modual™

Serie Pro AC

v1.0.0

2026-10-05

Series Pro AC

The modual Series Pro is a stationary battery storage system built from reused (second-life) automotive LFP battery packs, a modual Core control unit and Solis S6-EH3P20K-H hybrid inverters. It comes in two sizes:

Model	Battery packs	Inverters
Pro 35	1	1 × Solis S6-EH3P20K-H
Pro 70	2 (70-1 and 70-2)	2 × Solis S6-EH3P20K-H (master and slave)

This manual is for the qualified personnel who install and commission the system.

> **Danger**
>
> Read the safety instructions before you start. The system carries 320–400 V DC and is heavy enough to cause serious injury if it tips over.

Before delivery →

What the site must provide before the installation date.

Install a Pro 35 →

Delivery, mounting, wiring and commissioning of the single-pack system.

Install a Pro 70 →

Delivery, mounting, wiring and commissioning of the two-pack system.

Troubleshooting →

Status LED meanings and inverter error messages.

Support

modual AG, Seewenstrasse 13, CH-6440 Brunnen

- Web: modual.ch/support
- Phone: +41 41 244 05 55
- Email: support@modual.ch
- Monday to Friday, 09:00–17:00

Safety and warnings

⚠ Qualified personnel only

Installation must only be carried out by qualified personnel: people who are trained and authorised to install electrical power systems and who are familiar with local electrical regulations, battery systems and safe working practices.

⚠ At least two people

At least two people are required for transport and installation. The system is heavy and may cause serious injury if handled incorrectly. There is a risk of the product tipping over. Use only suitable and approved handling, lifting and transport equipment.

ⓘ Protective equipment

Always wear suitable protective equipment, including safety footwear, protective gloves and eye protection. Depending on site conditions and local regulations, additional protective equipment may be required.

⯃ Electrical hazard

The system contains high-voltage components. Before installation or maintenance, switch off and isolate all power sources and secure them against being switched on again. Check that the system is de-energised before touching any electrical component.

⯃ Fire hazard

Incorrect installation, unsuitable cable sizing, loose connections or blocked ventilation can cause overheating or fire. Keep the system away from flammable materials and maintain the required clearances.

Chemical hazard

Battery systems may contain hazardous substances. Do not open, damage, pierce or modify the battery modules. In the event of leaks, unusual odours, smoke or visible damage, stop the installation and contact qualified service personnel.

Incorrect installation may result in injury, fire, electric shock, chemical exposure or damage to property.

For the regulations that apply in Switzerland and the rules for work on the HV-DC side, see Regulations and electrical requirements.

Before delivery

Prepare the following points before the installation date to avoid delays.

Checklist

- ☐ **Two people.** The installation is carried out by at least two people, as required by occupational safety regulations.
- ☐ **Pallet truck.** A professional pallet truck is available. The components are too heavy to move to the installation site any other way.
- ☐ **Access.** Every component can be reached with the pallet truck. Stairs, thresholds and narrow passages have been taken into account.
- ☐ **T13 power outlet.** A free T13 outlet (230 V, single phase) is available at the installation location to supply the modual Core.
- ☐ **Grid connection** prepared (400 V AC, 3-pole MCB, see below).
- ☐ **RJ45 LAN connection** for the internet connection is available at the installation location.
- ☐ **Equipotential bonding** prepared for the entire system, with a 6 mm² earthing conductor.
- ☐ **EMS or energy meter** (optional) prepared, for example Solar Manager or an energy meter, connected via RS485.

Grid connection

Installation	Circuit breaker
Without PV	MCB C 20 A, 3-pole, 400 V AC
With PV	MCB C up to 32 A, 3-pole, 400 V AC

Weight and tipping hazard

The components have a high net weight.

- Transport them only in the upright position.
- Do not tilt them or lean them against anything.
- Use suitable lifting and transport equipment.

Printable checklist

Bring the installation material for the outlet and connections, the tools and the personal protective equipment described in Safety and warnings.

Tools required

Tool or material	Used for
Pallet truck (essential)	Moving the storage unit to its final position
Utility knife	Removing strapping and protective film
Socket spanner set, including sockets	Transport frame screws and anchors
Drill with 8 mm bit	Holes for the wall plugs and anchors
Phillips screwdriver	Inverter covers
Spirit level	Levelling the storage unit
M8 bolt anchors	Fixing the storage unit to the floor
Size 8 wall plugs with screws, or M8 wall anchors	Fixing the Pro 35 to the wall
Shim plates	Levelling the storage unit
Protective equipment	Safety footwear, gloves, eye protection

Measuring devices for the measurements required by law are also needed.

Location requirements

The Series Pro is intended exclusively for installation and operation in well-ventilated indoor areas. **Installation or use outdoors is not permitted.**

Suitable locations include garages, plant rooms and basements. When choosing the site:

- Make sure the site is **accessible by a pallet truck** for transport and installation.
- Keep the site accessible for maintenance and servicing. Keep all disconnection and connection points freely accessible at all times.
- Make sure the floor is level, load-bearing and able to support the total weight of the system.
- Comply with the applicable regional and national fire safety regulations. Install the system in a suitable fire compartment and keep the prescribed distances from combustible materials.
- Label the site as a battery energy storage system (see Marking).

Ambient conditions

Property	Permitted range
Ambient temperature	+5 °C to +40 °C
Relative humidity	5 % to 95 %, non-condensing

Scope of delivery and mounting options

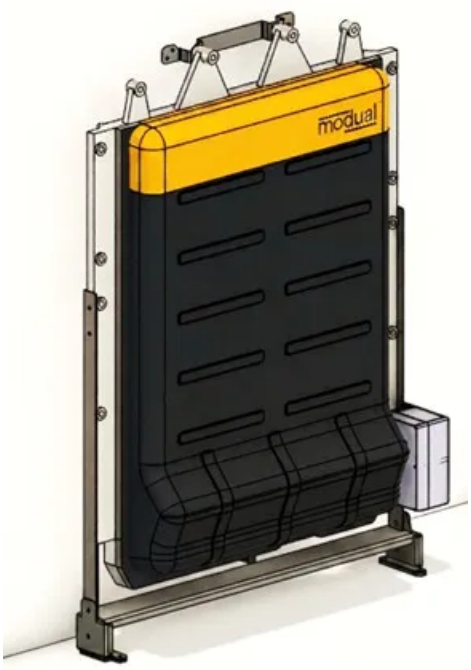
Scope of delivery

Item	Remarks	Qty
Series Pro 35 storage unit		1
Solis inverter S6-EH3P20K-H, including accessories	Pre-assembled or separate, depending on configuration. User manual on the Solis website.	1
Front and rear transport frames	Can be returned to modual, or used as firewood (untreated wood)	1
Pallet frames	Collected by the carrier	4
Pallet lid	Returned via the carrier	1
Clamping set		2

The Pro 35 is delivered on a pallet, enclosed by the pallet frames and lid.

Battery pack mounting

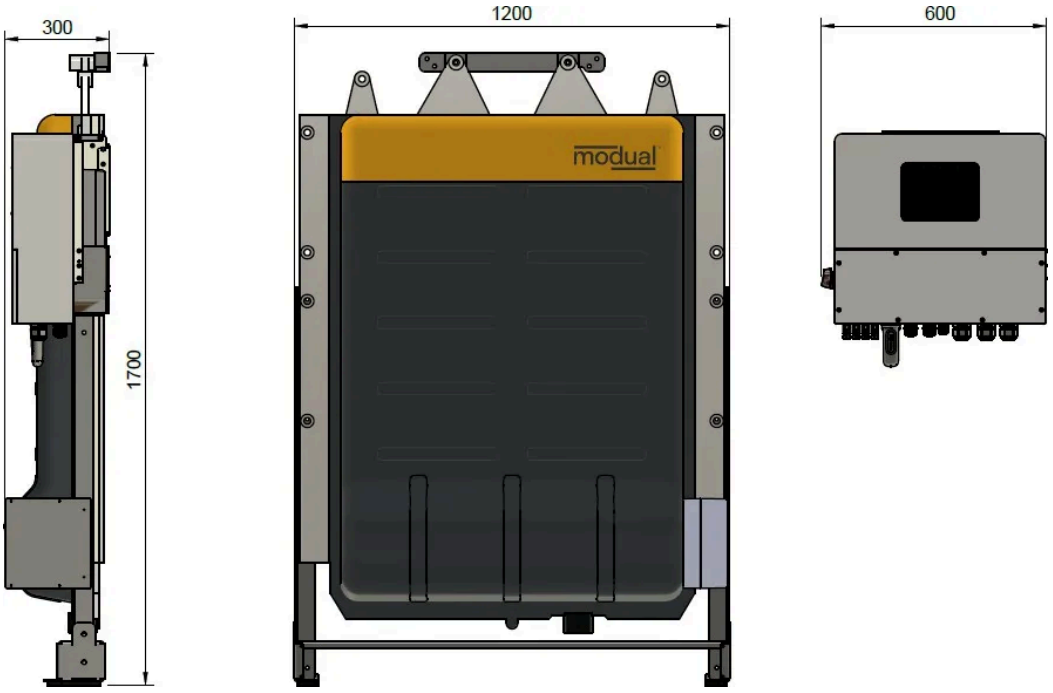
- **Wall mounting** (standard). The battery pack stands on the floor and is fixed to a load-bearing wall.



- **Freestanding.** Requires optional parts with support struts. Only recommended if the battery cannot be installed on a load-bearing wall.

Inverter mounting

On the wall

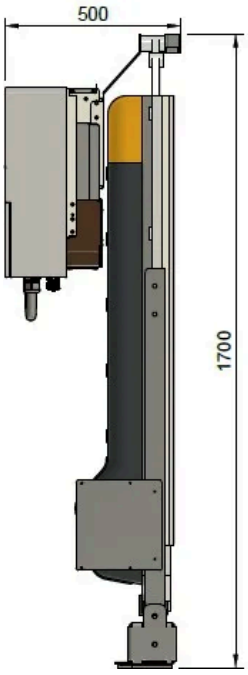


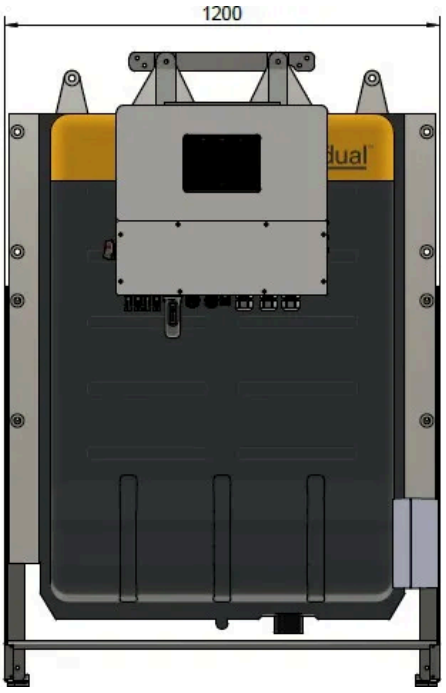
The inverter is mounted on the wall in any position using the wall bracket supplied with the inverter. The cables allow a radius of approximately **1.5 m** around the battery pack, measured from the HV connector at the top centre of the pack.

