

Firmware Update User Manual

Document FU0100P, Revision G, 15 Oct 2010



Xsens Technologies B.V.
phone +31 88 97367 00
fax +31 88 97367 01
email info@xsens.com
internet www.xsens.com



Revisions

Revision	Date	By	Changes
A	December 2008	PRI MMI	First version.
B	February 2009	PRI MMI	Added update for standalone MTs, Xbus Master, Xbus Master MTs and Xbus Kit
C	February 2009	HBE	Editorial changes
D	April 2009	HBE	Name change to MVN
E	May 2009	MHA	Added preferable mode Xbus system New corporate design
F	August 2009	PRI	Number of update options reduced to 3
G	October 2010	MHA	Minor editorial changes

© 2008-2010, Xsens Technologies B.V. All rights reserved. Information in this document is subject to change without notice. Xsens, MVN, MTi, MTi-G and MTx are registered trademarks or trademarks of Xsens Technologies B.V. and/or its parent, subsidiaries and/or affiliates in The Netherlands, the USA and/or other countries. All other trademarks are the property of their respective owners.

Table of Contents

1	INTRODUCTION	1
2	FIRMWARE UPDATE OVERVIEW.....	2
2.1	STANDALONE MOTION TRACKER (MTi/MTx/MTi-G)	2
2.2	XBUS KIT.....	2
2.3	MVN.....	2
3	FIRMWARE UPDATE DETAILS	3
3.1	STANDALONE MOTION TRACKER (MTi/MTx/MTi-G)	3
3.2	XBUS KIT.....	9
3.3	MVN.....	16
4	ADVANCED FIRMWARE UPDATE OVERVIEW	23
4.1	XBUS MASTER.....	23
4.2	XBUS MASTER MOTION TRACKERS.....	23
5	ADVANCED FIRMWARE UPDATE DETAILS.....	24
5.1	XBUS MASTER.....	24
5.2	XBUS MASTER MOTION TRACKERS.....	30
6	SYSTEM REQUIREMENTS	35
6.1	TECHNICAL SUPPORT	35

1 Introduction

Using the Firmware Updater, it is possible to update the firmware of your Xsens product. Always follow the instructions given by the Firmware Updater very carefully.

NOTE: Do NOT run other programs while updating MT firmware. Do NOT run the Firmware Updater in a Windows emulation environment or virtual PC environment. Do NOT disconnect the device during an update in progress.

2 Firmware update overview

The following sub-sections show the steps needed to update the firmware of the current Xsens products as shown in the overview.

In section 3, a *detailed description* of how to update Xsens' products is given.

In the standard Firmware Updater, it is possible to update Standalone Motion Trackers, the Xbus Kit or MVN. These are also the recommended update procedures. For the update procedure of the Xbus Master and the Xbus Master Motion Trackers individually, refer to section 4 and go to www.xsens.com/support

Legend:

U = User action

S = Software action

2.1 Standalone Motion Tracker (MTi/MTx/MTi-G)

1. U – Select 'Standalone Motion Tracker' in firmware updater
2. U – Select the COM port detection method (Auto-detect or manual)
3. S – Update Motion Tracker
4. U – Disconnect and reconnect the Motion Tracker before using it.

2.2 Xbus Kit

1. U – Select 'Xbus Kit' in firmware updater
2. S – The Xbus Kit will be detected via the WR-A
3. S – Update Xbus Master Bluetooth module settings
4. S – Update WR-A Bluetooth module settings
5. S – Shutdown Xbus Master
6. U – Turn on Xbus Master
7. S – Xbus Kit will be detected via serial port
8. S – Firmware update Xbus Master
9. S – Shutdown Xbus Master
10. U – Turn on Xbus Masters
11. S – Xbus Kit will be detected via serial port
12. S – Update all attached Motion Trackers
13. S – Shutdown Xbus Master when finished

2.3 MVN

1. U – Select 'MVN' in firmware updater
2. S – MVN will be detected via the WR-A
3. S – Update Xbus Master Bluetooth module settings
4. S – Update WR-A Bluetooth module settings
5. S – Shutdown Xbus Masters
6. U – Turn on Xbus Masters.
7. S – MVN will be detected via serial port
8. S – Firmware update Xbus Masters
9. S – Shutdown Xbus Masters
10. U – Turn on Xbus Masters
11. S – MVN will be detected via serial port
12. S – Update all attached Motion Trackers
13. S – Restore MVN settings
14. S – Shutdown Xbus Masters when finished

3 Firmware update details

NOTE: Do NOT run other programs while updating MT firmware. Do NOT run the Firmware Updater in a Windows emulation environment or virtual PC environment. Do NOT disconnect the device during an update in progress.

