

ABB Solar inverters

Quick Installation Guide

REACT-BATT-AP1

EN





In addition to what is explained below, the safety and installation information provided in the installation manual must be read and followed. The technical documentation and the interface and management software for the product are available at the website.  
The device must be used in the manner described in the manual. If this is not the case the safety devices guaranteed by the inverter might be ineffective.

Power and productivity  
for a better world™



3.  
List of supplied components

Components available for battery unit		Quantity
	Cabling bypass male flange	1
	Technical documentation	1

4.  
Safety precautions

**HAZARD.** The hazard warnings (set out below) are used to indicate risks or unsafe practices that CAN cause serious injury or death.

- **DO NOT** dismantle or disassemble the parts of the battery pack (REACT-BATT-AP1). The battery pack has safety functions and protection circuits which could be compromised by improper use.
- **DO NOT** set light to or heat the battery pack. Possible damage or melting of the insulation with consequent loss of the safety conditions due to the release of gas or burning of electrolyte material. The battery pack could produce heat, smoke, breakages or flames.
- **DO NOT** use or leave the battery pack near a naked flame, boiler or heated places (beyond the temperature range indicated in the technical data).
- **DO NOT** immerse or wet the battery pack with fresh or salt water. The battery pack could produce heat, smoke, breakages or flames.
- **DO NOT** break into, strike or stamp on the battery pack; this could deform, damage or short-circuit the battery pack. The battery pack could produce heat, smoke, breakages or flames.
- **DO NOT** create damaging impacts or drop the battery pack. The battery pack could be damaged.
- **DO NOT** use the battery pack for other equipment. The battery pack REACT-BATT-AP1 must be used solely with the inverter REACT-UNO-XX
- **DO NOT** touch the battery pack directly if there is a leak of electrolyte material. Should the electrolyte material come into contact with the eyes, wash the eyes with plenty of fresh water as soon as possible, without rubbing them. Then consult a doctor. If no treatment is applied, there could be problems for the eyes.
- **DO NOT** touch the battery pack if it shows any breaks in the plastic cover where any parts under voltage are visible.
- **DO NOT** use the battery pack should a fault or any anomaly (such as in smell, heat, colour, smoke, shape or noise) be found. The battery pack could produce heat, smoke, breakages or flames.

**WARNING.** The warnings (set out below) are used to indicate risks or dangerous actions which COULD cause serious personal harm or damage to the product or property.

- **DO NOT** use the battery pack REACT-BATT-AP1 with other battery models if not expressly indicated by ABB.
- **DO NOT** use a battery pack that is leaking electrolyte material. The electrolyte material which has leaked from the battery could burn or catch fire and cause smoke, breakages or flames.
- **DO NOT** use the battery pack if it shows anomalies. Should the battery pack have a bad smell, changes in colouring, deformation or other anomalous conditions during use (including charging and storage), do not use it. If an anomalous battery pack is used, it may produce heat, smoke, breakages or flames.

**CAUTION.** The caution messages (set out below) are used to indicate risks or dangerous actions which could cause serious harm to people or damage to property.

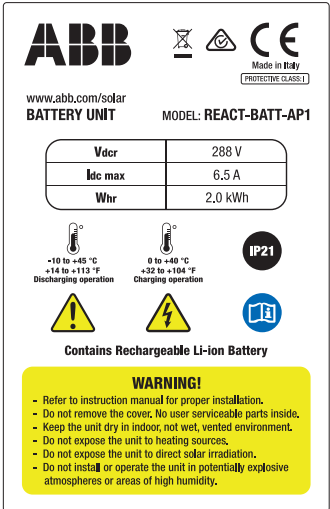
- **DO NOT** use or leave the battery pack exposed to direct sunlight (or in a vehicle which is exposed to the sun). The battery pack could produce heat, smoke, breakages or flames. In addition, its performance might deteriorate and/or it might have a shorter lifespan.
- If the battery pack has signs of rust, a bad smell or any anomaly on first being used, do not use the equipment.
- If the skin or clothes come into contact with electrolyte material which has leaked from the battery pack, wash them in plenty of fresh water as soon as possible, otherwise it might cause inflammation of the skin.