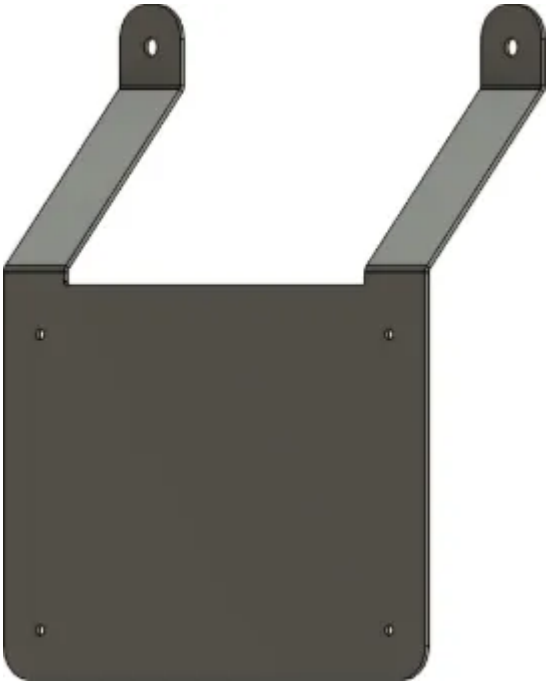
Dimension	Battery pack	Inverter
Width	1200 mm	600 mm
Height	1700 mm	
Depth	300 mm	

On the battery pack

The inverter is supplied pre-assembled on the battery pack and pre-wired. This option must be **specified when ordering**, because an optional bracket is fitted. The total depth is then 500 mm (width 1200 mm, height 1700 mm).


500
1700


1200

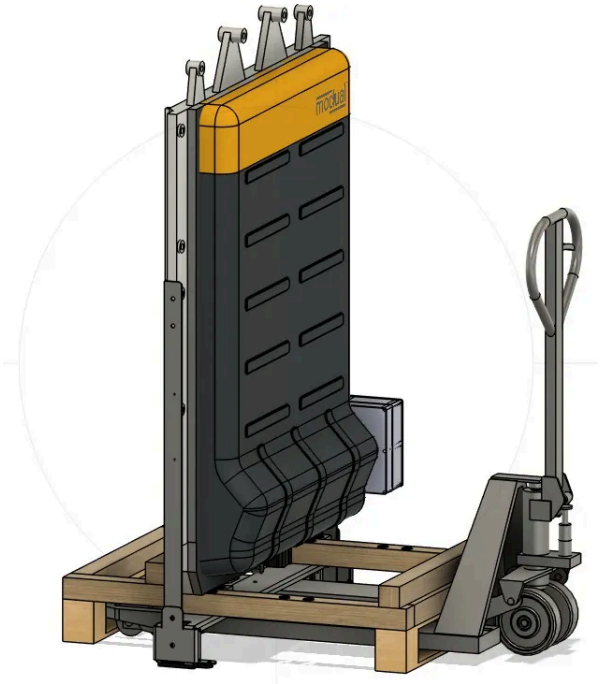


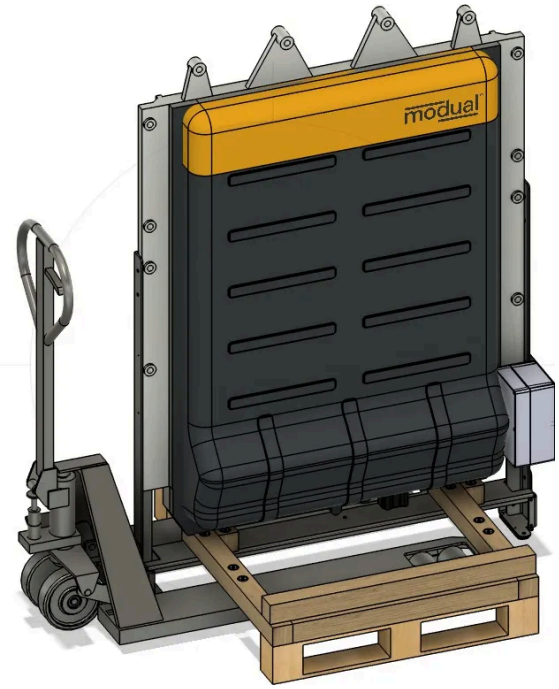
Mechanical installation

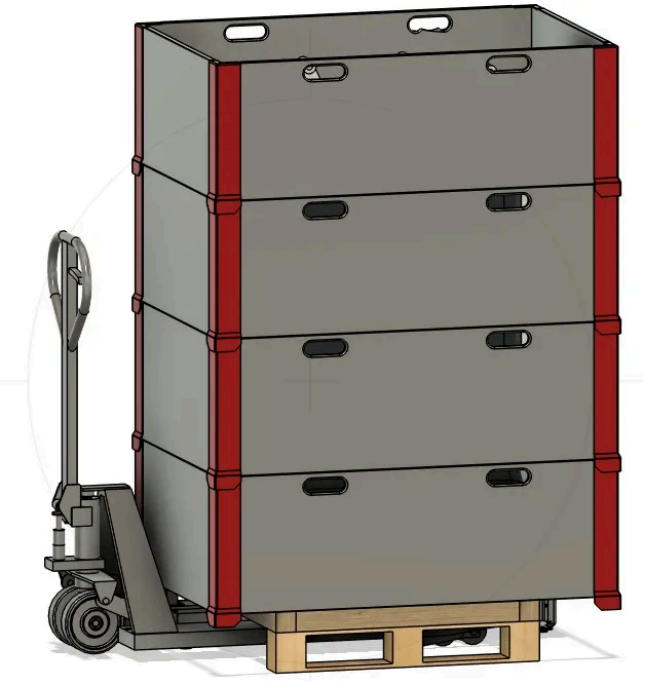
This page covers transport to the installation site, positioning the system, and fixing it to the wall and floor.

Handling

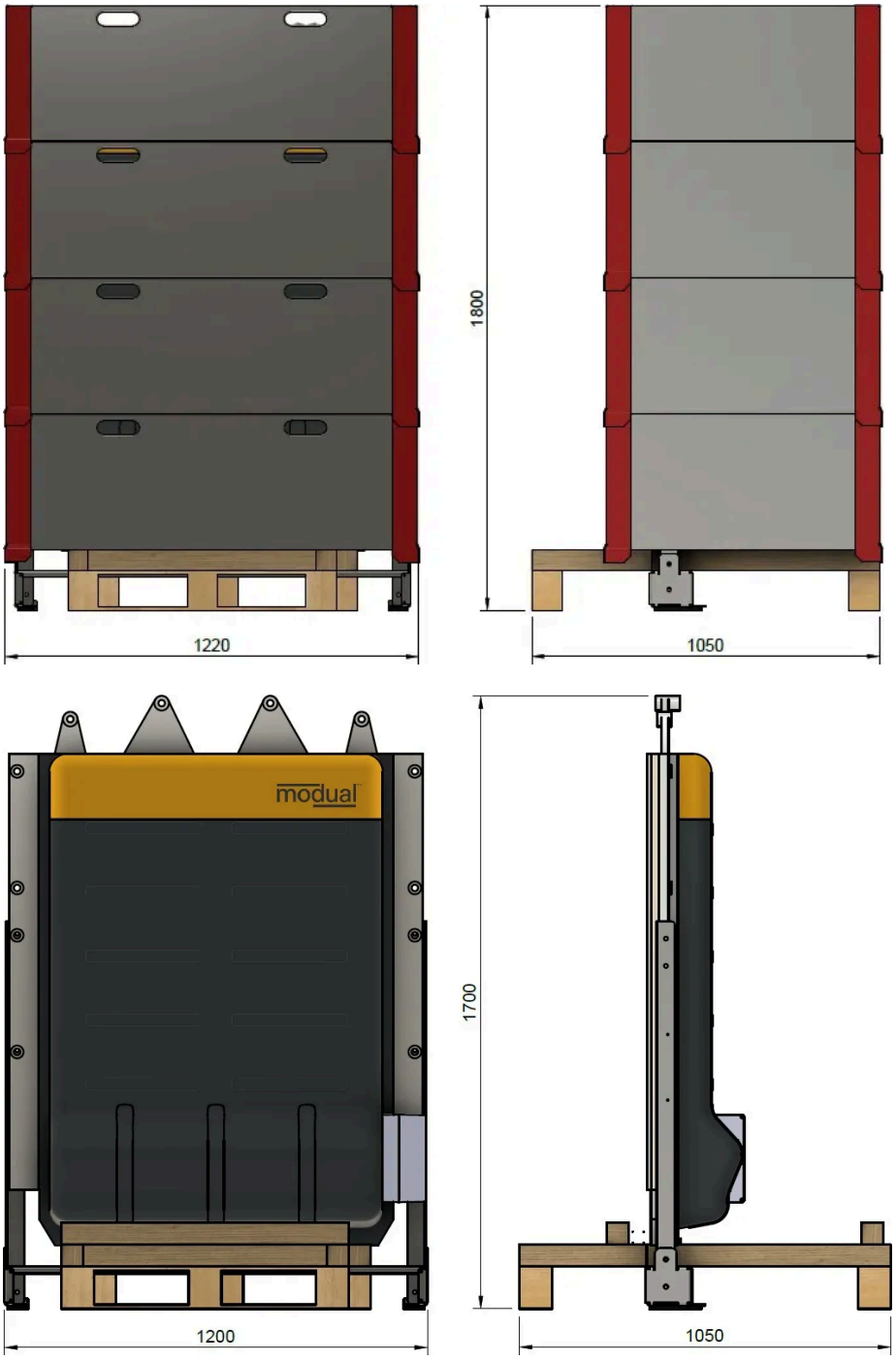
The storage unit can be lifted with a pallet truck from the front, the rear or either side, provided the transport frames are fitted to the front and rear. Handling is the same with or without the pallet frames.



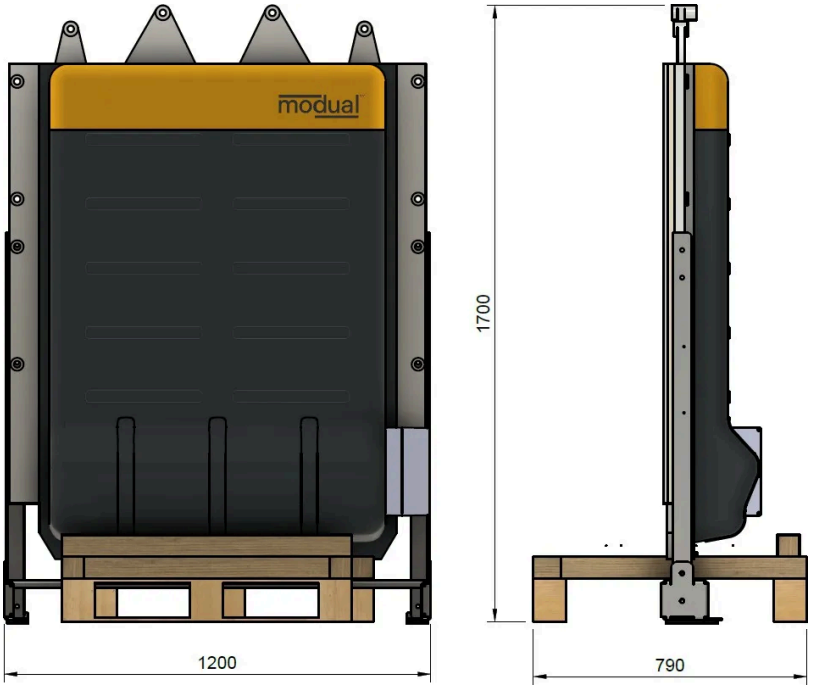




Condition	Width	Depth	Height
As delivered, with pallet frames	1220 mm	1050 mm	1800 mm
Manoeuvrable (frames removed)	1200 mm	1050 mm	1700 mm
Front transport frame moved inwards	1200 mm	790 mm	1700 mm



To fit through an **800 mm door frame**, loosen the 4 screws of the front transport frame and move it inwards.



