



# GivEnergy

2019  
V1.5D

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# GivEnergy

Home Energy Storage Systems



# Hybrid System

## Home Hybrid Inverter



- ◆ Compatible with GivEnergy LiFePO4 battery packs
- ◆ Backup up power (2.5kW) output during a black out
- ◆ Installed to new builds or retrofit to an existing solar PV system
- ◆ IP65 water-resistant for exterior install
- ◆ Remote software updating via WiFi / 3G dongle
- ◆ Cloud based monitoring and control through web / app interface
- ◆ Batteries are able to charge directly from Solar PV and the Grid
- ◆ Available in 3.6kW & 5.0kW models

Dimensions (W/H/D) 480\*440\*260mm  
Weight 24kg



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# Specification

Hybrid  
Giv-HY3.6 / Giv-HY5.0

Input Data (DC)	Giv-HY3.6	Giv-HY5.0
Max DC power	4500W	6500W
Max DC voltage	600V	
Start voltage	100V	
DC nominal voltage	360V	
PV voltage range	100V-600V	
MPPT voltage range	120V-550V	
Max input current per string of tracker A/tracker B	11A/11A	
Number of independent MPPT input	2	
Feedback current to the array	0A	

Output Data (AC)	Giv-HY3.6	Giv-HY5.0
Nominal AC output power	3680W	5000W
Max AC apparent power	3680VA	5000VA
Max output current	16.4A	21.7A
AC nominal voltage; range	220V/230V/240V; 180Vac-280Vac	
AC grid frequency; range	50,60Hz; ±5 Hz	
Power factor at rated power	1	
Power factor	0.9leading...0.9lagging	
THDi	<3%	
AC connection	Single phase(can be linked for three phase)	

Battery	Giv-HY3.6	Giv-HY5.0
Battery type	LiFePO4	
Nominal Power	2500W	
Nominal voltage	51.2V	
Battery capacity	≥50Ah	
Max discharging /charging power	3000W/3000W (capped at 2500W as per system balance)	
Charging curve	3-stage adaptive with maintenance	
Operating voltage range	46-57V	
Max charging/discharging current	50A / 50A	

Emergency Backup Power Output	Giv-HY3.6	Giv-HY5.0
Output rated power	97.00%	97.10%
Output voltage	96.50%	96.50%
Maximun efficiency	99.50%	99.50%

Efficiency	Giv-HY3.6	Giv-HY5.0
Euro-ETA	3000VA	
MPPT efficiency	230Vac ±2%, 50Hz (60Hz Optional) ±0.2%, THDV<3% (linear load)	



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## Protection Devices

Giv-HY3.6

Giv-HY5.0

DC reverse polarity protection	Yes
DC switch rating for each MPPT	Yes
Output over current protection	Yes
Output overvoltage protection-varistor	Yes
Ground fault monitoring	Yes
Grid monitoring	Yes
Max inrush current	30A peak
Max output fault current	40A peak
Max output overcurrent protection	25A rms
Integrated all pole sensitive leakage current monitoring unit	Yes

## General Data

Dimensions (W / H / D)	480*440*260mm
Weight	24kg
Operating temperature range	0°C-55°C
Noise emission (typical)	≤ 6 dB(A)
Altitude	Up to 2000m(6560ft)Without power derating
Relative humidity	95%
Consumption: operating (standby) / night	<5W / < 0.5 W
Topology	Transformerless
Cooling concept	Natural
Environmental Protection Rating	IP65

## Features

PV connection	H4/MC4
Battery connection	Screw terminal
AC connection	Screw terminal
Display	LED
Interfaces:Wi-Fi/USB/GPRS/RS485	Opt/Yes/Opt/Yes
Warranty: 5 years / 10 years / 15 years	Yes/Opt/Opt

## Certificates and Approvals

TüV CE, TüV IEC 62109-1&2, TüV VDE 0126-1-1, TüV G83/2, TüV G59/3, TüV AS4777&AS/NZS 3100, EN50438, SAA

# Specification

Hybrid  
Giv-HY3.6 / Giv-HY5.0



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# Long Body Hybrid

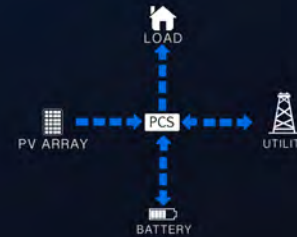
Giv-HY3.6L / Giv-HY5.0L



Extra Features Included in the Long Body design.

- ◆ Dual PV Switches
- ◆ Battery Switch
- ◆ Back up RCD Switch
- ◆ Main AC Switch
- ◆ Bi-Directional MID Approved meter (EN 50470-3) Class 1

Dimensions (W/H/D) 480\*700\*260mm  
Weight 30kg





Input Data (DC)	Giv-HY3.6	Giv-HY5.0
Max DC power	4500W	6500W
Max DC voltage	600V	
Start voltage	100V	
DC nominal voltage	360V	
PV voltage range	100V-600V	
MPPT voltage range	120V-550V	
Max input current per string of tracker A/tracker B	11A/11A	
Number of independent MPPT input	2	
Feedback current to the array	0A	

Output Data (AC)		
Nominal AC output power	3680W	5000W
Max AC apparent power	3680VA	5000VA
Max output current	16.4A	21.7A
AC nominal voltage; range	220V/230V/240V; 180Vac-280Vac	
AC grid frequency; range	50,60Hz; ±5 Hz	
Power factor at rated power	1	
Power factor	0.9leading...0.9lagging	
THDi	<3%	
AC connection	Single phase(can be linked for three phase)	

Battery		
Battery type	LiFePO4	
Nominal Power	2500W	
Nominal voltage	51.2V	
Battery capacity	≥50Ah	
Max discharging /charging power	3000W/3000W (capped at 2500W as per system balance)	
Charging curve	3-stage adaptive with maintenance	
Operating voltage range	46-57V	
Max charging/discharging current	50A / 50A	

Emergency Backup Power Output		
Output rated power	97.00%	97.10%
Output voltage	96.50%	96.50%
Maximun efficiency	99.50%	99.50%

Efficiency		
Euro-ETA	3000VA	
MPPT efficiency	230Vac ±2%, 50Hz (60Hz Optional) ±0.2%, THDV<3% (linear load)	

# Specification

Long Body Hybrid  
Giv-HY3.6L / Giv-HY5.0L



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## Protection Devices

	Giv-HY3.6	Giv-HY5.0
DC reverse polarity protection	Yes	Yes
DC switch rating for each MPPT	Yes	Yes
Output over current protection	Yes	Yes
Output overvoltage protection-varistor	Yes	Yes
Ground fault monitoring	Yes	Yes
Grid monitoring	Yes	Yes
Max inrush current	30A peak	30A peak
Max output fault current	40A peak	40A peak
Max output overcurrent protection	25A rms	25A rms
Integrated all pole sensitive leakage current monitoring unit	Yes	Yes

## General Data

Dimensions (W / H / D)	480*700*260mm
Weight	30kg
Operating temperature range	0°C-55°C
Noise emission (typical)	≤ 6 dB(A)
Altitude	Up to 2000m(6560ft)Without power derating
Relative humidity	95%
Consumption: operating (standby) / night	<5W / < 0.5 W
Topology	Transformerless
Cooling concept	Natural
Environmental Protection Rating	IP65

## Features

PV connection	H4/MC4
Battery connection	Screw terminal
AC connection	Screw terminal
Display	LED
Interfaces:Wi-Fi/USB/GPRS/RS485	Opt/Yes/Opt/Yes
Warranty: 5 years / 10 years / 15 years	Yes/Opt/Opt

