Operating guide

Eco-eye Smart3

August 2018

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Introduction to using Eco-eye Smart version 5031 with a computer

Eco-eye Smart has two totally separate methods of connecting to a computer.
- Offline data logging:
  Use **Smart3_card** to access the specially formatted memory card that logs readings every 4 seconds. The card has to be removed from the display and put into a card reader on a computer to transfer the readings.

- Real time display:
  Use **Smart3_usb** with the optional USB cable for:
  - streaming real-time readings to a graph and optionally store to a csv file
  - real-time uploads to the internet of things

Using the memory card in the Smart display.
Although this memory card can be used as normal on a computer it has actually been specially formatted to allow us to get many years of detailed data on to the card while still using very little battery power in the Smart display.
Any other memory cards will run the batteries down quickly and NO DATA WILL BE RECORDED.

The card is inserted with the contacts facing the front.

When a card is inserted into the slot on the side of Smart it will be checked and if it is a valid card the MC icon will come on. The # will also come on if Smart sees this as a new or initialized card. A * indicates that the card is known to Smart and it will add new readings after those already stored on the card.

If the MC icon is off, no readings are being recorded.

If Smart is rebooted for any reason you will need to transfer all readings to your computer and clear the card before Smart will write to it again. The computer data store is not affected and will be updated correctly when the next readings are transferred. There is an initialise button on the Trax card window.

The EcoLog.bin file on the card holds the recorded data and is in an exact location on the card. Do not reformat the card or make any changes to EcoLog.bin – it will stop the system from working and you will need to buy a replacement card.

The card is an MMC which is a predecessor to the common SD cards. If it is not recognised by a built in card reader, try a USB card reader as these usually support this format.

Smart3 is supplied with some demonstration readings but you will want to start a new datastore for your unit.

Smart3_card, program for Memory card readings

The display:
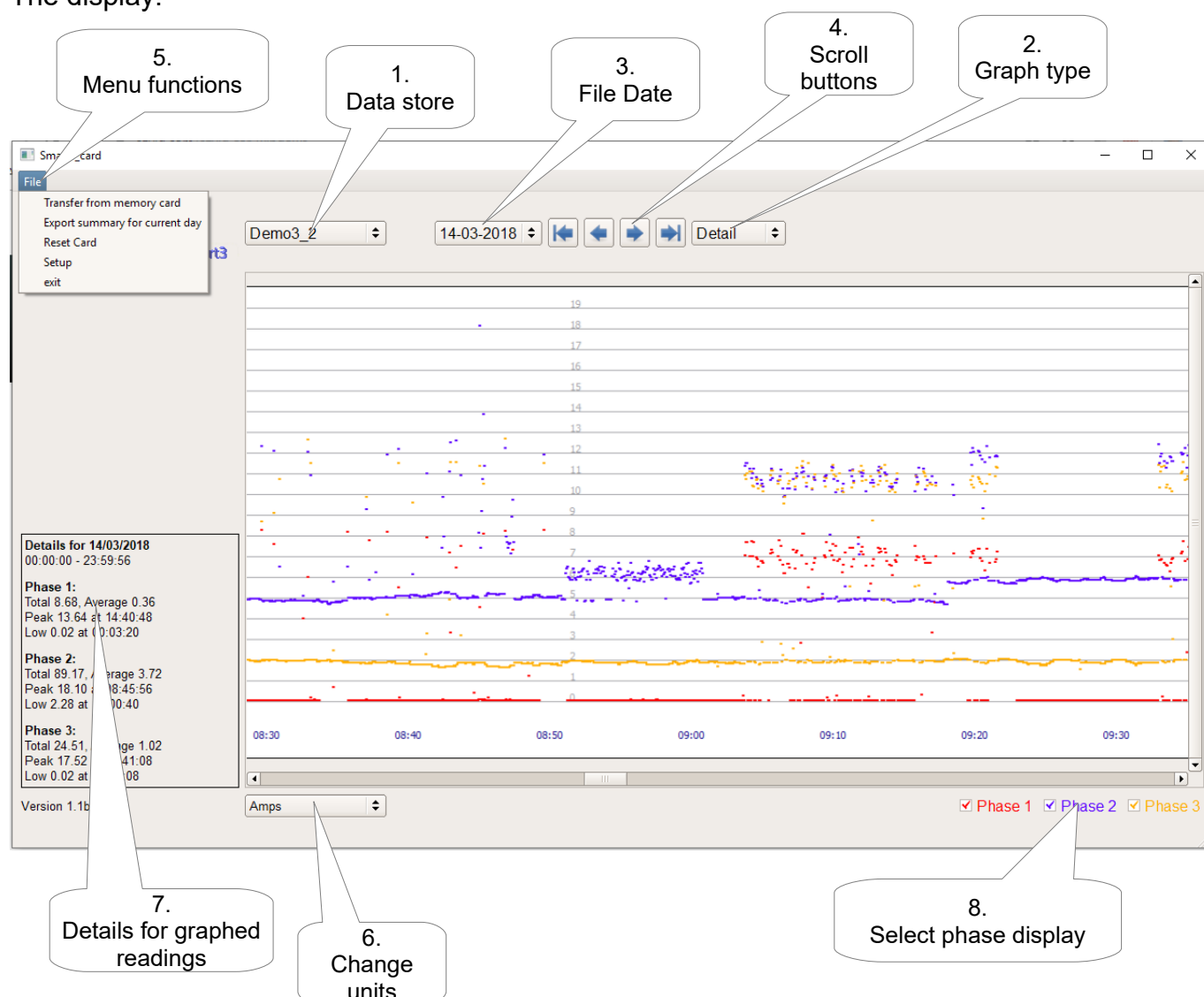
1. **Data store**.
   This is the name given to the Memory Card when it was first downloaded. Apart from storage space, there is no limit on the number of cards that can be stored. Note that until readings have been downloaded from the card, the graph will be showing demonstration data. The same card can be used to monitor a difgferent installation by resetting the card and then selecting New on the first Transfer operation.