> **⚠ Risk of tipping**
>
> Always move the front transport frame with at least one other person.

Installing the battery pack

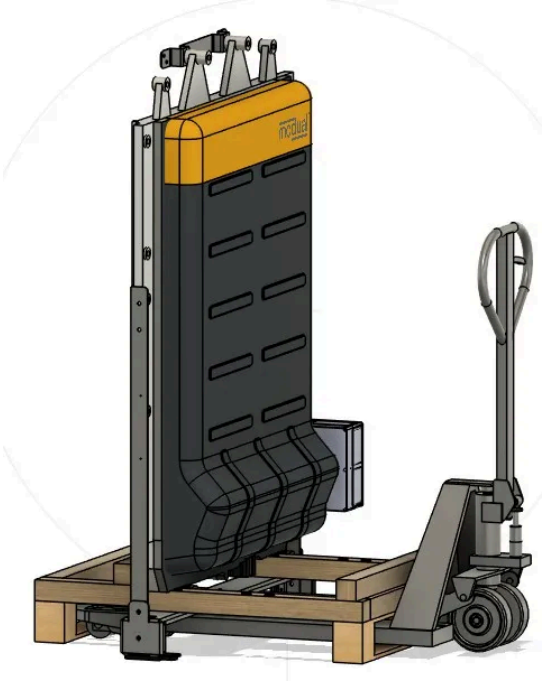
1. Remove the strapping, pallet lid and pallet frames.

   > **Tip**
   >
   > The frames are easier to lift if you turn them slightly anticlockwise. This sets the battery pack at a slight angle to the frame.

2. Tighten the Spanset that secures the storage unit at the rear slightly, until the battery is standing upright.

3. Move the storage system to the desired position with a pallet truck. Leave enough space at the rear for the next step.

> **⚠ Risk of tipping**
>
> Carry out this step with at least two people.

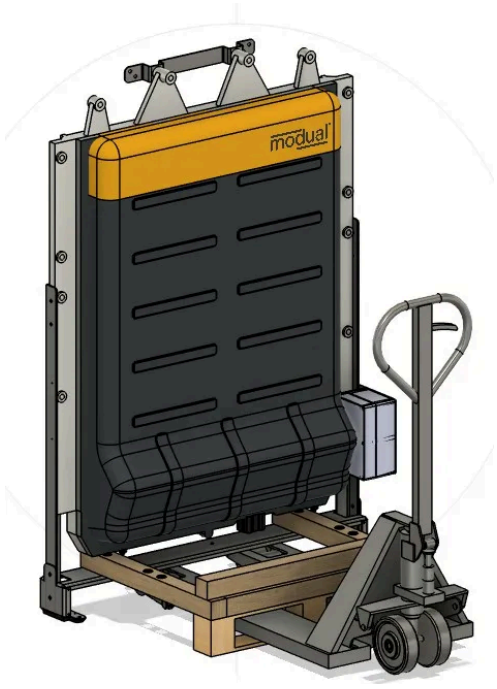


4. Remove the rear (wooden) transport frame by loosening the 4 screws on the underside of the base plate.

> **⚠ Risk of tipping**
>
> Carry out this step with at least two people.

5. Move the storage system to its final position against the wall.

> **⚠ Risk of tipping**
>
> Carry out this step with at least one other person.



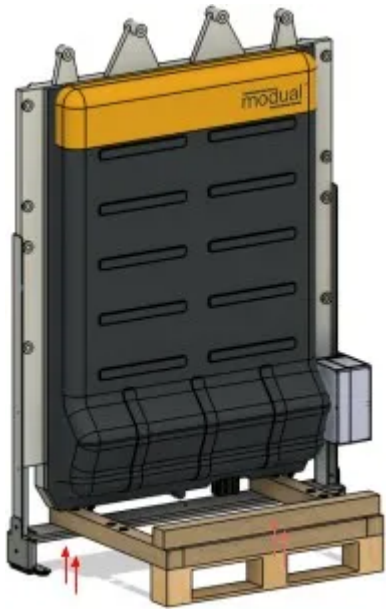
6. Level the storage unit so that it is parallel to the wall and horizontal. Use shims if necessary.

7. Fix the storage unit:
    - to the **wall**, with size 8 wall plugs and suitable screws or with M8 wall anchors;
    - to the **floor**, with M8 bolt anchors.

8. Remove the front transport frame.

> **Danger**
>
> Only remove the front transport frame once the battery pack is fixed to the wall and floor as described in step 7.

Loosen the 4 screws from below and remove the frame.



Installing the inverter

- **Inverter on the pack:** the inverter is delivered pre-installed. Continue with the electrical connections.
- **Inverter on the wall:** install the inverter according to the Solis installation instructions.

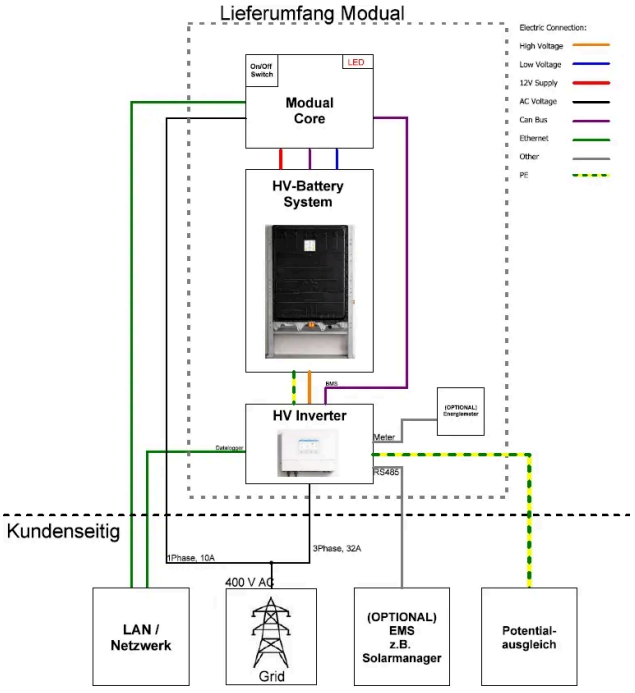
Electrical connections

Danger

- Danger to life from electrical voltage.
- Installation must only be carried out by qualified personnel.
- De-energise the system before carrying out any work.
- Do not install damaged components.

System overview

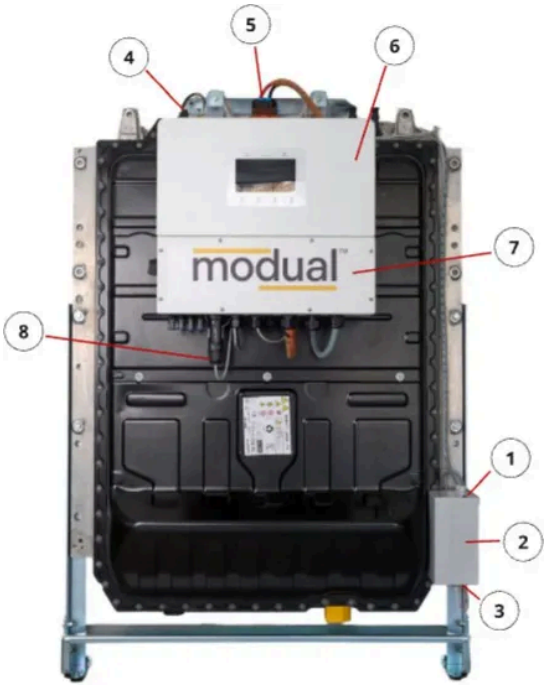
modual delivers the modual Core, the HV battery system and the HV inverter, pre-wired to each other. The customer provides the connections at the bottom of the table.



Connection	From	To	Type
Power supply (12 V), low voltage, CAN bus	modual Core	HV battery	Pre-wired

Connection	From	To	Type
High voltage DC and PE	HV battery	HV inverter	HV connector, earth cable
BMS data	modual Core	Inverter “BMS” port	CAN bus
Energy meter (optional)	Inverter “Meter” port	Eastron energy meter	RS485
Mains supply	Customer	modual Core	230 V, 1-phase, 10 A
Network	Customer LAN	modual Core	Ethernet
Network	Customer LAN	Inverter data logger	Ethernet or Wi-Fi
Grid	Customer	Inverter “GRID” terminal	400 V AC, 3-phase, 32 A
EMS (optional)	e.g. Solar Manager	Inverter “RS485” port	RS485
Equipotential bonding	Building	Inverter	PE

