CAMLIN POWER

PROFILE P3
Operational Manual

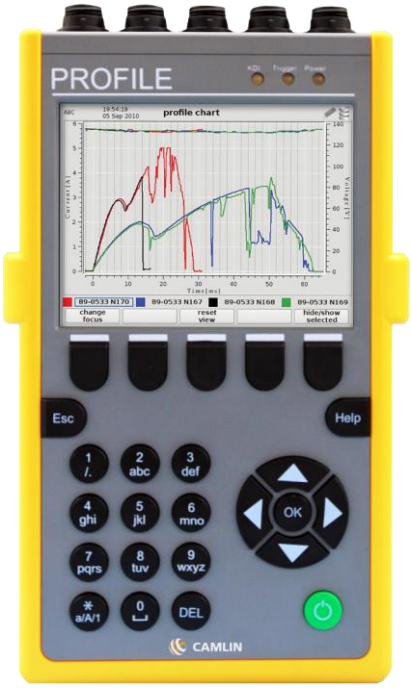

Figure 1 - PROFILE P3 Handset


DC VOLTAGE LEADS
POWER SUPPLY
DC INPUT
DC Voltage
CAT III 300V
DC Power
L1
L2
L3
AC Probes
DC Probe
Trigger/Sync
DC PROBE
CONNECTION
PEG CT CONNECTIONS
CAMLIN
DEVICE
INTERFACE
TRIGGER STATUS
POWER
INDICATION
USB PORTS
PROFILE
CB Test
Auxiliary
Setup
INDICATION ICONS (3)
USB CONNECTION STATUS
BATTERY CHARGE STATUS
N
BATTERY TYPE
BATTERY
COVER
Esc
Help
SOFT KEYS
OK
PRESS HELP
FOR USER
INSTRUCTIONS
DEL
CAMLIN
POWER
ON & OFF

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POWER

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www.camlinpower.com

Contents

1. Introduction

The **PROFILE P3** provides a unique insight into the true condition of circuit breakers at all voltages. Capturing the vital 'first trip' shows how the breaker would perform in a real-life fault situation.

A slow tripping circuit breaker can cause major disruptions on power networks resulting in:

- Widespread loss of supply
- Damage to plant
- Potential safety issues
- CI / CML financial penalties

Conventional testing requires a circuit breaker to be isolated. However this **first trip** operation can often temporarily clear any slow tripping problem.

Therefore capturing the **first trip** operation is essential to effective circuit breaker condition monitoring.

The PROFILE P3 offers a cost effective solution by enabling:

- Fast and simple online test
- Capture vital **first trip** operation
- Onsite analysis of breaker defects
- Efficiently target critical resources
- Combined relay and circuit breaker test

PROFILE P3 is a powerful diagnostic tool for analysing:

- Main contact operating time
- Auxiliary contact operating time and condition
- 'Health' of Close & Trip coils
- Condition of DC battery circuit
- The Total Trip Time

2. Profile System Overview

The Profile P3 and all accessories are supplied in a ruggedized carrying case.

Profile P3 Handset

This is a microprocessor based data acquisition and analysis system. It is controlled using the integral alpha numeric keypad to select options from the graphical user interface (GUI) on the large colour screen LCD. The probe and power supply connections are as shown in Figure 1- Profile P3 Handset. The P3 is supplied with 8 AA rechargeable batteries and also a DC Power Supply for recharging the batteries and powering the P3 when left onsite in continuous rearmed mode. The P3 has a removable hand strap which can be located on either side of the unit.

DC Current Probe

The DC current probe plugs into the 6 pin connector (see Figure 1) and has a range of 0 to 200 amps. It connects to the DC supply to the trip or close coil as required and is powered directly from the P3 handset.

DC Voltage Measuring Leads

The fused leads with crocodile clip connections are used to measure the circuit breaker DC voltage supply. The leads are rated at 1000 volts and have a measurement range of ±400V

Clip-on Current Transformers (CT's)

The three clip-on CT's are used to obtain the main contact time (Mcon) during a trip or close operation by measuring the current in the primary circuit.

They are clipped around the secondary wiring of the main protection CT's and connect to the 4 pin connectors as shown in Figure 1.

DC Power Supply

A DC power supply is provided to charge the rechargeable batteries and also power the handset when it is left in continuous rearm mode.

Trigger/Synch Device Interface

There is a facility to connect an interface device to an 8 pin connector. This is for future applications where devices can communicate, synchronise and be triggered by the P3 handset.

Additional Accessories

A USB memory stick is provided so that new software can be uploaded as well as data files such as record files and asset management details. There is also a USB lead which enables test results to be transferred to a PC either directly or via Replay Pro.

3. Profile Operation

There are 3 distinct areas within the main screen as follows –

- The Application Header is used to display most of the basic handset operation information and is always available on the top part of the screen.

- The Main Application screen is where the details associated with performing a test and analysing the results in both tabular and graphical format are viewed.

- The Application Footer displays a fixed set of 5 'soft' buttons corresponding to the 5 Functional keys immediately below on the keypad. These are context dependent and each button will correspond to an action available for the current screen.

The start-up screen on the Profile P3 is shown in Figure 2.

- CB Test: guides the user through the necessary steps to perform a test

- Auxiliary: enables stored test results to be viewed, data to be imported into the handset, and the system status to be viewed.

- Setup: enables the date and time and also the date format to be changed.

Figure - 2 Main Screen

Figure 3 shows how the Profile is connected for carrying out a 3 phase test on a 'live' circuit breaker.

- The DC current flowing through the trip coil is measured by a Hall-Effect CT and provides analysis of both the trip coil and main mechanism.

- The voltage probe measurement provides a clear indication of the condition of the DC battery and associated wiring.

- Peg CT's indicate when the current flowing in the main circuit has been interrupted.

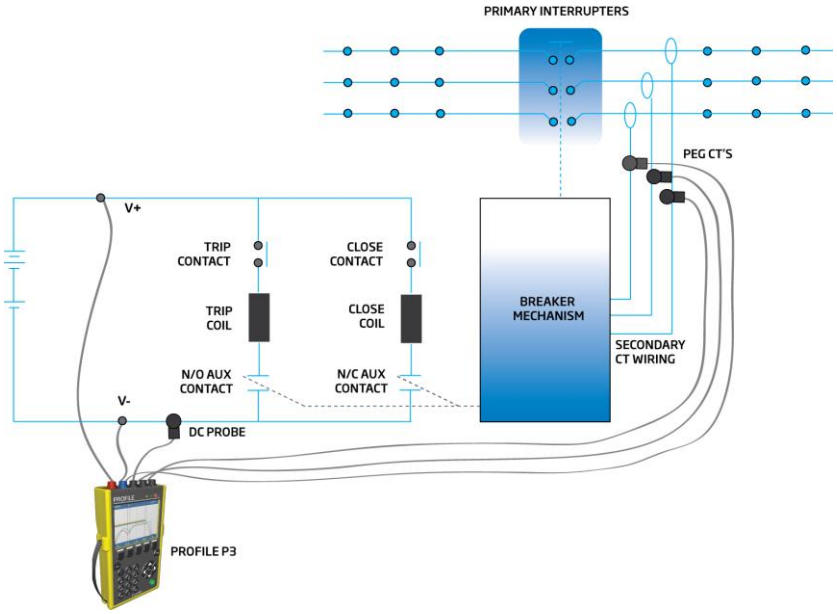


Figure 3 – The P3 connected for an online 3 phase test

3.1 Circuit Breaker Test Menu

This is where the user performs a circuit breaker test and capture trip and close profiles. There are three options for entering the test details as shown in Figure 4. Once the test details are entered, the user will select the test sequence by choosing the type of operation ie TRIP/CLOSE/TRIP FREE and the test mode ie SINGLE or MULTI. Once the test details are acknowledged then the user is prompted to connect the test probes and is provided with a visual indication that the correct connections have been made before arming the profile ready to capture a profile. The option to set the P3 in MULTI mode allows the user to capture and save multiple trip and close operations.

The intelligent power management system enables the handset and dc clamp to be left connected and powered for an indefinite period of time.

A detailed explanation of each stage in preparing the profile to carry out a 3 phase online test is given below.

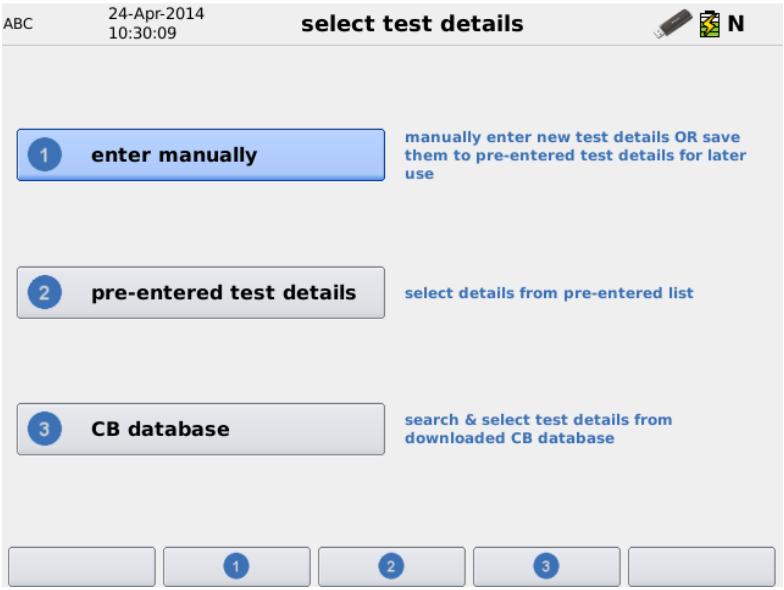


Figure 4 – Select Test Details

Manual Entry of Test Details

Selecting the *enter manually* option displays the screen as shown in Figure 5, and allows the user to manually enter new test details into each of the following four fields -

1. Substation - Unique substation name
2. Breaker ID – Unique circuit breaker identifier
3. Breaker Type – Circuit Breaker Type
4. Circuit ID – Unique circuit identifier

Note all of these fields can contain both alpha and numeric characters which are entered using the alpha numeric keypad in conjunction with the keypad mode key. The minimum field length is 2 characters and the maximum is 35 characters. If the details are already stored within the P3 circuit breaker database, then when the first character is entered in any field, all names beginning with that character are displayed in a pull down menu which the user can then select from.

The following fields are mandatory: Substation name, Breaker ID and Breaker Type, whereas the Circuit ID field is optional.

These test details can then be immediately used to carry out a circuit breaker test or saved to the pre-entered test details for future access.

There is also an option for loading the previous test details and editing the required field before either proceeding with the test or again saving them to the pre-entered test details for future access.

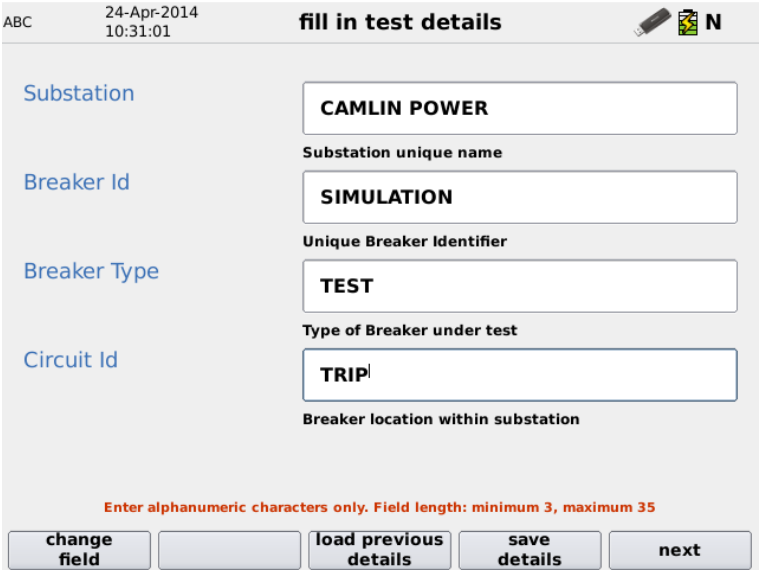


Figure 5 - Manually Enter Test Details

3.2 Selecting from Pre-entered test details

The user is able to select details from a pre-entered list which has either been downloaded via the usb port or saved from the manual entry option (see Figure 6). The test details can be selected from the screen by typing the number of the appropriate row (1 to 9) on the keypad. If there are multiple screens of data these results can be paged nine at a time by using the left/ right arrow keys.