## Certificates and Approvals

TÜV CE, TÜV IEC 62109-1&2, TÜV VDE 0126-1-1, TÜV G83/2, TÜV G59/3, TÜV AS4777&AS/NZS 3100, EN50438, SAA

# Specification

Long Body Hybrid  
Giv-HY3.6L / Giv-HY5.0L



# AC Coupled

Giv-AC3.0



- ◆ Installed to new builds or retrofitted to an existing solar pv system
- ◆ Charge the batteries directly from Solar PV by measuring the existing PV system via a CT
- ◆ Batteries can be charged directly from the Grid
- ◆ Remote software updating via Wi-Fi dongle
- ◆ Monitor your usage and generation through Web and APP interface
- ◆ Designed to be Light weight and compact and to maximise self-consumption and minimise imported electricity
- ◆ Monitoring home usage with Integrated smart metering for an accurate reading

Dimensions (W/H/D) 480\*290\*260mm  
Weight 19kg



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## Output Data (AC)

Nominal AC output power	3000W
Max AC apparent power	3000VA
Max output current	13.6A
AC nominal voltage; range	220V/230V/240V;180Vac-280Vac
AC grid frequency; range	50,60Hz;±5 Hz
Power factor at rate power	1
Power factor	0.9 leading...0.9 lagging
THDi	<3%
AC connection	Single phase(can be linked for three phase)

## Battery

Battery type	LiFePO4
Nominal Power	3000W
Nominal voltage	51.2V
Max discharging /charging power	3000W
Charging curve	3-stage adaptive with maintenance
Operating voltage range	46.4-57.6V
Max charging/discharging current	60A / 60A

## Backup Output

Output rated power	3000VA
Peak power	3600VA,10s
Output voltage	230Vac ±2%, 50Hz (60Hz Optional)±0.2%,THDV<3% (linear load)

## Efficiency

Max efficiency	97.10%
Euro-ETA	96.5%

# Specification

AC Coupled  
Giv-AC3.0



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## Protection Devices

DC reverse polarity protection	Yes
DC switch rating for each MPPT	Yes
Output over current protection	Yes
Output overvoltage protection-varistor	Yes
Ground fault monitoring	Yes
Grid monitoring	Yes
Max inrush current	30A peak
Max output fault current	40A peak
Max output overcurrent protection	25A rms
Integrated all pole sensitive leakage current monitoring unit	Yes

## General Data

Dimensions (W / H / D)	480*290*260mm
Weight	19kg
Operating temperature range	-25°C to 60°C (-13°F to 140°F) With derating above 45°C
Noise emission (typical)	≤ 25 dB(A)
Altitude	Up to 2000m(6560ft)Without power derating
Relative humidity	95%
Consumption: operating (standby) / night	<5W / < 0.5 W
Topology	Transformerless
Cooling concept	Natural
Environmental Protection Rating	IP65

## Features

PV connection	No
Battery connection	Screw terminal
AC connection	Screw terminal
Display	LED
Interfaces:Wi-Fi/USB/GPRS/RS485	Opt/Yes/Opt/Yes
Warranty	5 years / 10 years (Optional)/15years (Optional)

## Certificates

AS 4777, VDE-AR-N4105, VDE0126, G83, G59, IEC62109-1-2, IEC62040, EN61000-6-2, EN61000-6-3

# Specification

AC Coupled  
Giv-AC3.0



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# Long Body AC Coupled

Giv-AC3.0L



- ◆ Smart Demand Management
- ◆ Mobile App Available
- ◆ Wi-Fi/3G/LoRaWAN
- ◆ Cloud based monitoring and control
- ◆ Monitor renewable generation from any source

Extra Features included in the long body design

- ◆ Battery Switch
- ◆ Back up RCD Switch
- ◆ Main AC Switch
- ◆ Dual PV Switch

Dimensions (W/H/D) 480\*550\*260mm  
Weight 30kg



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## Output Data (AC)

Nominal AC output power	3000W
Max AC apparent power	3000VA
Max output current	13.6A
AC nominal voltage; range	220V/230V/240V;180Vac-280Vac
AC grid frequency; range	50,60Hz;±5 Hz
Power factor at rate power	1
Power factor	0.9 leading...0.9 lagging
THDi	<3%
AC connection	Single phase(can be linked for three phase)

## Battery

Battery type	LiFePO4
Nominal Power	3000W
Norminal voltage	51.2V
Max discharging /charging power	3000W
Charging curve	3-stage adaptive with maintenance
Operating voltage range	46.4-57.6V
Max charging/discharging current	60A / 60A

## Backup Output

Output rated power	3000VA
Peak power	3600VA,10s
Output voltage	230Vac ±2%, 50Hz (60Hz Optional)±0.2%,THDV<3% (linear load)

## Efficiency

Max efficiency	97.10%
Euro-ETA	96.5%

# Specification

Long Body AC Coupled  
Giv-AC3.0L



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## Protection Devices

DC reverse polarity protection	Yes
DC switch rating for each MPPT	Yes
Output over current protection	Yes
Output overvoltage protection-varistor	Yes
Ground fault monitoring	Yes
Grid monitoring	Yes
Max in rush current	30A peak
Max output fault current	40A peak
Max output overcurrent protection	25A rms
Integrated all pole sensitive leakage current monitoring unit	Yes

## General Data

Dimensions (W / H / D)	480*550*260mm
Weight	25kg
Operating temperature range	-25°C to 60°C (-13°F to 140°F) With derating above 45°C
Noise emission (typical)	≤ 25 dB(A)
Altitude	Up to 2000m(6560ft)Without power derating
Relative humidity	95%
Consumption: operating (standby) / night	<5W / < 0.5 W
Topology	Transformerless
Cooling concept	Natural
Environmental Protection Rating	IP65

## Features

PV connection	No
Battery connection	Screw terminal
AC connection	Screw terminal
Display	LED
Interfaces:Wi-Fi/USB/GPRS/RS485	Opt/Yes/Opt/Yes
Warranty	5 years / 10 years (Optional)/15years (Optional)
Extra Features included in the long body design.	Dual PV Switches      Main AC Switch Battery Switches      Back up RCD Switch EPS pre-installed for super fast fit

## Certificates

AS 4777, VDE-AR-N4105, VDE0126, G83, G59, IEC62109-1-2, IEC62040, EN61000-6-2, EN61000-6-3

# Specification

Long Body AC Coupled  
Giv-AC3.0L



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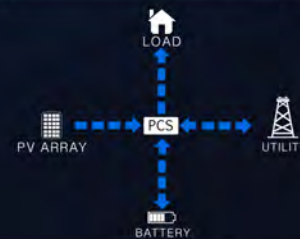
# 3 Phase Hybrid System

Hybrid Inverter



- ◆ Compatible with GivEnergy LiFePO4 battery packs
- ◆ Charging and discharging (10kW)
- ◆ Installed to commercial & warehouses properties
- ◆ Designed to maximise self-consumption and minimise imported electricity
- ◆ A constant back up for all essential modes
- ◆ Remote software updating via Wi-Fi / 3G Dongle
- ◆ Online seamless handover between on-grid and off-grid modes.
- ◆ Active and reactive power control (instantly)
- ◆ Comprehensive and high precision fault monitoring and recording

Dimensions (W/H/D) 650\*460\*210mm  
Weight 40kg



GivEnergy

Input Data (DC)	Giv-3P-HY6.0	Giv-3P-HY8.0	Giv-HY10
-----------------	--------------	--------------	----------

Max DC power	7800W	10400W	1300W
Max DC voltage		1000V	
Start voltage		200V	
DC nominal voltage		600V	
PV voltage range		280V-800V	
MPPT voltage range		120V-550V	
Max input current per string of tracker A/tracker B		11A/11A	
Number of independent MPPT input		2/1	

Output Data (AC)	Giv-3P-HY6.0	Giv-3P-HY8.0	Giv-HY10
------------------	--------------	--------------	----------

Nominal AC output power	6000W	8000W	10000W
Max AC apparent power	6000W	8000W	10000W
Max output current	10.0A	13.0A	16.0A
AC nominal voltage; range		380V/400V; 310V-480V	
AC grid frequency; range		50,60Hz; ±5 Hz	
Power factor at rated power		1	
Power factor		0.8leading...0.8lagging	
THDi		<3% (<1.5% @ Full load)	

