RAVAIR
ACTIVATED CARBON TECHNOLOGY

100% eco friendly

Lightweight Balcony photovoltaics

75% weight reduction, easy installation, conversion efficiency increase up to 3%

800w Hoymiles Inverter. Only one on ENA Register in the UK

4kW PER DAILY AVERAGE

800w PER DAYLIGHT HOUR

2.3KG PANEL WEIGHT

10 YEAR WARRANTY

EASY INSTALLATION

6X FLEIXBLE SOLAR PANELS 120W/18V

Whether you are on holiday abroad, a weekend stacation or simply working from home, our system will help run your appliences with free solar energy!

Email:sales@ravairsolar.com Website: www.ravairsolar.com Contact Tel: 0044-1892-750777

User Manual

Flexible Solar Balcony Power Plant 800W WiFi

Before using the appliance for the first time, please read the instructions for use and safety information carefully.

800W Balcony Solar System

6PCS*120W Flexible Solar Panel
Size : 900*800*3mm Weight :2.3kg

800W Micro Inverter

Extension Solar Cable

Velcro ties

2 in 1 Solar connector

stainless steel cable ties

10m AC Cable without Plug

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capacities, or by persons lacking in experience or knowledge, unless they are supervised or instructed on the use of this device by a person responsible for their safety. Children should be supervised to ensure they do not play with this device.

Keep this user manual for future reference or product sharing carefully. Do the same with the original accessories for this product. In case of warranty, please contact the dealer or the store where you bought this product.

Enjoy your product. * Share your experience and opinion on one of the well- known internet portals.

Table of Contents

Important notes at the start

ATTENTION!

According to the DNO, District Network Operator, All installations connecting to the Grid may only be carried out by CERTIFIED electrical Contractors. This PV system's Inverter must be installed on a dedicated final circuit to the requirements of BS 7671 in which be connected by a ***certified electrician*** *using a dedicated breaker and RCD into the consumer board. A G98 form must be submitted to your Local DNO within 28 days of Installation. Connection directly to a 13A Socket is* ***not*** *permitted.*

Explanation of the pictograms used

Read the user manual.

Read the user manual

Warning

Caution, risk of electric shock.

Caution, hot surface

Specifications subject to change without notice - please make sure you are using the latest manual available on the manufacturer's website.

Note

● Only use the product for purposes due to its intended function ● Do not damage the product. Following cases may damage the product: Incorrect voltage, accidents (including liquid or moisture), misuse or abuse of the product, faulty or improper installation, mains supply problems including power spikes or lightning damage, infestation by insects, tampering or modification of the product by persons other than authorized service personnel, exposure to abnormally corrosive materials, insertion of foreign objects into the unit, used with accessories not preapproved. ● Refer to and heed all warnings, precautions and safety instructions in the user manual.

Safety instructions

● Read the user manuals carefully, they contain important information on the use, safety and maintenance of the device. Keep the user manual in a safe place and pass them on to subsequent users if necessary.

● Before installing or using the Solar Balcony Power Plant, please read all instructions and warnings in the technical documentation, on the microinverter and on the solar modules.

● The device may only be used for its intended purpose in accordance with this user manual.

● Observe the safety instructions during use.

● Before commissioning, check the device and its connecting cable as well as accessories for damage. Do not use the device if it shows visible damage.

● Operate the device only from household power sources. Check whether the mains voltage specified on the type plate corresponds to that of your mains supply.

● Perform all electrical installations in accordance with local regulations (including DNA).

● When installing and operating the photovoltaic system, observe the national legal regulations and the connection conditions of the grid operator.
In particular, BS 7671.

● Note the information on determining the line reserve at the end of these operating instructions.

● Note that the housing of the micro inverter is a heat sink and can reach a temperature of 80 degrees Celsius. To reduce the risk of burns, do not touch the housing of the micro inverter.

● Do not squeeze the power cord, do not pull it over sharp edges or hot surfaces; do not use the power cord for carrying.

● If the power cord of this device is damaged, it must be replaced by the manufacturer or its customer service or a similarly qualified person in order to avoid hazards.

● The appliance is intended for household or similar use only. It must not be used for commercial purposes!

● Make sure that the device is well secured during operation and cannot be tripped over by cables.

● Never use the device after a malfunction, e.g. if the device has been dropped into water or damaged in any other way.

