

# CONSENSYS USER GUIDE V1.5

Rev. a



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# WHAT'S NEW IN THIS RELEASE

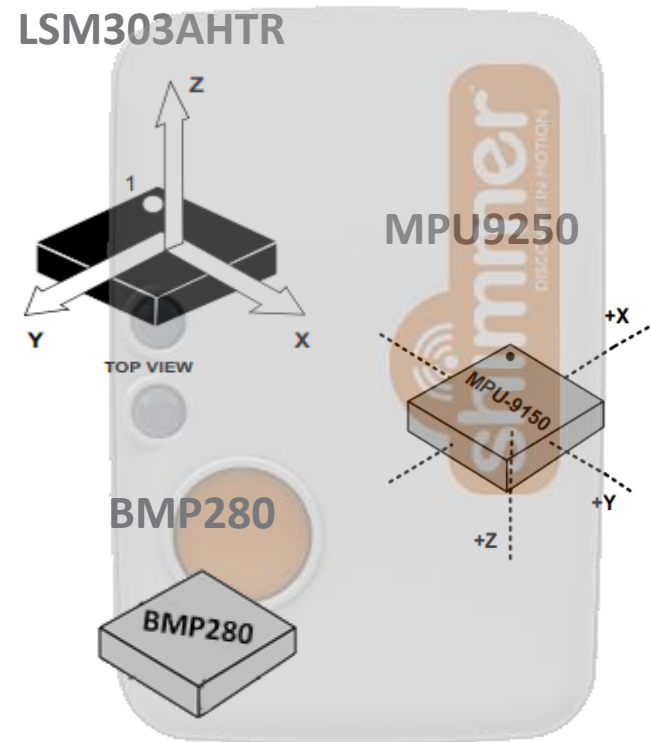
*Consensys v1.5.0 brings a number of software updates and bug fixes*

## Updates:

- Support for new IMU chips
  - LSM303AHTR
  - MPU9250
  - KXTC9-2050
- Support for new Pressure/Temperature chip
  - BMP280
- Quick plot option for device and sensor

## Bug fixes:

- Improved import time for EMG algorithm module
- Increased threshold for activity detection for activity algorithm module
- Database insertion method over Bluetooth
- Recording to Database or SD card over Bluetooth for ConsensysBASIC



# INTRODUCTION

*Consensys v1.5.0* 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>

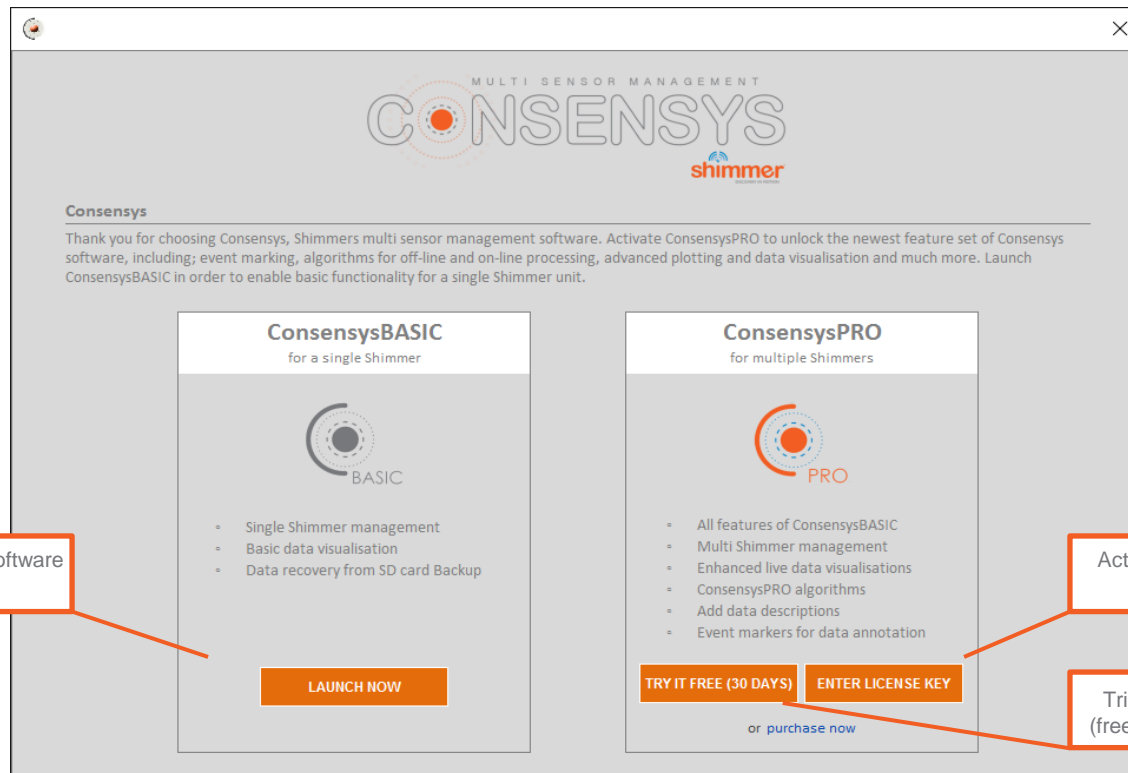


# CONSENSYSBASIC v CONSENSYSPRO

Consensys v1.5.0 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 30 day period)

# INSTALL HARDWARE & SOFTWARE (1/8)

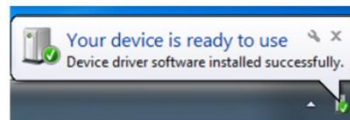
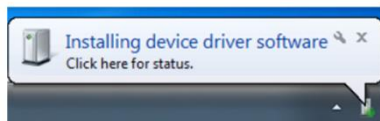
STEP 1 – Download the *Consensys* software from our [website](#)<sup>†</sup>.

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:

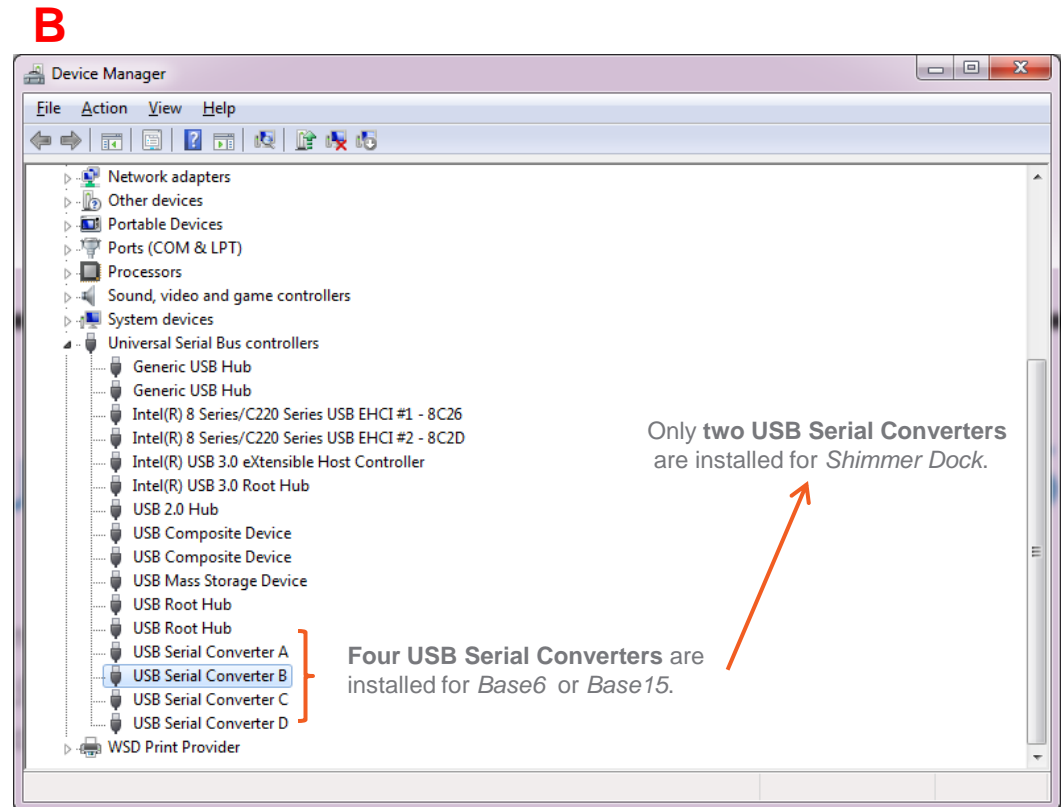
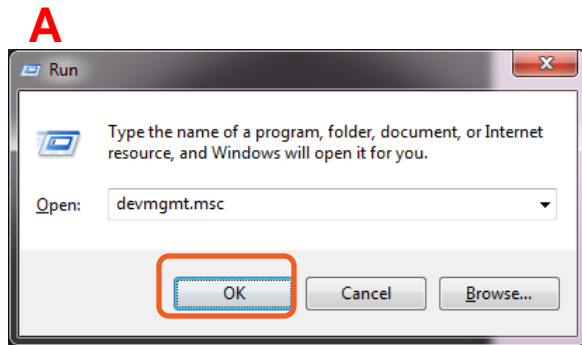


**N.B.** The driver installation can take up to a few minutes. In case you are not sure if the installation has finished, just go to the next STEP to verify the driver installation.

# 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.

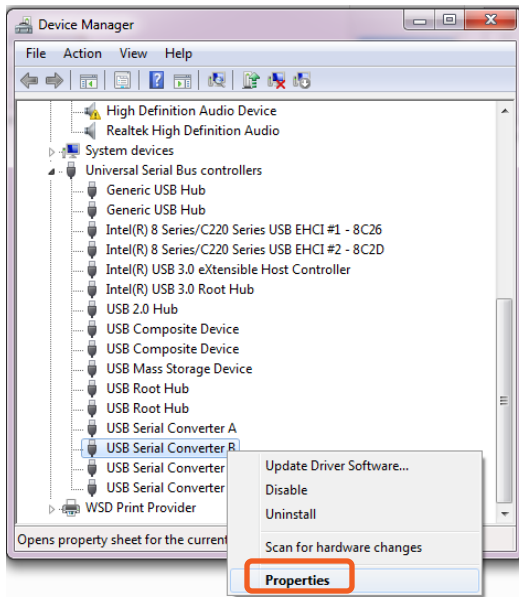


# INSTALL HARDWARE & SOFTWARE (3/8)

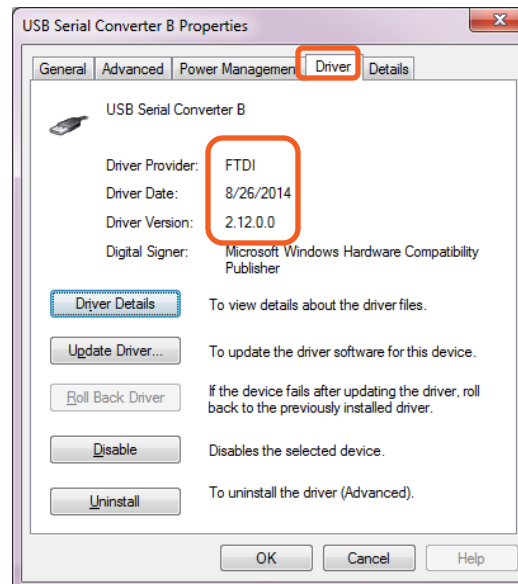
## STEP 6 – Verify driver installation - continued:

- 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.

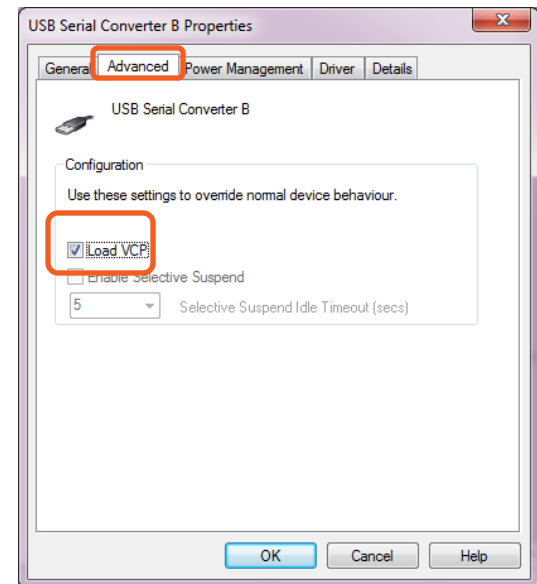
C



D



E



# 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:

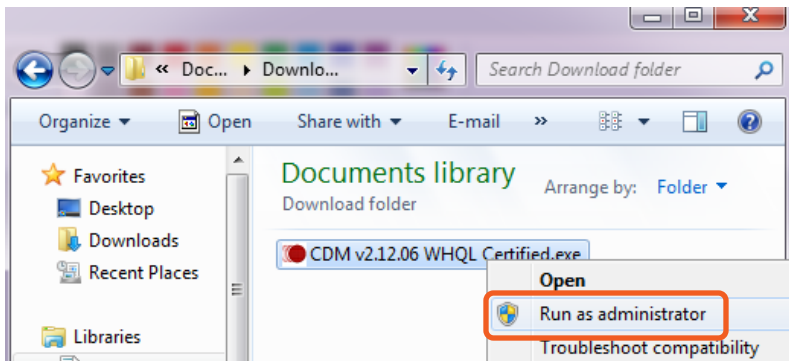
| Operating System        | Release Date | Processor Architecture   |                         |                        |                          |                          |                          |                          | Comments   |
|-------------------------|--------------|--------------------------|-------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
|                         |              | 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)

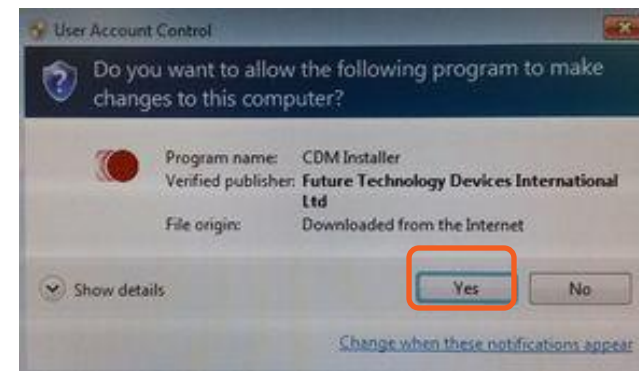
STEP 8 – Manual Driver installation:

Right-click the downloaded file;

“Run as administrator”:



Press “Yes” if this screen if shown:

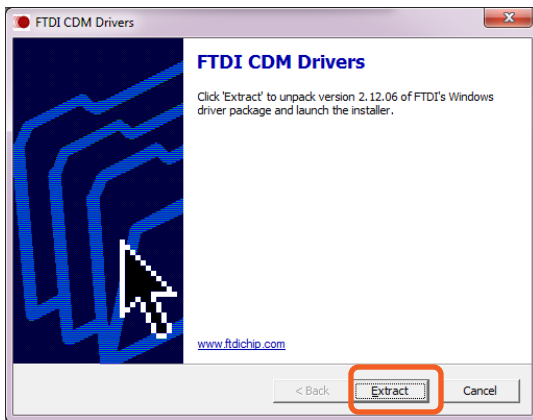


**N.B.** If a security warning pops up, click “Run”.

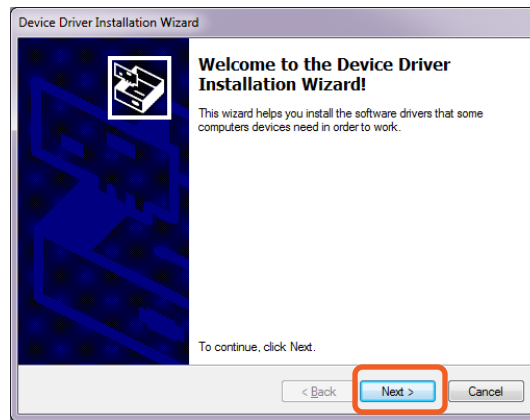
# INSTALL HARDWARE & SOFTWARE (6/8)

STEP 8 – Manual Driver installation - continued:

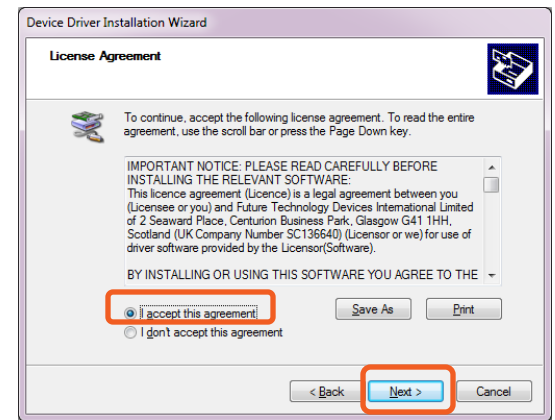
Click “Extract”:



Click “Next”:



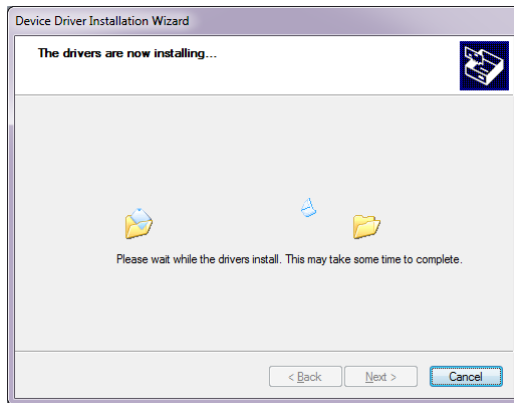
Accept and click “Next”:



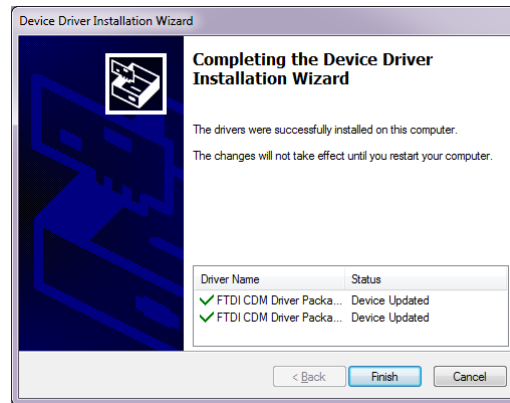
# INSTALL HARDWARE & SOFTWARE (7/8)

STEP 8 – Manual Driver installation - continued:

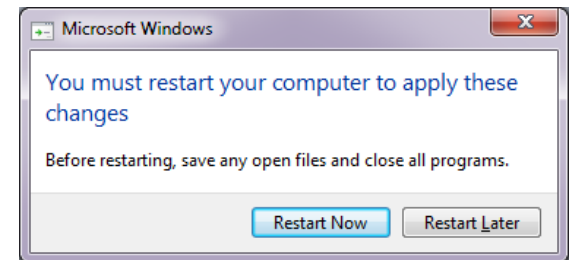
Drivers are installing:



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).