**Final installation of the equipment must not hinder access to any externally located disconnection devices.**









**Please refer to the warranty terms and conditions to evaluate any possible warranty exclusions due to improper installation.**

1.  
Labels and Symbols

The labels on the equipment have the Agency marking, main technical data and identification of the equipment and manufacturer



In the manual and/or in some cases on the equipment, the danger or hazard zones are indicated with signs, labels, symbols or icons.

	Always refer to instruction manual		General warning - Important safety information
	Positive pole and negative pole of the input voltage (DC)		Temperature range
	Hazardous voltage		Hot surfaces
	Always use safety clothing and/or personal safety devices		Point of connection for grounding protection

**The labels attached to the equipment must NOT be removed, damaged, dirtied, hidden, etc...**

2.  
Equipment Models and Components

The model of equipment to which this guide refers is REACT-BATT-AP1.  
The principal components of the REACT-BATT-AP1 are shown in the figure and described in the following table:

Main components	
11	Front cover
14	Battery unit (REACT-BATT-AP1)
13	Battery pack
35	Ground connection points
36	Cabling bypass male flange
45	Internal battery communication (cable to left unit)
44	Switch for setting the termination resistance of the internal battery communication
43	Internal battery communication (cable from right unit)
42	Rotary switch (RS485 internal line address)
41	Communication connector (cable to left unit)
40	Smoke sensor
39	Communication and control connector (cable from right unit)
37	Power connector (cable to left unit)
38	Power connector (cable from right unit)

5.  
Lifting and transport

**Transport and handling**  
Transport of the equipment, especially by road, must be carried out with by suitable ways and means for protecting the components (in particular, the electronic components) from violent shocks, humidity, vibration, extreme temperatures, etc.

The REACT-BATT-AP1, as it falls within the category of dangerous goods (UN 3480 lithium-ion battery, class 9, group II), must comply with the rules of the ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road) as regards packaging, transport and marking.  
For more information, consult the website of the Ministry of Infrastructure and Transport on page [http://www.mit.gov.it/mit/site.php?o=vc&lm=2&id\\_cat=207](http://www.mit.gov.it/mit/site.php?o=vc&lm=2&id_cat=207).  
Exemptions from the provisions:  
• the "Ancillary rule" (1.1.3.1 c ADR)  
• the "1,000 Units rule" (1.1.3.6 ADR)

**- End of life battery unit transportation**  
Besides complying with the general application of the ADR, Battery Units which are transported for disposal must comply with the following guidelines:  
- Be packed in accordance with packing instruction P909 of 4.1.4.1  
- Packages that need to be marked: "LITHIUM BATTERIES FOR DISPOSAL", in addition to other labels and indications provided for in the ADR.

For further details, please refer to the ADR document: "European Agreement concerning the International Carriage of Dangerous Goods by Road", special regulation 377.

Storage of REACT-BATT

The storage of REACT-BATT starts from the moment of delivery by ABB. In order to guarantee the full operation of the system, REACT-BATT must be put into service within 1 year at most of the date of production.  
In order to reduce risks during storage of the REACT-BATT it must be considered that:  
• In the case of damage to the REACT-BATT there is a high risk of fire.  
• Keep the REACT-BATT in a dry place.  
• Relative humidity, not condensing: 5% ... 95%  
• Handle and treat packages carefully.  
• Avoid unnecessary movements of the REACT-BATT.  
• Ambient temperature allowed during storage: -5°C...+40°C  
• Maximum height above sea level (a.s.l.): = 2 000 m

For the rules on storing the battery, refer to the regulations in force in the country concerned

**- Handling of damaged batteries**  
Should damage or visible deformation of the cover be found, or should it be noted that the batteries have overheated during operation, immediately contact the ABB technical assistance service.

Lifting

**Risk of injury due to the weight of the equipment.**

Where indicated and/or where there is a provision, eyebolts or handles, which can be used as anchorage points, are inserted and/or can be inserted.  
The ropes and means used for lifting must be suitable for bearing the weight of the equipment.