Battery	Giv-3P-HY6.0	Giv-3P-HY8.0	Giv-HY10
---------	--------------	--------------	----------

Battery type		Li-ion or Lead-acid	
Nominal voltage		384V	
Max discharging /charging power		10000W / 10000W	
Charging curve		3-stage adaptive with maintenance	
Operating voltage range		352V-456V	
Max charging/discharging current		25A / 25A	

Emergency Backup Power Output	Giv-3P-HY6.0	Giv-3P-HY8.0	Giv-HY10
-------------------------------	--------------	--------------	----------

Output rated power		10000W (3-phase asymmetrical load)	
Output voltage		230V, 50/60Hz ±5Hz	
Maximum efficiency (Peak Power)		15000W for 10ms; 12000W for 10s	
THDv		<3%	
Switch Time		<10ms	

# Specification

3 Phase Hybrid  
Giv-3P-HY6.0 / Giv-3P-HY8.0  
Giv-3P-HY10



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Efficiency	Giv-3P-HY6.0	Giv-3P-HY8.0	Giv-HY10
Euro-ETA	97.5%	97.5%	97.5%
MPPT efficiency	99.9%	99.9%	99.9%
Max efficiency	98.0%	98.3%	98.3%
Max battery to load efficiency	94.0%	94.0%	94.9%

### Protection Devices

DC reverse polarity protection	Yes
DC switch rating for each MPPT	Yes
Output over current protection	Yes
Output overvoltage protection-varistor	Yes
Ground fault monitoring	Yes
Grid monitoring	Yes
Integrated leakage current monitoring unit	Yes

### General Data

Dimensions (W / H / D)	650*460*210mm
Weight	40kg
Operating temperature range	-25°C/+60°C (-13°F/+140°F) With derating above 45°C (113°F)
Noise emission (typical)	≤ 25 dB(A)
Altitude	Up to 2000m(6560ft)Without power derating
Relative humidity	95%
Consumption: operating (standby) / night	<5W / < 0.5 W
Cooling concept	Natural
Environmental Protection Rating	IP65

### Features

PV connection	H4/MC4
Battery connection	Screw terminal
AC connection	Screw terminal
Display	LED
Interfaces:Wi-Fi/USB/GPRS/RS485	Opt/Yes/Opt/Yes
Warranty: 5 years / 10 years / 15 years	Yes/Opt/Opt

### Certificates and Approvals

G59-3 / CE,IEC 62109-1&2, VDE 0126-1-1,G59/2, AS4777&AS/NZS 3100, EN50438

# Specification

3 Phase Hybrid  
Giv-3P-HY6.0 / Giv-3P-HY8.0  
Giv-3P-HY10



# GivEnergy

# Battery Storage

Giv-Bat-ECO-2.6



- ◆ Using the latest LiFePO4 prismatic cell technology
- ◆ Warranted for 10years or throughput of 10 MWh per 1kWh of stored capacity
- ◆ 0.5C-1C charge and discharge rate
- ◆ 157Wh per Kg +/- 5%
- ◆ Plug & Play functionality
- ◆ Dual BMS system allowing greater control and functionality
- ◆ Scalable Battery Packs - Up to 5 per inverter in 2019
- ◆ Fully Recyclable at end of life
- ◆ IP65



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# Specification

Giv-Bat-ECO-2.6

Model	Giv-Bat-ECO-2.6
Capacity	2.6kWh
Voltage	51.2Vdc
Current	51Ah
IP Grade	IP65
BMS	Robust multi point monitoring BMS pre installed
Life cycling (80% DOD, 25°C)	10years
Operation temperature	-20°C~55°C
Storage Temperature	-30°C~60°C
Warranty BTT	26MWh
	10 years, whichever comes sooner
Standard	UN 38.3, IEC61000
Physical	28kg
	380*340*191mm

## Electrical Parameters

Operation voltage	46.4~57.6Vdc
Maximum Charging Voltage	57Vdc
Maximum charging/ Discharging current	60A / 60A
Network Interface	RS485
Communication Protocols	Modbus
Advantages	Stackable, BMS upgradeable, *IP65



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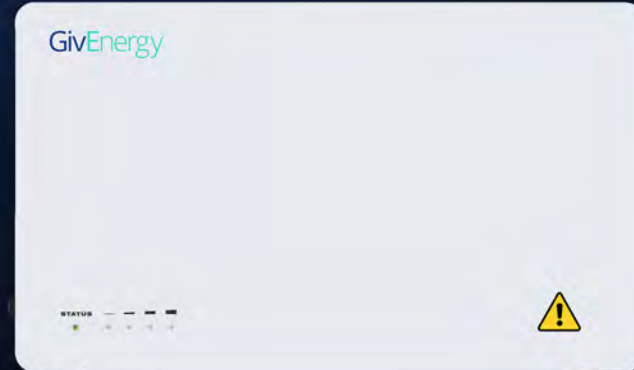
# Battery Storage

LiFePO<sub>4</sub>

- ◆ Using the latest LiFePO<sub>4</sub> prismatic cell technology
- ◆ Warranted throughput of 10 MWh per 1kWh of stored capacity  
Or 10 Years, Whichever comes first
- ◆ 0.5C-1C charge and discharge rate
- ◆ 170Wh per Kg +/- 5%
- ◆ Plug & Play functionality
- ◆ Dual BMS system allowing greater control and functionality
- ◆ Scalable Battery Packs - Up to 5 per inverter in 2019
- ◆ Fully Recyclable at end of life
- ◆ IP65



3.2kWh (16kWh scalable)



6.3kWh (31.5kWh scalable)

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# Specification

LiFePO<sub>4</sub> Battery

Model	Giv-Bat3.2	Giv-Bat6.3	Giv-Bat8.2
Capacity	3.2kWh	6.3kWh	8.2kWh
Voltage	51.2Vdc	51.2Vdc	51.2Vdc
Current	61.5Ah	123Ah	162Ah
IP Grade	IP65	IP65	IP65
BMS	Robust multi point monitoring BMS pre installed		
Life cycling (80% DOD, 25°C)		10years	
Operation temperature		-20°C~55°C	
Storage Temperature		-30°C~60°C	
Warranty BTT	32MWh	63MWh	84MWh
	10 years, whichever comes sooner		
Standard		UN 38.3, IEC61000	
Physical	28kg	53kg	60kg
	380*340*191mm	690*390*182 mm	480*550*220 mm

## Electrical Parameters

Operation voltage	46.4~57.9Vdc
Maximum Charging Voltage	57Vdc
Maximum charging/ Discharging current	60A/60A
Network Interface	RS485
Communication Protocols	Modbus
Advantages	Stackable, BMS upgradeable, *IP65



Cell Technology LiFePO<sub>4</sub>

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STATUS

GivEnergy



- ◆ Fully compliant with SEAI Guidelines
- ◆ Dual MPPT input 1000V DC 20A
- ◆ High Voltage Automatic DC Connector Relay
- ◆ Disconnects PV supply when Grid fails
- ◆ Automatically reinstates PV supply when grid is stable
- ◆ Programmable time delay
- ◆ Programmable grid settings
- ◆ Standard 5 year warranty
- ◆ Non invasive, low maintenance requirement



# Specification

PV Protect

## Input Data (DC)

DC input Minimum/Maximum Voltage	50V-1000V
DC Nominal Current	20A
MAX DC Short circuit Current	750A
Terminals	MC4-IP65
MPPT	2 (in and out)

## AC

AC working Voltage	230Vac 50Hz Single Phase
Voltage Protection	Programmable
Overvoltage Setting Range	220Vac-290Vac
Low voltage Setting Range	150Vac-219Vac
Voltage Recovery time Setting Range	1s-256s
Self consumption	≤5W
MCB	16A
AC supply connection	1A

