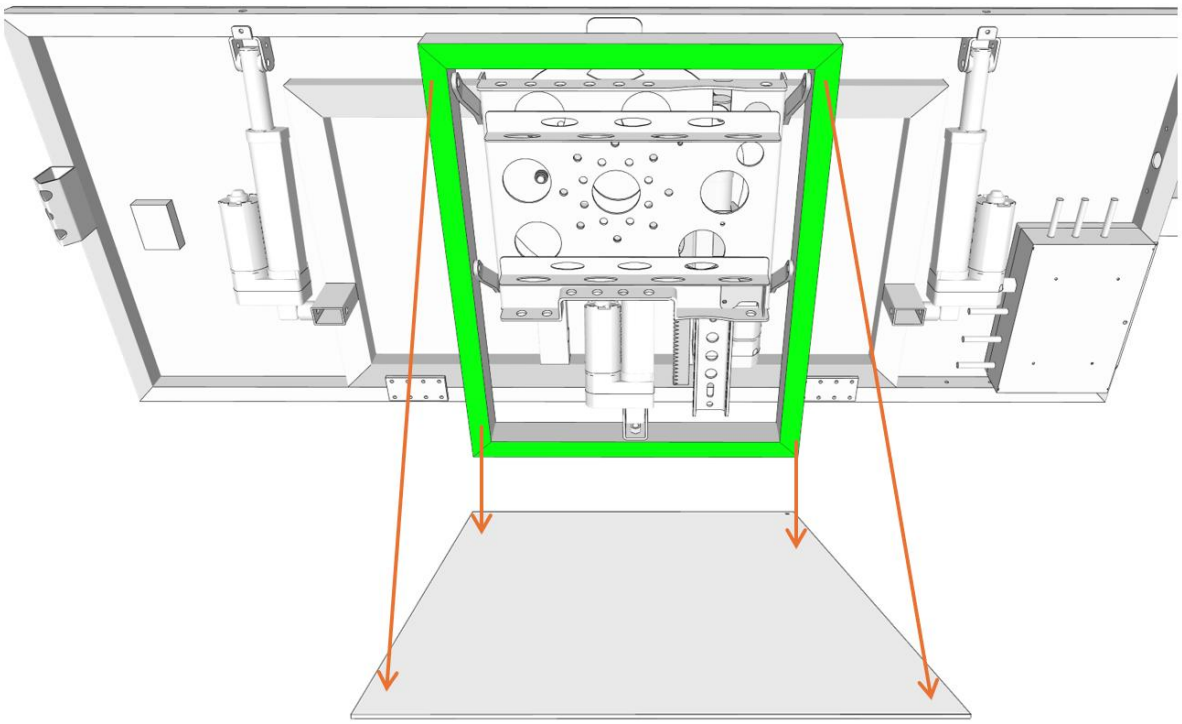


The mating part of the safety lock must be positioned correctly and bonded to the vehicle roof so that both parts engage with each other when the SUNSEEKER is in the retracted position.

