



Commercial Energy Storage Solutions

GivEnergy Commercial Ltd

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SME Battery Cabinet

Installation Manual

V1.0

64, 128, 192 and 256kWh

Safety

It is critical that the below safety instructions are fully read and understood. High DC voltage may be present within the battery cabinet even when turned off.

- Only trained and qualified electricians should install or maintain the battery cabinet.
- The battery cabinet is heavy and will require lifting equipment in all circumstances.
- The battery cabinet must only be moved when it is empty, under no circumstances can it be moved once the batteries are installed.
- Before removing any covers or batteries the battery cabinet should be isolated from the PCS and DC Cabinet if fitted.
- The installation order of the battery packs and high voltage box is critical, incorrect installation could result in serious damage.

Signs and symbols in this guide



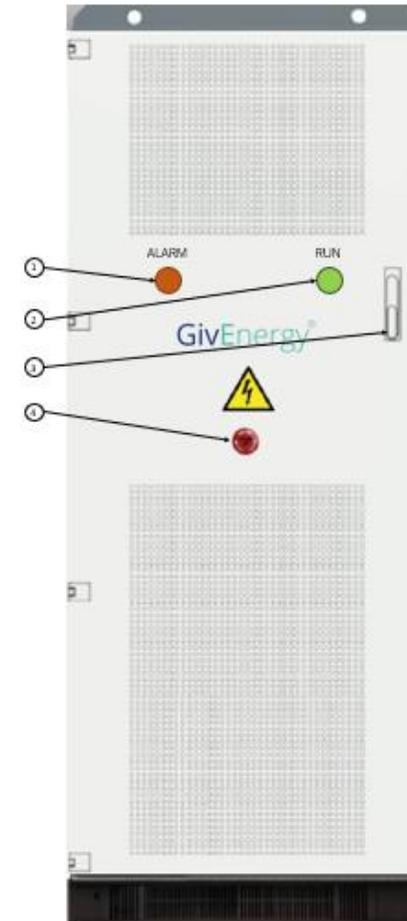
Pay particular attention to this instruction, risk of damage to the product or injury.

Required tools and equipment

- Gloves
- Screwdrivers
- Socket/Spanner set
- Suitably rated lifting equipment¹

¹ The battery packs weigh 76kg it is advised that these are not lifted manually and the use of a lifting device is recommended. Please speak to a GivEnergy representative if uncertain.

Battery cabinet components



1	Alarm light
2	Run light
3	Door handle
4	Emergency stop (EPO)

Delivery and unpackaging

The battery cabinet and battery packs are delivered on 2 separate pallets.

The battery cabinet will be delivered palletised in a cardboard box;

1. Remove all packaging and foam protection.
2. Remove the lower black trim on all sides of the battery cabinet – Be careful not to loose any of the bolts.
3. Unbolt the battery cabinet from its pallet on all 4 corners.
4. Lift the battery cabinet to allow removal of the pallet being careful not to put any body part in a potential trap area/drop zone.
5. The battery cabinet can now be positioned using the lifting equipment or a standard pallet truck.
6. The key to the door is attached to the handle.

The battery packs and high voltage box are delivered on one pallet;

1. Remove all outer packaging
2. Carefully lower the battery boxes one at a time, using a lifting aid if required.
3. Unbox batteries one at a time, taking care not to drop them.
4. Remove all foam and plastic protection.

The battery packs have an electrical connector block on their rear, do not stand the batteries up as this could damage this connector.

Key dimensions

Component	Battery Cabinet	Battery pack (7.6kWh)	HV Box
Size (W X D X H)	600 x 800 x 2050	452 x 664 x 134	452 x 664 x 134
Weight (kg)	200	76	40

Installation environment

To ensure optimal operation and lifetime of the system it must be installed in an environment that meets the following criteria at a minimum;

- 0°C to 40°C
- 0 to 95% non-condensing humidity
- <5000m altitude
- In an area with adequate ventilation

The battery cabinet must only be installed internally on level flat ground, it is possible to fix it to the floor on each corner if required.

Ventilation

The battery cabinet must have a suitable airflow to ensure optimal operation. All the battery packs are natural convection and do not have fan assistance.

Access

It is recommended that access to the area the system is located within is restricted. A locked door prevents immediate danger to the general public however the emergency stop button is accessible on the front door.

Assembly

All battery packs and the high voltage box must be secured with 2 bolts on each side before powering up the battery cabinet.

All power and data cables should be fed through the cable entry cover at the bottom of the battery rack and then out of the grommets on the under tray. The cable entry cover is removable if additional access is required.

Note: Ensure that all grommets are located correctly to avoid sharp metal edges damaging the cables.

Multiple battery cabinets

When installing multiple 64kWh battery racks a DC cabinet will be supplied. This cabinet offers an additional level of control and protection as well as a position to connect the battery racks together.

When a DC cabinet is provided the battery racks will take AC input from here, the DC cabinet is then powered from the PCS' EPS output terminals¹.

¹ See DC Cabinet Installation Manual for more details.