## Others

Dimensions(W*H*D)	310*200*93.5
Install	Wall Mounted
Weight	3.8kG
LED	PV and Grid Working Lights
Working Temperature	-20°C to 50°C
IP	IP20 / IP67 available
Enclosure	Mild Steel Powder Coated

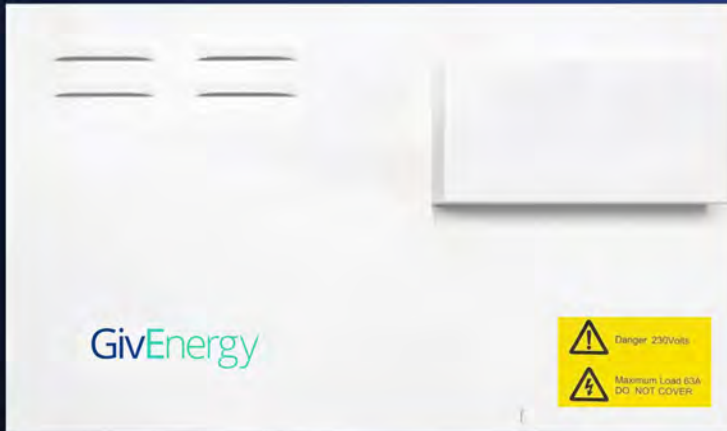
## Warranty

5 Years Parts Only



# Voltage Optimiser

3 Tap (Selectable)  
Giv-VO-360



- ◆ Digital display to show the output voltage
- ◆ Built in Voltage protection
- ◆ Prevent wear on appliances caused by electrical over supply and power surges
- ◆ Simple installation
- ◆ Works with, and improves the efficiency of, heat pumps and PV systems
- ◆ Thermal Protection
- ◆ Admendmant 3 compliant
- ◆ Manufactured to the highest British manufacturing standards
- ◆ Saves money on your electricity bills

# Specification

3 Tap (Selectable)  
Giv-VO-360

Description	GIV-VO-360 Domestic Voltage Optimisation Unit
Input(Volts)	Nominal input voltage 230v + 10% - 6%, 50 Hz, Single Phase AC
Output(Volts)	Nominal input voltage less 6, 12 or 18V (selectable)
Max Load	14.4kW
Dimensions	450mmx280mmx110mm
Weight	Approximately 18kgs
Operating Temperature	-5°c to + 55°c
Terminal Capacity	Incoming Both Live and Neutral=35.0mm2 Outgoing Both Live and Neutral=35.0mm2
Miniature Circuit Breaker	63Amp 6kA Type to BS EN 60898
Enclosure	Mild Steel Power Coated
Ingress Protection	IP20
Cable Entry	Bottom - 2x25mm compression glands
Standards	MCBs to BS EN 60898

Warranty

The Giv-VO-360 voltage optimisation unit is guaranteed for a period of 5 years from date of purchase. This warranty is limited the replacement of faulty components only.



Voltage  
Reduced &  
Stabilised



Electricity  
bills cut



# GivEnergy



# Metering EM418

single phase energy meter-100A-Modbus- Multi-rates



- ◆ MID approved with appendix "B" and "D" certification
- ◆ Single phase metering 4 din modules
- ◆ Direct metering up to 100A
- ◆ LCD display, 6 integer 2 decimal, meter display when power fails
- ◆ Clear green backlight display
- ◆ S0 pulse output
- ◆ Modbus RTU with 16 bit CRC
- ◆ 1,2,3 and 4 tariff meter option
- ◆ Accuracy class B according to EN50470-3
- ◆ Accuracy class 1 according to IEC62053-21
- ◆ Memory back-up (EEPROM)
- ◆ Import / Export / Generation and Consumption
- ◆ NET Metering to comply with OFGEM regulations on Co-Located Storage

## Characteristics

Type of measurement	Voltage, Ampere, kW, kvar, PF, Hz, +kWh, -kWh, ΣkWh, -kvarh, +kvarh
Rated current	100A
Rated Voltage	230V
Frequency (Hz)	50 or 60Hz
Maximum current	100A
Maximum value measured	999999.99kWh
Power consumption	<2W 10VA
Current terminals flexible 1×mm <sup>2</sup>	0-16mm <sup>2</sup>
RS485 cable	AWG18
another terminal flexible 1×mm <sup>2</sup>	0-2.5mm <sup>2</sup>

## Time of use

Rates	0~4
Separate Import & Export Registers	585
Programmable special days	64
Time-keeping accuracy	<0.5S/day
Power off clock running time	>5 years

## Modbus serial comms

Protocol	Modbus RTU with 16 bit CRC
Baud Rate(bps)	1200,2400,4800,9600(default)
Bus loading(pcs)	< 4%

## Dimension

Width (mm)	76
Height (mm)	104.5
Depth (mm)	60

## Environmental

Operating temperature	-25°C - +55°C
Storage temperature	-40°C - +70°C

# Specification

EM418



GivEnergy

# Metering EM115

single phase energy meter-45A-Modbus



- ◆ MID approved with appendix "B" and "D" certification
- ◆ Single phase metering 4 din modules
- ◆ Direct metering up to 100A
- ◆ LCD display, 6 integer 2 decimal, meter display when power fails
- ◆ Clear green backlight display
- ◆ S0 pulse output
- ◆ Modbus RTU with 16 bit CRC
- ◆ 1,2,3 and 4 tariff meter option
- ◆ Accuracy class B according to EN50470-3
- ◆ Accuracy class 1 according to IEC62053-21
- ◆ Memory back-up (EEPROM)
- ◆ Import / Export / Generation and Consumption
- ◆ NET Metering to comply with OFGEM regulations on Co-Located Storage
- ◆ With bi-directional energy measurement, this meter is ideal for solar PV energy metering. Direct/CT connection



## Characteristics

Type of measurement	Voltage ,Ampere ,kW, PF,H z , +kWh , -kWh ,L kWh
Rated current	5A
Rated Voltage	230V
Frequency (Hz)	50 or 60Hz
Maximum current	45A
Maximum value measured	999999.99kWh
Power consumption	<1.3W 0.01 VA
Current terminals flexible 1×mm2	0-16mm2
RS485 cable	AWG18
another terminal flexible 1×mm2	0-2.5mm2

## General Data

Pulse width(ms)	80
Pulse constant(imp/kWh)	10000
Pulse2 constant(imp/kWh)	0.001/0.01/0.1/1
LED constant(imp/kWh)	10000

## Dimension

Width (mm)	18
Height (mm)	104.5
Depth (mm)	88

## Environmental

Operating temperature	-25°C - +55°C
Storage temperature	-40°C - +70°C



# Specification

EM115



# Dongle

Wi Fi / GPRS



- ◆ Free communication choices through Wi-Fi, GPRS or RS485
- ◆ Flexible monitoring through GivEnergy App, tablets and PC
- ◆ Fast trouble shooting through USB, webserver
- ◆ Flexible Online web monitoring
- ◆ Real time monitoring when used with the APP
- ◆ Wifi, Mobile Data or Hardwired Ethernet connections available
- ◆ Monitoring points every 5 minutes.

