PROFILE

Portable Energy Recorder
User Installation Guides

Contents

Profile Installation Guide

Always read the installation notes in the User Manual provided with the system and pay particular attention to chapters 1, 2 & 6 and all electrical safety statements. The full Profile User Manual can be downloaded from https://www.newfound-energy.co.uk/ProfileDocs/ProfileUserManual-Full2019.pdf

Installing a Profile system can involve working near to exposed electricity carrying items and should therefore only be performed by an electrical safety qualified person.

Moulded, plastic coils

Flexible, mini-coils

Profile can be set to record measured data at different intervals. Regardsless of this setting**, the system takes 1200 measurements of Amps and Volts every second** then records information for kW & kVAr plus supply Volts and circuit Power Factor for each interval.

Although setting the recording interval to a smaller period will store data with more definition (more data records will be stored), **recorded figures are no less accurate at the higher interval settings.**
E.g. Over a 30 minute period the kWh usage recorded on 15 min intervals might be 10 kWh & 20 kWh.
On 5 min intervals, they might be 3 kWh, 4 kWh, 3 kWh, 4 kWh, 6 kWh & 10 kWh - the totals over the 30 minutes are the same.

The default of 30 or 15 minute recording intervals is sufficient for most surveys. Lower recording intervals are only advised where the user needs to know what fluctuations occured *within* those default periods.
Demand intervals available for the user to set are 60, 30, 15, 10, 5 or 1 minute. See the system leaflet and full user guide for survey duration possibilities at the different data saving intervals.

To install and operate the system there will need to be a 13 amp socket fed from the same transformer as the load to be monitored. As an alternative to a 13 Amp socket and the standard mains lead, the optional fused probe mains kit can be used by a **competent electrician** to provide the voltage source for the system.

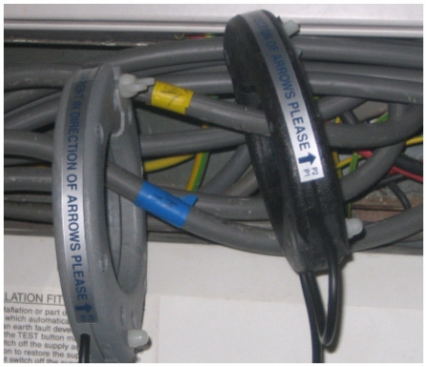
The installer should ensure that the polarity of the live and neutral supply to the Profile is correct.

To install the Profile follow the steps below.

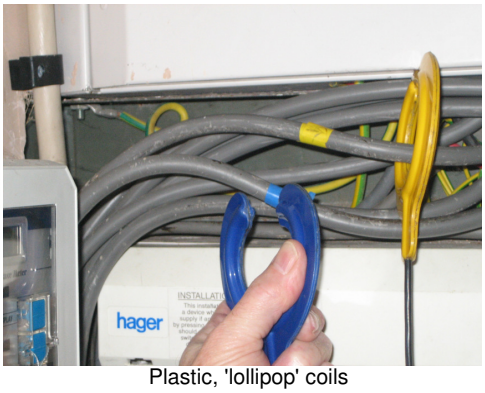
1. Power the Profile using the lead provided and the above mentioned socket. The display will show the mode of operation of Profile eg. 30 mins autologg

2. Connect the Rogowski coils to the Profile (via the 6-pin circular connector located on the top end of the Profile), then loop each coil around the relevant phase cable ensuring the current flow arrow indicates the direction of current flow to the load. If your Profile system has 'lollipop' style, flexible plastic coils ensure that the label on the side of each coil faces the load.

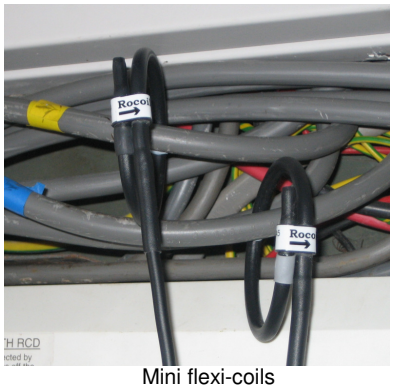
Warning: The Rogowski Current coils are fully insulated but should not be used on live conductors (e.g. bus bars). The application of these coils is the users responsibility at all times.



