

# CONSENSYS USER GUIDE V1.6

Rev. a



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# WHAT'S NEW IN THIS RELEASE

*Consensys v1.6.0 brings a number of software updates and bug fixes*

## Updates:

- Available in 32-bit and 64-bit
- GSR calibration improvements
- Gyroscope 'on-the-fly' calibration algorithm
- Support for Shimmer3 200g IMU
- Various bug fixes

# INTRODUCTION

*Consensys v1.6.0* is used with a *Consensys Base6* during the creation of this guide.

**Supported Software:** ConsensysBASIC / ConsensysPRO

**Supported Hardware:** *Shimmer Dock / Consensys Base6 / Consensys Base15 / all Shimmer3 Units.*

**Supported Firmware:** *SDLog / LogAndStream.*

Follow the links for more information on:

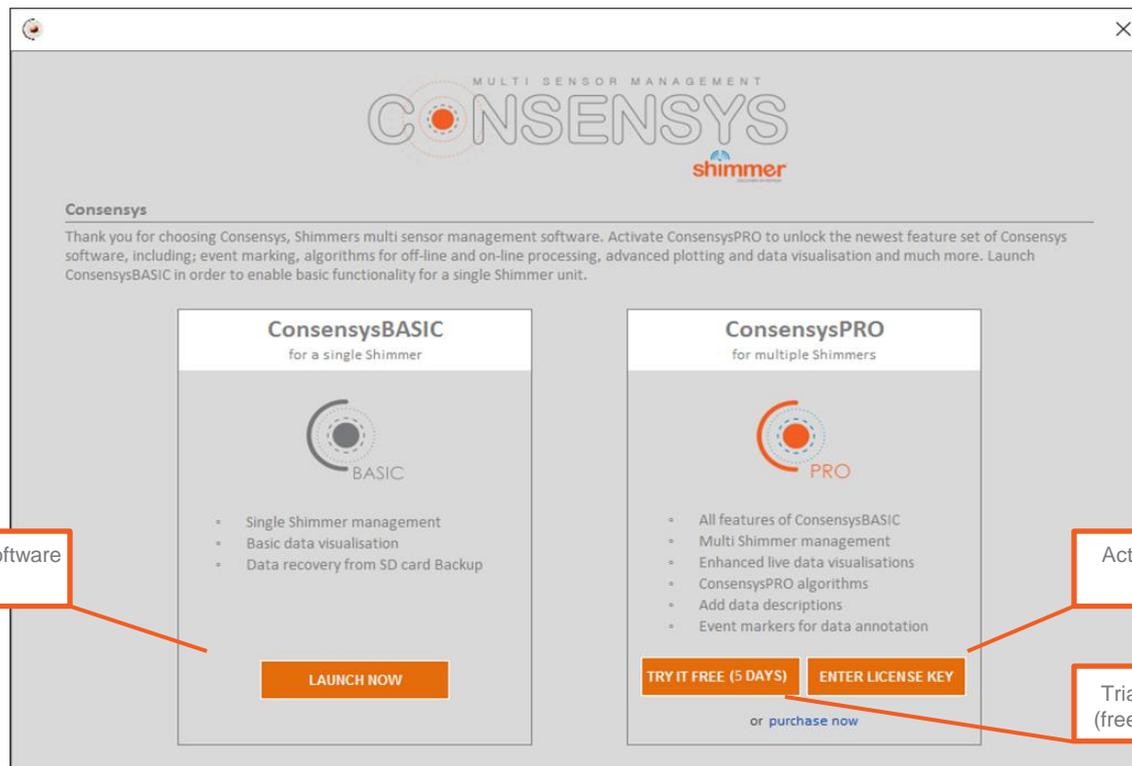
- *Consensys Software* – <http://www.shimmersensing.com/menu/products/consensys>
- *Consensys Base6* - <http://www.shimmersensing.com/menu/products/consensys-base6>
- *Consensys Base15* - <http://www.shimmersensing.com/menu/products/consensys-base15>
- *Documentation & Downloads* – <http://www.shimmersensing.com/menu/support>

# CONSENSYSBASIC v CONSENSYSPRO

Consensys v1.6.0 comprises of two applications, ConsensysBASIC and ConsensysPRO.

**ConsensysBASIC** – Basic functionality for a single Shimmer unit

**ConsensysPRO** – Advanced functionality for multiple Shimmer units including event marking, off-line and on-line processing, event marking, advanced plotting and data visualisation and much more



Launch ConsensysBASIC software  
(free of charge)

Activate ConsensysPRO software  
(license key required)

Trial ConsensysPRO software  
(free of charge for 5 day period)

# INSTALL HARDWARE & SOFTWARE (1/8)

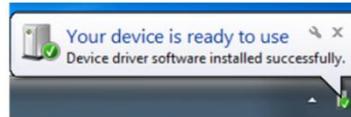
STEP 1 – Download the *Consensys* software from our [website](#)<sup>†</sup>.

STEP 2 – Connect the AC adapter with the *Base*.

STEP 3 – Plug the power cable into the AC adapter and a mains power socket.

STEP 4 – Connect the USB cable from your computer to the *Base*.

STEP 5 – Windows will now install the drivers for the *Base*. Status feedback is given in Windows' system tray; right bottom corner of the screen:

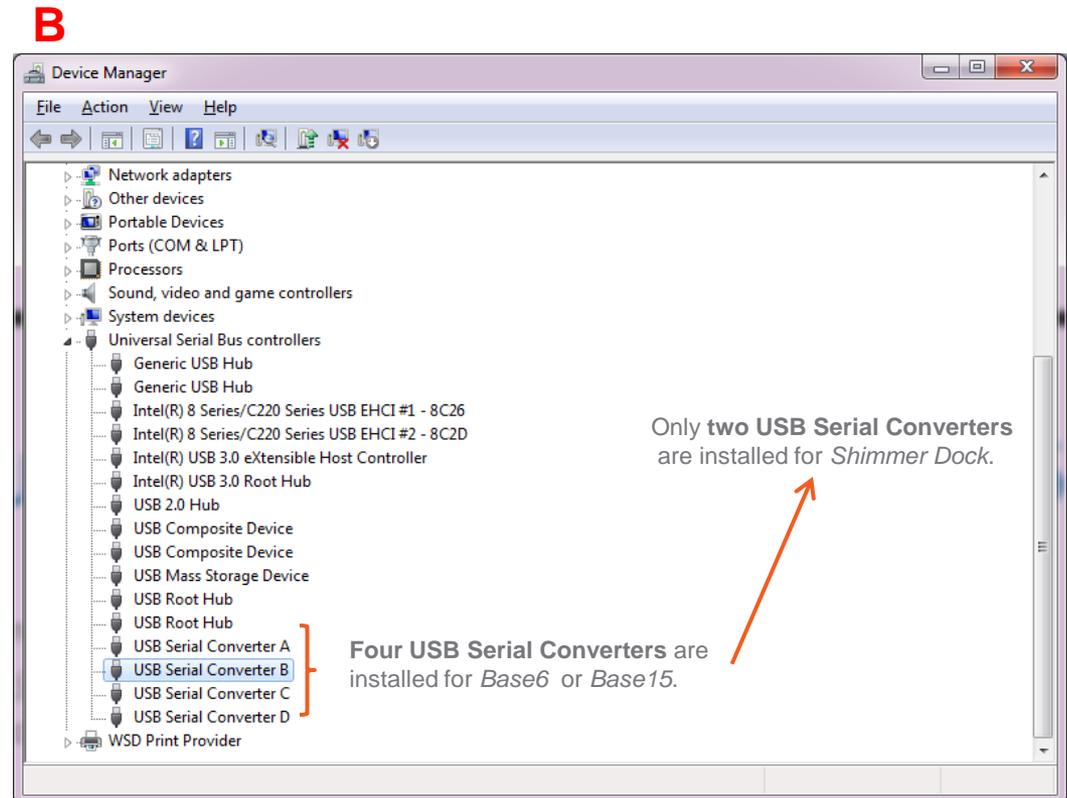
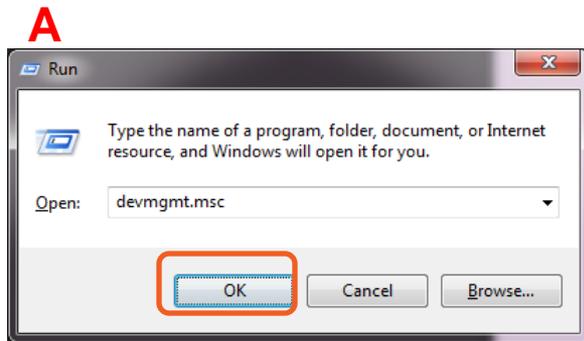


**N.B.** The driver installation can take up to a few minutes. In case you are not sure if the installation has finished, just go to the next STEP to verify the driver installation.

# INSTALL HARDWARE & SOFTWARE (2/8)

## STEP 6 – Verify driver installation:

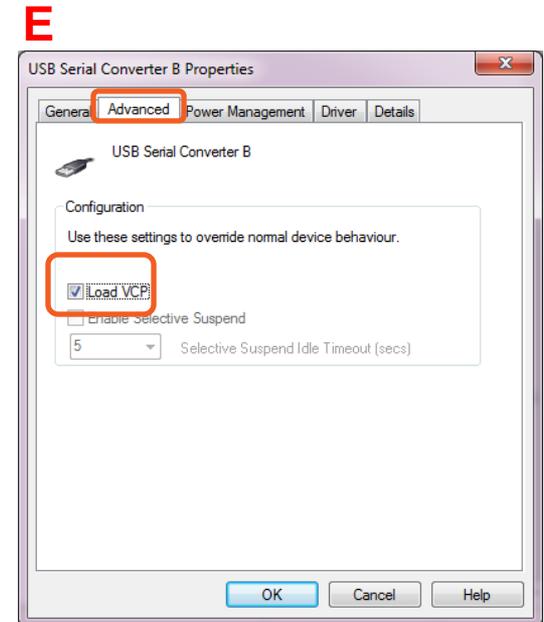
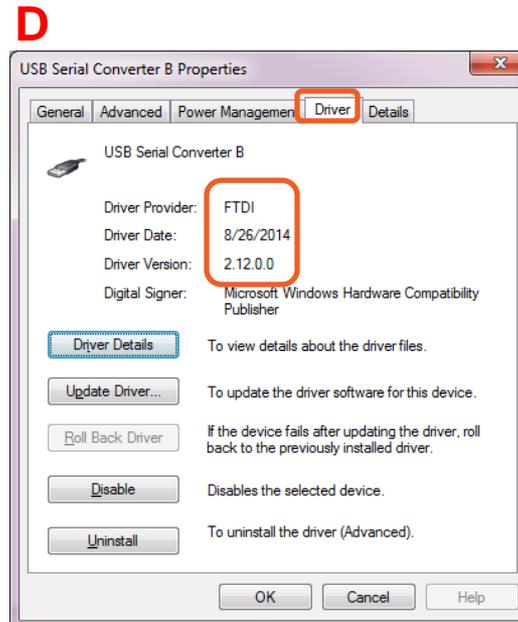
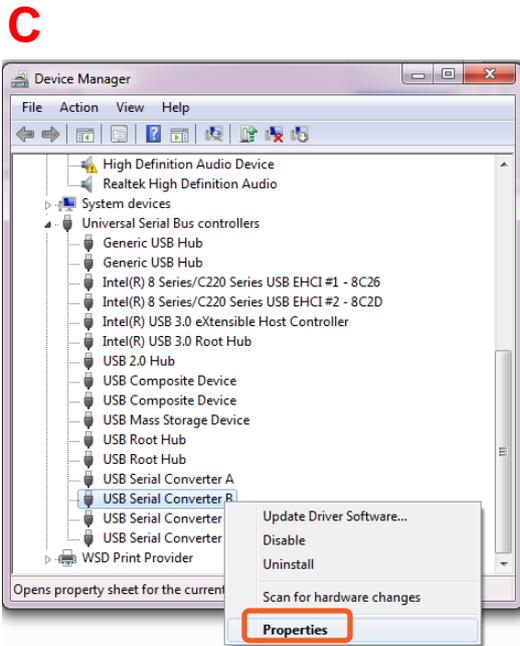
- A. Run the Device Manager: Press [Windows Key] + R; type `devmgmt.msc`; click “OK”.
- B. Go to Universal Serial Bus Controllers.



# INSTALL HARDWARE & SOFTWARE (3/8)

## STEP 6 – Verify driver installation - continued:

- C. Right-click on one of the USB Serial Converters; click **Properties**.
- D. Go to “Driver”; check if **FTDI Driver v2.12.0.0** or later is installed → **Correct Driver has been installed!**
- E. Go to “Advanced”; make sure **Load VCP** is checked.
- F. Repeat for the other USB Serial converters. Skip to STEP 9 if correct driver is installed for all USB Serial Converters.



# INSTALL HARDWARE & SOFTWARE (4/8)

## STEP 7 – Download the FTDI Driver:

- Go to <http://www.ftdichip.com/Drivers/VCP.htm>.
- Download the latest Windows “setup executable”.

Currently Supported VCP Drivers:

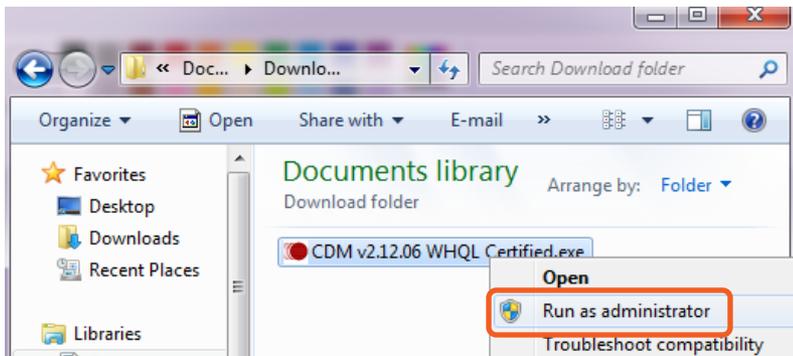
| Operating System        | Release Date | Processor Architecture   |                         |                        |                          |                          |                          |                          | Comments   |
|-------------------------|--------------|--------------------------|-------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
|                         |              | x86 (32-bit)             | x64 (64-bit)            | PPC                    | ARM                      | MIPSII                   | MIPSIV                   | SH4                      |  |
| Windows*                | 2015-07-28   | <a href="#">2.12.06</a>  | <a href="#">2.12.06</a> | -                      | -                        | -                        | -                        | -                        | <a href="#">2.12.06 WHQL Certified</a><br>Available as <a href="#">_setup executable</a><br><a href="#">Release Notes</a>                    |
| Linux                   | 2009-05-14   | <a href="#">1.5.0</a>    | <a href="#">1.5.0</a>   | -                      | -                        | -                        | -                        | -                        | All FTDI devices now supported in Ubuntu 11.10, kernel 3.0.0-19<br>Refer to <a href="#">TN-101</a> if you need a custom VCP VID/PID in Linux |
| Mac OS X 10.3 to 10.8   | 2012-08-10   | <a href="#">2.2.18</a>   | <a href="#">2.2.18</a>  | <a href="#">2.2.18</a> | -                        | -                        | -                        | -                        | Refer to <a href="#">TN-105</a> if you need a custom VCP VID/PID in MAC OS   |
| Mac OS X 10.9 and above | 2015-04-15   | -                        | <a href="#">2.3</a>     | -                      | -                        | -                        | -                        | -                        | This driver is signed by Apple   |
| Windows CE 4.2-5.2**    | 2012-01-06   | <a href="#">1.1.0.20</a> | -                       | -                      | <a href="#">1.1.0.20</a> | <a href="#">1.1.0.10</a> | <a href="#">1.1.0.10</a> | <a href="#">1.1.0.10</a> |  |
|                         |              | <a href="#">1.1.0.20</a> |                         |                        | <a href="#">1.1.0.20</a> |                          |                          |                          |  |

# INSTALL HARDWARE & SOFTWARE (5/8)

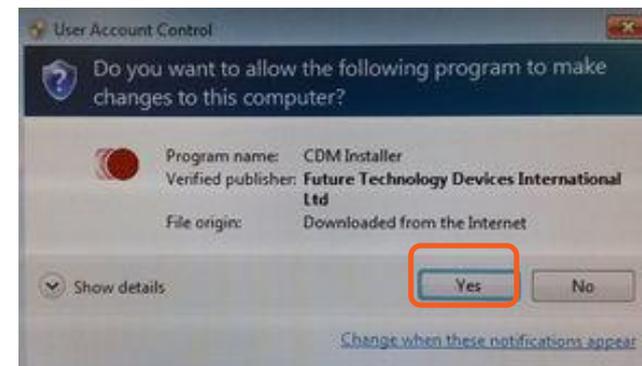
STEP 8 – Manual Driver installation:

Right-click the downloaded file;

“Run as administrator”:



Press “Yes” if this screen if shown:

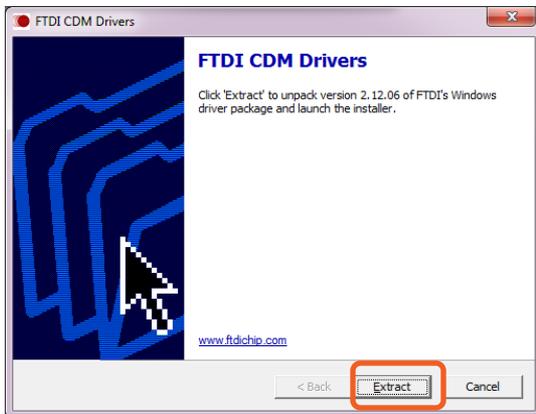


**N.B.** If a security warning pops up, click “Run”.

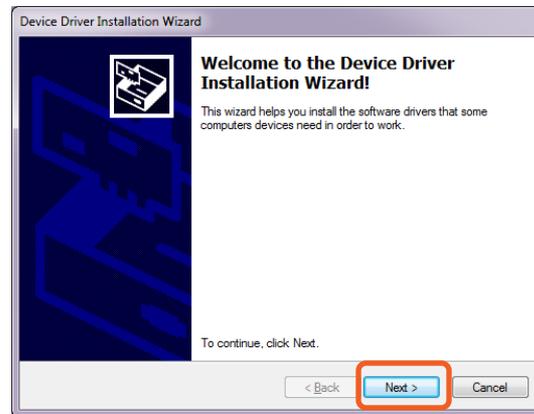
# INSTALL HARDWARE & SOFTWARE (6/8)

STEP 8 – Manual Driver installation - continued:

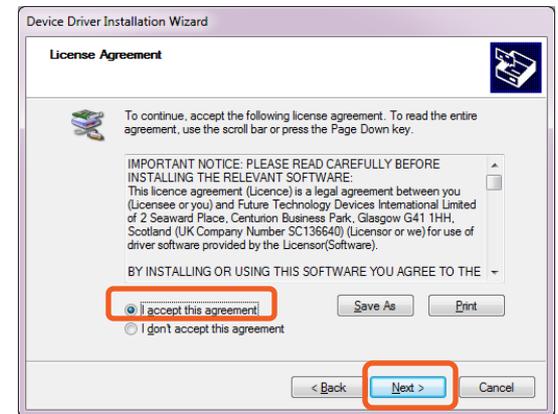
Click “Extract”:



Click “Next”:



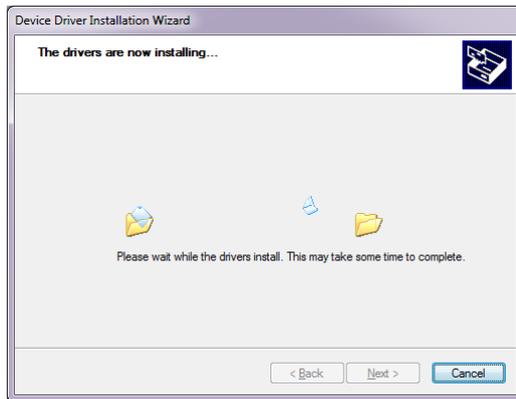
Accept and click “Next”:



# INSTALL HARDWARE & SOFTWARE (7/8)

STEP 8 – Manual Driver installation - continued:

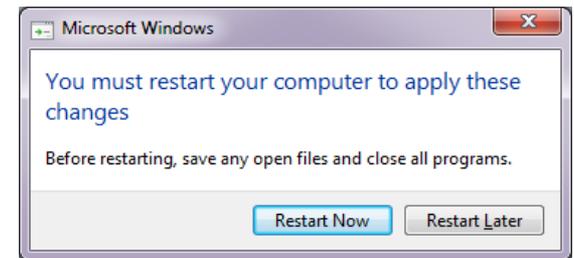
Drivers are installing:



Click "Finish":



Click "Restart Now":



**N.B.** Repeat STEP 6 before proceeding!

# INSTALL HARDWARE & SOFTWARE (8/8)

**N.B.** Only continue with STEP 9 if the driver installation has been verified (STEP 6).

STEP 9 – Extract the zip-file downloaded at STEP 1.

STEP 10 – Double-click “*setup.exe*” and follow the instructions.

STEP 11 – When the installation is complete, double-click the *Consensus* desktop icon to start.

# LICENSING - OVERVIEW (1/3)

**N.B.** ConsensysPRO requires a license to utilize the software, skip this licensing section if you intend to only use ConsensysBASIC for which a license is not required.

**Subscription:** Subscription license permits the use of ConsensysPRO for a specified time period after which time the subscription must be renewed in order to use the application. ConsensysPRO implements an annual subscription (365 day period).

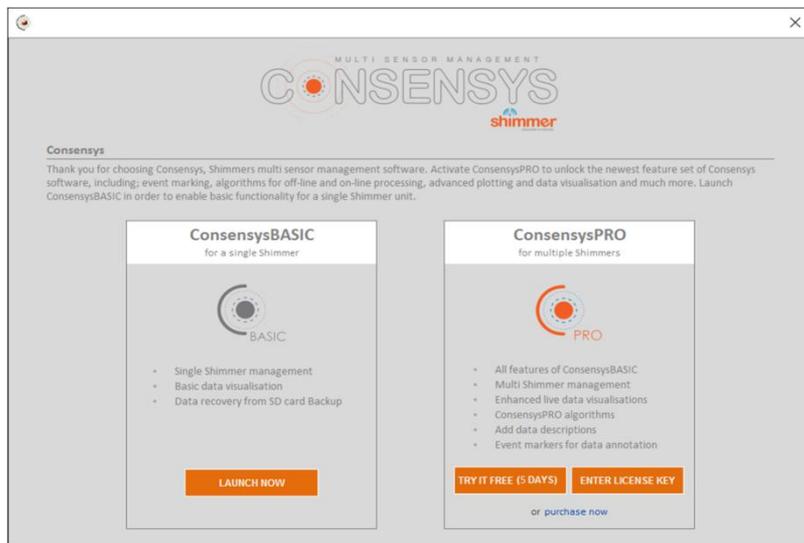
**Floating:** Floating licensing authorizes the use of ConsensysPRO with the given number of activations. The number of concurrent activations is tracked, and the total number of running sessions of the licensed application at any time is limited by the maximum allowed activations in the floating licenses purchased by the licensee.

**Trial:** You can try ConsensysPRO free of charge for a 5 day period after which you must purchase a license to continue to use ConsensysPRO or use ConsensysBASIC.

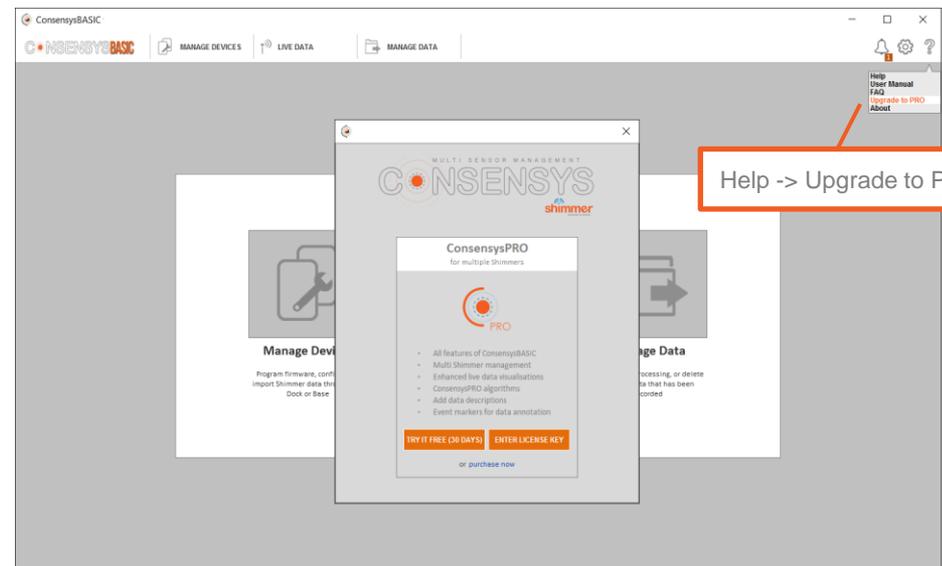
# LICENSING - ACTIVATION (2/3)

**N.B.** ConsensysPRO requires a license to utilize the software, skip this licensing section if you intend to only use ConsensysBASIC for which a license is not required.