# Specification

WiFi / GPRS

## GPRS Module

Port type	USB
SIM card type	Micro
Frequency range	GSM 900 - 1800 MHz
Antenna gain	3.0 dBi
Operation voltage	5 V
Operation current	400 mA
Instantaneous Max. power	< 2 W
Statics power	< 1 W

## General Data

Dimension (W/H/D)	79/135/29 mm
Weight	63 g
Operation temperature	-250C ~ +550C
Certification	FCC/CE
Warranty	1 year

## Wi-Fi Module

Wireless type	802.11.b/g/n
Frequency range	2.412GHz ~ 2.484GHz
Antenna gain	2.5 dBi
WLAN default IP	192.168.10.100
Default server URL	server.GivEnergy.cloud

## Security

Security mechanism	WEP/WPA-PSK/WPA2-PSK/WAPI
Encryption	WEP64/WEP128/AES/TKIP

## General Data

Max. communication distance	50m (Through one wall)
Dimension (W/H/D)	79/135/29 mm
Weight	63 g
Operation temperature	-250C ~ +550C
Certification	FCC/CE
Warranty	1 year



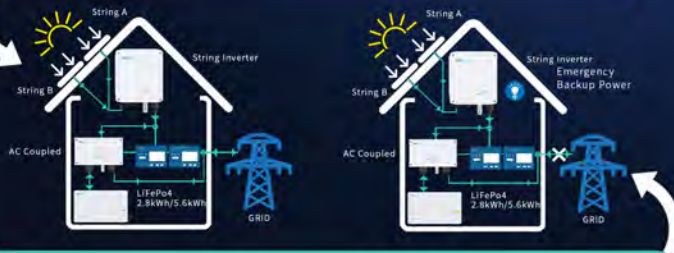


# Home Systems

## Operating Modes

### Day time mode

The inverter will divert PV generated power into the home to assist the demand. If the PV generation is higher than the demand the excess will be stored in the battery and/or exported to grid. If the demand in the home spikes (for example turning on a kettle) and the PV generation isn't enough on its own to meet this demand the battery will discharge to assist the PV so that very little energy is imported from the grid.

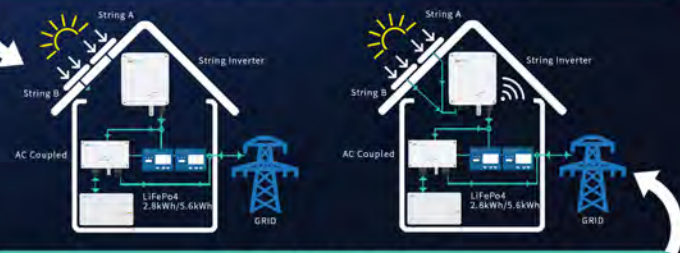


### Evening mode

When the PV is not generating due to insufficient light levels the system will monitor the demand and discharge the battery at the required level to minimise imported energy and to reduce demand on the grid at peak times.

### Night time (Economy 7) mode

Our systems can be set to recharge at cheap off peak rate energy to be used at peak times. This is extremely useful in Winter when there isn't as much PV production.



### Emergency back up mode

Our systems can be installed so that if you suffer a loss of power to the home our system will automatically switch over to power your lighting and other essential circuits

### Demand Side Response

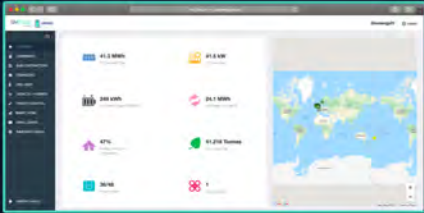
There is an option in our software to allow remote data collection/ analytics. This gives vital information to utility providers and can allow a high level of indication to when demand will occur. The system can also be operated remotely via wireless communication and can allow network operators access to balance the community loads at peak times and replace at off peak times, without any user intervention.

# Home Systems

## Monitoring Portal



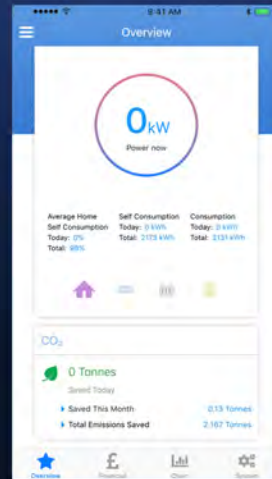
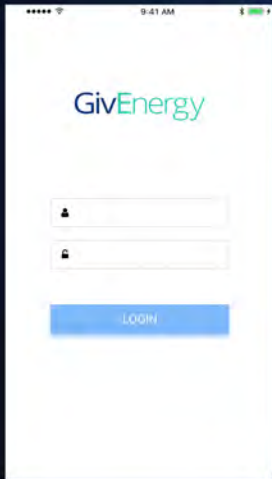
- ◆ Complete monitoring of all energy modes: Import, Export, Generation & Consumption.
- ◆ Web portal or APP access anywhere and anytime
- ◆ Real time monitoring and data with integrated smart meter
- ◆ Monitor PV array parameters
- ◆ Monitor battery information, SoC, warranted throughput
- ◆ Remote Control access for charging/discharging (DUoS, TnUoS, ToU, Off Peak)
- ◆ Remotely charge battery parameters



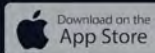
We have the control logic and monitoring platform that we believe to be the best on the market, we spend thousands of hours speaking with our clients to improve each version and allow us the greatest flexibility. This affords us the time to research and develop the best outcomes for our clients. Please feel free to look at our monitoring and control portal.