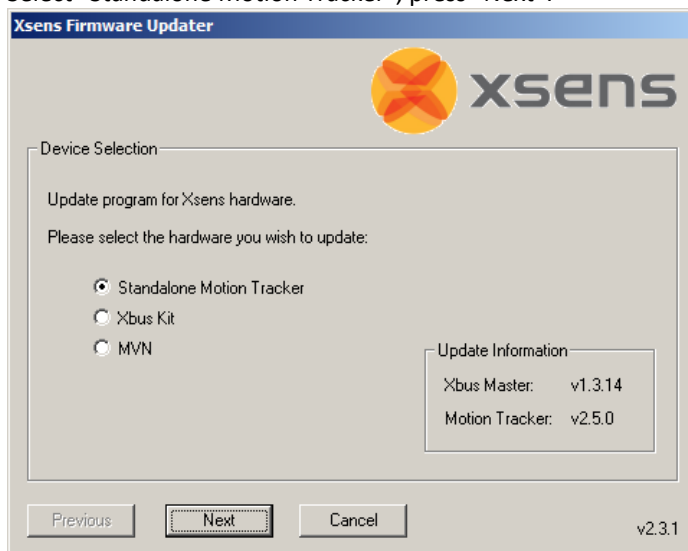
When updating the firmware in your device, please make sure to use the latest Firmware Updater (as part of the MT SDK or MVN), which are all available at our website www.xsens.com. Not using the latest Firmware Updater can render your sensor inoperable in which case the sensor may need to be returned to Xsens for recovery.

3.1 Standalone Motion Tracker (MTi/MTx/MTi-G)

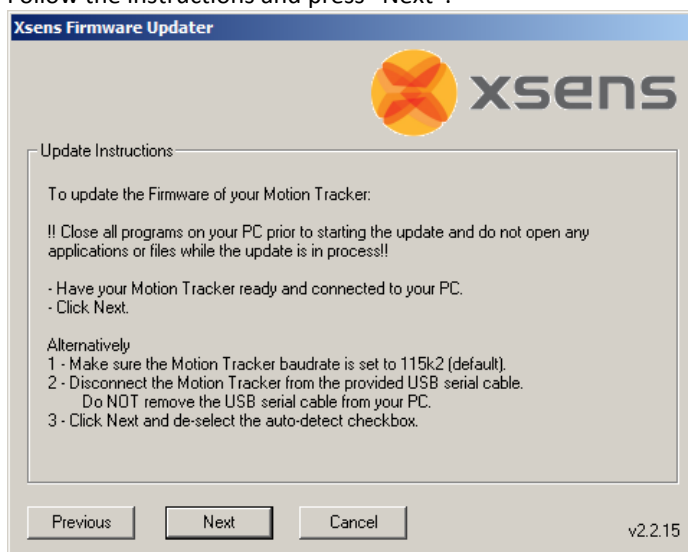
To start the Firmware Updater, go to Start → All Programs → Xsens → MT Manager.

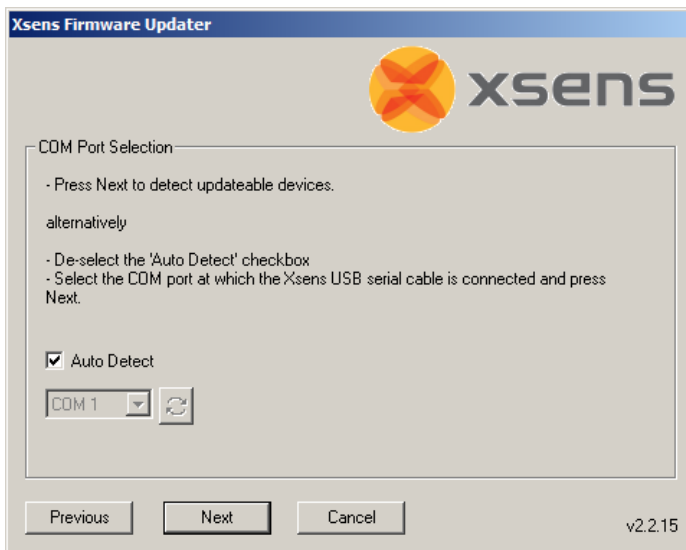
In MT Manager, go to Tools Menu → Firmware Updater...