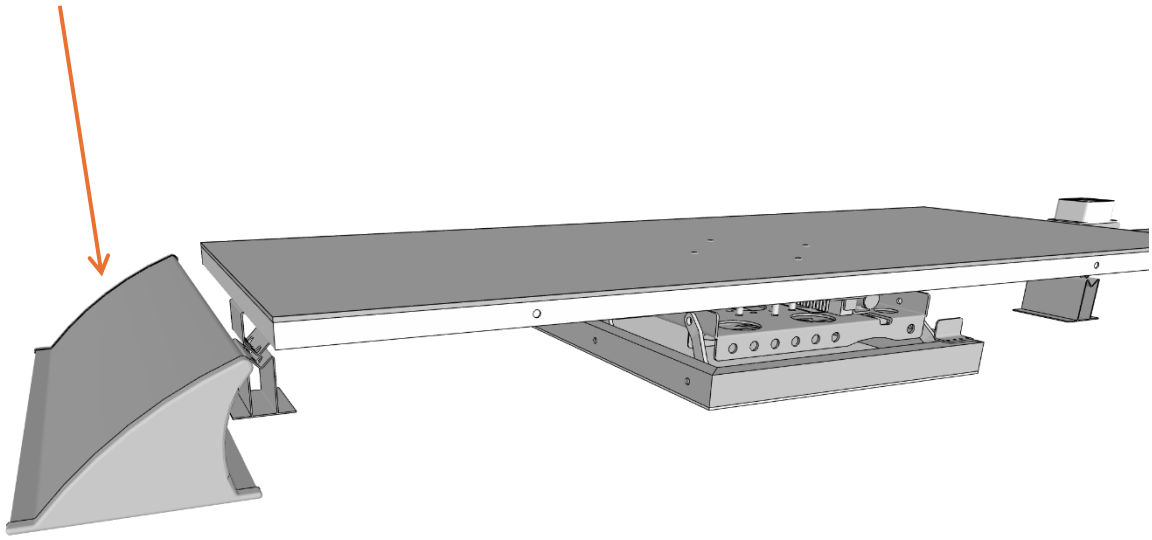


12. Mounting the SUNSEEKER

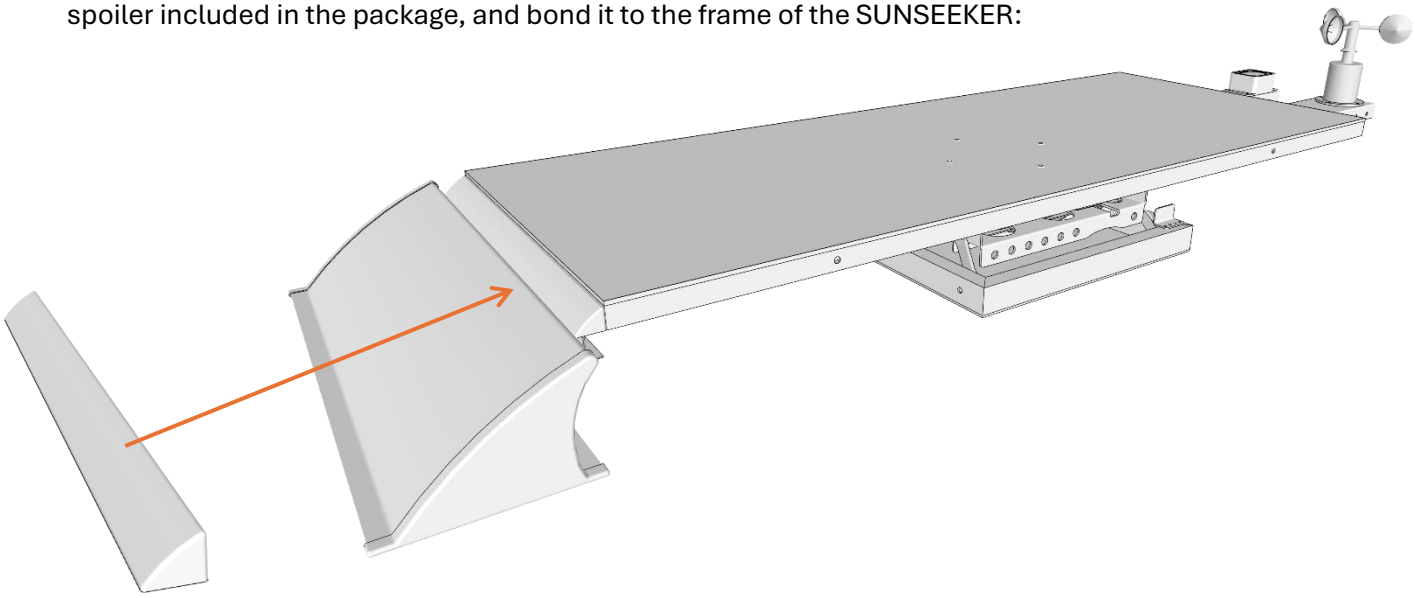
Bond the SUNSEEKER to the mounting plate:



Position the wind deflector in front of the SUNSEEKER:



