SIMRET-F2 ENGINEER'S INSTRUCTIONS

GETTING STARTED

The Simret-F2 is operated by a single *Click* control. The central OK button may be *single-clicked*, *double-clicked*, or *held-down*. The surrounding arrow buttons are used to navigate menus by moving a `highlight` bar through a menu of options on the instrument's display screen. Clicking the OK will select the highlighted item. Normally this will be accompanied by a beep from the instrument. The scroll bar on the right hand side indicates the relative position of the item within the menu.

Whenever possible the instrument operates to these simple rules:

- *single-click* to choose a menu item

- *single-click* to return

- *double-click* to enter a 2nd level menu

- *single-click* to return

- *hold-down* (for more than one second) to abandon a course of action

- Use ▲ or ▼ to increase or decrease a value.

- Use the arrow buttons to scroll through a menu

- the last option of a menu will return you to the previous menu, or use the ◄ button.

SWITCHING ON: To turn the instrument on, *hold-down* OK and then release it. The display will appear when OK is released. After a short self-test, the ***Start Menu*** will then appear. The instrument will switch-on automatically with the vehicle ignition.

The self-test will display the software version and when the sensor module calibration is next due. It will warn you if re-calibration is due and if there are more than 80 brake tests stored in memory. Upload or print the tests if the memory is full and then erase to create more space! If the SD card is fitted, tests will be automatically backed up to create space.

SWITCHING OFF: To manually switch off, *hold-down* OK in the ***Main Menu.*** If the *Click* control has not been operated for about 4 minutes, the instrument will switch itself off unless the vehicle ignition is on. It will also turn off if its internal battery voltage is very low. If the vehicle ignition is switched-on, the Simret-F2 will power-on again straight away.

EDITING: A built-in editor allows certain number values, names and software switches to be edited in the instrument. First highlight the item then for:

- numbers, *single-click* to edit

- names in a sub-menu, *single-click* to select or *double-click* to edit.

- software switches, *single-click* to change state

When a number or name is being edited, press the arrows until the pointer is at the required digit or letter and *single-click*. The pointer bounces to indicate the letter has been selected. For text edits, a slider of available characters appears. Use the arrows to change the character as required. Then *single-click* to implement the change and move on to the next digit or letter. Finally *double-click* when finished and then *single-click* to select one of the following options:

- **Continue:** continue editing this item

- **Save and quit:** save the new value and return to the menu.

- **Reset value:** reset to the default value and return to the menu

- **Just quit:** revert to the previous value and return to the previous menu.

BLUETOOTH: The Simret-F2 is equipped with Bluetooth to allow it to communicate wirelessly at distances of up to 10 metres with a Bluetooth enabled printer, laptop or iPhone. When the Bluetooth feature is turned ON, the instrument will automatically pair or make itself discoverable as required and the appropriate warning message will appear on the screen.

If Bluetooth is fitted, then at switch-on the instrument will make itself discoverable to other Bluetooth devices, such as a Bluetooth laptop, PC or iPhone, for uploading etc. After printing you can make the instrument discoverable again by *double-clicking* on the *Main Menu*. The Bluetooth Passcode your PC will ask for is '1234'.

The user can set SIMRET-F2 to pair with Bluetooth devices via the ***Setup Bluetooth*** menu. Preferably, make sure the appropriate remote device is switched on at this time. SIMRET will continue trying to pair until the device is switched on and pairing is successful. Successful pairing normally takes just a few seconds, although if many discoverable Bluetooth or WiFi devices are in range it may take a little longer. If the device will not pair, just *single click* to try again or *hold down* and release to abandon and investigate.

To pair with the *Printer*, first make sure the printer is switched-on by pressing its `>>` button, a green light appears on the printer (no green light means its battery is flat). The *Printer* will remain paired until the SIMRET is switched off or is made discoverable again by *double-clicking* in the *Main Menu*. The *Printer* will switch itself off after one minute if it can't pair.

Bluetooth devices are identified by their unique Bluetooth Address (a 12 digit number) and a "Friendly" name. To aid identification, all devices are marked with their Bluetooth friendly names. The friendly name will usually incorporate the serial number of the device.

If Bluetooth is fitted, then at switch-on the instrument will make itself discoverable to other Bluetooth devices, such as a Bluetooth laptop, PC or iPhone, for uploading etc. After printing or brake testing you can make the instrument discoverable again by double clicking on the *Main Menu.* The Bluetooth passcode is 1234.

Brake test pairing is not necessary for the Simret-F2 as the brake pedal trigger is hardwired.