# Mobile App

IOS & Android



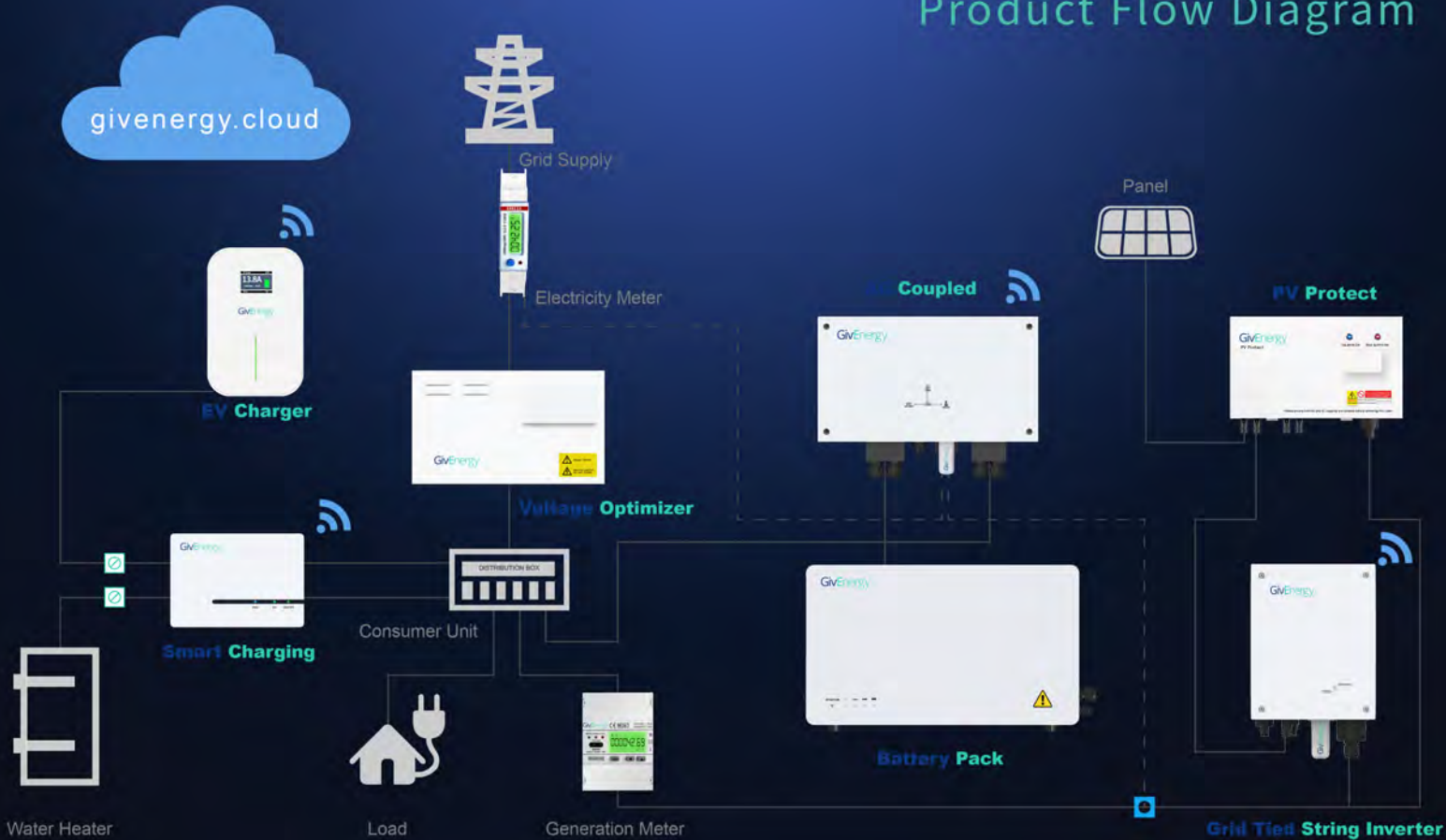
App Available to download from



# GivEnergy



# Product Flow Diagram



# GivEnergy

Energy Storage  
For  
Commercial, Industrial and Grid



GivEnergy

# SME- Small to Mid Sized Enterprise Energy Storage System

67.2Kwh / 50Kw Cabinet



- ◆ Using the latest LiFePO4 prismatic cell technology
- ◆ Smart EMS for integration of renewables
- ◆ Up to 1C charge and discharge rate
- ◆ 3 Phase 400v Installation
- ◆ Plug & Play Battery Packs, each 9.6kWh
- ◆ Multi Layer BMS for cell management - can be used to shift peak demand (DUOS), system allowing greater control and functionality
- ◆ Remote monitoring & control
- ◆ Local control via LED screen
- ◆ Scalable in 67.2kwh cabinet upto 201.6Kwh
- ◆ Available in 30/50/100kW Models
- ◆ Fully Recyclable at end of life
- ◆ IP20



AC Specifications	GivPCS-30	GivPCS-50	GivPCS-100
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Wiring Methods		Three Phase Five Wires	
Nominal Power Capacity	30kW	50kW	100kW
Maximum Power	33kVA	55kVA	110kVA
Nominal Grid Voltage		400V	
Voltage Range (Grid Tied)		400V+ 10%(settable)	
Voltage Range (Off Grid)		400V±5%	
Nominal Current	44A	72A	144A
Maximum Current	48A	79A	158A
Nominal Frequency		50Hz	
Frequency Range		47-51.5 (settable)	
THDi		<3% (Nominal Power)	
Power Factor		0.9 (Leading)-0.9 (Lagging)	

DC (Battery) Specifications			
-----------------------------	--	--	--

Nominal Power	30kW	50kW	100kW
DC Voltage Range		0V-900V	
Full Load Voltage Range		350V-850V	
Nominal Current	91A	150A	150A
Stabilized Voltage Precision		±1%	
Stabilized Current Precision		±2%	

PCS System			
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Maximum Conversion Efficiency	0.95	0.955	
Weight	490KG	600KG	850KG
Dimensions		Standard 19" 42U	
Altitude		5000 meter(Derated when>3000 meter)	
IP Grade		IP20	
Noise		<65dB	
Operating Temp Range		- 35°C~+45°C	
Storage Temp Range		- 40°C~+10°C	
Cooling Method		Forced Cooling	
Humidity		0-95%	
Communication		Enthernet, RS485, CAN2.0	

Others			
--------	--	--	--

Phase Imbalance Operating Capability		100%	
Parallel Capability		Yes	

Battery			
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Battery Pack		8.448kWh Standard 19"	
Battery Pack Voltage		76.8Vdc	
Battery Rack		59.1kWh Standard 19" 42U	
Battery Rack Voltage		537.6Vdc	
Rack Scaleable		Yes	

# Specification

67.2Kwh / 50Kw Cabinet



# Rack Mounted Battery

125kWh - 1.25MWh



- ◆ 9.6kWh packs based on 61.5Ah
- ◆ Modular plug and play packs
- ◆ Easy to Install
- ◆ LiFePO4 Battery cell Technology
- ◆ Can be used to charge from Grid or Surplus Renewable generation i.e solar, wind, hydro
- ◆ Built in multi layer BMS for precise cell monitoring and balancing
- ◆ Intergrated EMS allow multiple monitoring points
- ◆ 0.5c - 1c charge / discharge rate
- ◆ Modular packs, Modular racks for desired capacity
- ◆ Full monitoring and control through GivEnergy.Cloud



GivEnergy

# Specification

## Rack Mounted Batteries



### Battery Rack

Nominal Voltage	665V
Maximum Charge Voltage	759V
Cut-off Discharge Voltage	600V
Nominal Current	165A
Energy	125kWh
Power	109.8kW
Dimensions	800*600*2140mm
BMS	Robust multi point monitoring BMS pre installed
Life cycling (80% DOD, 25°C)	10years
Operation temperature	-20°C~55°C
Storage Temperature	-30°C~60°C
Standard	UN 38.3, IEC61000

### Per Rack

61.5Ah

1,	125kWh
2,	250kWh
3,	375kWh
4,	500kWh
5,	625kWh
6,	750kWh
7,	875kWh
8,	1000kWh
9,	1125kWh
10,	1250kWh

For Larger rack mounted systems, please contact [Technical@givenergy.co.uk](mailto:Technical@givenergy.co.uk)



# 3 Side Door Terminal Support Unit

Energy Storage System



- ◆ Bridge Power Gaps in Generation
- ◆ Modular 72kWh Battery Packs
- ◆ Backup Power for Grid Upgrades and Planned Maintenance
- ◆ Peak shaving and load shifting
- ◆ PF Regulation and Voltage Support
- ◆ Time of use ready
- ◆ DUoS- Green, Amber, Red rates
- ◆ TnUoS- Triad Avoidance
- ◆ UPS (Optional)
- ◆ Easy installation - External rack mounted

# 3 Side Door Terminal Support Unit

Energy Storage System

## Battery Cell LiFeP04

Capacity	61.5Ah
Voltage	3.2V
Charging method	Constant current + voltage
Temperature	
Charging	0°C~45°C
Discharging	-20°C~50°C
Short time	
Discharging/30min	-20°C~55°C
Storage	20°C~40°C
Transportation	-40°C~50°C
Weight	1.15±0.01kg
Energy Density	157/170±10Wh/Kg
Maximum Charging	2C charging
Discharging rate	3C discharging
Resistance	0.65mΩ ±5%

## Battery Pack

Cell	48 pcs
Connection Method	3P16S
BMU	1pcs
Nominal Voltage	51.2Vdc
Voltage Range	32.0-58.4Vdc
Capacity	165Ah(185Ah)
Energy	72kWh
Maximum Continuous Discharge Power	72kW
Nominal charge current	330A
Charge Method	CV/CC/CP
Cut-off Voltage	58.4Vdc
Cut-off Current	8.25A
Rated Discharge Current	165A
Standard Discharge Method	CC
Temperature Working Range	0°C~40°C



