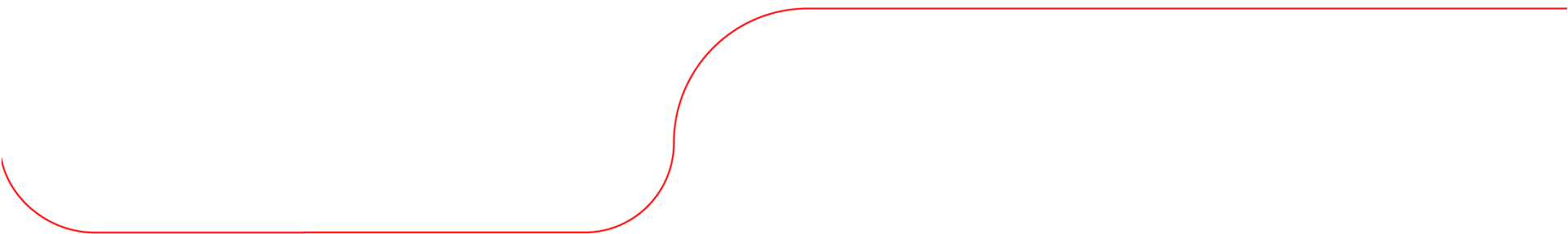




SKF®



What's New in Firmware v4.00

Microlog Analyzer v4.00

- Please refer to the updated user manual for detailed information on all of the new features



Microlog Analyzer v4.00

Major release of the Microlog Analyzer base firmware which includes:

- *New* additions and updates to the System Set Up menu
- *New* sensor set up module
- *New* and improved Module User Interface
- *New* features in updated Balancing module
- *New* module view options
- *New* Visual Trigger option
- *New* 3 channel and tacho support for the RuCd and Recorder modules
- *New* MPA-in-a-flash with gE support
- Defect fixes and enhancements

Changes to the Part Numbers

What we have today:

- Route Based Data Collectors
 - Microlog Analyzer GX and AX (CMXA 75 and CMXA 80)
- Stand Alone Analyzers
 - Microlog Advisor Pro and Microlog Consultant (CMXA 45 and CMXA 48)
- With v4.0 all of the modules, including 'Route' are available as a licensable option
- NO MORE ADVISOR PRO OR CONSULTANT!
- -A models replace Advisor Pro and Consultant and must be purchased with at least one other module or application bundle (this can include 'Route') – *a la carte*
- -M models have 'Route', Analyzer' and 'Balancing' licensed
- -F models have all modules, including 'Route' licensed

1

Updates to the System Setup Menu

What's changed in the System Setup Menu?

The screenshot shows a 'Setup' window with a blue title bar. The title bar contains the word 'Setup' on the left and a status bar on the right showing a mobile phone icon, the date '02/07/2013', and the time '14:14'. The main area of the window is a list of settings, each with a label on the left and a value on the right. The 'Channel Setup:' label is highlighted with a blue background. At the bottom of the window, there are four buttons: 'Help', 'Cont. -', 'Modules', 'Cont. +', and 'Apply'. A vertical scrollbar is on the right side of the settings list.

Route Mem:	Internal
Timeout:	Off
Dflt Units:	Metric
Channel Setup:	Individual
Input Range:	Sensor Units
Speed Measurement:	Inactive
Filter Entry:	Stepwise
Trigger:	User
Ext trig slope:	+
Module ICP:	Sensor Setting
Date Format:	DD/MM/YYYY
Time Zone:	(GMT) Dublin, Edinburgh, Lisbon, London
Date/Time:	14:14 02/07/2013
Memory:	-select cmd-
Route Font:	Big
Transducer Change:	Do not warn
Bias Check:	Manual

Help Cont. - Modules Cont. + Apply

Channel Setup

Two new options which relate to all modules except Route and Sensor Setup:

- Copy to all – all channels will use the same sensor settings
- Individual – each channel can be setup independently of each other

The screenshot shows a handheld device screen with a 'Setup' menu. The menu items are listed on the left, and their current settings are on the right. The 'Channel Setup' item is highlighted with a red oval, and its options 'Copy To All' and 'Individual' are shown in a sub-menu. 'Individual' is currently selected and highlighted in blue. The top of the screen shows the date and time '02/07/2013 14:14'. An 'OK' button is visible at the bottom right.

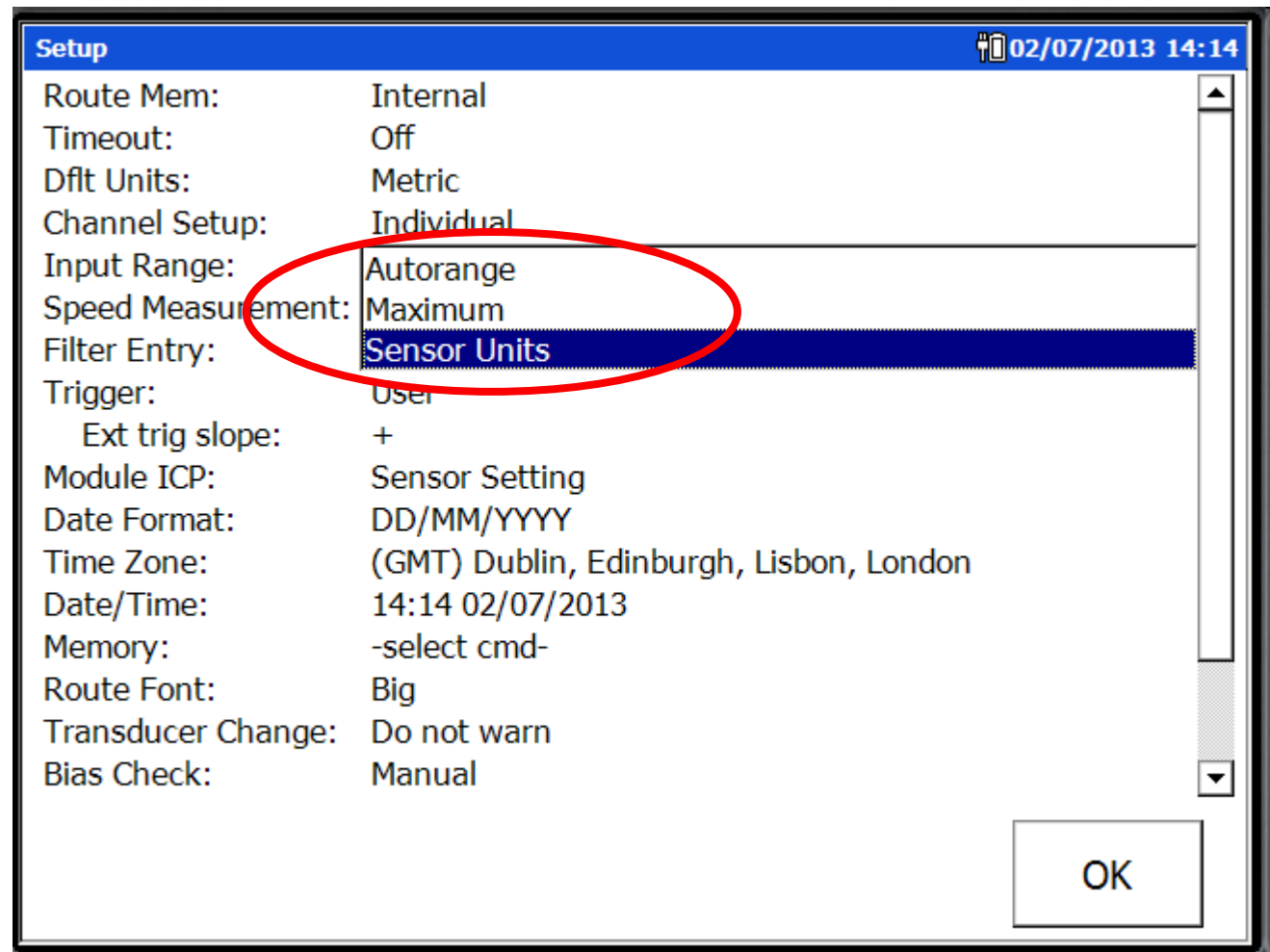
Setup		02/07/2013 14:14
Route Mem:	Internal	
Timeout:	Off	
Dflt Units:	Metric	
Channel Setup:	Copy To All	
Input Range:	Individual	
Speed Measurement:	Inactive	
Filter Entry:	Stepwise	
Trigger:	User	
Ext trig slope:	+	
Module ICP:	Sensor Setting	
Date Format:	DD/MM/YYYY	
Time Zone:	(GMT) Dublin, Edinburgh, Lisbon, London	
Date/Time:	14:14 02/07/2013	
Memory:	-select cmd-	
Route Font:	Big	
Transducer Change:	Do not warn	
Bias Check:	Manual	

OK

Input Range

Three new options which relate to all modules except Route and Sensor Setup:

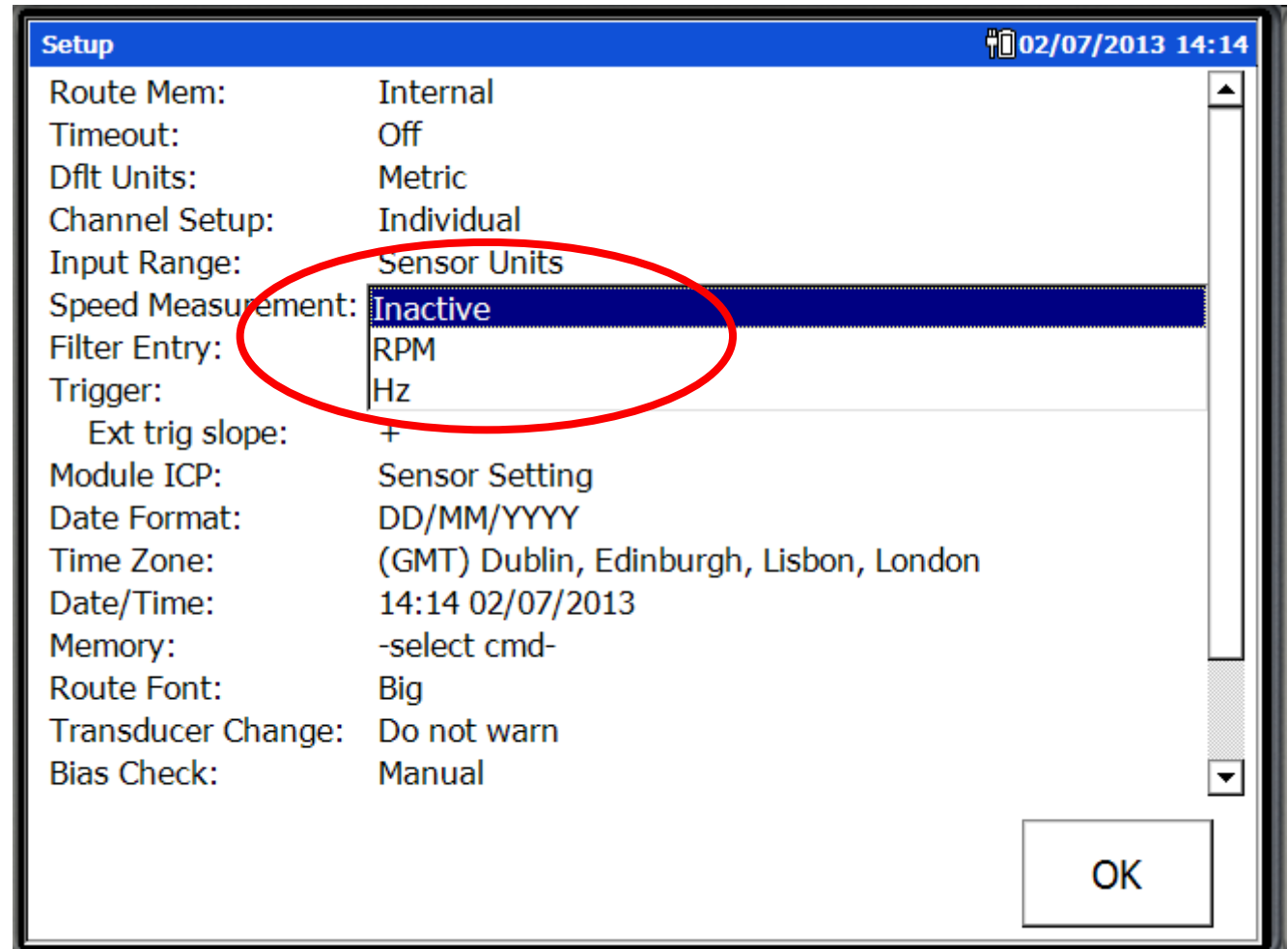
- Autorange – the input range is determined using autoranging with fast data collection
- Maximum – no autoranging is performed
- Sensor Units – no autoranging is performed, the input range is determined by the sensor sensitivity and type



Speed Measurement

Three new options which relate to all modules except Route and Sensor Setup:

- Inactive – no tachometer measurement is required
- RPM – acquires the speed and displays in RPM
- Hz - acquires the speed and displays in Hz



Filter Entry

Two new options which relate to all modules except Route and Sensor Setup:

- Stepwise – filter frequency is selected from pre-defined options
- Free Entry – filter frequency parameter is typed into a numeric entry field

The screenshot shows a 'Setup' menu with various configuration options. The 'Filter Entry' option is highlighted with a red circle, and a dropdown menu is visible next to it, showing 'Stepwise' and 'Free Entry' options. The 'Stepwise' option is currently selected.