CHARGING: The Simret-F2 contains a small NiMH battery that that allows the instrument to be used without switching-on the vehicle ignition. This allows results to be reviewed, downloaded or printed and settings changed. Brake testing and slope measurement are not accessible without vehicle power. The battery is automatically recharged when the vehicle ignition is switched on.

RE-CALIBRATION: The Simret-F2 is a precision instrument and must be recalibrated annually by an accredited laboratory. This gives you re-assurance that the **brake ratio** measurements will always be accurate and correct, ensuring the safety of your operatives and plant. On-site calibration is carried out by simply exchanging the *TA03 Sensor Module*. On connection this will upload its serial number and calibration details to the Simret-F2 control unit.

IN THE EVENT OF A SYSTEM CRASH: If no display appears or the instrument does not start correctly or appears to malfunction, the instrument must be reset. Do this by pressing and releasing the RESET button with a small screwdriver or similar. The button is recessed in the hole for the stainless steel cover plate's captive security screw. Note that if they battery has become discharged, the time and date will have to be re-entered but no results or settings will have been lost.

Always observe safe working procedures when accelerating and stopping the vehicle.

Simret-F2 can be used to measure either **brake effort** or deceleration. For heavy vehicles, **brake effort** measurement is recommended as best practice in the latest (May 2007) Guidance from the Health and Safety Executive.

The reason is simple, for the same brake performance, the **brake effort** (also known as **brake ratio**) will be the same regardless of ground slope. Deceleration, on the other hand, depends on the slope and, for example, the deceleration on a 10% downhill gradient will be 10% less than on level ground.

Brake effort measurements are recommended for heavy quarry vehicles where the test track may not be level, or indeed may be on a deliberate gradient to ensure that the brakes are forced to generate their fully developed effort during the test in order to reach a plateau (see Guidance document for more information).

The Simret-F2 is normally installed to trigger from the vehicles brake light circuit. This informs the instrument when the brakes are applied so it can then measure the delay time of the braking system. That is the time interval between applying the brakes and the deceleration start threshold being reached. For heavy vehicles this may be quite significant and a considerable distance may be travelled as evidenced by the distance time graphs produced by the instrument.

The instrument records information for about 2 seconds before the start trigger and for up to 6 seconds (adjustable) after the vehicle has stopped. Events in these periods can be seen on the graphs. On the graphs, a shaded area means a negative reading.

To accurately determine the speed and stopping distance, the instrument needs to know the gradient of the ground in order to eliminate any static offsets caused by the acceleration due to gravity. You may opt to measure these at the point of arming or at the point of coming to rest. Whichever one is most representative point of the test course should be used. If you choose to measure the slope offset at the end, it is measured after the *End Delay*, up to 6 seconds after the stop. For Engineer's Testing, you may also elect to pause while the brakes are released to unlock the vehicle's suspension. If you don't use the pause, make sure you set the End Delay long enough for the suspension to stop bouncing (confirm by looking at graph). The stop slope is measured as the blue arming light goes out.

For Driver's Testing the instrument is preset to use either arming or stop slope measurement. No pause can be selected by the driver and checking the graph will indicate if the *End Delay* is long enough for a particular vehicle if the stop slope is used. If you choose to use the arming slope measurement for the calculations, you are relying on the driver choosing an arming point with the same ground slope as that where the vehicle will come to a stop.

Note that the brake ratio result is NOT affected by the choice of slope, only the accuracy of the speed and distance calculation.

The instrument is normally set to take 40 measurements per second. This is the NORMAL sampling rate and is good for most situations. The FAST 400 measurement per second sampling rate can be selected in special situations, but be warned calculations take 10 times as long and 10 times the memory is used per test.

The instrument records information for about 2 seconds before the start trigger and up 6 seconds (as set by the **End Delay)** after the vehicle has stopped. Events in these periods can be seen on the graphs. On the graphs a shaded area means a negative reading.

If the *Auto-Align* feature is selected, the *TA03 Sensor Module* does not have to be accurately aligned with the direction of travel. It will sense which direction the vehicle first accelerates for the test (to 5 kph) and use that as the reference direction. It is important the initial direction coincides with that when the brakes are applied. *Auto Align* means that forward and reverse brake performance may be determined; this is useful for twin cab vehicles.

Simret-F2 will power up automatically for driver brake-testing whenever the vehicle ignition is switched on. When powered up in this manner, the display will always show the ***Review Menu*** with the results of the last test. The Driver simply arms for a new test by pressing the Blue ARM button on the side of the instrument.

If already switched on, you can go straight to the Driver Test Mode without first powering down by selecting the ***Review Menu***.

