



## Renewable Energy Solutions





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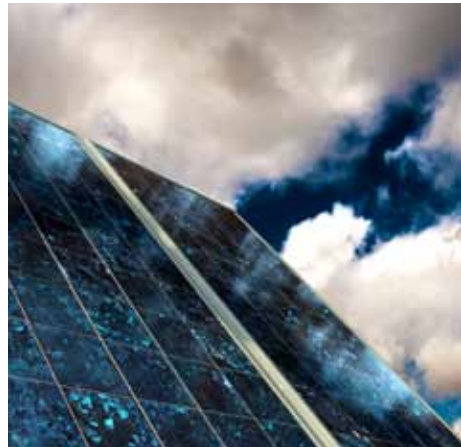
**For generations we have been reliant upon energy derived from fossil fuels, to satisfy the insatiable demand for energy by our expanding global economies.**

The resultant, relentless depletion of our world's resources has had devastating consequences for our natural environment and is widely recognised as the single biggest issue that we face today. Governments across the globe are committed to supporting technologies that provide an alternative for the future and enable both consumers and business to play their part.

MCG is at the forefront of providing solutions that enable this to happen. Our range of Wind Turbines, Solar Panels and Inverters are suitable for both domestic and commercial use and equip you with the means to dramatically reduce your carbon footprint.

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# What Is The Feed-In Tariff?

Feed-in Tariffs (FITs) were introduced into Great Britain and passed through the House of Lords on 1st April 2010.

The scheme guarantees a minimum payback for all electricity generated by the system, as well as a separate payment for the electricity exported to the grid.

These payments are in addition to the bill savings made by using the electricity generated on-site.

Once you have a microgeneration technology installed, in this case Photovoltaic or Wind, you should experience a monthly reduction in your electricity bill and then receive an income from your Feed-In Tariff provider.

Feed-In Tariffs are designed so that the average monthly income from your installation will be significantly greater than your monthly loan repayment (with a 25 year agreement for solar and 20 years for Wind).

If you are eligible to receive the FIT then you will benefit in 3 ways:

## 1. Generation tariff

A set rate paid by the energy supplier for each unit (or kWh) of electricity you generate (up to 41.3p per kW for PV). This rate will change each year for new entrants to the scheme (except for the first 2 years), but once you join you will continue on the same tariff for 20 years, or 25 years in the case of solar electricity (PV).

## 2. Export tariff

You will receive a further 3p/kWh from your energy supplier for each unit you export back to the national grid, that is when it isn't used on site. The export rate is the same for all technologies.

## 3. Energy bill savings

You will be making savings on your electricity bills, because generating your own electricity to power your appliances means you don't have to buy as much electricity from your energy supplier. The amount you save will vary depending on how much of the electricity you use on site.



Domestic FIT installations are likely to have their export estimated at 50% in most cases, until Smart meters are rolled out.

All generation and export tariffs are linked to the Retail Price Index (RPI) which ensures that each year they follow the rate of inflation.

- These tariffs are only available if installed by a certified installer under the MCS (Microgeneration Certification Scheme).
- Once installed contact your energy supplier and send them your MCS certificate to tell them you are eligible to receive FITs.
- If the system has been installed by an uncertified installer you will be unable to claim any of the FIT. You will, however, still benefit from lower energy bills and may well be able to negotiate some form of generation and export tariff from your energy supplier privately.
- The tariff levels will be reviewed by the government in 2013/14.