- Equipment weight

Model	Weight (kg/lb)	Lifting points
REACT-BATT-AP1	37kg / 81.5lb	4 (2 people)

Unpacking and checking

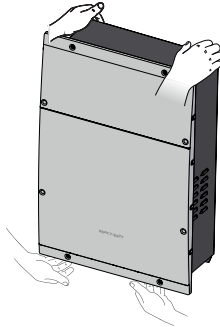
Bear in mind that the packaging elements (cardboard, cellophane, staples, adhesive tape, straps, etc.) may cause cuts and/or injuries if not handled with care. They should be removed by suitable means and not left in the hands of individuals who are not responsible (e.g. children).

The packaging components must be disposed of in accordance with the regulations in force in the country of installation.  
When you open the package, check that the equipment is undamaged and make sure all the components are present.

If any defect or damage is detected, please stop, contact the carrier and also promptly inform the ABB Service

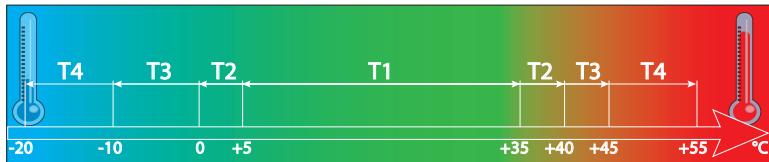
Disposal of battery unit

ABB is responsible for the battery unit disposal. Contact the local ABB service for further details.  
At the end of its life cycle, Battery Unit can be packed and transported by trained personnel in accordance with Chapter 1.3 ADR - See section "Transport of batteries at end of life".  
In case the original packing of the Battery Unit is no longer available, you may request a new one by contacting the ABB service.



6. Environmental checks

- The installation location must be easily accessible
- Prevent access to the installation location by children
- The minimum air volume in the installation location must be 15m³ and equipped with two openings with a diameter of 6cm for natural air circulation. If the two openings are located in the same wall they must be made at a minimum distance of 2 metres from each other.
- Installation of the unit in a location exposed to solar rays must be avoided as it may cause:
  - power limitation phenomena in the inverter (with a resulting decreased energy production by the system)
  - premature wear of the electrical/electromechanical components
  - premature wear of the mechanical components (gaskets) and of the user interface (display)
  - reduction in performance, lifetime and possible damage of the battery pack
- Always ensure that the flow of air around the inverter is not blocked so as to prevent overheating.
- Do not install in locations where flammable substances or gases may be present
- Do not install in locations with a constant presence of water and/or high humidity level.
- Do not install in rooms where people live or where the prolonged presence of people or animals is expected, because of the noise (around 50dB(A) at 1 m) that the inverter produces during operation.
- Avoid electromagnetic interference that can compromise the correct operation of electronic equipment, with the consequent hazards
- The ambient temperature of the installation location must be between 5°C and 35°C to guarantee the optimal operation of the battery unit (REACT-BATT-AP1). Here below are the functions available from the system on the basis of the ambient temperature:
  - T1 - Optimal operation of the REACT system
  - T2 - Correct operation of the REACT system with possible reduction in the lifetime of the batteries
  - T3 - Partial operation of the battery which limits its functioning to discharge only
  - T4 - Operation limited to the inverter part only. Management of the battery is disabled.



- Consult the technical data to check the required environmental conditions (protection rating, temperature, humidity, altitude, etc.)

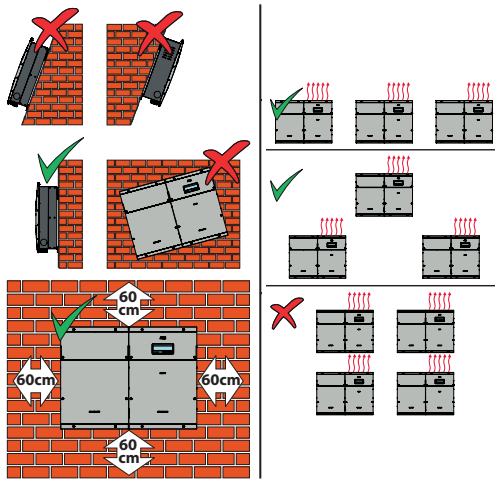
**Final installation of the REACT system must not compromise access to any externally located disconnection devices.**

**Please refer to the warranty terms and conditions to evaluate any possible warranty exclusions due to improper installation.**