GivEnergy

# Terminal Support Unit

## Energy Storage System

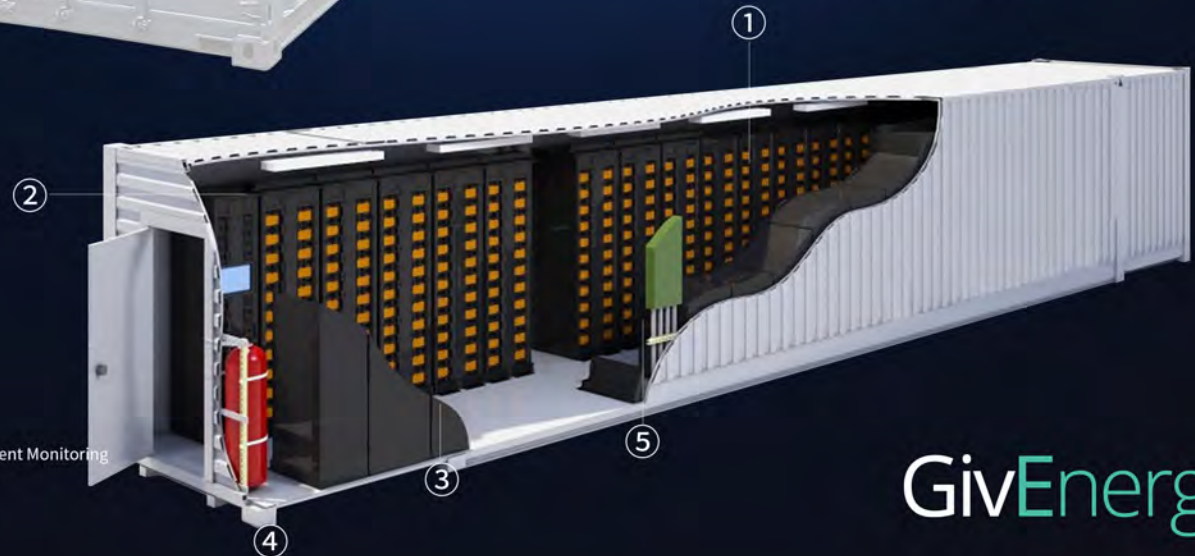


10Ft TSU 125kWh-375kWh

20Ft TSU 375kWh-1000kWh

40Ft TSU 1000kWh-2500kWh

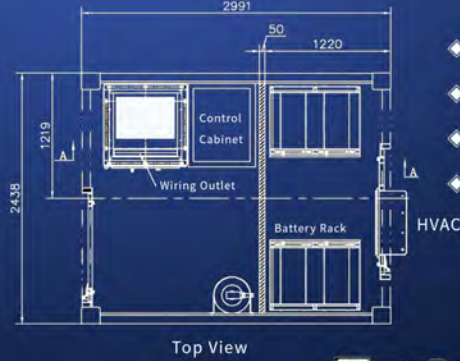
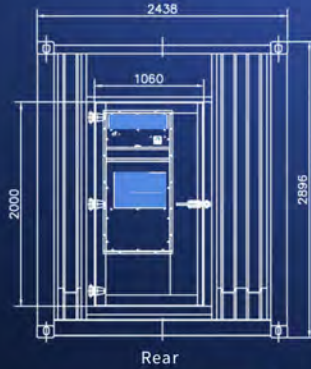
- ◆ Bridge Power Gaps in Generation
- ◆ Backup Power for Grid Upgrades and Planned Maintenance
- ◆ Peak shaving and load shifting
- ◆ PF Regulation and Voltage Support
- ◆ Time of use ready
- ◆ DUoS- Green, Amber, Red rates
- ◆ TnUoS- Triad Avoidance
- ◆ UPS (Optional)



- ① Battery Pack
- ② Power Conversion System
- ③ Central Control and Environment Monitoring
- ④ Fire Suppression Equipment
- ⑤ Industrial Air Conditioning



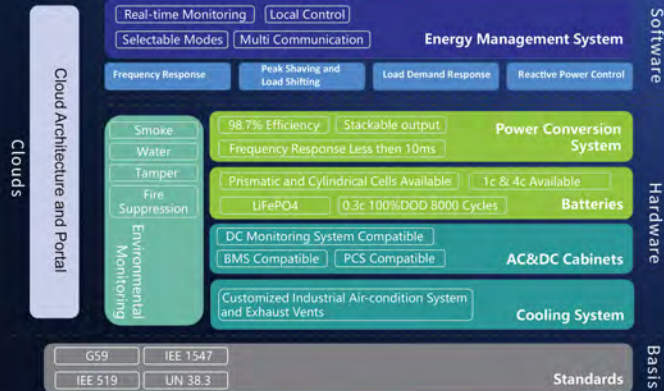
# 10ft Container ESS



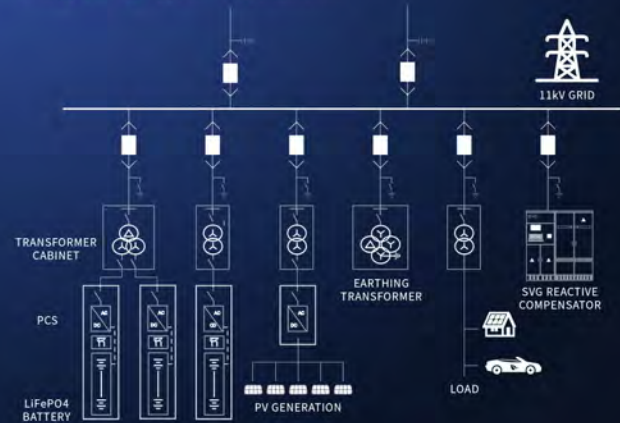
- ◆ Fire Suppression system
- ◆ Full HVAC System Install
- ◆ BMS-Building Management System
- ◆ Fully customizable to your requirements



## Integration



## Energy Storage System Applications



# Commercial Battery Cells, Packs and Racks

## Battery Cell LiFeP04

Capacity	61.5Ah
Voltage	3.2V
Charging method	Constant current + voltage
Temperature	
Charging	0°C~45°C
Discharging	-20°C~50°C
Short time	
Discharging/30min	-20°C~55°C
Storage	20°C~40°C
Transportation	-40°C~50°C
Weight	1.15±0.01kg
Energy Density	157/170±10Wh/Kg
Maximum Charging	2C charging
Discharging rate	3C discharging
Resistance	0.65mΩ ±5%

## Battery Pack

Cell	48 pcs
Connection Method	3P16S
BMU	1pcs
Nominal Voltage	51.2Vdc
Voltage Range	32.0-58.4Vdc
Capacity	165Ah(185Ah)
Energy	9.6kWh
Maximum Continuous Discharge Power	16.9KW
Nominal charge current	330A
Charge Method	CV/CC/CP
Cut-off Voltage	58.4Vdc
Cut-off Current	8.25A
Rated Discharge Current	165A
Standard Discharge Method	CC
Temperature Working Range	0°C~40°C
Weight	75kg

## Battery Rack

Nominal Voltage	665V
Maximum Charge Voltage	759V
Cut-off Discharge Voltage	600V
Nominal Current	165A
Energy	125kWh
Power	125kW
Dimensions	800*600*2140mm



GivEnergy



# Commercial OEM Installations



PCS Cabinet  
BMS Cabinet



BMS Display



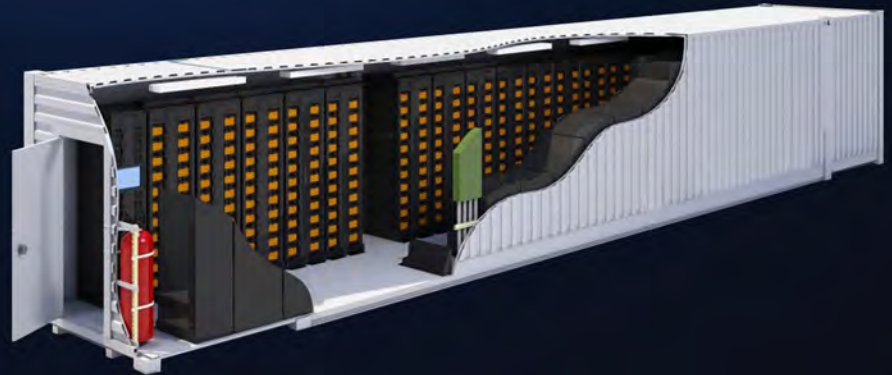
Fire Suppression



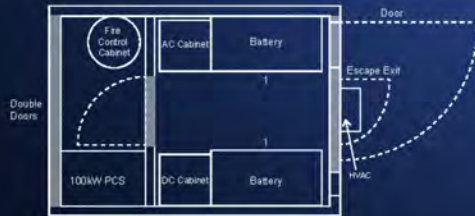
Battery Rack



HVAC



## 10' Container Solution



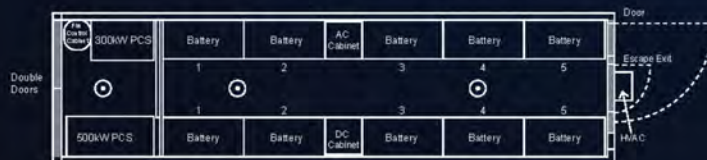
Standard 10' Container Solution  
11.1×8.0×9.5 feet  
100kW / 218kWh or 100kW / 327kWh