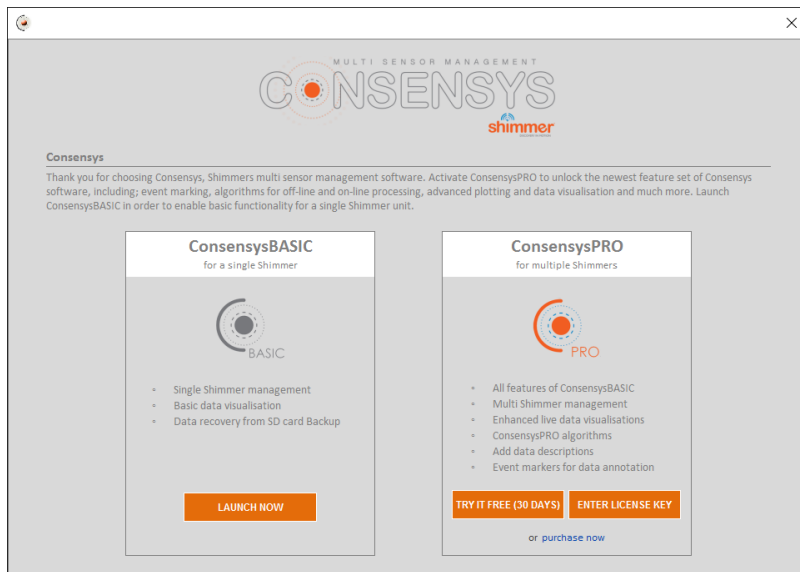
**Floating:** Floating licensing authorizes the use of ConsensysPRO with the given number of activations. The number of concurrent activations is tracked, and the total number of running sessions of the licensed application at any time is limited by the maximum allowed activations in the floating licenses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

**Trial:** You can try ConsensysPRO free of charge for a 30 day period after which you must purchase a license to continue to use ConsensysPRO or use ConsensysBASIC.

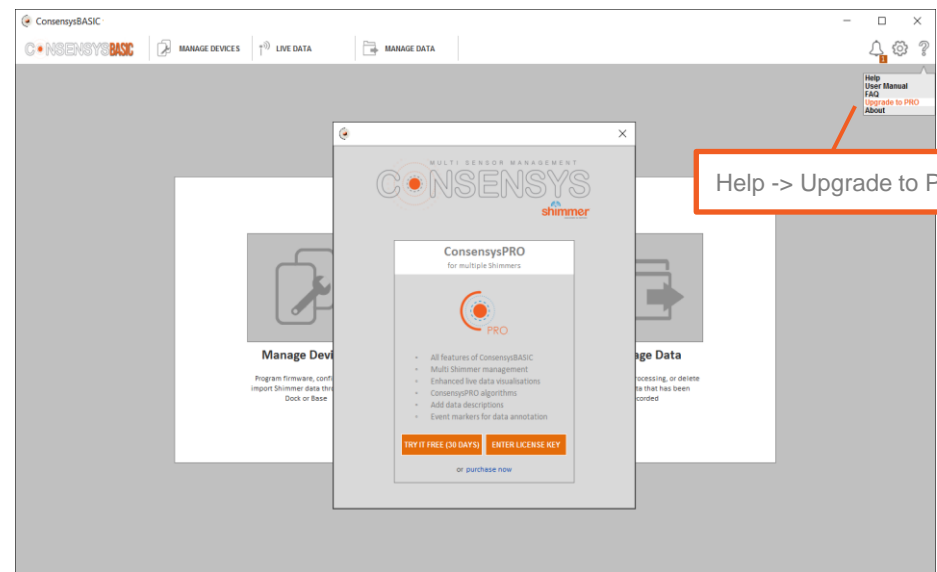
# LICENSING - ACTIVATION (2/3)

**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 30 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

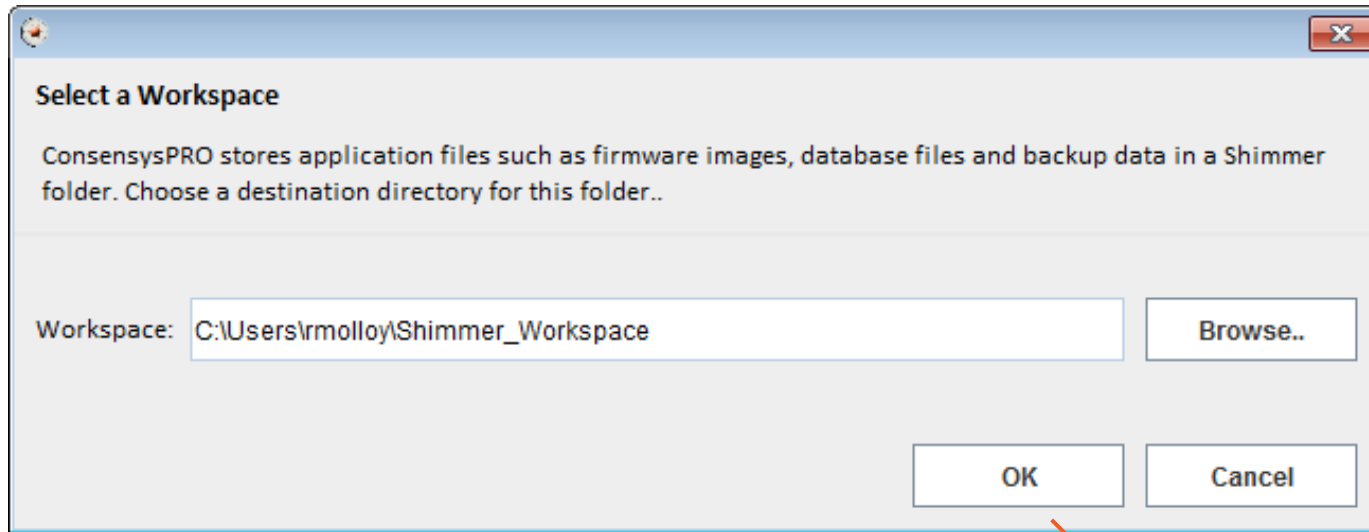
Help -> Manage Licenses

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!

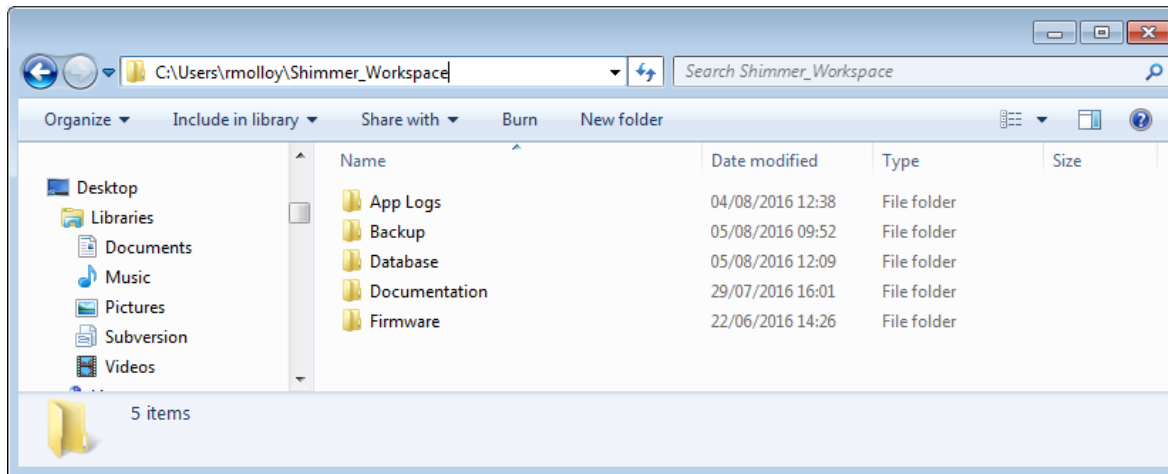
# CONSENSYS WORKSPACE (1/2)

**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).

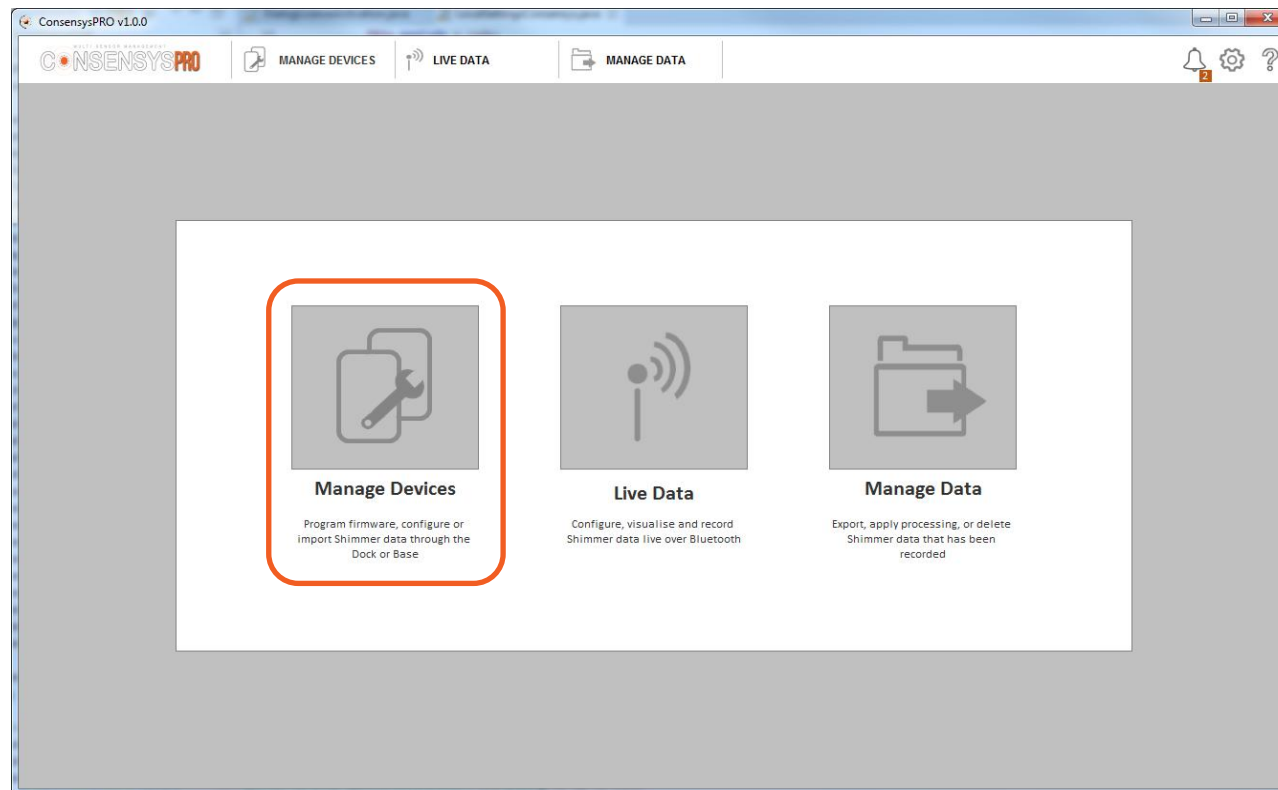
**Documentation:** Contains this user guide and a FAQ document (both accessible in Consensys software through the help icon)

**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 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 "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".

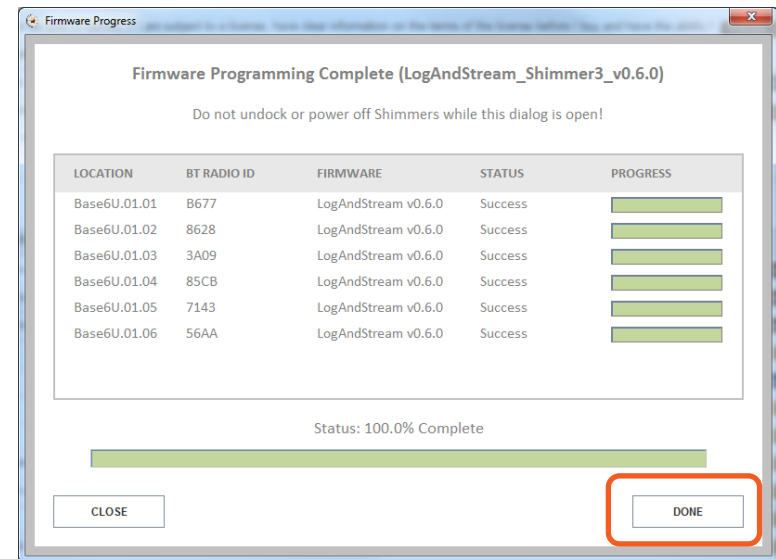
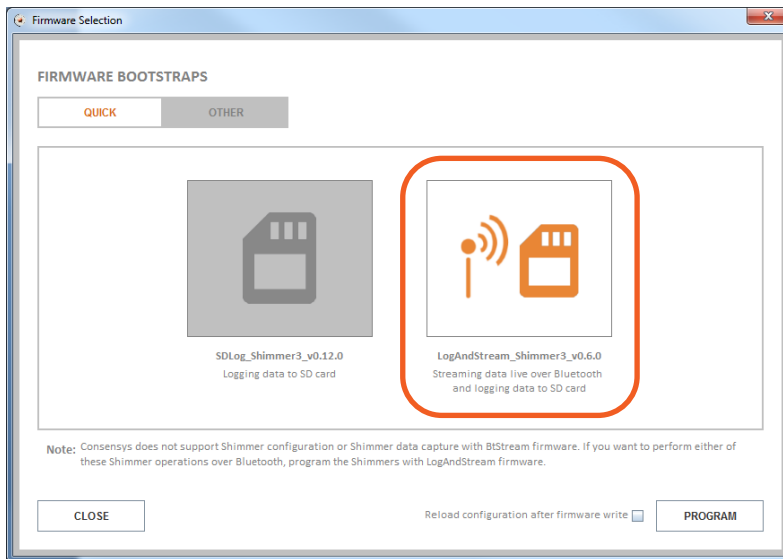
At the bottom of the interface, there is a note: "Shimmer(s) with firmware highlighted in red text indicates that a newer version of that firmware is available".



# 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 shimmer modules. Each module has a green checkmark and the shimmer logo. Below the visualization are status indicators: "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 (<1hr) 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.