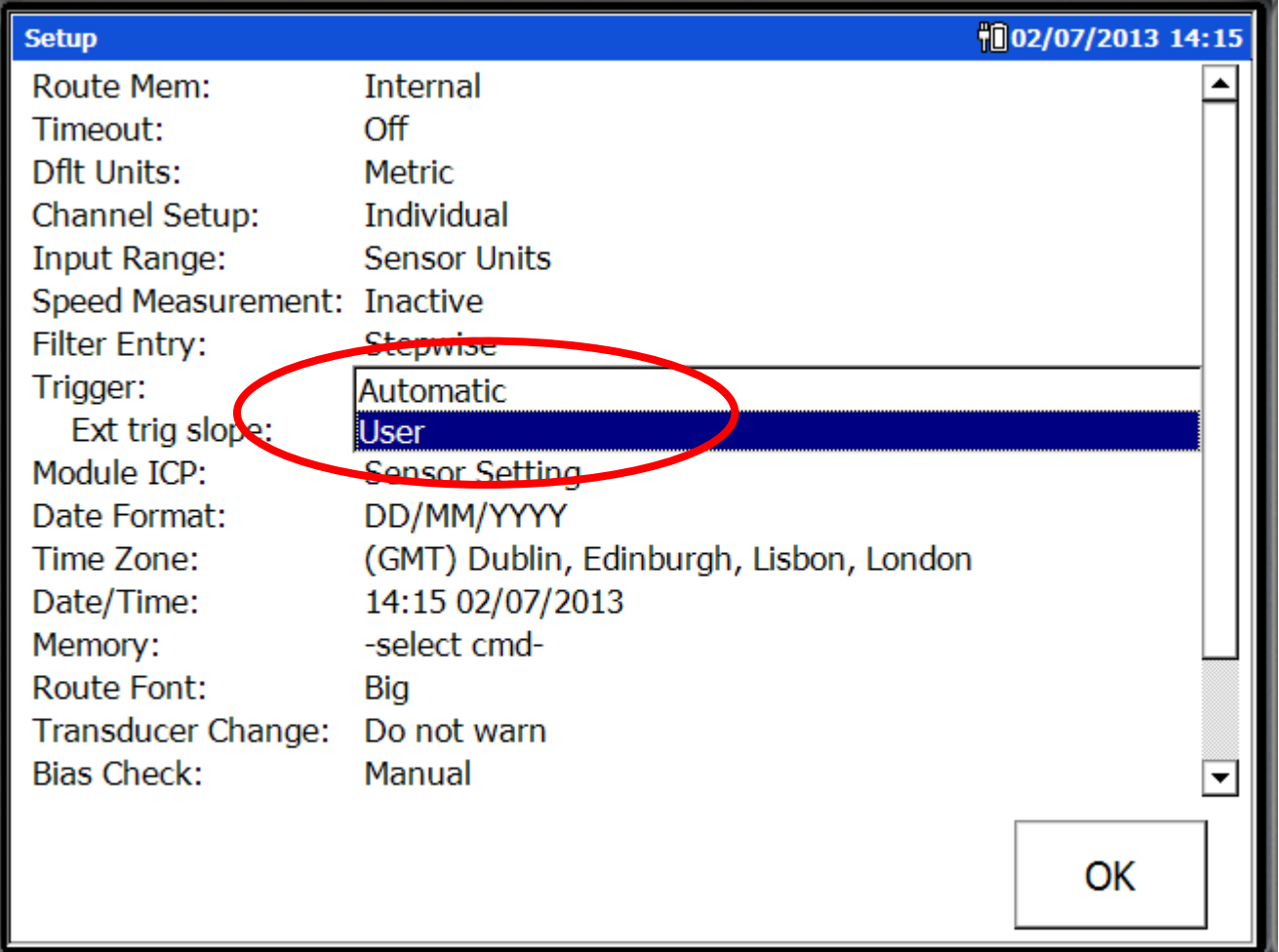
Setup		02/07/2013 14:14
Route Mem:	Internal	
Timeout:	Off	
Dflt Units:	Metric	
Channel Setup:	Individual	
Input Range:	Sensor Units	
Speed Measurement:	Inactive	
Filter Entry:	Stepwise	
Trigger:	Free Entry	
Ext trig slope:	+	
Module ICP:	Sensor Setting	
Date Format:	DD/MM/YYYY	
Time Zone:	(GMT) Dublin, Edinburgh, Lisbon, London	
Date/Time:	14:14 02/07/2013	
Memory:	-select cmd-	
Route Font:	Big	
Transducer Change:	Do not warn	
Bias Check:	Manual	

OK

Trigger

Two new options which relate to all modules except Sensor Setup:

- Automatic – the Microlog examines the trigger signal and automatically sets the trigger level to the signals midpoint
- User – the trigger level is set by user specified settings (*wait and see the new Visual Trigger later on!*)



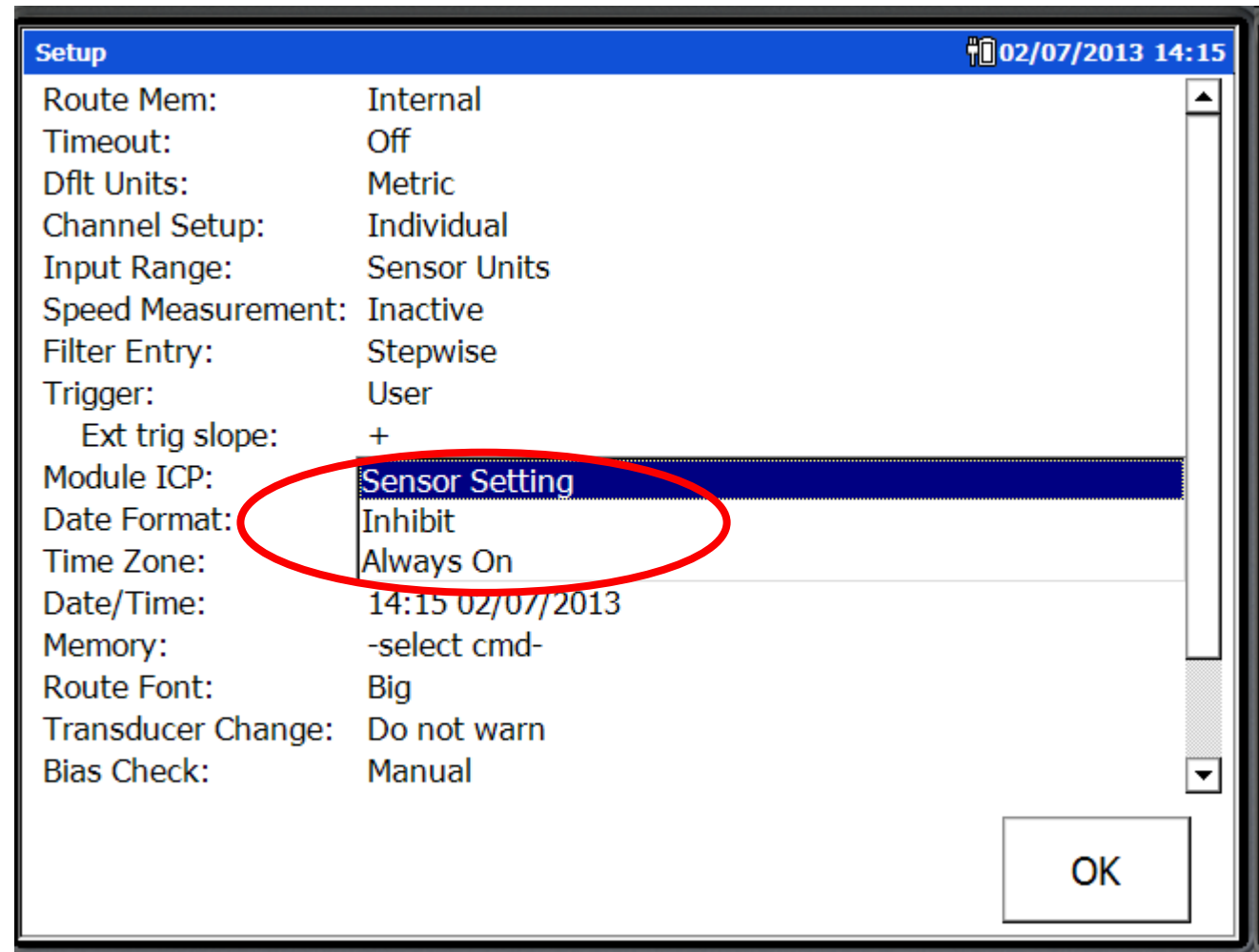
The screenshot shows a 'Setup' window with a blue header bar containing the title 'Setup' and a timestamp '02/07/2013 14:15'. The window lists various configuration parameters in two columns. The 'Trigger' parameter is highlighted with a red oval, and its dropdown menu is open, showing 'Automatic' and 'User' options. The 'User' option is currently selected and highlighted in blue. Other parameters include 'Route Mem: Internal', 'Timeout: Off', 'Dflt Units: Metric', 'Channel Setup: Individual', 'Input Range: Sensor Units', 'Speed Measurement: Inactive', 'Filter Entry: Stepwise', 'Module ICP: Sensor Setting', 'Date Format: DD/MM/YYYY', 'Time Zone: (GMT) Dublin, Edinburgh, Lisbon, London', 'Date/Time: 14:15 02/07/2013', 'Memory: -select cmd-', 'Route Font: Big', 'Transducer Change: Do not warn', and 'Bias Check: Manual'. An 'OK' button is located at the bottom right of the window.

Parameter	Value
Route Mem:	Internal
Timeout:	Off
Dflt Units:	Metric
Channel Setup:	Individual
Input Range:	Sensor Units
Speed Measurement:	Inactive
Filter Entry:	Stepwise
Trigger:	Automatic
Ext trig slope:	User
Module ICP:	Sensor Setting
Date Format:	DD/MM/YYYY
Time Zone:	(GMT) Dublin, Edinburgh, Lisbon, London
Date/Time:	14:15 02/07/2013
Memory:	-select cmd-
Route Font:	Big
Transducer Change:	Do not warn
Bias Check:	Manual

Module ICP

Three new options which relate to all modules except Route and Sensor Setup:

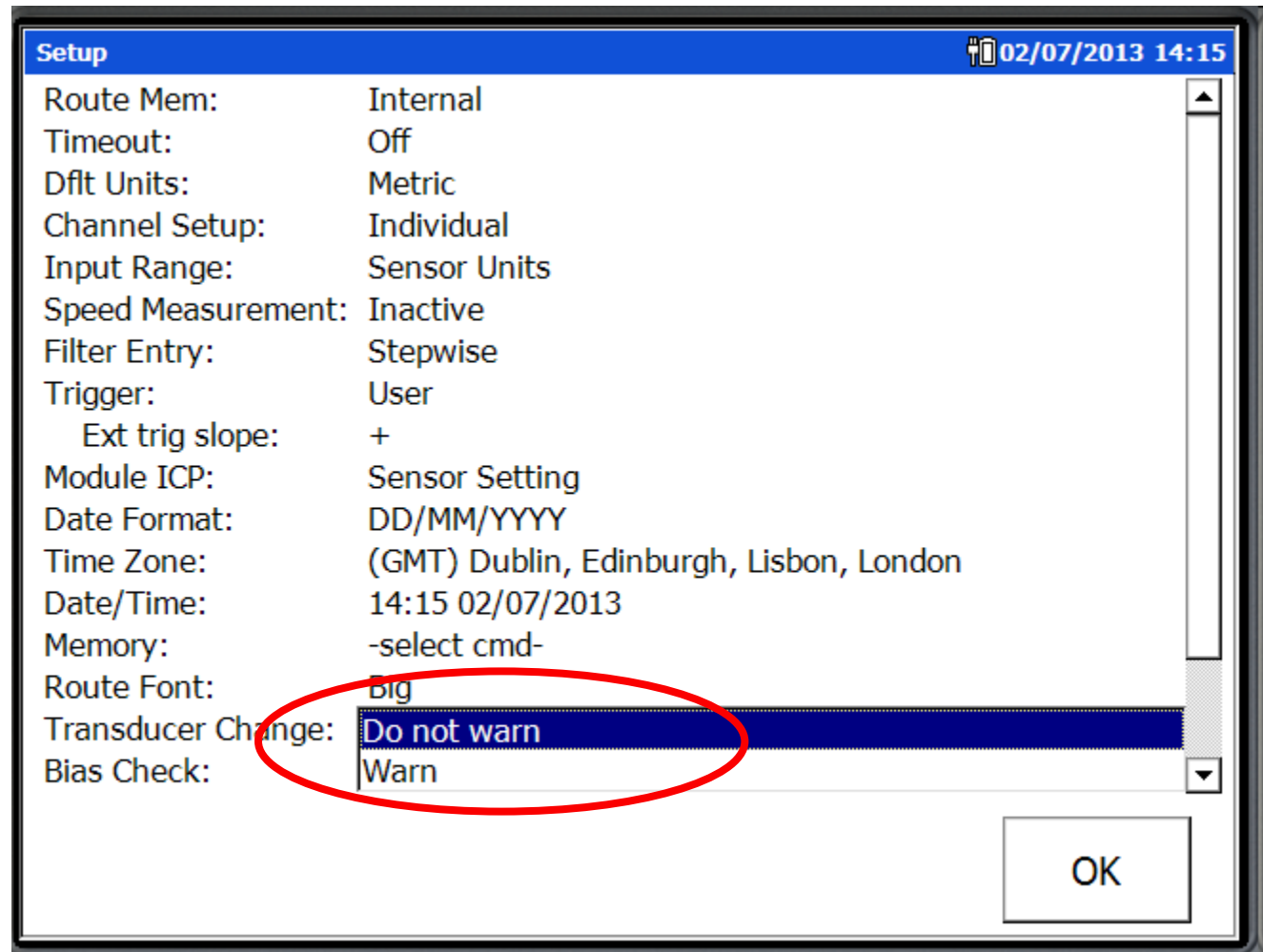
- Sensor setting – uses the sensor setting as defined in the Sensor Setup module
- Inhibit – prevents ICP from being switched on
- Always on – ICP is always on regardless of the sensor setting as defined in the sensor setup module



Transducer Change

Two new options which relate to the Route module:

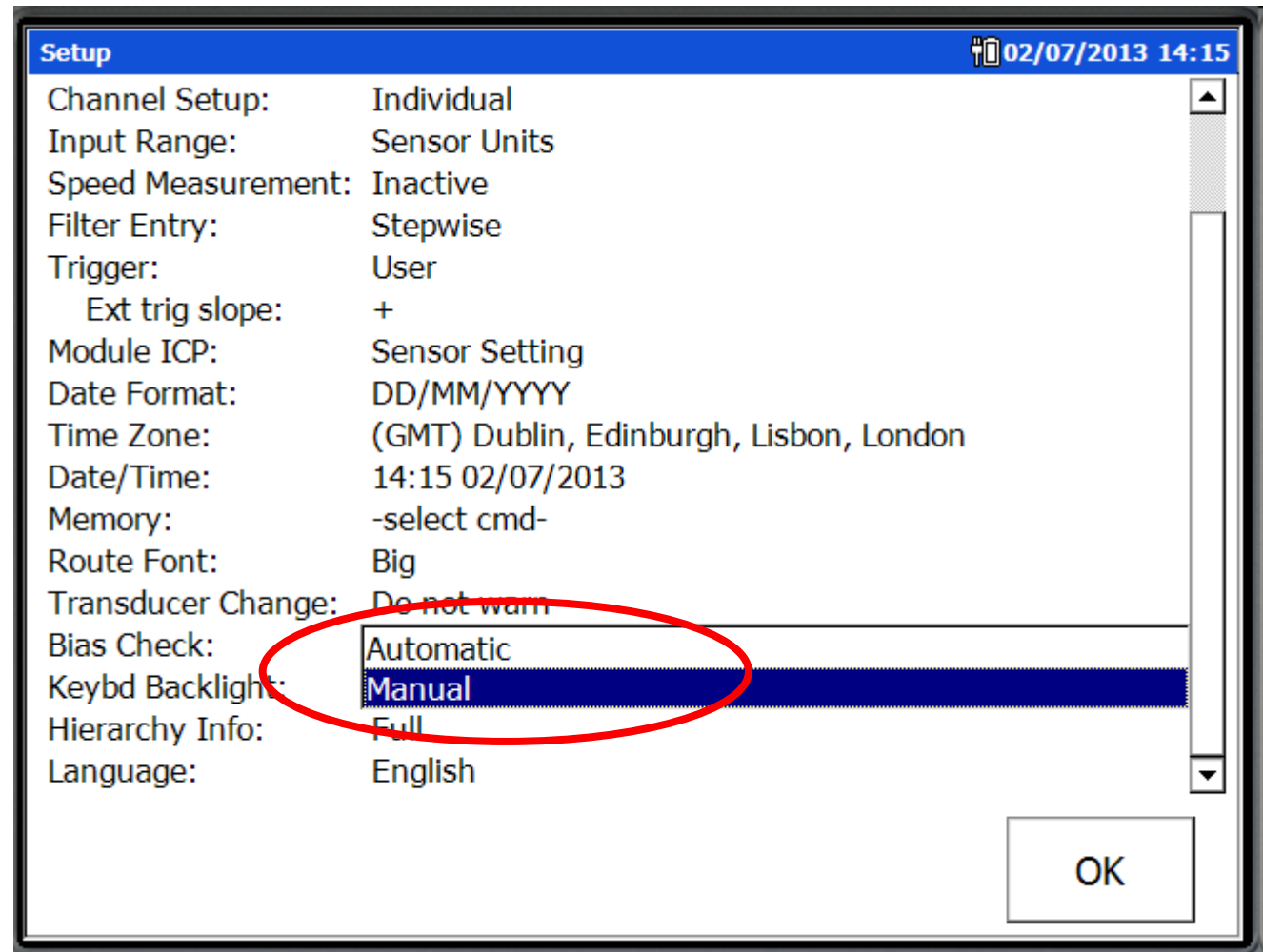
- Do not warn – there is no message displayed if the sensor ICP setting changes during a route
- Warn – the user is displayed a warning message if there is a change to the ICP setting moving between points. This prevents the user from possibly causing damage to a machine by applying 24V output from the Microlog



