CONSENSYS USER GUIDE V1.5

Rev. a

shimmer
DISCOVERY IN MOTION

CONTENTS

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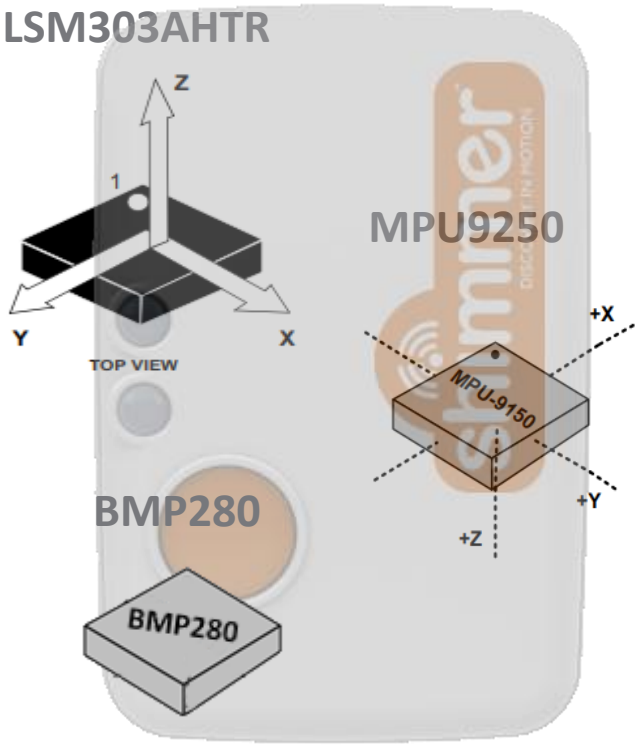
What's New in this Release

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

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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:

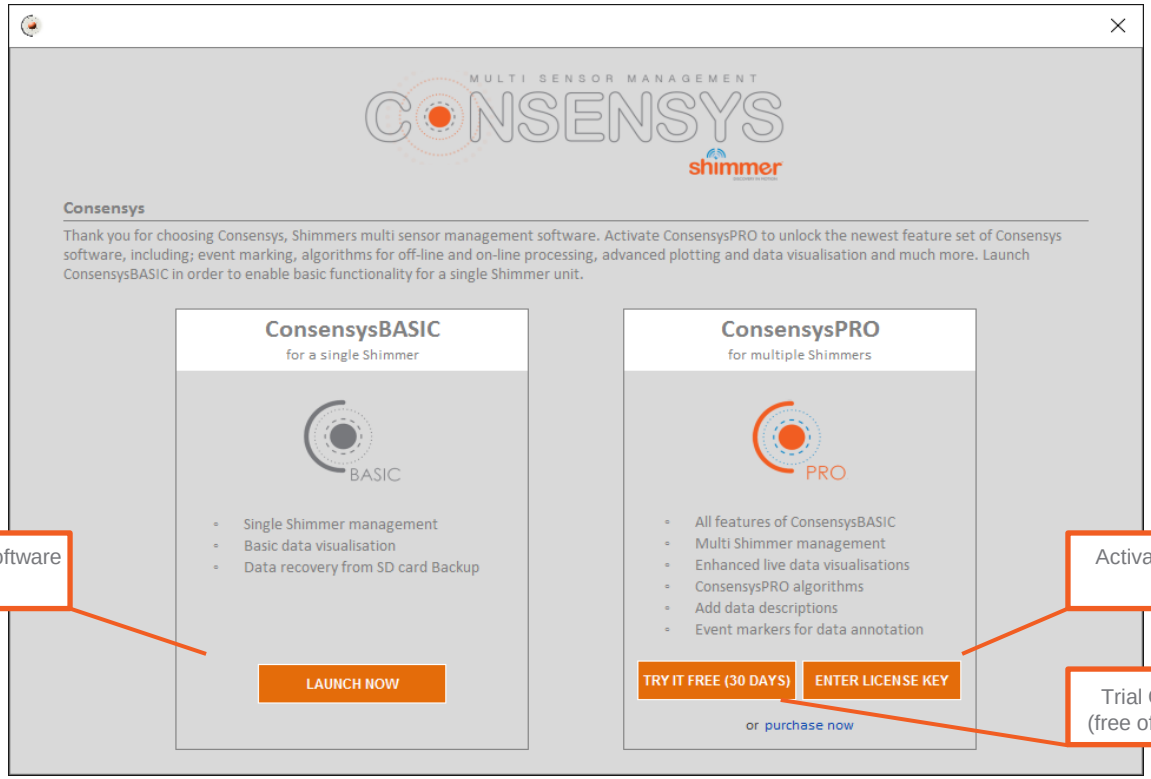
– *Consensys Software* – http://www.shimmersensing.com/menu/products/consensys
– *Consensys Base6* - http://www.shimmersensing.com/menu/products/consensys-base6
– *Consensys Base15* - http://www.shimmersensing.com/menu/products/consensys-base15
– *Documentation & Downloads* – http://www.shimmersensing.com/menu/support

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)

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INSTALL HARDWARE & SOFTWARE (1/8)

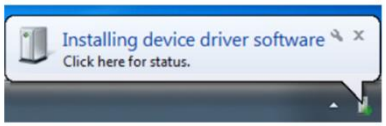
STEP 1 – Download the *Consensys* software from our website[†].

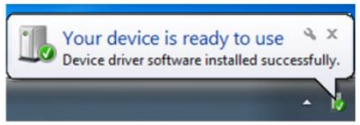
STEP 2 – Connect the AC adapter with the *Base*.

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.

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[†]http://www.shimmersensing.com/menu/support/wireless-sensor-networks-download/

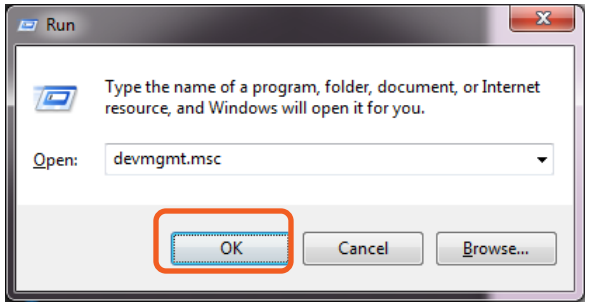
INSTALL HARDWARE & SOFTWARE (2/8)

STEP 6 – Verify driver installation:

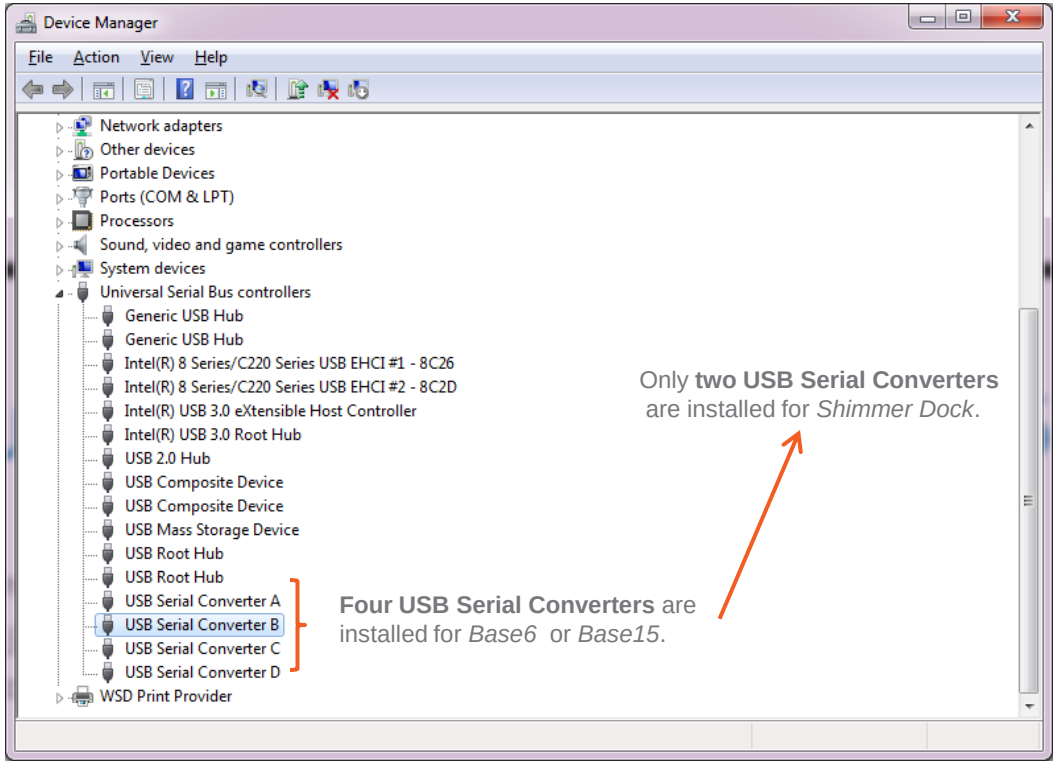
A. Run the Device Manager: Press *[Windows Key] + R*; type *devmgmt.msc*; click "OK".

B. Go to Universal Serial Bus Controllers.

A



B



INSTALL HARDWARE & SOFTWARE (3/8)

STEP 6 – Verify driver installation - continued:

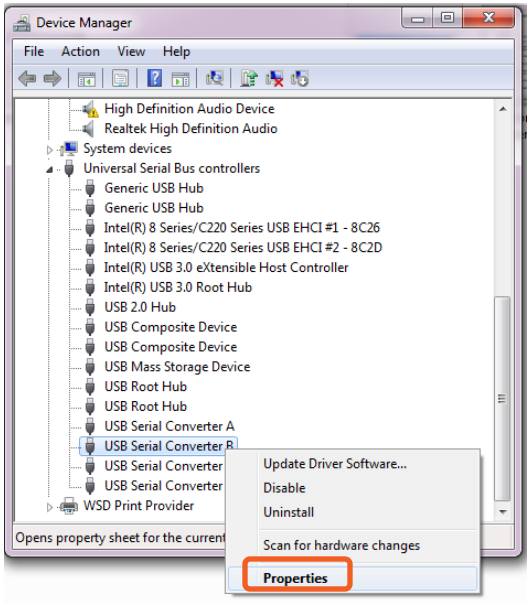
C. Right-click on one of the USB Serial Converters; click **Properties**.

D. Go to "Driver"; check if ***FTDI Driver v2.12.0.0*** or later is installed → **Correct Driver has been installed!**

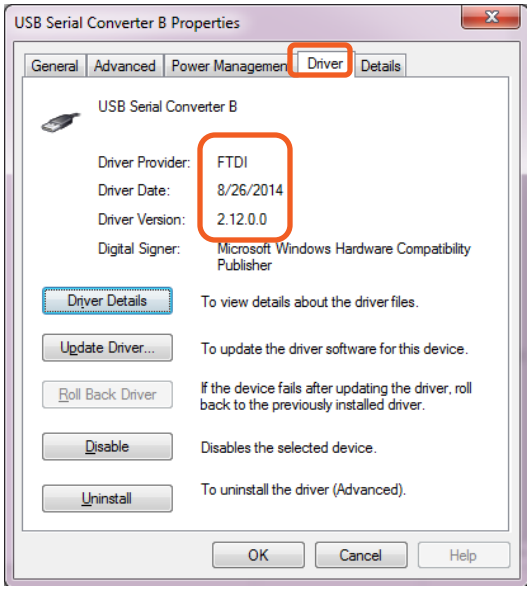
E. Go to "Advanced"; make sure ***Load VCP*** is checked.

F. Repeat for the other USB Serial converters. Skip to STEP 9 if correct driver is installed for all USB Serial Converters.

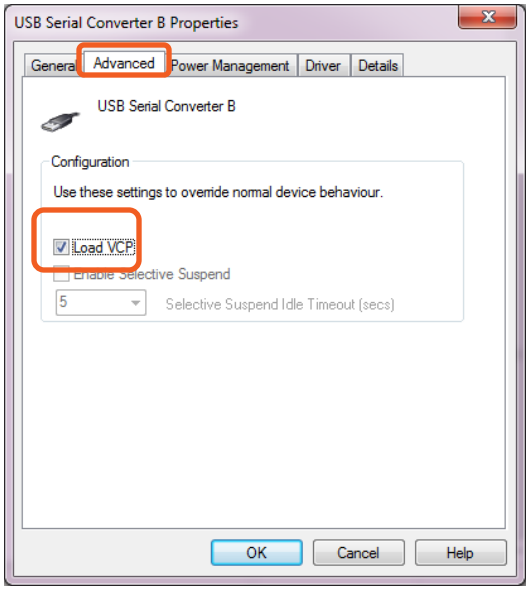
C



D



E



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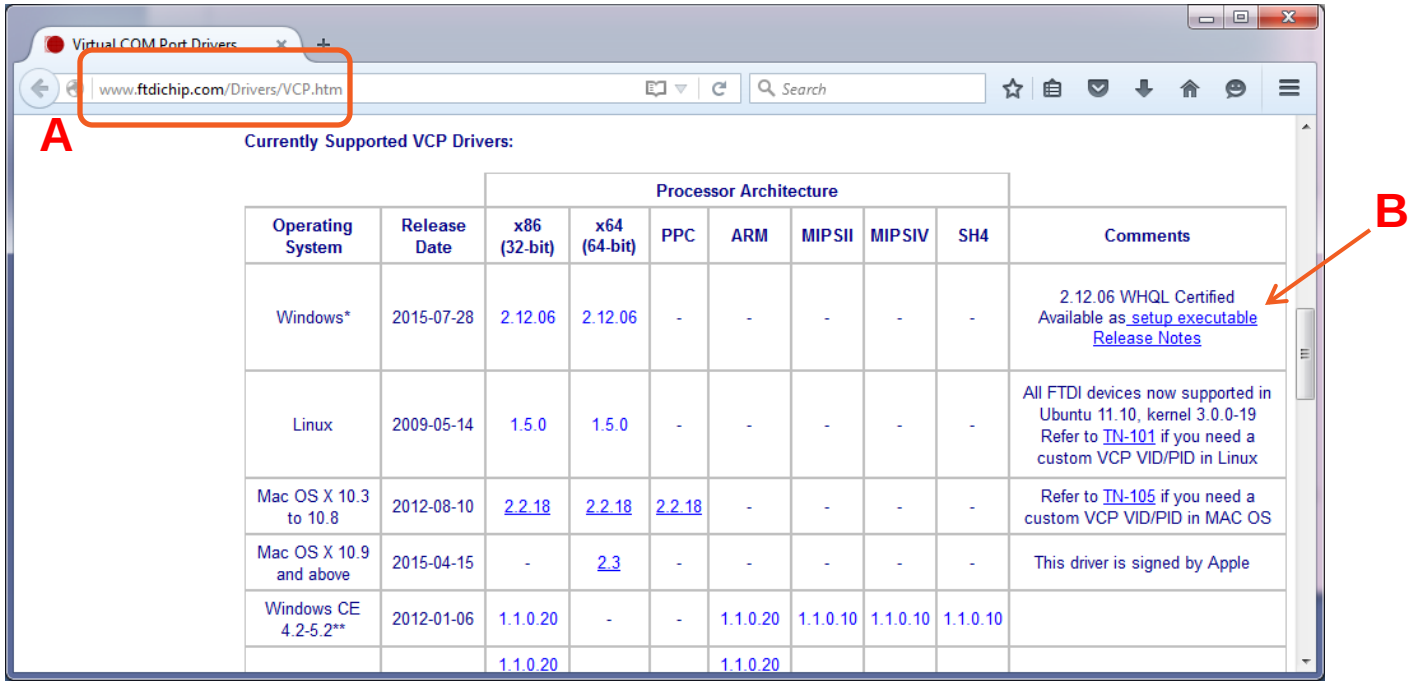
INSTALL HARDWARE & SOFTWARE (4/8)

STEP 7 – Download the FTDI Driver:

A. Go to http://www.ftdichip.com/Drivers/VCP.htm.

B. Download the latest Windows "setup executable".



Currently Supported VCP Drivers:

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

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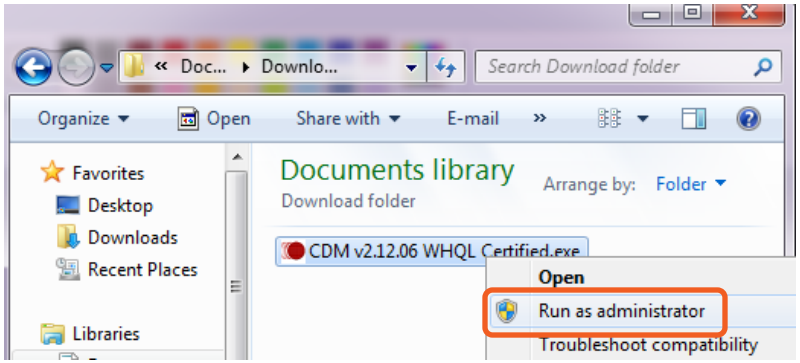
INSTALL HARDWARE & SOFTWARE (5/8)

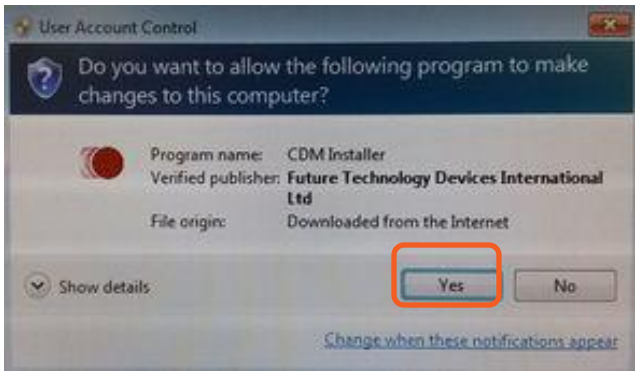
STEP 8 – Manual Driver installation:

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".

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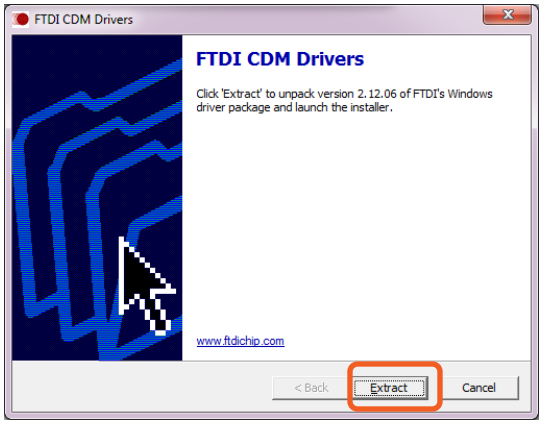
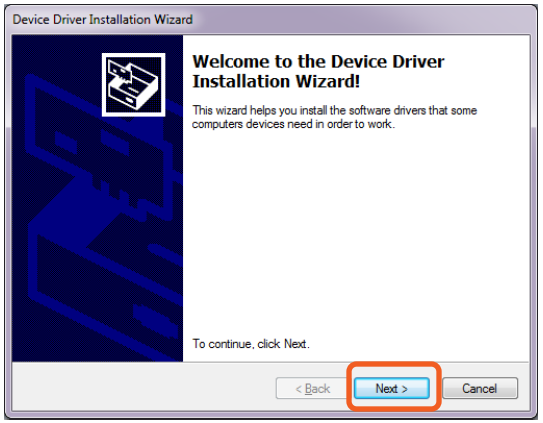
INSTALL HARDWARE & SOFTWARE (6/8)

STEP 8 – Manual Driver installation - continued:

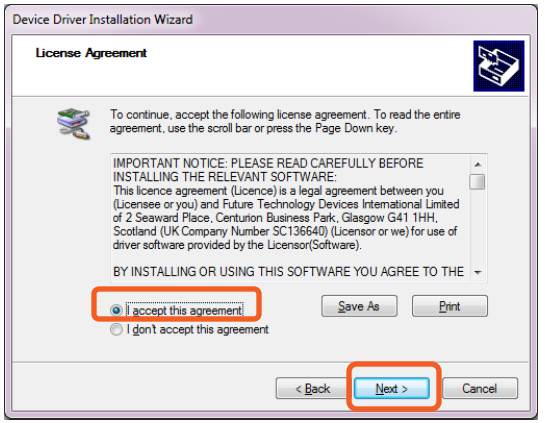
Click “Extract”:



Click “Next”:



Accept and click “Next”:



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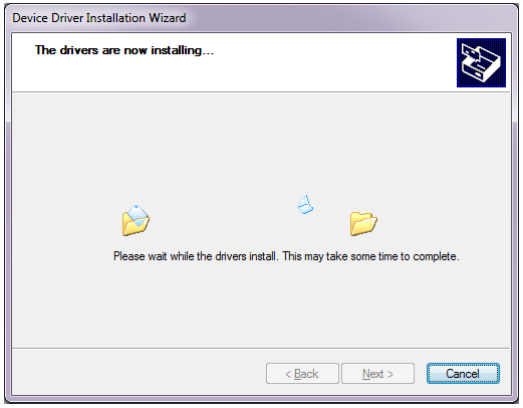
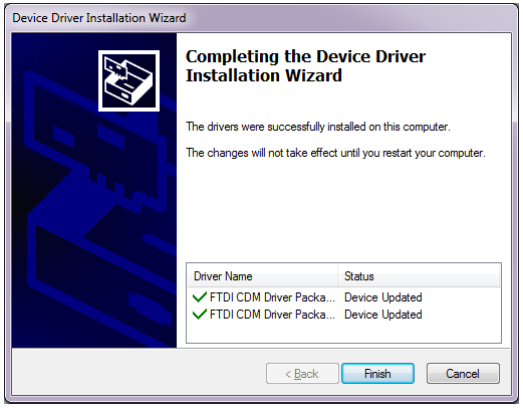
INSTALL HARDWARE & SOFTWARE (7/8)

STEP 8 – Manual Driver installation - continued:

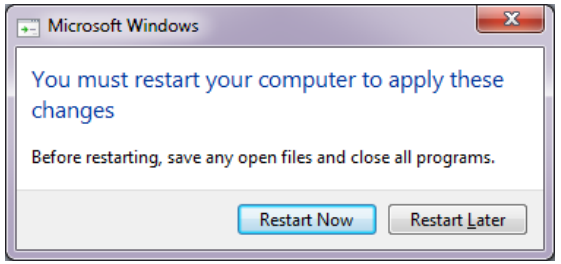
Drivers are installing:



Click “Finish”:



Click “Restart Now”:



N.B. Repeat STEP 6 before proceeding!

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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 *Consensys* desktop icon to start.

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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).

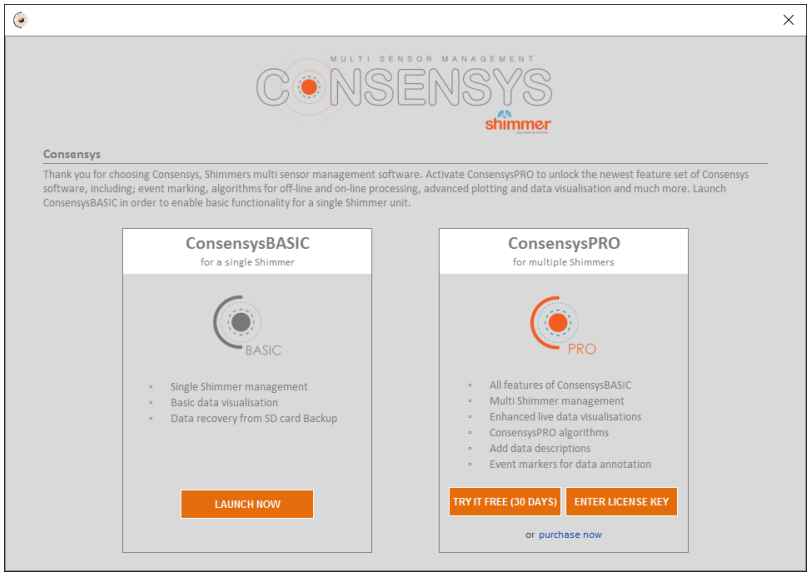
Floating: Floating licensing authorizes the use of ConsensysPRO with the given number of activations. The number of concurrent activations is tracked, and the total number of running sessions of the licensed application at any time is limited by the maximum allowed activations in the floating licenses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

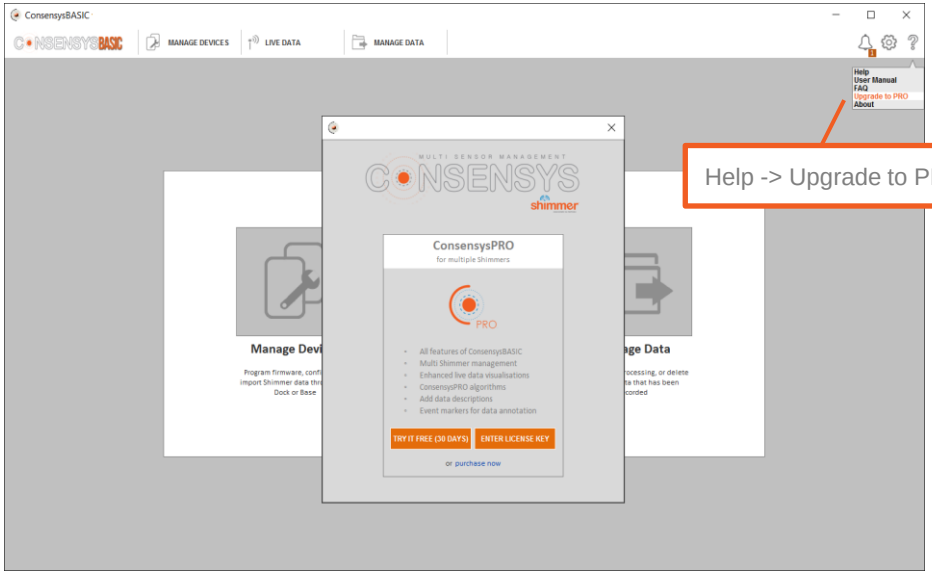
LICENSING - ACTIVATION (2/3)

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

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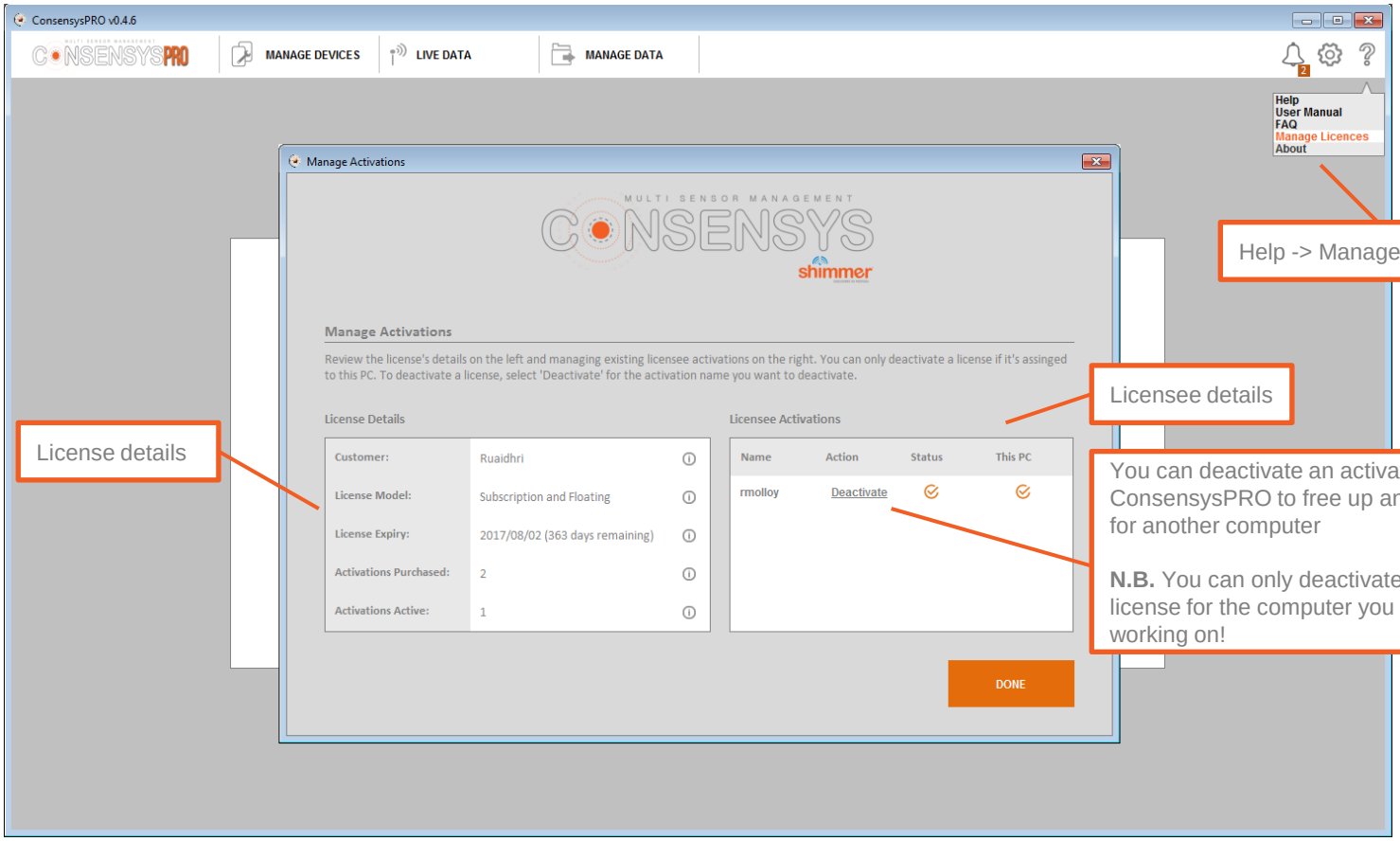
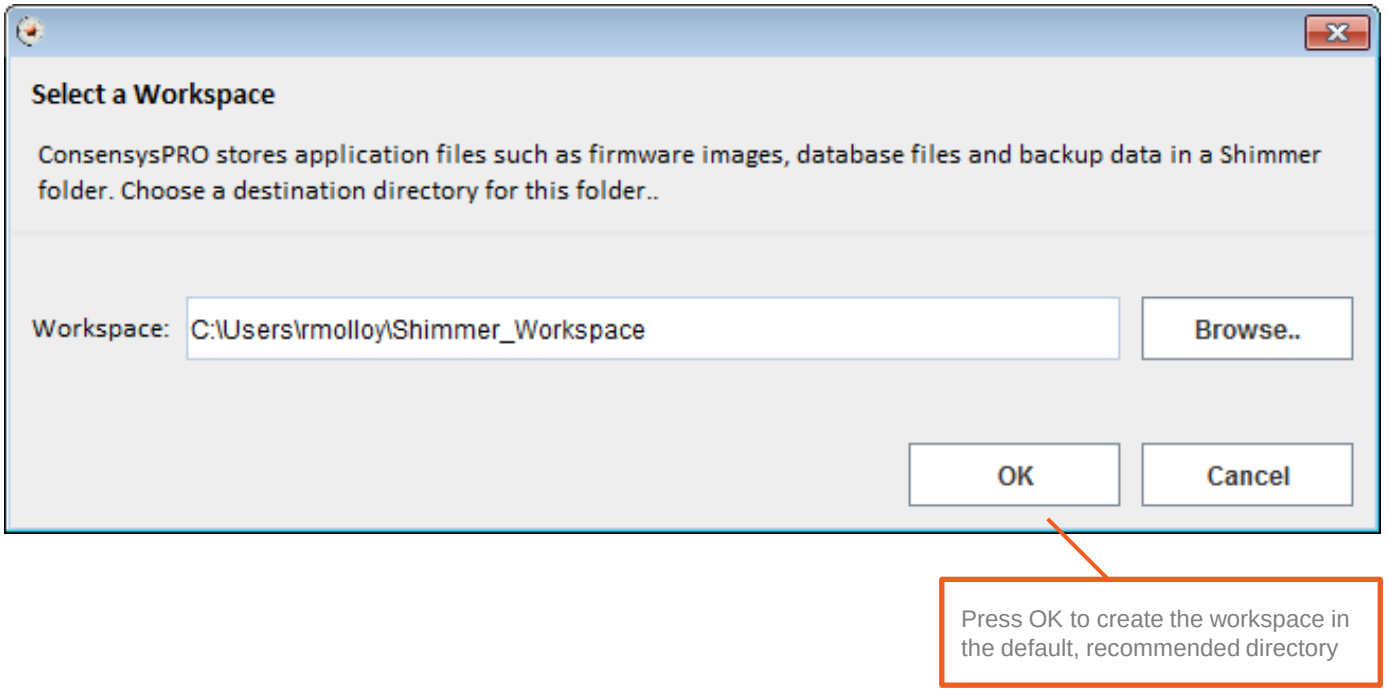
LICENSING - MANAGEMENT (3/3)