A specific substation can also be selected by typing the initial part of the substation name in the box provided at the top of the screen. The substation box is selected using the *change field* soft key. The *reset* soft key resets the screen display of all pre entered test details. To assist with locating the relevant test details, the user can also make use of the sort function which can be applied to any column in order to display the data in ascending or descending order. This is achieved by pressing the *change column* soft key followed by the *sort* soft key. Once the row containing the desired details is selected, pressing the OK key then takes the user to the next screen. The *update* key allows any field to be edited prior to doing a test.

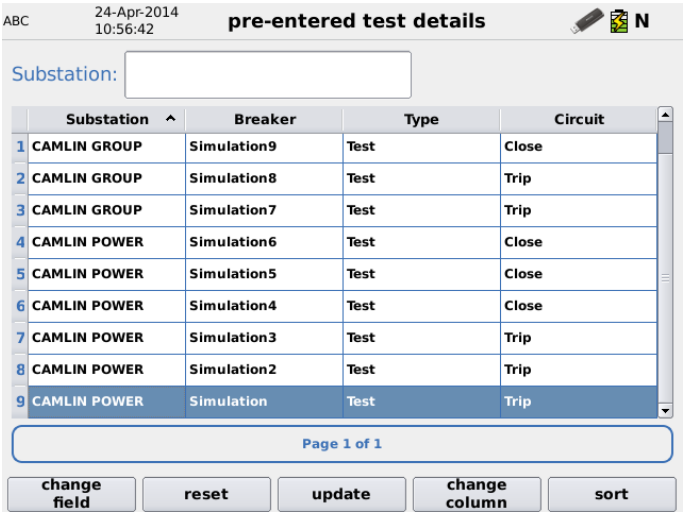


Figure 6 - Pre-entered test details

Selecting from a CB (Circuit Breaker) database

The user can search for the test details within a downloaded circuit breaker database by starting to type the substation name in the substation box as indicated in Figure 7. If these details are held within the database, then a list of substation names will appear in a drop down menu for selection. Once a substation name is selected by using the up/down arrow keys and pressing the OK key, a list of breaker ID's from that substation are presented. The circuit breaker to be tested can be selected by either scrolling down the list using the up/down arrow keys then pushing the OK button or starting to type the initial characters in the breaker ID box. The remaining fields (Breaker Type and Circuit ID) are then automatically populated. Details can be reselected by pressing the *reset* soft key. Once the desired details are selected, pressing the OK key or *next* soft key then takes the user to the next screen.

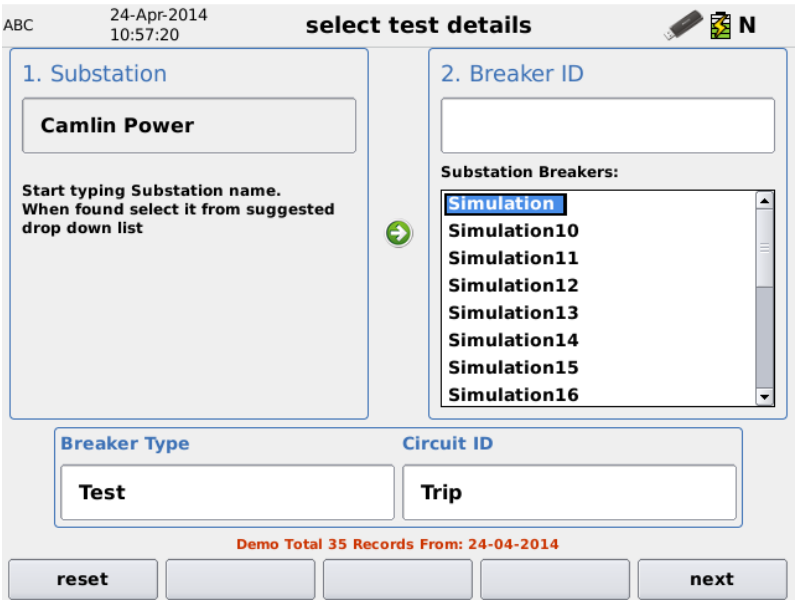


Figure 7 - Selecting Test Details from Circuit Breaker Database

3.3 Selecting Trigger and Operation Mode

Once the initial test details have been entered by one of the three options described in section 3.2, then the following operating modes can be selected by pressing the relevant soft key:

- Test Mode - Single or Multi
- Trigger Mode - Normal or Sensitive
- CB operation mode - Trip, Close, or Trip Free

Figure 8a shows the default setup for a first trip test and figure 8b shows

Note the Sensitive Trigger Mode should only be selected for trip or close coils where the current is very low and will not trigger the P3 when in normal Trigger Mode. The Sensitive Trigger mode may be more susceptible to false triggers due to the lower signal to noise ratio.

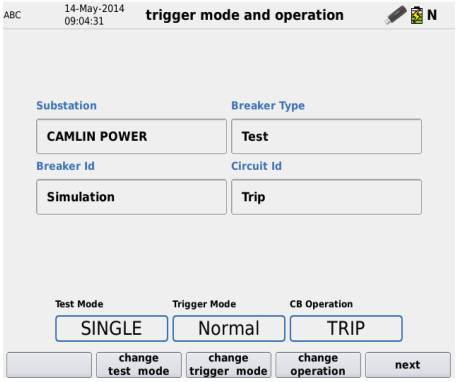


Fig 8a – Normal Test Mode

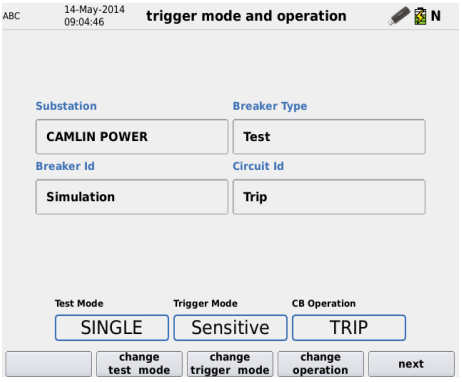


Fig 8b – Sensitive Test Mode

Selecting the MULTI mode enables multiple trip and close operations to be captured. After each trip or close operation, the P3 will automatically rearm within 15 seconds.

3.4 Pre-Test Confirmation

At this stage the user has entered all the required test details and can then select the *next* soft key where they are prompted to connect the test probes from the handset to the circuit breaker as shown in Figure 9. The test connections to a circuit breaker are shown in Figure 3.

Figure 9 - Correct Test Connections

Once the probes are connected there is a clear visual indication to the user that all test probes have been properly connected before operating the circuit breaker. On top of the screen the connected probe status is displayed. A **green** background means a probe has been detected while **orange** indicates either no probe has been connected or there is a bad connection on that channel.

Figure 10 indicates that there is a problem with the L3 clip-on CT connection.

Figure 10 - Wrong Test Connections

3.5 Armed mode

Once the user is satisfied with the pre-test confirmation checks, they can press OK and they will then be presented with the screen as shown in Figure 11a which indicates that the data acquisition module within the P3 is ready to capture data by displaying ARMED.

NOTE: In some situations the P3 may trigger before the circuit breaker has tripped. This is usually due to current already flowing in the circuit which the DC probe is connected to. If this happens the user should determine the reason for the 'false' trigger and if necessary, reposition the DC probe.

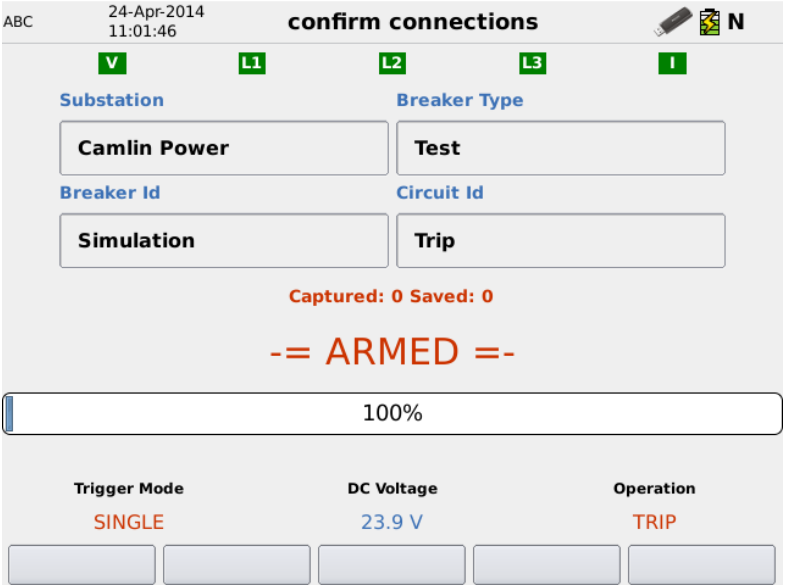


Figure 11 - Profile Armed

3.6 Initiating Test and Processing Data

At this stage the user is ready to perform a test by electrically tripping or closing the circuit breaker. During the data capture and analysis the following onscreen messages are displayed in sequence –

CAPTURING, DATA TRANSFER, ANALYSING, ANALYSIS DONE

NOTE: When the P3 is in MULTI mode, the analysis is performed in the background to enable the P3 to quickly rearm. This is indicated by the following on screen messages

CAPTURING, DATA TRANSFER, ARMING, ARMED

3.7 Analysis Results

Once the data analysis is completed the results are displayed in both graphical and numerical formats as shown in Figure 12a.

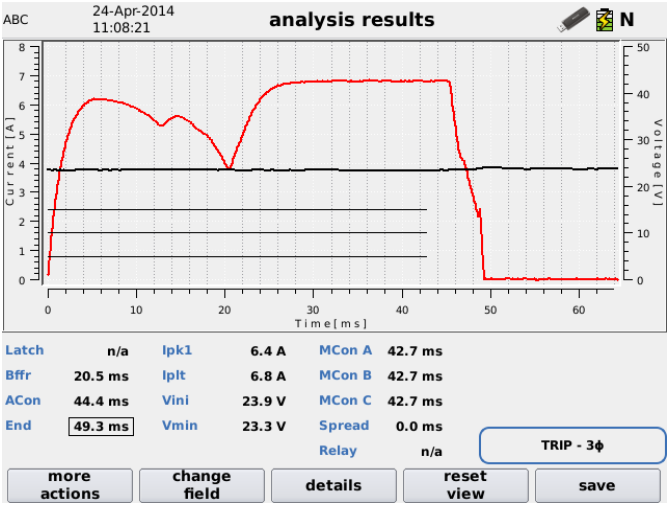


Figure 12a - Analysis Results

The user is able to change selection between latch, buffer, acon and end parameters by pressing the *Change Field* soft key and the corresponding position will be indicated on the graph. The horizontal black lines indicate the MCON times and spread. Also by pressing the *Details* soft key, the user can tag a record as GOOD, BAD, SUSPECT or SIGNATURE (benchmark trace for breaker type) and comments noted as shown in the example displayed in Figure 13. The arrow keys can be used to expand, contract or shift the graph on the screen.

