

PRODUCT BROCHURE



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Building a system

Our battery systems are comprised of 5 different parts.

1



Inverters

An inverter converts DC (direct current) electricity into AC (alternating current) and vice versa. Solar panels generate in DC and you use mains AC in your home. Batteries are also DC.

Available products:

- AC Coupled 3.0
- HY 3.6
- HY 5.0

2



Batteries

Battery storage allows you to store electrical energy from a generation source or off-peak tariffs to use when costs are higher or there isn't enough generation to cover demand alone.

Available products:

- Giv-Bat-ECO 2.6
- Giv-Bat 5.2
- Giv-Bat 8.2



Metering Solutions

Our meters are required to collect data to display energy values and to provide monitoring points for our system.

Available products:

- EM115
- EM418



Communications

Connect your devices to the GivEnergy Portal via WiFi or 4G and receive detailed information about your home energy usage, generation and battery.

Available products:

- WiFi Dongle
- 4G Dongle



Isolator

A DC Isolator switch is an electrical safety device that automatically disconnects itself in the event of a fault.

Available products:

- 100A

Hybrid Inverters

The GivEnergy Hybrid Inverter is a battery inverter and solar inverter in one unit. It can be coupled directly with solar panels to generate usable electricity in the property, as well as storing any excess energy for later use in a battery.

The battery is DC and AC coupled. DC Coupled allows the battery to charge efficiently from excess generation, whilst the AC Coupled charges from the grid using cheap rate electricity.

The Hybrid inverter aims to minimise export by storing excess energy in the battery during generation hours. Additionally, it will minimise import by discharging to meet demand in the property.

The Hybrid Inverter is compatible with flexible rate tariffs that fluctuate depending on time of day and wholesale prices. You can charge from the grid during off-peak times where rates are cheaper, and discharge the battery during peak times when energy is more expensive.

With an IP (Ingress Protection) rating of 65, the Hybrid Inverter can be installed inside and outside and is available in 3.6kW and 5kW forms.

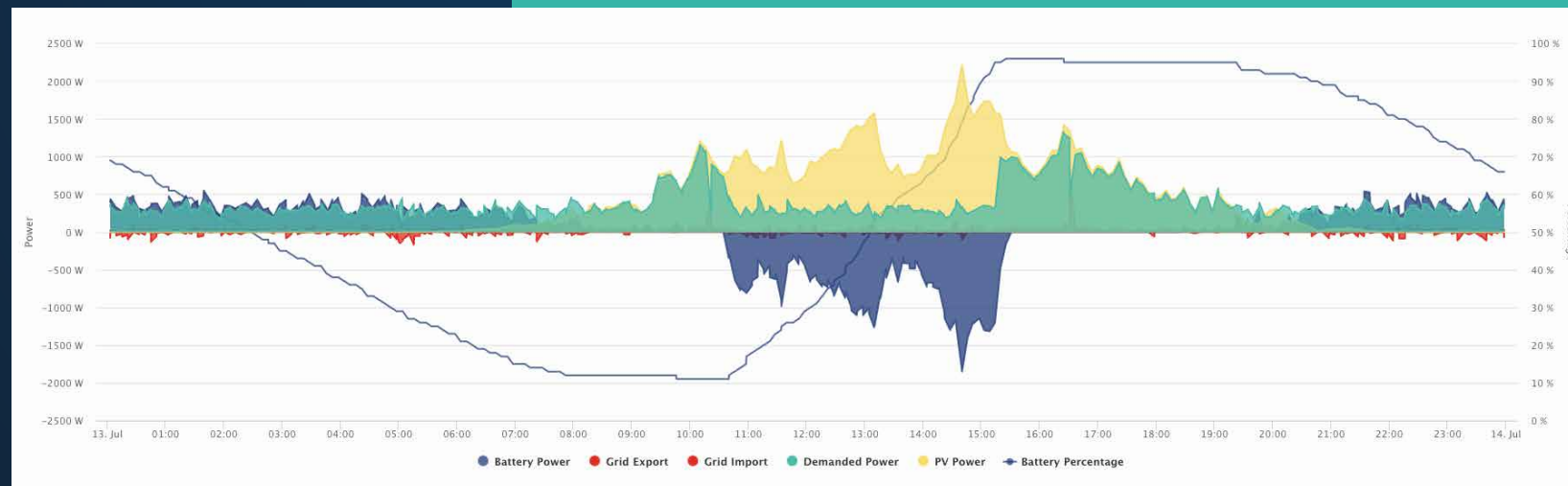
The inverter reports to the GivEnergy Portal, providing you with a detailed overview of your energy generation and usage.



How does a Hybrid Inverter work?

The graph below shows excess PV Power being stored in the battery during the day, ready to be used during the evening where demand is higher. Energy imported from the grid is minimal.

More information can be found at www.givenergy.co.uk.