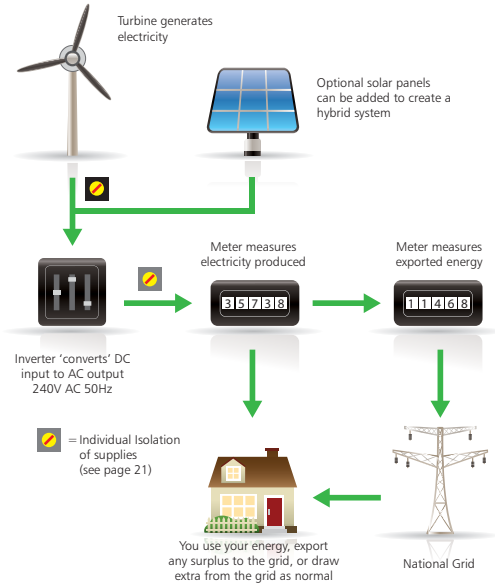


Tech	Scale	Tariff level for new installations in scheme year period (p/kWh)										Tariff lifetime (years)
		1 4/2010 to 3/2011	2 <3/2012	3 <3/2013	4 <3/2014	5 1/05/2015	6 <3/2016	7 <3/2017	8 <3/2018	9 <3/2019	10 <3/2020	
PV	≤4 kW (New Build <sup>†</sup> )	36.1	36.1	33.0	30.2	27.6	25.1	22.9	20.8	19.0	17.2	25
PV	≤4 kW (Retrofit <sup>†</sup> )	41.3	41.3	37.8	34.6	31.6	28.8	26.2	23.8	21.7	19.7	25
PV	4-10 kW	36.1	36.1	33.0	30.2	27.6	25.1	22.9	20.8	19.0	17.2	25
PV	10-100 kW	31.4	31.4	28.7	26.3	24.0	21.9	19.9	18.1	16.5	15.0	25
PV	100 kW - 5 MW	29.3	29.3	26.8	24.5	22.4	20.4	18.6	16.9	15.4	14.0	25
PV	Stand-alone <sup>†</sup>	29.3	29.3	26.8	24.5	22.4	20.4	18.6	16.9	15.4	14.0	25
Wind	≤1.5 kW	34.5	34.5	32.6	30.8	29.1	27.5	26.0	24.6	23.2	21.9	20
Wind	1.5-15 kW	26.7	26.7	25.5	24.3	23.2	22.2	21.2	20.2	19.3	18.4	20
Wind	15-100 kW	24.1	24.1	23.0	21.9	20.9	20.0	19.1	18.2	17.4	16.6	20
Wind	100-500 kW	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	20
Wind	500 kW - 1.5 MW	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	20
Wind	1.5-5 MW	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	20

<sup>†</sup>“Retrofit” refers to installation on a building which is already occupied; “New Build” implies an installation on a new building before first occupied; “Stand-alone” refers to an installation which is not attached to a building and not wired to provide electricity to an occupied building.

# How Does It Work?

## Typical Grid-Connected Installation



## Small On-Grid connection

Directly connected to the National Grid's mains electricity supply, renewable solutions reduce the consumption of electricity from the grid. If sufficiently large they also enable the export of power back to the grid, when power generated exceeds demand at the site, providing the prospect of revenue from the utility companies.

With domestic or other small scale systems, the wind turbine or PV system is linked to the grid via "grid-connect" inverters.

These devices transform the electricity generated by the wind turbine or PV panels into mains voltage AC, synchronised precisely with the voltage and frequency of the grid. The inverter also performs various safety functions, constantly monitoring the grid and switching off in the event of a fault or major fluctuation in supply.

The output of the inverter is connected directly to a fuse box - feeding wind or PV generated electricity into the building's conventional electricity supply. Electricity generated by the turbine is used within the building first with any surplus fed into the grid. Solar panels can be added to create a hybrid system.



## Course Overview

### City and Guilds 2372 (Solar PV Training)

This course is mainly aimed at qualified electricians who are seeking to obtain the skills to install grid connected domestic photovoltaic systems that are either integrated into the built environment, or 'retro fitted' to an existing domestic property.

This course has been developed specifically to address the underpinning knowledge and the specialist installation skills required for domestic solar photovoltaic installations, and concentrates on typical, commercially available PV panel installations. Other topics covered in the course will include specific areas in the Building Regulations, MCS certification, FIT's and Codes of Practice related to PV systems.

The Department of Energy and Climate Change supports the recognition of providing the necessary training to ensure that the right qualified personnel are in place to meet the UK's carbon reduction targets.

### Course pre-entry requirements

We thoroughly recommend that all delegates who are interested in attending this course are practicing electricians, preferably with experience in testing and inspecting, and therefore have the appropriate and required qualifications that relate to Solar PV installations. You will need as a minimum, an up to date 17th Edition qualification.

City and Guilds 2382-10 (Level 3 Certificate in the requirement of electrical installations BS 7671 2008)

City and Guilds 2382-20 (Level 3 Certificate in the requirement of electrical installations 16th to 17th edition BS 7671 2008) or equivalent - you will also need to have a qualification covering testing and initial verification – this would be evidenced by the delegate having successful passes in either

City and Guilds 2392-10 (Level 3 Certificate in fundamental inspection, testing and initial verification)

City and Guilds 2391 (Inspection and Testing).





## Course content

- Introduction to Solar Photovoltaic systems and how they work
- Applicable Standards, Regulations and other Codes of Practice
- PV system components
- MCS Certifications and other approvals
- Customer and client service
- Practical Site Surveying, including azimuth and horizon calculations and measurements, Insolation irradiance testing, typical FIT estimates and roof structure verification
- Health and Safety
- Typical roof structures, and roof photovoltaic panel fixing techniques, including working at heights in a simulated exercise
- Installation techniques for inverters, export meters, and any client PC interface
- PV System labelling
- G83/1 and G59/1 compliance and MCS certification
- Connection to consumer unit/distribution board
- Testing including measurements of all circuit voltages, fault currents for modules, strings and arrays
- Solar Photovoltaic Panel Installation fault finding
- Inverter testing
- Final commissioning

## Assessments

City and Guilds 2372 is assessed with a written examination that has 20 'short' answer questions and 1 'long' answer question. The duration of the written examination is 1.5 hours. There is a further 2.5 hour practical assessment

## Other Information

City and Guilds 2372 leads to a nationally recognised accredited award upon successful completion of both the written and practical assessments. City and Guilds 2372 can be used by individuals for the purposes of obtaining MCS scheme certification, and can be used as evidence of an individuals training and technical ability to install and commission Solar PV systems.

City & Guilds will be superseding this course in 2011 with City & Guilds 2399 (Environmental Technology).

We can offer various locations around the UK for this course.

Place your booking through our website on [www.mcg-renewable.com](http://www.mcg-renewable.com)



## Solar Panels

MCG offer two types of solar panels.