2. **Graph Type**
   There are 2 types of graph: detailed showing every 4 second reading and summary with 1 point on the graph which is an average for ½ hour.

3. **File Date**
   Click on the date to change to a different day. You can only enter dates for files that have been created for this data store.

4. **Scroll Buttons**
   Use to move from day to day or to the start or end of readings

5. **Menu functions**
   Select the appropriate function to:
   1. Download readings from the memory card
   2. Export a summary csv for the current day (detailed csv files for each day are in the datastore already
   3. Reset the card. This is used to clear the readings from the card to start a new analysis or is needed if the batteries in the monitor are changed.
   4. Setup

6. **Change units**
   Select Amps or Kilowatts

7. **Details for graphed readings**
   This box relates to the day being displayed. It shows the total and average for each phase together with the peak and low and the time they were recorded.
   The units are the same as that selected for the main graph.

8. **Select phase display**.
   Use to toggle the display of the phases, the text colour is the same as the graph colour

To close the program use the red X at the top right of the window or file/exit.

Memory card operations

Smart stores the readings in internal memory and then writes them to the Memory card when the internal buffer is full. SmartPC stores 252 demand readings and writes to the card every 16 minutes. SmartPV stores 126 demand and generate readings so writes to the card every 8 minutes. Smart 3 phase has 3 readings to store so writes about every 5 minutes. It is essential that the card is in your Smart when this is due to happen other wise your readings will be lost.

To help you know when the next write will be, the icon slowly flashes for the last 2 minutes and for the last minute flashes fast.

To make sure you have time to download your data only take the card out from the Smart when the icon is **not** flashing.

Put the card into a card reader on your computer. Click on the card icon, Smart3p will find your card automatically. Note, this an MMC card and some built in readers do not support the format. If necessary use a USB card reader.

Click on File – Transfer from memory card

New card
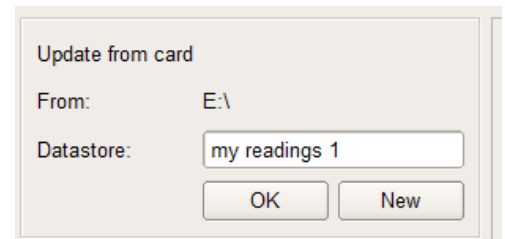The first time transfer is used the program will ask for a name to call this datastore.
Enter a unique name and press OK
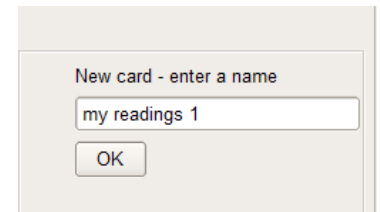
Update card
If the card has been used before it will tell you that it just update the readings already stored. Just press OK to continue with the update.
If you wish to start a new datastore, press New and then enter a new name as above

Download complete
A download complete message will be displayed when it finishes
Press OK then safe eject the card (see below) and return it to the Smart monitor.