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+

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

Range: +/- 130g Resolution: Low Power: Off Range: 10kΩ to 56kΩ Channel: Int A13

# 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.

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 titled 'TRIAL NAME: DefaultTri' and 'AUTO STOP (MINS): 0'. Below this, there are two sections: 'Sync Devices' and 'Start/Stop Logging Method'. The 'Start/Stop Logging Method' section has two options: 'User Button' (selected) and 'Undock/Dock'. A table titled 'AVAILABLE SHIMMERS' lists various shimmers with columns for Location, BT Radio ID, Expansion, and Shimmer Name. The 'Shimmer\_964A' is highlighted in orange. On the right, there are tabs for 'SENSORS', 'ALGORITHMS', and 'CALIBRATION'. The 'SENSORS' tab is active, showing a grid of sensor options: Low-Noise Accelerometer, Wide-Range Accelerometer, Gyroscope, Magnetometer, Pressure & Temperature, Battery Voltage, External Expansion ADCs, Internal Expansion ADCs, and GSR+ PPG. At the bottom, there are 'BACK' and 'WRITE CONFIG' buttons.

| 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 (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 ✓

Reset

Sync Devices

Start/Stop Logging Method

User Button 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 | 36AD        | None              | Shimmer_36AD |

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+

Power: Off

Range: 10kΩ to 56kΩ Channel: Int A13

# 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)

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 shows 'TRIAL NAME: DefaultTrial', 'AUTO STOP (MINS): 0', 'SHIMMER NAME: Shimmer\_964A', and 'SAMPLING RATE (Hz): 128.00'. The 'ALGORITHMS' tab is selected, and a red circle 'A' highlights the '9DOF' algorithm section. The interface includes a table of available shimmers and various configuration options.

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 |

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

# LOGGING – CONFIGURE TRIAL (6/8)

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

- 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

Sync Devices: Mode: Short (K3H)

Start/Stop Logging Method: User Button, Undock/Dock

AVAILABLE SHIMMERS

| LOCATION     | BT RADIO ID | EXPANSION        | SHIMMER NAME |
|--------------|-------------|------------------|--------------|
| Base6U.01.03 | 964A        | QDA+             | 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 |

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

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

| Offset (ba) | Sensitivity (ka) | Alignment (ka) |
|-------------|------------------|----------------|
| 0           | 81               | 0              |
| 0           | 0                | 83             |
| 0           | 0                | 85             |

Gyroscope (Range: +/- 500dps) Time: N/A (not set)

| Offset (ba) | Sensitivity (ka) | Alignment (ka) |
|-------------|------------------|----------------|
| 0           | 65.50            | 0.00           |
| 0           | 0.00             | 65.50          |
| 0           | 0.00             | 0.00           |

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

| Offset (ba) | Sensitivity (ka) | Alignment (ka) |
|-------------|------------------|----------------|
| 0           | 1631             | 0              |
| 0           | 0                | 1631           |
| 0           | 0                | 1631           |

Magnetometer (Range: +/- 1.3Ga) Time: N/A (not set)

| Offset (ba) | Sensitivity (ka) | Alignment (ka) |
|-------------|------------------|----------------|
| 0           | 1100             | 0              |
| 0           | 0                | 1100           |
| 0           | 0                | 985            |

Calibration Review Color Code

Custom Calibration:  The sensor is using custom calibration parameters. However, this custom calibration may not be accurate.

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 all to factory default calibration

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.

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

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: Mode: Short (<1hr)

Start/Stop Logging Method: User Button, Undock/Dock

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 | 36A0        | None              | Shimmer_36A0 |

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

SENSORS | ALGORITHMS | CALIBRATION

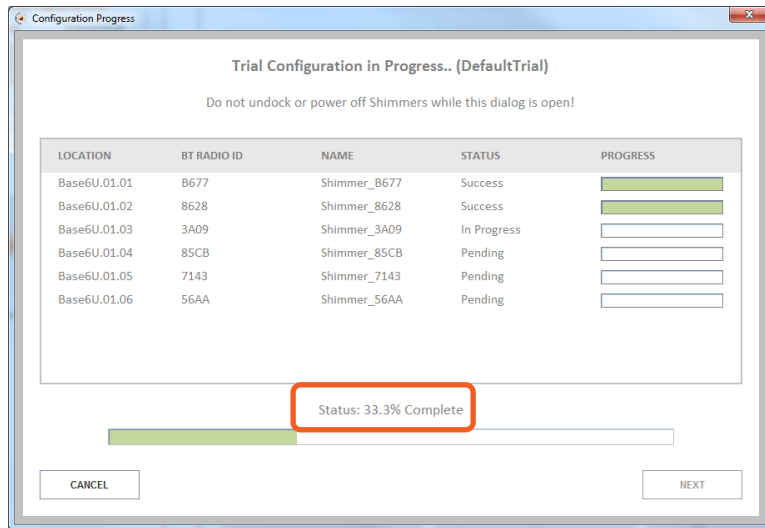
- Low-Noise Accelerometer
- Wide-Range Accelerometer: Range: +/- 2g
- Gyroscope: Range: +/- 500dps
- Magnetometer: Range: +/- 1.3Ga
- Pressure & Temperature: Resolution: Low
- Battery Voltage
- External Expansion ADCs: Ext A6, Ext A7, Ext A15
- Internal Expansion ADCs: Int A12, Int A13; Power: Off
- GSR+: GSR, PPG; Range: 10kΩ to 56kΩ; Channel: Int A13

BACK | WRITE CONFIG

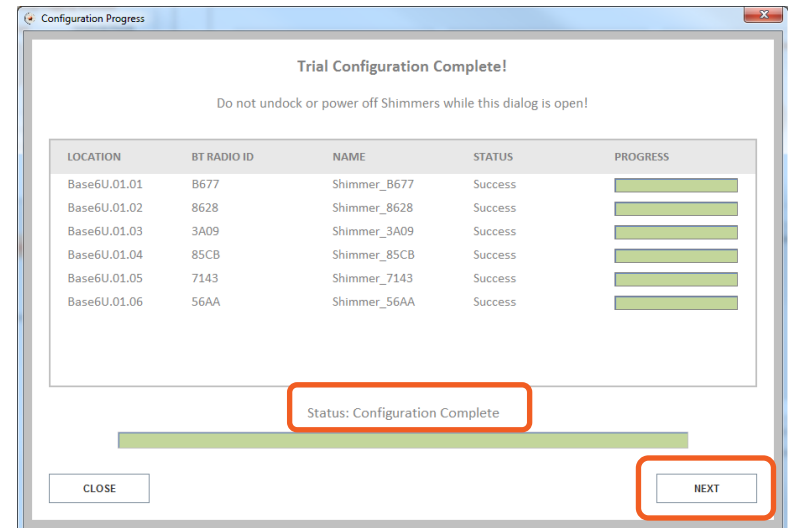
# LOGGING – CONFIGURE TRIAL (8/8)

STEP 8 – WRITE CONFIG.

Wait until Trial Configuration is written:



Click “NEXT” to complete the configuration:



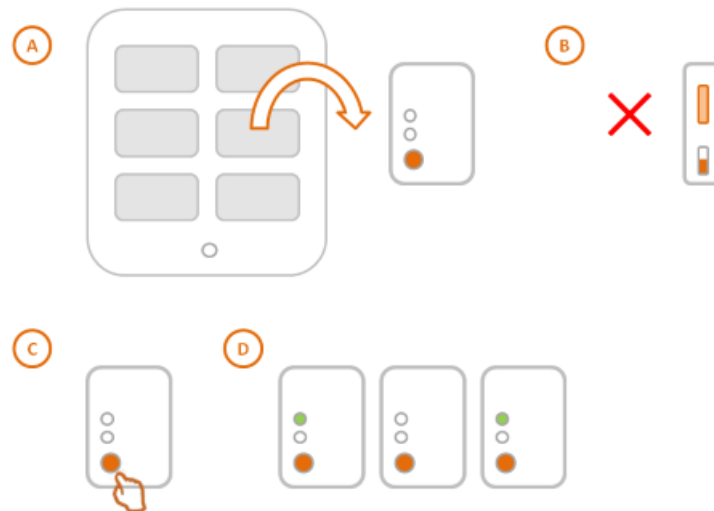
# LOGGING – CAPTURE DATA (1/2)

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)

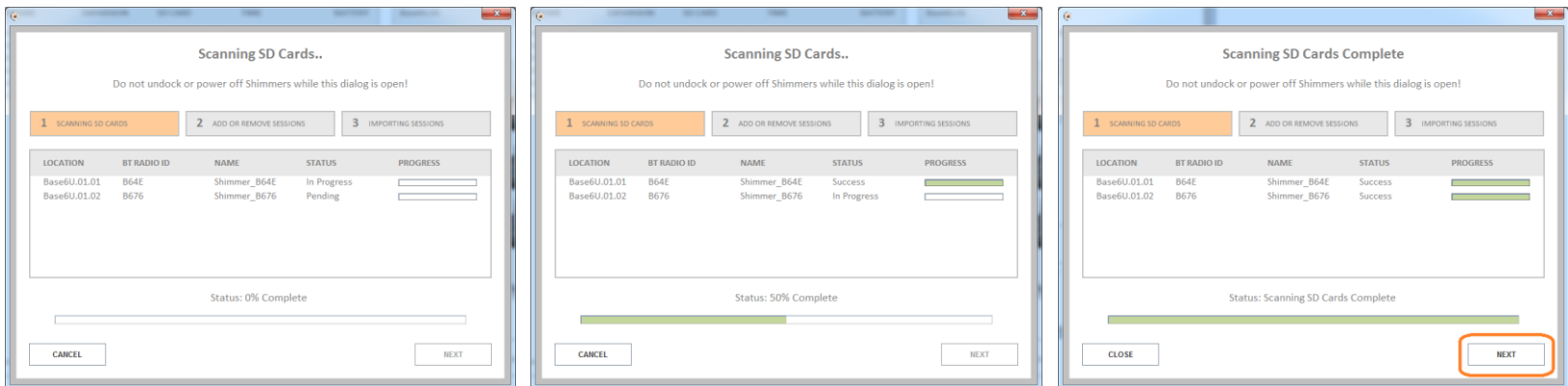
STEP 6 – The green LED will now turn on briefly once every two seconds. (B)



# LOGGING – IMPORT DATA (1/6)

## STEP 1 – Scanning SD Cards:

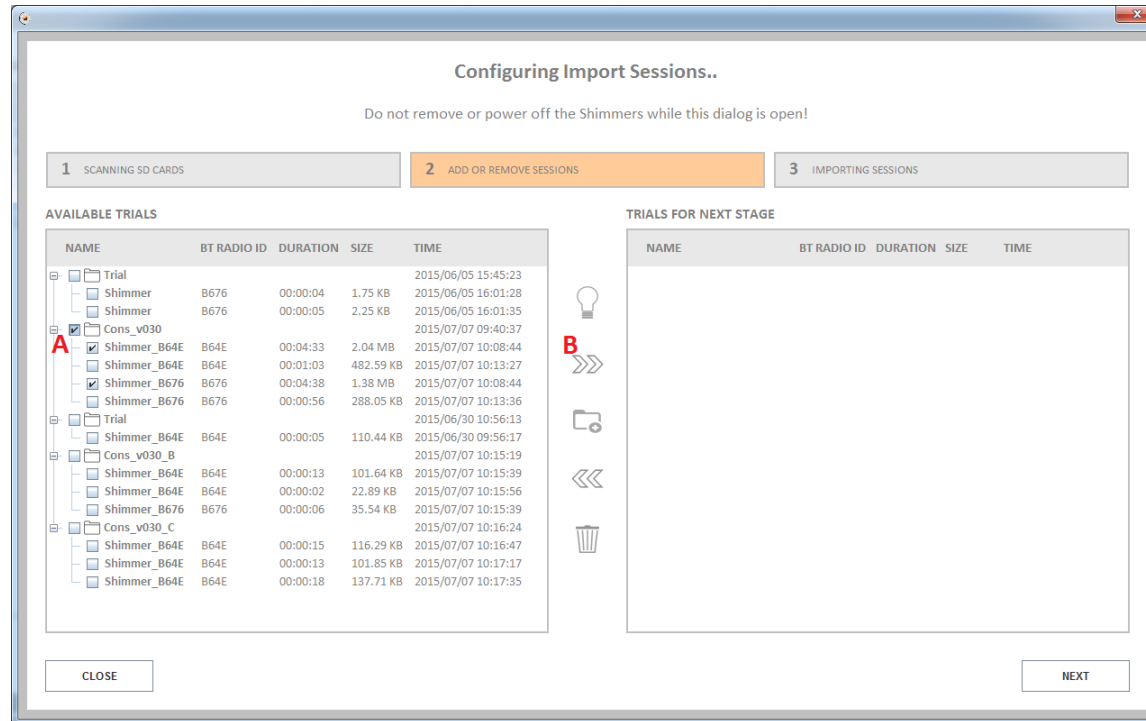
- Place the Shimmer(s) in the Base.
- Select the Shimmer(s) you want to import data from and click “IMPORT”.
- Hit “NEXT” when scanning is complete.



# LOGGING – IMPORT DATA (2/6)

## STEP 2 – Configuring Import Sessions:

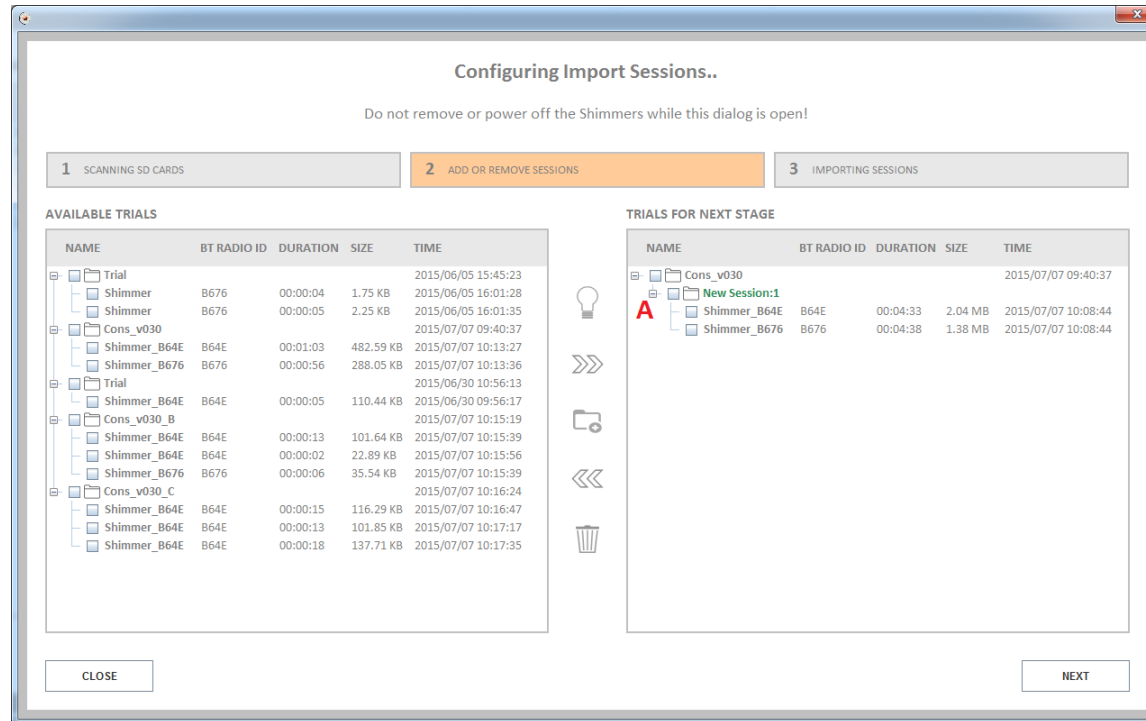
- A. Select data from one or more Shimmers.
- B. Click the button to add the data as new session to the list for the next stage.