NOTE: When the records are captured in MULTI mode, the analysis results are not displayed. Press ESC and the message 'Are you sure you want to Cancel?' will appear, then press the *Yes* soft key. Continuing to press the ESC key allows the user to either select another test mode or to return to the main screen. An option to display the AC wave form (see Figure 12b) at the point where the circuit breaker opens or closes is available by pressing the *more actions* soft key and selecting *display Mcon AC data*.

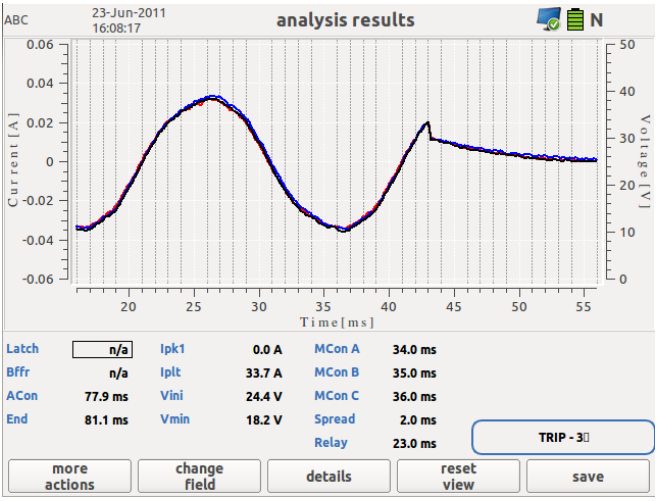


Figure 12b - AC Waveform

The user can retrieve the test results for viewing and analysis, as described in section **4.1.**

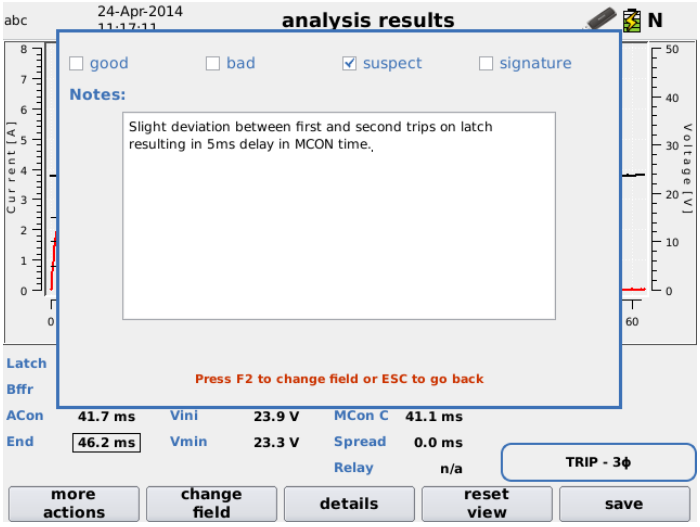


Figure 13 - Test details

3.8 Test Results Options

Once a test is completed the following options are available:

- Amend the test details as described in section 3.7
- Save or discard the test record
- If Save is selected then the user is provided with the option to do another test. If this option is chosen, then the test entry screen that was used to enter the test details is displayed.
- If either the test result is not saved or the option to another test is not chosen, then the user is returned to the main screen.

4. Auxiliary Menu

When the Auxiliary icon is selected from the main screen (see Figure 2, page 6), the user is presented with four options as show in Figure 14 below.

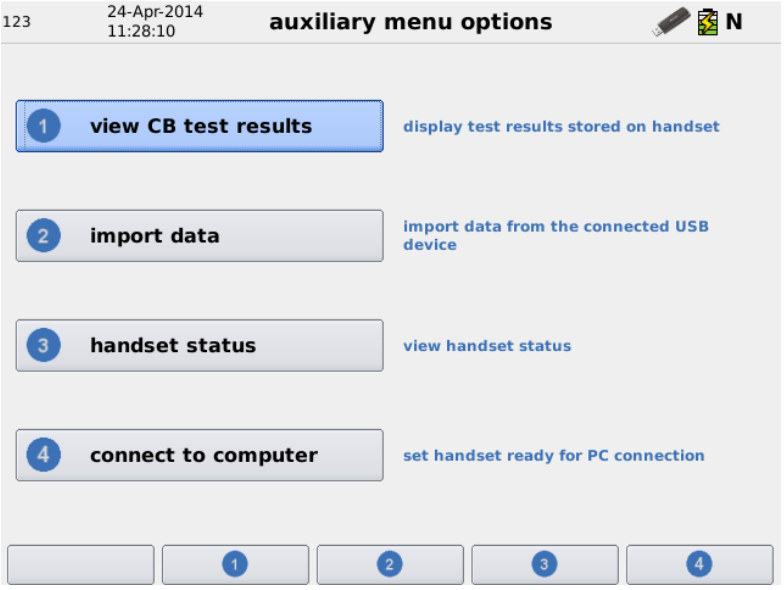


Figure 14 - Auxiliary Menu

4.1 Selecting and Viewing Profile Records

Once the View CB Tests option is chosen, the user is presented with the screen as shown in Figure 15a. Records stored on the handset are displayed in tabular format. A record can also be marked for viewing in graphical mode.

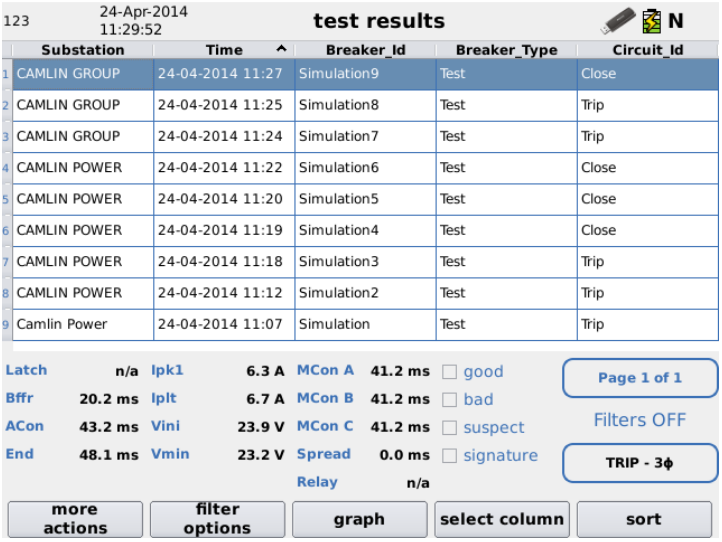


Figure 15a - Handset Profile Tests

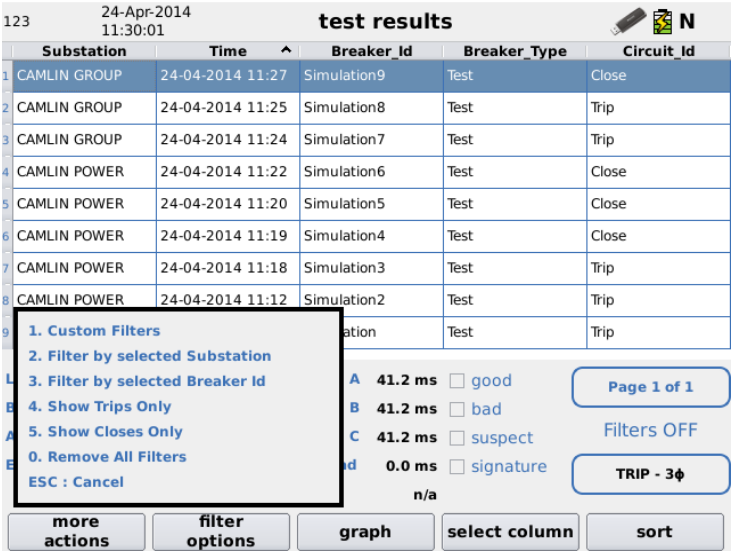


Figure 15b - Filter Options

Record Filter Options

The following range of options for selecting test results are presented via the *filter options* soft key as indicated in Figure 15b.

1. *Custom Filters* – enables the user to apply a customer filer as described below

2. *Filter by selected Substation* – displays only records that contain the substation name within the record that is selected.

3. *Filter By Selected Breaker ID* – displays only records that contain the breaker id within the record that is selected.

4. *Show Trips Only* – displays only trip records

5. *Show Closes Only* – displays only close records

0. *Remove All Filters* – removes all applied filter options

ESC. Removes filter option menu list

Using the *Custom Filters* option enables multiple search criteria to be applied to precisely filter the records to be displayed as shown in Figures 16 and 17. The search criteria include; substation, breaker id, breaker type, and records can also be filtered by operation: close, trip, trip free or record tags. The tag list has four options; Good, Bad, Suspect and Signature. The Signature option is where a trace is considered to be the optimum for that circuit breaker type.

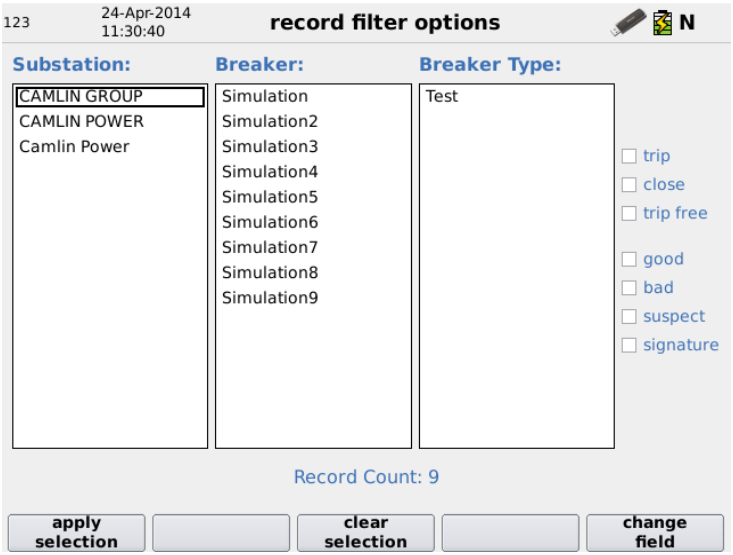


Figure 16 - Applying a Filter

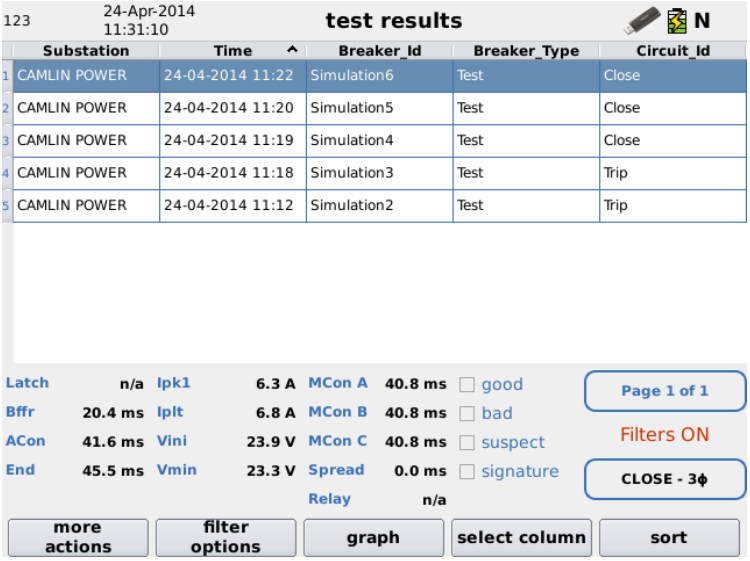


Figure 17 - Filtered Result

Record Management Options

When *view CB test results* and *more actions* are selected, a window appears as shown in Figure 18 that has the following options –

1. *Delete Selected Record* – up to 4 selected records can be deleted

2. *Delete All Records on Page* – all 9 records on the page are deleted

3. *Re-analyse Selected Record* – applies the latest analysis algorithm to a test record

4. *View Record Info* – this displays any notes that have been saved

6. *Export selected Records to USB* – up to 4 selected records can be exported to a USB memory stick