Hybrid Inverter Specifications

Input Data (DC)

	Giv-HY 3.6	Giv-HY 5.0
Max DC Power	4500W	6500W
Max DC Voltage		58DV DC
Start Voltage		140V DC VOC - 12DV DC Vmpp
DC Nominal Voltage		36DV
PV Voltage Range		100V - 600V
MPPT Voltage Range		120V - 550V
Max Input Current per String		11A / 11A
Number of Independent MPPT Input		2

Output Data (AC)

Nominal AC Output Power	3680W	5000W
Max AC Apparent Power	3680VA	5000VA
Max Output Current	16.4A	21.7A
AC Range		180V - 280V AC
AC Grid Frequency Range		50 Hz; +5 Hz
Power Factor at Rated Power		1
Power Factor		0.9 Leading...0.9 Lagging
THDI		<3%
AC Connection	Single Phase (multiple units can be installed for 3 phase)	

Battery Power

Nominal Power	2600W
Max Charging / Discharging Current	50A / 50A

Backup Output

Max Power Output (Battery + Solar)	3600W	5000W
Max Power Output from Battery	2600W	2600W
Output Frequency	50 Hz	50 Hz
Output Voltage	230V	230V

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
Earth Leakage Current Monitoring	Yes

General Data

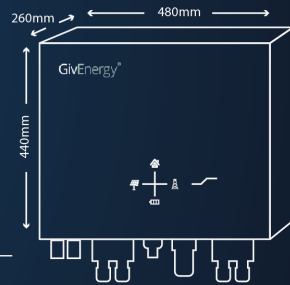
Weight	24 Kg
Operating Temperature Range	-25°C > 55°C (Ambient)
Consumption Operating (Standby) / Night	<5W / <0.5W
Topology	Transformerless
Cooling Concept	Natural
Environmental Protection Rating	IP65

Features

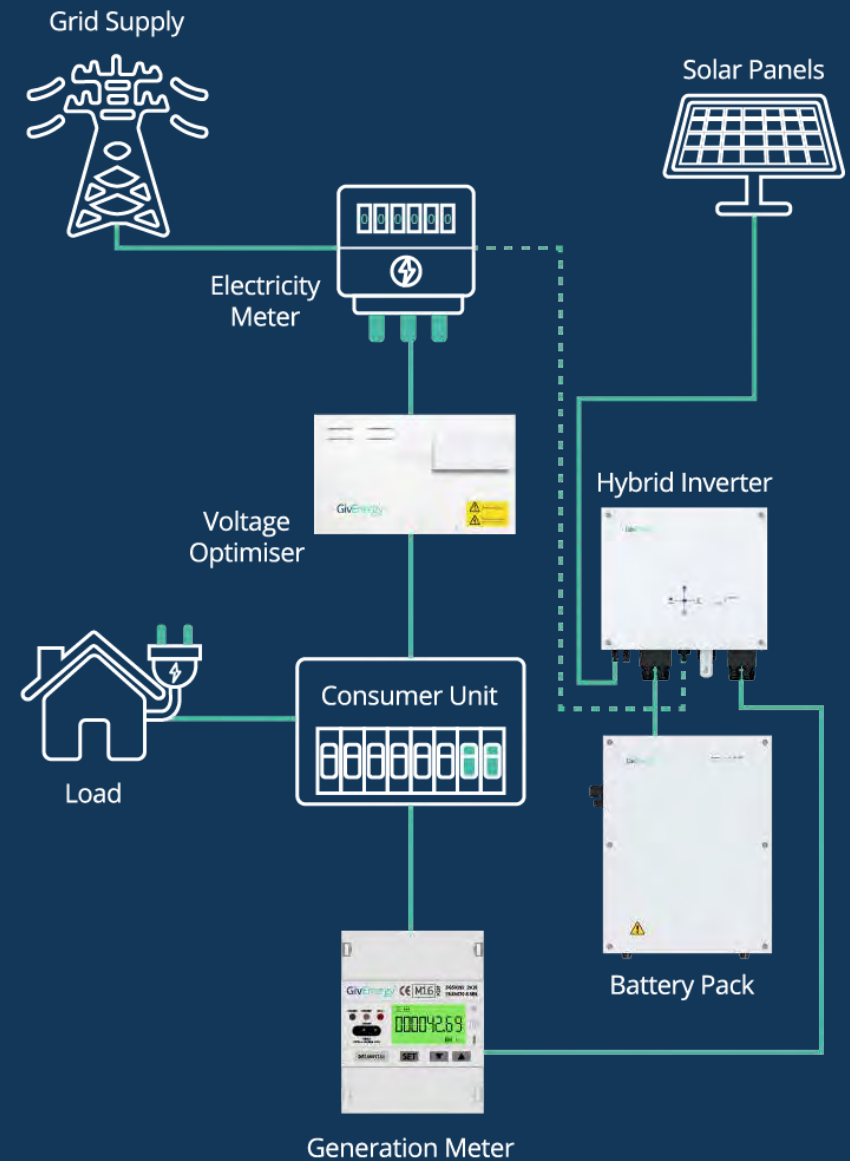
PV Connection	H4 / MC4
Battery Connection	Screw Terminal
AC Connection	Screw Terminal
Display	LED
Interfaces: WiFi / USB / GPRS / RS485 / 4G	Opt / Yes / Opt / Yes / Opt
Warranty: 5 Years / 10 Years	Yes / Opt

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, EN50549, SAA, TÜVG98/1-4: 2019, G98, G99, G100



How a Hybrid Inverter works



AC Coupled

Our AC Coupled Inverter works as a standalone energy storage system or works alongside solar, hydro, or wind-turbine to store excess energy.

Make the most of your split rate energy tariffs (e.g. Economy 7) by charging the battery at off-peak times when energy rates are cheaper and discharging during what would be the more expensive periods to reduce your energy bill.

By choosing a suitable battery size, you could benefit from cheaper rates of electricity all day.