## 20' Container Solution



Standard 20' Container Solution  
19.9×8.0×9.5 feet  
100kW / 436kWh or 250kW / 763kWh

## 30' Container Solution



Standard 30' Container Solution  
29.9×8.0×9.5 feet  
500kW / 1MWh or 750kW / 1.6MWh

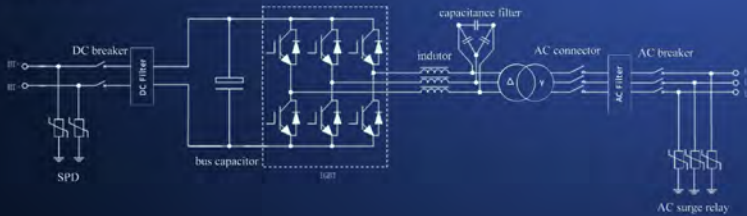
## 40' Container Solution



Standard 40' Container Solution  
40×8.0×9.5 feet  
1MW / 1MWh or 1MW / 2MWh

# Bi-Directional PCS

## Hardware



100kW Power Conversion System



500kW Power Conversion System



- ◆ Hybrid design, on-grid, off-grid and energy storage function combined
- ◆ Bidirectional conversion available
- ◆ Autonomous energy management system
- ◆ Intelligent charging function
- ◆ Multi source renewable integration
- ◆ Black start-up compatibility
- ◆ Autonomous phase balancing
- ◆ Online seamless handover between on-grid and off-grid modes.
- ◆ Active and reactive power control (instantly)
- ◆ Support various loads type, independently or mixed
- ◆ Comprehensive and high precision operation and fault monitoring and recording



# Specification

PCS

Model	GivPCS-100	GivPCS-250	GivPCS-500
AC connection method	Three-phase three-wire	Three-phase three-wire	Three-phase three-wire

## Parameters in battery side

Rated power	100kW	250kW	500kW
DC voltage range	500V~900V	500V~900V	500V~900V
DC voltage range of full power	500V~850V	500V~850V	580V~850V
Rated running current	207A	517A	880A
Voltage stabilizing accuracy	≤1%	≤1%	≤1%
Current stabilizing accuracy	≤2%	≤2%	≤2%

## Parameters in battery side

Rated power	100kW	250kW	500kW
Max capacity Rated	110kVA	275kVA	550kVA
grid voltage	400V	400V	400V
Voltage range (gird-connected)	400V+10%(Adjusteable)	400V+10%(Adjustable)	400V+10%(Adjustable)
Voltage range(off gird)	400V±5%	400V±5%	400V±5%
Rated current	145A	362A	721A
Max running current	159A	398A	794A
Rated grid frequency		50HZ	
Frequency range		47-51.5 (Adjustable)	
THDv		<3% (rated power)	
Power factor		0.9(lead)-0.9(lagging)	

Protection	GivPCS-100	GivPCS-250	GivPCS-500
Low voltage ride through		Yes	
Anti-islanding mode		Yes (support planned Island)	
AC over current/short circuit protection		Yes	
AC over voltage/under voltage protection		Yes	
AC over frequency/under frequency protection		Yes	
Phase sequence fault protection		Yes	
DC over current/short circuit protection		Yes	
DC over voltage/under voltage protection		Yes	
DC reverse polarity protection		Yes	
Over temperature protection		Yes	
Insulation protection		Yes	
Power module(IGBT) protection		Yes	

System	GivPCS-100	GivPCS-250	GivPCS-500
Max conversion efficiency	0.97	0.97	0.987
Dimension(W*H*D)	807mm*1976mm*860mm	1010mm*1976mm*650mm	1406mm*1976mm*650mm
Weight	930kg	940kg	950kg
Altitude		5000m	
Protective class		IP23	
Noise		<65dB	
Operating temperature		-35°C~+45°C	
Storage Temperature		-40°C~+70°C	
Cooling		Forced Air cooling	
Relative humidity		0-95%, Non- condensing	
Communication		Ethernet, RS485, CAN2.0, Modbus, Bacnet	

## Introduction

The Battery Management System (BMS) comprises of the following items:

(BMU) Battery Module Monitoring Unit. This is used to monitor each 9.6kWh pack and monitors the cell voltages and temperatures of each cell within the pack.

(BCMS) Battery Cluster Management Unit. This is used to monitor all 8.448kWh packs within a rack. This also monitors Pack voltages, Pack Temperatures and monitors SoC of each pack when charging and discharging.

(DMU) DC Monitoring Unit. This monitors the central DC BUS and controls the upper and lower voltage limits of the battery pack.

(BAMS) Battery Rack Automatic Management System. This is the Heart of the control system and is used to read all battery packs in regards to voltages, currents, SoC. This unit also control the charge and discharge rates of the battery packs, manages pack voltages and temperatures and adjusts safety/grid parameters accordingly.



BAMS

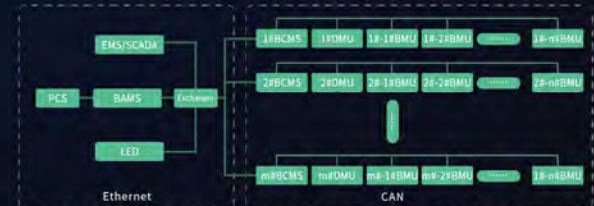
## Production

- ◆ SoC high protection
- ◆ SoC low protection
- ◆ Rack overvoltage protection
- ◆ Rack undervoltage protection
- ◆ Rack overcurrent protection
- ◆ Single cell overvoltage protection
- ◆ Single cell undervoltage protection
- ◆ Single cell overcurrent protection
- ◆ Single cell over temperature protection
- ◆ Single cell low temperature protection
- ◆ Short circuit protection
- ◆ Fire protection

## Specification

Master BMS	
Name	Specifications
Voltage Range	18~32V
Cell Voltage	0~5V
Cell Voltage Error Range	≤ ±3mV
Voltage and Tep Acquisition Cycle	≤5ms
Current Acquisition Range	≤300A
Current Acquisition Error	≤ ±1%
Current Acquisition Cycle	≤1ms
Temperature Acquisition Error	≤ ±1°C
Temperature Acquisition Range	-20~60°C
Battery Balanced Current	2A
Communication with PCS	CAN
Communication with EMS	Ethernet
History Event Memory	≥100000 packet
History Store Memory	≥90 day

## Communication





# Technical Advantages

Certifications  
Clients



# Our Additional Services

## Site Survey

We offer a comprehensive site survey at the start of any commercial project to ascertain specific requirements to put together an accurate proposal.



## Installation

We offer full training and support on all of our products to our certified installer network. This in turn enables us to make sure that our products are fitted in accordance with BS 7671:2018 and to our requirements to validate the manufacturer warranty.



## Web Portal

Our bespoke, easy-to-use monitoring portal has different layers of access. As an end user you can monitor what your system is doing and see how much you are saving. As an Approved installer you will have 24hr access to [givenergy.cloud](https://givenergy.cloud) in order to manage your complete portfolio and perform remote system checks.



## Support / After care

Our UK-based Technical support team will ensure you are never more than a phone call away from all the support you need



# Our Installations around the world



OEM UK Installation



OEM Australian Installation



OEM Thailand Installation



OEM New Zeland Installation

GivEnergy are looking for worldwide distributors, please contact Carl at [carl.pote@givenergy.co.uk](mailto:carl.pote@givenergy.co.uk) if you are interested in distrubution outside of the UK



# About Our Company

GivEnergy is a manufacturer of electronic equipment designed to manage energy use and production. We specialise in our range of inverters and battery systems which have been developed to negate the need for costly infrastructure upgrades in Low Voltage areas.

Our systems use intelligent algorithms to peak shave and make the most of ToU and Economy 7 tariffs as well as storing excess-generated power from solar, wind etc to maximise self consumption.





# GivEnergy

Power & Energy



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