Select “Standalone Motion Tracker”, press “Next”:



Follow the instructions and press “Next”:

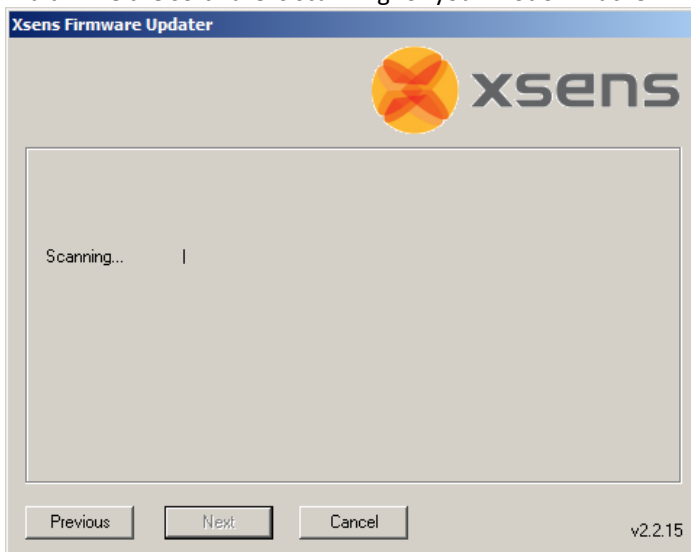




Press “Next” or manually select a COM port number where a device configured at 115k2 has been attached.

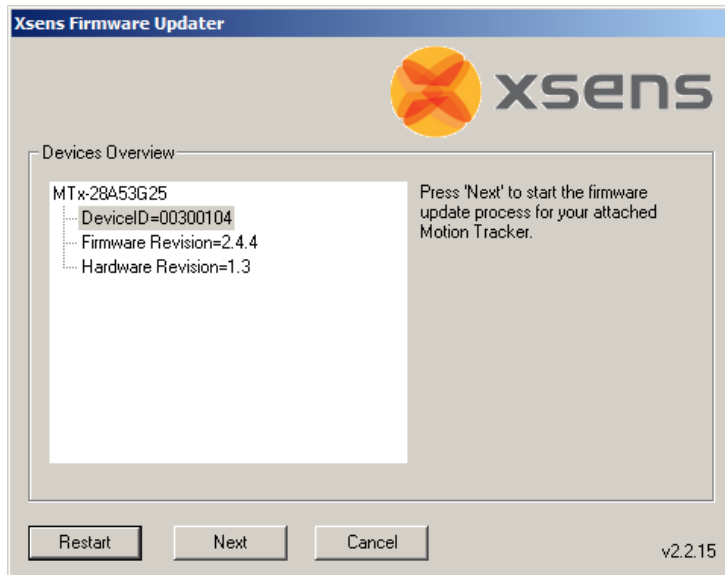
Note: If the Firmware Updater does not find a Motion Tracker attached during an auto detect, it does help to manually select the COM port number. For the COM port number, connect your Motion Tracker and read out the COM port number in the Device list.