Got a PV system with a feed in tariff? The AC Coupled system can be retrofitted to any form of generation without affecting any feed in tariff payments as it does not change the existing installation.

The inverter can charge from excess generation that would otherwise be sent back to the grid. It will then discharge to meet energy demand where generation is not enough alone.

By default, the system is configured to achieve 'Grid Neutrality', this is to efficiently minimise energy import and export and decrease the carbon footprint whilst reducing your energy bill.



Agile Octopus

GivEnergy has created an automated platform that is compatible with various multi rate tariffs, such as Octopus Agile.

With variable half-hourly energy rates, tied to wholesale prices, Agile Octopus rewards its customers for using more energy when the grid is chock full of green, renewable generated electrons, and less when the grid is at its dirtiest (usually between 4-7pm on weekdays).

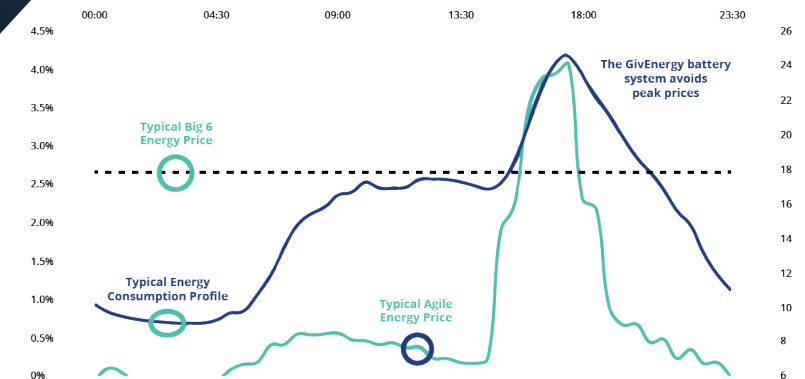


Image courtesy of Octopus Energy, via <https://octopus.energy/blog/agile-smart-grid/>

AC Coupled Specifications

Output Data (AC)

Nominal AC Output Power	3000W
Max AC Apparent Power	3000VA
Max Output Current	15A
AC Nominal Voltage; Range	202V - 262V
AC Grid Frequency; Range	50 Hz + 5 Hz
Power Factor at Rate Power	1
Power Factor	0.9 Leading...0.9 Lagging
THDI	<3%
AC Connection	Single Phase (multiple units can be installed for 3 phase)

Battery Power

Nominal Power	3000W
Max Charging / Discharging Current	60A / 60A

Backup Output

Output Rated Power	3000VA
Peak Power	3600VA, 10s
Output Voltage	230Vac +2%, 50Hz (60Hz Optional) +0.28. THDV<3% (Linear Load)

Efficiency

Max Efficiency	97.10%
Euro - ETA	96.5%

Protection Devices

Output Over Current Protection	Yes
Output Over Voltage 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
All Pole Sensitive Leakage Current Monitoring	Yes

General Data

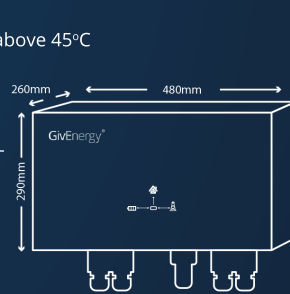
Weight	19 Kg
Operating Temperature Range	-25°C to 60°C with Derating above 45°C
Consumption: Operating (Standby) / Night	<5W / <0.5W
Topology	Transformerless
Cooling Concept	Natural
Environmental Protection Rating	IP65

Features

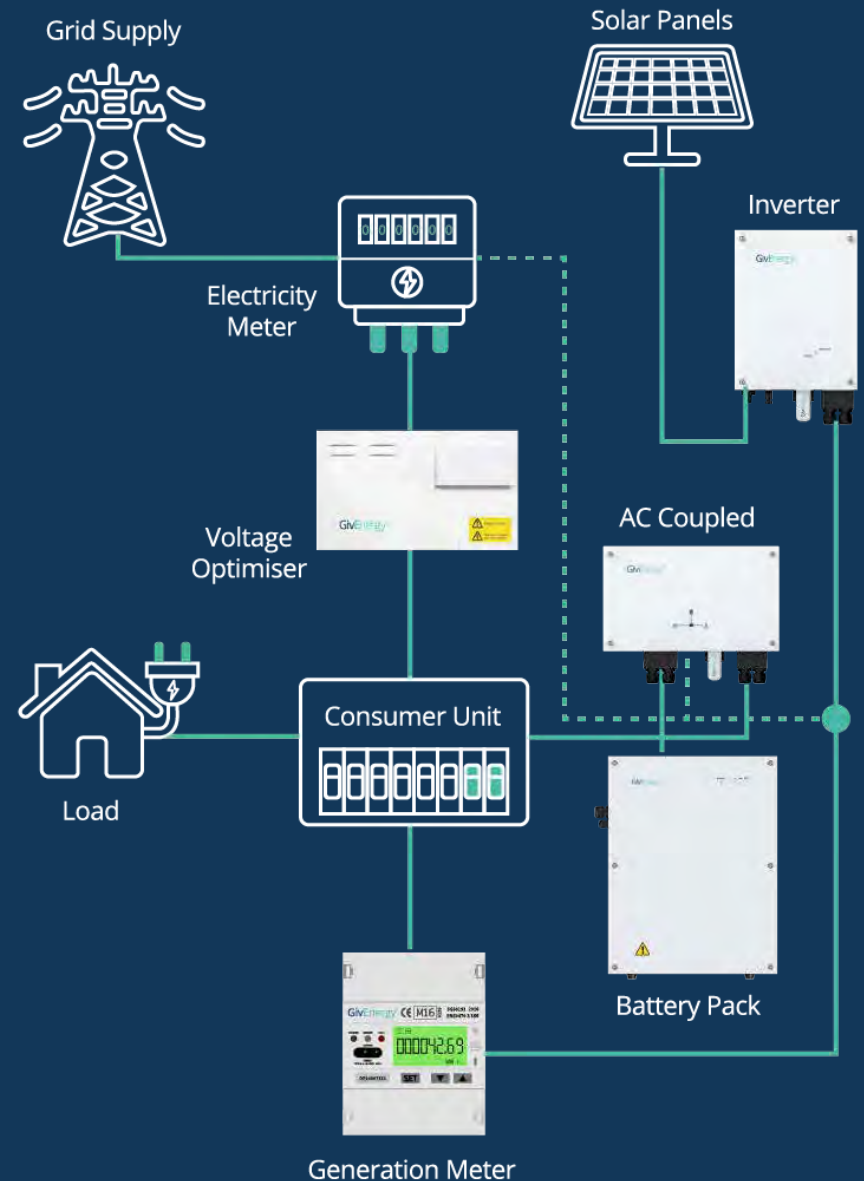
PV Monitoring	CT / Meter
Grid Monitoring	Meter
Battery Connection	Screw Terminal
AC Connection	Screw Terminal
Display	LED
Interfaces: WiFi / USB / GPRS / RS485 / 4G	Opt / Yes / Opt / Yes / Opt
Warranty: 5 Years / 10 Years	Yes / Opt

