



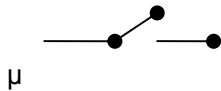
SAFETY WARNING



The device is operated by software controlled from a remote source and power can be interrupted and turned ON again without notice. Please ensure that any connected load that can be switched off by the Plogg device can be returned to full power safely whilst unsupervised.

A failure in the operation of the software could result in the random re-instatement of power to the connected load. IF the load cannot be operated unsupervised then either the Plogg unit must be disconnected or the load switched OFF at source once the operation cycle of the load has been completed.

The maximum current that can be operated through the device is 13 Amps and the Plogg is rated for mains alternating current supply, single phase, at 230 V ~ nominal and 50Hz frequency.



μ

This device contains a normally open relay.

The plug is earthed.

There are no serviceable parts and in the event of a failure please disconnect the device, notify Energy Optimizers Limited and return the device to us for inspection and, if appropriate, replacement. The device contains live MAINS circuitry. Do not attempt to open the device, disassemble, crush, puncture, short external power sockets or plug pins or expose the device to temperatures greater than 60°C.

MEASUREMENT CATEGORY II – the device is intended for measurements performed on circuits directly connected to the low voltage mains installation (230V ~ A.C.) e.g. household appliances, portable tools, personal computer equipment.

CONNECTION

The PLOGG meter must be plugged into a suitable single phase AC mains supply rated at nominal 230V, 50 Hz frequency via a socket complying with BS1363/A. The load (appliance) should be connected to the PLOGG via a 13A plug (BS1363) fitted with 1.2mm² or 1.50mm² 3 core cable in accordance with BS6500.

The PLOGG is activated approximately 3 seconds after the mains supply has been turned on.

The PLOGG contains an embedded transceiver Bluetooth approved RF device operating at 2.4GHz bandwidth.

NORMAL OPERATION

Normal Environmental Conditions:

- a) Indoor use only;
- b) Altitude up to 2000m;
- c) Temperature of 5°C to 40°C;
- d) Maximum relative humidity of 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C;
- e) MAINS supply voltage fluctuations of up to +/- 10% of the nominal voltage;
- f) POLLUTION degree 1, normally only dry, non-conductive pollution.

Connection to the Mains Supply

The Plogg is a type of adaptor and under normal circumstances the Plogg is connected to the mains supply via the Plogg's 13A plug connection. The appliance load is connected via the Plogg's 13A socket. Once connected to the mains supply and the mains supply is switched ON then A.C. power supply at nominal 230V ~ is available at the Plogg socket and a connected load/appliance will receive power as though connected directly to the mains supply socket.

The device is intended for operation in ambient temperatures below a maximum of 60°C

The Plogg meter records electrical power consumption (kWh and kVAR) and, if applicable, electrical power generated. The data is stored within the Plogg's 64kB memory and can be downloaded in a text file format via the RF wireless connection

to a Windows enabled PC or Laptop or viewed as instantaneous readings on the installed Plogg Manager software.

A number of electrical parameters are measured including Volts, Amps, Watts, kWh, kVARh and phase angle.

If the device is not operated in the manner and under the conditions specified above then the protection provided by the equipment may be impaired.

Under the Waste Electrical and Electronic Equipment Regulations 2006 this product should be disposed separately from other household waste and in specially designated local authority operated recycling sites.

PROTECTION

The device is protected against electric shock in NORMAL CONDITION and in SINGLE FAULT CONDITION.

The device is protected against excessive energy in the case of a fault in the unit by a [fusible resistor].

METERING

The device contains a Teridian meter system chip with the following features:

- Wh accuracy over temperature and 2000:1 range <0.5%
- Exceeds IEC62053 /ANSIC 12.20
- Voltage reference <50ppm/°C
- Four quadrant metering
- Voltage/current angle
- 40-70Hz line frequency range with same calibration
- 22 bit delta-sigma ADC
- Battery backup for RTC
- 8-bit MPU (80515) – 1 clock cycle per instruction

PDA SOFTWARE INSTALLATION PROCEDURE

SOFTWARE DOWNLOAD

Please go to www.plogg.co.uk and to the Support page, lower section.

This is the software download page and you will need to download the Plogg Mobile Manager (.cab file) to a folder in Active Sync on your Laptop or PC and then transfer the file to your PDA.

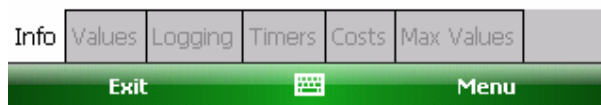
The Plogg Mobile Manager programme is the principal operating software package for use with a PDA operating either Windows Mobile v5 or v6. The software supports both Broadcom and Microsoft Bluetooth protocols for the Windows Mobile environment.