# LOGGING – IMPORT DATA (3/6)

## STEP 2 – Configuring Import Sessions – continued:

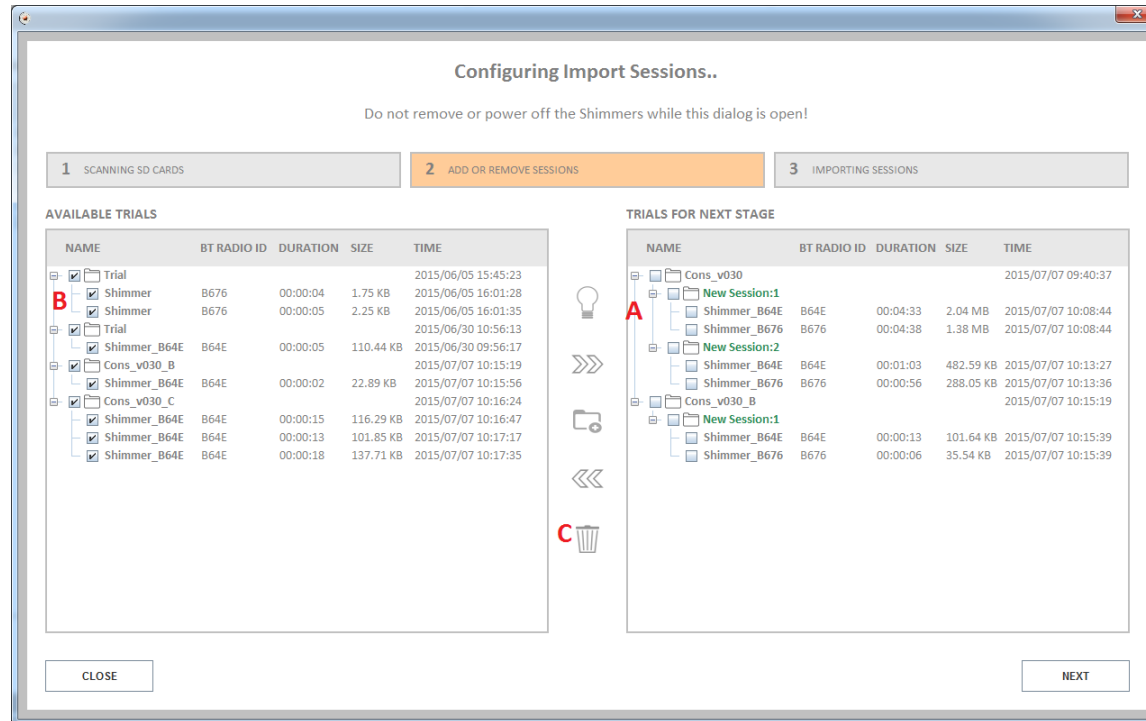
- A. For trial “Cons\_v030” the data is added to “New Session:1”.



# 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.

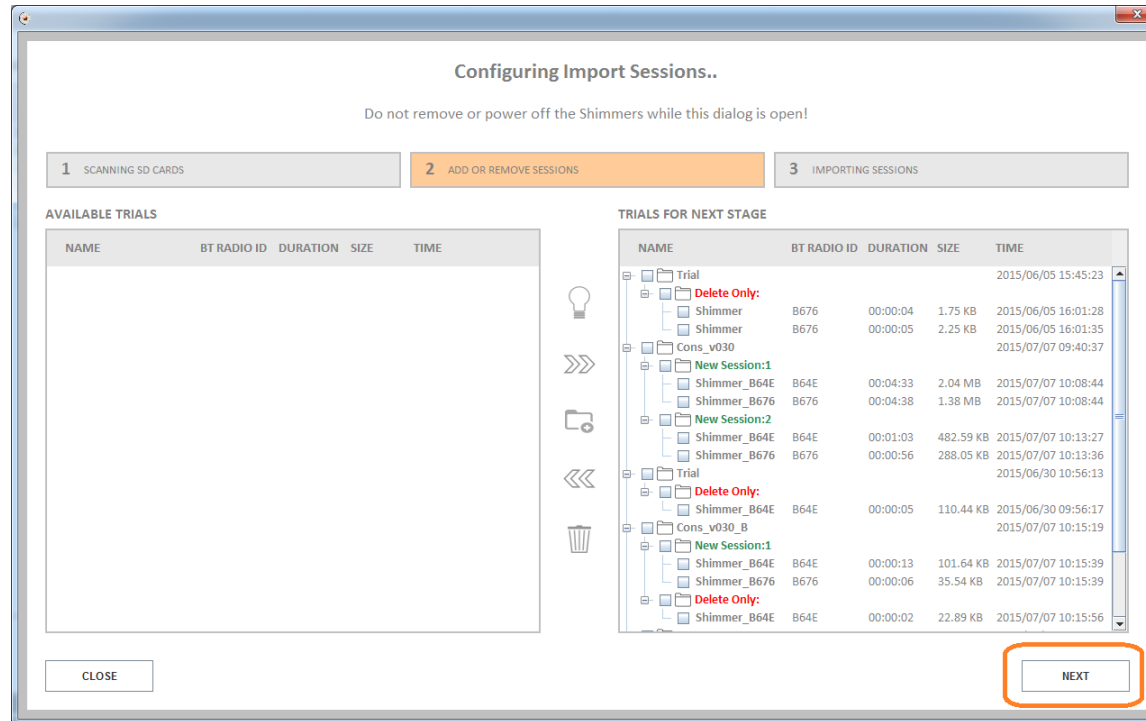




# LOGGING – IMPORT DATA (5/6)

## STEP 2 – Configuring Import Sessions – continued:

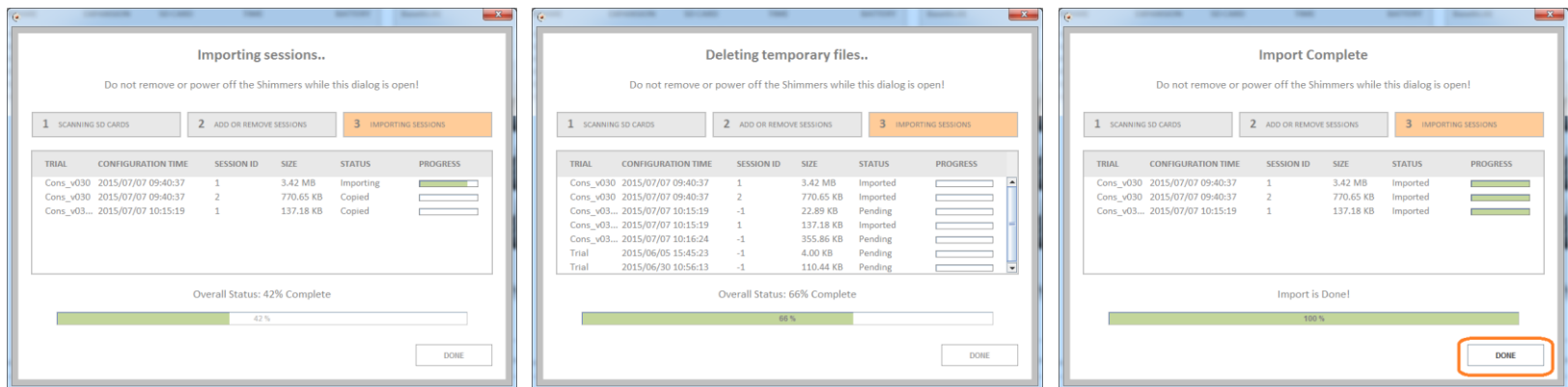
- A. Data not to be imported in the next stage is now listed to be deleted – marked “Delete Only”.
- B. Hit “NEXT” to continue to the next stage (and hit “YES” to confirm).



# LOGGING – IMPORT DATA (6/6)

## STEP 3 – Importing sessions:

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



**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

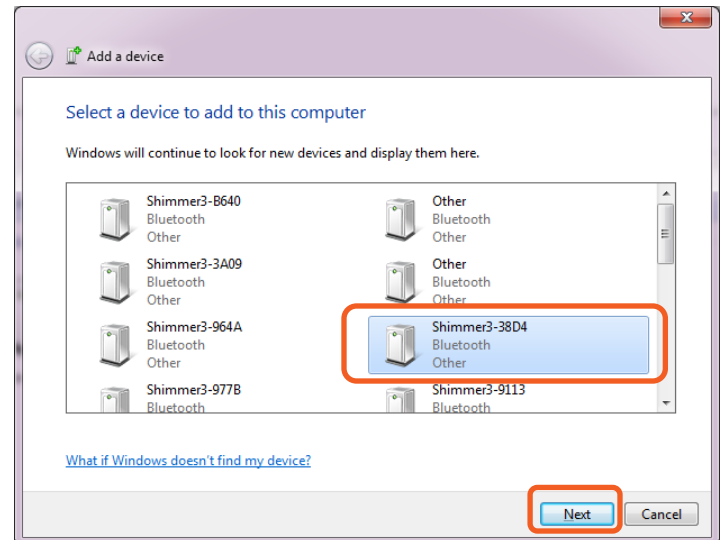
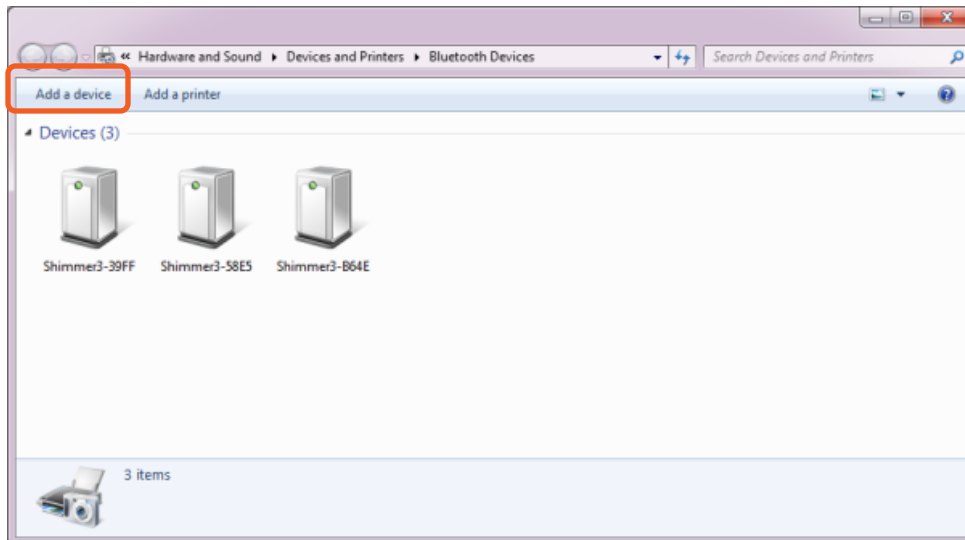
**N.B.** The computer needs to be equipped with a Bluetooth Adapter to allow streaming over Bluetooth.

**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:

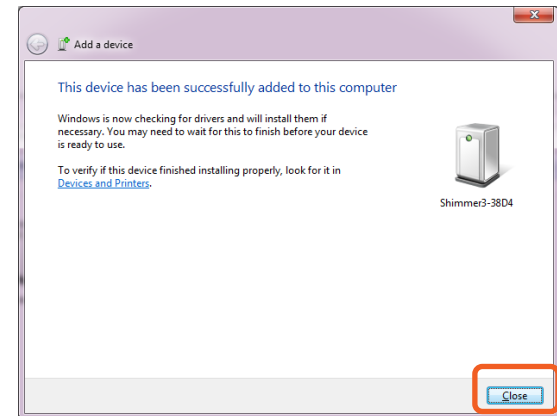
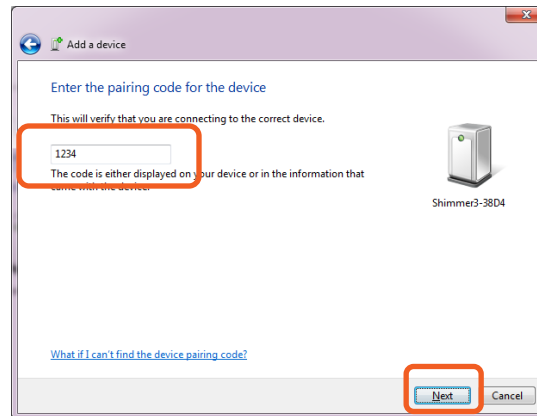
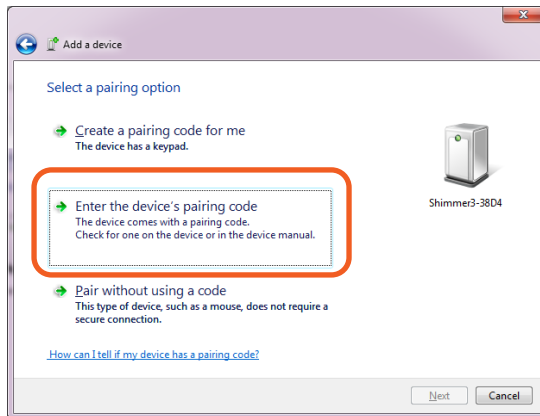
Select Shimmer, click “Next”:



# STREAMING – PAIR SHIMMER (2/2)

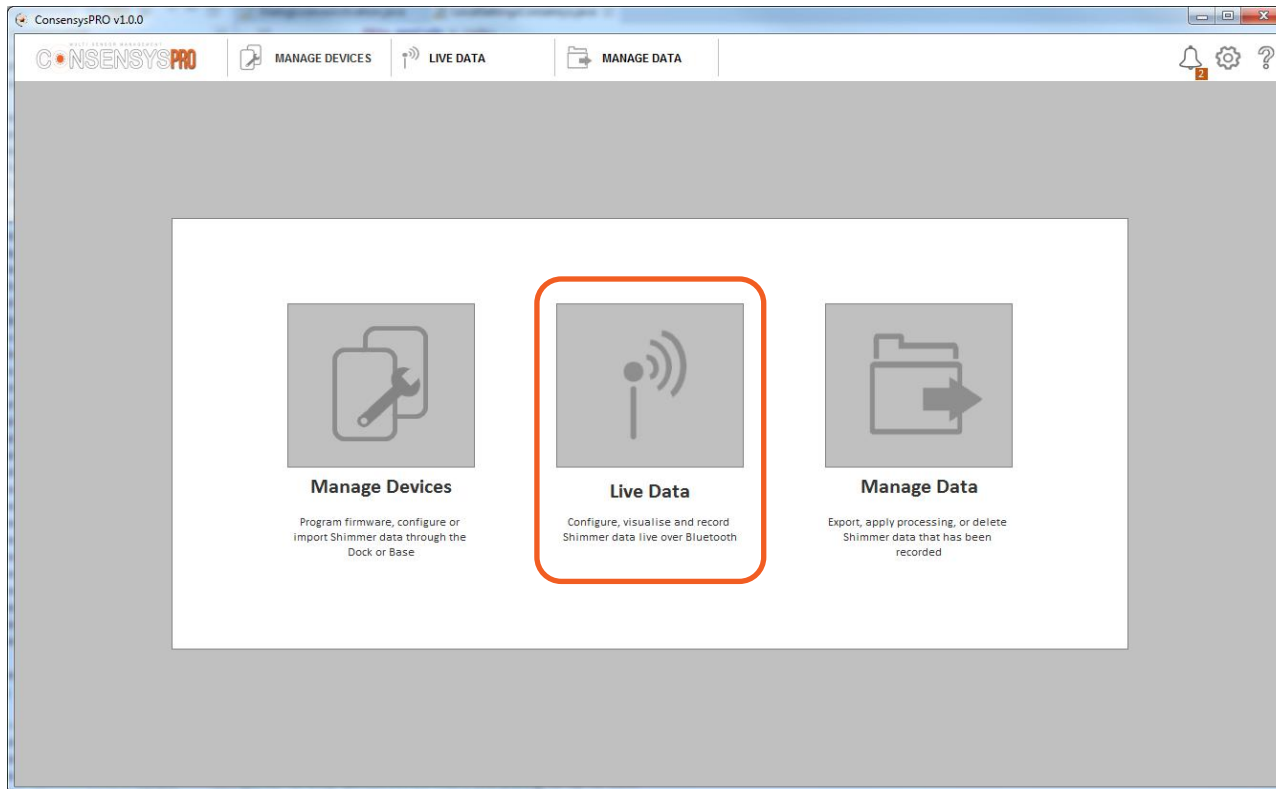
Enter the pairing code: “1234” and click “Next”:

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' column with a device icon, a 'DEVICES' column with details (Exp: Unknown Fw: Unknown Fs: Unknown, State: Disconnected Overall Packets: N/A), and a 'RECORDING DETAILS AND STATUS' column with icons for connection, configuration, and recording. A red box highlights the 'SELECT' column.
- DATA VISUALISATION (Active: Plot 1)**: A plot area showing a graph with the y-axis ranging from 0.0 to 1.0 and the x-axis labeled 'x'.
- Hardware and Devices and Printers**: A window showing a list of detected devices: Shimmer2-2C02, Shimmer2-3A44, Shimmer2-36AD, Shimmer2-50CE, and RIM2-88A0. A red arrow points from the 'SELECT' column in the main table to this window.

At the bottom of the main window, there are buttons for CONNECTION (0/5), CONFIGURE (0/0), STREAM (0/0), and RECORD (0/0). Below these buttons, a note states: "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."

**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 ConsensysPRO v1.0.5 software interface. The main window is titled "AVAILABLE DEVICES (0/5) (SELECT SHIMMERS FROM THE TABLE FOR BLUETOOTH CONFIGURATION)". It contains a table with columns for "SELECT", "DEVICES", and "RECORDING DETAILS AND STATUS".

| 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 |

At the bottom of the interface, there are four buttons: CONNECTION (0/5), CONFIGURE (0/0), STREAM (0/0), and RECORD (0/0). A note below the buttons reads: "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."

On the right side, there is a "Plot 1" window showing a graph with a y-axis from 0.0 to 10.0 and an x-axis labeled "x". The Shimmer logo is visible in the top right corner of the plot window.