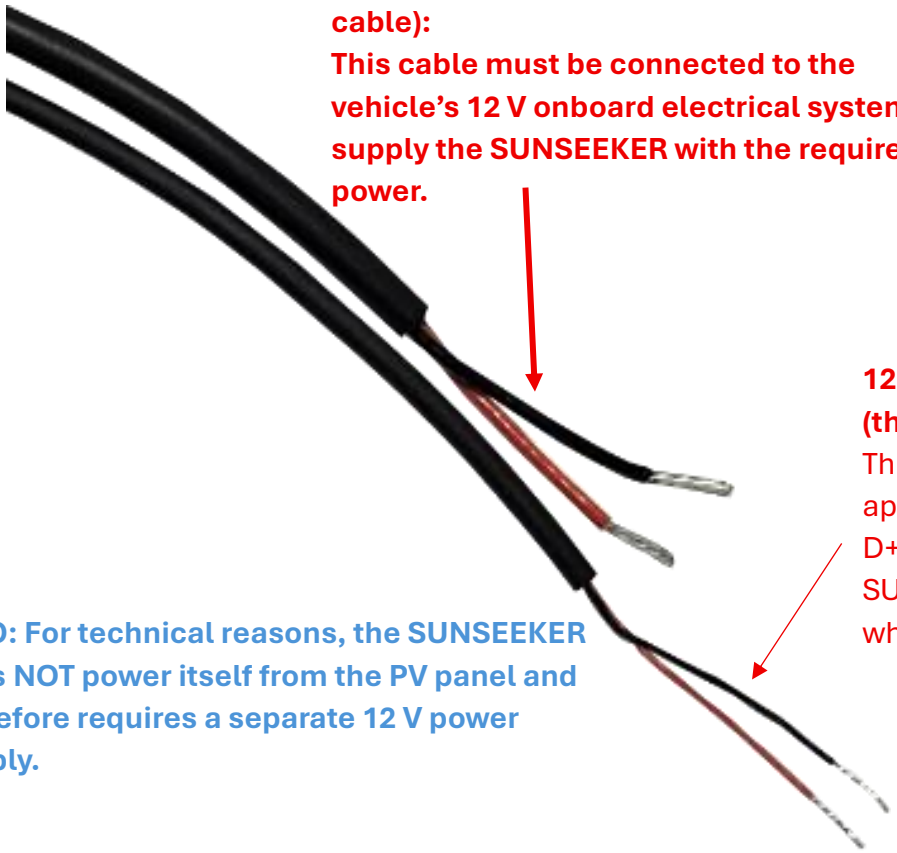
If necessary, close the gap between the wind deflector and the SUNSEEKER using the additional spoiler included in the package, and bond it to the frame of the SUNSEEKER:



Route the cables into the vehicle and ensure that the **DC cables of the PV panel are routed separately from the 12 V supply cables**.

The two additional power cables you will find differ as follows:

12 V power supply for the controller (thick cable):
This cable must be connected to the vehicle's 12 V onboard electrical system to supply the SUNSEEKER with the required power.



12 V signal cable for D+ contact (thin cable):
This cable must be connected to the appropriate terminal (ACC / ignition / D+) in the fuse box to ensure that the SUNSEEKER automatically retracts when the vehicle is started.

INFO: For technical reasons, the SUNSEEKER does NOT power itself from the PV panel and therefore requires a separate 12 V power supply.

For routing all cables into the vehicle, we recommend using a **weatherproof dual cable entry**:

Electrical Safety

- All electrical installations must comply with applicable national and local electrical codes and standards (e.g., NEC and relevant RV electrical standards).
- Connection to the 12 V onboard electrical system must be performed only by a qualified electrician or certified technician.
- Incorrect wiring or improper connections may result in fire hazards, equipment damage, or personal injury.

Basic Principles of Cable Routing

1. Cable Type: Use UV-resistant, double-insulated solar cables (e.g., 2 × 4 mm^2, TÜV-certified, PV1-F or equivalent).
2. Connectors: Use only MC4-compatible, watertight connector systems.
3. Protection: Always route roof-mounted cables in cable ducts or corrugated conduit (UV-resistant) to prevent mechanical damage.
4. Securing: Fasten cables using halogen-free, UV-resistant cable clamps or adhesive mounting pads. Do not use unprotected metal clamps.
5. Separation: Always route PV DC cables separately from onboard electrical system cables or 120 V AC wiring.