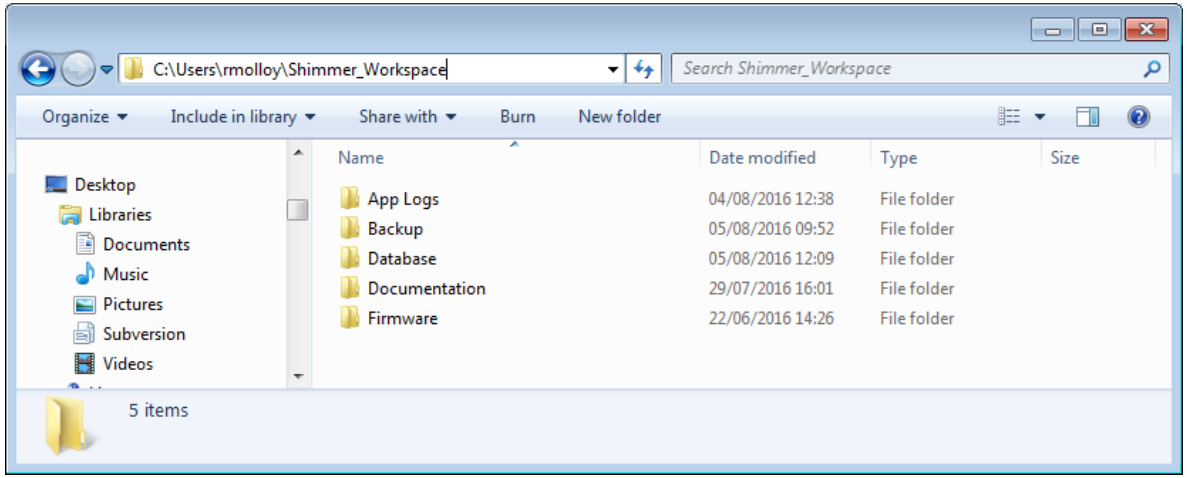


CONSENSYS WORKSPACE (1/2)

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.



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.

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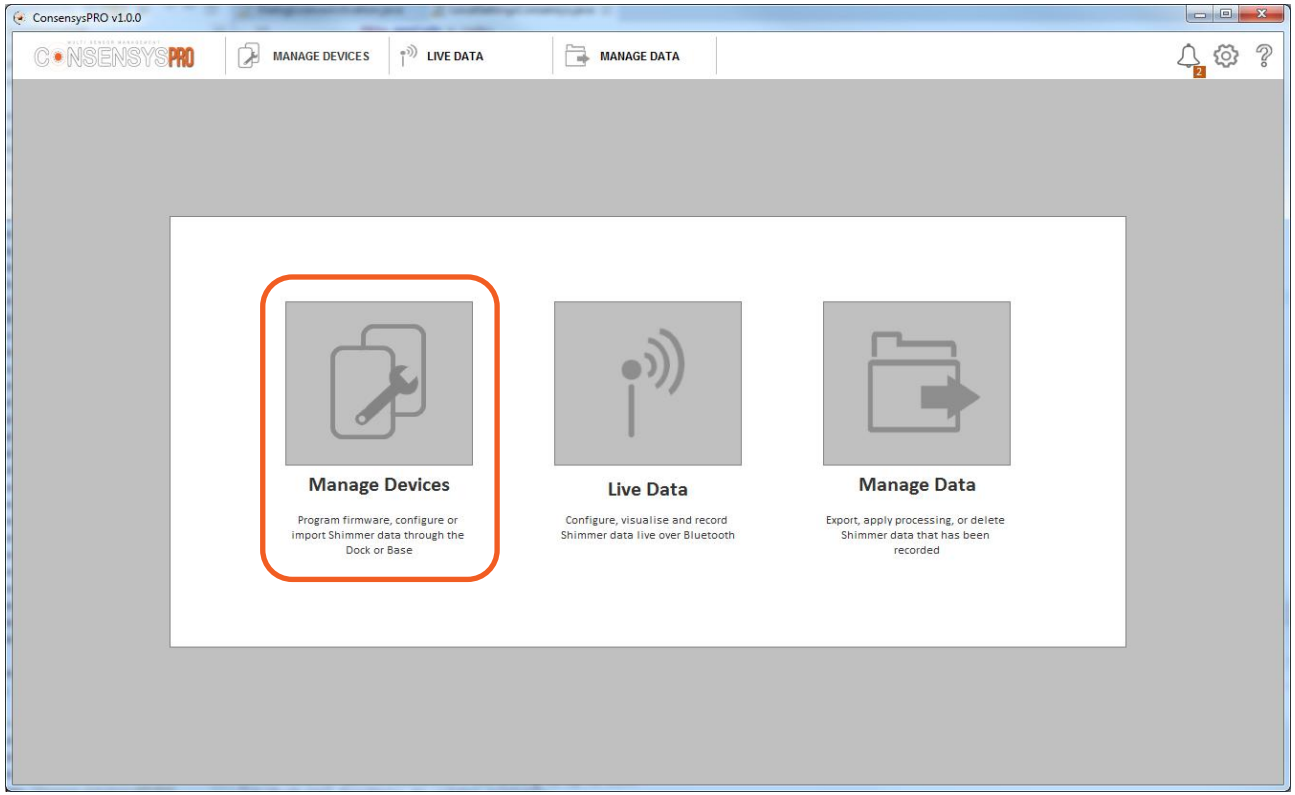
PROGRAM FIRMWARE (1/3)

STEP 1 – Start *Consensys*.

STEP 2 – Click “MANAGE DEVICES”.

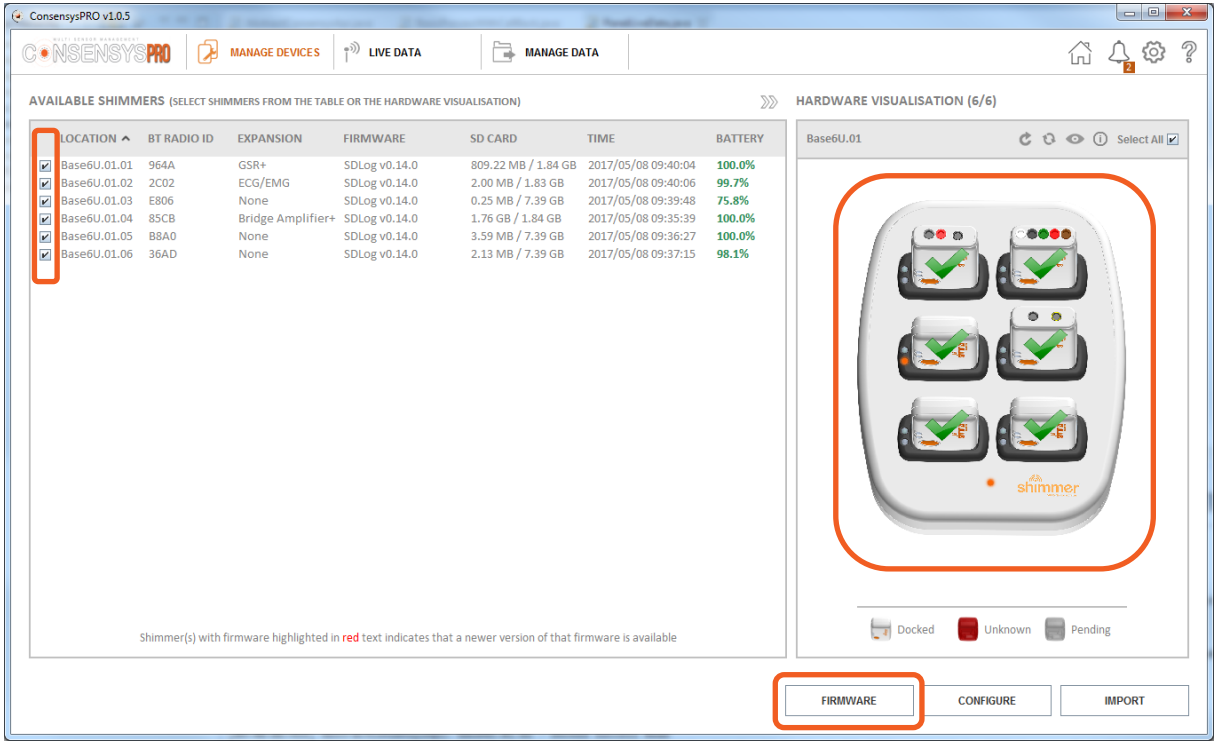


Program Firmware (2/3)

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).

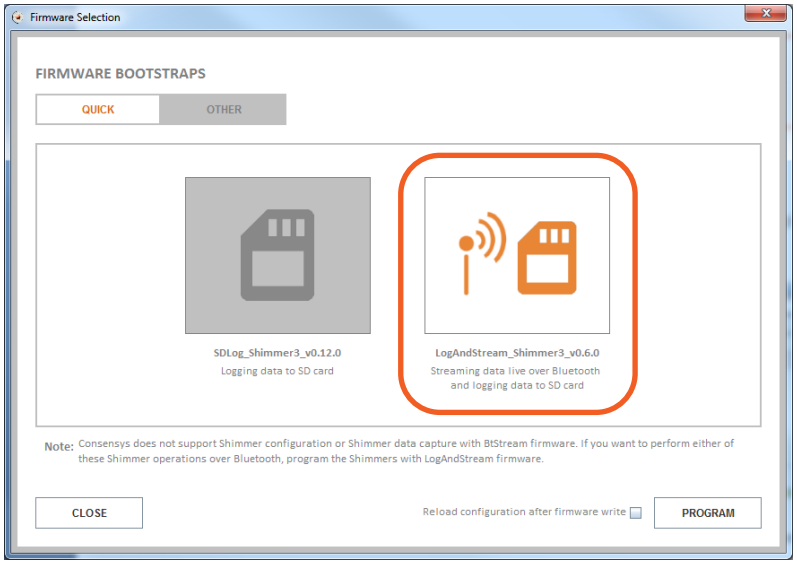
STEP 5 – Select one or more Shimmers and click on the “FIRMWARE” button.

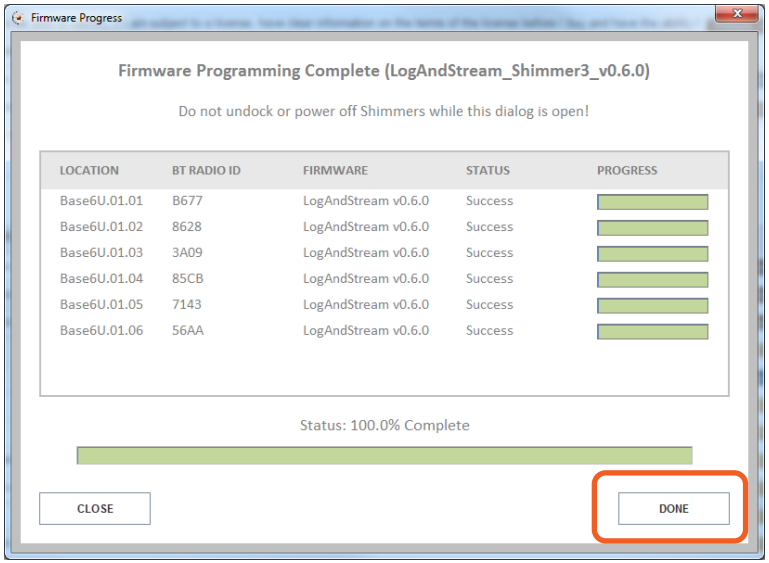


PROGRAM FIRMWARE (3/3)

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

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





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LOGGING

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

In this section:

– Configure Trial

– Capture Data

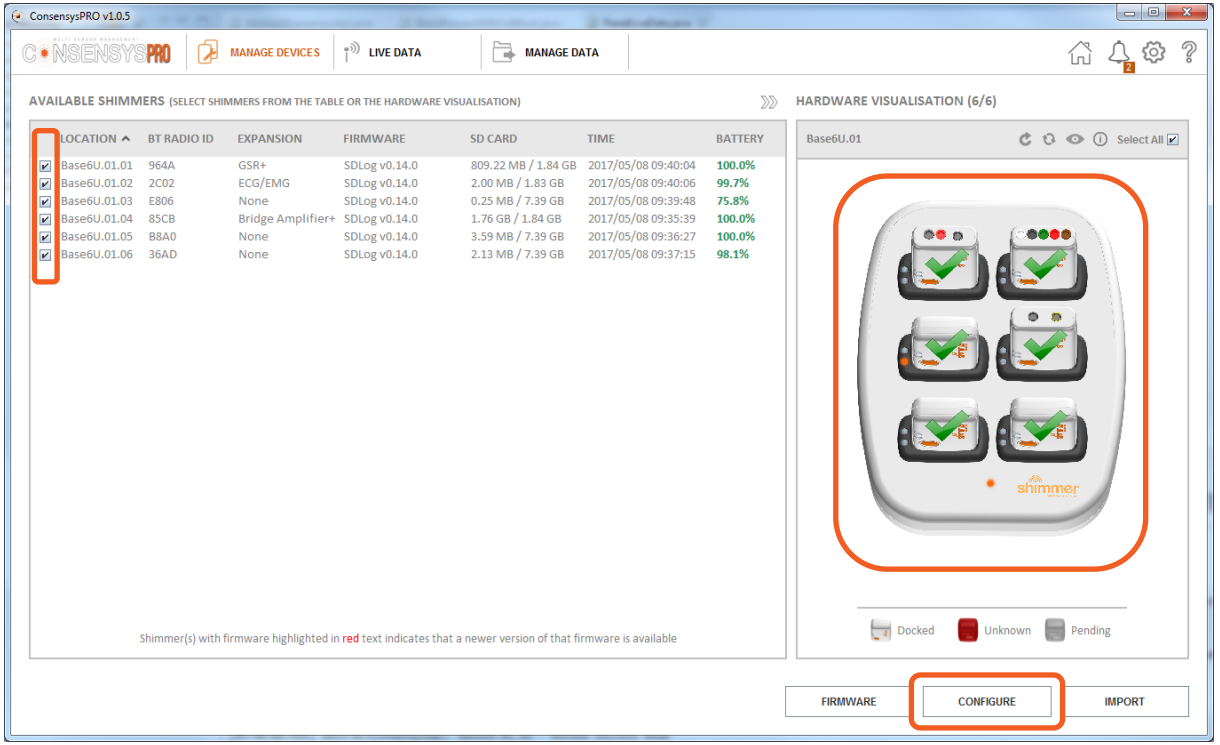
– Import Data

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 is 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”:



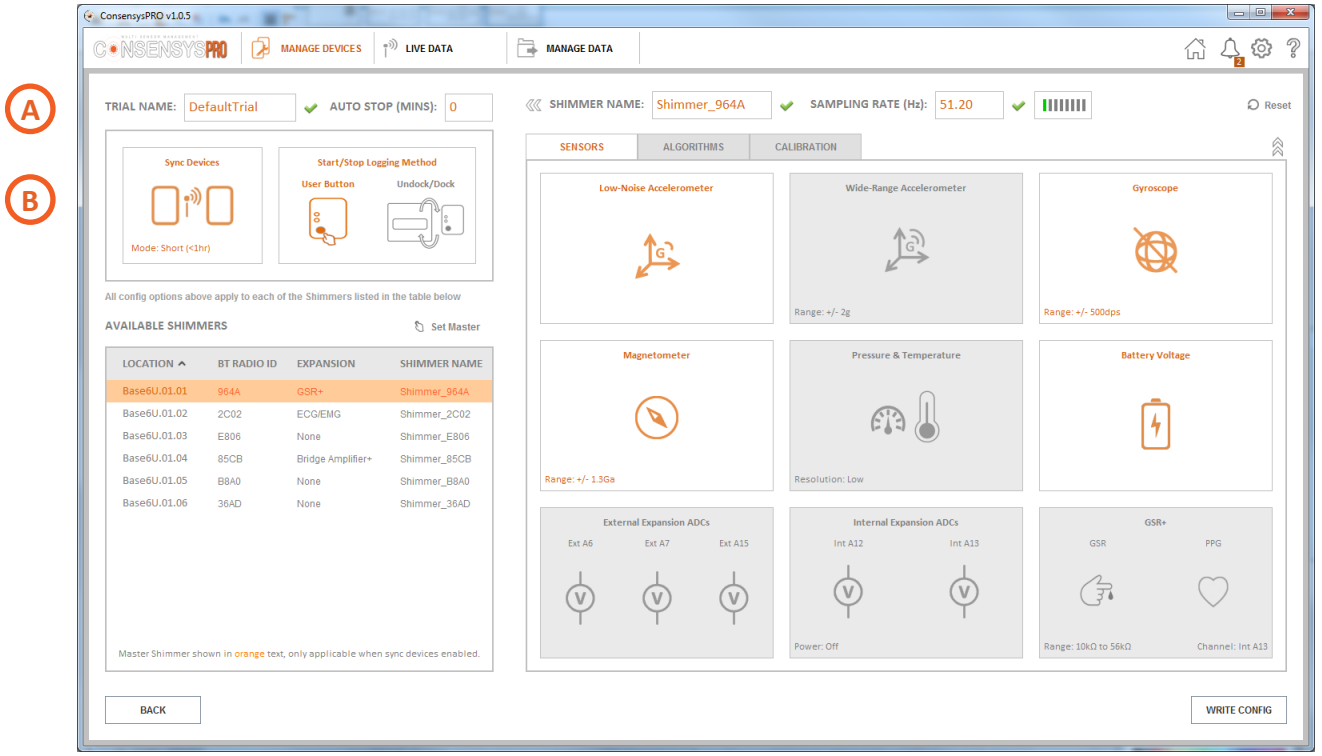
N.B. ConsensysBASIC only allows the use of one Shimmer at any one time!

shimmer
DISCOVERY IN MOTION

LOGGING – CONFIGURE TRIAL (2/8)

STEP 2 – Set TRIAL NAME & Sync Devices:

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



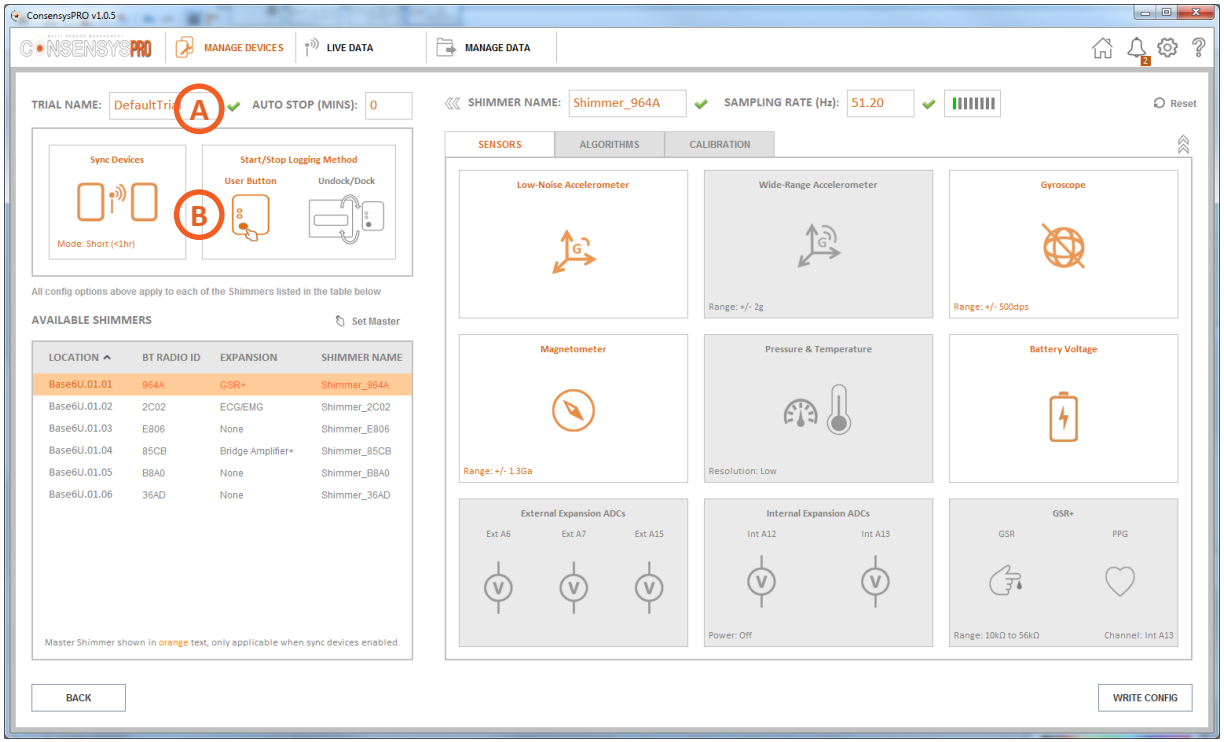
LOGGING – CONFIGURE TRIAL (3/8)

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

A. To automatically stop logging, enter a value other than zero.

B. Choose to start and stop logging with the User Button or by undocking/docking – User Button is used in this guide.

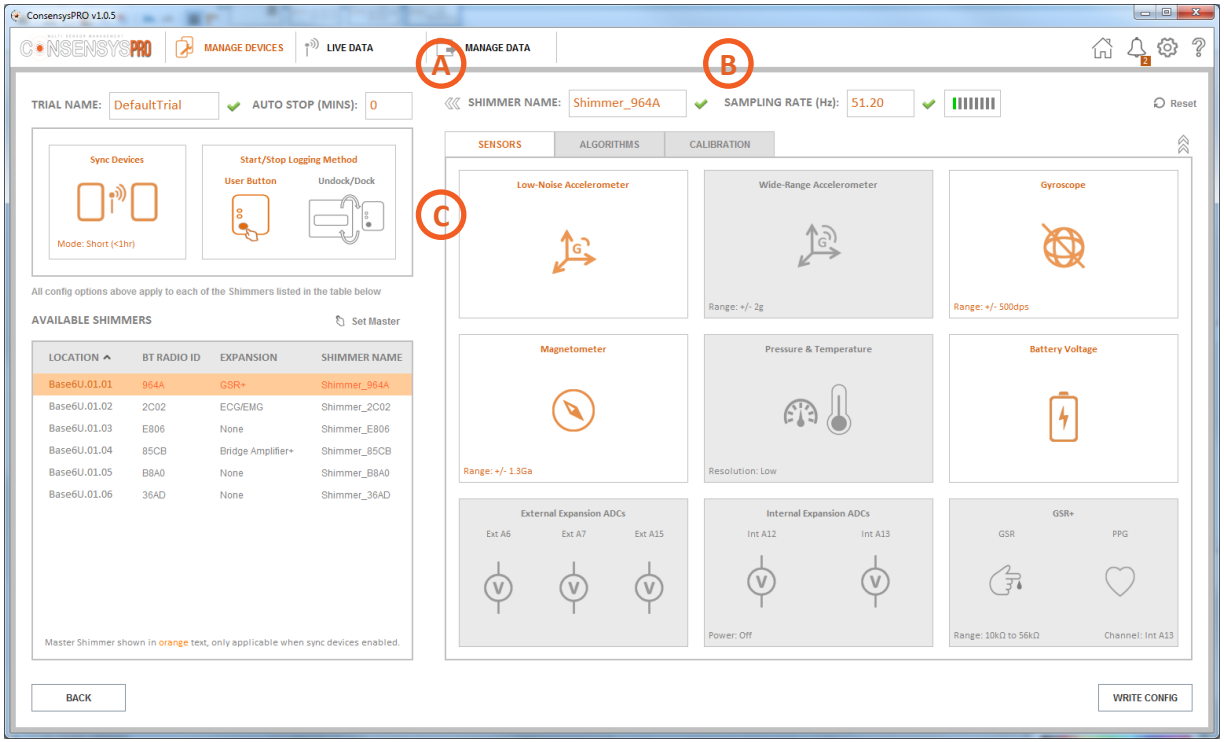
N.B. When using the Undock/Dock method, log for at least one minute to ensure a data file is created.



LOGGING – CONFIGURE TRIAL (4/8)

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

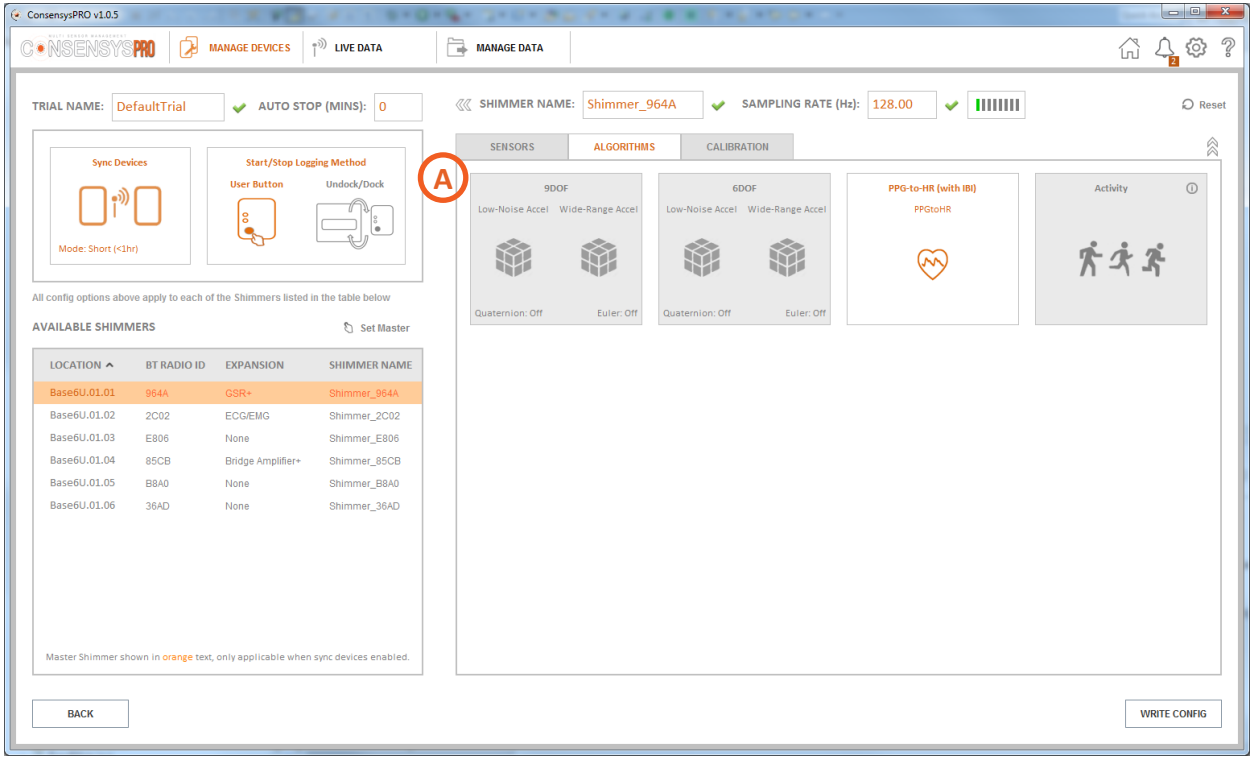
A. Choose SHIMMER NAME.
B. Choose SAMPLING RATE.
C. Click on the tiles to enable and configure sensors.