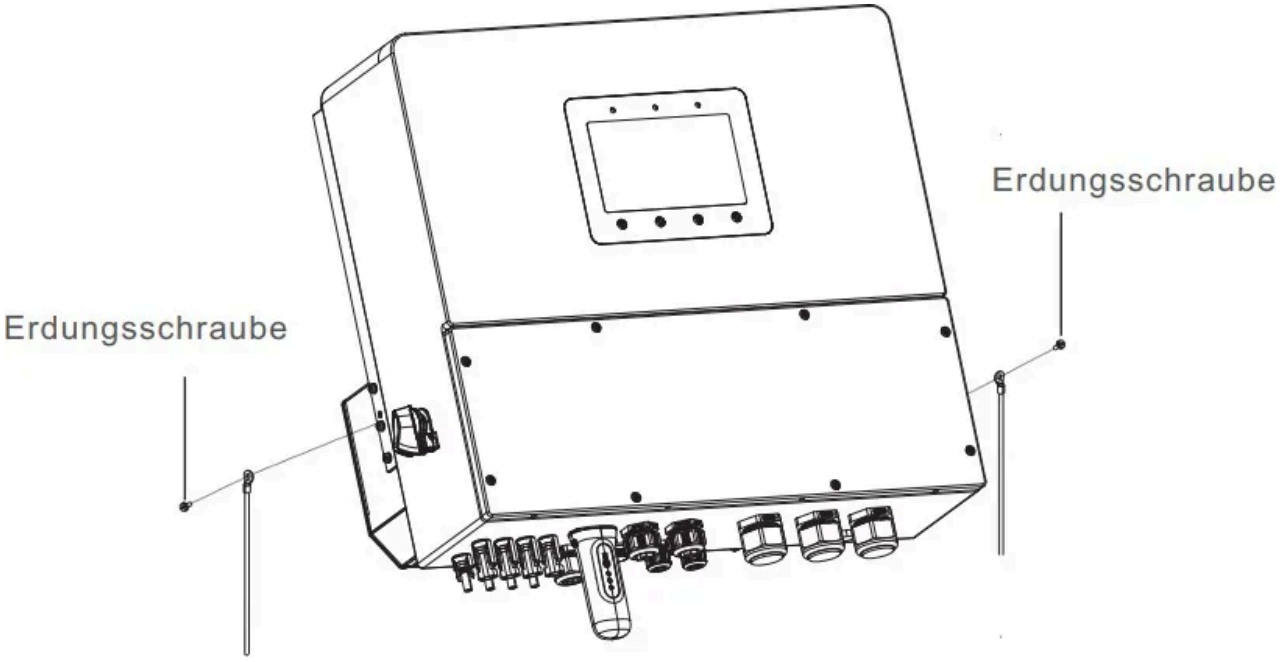
Rack overview

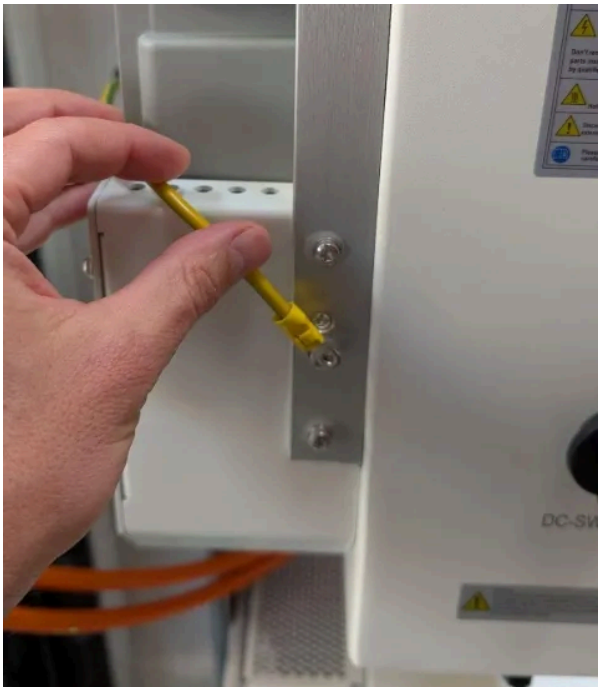


No.	Component
1	Battery status LED
2	modual Core
3	Network connection, main switch, mains connection (underside of the modual Core)
4	Battery signal connector
5	HV battery connector
6	Battery inverter
7	Inverter network connection

Connecting the system

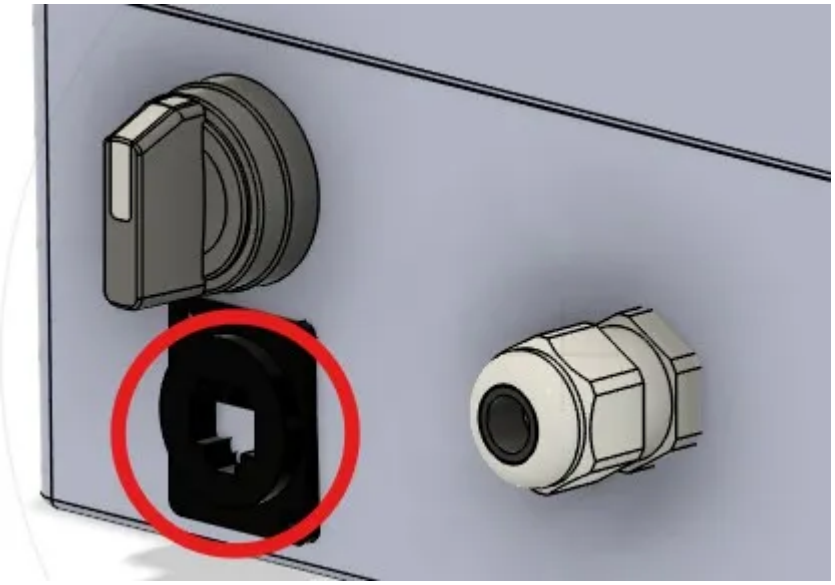
1. Connect the earth terminal of the battery pack to the inverter, using the earthing screw on the inverter. *With the inverter mounted on the pack, this connection is already in place.*





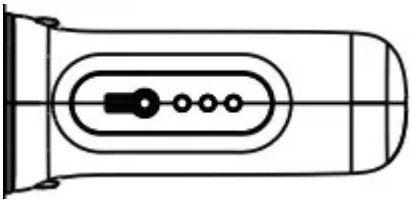
2. Connect the inverter to the building’s equipotential bonding system.

3. Connect the modual Core to the local network, using the RJ45 socket on the underside of the housing.

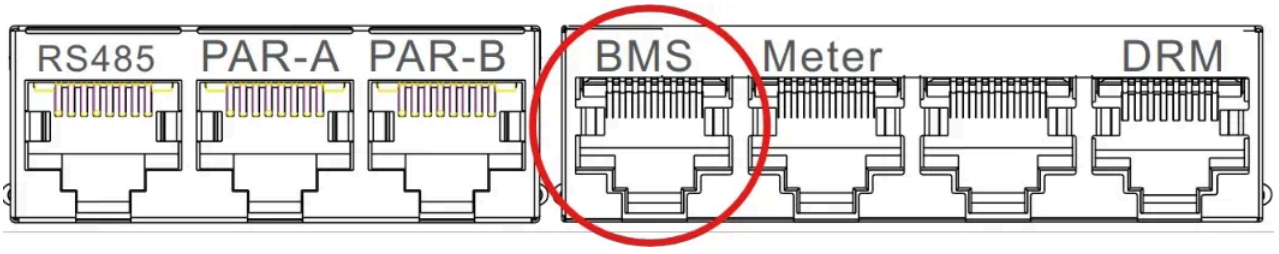


> **⚠ Caution**
>
> This connection is required to comply with the warranty conditions.

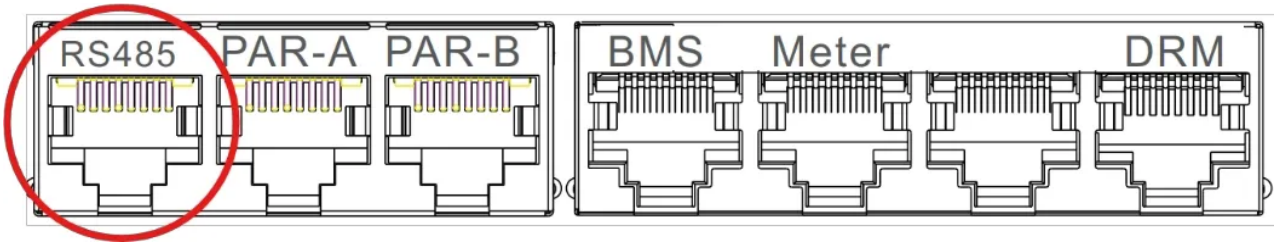
4. Connect the Solis inverter to the local network, through the network interface of the Solis data logger or through the local Wi-Fi. See the Solis inverter user manual.



5. Remove the cover of the Solis inverter (8 screws). Connect the data cable from the modual Core to the **BMS** port of the inverter. *With the inverter mounted on the pack, this connection is already in place.*

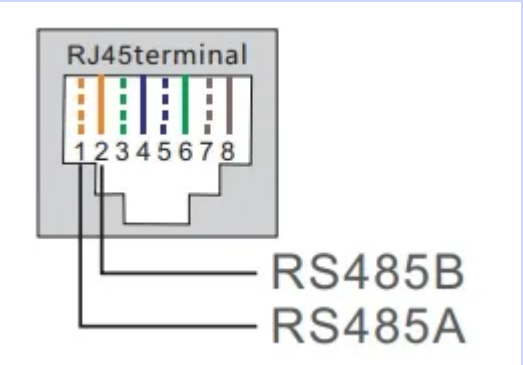


6. If you are using a compatible energy management system (e.g. Solar Manager Connect 2), connect its RS485 cable to the **RS485** port of the inverter.

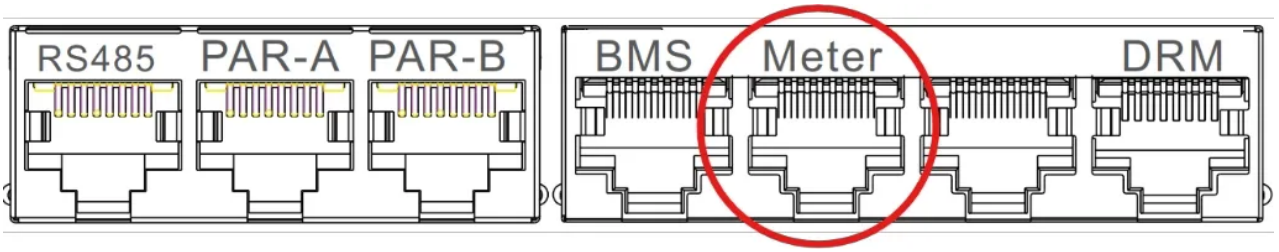


RS485 pin assignment (EIA/TIA 568B)

RS485A to pin 1 (orange/white), RS485B to pin 2 (orange).



7. If you are using the supplied energy meter (Eastron), connect it to the **Meter** port of the inverter. The pin assignment is the same as for RS485 above.

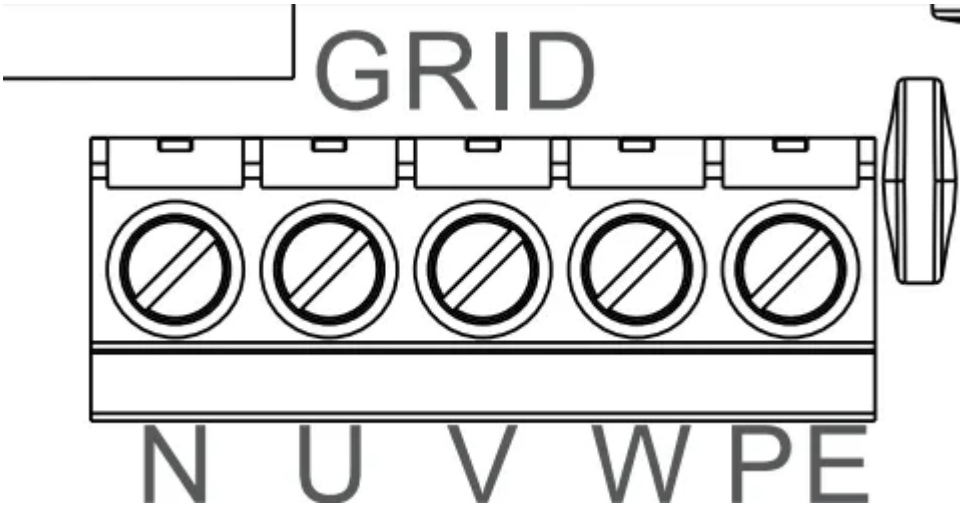


8. Carefully plug the prepared HV connector into the battery pack. You should hear and feel it click into place.

9. Connect the power cable of the modual Core to a T13 socket (230 V / 50 Hz). If your installation requires it, you can instead connect the cable directly to an additional junction box. The circuit must be fused at 10 A.