When you have downloaded the Plogg Mobile Manager to your PDA then plug a Bluetooth PLOGG unit into a power socket and switch the mains supply ON. There is no need to connect a load at this stage.

Run the Plogg Mobile Manager software and and from the drop down menu press "Connect to..."



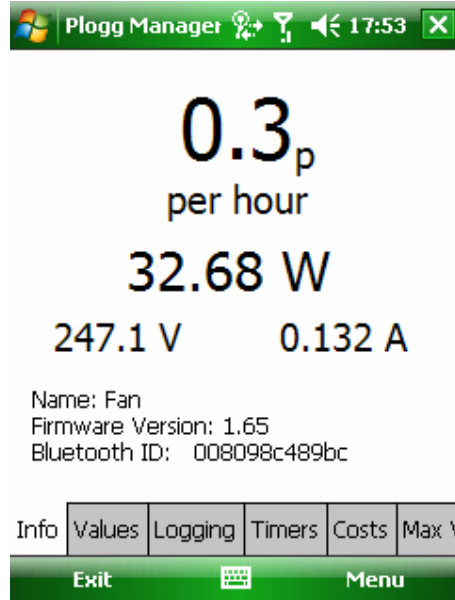
No Plogg Connected!





The Plogg Mobile Manager will allow you to list the friendly names of all Bluetooth Plogg devices found. Initially, the Plogg units will be identified only by a number. Once located and selected then you should use the Plogg Manager software – Operations section - to adopt a friendly name, which will ensure that future identification is straightforward.

Select the desired Plogg device and then press “Connect”



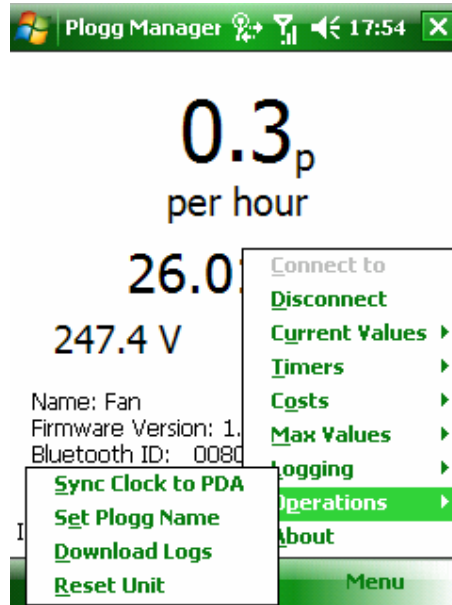
This brings you to the main Info page and confirmation of the version of the firmware installed on the Plogg the Plogg's Bluetooth ID.

The cost shown is the figure calculated from the instantaneous value of power being drawn by the connected load (Watts) and the applicable tariff cost (pence) set under the Costs menu option as if applied as a constant over a period of one hour.

The instantaneous values for Voltage and Current drawn by the connected load are also shown.

The values on this screen are updated every 30 seconds.

From the drop down Menu select "Operations"



Operations:

Set the time and date from the PDA by selecting "Sync Clock to PDA"

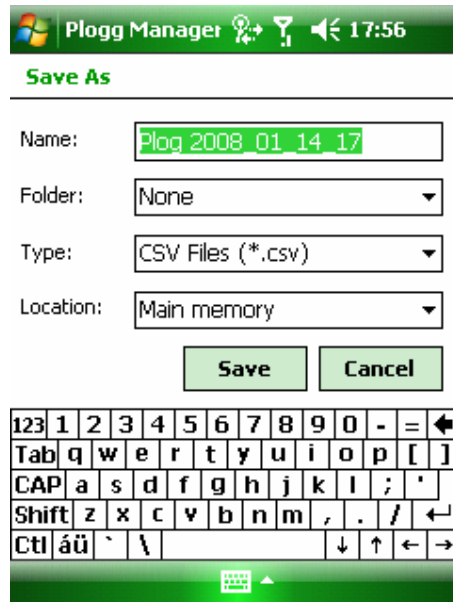
Select Set Plogg Name and then enter your chosen name in the drop down box and then press "OK"



The Reset Unit is a support only function and undertakes a soft restart – equivalent of switching the mains supply to the Plogg device OFF and ON.

Download logs

Select “Download Logs” and the drop down menu will ask for a location and file name for the logs. The logs are saved in .csv file format, which can be accessed from an Excel application on your PC or Laptop for further analysis and charting functions.



Values

This section of the screen shows the instantaneous values against each of the listed parameters for the Device Time shown.