LOGGING – CONFIGURE TRIAL (5/8)

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

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



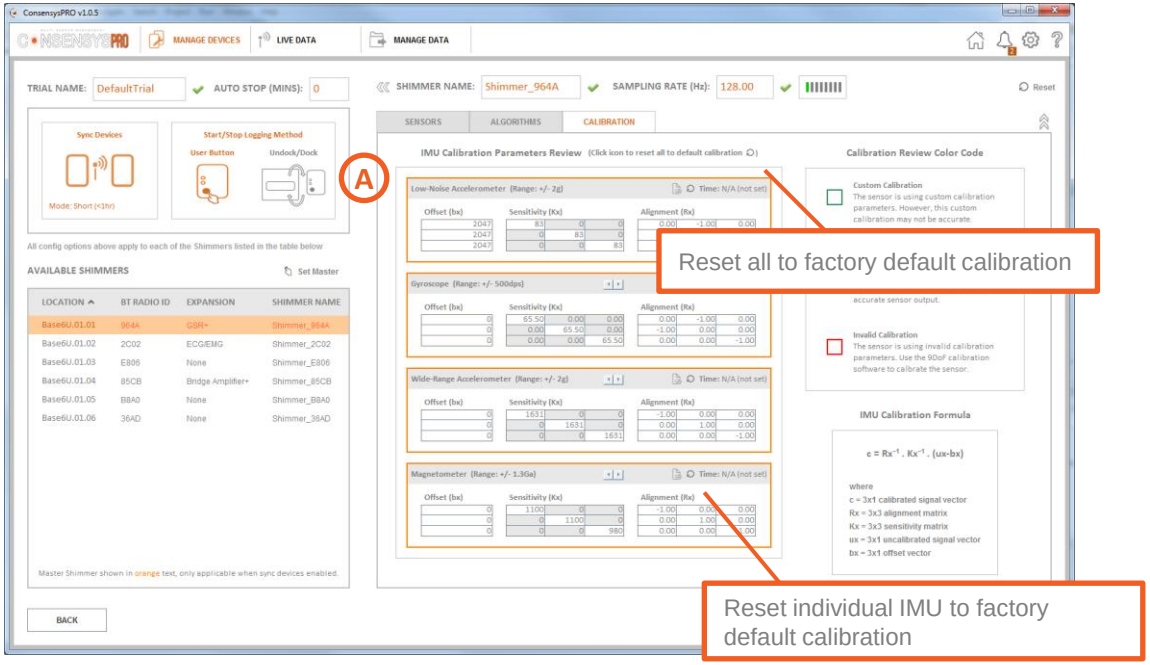
N.B. Algorithms are not available in ConsensysBASIC!

shimmer
DISCOVERY IN MOTION

LOGGING – CONFIGURE TRIAL (6/8)

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

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

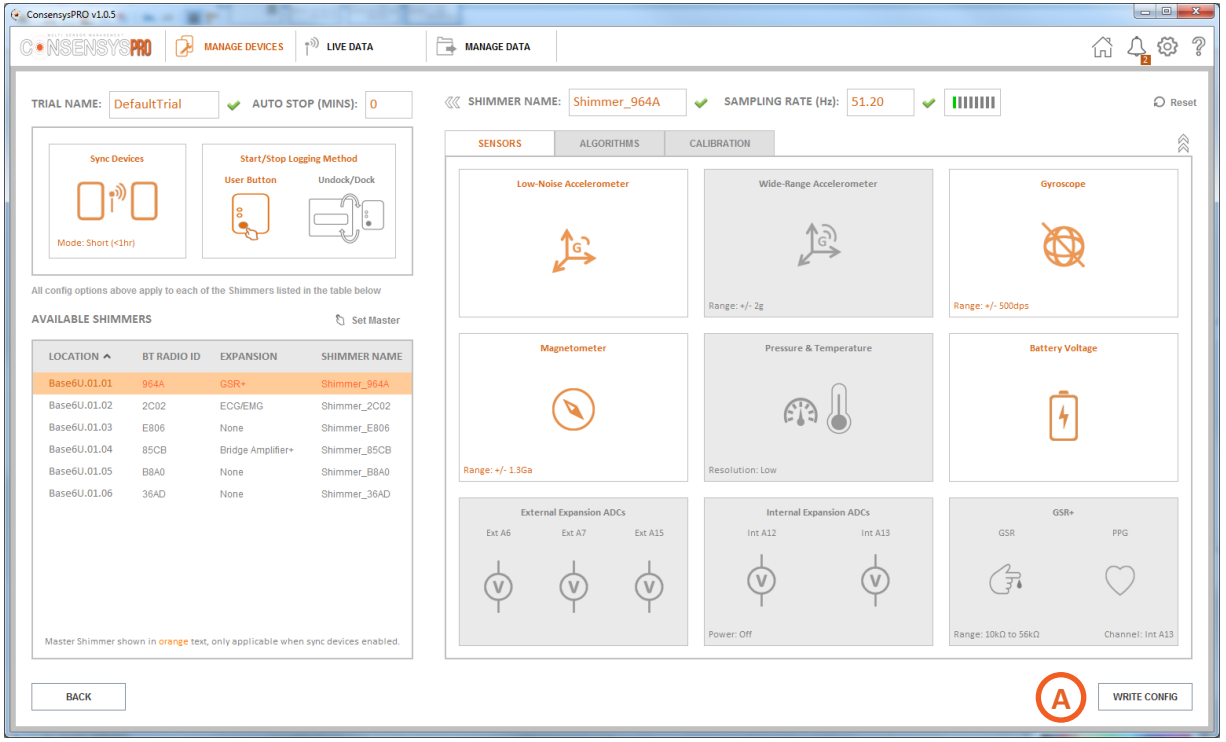


N.B. A Shimmer that appears with a red warning symbol has an invalid IMU calibration And should be reset to default or calibrated using Shimmer's 9DoF calibration software

LOGGING – CONFIGURE TRIAL (7/8)

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

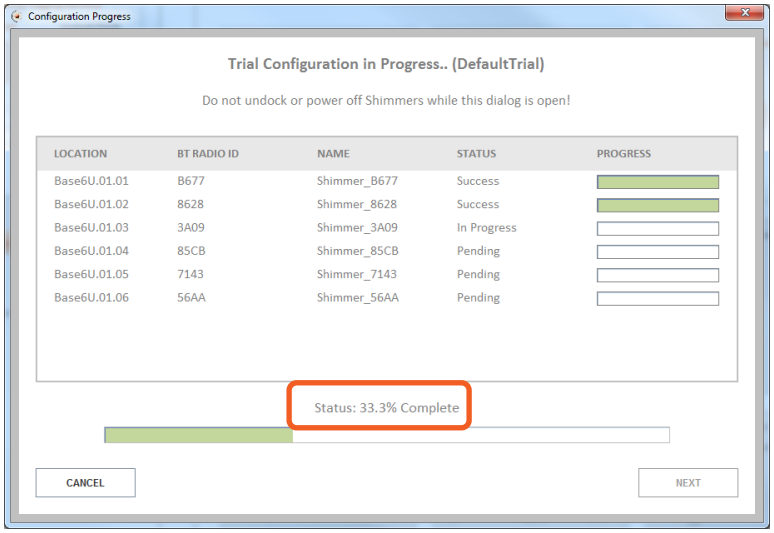
A. Press the WRITE CONFIG button to save the configuration (trial details, Shimmer details, sensor details, algorithm details, calibration details) to each of the Shimmers.



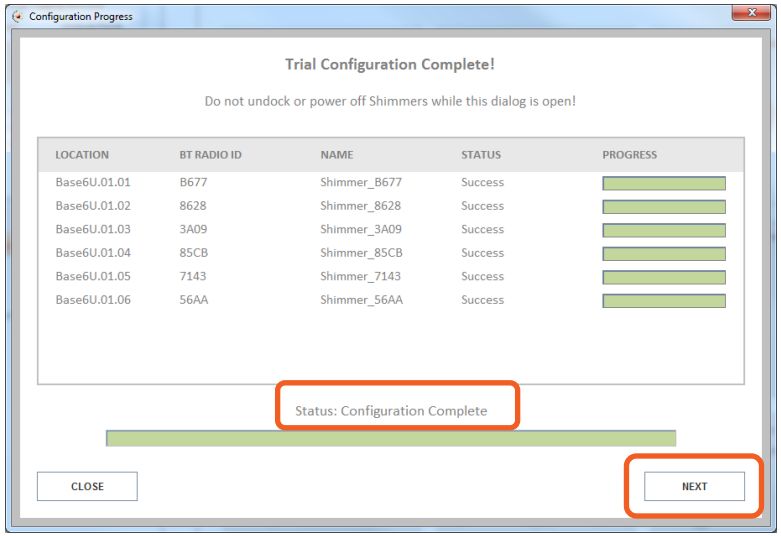
LOGGING – CONFIGURE TRIAL (8/8)

STEP 8 – WRITE CONFIG.

Wait until Trial Configuration is written:



Click “NEXT” to complete the configuration:



shimmer
DISCOVERY IN MOTION

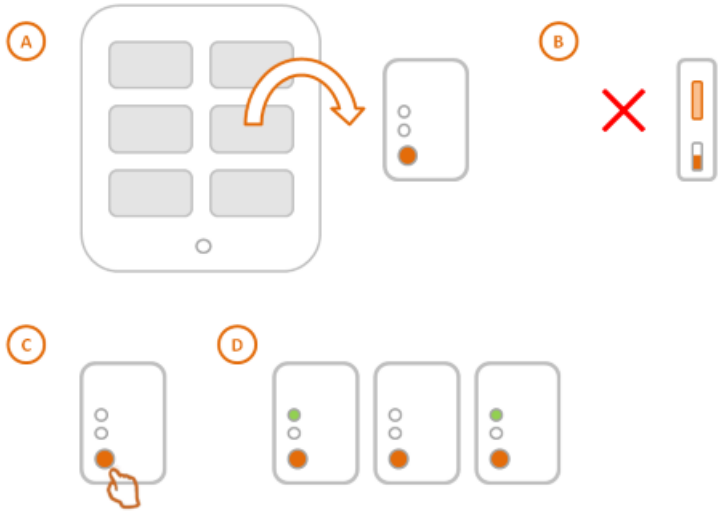
LOGGING – CAPTURE DATA (1/2)

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)

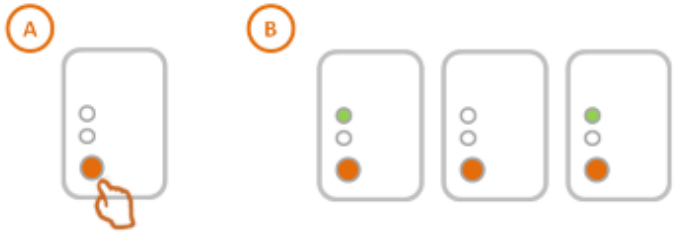


shimmer
DISCOVERY IN MOTION

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)

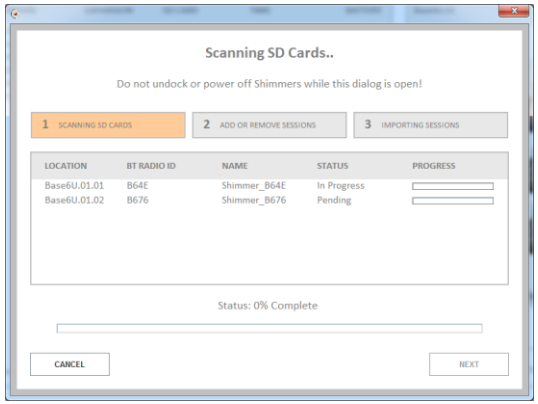


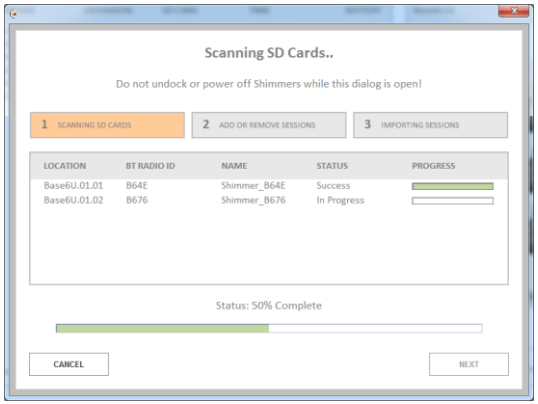
shimmer
DISCOVERY IN MOTION

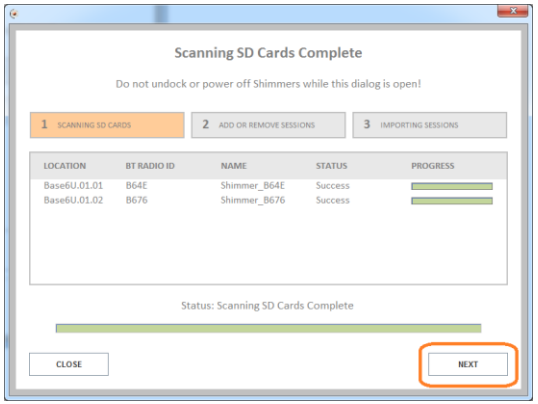
LOGGING – IMPORT DATA (1/6)

STEP 1 – Scanning SD Cards:

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







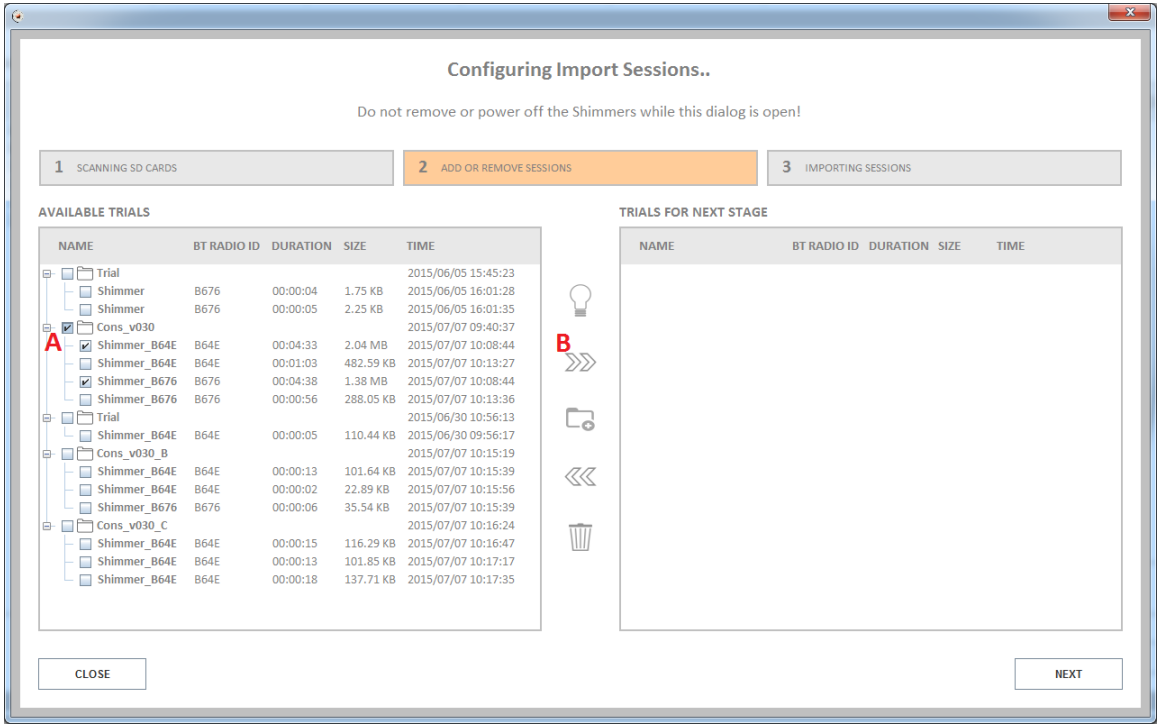
shimmer
DISCOVERY IN MOTION

LOGGING – IMPORT DATA (2/6)

STEP 2 – Configuring Import Sessions:

A. Select data from one or more Shimmers.

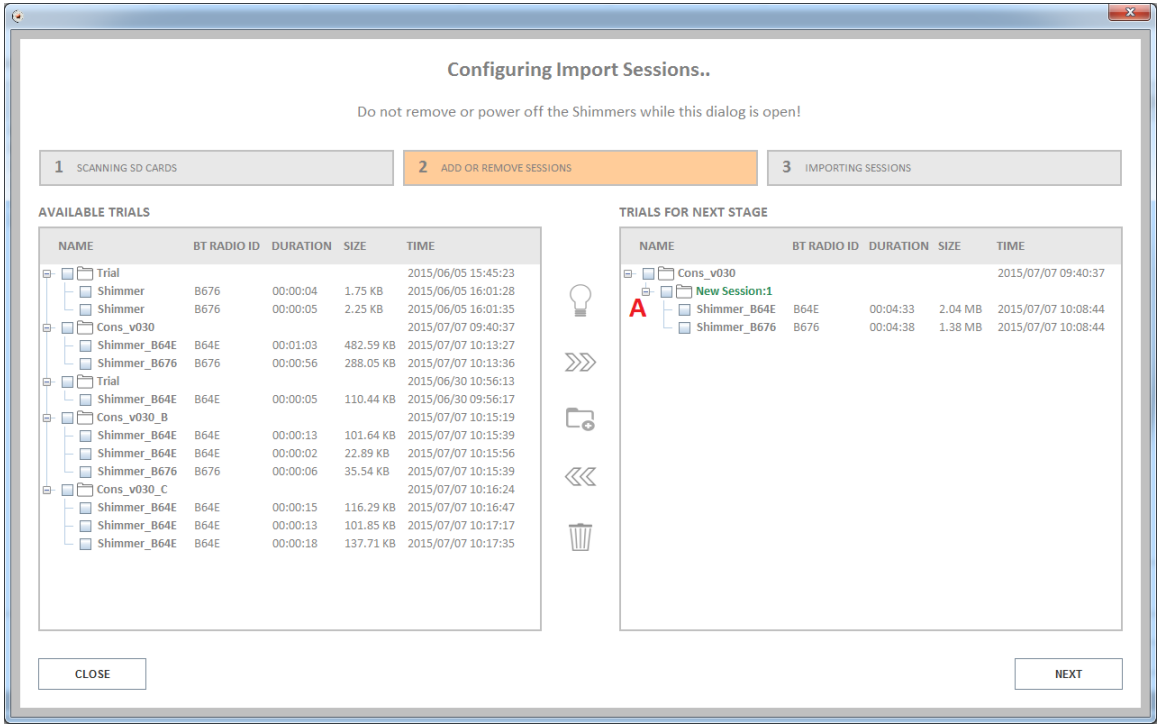
B. Click the button to add the data as new session to the list for the next stage.



LOGGING – IMPORT DATA (3/6)

STEP 2 – Configuring Import Sessions – continued:

A. For trial “Cons_v030” the data is added to “New Session:1”.



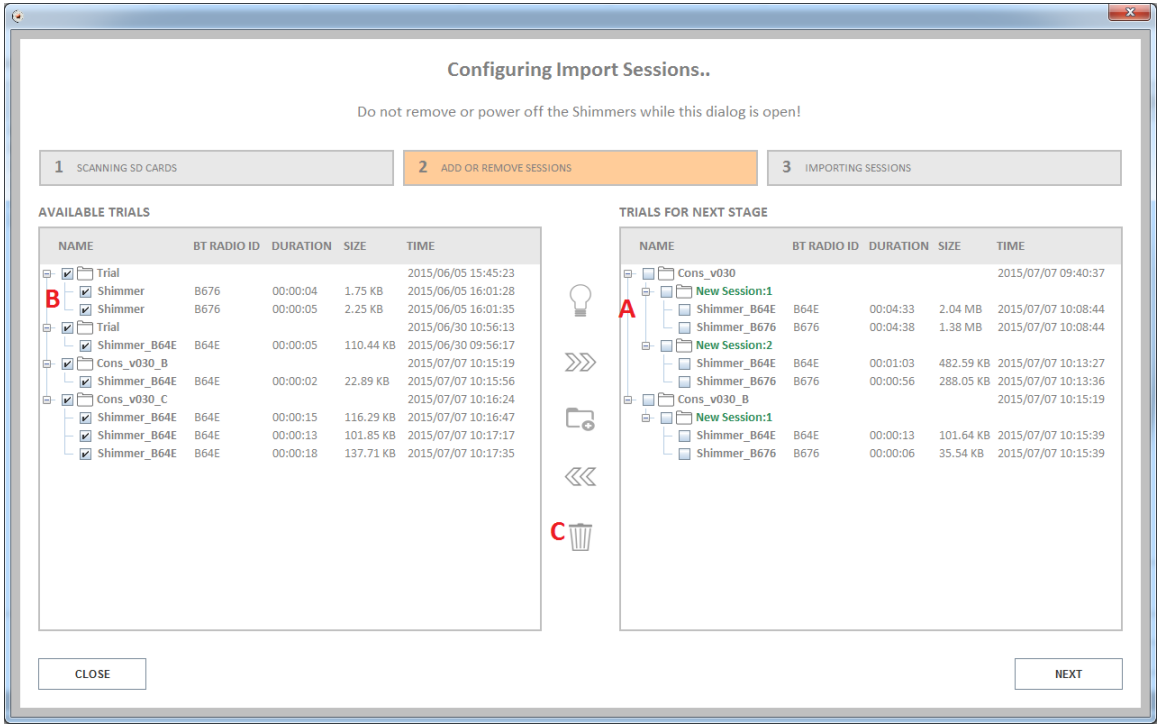
LOGGING – IMPORT DATA (4/6)

STEP 2 – Configuring Import Sessions – continued:

A. In the same way data is added as “New Session:2” of trial “Cons_v030” and “New Session:1” of “Cons_v030_B”.

B. The remaining data on the SD cards of the selected Shimmers is selected.

C. Clicking this button will mark the data selected in AVAILABLE TRIALS (B) to be deleted in the next stage.

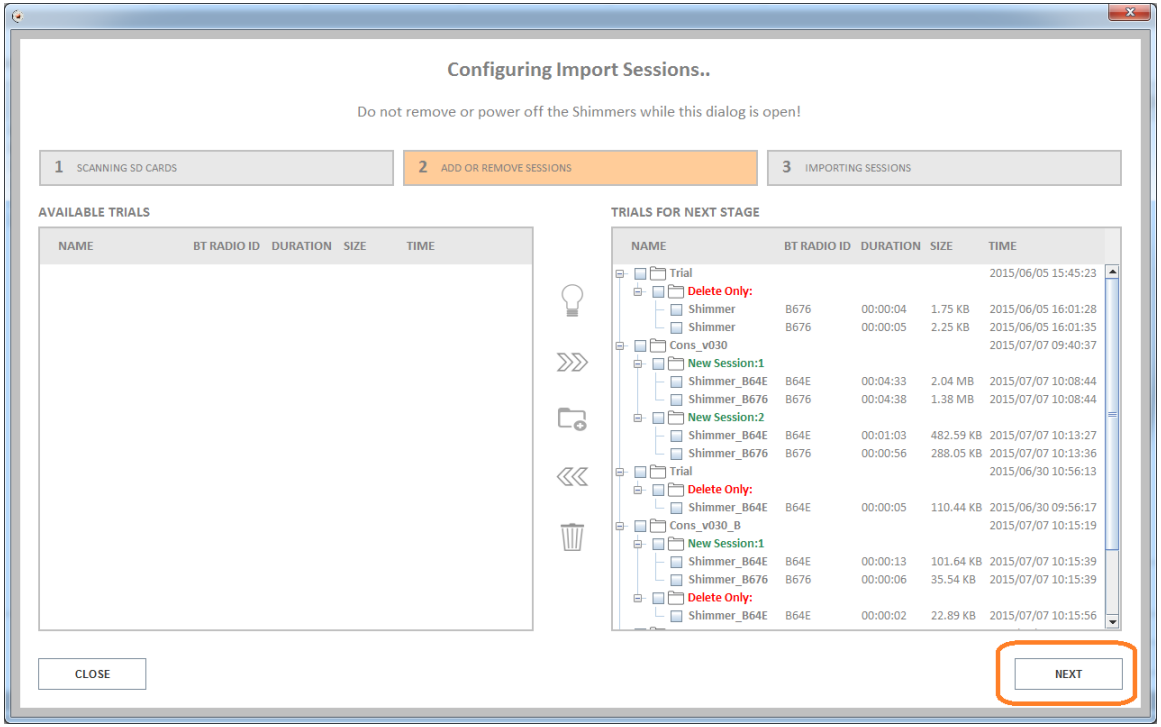


LOGGING – IMPORT DATA (5/6)

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”.

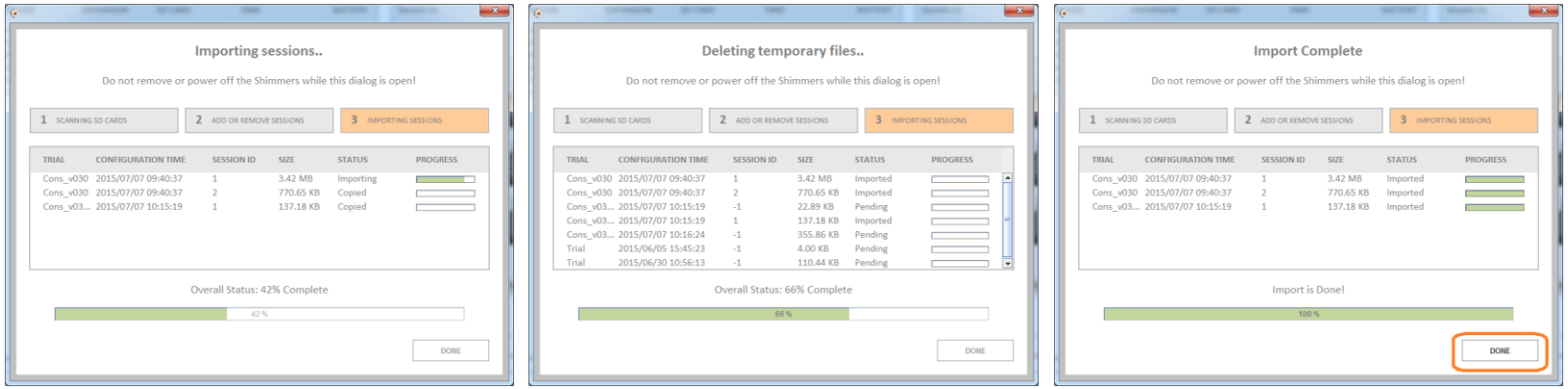
B. Hit “NEXT” to continue to the next stage (and hit “YES” to confirm).



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.

shimmer
DISCOVERY IN MOTION

STREAMING

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

In this section:

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

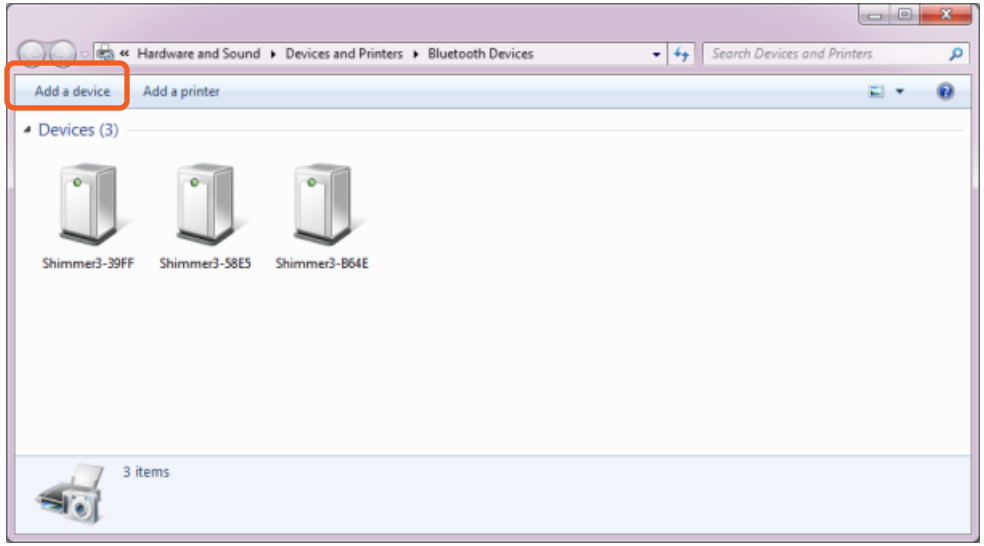
N.B. The computer needs to be equipped with a Bluetooth Adapter to allow streaming over Bluetooth.

N.B. Shimmers need to be programmed with *LogAndStream* firmware - see Program Firmware. *BtStream* firmware is not supported in *Consensys software*.