Product Code	Type
SST195/72M	Monocrystalline
POWERPLUS 210P	Polycrystalline
POWERPLUS 215P	Polycrystalline
POWERPLUS 220P	Polycrystalline
POWERPLUS 225P	Polycrystalline
POWERPLUS 230P	Polycrystalline

Please view our website for full specifications on all varieties of solar panels.

Part No.	Watt	Size	Weight	DC Voltage	Amp	Efficiency
SST195/72M	195	1580 X 808 X 50	16Kg	45.1	5.34	18.23%
POWERPLUS210P	210	1615 x 986 x 46	22Kg	28.48	7.47	12.90%
POWERPLUS215P	215	1615 x 986 x 46	22Kg	28.77	7.56	13.21%
POWERPLUS220P	220	1615 x 986 x 46	22Kg	29.14	7.65	13.51%
POWERPLUS225P	225	1615 x 986 x 46	22Kg	29.50	7.72	13.82%
POWERPLUS230P	230	1615 x 986 x 46	22Kg	29.70	7.82	14.13%

Polycrystalline cells are composed of many crystallites of varying sizes and orientation. As such they are easier to produce than monocrystalline cells and can be manufactured into larger panels.

Monocrystalline cells are composed of single crystal and are, because of this, smaller but more efficient than its Polycrystalline counterparts.

Due to the increased efficiency these modules are better suited for the UK climates' low light levels as they can capture more of the sun's irradiance per square metre.

# Power Inverters

Power Inverters are available in these types -

## **Modified Sine Wave:**

These inverters are usually only found in the leisure and mobile markets for powering small appliances and battery charging.

## **Pure Sine Wave:**

These power inverters provide utility grade power and are the basis for inverters used with on-grid applications. The On-Grid synchronous inverters operate across a range from 50 Volts to 600 Volts DC to follow the output from the DC source of Photovoltaic Panels or Turbines and synchronise it to the Grid at a constant voltage and frequency.

## **Multi-String Inverter:**

Whenever the PV generator is exposed to differing irradiation conditions, it should be divided into separate strings. Dividing up the PV generator in this way avoids large losses in the yield since the individual sub-generators have different MPPs, (Maximum Power Point Tracker). A multistring inverter from SMA operates strings from PV modules with the same level of irradiation separately and each with its own MPP tracker thus ensuring maximum energy yield.





**Part No. SB1200**

**Max DC Power**  
**Max DC Voltage**  
**No of Strings**  
**Max efficiency**  
**AC Nominal power**  
**Nominal AC Voltage**  
**Dimensions WxHxD**  
**Weight**

1320W  
400V  
1 / 2  
92.1%  
1200W  
180 - 260V  
440 x 339 x 214mm  
23Kg



**Part No. SB1700**

**Max DC Power**  
**Max DC Voltage**  
**No of Strings**  
**Max efficiency**  
**AC Nominal power**  
**Nominal AC Voltage**  
**Dimensions WxHxD**  
**Weight**

1850W  
400V  
1 / 2  
93.5%  
1550W  
180 - 260V  
440 x 339 x 214mm  
25Kg



**Part No. SB2500**

**Max DC Power**  
**Max DC Voltage**  
**No of Strings**  
**Max efficiency**  
**AC Nominal power**  
**Nominal AC Voltage**  
**Dimensions WxHxD**  
**Weight**

2700W  
600V  
1 / 3  
94.1%  
2300W  
180 - 260V  
440 x 339 x 214mm  
28Kg





**Part No. SB3000**

Max DC Power  
Max DC Voltage  
No of Strings  
Max efficiency  
AC Nominal power  
Nominal AC Voltage  
Dimensions WxHxD  
Weight

3200W  
600V  
1 / 3  
95%  
2750W  
180 - 280V  
440 x 339 x 214mm  
32Kg



**Part No. SB2000HF**

Max DC Power  
Max DC Voltage  
No of Strings  
Max efficiency  
AC Nominal power  
Nominal AC Voltage  
Dimensions WxHxD  
Weight

2100W  
700V  
1 / 2  
96.3%  
2000W  
180 - 280V  
348 x 580 x 145mm  
17Kg



**Part No. SB2500HF**

Max DC Power  
Max DC Voltage  
No of Strings  
Max efficiency  
AC Nominal power  
Nominal AC Voltage  
Dimensions WxHxD  
Weight

2600W  
700V  
1 / 2  
96.3%  
2500W  
180 - 280V  
348 x 580 x 145mm  
17Kg



# Power Inverters



**Part No. SB3000HF**

**Max DC Power** 3150W  
**Max DC Voltage** 700V  
**No of Strings** 1 / 2  
**Max efficiency** 96.3%  
**AC Nominal power** 3000W  
**Nominal AC Voltage** 180 - 260V  
**Dimensions WxHxD** 348 x 580 x 145mm  
**Weight** 17Kg



**Part No. SB3300**

**Max DC Power** 3820W  
**Max DC Voltage** 500V  
**No of Strings** 1 / 2  
**Max efficiency** 92.1%  
**AC Nominal power** 3300W  
**Nominal AC Voltage** 180 - 260V  
**Dimensions WxHxD** 450 x 352 x 236mm  
**Weight** 38Kg