**A** Activate ConsensysPRO on software startup



**B** Activate ConsensysPRO by selecting Help -> Upgrade to PRO



**N.B.** You can trial ConsensysPRO for free for a 5 day period or you can purchase a license by visiting <http://www.shimmersensing.com/menu/products/consensys>

# LICENSING - MANAGEMENT (3/3)

ConsensusPRO v0.4.6

MANAGE DEVICES | LIVE DATA | MANAGE DATA

Help User Manual FAQ Manage Licences About

**Manage Activations**

MULTI SENSOR MANAGEMENT  
**CONSENSYS**  
shimmer

**Manage Activations**

Review the license's details on the left and managing existing licensee activations on the right. You can only deactivate a license if it's assigned to this PC. To deactivate a license, select 'Deactivate' for the activation name you want to deactivate.

**License Details**

|                        |                                 |   |
|------------------------|---------------------------------|---|
| Customer:              | Ruaidhri                        | ⓘ |
| License Model:         | Subscription and Floating       | ⓘ |
| License Expiry:        | 2017/08/02 (363 days remaining) | ⓘ |
| Activations Purchased: | 2                               | ⓘ |
| Activations Active:    | 1                               | ⓘ |

**Licensee Activations**

| Name    | Action                     | Status | This PC |
|---------|----------------------------|--------|---------|
| rmolloy | <a href="#">Deactivate</a> | ✔      | ✔       |

DONE

License details

Licensee details

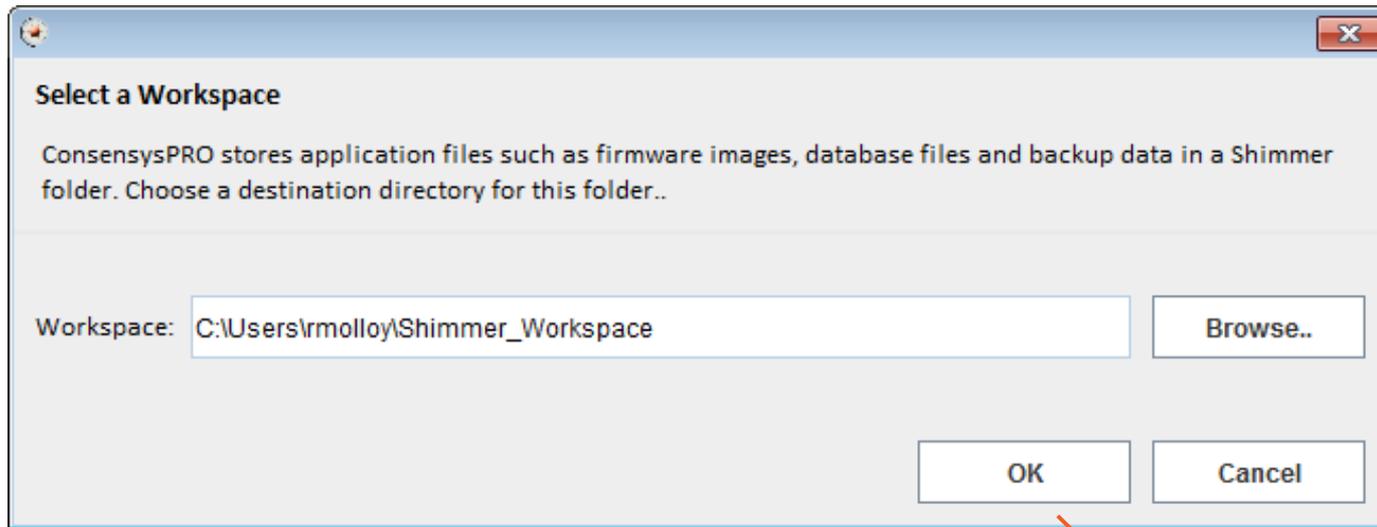
Help -> Manage Licences

You can deactivate an activation for ConsensusPRO to free up an activation for another computer

**N.B.** You can only deactivate the license for the computer you are working on!

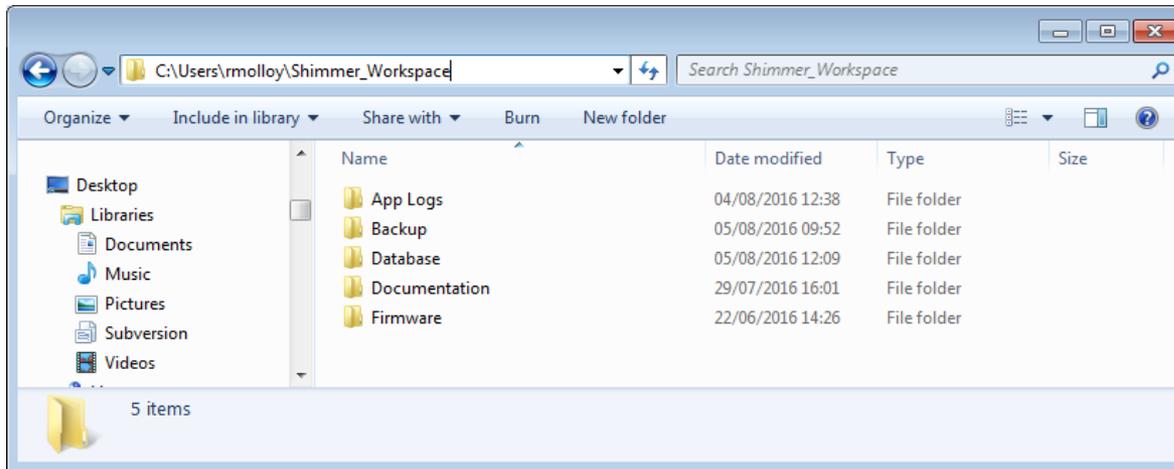
# CONSENSYS WORKSPACE (1/2)

**N.B.** The first time a new version of Consensys software is run, a workspace must be created to store application files. The workspace will be created automatically when you choose a directory and press the 'OK' button. The structure of the workspace is detailed on the next slide.



Press OK to create the workspace in the default, recommended directory

# CONSENSYS WORKSPACE (2/2)



**App Logs:** Contains text files with debug information used by the Shimmer team to debug Consensys hardware and/or software issues.

**Backup:** Contains a back up of the data imported from Shimmer SD cards into Consensys software.

**Database:** Contains database files with data imported from Shimmer SD cards and recorded over Bluetooth which can be exported to text files in Consensys software (using the MANAGE DATA tab).

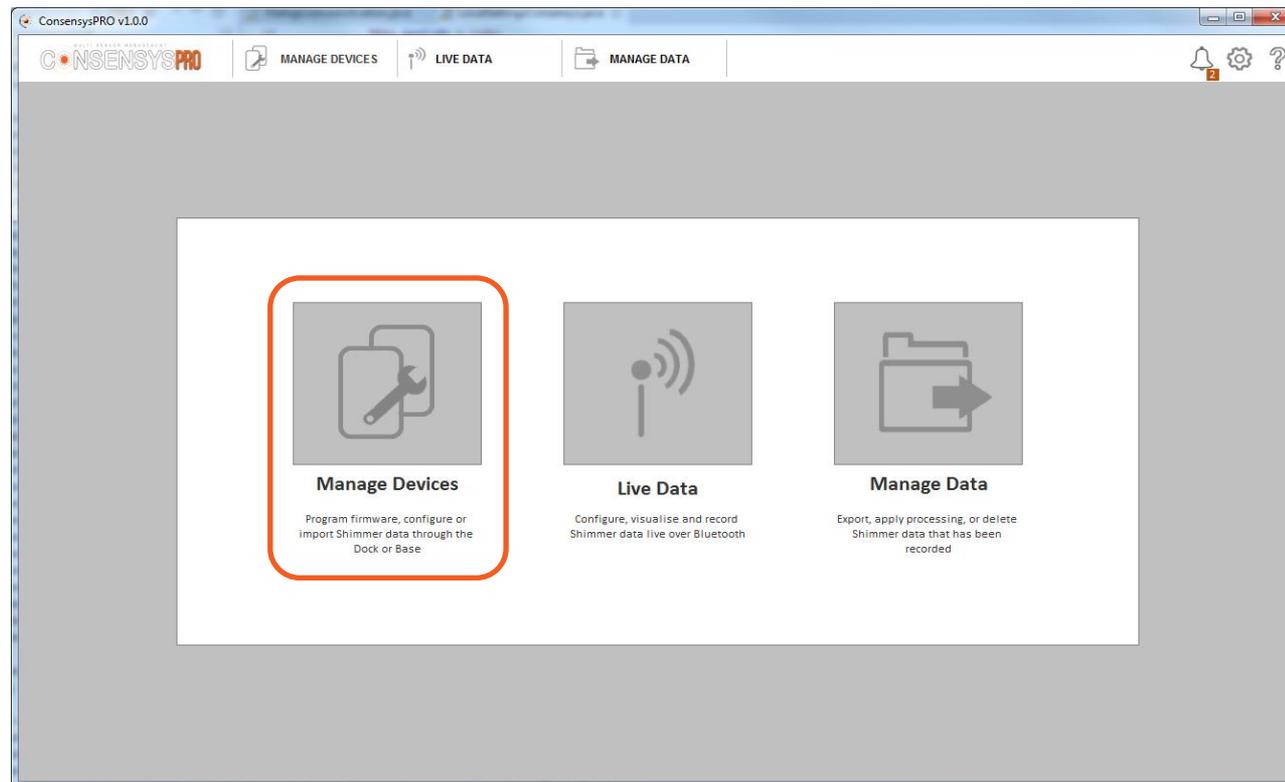
**Documentation:** Contains this user guide and a FAQ document (both accessible in Consensys software through the help icon)

**Firmware:** Contains Shimmer3 firmware files (e.g. LogAndStream, SDLog) which can be programmed onto Shimmers in Consensys software.

# PROGRAM FIRMWARE (1/3)

STEP 1 – Start *Consensys*.

STEP 2 – Click “MANAGE DEVICES”.



# PROGRAM FIRMWARE (2/3)

STEP 3 – Switch on the Shimmer(s) and place in the *Base6*.

STEP 4 – Click on the graphic or the device list to select/deselect the Shimmer(s).

STEP 5 – Select one or more Shimmers and click on the “FIRMWARE” button.

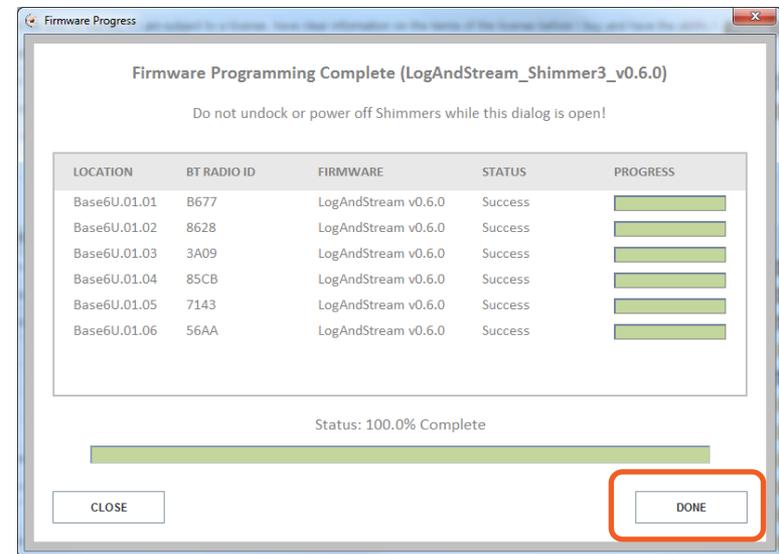
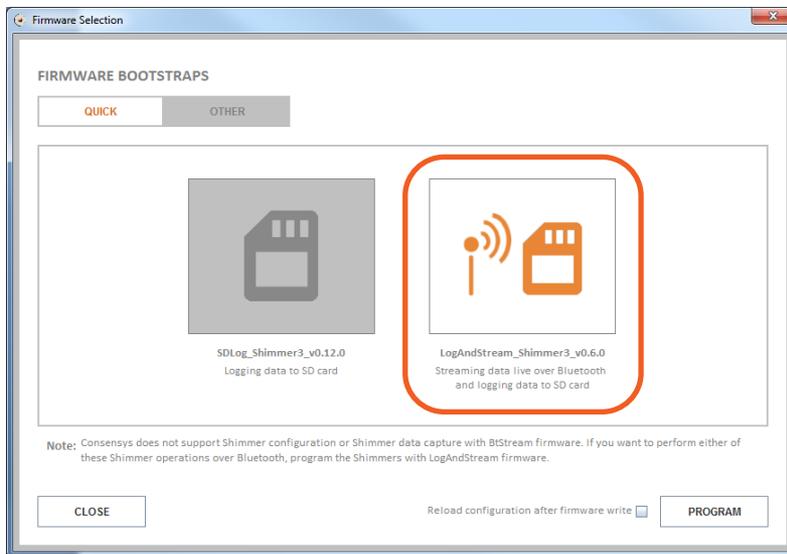
The screenshot displays the ConsensysPRO v1.0.5 software interface. The main window is titled "AVAILABLE SHIMMERS (SELECT SHIMMERS FROM THE TABLE OR THE HARDWARE VISUALISATION)". Below this title is a table with the following columns: LOCATION, BT RADIO ID, EXPANSION, FIRMWARE, SD CARD, TIME, and BATTERY. The table contains six rows of data, each with a checkbox in the first column. The first row is highlighted in red. To the right of the table is a "HARDWARE VISUALISATION (6/6)" section showing a "Base6U.01" device with six shimmers docked. Each shimmer has a green checkmark and a battery level indicator. Below the visualization are three buttons: "FIRMWARE", "CONFIGURE", and "IMPORT". The "FIRMWARE" button is highlighted with a red box. At the bottom of the interface, there is a note: "Shimmer(s) with firmware highlighted in red text indicates that a newer version of that firmware is available".

| LOCATION                            | BT RADIO ID  | EXPANSION | FIRMWARE          | SD CARD       | TIME                | BATTERY             |        |
|-------------------------------------|--------------|-----------|-------------------|---------------|---------------------|---------------------|--------|
| <input checked="" type="checkbox"/> | Base6U.01.01 | 964A      | GSR+              | SDLog v0.14.0 | 809.22 MB / 1.84 GB | 2017/05/08 09:40:04 | 100.0% |
| <input checked="" type="checkbox"/> | Base6U.01.02 | 2C02      | ECG/EMG           | SDLog v0.14.0 | 2.00 MB / 1.83 GB   | 2017/05/08 09:40:06 | 99.7%  |
| <input checked="" type="checkbox"/> | Base6U.01.03 | E806      | None              | SDLog v0.14.0 | 0.25 MB / 7.39 GB   | 2017/05/08 09:39:48 | 75.8%  |
| <input checked="" type="checkbox"/> | Base6U.01.04 | 85CB      | Bridge Amplifier+ | SDLog v0.14.0 | 1.76 GB / 1.84 GB   | 2017/05/08 09:35:39 | 100.0% |
| <input checked="" type="checkbox"/> | Base6U.01.05 | B8A0      | None              | SDLog v0.14.0 | 3.59 MB / 7.39 GB   | 2017/05/08 09:36:27 | 100.0% |
| <input checked="" type="checkbox"/> | Base6U.01.06 | 36AD      | None              | SDLog v0.14.0 | 2.13 MB / 7.39 GB   | 2017/05/08 09:37:15 | 98.1%  |

# PROGRAM FIRMWARE (3/3)

STEP 6 – Program the Shimmer with *SDLog* or *LogAndStream*:

Select *SDLog* or *LogAndStream*, and click PROGRAM”: Click “DONE” when complete:



# LOGGING

Logging data on the SD card(s) of one or multiple Shimmers.

In this section:

- [Configure Trial](#)
- [Capture Data](#)
- [Import Data](#)

**N.B.** To enable logging data to the SD cards Shimmers need to be programmed with *SDLog* or *LogAndStream* firmware – see [Program Firmware](#).

**N.B.** In the Logging section of this guide *SDLog* is used, which allows for synchronisation between multiple Shimmers when logging to the SD card. Synchronisation is not available for *LogAndStream*. The advantage of *LogAndStream* is that it can also be used to stream data over Bluetooth – see the [Streaming section](#) of this guide.

# LOGGING – CONFIGURE TRIAL (1/8)

STEP 1 – Select one or more Shimmer(s) with the same firmware (type and version) and click on “CONFIGURE”:

The screenshot shows the ConsensysPRO v1.0.5 software interface. The main window is divided into two panes. The left pane, titled "AVAILABLE SHIMMERS (SELECT SHIMMERS FROM THE TABLE OR THE HARDWARE VISUALISATION)", contains a table with the following data:

| LOCATION                            | BT RADIO ID  | EXPANSION | FIRMWARE          | SD CARD       | TIME                | BATTERY             |        |
|-------------------------------------|--------------|-----------|-------------------|---------------|---------------------|---------------------|--------|
| <input checked="" type="checkbox"/> | Base6U.01.01 | 964A      | GSR+              | SDLog v0.14.0 | 809.22 MB / 1.84 GB | 2017/05/08 09:40:04 | 100.0% |
| <input checked="" type="checkbox"/> | Base6U.01.02 | 2C02      | ECG/EMG           | SDLog v0.14.0 | 2.00 MB / 1.83 GB   | 2017/05/08 09:40:06 | 99.7%  |
| <input checked="" type="checkbox"/> | Base6U.01.03 | E806      | None              | SDLog v0.14.0 | 0.25 MB / 7.39 GB   | 2017/05/08 09:39:48 | 75.8%  |
| <input checked="" type="checkbox"/> | Base6U.01.04 | 85CB      | Bridge Amplifier+ | SDLog v0.14.0 | 1.76 GB / 1.84 GB   | 2017/05/08 09:35:39 | 100.0% |
| <input checked="" type="checkbox"/> | Base6U.01.05 | B8A0      | None              | SDLog v0.14.0 | 3.59 MB / 7.39 GB   | 2017/05/08 09:36:27 | 100.0% |
| <input checked="" type="checkbox"/> | Base6U.01.06 | 36AD      | None              | SDLog v0.14.0 | 2.13 MB / 7.39 GB   | 2017/05/08 09:37:15 | 98.1%  |

The right pane, titled "HARDWARE VISUALISATION (6/6)", shows a 3D rendering of a Base6U.01 device with six shimmers docked. Each shimmer has a green checkmark on its screen. Below the visualization are status indicators for "Docked", "Unknown", and "Pending". At the bottom of the interface, there are three buttons: "FIRMWARE", "CONFIGURE", and "IMPORT". The "CONFIGURE" button is highlighted with a red box.

Shimmer(s) with firmware highlighted in red text indicates that a newer version of that firmware is available

**N.B.** ConsensysBASIC only allows the use of one Shimmer at any one time!

# LOGGING – CONFIGURE TRIAL (2/8)

## STEP 2 – Set TRIAL NAME & Sync Devices:

- Choose a TRIAL NAME.
- Click the *Sync Devices* tile to enable synchronised logging from multiple Shimmers (available for *SDLog* firmware only).
- Choose Mode based on estimated logging duration.

A

B

ConsensysPRO v1.0.5

MANAGE DEVICES LIVE DATA MANAGE DATA

TRIAL NAME: DefaultTrial ✓ AUTO STOP (MINS): 0

SHIMMER NAME: Shimmer\_964A ✓ SAMPLING RATE (Hz): 51.20 ✓

Sync Devices Start/Stop Logging Method

Mode: Short ( $t_{thr}$ ) User Button Undock/Dock

All config options above apply to each of the Shimmers listed in the table below

AVAILABLE SHIMMERS Set Master

| LOCATION ^   | BT RADIO ID | EXPANSION         | SHIMMER NAME |
|--------------|-------------|-------------------|--------------|
| Base6U.01.01 | 904A        | GSR+              | Shimmer_964A |
| Base6U.01.02 | 2C02        | ECG/EMG           | Shimmer_2C02 |
| Base6U.01.03 | E806        | None              | Shimmer_E806 |
| Base6U.01.04 | 85CB        | Bridge Amplifier+ | Shimmer_85CB |
| Base6U.01.05 | B8A0        | None              | Shimmer_B8A0 |
| Base6U.01.06 | 36AD        | None              | Shimmer_36AD |

Master Shimmer shown in orange text, only applicable when sync devices enabled.

SENSORS ALGORITHMS CALIBRATION

Low-Noise Accelerometer Wide-Range Accelerometer Gyroscope

Magnetometer Pressure & Temperature Battery Voltage

External Expansion ADCs Internal Expansion ADCs GSR+

Ext A6 Ext A7 Ext A15 Int A12 Int A13 GSR PPG

Power: Off Range: 10kΩ to 56kΩ Channel: Int A13

BACK WRITE CONFIG

# LOGGING – CONFIGURE TRIAL (3/8)

## STEP 3 – Set AUTO STOP & Start/Stop Logging Method:

- To automatically stop logging, enter a value other than zero.
  - Choose to start and stop logging with the User Button or by undocking/docking – User Button is used in this guide.
- N.B.** When using the Undock/Dock method, log for at least one minute to ensure a data file is created.

ConsensysPRO v1.0.5

MANAGE DEVICES | LIVE DATA | MANAGE DATA

TRIAL NAME: DefaultTri **A** ✓ AUTO STOP (MINS): 0

SHIMMER NAME: Shimmer\_964A ✓ SAMPLING RATE (Hz): 51.20 ✓

Sync Devices | Start/Stop Logging Method

User Button **B** | Undock/Dock

Mode: Short (<1hr)

All config options above apply to each of the Shimmers listed in the table below

AVAILABLE SHIMMERS Set Master

| LOCATION     | BT RADIO ID | EXPANSION         | SHIMMER NAME |
|--------------|-------------|-------------------|--------------|
| Base6U.01.01 | 964A        | GSR+              | Shimmer_964A |
| Base6U.01.02 | 2C02        | ECG/EMG           | Shimmer_2C02 |
| Base6U.01.03 | E806        | None              | Shimmer_E806 |
| Base6U.01.04 | 85CB        | Bridge Amplifier+ | Shimmer_85CB |
| Base6U.01.05 | B8A0        | None              | Shimmer_B8A0 |
| Base6U.01.06 | 36A0        | None              | Shimmer_36A0 |

Master Shimmer shown in orange text, only applicable when sync devices enabled.

BACK | WRITE CONFIG

SENSORS | ALGORITHMS | CALIBRATION

Low-Noise Accelerometer | Wide-Range Accelerometer | Gyroscope

Magnetometer | Pressure & Temperature | Battery Voltage

External Expansion ADCs | Internal Expansion ADCs | GSR+ PPG

# LOGGING – CONFIGURE TRIAL (4/8)

STEP 4 – Set parameters for **each** Shimmer.

- A. Choose SHIMMER NAME.
- B. Choose SAMPLING RATE.
- C. Click on the tiles to enable and configure sensors.