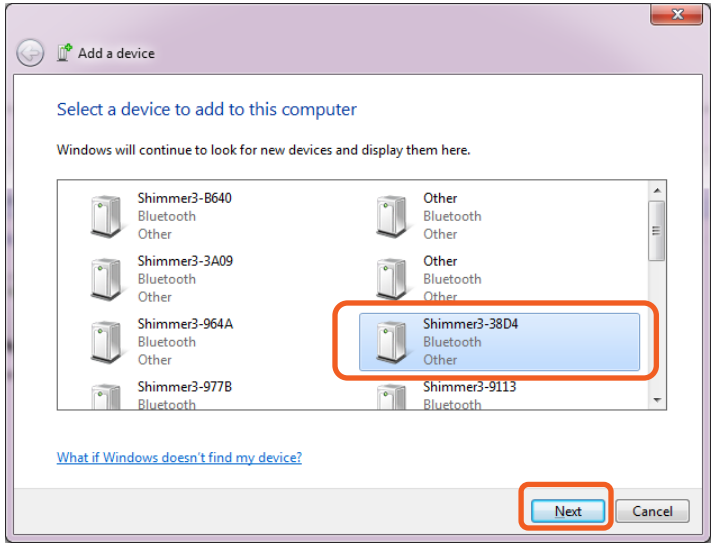
shimmer
DISCOVERY IN MOTION

STREAMING – PAIR SHIMMER (1/2)

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



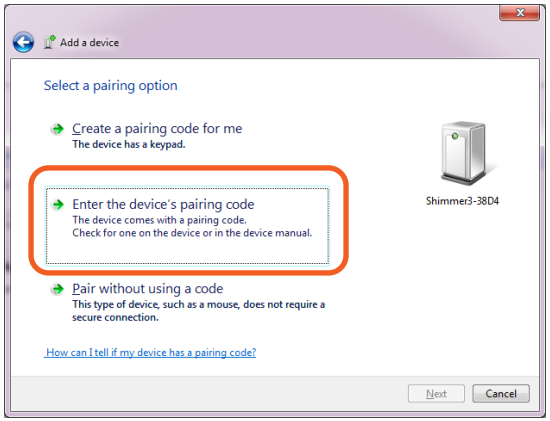
Select Shimmer, click “Next”:

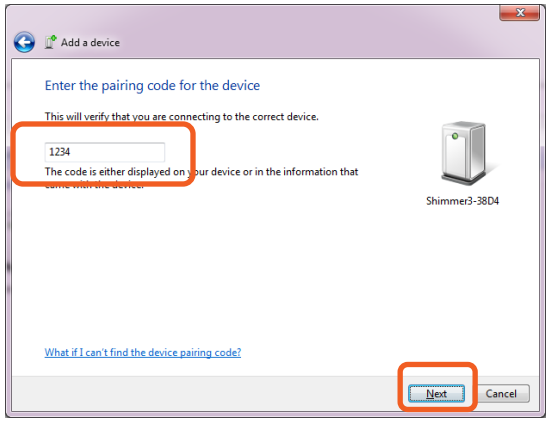


shimmer
DISCOVERY IN MOTION

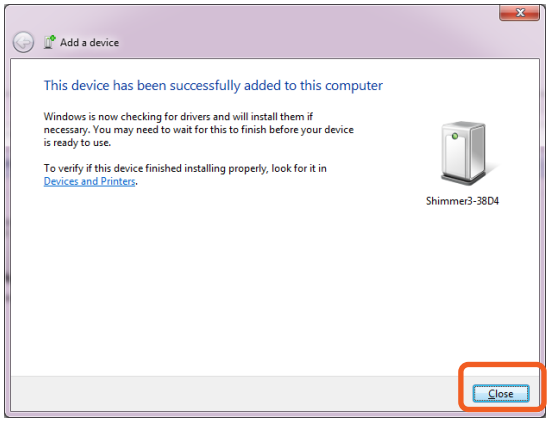
STREAMING – PAIR SHIMMER (2/2)

Enter the pairing code: "**1234**" and click "Next":





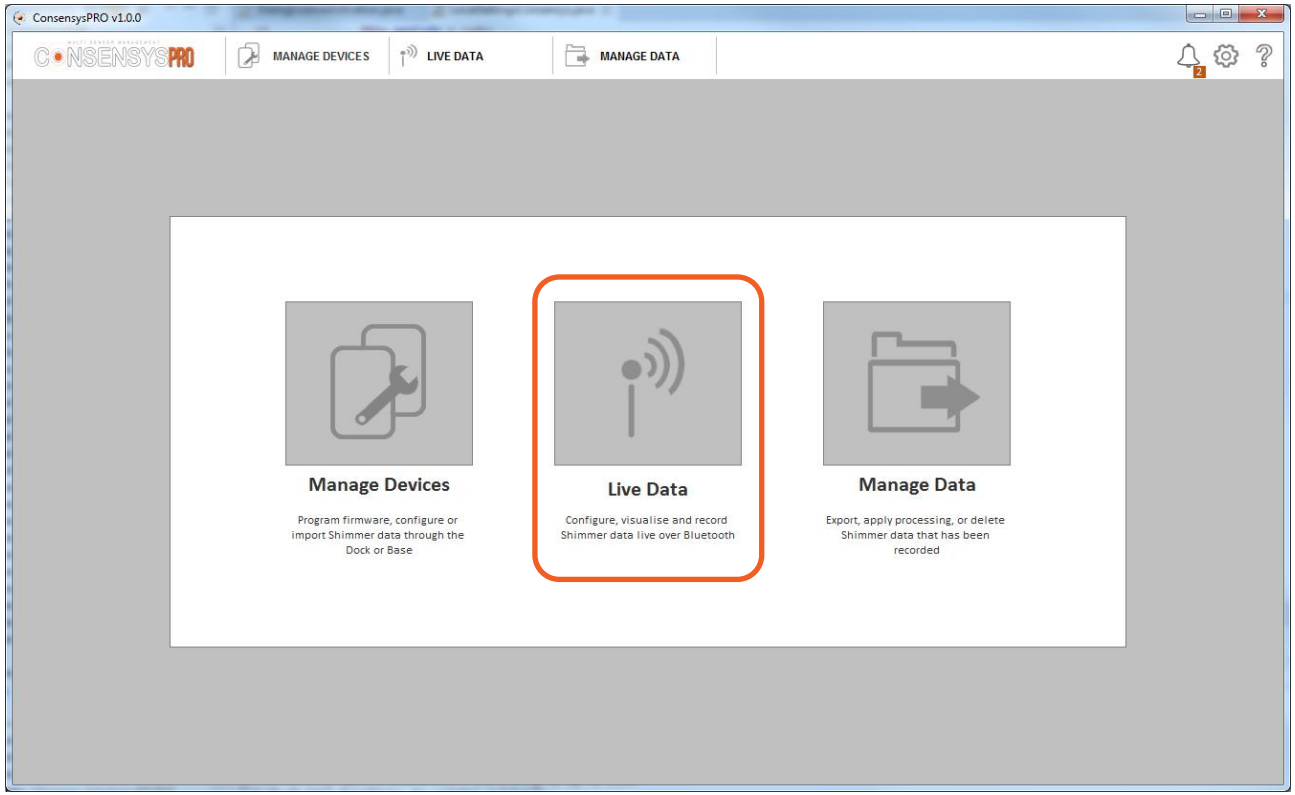
Click "Close":



shimmer
DISCOVERY IN MOTION

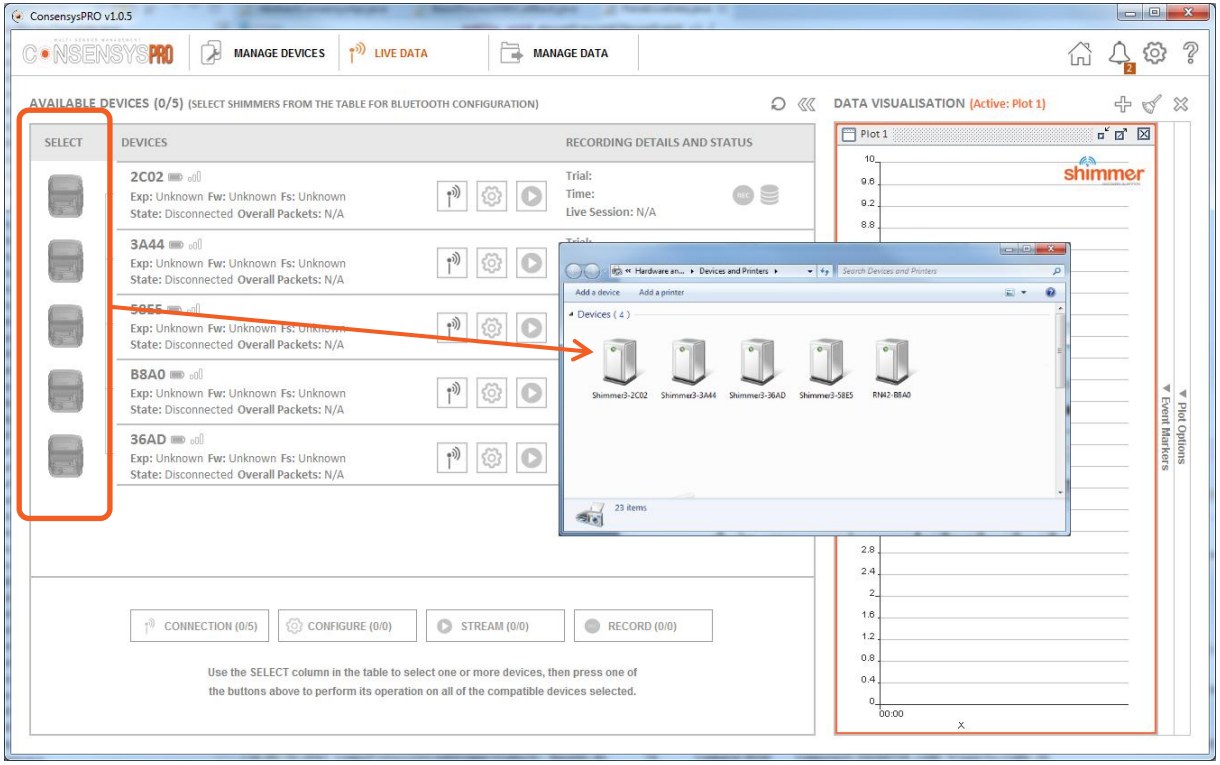
STREAMING – CONNECT (1/5)

STEP 1 – Go to “LIVE DATA”:



STREAMING – CONNECT (2/5)

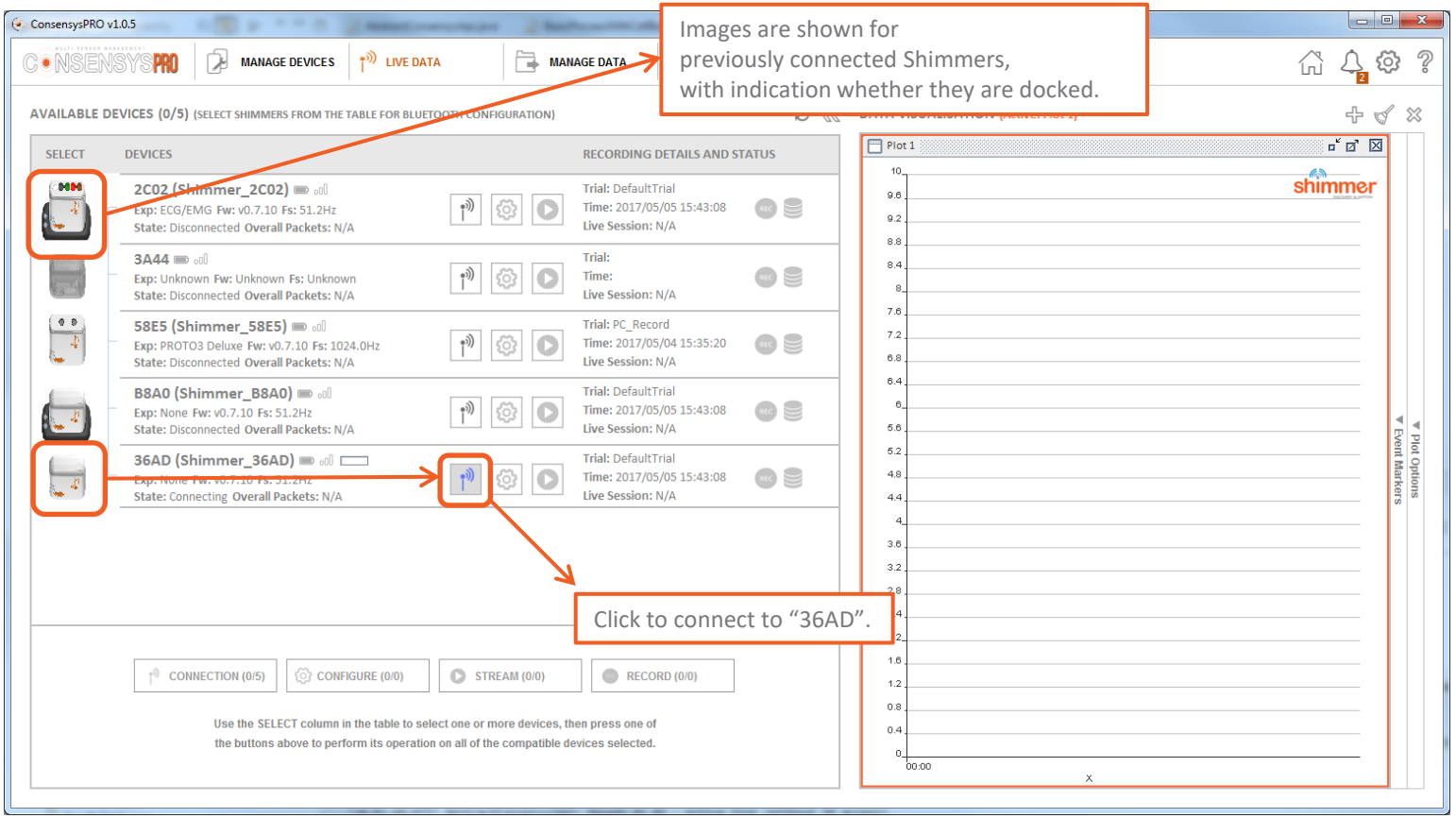
STEP 2 – Note all Shimmers listed in “Devices and Printers” show up in “LIVE DATA” :



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

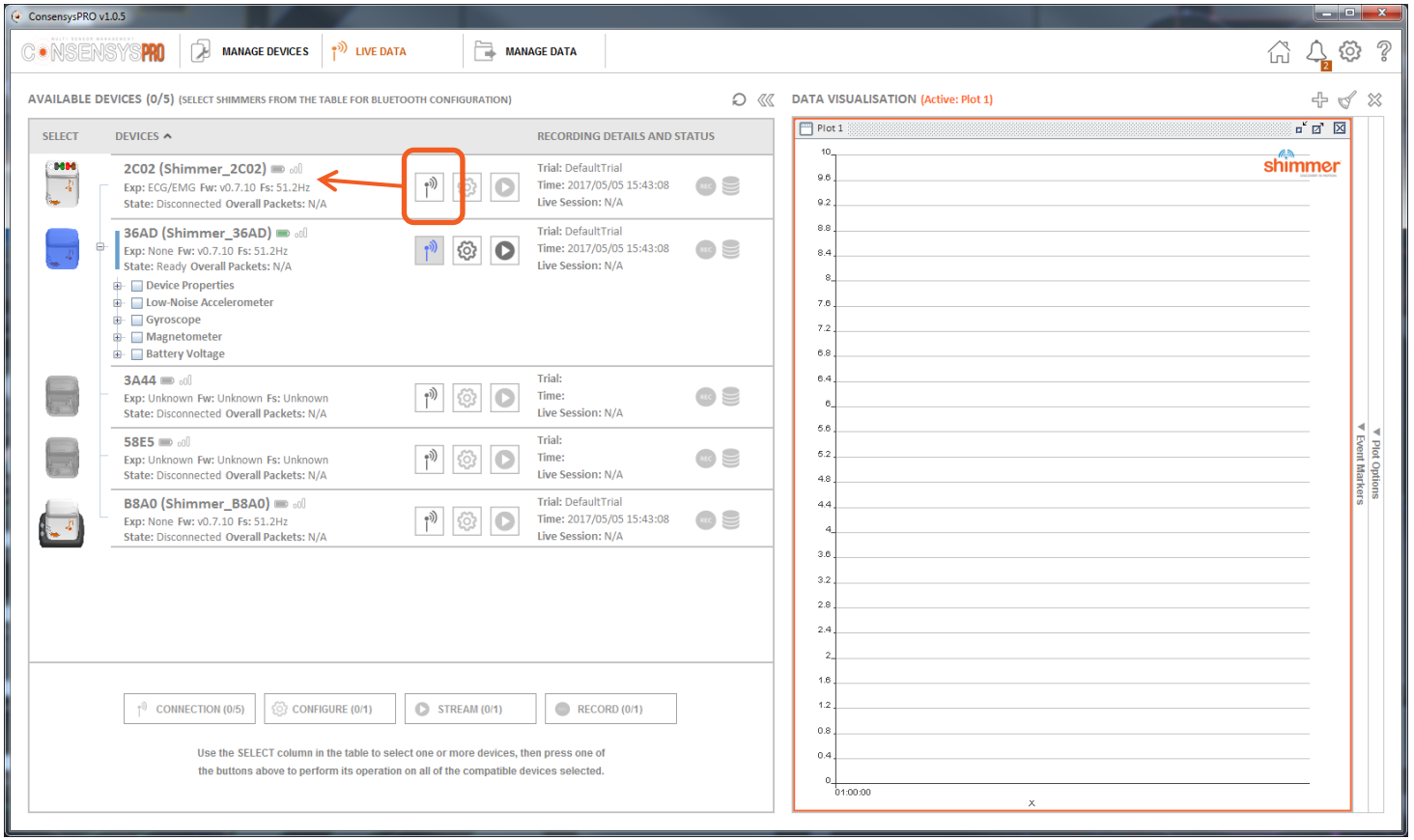
STREAMING – CONNECT (3/5)

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



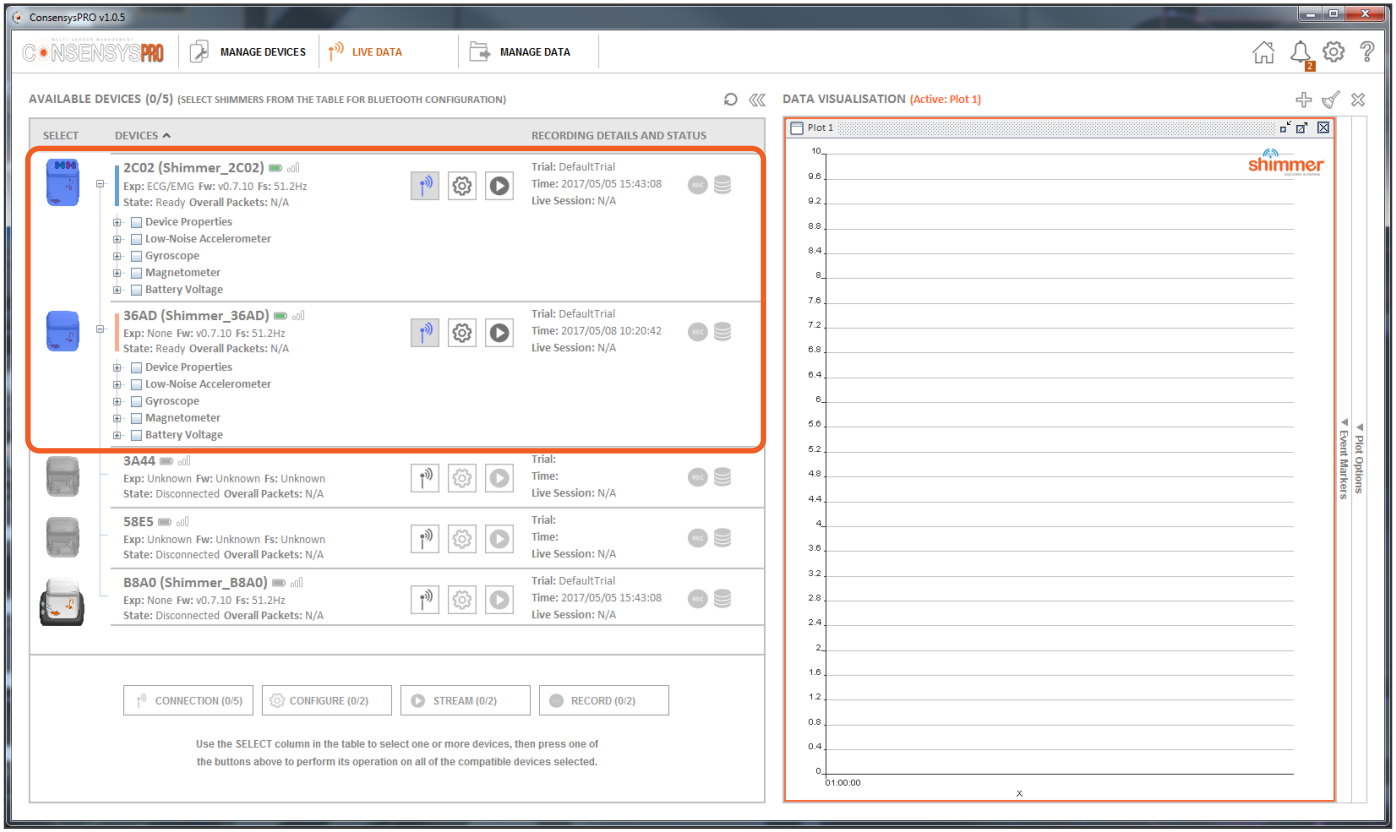
STREAMING – CONNECT (4/5)

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



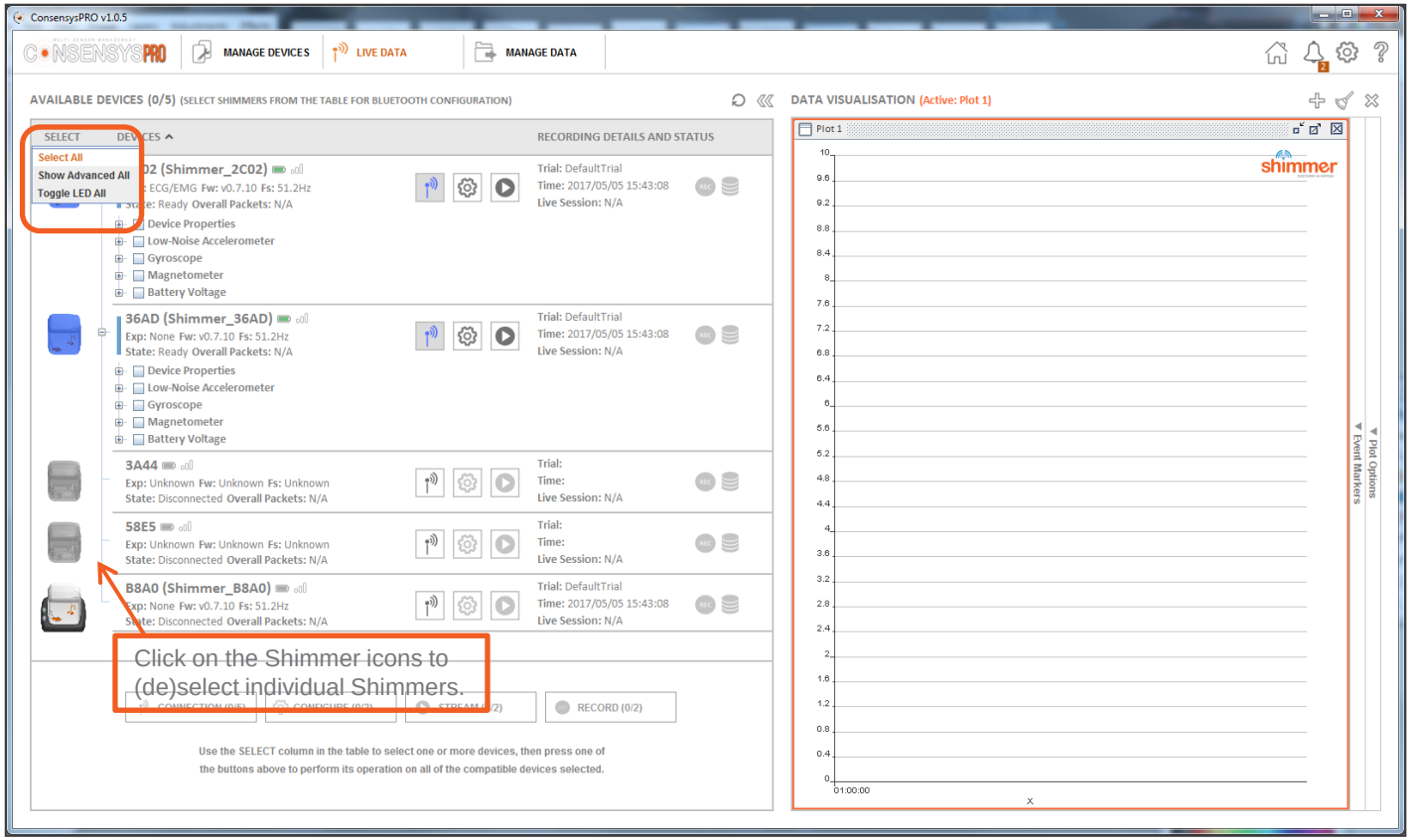
STREAMING – CONNECT (5/5)

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



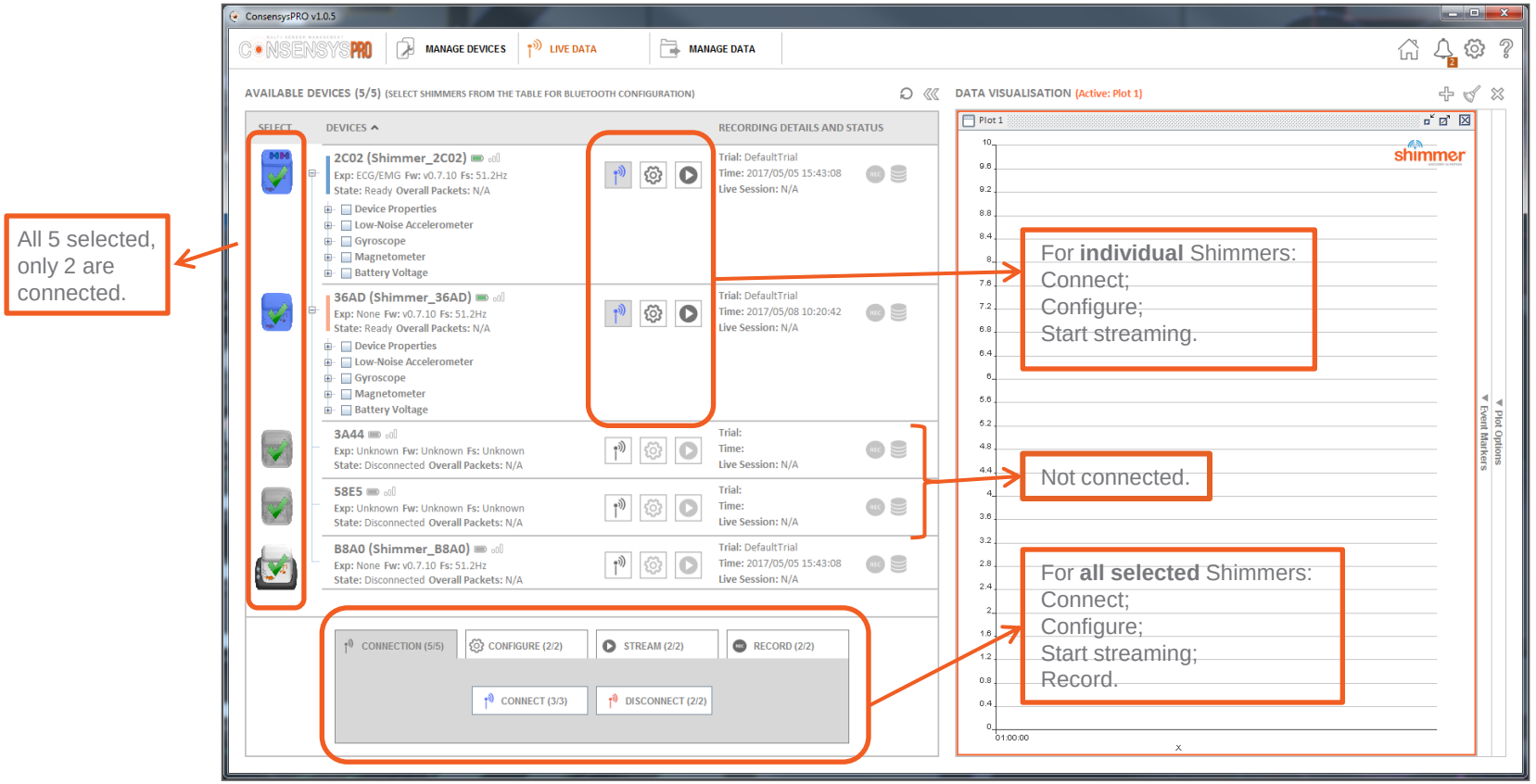
STREAMING – CONFIGURE TRIAL (1/7)

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



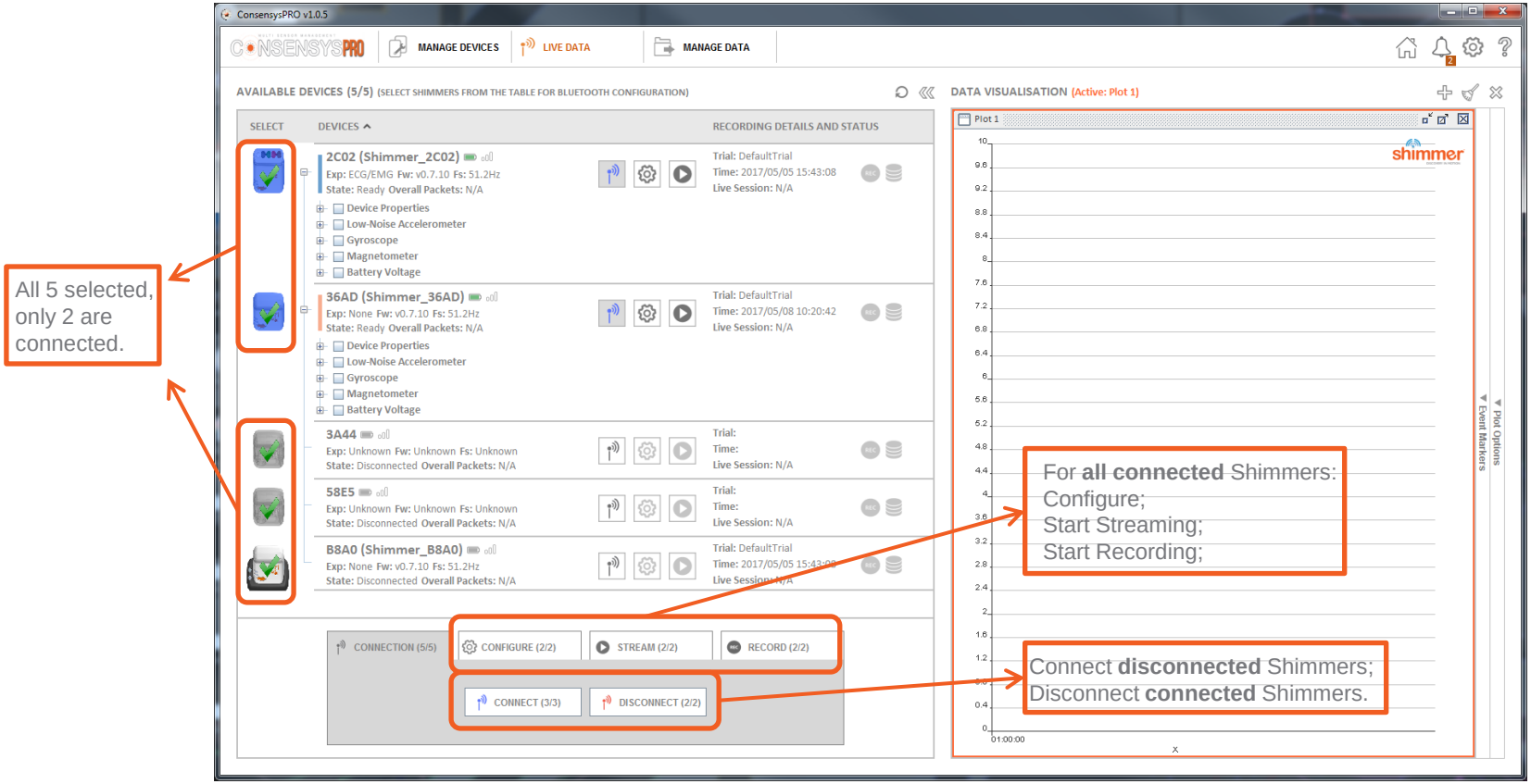
STREAMING – CONFIGURE TRIAL (2/7)