**Part No. SB3800**

**Max DC Power** 4040W  
**Max DC Voltage** 500V  
**No of Strings** 1 / 3  
**Max efficiency** 96.5%  
**AC Nominal power** 3800W  
**Nominal AC Voltage** 180 - 260V  
**Dimensions WxHxD** 450 x 352 x 236mm  
**Weight** 38Kg



**Part No. SB3000TL**

Max DC Power	3200W
Max DC Voltage	550V
No of Strings	1 / 2
Max efficiency	97%
AC Nominal power	3000W
Nominal AC Voltage	180 - 280V
Dimensions WxHxD	470 x 445 x 180mm
Weight	22Kg



**Part No. SB4000TL**

Max DC Power	4200W
Max DC Voltage	500V
No of Strings	2 / A:2 B:2
Max efficiency	97%
AC Nominal power	4000W
Nominal AC Voltage	180 - 280V
Dimensions WxHxD	470 x 445 x 180mm
Weight	25Kg



**Part No. SB5000TL**

Max DC Power	5300W
Max DC Voltage	550V
No of Strings	2 / A:2 B:2
Max efficiency	97%
AC Nominal power	4600W
Nominal AC Voltage	180 - 280V
Dimensions WxHxD	470 x 445 x 180mm
Weight	25Kg





## SUNNY BEAM Bluetooth wireless technology

### Part No. SUNNYBEAM/BT

The all-in-one service package for the home

Informative, compact, and easy to operate: Sunny Beam with Bluetooth doesn't just look good, it's an innovative monitoring solution. The key data is visible on its large graphic display: daily profile, current output, as well as daily and total energy yield. The performance of up to 12 inverters, the monthly overview, the energy yield in GB Pounds, and the CO<sub>2</sub> savings can all be accessed with one hand. Data for a minimum of 90 days is stored in the device and can be transmitted to a PC via a USB cable – without an additional program. In the event of errors, the Sunny Beam can also be set up to emit an acoustic signal.

### User-friendly

- Wireless table device with large, easily readable display
- USB interface for data transfer to PC

### Innovative

- Auto monitoring of up to twelve inverters via Bluetooth
- Power supply via integrated solar cell

### Easy to use

- Intuitive operation via rotary push button
- Easy to understand display of all key plant data

### Reliable

- Audio alarm in the event of faults
- Data archiving for at least 90 days in daily files and up to 12 monthly files in CSV format





# Mounting Systems



The Conergy SunTop III is a revolutionary system for PV modules on pitched roofs. Conergy has brought together over 10 years of field experience and German engineering to form the unique, patented aluminum base rails and Quickstone technology to enable easier and faster installations.

## Elegant Simplicity.

With Quickstone technology, the Conergy SunTop III offers both an elegant yet simple installation solution which can be mounted easily on any pitched roof with almost every kind of roof material. Once the fixing points are installed, the only installation tool you'll ever need is a simple Allen key.

## Significant Savings.

The Conergy SunTop III system's unique engineering and high level of pre-assembly will reduce your installation time significantly, as much as 40 % in some cases.

Additionally, with only a few rail lengths and the adjustable telescopic end piece, the Conergy SunTop III reduces inventory costs and hassles as well.

## Extensive module compatibility.

Almost every type of framed module available can be used with the Conergy SunTop III system.

## Excellent adaptability.

The height adjustment of the base rails from Conergy allows a level PV array to be established, no matter how uneven the roof.

## Engineered to high standards.

The Conergy SunTop III system design guidelines enable code-compliant installation in all wind regions in Europe. The Conergy SunTop III design tool removes the need for detailed, manual calculations; simply choose your appropriate terrain category and other parameters and the planning aid will provide you with a complete design to comply with AS/NZS 1170.

## Guaranteed durability.

All components are made of extruded aluminum and stainless steel. The high corrosion resistance ensures a long lifespan. Conergy provides a guarantee of 10 years on the durability of all components.

For further information, see our website on [www.mcgr-renewable.com](http://www.mcgr-renewable.com)



# Mounting Accessories



**Part No. 610-0519**  
Conergy Rail 13/58 0.6m



**Part No. 610-0526**  
Conergy Rail 13/58 1.2m



**Part No. 610-0536**  
Conergy Rail 13/58 1.8m



**Part No. 610-0545**  
Conergy Rail 13/58 2.4m



**Part No. 800-0525**  
Conergy Rail 13/58 3m



**Part No. 702-0067**

Module End Clamp 50mm



**Part No. 702-0070**

Module End Clamp 46mm



**Part No. 704-0003**

X-Stone 90° pre assembled



**Part No. 700-0019**

Module Clamp ST III Frames 32-46mm



**Part No. 720-0042**

66 Head Wood Screw 6 x 80mm



# Mounting Accessories



pantile roof



**Part No. 805-0010**

Standard Roof Hook 170STIII



plain roof



**Part No. 720-0097**

Plain Roof Hook



corrugated roof



**Part No. 720-0015**

Hanger Bolt



**Part No. 706-0024**

Telescoping 13/58



**Part No. 720-0030**

Kit: Anti-Slip Protection /10





**Part No. 720-0051**

Kit: Standard Connection Rail to Roof Hook /20



slate roof



**Part No. 805-0007**

Slate Roof Hook



**Part No. 601-0032**

L-brackets for Hanger Bolt M12 x 300mm



# SolarSimplex



Part No. SOLARSIMPLEX 4.2

Part No. SOLARSIMPLEX 6.2

Conergy SolarSimplex has been designed for simple, flexible and professional installation on flat roofs. The system consists of a plastic tub, two aluminium supporting bars and the necessary screws. Weighing only 4 kilograms, Conergy SolarSimplex is easy to stack and transport. Mounting is limited to packing the tub with ballast, gravel or paving stones, and attaching the supporting bars and modules.