The screenshot shows a Windows-style title bar for 'Plogg Manager' with system icons and a clock showing 17:57. Below the title bar, the following parameters are listed:

Device Time:	2008 JAN 14 17:57:03
Device Up Time:	0 days 06:00:43
Equip On Time:	0 days 00:14:56
Watts:	25.70 W
Frequency:	50.0 Hz
Voltage:	247.2 V
Current:	0.105 A
VAR:	-4.37 VAR
Phase Angle:	351 Degrees
W Consumed:	0.006 kWh
W Generated:	0.000 kWh
VARh Con:	0.001 KVARh
VARh Generated:	0.000 KVARh

At the bottom, there is a navigation menu with buttons for 'Info', 'Values', 'Logging', 'Timers', 'Costs', and 'Max V'. Below this menu is a green bar with 'Exit' and 'Menu' buttons.

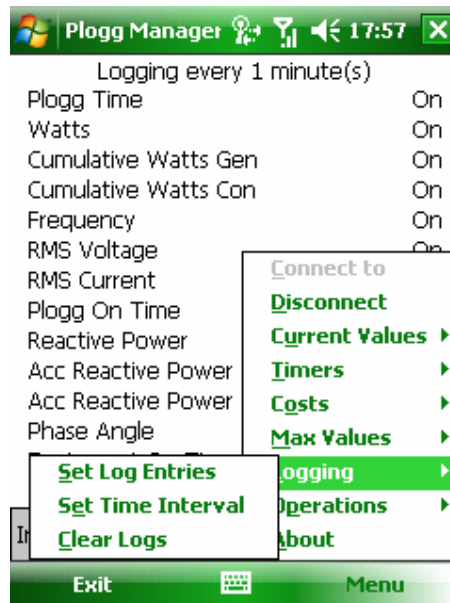
From the Menu select Current Values

The “Clear” button resets the Cumulative registers for Watts Gen, Watts Con, Reactive Power Gen and Reactive Power Con.

The “Refresh” button requests an update of all of the Current Values.

Logging

Use this function to set the logging interval required and the data fields that you wish to log e.g. the cumulative values for kWh and the Device Time and Plogg Uptime.



The logging interval can be set in minutes form 1 minute to 65535 minutes (45 days).

Press “OK” to confirm set the input interval.

Select Log Entries

To alter the fields that you wish to log simply press the “Select Log Values” button and then click on the fields that you wish to log to turn OFF or ON.

Instantaneous values will be shown in the Plogg Manager and the logs can be downloaded as a .csv file for capture by Excel on your PC.

Please note that the rechargeable batteries will take 24 hours to reach full charge - i.e. to support the full memory function.

Setting	On/Off
Device Time	On
Plogg Uptime	On
Equipment on time	On
Watts	On
Cumulative Wattu Gen	Off
Cumulative Wattu Con	On
Frequency	Off
RMS Voltage	On
RMS Current	On
Reactive Power	Off
Acc Reactive Power Gen	Off
Acc Reactive Power Con	Off
Phase Angle	Off

Device Time – this is the Real Time Clock setting for the device that is set from your PC or Laptop clock.

Plogg Uptime – this is the time that the Plogg unit has been activated – this value cannot be reset.

Equipment On – this is the total amount of time that a load has been connected to the Plogg and has been drawing power.

Watts is the measurement of real power that results in the net transfer of energy in one direction. The Plogg calculates this by taking the product of the r.m.s. values of the fundamental frequency components of voltage and current multiplied by the cosine of the phase angle between them.

Cumulative Watts Gen – this is the cumulative value of Watts generated expressed in kWh. The Plogg has four quadrant metering and is able to measure the amount of energy exported, gross, e.g. from a wind turbine or CHP unit.

Cumulative Watts Con – this is the cumulative value of Watts consumed expressed in kWh

Frequency – this is the frequency at which voltage and current are transmitted in A.C. supplies – usually 50Hz

RMS Voltage - is the difference of electrical potential between two points of an electrical or electronic circuit, expressed in volts.

RMS Current - The amount of electric current is the amount of electric charge (measured in coulombs) flowing through that surface over time and is expressed in Amperes.

Reactive Power - The Plogg calculates this by taking the product of the r.m.s. values of the fundamental frequency components of voltage and current multiplied by the sine of the phase angle between them and is expressed in VAR.

Acc Reactive Power Con – this is the cumulative amount of Reactive Power consumed and is expressed in kVARh

Acc Reactive Power Gen – this is the cumulative amount of Reactive Power generated and is expressed in kVARh

Phase Angle - the phase angle (ϕ) between the current and voltage sinusoid waveforms.

WARNING: Resetting the logged fields will cause the current logs to be erased. If the historical data is to be retained then first download the logs and then reset the fields.