STEP 2 – Selecting Shimmers enables Group Buttons:



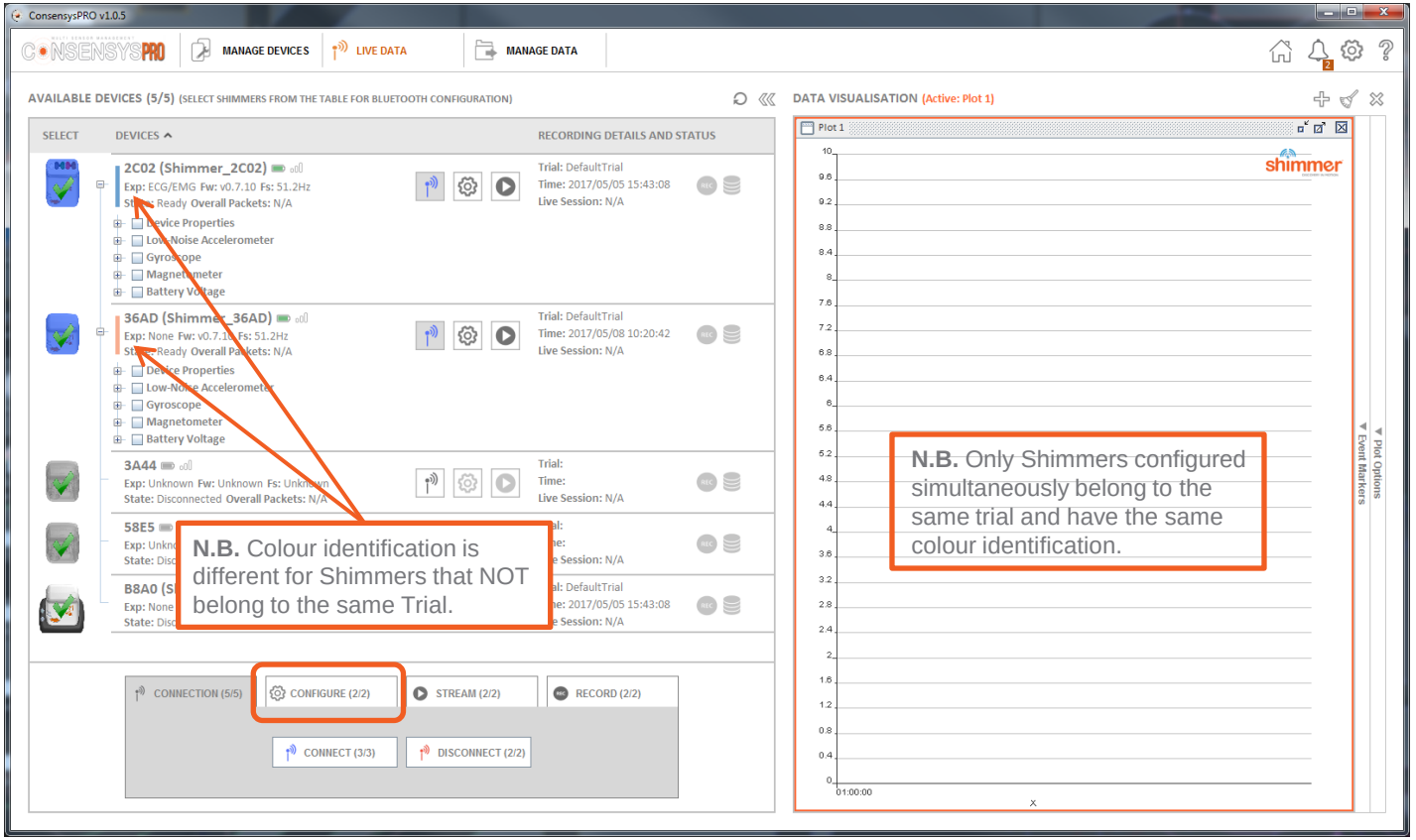
STREAMING – CONFIGURE TRIAL (3/7)

STEP 3 – Selecting Shimmers enables Group Buttons – continued:



STREAMING – CONFIGURE TRIAL (4/7)

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

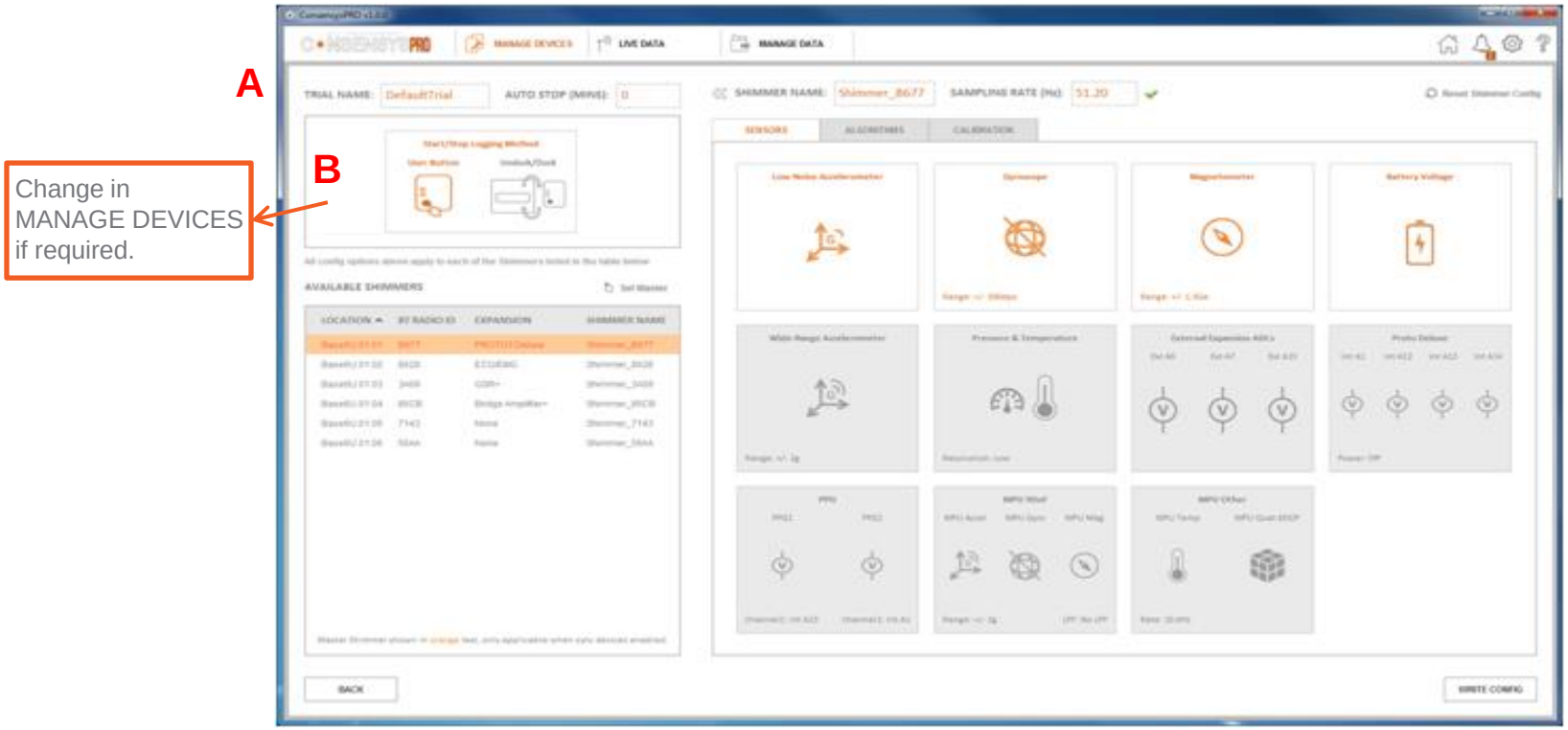


STREAMING - CONFIGURE TRIAL (5/7)

STEP 5 – Set TRIAL NAME:

A. Choose TRIAL NAME.

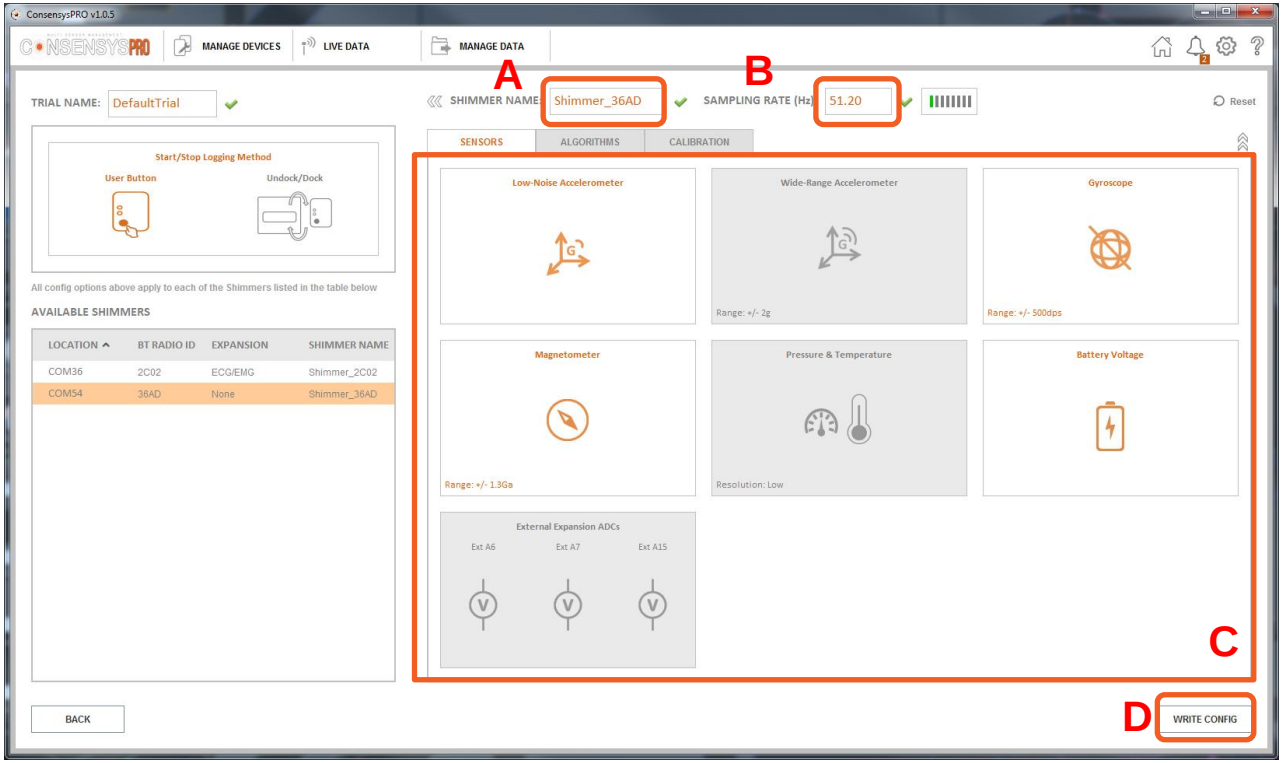
B. Start/Stop Logging Method cannot be changed when connected over Bluetooth.



STREAMING - CONFIGURE TRIAL (6/7)

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

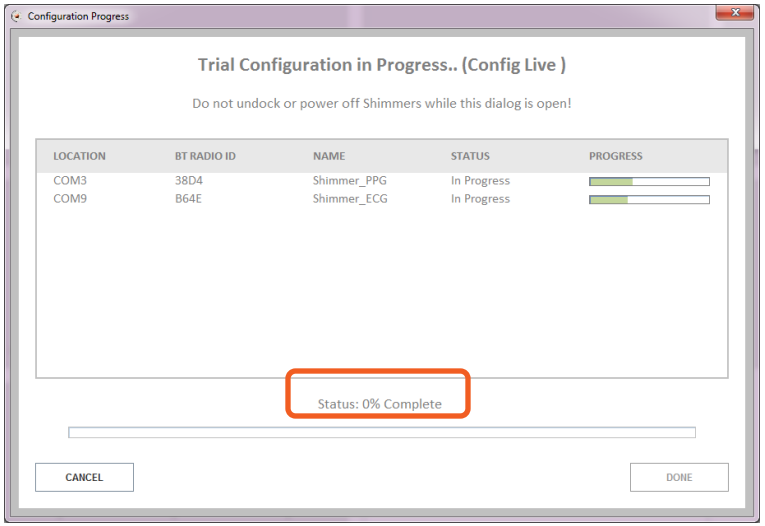
A. Choose SHIMMER NAME.
B. Choose SAMPLING RATE.
C. Click on the tiles to enable and configure sensors.
D. When all Shimmer are configured, click “WRITE CONFIG” to write the configuration to the Shimmers.



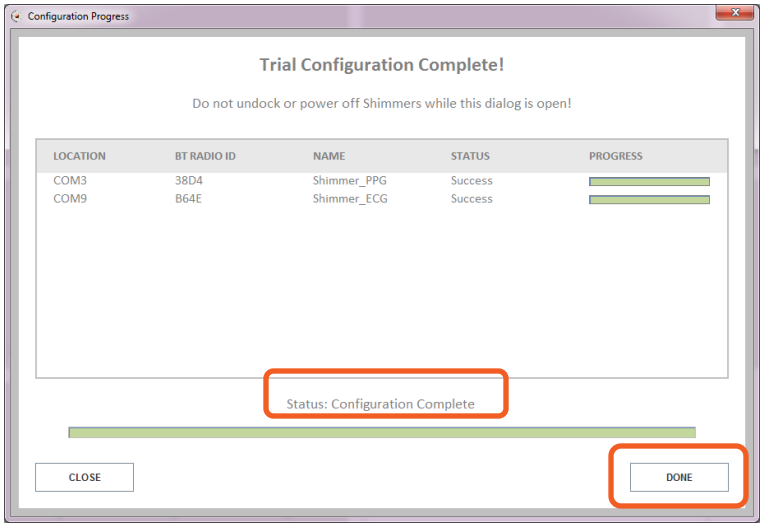
STREAMING - CONFIGURE TRIAL (7/7)

STEP 7 – WRITE CONFIG.

Wait until Trial Configuration is written:



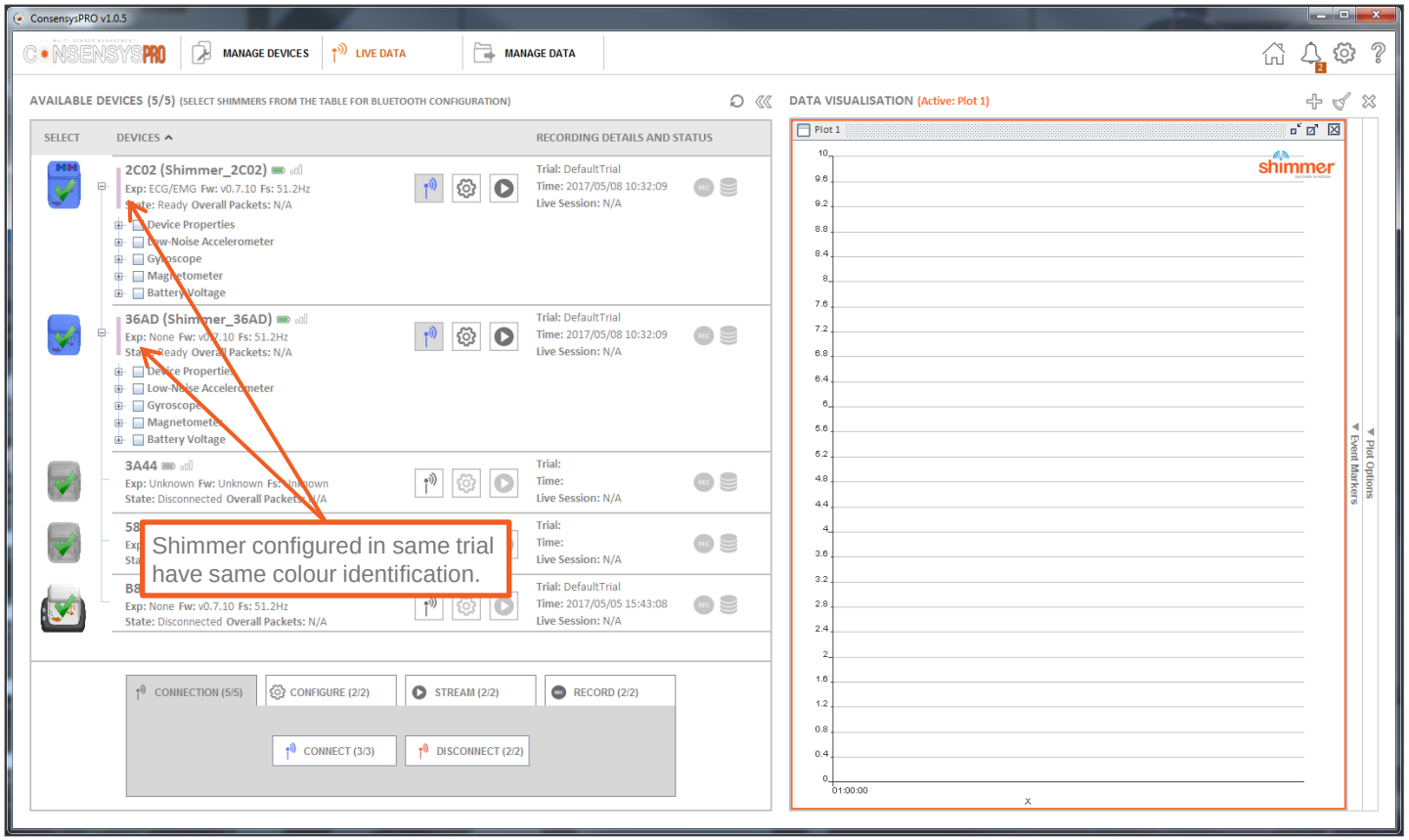
Click “NEXT” to complete the configuration:



shimmer
DISCOVERY IN MOTION

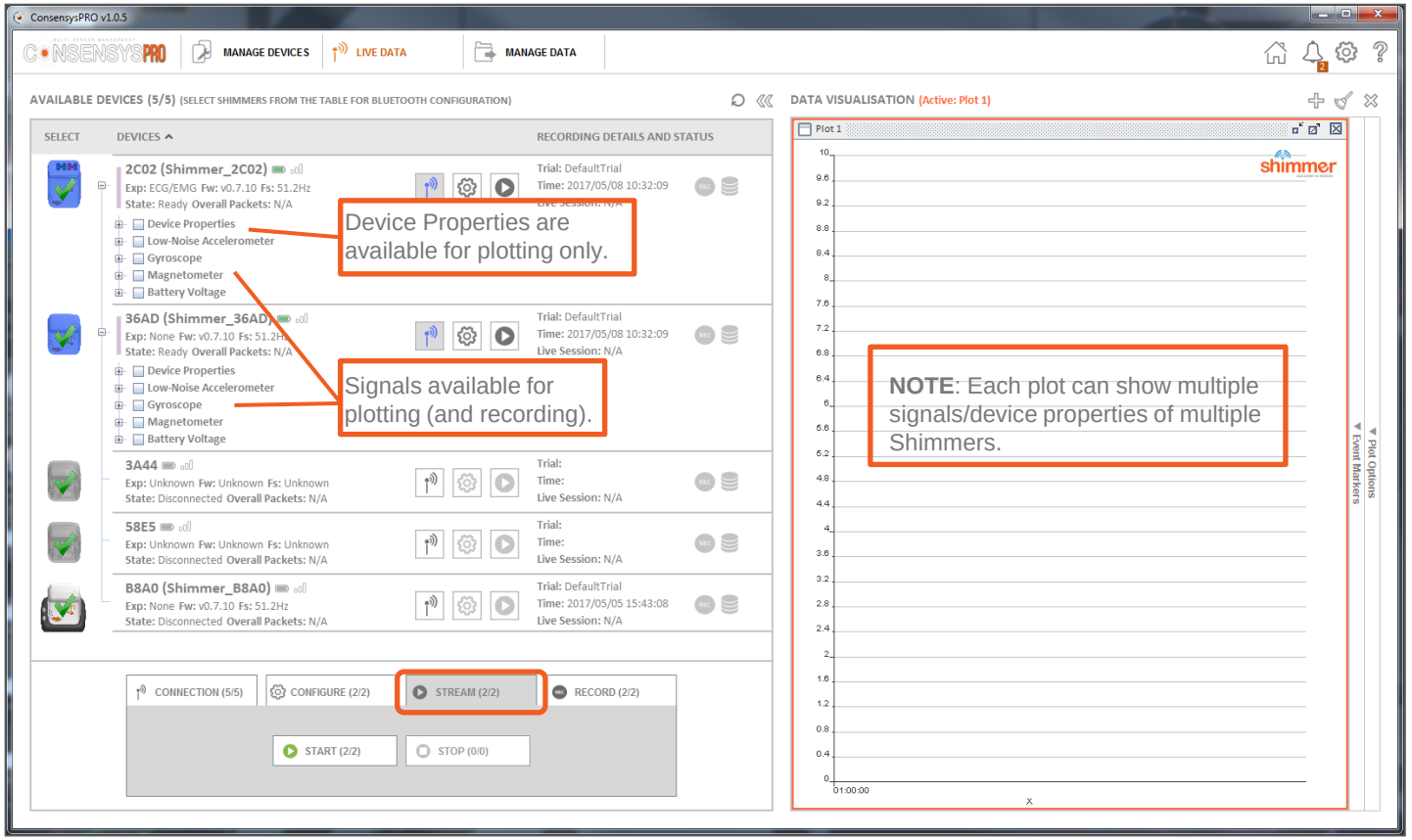
STREAMING - STREAM & PLOT (1/5)

STEP 1 – Undock Shimmers before streaming:



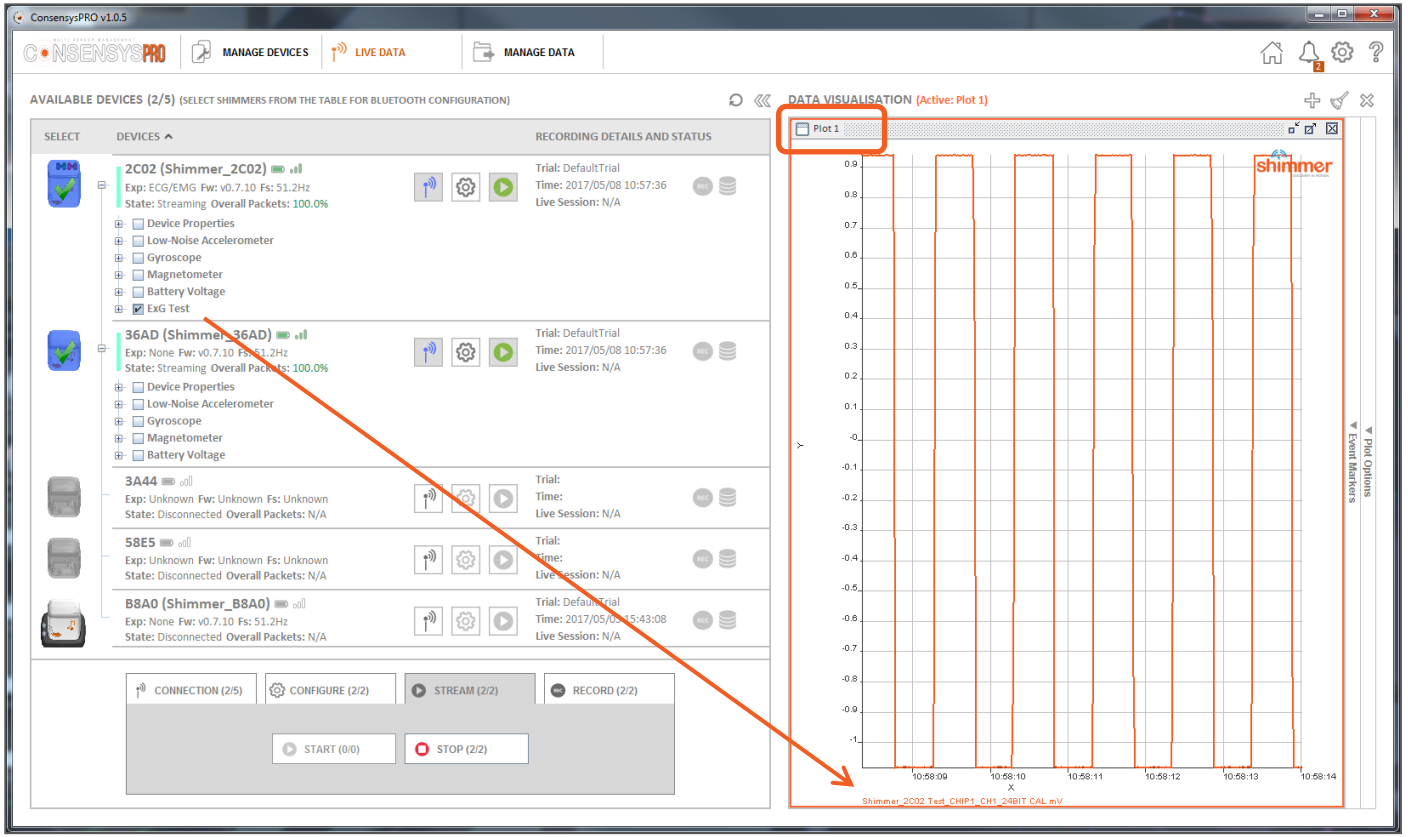
STREAMING - STREAM & PLOT (2/5)

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



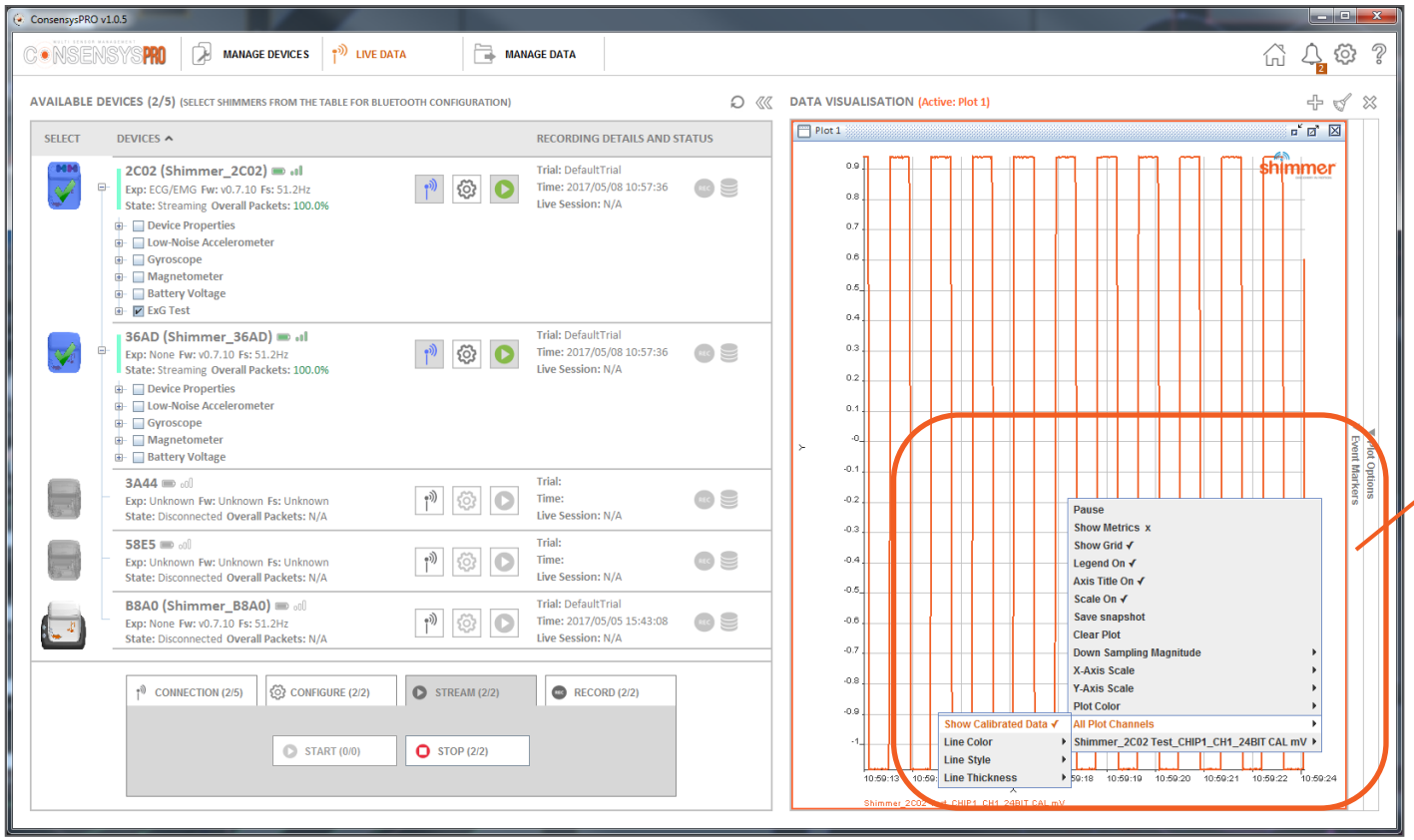
STREAMING - STREAM & PLOT (3/5)

