

# Installation and wiring of solar kits

This course will walk you through the best practices for successful solar kit installation. Correct installation ensures optimal, efficient and safe operation.

You will learn how to install the panels, optimize their orientation, and make reliable electrical wiring.



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# Module Objectives

## 1 Compliant installation

Install a solar kit correctly in compliance with safety standards.

## 2 Optimization

Optimize the orientation and inclination of solar panels.

## 3 Secure cabling

To make reliable and safe electrical wiring.



# Importance d'une installation correcte

## Efficiency

An optimal installation ensures maximum efficiency of the solar system.

## Security

Avoids electrical hazards and potential accidents.

## Durability

Extends equipment life and reduces breakdowns.





# Choice of location panels



## Sun exposure

Choose areas without shade during hours of high light.



## Orientation

Ideally facing south in the northern hemisphere to capture more sun.



## Strong Support

Make sure the structure can support the weight of the panels.



# Fixing the panels

## Sloped roof

Use mounting rails to follow the slope of the roof.

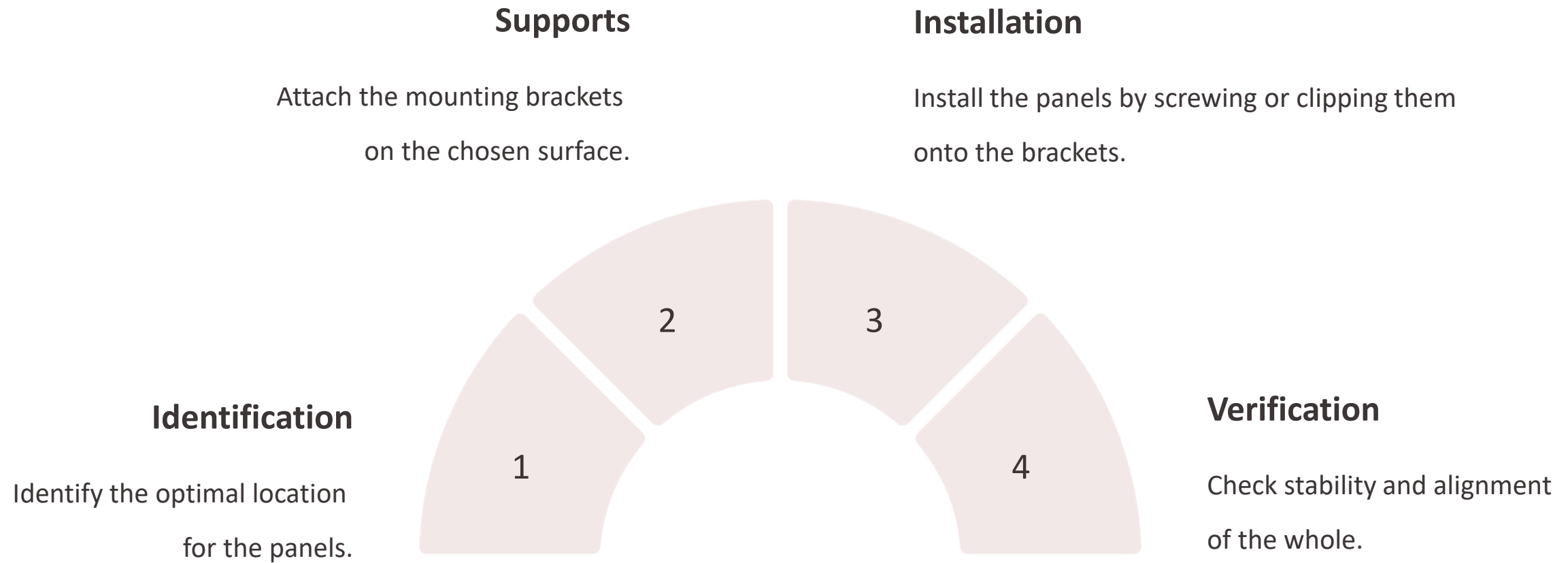
## Flat roof

Use inclined structures to optimize orientation.

## Ground

Install on a metal frame that is well anchored to resist the wind.

# Attachment Steps



# Connection to the controller

## Charging



1

### Verification

Check the polarity (+ and -) of the solar panels.