Bias Check

Two new options which relate to the Route module:

- Automatic – automatically checks the sensor bias voltage before taking a reading
- Manual – user has to press the shift + B keys to perform a bias check



2

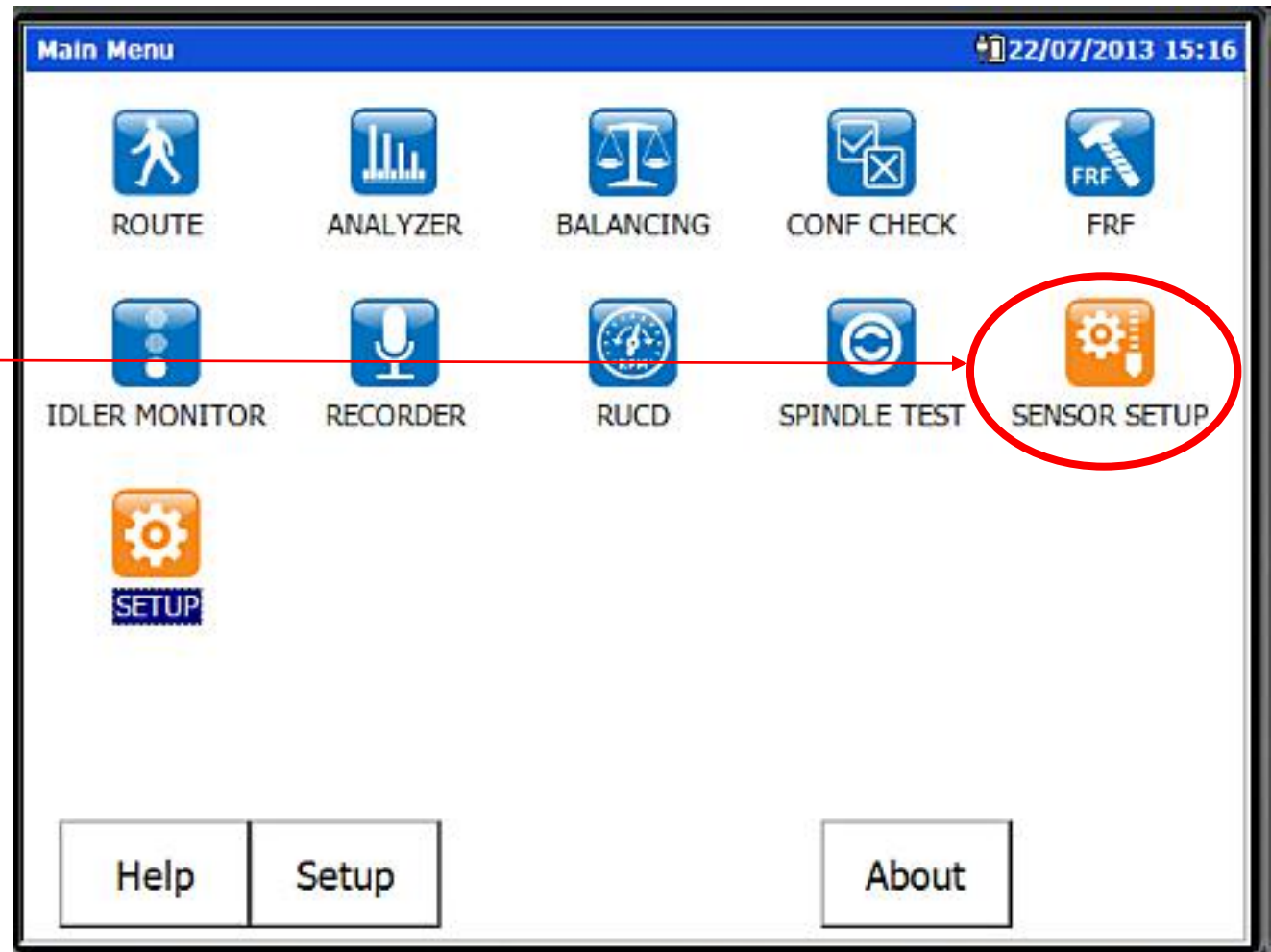
New Sensor Setup Module

New Sensor Setup Module

New sensor setup module allows users to add their own sensor types that can be selected from within the modules (no applicable to the Route module). This saves time during data collection setup.

This also enables the user to add unique calibration data for each sensor to ensure even more accurate data collection.

This module is included free to all users.

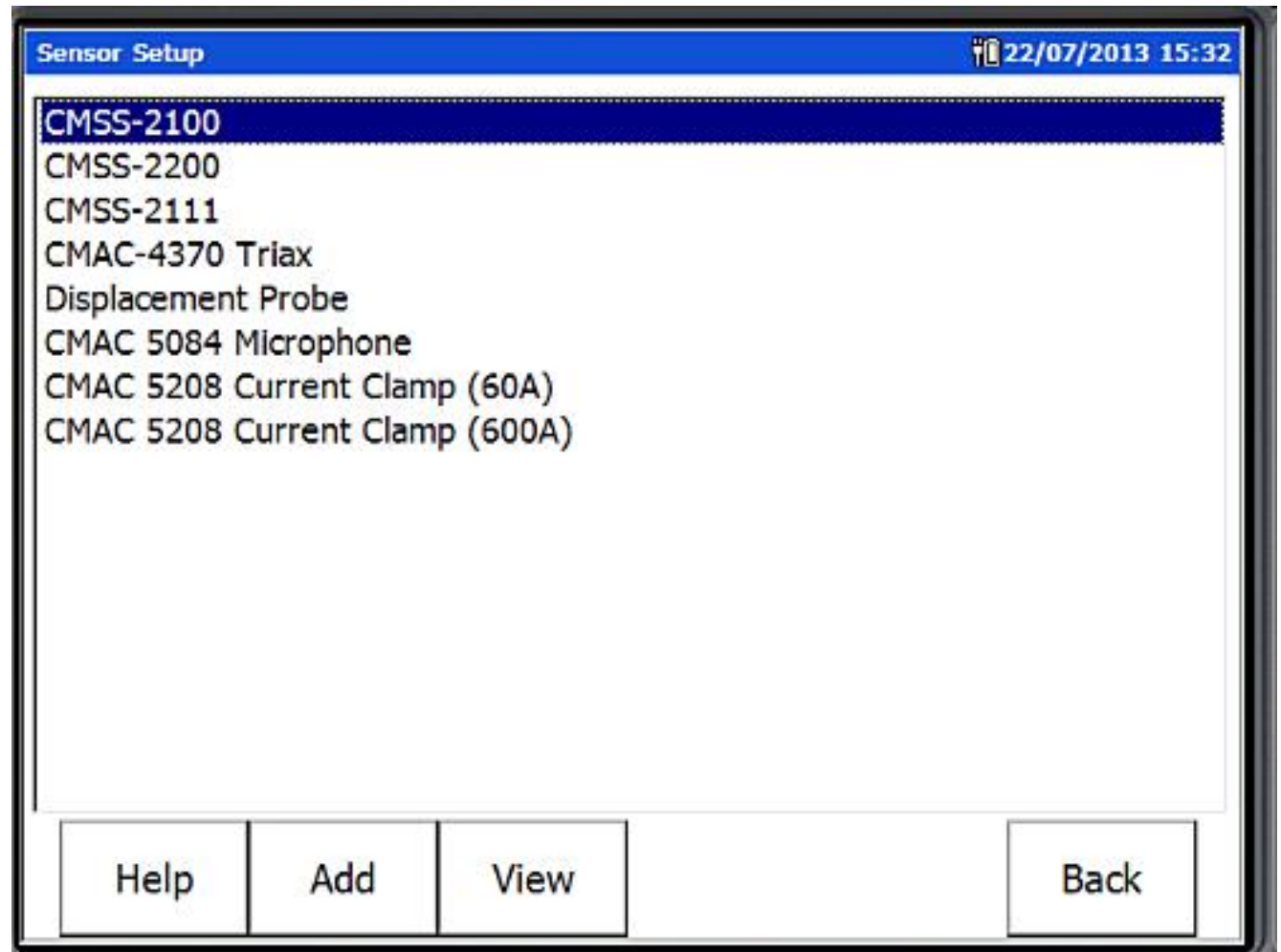


Default settings

Preinstalled with a set of common SKF accessories.

These cannot be deleted or modified.

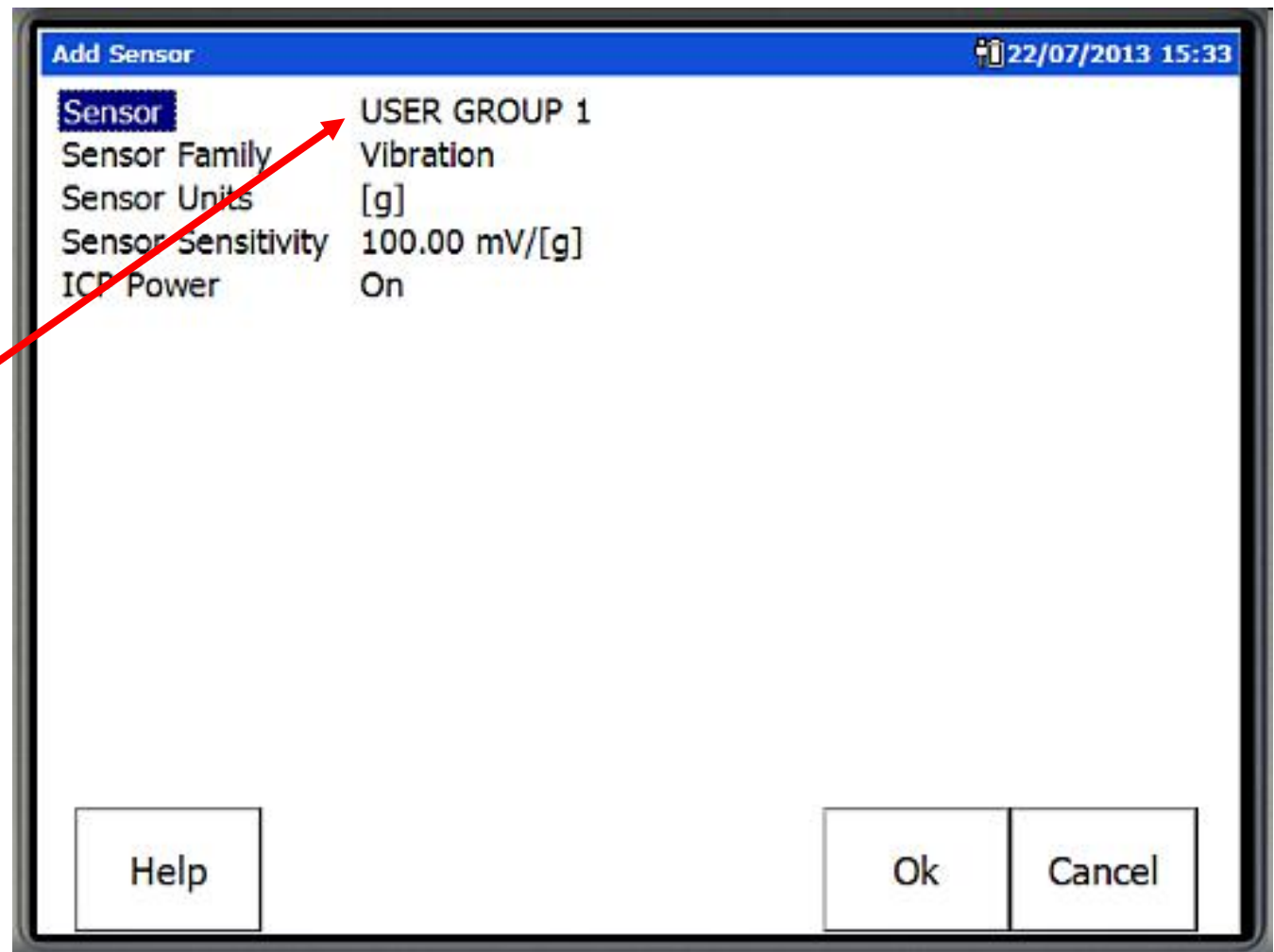
Look at the sensor parameters by pressing “View” or pressing the “Fire” key



Add your own unique sensor

Press the “Add” button from the main menu allows users to create their own sensors.

Create a unique name for each sensor using the numeric keypad to type in the name.



The screenshot shows a dialog box titled "Add Sensor" with a timestamp "22/07/2013 15:33" in the top right corner. The dialog contains the following fields and values:

Sensor	USER GROUP 1
Sensor Family	Vibration
Sensor Units	[g]
Sensor Sensitivity	100.00 mV/[g]
ICP Power	On

At the bottom of the dialog, there are three buttons: "Help", "Ok", and "Cancel".

Sensor Family

Select from two options which type of sensor you want to add:

- Vibration – allows the user to select ICP enabled or not. Standard use for most users would be ICP accelerometer
- Process – allows the user to select a sensor not related to vibration such as a current clamp or thermometer

Add Sensor 22/07/2013 15:33

Sensor	USER GROUP 1
Sensor Family	Vibration
Sensor Units	Process
Sensor Sensitivity	100.00 mV/[g]
ICP Power	On

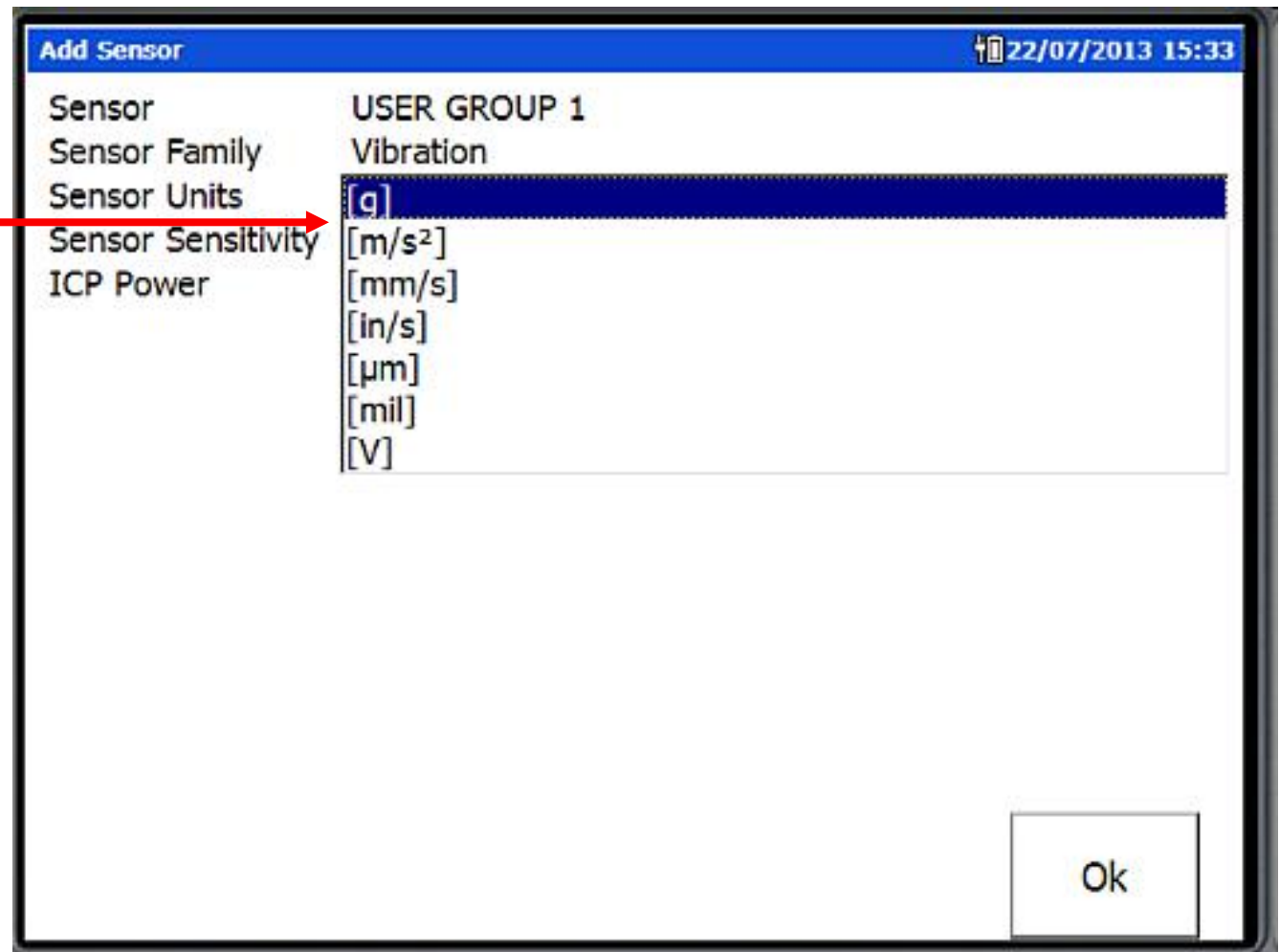
Ok

Sensor Units

Select the units that the sensor type will use during a measurement.