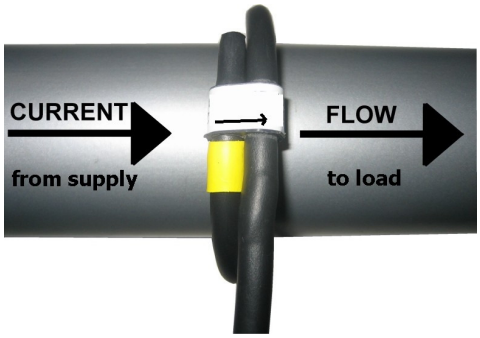
Moulded, plastic coils

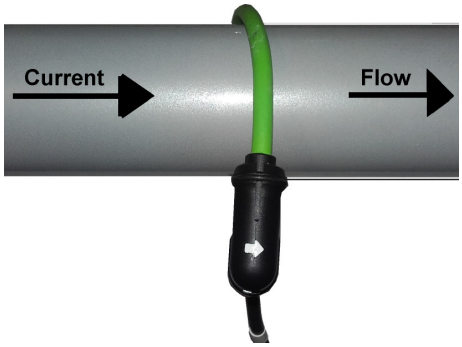


Plastic, 'lollipop' coils


Mini flexi-coils

It is vital to ensure that each coil is fitted around the correct phase and with the current flow in the correct direction.

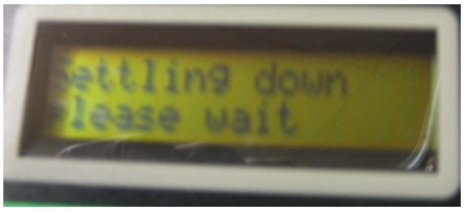




When using the moulded plastic or flexicoils, it is important that the connection is made as securely as possible with the coils closed firmly (moulded), or the end of the coil being pushed into the connection point right up to the stop (flexi-coils). Any gap left will slightly reduce the accuracy of the Profile's readings.
Each flexi-coil should be looped around the phase cable only once.

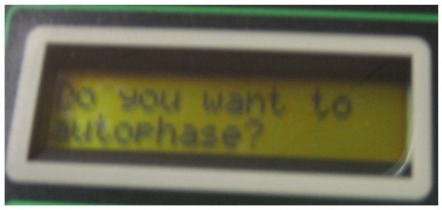
When using the flexi-coils **it is also important that the coils are not stretched**. Doing so could damage the internal structure. When the coil is in place, **do not pull** on flying lead as this could also cause damage.

3. To instigate recording press the return/enter key [↵]. The display will show **Settling down please wait**.



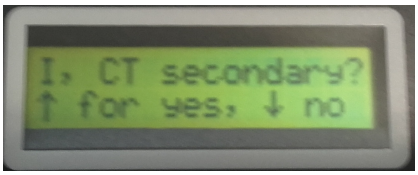
If this message does not appear, remove & return power to the Profile before re-trying.

4. a) With sufficient current flowing, the Profile display will ask **Do you want to autophase?** Unless you specifically do not wish to, answer yes by using the button with the up arrow [↑].



If you answer 'no' (down arrow [↓] key), you must phase by hand (see page 6)

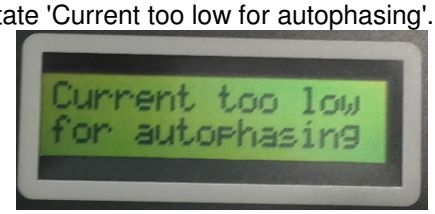
b) If the current flowing through the circuit cables is too low, the Profile may ask if the coils are on CT (current transformer) secondaries/tails.



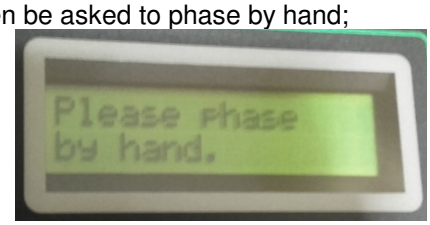
Use the up or down arrow key to answer yes or no.