2

### Connection

Use MC4 connectors to connect the panels in series or in parallel.

3

### Connection

Connect the cables to the regulator's input terminals.

4

### Securing

Check that the connections are tight and insulated.

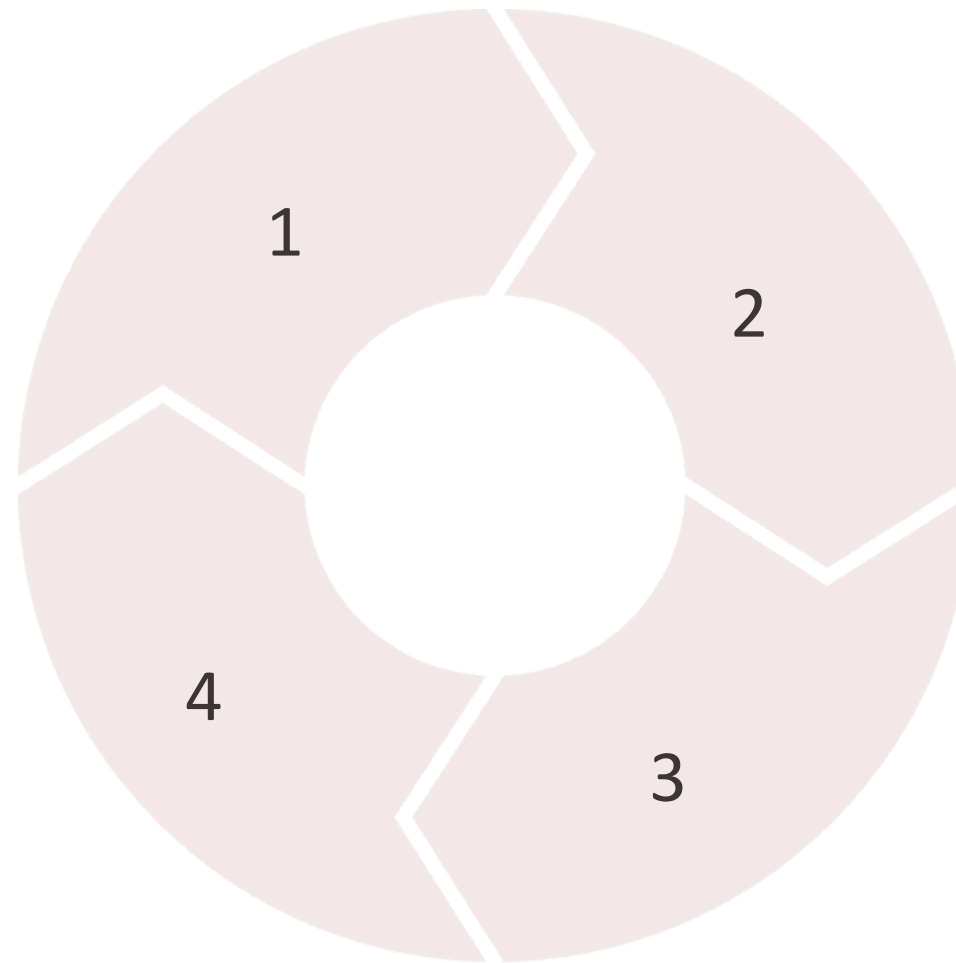
# Connecting the batteries and converter

## Battery (+)

Connect the positive terminal of the battery to the positive terminal of the regulator.

## Verification

Ensure good ventilation around the inverter to prevent overheating.