If Vibration is selected for sensor family, then only Vibration units such as g, mm/s, etc. can be selected.

The same is true if Process is selected then only Process measurement types such as Pa can be selected.



The screenshot shows a software interface titled "Add Sensor" with a timestamp of 22/07/2013 15:33. The interface has a list of sensor properties on the left and their corresponding values on the right. The properties are: Sensor, Sensor Family, Sensor Units, Sensor Sensitivity, and ICP Power. The values are: USER GROUP 1, Vibration, [g], [m/s²], [mm/s], [in/s], [μm], [mil], and [V]. The "Sensor Units" dropdown menu is open, showing a list of units: [g], [m/s²], [mm/s], [in/s], [μm], [mil], and [V]. A red arrow points from the text "Select the units that the sensor type will use during a measurement." to the "Sensor Units" dropdown menu.

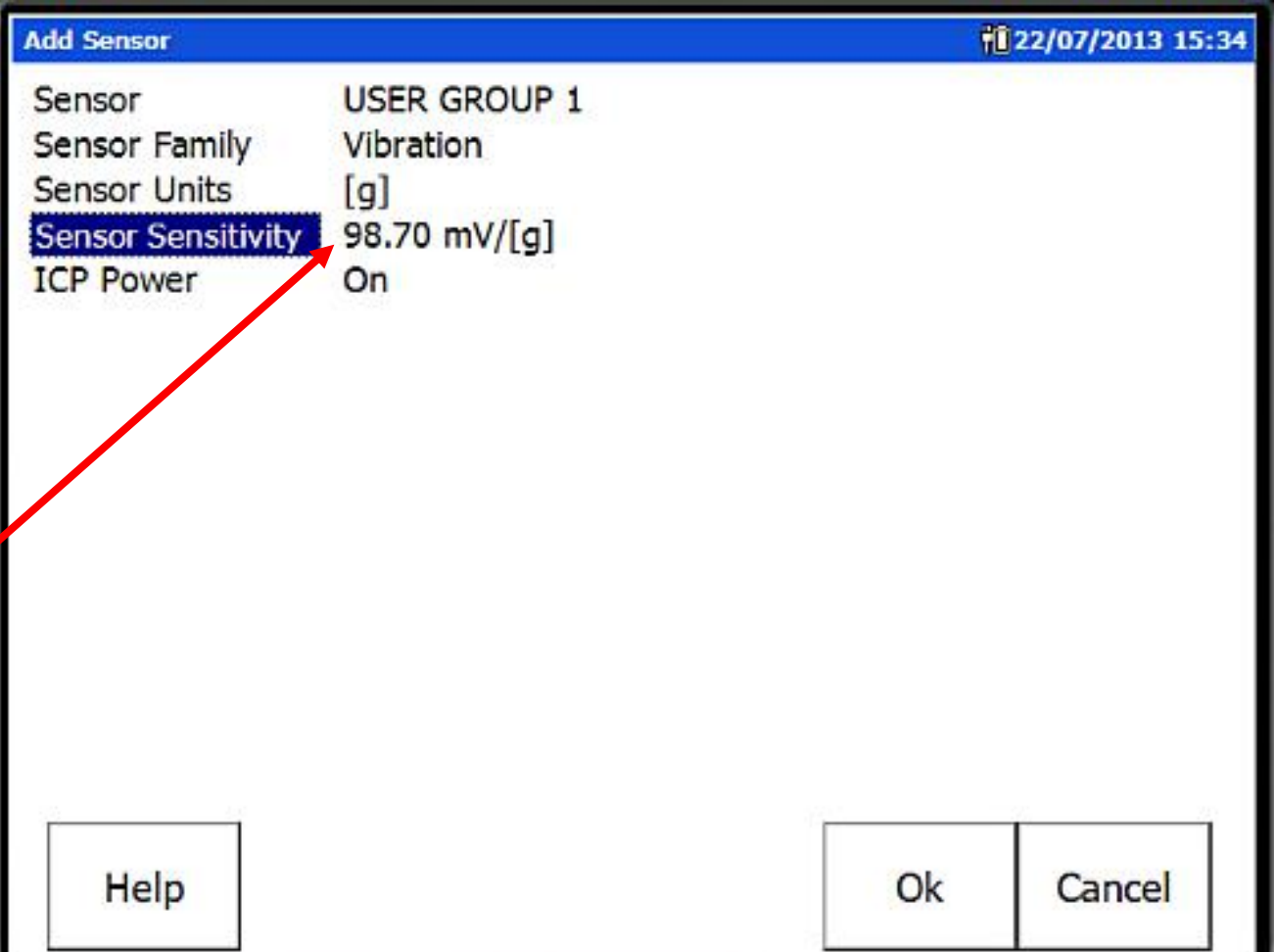
Property	Value
Sensor	USER GROUP 1
Sensor Family	Vibration
Sensor Units	[g]
Sensor Sensitivity	[m/s ²]
ICP Power	[mm/s]
	[in/s]
	[μm]
	[mil]
	[V]

Ok

Sensor Sensitivity

All vibration sensors will have a nominal sensitivity setting such as 100mV/g, however, these are calibrated at the manufacturer and a unique sensitivity for each sensor should be used to ensure accurate measurement values during data collection.

By adding and storing the value here, there is no need to continually type in the value during data collection – **JUST SELECT YOUR PREDEFINED FAVOURITE!**



The screenshot shows a software interface titled "Add Sensor" with a timestamp "22/07/2013 15:34". It displays configuration details for "USER GROUP 1":

Sensor	USER GROUP 1
Sensor Family	Vibration
Sensor Units	[g]
Sensor Sensitivity	98.70 mV/[g]
ICP Power	On

At the bottom, there are three buttons: "Help", "Ok", and "Cancel". A red arrow points from the text "JUST SELECT YOUR PREDEFINED FAVOURITE!" to the "Sensor Sensitivity" field.

Why is Sensor Sensitivity Important?

- Manufacturers will supply sensors with a nominal sensitivity such as 100mV/g
- In reality, they will provide sensors with $\pm 10\%$ of that value
 - So anything between 90mV/g and 110mV/g
- This means that if you use two different sensors on two different occasions and do not set the correct sensitivity, your readings could be as much as 20% out!

ICP Power

Select whether your sensor requires ICP power or not.

This ensures that you will not damage any machinery or sensor by applying or not applying 24V from the Microlog.

Press “OK” once you have completed all of the required parameters for your sensor.

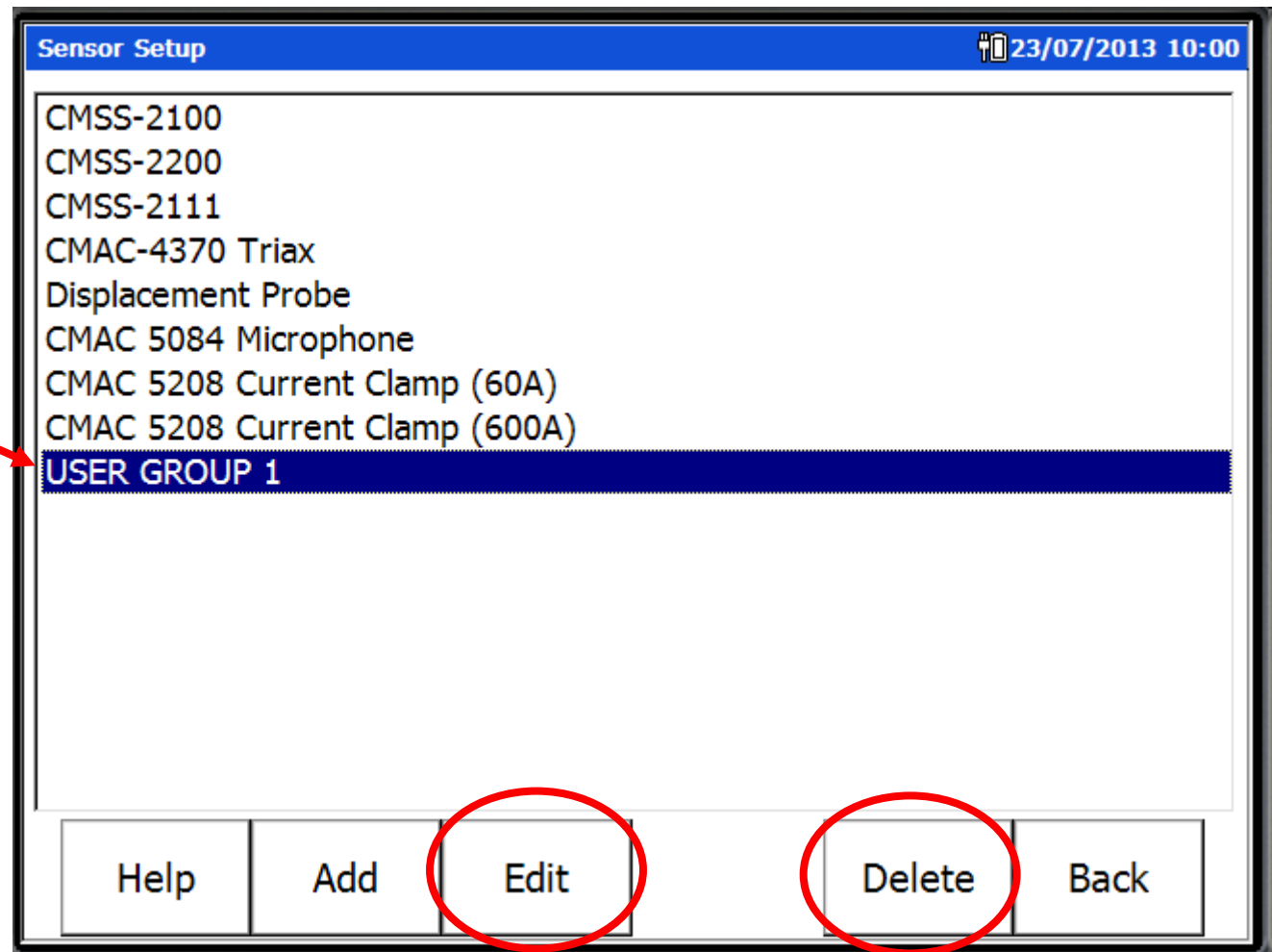
Add Sensor		22/07/2013 15:34
Sensor	USER GROUP 1	
Sensor Family	Vibration	
Sensor Units	[g]	
Sensor Sensitivity	98.70 mV/[g]	
ICP Power	On Off	

Ok

Your New Sensor

After you have successfully added your sensor it now appears on the front screen along with the SKF predefined accessories.

If your sensor is selected, the “Delete” and “Edit” buttons appears allowing you to edit any of the parameters or remove the sensor from the list completely.



3

New and Improved Module UI

New Screen Layout (applies to all modules)

Recall – recalls the last measurement setting that the user used.

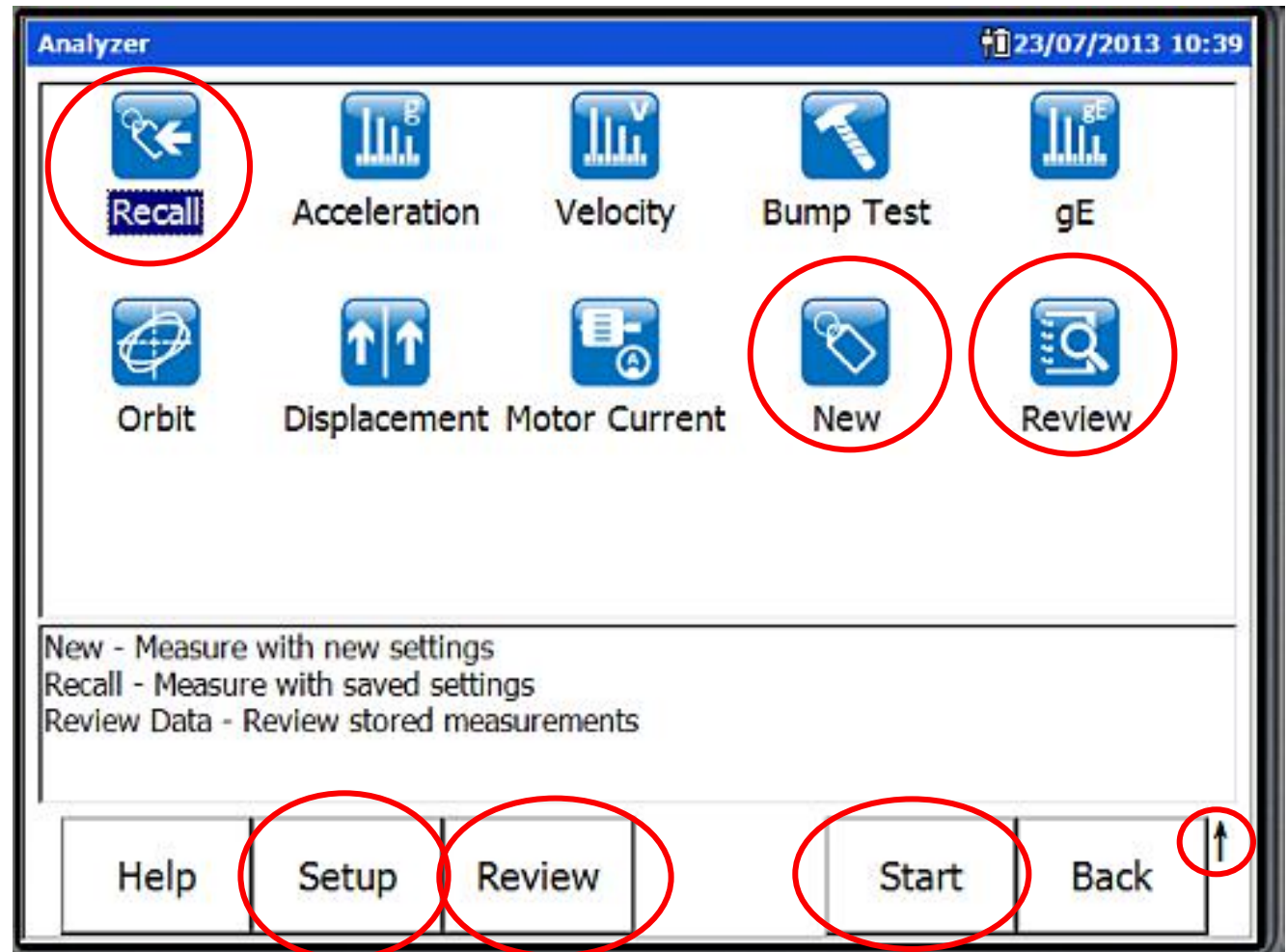
New – allows the user to setup a new user defined measurement setup.