Note that the vehicle ID, examiner or driver ID, brake type and ground conditions last set in the Engineer's Testing Mode will be used for all subsequent Driver Tests.

For Driver's use, the *Click* control and SD Memory card are hidden behind a cover plate that is held in place by a captive security screw.

The only control accessible to the driver is the blue ARMING button on the side of the case.

The instrument will remain on for about four minutes after the vehicle ignition is turned off. During this time the driver may use the blue button to step through the stored results and display them on the screen. The instrument will stay switched on for four minutes after the last button press.

The SIMRET-F2 also remains discoverable to other Bluetooth devices for four minutes after the ignition is turned off. This facilitates automatic uploading of results as the vehicle is parked in a garage. Once connected, it will remain active until the upload is completed.

Over the years Turnkey has produced many documents about brake testing, please contact our Technical Support Department for further information.

support@turnkey-instruments.com

simret.eu

0800 195 8887

"*Guidance on brake testing for rubber-tyre vehicles operating in quarries, open cast coal sites and mines*" (published in May 2007 by EPIC in conjunction with OPERC and the UK Health and Safety Executive, ISBN 978 0 947974 62 6).

Start Menu

The top line shows the % of memory used, the present time and a battery condition indicator. The latter shows LOW if recharge is needed right away and CHG while being recharged. The instrument will turn itself off if the battery gets too low. If the battery goes completely flat you will have to reset the clock but the stored results will be preserved.

Test Brakes: *single-click* to proceed straight to brake testing. Bluetooth will attempt to pair with the *Pedal Pad*

More… : *single-click* to proceed to the ***Main Menu.***

While this menu is visible the SIMRET-F2 can be discovered by other Bluetooth Devices and can thus be connected for downloading to a Bluetooth enabled Windows PC. The screen will briefly show a "Making Discoverable" message.

Main Menu

Double-click to make discoverable if Bluetooth is on. The passcode is 1234.

Examiner Identity: *single-click* to show a list of up to eight examiners names, ▲▼ to highlight then *single-click* to select or *double-click* to edit (see *Editing*).

Plant Identity: *single-click* to show a list of up to 99 plant or vehicle identities. ▲▼ to highlight then *single-click* to select or *double-click* to edit (see *Editing*).

Site Conditions: *single-click* to show a list of up to 16 site conditions or user notes, ▲▼ to highlight then click again to select or *double-click* to edit.

Measure GRADIENT: *single-click* to measure the slope gradient. The instrument continuously measures and displays the slope gradient in percent. A negative number means a downward gradient. Click again to return to the main menu. The maximum slope is limited to 25% .

BRAKE TESTING: *single-click* to arm the instrument for the next brake test. The display shows the examiner, vehicle name, and site conditions for the test together with the test reference number. Highlight and *single-click* to change any of these (see *Editing*). When ready, *single-click* **Proceed**.

Click again to confirm the vehicle is stationary and you are ready to proceed with the test. The instrument should be properly located in the vehicle and the vehicle should be on a gradient representative of the test course.

All the subsequent calculations of deceleration, speed and distance will be referenced to the gradient measured at this point (i.e. the gradient at arming). Alternatively, if measure slope at stop is selected (see **Change Settings** menu), all calculations will be reference to the gradient measured at stop when the vehicle has come to rest.

The gradient measurements will only be displayed and printed if the instrument is set to measure Brake Ratio (as recommended for heavy vehicles).

When ready, highlight the type of brake being tested and click.

The instrument is now fully armed for the brake test, accelerate to test speed and apply the brakes. The BLUE armed light will illuminate and the display will show the speed increase when accelerating. Note you must accelerate to 5kph (or mph) before you can trigger the test.

The Test Reference number is shown at the top of the display together with whether the internal or external start trigger will be used (see *Change Settings*). The Test Reference Number will auto increment after each successful test. You must accelerate to at least 5 kph (or mph) before braking otherwise the instrument will not trigger. This allows you to hold the instrument on the brake while arming and also allows the instrument to determine its direction of travel (but see *Allow Coasting* in **Change Settings**).

Until you reach a speed of 5 kph (or mph), you may still elect to measure the *Slope at Stop* and to *Pause* before doing so, move the highlight and click ON or OFF as required (see **Change Settings**). The instrument will beep as this speed is passed. This is also the speed to which the auto alignment is set If the Speedo Beep feature is enabled, the instrument will instead beep once at 10 kph (or mph), twice at 20 and so on.

To abandon the test, *hold-down* OK.