7. *Export all Records on Page to USB* – all records on a page can be exported to a USB memory stick

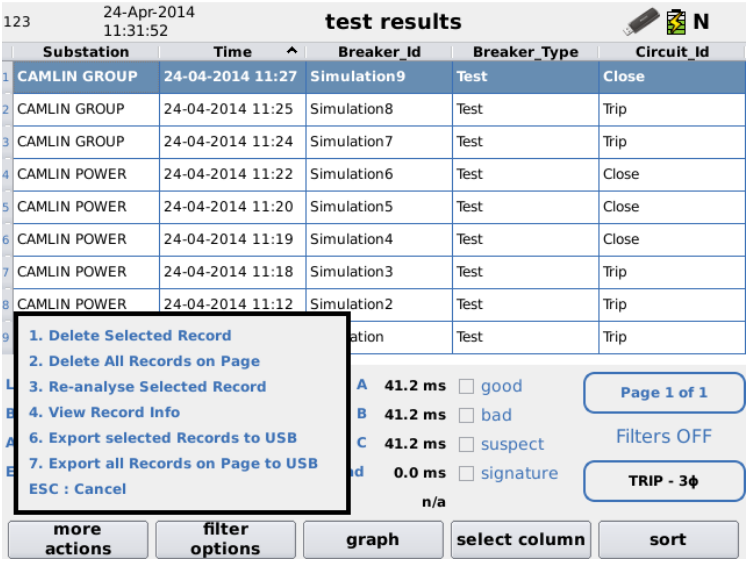


Figure 18 - Record management options

Comparison Function

Comparing the first trip key parameters such as Buffer, Acon and Mcon times to those from a subsequent trip will give a clear indication of potential 'slow trip' problems within the circuit breaker. Although this can be achieved by overlaying two trip profiles, the operator still has to calculate the difference in these parameters between the first and second trip and then determine if they are outside acceptable limits.
The *Compare* function automatically calculates and displays the difference in the key parameters between first and second trips, and indicates if they are outside pre-set tolerances. If required, three trip operations can be compared, with the difference between the first trip to second and third being displayed.

Setting Options for Compare Function

The parameters as shown in Figure 19 can have % tolerances individually set. This is achieved by first selecting the *Compare* tab within the *Setup* menu. Please refer to section 5.2 of this manual.

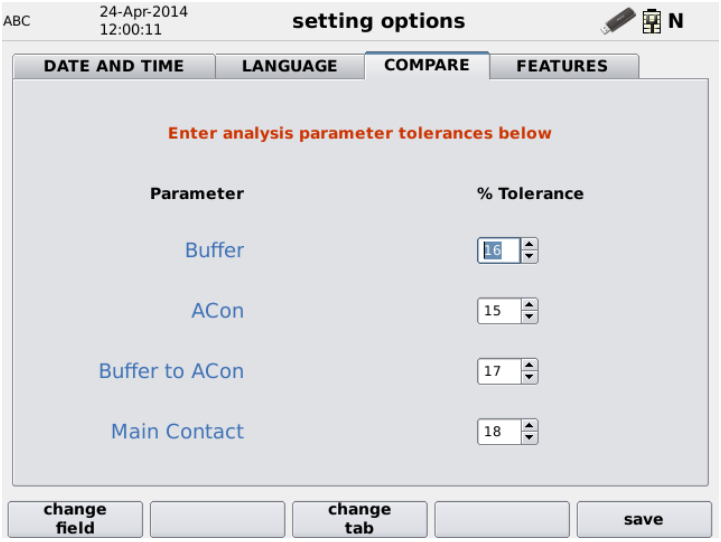


Figure 19 - Selecting comparison tolerances

View Comparison Function

To select the *View Comparison* function, two records (normally this will be first and second trip) must first be selected for comparison from the view CB test results option. Three trip records can also be selected for comparison. Once these records are selected there are then two ways of selecting the comparison function as shown in the Figures 20 & 21. Note if fewer than two records are selected, then the *View Comparison* function will not be available.

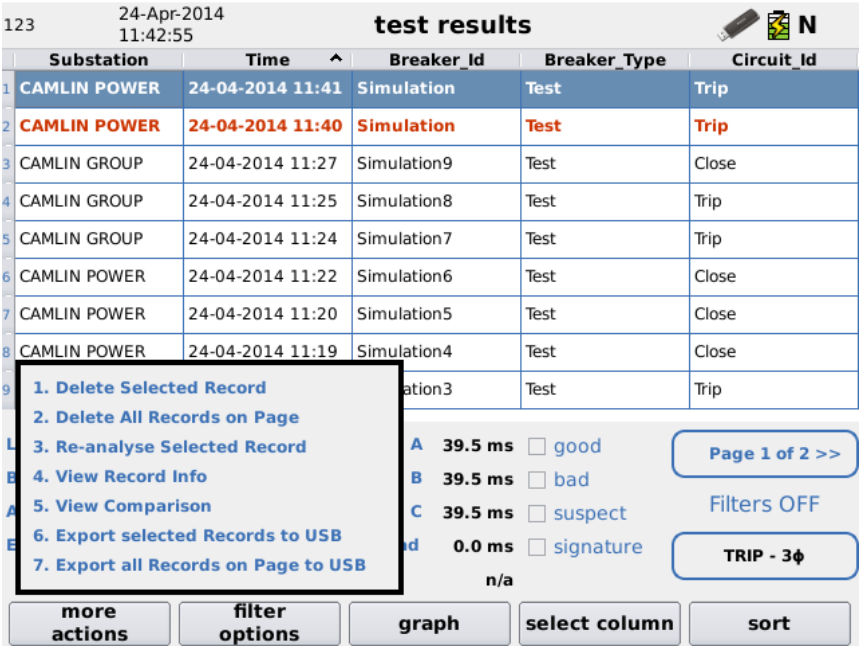


Figure 20 - Selecting Records for Comparison

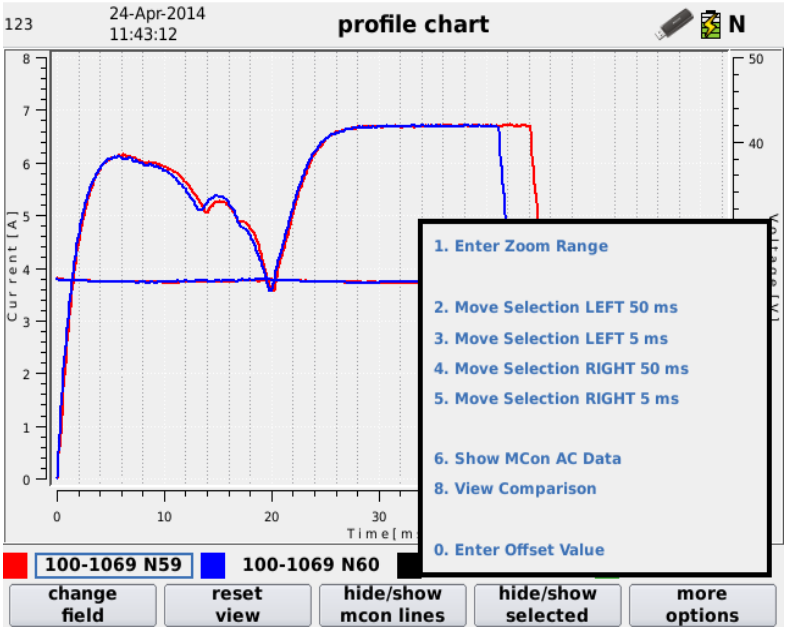


Figure 21 - Viewing Comparison when Graphs displayed

After the *View Comparison* is selected, then the results will be displayed as shown in either Figure 22a or 22b. Those parameters that are within tolerance will be displayed in green whereas those outside will be displayed in red.

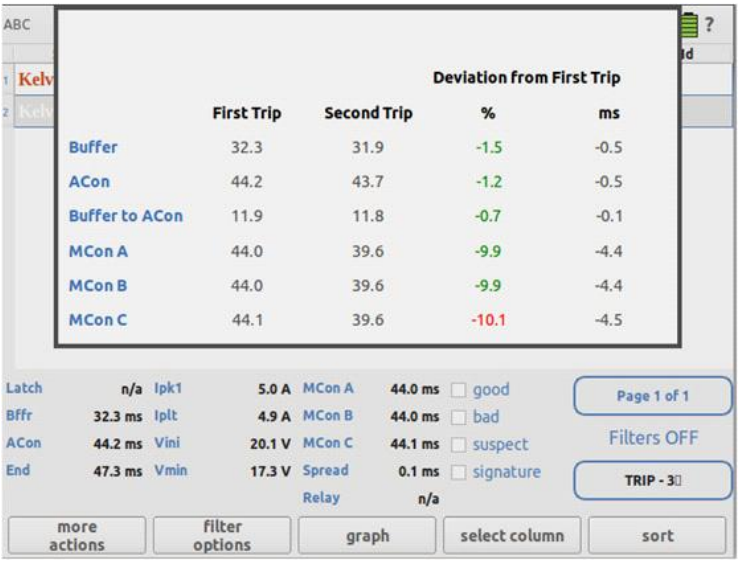


Figure 22a - Comparison Results for 2 Trips

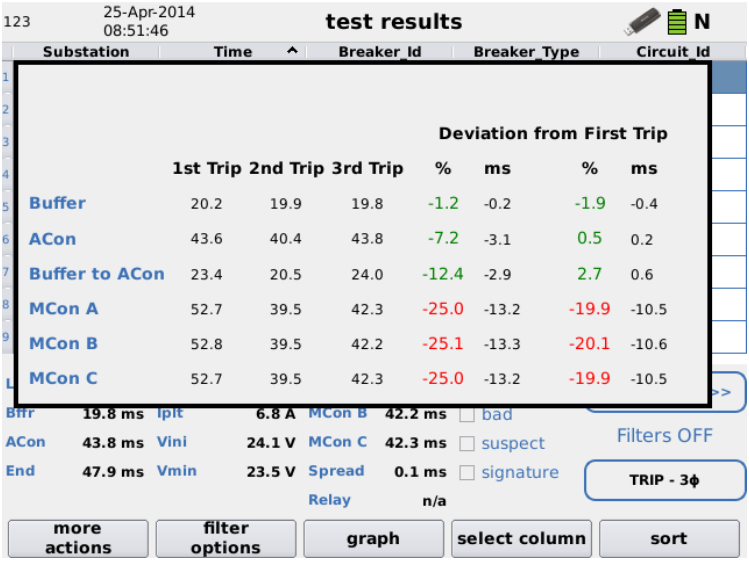


Figure 22b - Comparison Results for 3 Trips

If one of the records selected is not a trip, then a message will be displayed as shown in Figure 23.

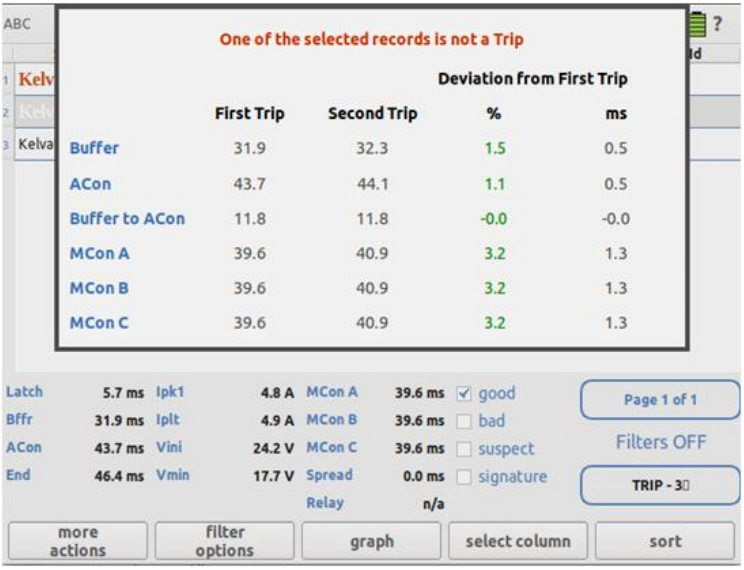


Figure 23 - Incorrect Record Selection

Graph View Options

When *view CB test results*, *graph* and then *more options* soft keys are selected, a window appears as shown in Figure 24a that has the following options –

1. *Enter Zoom Range* – allows the start and end times for a graph to be altered so that a particular section can be zoomed in on to fill the screen.