A summary of the download is shown in the box bottom left for diagnostics.

Errors indicate possible radio interference.
Missed indicates bad radio reception.
(Null and old are for Eco Eye use only)
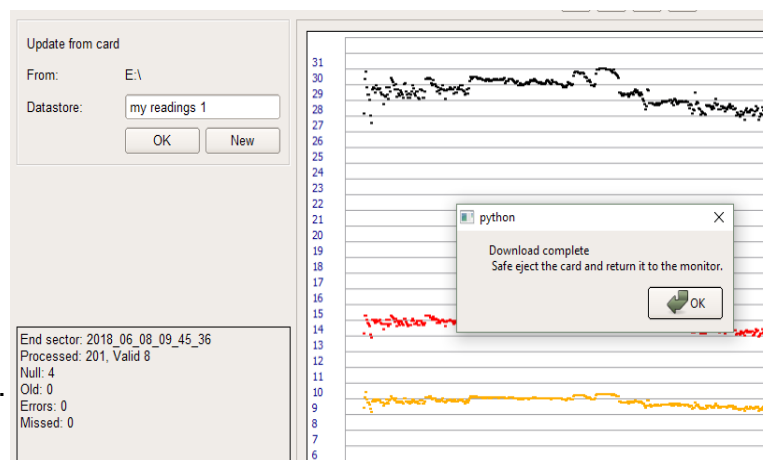
Safe eject the card and return it to the monitor.

Resetting the card.
There is space on the card for over a year of 4 second readings.
The card will need to be reset (sometimes known as initialising the card) to start at the beginning if the batteries are taken out of the monitor or it is reset for any other reason.
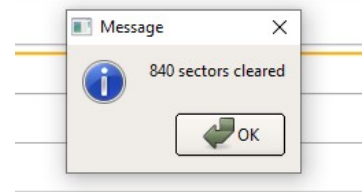You may also want to reset the card if starting a new monitoring site.

Put the card into your PC.

Click on File – Reset card.
If the card is found the program will ask for confirmation:
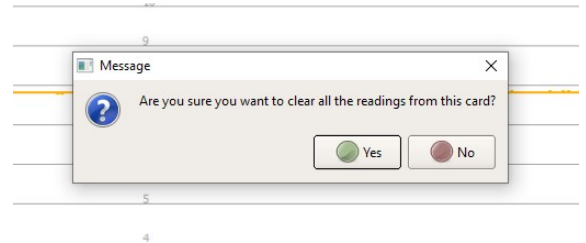
It will then confirm that it has cleared the readings from the card:

It is essential that you safe eject the card when it has finished!

Safe ejecting the card
It is essential to eject the card correctly as it could be corrupted if Windows has not finished writing to it.

On windows explorer or my computer, right-click on the removable drive (SMART) and then left-click on Eject.

As long as no messages are displayed it is now safe to take the card out of your computer and return it to the monitor.
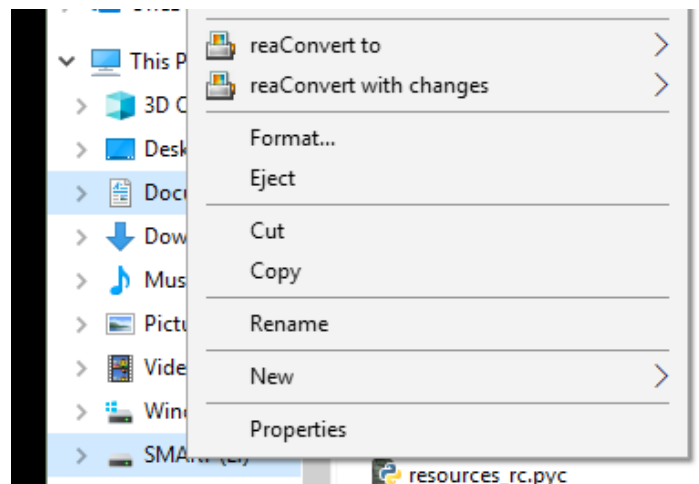
Data storage
The readings are stored in a folder using the name supplied below the Files3P folder in C:\Eco-eye