At the end of the test, a results summary will be displayed. At this stage you can elect to accept or reject the test. If any errors or warnings have been detected, you can elect to view these before accepting or rejecting the test results.

After a successful test the BLUE light will go out, if it flashes it means the instrument has detected potential errors. The GREEN pass or RED fail light indicate whether or not the vehicle has exceeded the chosen pass threshold, if these flash it means that calibration is overdue.

Once accepted you may either:

- Proceed with another test for that vehicle
- Review the results in more detail
- Change the instrument settings
- Adjust the test parameters
- Finish testing.

Do not move off until the Pass or Fail light appears

Review Results: *single-click* to review the stored test results. Change the test number to be reviewed by highlighting, clicking and changing to the required test. The display shows the results summaries as you move though the stored tests. *Single-click* when the required test is reached.

Single-click **More** to see more detailed results for the test including the instrument set-up used and any errors or warnings given. The test can also be selected for later printing (**Mark for Print**) or later erasing (**Mark for Erase**). If printing is selected, you may optionally choose to print graphs, either individually or overlaid, and the test settings. Any error report will always be printed.

Single-click **Graph** to display a graph of the test results. Scroll through the graph with ▲▼, or *hold-down* to animate. *Double-click* or ►◄ to change the graph, the *options* to the right of the graph will flash, use ►◄ to scroll between these options:

- *change plot* (e.g. brake ratio, distance, speed, etc)
- *change span* (e.g. 0 to 100%, 0 to 50%, etc)
- *change zoom*. (e.g. expand time axis, etc)

Single-Click at the required option. The axis name will then flash, ▲▼ and *single-click* again to select the required axis name, span or zoom.

The fixed solid line on the graph is the time reference line. The dashed lines represent the times of the external start trigger (if enabled), and the start and end of deceleration.

Single-click to close the graph and review other results.

Single-click **Print** to print this test now, regardless of the whether or not the test has been marked for print. The printer will turn on automatically if it has been paired previously, if not switch-on first by pressing its **>>** button to pair. Printing graphs and settings may be skipped depended on the chosen options. If the graphs are printed, they can be overlaid or printed individually. The solid lines on the graphs correspond, as above, to the external start (if used) and the start and end of deceleration. Press and hold the OK to abandon a print.

Single-click **Quit** to return to the previous menu

Bluetooth: *single-click* to temporarily switch Bluetooth ON or OFF

Setup Instrument: *single-click* for the **Set-Up Menu** to change the set-up of the instrument. You may need a PIN number to do so.

Print Selection: *single-click* to print all the tests that have been selected or marked for print during **Review Results**. If *Mark for Print* was the default instrument set-up, all prints will be automatically marked for print when they are accepted. You may choose to print two copies of each test, and deselect or mark for erase after printing. Press and hold to abandon the print.

Erase Selection: *single-click* to erase all those tests that have been marked for erase. Any freed memory space will be recovered; this may take a few seconds depending on how many tests are already stored in memory. You will be prompted to confirm.

SD memory card backup

The 2GB SD card is a factory option and this menu will only be available when fitted and the memory card has been inserted into the slot on the side of the instrument (behind the cover).

A 2GByte SD card must be used. High capacity SDHC cards are not compatible.

SD Card Backup: *single-click* to review the memory card Folders. Change the Folder number to be reviewed by highlighting, clicking and changing to the required number between 0 and 999. As you move though the folders, the display shows the time and date the folder was saved and the serial number of the instrument that saved it. *Single-click* when the required Folder is reached.

Single-click **Save** to backup this instrument's entire internal memory to that Folder number. The display first asks you to confirm you wish to erase and overwrite the Folder's current contents. Backing up the entire memory takes about 50 seconds The Folder is given the (un-hidden) name SSSSSnnn.TKI, where SSSSS is a the five character instrument serial number and nnn is folder number between 000 and 999.

Single-click **Load** to retrieve the SD card Folder into the instrument's memory. This will overwrite the instrument's internal memory, but you will be able to append new tests if space allows. Retrieving takes about 50 seconds.

Single-click **Quit** to return to the previous menu

Automatic Backup: if the SD card is fitted, whenever the instrument switches-off with its internal memory more than 80% full or containing more than 75 tests, the internal memory will be automatically backed-up to the next Folder Number on the SD Card. The internal memory will then be erased. This will be repeated when it is next full until all 1000 folders have been used (75,000 tests).

If the automatic backup isn't needed as the instrument switches off, then the internal memory is just backed up in Folder 0 but not erased. Thus after switch-off the SD Card is always ready with the latest results backed up (in Folder 0).

Automatic backup does not happen if the low battery warning is on.