> **Danger**
>
> Before installing the AC cables, make sure the circuit breakers (OCPDs) are switched off. Use a multimeter to check that the AC voltages are 0 V AC before proceeding.

10. Connect the 3-phase AC cable to the **GRID** terminal of the inverter (N, U, V, W, PE).



11. Carry out all measurements required by law.

12. Refit the cover of the Solis inverter with the 8 screws.

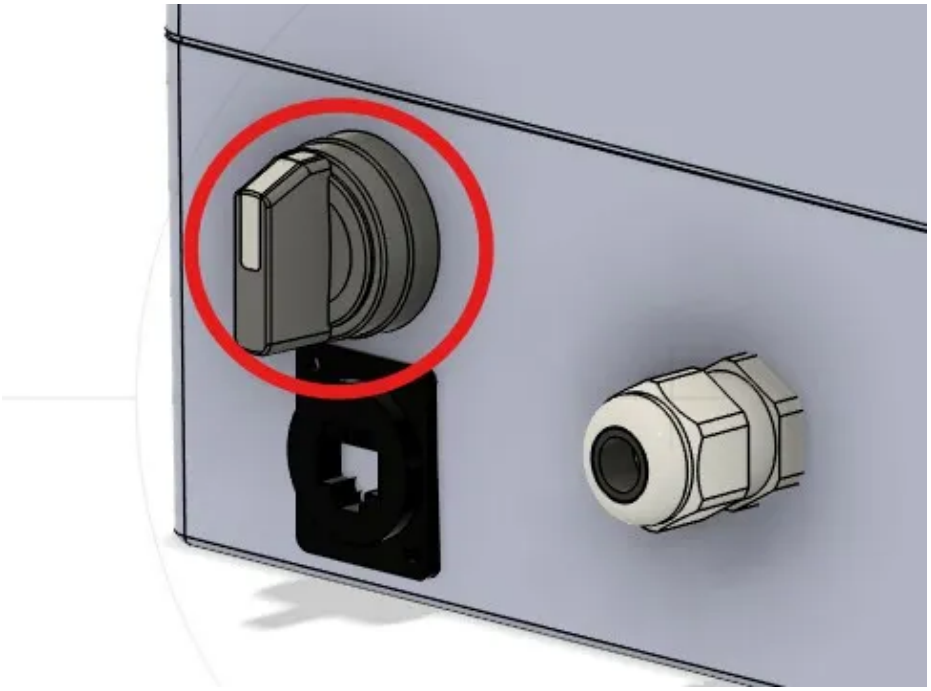
Continue with commissioning.

Commissioning

Danger

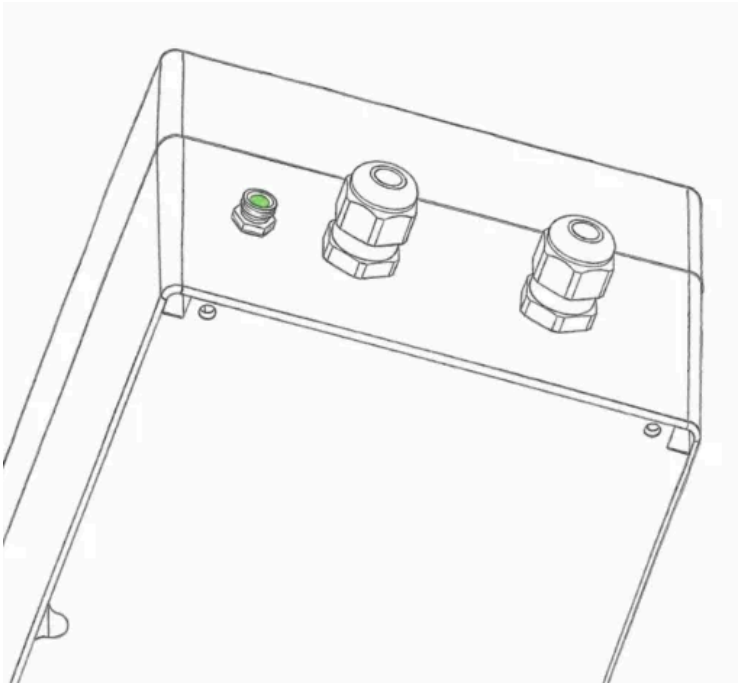
- The HV battery is switched on during commissioning.
- Risk of fatal injury from high voltage. Touching live contacts can cause serious injury or death.
- Do not touch exposed contacts.
- Wear suitable personal protective equipment.

1. Switch on the battery by turning the rotary switch on the underside of the modual Core.



2. The battery pre-charges automatically and then switches on. This takes a few seconds, during which the LED on the modual Core lights up blue.

3. As soon as the battery is on and free of faults, the LED on the modual Core lights up green (pulsing slowly).



4. After a few seconds, the battery voltage switches the Solis inverter on automatically.

5. Switch on the AC side of the inverter.

6. Check all inverter settings and apply the modual-specific inverter settings.

7. Fill in the registration form and send it to modual within 30 days.

If the LED does not turn green, see troubleshooting.

Scope of delivery and mounting options

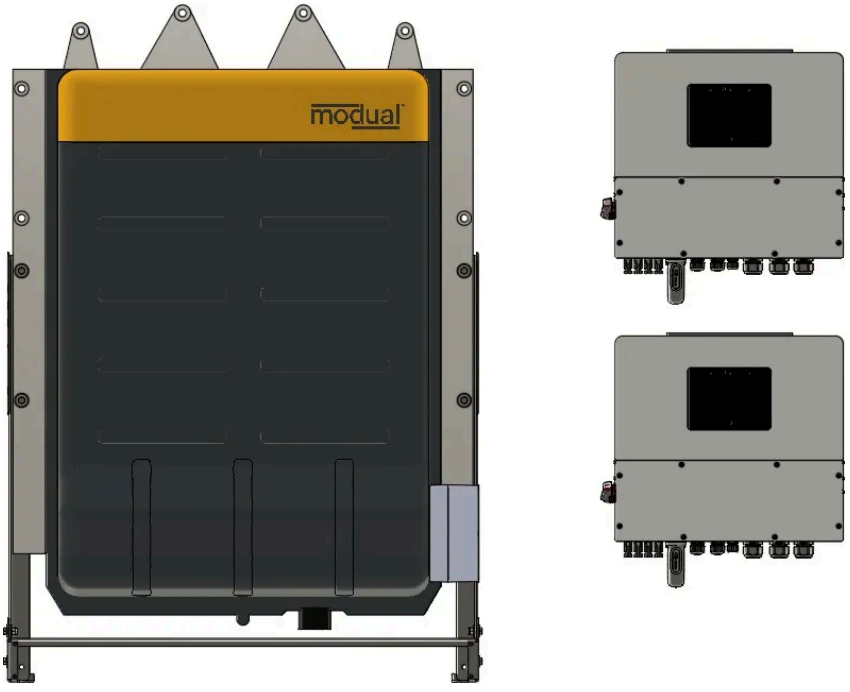
Scope of delivery

Item	Remarks	Qty
Series Pro 70 storage unit		1
Solis inverter S6-EH3P20K-H, including accessories	User manual on the Solis website. Delivered on a separate pallet.	2
Transport frame		1
Clamping set		1

The storage unit is delivered strapped and wrapped in protective film on a transport frame.

Inverter mounting

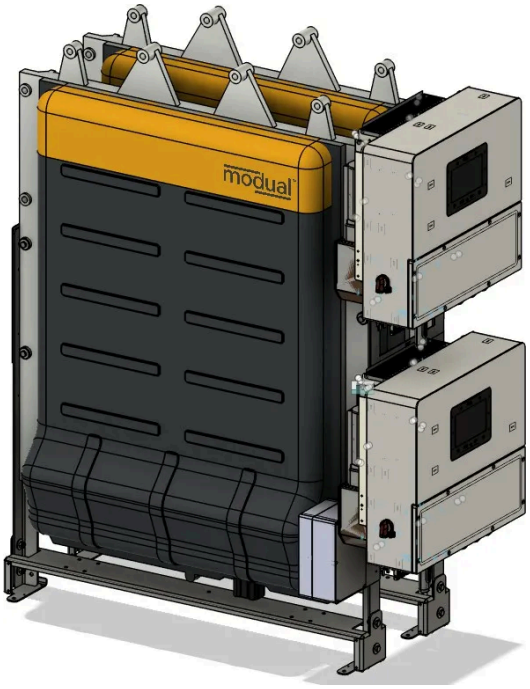
On the wall

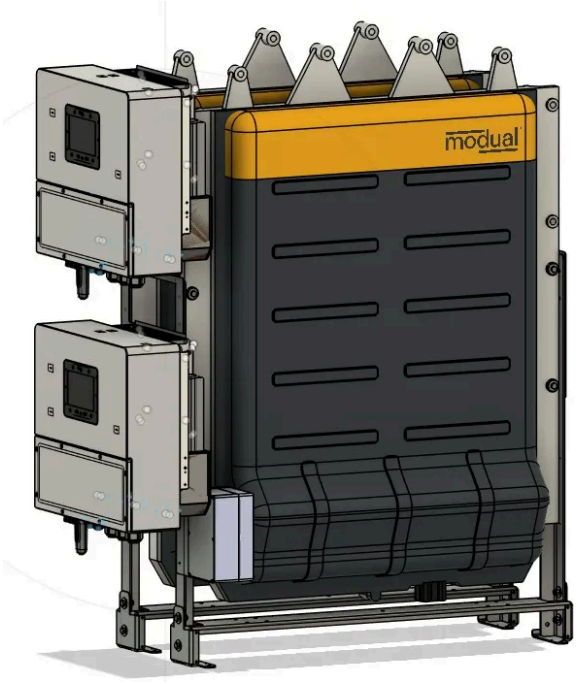


The inverters are mounted on the wall in any position using the wall brackets supplied with them. The cables allow a radius of approximately **1.5 m** around the battery pack, measured from the HV connector at the top centre of the pack.

On the pack, right or left

Both inverters are mounted one above the other on a bracket at the right-hand or left-hand side of the storage unit. This option must be **specified when ordering**, because an optional bracket is fitted.