Cable Routing Path: Roof → Interior

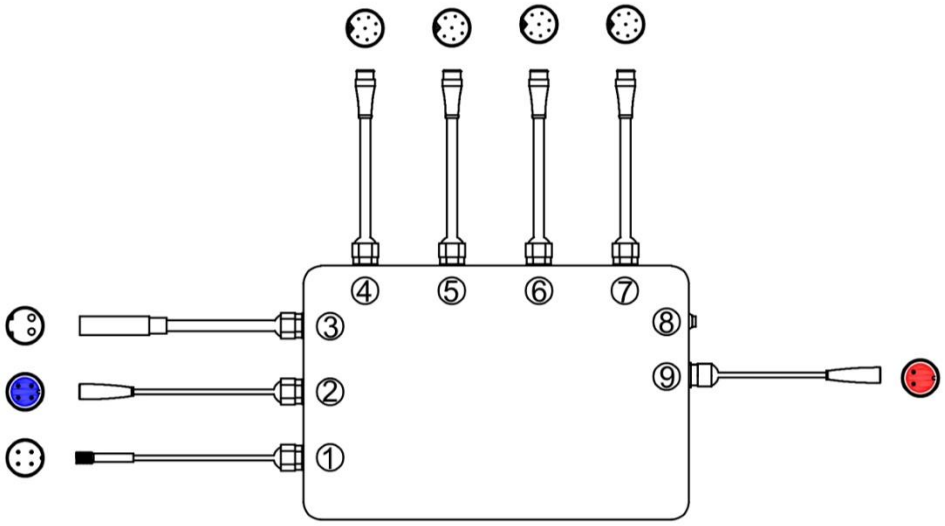
1. **Roof Penetration:**
    - Use a watertight roof entry (e.g., a dual cable entry with IP68 protection rating), bonded with a UV-resistant PU or MS polymer sealant.
    - Position the roof entry so that rainwater can drain freely and does not collect in recessed areas.
2. **Interior Cable Routing:**
    - Route the cables vertically through the roof entry into the interior.
    - Immediately place the cables inside a closed cable duct or raceway once inside the vehicle.

- Route the cables along existing wiring paths or furniture edges where possible.

Safety and Installation Guidelines

- **Circuit Protection:**
    - Protect each PV cable with a suitable fuse before it enters the charge controller (DC-rated fuse matched to the module current).
    - When multiple modules are connected in parallel, protect each string individually.
- **Cable Routing:**
    - Do not leave cables loose—always secure them properly.
    - Protect sharp edges on the roof or furniture with edge protection.
    - Select the cable cross-section according to the module output (for a 135 W module, a minimum of 2 × 4 mm^2 is recommended).
- **Fire Protection:**
    - Do not route cables near heating systems or gas lines.
    - Equip cable penetrations through metal or wood with protective bushings (e.g., rubber grommets).
- **Serviceability:**
    - Route cables in a way that allows for future maintenance or replacement.

13. Controller Connection Overview



Controller Connection Overview

Connection No. 1: Wind Sensor Connection Cable
Connect the wind sensor cable to the designated socket (1).
Ensure that each connector is matched only with its corresponding counterpart. Make sure the connector is fully inserted into the socket and that the rubber seal is properly engaged.

An improper connection will prevent wind speed detection. In this case, the system will not automatically shut down when wind speed exceeds 12 m/s (≈ 27 mph). This may cause the product to tip over and represents a serious safety hazard.

Connection No. 2: Light Sensor Connection Cable
Connect the light sensor cable to the designated socket (2).
An improper connection will prevent sunlight detection and will disable the tracking function.

Connection No. 3: Power Supply Cable (premounted to the controller)
Connect the power supply cable to the designated socket (3).
Incorrect polarity may cause damage to the product.

Connection No. 4: Lift Motor Connection Cable (premounted to the controller)
Connect this cable correctly to the designated socket (4).
An improper connection will prevent motor operation and may result in damage to the motor and the mechanical structure.

Connection No. 5: Left Actuator Motor Connection Cable
(premounted to the controller
Connect this cable correctly to the designated socket (5).
An improper connection will prevent motor operation and may result in damage to the motor and the mechanical structure.

Connection No. 6: Right Actuator Motor Connection Cable
(premounted to the controller)
Connect this cable correctly to the designated socket (6).
An improper connection will prevent motor operation and may result in damage to the motor and the mechanical structure.

Connection No. 7: Rotation Drive Connection Cable
(premounted to the controller)
Connect this cable correctly to the designated socket (7).
An improper connection will prevent motor operation and may result in damage to the motor and the mechanical structure.