Review – allows the user to review previously saved data or measurements setups.

Start – starts the measurement that is highlighted.

Setup – takes the user directly to the Setup screen.

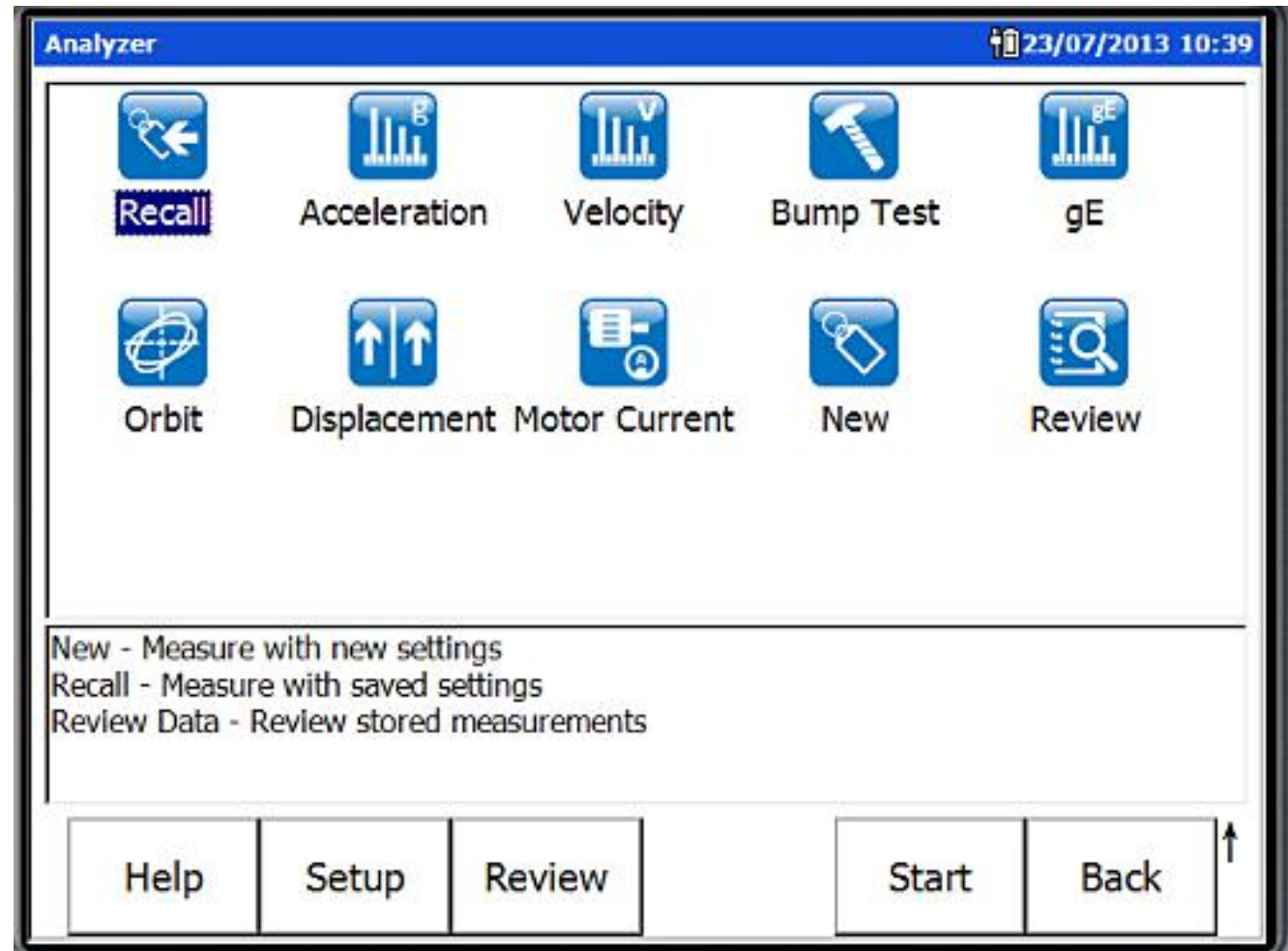
Shift indicator – lets the user know that shifted functions are available.



Predefined Measurement Types

Each module now has a set of pre-defined and pre-installed measurement types.

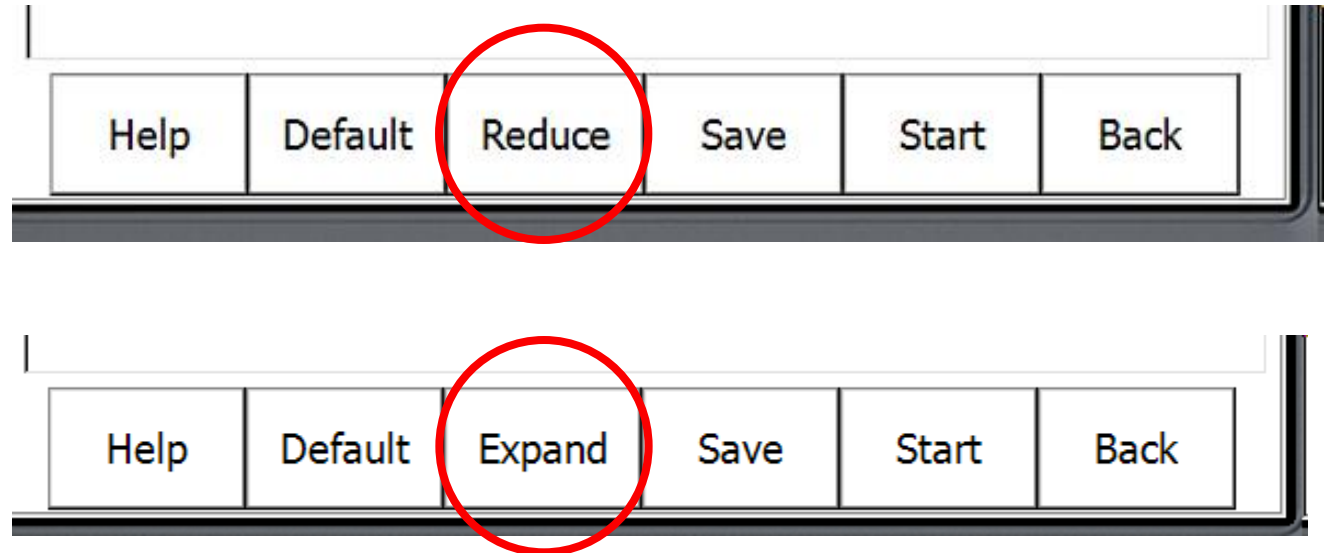
These measurement types can be used as is for immediate data collection by pressing the “Start” button or can be modified by highlighting the measurement type and pressing “Setup” or the fire key.



Expand/Reduce Functionality

There are two type of Analysts in the world today – experts and the rest of us!

To that end, we have left the expert settings for the experts and hidden them for the rest of us!



Most of what you will find in the reduced menu will be fine for most of us; for the experts, the expand button can be used to modify additional measurement parameters such as number of averages, window type, etc.

The Review Screen

The “Recall” and “Review Data” menu options have been replaced with one new “Review” screen.

From here users can now review/recall previously collected data and previously saved measurement settings – all from the one location!

Setups that have been saved that do not contain data are signified with no “tick” mark. Files that contain data that has been collected are signified with a “tick”.

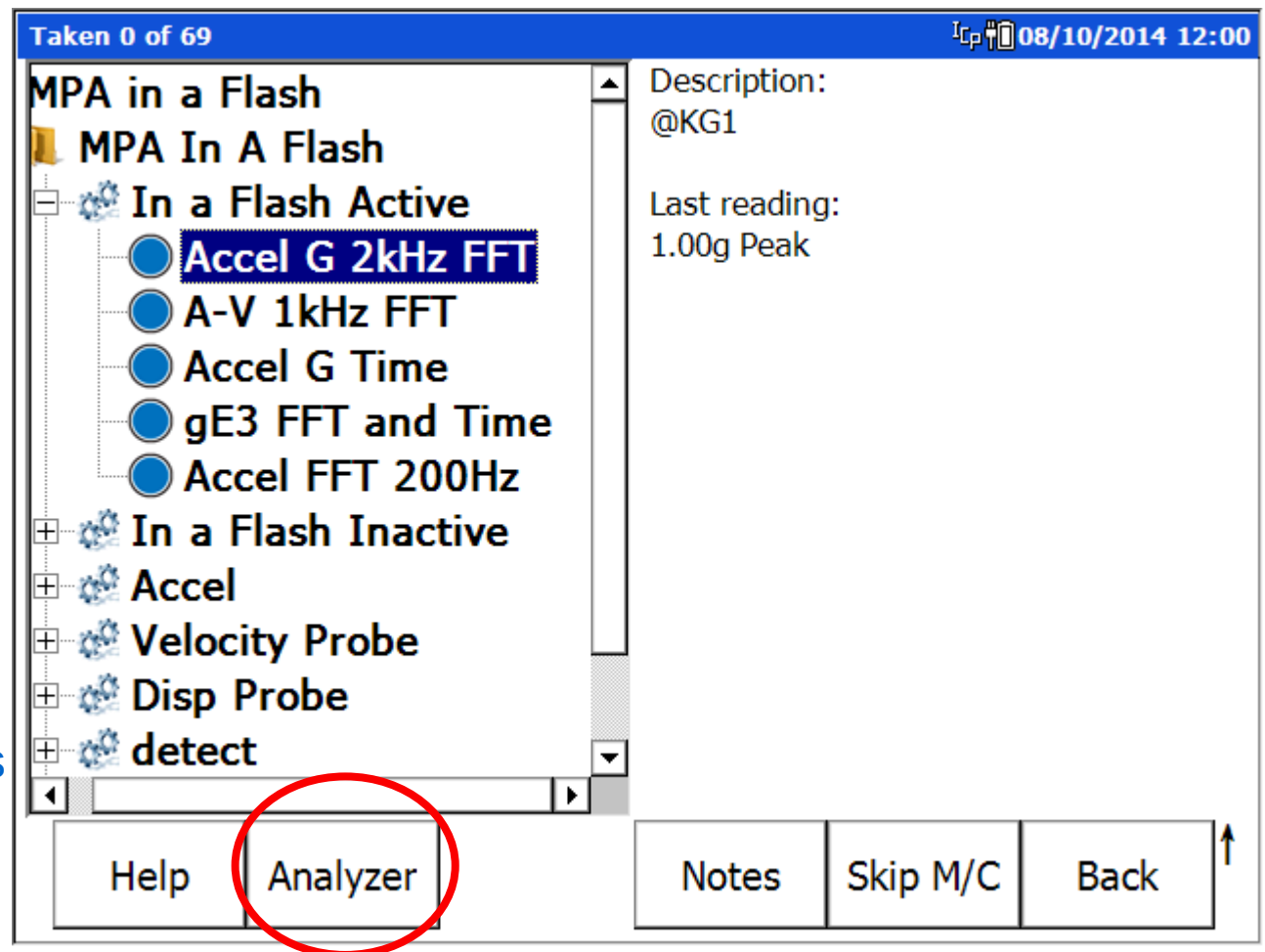


What's Happened to Non-Route?

Non-Route has been replaced with the new updated Analyzer module!

Pressing the “Analyzer” button invokes the Analyzer module and uses the point settings from the Route to create an Analyzer measurement!

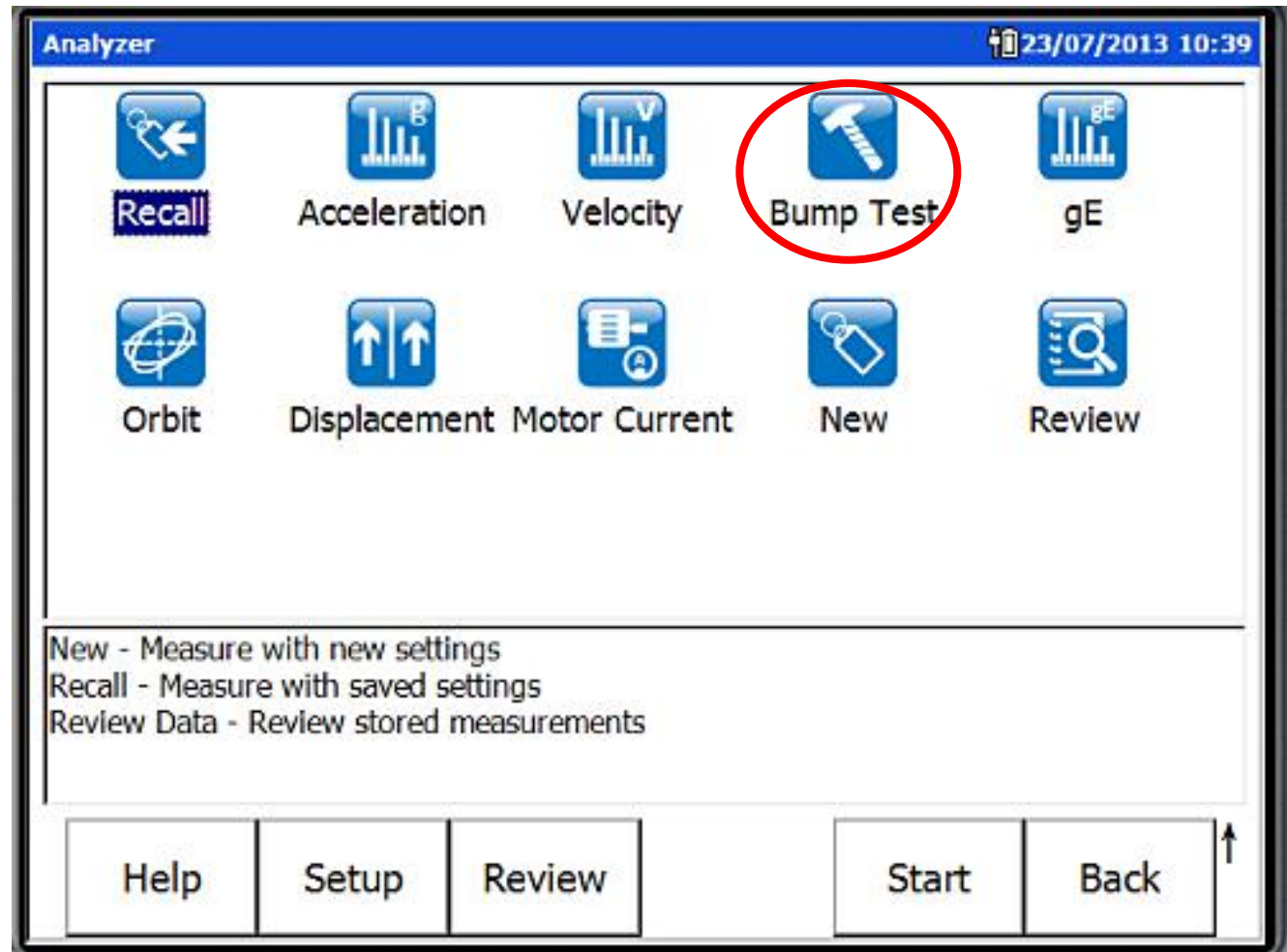
Save the data from the Analyzer module and this can be uploaded to @Analyst and will be treated as Non-Route data.