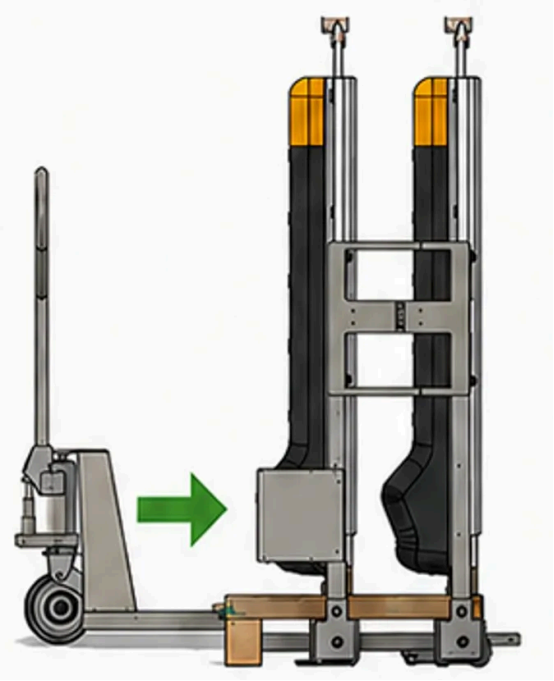


Mechanical installation

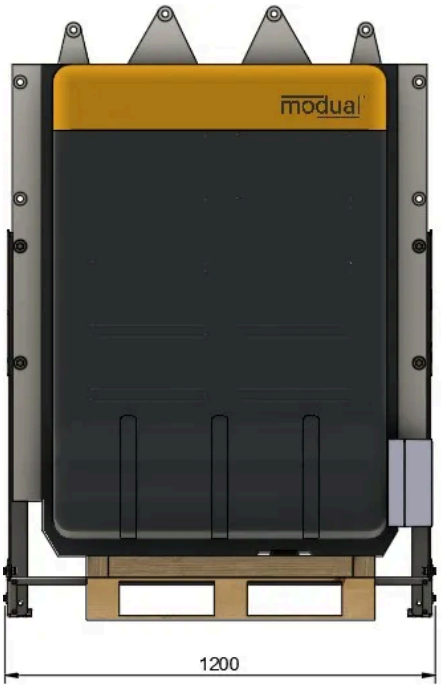
Handling

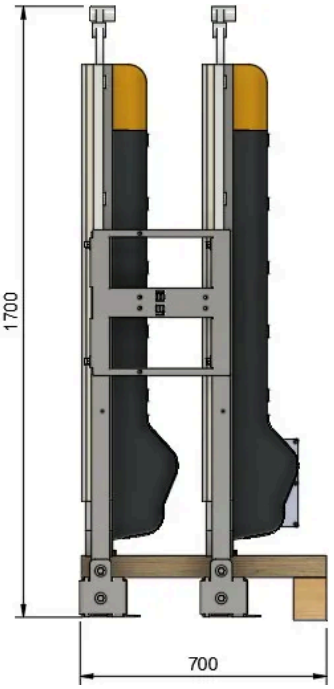
The storage unit must only be lifted and transported **from the front** with a pallet truck.

> ⚠ **Risk of tipping**
>
> Carry out this step with at least two people. Depending on the pallet truck, the centre of gravity may be poorly balanced and the storage unit may be unstable.



Condition	Width	Depth	Height
As delivered	1200 mm	700 mm	1700 mm





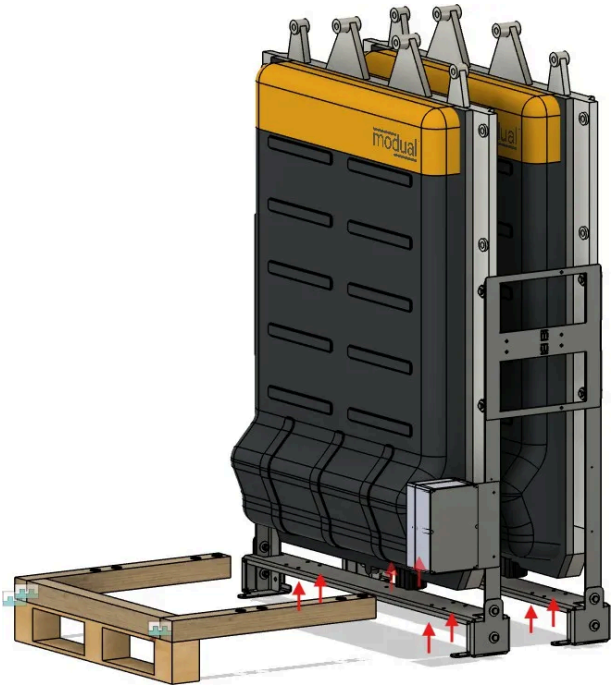
Installing the battery packs

1. Remove the strapping and the protective film from the storage unit.

2. Move the storage unit to the desired position with a pallet truck.

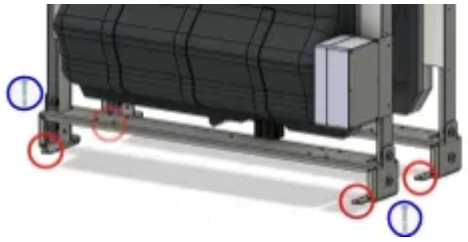
> **⚠ Risk of tipping**
>
> Carry out this step with at least one other person.

3. Remove the transport frame by loosening the 8 screws.



4. Position the storage unit as required and level it, using shims if necessary.

5. Fix the storage unit to the floor with M8 bolt anchors, using **at least three of the four** fixing holes.



Installing the inverters

- **Inverters on the pack (left or right):** hang the inverters on the brackets and secure them with the supplied locking screw, as described in the Solis user manual. Mount the **master (70-1) in the upper position** and the **slave (70-2) in the lower position**.
- **Inverters on the wall:** install the inverters according to the Solis installation instructions.

Continue with the electrical connections.

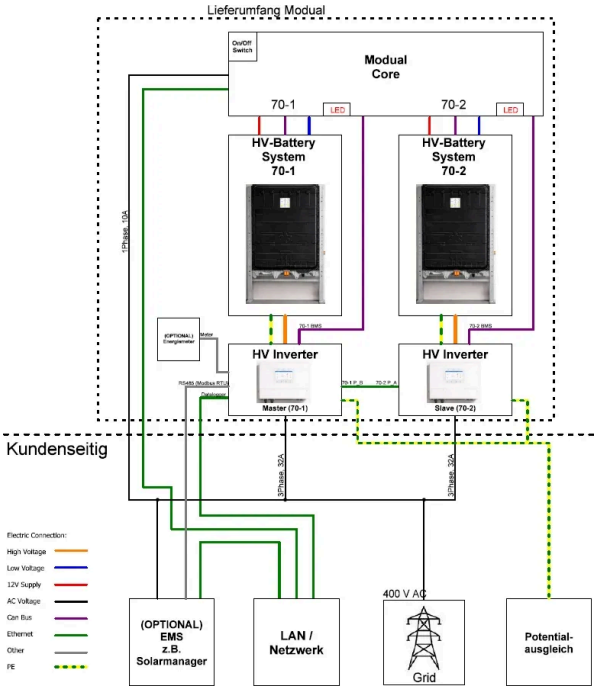
Electrical connections

Danger

- Risk of death from electric shock.
- Installation must only be carried out by qualified personnel.
- De-energise the system before carrying out any work.
- Do not install damaged components.

System overview

The Pro 70 consists of one modual Core, two HV battery systems (70-1 and 70-2) and two HV inverters, the master (70-1) and the slave (70-2). modual delivers these components; the customer provides the connections marked “Customer”.

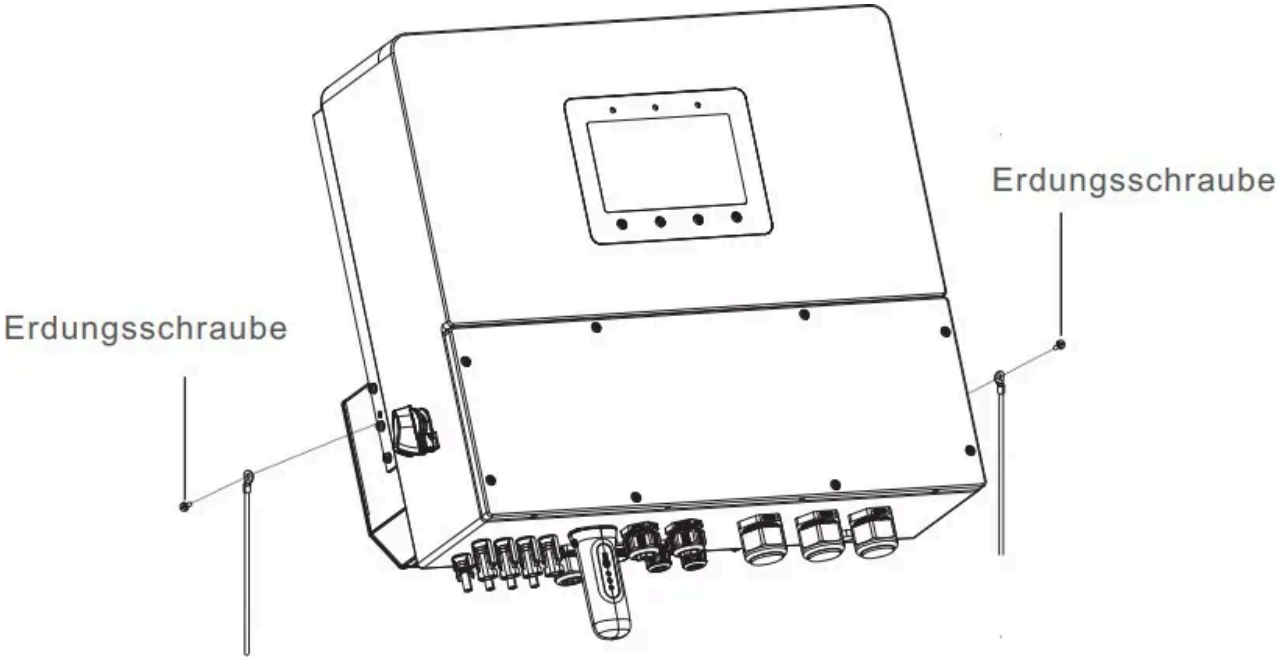


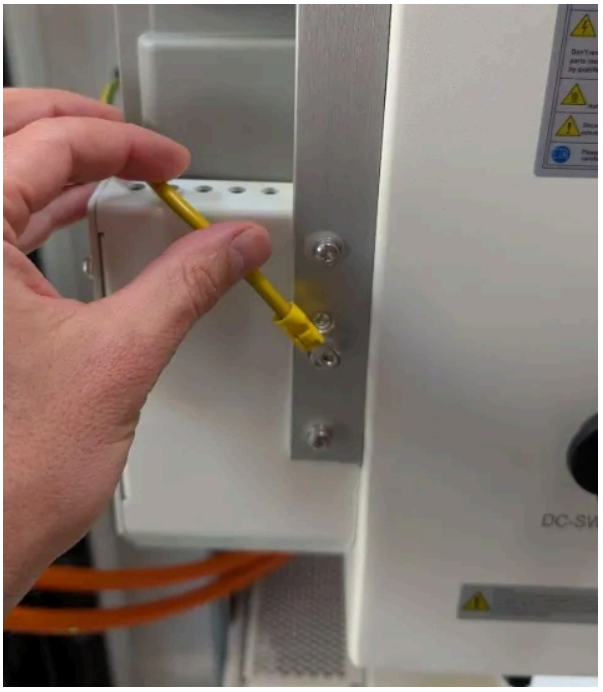
Connection	From	To	Type
Power supply (12 V), low voltage, CAN bus	modual Core	HV battery 70-1 and 70-2	Pre-wired