Certificates and Approvals

AA4777, VDE-AR-N4105, VDE0126, G98, G99, IEC2109-1-2, IEC62040, EN61000-6-2, EN61000-6-3, EN50549, G100



How an AC Coupled Inverter works



Giv-Bat 2.6



The 2.6kWh battery pack sits alongside our AC Coupled or Hybrid Inverter so that you can store energy from the grid or excess generation. Utilising lithium iron phosphate, our batteries are extremely safe and can be installed in a wide range of locations. Due to its light weight, it is ideal for installation in lofts and hard to access areas and can be banked together to increase capacity.

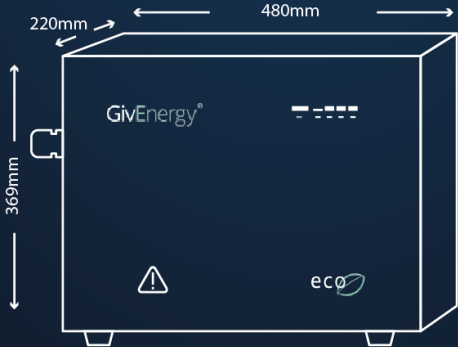
- Using the latest LiFePO₄ prismatic cell technology (>20yrs lifespan)
- 10 Year guarantee
- 0.5C (1300W) charge and discharge rate
- Active cell balancing
- Active BMS systems allowing greater control and functionality
- Remote firmware updates
- 90% depth of discharge
- Robust carry handles to aid with lifting and installation
- IP65 (suitable for loft and external installation)
- Wall mounted or floor standing

Model Bat 2.6

Capacity	2.6kWh / 51Ah
Voltage	51.2V DC
Current	30A Charge / Discharge
Technology	LiFePO ₄ Cell
IP Grade	IP65
BMS	Robust Multi Point Monitoring BMS Pre Installed
Life Cycling (90% DOD, 25°C)	10 Years
Operating Temperature	-10°C - 55°C
Storage Temperature	-30°C - 60°C
Warranty BTT	26MWh / 10 Years
Standard	UN 38.3, IEC61000
Weight	32 Kg

Electrical Parameters

Operating Voltage Range	43.2V - 58.5V DC
Maximum Charging Voltage	59V
Maximum Charging / Discharging Current	30A / 30A
Network Interface	RS485
Communication Protocols	Modbus
Advantages	Stackable, BMS Upgradeable, IP65
Depth of Discharge	90%



Giv-Bat 5.2



The 5.2kWh battery pack sits alongside our AC Coupled or Hybrid Inverter so that you can store energy from the grid or excess generation. Utilising lithium iron phosphate, our batteries are extremely safe and can be installed in a wide range of locations.

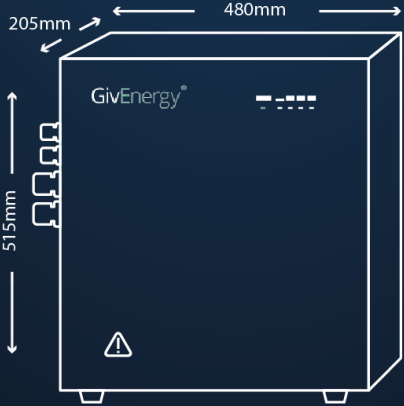
- Using the latest LiFePO₄ prismatic cell technology (>20yrs lifespan)
- 10 years guarantee
- 0.5C (2600W) charge and discharge rate
- Active cell balancing
- Active BMS systems allowing greater control and functionality
- Remote firmware updates
- 100% depth of discharge
- Robust carry handles to aid with lifting and installation
- Can be installed alongside other GivEnergy battery packs (Mix & Match)
- Wall mounted or floor standing