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

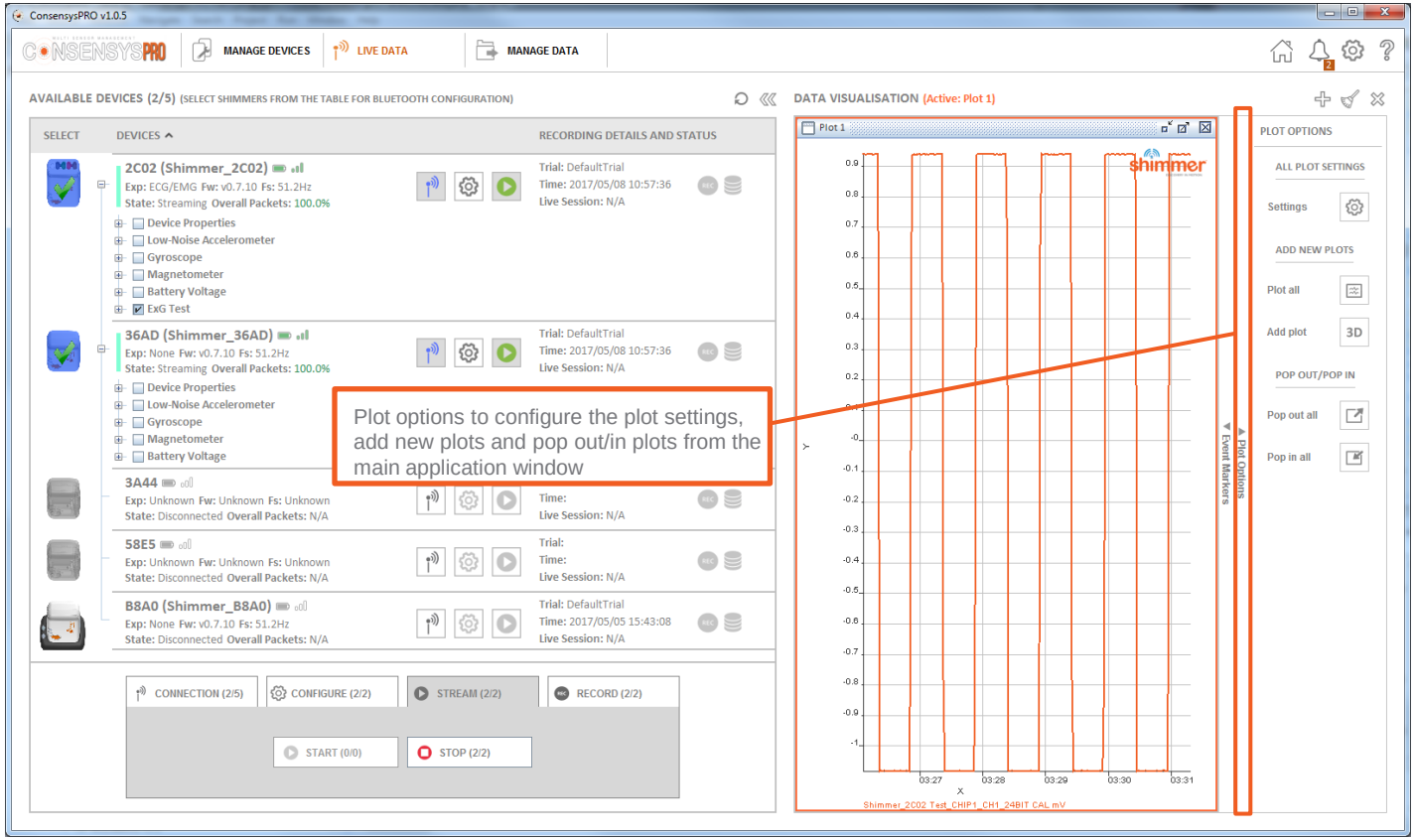


STREAMING - STREAM & PLOT (4/5)

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

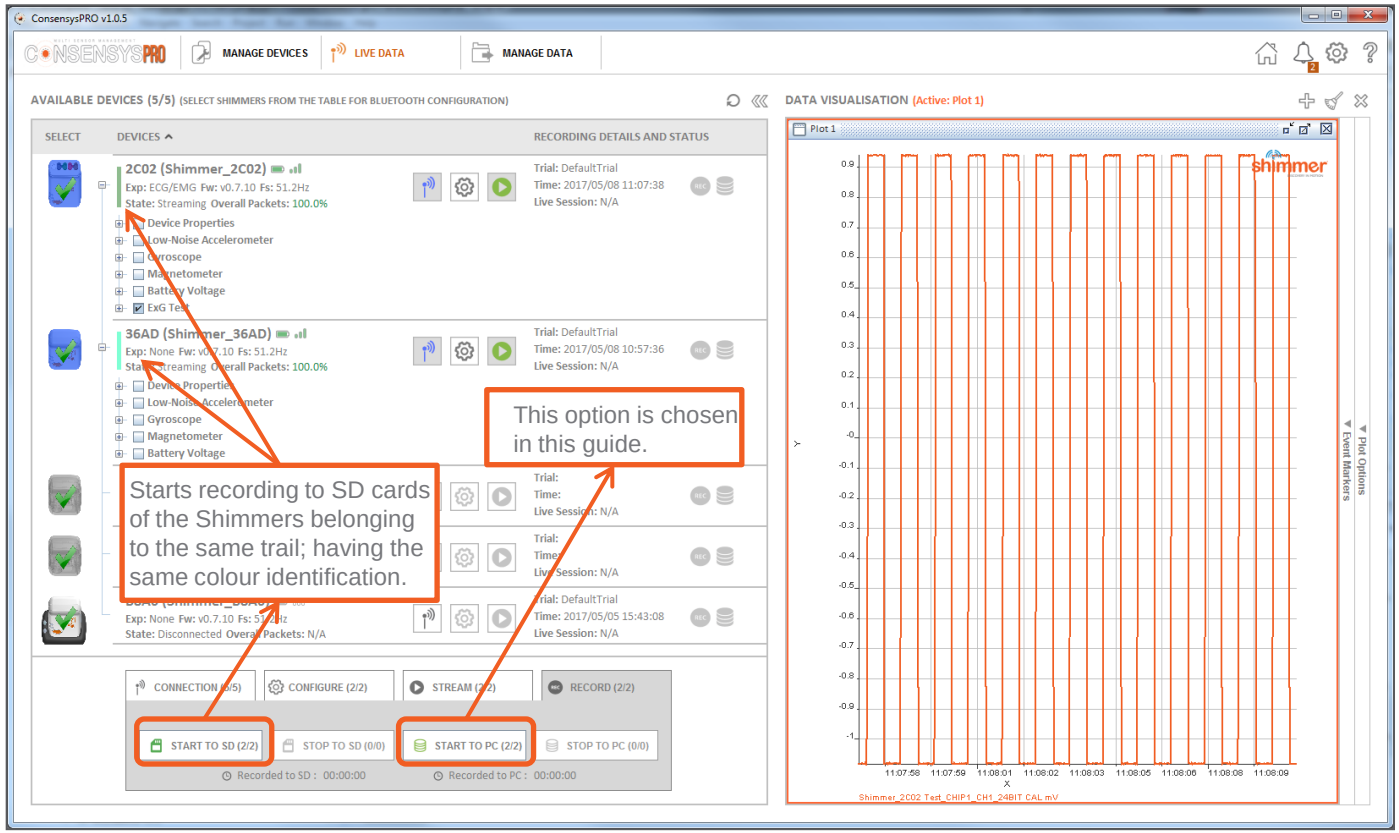


STREAMING - STREAM & PLOT (5/5)



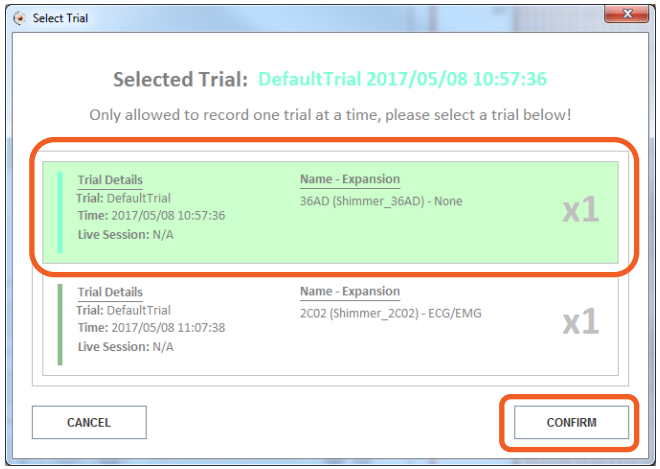
STREAMING - RECORD (1/4)

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



STREAMING - RECORD (2/4)

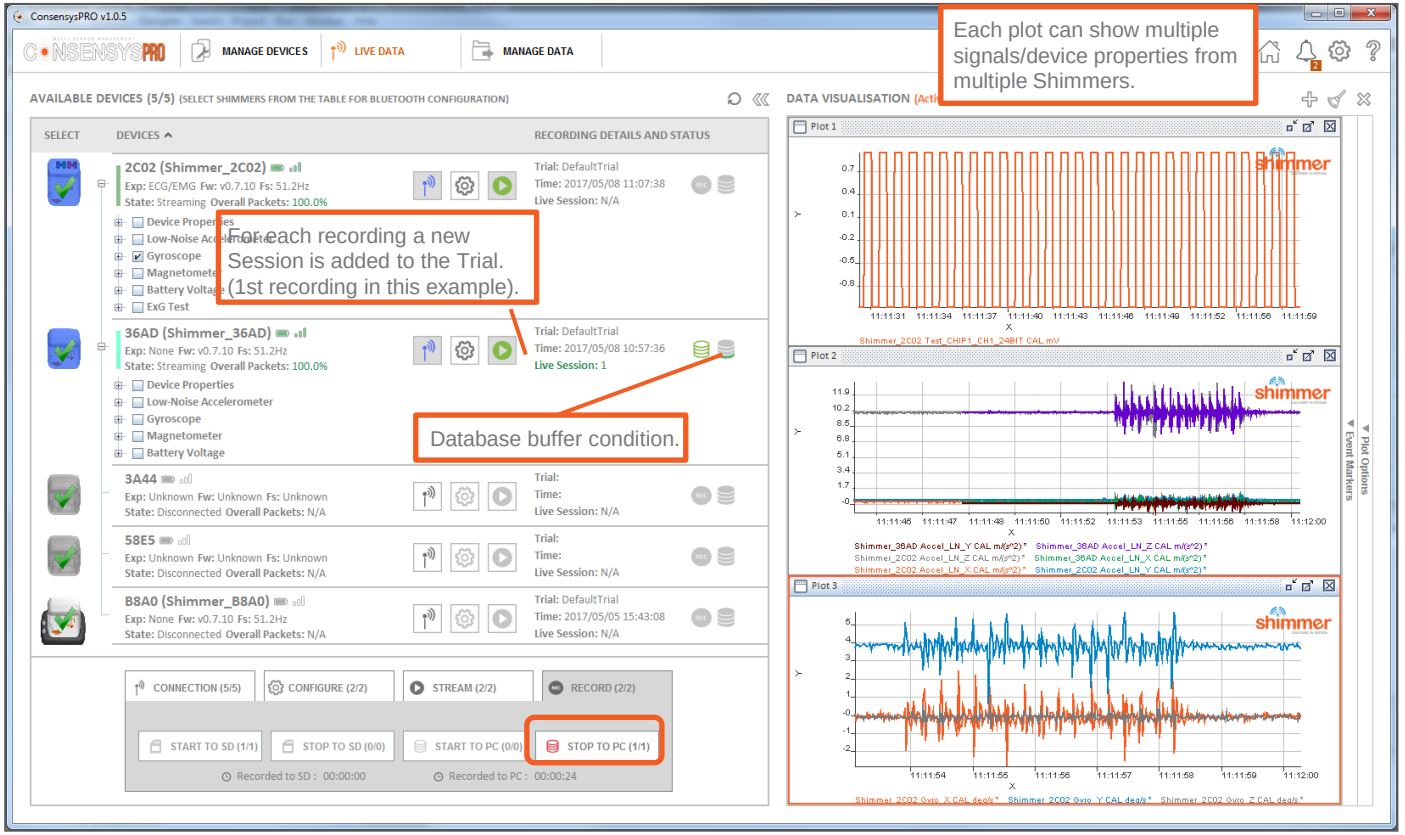
STEP 2 – Select the trial for recording and press “CONFIRM”:



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

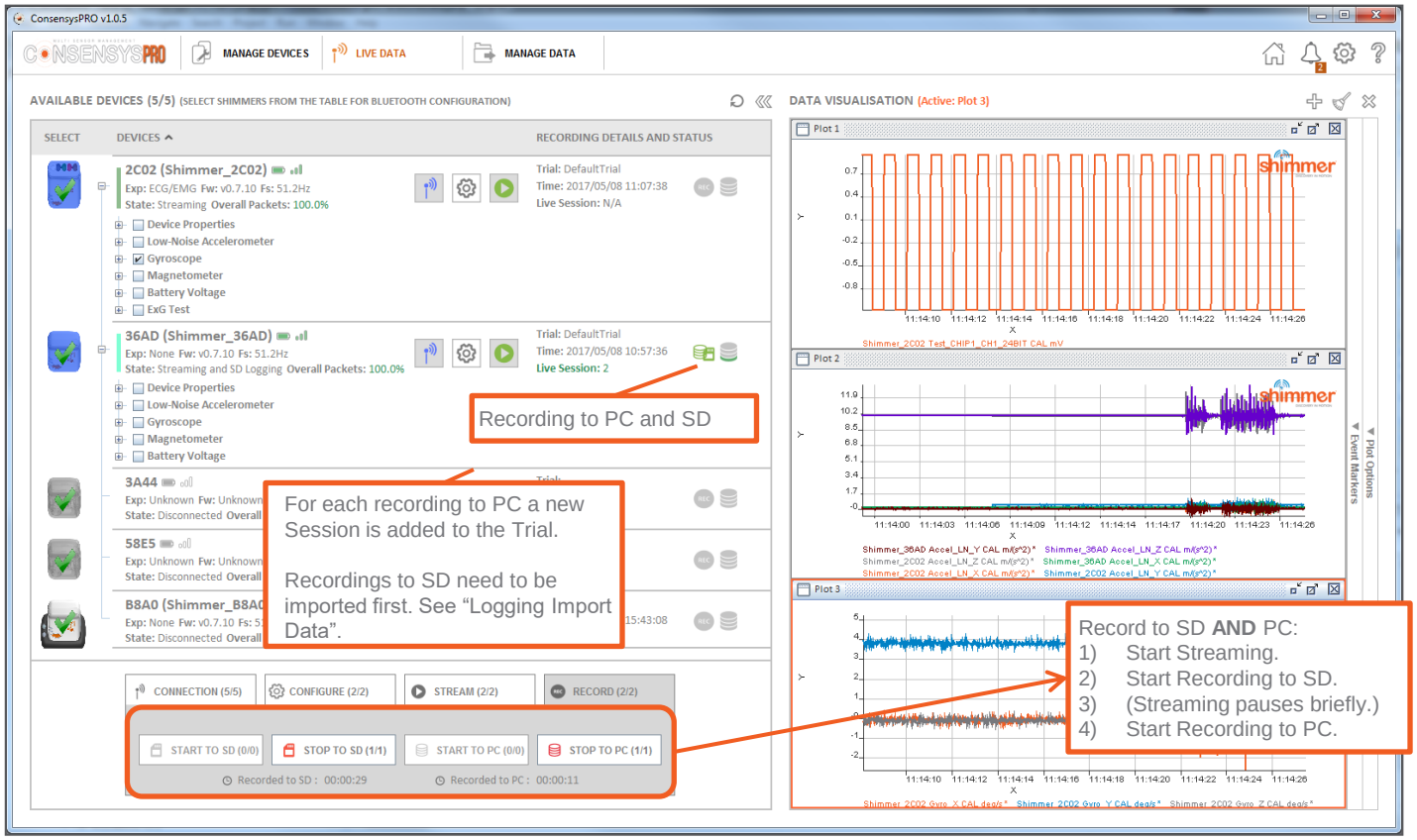
STREAMING - RECORD (3/4)

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



STREAMING - RECORD (4/4)

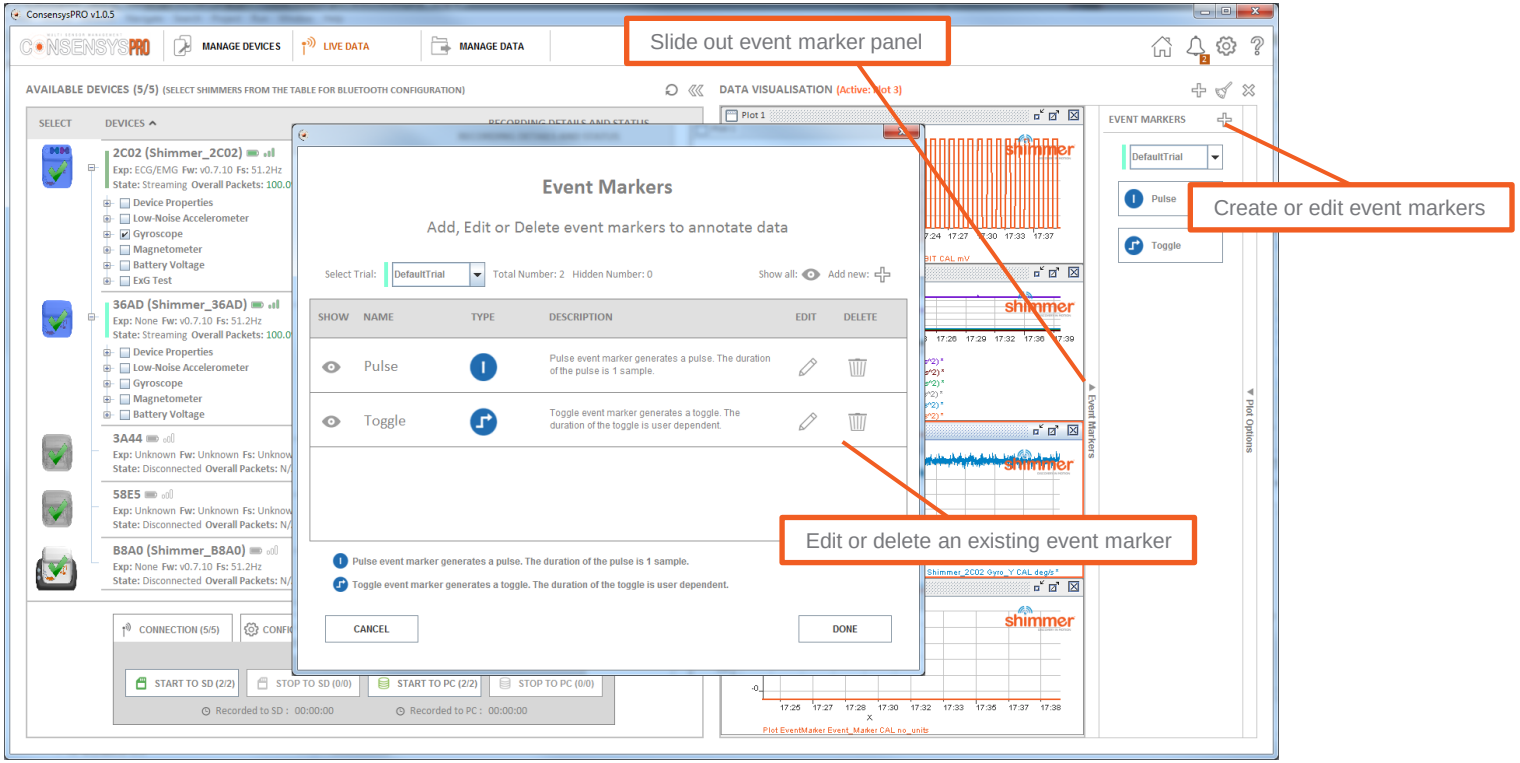
STEP 4 – To record simultaneously to SD and PC:



STREAMING – EVENT MARKERS (1/3)

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

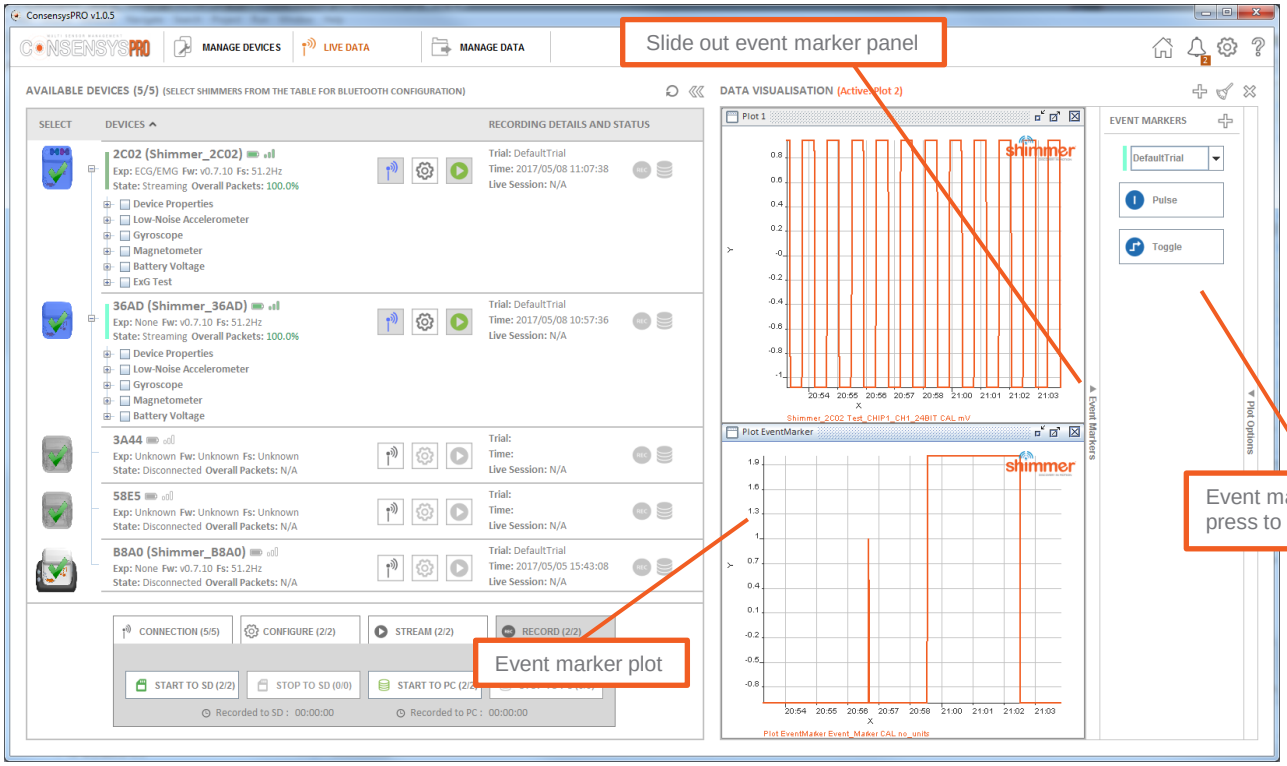
STEP 1 – Create or edit event markers (of type Pulse and/or Toggle) when at least one Shimmer is connected over Bluetooth:



N.B. ConsensysBASIC does not support event markers!

STREAMING – EVENT MARKERS (2/3)

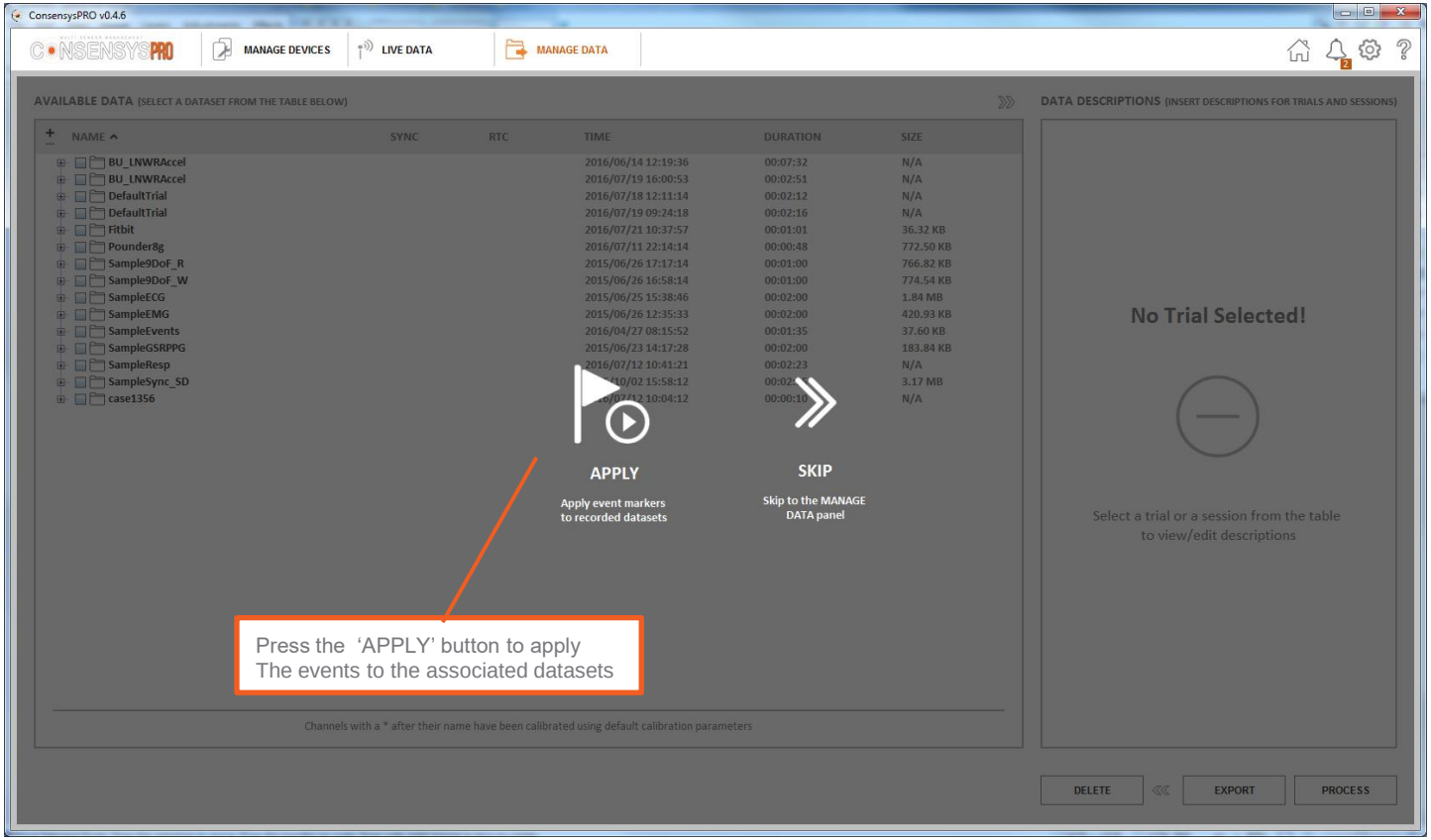
STEP 2 – Show the available event markers (buttons) when at least one Shimmer is connected data over Bluetooth and fire the event by pressing the relevant event button.



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.