*The contents of the SD memory card can be imported into the Turnkey **Winsim** application.*

Setup Instrument Menu

The Editor PIN may be required to access this menu

Adjust Values: *single-click* to select the **Adjust Values** menu.

Change Settings: *single-click* to select the **Change Settings** menu.

Setup Bluetooth: *single-click* to select the **Setup Bluetooth** menu (Bluetooth must be ON).

Trim Zeros: *single-click* to accurately trim the zero readings of the instrument by following the on screen instructions. The vehicle must be on level ground. Doing this records the Remote Sensor calibration date..

Erase all Tests: *single-click* to erase all the tests in the instrument's memory, regardless of whether marked for erase or not. You will be prompted to confirm

Set Time and Date: *single-click* to set the time and date by following the on screen instructions

Adjust Contrast: *single-click* and ►◄ to adjust the contrast of the display

Adjust Backlight: *single-click* and ►◄ to adjust the brightness of the backlight. The brighter it is the more battery power will be used. To conserve power, the light turns off if there has been no input for about 2 minutes.

Defragment Memory: *single-click* to confirm that the memory is fully defragmented and all free space is available for use.

Format SD Card: *single-click* to format the SD Card to make it visible to a personal computer (FAT16 file system). Sets all the Folder names to FFFFFnnn.TKI (nnn=000 to 999, hidden file attribute) but does not overwrite previously stored data. Folders are in the BACKUP subdirectory of the TURNKEY root directory

Configure Printer: *single-click* to configure printer fonts and timeouts. Also resets the Bluetooth to its factory defaults in case of problems.

Calibration Report: *single-click* to print calibration report.

User PIN: single-click to change the PIN required to use the instrument. Make a note of it! (5424)

Editor PIN: single-click to change the PIN required to set-up the instrument. Make a note of it! (4748)

Main Menu: *single-click* to return to *Main Menu.*

Adjust Values Menu

Use the built-in editor to adjust any of these values. The default values are shown

Test Number: the test reference number between 1 and 30000, it is automatically incremented after each test.

Pass B1 > 25.0 %g: pass threshold for the 1st brake type (normally 'Service')

Pass B1 > 25.0 %g: pass threshold for the 2nd brake type (normally 'Secondary')

Pass B1 > 25.0 %g: pass threshold for the 3rd brake type (normally 'Parking')

Pass B1 > 25.0 %g: pass threshold for the 4th brake type

Trig at 10.0 %g: the deceleration threshold for start of braking

Stop at 10.0 %g: the deceleration threshold for end of braking

Trig hold 0.50 sec: the minimum time the deceleration must be sustained <u>over</u> the start threshold to be a true start of deceleration. The true start time is the start of this time.

Stop hold 0.20 sec: the minimum time the deceleration must be sustained <u>below</u> the stop threshold to be a true end of deceleration. The true stop time is the start of this time.

End Delay 2.5 s: delay before measuring the stop point slope gradient. Only if 'Slope at Stop' has been selected.

Peak over 0.20 sec: the minimum time the peak reading has to be sustained.

Dive 5.0 deg/g: compensation for the tilt of the vehicle (in degrees tilt per g of deceleration) caused by the movement of its suspension as it decelerates

PFT trig 20.0 kgF: trigger point for Pedal Force Transducer in kg force. Only if PFT is enabled in settings.

2.5V PFT 100.0 kgF: PFT calibration, force required for 2.5 Volts output from PFT

0.0V PFT 0.0 kgF: PFT calibration, force required for 0.0 Volts output from PFT

Card Folder 0: the next SD memory card folder to be used (in range 0 to 999). Only if the SD card feature has been enabled by the factory.

Filter type 2: the amount of smoothing applied to the readings for the graphs. Zero means no smoothing is applied.

Lifetime 24 hr: the length of time from the last brake test that the pass/fail lights will remain illuminated. Set to 0 to disable the pass/fail lights.

- **Save Changes:** save the changes made.
- **Reset ALL:** revert to default values (shown above), then need to Save Changes too!
- **No changes:** revert to the previous values

Setup Bluetooth Menu

SIMRET-F2 *maintains two Bluetooth Device Lists of up to 8 Bluetooth devices identified by their Bluetooth Addresses and their Friendly Names*

Bluetooth Search: searches for local Bluetooth devices that are in the discoverable state. This takes about 30 seconds, but click at anytime to terminate. Results are shown as Friendly Names in the **Devices Found** table, see below. To be discovered, Bluetooth devices such as the printer or pedal pad must be switched on first.