Connection No. 8: Push Button Switch
Used to switch the device ON and OFF.

Connection No. 9: ACC / D+ Connection Cable
(premounted to the controller)
Connect this cable correctly to the vehicle's D+ / ACC / ignition signal.
Observe correct polarity, as incorrect polarity may cause damage to the product.

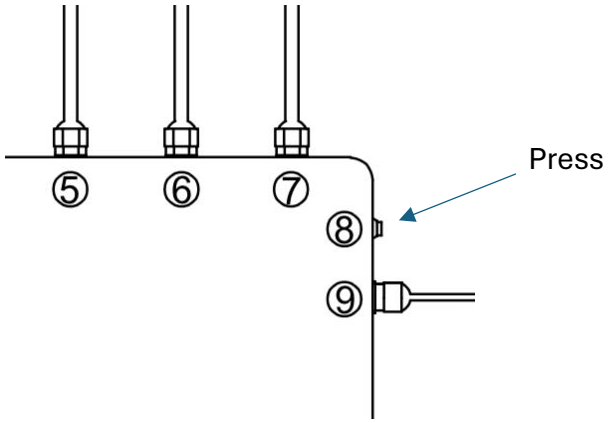
14 Device Power-On

Prerequisites

- Ensure that the SUNSEEKER is securely mounted on the vehicle roof.
- Verify that all cables are correctly connected. (Installation by a qualified service provider is recommended.)

System Start

- Press and hold button (8) on the controller.

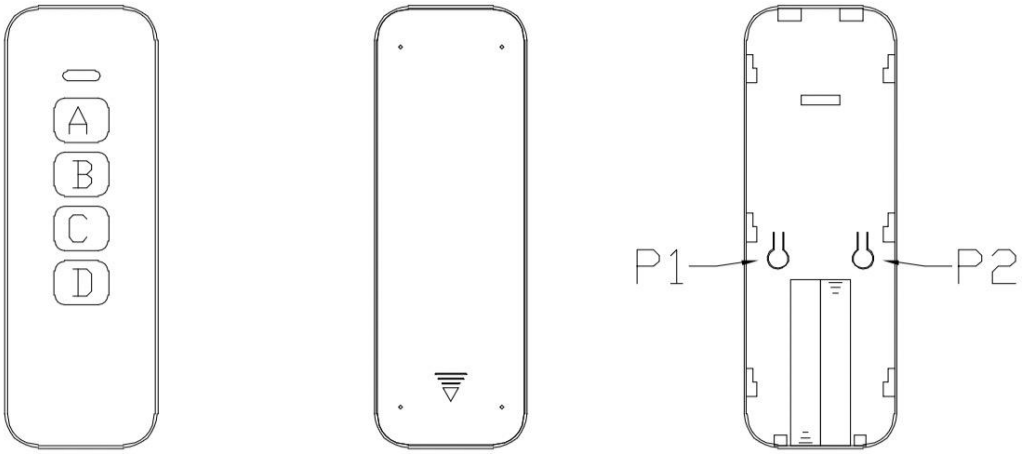


- After **3 seconds**, a long audible signal sounds.
- Release the button — a short audible signal will sound.
- If the light intensity is sufficient, another short audible signal will sound after approximately **10 seconds**, and the system will automatically switch to **sun-tracking mode**. The SUNSEEKER will begin rotating to locate and align with the sun.

System Shutdown

- To manually shut down the SUNSEEKER, press and hold **button (8)** on the controller until an audible signal sounds.
- Two long audible signals will sound, the device will retract, and the system will shut down.

15. Using the Remote Control



Remote Control Setup

The remote control must be paired with the device before use. Pairing is performed at the factory, so normally no action is required. Simply open the battery compartment, insert the supplied battery, and the remote control will be ready for immediate use.

Remote Control Functions

- Button A: Power ON
- Button B: Power OFF
- Button C: Retract left motor
  (Use only to compensate for possible alignment deviations)
- Button D: Retract right motor

Pairing Procedure

If the remote control does not function, proceed as follows:

1. Remove the back cover of the remote control and insert the battery correctly.
2. Press and hold button (8) on the controller for 10 seconds.
   - A single audible signal will sound immediately.
   - After 10 seconds, a second audible signal will sound.
3. Release button (8) on the controller.
4. Press the P1 or P2 button on the back of the remote control
   (both buttons have the same function).
5. If pairing is successful, three consecutive audible signals will sound.