If the coils are measuring on CT secondaries, you must use the up arrow to **select 'yes'** when asked to do so and proceed with the instruction in Measuring CT Secondaries (page 9).

If 'no' is selected, the Profile will state 'Current too low for autophasing'.

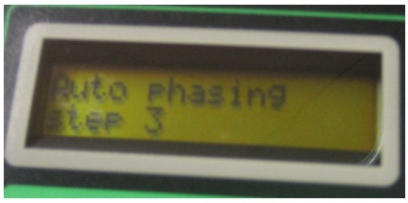


Press enter to preceed. You will then be asked to phase by hand;



See Phase by Hand (page 6).

5. All being well, the Profile will use 7 steps to determine which phase is powering the system and when succesful will display something like **OK red normal**.



6. This states that the voltage being measured through the 13 Amp socket is phase 1 [red or brown] and that phase rotation is normal, ie. phase 1, phase 2, phase 3. If rotation is reversed it will say something like **OK red reversed**, ie. phase 1, phase 3, phase 2 rotation. This situation is not a problem and recording can continue with the standard check on positive values being performed as described below.

7. If due to very low current or poor power factor it is not possible for the system to autophase, ***Autophase not possible*** will be displayed and you will be instructed to **phase by hand**. Please see the 'Phase by Hand' guide on page 6.

8. To view the measurements being made press the Escape key [ ] and the display will revert to presenting the date/time display. Using the up arrow [↑] key and down arrow [↓] key different display pages may be accessed. **A correct installation will usually* show positive kW for all 3 phases and positive kVAr for all three phases.**

9. If negative values are shown it is probable that one or more of the coils are either the wrong way around or on the wrong phases. Colour coded cables are sometimes incorrectly marked.

   *In some circumstances it is possible for a *'small'* negative kVAr reading to be shown even when coil installation is correct (*'small'* here means relative to the corresponding kW readings, e.g. -1 or -2 kVAr, against tens of kW or higher).
   This is usually due to inductive loads on the circuit being measured (computers ot florescent lighting for example).

Several display pages are available providing information on

- Phase kW, kVAr, kVA, A
- Volts
- Total circuit kWh and kVArh {krh} import & export
- Etc

The Profile system will now be recording data on all three phases connected.

If required the Profile can be used as a simple meter by reading the kWh & kVArh registers at the start of a survey and at the end to provide total circuit consumption for the survey period.

Once a survey for the required duration has been completed, the recorded data can be downloaded from the Profile via its USB connector & analysed using the ProPower2 PC software or the Profile App for Android. Please refer to software documentation for more details.

Older Profile systems may have a 9-pin serial port for data transfer. With newer PCs the use of a suitable USB to serial adaptor is therefore necessary.
Alternatively the Profile system can be upgraded to provide USB connectivity. Please contact NewFound Energy for more details.

Phase by Hand Notes

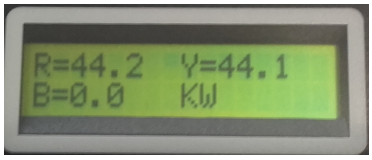
You are required to perform this operation because Profile has instructed you that it is unable to autophase. An instruction to ***'phase by hand'*** will have been displayed on the Profile display.

In this mode thre Profile sets itself to believe that the unit's power is sourced from the phase that coil 1 is installed around. Please ensure that installation caters for this.

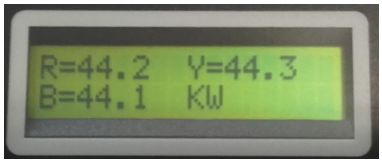
To phase by hand remove all of the coils then re-connect one at a time.

1. First put coil 1 [red/brown] on the cable believed to be phase 1 ***[phase providing the system voltage] ensuring correct orientation with regard to current flow*** and, using the up arrow [↑] and down arrow [↓] keys, scroll to the appropriate displays to check that phase 1 kW & kVAr are positive.

2. If so proceed to put coil 2 [yellow/black] on the cable believed to be phase 2 and then check that all of phase 1 & 2 displayed kW and kVAr are all positive.