Annotations in the image include:

- A red box around the "SELECT" column icons, with an arrow pointing to a text box: "Images are shown for previously connected Shimmers, with indication whether they are docked."
- A red box around the "36AD" device's Bluetooth icon, with an arrow pointing to a text box: "Click to connect to '36AD'".



# 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 |

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.

Plot 1

shimmer

Full Options  
Event Markers

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

# 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: 'AVAILABLE DEVICES (0/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' section contains a table of devices with columns for 'SELECT', 'DEVICES', and 'RECORDING DETAILS AND STATUS'. A red box highlights the 'SELECT' column, which includes options like 'Select All', 'Show Advanced All', and 'Toggle LED All'. Below this, a list of devices is shown, including '02 (Shimmer\_2C02)', '36AD (Shimmer\_36AD)', '3A44', '58E5', and 'B8A0 (Shimmer\_B8A0)'. Each device entry has a Shimmer icon, a status indicator, and a set of control buttons (Bluetooth, Settings, Play, Record, and Stop). A red box highlights the Shimmer icons, with a text box below stating: 'Click on the Shimmer icons to (de)select individual Shimmers.' The 'DATA VISUALISATION' section on the right shows a plot area with a y-axis ranging from 0.0 to 10.0 and an x-axis labeled 'x' with a value of 01.0000. The Shimmer logo is visible in the top right corner of the plot area.

| SELECT                   | DEVICES             | RECORDING DETAILS AND STATUS  |
|--------------------------|---------------------|---|
| <input type="checkbox"/> | 02 (Shimmer_2C02)   | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
| <input type="checkbox"/> | 36AD (Shimmer_36AD) | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |
| <input type="checkbox"/> | 3A44                | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/> | 58E5                | Trial:<br>Time:<br>Live Session: N/A                                  |
| <input type="checkbox"/> | B8A0 (Shimmer_B8A0) | Trial: DefaultTrial<br>Time: 2017/05/05 15:43:08<br>Live Session: N/A |

# 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 (2C02 and 36AD) have green checkmarks in the selection 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 bottom section containing buttons for CONNECTION (5/5), CONFIGURE (2/2), STREAM (2/2), and RECORD (2/2). Below these are buttons for CONNECT (3/3) and DISCONNECT (2/2).

Annotations and callouts:

- A callout box on the left states: "All 5 selected, only 2 are connected." with an arrow pointing to the selection column.
- A callout box for the 2C02 and 36AD devices states: "For individual Shimmers: Connect; Configure; Start streaming." with an arrow pointing to the individual device control buttons.
- A callout box for the 3A44, 58E5, and B8A0 devices states: "Not connected." with an arrow pointing to the individual device control buttons.
- A callout box for the group controls states: "For all selected Shimmers: Connect; Configure; Start streaming; Record." with an arrow pointing to the group buttons.

# STREAMING – CONFIGURE TRIAL (3/7)

STEP 3 – Selecting Shimmers enables Group Buttons – continued:

The screenshot displays the ConsensusPRO v1.0.5 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 device list shows five entries: 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, 58E5, and B8A0 (Shimmer\_B8A0). Each entry has a 'SELECT' checkbox, a status indicator, and recording details. The 'CONNECTION (5/5)' section at the bottom contains buttons for 'CONFIGURE (2/2)', 'STREAM (2/2)', 'RECORD (2/2)', 'CONNECT (3/3)', and 'DISCONNECT (2/2)'. A 'Plot 1' window is open on the right, showing a blank graph with the Shimmer logo.

Annotations in the image include:

- A box on the left: "All 5 selected, only 2 are connected." with arrows pointing to the 'SELECT' checkboxes of all five devices.
- A box on the right: "For all **connected** Shimmers: Configure; Start Streaming; Start Recording;" with an arrow pointing to the 'CONFIGURE', 'STREAM', and 'RECORD' buttons.
- A box on the right: "Connect **disconnected** Shimmers; Disconnect **connected** Shimmers." with an arrow pointing to the 'CONNECT' and 'DISCONNECT' buttons.

# 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 'AVAILABLE DEVICES (5/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' section lists five Shimmer devices with their respective configurations and recording details. A red box highlights the 'CONFIGURE (2/2)' button at the bottom of the device list. A red arrow points from this box to a text box containing the note: 'N.B. Colour identification is different for Shimmers that NOT belong to the same Trial.' The 'DATA VISUALISATION' section shows a plot area with a grid and a 'shimmer' logo. A red box highlights a text box containing the note: 'N.B. Only Shimmers configured simultaneously belong to the same trial and have the same colour identification.'

**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.**

# STREAMING - CONFIGURE TRIAL (5/7)

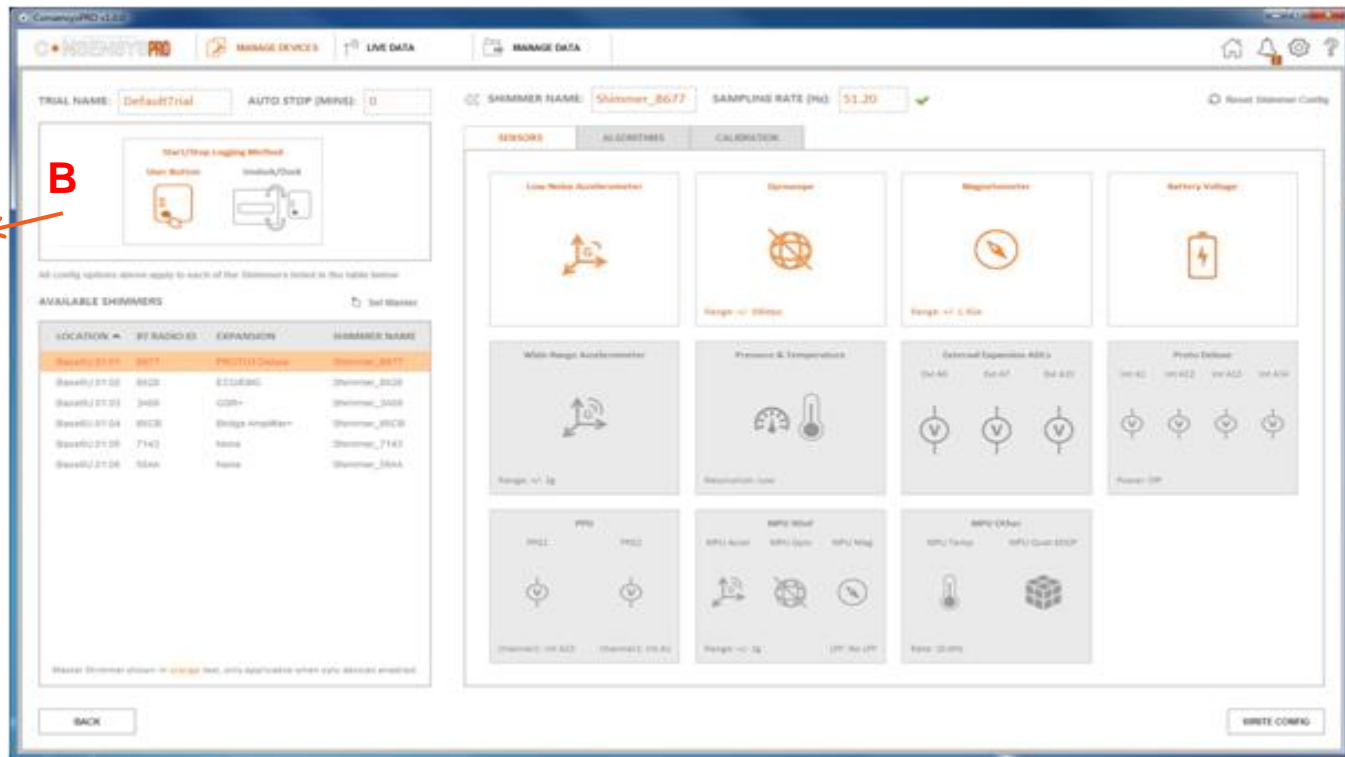
## STEP 5 – Set TRIAL NAME:

- 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:

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

ConsensysPRO v1.0.5

MANAGE DEVICES LIVE DATA MANAGE DATA

TRIAL NAME: DefaultTrial ✓

SHIMMER NAME: Shimmer\_36AD ✓

SAMPLING RATE (Hz): 51.20 ✓

Start/Stop Logging Method

User Button Undock/Dock

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

AVAILABLE SHIMMERS

| LOCATION | BT RADIO ID | EXPANSION | SHIMMER NAME |
|----------|-------------|-----------|--------------|
| COM36    | 2C02        | ECG/EMG   | Shimmer_2C02 |
| COM54    | 36AD        | None      | Shimmer_36AD |

SENSORS ALGORITHMS CALIBRATION

Low-Noise Accelerometer

Wide-Range Accelerometer

Gyroscope

Magnetometer

Pressure & Temperature

Battery Voltage

External Expansion ADCs

Ext A6 Ext A7 Ext A15

BACK

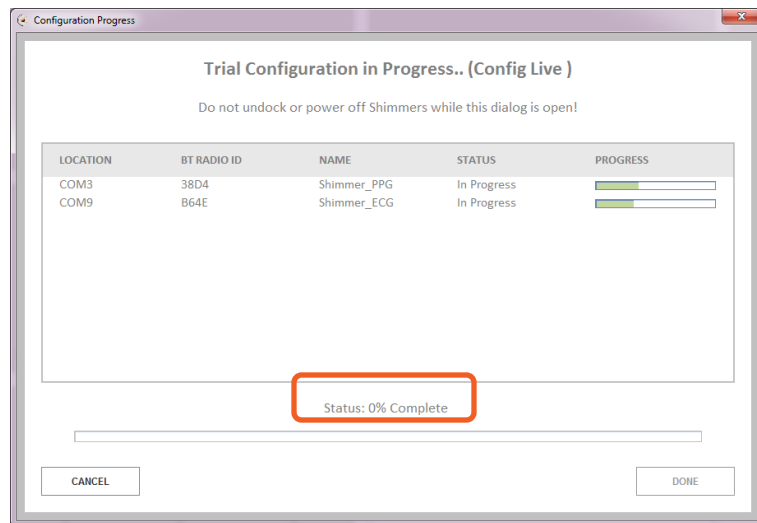
WRITE CONFIG



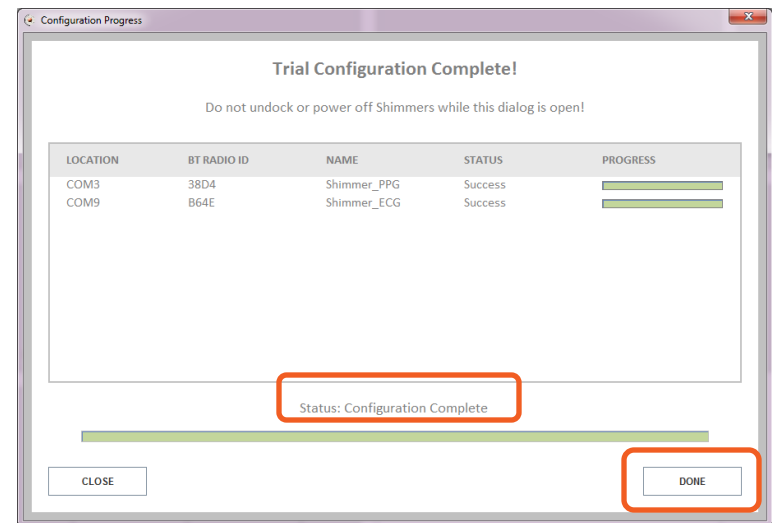
# STREAMING - CONFIGURE TRIAL (7/7)

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 sections: 'AVAILABLE DEVICES (5/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' section 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' section shows a plot area with a y-axis ranging from 0 to 10 and an x-axis labeled '01:00:00'. The plot area is currently empty, and 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 Shimmer\_2C02, with the text: "Device Properties are available for plotting only."
- A red box around the 'Low-Noise Accelerometer' checkbox for Shimmer\_2C02, 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."

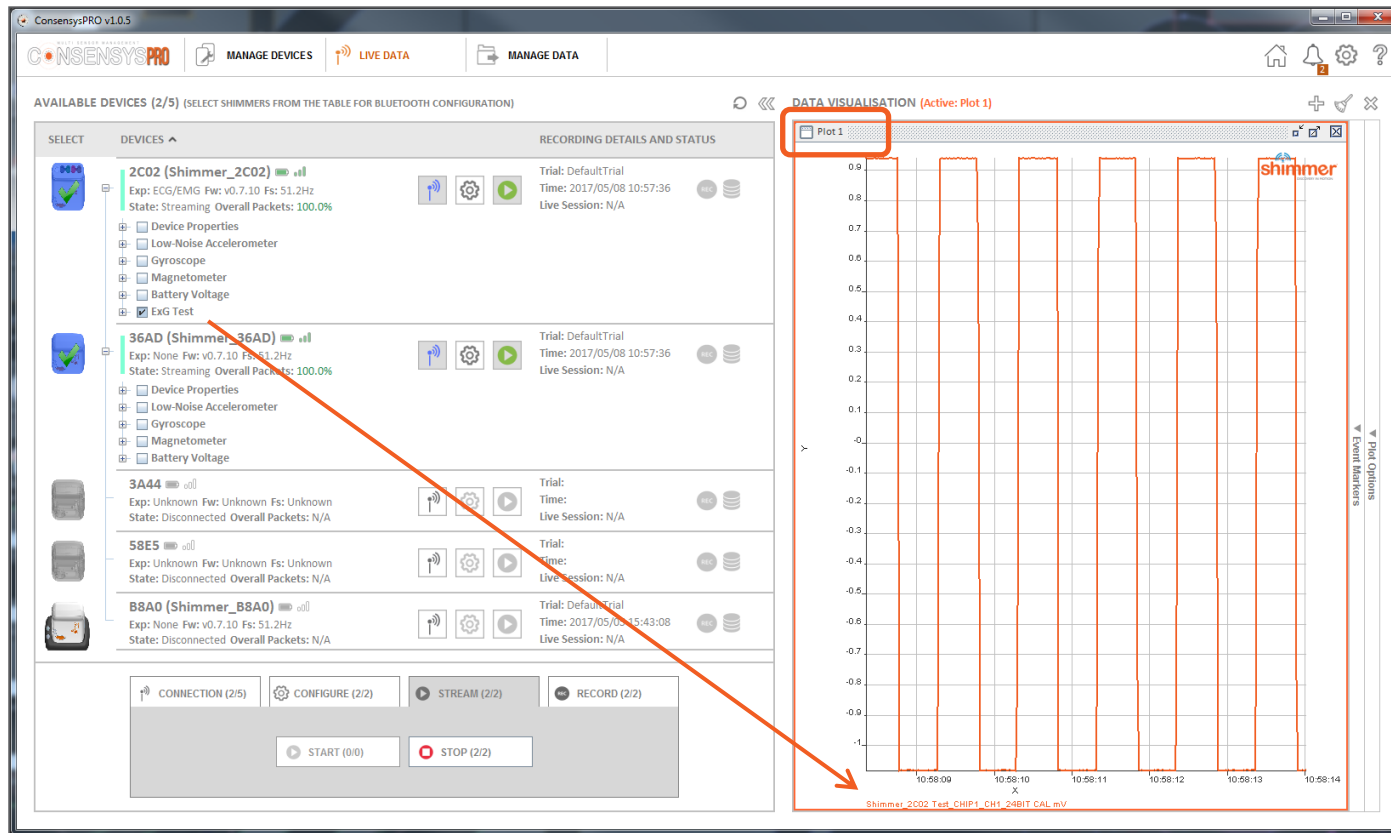
| SELECT                              | DEVICES  | RECORDING DETAILS AND STATUS  |
|-------------------------------------|--|---|
| <input checked="" type="checkbox"/> | <b>2C02 (Shimmer_2C02)</b><br>Exp: ECG/EMG Fw: v0.7.10 Fs: 51.2Hz<br>State: Ready Overall Packets: N/A     | Trial: DefaultTrial<br>Time: 2017/05/08 10:32:09<br>Live Session: N/A |
| <input 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 top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main area is divided into two sections: 'AVAILABLE DEVICES (2/5)' and 'DATA VISUALISATION (Active: Plot 1)'. The 'AVAILABLE DEVICES' section lists several Shimmer devices with their properties and recording status. The 'DATA VISUALISATION' section shows a plot of data for 'Shimmer\_2C02'. A red box highlights the 'Plot Options' panel on the right, which contains settings for the plot and options to add or remove plots. A text box with an arrow points to this panel, stating: 'Plot options to configure the plot settings, add new plots and pop out/in plots from the main application window'. The plot itself shows a square wave signal over time, with the x-axis labeled 'X' and the y-axis labeled 'Y'. The plot title is 'Shimmer\_2C02 Test\_CHIP1\_CH1\_24BIT\_CAL.mv'.