Unpairing the Remote Control

- To cancel the pairing, repeat the pairing procedure described above.

16. Automatic Retraction Function When the Vehicle Is Started

This function is essential to the principle of **“power generation while parked – worry-free driving.”** It ensures that the SUNSEEKER automatically retracts when the vehicle is started in order to prevent collisions and damage.

Function Description

The controller monitors the vehicle status via the **ACC signal (ignition signal / D+)**.

- As soon as the vehicle is started, **12 V is present on the ACC cable**.
- The system immediately interrupts all current operations.
- Priority is given to the **emergency retraction command**, causing the SUNSEEKER to quickly retract into the safe parking position.

Installation Note

This function is only guaranteed if the **ACC cable is correctly connected**.
Ensure that the installer connects this cable to a circuit that is controlled by the ignition switch.

Function Test

- **Vehicle switched off:**
  The SUNSEEKER can deploy normally for sun-tracking operation.
- **Ignition key turned to “ACC” or “ON” (engine does not need to be running):**
  The SUNSEEKER automatically retracts.
- **Engine started:**
  The SUNSEEKER remains fully retracted.
- **Vehicle switched off and key removed:**
  The module can be redeployed either via the remote control or automatically returns to sun-tracking mode.

Important Notes

- Before every trip, visually check that the SUNSEEKER is **fully retracted**.
- This function has **highest priority**: starting the vehicle will always trigger automatic retraction, regardless of the current operating mode.

Emergency Shutdown & Safety

- **Before driving, ensure that the SUNSEEKER is fully retracted.**
- **The system must automatically retract when the vehicle is started (D+ / ACC connection).**
- **Driving with the system deployed is not permitted and represents a serious safety hazard.**

17. Audible Signal Description

Please refer to the following signal sequences for the exact meaning of each audible tone:

- **1 short audible signal:**
  Button pressed for 3 seconds, start of sun-tracking operation
- **2 short audible signals:**
  Sun-tracking operation ended
- **3 short audible signals:**
  Angle motor angle deviation error, successful pairing of the remote control
- **4 short audible signals:**
  Retraction due to high wind conditions
- **5 short audible signals:**
  Forced retraction due to an angle motor fault
- **6 short audible signals:**
  Vehicle start detected
- **10 short audible signals:**
  Low battery level
- **1 long audible signal:**
  Power-on, entry into wireless pairing mode
- **2 long audible signals:**
  Control board powered on, power-off, or vehicle stopped

18. Maintenance

- **Regular Cleaning:**
  Keep the surface of the PV modules clean. As a general rule, the modules should be cleaned at least **once per month**. Use water and a clean sponge or cloth. For stubborn dirt, a mild, non-abrasive detergent may be used. The use of mineral-rich water for cleaning the components is not recommended.
- **Caution:**
  PV modules must not be cleaned during heavy rain or snowfall.
- **Regular Inspection:**
  After the first **500 km (310 miles)** of vehicle operation, inspect the mounting and adhesive bonds. Thereafter, inspect all electrical and mechanical connections **every three months** to ensure they are clean, secure, undamaged, and free of corrosion.
- **Professional Assistance:**
  If any issues arise, consult a qualified professional.
- **Note:**
  Carefully read the instructions for the converter, controller, battery, and all other system components to ensure overall system compatibility.

19. FAQ – Frequently Asked Questions

Q1: What should I do if the SUNSEEKER does not automatically retract when the vehicle is started?

A1:

1. Check whether the **ACC cable** of the main control unit is correctly connected.
2. Check whether the fuse has blown.
3. Try unplugging and reconnecting the ACC connector.

Q2: What should I do if the remote control does not respond?

A2:

1. Check the battery level of the remote control.
2. Make sure that no objects are blocking the signal.
3. Try pairing the remote control again.

Q3: Why does the system not always deploy?

A3:

1. Check whether the main power switch is turned ON.
2. Verify that the battery cables are not loose or disconnected.
3. Is it a cloudy day? In very low light conditions, the system may switch to **standby mode**.