### Flexible application:

SolarSimplex is primarily designed for gravel-covered flat roofs. However, it can also be used with virtually all types of common rough roof covering.

### Rapid mounting:

All components are pre-fitted according to the chosen PV module. Their light weight makes for simple and low-cost transportation to the roof. Integrated channels for cable routing further simplify assembly.

### Individual array:

The PV modules are placed individually, allowing the most diverse arrangements. As a result, SolarSimplex offers optimal adaptability to the given roof surface.

### High module compatibility:

The SolarSimplex allows easy flat roof mounting of virtually all conventional PV modules between 70 and 165 watt peak. For larger modules, an extension kit for the supporting rails can be obtained.

### Optimized design:

The space between the PV module and the Solar Simplex guarantees optimum rear ventilation. At the same time, the supporting bars guarantee good load transmission into the tub.



## Conergy SolarSimplex

<b>Installation Site</b>	Flat Roof
<b>Roof Cladding</b>	Suitable for almost all types of conventional rough roof cladding
<b>Tilt Angle</b>	25°
<b>Roof Load</b>	Subject to approval by structural engineer
<b>Height of Building</b>	Depends on wind zone and terrain category
<b>Solar Module</b>	Framed
<b>Module Arrangement</b>	Individual (One module per unit)

## Dimensions (in mm)

Model	A	B	C	D	Ballast
<b>SolarSimplex 2.1</b>	1,350	730	440	100	59kg
<b>SolarSimplex 2.2</b>	1,440	670	390	100	55kg
<b>SolarSimplex 2.3</b>	1,250	860	480	90	60kg
<b>SolarSimplex 4.1</b>	1,600	800	450	85	73kg
<b>SolarSimplex 4.2</b>	1,200	1,050	550	80	68kg
<b>SolarSimplex 6.2</b>	1,680	1,050	550	80	98kg

## Conergy SolarSimplex

<b>Module Orientation</b>	Flat Roof
<b>Size of Modular array</b>	Any size possible
<b>Position of Modular array</b>	Any position possible
<b>Plastic tray, Plastic through</b>	100% chlorine-free, recycled polyethylene (HDPE)
<b>Support Rails</b>	Extruded aluminium (ENAW 6060/6030)
<b>Small Parts</b>	Stainless Steel (V2A)
<b>Weight</b>	4 -5Kg



# Electricity Meters



**Single Phase**  
**Part No. LG5235**

The LG5235 is a single phase electronic meter and is intended for electric energy measurement and registration in single-phase two-wire networks in households. The meter is approved and manufactured in compliance with the IEC 62052-V, and ISO 9001 standards. It is designed according to extreme Iskraemeco's standards and is the result of our more than 50 years experience of meter manufacturing and fifty million meters installed worldwide.



**Single Phase**  
**Part No. ME162 RENEWABLE**

The ME162 single-phase electronic meter is intended for electric energy measurement and registration in single-phase two-wire networks in households. The meter is approved and manufactured in compliance with the IEC 62052-11, IEC 62053-21 (IEC 61036) standards and ISO 9001. It is designed according to extreme Iskraemeco's standards that are the result of our more than 50 years experience of meter manufacturing and fifty million meters installed worldwide.





**Single Phase**  
**Part No. A100C**

The successful Range of A100C meters from Elster Metering Systems provide a cost effective solution for one or two rate domestic applications. The A100C meter is housed in an extremely compact case. To further enhance security, the main meter cover is permanently secured to the base during the manufacturing process. The A100C has the option of IrDA or optical IEC 62056-21 communications.



**Three Phase**  
**Part No. ISK / MT171**

MT171- A three-phase active energy meter for households, belongs to a new generation of Iskraemeco meters. It gives advantages to all users in the process: Installer, Maintenance Engineer, Service Engineer, Readout Operator and Final User. The meter is approved and manufactured in compliance with the IEC 62052-1, IEC 6205312 (IEC 61036) standards, and ISO 9001 and designed according to even higher internal Iskraemeco standards, achieved through our experience from more than 50 years of meter manufacturing.

# Smart Meters

## Single Phase Part No. ISK / ME372

This is the UK Standard single phase multi-function meter with built-in GSM/GPRS modem for automatic meter reading and remote control. The GSM modem can be exchanged with an integrated RS485 interface for multi-site installations. This is achieved through RF connectivity, allowing up to 31 meters connected to one communication loop at a distance of up to 1200m. The meter is capable of measuring both the active (import) and reactive (export) energy flow directions. The meter is provided with a micro-master M-Bus interface for connection of up to four external metering devices, such as the P2G data logger.