Connection	From	To	Type
High voltage DC and PE	HV battery 70-1 / 70-2	Master / slave inverter	HV connector, earth cable
BMS data	modual Core (cables 70-1, 70-2)	“BMS” port of master / slave	CAN bus
Parallel link	Master “PAR-B”	Slave “PAR-A”	Network cable
Energy meter (optional)	Master “Meter” port	Eastron energy meter	RS485
EMS (optional)	e.g. Solar Manager	Master “RS485” port	RS485 (Modbus RTU)
Mains supply	Customer	modual Core	230 V, 1-phase, 10 A
Network	Customer LAN	modual Core	Ethernet
Network	Customer LAN	Master data logger	Ethernet or Wi-Fi
Grid	Customer	“GRID” terminal of each inverter	400 V AC, 3-phase, 32 A each
Equipotential bonding	Building	Both inverters	PE

Connecting the system

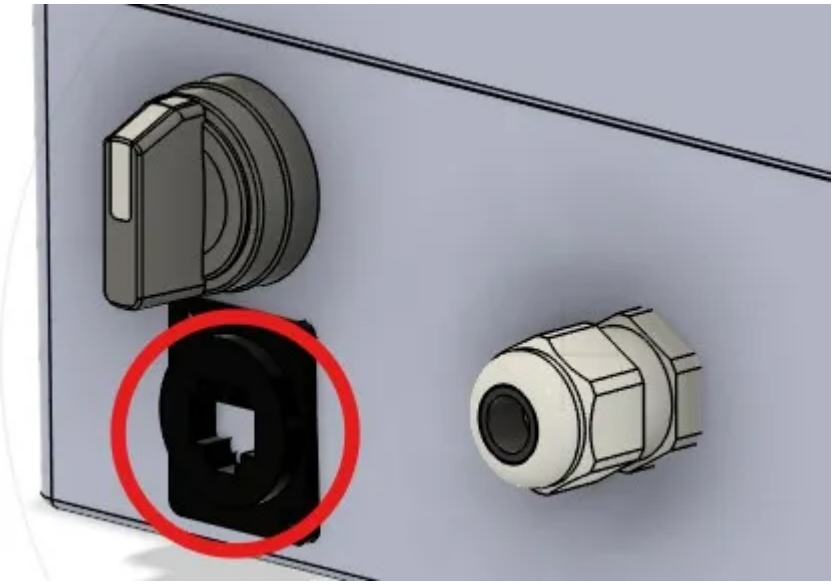
1. Connect the earth terminal of each battery pack to its inverter, using the earthing screw on the inverter.





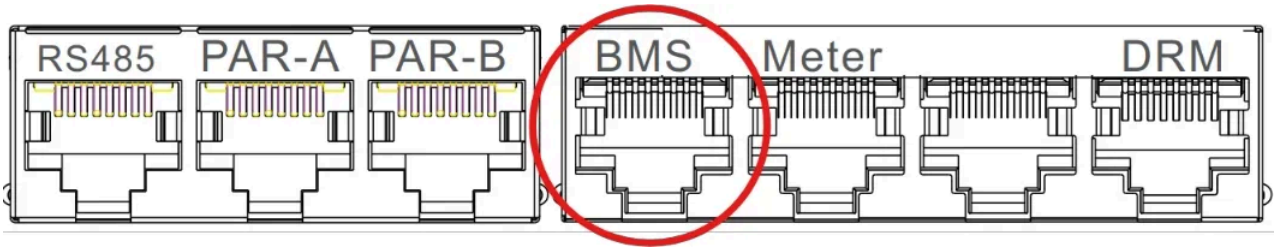
2. Connect both inverters to the building’s equipotential bonding system.

3. Connect the modual Core to the local network, using the RJ45 socket on the underside of the housing.

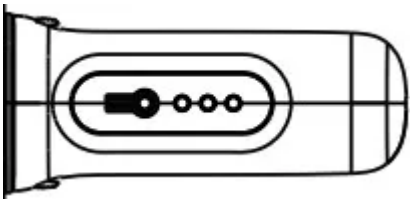


> **⚠ Caution**
>
> This connection is required to comply with modual AG’s warranty conditions.

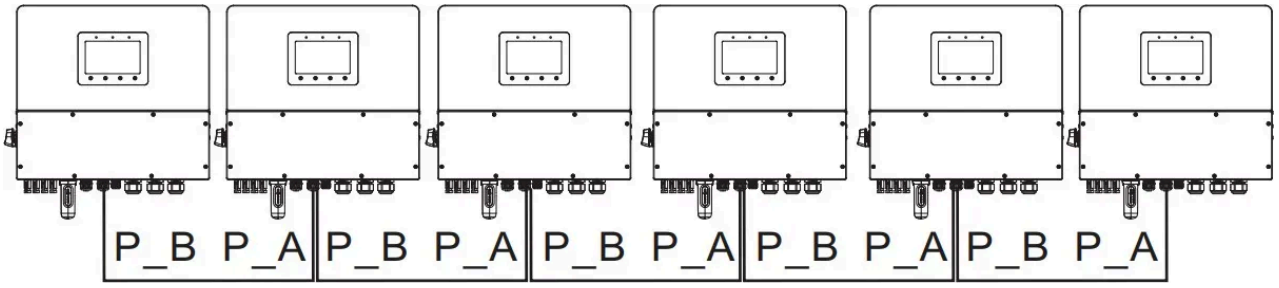
4. Remove the covers of both Solis inverters (8 screws each). Then connect:
    - the modual Core data cable labelled **70-1** to the **BMS** port of the master (70-1);
    - the modual Core data cable labelled **70-2** to the **BMS** port of the slave (70-2).

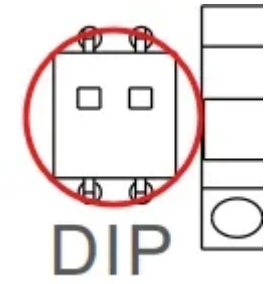


5. Connect the master inverter (70-1) to the local network, through the network interface of the Solis data logger or through the local Wi-Fi. See the Solis inverter user manual.

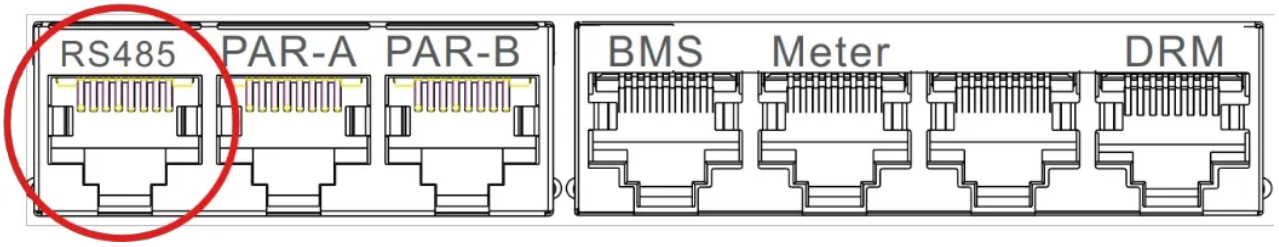


6. Connect the two inverters with an additional network cable: from the **PAR-B** port of the master to the **PAR-A** port of the slave. Check that the **DIP switches** on both inverters are set to **ON**.



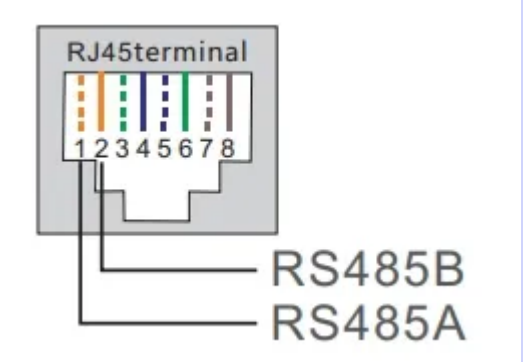


7. If your energy management system (e.g. Solar Manager Connect 2) requires Modbus RTU control, connect its RS485 cable to the **RS485** port of the master (70-1).

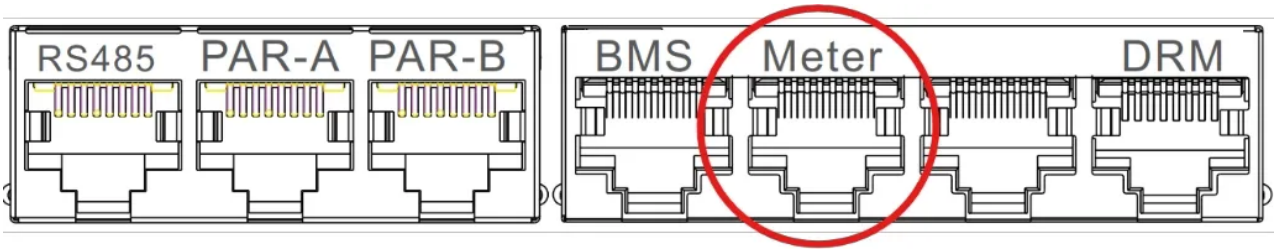


ⓘ RS485 pin assignment (EIA/TIA 568B)

RS485A to pin 1 (orange/white), RS485B to pin 2 (orange).



8. If you are using the supplied energy meter (Eastron), connect it to the **Meter** port of the master inverter. The pin assignment is the same as for RS485 above.

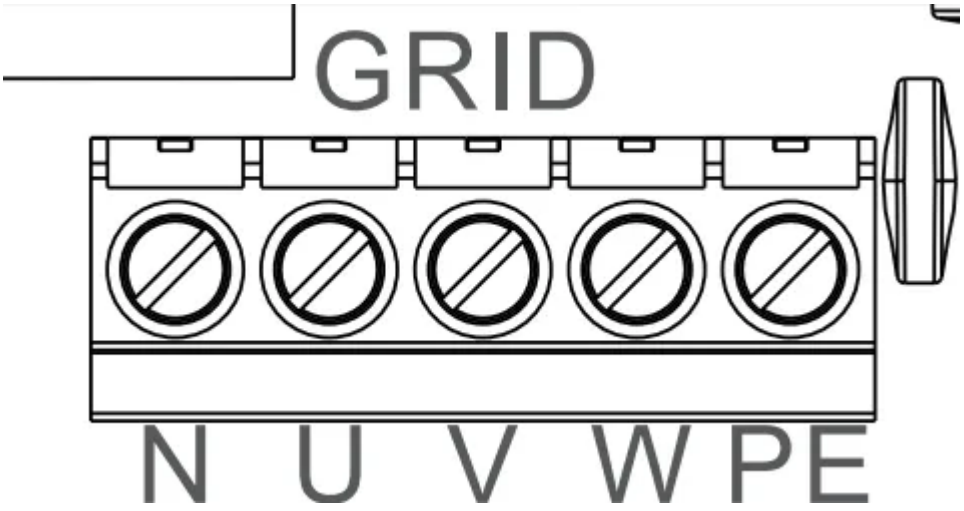


9. Carefully plug each prepared HV connector into its battery pack. You should hear and feel it click into place.

10. Connect the power cable of the modual Core to a 230 V / 50 Hz socket. If your installation requires it, you can instead connect the cable directly to an additional junction box. The circuit should be fused at 10 A.

> **Danger**
>
> Before installing the AC cables, make sure the circuit breakers (OCPDs) are switched off. Use a multimeter to check that the AC voltages are 0 V AC before proceeding.