● The manufacturer assumes no responsibility in the event of incorrect use resulting from failure to follow the instructions for use.
● Modification or alteration of the product will affect the product safety. Caution: Risk of injury!
● All modifications and repairs to the device or accessories may only be carried out by the manufacturer or persons expressly authorized by the manufacturer for this purpose.
● Make sure that the product is operated from a power source that is easily accessible so that you can quickly disconnect the device from the mains in case of an emergency.
● Never open the product without authorization. Never carry out repairs yourself!
● Handle the product with care. It can be damaged by shocks, impacts or falling from even a low height.
● Keep the product away from extreme heat.
● Never immerse the product in water or other liquids.
● Technical changes and errors excepted!

Warning!

● Do not tamper with or manipulate the micro inverter or other parts of the equipment under any circumstances.
● Risk of damage due to improper modifications!
● Keep all contacts dry and clean!

Caution Risk of electric shock!

● When operating this device, certain parts of the device are under dangerous voltage, which can lead to serious physical injuries or death. Therefore, follow the following instructions to minimize the risk of injury.
● Disconnect the connection only in a de-energized state!
● Before carrying out visual inspections and maintenance work, check that the power supply is switched off and secured against being switched on again.

Caution, hot surface!

● The surface of the micro inverter can become very hot. Touching the surface can cause burns.
● Mount the micro inverter in such a way that accidental contact is not possible.
● Do not touch hot surfaces. When working on the micro inverter, wait until the surface has cooled down sufficiently.

Intended use

The micro inverter may only be operated with a fixed connection to the public power supply. The micro inverter is not intended for mobile use. Modifications to the micro inverter are generally prohibited. For changes in the environment, you must always consult a qualified electrician. Assembly, installation and electrical connection.

Assembly, installation and electrical connection

Warning!

- All work including transport, installation, commissioning and maintenance must be carried out by qualified and trained personnel.
- The electrical connection to the central building services may only be carried out by a licensed electrician.
- Do not connect the micro inverter to the operator grid until you have fully implemented the installation process and have sent form G98 for approval from the electricity network operator.
- If you mount the micro inverters at a great height, avoid possible fall risks.
- Do not insert electrically conductive parts into the plugs and sockets! Tools must be dry.

Caution measures during installation

- Installation must be performed with the unit disconnected from the grid and with the solar panels shaded and/or insulated.
- Install the micro inverter and all DC connections in a suitable location, for example under the solar panel, to avoid direct UV/sunlight exposure, rain exposure, snow accumulation, etc. In any case, sufficient air circulation for cooling must be ensured.
- Install the micro inverter in such a way that at least 2cm distance to the nearest surface is maintained. Otherwise, the micro inverter may overheat.
- Do not install in locations where gases or flammable materials may be present.

Qualified personnel

An adequately informed person or a person supervised by a person with electrical engineering skills and knowledge so that he or she recognizes the risks and avoids the hazards caused by electricity. For safety reasons, in this manual 'Qualified Personnel' means that this person is familiar with safety requirements, cooling systems and EMC and that this person is authorized to power, ground and attach equipment, systems and circuits according to existing safety procedures. The micro inverter, accessories and connected systems may only be commissioned and operated by qualified personnel.

Ravair Solar Ltd

- In no event shall Ravair Solar Ltd be liable/responsible for any direct, indirect punitive, incidental, special consequential danger, to property or life, improper storage, whatsoever arising out of or connected with the use or misuse of their products. - Error messages may appear depending on the environment it is used in.

Features

- Mount on balcony, fence and more
- Easy installation: plug in, start, save energy
- Flexible solar modules (without glass - EVA material)
- Lightweight panels and compact microinverter
- Suitable for feeding electricity into the 230V household grid
- Maximum inverter feed-in power of 800W
- Ideal for covering the base load of your home during the day
- Power tracking possible via app and web view
- ENA compliant

Product details

Package content:	
1x 800W PV microinverter	2x MC4 Y-Splitter
6x flexible solar module 120W (720W)	4x 2m MC4 extension cable
	2x 3m MC4 extension cable
	1x AC input end cap
60x cable tie	1x AC connection cable
36x steel band	1x user manual

Product overview

PV Micro Inverter 800HMS-2-T
See Hoymoyles Inverter Manual

Preparation

Requirements for the operation of a photovoltaic system

- Permission from the owner or owners' association if you are not the owner yourself
- Permanent connection
- RCD in the fuse box (standard nowadays)
- Socket, better protected outdoors
- Electricity meter with backstop or bidirectional meter

ATTENTION!

The following requirements must be met in order to operate a photovoltaic system.