Installation position

When choosing the place of installation, observe the following conditions:

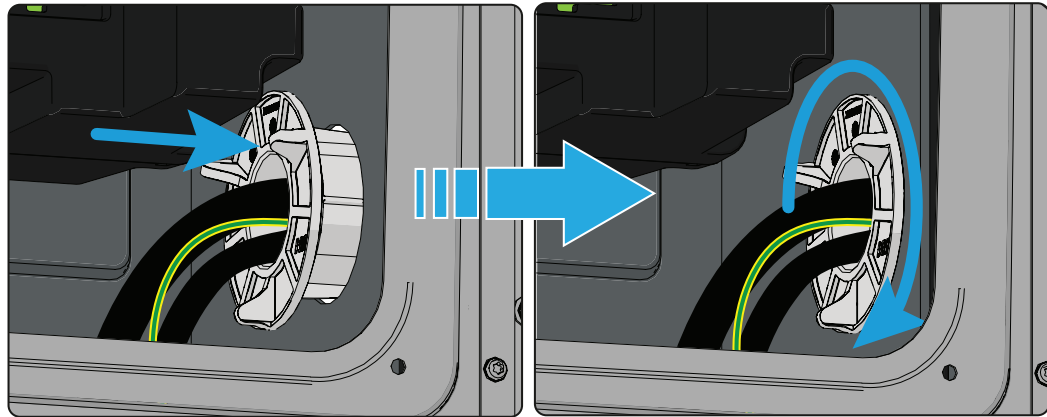
- Install on a wall or strong structure capable of bearing the weight of the equipment
- Install in safe, easy to reach locations
- If possible, install at eye-level so that the display and status LEDs can be seen easily
- Install at a height that considers the heaviness of the equipment. Failure to meet this condition could result in problems during servicing, unless suitable means are provided to carry out the operation
- Install vertically with a maximum inclination of 5° (forward or backward). If this condition cannot be met, the inverter could undergo derating due to high temperature because of poor heat dissipation.
- The installation must take account of any electrical devices (e.g. lamps, switches, etc.) which must be at least 60cm from the equipment. These distances must be maintained also to facilitate the circulation of the air needed to cool the unit and to facilitate the operations to install/maintain hardware and software which is done by dismantling the covers placed on the front.
- For a multiple installation, position the inverters side by side.
- If the space available does not allow this arrangement, position the inverters in a staggered arrangement as shown in the figure so that heat dissipation is not affected by other inverters.



- Unscrew the 8 screws and open the front cover (11) in order to make all the necessary connections.

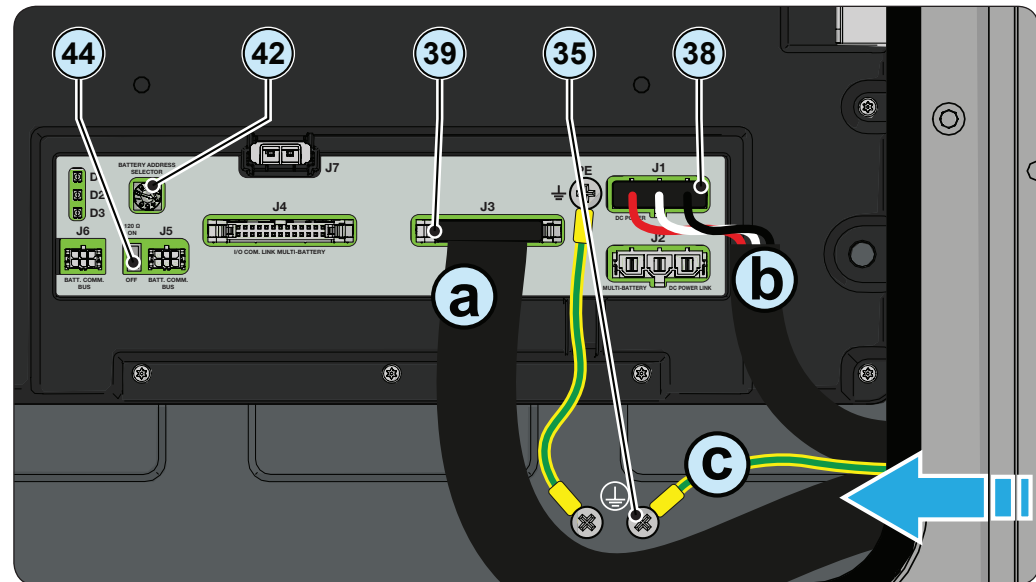
**Warning! Dangerous voltage on the terminals of the power connector. Be careful not to touch the terminals with fingers or with uninsulated equipment. Make the connections using personal protective clothing and/or equipment, such as insulating gloves.**