## Battery (-)

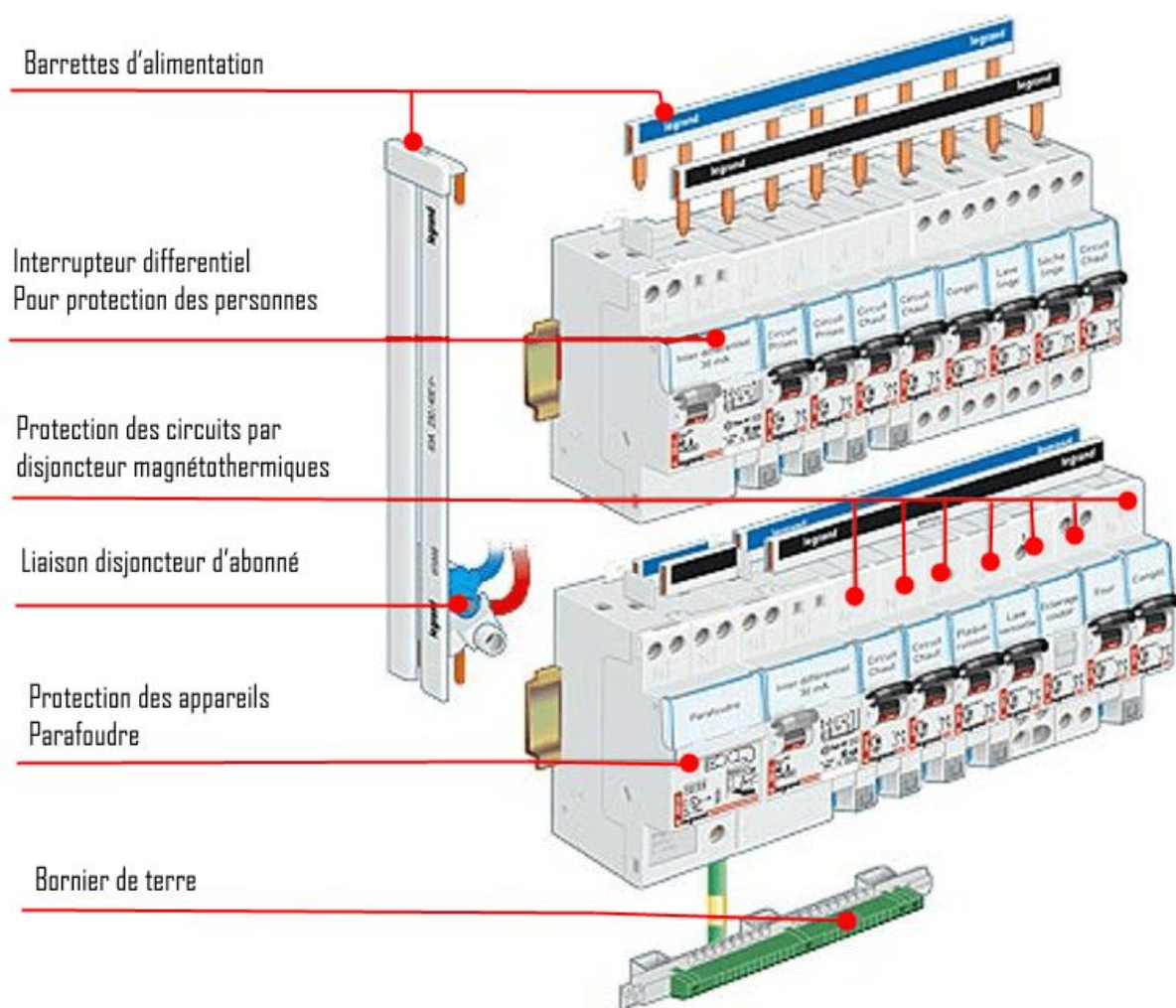
Connect the negative terminal of the battery to the negative terminal of the regulator.

## Converter

Connect the converter to the regulator's output terminals or directly to the batteries.



# Protection and security



## Circuit breakers

Protects against overloads and short circuits.



## Fuses

Protect batteries from excessive currents.