2. *Move Selection LEFT 50 ms* – enables the graph that is currently selected to be moved to the left on the screen along the x axis by 50 msecs.

3. *Move Selection LEFT 5 ms* – enables the graph that is currently selected to be moved to the left on the screen along the x axis by 5 msecs.

4. *Move Selection RIGHT 50 ms* – enables the graph that is currently selected to be moved to the right on the screen along the x axis by 50 msecs.

5. *Move Selection RIGHT 5 ms* – enables the graph that is currently selected to be moved to the right on the screen along the x axis by 5 msecs.

6. *Show MCon AC Data* - Displays the AC waveform at the point where the breaker opens or closes as shown in Figure 24b.

0. *Enter Offset Value* – allows the user to set the value in msecs that the graph should be moved either right or left on the x axis. This would normally be used to make the final adjustment to ensure two graphs are correctly overlaid.

Explanation of Pole Spread for Online Mcon AC Measurement

The point at which the primary current reaches zero on the AC waveform, is marked by a resulting change in the secondary current from a sine wave to an exponentially decaying 'tail' (as shown in Figure 24b).

It should be noted that the Mcon time for each phase includes the arc extinction time. The pole spread (difference between fastest and slowest Mcon time) will therefore depend at which point on the sine wave the individual pole has opened. For example, if one pole opens at a zero crossing, then the arc extinction time will be shorter for that phase than the other two phases, which are 120° leading or lagging.

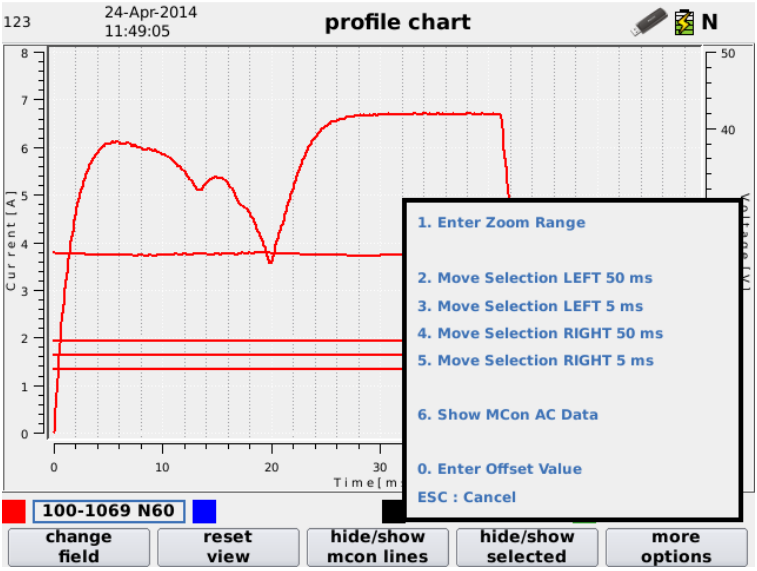


Figure 24a - Graph view options

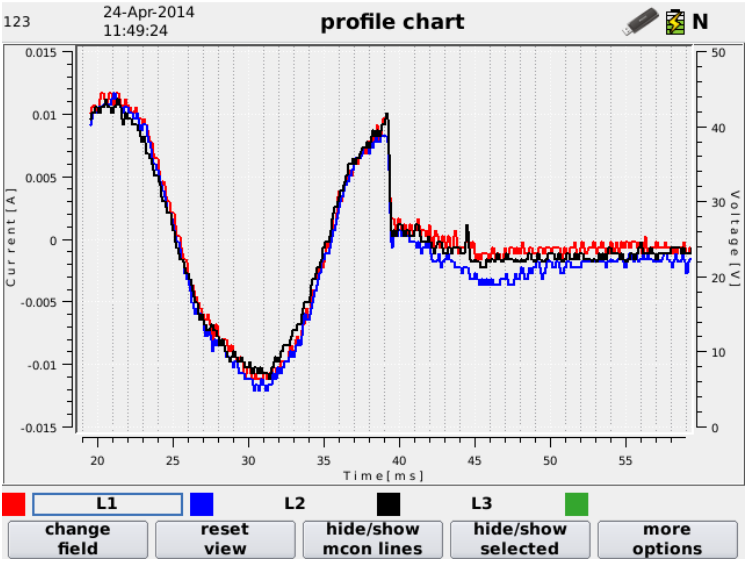


Figure 24b - AC Waveform

Profile Chart

The example in Figure 25 shows the charted results of the applied filter in figure 17 displaying two consecutive trip and close operations which clearly indicate a problem with the auxiliary contacts. This is one of the key features that greatly assist onsite analysis of defects.

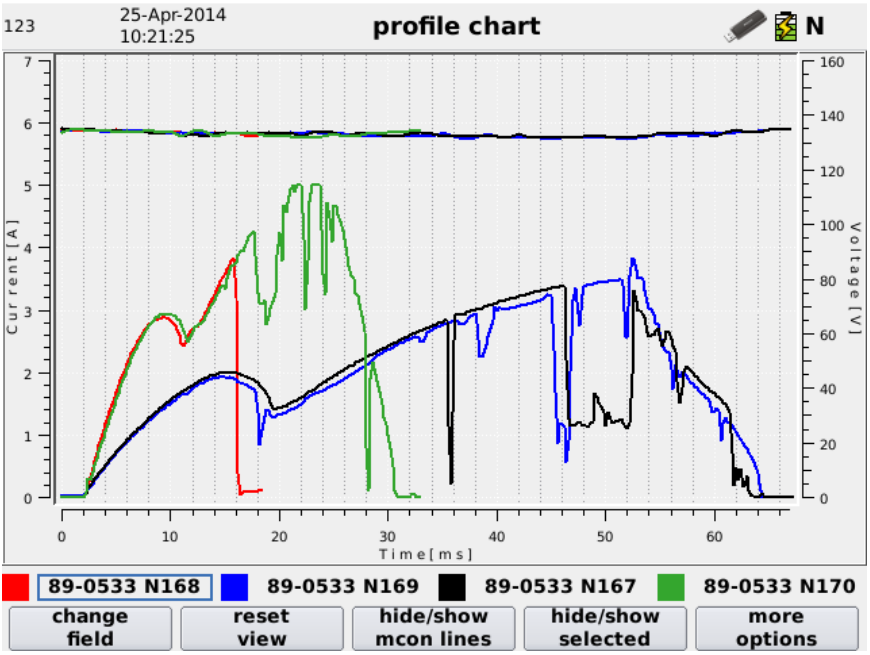


Figure 25- Profile Chart View with up to 4 records overlaid

The example in Figure 26 shows only the trip operations with the close operations hidden.

Individual graphs can be hidden by selecting the required graph by pressing the *change field* soft key and then they *hide / show selected* soft key.

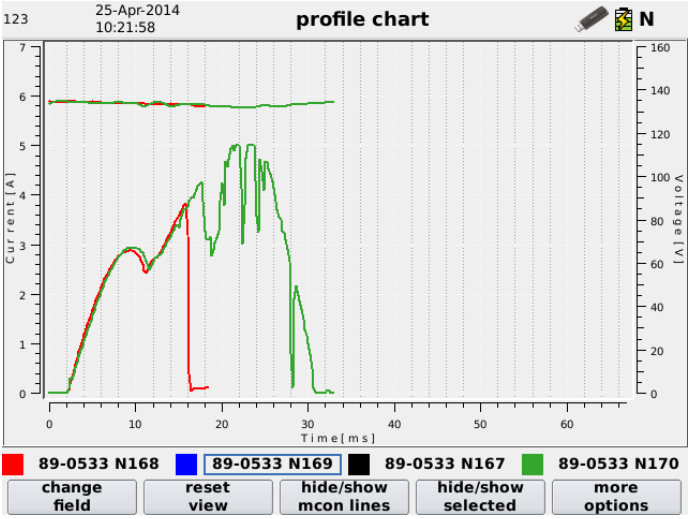


Figure 26 - Profile Chart View with 2 records hidden

MCON Lines

When multiple graphs are displayed, MCON lines are displayed on a separate screen as shown in Figure 27. This screen is activated by pressing the *hide/show MCON lines* soft key.

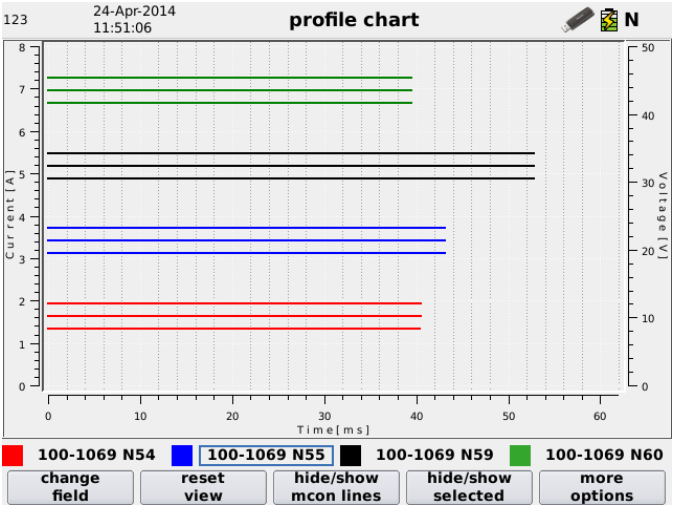


Figure 27 Profile Chart View with test results displayed

Selected Profile Chart Details

The screen shown in Figure 28 displays the test results from a profile chart and a colour code header clearly identifies which profile chart was selected.

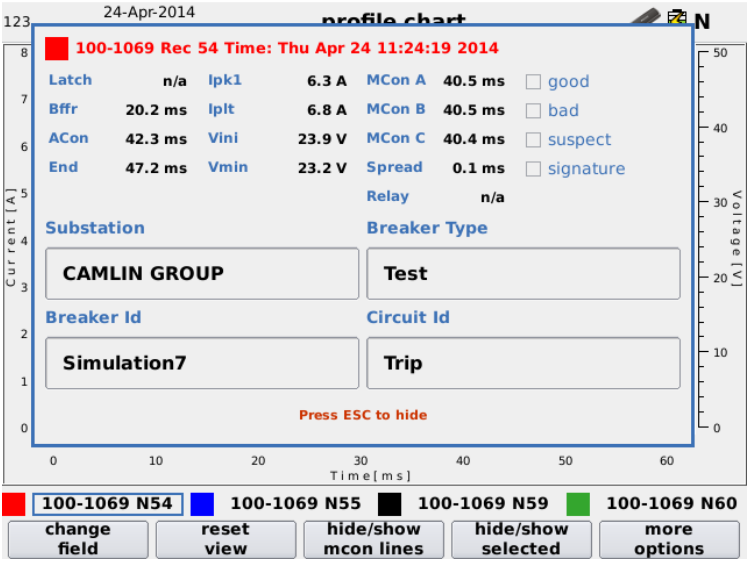


Figure 28 - Profile Chart View with test results displayed

4.2 Importing Data

Data can be imported via a USB memory stick in the following formats -

- Record files with a rec extension eg 2005030809390297.rec
- Pre-entered Test Details files with a csv extension
- Circuit Breaker Database files with a cbd extension
- P3 firmware file which has a .img extension

The data is imported by inserting the USB memory stick and selecting the *import data* option in the auxiliary menu options screen (see Figure 14). The files that can be imported are displayed in Figure 29 below.