What's Happened to Bump Test?

The Bump Test module was actually a cut down version of the Analyzer module. We have added this as a predefined measurement setting in the new advanced Analyzer module

All Route based customers who upgrade to v4.0 will automatically have the Analyzer module licensed.

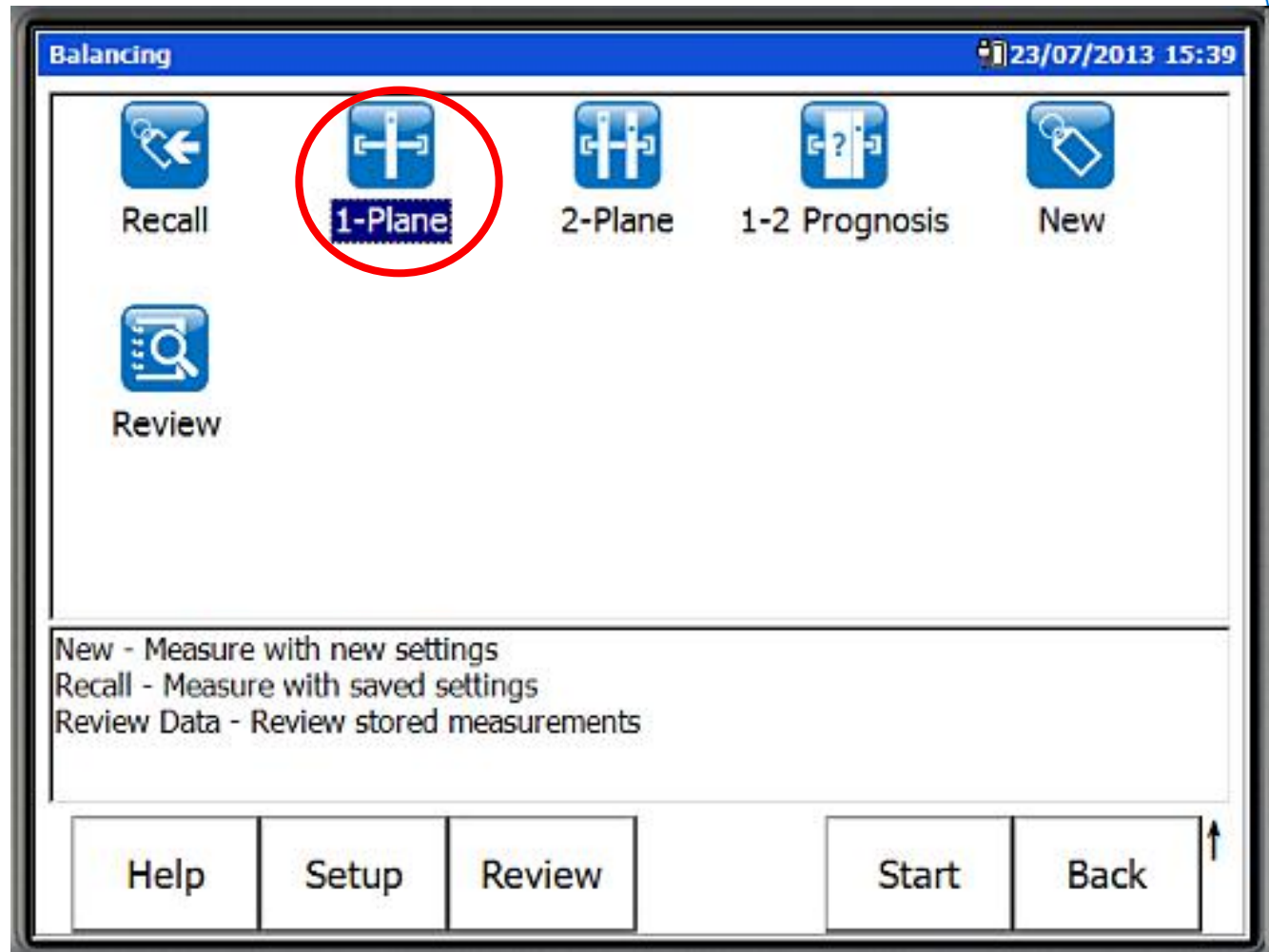


4

New Updated Balancing Module

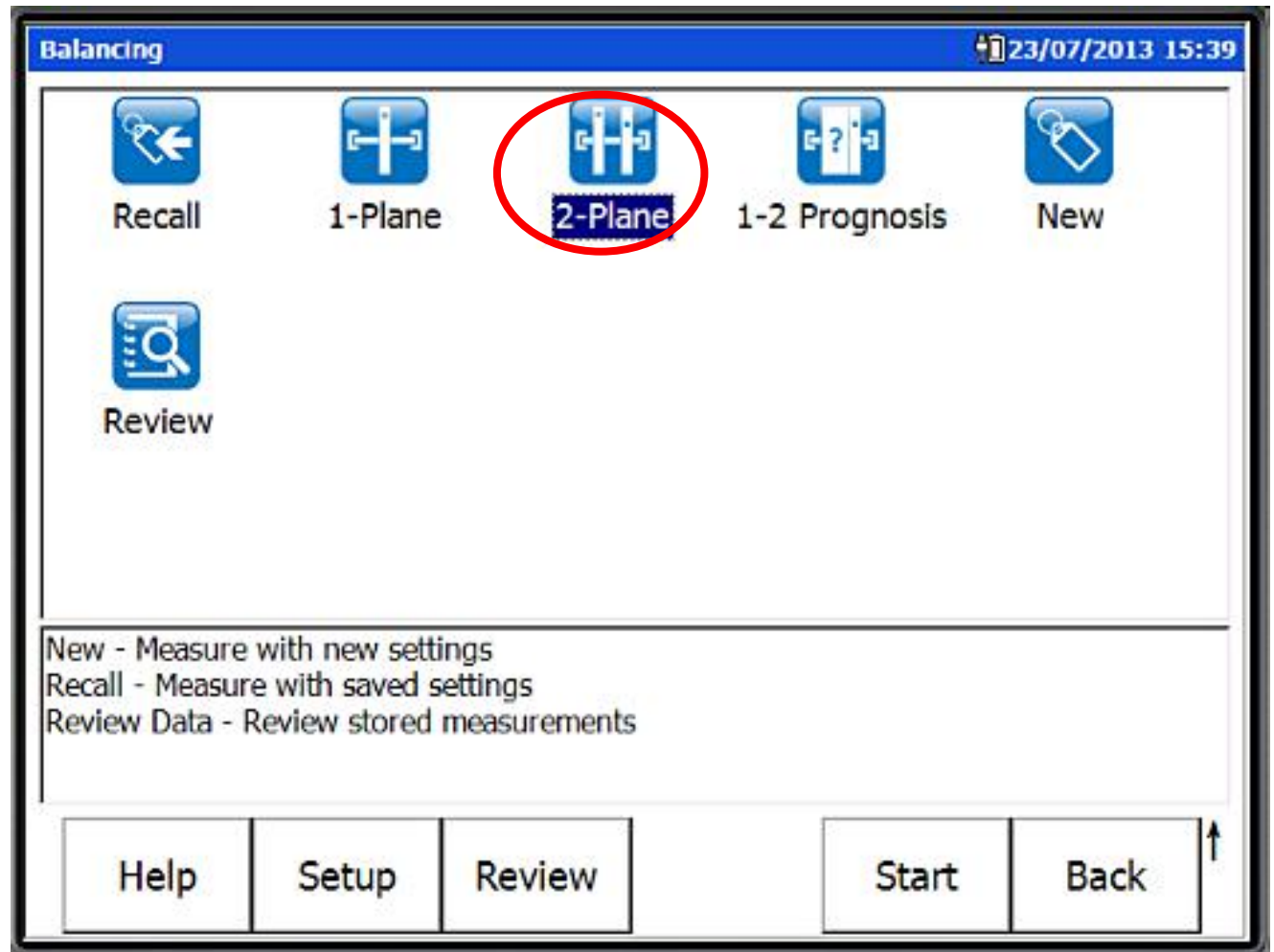
Predefined Setups 1 Plane

- Channel 1 sensor (Plane A)
- CMSS 2200 sensor selected
- Velocity in mm/sec
- Weight units in grams
- Polar correction
- Vibration threshold 2.8 mm/sec



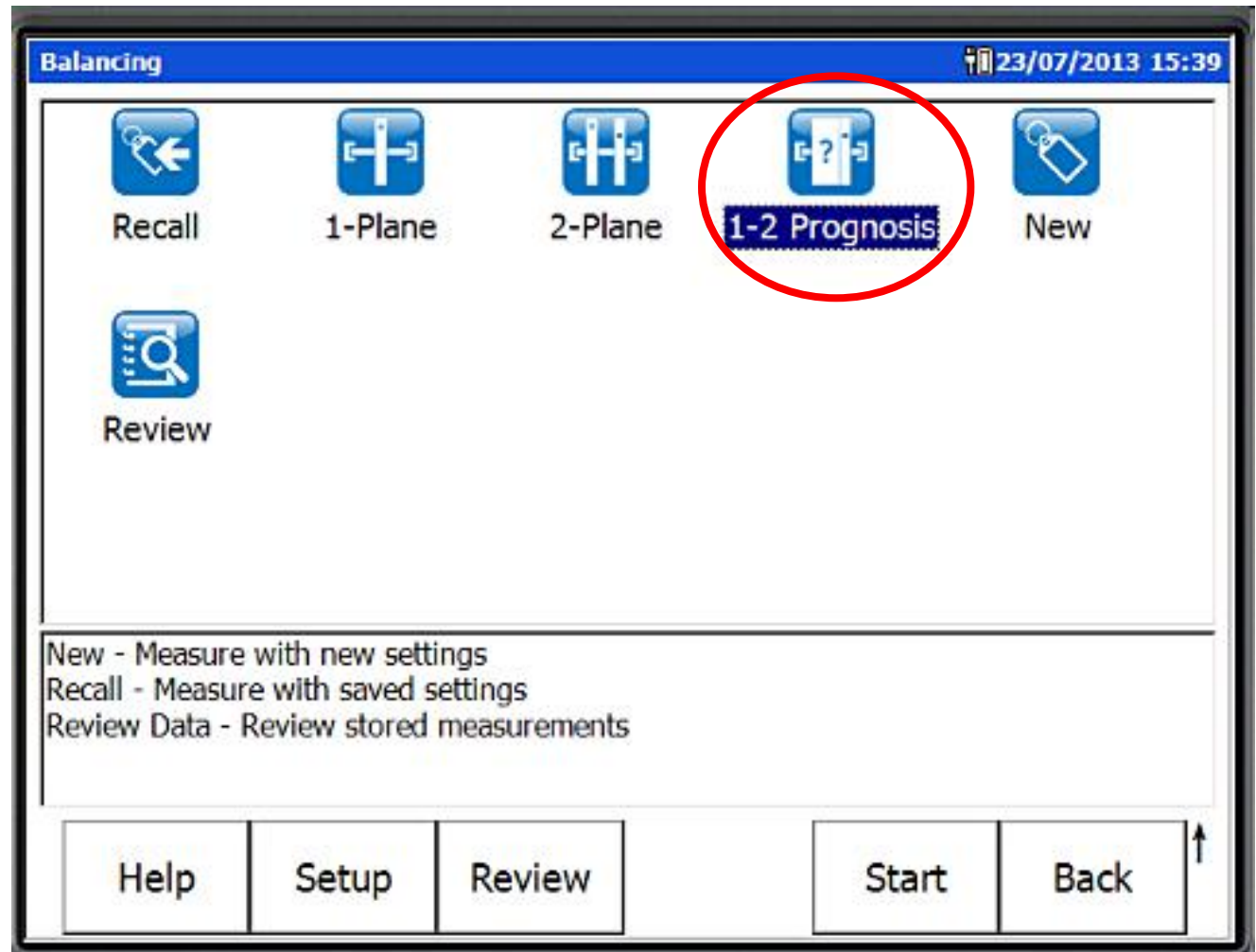
Predefined Setups 2 Plane

- Plane A=CH1
Plane B =CH2
- CMSS 2200
sensors selected
- Acceleration in
mm/s
- Weight units in
grams
- Polar correction
- Vibration
threshold
2.8mm/s
- Solution Dynamic



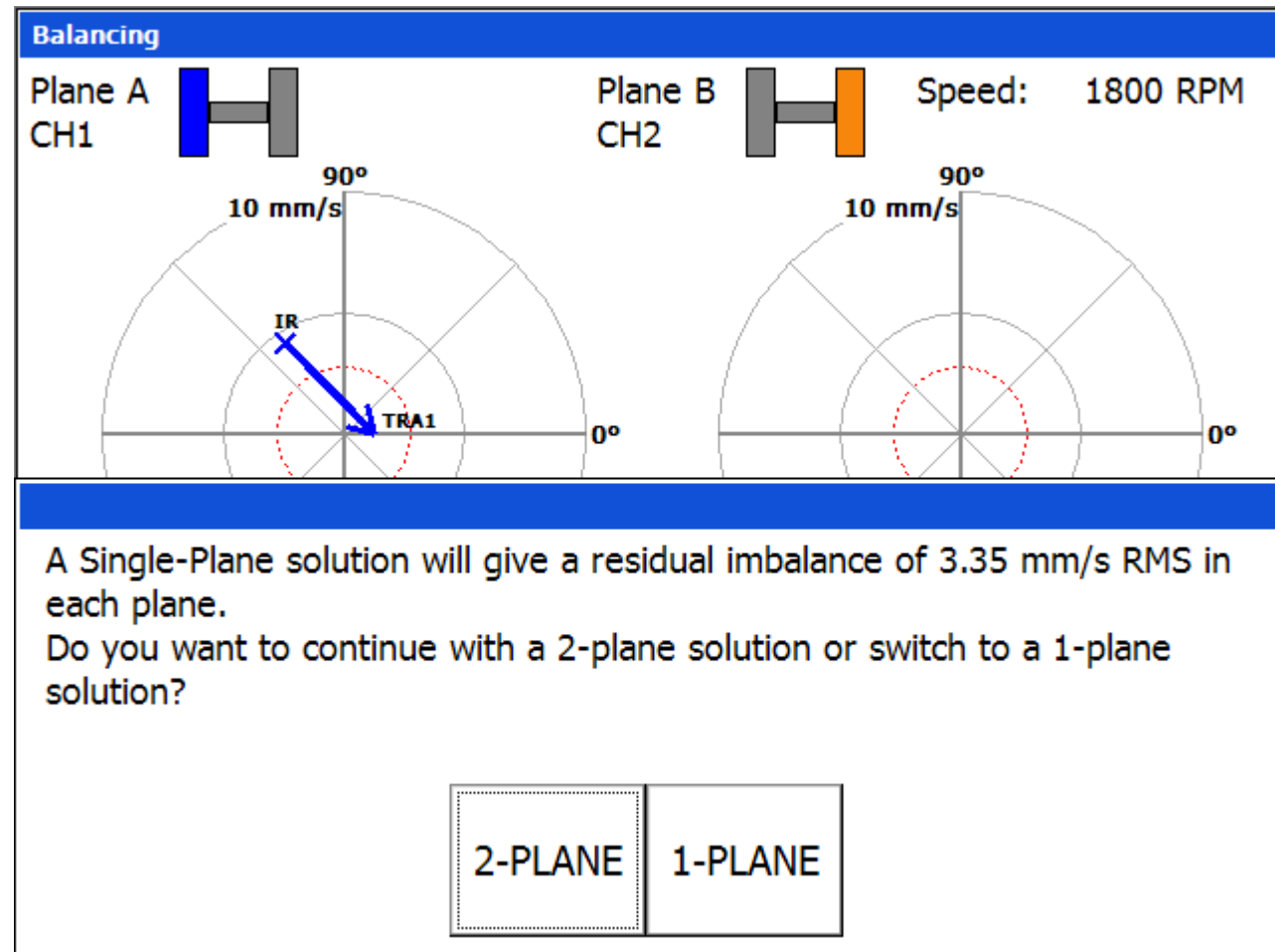
Predefined Setups 1-2 Plane Prognosis

- Plane A=CH1
Plane B =CH2
- CMSS 2200
sensors selected
- Acceleration in
mm/s
- Weight units in
grams
- Polar correction
- Vibration
threshold
2.8mm/s
- Solution 1-2
Plane with
Prognosis



What is Prognosis?

