



ener-G-friend *Office*

An alternative energy pack to power a laptop/tablet computer (DC to DC) and inkjet printer via
an AC inverter **anywhere & any time**

Also included a fold-up LED reading light

For the use of rural and off grid offices as well as for on grid users with
unstable grid power

Designed, developed and manufactured by **Betta Lights** South Africa



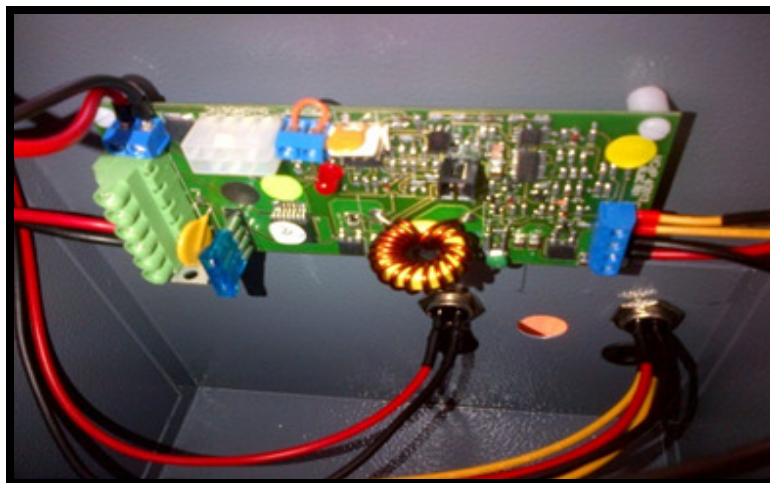
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Power pack



Item	Power pack: OFFICE (model) to power laptop and tablet computers as well as an inkjet printer anytime and anywhere
Operating voltage	12 volt DC
Operating environment	-20 ⁰ C to - 65 ⁰ C
Ports	<ol style="list-style-type: none"> 1. Solar panel port 2. LED reading lamp port 3. Laptop DC charge port 4. USB port for tablet computer 5. AC port via inverter for inkjet printer 6. External battery charge port through AC charger
Battery Box material	HR 486 LLDPE Rotational moulded
Battery Box Vicat softening temperature (ASTM D1525)	120 ⁰ C
LED Status indicators	<ol style="list-style-type: none"> 1. Inverter ON or OFF 2. Battery status 3. Solar charge status
Key sub-systems	<ol style="list-style-type: none"> 1. Solar Betta MPPT charge controller 2. 170W inverter 3. DC to DC converter with adjustable voltage and USB port 4. 50W solar panel 5. 22 Ah lead crystal battery 6. Reading lamp 7. <i>Optional item: 220 AC Betta Lights battery charger</i>
Fuse	External panel mount Fuse holder with 15Amp fuse

Solar Charge Controller



Item	Betta MPPT solar charge controller
Operating voltage	12 volt DC
Operating environment	-20 ⁰ C to - 65 ⁰ C
Incorporated Value System	Energy efficiency, ease of installation, low maintenance and its ability to operate in high and low temperature environments, while protecting the system and equipment
Wattage maximum	160 watt 12 volt solar panel
Protections	<ol style="list-style-type: none"> 1. Over Charge protection 2. Over discharge protection and low voltage reconnect voltage 3. Thermal protection of battery 4. Overload protection 5. The unit can withstand 100⁰ C operational temperature without damaging itself. When the unit's temperature reaches 65⁰ C, the unit shuts all operational functions down, and monitors the situation. When the temperature drops, full functionality resumes, with no loss of data or settings 6. Reverse polarity 7. Reverse current
Battery status indicator	LED status indicate when the unit is charging, and what the battery status is
MPPT	The unit has MPPT functionality, and has an energy conversion efficiency of up to 96.9%

170 watt inverter

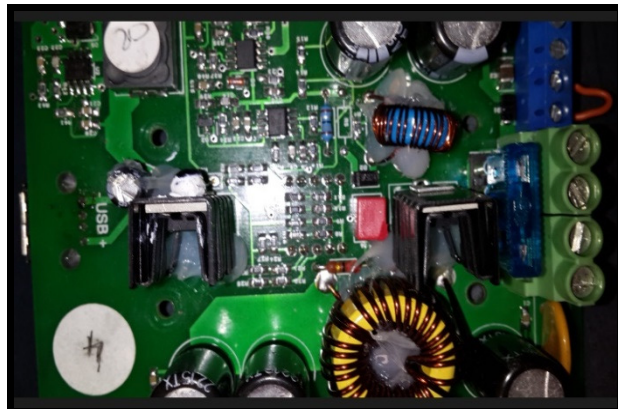


Item	Betta 170 watt inverter
Operating voltage	12 volt DC inverted to 220 AC
Operating environment	-20 ⁰ C to - 65 ⁰ C
Flexible AC plug interfaces	Yes, plugs to be specified on order (plug and play type; see options in pictures)
220 AC wave	Pure sine wave
Overload protection	Yes
Auto recovery from overload or short circuit	Yes, when cause is removed



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DC to DC converter



Item	Betta DC to DC converter
Operating voltage	12 volt DC
Operating environment	-20 ⁰ C to - 65 ⁰ C
Output Voltage settings	15, 15, 16, 17, 18, 19, 19.5, 20, 22, 24 and 5 volt USB
Efficiency	93%
USB Current	2 Amp



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Foldable LED reading light



Item	Foldable 12 volt LED reading lamp
LED Bulb	1.3 watt, 12 volt, 1300 lumen output, resulting in 200 lux on working level
Operating voltage	DC(12V)
Luminary efficiency	>90%
Effective beam angle	130 deg.
Foldable	Foldable light head and foot piece
Colour temperature	4000 - 5000K
Light colour	Pure White
Operating environment	-20 ⁰ C to - 65 ⁰ C
IP level	IP55
Expected life	50,000 hours
Fitting type for bulb	E27



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22 Ah Lead Crystal batteries



Item	Lead Crystal, Deep cycle, maintenance free
Voltage	12V
Amp Hour	1 x 22Ah
Operating environment	-20° C to - 65° C
Expected battery life	7 years
Discharge features	100% DOD without damaging the battery. Expected cycles at 100% DOD = 400, and at 33% DOD = 2600
Shelf life	Up to 2 years without significant self-discharge



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Solar Panel



Item	PV panel, 12 volt, 50Watt
IP level	IP65
Operating environment	-20 ⁰ C to - 90 ⁰ C
Panel cable length	6 m
Panel watt	50
Watt Tolerance (%)	+ - 5%
Voltage at max power (V)	17.7
Current at max power (A)	2.85
Open circuit voltage (Voc)	21.7
Short circuit current (Isc)	2.64
Energy yield degrading over time	20 years / 80% yield



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Laptop computer tips



Item	Laptop tips and computer cable with connection to ener-G-friend
Universal tip set	14 tips for most popular laptop computers
Cable length	1 m