AVAILABLE DEVICES (2/5) (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: 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               | 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               | 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 VISUALISATION (Active: Plot 1)

Plot 1

Plot Options

- ALL PLOT SETTINGS
- Settings
- ADD NEW PLOTS
- Plot all
- Add plot
- POP OUT/POP IN
- Pop out all
- Pop in all

Plot Options

Settings

ADD NEW PLOTS

Plot all

Add plot

POP OUT/POP IN

Pop out all

Pop in all

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

Plot options to configure the plot settings, add new plots and pop out/in plots from the main application window

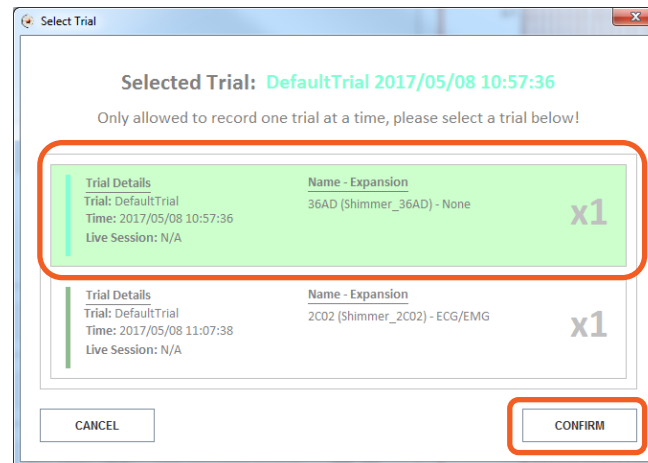
# STREAMING - RECORD (1/4)

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

The screenshot displays the ConsensusPRO v1.0.5 software interface. On the left, a list of available devices is shown, including 2C02 (Shimmer\_2C02) and 36AD (Shimmer\_36AD). The 2C02 device is highlighted, and its recording details are shown on the right, indicating it is streaming at 100.0% overall packets. Below the device list, there are four recording options: 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." On the right side of the interface, a data visualization plot is shown, displaying a series of red vertical lines representing data points over time. The plot is titled "Plot 1" and has a y-axis ranging from -1.0 to 0.9 and an x-axis showing time from 11:07:58 to 11:08:08. The plot is also highlighted with a red box.

# 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, the 'AVAILABLE DEVICES (5/5)' section lists several Shimmer devices: 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, 58E5, and B8A0 (Shimmer\_B8A0). The 2C02 device is highlighted, and its recording details show 'Trial: DefaultTrial', 'Time: 2017/05/08 11:07:38', and 'Live Session: N/A'. A red box highlights the recording details for the 2C02 device with the text: 'For each recording a new Session is added to the Trial. (1st recording in this example)'. Below the device list, the 'STOP TO PC (1/1)' button is highlighted with a red box and labeled 'Database buffer condition.'. On the right, the 'DATA VISUALISATION' section shows three plots. Plot 1 shows a square wave signal labeled 'Shimmer\_2C02 Test\_CHIP1\_CH1\_24BIT CAL mV'. Plot 2 shows multiple acceleration signals labeled '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', and 'Shimmer\_2C02 Accel\_LN\_X CAL m/s^2'. Plot 3 shows multiple gyroscope signals labeled 'Shimmer\_2C02 Gyro\_X CAL deg/s', 'Shimmer\_2C02 Gyro\_Y CAL deg/s', and 'Shimmer\_2C02 Gyro\_Z CAL deg/s'. A red box highlights the top plot with 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 top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main area is divided into 'AVAILABLE DEVICES (5/5)' and 'RECORDING DETAILS AND STATUS'. The device list shows 2C02 (Shimmer\_2C02), 36AD (Shimmer\_36AD), 3A44, 58E5, and B8A0 (Shimmer\_B8A0). The recording status for 2C02 shows 'State: Streaming Overall Packets: 100.0%' and 'Live Session: N/A'. The recording status for 36AD shows 'State: Streaming and SD Logging Overall Packets: 100.0%' and 'Live Session: 2'. The recording status for 3A44 and 58E5 shows 'State: Disconnected Overall'. The recording status for B8A0 shows 'State: Disconnected Overall'. The bottom control bar includes 'CONNECTION (5/5)', 'CONFIGURE (2/2)', 'STREAM (2/2)', and 'RECORD (2/2)'. The 'RECORD (2/2)' section has buttons for 'START TO SD (0/0)', 'STOP TO SD (1/1)', 'START TO PC (0/0)', and 'STOP TO PC (1/1)'. The 'STOP TO SD (1/1)' and 'STOP TO PC (1/1)' buttons are highlighted with an orange box. The 'DATA VISUALISATION' section shows three 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 plots show various data signals over time. Three orange boxes with arrows point to specific elements: one points to the 'STOP TO SD (1/1)' and 'STOP TO PC (1/1)' buttons, another points to the 'RECORDING DETAILS AND STATUS' for device 36AD, and a third points to the 'RECORD TO SD AND PC' section of Plot 3.

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 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 ConsensysPRO v0.4.6 software interface. The main window is titled 'AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)'. It contains a table with columns: NAME, SYNC, RTC, TIME, DURATION, and SIZE. The table lists various datasets, including BU\_LNWRAccel, DefaultTrial, Fitbit, Pounder8g, Sample9Dof\_R, Sample9Dof\_W, SampleECG, SampleEMG, SampleEvents, SampleGSRPPG, SampleResp, SampleSync\_SD, and case1356. Below the table, there are two buttons: 'APPLY' (with a play icon) and 'SKIP' (with a right arrow icon). The 'APPLY' button is highlighted with an orange box and a callout that says 'Press the 'APPLY' button to apply The events to the associated datasets'. The 'SKIP' button is labeled 'Skip to the MANAGE DATA panel'. To the right of the table, there is a 'DATA DESCRIPTIONS' panel with the text '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_LNWRAccel  |      |     | 2016/06/14 12:19:36 | 00:07:32 | N/A       |
| BU_LNWRAccel  |      |     | 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 |      |     | 2016/07/12 10:41:21 | 00:02:23 | 3.17 MB   |
| case1356      |      |     | 2016/07/12 10:04:12 | 00:00:10 | N/A       |

# 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 14:48:49 | 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%  | ✓    |     | 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 17:17:10 | 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 |
| SampleGSRPPG                  |      |     | 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_38G4 - 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 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

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.)

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

**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.
- Select “File Delimiter”, “File Format”, “Timestamp Format”, “Data Format”.
- Hit “Export” to export the selected data to a file in the requested format.

**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%  |      | ✓   | 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 | 00:00:01 | N/A       |
| SampleDef_R                   |      |     | 2015/06/26 17:17:14 | 00:01:00 | 766.82 KB |
| SampleDef_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 |
| SampleGSRPPG                  |      |     | 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_304D - 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_28E0 - 1024.0Hz - 98% |      | ✓   | 2015/10/02 16:08:31 | 00:01:59 | 1.05 MB   |
| Accel_WR_X (v-f-2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Y (v-f-2g, 1344.0Hz) |      |     |                     |          |           |
| Accel_WR_Z (v-f-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 here 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 synchronized yet. The User can synchronize 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 synchronized.

PC Recording - Session 2

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

PC Recording - Session 3

SAVE

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

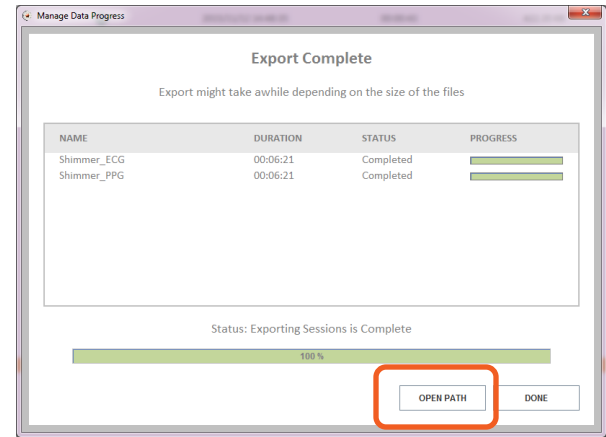
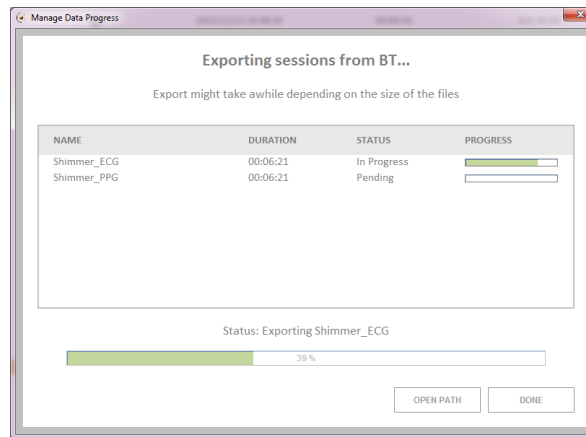
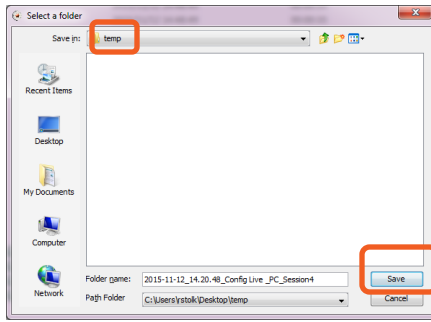
DELETE 300 File Format: csv File Delimiter: tab FD Timestamp Format: Unix Data Format: Calibrated EXPORT PROCESS



# MANAGE DATA – EXPORT (2/2)

## STEP 2 – EXPORT – Export the data:

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



# MANAGE DATA – DELETE (1/3)

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

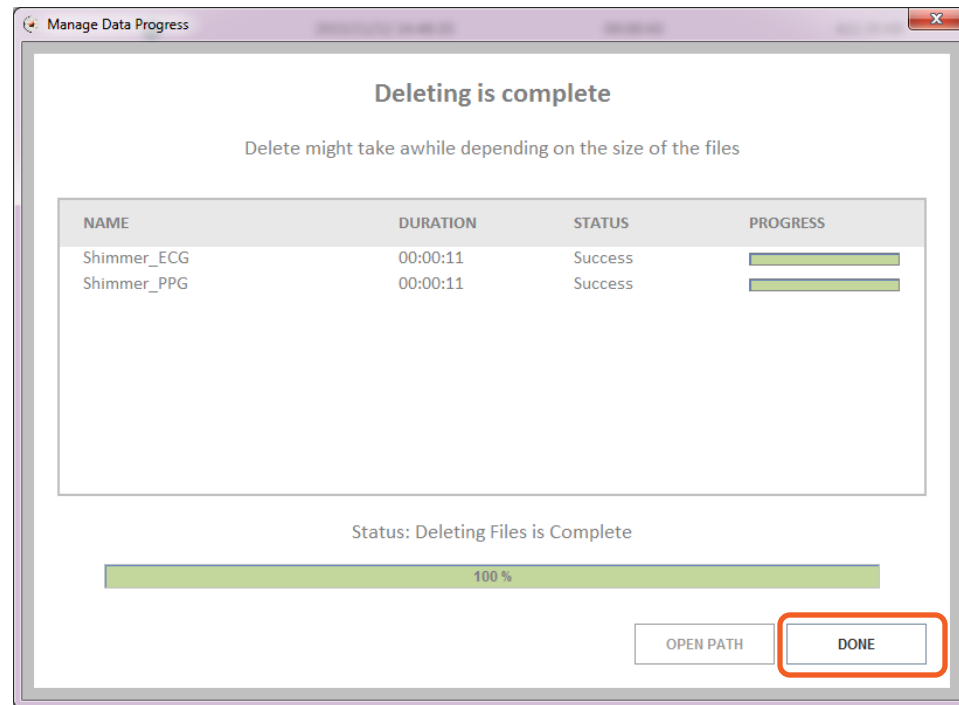
- Select data to be deleted – this can.
- Hit “DELETE” to delete the selected data from the database (and hit “YES” to confirm).

The screenshot shows the Consensys v04.0 software interface. The main window is titled 'MANAGE DATA'. On the left, there is a tree view showing a hierarchy of data including 'Config Live', 'SD Recording', 'PC Recording', 'GS-v0.4.0', and 'PPG'. The main area displays a table of 'AVAILABLE DATA' with columns: NAME, SYNC, RTC, TIME, DURATION, and SIZE. A modal dialog box is open in the center, asking 'You are about to permanently delete the selected data. Are you sure you want to proceed?' with 'Yes' and 'No' buttons. The 'DELETE' button is highlighted at the bottom of the interface.

| 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%  |      |     |                     |          | N/A       |
| Shimmer_ECG - 512.0Hz - 100%  |      |     |                     |          | N/A       |
| GS-v0.4.0                     |      |     |                     |          |           |
| PPG                           |      |     |                     |          |           |
| SampleDoF_R                   |      |     | 2015/06/26 12:35:33 | 00:02:00 | 420.93 KB |
| SampleDoF_W                   |      |     | 2015/06/23 14:17:28 | 00:02:00 | 183.84 KB |
| SampleECG                     |      |     | 2015/10/02 15:58:12 | 00:02:25 | 3.17 MB   |
| SampleEMG                     |      |     |                     |          | 7.25 KB   |
| SampleGSRPPG                  |      |     |                     |          | 96.82 KB  |
| SampleSync_SD                 |      |     |                     |          | 74.54 KB  |
| 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) |      |     |                     |          |           |

# 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:

**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                     |      |     |                     |          |           |
| 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_ECG - 512.0Hz - 100%  |      | ✓   | 2015/11/12 14:48:35 | 00:00:43 | 368.31 KB |
| 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       |
| Session 2                     |      |     |                     |          |           |
| 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                     |      |     |                     |          |           |
| 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       |
| Session 4                     |      |     |                     |          |           |
| Shimmer_PPG - 256.0Hz - 100%  |      |     | 2015/11/12 14:55:10 | 00:06:21 | 57.25 KB  |
| Shimmer_ECG - 512.0Hz - 100%  |      |     | 2015/11/12 14:55:10 | 00:06:21 | 166.82 KB |
| GS-v0.4.0                     |      |     |                     |          | 74.54 KB  |
| PPG                           |      |     |                     |          | 3.84 MB   |
| Sample9Dof_R                  |      |     |                     |          | 430.93 KB |
| Sample9Dof_W                  |      |     |                     |          | 183.84 KB |
| SampleECG                     |      |     |                     |          | 3.17 MB   |
| SampleIMG                     |      |     | 2015/06/26 12:35:33 | 00:02:00 | 1.06 MB   |
| SampleCSRPPG                  |      |     | 2015/06/23 14:17:28 | 00:02:00 | 1.06 MB   |
| SampleSync_SD                 |      |     | 2015/10/02 15:58:12 | 00:02:25 | 1.05 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_2BEO - 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) |      |     |                     |          |           |

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

**Permanently delete selected data?**  
You are about to permanently delete the selected data. Are you sure you want to proceed?  
Yes No

**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

SAVE

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

# 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”.

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_LL-RA_24BIT               |      |     |                     |          |           |
| ECG_LL-LA_24BIT               |      |     |                     |          |           |
| ECG_LL-RA_24BIT               |      |     |                     |          |           |
| ECG_LL-LA_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       |
| SampleDoF_R                   |      |     | 2015/06/16 17:17:14 | 00:01:00 | 766.82 KB |
| SampleDoF_W                   |      |     | 2015/06/26 16:58:14 | 00:01:00 | 774.54 KB |
| SampleCG                      |      |     | 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 |
| 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   |
| 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_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

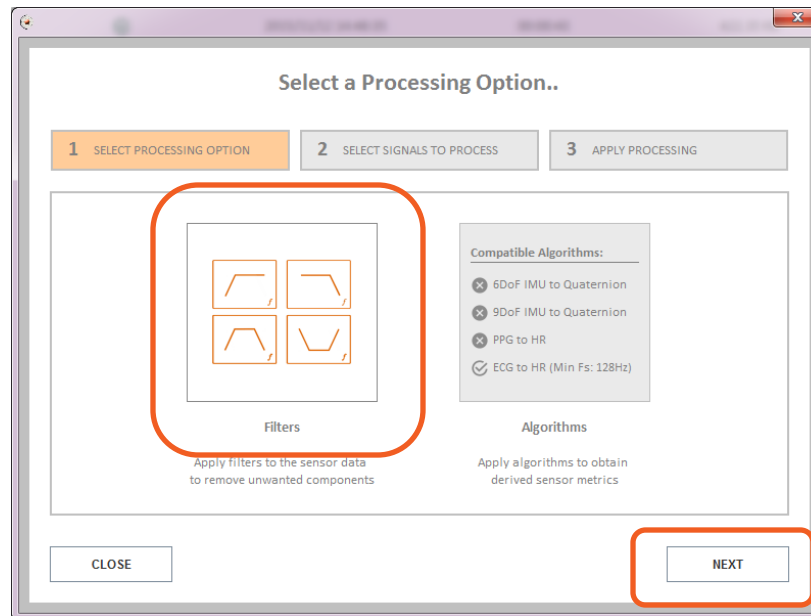
DELETE >>> File Format: csv File Delimiter: tab (t) Timestamp Format: Unix Data Format: Calibrated EXPORT PROCESS