Devices found: shows the results of the last search (if available) as Friendly Names. Click on a name to add it to the *BlueTooth Device List*. The new name will be added to the list in the location following that of the device currently paired as the printer -see **Warning** below. The instrument will also be set ready to pair with the new device as the printer. Alternatively, scroll to and click on *Go back* the end of the table to do nothing.

    Warning:- this will overwrite the existing Bluetooth Device Address and Friendly Name at that location

Make Discoverable: allow the *SIMRET-F2* to be discovered by other Bluetooth devices. The passcode is 1234. You can also *double-click* in the *Main Menu*

Printing pair: *single-click* on one of these to pair for printing:

    Bluetooth Address: *single-click* to show the Bluetooth Device List as addresses; ▲▼ to highlight then *single-click* to select or *double-click* to edit (see *Editing*). The instrument will automatically try to pair with the chosen device before printing.

    Friendly Name: *single-click* to show the Bluetooth Device List as friendly names; ▲▼ to highlight then *single-click* to select or *double-click* to edit (see *Editing*). The instrument will automatically try to pair with the chosen device before printing.

Brake Testing pair: *single-click* on one of these to pair for the pedal-pad:

    Bluetooth Address: *single-click* to show the Bluetooth Device List as addresses; ▲▼ to highlight then *single-click* to select or *double-click* to edit (see *Editing*). The instrument will automatically try to pair with the chosen device before brake testing.

    Friendly Name: *single-click* to show the Bluetooth Device List as friendly names; ▲▼ to highlight then *single-click* to select or *double-click* to edit (see *Editing*). The instrument will automatically try to pair with the chosen device before brake testing.

The Brake Testing Pair is only for diagnostics on the Simret-F2

Go Back: go back to *Setup Instrument* Menu

Note if you are experiencing problems with the Bluetooth try using the Configure Printer option in the Setup Instrument Menu to reset it to its factory defaults.

Change Settings Menu

Highlight the item and single-click to change its state. The default states are shown Note some items will only appear conditionally depending on the state of other items.

Bluetooth   Yes
> YES to switch on Bluetooth
> NO to switch off

Swap BT port   No
> YES for special versions
> NO normal setting

Remote Sensors   Yes
> YES is to use *TA03 Sensor Module*
> NO to use internal sensor

I/O expansion   No
> YES for input/output expansion
> NO for no expansion

Auto-alignment   Yes
> YES to auto-align with direction of travel
> NO for manual alignment

Brake Effort   Yes
> YES to measure brake effort or ratio
> NO to measure deceleration

Allow Coasting   No
> YES for rail coasting mode
> NO for normal operation

Metric Units   Yes
> YES for results in metric units
> NO for imperial units

metre/sec/sec   No
> YES for results in metres/sec/sec
> NO for %g or g

Results in %g   Yes
> YES for results in units of %g
> NO for units of g

External trig   Yes
> YES to start at external trigger
> NO to self-start at deceleration

Delay in Mean   No
> YES to include the brake delay in the mean calculation
> NO to exclude (gives higher readings)

Only show MFDD   No
> YES to show MFDD results only
> NO to show MEAN, PEAK, MFDD

MFDD markers   Yes
> YES to mark 80% and 10%V on graphs
> NO for no MFDD markers

Calc. Distance   Yes
> YES to calculate stopping distance
> NO do not calculated

Slope at stop   No
> YES use gradient at stop as reference
> NO use gradient at arming

Pedal Force   No
> YES to use pedal force transducer
> NO don't use

Sampling Rate   NRML
> NRML=40 samples/sec
> FAST=400 samples/sec

Beeper   ON
> ON means beeper is on

Speedo Beep   ON
> ON means Speedo Beep is on at 10, 20, 30, and 40 kph/mph

Screen light   ON
> ON means screen light is on

PIN for edit   No
> YES means PIN number required for changing setup

PIN to use   No
> YES means PIN number required to use instrument

Mark for print   Yes
> YES to mark all tests for print selection

Print graphs   Yes
> YES to print graphs
> NO don't print graphs

Overlay graphs   Yes
> YES to print graphs overlaid
> NO print separate graphs

Print settings   Yes
        YES to print test settings with results
        NO don't print settings

- **Save Changes:** save the changes made.

- **Reset ALL:** revert to default values (shown above), need to Save Changes too!

- **No changes:** revert to the previous values.