AMR communication – GSM/GPRS/SMS: GSM modem is fully integrated into the meter. Comm. frequency: multiple bands are supported: 1800 MHz, 900 MHz, 800 MHz and 1900 MHz. A high performance antenna is integrated into the meter.

### Features:

- Fully integrated GSM Modem
- AMR on demand and alarm call backs
- CoP5 compatible
- 'Fit and Go' - Simple and Fast installation procedure
- Multi-utility input for water, heat or gas metres readings
- Power disconnection or limitation - integrated relay
- DSM: local or remote load control - integrated load relay
- Indication of operational status
- Tamper detection



## Three Phase Part No. ISK / ME375

This meter is targeted at deregulated energy markets and enables provision of an AMR service. It is a poly-phase meter intended for use in Commercial/Industrial and CoP5 applications.

The meter incorporates a fully integrated GSM modem. The integrated GSM modem can be exchanged with integrated RS485 communication interface for multi-site installations. It is a perfect combination of well-proven metering technology and state-of-the-art GSM communication modem, all integrated and sealed in a single enclosure. The integrated solution attains the same high quality and reliability of Iskraemeco meters. The meter is approved according to IEC 62052-11 and IEC 62053-21, ISO 9001, and designed to even higher internal Iskraemeco standards, based on 50 years of experience of meter manufacturing worldwide.

### Features:

- Fully integrated GSM modem
- AMR on demand and alarm call-backs
- CoP5 compatible
- 'Fit and go' – simple and fast installation procedure
- Multi-utility input for water, heat or gas meters reading
- Active/reactive, multi-rate metering
- Indication of operational statuses
- Very high EMC immunity



# AC & DC Isolators

## AC Isolators

Padlockable AC Isolator as required by G83 grid-connection regulations. All grid-connected generation systems (wind, PV, Hydro, CHP) must have G83 Grid-connection equipment, and must include a DC isolator on the DC side of the grid-tie inverter, and an AC isolator on the AC side of the grid tie inverter.



SMI25-3



3P25ASM



Product Code:	Rating		
	AC21 Amps	AC23A KW 415V	IP Rating
<b>3P20ASM</b>	20	5.5	IP66
<b>3P25ASM</b>	25	7.5	IP66
<b>3P32ASM</b>	32	11	IP66
<b>3P40ASM</b>	40	15	IP66
<b>3P63ASM</b>	63	22	IP66
<b>3P80ASM</b>	80	30	IP66
<b>3P100ASM</b>	100	37	IP66
<b>SMI20-3</b>	20	5.5	IP65
<b>SMI25-3</b>	25	7.5	IP65
<b>SMI32-3</b>	32	11	IP65
<b>SMI63-3</b>	63	22	IP65

## DC Isolators

All terminals will remain live during daylight hours, so it is important that it can be isolated during the system installation and any maintenance work. The switch has to be rated for the system voltage (string open circuit voltage  $V_{oc} \times 1.15$ ) and current (string short circuit current  $I_{sc} \times 1.25$ ).



2P25-450DC

2P16-450DC

Product Code:	Rating		
	Amps	DC21 Volts	IP Rating
<b>2P16-450DC</b>	16	450	IP66
<b>2P25-450DC</b>	25	450	IP66
<b>2P32-450DC</b>	32	450	IP66
<b>2P16-650DC</b>	16	650	IP66
<b>2P32-650DC</b>	32	650	IP66
<b>2P63-650DC</b>	63	650	IP66
<b>2P80-650DC</b>	80	650	IP66
<b>2P16-800DC</b>	16	800	IP66
<b>2P20-800DC</b>	20	800	IP66
<b>2P25-800DC</b>	25	800	IP66
<b>2P32-800DC</b>	32	800	IP66
<b>2P50-800DC</b>	50	800	IP66
<b>2P63-800DC</b>	63	800	IP66



## Accessories



**Part No: MC4 Connector Male**

MC4 Male Connector



**Part No: MC4 Connector Female**

MC4 Female Connector



**Part No: MC4 Branch Male**

MC4 Branch Male



**Part No: MC4 Branch Female**

MC4 Branch Female



**Part No: Crimp Tool 2.5-4mm**

Crimp Tool (MC3, MC4) 2.5/4mm



**Part No: Crimp Tool 2.5-6mm**

Crimp Tool (MC3, MC4) 2.5/4/6mm



**Part No: Installation Tool**

Multi Contact Installation Tool, PV-MS (MC4) For safe fixing and easy opening of the crimped pugs, sockets and connections.



**Part No: Installation Case**

Solar Installation Case, Contains all accessories and tools for installation on site. Usable for all types of cables and plugs.