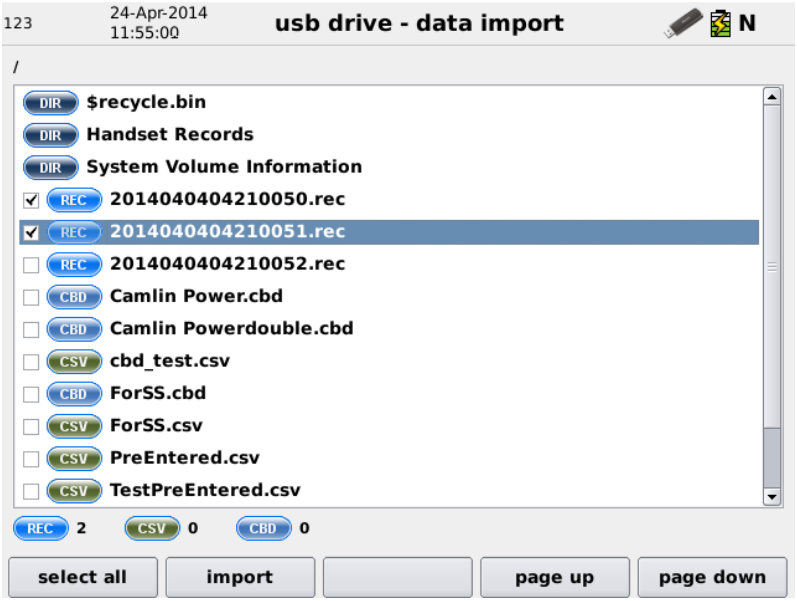


Figure 29 - Data Import

The required files are selected by using the up/down arrow keys and pressing OK. Once the selection has been made then the files are imported by pressing the *import* soft key. If there are multiple screens of data, then the page up and page down soft keys can be used to locate the required files. Note only one file type can be imported at a time. For rec files multiple selections can be made but for both csv and cbd files only one file can be imported. The *select all* soft key can be used to select all rec files if required.

Export Rec files to USB

The normal method for exporting records is by connecting a P3 to a PC with Replay Pro but where this is not practical a small number of test records can be exported to a usb as described in the Record Management Options section on P 23.

4.3 Handset Status

Selecting *handset status* from the auxiliary menu options provides the following information as shown in Figure 30a.

- Number of records stored
- Calibration Date
- Next Calibration Date
- Software version details

There is also an option to export logs and debug files to a usb memory stick as shown in Fig 30a. These are sometimes requested when investigating issues related to the performance of the firmware.

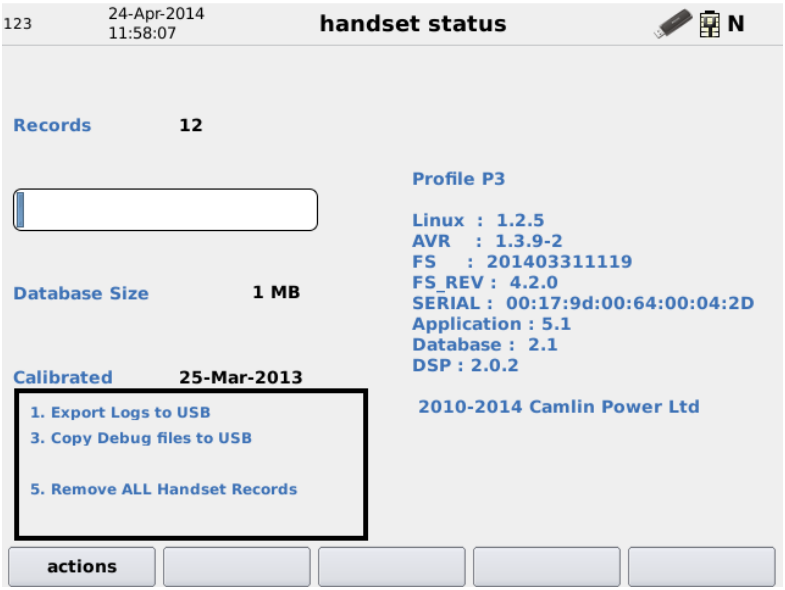


Figure 30a - Handset Status

The *Remove All Handset Records* option enables all records on the handset to be deleted. This requires a password to be entered as shown in Figure 30b. The password is today's date + 712 so for example if the date was 18th May it would be 18712

Figure 30b - Handset Status

4.4 Exporting Test Records

Test records can be exported by connecting the P3 to a PC using the USB lead provided. To establish a connection, the *connect to computer option* must first be selected as shown in Figure 31a. After a few seconds 'Ready! Connect to PC' will be displayed as shown in Figure 31b, indicating the connection has been established. The P3 will be shown as PROFILEP3 (D:) under the Computer file directory when viewing disk drives and other hardware connected to your computer. Double clicking on the PROFILE P3 (D:) will display the profile records database file as shown in Figure 31c. This file can then be copied to a suitable folder if required for later retrieval of records from Replay Pro as shown in Figure 31d. Alternatively the P3 records can be directly imported from a P3 to Replay Pro (proprietary analysis software) by selecting the' Import Records from a Profile Handset or PC ' option on Replay Pro and opening the PROFILEP3 (D:) directory. Either method of

importing records will display a list of records as shown in Figure 32 which can then be downloaded into Replay Pro.

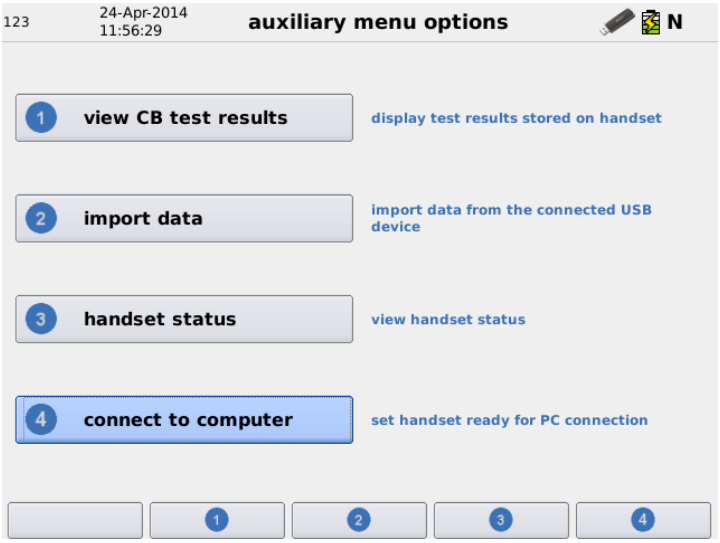


Figure 31a - PC Connection

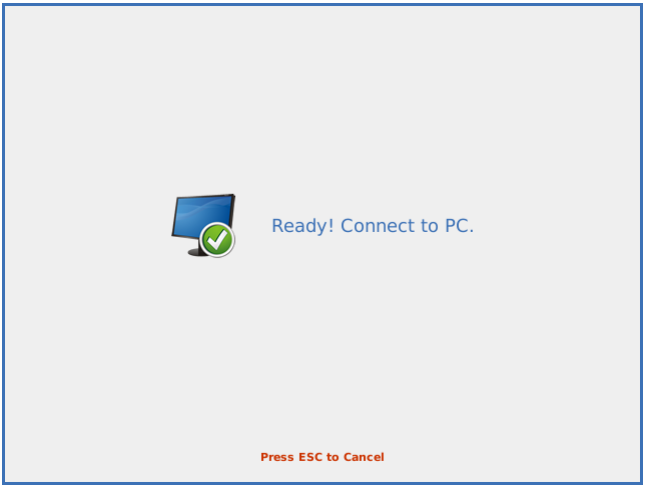


Figure 31b - PC Connected

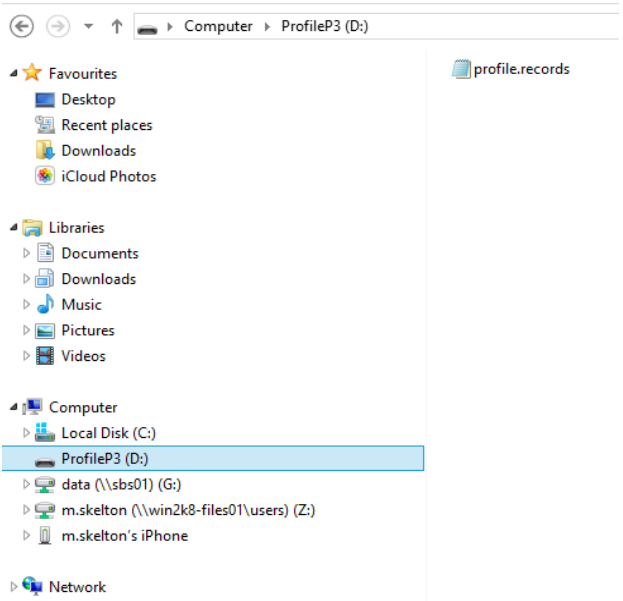


Figure 31c - PC File Directory

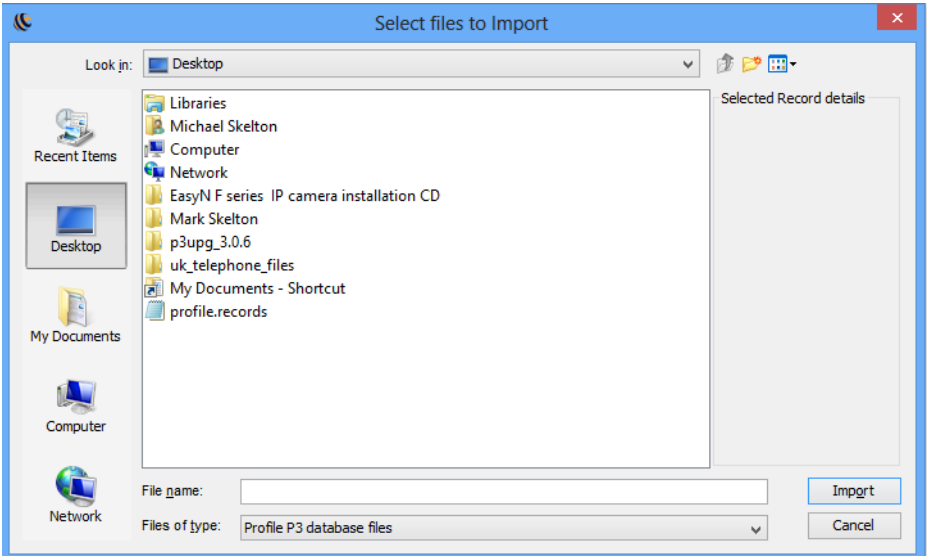


Figure 31d – Profile Records Database

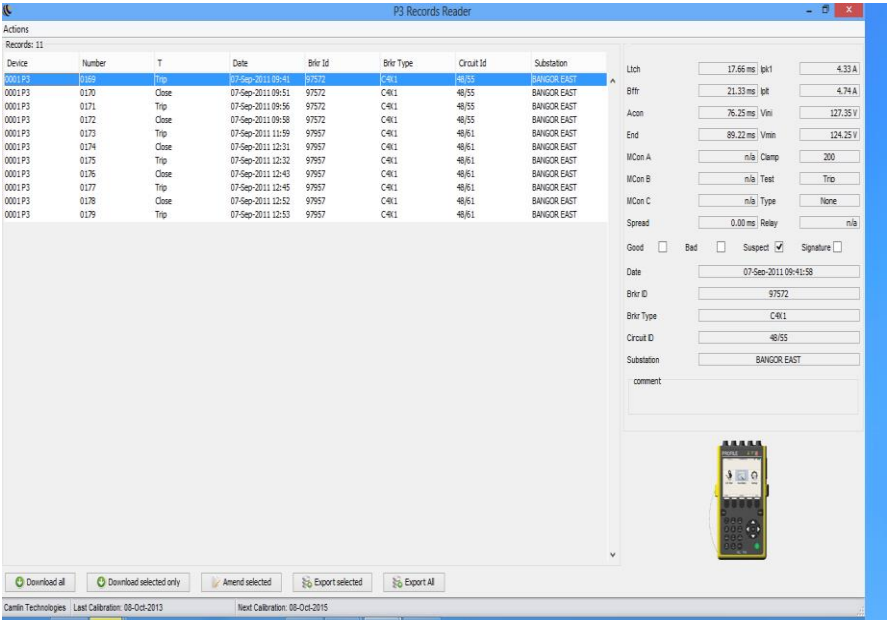


Figure 32 – Profile Records Reader

5. Setup

These options are accessible from the main menu and allows the following parameters to be configured.