3. If this is the case coil 3 [blue/grey] can then be connected. Again check for positive kW & kVAr on phase 3.



If at any time negative values are displayed then a coil may* be either on the wrong phase or has the wrong orientation.

Coils should be installed so that all phase kW and kVAr values displayed are positive*.

Once this 'Phase by Hand' process is complete, the Profile can be left in situ to record as if the autophase routine had completed successfully.

*In some circumstances it is possible for a *'small'* negative kVAr reading to be shown even when coil installation is correct (*'small'* here means relative to the corresponding kW readings, e.g. -1 or -2 kVAr, against tens of kW or higher).

This is usually due to inductive loads on the circuit being measured (computers ot fluorescent lighting for example).

Using Profile for Single Phase Surveys

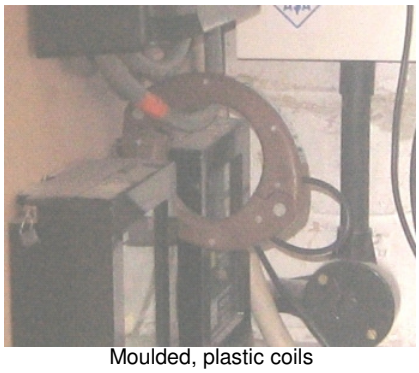
Please also read through the Profile Installation Guide on page 2 to familiarise yourself with the full Profile operation.

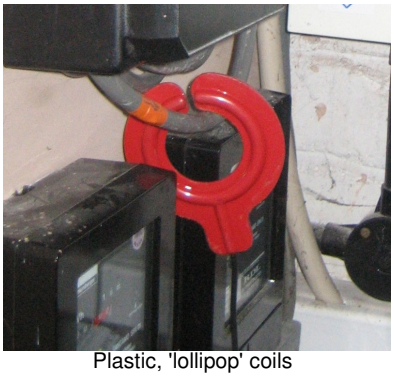
For single phase installation use the red/brown phase 1 coil only. The system will assume that the voltage providing power to the Profile is from the same phase as that being measured by the coil. It is essential that this is the case.

1. Connect coils to the Profile system (via the 6-pin circular connector located on the top end of the Profile), and power the Profile with the supplied mains lead.

2. Put the red/brown coil around the supply cable [live only, i.e. the coil should NOT be looped around both the live & neutral] **ensuring that the direction arrow points in the direction of current flow.**

   If your Profile system has 'lollipop' style, flexible plastic coils, ensure that the label on the side of the coil faces the load.

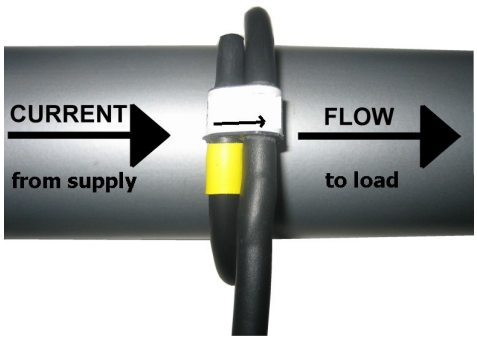

Moulded, plastic coils

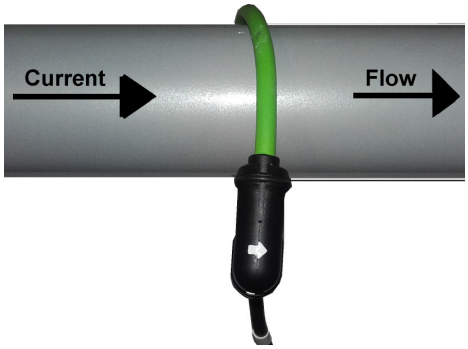

Plastic, 'lollipop' coils

flexicoils

When using the moulded plastic or flexicoils, it is important that the connection is made as securely as possible with the coils closed firmly (moulded) or the end of the coil being pushed into the connection point right up to the coloured stop (flexicoils). Any gap left will slightly reduce the accuracy of the Profile's readings.

Each flexi-coil should be looped around the phase cable only once.