ConsensysPRO v1.0.5

MANAGE DEVICES LIVE DATA MANAGE DATA

TRIAL NAME: DefaultTrial ✓ AUTO STOP (MINS): 0

SHIMMER NAME: Shimmer\_964A ✓ SAMPLING RATE (Hz): 51.20 ✓

Sync Devices Start/Stop Logging Method

AVAILABLE SHIMMERS

| LOCATION     | BT RADIO ID | EXPANSION         | SHIMMER NAME |
|--------------|-------------|-------------------|--------------|
| Base6U.01.01 | 964A        | GSR+              | Shimmer_964A |
| Base6U.01.02 | 2C02        | ECG/EMG           | Shimmer_2C02 |
| Base6U.01.03 | E806        | None              | Shimmer_E806 |
| Base6U.01.04 | 85CB        | Bridge Amplifier+ | Shimmer_85CB |
| Base6U.01.05 | B8A0        | None              | Shimmer_B8A0 |
| Base6U.01.06 | 36AD        | None              | Shimmer_36AD |

SENSORS ALGORITHMS CALIBRATION

Low-Noise Accelerometer Wide-Range Accelerometer Gyroscope

Magnetometer Pressure & Temperature Battery Voltage

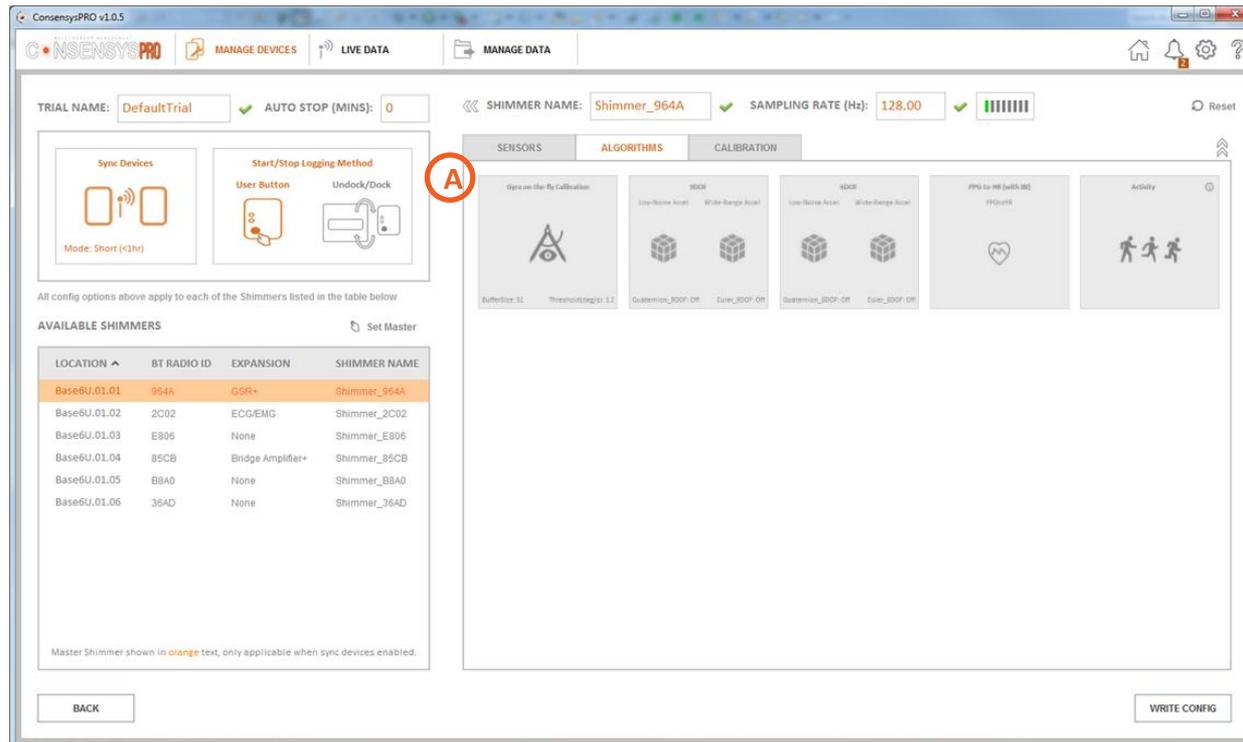
External Expansion ADCs Internal Expansion ADCs GSR+ PPG

BACK WRITE CONFIG

# LOGGING – CONFIGURE TRIAL (5/8)

## STEP 5 – Set algorithms for **each** Shimmer

- A. Enabled algorithms specific to the hardware (e.g. 9DoF to Quat for Shimmer3 IMU, ECG-to-HR for Shimmer3 ECG etc)



**N.B.** Algorithms are not available in ConsensysBASIC!

# LOGGING – CONFIGURE TRIAL (6/8)

## STEP 6 – Review calibration for **each** Shimmer.

- A. Review the calibration for each of the IMU sensors. You can reset the calibration of all or an individual IMU to the factory default calibration by pressing the reset icon

ConsensysPRO v1.0.5

TRIAL NAME: DefaultTrial AUTO STOP (MINS): 0 SHIMMER NAME: Shimmer\_964A SAMPLING RATE (Hz): 128.00

IMU Calibration Parameters Review (Click icon to reset all to default calibration)

Low-Noise Accelerometer (Range: +/- 2g) Time: N/A (not set)

| Offset (Hz) | Sensitivity (K) | Alignment (K) |
|-------------|-----------------|---------------|
| 2043        | 83              | 0             |
| 2047        | 0               | 83            |
| 2047        | 0               | 0             |

Reset all to factory default calibration

Invalid Calibration  
The sensor is using invalid calibration parameters. Use the 9DoF calibration software to calibrate the sensor.

IMU Calibration Formula

$$e = Rx^{-1} \cdot Kx^{-1} \cdot (ux-bx)$$

where  
c = 3x1 calibrated signal vector  
Rx = 3x3 alignment matrix  
Kx = 3x3 sensitivity matrix  
ux = 3x1 uncalibrated signal vector  
bx = 3x1 offset vector

Reset individual IMU to factory default calibration

**N.B.** A Shimmer that appears with a **red** warning symbol has an invalid IMU calibration  
And should be reset to default or calibrated using Shimmer's 9DoF calibration software



# LOGGING – CONFIGURE TRIAL (7/8)

## STEP 7 – Write settings for **all** Shimmer.

- A. Press the WRITE CONFIG button to save the configuration (trial details, Shimmer details, sensor details, algorithm details, calibration details) to each of the Shimmers.

The screenshot shows the ConsensysPRO v1.0.5 software interface. The top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main configuration area is divided into several sections:

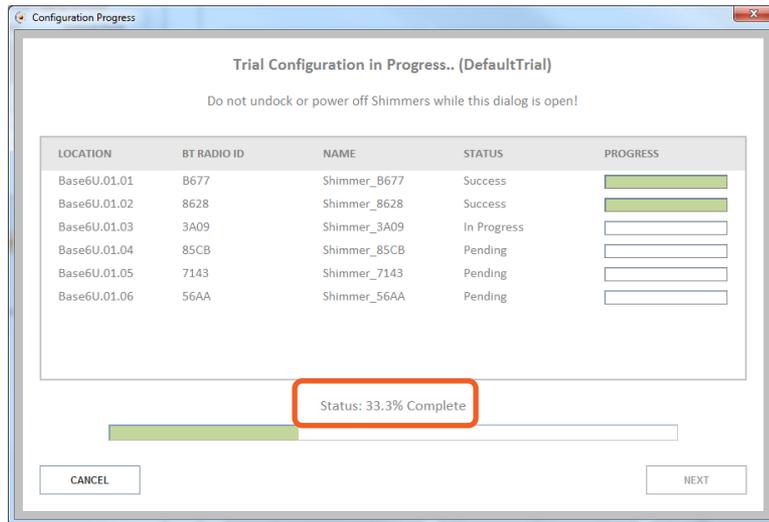
- TRIAL NAME:** DefaultTrial (with a green checkmark)
- AUTO STOP (MINS):** 0
- SHIMMER NAME:** Shimmer\_964A (with a green checkmark)
- SAMPLING RATE (Hz):** 51.20 (with a green checkmark and a signal strength indicator)
- Sync Devices:** Mode: Short (<1hr)
- Start/Stop Logging Method:** User Button, Undock/Dock
- AVAILABLE SHIMMERS:** A table listing available shimmers with columns for LOCATION, BT RADIO ID, EXPANSION, and SHIMMER NAME. The row for 'Shimmer\_964A' is highlighted in orange.
- Sensors:** A grid of sensor configuration options including Low-Noise Accelerometer, Wide-Range Accelerometer, Gyroscope, Magnetometer, Pressure & Temperature, Battery Voltage, External Expansion ADCs, Internal Expansion ADCs, and GSR+ PPG.
- Buttons:** A 'BACK' button and a 'WRITE CONFIG' button (with a circled 'A' icon).

| LOCATION     | BT RADIO ID | EXPANSION         | SHIMMER NAME |
|--------------|-------------|-------------------|--------------|
| Base6U.01.01 | 964A        | GSR+              | Shimmer_964A |
| Base6U.01.02 | 2C02        | ECG/EMG           | Shimmer_2C02 |
| Base6U.01.03 | E806        | None              | Shimmer_E806 |
| Base6U.01.04 | 85CB        | Bridge Amplifier+ | Shimmer_85CB |
| Base6U.01.05 | B8A0        | None              | Shimmer_B8A0 |
| Base6U.01.06 | 36A0        | None              | Shimmer_36A0 |

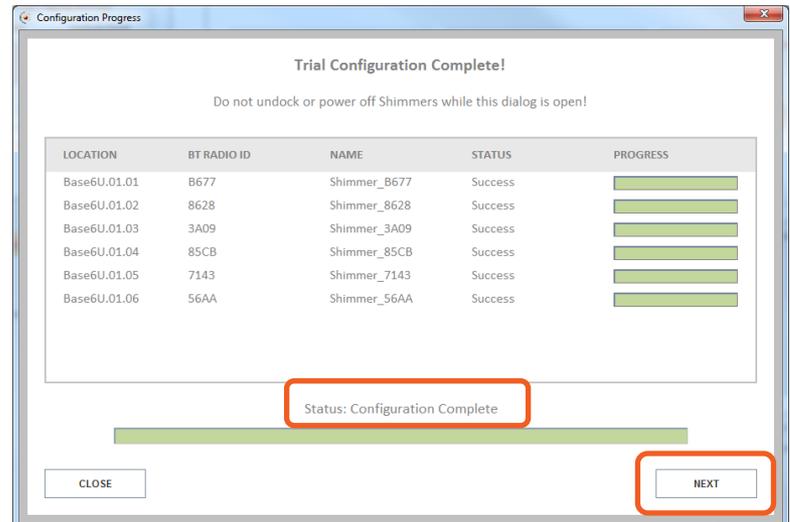
# LOGGING – CONFIGURE TRIAL (8/8)

STEP 8 – WRITE CONFIG.

Wait until Trial Configuration is written:



Click "NEXT" to complete the configuration:



# LOGGING – CAPTURE DATA (1/2)

STEP 1 – Undock the Shimmer(s). (A)

STEP 2 – DO NOT Power off the Shimmer. (B)

STEP 3 – Press the orange User Button on the Shimmer(s) to start data capture. (C)

STEP 4 – The green LED will turn on and off at one second intervals when capturing data. (D)



# LOGGING – CAPTURE DATA (2/2)

STEP 5 – Press the orange User Button again to stop data capture. (A)

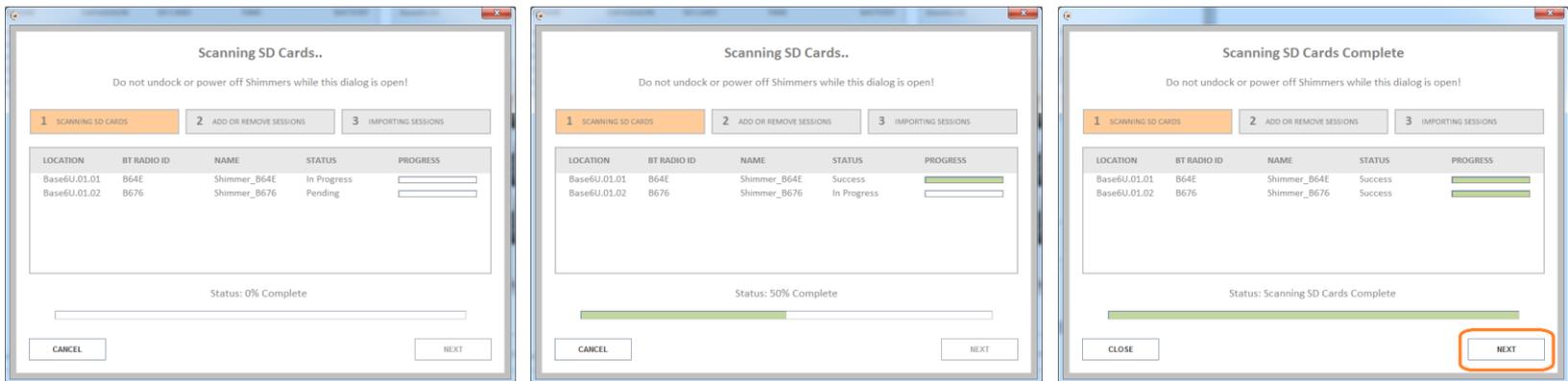
STEP 6 – The green LED will now turn on briefly once every two seconds. (B)



# LOGGING – IMPORT DATA (1/6)

## STEP 1 – Scanning SD Cards:

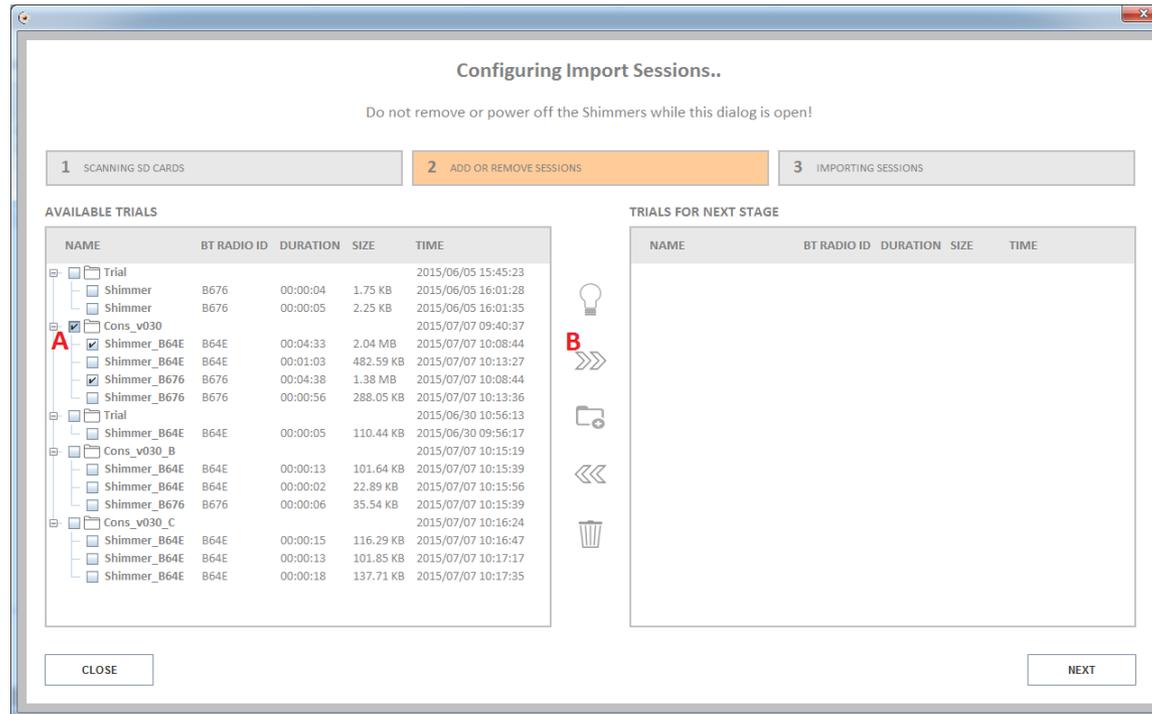
- Place the Shimmer(s) in the Base.
- Select the Shimmer(s) you want to import data from and click “IMPORT”.
- Hit “NEXT” when scanning is complete.



# LOGGING – IMPORT DATA (2/6)

## STEP 2 – Configuring Import Sessions:

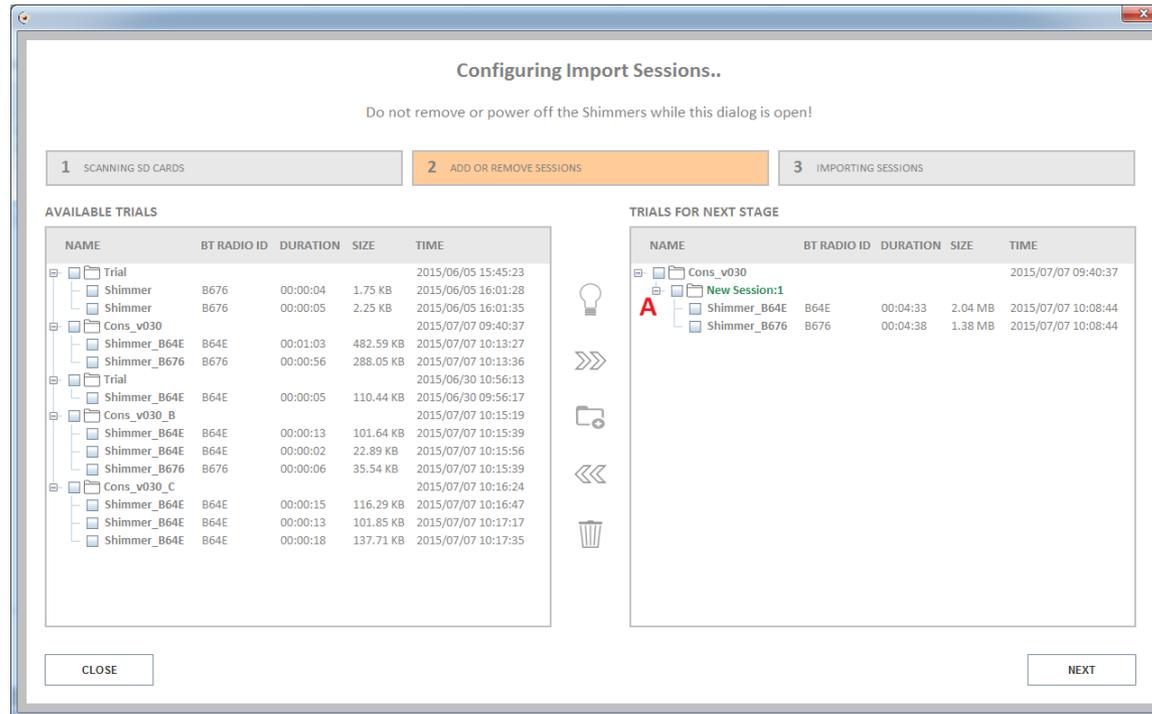
- A. Select data from one or more Shimmers.
- B. Click the button to add the data as new session to the list for the next stage.



# LOGGING – IMPORT DATA (3/6)

## STEP 2 – Configuring Import Sessions – continued:

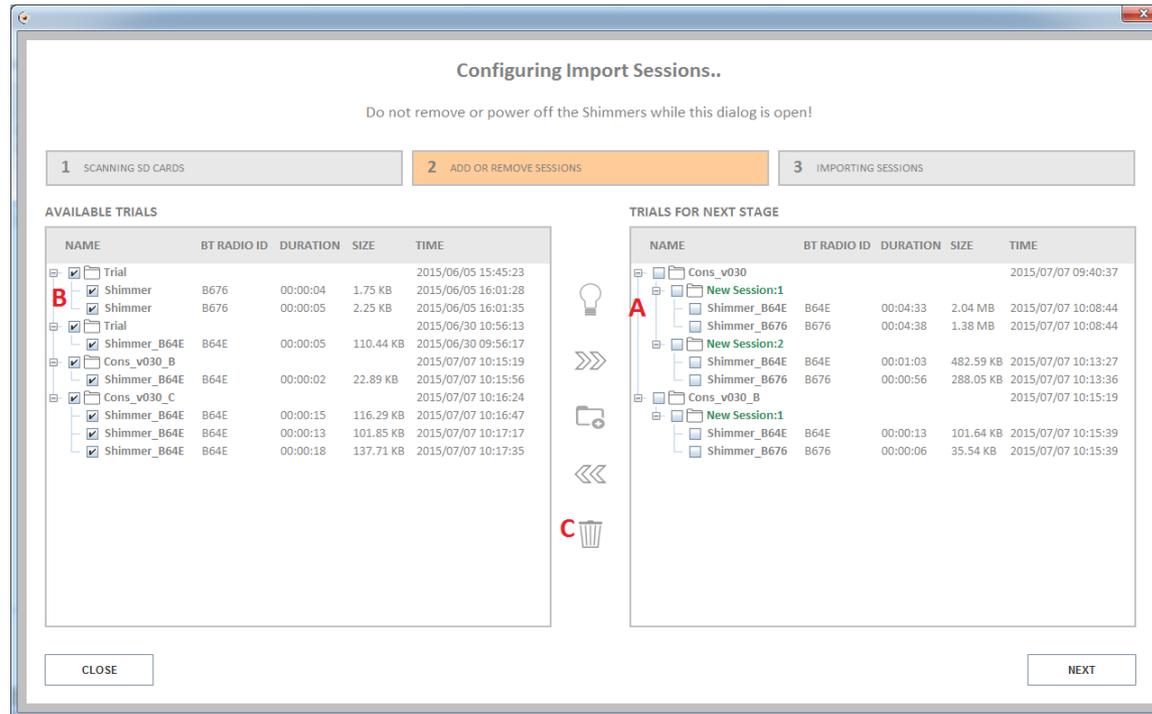
- A. For trial “Cons\_v030” the data is added to “New Session:1”.



# LOGGING – IMPORT DATA (4/6)

## STEP 2 – Configuring Import Sessions – continued:

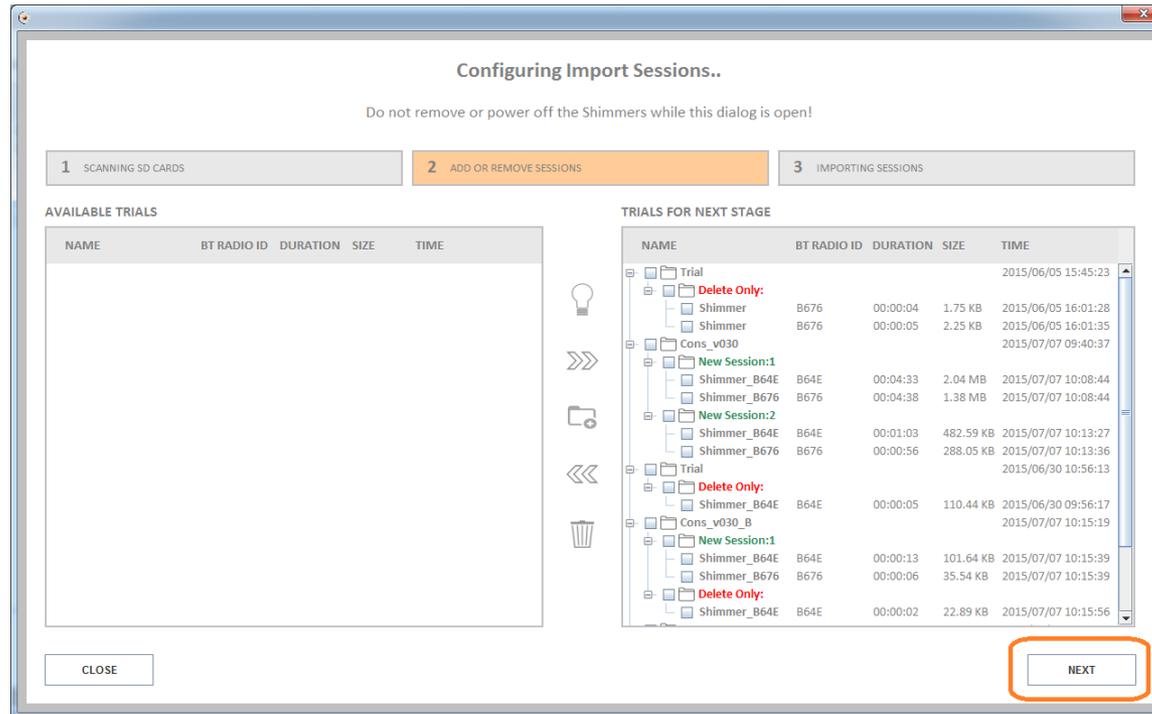
- In the same way data is added as “New Session:2” of trial “Cons\_v030” and “New Session:1” of “Cons\_v030\_B”.
- The remaining data on the SD cards of the selected Shimmers is selected.
- Clicking this button will mark the data selected in AVAILABLE TRIALS (B) to be deleted in the next stage.



# LOGGING – IMPORT DATA (5/6)

## STEP 2 – Configuring Import Sessions – continued:

- Data not to be imported in the next stage is now listed to be deleted – marked “Delete Only”.
- Hit “NEXT” to continue to the next stage (and hit “YES” to confirm).



# LOGGING – IMPORT DATA (6/6)

## STEP 3 – Importing sessions:

- The data selected for import is now being imported into the database.
- Data marked to be deleted is now being deleted.
- Hit “DONE” when Import is complete to go to “MANAGE DATA”.

The image displays three sequential screenshots of the Shimmer software interface during the import process. Each window has a title bar and a navigation bar with three tabs: '1 SCANNING SD CARDS', '2 ADD OR REMOVE SESSIONS', and '3 IMPORTING SESSIONS' (which is highlighted in orange).