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

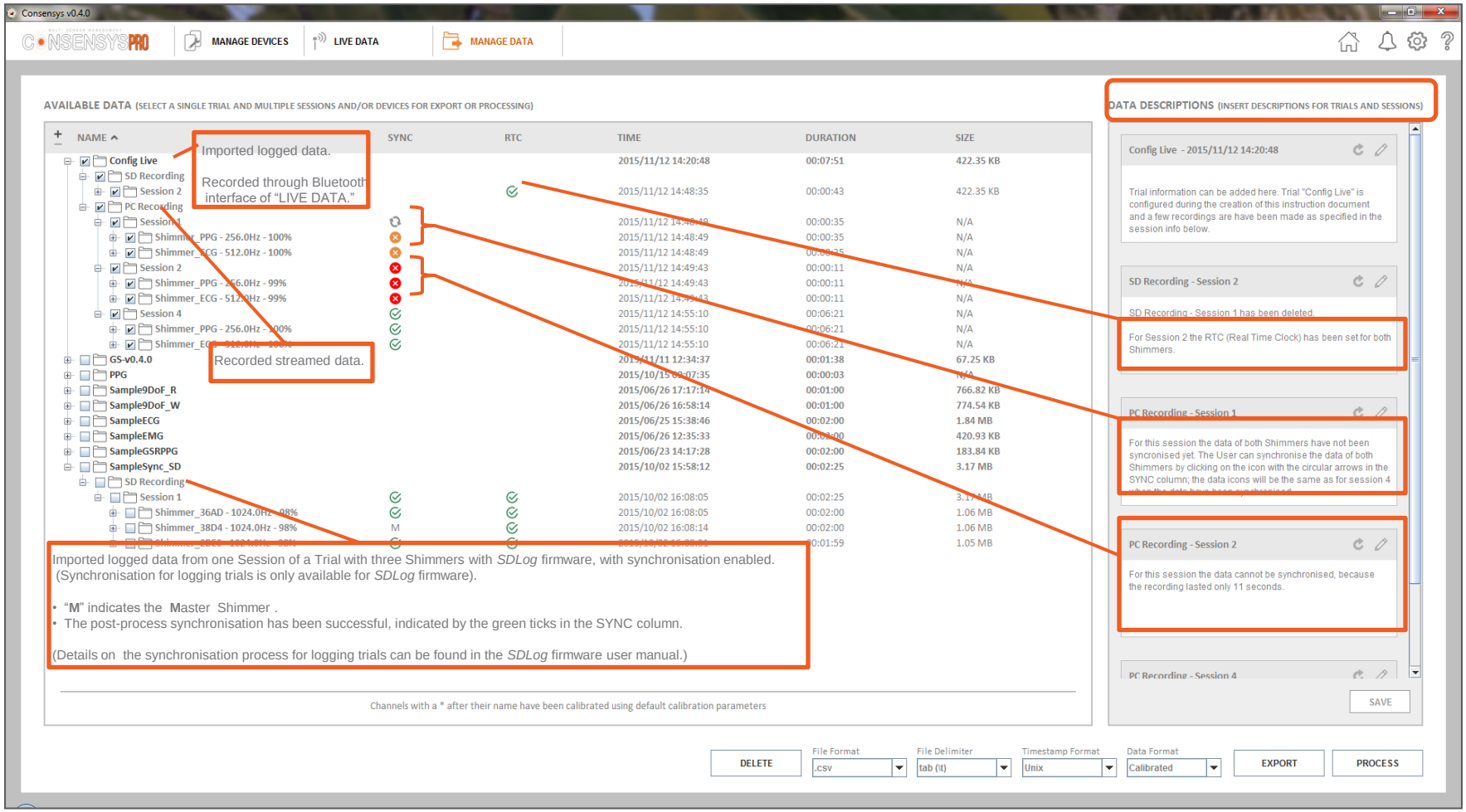
– Export

– Delete

– Process

shimmer
DISCOVERY IN MOTION

MANAGE DATA – GENERAL

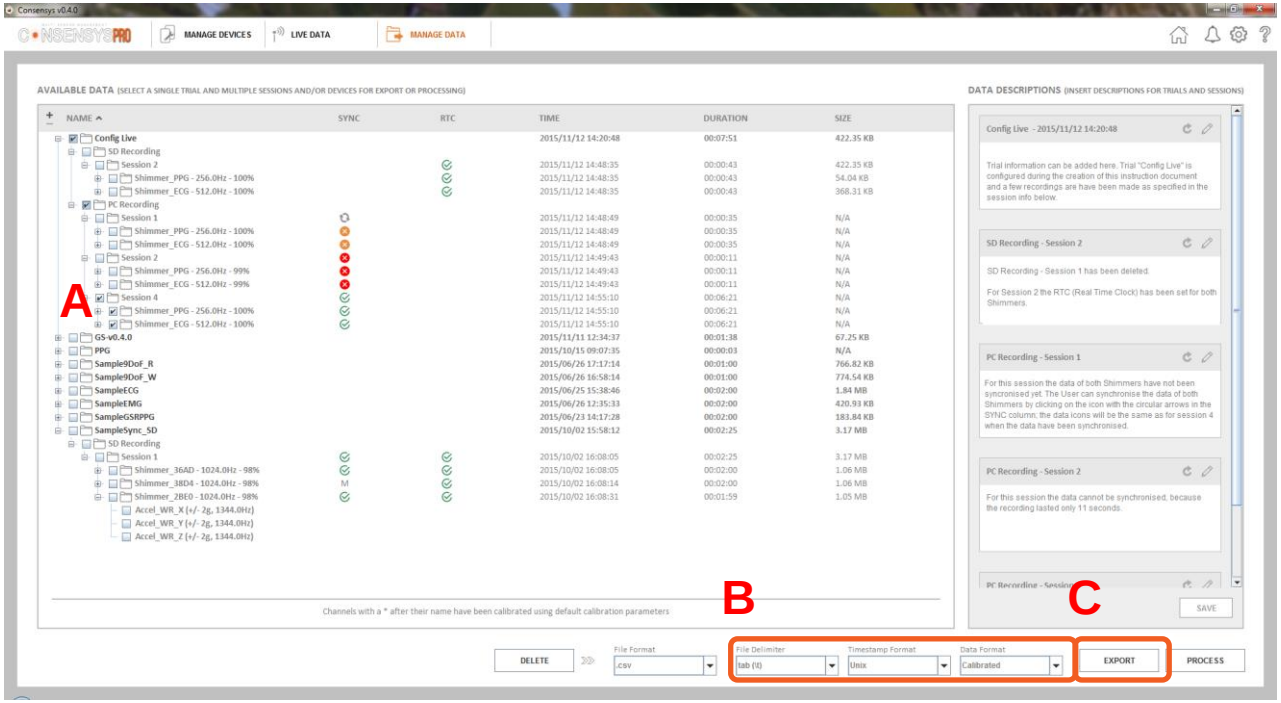


N.B. ConsensysBASIC does not support DATA DESCRIPTIONS!

MANAGE DATA – EXPORT (1/2)

STEP 1 – EXPORT – Select data and format:

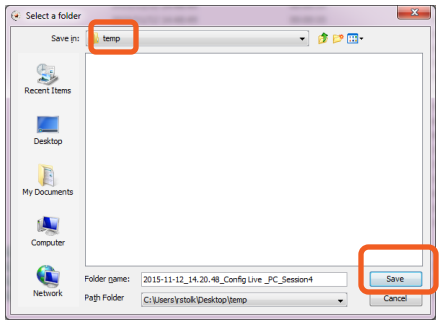
A. Select one or more sessions from one trial.
B. Select “File Delimiter”, “File Format”, “Timestamp Format”, “Data Format”.
C. Hit “Export” to export the selected data to a file in the requested format.

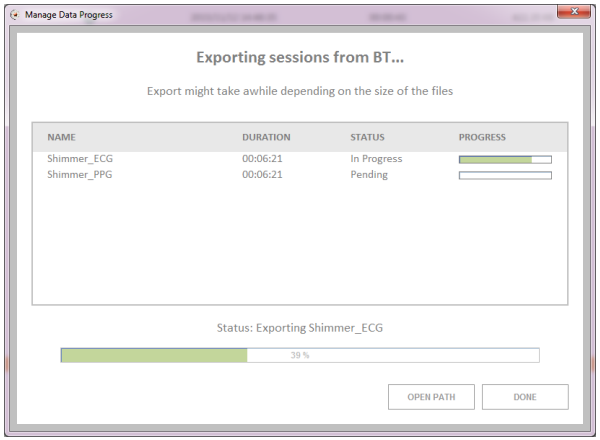


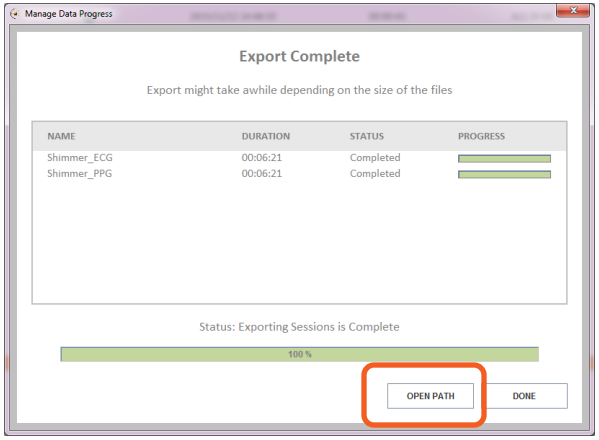
MANAGE DATA – EXPORT (2/2)

STEP 2 – EXPORT – Export the data:

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







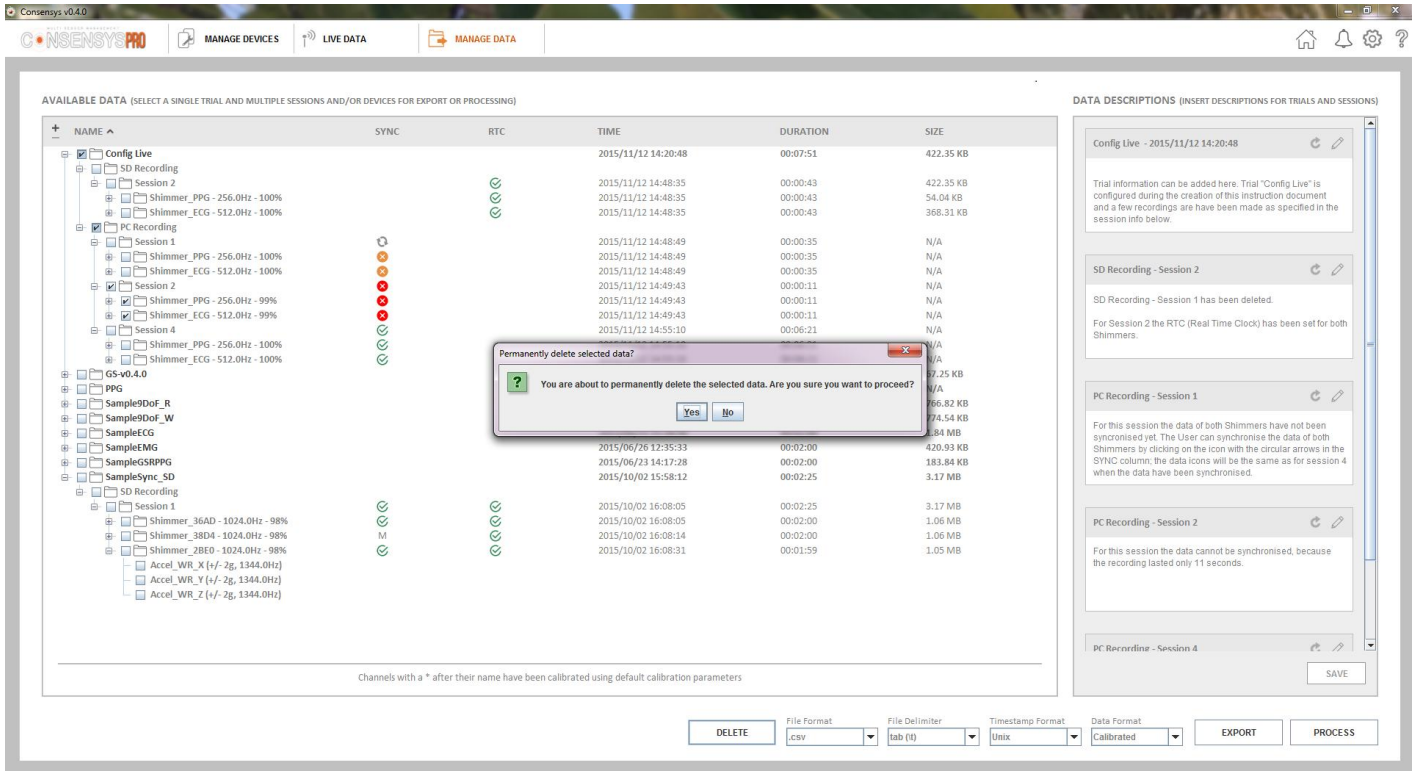
shimmer
DISCOVERY IN MOTION

MANAGE DATA – DELETE (1/3)

STEP 1 – DELETE – Select and delete data:

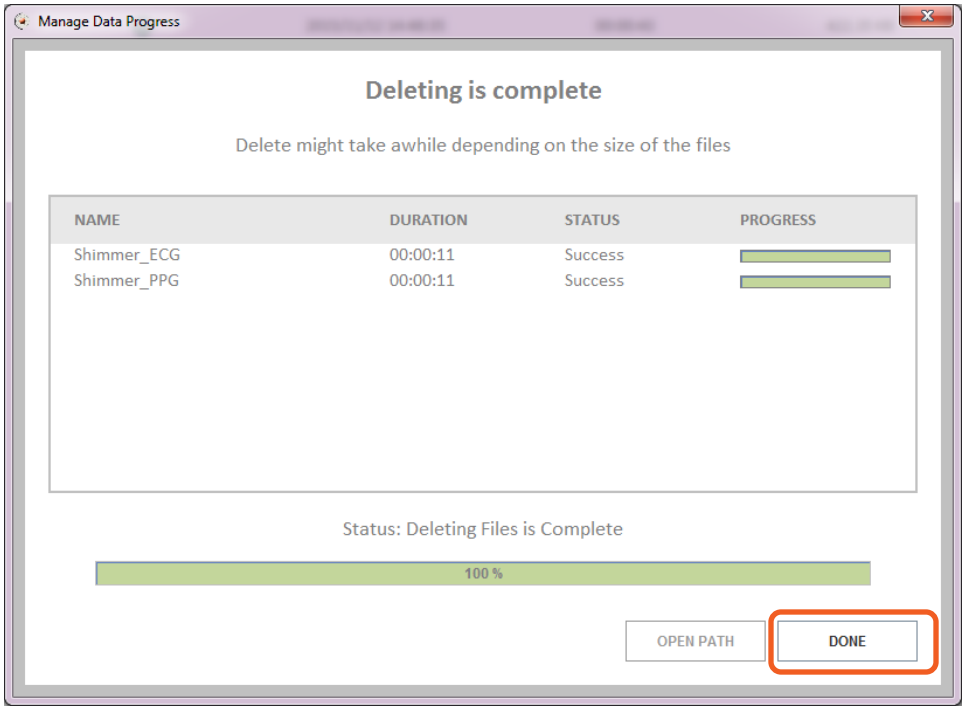
A. Select data to be deleted – this can.

B. Hit “DELETE” to delete the selected data from the database (and hit “YES” to confirm).



MANAGE DATA – DELETE (2/3)

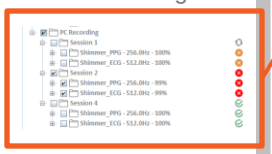
STEP 2 – DELETE – Click “DONE” when Deleting Files is Complete:

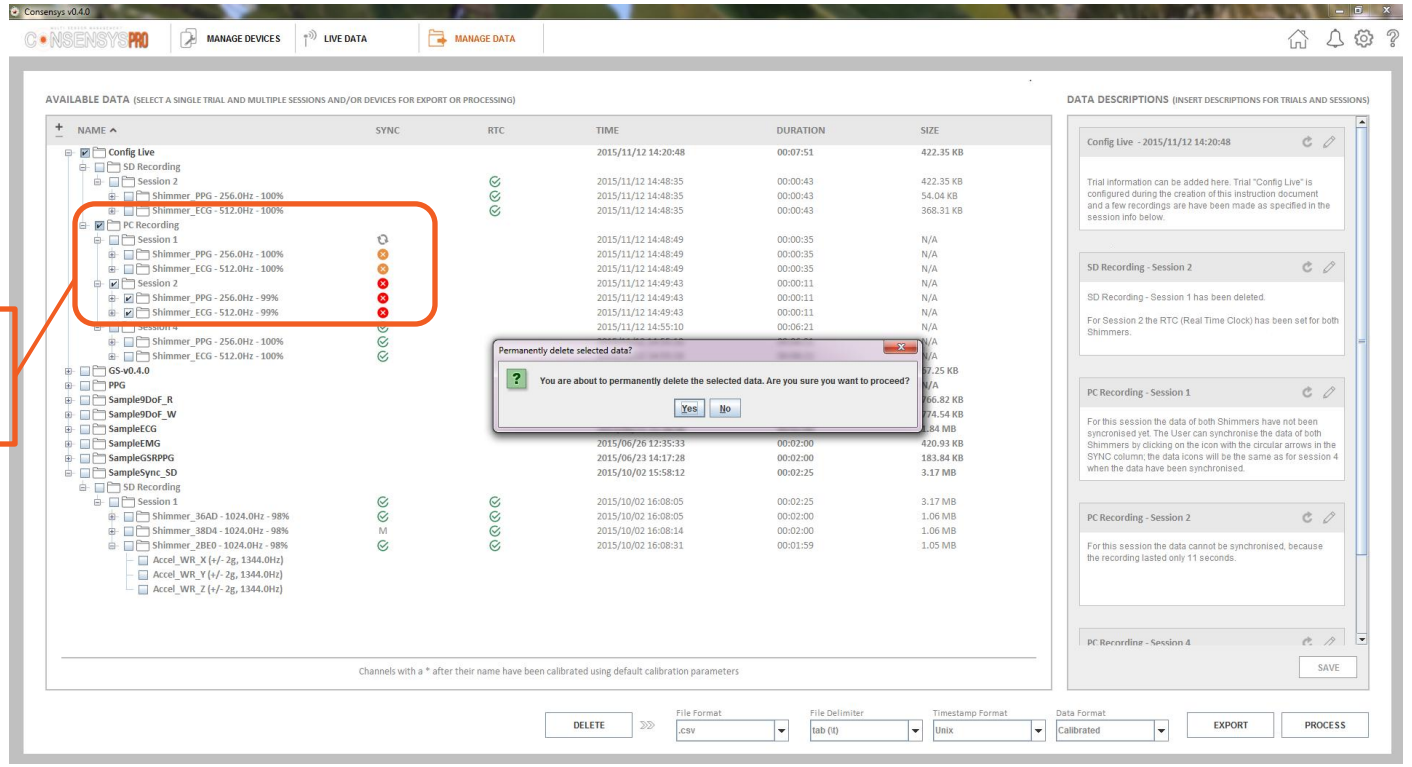


MANAGE DATA – DELETE (3/3)

STEP 3 – DELETE – Confirm data has been deleted:

Before deleting:



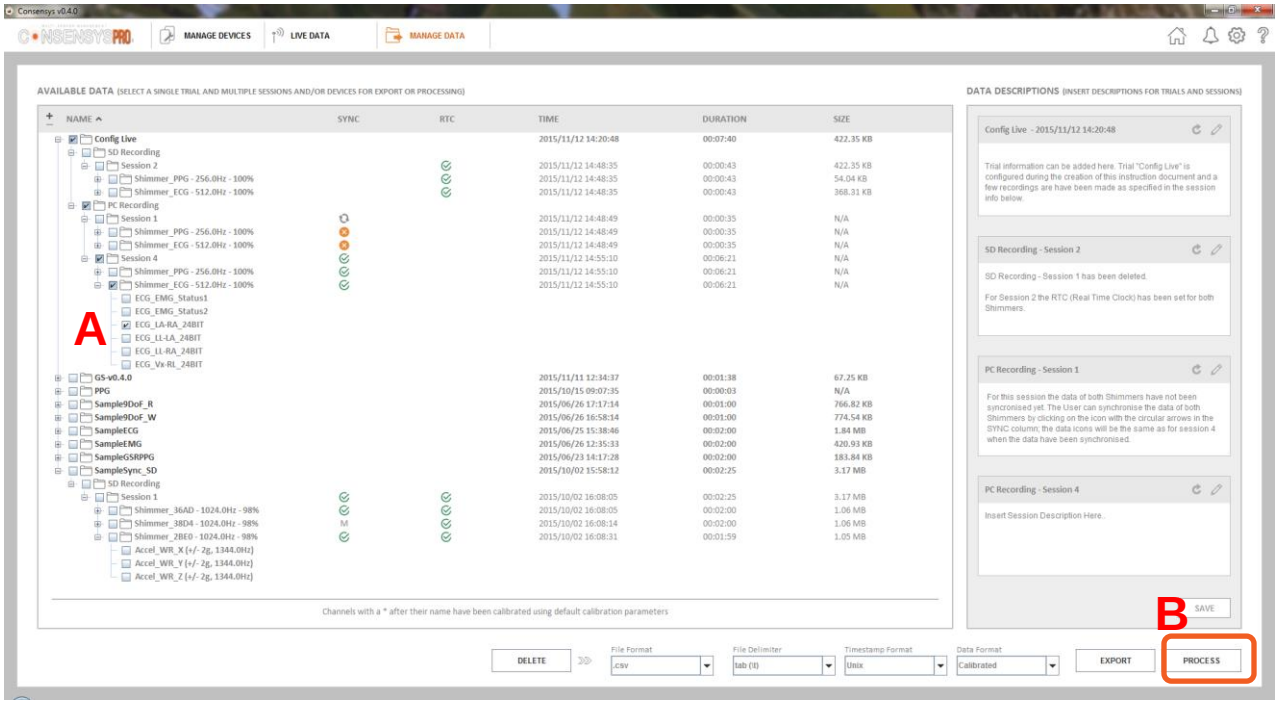


MANAGE DATA – PROCESS (1/5)

STEP 1 – Select data:

A. Select data to process – *e.g.* "ECG_LA_RA_24BIT" from Shimmer called: "Shimmer_ECG".

B. Click "PROCESS".



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

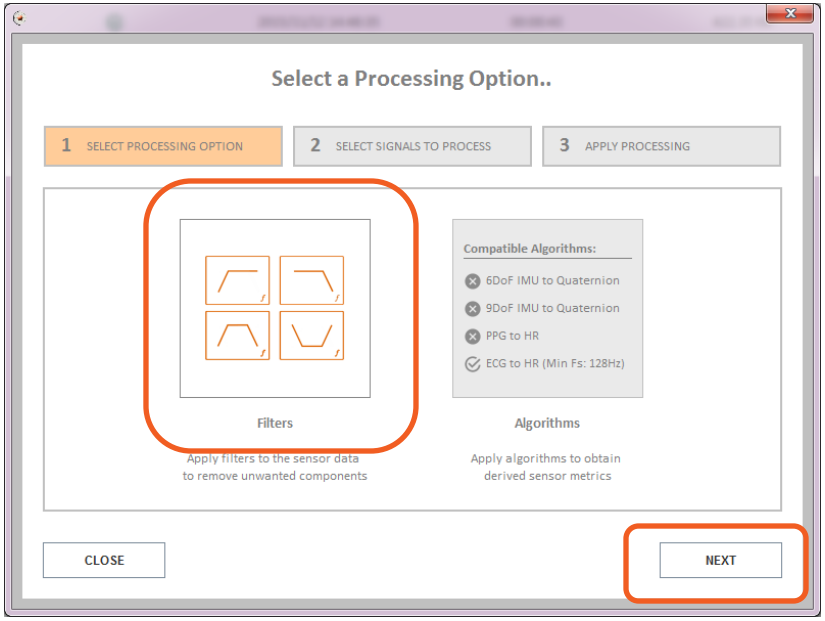
MANAGE DATA – PROCESS (2/5)

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.

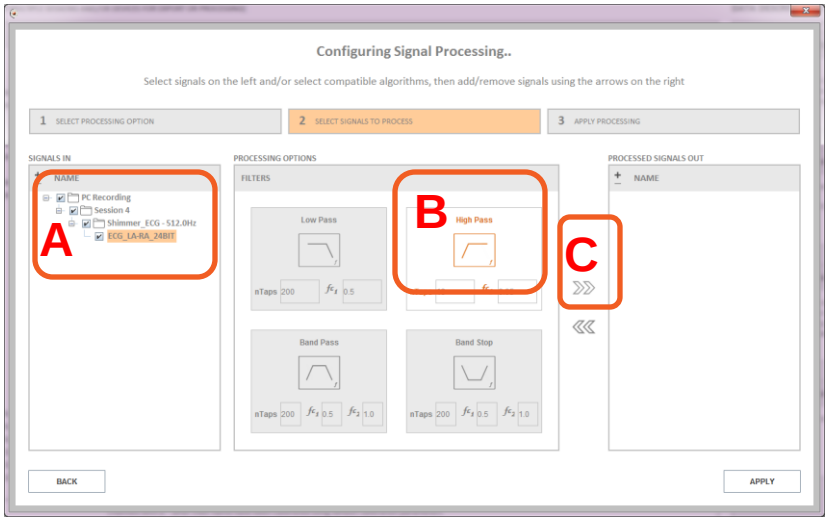
C. Click “NEXT”.

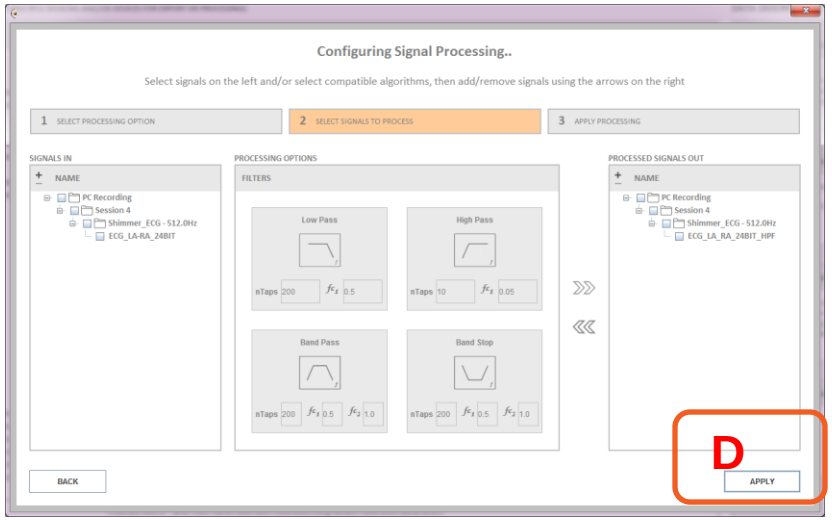


MANAGE DATA – PROCESS (3/5)

STEP 3 – Configuring Signal Processing:

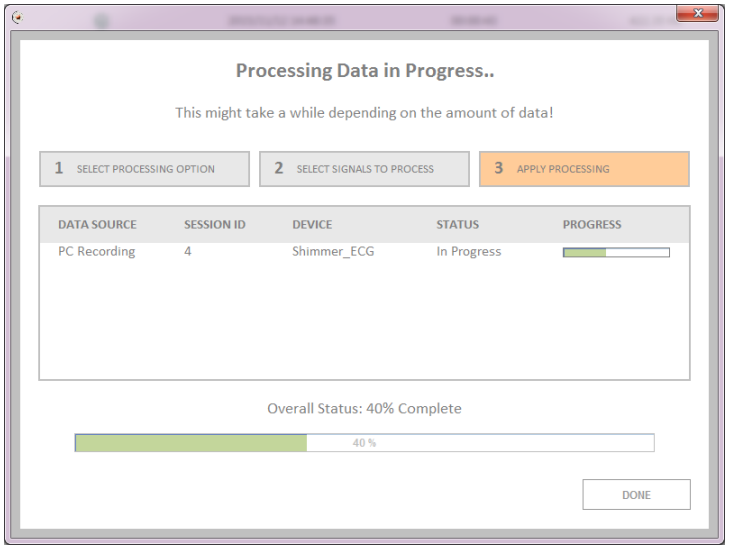
A. Select signals to process. (In this example only one signal was selected, so there is nothing else to select.)
B. Select filter parameters.
C. Add to the “PROCESSED SIGNALS OUT” list for the next stage.
D. Hit “Apply”.

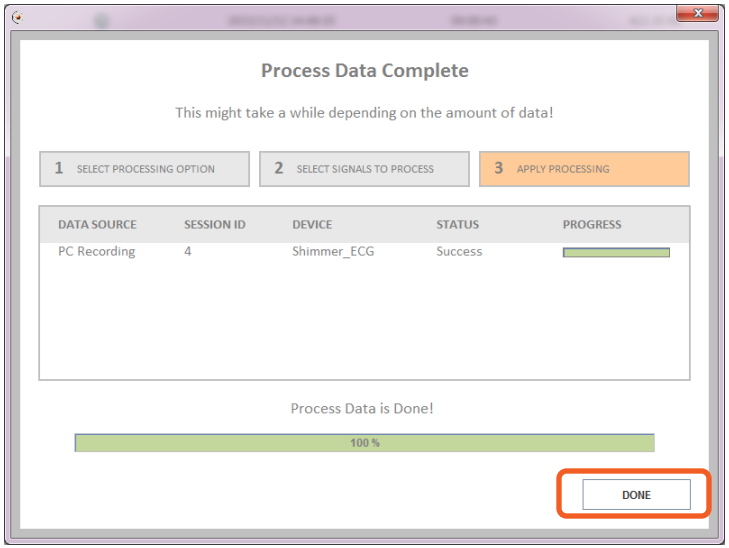




MANAGE DATA – PROCESS (4/5)

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

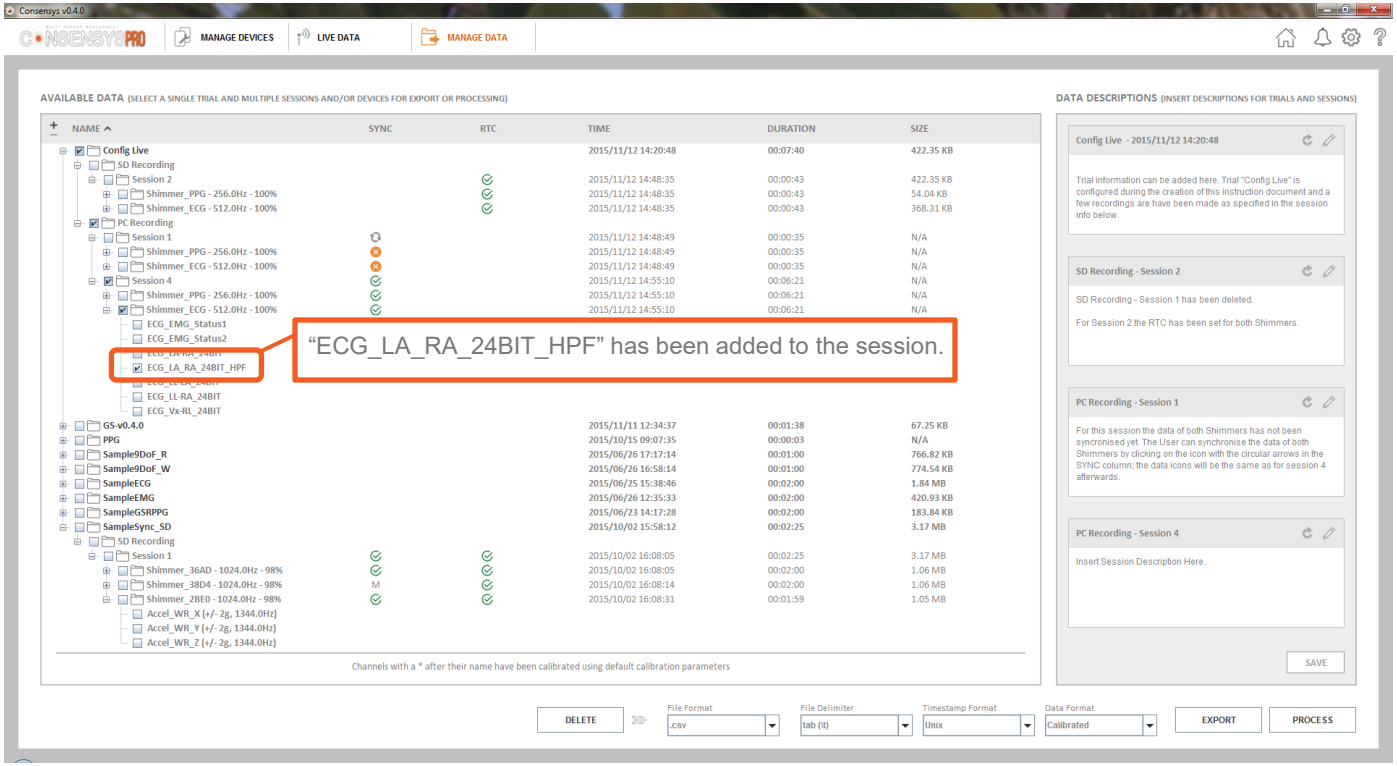




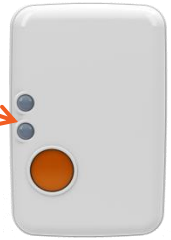
shimmer
DISCOVERY IN MOTION

MANAGE DATA – PROCESS (5/5)

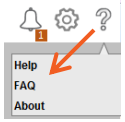
STEP 5 – Confirm processing has been applied:



THINGS YOU MIGHT NEED TO KNOW (1/4)

- The **green** and **blue** LED (in LED location B)  are **blinking rapidly**.
  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.