Model Bat 5.2

Capacity	5.2kWh / 102Ah
Voltage	51.2V DC
Current	60A
Technology	LiFePO ₄ Cell
IP Grade	IP65
BMS	Robust Multi Point Monitoring BMS Pre Installed
Life Cycling (90% DOD, 25°C)	10 Years
Operating Temperature	-10°C - 55°C
Storage Temperature	-30°C - 60°C
Warranty BTT	52MWh / 10 Years
Standard	UN 38.3, IEC61000
Weight	54 Kg

Electrical Parameters

Operating Voltage Range	43.2V - 58.5V DC
Maximum Charging Voltage	59V DC
Maximum Charging / Discharging Current	60A / 60A
Network Interface	RS485
Communication Protocols	Modbus
Advantages	Stackable, BMS Upgradeable, IP65
Depth of Discharge	100%



Giv-Bat 8.2 Unlimited



The 8.2kWh battery pack sits alongside our AC Coupled or Hybrid Inverter so that you can store energy from the grid or excess generation. Utilising lithium iron phosphate, our batteries are extremely safe and can be installed in a wide range of locations. Our market-leading battery warranty means you can use your battery as much as you want for 10 years and still be covered.

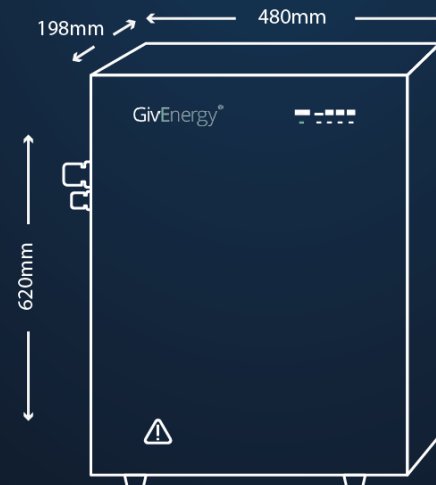
- Using the latest LiFePO₄ prismatic cell technology (>20yrs lifespan)
- 10 years unlimited cycle guarantee
- 0.5C (4100W) charge and discharge rate
- Active cell balancing
- Dual BMS systems allowing greater control and functionality
- Remote firmware updates
- 100% depth of discharge
- Robust carry handles to aid with lifting and installation
- Can be installed alongside other GivEnergy battery packs (Mix & Match)
- Wall mounted or floor standing

Model Bat 8.2

Capacity	8.2kWh / 160Ah
Voltage	51.2V DC
Current	85A
Technology	LiFePO ₄ Cell
IP Grade	IP65
BMS	Robust Multi Point Monitoring BMS Pre Installed
Life Cycling (90% DOD, 25°C)	10 Years
Operating Temperature	-10°C - 55°C
Storage Temperature	-30°C - 60°C
Warranty BTT	Unlimited Cycles / 10 Years
Standard	UN 38.3, IEC61000
Weight	94 Kg

Electrical Parameters

Operating Voltage Range	43,2V - 58.5V DC
Maximum Charging Voltage	59V DC
Maximum Charging / Discharging Current	85A / 85A
Network Interface	RS485
Communication Protocols	Modbus
Advantages	Stackable, BMS Upgradeable, IP65
Depth of Discharge	100%



Power Diverter

New to our range of products, the GivEnergy Power Diverter is designed to divert excess energy or cheap rate electricity to other devices instead of sending it back to the grid. It can be used with any GivEnergy battery storage systems or on its own.

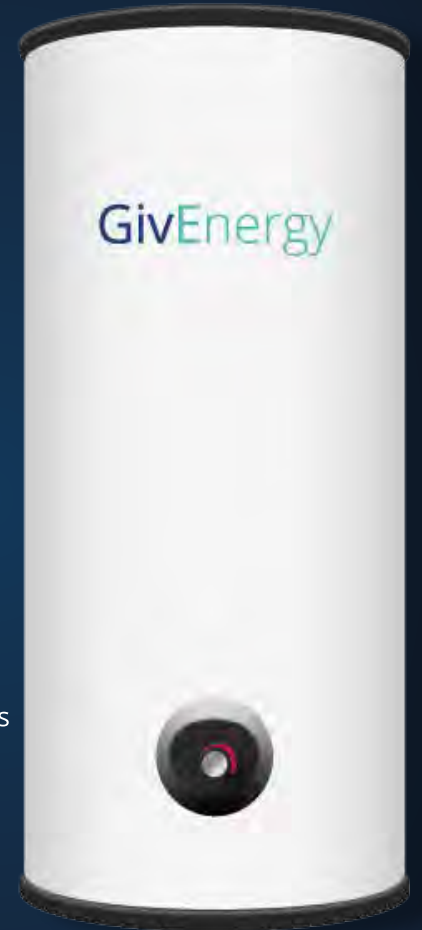
On its own, it can make use of split rate energy tariffs automatically and connects directly to the GivEnergy Portal.

The GivEnergy App and Portal provides an overview of your energy usage, generation and battery. If paired with our battery systems, you can prioritise utilisation of excess energy or split your energy between the two systems.



Our GivEnergy power diverter boasts a maximum power of up to 16A. It comes with a remote monitoring and override feature, giving you full control of your water. It is compatible with our GivEnergy inverters and any resistive load.