They are stored as daily CSV files called D$_yyyy_mm_dd.csv
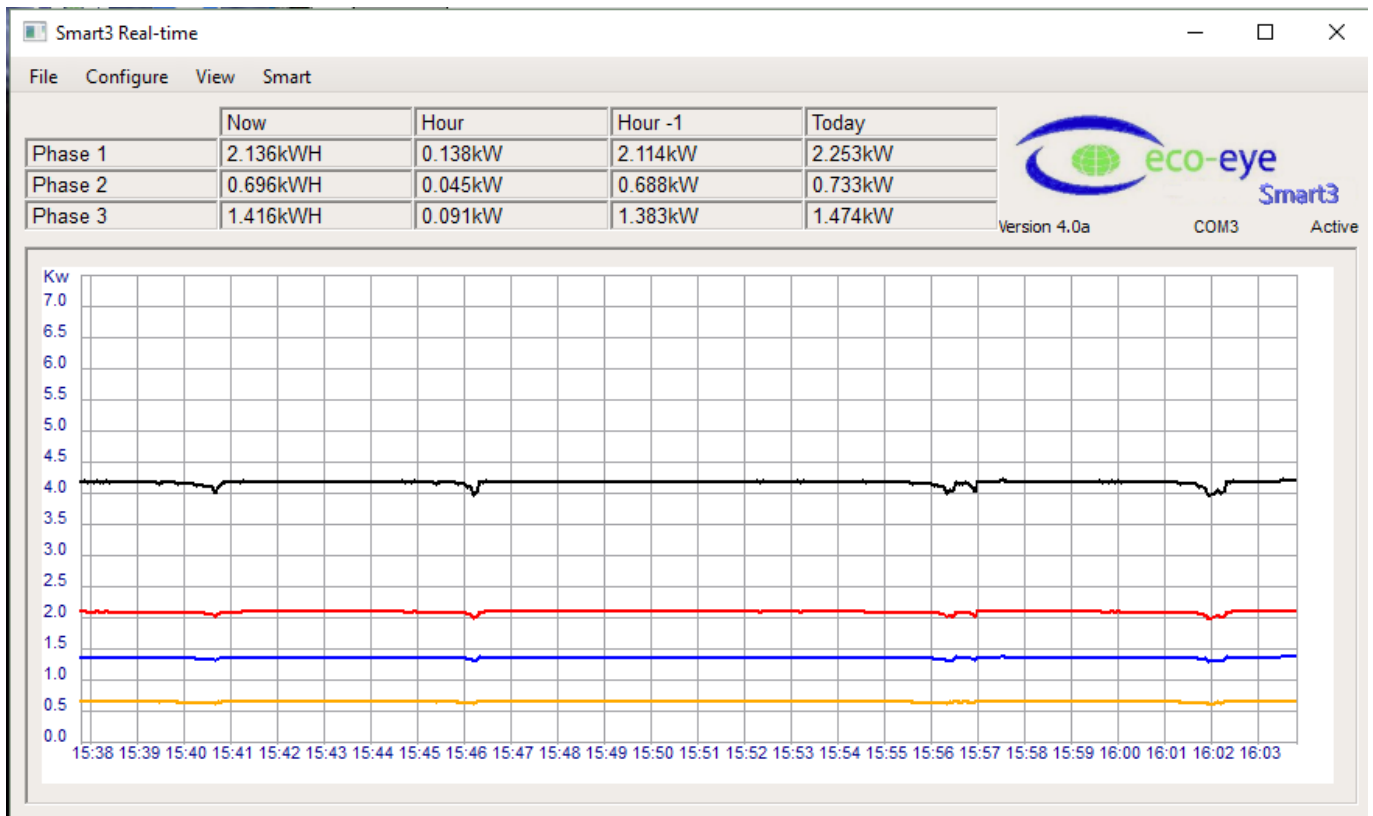Each reading consists of the following fields separated by commas:
Date
Time
Phase 1 reading in amps
Phase 2 reading in amps
Phase 3 reading in amps

Smart3_usb, Live monitoring with the USB cable.