- Insert the battery pack connection cables (which come out of the inverter) into the REACT-BATT (14) using the hole present on the side of the mechanical cover.
- Feed the cables into the cable conduit (male) (36) supplied with the REACT-BATT (14).
- Insert the cable conduit (male) (36) into the REACT-BATT (14) and screw it into its counterpart (cable conduit (female) (07) on REACT-UNO (03).



Connect the cables to the respective counterparts on the battery pack respecting the positions:

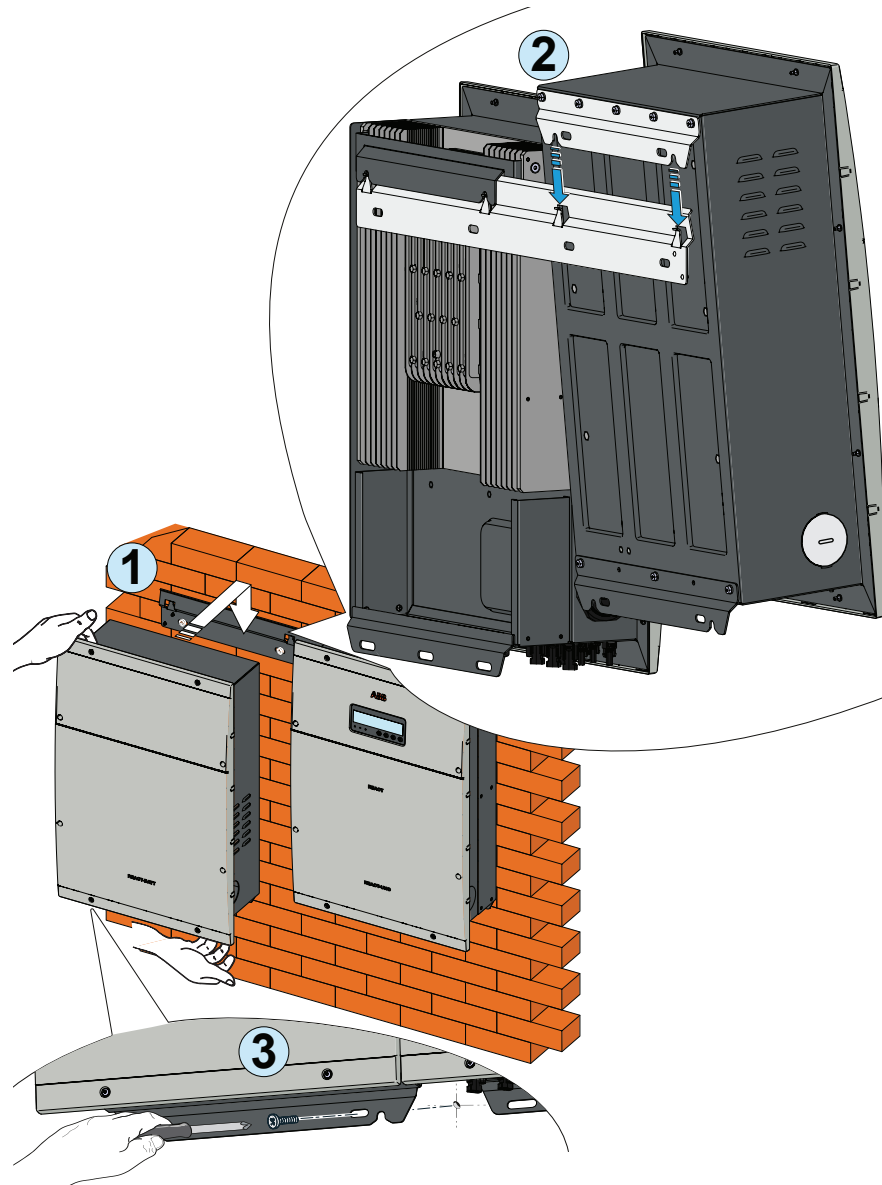
- a Communication and control cable on the communication and control connector (cable from the unit on the right) (39).
- b Power cable on the power connector (cable from the unit on the right) (38).
- c Ground cable on the ground connection points (35).