- Up to 16A Maximum power
- Pulse width modulation
- IP20
- Remote monitoring
- Override feature
- Compatible with GivEnergy inverters
- Compatible with any resistive load



PV Protect

The PV Protect offers the ability to switch off the DC cables in your house when the mains is isolated.

The DC energy runs through the device before entering the inverter. In the event of a grid outage, it will disconnect the solar DC from the inverter, ensuring that there are no live DC cables running through the property. It acts as a fireman's switch to isolate DC in an emergency, and allows emergency services (if required) to enter the property through the roof without risk of electric shock.

The PV Protect is a mandatory type device for those wishing to claim the SEAI grant in Ireland.

- Fully compliant with SEAI
- Dual MPPT input 800V 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



Input Data (DC)

DC Input Min/Max Voltage
DC Nominal Current
Max DC Short Circuit Current
Terminals
MPPT

50V - 800V
20A per string
750A
MC4-IP65
2 (In and Out)

AC

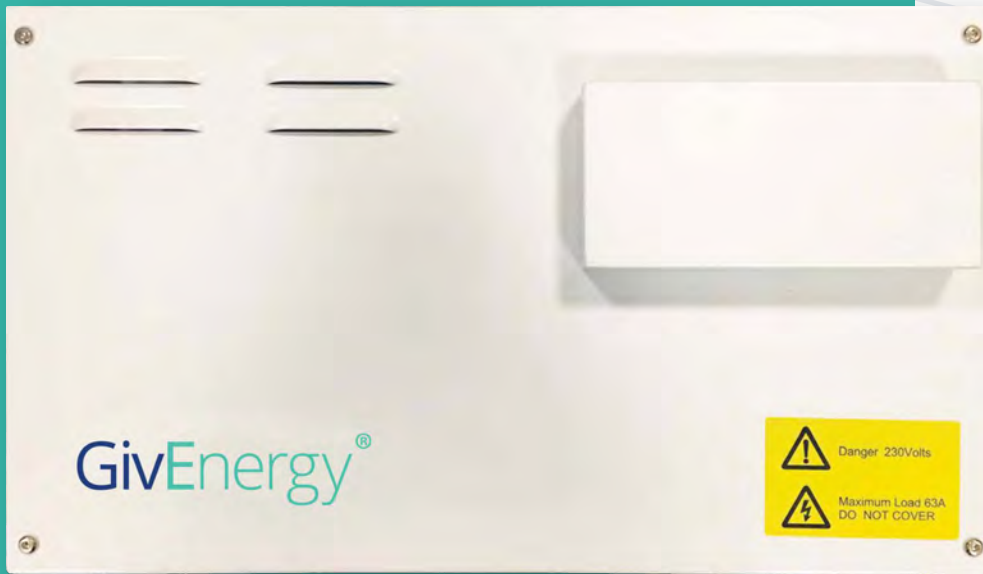
AC Working Voltage
Voltage Protection
Overvoltage Setting Range
Low Voltage Setting Range
Voltage Recovery Time Setting Range
Self Consumption
MCB
AC Supply Connection

230Vac 50 Hz Single Phase
Programmable
220Vac - 290Vac
150Vac - 219Vac
1s - 256s
<5W
6 to 16A
1A

Electrical Parameters

Dimensions (W x H x D) mm
Installation
Weight
Working Temperature
IP
Warranty

310 x 200 x 93.5
Wall Mounted
3.8 Kg
-20°C - 50°C
IP20 / IP67 Available
5 Years, Parts Only



Electrical Parameters

Input (Volts)

Output (Volts)

Max Load

Dimensions (W x H x D) mm

Weight

Operating Temperature

Terminal Capacity

Miniature Circuit Breaker

Ingress Protection

Cable Entry

Standards

Warranty

Nominal Input Voltage 230V + 10% - 6%, 50Hz, Single Phase AC
Nominal Input Voltage Less 6V, 12V or 18V (selectable)

63A

450 x 280 x 110

18 Kg

-5°C - 55°C

Incoming Live and Neutral
= 35.0mm²

63Amp 6kA Type to BS EN 60898

IP20

Bottom - 2 x 25mm
Compression Glands

MCBs to BS 60947-2

5 Years

Voltage Optimiser

The Voltage Optimiser is ideal for homes where the grid voltage is too high. It regulates the incoming power supply by reducing the voltage supplied to the optimum level, by a choice of either 6V, 12V or 18V. This helps to prolong the life of sensitive devices (TVs, laptops, etc) that run on a lower voltage through a transformer.

- Digital display to show output voltage
- Built in voltage protection
- Simple installation
- Thermal protection
- Prevents wear on appliances caused by electrical oversupply
- Amendment 3 Compliant
- Saves money on your electricity bills
- Works with, and improves efficiency of electronic devices
- Manufactured to the highest British manufacturing standards



Metering EM115



Characteristics

Type of Measurement	Voltage, Ampere, kW, PF, Hz, +/- kWh, L kWh, +/- kvarh
Rated Current	5A
Rated Voltage	230V
Frequency (Hz)	50Hz / 60Hz
Maximum Current	100A
Maximum Value Measured	999999.99kWh
Power Consumption	<1.3W 0.01VA
Current Terminals Flexible	1xmm ²
RS485 Cable	AWG18
Comms Terminal Flexible	1xmm ²
Pulse 1 Width (ms)	80
Pulse 1 Constant (imp / kWh)	1000
Pulse 2 Constant (imp / kWh)	0.001 / 0.01 / 1
Dimensions (W x H x D) mm	18 x 104.5 x 88
Operating Temperature	-25°C - 55°C
Storage Temperature	-40°C - 70°C

The GivEnergy EM115 Meter is used as a monitoring point and is a Class 1 MID approved single phase Modbus energy meter with CT clamp, which can be used for direct metering up to 100A. Ideal for PV energy metering, this product offers bi-directional energy measurement and direct/CT connection. The meter features an LCD display with a clear green backlight.