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

# MANAGE DATA – PROCESS (2/5)

## STEP 2 – Select a Processing Option:

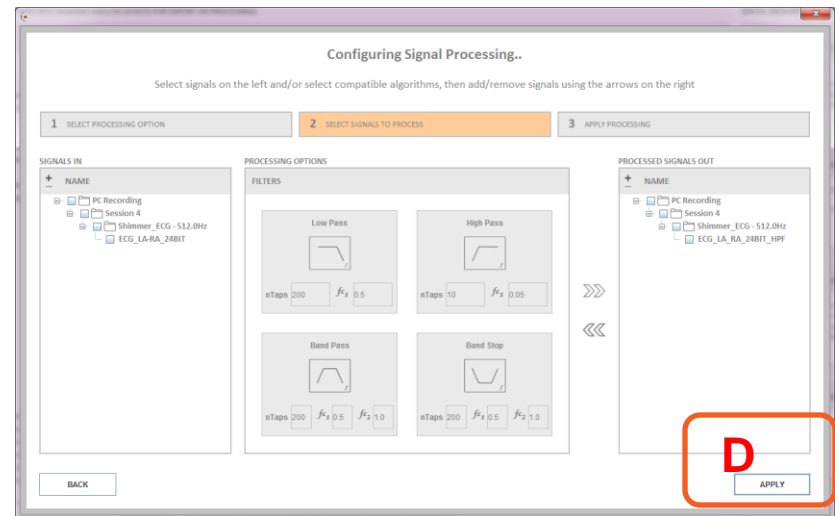
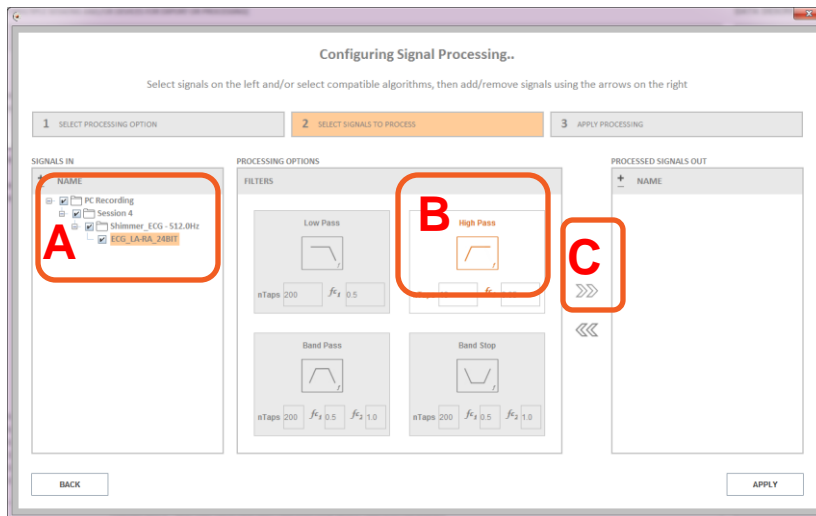
- A. Select **Filters** or **Algorithms** – only algorithms compatible with the selected data can be selected.
- B. Note that **Filters** only applies one filter operation to the selected signal(s). Follow STEPS 1 to 3 on the processed signal(s) to apply a successive filter operation.
- C. Click “NEXT”.



# MANAGE DATA – PROCESS (3/5)

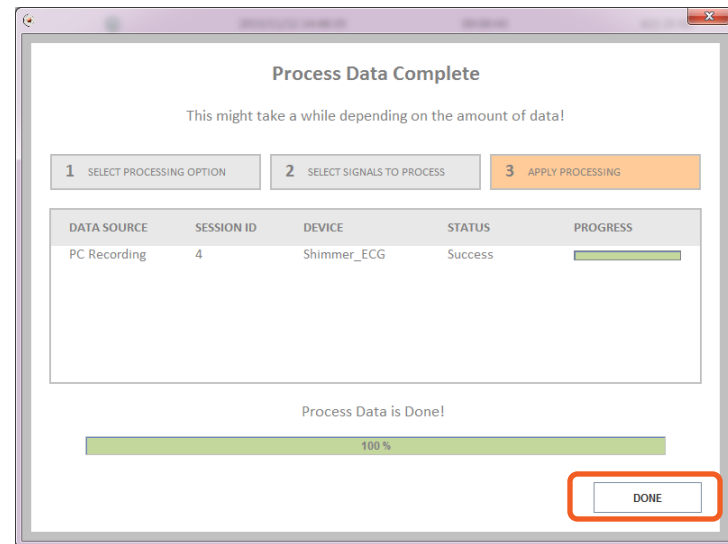
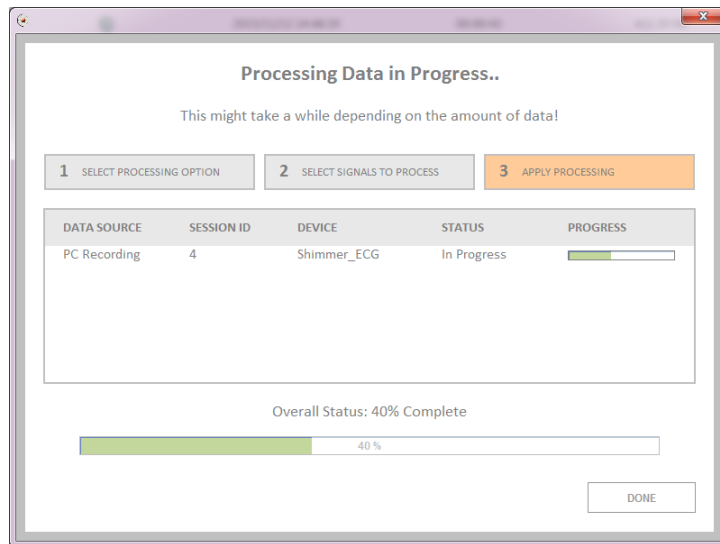
## STEP 3 – Configuring Signal Processing:

- 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:





# MANAGE DATA – PROCESS (5/5)

STEP 5 – Confirm processing has been applied:

The screenshot shows the NSENSYS PRO software interface. At the top, there are navigation tabs: 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The main area is titled 'AVAILABLE DATA (SELECT A SINGLE TRIAL AND MULTIPLE SESSIONS AND/OR DEVICES FOR EXPORT OR PROCESSING)'. It contains a table with columns: NAME, SYNC, RTC, TIME, DURATION, and SIZE. A red box highlights the 'EGC\_LA\_RA\_24BIT\_HPF' entry in the table, with a callout box stating: "EGC\_LA\_RA\_24BIT\_HPF" has been added to the session.

| 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               |      |     |                     |          |           |
| CGS_LP_V05_24BIT              |      |     |                     |          |           |
| EGC_LA_RA_24BIT_HPF           |      |     |                     |          |           |
| CGS_LP_V05_24BIT              |      |     |                     |          |           |
| EGC_LL_RA_24BIT               |      |     |                     |          |           |
| EGC_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 |
| SampleGSRPPG                  |      |     | 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_3804 - 1024.0Hz - 98% | M    | ✓   | 2015/10/02 16:08:14 | 00:02:00 | 1.06 MB   |
| Shimmer_28EO - 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

At the bottom of the interface, there are dropdown menus for 'File Format' (set to .csv), 'File Delimiter' (set to tab (t)), 'Timestamp Format' (set to Unix), and 'Data Format' (set to Calibrated). There are also buttons for 'DELETE', 'EXPORT', and 'PROCESS'.

The 'DATA DESCRIPTIONS' panel on the right shows information for 'Config Live - 2015/11/12 14:20:48', 'SD Recording - Session 2', 'PC Recording - Session 1', and 'PC Recording - Session 4'. A 'SAVE' button is located at the bottom of this panel.

# THINGS YOU MIGHT NEED TO KNOW (1/4)

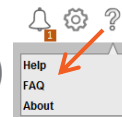
- The **green** and **blue** LED (in LED location B)
  1. Start *Consensys* and connect *Shimmer Dock* or *Base*.
  2. Place the Shimmer in the *Shimmer Dock* or *Base*.
  3. The Real Time Clock (RTC) of the Shimmer will be set.
  4. The blinking stops after the RTC has been set.



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 (2/4)

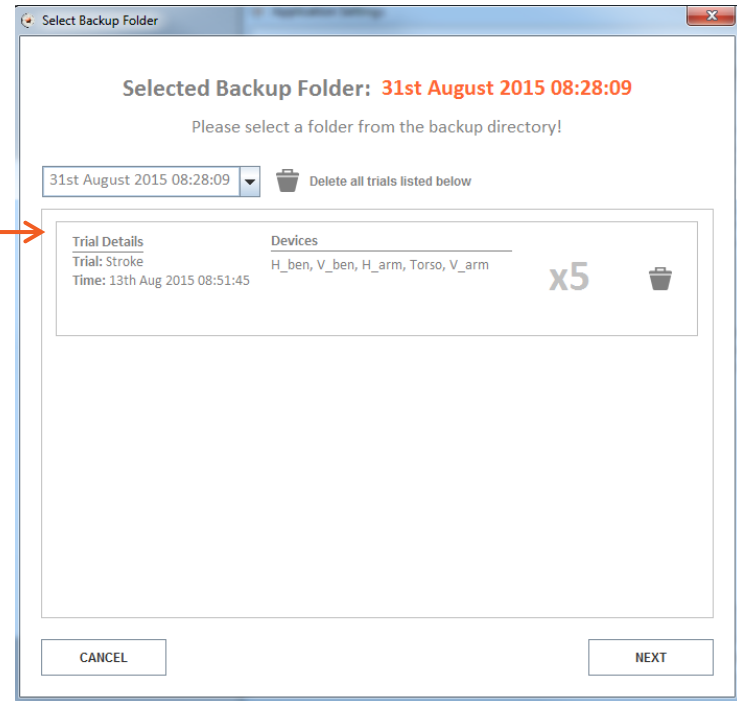
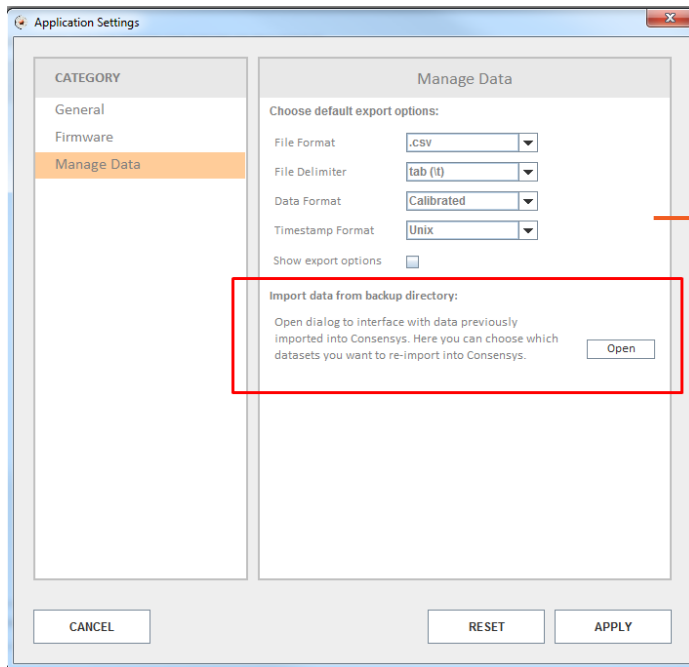
- To access the SD Card of a Shimmer inserted in a *Consensys Base*, right-click the Shimmer visualisation in MANAGE DEVICES; press “Open SD”:



- 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 (3/4)

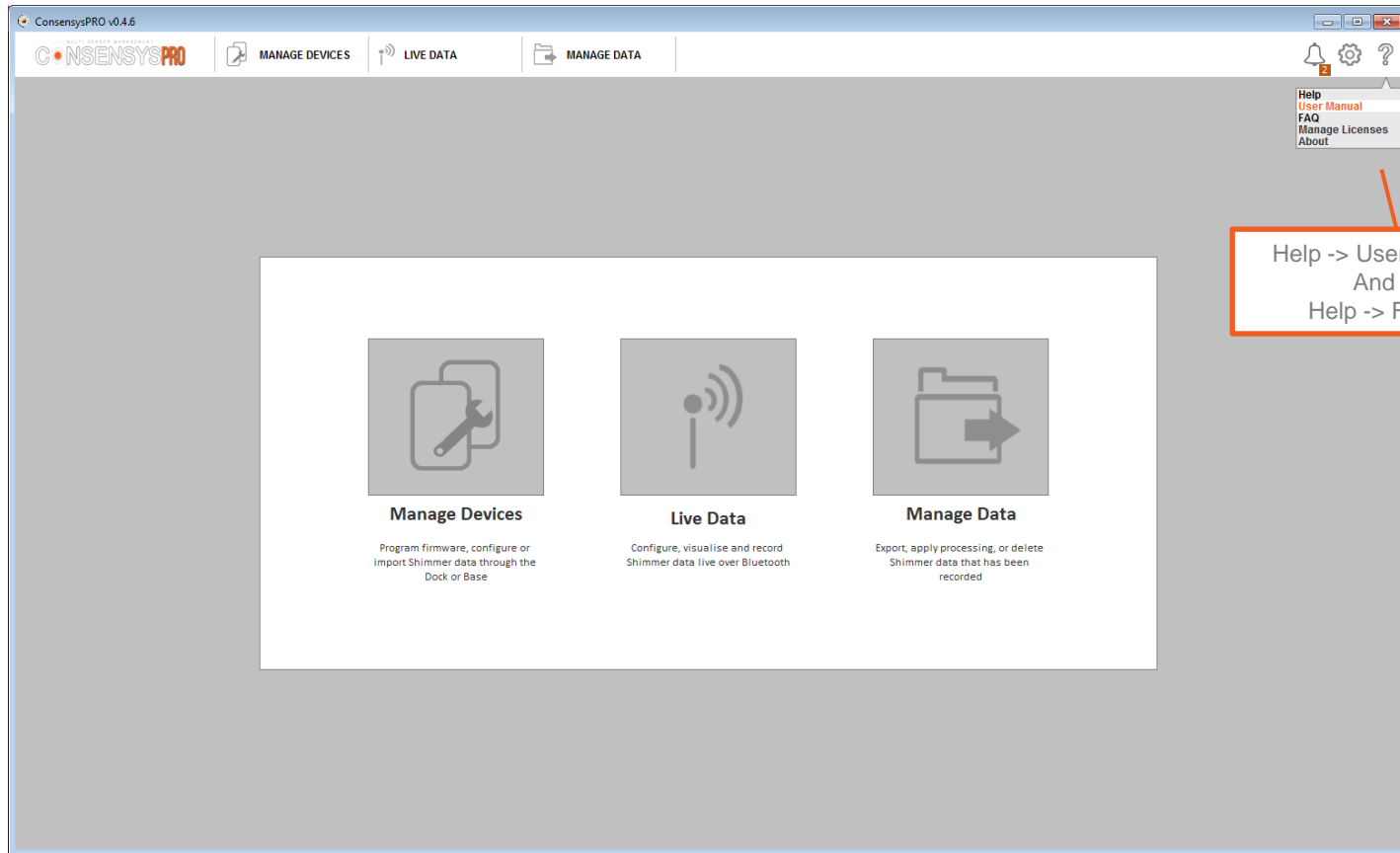
- To import data from the backup, you only need to open the *Manage Data* category in the Application Settings and click on *Open* the backup



- 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 (4/4)

- 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

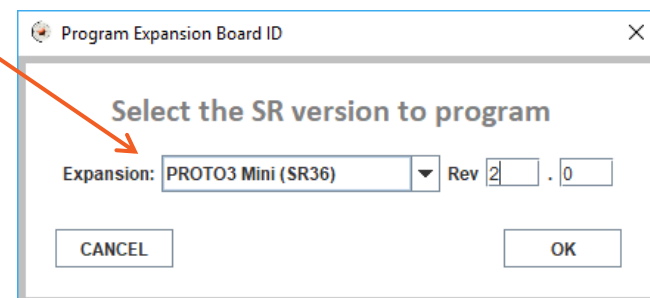
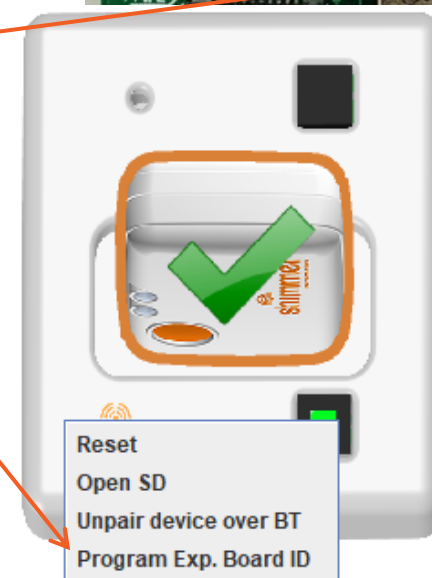
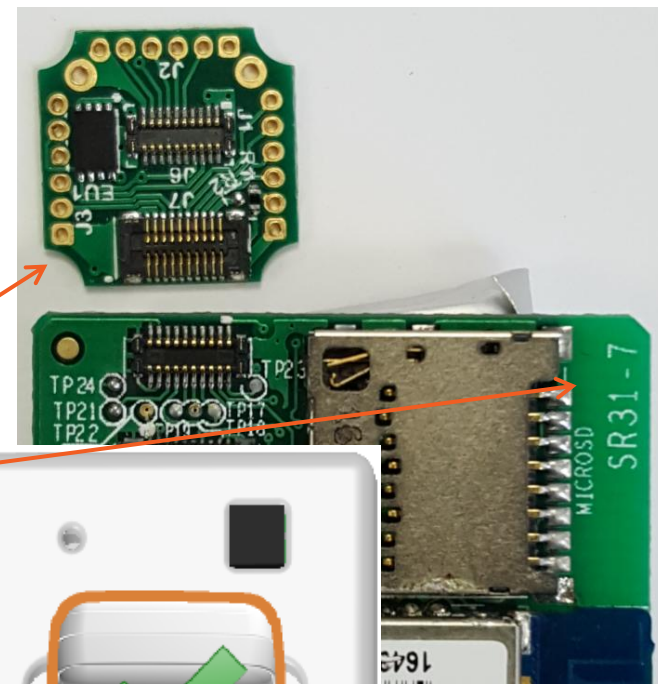


# PROTO3 MINI USERS

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.