- Before to close the front cover check that:
  - the switch for setting the termination resistance of the internal communication line is in position OFF (downward)
  - the rotary switch for setting the internal RS485 address is in position 1.
- Screw the 8 screws (tightening torque 2.4Nm) and close the REACT-BATT-AP1 front cover (11).
- Refer to the REACT product manual for the commissioning of the system

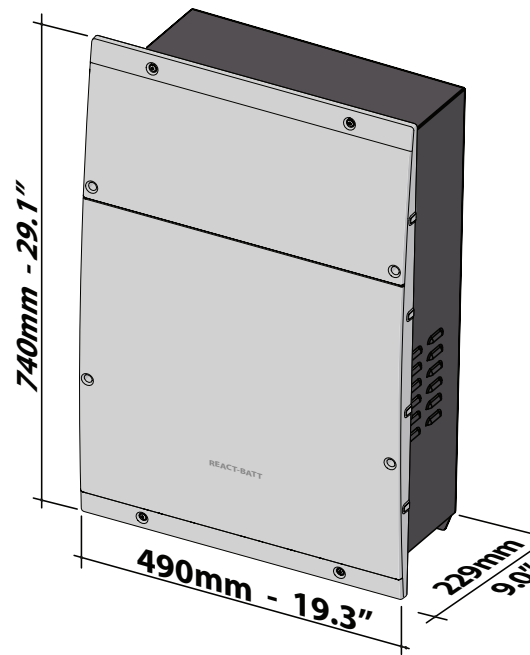
**During installation, do not place the equipment with its front facing towards the ground. Handling of the REACT inverter and of the Battery Box requires two people. Do not attempt to wall mount the system alone.**

- Snatch off the adhesive on the hole on right lower enclosure's side.
- Hook the REACT-BATT-AP1 to the bracket springs in correspondence with the insertion points in the bracket (2) on the back of the equipment (Step 1 and 2). During this phase verify the correct alignment of the two unit (REACT-BATT-AP1 and REACT-UNO).
- Drill 2 holes in correspondence with the slots on the REACT-BATT lower bracket, using a drill with a 10 mm diameter bit. The holes must be approximately 70 mm deep.
- Anchor the lower part of the REACT-BATT using No. 2 plugs with a diameter of 10 mm, supplied (Step 3).



8. Dimensions

The dimensions are expressed in millimeters (mm) and inches (in)



9. Characteristics and technical data

REACT-BATT-AP1	
<b>Environmental</b>	
Ambient temperature range	-20...+55°C
Optimal battery operational temperature range	+5...+35°C
Full battery function operational temperature range charge	0...+40°C
Full battery function operational temperature range discharge	-10...+45°C
Relative humidity	0...95% non condensing
Recommended location	Indoor with ventilation openings
<b>Physical</b>	
Environmental protection rating	IP21
Cooling	Natural
Battery unit dimension (H x W x D)	740 mm x 492 mm x 231 mm
Battery unit weight	< 37 kg
Mounting system	Wall bracket
<b>Battery pack</b>	
Manufacturer	Panasonic
Battery type	Li-Ion
Typical/Max power discharge	1.5 kW / 1.8 kW
Max power charge	1.1 kW
Rated capacity	2 kWh (6 kWh, with 3x battery pack)
Battery lifetime	> 4500 cycles
Battery calendar lifetime, typical	10 years (Max 9 MWh discharged)
<b>Safety</b>	
Marking	CE
Safety and EMC	EN62109-1, EN62109-2, compliant with the applicable requirements of EN60950-1, EN61000-6-2, EN61000-6-3, UN38.3, UN3480

Contact us

[www.abb.com/solarinverters](http://www.abb.com/solarinverters)

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