NOTES ABOUT SETTINGS

- If you select *Slope at Stop* the instrument will measure the reference ground slope at the end of the test. You may also select *Pause at End* on the *Arming Menu*, this allows you to release the vehicle's suspension before taking the end slope measurement. If you don't use the pause, the slope measurement is made after the *End Delay* time. The default value of this is 2.5 seconds but may be increased up to 6 seconds from the stop (to allow time for the suspension to stop bouncing). The end slope measurement is made just after the Blue arming light goes out, so only move off when the pass/fail light appears. The instrument continues to record during the *End Delay* time. If *Slope at Stop* is set to NO, the instrument only records for about 1.5 seconds after the stop and uses the arming slope for the speed and distance calculations.

- *Allow Coasting* is mainly for railway use and is only available if *Auto-Alignment* is off and the *External Trigger* is set. Normal (40/second) sampling has to be selected too. When coasting is selected, the instrument may be armed while the locomotive is coasting at constant speed. No speed increase is needed to activate the trigger and the post-arming speedometer is not shown. In the coasting mode it is recommended that *Slope at Stop* is chosen (see above) as the arming slope may not be that accurate.

- Besides the conventional Mean (between the start and stop thresholds) and Peak values of brake effort or deceleration the instrument also measures the Mean Fully Developed Deceleration (MFDD). This is defined as the mean deceleration between 80% and 10% of the test speed and is now used internationally as the standard measure of brake performance. When *MFDD markers* is on, marker lines are placed on the graphs at the 80%V and 10%V points. These are in addition to the graph marker lines at the start and stop deceleration thresholds and the external trigger point. Note if brake effort is being measured, the Mean Fully Developed Brake Effort or Ratio is determined.

- *Swap BT Port* must always be set to NO on Simret-F2

- If *Only show MFDD* is YES, the PASS and FAIL warning lights are based on the MFDD reading; if NO, the PASS and FAIL lights are based on the MEAN deceleration between the start and stop thresholds. Similarly if *Only show MFDD* is YES, the MFDD (rather than the MEAN) is shown on the *accept results* and *review results* screens.

- The *brake delay time* and the start and stop transitions, generally speaking, have no effect on the MFDD reading which is the mean deceleration between 80% of the speed at braking and 10% of the speed at braking. If ***Only show MFDD*** is YES, the *brake delay time* is still the time between the pedal actuation and the start threshold.

- If ***Only show MFDD*** is YES, the MEAN and PEAK readings are excluded from the detailed *more results* screen and from the printout.
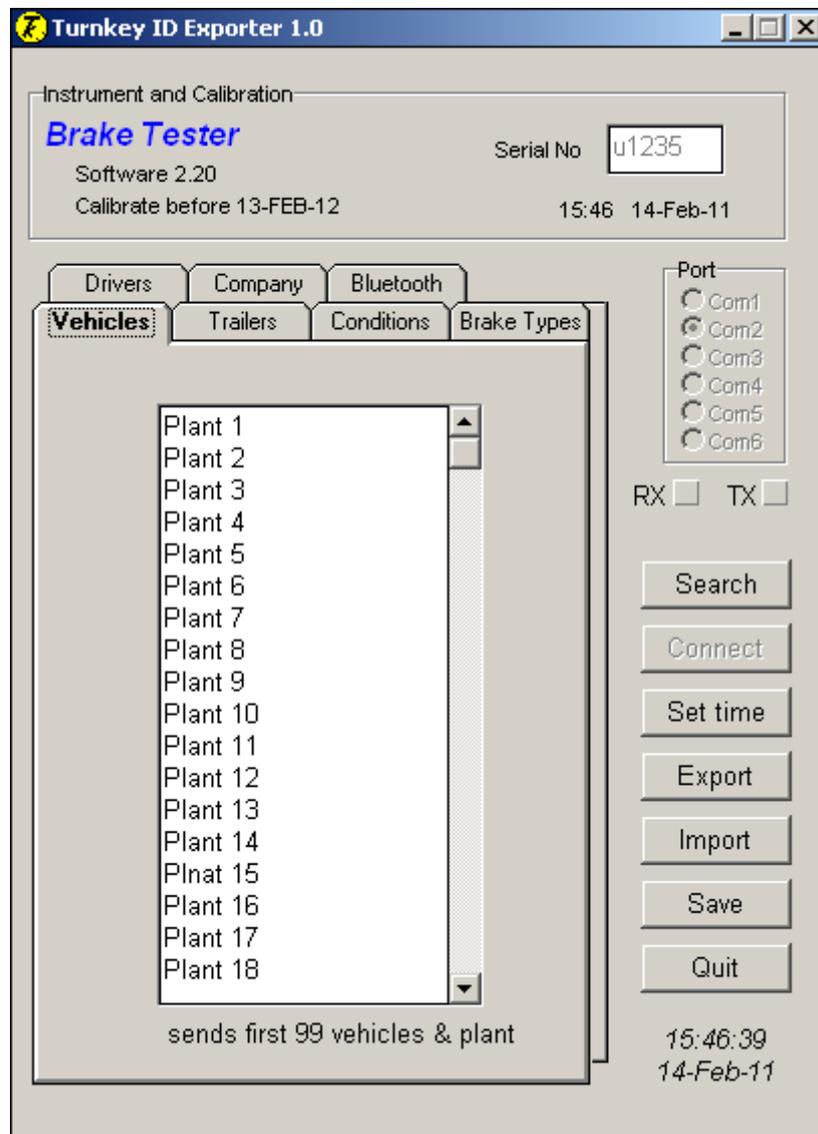
Turnkey ID Exporter Program

