GivEnergy® Commercial

Commercial Energy Storage Solutions

DC Cabinet

Installation Manual

V1.0

200A & 1000A

GivEnergy Commercial Ltd

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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 DC cabinet.
- The DC cabinet is heavy and will require lifting equipment in all circumstances.
- Before removing any covers or batteries the DC cabinet **must** be isolated from all sources, including the PCS and Batteries if fitted.

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

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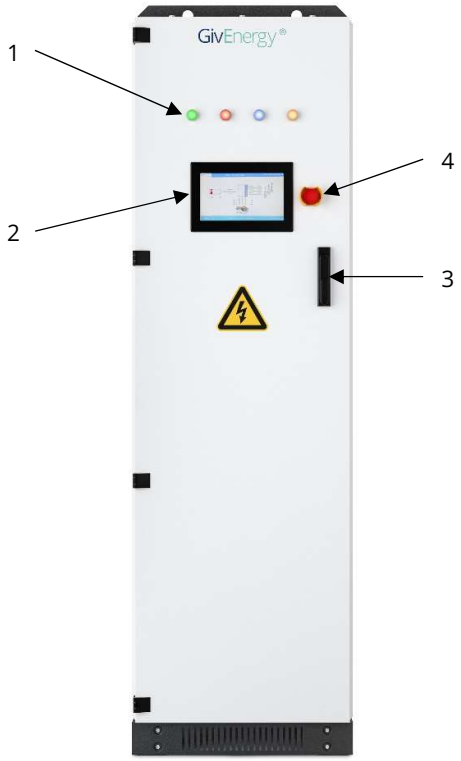
DC cabinet components



1	Status lights
2	Screen
3	Door handle
4	Emergency stop (EPO)

Delivery and unpackaging

The DC 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 DC cabinet – Be careful not to loose any of the bolts.
3. Unbolt the DC cabinet from its pallet on all 4 corners.
4. Lift the DC cabinet to allow removal of the pallet being careful not to put any body part in a potential trap area/drop zone.
5. The DC 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.

Key dimensions

	DC Cabinet
Size *(W X D X H)*	600 x 800 x 2050
Weight *(kg)*	200

Components

- 1 x DC Cabinet
- 1 x DC Power cable kit
- 1 x Data cable kit

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 DC 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 DC cabinet must have a suitable airflow to ensure optimal operation.

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 power and data cables should be fed through the cable entry cover at the bottom of the DC cabinet. 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.

The 200A and 1000A versions have the same installation instructions, the size and quantity of DC Power cables between the DC Cabinet and the PCS will vary on the PCS sizing, for more information please contact GivEnergy.

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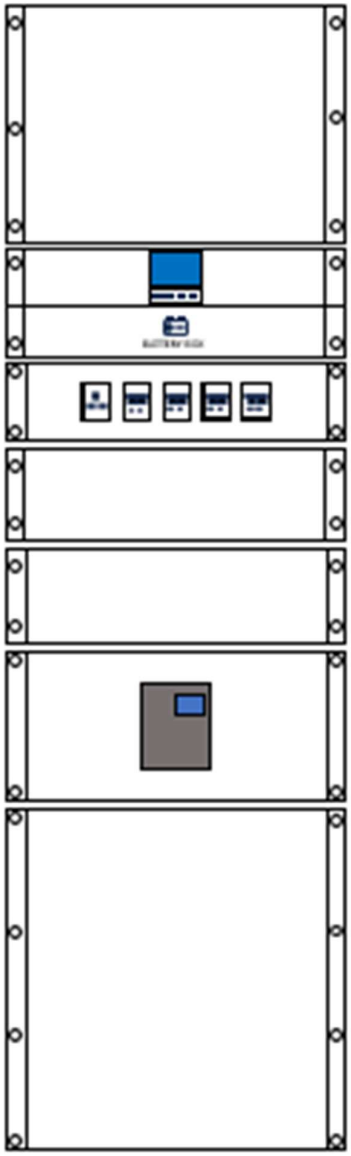

1 - Empty cover

2 - UPS

3- Switches

4 – EMS and terminals

5 - Connections and terminals

6 - DC Switch

7 – DC cable entry

Electrical and data connections

All connections can be found by removing the covers of the DC Cabinet, covers must only be removed with **all** battery racks/cabinets turned off and disconnected as well as the PCS DC switch off.

DC Input

The DC Cabinet can have up to 4 battery racks/cabinets connected to it. From each high voltage box connect a positive and negative battery cable to the DC Cabinets DC Input terminals using the cables provided. DC inputs are under cover 7 and use the central connectors, positive + connection are on the left with negative – connections on the right.

DC Output

The DC Cabinet can have up to 4 outgoing connections, the cable size must be suitably rated for the maximum charge/discharge current and may be multiple cables per pole. The required cables are included. DC outputs are under cover 7 and use the outer connectors, positive + connection are on the left with negative – connections on the right.