- MID approved when used with solid core CT to appendix 'B' and 'D' certification
- Single phase metering 1 din modules
- Direct metering up to 100A
- LCD display, 6 integer, 2 decimal, meter display when power fails
- Clear green backlit display
- Bi-directional energy measurement this meter is ideal for Solar PV energy metering
- Solid or split CT options
- 50 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 IEC62052-21
- Memory back-up (EEProm)
- Import / export generation and consumption
- NET metering to comply with OFGEM regulations on co-located storage



Metering EM418

The GivEnergy EM418 Meter is a Class 1 MID approved billing meter. It can be used in conjunction with GivEnergy's inverters for generation and import/export. It allows energy providers and PPA providers to gather generation data remotely. It features a large screen and buttons for ease of use.

- MID approved with appendix 'B' and 'D' certification
- Single phase metering 4 din modules
- Direct metering up to 100A
- Clear green backlit display
- LCD display, 6 integer, 2 decimal, meter display when power fails
- 50 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 IEC62052-21
- Memory back-up (EEProm)

Characteristics

Type of Measurement
 Rated Current
 Rated Voltage
 Frequency (Hz)
 Maximum Current
 Maximum Value Measured
 Power Consumption
 Current Terminals Flexible 1xmm²
 RS485 Cable
 Comms Terminal Flexible 1xmm²

Voltage, Ampere, kW, PF, Hz, +/- kWh, L kWh
 100A
 230V
 50Hz / 60Hz
 100A
 999999.99kWh
 <2W 10VA
 0 - 16mm²
 AWG18
 0 - 2.5mm²

Time of Use

Rates
 Separate Import / Export Registers
 Programmable Special Days
 Time-Keeping Accuracy
 Power Off Clock Running Time
 Dimensions (W x H xD) mm
 Operating Temperature
 Storage Temperature

0~4
 585
 64
 <0.5s / Day
 >5 Years
 76 x 104.5 x 60
 -25°C - 55°C
 -40°C - 70°C

Modbus Serial Comms

Protocol
 Baud Rate (BPS)
 Bus Loading (PCS)

Modbus RTU with 16 Bit CRC
 1200, 2400, 4800, 9600 (Default)
 W <64

Dongles

Our GivEnergy dongles are available as WiFi or 4G for our Inverters and Power Diverter.

WiFi – Connect your devices to the internet with our WiFi dongle and allow your devices to seamlessly interact with each other. Update your firmware over-the-air effortlessly. Our dongles are supplied as part of our standard packages.

4G – Our SIM enabled dongles allow our devices to connect using 4G, 3G, and GPRS. Suitable for social housing providers or where WiFi is not available. Data allowances vary depending on the chosen package.

- Flexible monitoring through the GivEnergy App and Web Portal
- Built in flash memory
- IP65



4G Module

Port Type
 SIM Card Type
 Frequency Range
 Antenna Gain
 Operation Voltage
 Operation Current
 Instantaneous Max. Power
 Statics Power

USB
 Micro
 GSM 900 - 1800 MHz
 3,0dBi
 5V
 400 mA
 <2W
 <1W

WiFi

Wireless Type
 Frequency Range
 Antenna Gain
 WLAN Default IP
 Default Server URL

802.11b/g/n
 2.412GHz - 2.484GHz
 2.5dBi
 192.168.10.100
 Server.GivEnergy,Cloud

Security

Security Mechanism
 Encryption

WEP / WPA-PSK / WPA2-PSK / WAPI
 WEP64 / WEP128 / AES / TKIP

General Data

Max. Communication Distance
 Dimensions (W x H x D) mm
 Weight
 Operation Temperature
 Certification
 Warranty

50m (Cross One Wall)
 79 x 135 x 29
 63 grams
 -25°C - 55°C
 FCC / CE
 5 Years

GivEnergy Monitoring Portal

The GivEnergy Monitoring Portal gives you full control over your energy. Featuring a customisable interface, your dashboard is unique to you. Display your energy data exactly how you want on your phone, tablet or computer.

Smart Integration

Monitor all of your electronic devices in one place with Smart Integration. Integrate third party products with the GivEnergy Portal and control your devices from anywhere.

EV Compatible

Control your electric vehicle (EV) charger from the dashboard. Monitor and select your charge point, and display the latest information about your vehicle.