The **Turnkey ID** program allows plant details, site conditions, operator names and other information to be downloaded to the instrument from a Windows personal computer. The executable program *IDexporter.exe* (supplied on the CD or available from the Turnkey website) should be copied to a convenient directory on your computer. Backup files of the plant names you use etc., will also be created in that directory.

If your PC is equipped with a **Turnkey Bluetooth Adaptor**, the instrument will be discovered by it and a wireless connection made whenever it is switched on and discoverable (e.g. in the *Start Menu* and *Main Menu*).

Alternatively, use a **Turnkey USB Link** to physically connect the instrument's DIN connector to a USB port on your computer. The instrument will sense the DIN connector and override the Bluetooth, if fitted.

Start the *IDexporte*r program and use the radio buttons to select the com port to which the Bluetooth Adaptor or USB link is attached.

For Bluetooth, click on *Search* and the program will search for available Bluetooth devices and produce lists of available Friendly Names and Bluetooth Addresses. Click on the name of the instrument you wish to connect.

For a wired connection, click on **Connect** button.

If the instrument is switched on and in the *Start Menu or Main Menu*, it will connect automatically and upload its serial number, calibration due date and its local time. It will stay connected and switched-on as long as the program is running.

The information that may be exported to the instrument is shown on seven tabbed pages labelled *Company*, *Examiner*, and so on. Click on a tab to select a page. On the selected page, type in the names or information you wish to download. You are allowed 16 characters per line; the number of lines that will be sent is shown at the bottom of the page.

Click **Export** to download the selected page of information to the instrument. Click **Import** to upload existing information from the instrument. Click **Save** to save the page of information to your Windows directory for future use; for example, if you want to download the same plant list to several instruments. Note that each tabbed page must be exported (or imported) and saved in turn as required.

If you have several different groups of plant names, create copies of the program in different directories to suit.

Click **Set Time** to set the instrument to your PC's time and date.

NOTES

This instrument is protected and the design registered in the United Kingdom 3001616, Germany 40206551.4, USA D478523S, France 024676, South Africa A2002/00965 and Australia 150186.

Turnkey® and SIMRET® are registered trademarks. SIMRET® was originally developed by the UK Health and Safety Executive to measure brake ratio for heavy off-road vehicles and mine locomotives.

simret.eu

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Freepost Turnkey

Simret-F2 & In-Cab Driver Instructions

The Simret-F2 or In-Cab will automatically switch-on whenever the vehicle ignition is turned on. It will switch-off 4 minutes after the ignition is turned off.

Driver Brake Testing

Always choose a safe and designated area for brake testing

1. Drive to the start of the test course

2. When stationary, press the ARM button. If necessary, hold the vehicle on the brake.

3. After a few seconds, a blue light will appear. This signifies the instrument is ready and armed for the brake test. Keep the vehicle stationary till the blue light comes on.

4. Accelerate up to the test speed and apply the brakes to bring the vehicle to a complete stop. The blue light will go out just after the vehicle stops or if the test is abandoned. The test will be abandoned if you don't brake within 60 seconds or if you press the ARM button a second time.

5. Hold the vehicle stationary until either the GREEN or RED lamp lights, this should take no more than 10 seconds. You can move off when one of these lamps lights.

6. The green light means PASS, the red light means FAIL. The pass/fail level is preset to suit the vehicle. If the red or green light flashes, the instrument is due for re-calibration – inform your supervisor right away.

7. If the blue light continues to flash after the test, it means either there has been an error in the test or the memory is getting full and needs erasing. Repeat the test and inform your supervisor.

8. The PASS/FAIL lights will remain on for the preset lifetime of the test, normally 24 hours. The test lifetime clock will continue to tick even when the vehicle ignition is off.

www.turnkey.tel