**Importing sessions..**  
Do not remove or power off the Shimmers while this dialog is open!  
Overall Status: 42% Complete

| TRIAL       | CONFIGURATION TIME  | SESSION ID | SIZE      | STATUS    | PROGRESS                         |
|-------------|---------------------|------------|-----------|-----------|----------------------------------|
| Cons_v030   | 2015/07/07 09:40:37 | 1          | 3.42 MB   | Importing | <div style="width: 100%;"></div> |
| Cons_v030   | 2015/07/07 09:40:37 | 2          | 770.65 KB | Copied    | <div style="width: 100%;"></div> |
| Cons_v03... | 2015/07/07 10:15:19 | 1          | 137.18 KB | Copied    | <div style="width: 100%;"></div> |

**Deleting temporary files..**  
Do not remove or power off the Shimmers while this dialog is open!  
Overall Status: 66% Complete

| TRIAL       | CONFIGURATION TIME  | SESSION ID | SIZE      | STATUS   | PROGRESS                         |
|-------------|---------------------|------------|-----------|----------|----------------------------------|
| Cons_v030   | 2015/07/07 09:40:37 | 1          | 3.42 MB   | Imported | <div style="width: 100%;"></div> |
| Cons_v030   | 2015/07/07 09:40:37 | 2          | 770.65 KB | Imported | <div style="width: 100%;"></div> |
| Cons_v03... | 2015/07/07 10:15:19 | -1         | 22.89 KB  | Pending  | <div style="width: 100%;"></div> |
| Cons_v03... | 2015/07/07 10:15:19 | 1          | 137.18 KB | Imported | <div style="width: 100%;"></div> |
| Cons_v03... | 2015/07/07 10:16:24 | -1         | 355.86 KB | Pending  | <div style="width: 100%;"></div> |
| Trial       | 2015/06/05 15:45:23 | -1         | 4.00 KB   | Pending  | <div style="width: 100%;"></div> |
| Trial       | 2015/06/30 10:56:13 | -1         | 110.44 KB | Pending  | <div style="width: 100%;"></div> |

**Import Complete**  
Do not remove or power off the Shimmers while this dialog is open!  
Import is Done!

| TRIAL       | CONFIGURATION TIME  | SESSION ID | SIZE      | STATUS   | PROGRESS                         |
|-------------|---------------------|------------|-----------|----------|----------------------------------|
| Cons_v030   | 2015/07/07 09:40:37 | 1          | 3.42 MB   | Imported | <div style="width: 100%;"></div> |
| Cons_v030   | 2015/07/07 09:40:37 | 2          | 770.65 KB | Imported | <div style="width: 100%;"></div> |
| Cons_v03... | 2015/07/07 10:15:19 | 1          | 137.18 KB | Imported | <div style="width: 100%;"></div> |

The 'DONE' button in the 'Import Complete' window is highlighted with a red rectangle.

**N.B.** Skip to Manage Data for instructions on accessing the imported data.

# STREAMING

**Streaming data** from one or multiple Shimmers to the computer **over Bluetooth**.

In this section:

- Pair Shimmer
- Connect
- Configure Trial
- Stream & Plot
- Record

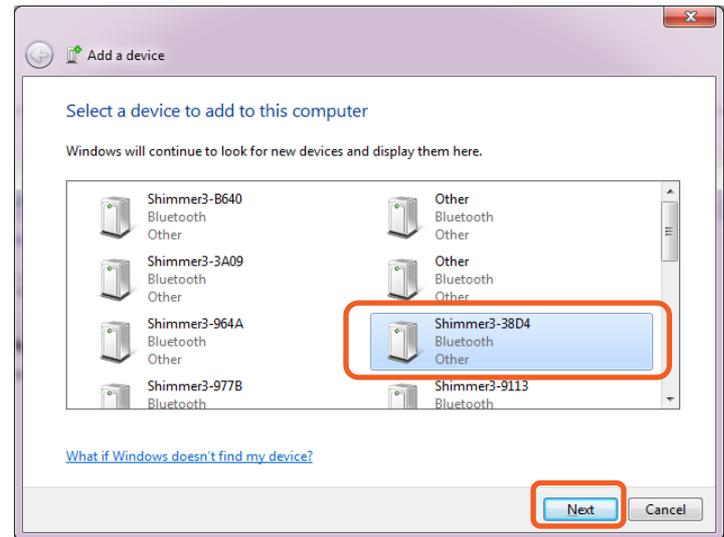
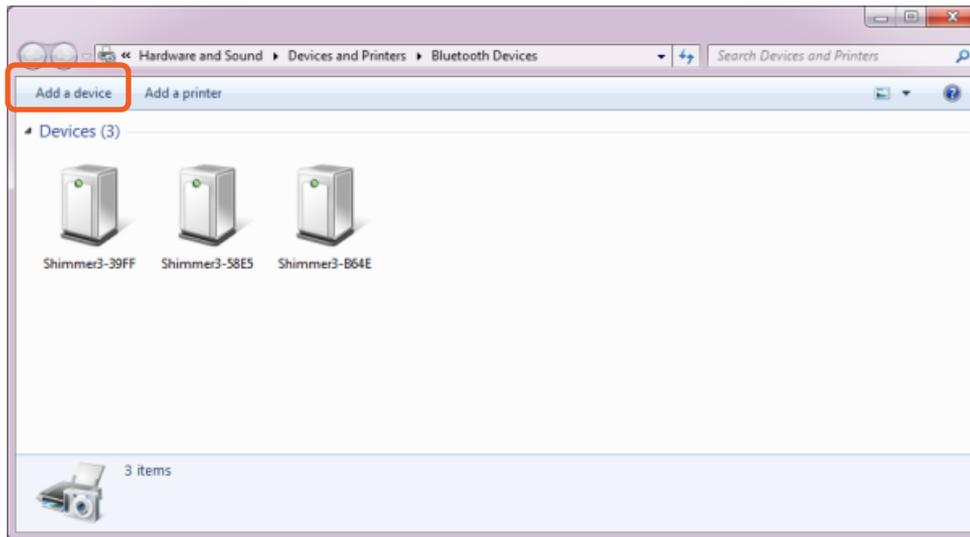
**N.B.** The computer needs to be equipped with a Bluetooth Adapter to allow streaming over Bluetooth.

**N.B.** Shimmers need to be programmed with *LogAndStream* firmware - see [Program Firmware](#).  
*BtStream* firmware is not supported in *Consensus* software.

# STREAMING – PAIR SHIMMER (1/2)

Click “Add a device” in Bluetooth devices in Control Panel:

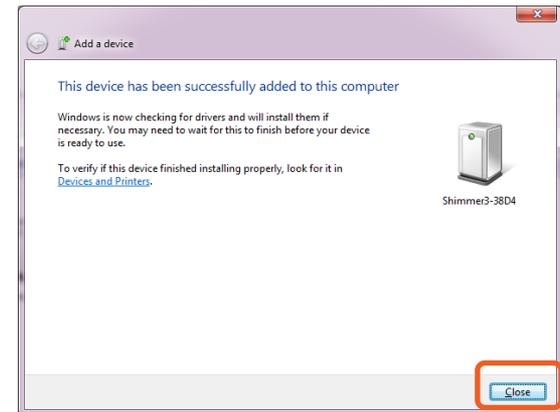
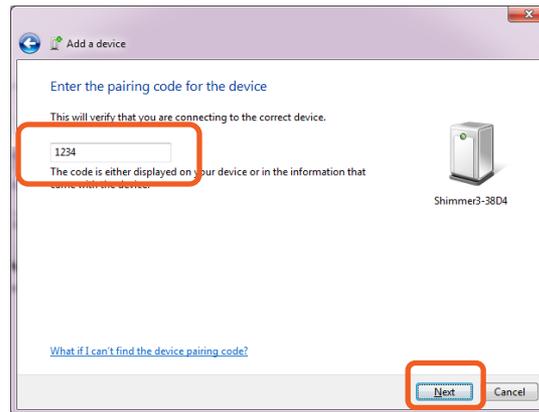
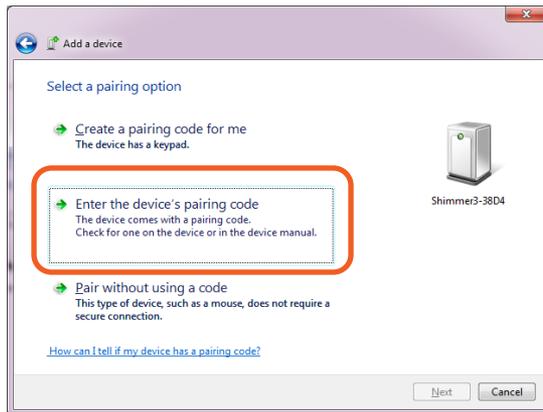
Select Shimmer, click “Next”:



# STREAMING – PAIR SHIMMER (2/2)

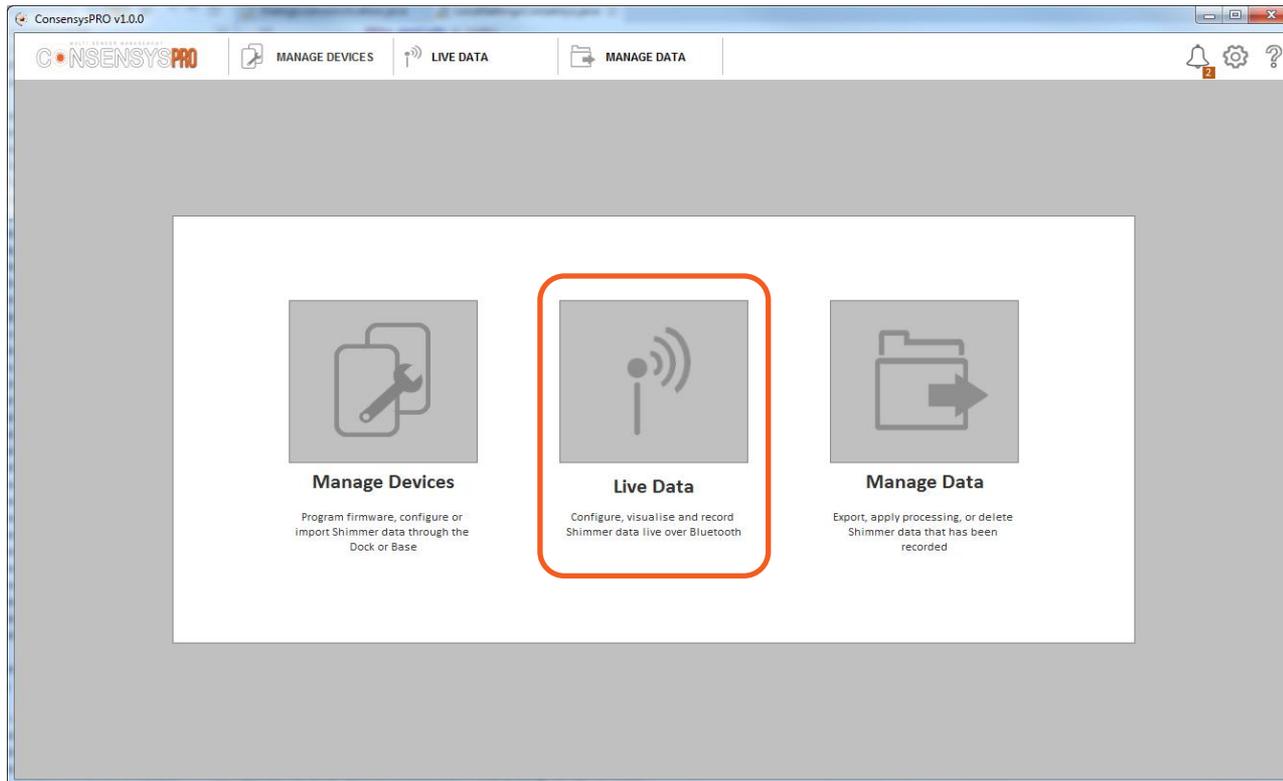
Enter the pairing code: “1234” and click “Next”:

Click “Close”:



# STREAMING – CONNECT (1/5)

STEP 1 – Go to “LIVE DATA”:



# STREAMING – CONNECT (2/5)

STEP 2 – Note all Shimmers listed in “Devices and Printers” show up in “LIVE DATA” :

The screenshot displays the ConsensysPRO v1.0.5 software interface. The main window is divided into several sections:

- AVAILABLE DEVICES (0/5)**: A table listing five Shimmer devices: 2C02, 3A44, 50CE, B8A0, and 36AD. Each device entry includes a 'SELECT' button, a device icon, and recording details (Trial, Time, Live Session). The 'SELECT' column is highlighted with a red box.
- RECORDING DETAILS AND STATUS**: A section for configuring recording parameters for the selected device.
- DATA VISUALISATION (Active: Plot 1)**: A plot area showing real-time data. The plot is currently empty, with axes ranging from 0.0 to 10.0. The Shimmer logo is visible in the top right of the plot area.
- CONNECTION (0/5)**, **CONFIGURE (0/0)**, **STREAM (0/0)**, and **RECORD (0/0)**: Action buttons for managing the devices.

An inset window titled "Add a device" is open, showing a list of devices (4) including Shimmer2-2C02, Shimmer2-3A44, Shimmer2-36AD, Shimmer2-58E5, and RM2-88A0. A red arrow points from the 'SELECT' column of the main table to this inset window.

**N.B.** ConsensysBASIC only allows the use of one Shimmer at any one time!

# STREAMING – CONNECT (3/5)

STEP 3 – Connect to Shimmer (“36AD” in this example):

The screenshot displays the ConsensusPRO v1.0.5 software interface. The main window is titled "AVAILABLE DEVICES (0/5) (SELECT SHIMMERS FROM THE TABLE FOR BLUETOOTH CONFIGURATION)". It features a table with columns for "SELECT", "DEVICES", and "RECORDING DETAILS AND STATUS". The table lists five Shimmer devices: 2C02, 3A44, 58E5, B8A0, and 36AD. The 36AD device is highlighted with a red box, and a red arrow points to its Bluetooth icon, which is also highlighted with a red box. A red callout box above the table states: "Images are shown for previously connected Shimmers, with indication whether they are docked." Below the table, there are four buttons: "CONNECTION (0/5)", "CONFIGURE (0/0)", "STREAM (0/0)", and "RECORD (0/0)". A red callout box below the buttons states: "Click to connect to '36AD'." To the right of the main window, there is a "Plot 1" window showing a graph with a y-axis ranging from 0.0 to 10.0 and an x-axis labeled "x". The plot area is currently empty. The Shimmer logo is visible in the top right corner of the plot window.

| SELECT | DEVICES   | RECORDING DETAILS AND STATUS  |
|--------|---|---|
|        | <b>2C02 (Shimmer_2C02)</b><br>Exp: ECG/EMG Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A         | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
|        | <b>3A44</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A                       | Trial:<br>Time:<br>Live Session: N/A                                  |
|        | <b>58E5 (Shimmer_58E5)</b><br>Exp: PROTO3 Deluxe Fw: v0.7.10 Fs: 1024.0Hz<br>State: Disconnected Overall Packets: N/A | Trial: PC_Record<br>Time: 2017/05/04 15:35:20<br>Live Session: N/A    |
|        | <b>B8A0 (Shimmer_B8A0)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A            | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
|        | <b>36AD (Shimmer_36AD)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Connecting Overall Packets: N/A              | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |

CONNECTION (0/5) CONFIGURE (0/0) STREAM (0/0) RECORD (0/0)

Use the SELECT column in the table to select one or more devices, then press one of the buttons above to perform its operation on all of the compatible devices selected.

# STREAMING – CONNECT (4/5)

STEP 4 – Connect to another Shimmer (“2C02” in this example):

The screenshot displays the ConsensysPRO v1.0.5 software interface. The top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main area is divided into two sections: 'AVAILABLE DEVICES (0/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' section contains a table with columns for 'SELECT', 'DEVICES', and 'RECORDING DETAILS AND STATUS'. The table lists five devices: 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, 58E5, and B8A0 (Shimmer\_B8A0). The 2C02 device is highlighted with a red box, and a red arrow points to its 'SELECT' button. Below the table are buttons for 'CONNECTION (0/5)', 'CONFIGURE (0/1)', 'STREAM (0/1)', and 'RECORD (0/1)'. The 'DATA VISUALISATION' section shows a plot titled 'Plot 1' with a y-axis ranging from 0 to 10 and an x-axis labeled 'x' with a timestamp '01:00:00'. The Shimmer logo is visible in the top right corner of the plot area.

| SELECT                   | DEVICES   | RECORDING DETAILS AND STATUS   |
|--------------------------|---|--|
| <input type="checkbox"/> | <b>2C02 (Shimmer_2C02)</b><br>Exp: ECG/EMG Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
| <input type="checkbox"/> | <b>36AD (Shimmer_36AD)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A           | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
| <input type="checkbox"/> | <b>3A44</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A               | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/> | <b>58E5</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A               | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/> | <b>B8A0 (Shimmer_B8A0)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A    | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |

CONNECTION (0/5) CONFIGURE (0/1) STREAM (0/1) RECORD (0/1)

Use the SELECT column in the table to select one or more devices, then press one of the buttons above to perform its operation on all of the compatible devices selected.

# STREAMING – CONNECT (5/5)

STEP 5 – Find both connected Shimmers at the top of AVAILABLE SHIMMERS:

The screenshot displays the ConsensysPRO v1.0.5 software interface. The top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main area is divided into two sections: 'AVAILABLE DEVICES (0/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' section contains a table of devices with a 'SELECT' column on the left. Two devices, '2C02 (Shimmer\_2C02)' and '36AD (Shimmer\_36AD)', are highlighted with a red box, indicating they are the target devices for this step. The 'DATA VISUALISATION' section shows a plot area with a y-axis ranging from 0.0 to 10.0 and an x-axis labeled 'x'.

| SELECT                              | DEVICES  | RECORDING DETAILS AND STATUS  |
|-------------------------------------|--|---|
| <input checked="" type="checkbox"/> | <b>2C02 (Shimmer_2C02)</b><br>Exp: ECG/EMG Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A     | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
| <input checked="" type="checkbox"/> | <b>36AD (Shimmer_36AD)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A        | Trial: DefaultTrial<br>Time: 2017/05/08 10:20:42<br>Live Session: N/A |
| <input type="checkbox"/>            | <b>3A44</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A            | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/>            | <b>58E5</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A            | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/>            | <b>B8A0 (Shimmer_B8A0)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |

CONNECTION (0/5) CONFIGURE (0/2) STREAM (0/2) RECORD (0/2)

Use the SELECT column in the table to select one or more devices, then press one of the buttons above to perform its operation on all of the compatible devices selected.

# STREAMING – CONFIGURE TRIAL (1/7)

STEP 1 – Select Shimmers – e.g. by right-clicking on “SELECT”, press “Select All”:

The screenshot displays the ConsensysPRO v1.0.5 software interface. The main window is divided into two primary sections: a device management table on the left and a data visualization plot on the right.

**Device Management Table:**

| SELECT   | DEVICES  | RECORDING DETAILS AND STATUS  |
|--|--|---|
| <input type="checkbox"/> Select All<br><input type="checkbox"/> Show Advanced All<br><input type="checkbox"/> Toggle LED All | <b>02 (Shimmer_2C02)</b><br>ECG/EMG Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A            | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
| <input type="checkbox"/>   | <b>36AD (Shimmer_36AD)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A        | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
| <input type="checkbox"/>   | <b>3A44</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A            | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/>   | <b>58E5</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A            | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/>   | <b>B8A0 (Shimmer_B8A0)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |

**Data Visualization Plot:**

The plot area on the right is titled "Plot 1" and shows a blank coordinate system with a vertical axis ranging from 0.0 to 10.0 and a horizontal axis labeled "x" with a value of 01.00:00. The Shimmer logo is visible in the top right corner of the plot area.

**Annotations:**

- A red box highlights the "SELECT" column in the device table, containing the "Select All" option.
- A red box highlights the Shimmer icons in the device table, with a text box stating: "Click on the Shimmer icons to (de)select individual Shimmers."

**Footer:**

Use the SELECT column in the table to select one or more devices, then press one of the buttons above to perform its operation on all of the compatible devices selected.

# STREAMING – CONFIGURE TRIAL (2/7)

STEP 2 – Selecting Shimmers enables Group Buttons:

The screenshot displays the ConsensysPRO v1.0.5 software interface. The main window is divided into several sections:

- AVAILABLE DEVICES (5/5):** A table listing five Shimmer devices: 2C02, 36AD, 3A44, 58E5, and B8A0. The first two devices (2C02 and 36AD) have green checkmarks in the 'SELECT' column, indicating they are selected. The other three (3A44, 58E5, and B8A0) have grey checkmarks, indicating they are not selected.
- RECORDING DETAILS AND STATUS:** A section for each device showing trial information (e.g., Trial: DefaultTrial, Time: 2017/05/05 15:43:08) and recording status (e.g., Live Session: N/A).
- DATA VISUALISATION (Active: Plot 1):** A plot area on the right side of the interface, currently showing a blank graph with the Shimmer logo.
- GROUP CONTROLS:** A set of buttons at the bottom of the interface, including 'CONNECTION (5/5)', 'CONFIGURE (2/2)', 'STREAM (2/2)', and 'RECORD (2/2)'. Below these are 'CONNECT (3/3)' and 'DISCONNECT (2/2)' buttons.

Annotations in the image provide further context:

- A box on the left states: "All 5 selected, only 2 are connected." with an arrow pointing to the 'SELECT' column.
- A box for the selected devices (2C02 and 36AD) states: "For individual Shimmers: Connect; Configure; Start streaming." with an arrow pointing to the device-specific control buttons.
- A box for the non-selected devices (3A44, 58E5, and B8A0) states: "Not connected." with an arrow pointing to their respective control buttons.
- A box for the group controls states: "For all selected Shimmers: Connect; Configure; Start streaming; Record." with an arrow pointing to the 'CONNECT (3/3)' and 'DISCONNECT (2/2)' buttons.

# STREAMING – CONFIGURE TRIAL (3/7)

STEP 3 – Selecting Shimmers enables Group Buttons – continued:

The screenshot displays the ConsensusPRO v1.0.5 interface. On the left, a table lists five available devices: 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, 58E5, and B8A0 (Shimmer\_B8A0). Each device has a 'SELECT' checkbox, which is checked for all five. Below the table, a 'CONNECTION (5/5)' section contains buttons for 'CONFIGURE (2/2)', 'STREAM (2/2)', and 'RECORD (2/2)'. A second row of buttons shows 'CONNECT (3/3)' and 'DISCONNECT (2/2)'. On the right, a 'DATA VISUALISATION (Active: Plot 1)' window shows a blank plot. Three callout boxes provide instructions: one points to the selected devices, another points to the 'CONFIGURE', 'STREAM', and 'RECORD' buttons, and a third points to the 'CONNECT' and 'DISCONNECT' buttons.

AVAILABLE DEVICES (5/5) (SELECT SHIMMERS FROM THE TABLE FOR BLUETOOTH CONFIGURATION)

| SELECT                              | DEVICES   | RECORDING DETAILS AND STATUS  |
|-------------------------------------|---|---|
| <input checked="" type="checkbox"/> | <b>2C02 (Shimmer_2C02)</b><br>Exp: ECG/EMG Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A<br>Device Properties:<br><input type="checkbox"/> Low-Noise Accelerometer<br><input type="checkbox"/> Gyroscope<br><input type="checkbox"/> Magnetometer<br><input type="checkbox"/> Battery Voltage | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
| <input checked="" type="checkbox"/> | <b>36AD (Shimmer_36AD)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A<br>Device Properties:<br><input type="checkbox"/> Low-Noise Accelerometer<br><input type="checkbox"/> Gyroscope<br><input type="checkbox"/> Magnetometer<br><input type="checkbox"/> Battery Voltage    | Trial: DefaultTrial<br>Time: 2017/05/08 10:20:42<br>Live Session: N/A |
| <input checked="" type="checkbox"/> | <b>3A44</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A   | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input checked="" type="checkbox"/> | <b>58E5</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A   | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input checked="" type="checkbox"/> | <b>B8A0 (Shimmer_B8A0)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A  | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |

CONNECTION (5/5)  
CONFIGURE (2/2) | STREAM (2/2) | RECORD (2/2)  
CONNECT (3/3) | DISCONNECT (2/2)

DATA VISUALISATION (Active: Plot 1)  
Plot 1  
shimmer

For all **connected** Shimmers:  
Configure;  
Start Streaming;  
Start Recording;

Connect **disconnected** Shimmers;  
Disconnect **connected** Shimmers.

# STREAMING – CONFIGURE TRIAL (4/7)

STEP 4 – Configure the connected Shimmers – click “Configure tab”:

The screenshot displays the ConsensysPRO v1.0.5 software interface. The top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main area is divided into two panels: 'AVAILABLE DEVICES (5/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' panel lists five Shimmer devices with their respective configurations and recording details. The 'DATA VISUALISATION' panel shows a plot area with a y-axis ranging from 0.0 to 10.0 and an x-axis starting at 01:00:00. A 'shimmer' logo is visible in the top right of the plot area.

**N.B. Colour identification is different for Shimmers that NOT belong to the same Trial.**

**N.B. Only Shimmers configured simultaneously belong to the same trial and have the same colour identification.**

At the bottom of the interface, there are buttons for 'CONNECTION (5/5)', 'CONFIGURE (2/2)', 'STREAM (2/2)', and 'RECORD (2/2)'. Below these are 'CONNECT (3/3)' and 'DISCONNECT (2/2)' buttons.