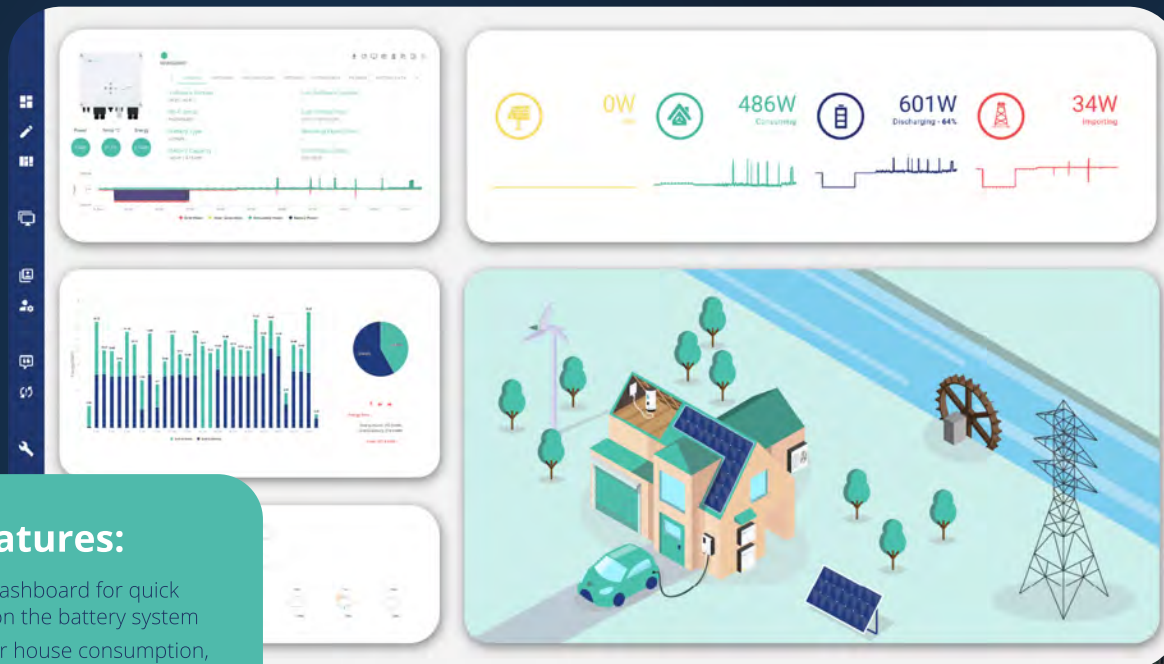
Key Features:

- Easy to use dashboard for quick information on the battery system
- Easily monitor house consumption, grid usage and solar generation
- Monitor state of charge and battery health
- Graphs displaying your power usage and energy usage
- Zoom into graphs to view detailed power values
- Remotely control your system and battery to charge/discharge
- Integrate with Octopus Agile, Go and Go Faster

Agile Octopus Optimised

Charge your battery during off-peak times, discharge when energy rates are more expensive, or sell any excess back to your energy provider*. Maximise your battery's potential with an Octopus Energy smart tariff and configure your energy usage around your lifestyle.

** An export agreement must be in place with your energy provider in order to sell energy to them.*



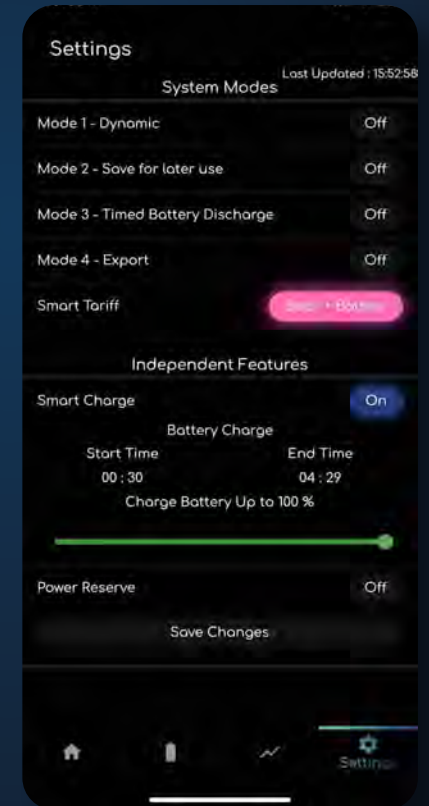
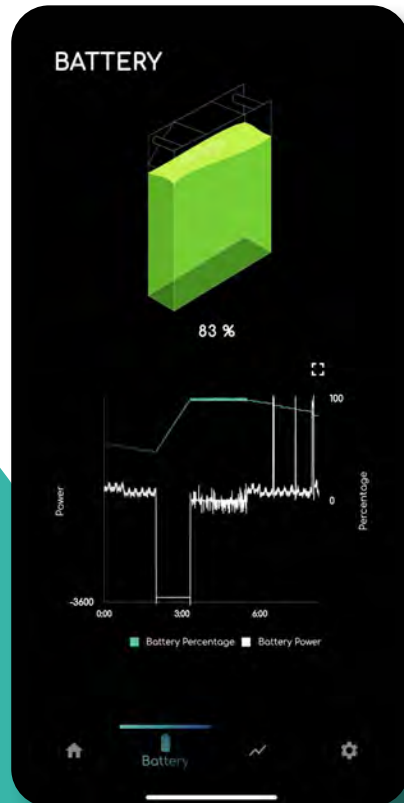
GivEnergy App

The GivEnergy App provides basic information about your Home Energy Demand, Solar PV Generation, Grid Import Energy and GivEnergy Battery Usage.



Save on the go

Control your energy while you tend to your daily tasks and have free peace of mind that your energy is being used efficiently while inside and outside of your home.



Available FREE from



GivEnergy[®]

Call: 01377 252 874
www.GivEnergy.co.uk

Unit C4, Fenton Trade Park, Dewsbury Rd, Fenton Industrial
Estate, Stoke-on-Trent, ST4 2TE