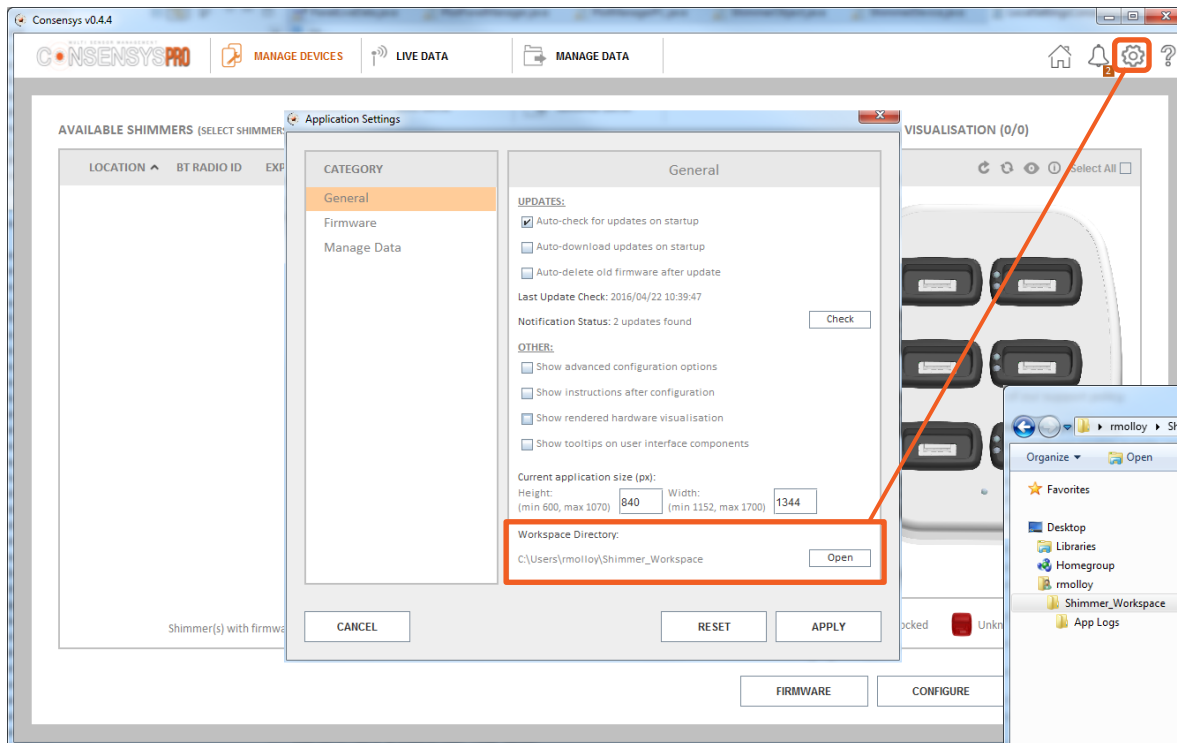
- Attach the Proto3 Mini to the SR31-7 by following instructions described in the Proto3 User Guide.
- Dock the Shimmer and program it with LogAndStream v0.10.0 (or greater).
- Hold the Ctrl+Alt+Shift keys and right click on the Shimmer image in the Dock or Base (using Consensys v1.5.0 or greater).
- 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”.

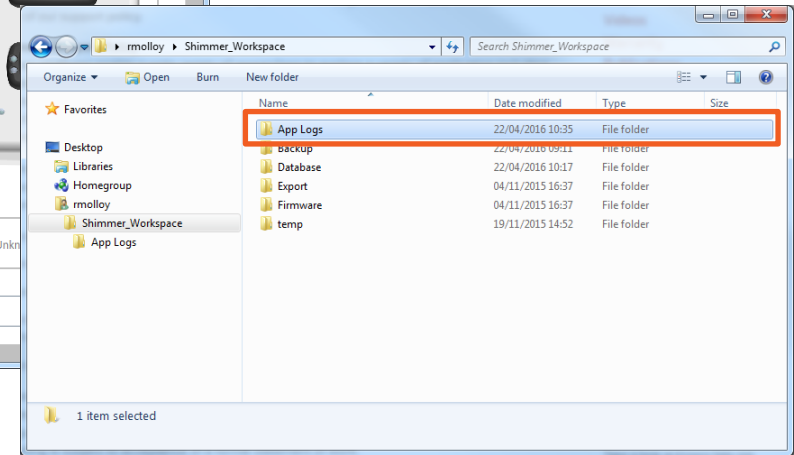


# TROUBLESHOOTING – DOCK/BASE ISSUES

- 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...

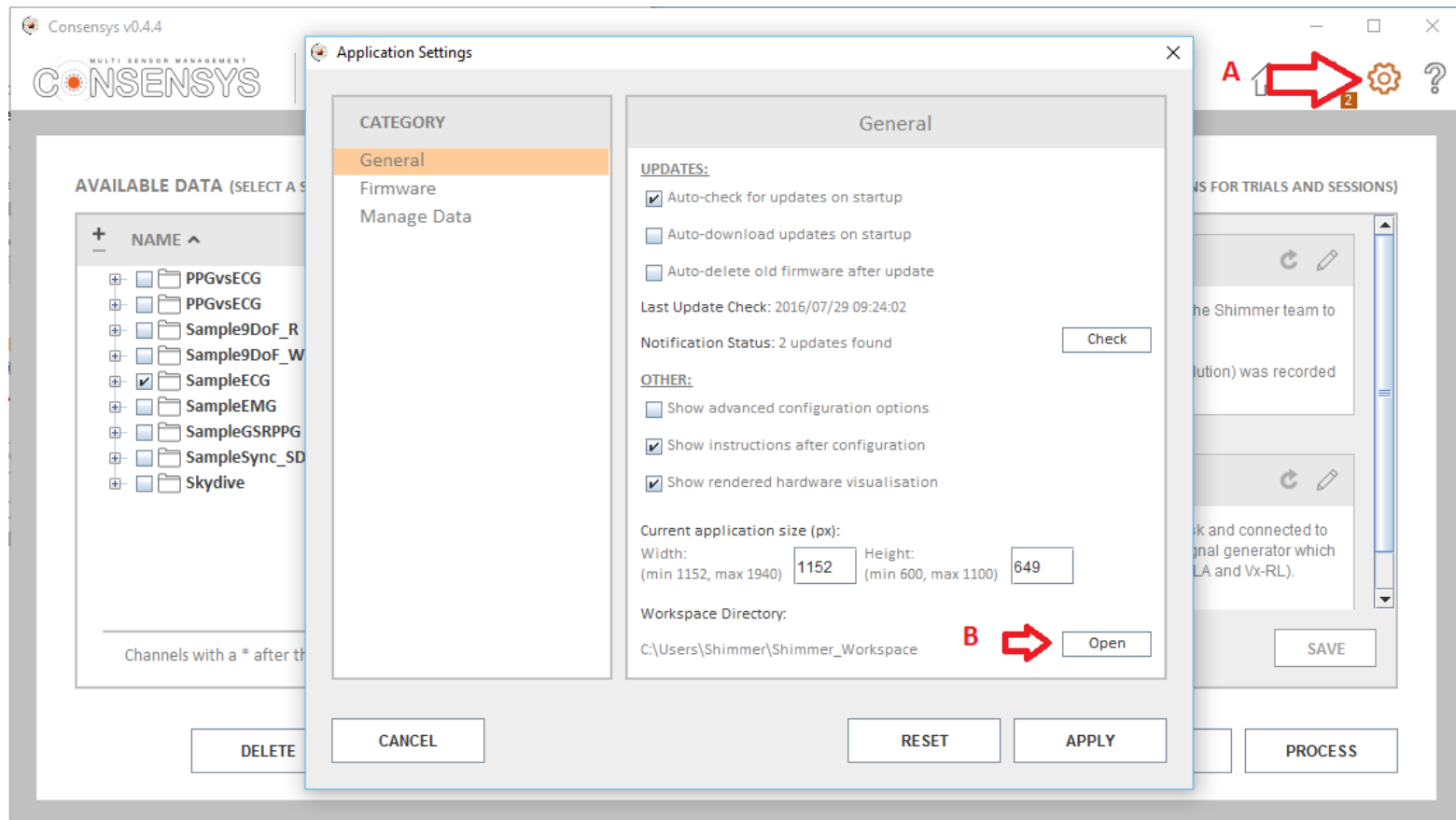
SAVE

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



# TROUBLESHOOTING – RECORDED DATA

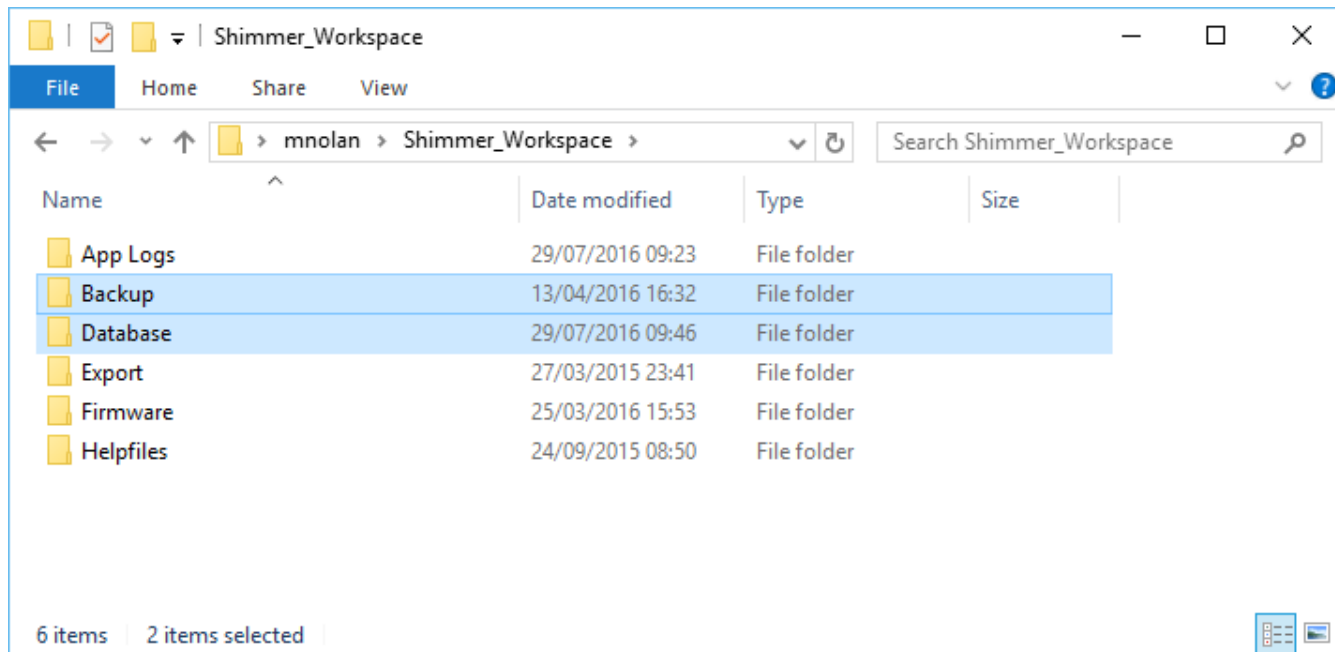
2. To navigate to the **Shimmer\_Workspace** directory:
  - A. Click on the Consensys 'Application Settings' menu
  - B. Click on the 'Open' button to open the workspace directory



# TROUBLESHOOTING – RECORDED DATA

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

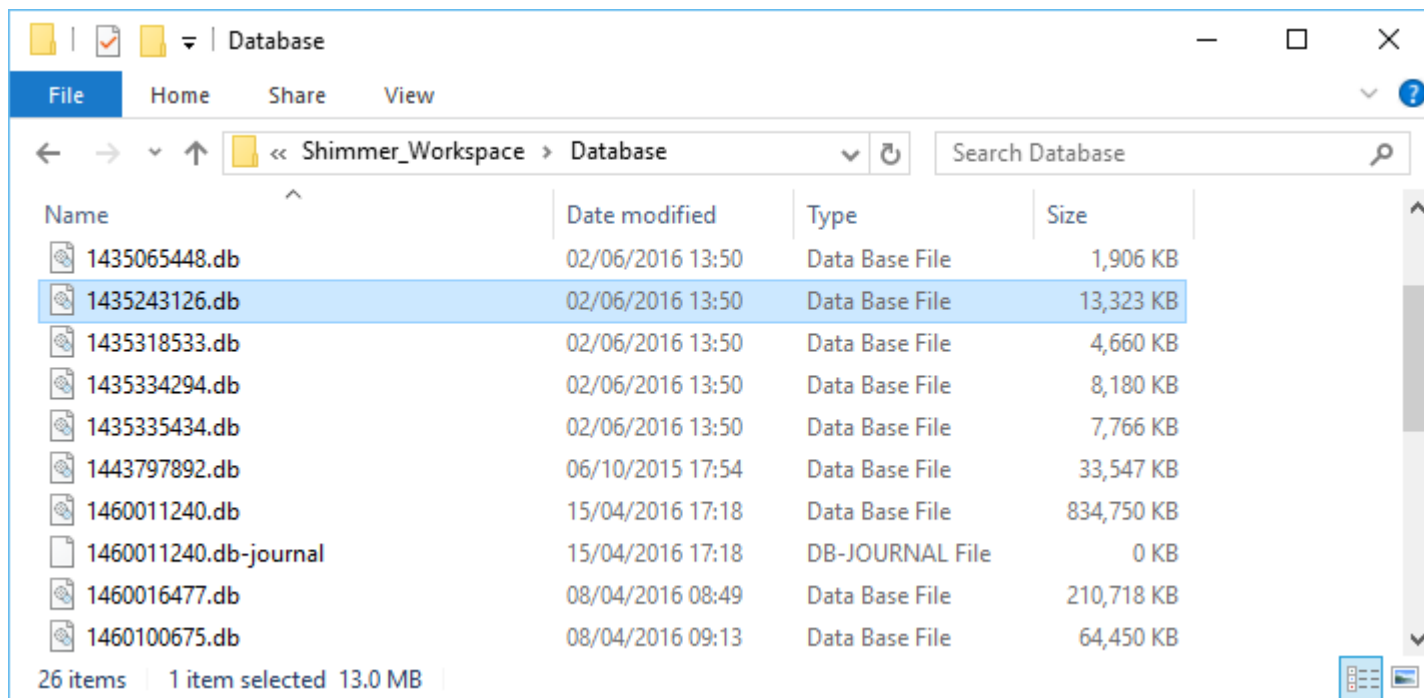
The 'Backup' directory is only relevant if data was imported from the Shimmer's SD card and is not used if data is solely recorded over a Bluetooth connection.



# 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)