**PV Array DC Junction Box.**

**DANGER - contains live parts during daylight.**

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MC00002

**Part No: SPV1**

PV ARRAY JUNCTION BOX Label, PV Array d.c. junction box. Danger - Contains live parts during daylight



**DO NOT disconnect DC plugs and sockets under load.**

**Turn off AC supply first.**

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MC00003

**Part No: SPV2**

DO NOT DISCONNECT Label, Do not disconnect d.c. plugs and sockets under load. turn off a.c. supply first



**PV Array DC Isolator.**

**DANGER - contains live parts during daylight.**

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MC00004

**Part No: SPV3**

PV ARRAY DC ISOLATOR Label, PV Array d.c. isolator. Danger - Contains live parts during daylight





**Inverter.**  
**Isolate AC and DC**  
**before carrying out work**

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MCG02026

**Part No: SPV4**

PV Inverter Label, Inverter - Isolate a.c. and d.c. before carrying out work



**PV System.**  
**Main AC Isolator.**

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MCG02024

**Part No: SPV5**

PV MAIN ISOLATOR Label, PV system - main a.c. isolator



**DO NOT work on this equipment**  
**until it is isolated from BOTH**  
**mains AND on-site**  
**generation supplies**

Isolate on-site generator at: \_\_\_\_\_

Isolate mains supply at: \_\_\_\_\_

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MCG02022

**Part No: RE1**

DUAL SUPPLY WARNING Label, Dual supply warning label and Pt No.



# PV Cable



**Part No: PV4/100 BLACK**

100 Meters 4.0 Black Twined Copper PV Solar Single Cable

**Part No: PV4/100 RED**

100 Meters 4.0 Red Twined Copper PV Solar Single Cable

**Part No: PV4/500 BLACK**

500 Meters 4.0 Black Twined Copper PV Solar Single Cable

**Part No: PV4/500 RED**

500 Meters 4.0 Red Twined Copper PV Solar Single Cable

**Part No: PV6/100 BLACK**

100 Meters 6.0 Black Twined Copper PV Solar Single Cable

**Part No: PV6/100 RED**

100 Meters 6.0 Red Twined Copper PV Solar Single Cable

**Part No: PV6/500 BLACK**

500 Meters 6.0 Black Twined Copper PV Solar Single Cable

**Part No: PV6/500 RED**

500 Meters 6.0 Red Twined Copper PV Solar Single Cable

## Technical Features

<b>Conductors</b>	Tinned Copper	CEI EN 60228
<b>Insulation</b>	crosslinked polyolefine	2pfg 1169/08.2007
<b>Outer Sheath</b>	crosslinked polyolefine	2pfg 1169/08.2007
<b>Flame Retardant</b>		CEI EN 60332-1-2
<b>Halogen Free</b>	(<0,5mg/g -0,5%)	CEI EN 50267-2-1/2
<b>Gas Emission</b>	(toxicity index ,2%)	CEI 20-37/4-0
<b>Low Smoke</b>	(transmittance >60%)	CEI EN 61034-2
<b>UV Resistant</b>		HD 605
<b>Ozone Resistant</b>		CEI EN 50396
<b>Behaviour</b>	(20000h at 120°C)	CEI EN 60216
<b>DC Resistant</b>	according to	CEI EN 60228
<b>Current Capacity</b>		2pfg 1169/08.2007
<b>Rated Voltage</b>	0,61kVAC 0,9/1,5kVDC	
<b>Max Voltage</b>	1,2kVAC 1,8kVDC	
<b>Test Voltage</b>	6,5kVAC 15kVDC	
<b>Max Op. Temp</b>	90°C	
<b>S/C Temp</b>	250°C	
<b>Min Inst. Temp</b>	-25°C	
<b>Min Bend Radius</b>	0 x 6	
<b>Certification</b>	G38 1/1, G38/1, G83/1, G83/1, MCS BBA 0025	

# Wind Turbines

Many commercial, agricultural and Local Authority sites are large enough to be suitable for wind turbines from 5 – 250kW size range.

System's such as these use the same technology as their full size coastline counterparts (Mega watt Turbines), but at a scale more suitable to on-site generation.

The physics of wind energy generation mean the bigger the turbine, the more cost effective it becomes. Larger blades capture more wind energy and taller towers give access to higher wind speeds.

The introduction of the Feed In Tariff in the UK has thus made wind energy a very attractive investment opportunity.

The Government has Passed legislation in April 2010, stating anyone who is generating renewable energy (under 5MW) will be paid for everything they generate, including the units they use themselves. The tariff lifetime is 20 years. Below is the current tariff set to run until February 2013 when it will begin to decrease every year until March 2020.

0 – 1.5kW	34.5 (p/kWh)
1.5 – 15kW	36.7 (p/kWh)
15 – 100kW	24.1 (p/kWh)
100 – 500kW	18.8 (p/kWh)

These are the actual pence per kW you will receive from your turbine for the lifetime of the agreement (20 years) from your energy provider.

## The benefits of a Grid Tied system:

- Harness a plentiful energy source: In the UK we have 40% of Europe's total wind energy.
- Cut your carbon footprint: wind electricity is green, renewable energy and doesn't release any harmful carbon dioxide or other pollutants.
- Cut your electricity bills: wind is free, so once you've paid for the initial installation your electricity costs will be reduced.
- Store electricity for a calm day: if your home isn't connected to the National Grid you can store excess electricity in batteries and use it when there is no wind.
- Sell electricity back to the grid: if your system is producing more electricity than you need, or when you can't use it, someone else can use it - and you could make a bit of money.