TIMERS



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Timer 0:      0900-2100 (valid now)
Timer 1:      0000-0000
Timer 2:      0000-0000
Timer 3:      0000-0000
  
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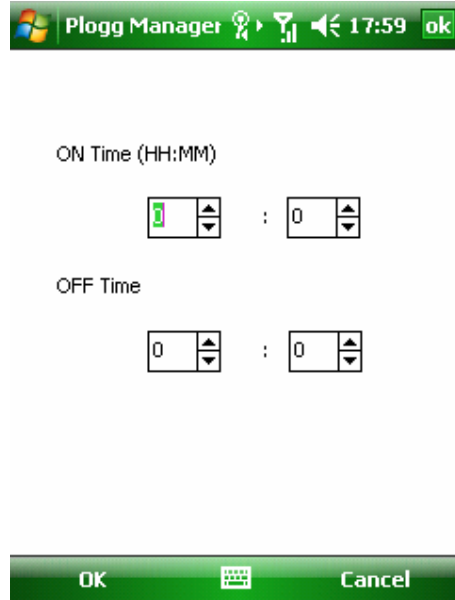
From the Menu the “Enable” and “Disable” buttons are global command settings and the latter will override individual timers, if set.

If no timers have been set then activating the “Enable” button will turn the connected load, OFF.

Select “Enable” prior to setting the timers.

IF the timers are enabled and there are valid timer settings then the Plogg device will turn ON the connected load when the Plogg “Device Time” is within any of the timer settings. If the Device Time lies outside all of the timer settings then the connected load will be turned OFF.

Timers can overlap e.g. timer 0 is set to 12:30->18:00 and timer 1 is set to 16:00 -> 20:00 will result in the power being ON to the connected load between 12:30 and 20:00.



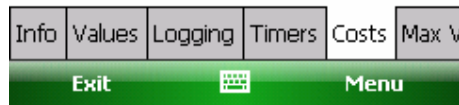
RELAY

The Plogg contains an appropriately rated, normally open relay. The relay is activated when the mains supply to the Plogg is turned ON and results in the mains supply being supplied to the connected appliance. If the Plogg should fail for any reason then the relay will be deactivated and the load turned OFF. Under these circumstances and if necessary, the faulty Plogg can be removed and the load plugged directly into the mains supply socket.

Costs

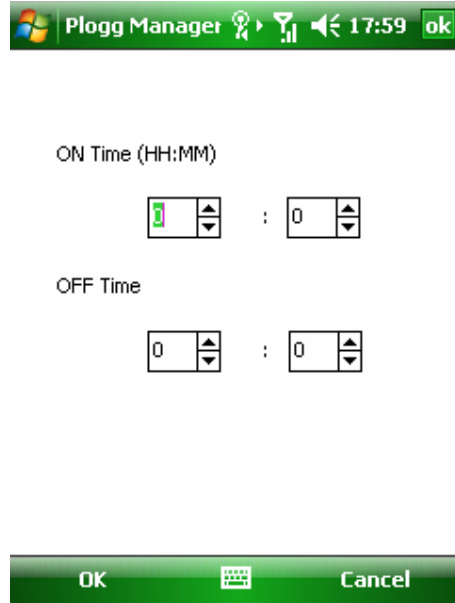


Tariff 0: 0.000kWh, Cost 0.00
Tariff 1: 0.000kWh, Cost 0.00
Tariff0 Time: 0600-2230
Tariff 0: 10.0 pence/Kwh
Tariff 1: 0.0 pence/Kwh



The Plogg unit accepts two tariff rates and the cost level is set in pence values to one decimal place only.

If further degrees of accuracy in the tariff prices are required then the log values can be adjusted in Excel.



Tariff Times

From the Menu select Set Times.

Setting tariff 0 time sets the converse time for tariff 1.

Maximum Recorded Values



Max Voltage Consumed:
248.7 V at 2008 JAN 14 16:54:51
Max Current Consumed:
0.141 A at 2008 JAN 14 17:53:37
Max Wattage Consumed:
34.86 W at 2008 JAN 14 17:53:37



The date and time stamps for the maximum recorded values for Voltage, Current and Wattage and their associated values are shown for the period since these values were last reset. To obtain the latest values press “Refresh”. To reset the registers to zero press “Reset Max Values”



Max Voltage Consumed:
248.7 V at 2008 JAN 14 16:54:51
Max Current Consumed:
0.141 A at 2008
Max Wattage Consumed:
34.86 W at 2008

- Connect to
- Disconnect
- Current Values ▶
- Timers ▶
- Costs ▶
- Max Values ▶
- Logging ▶
- Operations ▶
- About

Reset Max Values
Refresh

About

This screen confirms the version of the software.



SUPPORT ASSISTANCE

Please call our support line on +44 (0) 1472 266731 if you have any questions.

Shaun Merrick

General Manager