5.1 Date, Time

The facility to set the current date and time is available as shown in Figure 33.

Figure 33 - Configuring date & time

NOTE: The date format can also be changed.

5.2 Language Options

The following languages as shown in Figure 34 can be selected by scrolling down to the required language and pressing ‘Save’. The P3 will then restart and display the screens in that language.

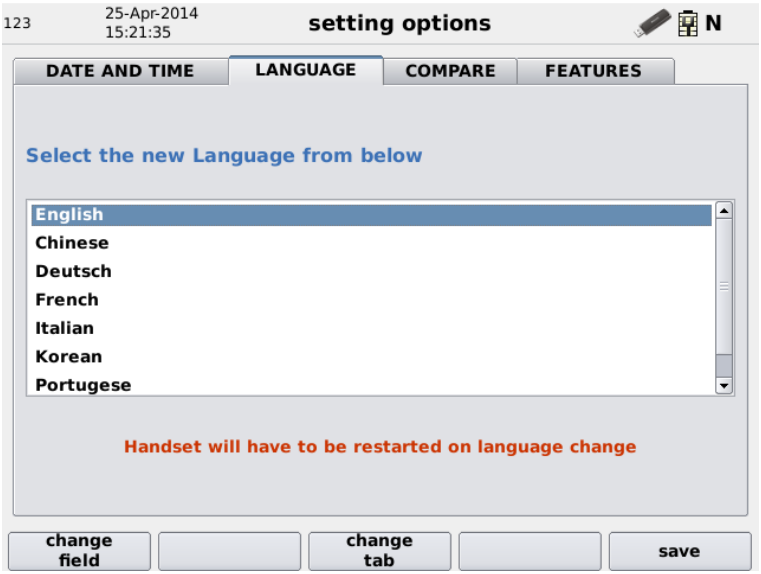


Figure 34 – Selecting languages

5.3 Compare

This allows the tolerance percentage to be set for each of the parameters as shown in Figure 35. This is activated by a 'hot key' combination which can be obtained by contacting profile@camlinpower.com.

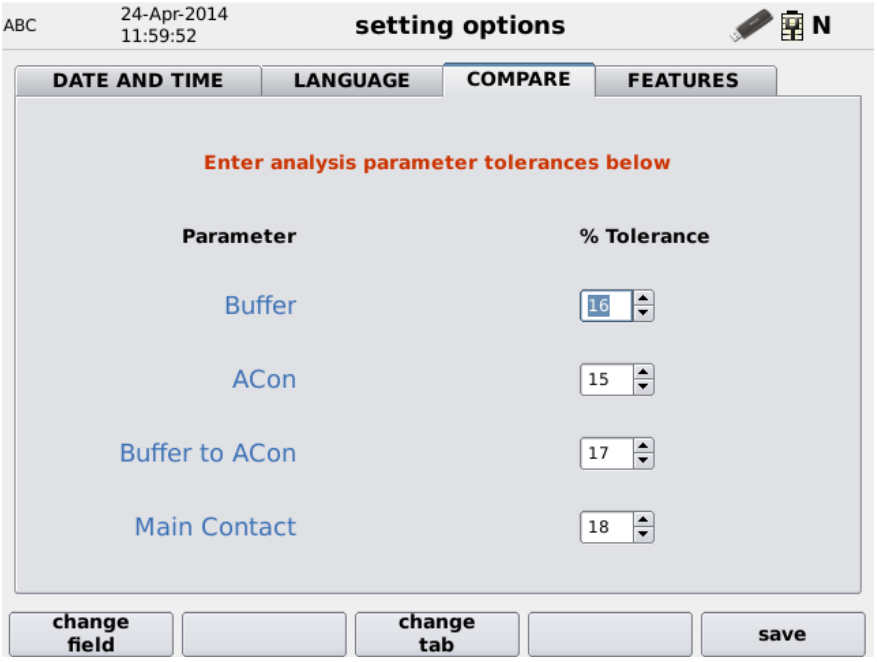


Figure 35 - Comparison tolerance settings

5.4 Features- Total Trip Time

A firmware upgrade is available which enables both the protection relay and circuit breaker to be tested together to obtain the **Total Trip Time** (see Figure 37)**.** To enquire about obtaining this firmware, please email profile@camlinpower.com. To upgrade the firmware, an unlock code is required which should be entered as shown in Figure 36.

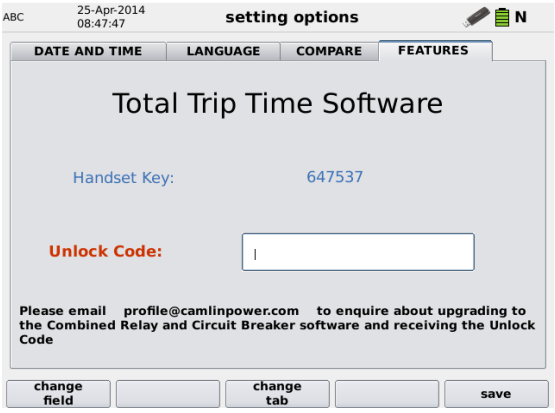


Figure 36 Unlock Code

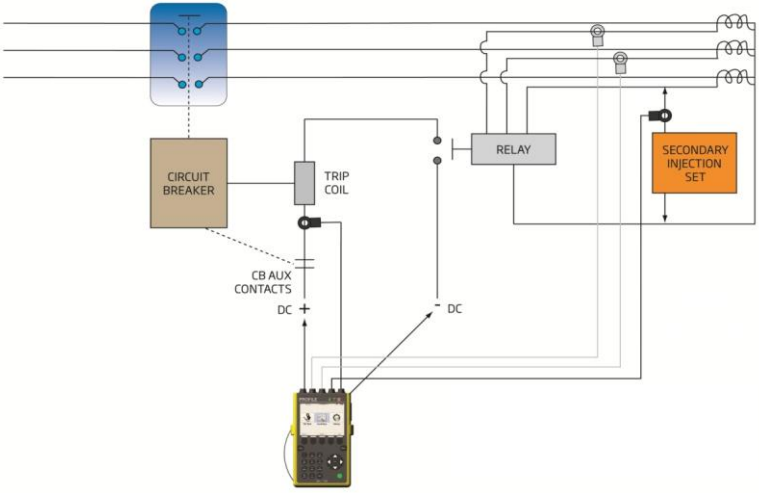


Figure 37 - Connection Diagram for Protection Relay & CB Test

6. Power Mode Indication

The P3 provides a visual indication of battery charge and power supply status which are shown in the table below.

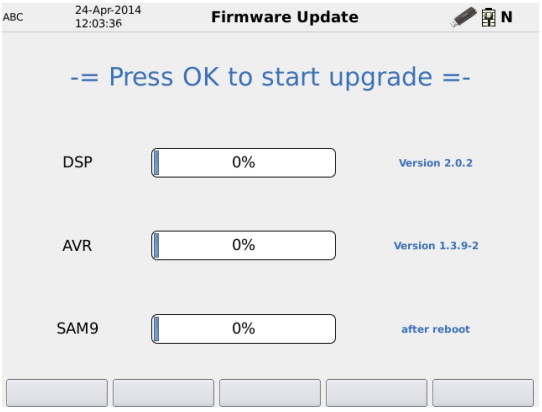
POWER LED	DESCRIPTION
Solid Green	Indicates the batteries are being charged
Flashing Green once per sec	Operating from power supply but not charging batteries
Flashing Green once per 2.5s	Operating from batteries - normal charge state
Flashing Amber once per sec	Operating from batteries - low charge state
Flashing Red Once per sec	Operating from batteries - critical charge state
Solid Red for 10s	P3 about to power off due to discharged batteries
Flashing Red /Amber	P3 is off with DC power supply connected, this indicates alkalines batteries inserted

GUI	DESCRIPTION
	Indicates the batteries are charging
	Operating from the power supply, but battery state unknown
	Powered from batteries which are in a normal charge state
	Powered from batteries which are in a low charge state
	Powered from batteries which are in a critical charge state
	The power supply is connected and batteries are in a good charge state
N	Indicates Ni Cd rechargable batteries
A	Indicates Alkaline non-rechargable batteries
?	Indicates either no batteries inserted or battery type undetected

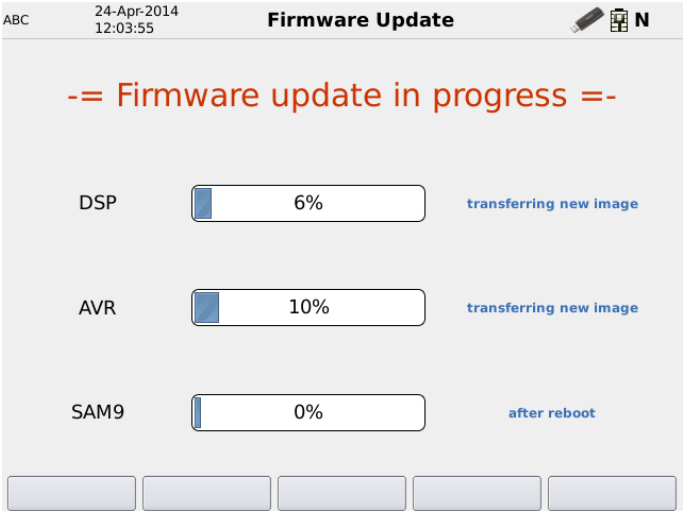
7. Firmware Upgrade Procedure

- Check the Support Centre on the Camlin Power website for details on how to obtain the latest firmware
- Save the firmware to a USB memory stick and insert in the P3
- The following message will then be displayed

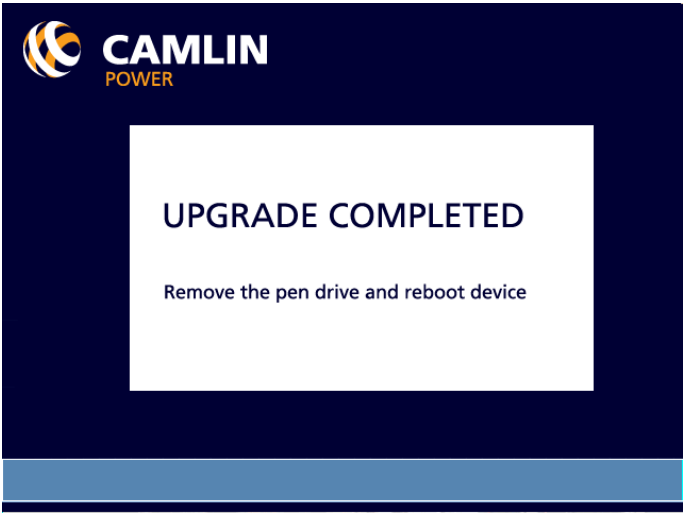
- Once OK is pressed the following message is displayed



- After OK is pressed, the upgrade will start as shown below



- After the upgrade is finished, the following message will be displayed



8. Uploading Asset Details

8.1 Uploading Circuit Breaker Database to P3

This procedure describes how your circuit breaker asset details can be uploaded from your circuit breaker database or asset management system to the P3. This simplifies and improves the accuracy of data entry when using the P3.