- You must register your photovoltaic system with your responsible grid operator.
- In addition, a G98 FORM must be submitted to the responsible authority (DNO.
- Meter replacement required: A bi-directional meter must be present or depending on what your electricity provider specifies. Simple electricity meters are often not sufficient.
- If necessary, the consent of the landlord is required.
- If you are unsure, please have the local conditions checked, if necessary, or contact your network operator for information.

Connecting the micro inverter

It may only be necessary to connect the solar modules (DC) to each other and to the micro inverter. On the AC side, only the connection with the enclosed connection cable must be made.

CAUTION!
Observe all local regulations and restrictions during installation.

CAUTION!
The external protective grounding conductor is connected to the protective grounding conductor terminal of the micro inverter via AC connection. When connecting, connect the AC terminal first to ensure grounding of the micro inverter. Then connect the DC terminals. When disconnecting, disconnect the AC first by opening the branch circuit breaker but keeping the protective grounding conductor in the branch circuit breaker connected to the micro inverter. Then disconnect the DC inputs.

CAUTION!
Do not, under any circumstances, connect the DC input if the AC connection is not connected.

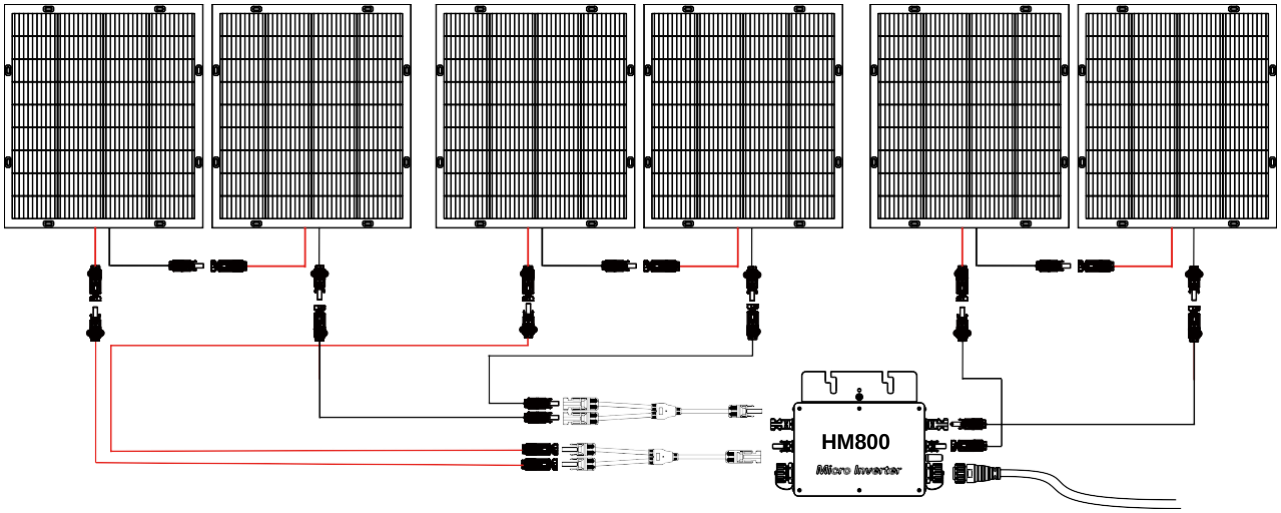
CAUTION!
Install disconnect devices on the AC side of the micro inverter.

CAUTION!
It is strongly recommended to install surge protectors in the appropriate meter box.

CAUTION!
You should not use an AC residual current device to protect the corresponding circuit to the micro inverter, even if it is an outdoor circuit. None of the small residual current devices (5~30 mA) are designed for regeneration and will be damaged if regeneration occurs. The same is true for AC arc fault circuit breakers. They are not evaluated for regenerative power and could be damaged if regenerated with the output of a solar micro inverter.

Connect the solar panels (DC connection)
Connect the solar panels DC cables to each other on one side and the cable tree to the DC input side of the micro inverter as shown in the cable guide.

Cable guide
Panel schematic connection to the micro inverter. (not scaled)



Important! To achieve a proper function solar power system, connect the plugs in the order shown.

The 800W Micro Inverter has two pairs of MC4 connectors. These two connectors are for two solar panels connected in series on one side and 4 panels connected as 2 strings of 2 panels in parallel on the other.

To connect the panels, we recommend the following steps:
- Check the length of your balcony or fence and consider the direction of installation.
- Plug the Y-shaped branch connector inter the micro inverter on the side closest to where the 4 panels will be mounted.
- Put each 2 panels together at one side. You now have 3 sets.
- Place the sets in position and secure them temporarily.
- Attach the extension cables as required to the best fitting solution.
- Connect the panels to the extensions and the micro inverter.
- Fix the panels using the accessories supplied. (cable tie or metal band)
- Connect the Betteri socket cable to the micro inverter and connect to the mains.