Wait while the software is scanning for your Motion Tracker:

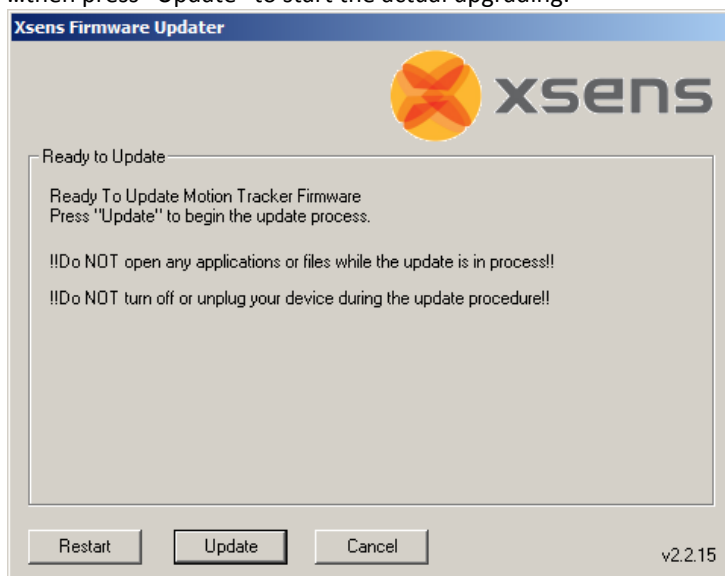


An overview is shown of all detected hardware. If one Motion Tracker was found, the “Next” button is enabled. If no hardware was found, the previous dialog is shown again.

Click “Next”:

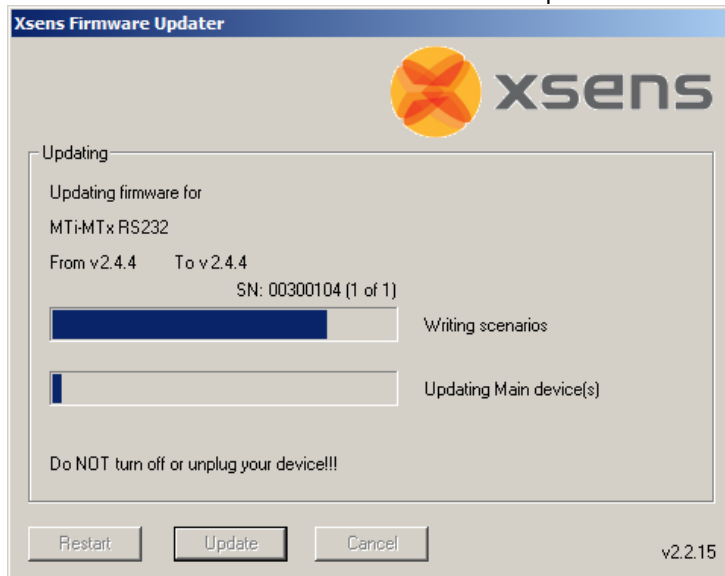


...then press “Update” to start the actual upgrading:

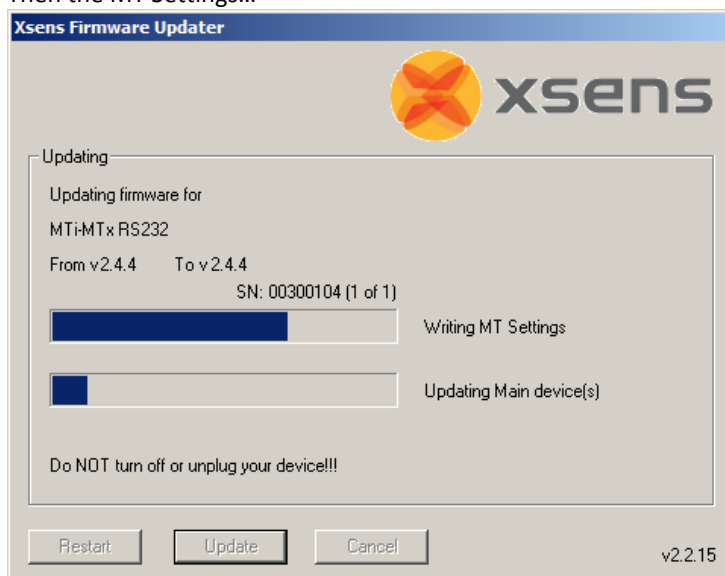


Important: Do NOT turn off or unplug your device during the update!