Required Database Fields

The P3 circuit breaker database has the following four fields with each requiring a minimum of 2 characters.

1. Substation name
2. Breaker ID (serial number or unique identifier)
3. Breaker Type
4. Circuit ID (used to identify when switching) Note – the Circuit ID field is optional

Procedure

1. Export your circuit breaker asset information to a spreadsheet. (It should be possible to directly retrieve this information from your asset management database).

2. Once imported into a spreadsheet, delete columns containing surplus asset details, leaving only the required fields as detailed above

3. The columns containing the required fields should then be formatted in the following order ;

- Column A – Breaker ID,
- Column B – Substation name,
- Column C – Breaker type,
- Column D – Circuit ID

4. A new blank row should be inserted at the top of the spreadsheet so that all asset details should now begin on row 2.

5. Highlight column B, right click and select Format Cells from pull down menu, click on text and then click OK.

6. In cell A1 type **CB Database**
   In cell B1 type **2010/10/19 14:00:30**
   In cell C1 type **Database Name**

Note any date and time can be used as long as the format is as shown

7. The file should then be saved with a .csv extension

Note for Excel - Click either YES or OK as appropriate in the various prompt windows which appear

8. The saved file should then be renamed with a .cbd extension

9. Open the file in Notepad and check that the date format is still as shown above. If not, then edit it and save with correct format.

10. This file should then be copied to the usb memory stick provided which should then be inserted in the USB port on the P3.

11. Under the auxiliary option on the P3, select option2: import data then using up/down arrow keys highlight the required .cbd file, press OK followed by the import soft key.

8.2 Uploading Pre-entered test details to P3

This procedure describes how test details can be pre-entered from a usb memory stick prior to testing circuit breakers. The test details will be listed on the P3 in a table format and can be accessed as described in section 3.2 P11. This could be used to provide the circuit breaker tester with a testing schedule.

Required Database Fields

The P3 circuit breaker database has the following four fields which require a minimum of 2 characters.

1. Substation name
2. Breaker ID (serial number or unique identifier)
3. Breaker Type
4. Circuit ID (used to identify when switching) Note – the Circuit ID filed is optional

Procedure

1. Open a new spreadsheet file.

2. Highlight column B, right click and select Format Cells from pull down menu, click on text and then click OK.

In column A1 type **CB Details**
In column B1 type **2010/10/19 14:00:30** (note – this does not have to be the actual date)
In column C1 type **Database Name**

3. Test details can then be entered in row 2 as follows –
   cell a1 – Breaker ID, cell b1 – Substation name, cell c1 – Breaker type, cell d1 – Circuit ID

4. Subsequent rows should similarly be completed as required.

5. The file should then be saved with a .csv extension

Note for Excel - Click either YES or OK as appropriate in the various prompt windows which appear

6. This file should then be copied to the usb memory stick provided which should then be inserted in the USB port on the P3

7. Under the auxiliary option on the P3, select option2: import data then using the up/down arrow keys highlight the file called P3.csv then press OK and press import soft key.

9. Offline test instructions

Introduction

The Profile P3 can be used in an offline mode to measure the main contact times when the circuit breaker is isolated from the network or is being tested at another location such as the manufacturer's premises or a maintenance workshop.

This is achieved by connecting the Profile P3 to an Interface Unit which provides a constant current source from a 24 volt DC supply across the circuit breaker main contacts. The Interface Unit is connected to each side of the circuit breaker as shown on page 47.

Performing an Offline Test

The test setup is exactly the same as for an online test by entering the details on the P3 of the circuit breaker to be tested being entered and selecting the test mode selected. The P3 automatically detects that this is an offline test and labels the trip or close record with an 'x' symbol. The connections (see pages 46, 47) from the P3 Interface Unit to the P3 and the circuit breaker are as follows –

1. Connect the DC probe and DC measuring leads as for an online test

2. Connect the lead with the three 4 pin connectors labelled L1,L2,L3 to the L1,L2,L3 sockets on the P3 handset and the 8 pin connector to the P3 Interface box labelled Handset L1,L2,L3.

3. Connect the lead permanently connected from the Breakout Box to the P3 Interface box 4 pin socket labelled Test Signals Output.

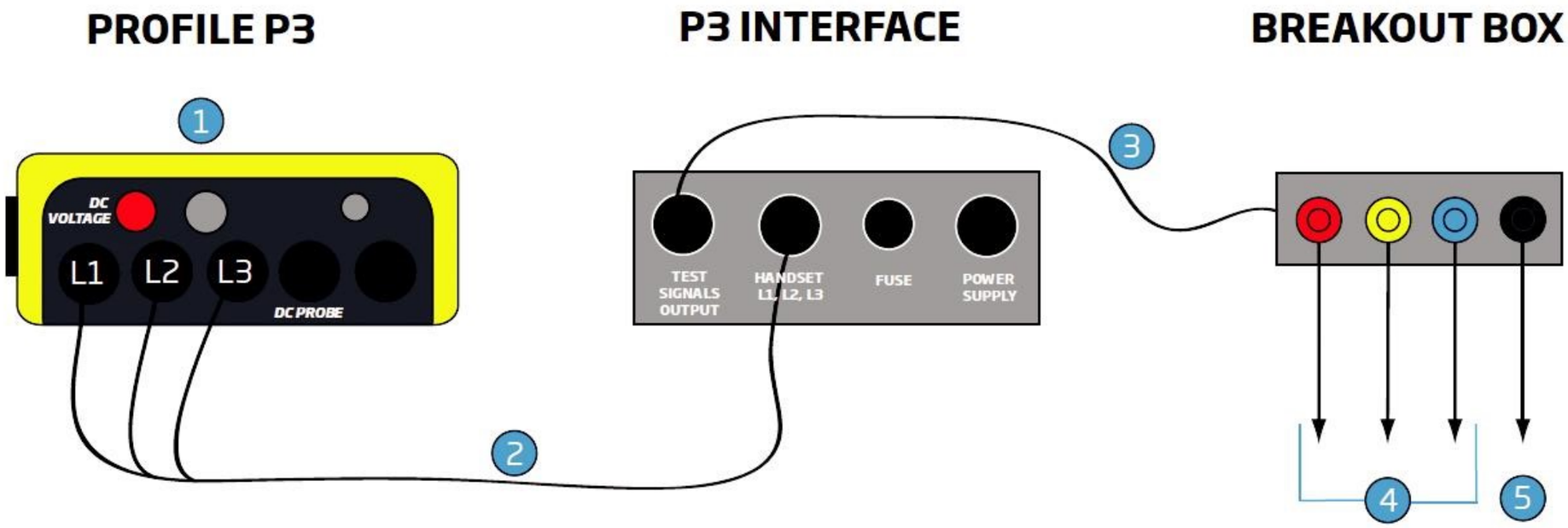
4. Connect leads coloured red, yellow and blue, to the Breakout Box and connect other end using croc clips to each phase on one side of the circuit breaker.

5. Connect the black lead to all the phases on the other side which should be connected together and to the substation earth.

NOTE Normally the circuit breaker is isolated and earthed when maintenance or other work is being carried out. To make test connections, a safety document such as Sanction for Test would be issued to permit the operator to make connections and remove earths if required.

The offline test connections should be made when the circuit breaker is earthed on both sides and the earth then removed from the side with the three connections (red, yellow, blue).

Once the connections have been made the Test Signal Status LED's on the P3 Interface Box should be green to indicate that current is flowing through the circuit breaker when it is closed. Note the Power LED should indicate when the AC supply has been connected.



OFFLINE TEST CONNECTIONS

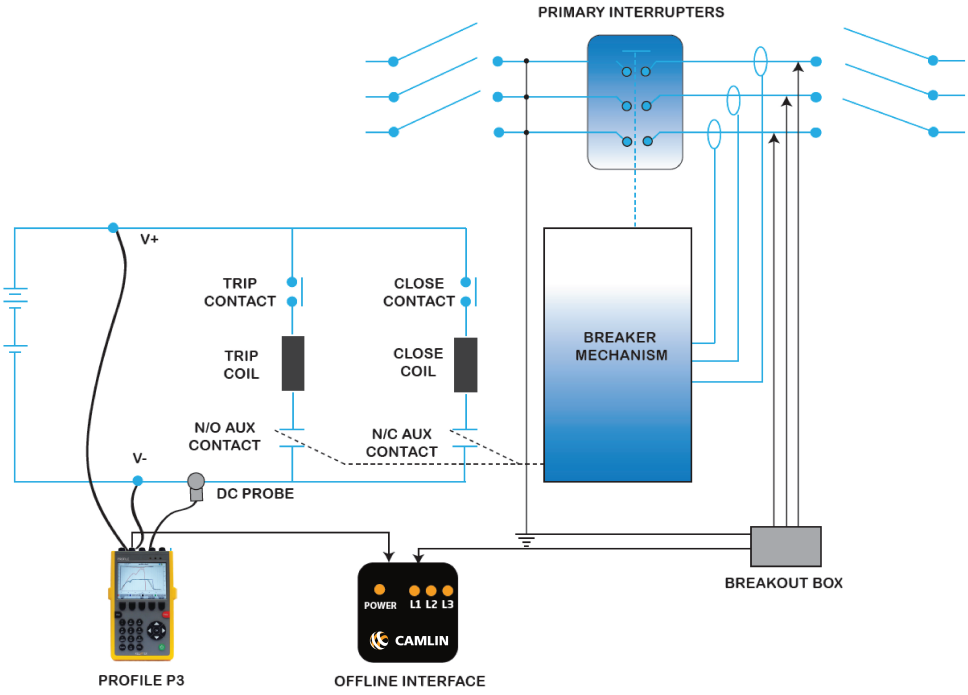
1. Connect DC Probe and DC voltage measuring leads as normal to the circuit breaker secondary wiring.

2. Connect lead with three 4 pin connectors to the P3 handset (L1, L2 & L3) and the 8 pin connector to the P3 interface unit.

3. Connect lead from breakout box with 4 pin connector to P3 Interface unit.

4. Connect 5 metre coloured leads (red, yellow, blue) to breakout box and attach ends with crocodile clips to each phase on one side of the circuit breaker, which is isolated and earthed. ***NOTE - This earth must be removed while completing the offline test.***

5. Connect 5 metre black lead to breakout box and attach end with crocodile clip to the common phases on the other side of the circuit breaker. ***NOTE - The earth can be left on to provide a common earth connection.***


PRIMARY INTERRUPTERS
V+
TRIP CONTACT
CLOSE CONTACT
TRIP COIL
CLOSE COIL
BREAKER MECHANISM
N/O AUX CONTACT
N/C AUX CONTACT
V-
DC PROBE
POWER
L1 L2 L3
CAMLIN
BREAKOUT BOX
PROFILE P3
OFFLINE INTERFACE

Specification

SPECIFICATION	RANGE	ACCURACY	RESOLUTION
DC Current Measurement:	± 200 A	±5%	±100mA
DC Voltage Measurement:	±400 V	±5%	50mV
AC Current Pickup Threshold (MCon timing):	10 mA	±0.5mA	
Timing parameters:		±0.2 ms	±0.1 ms
Handset Power Supply:	10-15 V DC, 24W		
Inline Power Supply:	85-265 V AC		
	50 / 60 Hz		
Profile Battery Supply :	8x AA		
	Rechargeable (NiMH) or standard alkaline		
	8 hours under normal usage		
	3 kg		
Screen:	5.7” Color Display, 640 x 480 (VGA)		
Operating temperature:	-20°C to +50°C (-4°F to +122°F)		
Handset record storage:	≤1000 records		

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For servicing and repairs please contact our customer service departments below.

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