# STREAMING - CONFIGURE TRIAL (5/7)

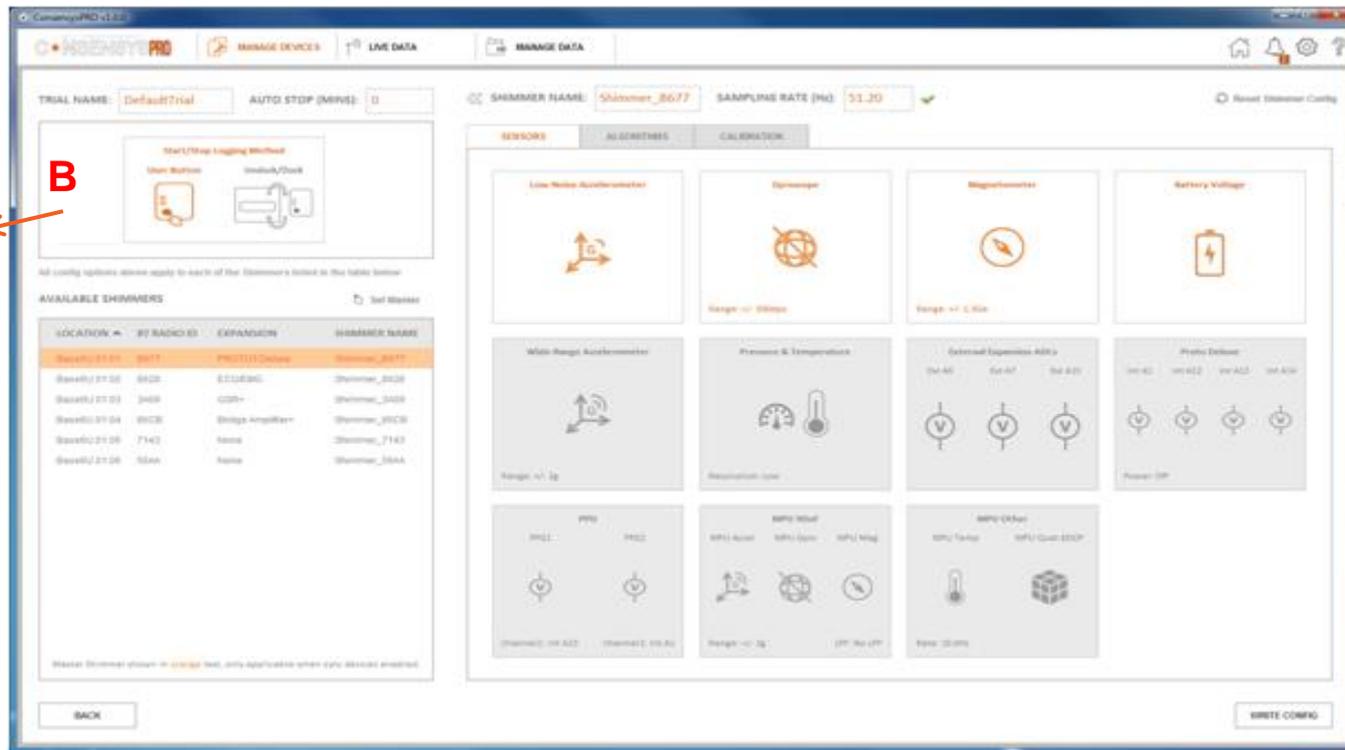
## STEP 5 – Set TRIAL NAME:

- A. Choose TRIAL NAME.
- B. Start/Stop Logging Method cannot be changed when connected over Bluetooth.

A

B

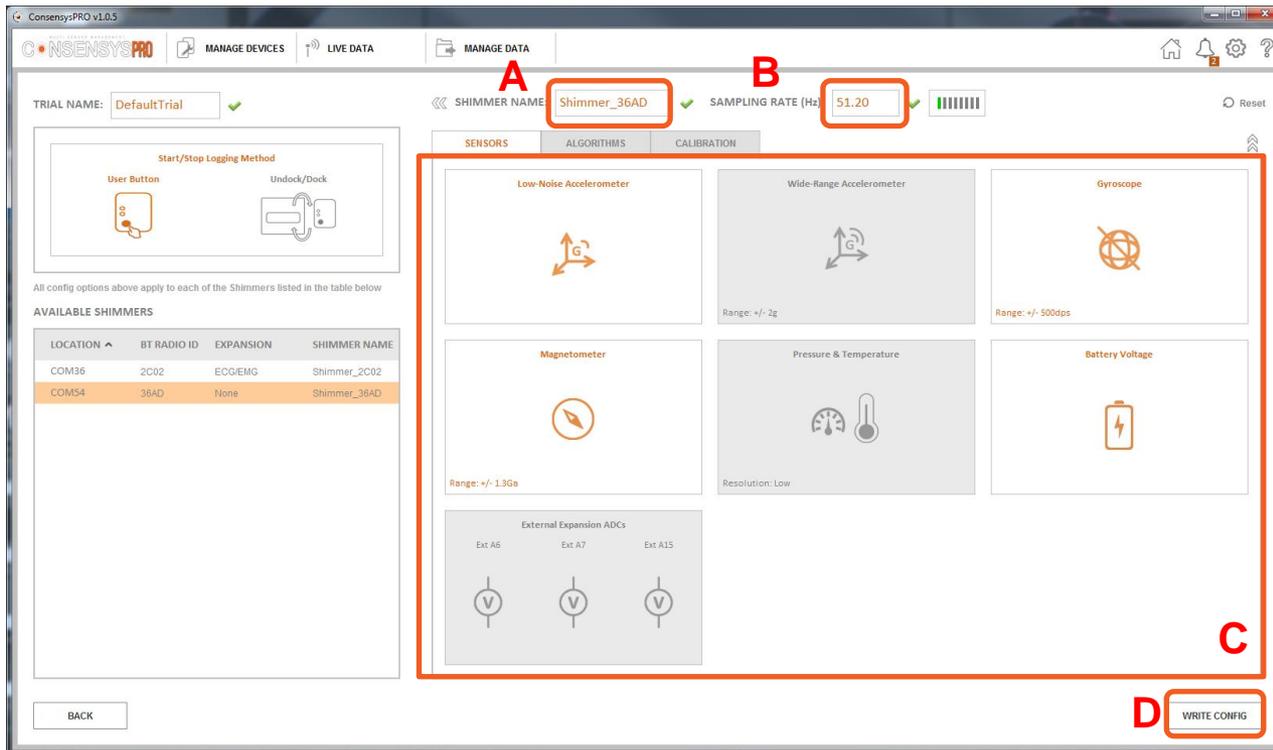
Change in  
MANAGE DEVICES  
if required.



# STREAMING - CONFIGURE TRIAL (6/7)

STEP 6 – Set parameters for **each** Shimmer:

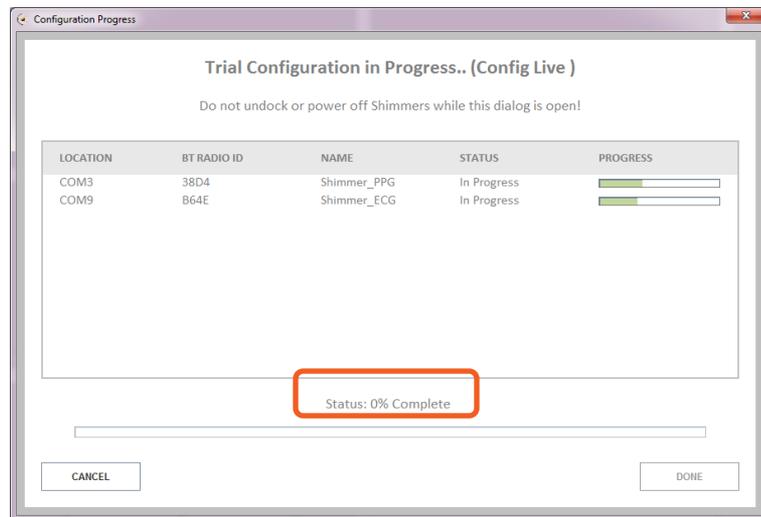
- A. Choose SHIMMER NAME.
- B. Choose SAMPLING RATE.
- C. Click on the tiles to enable and configure sensors.
- D. When all Shimmer are configured, click “WRITE CONFIG” to write the configuration to the Shimmers.



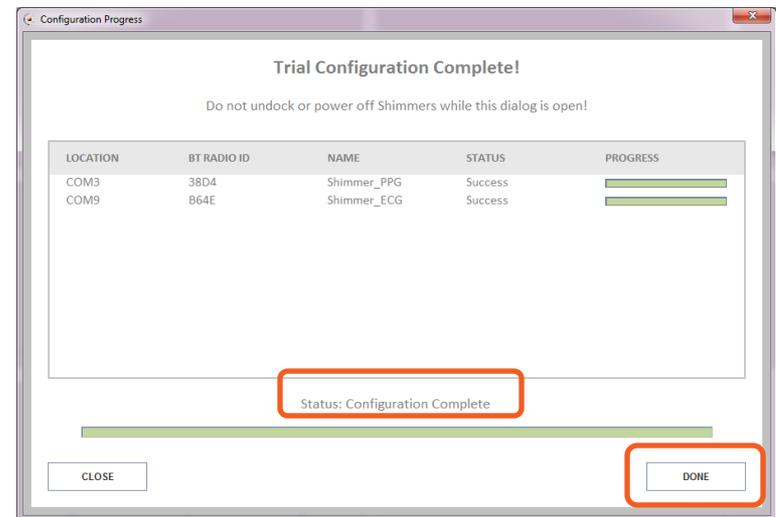
# STREAMING - CONFIGURE TRIAL (7/7)

STEP 7 – WRITE CONFIG.

Wait until Trial Configuration is written:



Click “NEXT” to complete the configuration:



# STREAMING - STREAM & PLOT (1/5)

STEP 1 – Undock Shimmers before streaming:

The screenshot displays the ConsensysPRO v1.0.5 software interface. The top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main area is divided into two panels: 'AVAILABLE DEVICES (5/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' panel lists five devices: 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, 58, and B8. Each device entry includes its name, status, and recording details. A red box highlights the '2C02 (Shimmer\_2C02)' and '36AD (Shimmer\_36AD)' entries, with a red arrow pointing to a text box that reads: 'Shimmer configured in same trial have same colour identification.' The 'DATA VISUALISATION' panel shows a plot titled 'Plot 1' with a y-axis ranging from 0 to 10 and an x-axis labeled 'x' with a value of 01:00:00. The Shimmer logo is visible in the top right corner of the plot area.

# STREAMING - STREAM & PLOT (2/5)

STEP 2 – Select signals to plot and press “START” to start streaming:

The screenshot displays the ConsensysPRO v1.0.5 software interface. The left panel, titled 'AVAILABLE DEVICES (5/5)', lists five Shimmer devices with their properties and recording status. The right panel, titled 'DATA VISUALISATION (Active: Plot 1)', shows a blank plot area with a y-axis ranging from 0 to 10 and an x-axis labeled '01:00:00'.

Annotations in the image include:

- A red box around the 'Device Properties' checkbox for the 2C02 device, with the text: "Device Properties are available for plotting only."
- A red box around the 'Low-Noise Accelerometer' checkbox for the 36AD device, with the text: "Signals available for plotting (and recording)."
- A red box around the 'STREAM (2/2)' button in the bottom control panel.
- A red box around the plot area with the text: "NOTE: Each plot can show multiple signals/device properties of multiple Shimmers."

| SELECT                              | DEVICES  | RECORDING DETAILS AND STATUS  |
|-------------------------------------|--|---|
| <input checked="" type="checkbox"/> | <b>2C02 (Shimmer_2C02)</b><br>Exp: ECG/EMG Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A     | Trial: DefaultTrial<br>Time: 2017/05/08 10:32:09<br>Live Session: N/A |
| <input checked="" type="checkbox"/> | <b>36AD (Shimmer_36AD)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A        | Trial: DefaultTrial<br>Time: 2017/05/08 10:32:09<br>Live Session: N/A |
| <input checked="" type="checkbox"/> | <b>3A44</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A            | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input checked="" type="checkbox"/> | <b>58E5</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A            | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input checked="" type="checkbox"/> | <b>B8A0 (Shimmer_B8A0)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |

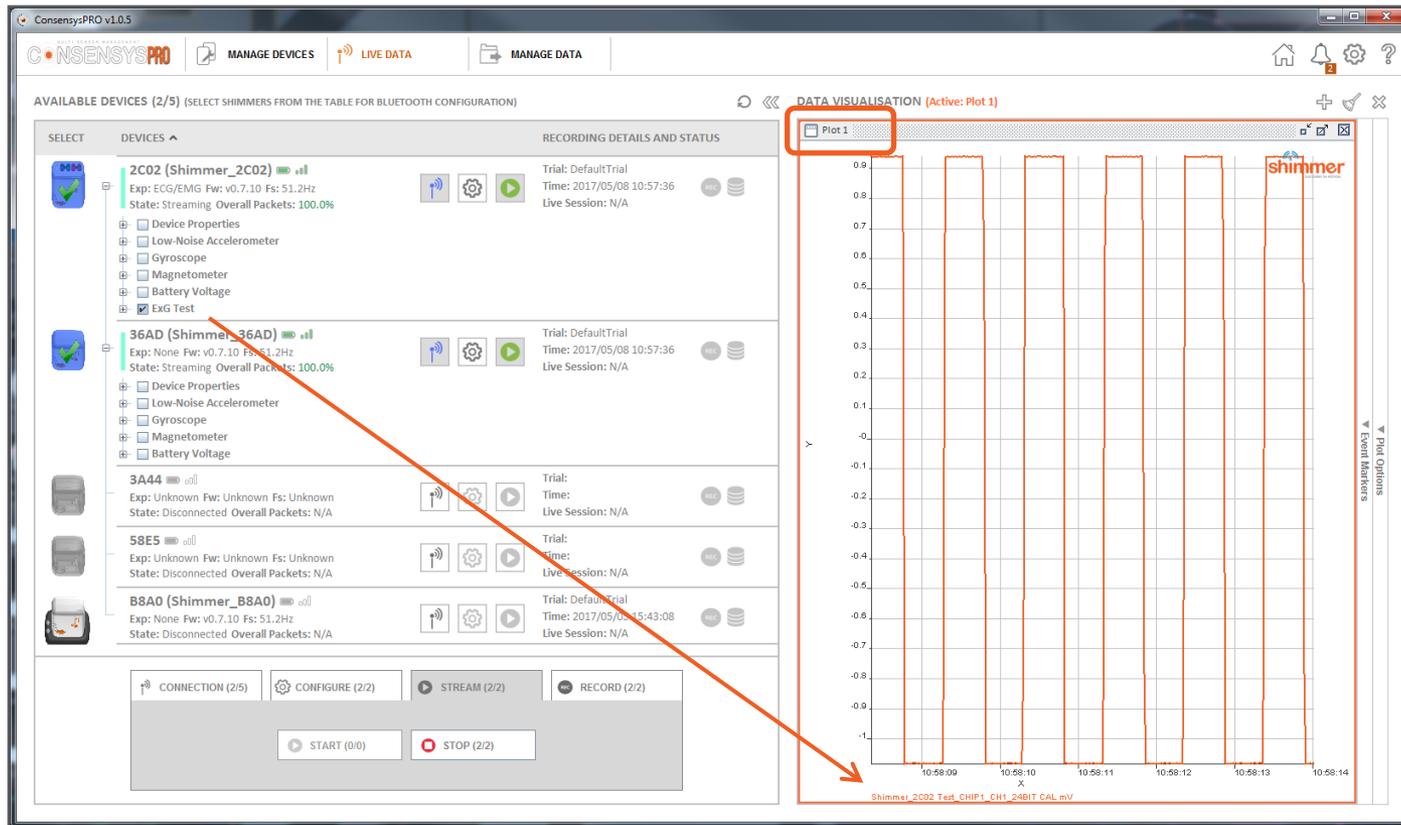
CONTROL PANEL:

CONNECTION (5/5) CONFIGURE (2/2) **STREAM (2/2)** RECORD (2/2)

START (2/2) STOP (0/0)

# STREAMING - STREAM & PLOT (3/5)

Example: Signal “ExG Test” is plotted in “Plot 1”:



# STREAMING - STREAM & PLOT (4/5)

STEP 4 – Right-click in a plot window to change its properties:

The screenshot displays the ConsensysPRO v1.0.5 software interface. On the left, a table lists available devices with their details and recording status. On the right, a plot window titled 'Plot 1' shows a square wave signal. A context menu is open over the plot, listing various options for customizing the data visualization.

| SELECT                              | DEVICES   | RECORDING DETAILS AND STATUS  |
|-------------------------------------|---|---|
| <input checked="" type="checkbox"/> | <b>2C02 (Shimmer_2C02)</b><br>Exp: ECG/EMG Fw: v0.7.10 Fs: 51.2Hz<br>State: Streaming Overall Packets: 100.0% | Trial: DefaultTrial<br>Time: 2017/05/08 10:57:36<br>Live Session: N/A |
| <input checked="" type="checkbox"/> | <b>36AD (Shimmer_36AD)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Streaming Overall Packets: 100.0%    | Trial: DefaultTrial<br>Time: 2017/05/08 10:57:36<br>Live Session: N/A |
| <input type="checkbox"/>            | <b>3A44</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A               | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/>            | <b>58E5</b><br>Exp: Unknown Fw: Unknown Fs: Unknown<br>State: Disconnected Overall Packets: N/A               | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/>            | <b>B8A0 (Shimmer_B8A0)</b><br>Exp: None Fw: v0.7.10 Fs: 51.2Hz<br>State: Disconnected Overall Packets: N/A    | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |

**Plot 1 Context Menu Options:**

- Pause
- Show Metrics x
- Show Grid
- Legend On
- Axis Title On
- Scale On
- Save snapshot
- Clear Plot
- Down Sampling Magnitude
- X-Axis Scale
- Y-Axis Scale
- Plot Color
- Show Calibrated Data
- All Plot Channels
- Shimmer\_2C02 Test\_CHIP1\_CH1\_24BIT CAL mV
- Line Color
- Line Style
- Line Thickness

If desired  
change  
Data Format.

# STREAMING - STREAM & PLOT (5/5)

The screenshot displays the ConsensysPRO v1.0.5 software interface. The main window is divided into several sections:

- AVAILABLE DEVICES (2/5):** A list of devices with their properties and recording status. The first device, 2C02 (Shimmer\_2C02), is active and streaming. The second device, 36AD (Shimmer\_36AD), is also streaming. The other three devices (3A44, 58E5, and B8A0) are disconnected.
- RECORDING DETAILS AND STATUS:** A section for each device showing trial information, time, and live session status.
- DATA VISUALISATION (Active: Plot 1):** A plot window showing a square wave signal. The plot is titled "Plot 1" and has a "shimmer" logo. The x-axis is labeled "X" and shows time from 03:27 to 03:31. The y-axis ranges from -1.0 to 1.0. A red box highlights the plot area, and a text box points to it with the text: "Plot options to configure the plot settings, add new plots and pop out/in plots from the main application window".
- PLOT OPTIONS:** A sidebar on the right containing various plot settings and options, including "ALL PLOT SETTINGS", "Settings", "ADD NEW PLOTS", "Plot all", "Add plot", "POP OUT/POP IN", "Pop out all", and "Pop in all".
- CONTROL PANEL:** A bottom section with buttons for "CONNECTION (2/5)", "CONFIGURE (2/2)", "STREAM (2/2)", and "RECORD (2/2)". Below these are "START (0/0)" and "STOP (2/2)" buttons.

# STREAMING - RECORD (1/4)

STEP 1 – Press buttons on “RECORD” tab to start recording – Choose “START TO PC”:

The screenshot displays the ConsensusPRO v1.0.5 software interface. The top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main area is divided into 'AVAILABLE DEVICES (5/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' section lists three Shimmer devices: 2C02, 36AD, and 3600. Each device has a 'RECORDING DETAILS AND STATUS' panel with a 'START' button. The 'RECORD' tab at the bottom contains four buttons: 'START TO SD (2/2)', 'STOP TO SD (0/0)', 'START TO PC (2/2)', and 'STOP TO PC (0/0)'. The 'START TO PC (2/2)' button is highlighted with a red box. A red arrow points from this button to a text box that says 'This option is chosen in this guide.' Another red arrow points from the 'START TO SD (2/2)' button to a text box that says 'Starts recording to SD cards of the Shimmers belonging to the same trail; having the same colour identification.' The 'DATA VISUALISATION' section shows a plot of 'Shimmer\_2C02 Test\_CHIP1\_CH1\_24BIT\_CAL.mv' with a y-axis ranging from -1 to 0.9 and an x-axis showing time from 11:07:58 to 11:08:08.

AVAILABLE DEVICES (5/5) (SELECT SHIMMERS FROM THE TABLE FOR BLUETOOTH CONFIGURATION)

DATA VISUALISATION (Active: Plot 1)

SELECT DEVICES RECORDING DETAILS AND STATUS

2C02 (Shimmer\_2C02) Trial: DefaultTrial  
Exp: ECG/EMG Fw: v0.7.10 Fs: 51.2Hz Time: 2017/05/08 11:07:38  
State: Streaming Overall Packets: 100.0% Live Session: N/A

36AD (Shimmer\_36AD) Trial: DefaultTrial  
Exp: None Fw: v0.7.10 Fs: 51.2Hz Time: 2017/05/08 10:57:36  
State: Streaming Overall Packets: 100.0% Live Session: N/A

3600 (Shimmer\_3600) Trial: DefaultTrial  
Exp: None Fw: v0.7.10 Fs: 51.2Hz Time: 2017/05/05 15:43:08  
State: Disconnected Overall Packets: N/A Live Session: N/A

START TO SD (2/2) STOP TO SD (0/0) START TO PC (2/2) STOP TO PC (0/0)

Recorded to SD : 00:00:00 Recorded to PC : 00:00:00

Plot 1

Shimmer

Y

X

Shimmer\_2C02 Test\_CHIP1\_CH1\_24BIT\_CAL.mv

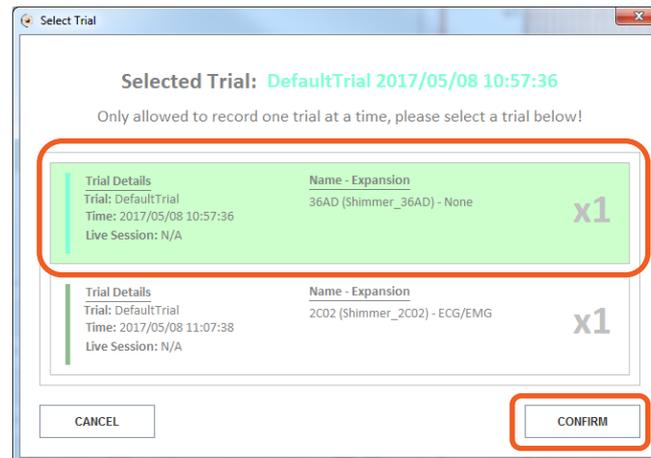
▼ Plot Options  
▼ Event Markers

This option is chosen in this guide.

Starts recording to SD cards of the Shimmers belonging to the same trail; having the same colour identification.

# STREAMING - RECORD (2/4)

STEP 2 – Select the trial for recording and press “CONFIRM”:



**N.B.** This dialog only shows up when Shimmers across multiple trials have been selected.

# STREAMING - RECORD (3/4)

STEP 3 – Press “STOP TO PC” to stop recording to PC:

The screenshot displays the ConsensysPRO v1.0.5 software interface. On the left, a 'DEVICES' table lists four Shimmer devices: 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, and B8A0 (Shimmer\_B8A0). The 2C02 device is highlighted with a red box and contains the text: "For each recording a new Session is added to the Trial. (1st recording in this example)." Below the device list, a 'RECORDING DETAILS AND STATUS' section shows the 'STOP TO PC (1/1)' button highlighted with a red box and labeled "Database buffer condition." On the right, three data plots are shown: Plot 1 (Shimmer\_2C02 Test\_CHIP1\_CH1\_24BIT CAL mV), Plot 2 (Shimmer\_36AD Accel\_LN\_Y CAL m/s^2, Shimmer\_36AD Accel\_LN\_Z CAL m/s^2, Shimmer\_2C02 Accel\_LN\_Z CAL m/s^2, Shimmer\_36AD Accel\_LN\_X CAL m/s^2, Shimmer\_2C02 Accel\_LN\_X CAL m/s^2, Shimmer\_2C02 Accel\_LN\_Y CAL m/s^2), and Plot 3 (Shimmer\_2C02 Gyro\_X CAL deg/s, Shimmer\_2C02 Gyro\_Y CAL deg/s, Shimmer\_2C02 Gyro\_Z CAL deg/s). A red box at the top right of the plots area contains the text: "Each plot can show multiple signals/device properties from multiple Shimmers."

# STREAMING - RECORD (4/4)

STEP 4 – To record simultaneously to SD and PC:

The screenshot displays the ConsensysPRO v1.0.5 software interface. The left panel shows a list of available devices: 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, 58E5, and B8A0 (Shimmer\_B8A0). The 2C02 device is selected and shows recording details: Trial: DefaultTrial, Time: 2017/05/08 11:07:38, Live Session: N/A. The recording status is 'Streaming Overall Packets: 100.0%'. The right panel shows three data plots: Plot 1 (Shimmer\_2C02 Test\_CHIP1\_CH1\_24BIT CAL mV), Plot 2 (Shimmer\_36AD Accel\_LN\_Y CAL m/s^2, Shimmer\_36AD Accel\_LN\_Z CAL m/s^2, Shimmer\_2C02 Accel\_LN\_X CAL m/s^2, Shimmer\_36AD Accel\_LN\_X CAL m/s^2, Shimmer\_2C02 Accel\_LN\_Y CAL m/s^2), and Plot 3 (Shimmer\_2C02 Gyrp X CAL deg/s, Shimmer\_2C02 Gyrp Y CAL deg/s, Shimmer\_2C02 Gyrp Z CAL deg/s). The bottom panel shows recording controls: START TO SD (0/0), STOP TO SD (1/1), START TO PC (0/0), and STOP TO PC (1/1). The recording progress is shown as Recorded to SD: 00:00:29 and Recorded to PC: 00:00:11.