Connect the DC connection cables of the micro inverter to the matching counterpart of the (extension cable / y-splitter) solar panel. Plug the pair of connectors together until you hear a "click" sound. The connectors of some solar panels have the polarity (+, -) printed on them, which is valid for the panels. The DC cable of the micro inverter with the plus marking (+) is connected to the - pole of the panel, the negative marked cable (-) to the + pole. Make sure that the polarity is correct.

Note: When plugging in the DC cables, if the AC cable is already plugged in, the micro

inverter LED should immediately flash green and start synchronizing with the grid within 2 minutes. If the AC cable is not plugged in, the red LED will flash continuously and repeat this until the AC cable is plugged in (see chapter LED Status).

Connecting the micro inverter to the AC grid (AC connection)

See Hoymiles Inverter Manual

10mts A/C wire is provided but Hoymiles HMS Field Connector is supplied (to connect to Inverter) but not wired in case customer needs longer wire.

Mounting

Observe the following instructions for the corresponding installation.

General hints

- Before you start mounting, check the solar module, the inverter and all cables for visual damage.
- Do not stand on the module or the cables. To prevent grease stains on the module, avoid contact with your hands on the glass surface and ideally wear work gloves.
- Place the solar module face down on a clean, flat, soft surface.
- Write down the model and serial number of the components [inverter, solar module(s)] and keep the numbers. In the event of a defect, we will need the numbers for unique identification.

Balcony

- The solar modules can be mounted onto balconies with rails and handrails only.

The balcony mounting material is attached as accessory:

- Sixty times cable ties in black for every hole in the panels
- Thirty-six metal bands are provide, one for every corner and middle of the panels

Fence

- Follow the mounting according to balcony mounting – refer to the status given. Use the accessories provided to attach the system to the fence.

Others

- For installation in places other than a balcony or fence, you can use screws or glue the back of the unit to a flat surface.

First commissioning

After mechanical and electrical installation of the solar power system, you can put the system into operation. There should be enough sunshine for this. The solar panels need to produce at least a start voltage of 22V.

Initial state:

1. The micro inverter is connected to the solar panels.
2. The microinverter is connected to the house mains.
3. The cables are fixed protected from rain and sunlight.
4. The feed line is connected to the mains via a circuit breaker.

Proceed as follows:

1. Turn on the circuit breaker and any other switches that may be present.
2. Switch on the main AC switch.
3. The unit LED should begin flashing green after you turn on the AC circuit breaker. See Hoymiles Manual for more information.
4. The micro inverter starts feeding (grid synchronization) within 2 minutes if there is sufficient solar radiation. The status LED indicates the basic function. You can check the feed-in power with a suitable power socket energy meter* (*needs to be waterproof for outside use!).
5. If you have installed a feed-in meter, you can also use it to check the current feed-in power or energy.

Note: When AC power is applied but the micro inverter is not started, approximately 0.2W of power can be measured for each micro inverter using a power meter. This power is reactive power, not consumption from the utility grid.

LED status

The LED of each micro inverter provides information about the current status. All micro inverters draw their supply voltage from the DC connector/solar panels.

Status during power up

See Hoymiles Inverter Manual

Status after the switch-on process

See Hoymiles Inverter Manual

Get the App

See Hoymiles Inverter Manual.

WiFi installation

Install App

Troubleshooting

Maintenance work and troubleshooting on the micro inverter may only be conducted by suitably qualified personnel. Modifications to the micro inverter are prohibited. The micro inverter draws its supply voltage from the DC side. To restart the micro inverter, the solar panels must be disconnected from the micro inverter. The start-up process usually takes place within 2 minutes. For troubleshooting purposes, perform the following steps in the order listed:

1. Check that all AC breakers are turned ON.
2. Check all connection cables for external damage.
3. Check all AC side connections for damage or connection errors.
4. Measure at the connection points. The applied mains voltage must not exceed or fall below the AC voltage range of 180-275V.
5. Restart the micro inverter by disconnecting and reconnecting the DC power / solar panels. A green LED (see LED status) should indicate a normal start-up process.

CAUTION!
Never disconnect the DC cables while the micro inverter is generating power.