# Project Overview

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## **(Stage 1) Initial Wind Assessment:**

The proposed site is quickly assessed to check whether the wind speed and the physical environment are suitable for a Grid Tied Wind Turbine. The Wind speed will be gathered and the proposed revenue from the Feed In Tariff explained in a small report. If happy with the findings we can continue on to Stage 2.

## **(Stage 2) Chargeable Site Visit:**

(Refundable on placement of order)

Contractor to visit site and examine: existing energy use, Wind turbine location, access to site, Wind speed monitoring and ascertain the correct Wind turbine selection for the site and look at Grid connection.

## **(Stage 3) Pricing:**

Once the Site visit has been completed and different Turbine options have been discussed then a formal quotation will then be made including payback vs. Installation costs.

## **(Stage 4) Chargeable Site Feasibility Study:**

( Non-refundable)

### **This will include the following:**

Registered land designations - Ornithological impact  
- Noise impact

Landscape and visual impact - Shadow Flicker -  
Environmental impact assessment

Electromagnetic Interference - Radar - Aviation -  
Planning Summary

## **(Stage 5) Order:**

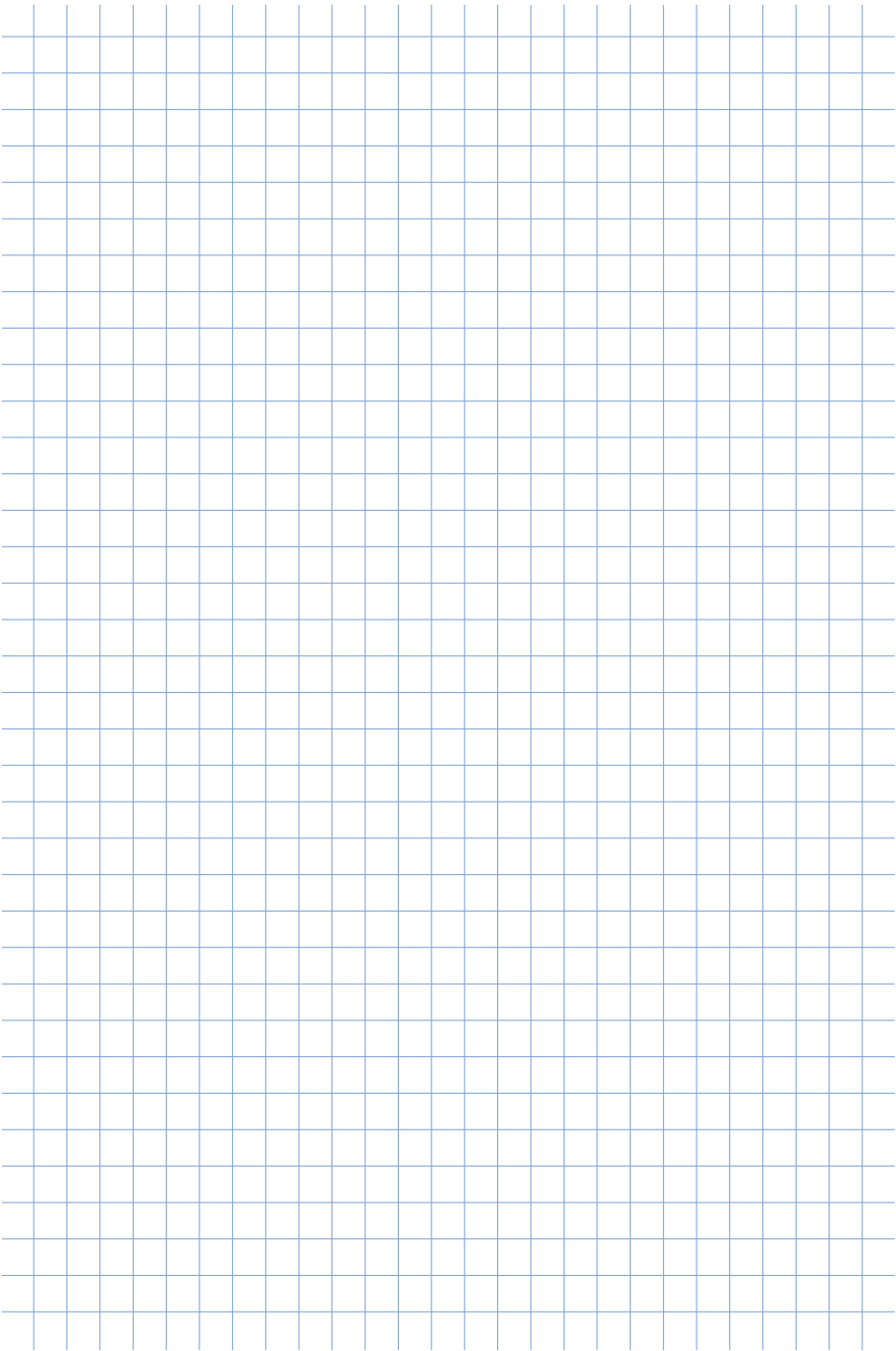
Once the order has been placed and deposit received, we will then be able to give an accurate delivery time.

## **(Stage 6) Installation:**

Prior to the Turbines' arrival the ground working will commence. Once this has been finished the Turbine will arrive and be installed by an accredited UK installer.









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