High voltage box



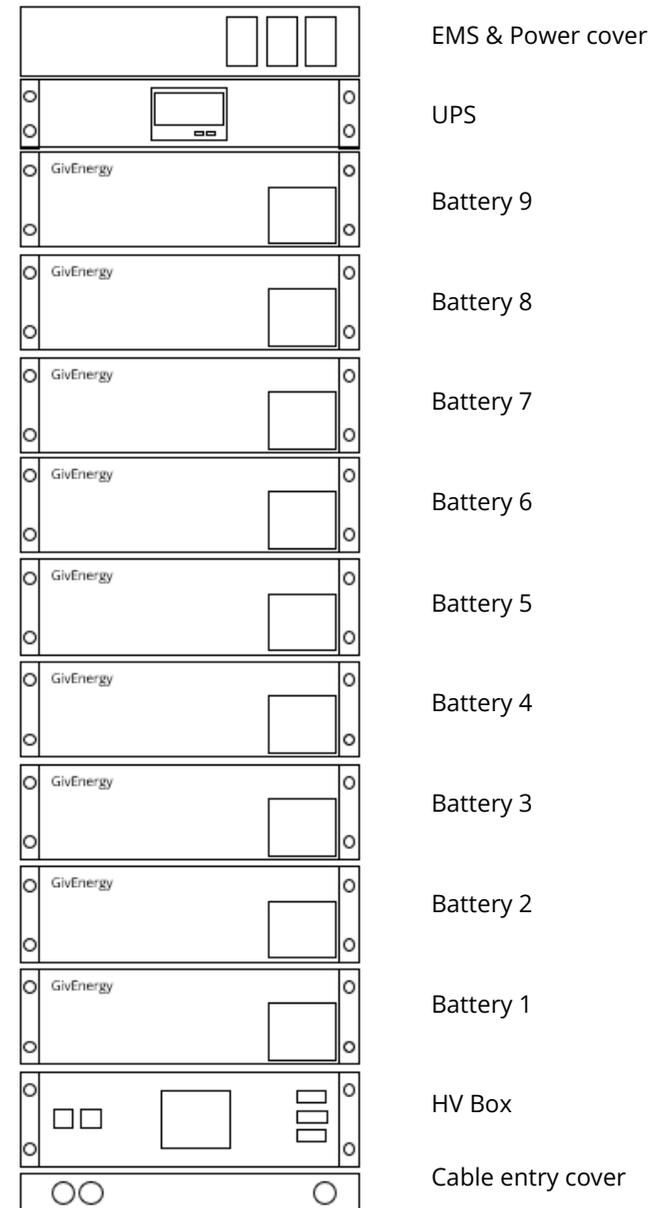
It is critical that the high voltage box is installed into the bottom slot of the battery cabinet first and all input and output connections are installed before inserting any battery packs.

Battery packs



Battery packs must only be installed after the high voltage box is installed and connected.

Ensuring that both the MCCB and power button on the high voltage box are both OFF the batteries can be installed in the order shown on the next page.



Electrical and data connections

The high voltage box front cover has sockets for DC output and AC input.

The AC input is used to power the UPS at the top of the battery cabinet, this ultimately provides power to all control circuits.



All connections in and out of the battery cabinet/high voltage box must be made prior to installing the battery packs.

DC output

Ensuring the PCS DC switch is in the off position use the supplied cables, connect the ring terminal end to the PCS DC input terminals or if fitting multiple battery racks connect them all into the DC cabinets DC input terminals first, ensuring correct polarity.

Connect the DC power cables to the high voltage box ensuring the correct polarity.

AC input

Ensuring that the PCS is fully isolated correctly¹ connect the provided wiring harness to Phase 1, Neutral and Earth of the EPS output MCCB on the PCS.

If a DC cabinet is installed this supply will connect into the DC cabinet²

¹ See PCS installation manual for details

² See DC cabinet installation manual for details

Data connections

The high voltage box has 2 data connection points, one is to communicate with the PCS, the other is for meter communication.

Using the cables provide connect these into the high voltage box, the cables may be extended as required.

System setup

The EMS is located in the top of the battery cabinet, it provides control to the whole system, when multiple battery cabinets are installed only one EMS is utilised and this will be located within the DC cabinet.

The EMS communicates with all battery packs, high voltage boxes, PCS, metering and the internet via either LAN or WiFi.

The GivEnergy engineer will help install and configure the LAN or WiFi connectivity and ensure communication with the online portal.

Power on procedure

Once all connections are terminated correctly with satisfactory test results the following turn on procedure should be followed;

1. Release the emergency stop button if pressed
2. Turn on the PCS following its power on procedure
3. Turn on the MCB located at the top of the battery cabinet
4. Press the on/off button on the front of the UPS
5. Once lit up, press and hold the on/off button on the UPS for 3 seconds, checking that voltage is shown on the output on the UPS screen
6. Press the power on button on the high voltage box
7. Turn ON the MCCB on the high voltage box

Shutdown procedure

In an emergency press the emergency stop button on the PCS first then all battery cabinets/racks then follow the below instructions.

1. Turn the PCS off first
2. Press the power button on the high voltage box
3. Turn OFF the MCCB on the high voltage box
4. Press and hold the on/off button on the UPS for 3 seconds, checking that the voltage is gone from the output on the UPS screen
5. Turn OFF the MCB located at the top of the battery cabinet
6. Repeat for additional battery cabinets

Initial testing/commissioning

All GivEnergy commercial storage solutions include an on-site commissioning service, our engineer will ensure correct communication with meter, battery packs, EMS and PCS. To aid in this testing the engineer will initially run a low power test in 'manual' mode setting the system to complete a 5 minute charge followed by a 5 minute discharge and a rate of 10kW.

Once this is complete where electrical supply parameters allow a full power charge and discharge will be ran for a period of 15 minutes each. If electrical limitations on site do not allow this test will be adjusted to power levels with site tolerance.

Any additional tests can now be completed include system specific operation such as back up power.

Once above testing is successfully completed the system will be set to run in its agreed operational modes and a demonstration can be given to the client and/or installer.

Our engineer will supply commissioning paperwork once complete, the date of which will commence the PCS warranty.

Maintenance

Ensure that the ventilation holes on the front door of the battery cabinet do not become blocked with dust.

Support

Free remote support is included with all systems for the period of the warranty.

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