11. Connect a 3-phase AC cable to the **GRID** terminal of the master inverter (N, U, V, W, PE). Repeat with the second AC cable on the slave inverter.



12. Carry out all measurements required by law.

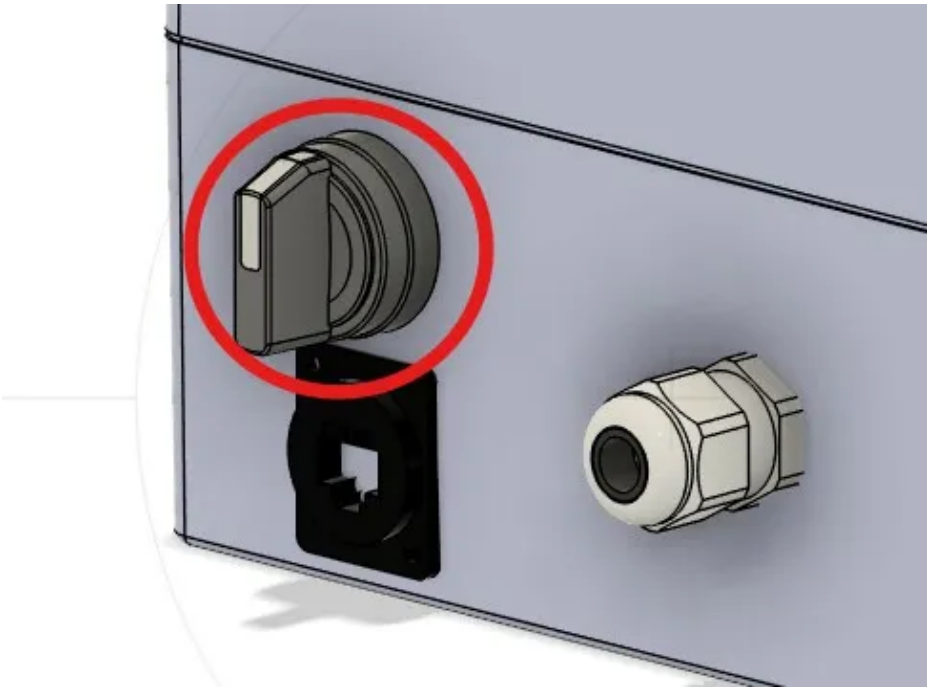
13. Refit the covers of both Solis inverters with their 8 screws.

Continue with commissioning.

Commissioning

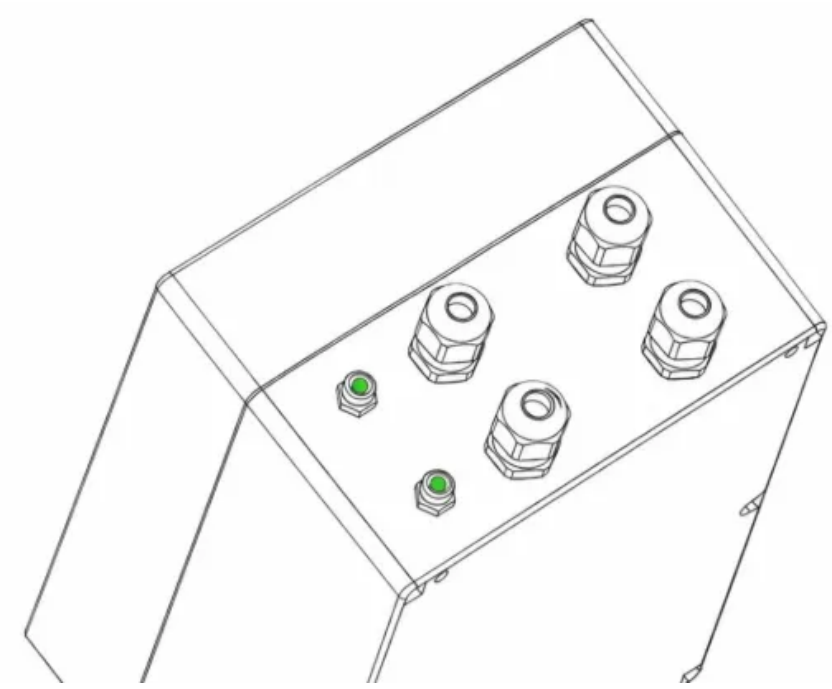
> **Danger**
>
> - The HV batteries are switched on during commissioning.
> - Risk of death from high voltage. Touching live contacts can cause serious injury or death.
> - Do not touch exposed contacts.
> - Wear suitable personal protective equipment.

1. Switch on the battery by turning the rotary switch on the underside of the modual Core.



2. Both batteries pre-charge automatically and then switch on. This takes a few seconds.

3. As soon as the batteries are connected and in good working order, their LEDs on the modual Core light up green (pulsing slowly). The Core has one LED per battery.

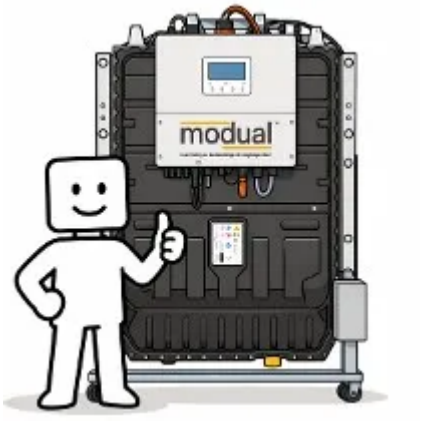


4. After a few seconds, the battery voltage switches the Solis inverters on automatically.

5. Switch on the AC side of both inverters.

6. Check all inverter settings and apply the modual-specific inverter settings without exception. Set the parallel settings for multiple systems as described in the Solis manual.

7. Fill in the registration form and send it to modual within 30 days.



If an LED does not turn green, see troubleshooting.

Inverter settings

Check all inverter settings as described in the Solis inverter user manual. The following settings are specific to modual and **must be applied without exception**, on every inverter of the system.

Storage mode

Setting	Value
Allow Grid Charging	Enable

Battery settings

Setting	Value
Battery type	Lithium Battery HV
Max. charging current	50 A
Max. discharge current	50 A
Forced discharge	4 % or higher
Over-discharge	5 % or higher
Recovery	6 % or higher
Battery Saver	Enable
Max. charge SOC	100 % at most

Country code

In Switzerland, set the country code **NA-EEA-A**. Secure the protection parameters against unauthorised changes (see AC side).

Installation-specific settings

Setting	Value
Energy meter	Eastron, or no energy meter (Solar Manager)
Parallel settings	1 system (Pro 35), or multiple systems (Pro 70) as described in the Solis manual

Solis Cloud app, local mode

The password for connecting the Solis Cloud app in local mode depends on the Solis firmware:

Firmware	Password
Newer	`modual`
Older	`battery_storage`

Troubleshooting

In the event of a fault, first check the status LED on the modual Core, which shows the battery’s state. Then check the inverter for error messages.

modual Core status LED

LED	Meaning	Action
Green, pulsing	Normal operation. The battery is on and ready for use.	None.
Red	Fault. The battery has shut down to protect the system.	Check the installation and restart the battery. If the fault persists, contact technical support.
Blue	Commissioning or configuration has not been carried out, or is incomplete.	Complete the configuration as described in this manual and restart the system. If the fault persists, contact technical support.

> **Note**
> The LED also lights up blue for a few seconds while the battery pre-charges during switch-on. This is normal.

Error messages on the inverter

If the inverter shows an error message, look it up in the Solis user manual and carry out the actions recommended there.

Technical support

- Phone: +41 41 244 05 55
- Email: support@modual.ch
- Web: modual.ch/support

Regulations and electrical requirements

Binding standards

Electrical installation and grid connection

- **NIV**: Ordinance on Low-Voltage Electrical Installations (SR 734.27)
- **NIN SN 411000:2025**: Low-Voltage Installation Standard, in particular chapter 7.12 “Photovoltaic and energy storage systems”
- **VSE NA/EEA-NE7-CH:2025**: Grid connection of energy generation systems, including annex E (protection setting values for Switzerland)
- **VDE-AR-N 4105**: Generation systems on the low-voltage grid (D-A-CH implementation of grid connection protection)

Safety of stationary energy storage systems

- **ESTI Guideline No. 220**: Requirements for stationary energy storage systems
- **SNR 460712**: Safety of stationary battery energy storage systems

Distribution system operator (DSO)

Take the technical connection conditions (TAB) of the relevant DSO into account and submit them as part of the technical connection application (TAG).

> ⚠ **Caution**
>
> Work on the HV-DC side (approx. 320–400 V DC) must only be carried out by qualified specialists with the appropriate HV qualification. The storage system uses reused (second-life) automotive LFP battery packs.

HV-DC side

Danger

The system carries a DC voltage of approx. **320–400 V DC**. Contact with live parts can cause life-threatening injuries from electric shock or an electric arc. Ensure the system is de-energised, and verify it, before starting any work.

- De-energise the system completely before working on the HV-DC side.
- Open the internal high-voltage contactors by switching off the control or 12 V supply, or by triggering the HVIL loop.
- Check that there is no voltage at the HV terminals.
- After switching off, wait at least **5 minutes** for the system to discharge.
- Keep all high-voltage DC components (> 120 V DC) protected against accidental contact at all times.
- Only disconnect high-voltage connectors when they are de-energised.

Insulation monitoring

Insulation monitoring on the DC side is done entirely by the battery pack. It tests the insulation automatically before closing the internal high-voltage contactors, and does not close them if it detects a fault. It repeats the test regularly during operation. Additional DC insulation monitoring on the inverter is not required.

AC side

- Connect the inverter (Solis S6-EH3P) to the grid with a **fixed direct connection**. Plug connections for the grid connection are not permitted.
- Carry out the grid connection according to the national installation regulations. Only a qualified electrician may do this.
- Fit the AC side with an all-pole isolating device (system switch).
- Install a separate fuse for the AC connection of the battery storage system.
- Install a separate energy metering system if the DSO requires it.

- Grid and system protection (NA protection) is provided by the inverter. During commissioning, set the protection parameters for Switzerland and secure them against unauthorised changes.
- Implement residual current protection according to the inverter manufacturer’s specifications. Provide an emergency shutdown if the DSO or the fire safety regulations require it.

Marking

- Label all isolation points, in particular the AC system switch and any emergency shut-off.
- Affix a notice to the domestic distribution board indicating the battery storage system and the possibility of power feed-back.
- Label the installation site as a battery energy storage system.

Registration form

After a successful installation, the installer registers the storage system with modual AG. Send the completed form **within 30 days** of installation, by email to kundendienst@modual.ch or by post.

Information required

Storage system

- Serial number
- Commissioning date

Operator (owner) entitled to the warranty

- Surname, first name
- Address
- Email
- Telephone
- Type of building: detached house, block of flats, commercial and industrial, or agriculture

Authorised installer or specialist partner

- Company
- Surname, first name
- Address
- Email
- Telephone

Confirmation

By signing the form, the installer or specialist partner confirms that the energy storage system has been professionally connected, installed and commissioned in accordance with the installation requirements.

- Place, date, signature

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