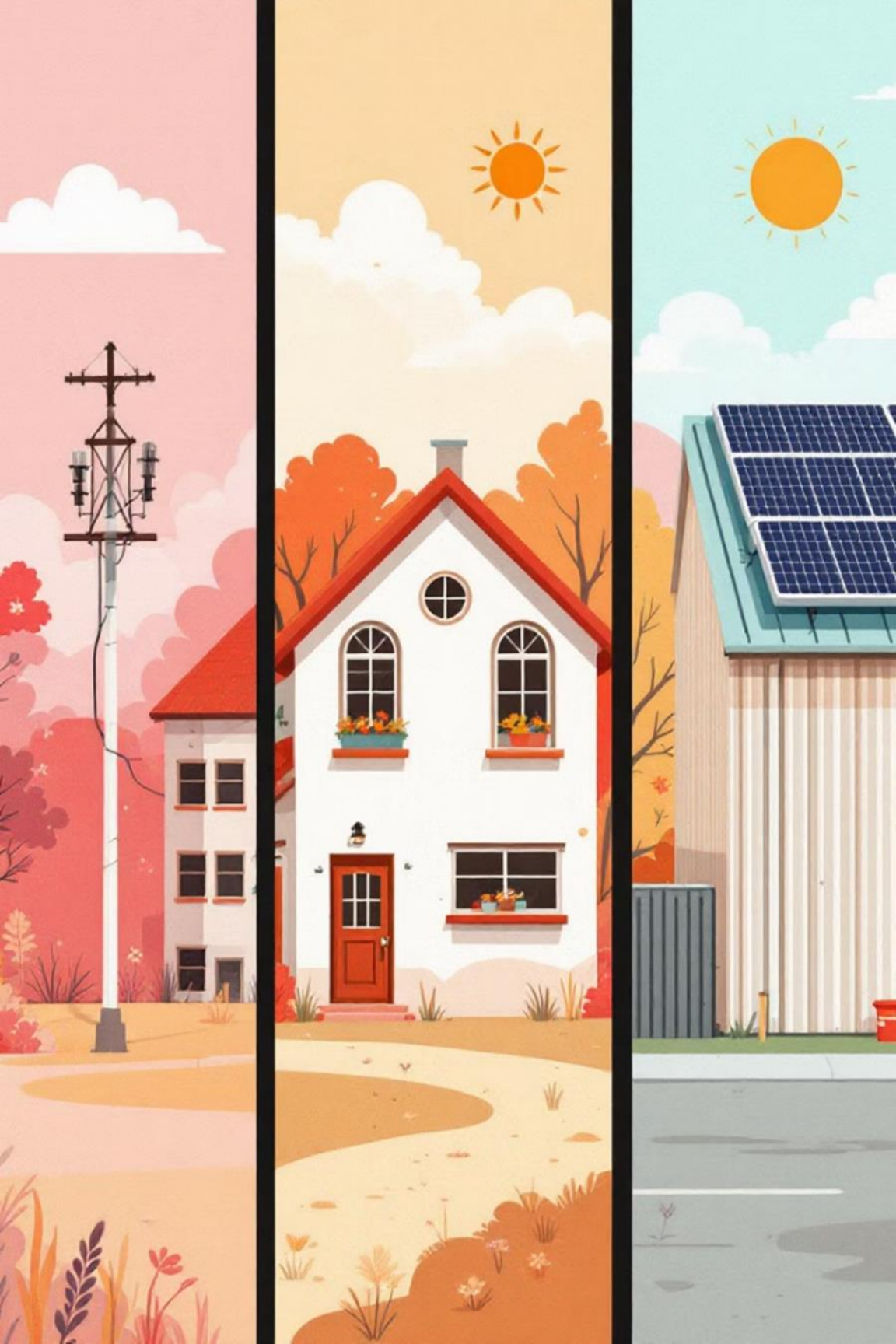
## Parafoudres

Protect against power surges caused by lightning.



## Grounding

Avoids the risk of electrocution and protects sensitive equipment.



# Case studies

1

## Detached house

Installation of 4 x 300W panels, 40A MPPT controller, 2 x 12V 200Ah batteries and 3000W inverter. Solution to shading: moving on a pole.

2

## Commerce

Securing after outages due to overloading. Adding circuit breakers, fuses, and surge arresters to avoid hazards.

3

## Sheet metal roofing

Fixing on surfaces subject to vibration. Use of reinforced aluminum fasteners with anti-corrosion bolts.



# Tests and verifications

1

## Visual inspection

Inspect all connections and fasteners before commissioning.

2

## Voltage test

Check the no-load voltages of the panels and the complete system.

3

## Load Testing

Test the system under load to confirm that it is working properly.

4

## Aftercare

Document the installation and plan a regular maintenance schedule.

# Conclusion



## Security

Standard-compliant installation

## Performance

Orientation optimization

## Reliability

Safe electrical wiring

This course has allowed you to learn the fundamentals of installing and wiring a solar kit. Always follow the manufacturers' recommendations.