This is the hub for all real-time access to Smart's energy monitoring. It requires Smart to be plugged in to a PC continuously for everything to work.

- Plug the cable into Smart and a spare USB port on your computer
- Start Trax_usb
- Trax will now try search for your Smart and if successful will start displaying readings
- If more than one possible port is found Trax will prompt for you to enter the correct port number (see appendix 1 for finding out what this number is).

If all is OK, after a few seconds the live graph will open as shown below. The port and status of the connection are shown under the Trax logo.

The graph will scroll and automatically change the kW scale to fit the readings currently being displayed. Re-size the window to display more or less information.

Closing the live window will disconnect from Smart and stop all logging after a short period.

The window can be minimized and logging will continue.

If your computer goes into sleep or standby mode logging will stop.

Top bar explanation

	Now	Hour	Hour -1	Today
Phase 1	2.136kWH	0.172kW	2.114kW	2.286kW
Phase 2	0.696kWH	0.056kW	0.688kW	0.744kW
Phase 3	1.416kWH	0.113kW	1.383kW	1.496kW

Version 4.0a   COM3   Active

Port

Status

Phase 1	Amount of electricity on phase 1
Phase 2	Amount of electricity on phase 2
Phase 3	Amount of electricity on phase 3
Now	Predicted – as will be seen on the display
Hour	Current Hour – actual value
Hour -1	Previous hour – actual value
Today	Total so far today

The port shows the active communication port.
The status shows the current status of the connection to Smart.

Smart3_usb Menu Options

Some of these are not available for Smart3 monitors at the moment

File - CSV
A message will ask you to confirm that you want to start logging.
There will be a tick against CSV if it is active.
By default, the file is created in the _Export folder in the Smart data directory, this can be changed in the Configure menu.
There is one record for each reading with date,time and the reading in amps.
This file can be read straight into a spreadsheet program.
Multiply amps by your voltage for Kilowatts.

To stop – click on CSV and a message will ask you to confirm that you want to stop logging

File – Email
Once Email reporting has been configured this menu item switches it on and off. There will be a tick against it when it is active.

View– Event Log
Exceptions during live events are written to a log file.
The level of logging can be controlled by the number set on Configure – general.
The icon will change to a ⚠ if a new message has been written to the file since it was last viewed.
The file is Trax_log.txt in the files folder of the eco-eye installation
Print on the view window is not yet implemented.

Configure – General

Only Voltage and Graph colours are applicable for Smart 3

Set Volts. This can be used to calibrate the readings.

The amount of CO2 released by generating 1 unit of electricity.

Tariffs
In the event of an overlap the higher rate number overrides the lower rate number.
A rate of 0.000 causes that rate band to be ignored.
Standing charge is entered as ponds per day so the example shows a standing charge of 13 pence per day

Coloured blocks allow the graph colours to be changed. (Temperature is for a new version of SmartPC)

Currency symbol can be changed

Check for updates enables Trax to check on start-up for updates.

Event logging level is for diagnostics and should be left at zero unless instructed to change it by Eco-eye support

The folder name at the bottom is the folder for smart data storage.

Configure – CSV

Folder for storing CSV files from the Trax live screen.

Check "Start automatically" to get Trax to start writing a CSV file as soon as the live screen is started.

Configure – Email

A valid email server and user is required to use this Trax service.

You will need the details for your email service, most of them you can find from your account
details in your email program
As an example if you have a gmail account, try the following:
Outgoing mail server: smtp.gmail.com
Port 465, tick Authenticate and tick Use SSL
Your user name is your email address

Others may use port 25.
Use the Send Test Message to check that it is working.

2 types of email are available when Smart is attached to a computer with the USB cable.

Daily reports contain hourly Kw used in a 24 hour period.

Alerts will be sent when electricity used in any hour is over the entered trigger value.

Check "Start automatically" to get Trax to enable emailing as soon as the live screen is started.

Enable summary csv and Enable debug to Eco-eye are for special projects. Contact support for
details.

Finding the port number on Windows 7

Click on start then Devices and Printers