- **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**) 

for solutions to the most common problems.

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

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DISCOVERY IN MOTION

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/)

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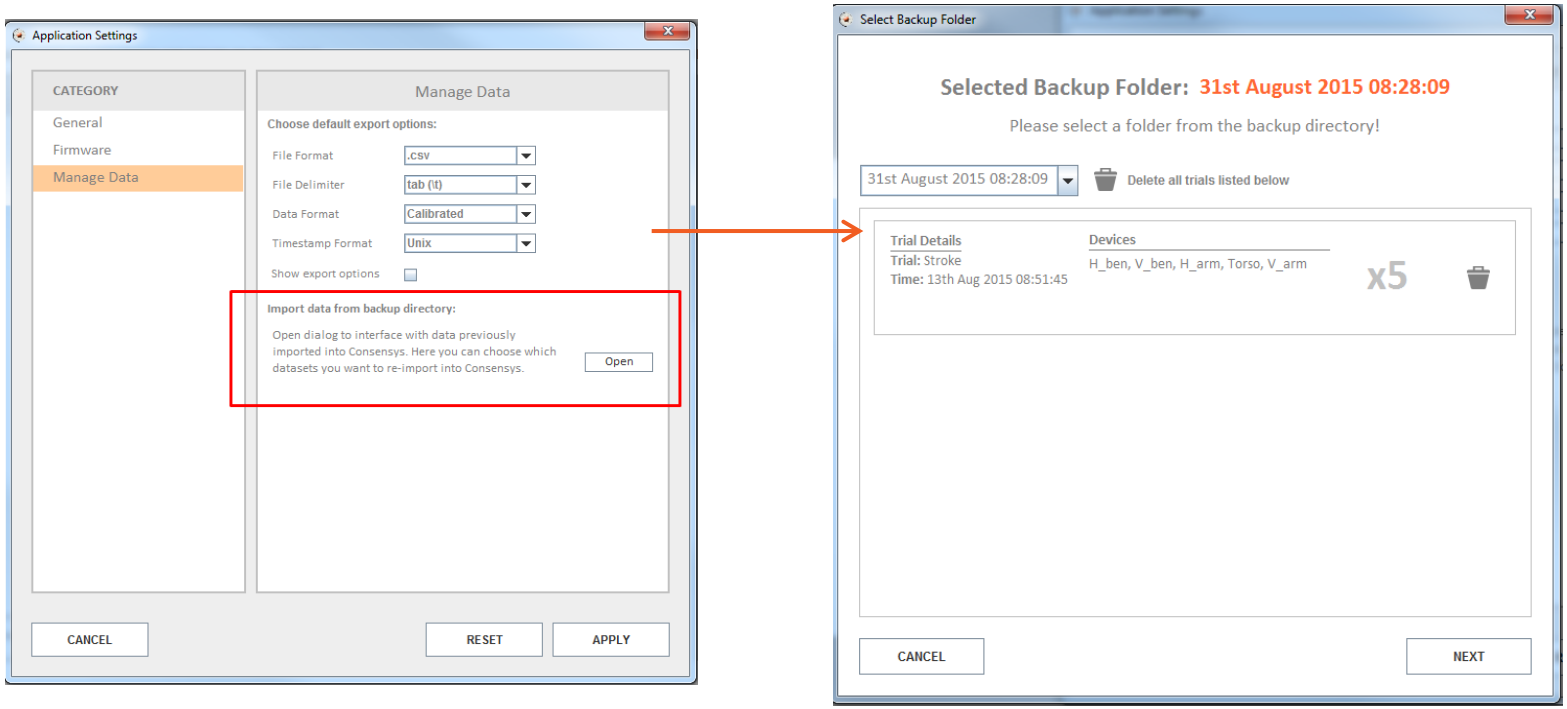
THINGS YOU MIGHT NEED TO KNOW (3/4)

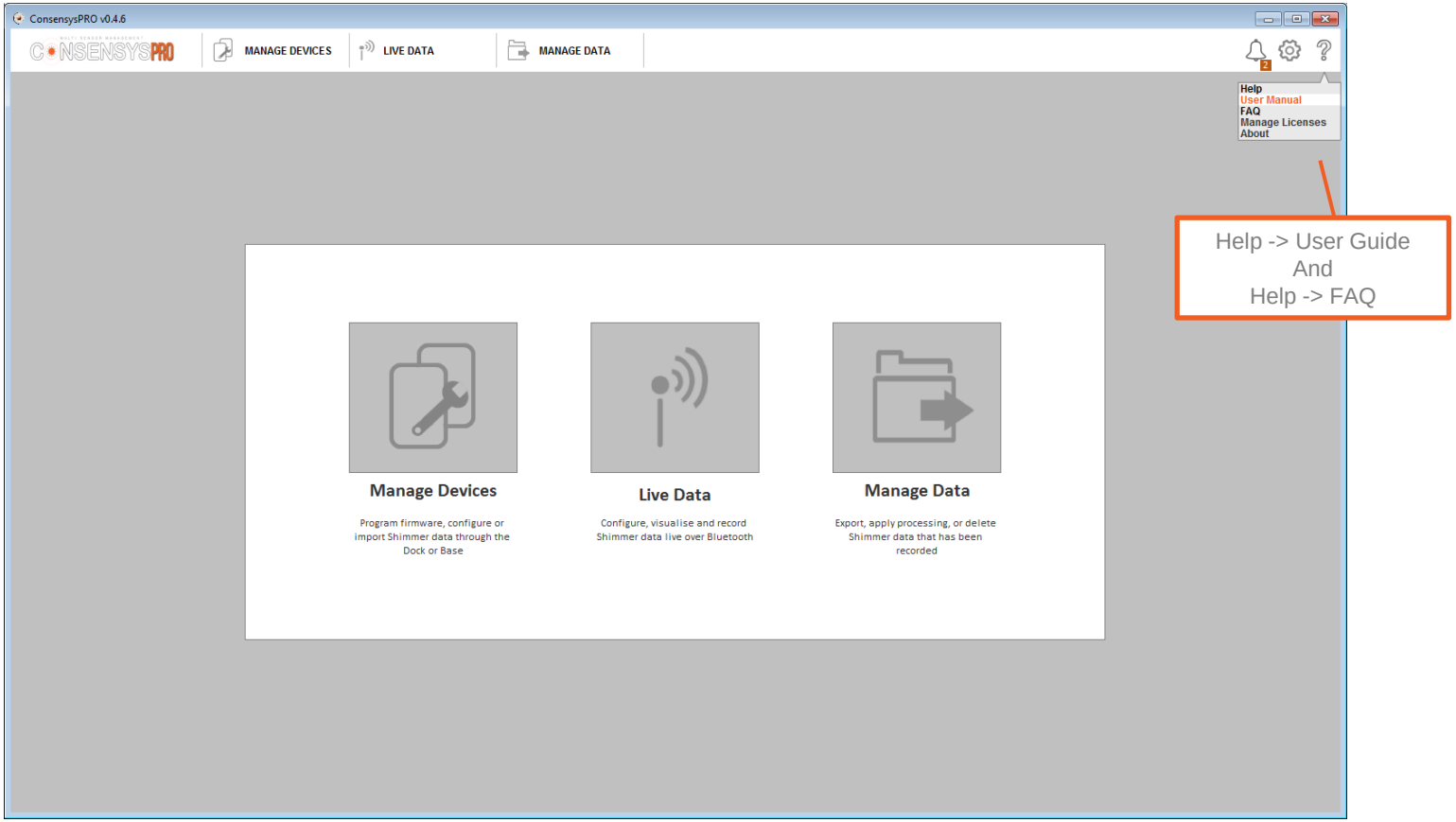
- To import data from the backup, you only need to open the *Manage Data* category in the Application Settings and click on *Open* the backup



- 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

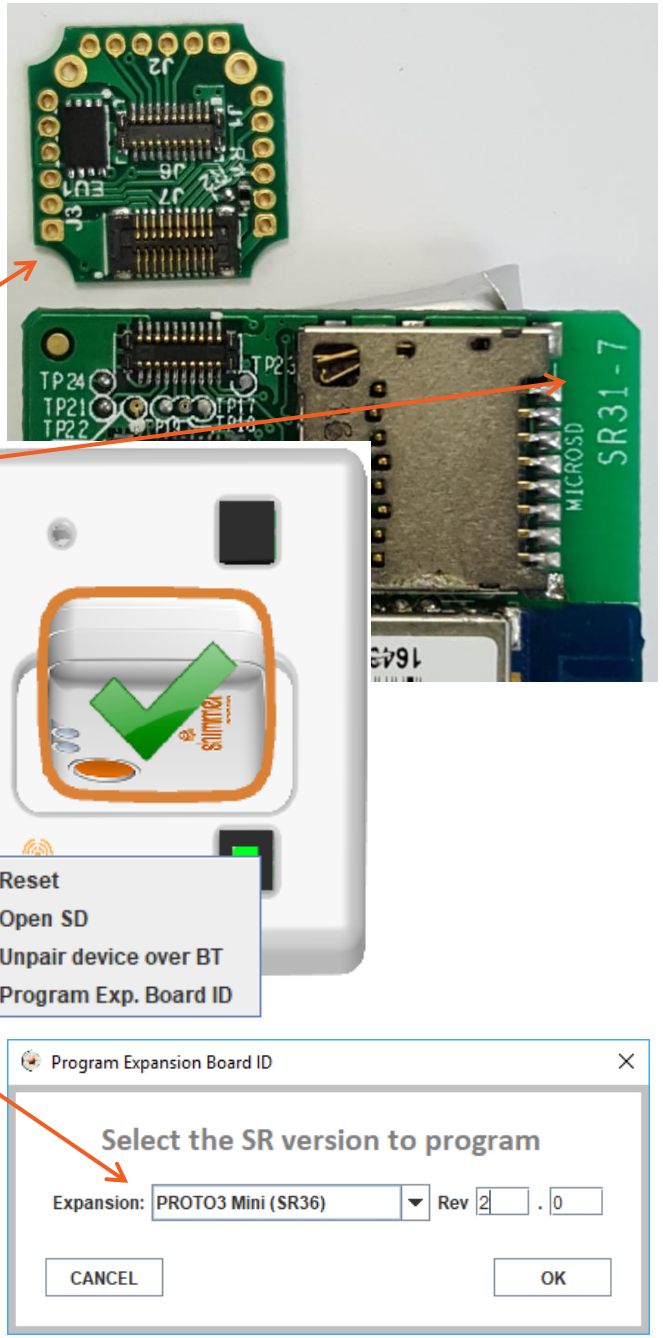


PROTO3 MINI USERS

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”.



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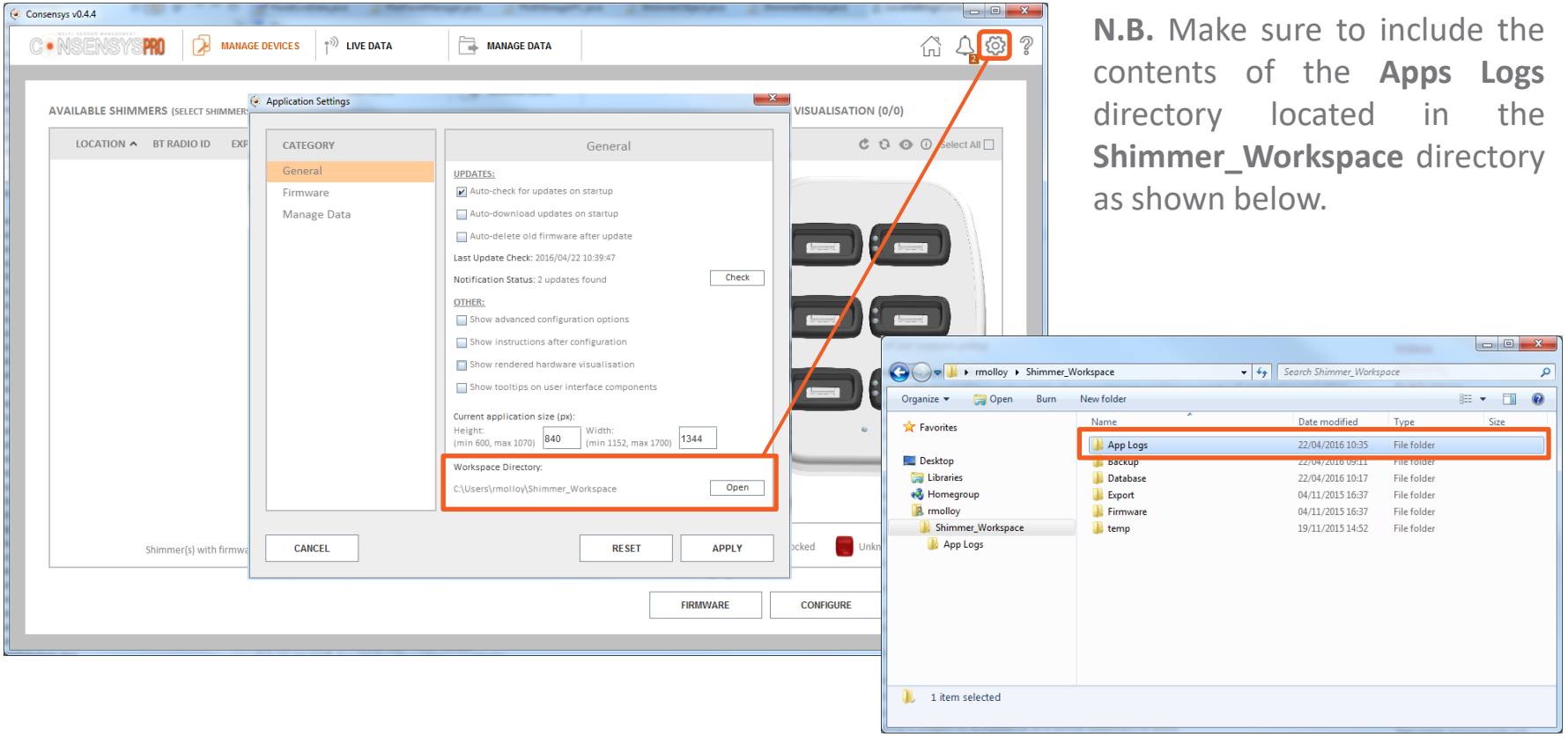
TROUBLESHOOTING –DOCK/BASE ISSUES

- 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[1].



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

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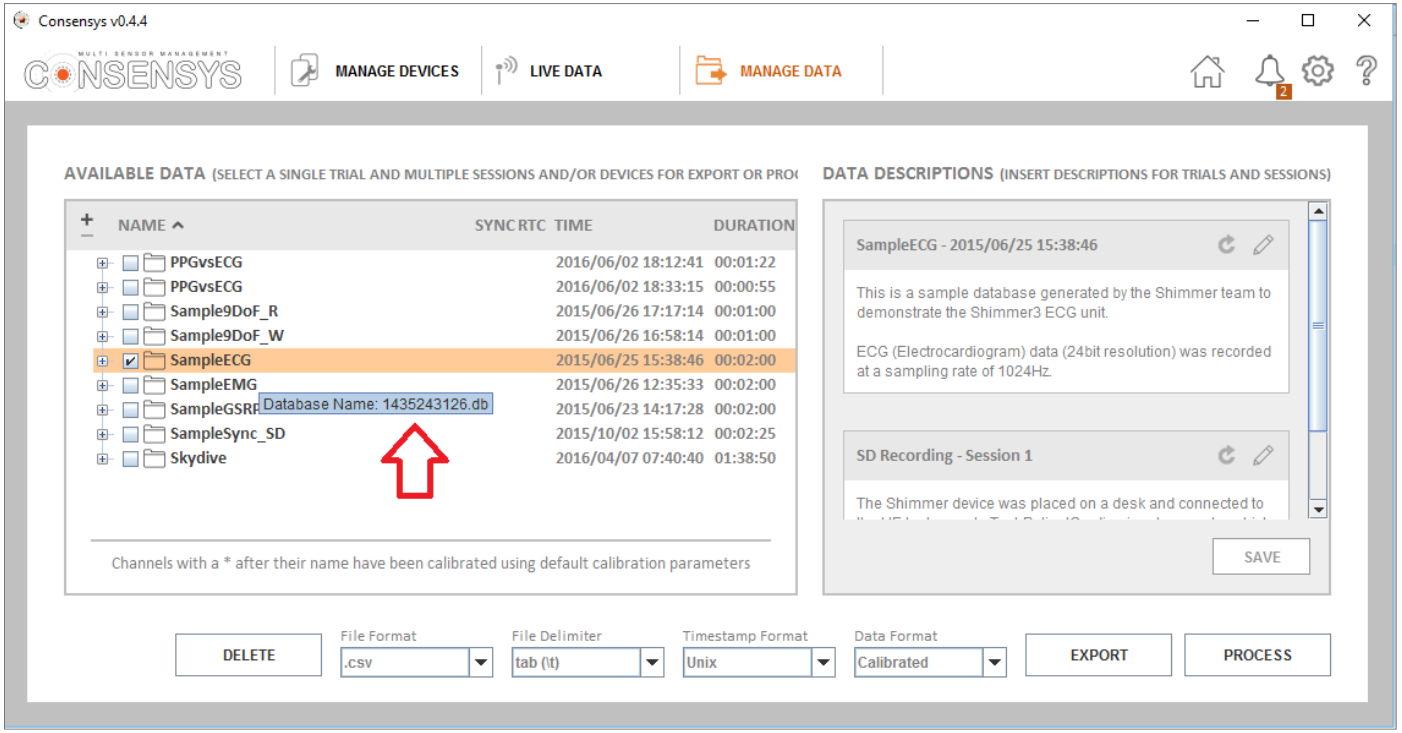
DISCOVERY IN MOTION

[1] http://www.shimmersensing.com/menu/support/

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[1]. **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.

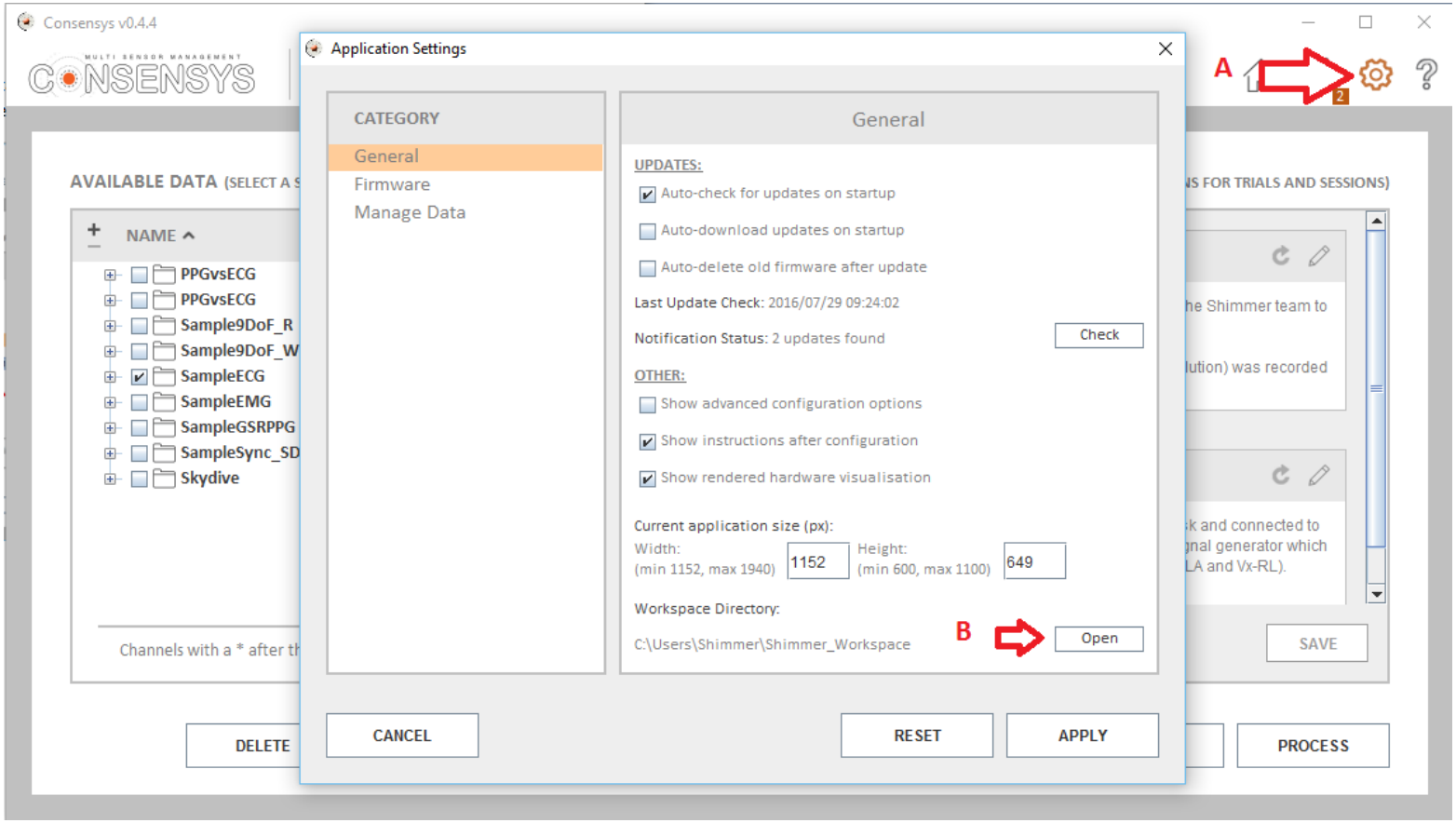
1. To identify the appropriate database file, hover your mouse over the trial in the Consensys 'Manage Data' tab. The file name will be a set of digits (*e.g.*, '1435243126.db') as below.



[1] http://www.shimmersensing.com/menu/support/

TROUBLESHOOTING – RECORDED DATA

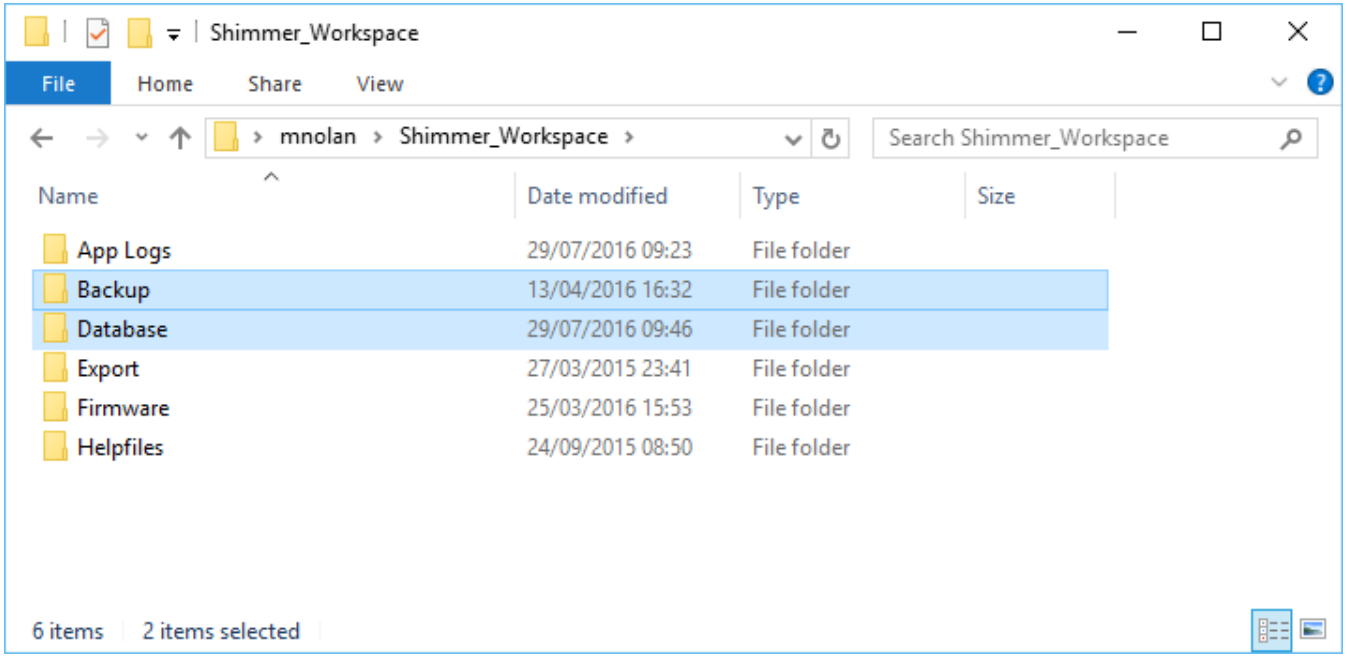
2. To navigate to the **Shimmer_Workspace** directory:
   A. Click on the Consensys 'Application Settings' menu
   B. Click on the 'Open' button to open the workspace directory



TROUBLESHOOTING – RECORDED DATA

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

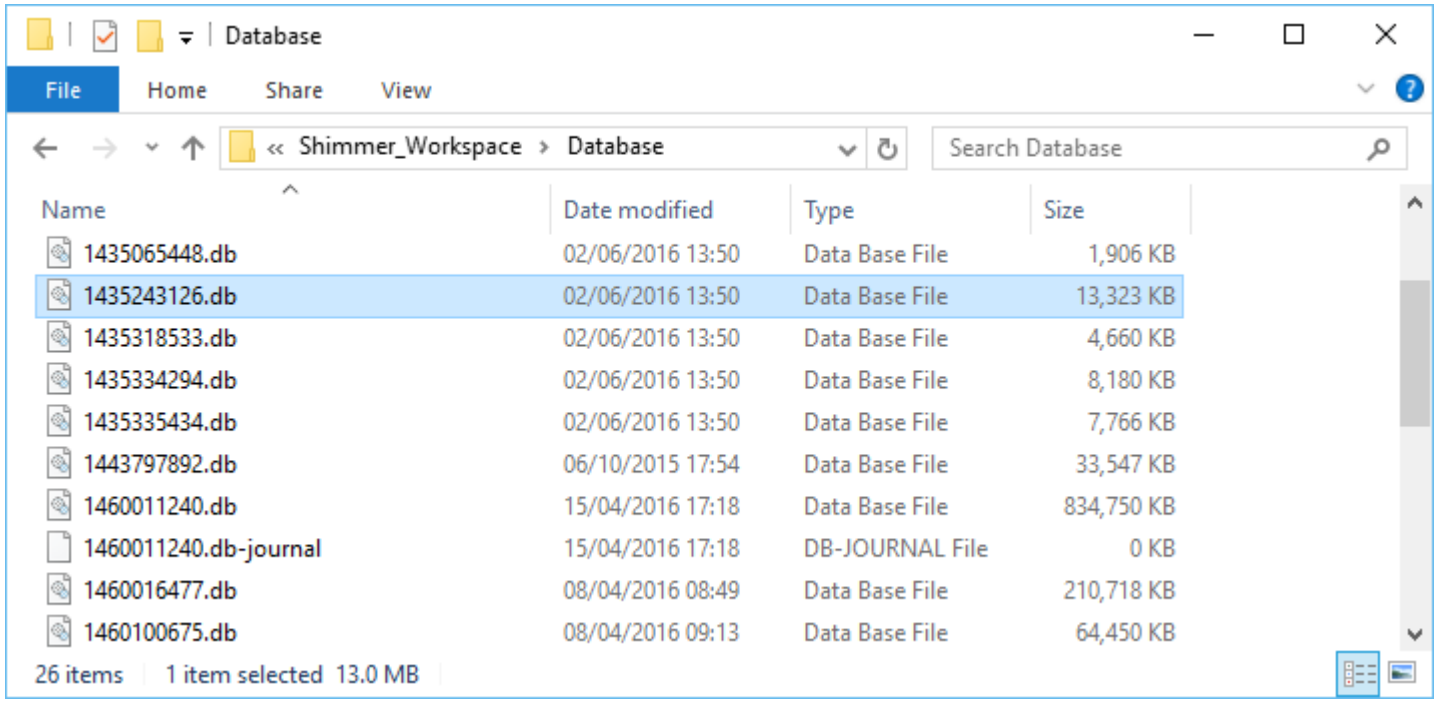
   The ‘Backup’ directory is only relevant if data was imported from the Shimmer’s SD card and is not used if data is solely recorded over a Bluetooth connection.



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).



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DISCOVERY IN MOTION

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’.