6. Measure the voltage of the solar panel to the micro inverter with a suitable multi-meter. The required starting voltage of the micro inverter is above DC22V.
7. Check the MC4 connectors of the micro inverter and solar panel(s). Damaged DC connections must be replaced.
8. If necessary, check with your grid operator whether the grid frequency matches the frequency range of the micro inverter.

CAUTION!
Do not attempt to repair the micro inverter.
If the above steps do not solve the problem, contact an electrician.

The AC connection on the micro inverter cannot be replaced/repaired. If the cable has been damaged, the device should be disposed of.

Unless otherwise specified, maintenance work must be carried out with the equipment disconnected from the mains (mains switch open) and the solar panels covered or insulated.

Do not use rags or corrosive products for cleaning that could corrode parts of the equipment or cause electrostatic charges.

Avoid temporary repairs. All repairs should be made only with original spare parts.

Each micro inverter should be protected by a circuit breaker, but central disconnect protection is not required unless specified by national standards, or by the responsible network operator.

Technical specifications

For the technical specifications of the solar module, please refer to the enclosed data sheet.

Inverter

DC-input	
Recommended input power (W)	240-380
Panel compatibility	60-cell or 72-cell panels
Panel connection	MC4
MPPT voltage range (V)	29-48
Starting voltage (V)	22
Operating voltage range (V)	16-60
Max. input voltage (V)	60
Max. input current (A)	2x 11.5
Max. input short-circuit current (A)	2x15

AC-output	
Rated output power (VA)	800
Rated output current (A)	2.73 at 220V 2.61 at 230V 2.50 at 240V
Rated output voltage/range (V)	220/180-275 230/180-275 240/180-275
Rated frequency/rated frequency range (Hz)	45-55 (under 50Hz @ 220 V & 230 V) 55-65 (under 60Hz @ 220 V & 230 V)
Power factor	>0.99 standard 0.8 leading..... 0.8 delayed
Output current harmonic distortion	≤3%
Maximum number of devices in series	6

Efficiency, safety and protection	
Peak efficiency	96.70%
CEC weighted efficiency	96.50%
MPPT rated efficiency	99.80%
Nightly power consumption (MW)	<50

Mechanical data	
Ambient temperature range (°C)	-40~+65
Storage temperature range (°C)	-40~+85
Dimensions (WxHxD) mm	250×170×28
Weight (kg)	3.00
Protection class	NEMA outdoor (IP67)
Cooling	Natural circulating air - no fans
AC output cable length (cm)	188

AC input cable length (cm)	8.5

Communication	
Transmission	2.4GHz Proprietary RF (Nordic)
Frequency range	2.403 - 2.475GHz
Radiated transmit power	max. 5.68dBM / 3.7Mw

Characteristics	
Compliance	VDE-AR-N 4105:2018, EN50549-1:2019, VFR2019, IEC/EN 62109-1/-2, IEC/EN 61000-3-2/-3, IEC/EN-61000-6-1/-2/-3/-4

Load capacity of copper lines

Load capacity of copper cables and lines for fixed installation in buildings 1.5mm^2 nominal cross-section; at ambient temperature 25°C, with 2 loaded cores*.				
Installation method	On thermally insulated walls	In electrical installation pipes	On walls	In the air
Current carrying capacity Iz of the conductors of the final circuit in amperes	16,5	17,5	21	23
Maximum rated current Ig of the power generation system with 16A circuit breaker	0,5	1,5	5	7
Maximum rated current Ig of the power generation system with 13A circuit breaker	3,5	4,5	8	10
Photovoltaic system	one solar module	two solar modules	up to 3 × 115W	from 4 × 115W
max. current load in amperes	1.3	2.6	1.3	2.6

* The example from the table is based on two loaded copper lines with a nominal cross-section of 1.5mm^2, which reflects the line in a typical household. In the case of a larger cross-section or a different cable type, the permissible current-carrying capacity is different, so that this must be considered separately, in accordance with local regulations.

Disposal of the packaging. Sort packaging materials by type upon disposal.

Dispose of cardboard and paperboard in the wastepaper. Foils should be submitted for recyclables collection.

Disposing of old equipment (Applies in the European Union and other European countries with separate collection (collection of recyclable materials) Old equipment must not be disposed of with household waste! Every consumer is required by law to dispose of old devices that can no longer be used separately from household waste, e.g., at a collection point in his or her municipality or district. This ensures that the old devices are properly recycled and that negative effects on the environment are avoided. For this reason, electrical devices are marked with the symbol shown here.

Warranty Extension:

In a show of our commitment to providing high-quality products, we are pleased to extend the warranty period for the 600W and 800W flexible balcony solar power systems to 10 years from the date of installation.