Recording to PC and SD

For each recording to PC a new Session is added to the Trial.

Recordings to SD need to be imported first. See "Logging Import Data".

Record to SD AND PC:

- 1) Start Streaming.
- 2) Start Recording to SD.
- 3) (Streaming pauses briefly.)
- 4) Start Recording to PC.

# STREAMING – EVENT MARKERS (1/3)

Event markers can be used to annotate incidents that occur during data collection

STEP 1 – Create or edit event markers (of type Pulse and/or Toggle) when at least one Shimmer is connected over Bluetooth:

Slide out event marker panel

Create or edit event markers

Edit or delete an existing event marker

**Event Markers**  
Add, Edit or Delete event markers to annotate data

Select Trial: DefaultTrial Total Number: 2 Hidden Number: 0 Show all: Add new: +

| SHOW                     | NAME   | TYPE | DESCRIPTION   | EDIT | DELETE |
|--------------------------|--------|------|---|------|--------|
| <input type="checkbox"/> | Pulse  |      | Pulse event marker generates a pulse. The duration of the pulse is 1 sample.          |      |        |
| <input type="checkbox"/> | Toggle |      | Toggle event marker generates a toggle. The duration of the toggle is user dependent. |      |        |

Pulse event marker generates a pulse. The duration of the pulse is 1 sample.  
 Toggle event marker generates a toggle. The duration of the toggle is user dependent.

CANCEL DONE

**N.B.** ConsensysBASIC does not support event markers!

# STREAMING – EVENT MARKERS (2/3)

STEP 2 – Show the available event markers (buttons) when at least one Shimmer is connected data over Bluetooth and fire the event by pressing the relevant event button.

The screenshot displays the ConsensysPRO v1.0.5 software interface. On the left, a list of available devices is shown, including 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, 58E5, and B8A0 (Shimmer\_B8A0). The 2C02 device is selected and shows recording details and status. The main area features a 'DATA VISUALISATION (Active Plot 2)' section with two plots: 'Plot 1' and 'Plot EventMarker'. Plot 1 shows a regular square wave signal, and Plot EventMarker shows a single pulse. On the right, an 'EVENT MARKERS' panel is visible, containing buttons for 'Pulse' and 'Toggle'. A red box highlights the 'EVENT MARKERS' panel with the text 'Event marker buttons, press to fire the event'. Another red box highlights the 'Slide out event marker panel' button at the top. A third red box highlights the 'RECORD (2/2)' button at the bottom with the text 'Event marker plot'.

**N.B.** The event marker value is a code relating to the number of the event

# STREAMING – EVENT MARKERS (3/3)

STEP 3 – Apply the used event markers to the associated datasets. Then the event marker data will get exported along with the Shimmer sensor data.

The screenshot shows the ConsensusPRO v0.4.6 software interface. The main window is divided into two panels: 'AVAILABLE DATA' on the left and 'DATA DESCRIPTIONS' on the right. The 'AVAILABLE DATA' panel contains a table with columns for NAME, SYNC, RTC, TIME, DURATION, and SIZE. The table lists various datasets such as BU\_INWRAccel, DefaultTrial, Fitbit, Pounder8g, Sample9DoF\_R, Sample9DoF\_W, SampleECG, SampleEMG, SampleEvents, SampleGSRPPG, SampleResp, SampleSync\_SD, and case1356. Below the table, there are two large buttons: 'APPLY' (with a play icon) and 'SKIP' (with a right-pointing arrow icon). An orange arrow points from a text box to the 'APPLY' button. The 'DATA DESCRIPTIONS' panel is currently empty, displaying 'No Trial Selected!' and a large minus sign icon. At the bottom of the interface, there are buttons for 'DELETE', 'EXPORT', and 'PROCESS'.

| NAME          | SYNC | RTC | TIME                | DURATION | SIZE      |
|---------------|------|-----|---------------------|----------|-----------|
| BU_INWRAccel  |      |     | 2016/06/14 12:19:36 | 00:07:32 | N/A       |
| BU_INWRAccel  |      |     | 2016/07/19 16:00:53 | 00:02:51 | N/A       |
| DefaultTrial  |      |     | 2016/07/18 12:11:14 | 00:02:12 | N/A       |
| DefaultTrial  |      |     | 2016/07/19 09:24:18 | 00:02:16 | N/A       |
| Fitbit        |      |     | 2016/07/21 10:37:57 | 00:01:01 | 36.32 KB  |
| Pounder8g     |      |     | 2016/07/11 22:14:14 | 00:00:48 | 772.50 KB |
| Sample9DoF_R  |      |     | 2015/06/26 17:17:14 | 00:01:00 | 766.82 KB |
| Sample9DoF_W  |      |     | 2015/06/26 16:58:14 | 00:01:00 | 774.54 KB |
| SampleECG     |      |     | 2015/06/25 15:38:46 | 00:02:00 | 1.84 MB   |
| SampleEMG     |      |     | 2015/06/26 12:35:33 | 00:02:00 | 420.93 KB |
| SampleEvents  |      |     | 2016/04/27 08:15:52 | 00:01:35 | 37.60 KB  |
| SampleGSRPPG  |      |     | 2015/06/23 14:17:28 | 00:02:00 | 183.84 KB |
| SampleResp    |      |     | 2016/07/12 10:41:21 | 00:02:23 | N/A       |
| SampleSync_SD |      |     | 2016/07/02 15:58:12 | 00:00:10 | 3.17 MB   |
| case1356      |      |     | 2016/07/14 10:04:12 | 00:00:10 | N/A       |

Press the 'APPLY' button to apply  
The events to the associated datasets

# MANAGE DATA

“MANAGE DATA” – Interfaces with Consensys’ database.

Consensys’ database holds:

- **SD-Recordings**: imported data from Shimmer SD cards – see [Logging – Import Data](#).
- **PC-Recordings**: recorded data streamed to the PC – see [Streaming – Record](#).

In this section:

- [General](#)
- [Export](#)
- [Delete](#)
- [Process](#)

# MANAGE DATA – GENERAL

**AVAILABLE DATA (SELECT A SINGLE TRIAL AND MULTIPLE SESSIONS AND/OR DEVICES FOR EXPORT OR PROCESSING)**

| NAME                          | SYNC | RTC | TIME                | DURATION | SIZE      |
|-------------------------------|------|-----|---------------------|----------|-----------|
| Config Live                   |      |     | 2015/11/12 14:20:48 | 00:07:51 | 422.35 KB |
| SD Recording - Session 2      |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 422.35 KB |
| PC Recording - Session 1      | ⊗    |     | 2015/11/12 14:48:45 | 00:00:35 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  | ⊗    |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  | ⊗    |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| SD Recording - Session 1      | ⊗    |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| Shimmer_PPG - 256.0Hz - 99%   | ⊗    |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| Shimmer_ECG - 512.0Hz - 99%   | ⊗    |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| SD Recording - Session 4      | ✓    |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  | ✓    |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  | ✓    |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| GS-v0.4.0                     |      |     | 2015/11/11 12:34:37 | 00:01:38 | 67.25 KB  |
| PPG                           |      |     | 2015/10/15 09:07:35 | 00:00:03 | N/A       |
| Sample9DoF_R                  |      |     | 2015/06/26 17:17:15 | 00:01:00 | 766.82 KB |
| Sample9DoF_W                  |      |     | 2015/06/26 16:58:14 | 00:01:00 | 774.54 KB |
| SampleECG                     |      |     | 2015/06/25 15:38:46 | 00:02:00 | 1.84 MB   |
| SampleEMG                     |      |     | 2015/06/26 12:35:33 | 00:06:00 | 420.93 KB |
| SampleGSPPG                   |      |     | 2015/06/23 14:17:28 | 00:02:00 | 183.84 KB |
| SampleSync_SD                 |      |     | 2015/10/02 15:58:12 | 00:02:25 | 3.17 MB   |
| SD Recording - Session 1      | ✓    | ✓   | 2015/10/02 16:08:05 | 00:02:25 | 3.17 MB   |
| Shimmer_36AD - 1024.0Hz - 98% | ✓    | ✓   | 2015/10/02 16:08:05 | 00:02:00 | 1.06 MB   |
| Shimmer_38D4 - 1024.0Hz - 98% | M    | ✓   | 2015/10/02 16:08:14 | 00:02:00 | 1.06 MB   |
| Shimmer_38D4 - 1024.0Hz - 98% | ⊗    | ✓   | 2015/10/02 16:08:24 | 00:01:59 | 1.05 MB   |

**DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS AND SESSIONS)**

Config Live - 2015/11/12 14:20:48

Trial information can be added here. Trial "Config Live" is configured during the creation of this instruction document and a few recordings are have been made as specified in the session info below.

SD Recording - Session 2

SD Recording - Session 1 has been deleted.

For Session 2 the RTC (Real Time Clock) has been set for both Shimmers.

PC Recording - Session 1

For this session the data of both Shimmers have not been synchronised yet. The User can synchronise the data of both Shimmers by clicking on the icon with the circular arrows in the SYNC column; the data icons will be the same as for session 4 when the data has been synchronised.

PC Recording - Session 2

For this session the data cannot be synchronised, because the recording lasted only 11 seconds.

PC Recording - Session 4

SAVE

Channels with a \* after their name have been calibrated using default calibration parameters

DELETED EXPORT PROCESS

Imported logged data.  
Recorded through Bluetooth interface of "LIVE DATA."

Recorded streamed data.

Imported logged data from one Session of a Trial with three Shimmers with *SDLog* firmware, with synchronisation enabled. (Synchronisation for logging trials is only available for *SDLog* firmware).

- "M" indicates the Master Shimmer.
- The post-process synchronisation has been successful, indicated by the green ticks in the SYNC column.

(Details on the synchronisation process for logging trials can be found in the *SDLog* firmware user manual.)

**N.B. ConsensysBASIC does not support DATA DESCRIPTIONS!**

# MANAGE DATA – EXPORT (1/2)

## STEP 1 – EXPORT – Select data and format:

- Select one or more sessions from one trial.
- Hit “Export” to export the selected data to a file in the requested format.
- Select “File Delimiter”, “File Format”, “Timestamp Format”, “Data Format”.
- Press “Ok”

AVAILABLE DATA (SELECT A SINGLE TRIAL AND MULTIPLE SESSIONS AND/OR DEVICES FOR EXPORT OR PROCESSING)

| NAME                          | SYNC | RTC | TIME                | DURATION | SIZE      |
|-------------------------------|------|-----|---------------------|----------|-----------|
| Config Live                   |      |     | 2015/11/12 14:20:48 | 00:07:51 | 422.35 KB |
| SD Recording                  |      |     |                     |          |           |
| Session 2                     |      |     | 2015/11/12 14:48:35 | 00:00:43 | 422.35 KB |
| Shimmer_PPG - 256.0Hz - 100%  |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 54.04 KB  |
| Shimmer_ECG - 512.0Hz - 100%  |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 368.31 KB |
| PC Recording                  |      |     |                     |          |           |
| Session 1                     |      |     |                     |          |           |
| Shimmer_PPG - 256.0Hz         |      |     |                     |          |           |
| Shimmer_ECG - 512.0Hz         |      |     |                     |          |           |
| Session 2                     |      |     |                     |          |           |
| Shimmer_PPG - 256.0Hz         |      |     |                     |          |           |
| Shimmer_ECG - 512.0Hz         |      |     |                     |          |           |
| Session 4                     |      |     |                     |          |           |
| Shimmer_PPG - 256.0Hz         |      |     |                     |          |           |
| Shimmer_ECG - 512.0Hz         |      |     |                     |          |           |
| GS-v0.4.0                     |      |     |                     |          |           |
| PPG                           |      |     |                     |          |           |
| SampleSDof_R                  |      |     |                     |          |           |
| SampleSDof_W                  |      |     |                     |          |           |
| SampleECG                     |      |     |                     |          |           |
| SampleEMG                     |      |     |                     |          |           |
| SampleSRPPG                   |      |     |                     |          |           |
| SampleSync_SD                 |      |     |                     |          |           |
| SD Recording                  |      |     |                     |          |           |
| Session 1                     |      |     |                     |          |           |
| Shimmer_36AD - 1024.4         |      |     |                     |          |           |
| Shimmer_38D4 - 1024.4         |      |     |                     |          |           |
| Shimmer_28B0 - 1024.4         |      |     |                     |          |           |
| Accel_WR_X (+/- 2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Y (+/- 2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Z (+/- 2g, 1344.0Hz) |      |     |                     |          |           |

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS AND SESSIONS)

Config Live - 2015/11/12 14:20:48

Trial information can be added here. Trial "Config Live" is configured during the creation of this instruction document and a few recordings are have been made as specified in the [example.pdf](#) below.

on 2

on 1 has been deleted.

PC (Real Time Clock) has been set for both

of both Shimmers have not been set can synchronise the data of both on the icon with the circular arrows in the icons will be the same as for session 4 len synchronised.

on 2

ata cannot be synchronised, because my 11 seconds.

PC Recording - Session

SAVE

EXPORT PROCESS

DELETE

Channels with a \* after their name have been calibrated using default calibration parameters

Export Options

File Path: C:\Users\rmol\Desktop\2015-10-02\_16.58.12\_SampleSync\_SD\_Session1

Sensor data file

Export by event marker  Name Description Set..

Include video file(s) in export  (0 video file(s) in export)

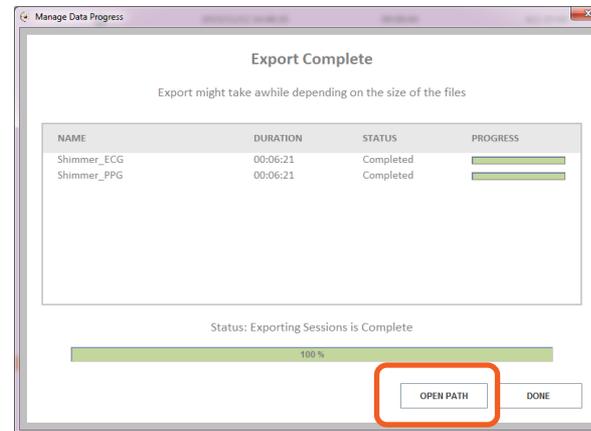
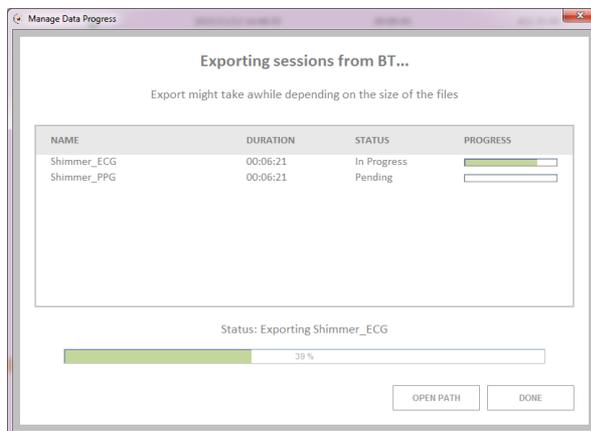
File Format: .txt File Delimiter: tab (t) Timestamp Format: Unix Data Format: Calibrated File Chunk Size (MB): Disabled

OK Cancel

# MANAGE DATA – EXPORT (2/2)

## STEP 2 – EXPORT – Export the data:

- A. When Export is complete, click “OPEN PATH” to navigate to the exported file(s).
- B. Open the file with a spreadsheet application, or with for example MATLAB.



# MANAGE DATA – DELETE (1/3)

## STEP 1 – DELETE – Select and delete data:

- Select data to be deleted – this can.
- Hit “DELETE” to delete the selected data from the database (and hit “YES” to confirm).

The screenshot displays the Consensys v0.4.0 software interface. The main window is titled 'MANAGE DATA' and contains two primary sections: 'AVAILABLE DATA' and 'DATA DESCRIPTIONS'.

**AVAILABLE DATA** (SELECT A SINGLE TRIAL AND MULTIPLE SESSIONS AND/OR DEVICES FOR EXPORT OR PROCESSING)

| NAME                          | SYNC | RTC | TIME                | DURATION | SIZE      |
|-------------------------------|------|-----|---------------------|----------|-----------|
| Config Live                   |      |     | 2015/11/12 14:20:48 | 00:07:51 | 422.35 KB |
| SD Recording                  |      |     |                     |          |           |
| Session 2                     |      |     | 2015/11/12 14:48:35 | 00:00:43 | 422.35 KB |
| Shimmer_PPG - 256.0Hz - 100%  |      |     | 2015/11/12 14:48:35 | 00:00:43 | 54.04 KB  |
| Shimmer_ECG - 512.0Hz - 100%  |      |     | 2015/11/12 14:48:35 | 00:00:43 | 368.31 KB |
| Session 1                     |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Session 2                     |      |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| Shimmer_PPG - 256.0Hz - 99%   |      |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| Shimmer_ECG - 512.0Hz - 99%   |      |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| Session 4                     |      |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  |      |     |                     |          |           |
| Shimmer_ECG - 512.0Hz - 100%  |      |     |                     |          |           |
| GS-v0.4.0                     |      |     |                     |          |           |
| PPG                           |      |     |                     |          |           |
| SampleDof_R                   |      |     |                     |          |           |
| SampleDof_W                   |      |     |                     |          |           |
| SampleECG                     |      |     |                     |          |           |
| SampleEMG                     |      |     |                     |          |           |
| SampleSRPPG                   |      |     |                     |          |           |
| SampleSync_SD                 |      |     |                     |          |           |
| SD Recording                  |      |     |                     |          |           |
| Session 1                     |      |     | 2015/10/02 16:08:05 | 00:02:25 | 3.17 MB   |
| Shimmer_36AD - 1024.0Hz - 98% |      |     |                     |          |           |
| Shimmer_38D4 - 1024.0Hz - 98% |      |     | 2015/10/02 16:08:05 | 00:02:00 | 1.06 MB   |
| Shimmer_2BE0 - 1024.0Hz - 98% |      |     | 2015/10/02 16:08:14 | 00:02:00 | 1.06 MB   |
| Accel_WR_X (+/- 2g, 1344.0Hz) |      |     | 2015/10/02 16:08:31 | 00:01:59 | 1.05 MB   |
| Accel_WR_Y (+/- 2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Z (+/- 2g, 1344.0Hz) |      |     |                     |          |           |

**DATA DESCRIPTIONS** (INSERT DESCRIPTIONS FOR TRIALS AND SESSIONS)

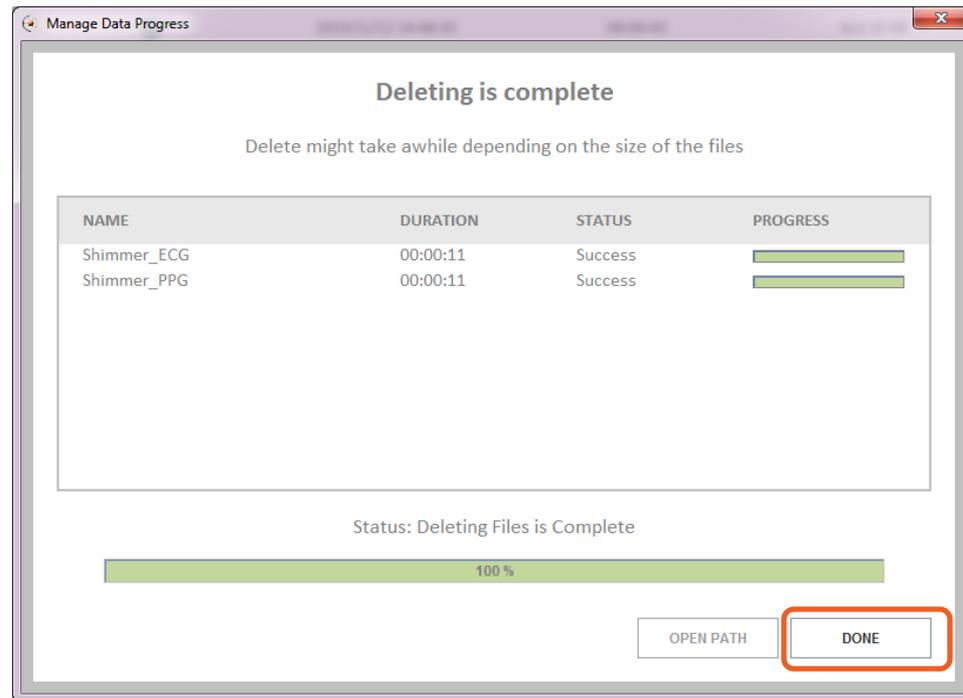
- Config Live - 2015/11/12 14:20:48**  
Trial information can be added here. Trial "Config Live" is configured during the creation of this instruction document and a few recordings are have been made as specified in the session info below.
- SD Recording - Session 2**  
SD Recording - Session 1 has been deleted.  
For Session 2 the RTC (Real Time Clock) has been set for both Shimmers.
- PC Recording - Session 1**  
For this session the data of both Shimmers have not been synchronised yet. The User can synchronise the data of both Shimmers by clicking on the icon with the circular arrows in the SYNC column, the data icons will be the same as for session 4 when the data have been synchronised.
- PC Recording - Session 2**  
For this session the data cannot be synchronised, because the recording lasted only 11 seconds.
- PC Recording - Session 4**

Channels with a \* after their name have been calibrated using default calibration parameters

Buttons: DELETE, EXPORT, PROCESS

# MANAGE DATA – DELETE (2/3)

STEP 2 – DELETE – Click “DONE” when Deleting Files is Complete:



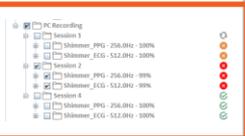
# MANAGE DATA – DELETE (3/3)

STEP 3 – DELETE – Confirm data has been deleted:

The screenshot shows the NSENSYS PRO software interface. The 'MANAGE DATA' window is active, displaying a table of available data. The table has columns for NAME, SYNC, RTC, TIME, DURATION, and SIZE. A dialog box is open in the center, asking 'Permanently delete selected data? You are about to permanently delete the selected data. Are you sure you want to proceed?' with 'Yes' and 'No' buttons. A 'DELETE' button is located at the bottom left of the window. On the right side, there are 'DATA DESCRIPTIONS' for various sessions, including 'Config Live', 'SD Recording - Session 2', 'PC Recording - Session 1', 'PC Recording - Session 2', and 'PC Recording - Session 4'. A 'SAVE' button is at the bottom right of the descriptions panel. An 'EXPORT' button and a 'PROCESS' button are at the bottom of the main window.

| NAME                          | SYNC | RTC | TIME                | DURATION | SIZE      |
|-------------------------------|------|-----|---------------------|----------|-----------|
| Config Live                   |      |     | 2015/11/12 14:20:48 | 00:07:51 | 422.35 KB |
| SD Recording                  |      |     |                     |          |           |
| Session 2                     |      |     |                     |          |           |
| Shimmer_PPG - 256.0Hz - 100%  |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 422.35 KB |
| Shimmer_ECG - 512.0Hz - 100%  |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 54.04 KB  |
| Shimmer_PPG - 256.0Hz - 100%  |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 368.31 KB |
| PC Recording                  |      |     |                     |          |           |
| Session 1                     |      |     |                     |          |           |
| Shimmer_PPG - 256.0Hz - 100%  |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_PPG - 256.0Hz - 99%   |      |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| Shimmer_PPG - 256.0Hz - 99%   |      |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| Shimmer_ECG - 512.0Hz - 99%   |      |     | 2015/11/12 14:49:43 | 00:00:11 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  |      |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  |      |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| GS-v0.4.0                     |      |     |                     |          |           |
| PPG                           |      |     |                     |          | 57.25 KB  |
| SamplesDoF_R                  |      |     |                     |          | 666.82 KB |
| SampleECG                     |      |     |                     |          | 74.54 KB  |
| SampleIMG                     |      |     | 2015/06/26 12:35:33 | 00:02:00 | 384 MB    |
| SampleGSRPG                   |      |     | 2015/06/23 14:17:28 | 00:02:00 | 430.93 KB |
| SampleSync_SD                 |      |     | 2015/10/02 15:58:12 | 00:02:25 | 3.17 MB   |
| SD Recording                  |      |     |                     |          |           |
| Session 1                     |      |     |                     |          |           |
| Shimmer_36AD - 1024.0Hz - 98% | ✓    | ✓   | 2015/10/02 16:08:05 | 00:02:25 | 3.17 MB   |
| Shimmer_38D4 - 1024.0Hz - 98% | M    | ✓   | 2015/10/02 16:08:05 | 00:02:00 | 1.06 MB   |
| Shimmer_2BE0 - 1024.0Hz - 98% | ✓    | ✓   | 2015/10/02 16:08:14 | 00:02:00 | 1.06 MB   |
| Accel_WR_X (+/- 2g, 1344.0Hz) | ✓    | ✓   | 2015/10/02 16:08:31 | 00:01:59 | 1.05 MB   |
| Accel_WR_Y (+/- 2g, 1344.0Hz) | ✓    | ✓   |                     |          |           |
| Accel_WR_Z (+/- 2g, 1344.0Hz) | ✓    | ✓   |                     |          |           |

Before deleting:



# MANAGE DATA – PROCESS (1/5)

## STEP 1 – Select data:

- Select data to process – e.g. “ECG\_LA\_RA\_24BIT” from Shimmer called: “Shimmer\_ECG”.
- Click “PROCESS”.