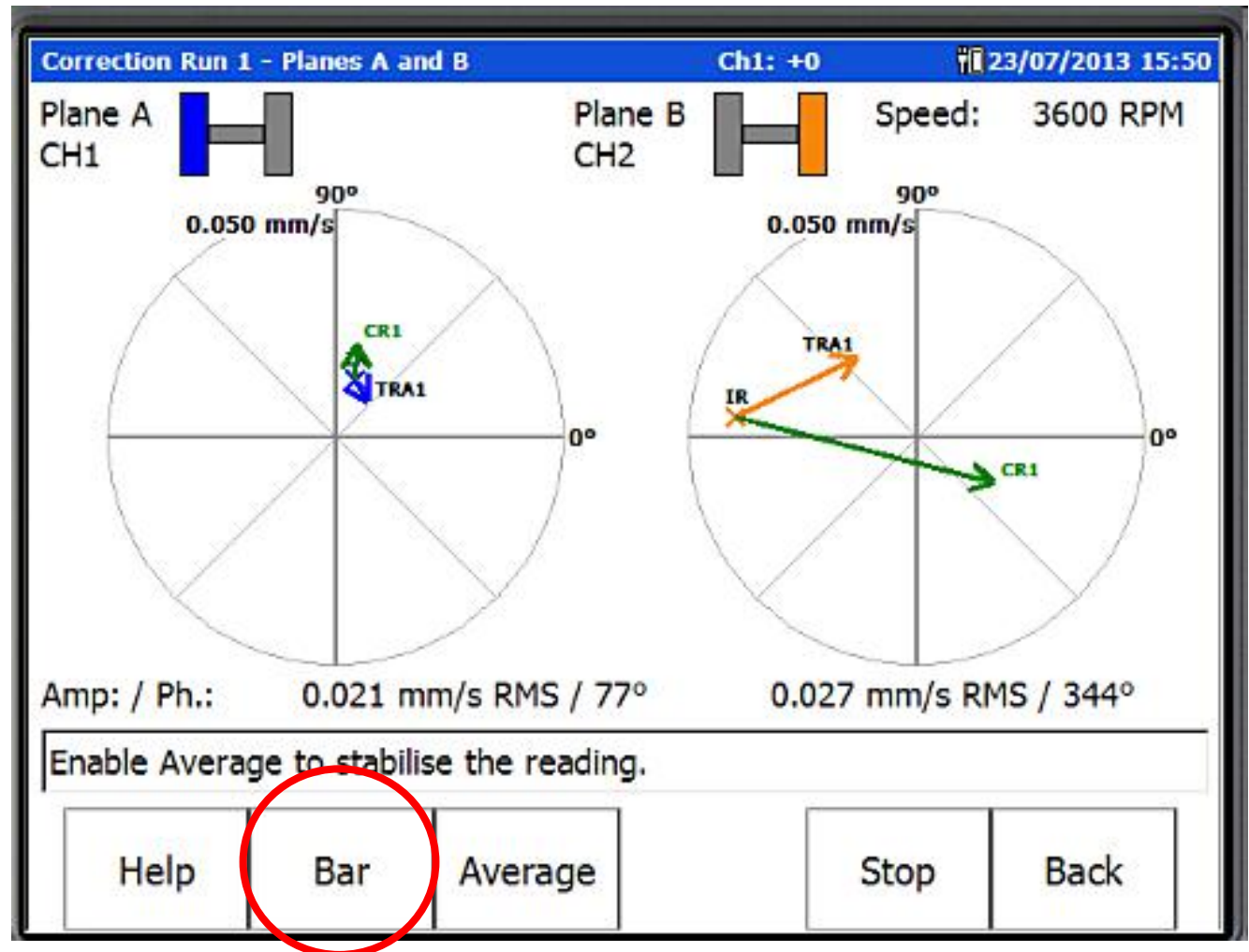
Prognosis calculates what the residual balance would be (after the initial trial weight run) if the solution was switched to a single plane balance and provides you with the option to switch or continue with a 2 plane solution i.e. trail weight in plane B.



New Polar Plot View

New Polar Plot view gives users a real-time perspective of the balance run as they are moving through.

Switch to the Bar graph view at anytime with the press of a button!

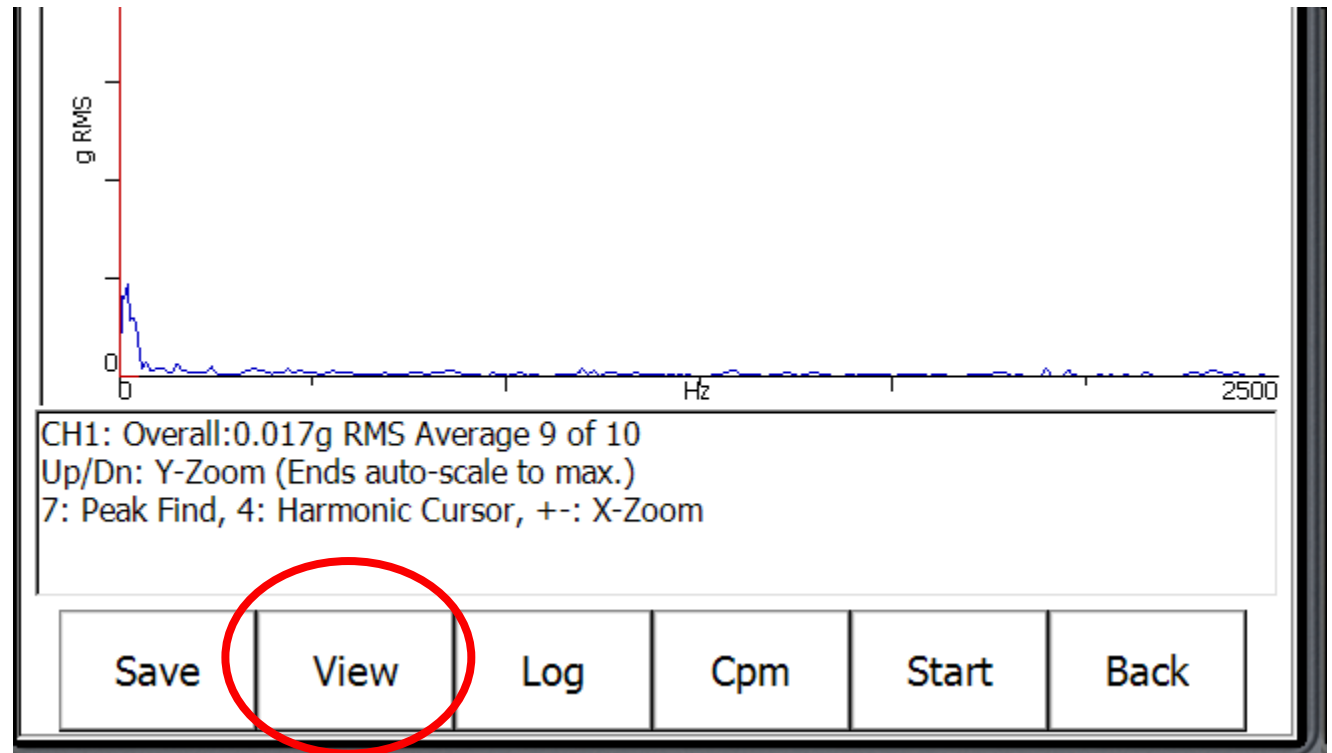


5

New Module View Options

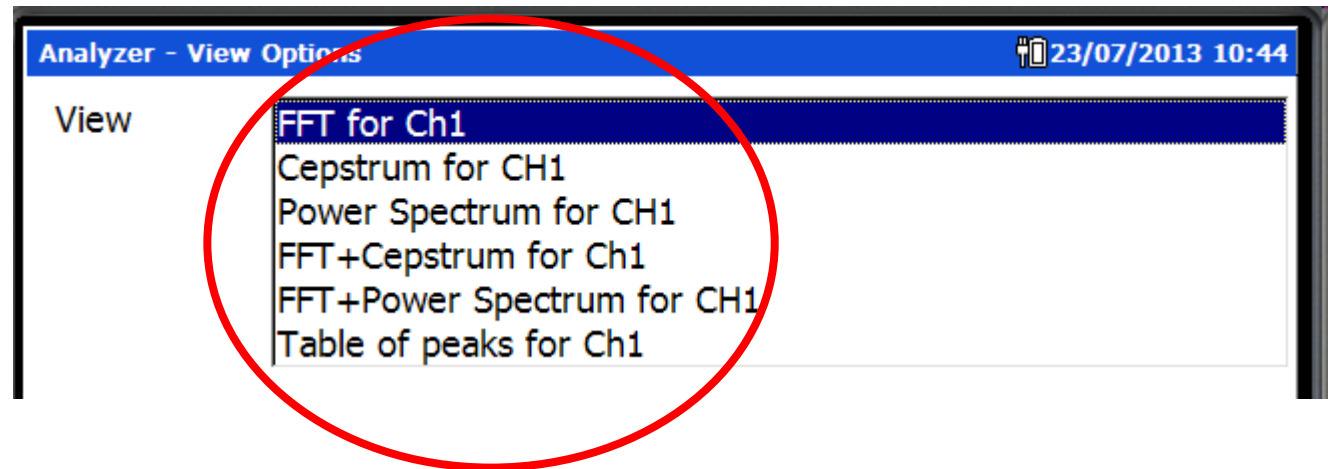
Changing the View Options in the Modules

It's now easier than ever before to change what you are viewing! Instead of having to go all the way back to the set up screen, just press the "View" button on the Microlog screen to be taken to the View options screen.



What can I View?

Depending on the measurement type you have selected from the Analyzer setup screen is dependent on what you can view from the View menu screen.



A simple 1 channel measurement will display the following options:

- FFT for Ch1
- Cepstrum for Ch1
- Power Spectrum for Ch1
- FFT + Cepstrum for Ch1
- FFT + Power Spectrum for Ch1
- Table of Peaks for Ch1

What are the new view options that have appeared?

Power Cepstrum:

A Power Cepstrum is the result of taking the inverse Fourier transform of the logarithm of the estimated spectrum of a signal – in other words, a Spectrum of the Spectrum!

It is very useful in the detection of gearbox problems amongst other things. We will find out more about Power Cepstrum later on!

Power Spectrum:

A power spectrum of a signal is the power of that signal at each frequency that it contains.

6

New Visual Trigger Feature

What is Visual Trigger and when do I use it?

Visual Trigger “does what it says on the tin!” It provides the user with a graphical representation of the trigger input to the Microlog and allows the user to set the trigger level to an acceptable level.

This ensures that the user is confident that they are receiving a good tacho signal before beginning a time consuming job such as a balance run only to find out half way through that you have an issue! Not a good feeling!

How do I use this new Feature?

Speed Measurement:	Inactive
Filter Entry:	Stepwise
Trigger:	User
Ext trig slope:	+
Module ICP:	Sensor Setting
Date Format:	DD/MM/YYYY

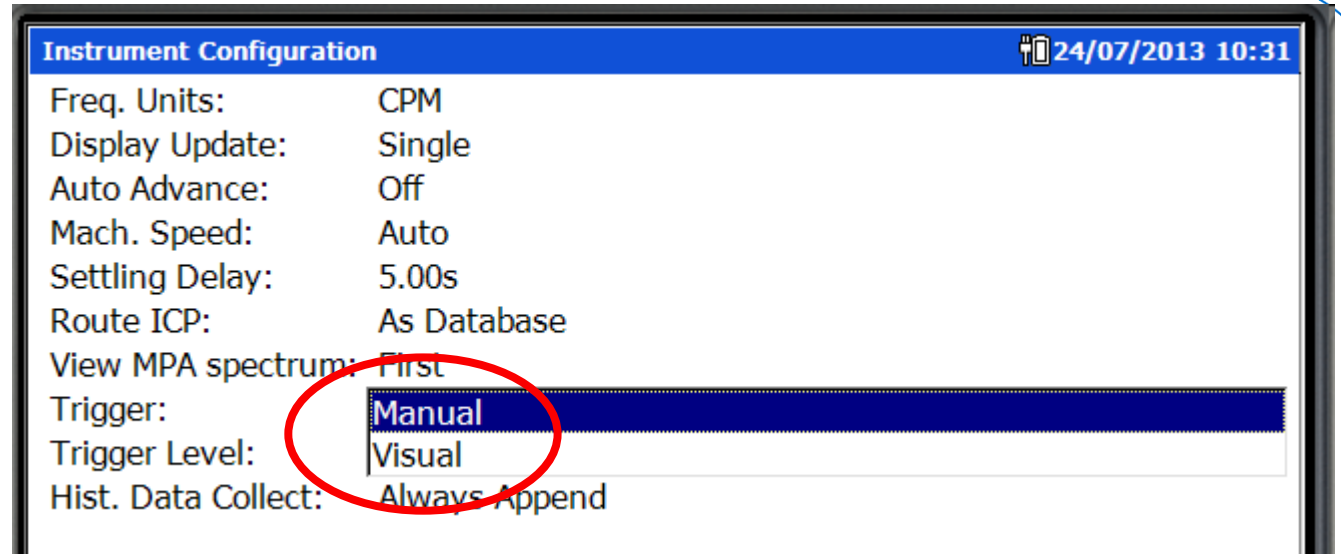
From the System Setup menu, make sure that the “Trigger” setting is set to “User”.

This is true for all modules including “Route”.

From the Route Module....

If the user has set the “Trigger” to “User” from the System setup menu, then the “Trigger” option is available from the “Config” menu in the “Route” module.

Note: If the Trigger setting is Automatic, then this menu option does not appear!



The setting defaults to “Manual” which allows the user to manually enter the trigger value using the numeric keypad.