It is **critical** that correct polarity is confirmed before energising battery racks, this can be achieved by a long lead test method. Incorrect polarity will result in serious damage to the equipment and has the potential for serious injury.

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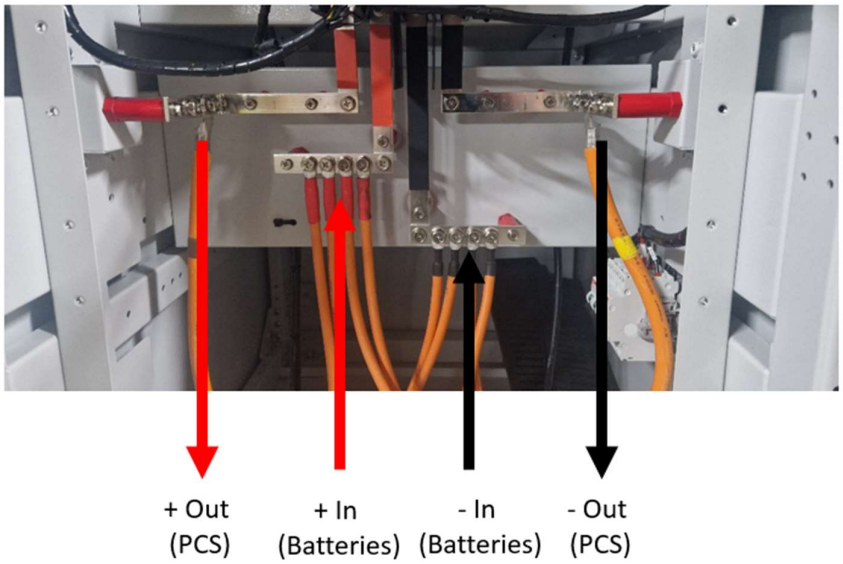


AC input

The DC Cabinet supply socket can be found under cover 5. Using the provided cable connect the plug and socket together and then connect the other end to the Auxiliary output on the PCS[1].

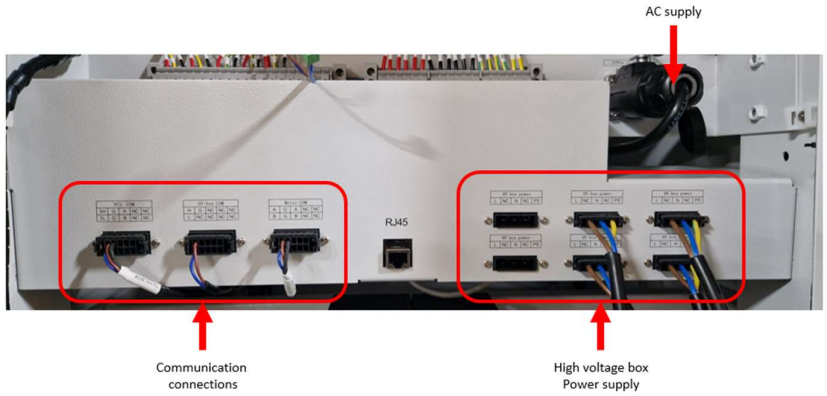
[1] See PCS installation manual for details

AC outputs

The AC output sockets can be found under cover 5. Using the provided cables connect the pre made cables between the power outlet sockets and each high voltage box.

Data connections

A connect strip can be found at the bottom of the DC Cabinet, use these terminals to connect all high voltage box data cables.



The data connection for metering and PCS can be found under cover 5. Using the cables provided connect the metering and PCS communication cable.

The data connection points for the battery rack high voltage boxes can be found at the very bottom of the DC Cabinet under the DC Connection points.

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Power on procedure

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

1. Turn on the PCS[1]
2. Turn on all MCB's within DC Cabinet
3. Turn On the UPS using the On/Off button, a single press lights up the screen – Wait for the UPS to beep then press the button again.
4. Wait for the screen on the door to start
5. Login as installer, using password '1357'*
6. Turn on the battery racks 1 at a time and ensure battery data is shown on screen 2.
7. Once all battery racks report data, press the 'Reset' button on the home screen
8. Press the on button on the home screen

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[1]
2. Turn off the Battery cabinets second[2]
3. Turn off all MCB's within the DC Cabinet
4. Press and hold the On/Off button on the UPS to turn it off

[1] See PCS installation manual for more details
[2] See SME Battery Cabinet installation manual for more details
* The DC cabinet should be pre-programmed to the correct number of battery racks, if not please contact GivEnergy.

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.

Phone: 01377 252 874

Email: commercial@givenergy.co.uk

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For technical support call 01377 252 874 or commecial@givenergy.co.uk