Consensys v0.4.0

MANAGE DEVICES | LIVE DATA | MANAGE DATA

AVAILABLE DATA (SELECT A SINGLE TRIAL AND MULTIPLE SESSIONS AND/OR DEVICES FOR EXPORT OR PROCESSING)

| NAME                          | SYNC | RTC | TIME                | DURATION | SIZE      |
|-------------------------------|------|-----|---------------------|----------|-----------|
| Config Live                   |      |     | 2015/11/12 14:20:48 | 00:07:40 | 422.35 KB |
| SD Recording                  |      |     |                     |          |           |
| Session 2                     |      |     | 2015/11/12 14:48:35 | 00:00:43 | 422.35 KB |
| Shimmer_PPG - 256.0Hz - 100%  |      |     | 2015/11/12 14:48:35 | 00:00:43 | 54.04 KB  |
| Shimmer_ECG - 512.0Hz - 100%  |      |     | 2015/11/12 14:48:35 | 00:00:43 | 368.31 KB |
| PC Recording                  |      |     |                     |          |           |
| Session 1                     |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Session 4                     |      |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  |      |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  |      |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| ECG_EMG_Status1               |      |     |                     |          |           |
| ECG_EMG_Status2               |      |     |                     |          |           |
| ECG_LA_RA_24BIT               |      |     |                     |          |           |
| ECG_LL_LA_24BIT               |      |     |                     |          |           |
| ECG_LL_RA_24BIT               |      |     |                     |          |           |
| ECG_Vv_RL_24BIT               |      |     |                     |          |           |
| GS-v0.4.0                     |      |     | 2015/11/11 12:34:37 | 00:01:38 | 67.25 KB  |
| PPG                           |      |     | 2015/10/15 09:07:35 | 00:00:03 | N/A       |
| SampleSDof_R                  |      |     | 2015/06/26 17:17:14 | 00:01:00 | 766.82 KB |
| SampleSDof_W                  |      |     | 2015/06/26 16:58:14 | 00:01:00 | 774.54 KB |
| SampleECG                     |      |     | 2015/06/26 15:38:46 | 00:02:00 | 1.84 MB   |
| SampleEMG                     |      |     | 2015/06/26 12:35:33 | 00:02:00 | 420.93 KB |
| SampleCSRPPG                  |      |     | 2015/06/23 14:17:28 | 00:02:00 | 183.84 KB |
| SampleSync_SD                 |      |     | 2015/10/02 15:58:12 | 00:02:25 | 3.17 MB   |
| Session 1                     |      |     | 2015/10/02 16:08:05 | 00:02:25 | 3.17 MB   |
| Shimmer_36AD - 1024.0Hz - 98% |      |     | 2015/10/02 16:08:05 | 00:02:00 | 1.06 MB   |
| Shimmer_38D4 - 1024.0Hz - 98% |      |     | 2015/10/02 16:08:14 | 00:02:00 | 1.06 MB   |
| Shimmer_28E0 - 1024.0Hz - 98% |      |     | 2015/10/02 16:08:31 | 00:01:59 | 1.05 MB   |
| Accel_WR_X (+/- 2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Y (+/- 2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Z (+/- 2g, 1344.0Hz) |      |     |                     |          |           |

Channels with a \* after their name have been calibrated using default calibration parameters

DELETE

EXPORT PROCESS

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS AND SESSIONS)

Config Live - 2015/11/12 14:20:48

Trial information can be added here. Trial "Config Live" is configured during the creation of this instruction document and a few recordings are have been made as specified in the session info below.

SD Recording - Session 2

SD Recording - Session 1 has been deleted.

For Session 2 the RTC (Real Time Clock) has been set for both Shimmers.

PC Recording - Session 1

For this session the data of both Shimmers have not been synchronised yet. The User can synchronise the data of both Shimmers by clicking on the icon with the circular arrows in the SYNC column; the data icons will be the same as for session 4 when the data have been synchronised.

PC Recording - Session 4

Insert Session Description Here.

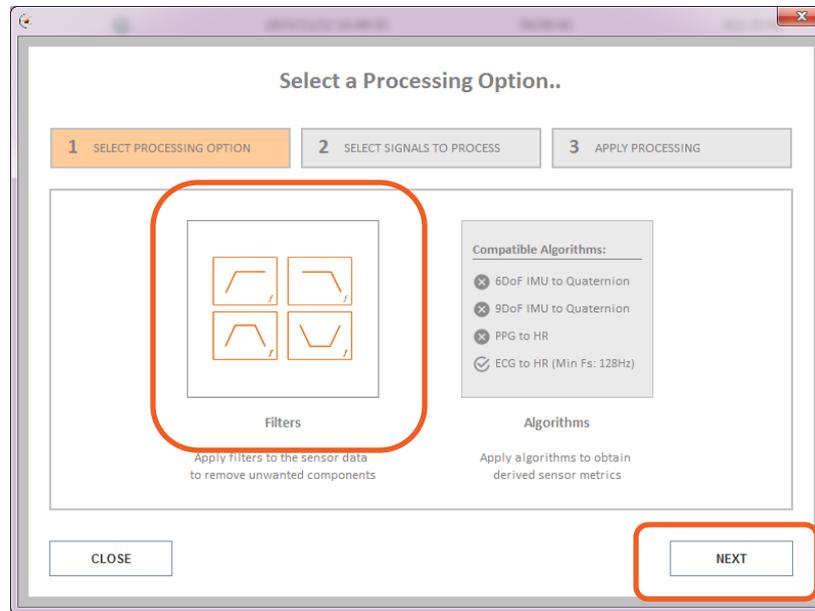
SAVE

N.B. ConsensysBASIC does not support off-line data processing

# MANAGE DATA – PROCESS (2/5)

## STEP 2 – Select a Processing Option:

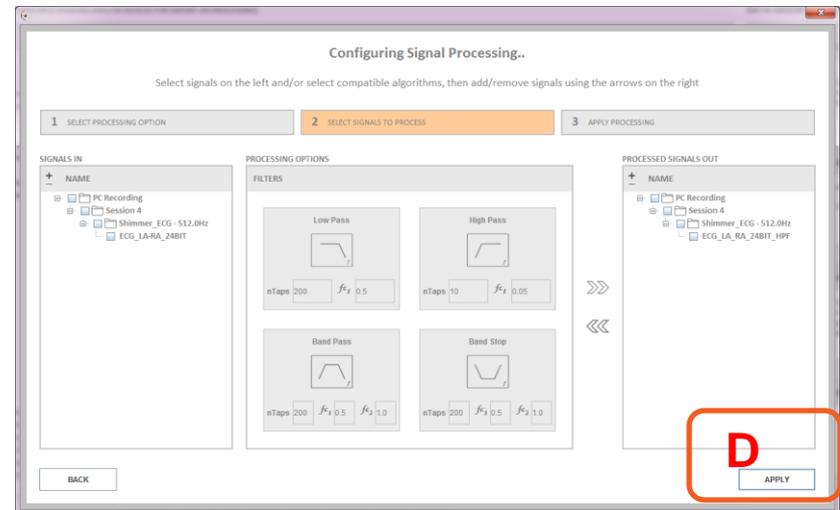
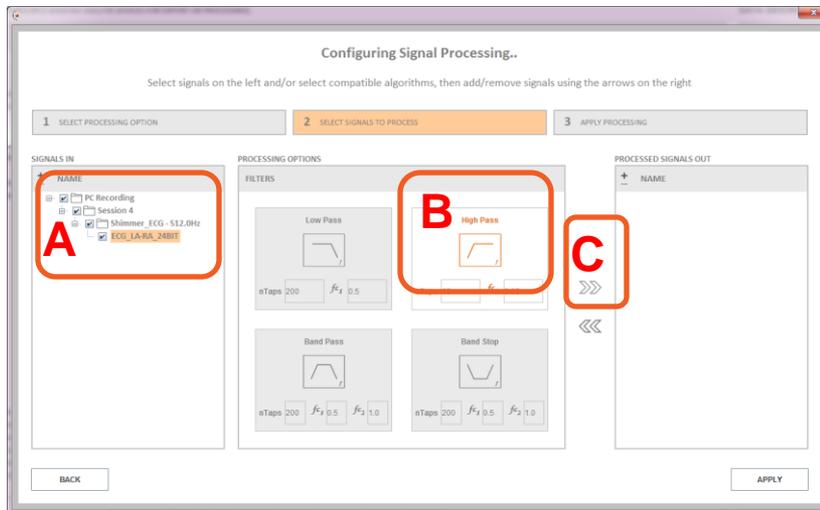
- Select **Filters** or **Algorithms** – only algorithms compatible with the selected data can be selected.
- Note that **Filters** only applies one filter operation to the selected signal(s). Follow STEPS 1 to 3 on the processed signal(s) to apply a successive filter operation.
- Click “NEXT”.



# MANAGE DATA – PROCESS (3/5)

## STEP 3 – Configuring Signal Processing:

- Select signals to process. (In this example only one signal was selected, so there is nothing else to select.)
- Select filter parameters.
- Add to the “PROCESSED SIGNALS OUT” list for the next stage.
- Hit “Apply”.



# MANAGE DATA – PROCESS (4/5)

STEP 4 – Processing Data in Progress – Click “DONE” when complete:

**Processing Data in Progress..**  
This might take a while depending on the amount of data!

1 SELECT PROCESSING OPTION    2 SELECT SIGNALS TO PROCESS    3 APPLY PROCESSING

| DATA SOURCE  | SESSION ID | DEVICE      | STATUS      | PROGRESS                        |
|--------------|------------|-------------|-------------|---------------------------------|
| PC Recording | 4          | Shimmer_ECG | In Progress | <div style="width: 40%;"></div> |

Overall Status: 40% Complete

40 %

DONE

**Process Data Complete**  
This might take a while depending on the amount of data!

1 SELECT PROCESSING OPTION    2 SELECT SIGNALS TO PROCESS    3 APPLY PROCESSING

| DATA SOURCE  | SESSION ID | DEVICE      | STATUS  | PROGRESS                         |
|--------------|------------|-------------|---------|----------------------------------|
| PC Recording | 4          | Shimmer_ECG | Success | <div style="width: 100%;"></div> |

Process Data is Done!

100 %

DONE

# MANAGE DATA – PROCESS (5/5)

STEP 5 – Confirm processing has been applied:

AVAILABLE DATA (SELECT A SINGLE TRIAL AND MULTIPLE SESSIONS AND/OR DEVICES FOR EXPORT OR PROCESSING)

| NAME                          | SYNC | RTC | TIME                | DURATION | SIZE      |
|-------------------------------|------|-----|---------------------|----------|-----------|
| Config Live                   |      |     | 2015/11/12 14:20:48 | 00:07:40 | 422.35 KB |
| SD Recording                  |      |     |                     |          |           |
| Session 2                     |      |     | 2015/11/12 14:48:35 | 00:00:43 | 422.35 KB |
| Shimmer_PPG - 256.0Hz - 100%  |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 54.04 KB  |
| Shimmer_ECG - 512.0Hz - 100%  |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 368.31 KB |
| PC Recording                  |      |     |                     |          |           |
| Session 1                     |      |     | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  |      | ⊗   | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  |      | ⊗   | 2015/11/12 14:48:49 | 00:00:35 | N/A       |
| Session 4                     |      |     | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| Shimmer_PPG - 256.0Hz - 100%  |      | ⊗   | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  |      | ⊗   | 2015/11/12 14:55:10 | 00:06:21 | N/A       |
| ECG_EMG_Status1               |      |     |                     |          |           |
| ECG_EMG_Status2               |      |     |                     |          |           |
| ECG_LA_RA_24BIT               |      |     |                     |          |           |
| ECG_LL_RA_24BIT               |      |     |                     |          |           |
| ECG_Vx-RL_24BIT               |      |     |                     |          |           |
| GS-v0.4.0                     |      |     | 2015/11/11 12:34:37 | 00:01:38 | 67.25 KB  |
| PPG                           |      |     | 2015/10/15 09:07:35 | 00:00:03 | N/A       |
| SampleDoF_R                   |      |     | 2015/06/26 17:17:14 | 00:01:00 | 766.82 KB |
| SampleDoF_W                   |      |     | 2015/06/26 16:58:14 | 00:01:00 | 774.54 KB |
| SampleECG                     |      |     | 2015/06/25 15:38:46 | 00:02:00 | 1.84 MB   |
| SampleEMG                     |      |     | 2015/06/26 12:35:33 | 00:02:00 | 420.93 KB |
| SampleGSPPPG                  |      |     | 2015/06/23 14:17:28 | 00:02:00 | 183.84 KB |
| SampleSync_SD                 |      |     | 2015/10/02 15:58:12 | 00:02:25 | 3.17 MB   |
| SD Recording                  |      |     |                     |          |           |
| Session 1                     |      |     | 2015/10/02 16:08:05 | 00:02:25 | 3.17 MB   |
| Shimmer_36AD - 1024.0Hz - 98% | ✓    | ✓   | 2015/10/02 16:08:05 | 00:02:00 | 1.06 MB   |
| Shimmer_38D4 - 1024.0Hz - 98% | ✓    | ✓   | 2015/10/02 16:08:14 | 00:02:00 | 1.06 MB   |
| Shimmer_2BE0 - 1024.0Hz - 98% | ✓    | ✓   | 2015/10/02 16:08:31 | 00:01:59 | 1.05 MB   |
| Accel_WR_X (+/- 2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Y (+/- 2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Z (+/- 2g, 1344.0Hz) |      |     |                     |          |           |

Channels with a \* after their name have been calibrated using default calibration parameters

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS AND SESSIONS)

Config Live - 2015/11/12 14:20:48

Trial information can be added here. Trial "Config Live" is configured during the creation of this instruction document and a few recordings are have been made as specified in the session info below.

SD Recording - Session 2

SD Recording - Session 1 has been deleted.

For Session 2 the RTC has been set for both Shimmers.

PC Recording - Session 1

For this session the data of both Shimmers has not been synchronised yet. The User can synchronise the data of both Shimmers by clicking on the icon with the circular arrows in the SYNC column; the data icons will be the same as for session 4 afterwards.

PC Recording - Session 4

Insert Session Description Here.

SAVE

EXPORT PROCESS

"ECG\_LA\_RA\_24BIT\_HPF" has been added to the session.

# THINGS YOU MIGHT NEED TO KNOW (1/5)

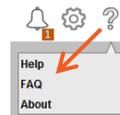
- The **green** and **blue** LED (in LED location B)
  1. Start *Consensys* and connect *Shimmer Dock* or *Base*.
  2. Place the Shimmer in the *Shimmer Dock* or *Base*.
  3. The Real Time Clock (RTC) of the Shimmer will be set.
  4. The blinking stops after the RTC has been set.



are **blinking rapidly**.

- **RTC:** If the “Real Time Clock” on the Shimmer is set, a relationship between “real-world time” and the local clock on the Shimmer is established, enabling synchronisation to a “common clock” among multiple Shimmer and external devices. **N.B.** Switching off Shimmers results in the loss of the RTC information. To set the RTC on the Shimmer, insert the Shimmer into a Shimmer Dock or Consensys Base while the Consensys software is running.

- Check out the Frequently Asked Questions (**FAQ**) problems.



for solutions to the most common

- **Session:** A dataset containing data from one or more Shimmers belonging to the same **Trial**, *i.e.* configured at the same time.

# THINGS YOU MIGHT NEED TO KNOW (2/5)

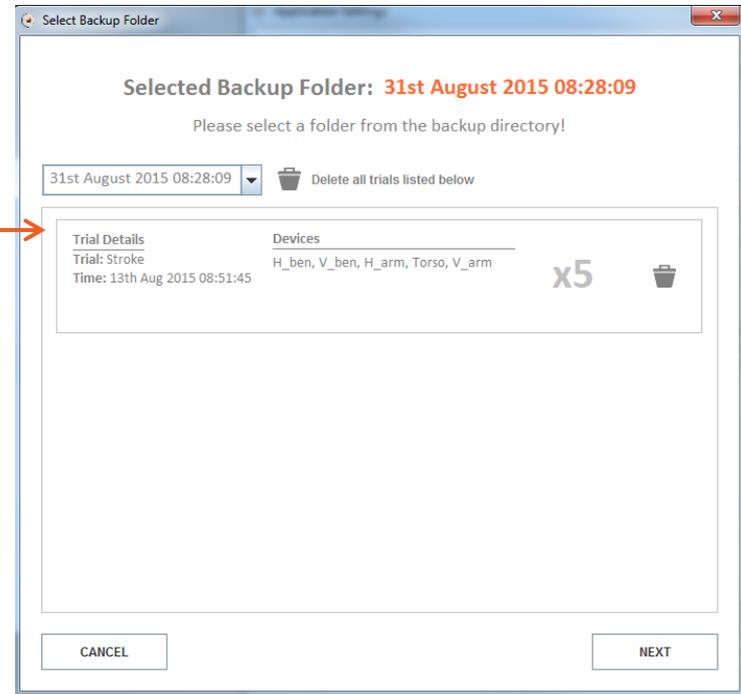
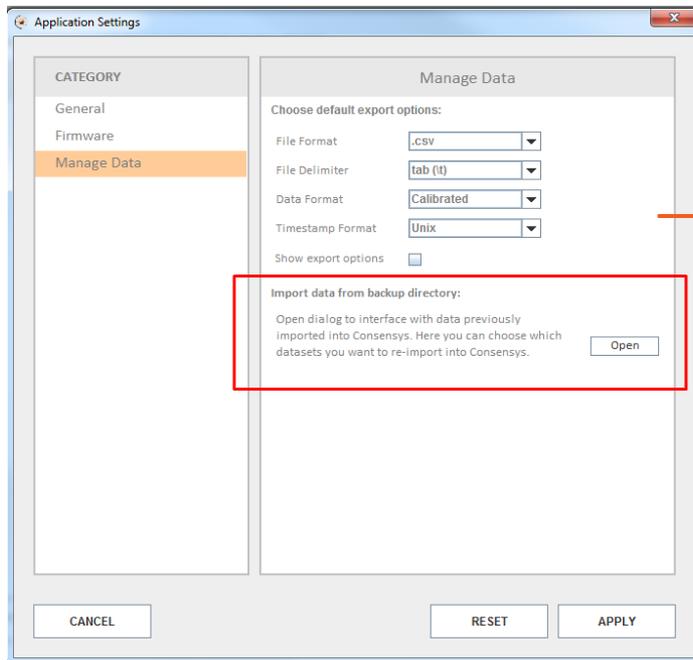
- To access the SD Card of a Shimmer inserted in a *Consensys Base*, right-click the Shimmer visualisation in MANAGE DEVICES; press “Open SD”:



- All **User Manuals / User Guides** for Shimmer hardware and software is available for download from our website. It is highly recommended that all new Shimmer users read the *Shimmer User Manual*. (<http://www.shimmersensing.com/menu/support/>)

# THINGS YOU MIGHT NEED TO KNOW (3/5)

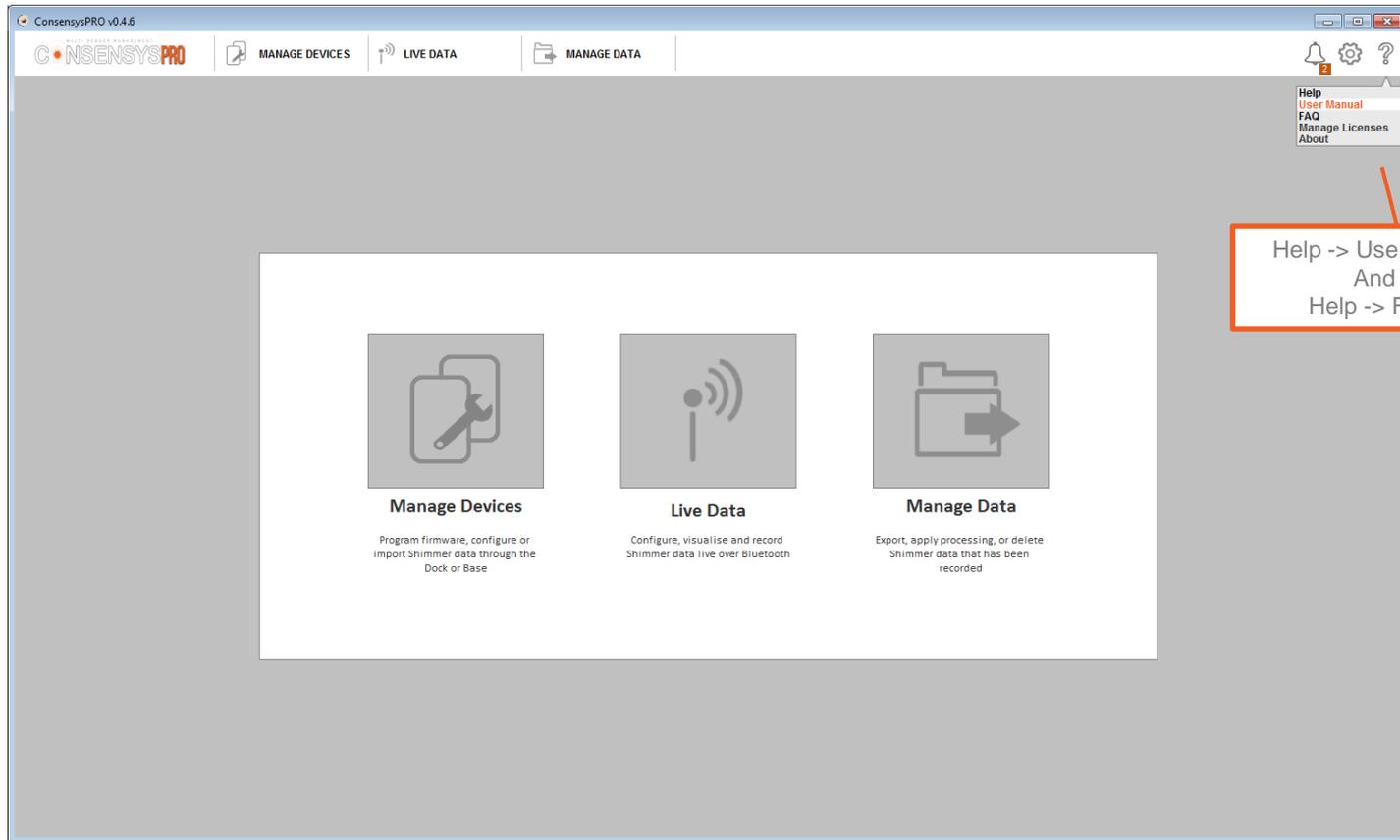
- To import data from the backup, you only need to open the *Manage Data* category in the Application Settings and click on *Open* the backup



- After selecting a backup directory and clicking *Next*, you will be direct to the second step of the import process

# THINGS YOU MIGHT NEED TO KNOW (4/5)

- Consensys includes a link to this guide in the software and also a FAQ page. Please consult both documents if encountering an issue with the Consensys software or hardware



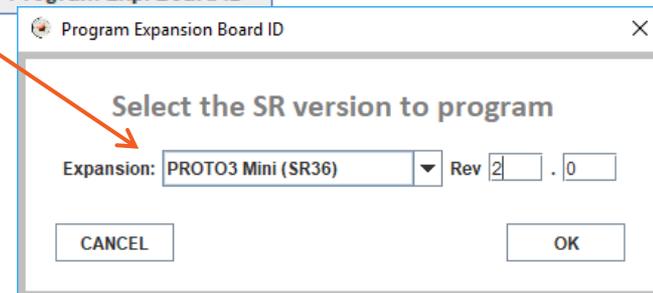
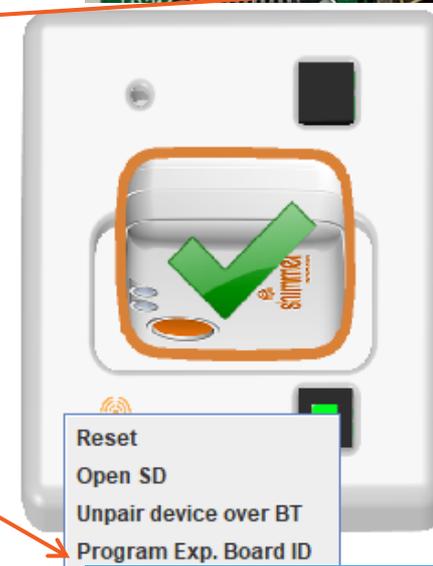
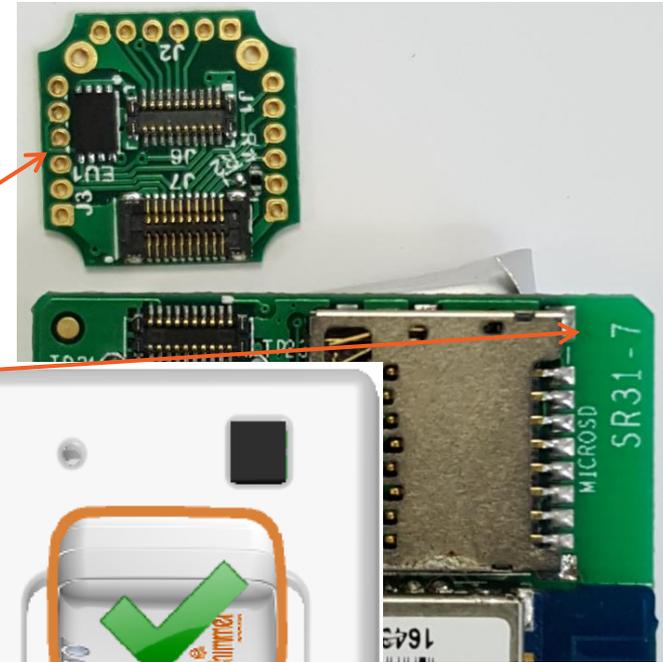
# THINGS YOU MIGHT NEED TO KNOW (5/5)

## PROTO3 MINI USERS

Customers attaching the Proto3 Mini to newer versions of the Shimmer3 IMU unit (*i.e.*, the SR31-7) need to update the board version for the device to function correctly in Consensys.