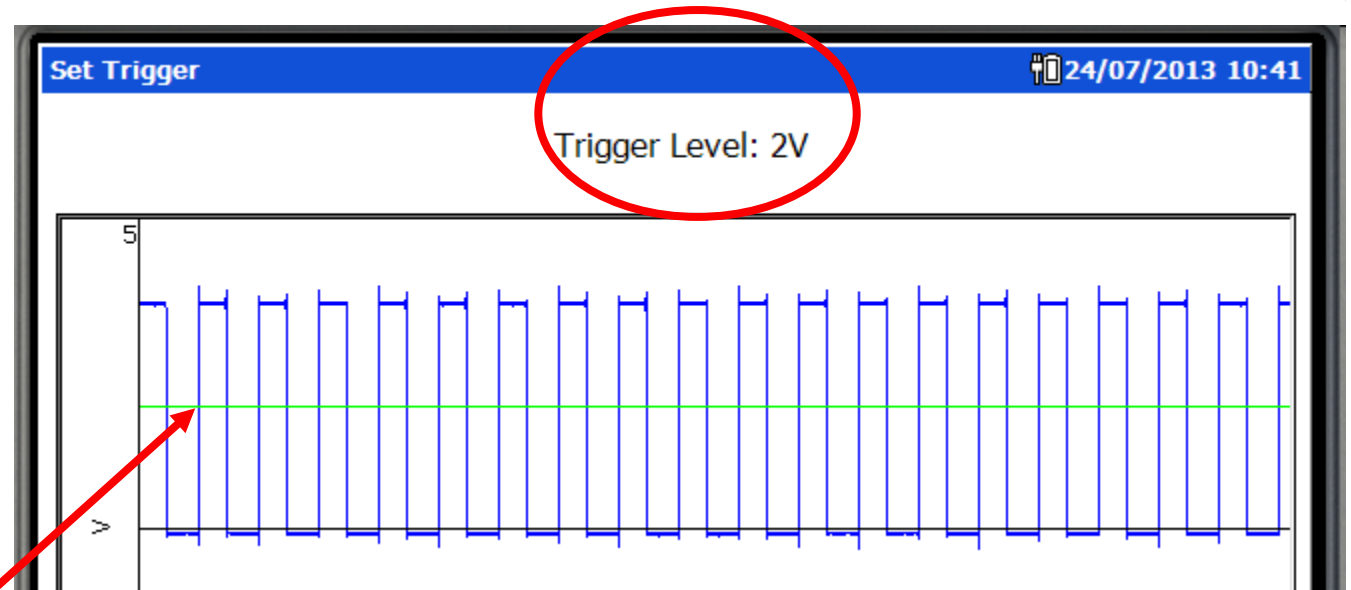
By selecting “Visual,” let’s see what happens next.....

Visual Trigger

By selecting “Visual” the user is shown the actual trigger input signal to the Microlog!

This enables the user to ensure that the trigger signal is “good” and ready to start using during data collection.

The trigger level is displayed at the top of the screen and is denoted by the green horizontal line on the display.



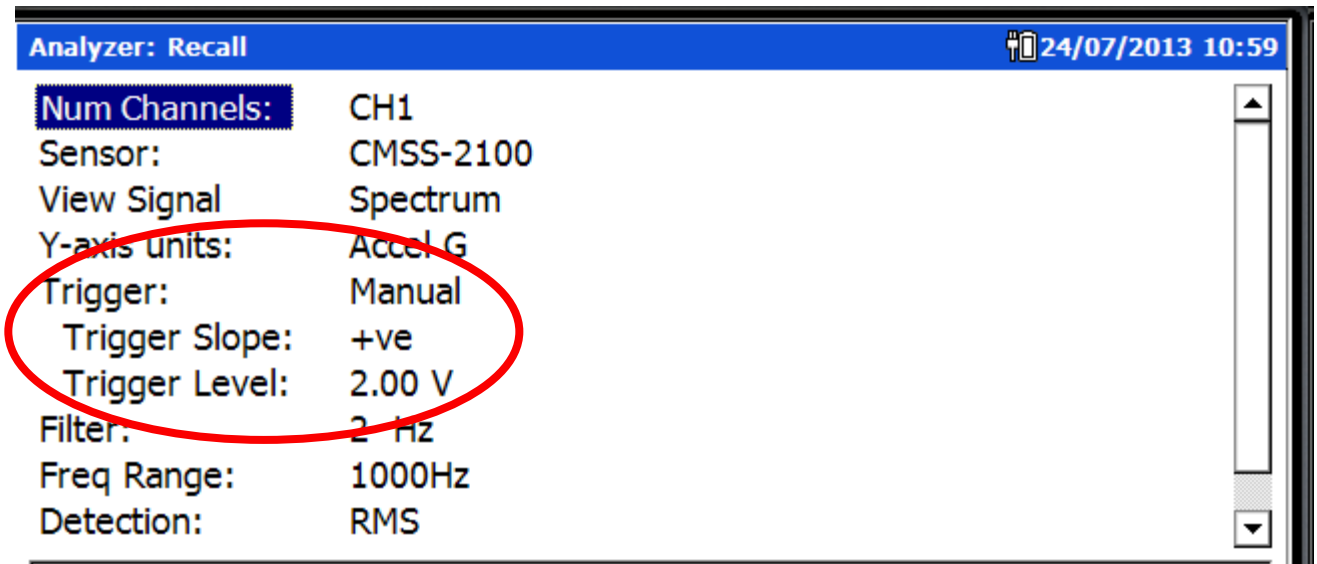
Users can adjust the trigger level using the up and down arrow keys.

Once the user is happy with the trigger level, pressing OK stores the level and changes the menu setting back to “Manual” with the set level.

From the other Modules....

If the user has set the “Trigger” to “User” from the System setup menu **and** the “Speed Measurement” is **not** set to “Inactive”, then the “Trigger” option is available from the setup menu in the modules (*Analyzer and Balancing only*).

Changing to “Visual” from “Manual” invokes the same display screen as per the Route module in the previous slide.



7

New 3 Channel Support for
Recorder and RuCd Modules

What's this new feature all about?

The introduction of v4.0 introduces support for 3 channel plus tacho in the Recorder module and 3 channel plus tacho in the RuCd module.

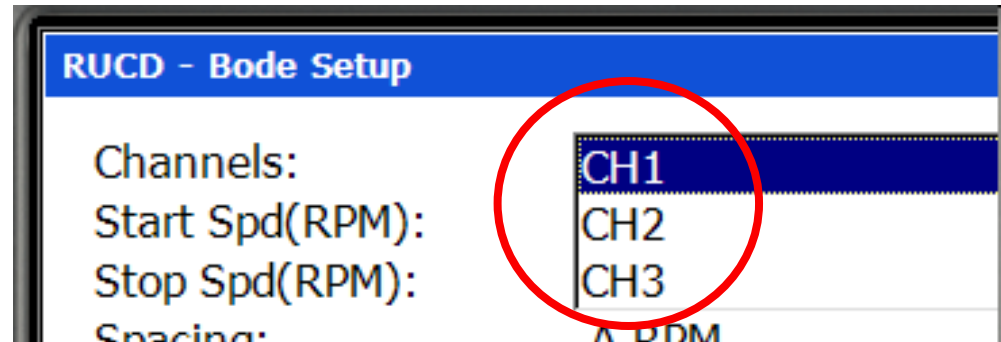
This provides Analysts with even more tools for detecting problems by enabling them to look at the tacho signal with 3 channels over a long period of time whilst collecting data.

RUCD - Taking Data		📱 24/07/2013 11:20
State:	Acquiring	
Speed:	3600 RPM	
Overall:	CH1:0.530[mm/s] RMS CH2:1.28[mm/s] RMS CH3:1.38[mm/s] RMS	
Max:	CH3:2.53[mm/s] RMS @ 3594RPM	
Rec Time:	00:03:13	

Note: this is available to all users with the serial number 1210xxx onwards. PSP customers with hardware prior to this date code are entitled to a free hardware upgrade to enable this feature.

Setting it up in RuCD

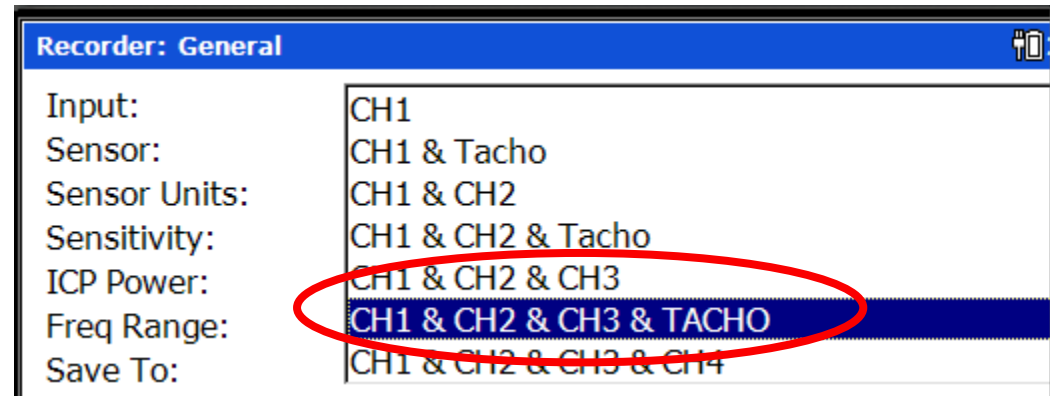
Very simply select 3 channels from the drop down menu and the Microlog will collect all 3 plus tacho if you are using a triaxial accelerometer.



The data can then be post processed one channel at a time by selecting the particular channel that you want to look at.

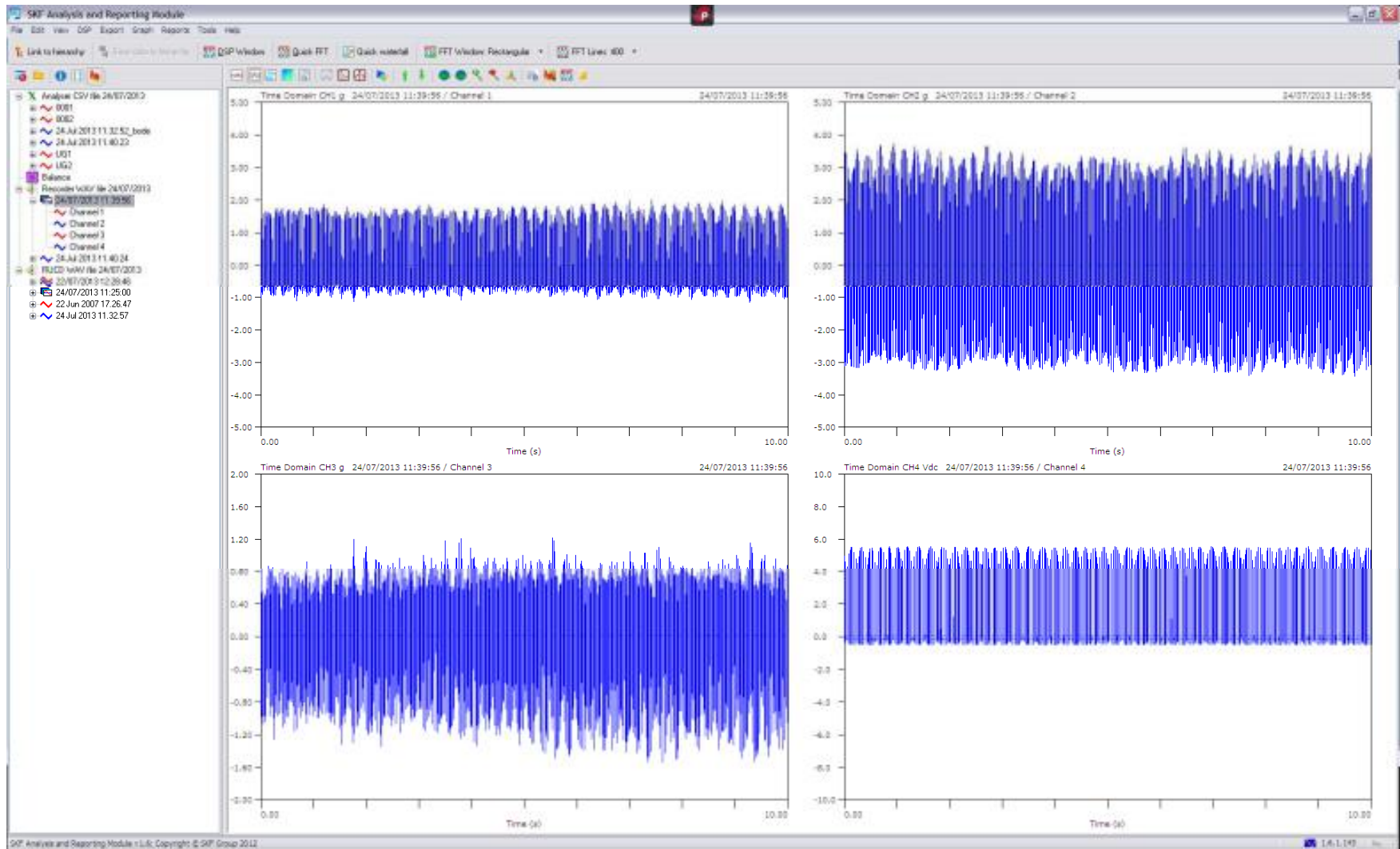
Setting it up in Recorder

Very simply select 3 channels & TACHO from the drop down menu and the Microlog will collect all 3 plus tacho if you are using a triaxial accelerometer.



The data can then reviewed either on the unit or in ARM looking at all 3 channels plus the tacho simultaneously (see next slide)!

3 Channel plus Tacho in ARM



8

MPA-in-a-flash with gE support

What's MPA-in-a-flash all about?

So, what is MPA-in-a-flash?

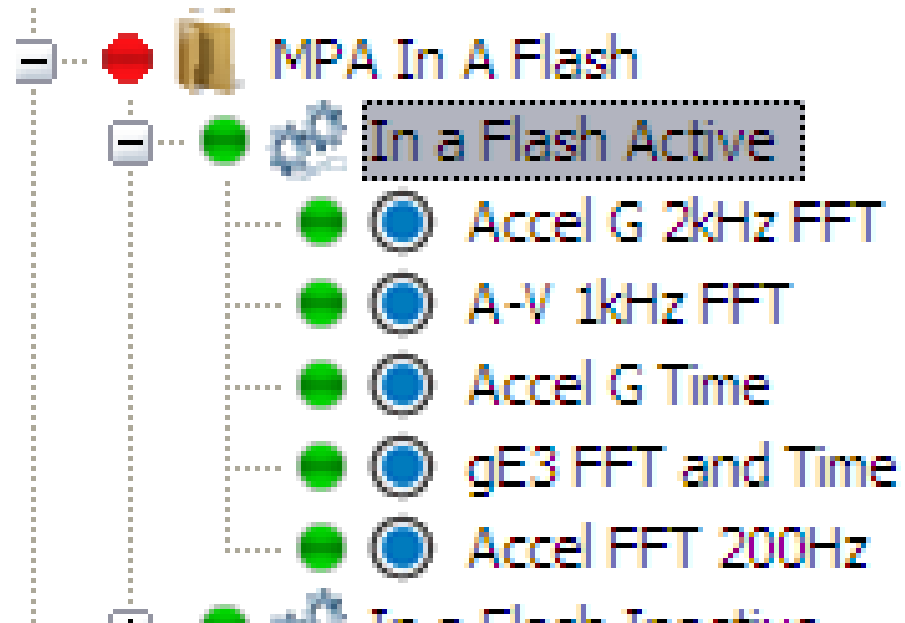
MPA (Multi Parameter Automation) enables users to collect various types of measurement types at one measurement location to enable faster route data collection. Using the same sensor, the user need's to press only one button to sequentially collect all pre-configured MPA measurements.

MPA-in-a-flash does the same, but uses the same block of data to calculate each of the pre-configured measurements; thus “in-a-flash”!

What's changed?

Previously, if a user setup the route as per the attached, then the gE point data would be acquired separately and processed on its own.

With v4.0, all of the points are processed from the same block of data.



Stop

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