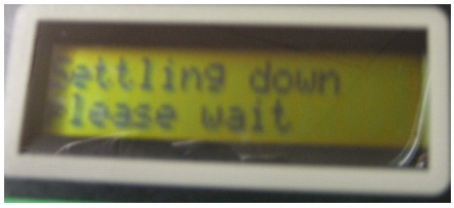


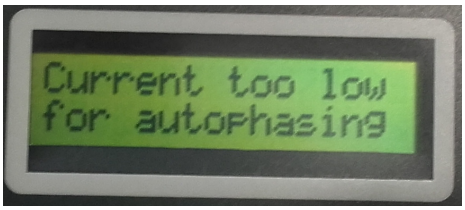
When using the flexi-coils **it is also important that the coils are not stretched**. Doing so can damage the internal structure. When the coil is in place, **do not pull** on flying lead as this could also cause damage.

3. The system will power up with the date & time on display as well as a statement of logging mode (e.g. '30 mins autologg').

4. Press the enter key: 

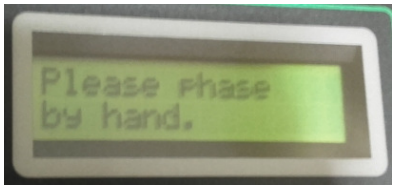
   The system will display *'Settling down please wait'*, followed by *'Current too low for autophasing'*





Press the enter key again.

5. The Profile will then state *'Please phase by hand'*. Providing you have the coil installed correctly you need do nothing further.



6. Press the escape key: 

   Then, using the up arrow [↑] and down arrow [↓] keys, scroll to the appropriate displays to check that phase 1 kW & kVAr are positive*.

The system will now record energy use over the selected recording period for the measured cable.

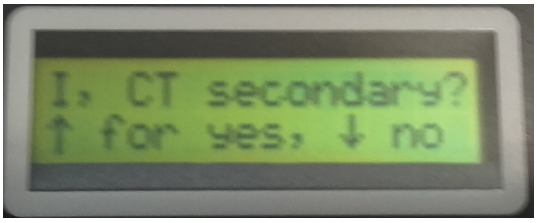
*In some circumstances it is possible for a *'small'* negative kVAr reading to be shown even when coil installation is correct (*'small'* here means relative to the corresponding kW readings, e.g. -1 or -2 kVAr, against tens of kW or higher).

This is usually due to inductive loads on the circuit being measured (computers or florescent lighting for example).

Measuring CT (Current Transformer) Secondaries

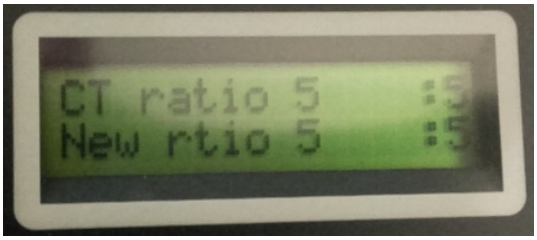
First read the Profile Installation Guide on page 2.
If the circuit current exceeds 2000A, or the circuit cables are inaccessible, the Profile coils can be attached to CT secondaries/tails.
In this circumstance the coils should be connected in the usual way, ensuring that they are connected to the correct phase & with correct orientation (please see the Profile Installation Guide).
It should be noted that the Profile will assume that the CTs in question have a 5A secondary current

1. At the point of Autophasing, the low current flow will prompt the Profile to ask if it is connected to CT secondaries.



Answer 'yes' using the up arrow key [↑].

2. The Profile will then ask you to set the CT primary current.



The first line of this display ('CT Ratio....') states the current CT ratio set.
Using the up & down arrow keys, set the 'New rtio...' to match the primary current of the CTs being measured.

3. Once the 'New rtio...' is set correctly, press the enter key  to confirm the setting.

4. Once the 'CT Ratio....' is set, press the escape key; 

5. The Profile will return to its main display page and record data using the CT ratio set.
The Phase by Hand procedure should now be completed (see page 6).

The specification of the Profile Portable Energy recorder is subject to change without prior notice. The guides in this document reflect the capabilities at the time of writing.

This document is intended as a guide only. NewFound Energy Ltd cannot be held responsible for any issues arising from incorrect use or installation of the Profile.

Any customer requiring further guidance in the use of Profile should contact their supplier.

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