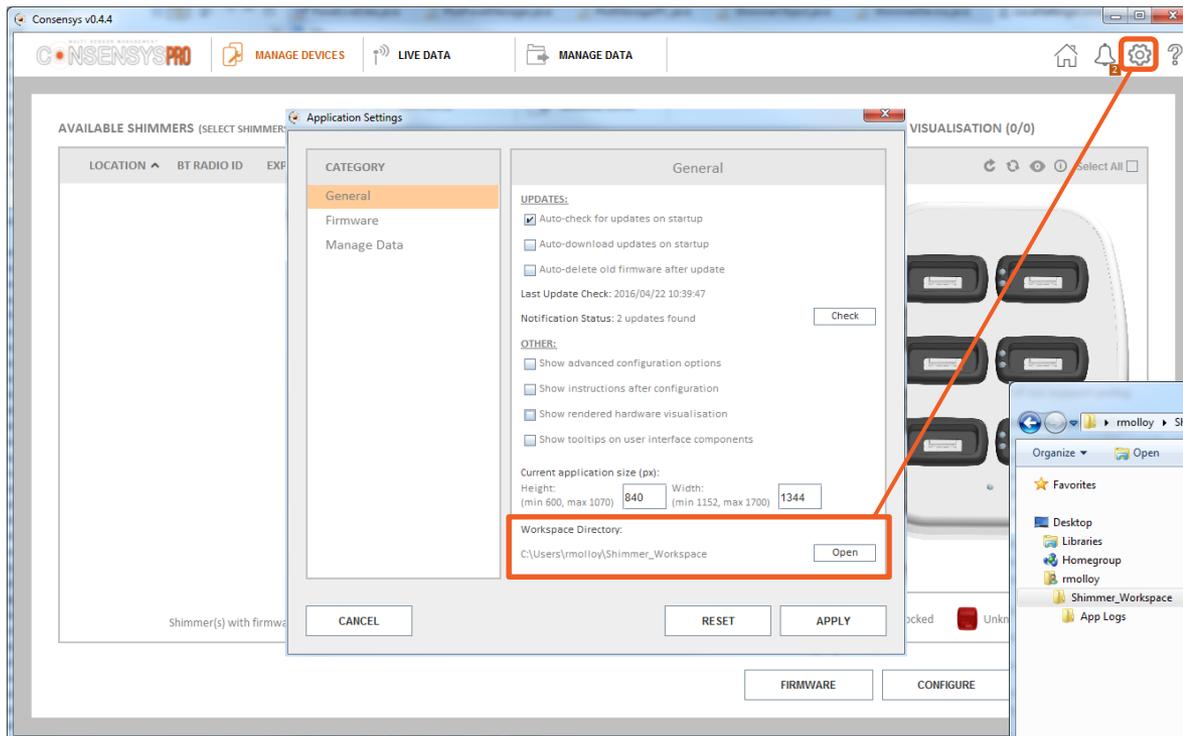
- Attach the Proto3 Mini to the SR31-7 by following instructions described in the Proto3 User Guide.
- Dock the Shimmer and program it with LogAndStream v0.10.0 (or greater).
- Hold the Ctrl+Alt+Shift keys and right click on the Shimmer image in the Dock or Base (using Consensys v1.5.0 or greater).
- Select the right click menu option titled “Program Exp. (Expansion) Board ID”.
- Select “Proto3 Mini (SR36)” from the drop-down menu, enter a Rev of “2” and click “OK”.

To return the Shimmer to normal operation if the Proto3 Mini is disassembled from the IMU, repeat the procedure but instead select the option “Shimmer3 (SR31)” from the drop-down menu and a Rev of “7”.

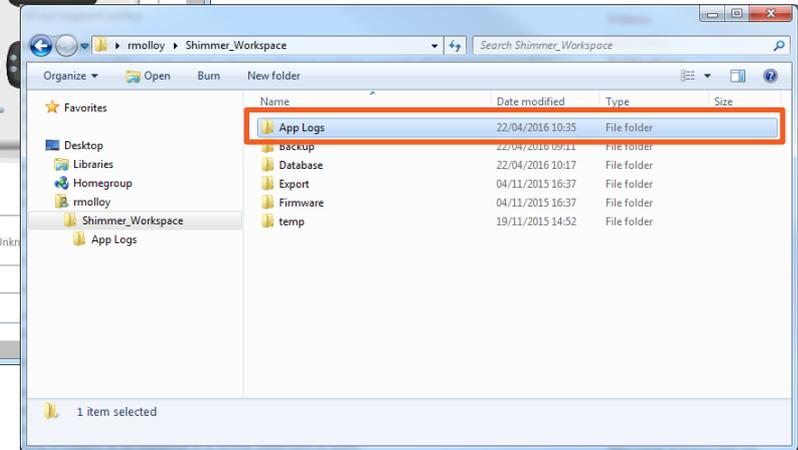


# TROUBLESHOOTING –DOCK/BASE ISSUES

- If you experience any issue while installing or using the Shimmer Dock or Consensys Base, please consult the relevant sections of this guide and the Consensys FAQ first. If the issue has not been resolved, please submit a support query through the support section of our [website](http://www.shimmersensing.com)<sup>1</sup>.



**N.B.** Make sure to include the contents of the **Apps Logs** directory located in the **Shimmer\_Workspace** directory as shown below.



# TROUBLESHOOTING – RECORDED DATA

- If you experience an error with your recorded data in Consensys 'Manage Data', please consult this document and the Consensys FAQs first. If the issue has not been resolved, please submit a support query through the support section of our [website](#)<sup>1</sup>. **N.B.** please include the relevant **Database File(s)** from the Database directory and **Binary File(s)** from the Backup directory as outlined in this section.
1. To identify the appropriate database file, hover your mouse over the trial in the Consensys 'Manage Data' tab. The file name will be a set of digits (e.g., '1435243126.db') as below.

Consensys v0.4.4

MANAGE DEVICES | LIVE DATA | MANAGE DATA

AVAILABLE DATA (SELECT A SINGLE TRIAL AND MULTIPLE SESSIONS AND/OR DEVICES FOR EXPORT OR PROCESS)

| + | NAME ^        | SYNC RTC TIME       | DURATION |
|---|---------------|---------------------|----------|
| + | PPGvsECG      | 2016/06/02 18:12:41 | 00:01:22 |
| + | PPGvsECG      | 2016/06/02 18:33:15 | 00:00:55 |
| + | Sample9DoF_R  | 2015/06/26 17:17:14 | 00:01:00 |
| + | Sample9DoF_W  | 2015/06/26 16:58:14 | 00:01:00 |
| + | SampleECG     | 2015/06/25 15:38:46 | 00:02:00 |
| + | SampleEMG     | 2015/06/26 12:35:33 | 00:02:00 |
| + | SampleGSRF    | 2015/06/23 14:17:28 | 00:02:00 |
| + | SampleSync_SD | 2015/10/02 15:58:12 | 00:02:25 |
| + | Skydive       | 2016/04/07 07:40:40 | 01:38:50 |

Database Name: 1435243126.db

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS AND SESSIONS)

SampleECG - 2015/06/25 15:38:46

This is a sample database generated by the Shimmer team to demonstrate the Shimmer3 ECG unit.

ECG (Electrocardiogram) data (24bit resolution) was recorded at a sampling rate of 1024Hz.

SD Recording - Session 1

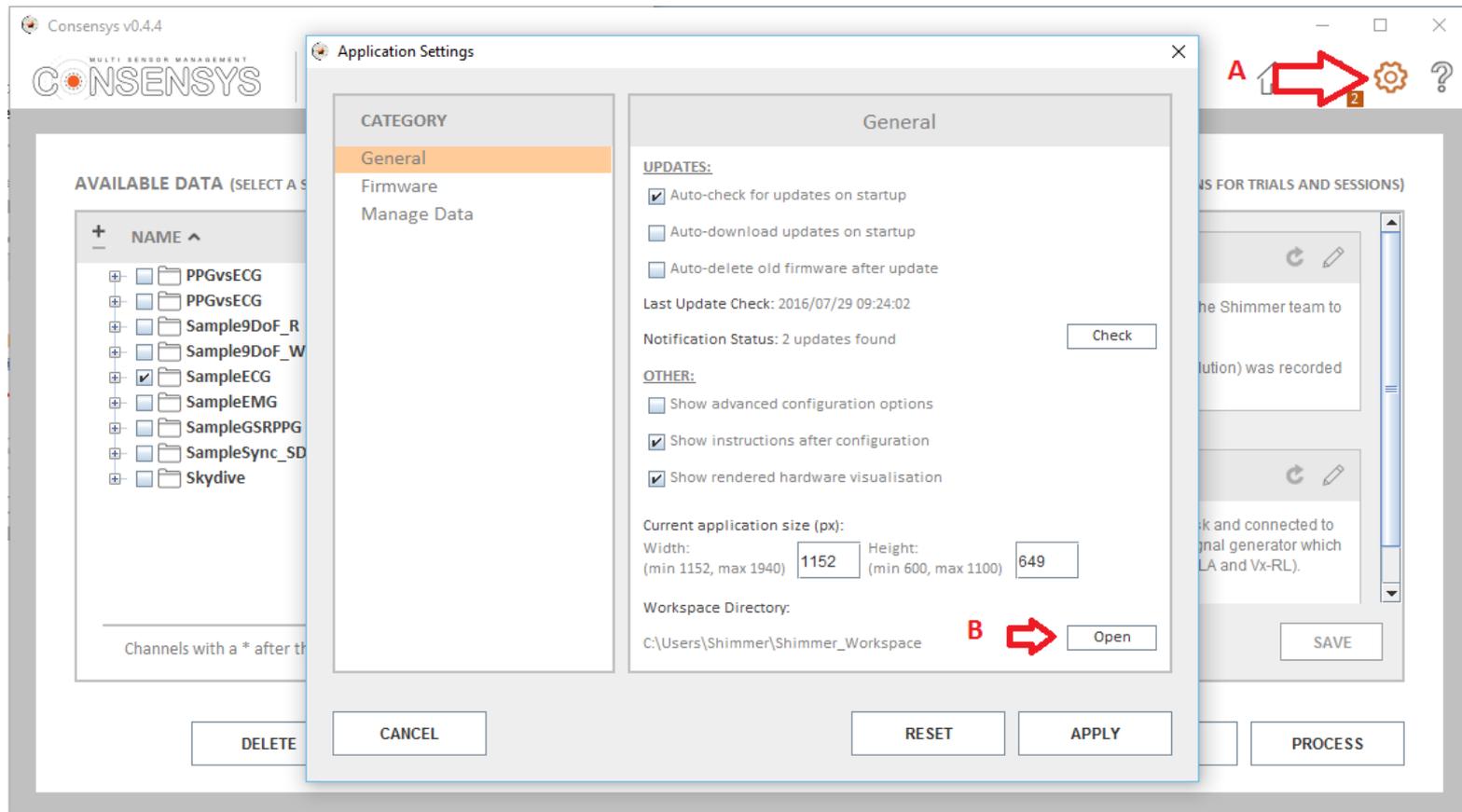
The Shimmer device was placed on a desk and connected to...

Channels with a \* after their name have been calibrated using default calibration parameters

DELETE | File Format: .csv | File Delimiter: tab (\t) | Timestamp Format: Unix | Data Format: Calibrated | EXPORT | PROCESS

# TROUBLESHOOTING – RECORDED DATA

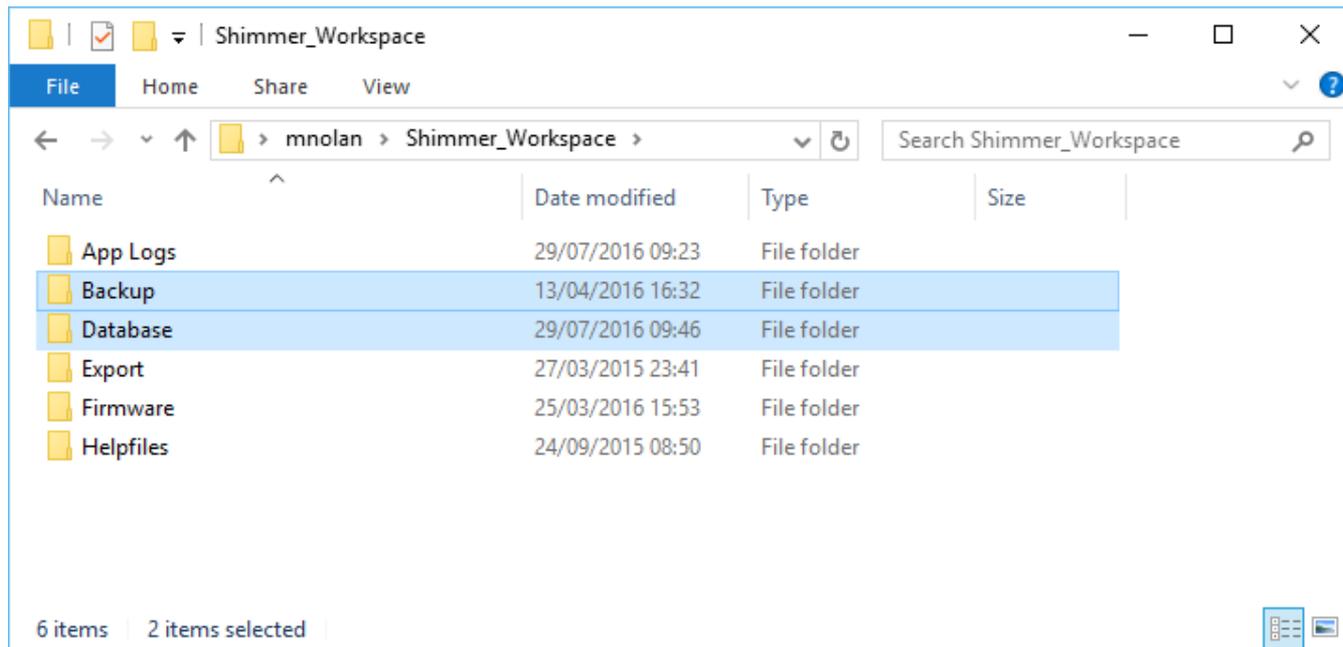
2. To navigate to the **Shimmer\_Workspace** directory:
  - A. Click on the Consensys 'Application Settings' menu
  - B. Click on the 'Open' button to open the workspace directory



# TROUBLESHOOTING – RECORDED DATA

3. The Shimmer Workspace will appear as below. The important directories to note are the 'Backup' and 'Database' directories - as highlighted.

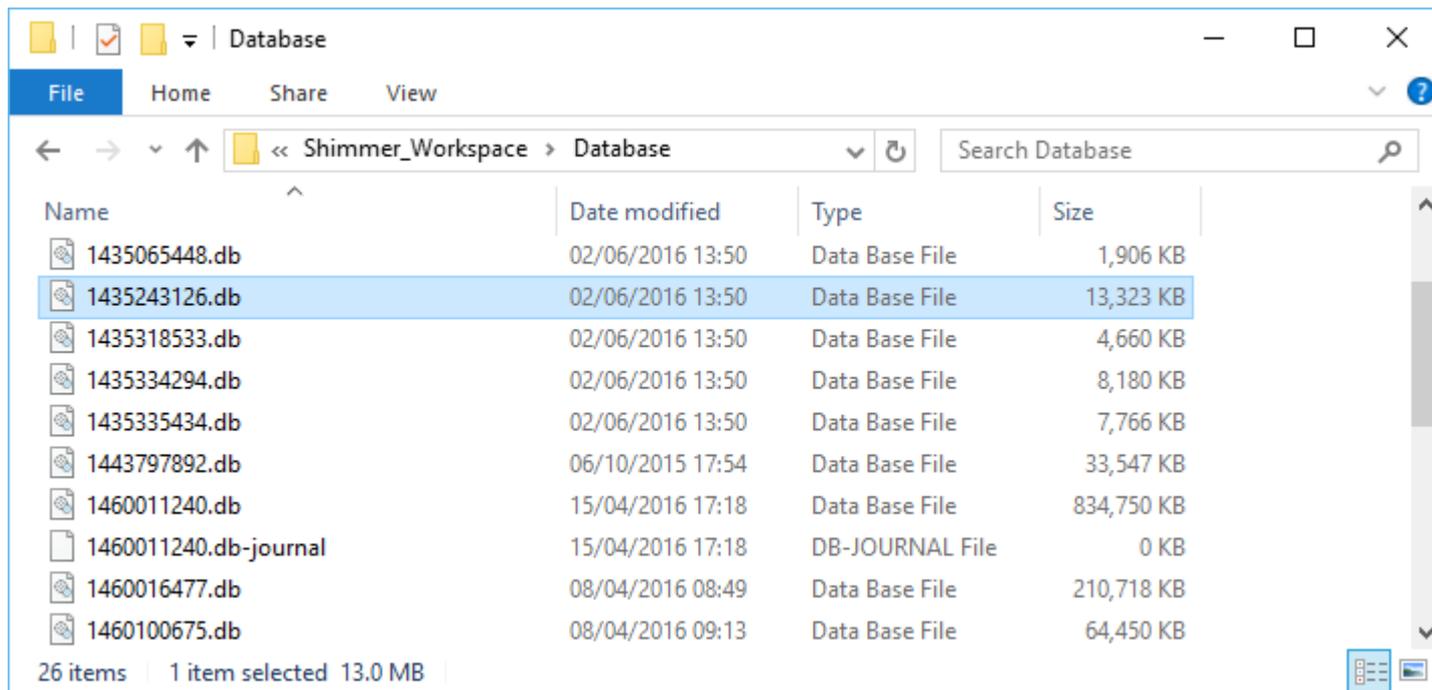
The 'Backup' directory is only relevant if data was imported from the Shimmer's SD card and is not used if data is solely recorded over a Bluetooth connection.



# TROUBLESHOOTING – RECORDED DATA

## 4. 'Database' Directory:

This directory stores a database file per 'trial' whereby the database filename is the trial configuration time in Unix Timestamp format. For example, the selected database below, '1435243126.db', corresponds to the 'SampleEMG' trial shown in step 1 which was configured on the '25th June 2015 at 15:38.46 GMT+1' (online converter example [here](#)).



# TROUBLESHOOTING – RECORDED DATA

## 5. 'Backup' Directory:

This directory contains the binary data files copied from the Shimmer during the import of data that was recorded to the Shimmer's on-board SD card. The structure of the directory is as shown below. If sending this data to Shimmer Support, it is sufficient to just identify the import date, create a ZIP of that directory and send that to Shimmer support'.

**Level 1** Consensys import date

**Level 2** Bluetooth MAC address per Shimmer

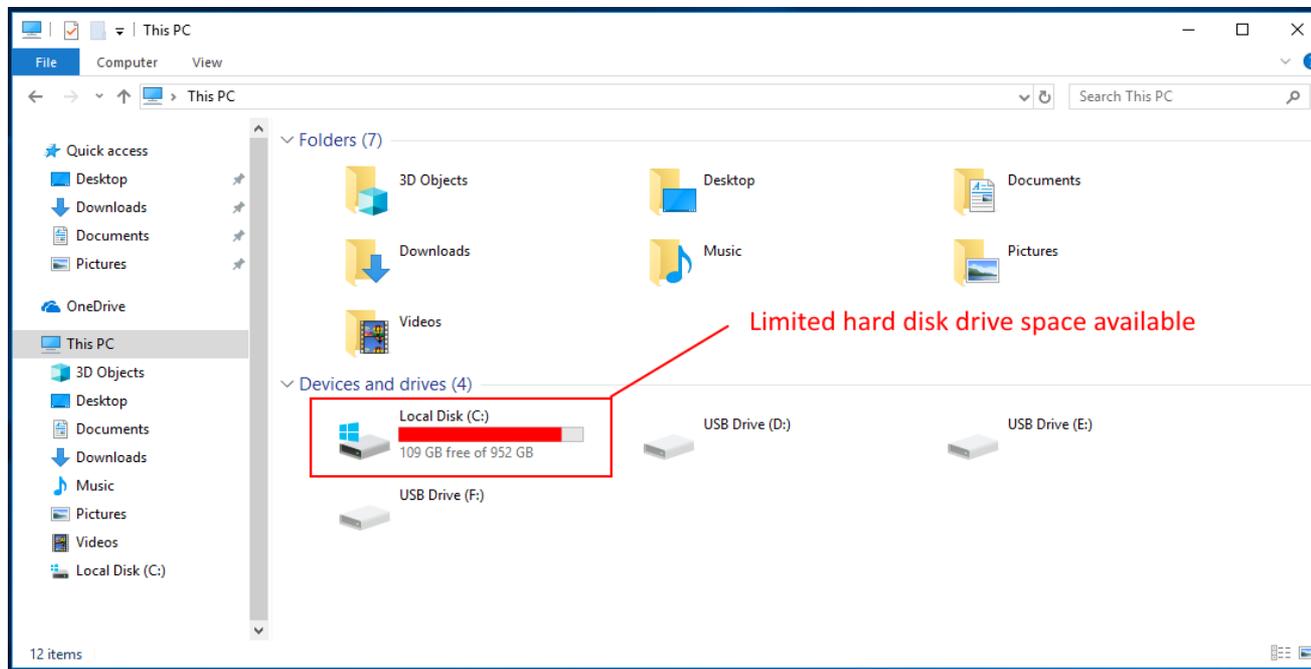
**Level 3** 'data' directory as copied directly from each Shimmer's SD card

**Level 4** Trial name (e.g., 'Shimmer\_cal1') and configuration time in Unix format (e.g., '1435224503' or 25<sup>th</sup> June 2015 09:28:23 GMT)

**Level 5** Shimmer name (i.e. 'Shimmer') and the recorded session number (i.e., 000)

# TROUBLESHOOTING – LIMITED FREE HARD DISK DRIVE SPACE (P1)

1. If recording a significant amount of data in Consensys you may find the available memory on the hard disk drive nearing capacity which will limit the ability to record further data (see below for illustration of hard disk drive nearing capacity)
2. If step 1. above is observed, Consensys datasets should be moved from the hard disk drive to a secure external location, example procedural steps to follow on the [next page](#).



# TROUBLESHOOTING – LIMITED FREE HARD DISK DRIVE SPACE (P2)

## Example procedure to free-up hard disk drive space

1. Choose the Consensys datasets that you would like to archive from the 'Manage Data' tab.
2. Identify the dataset's database name (a set of ten digits e.g., '1435243126.db'). See [page 84](#) for how to do this.
3. Locate the corresponding folder (name of the folder is same as the database name e.g., '1435243126') in the 'Database' directory.
4. Make sure this folder has a database file (.db)
5. Move this folder safely to a secure location e.g. an external hard disk drive (Do not rename the folder.)
6. Once you restart the software, you will no longer find the dataset in the 'Manage Data' tab

## A few points to keep in mind..

- Once archived, for your convenience maintain a document with the dataset's details such as the trial name, database name, study details etc.
- If you would like to view the archived data in Consensys, please copy the dataset's folder to the 'Database' directory of the PC running Consensys and restart the software.
- Store the archived data in secure location.

# FURTHER QUESTIONS?

Why not reach out to us through our online ticketing support system?

<http://shimmersensing.com/support/wearable-sensing-support/>

Or contact us through one of our social media channels