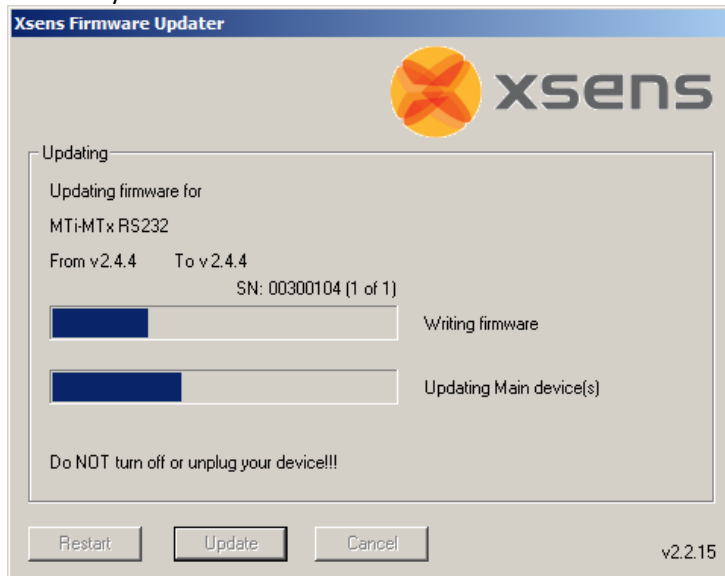
Now the firmware of the Motion Tracker will be updated. First the scenario definitions...



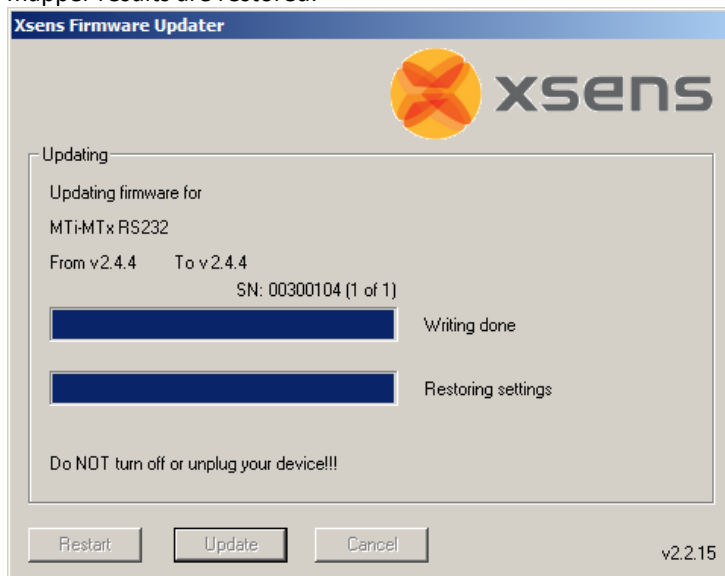
Then the MT Settings...



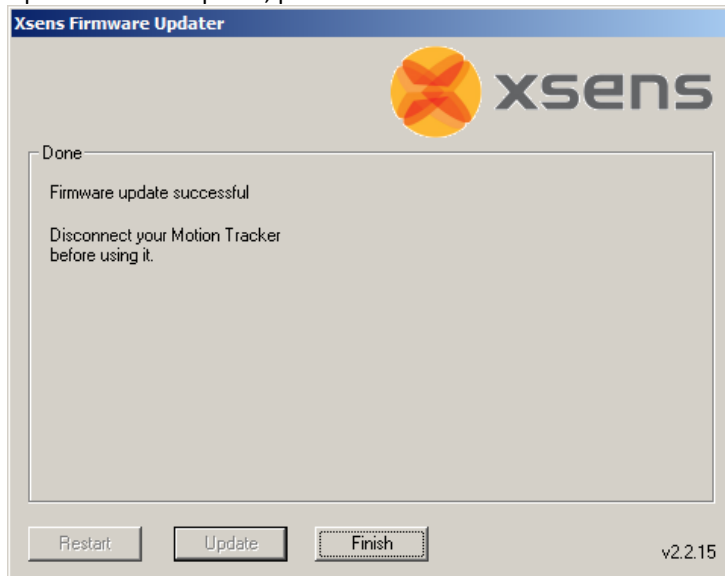
And finally the firmware of the attached Motion Tracker.



When all Motion Trackers have been updated, baud rate, location ID, alignment matrix and magnetic field mapper results are restored:



Upon successful update, press “Finish” to conclude the Firmware Update.

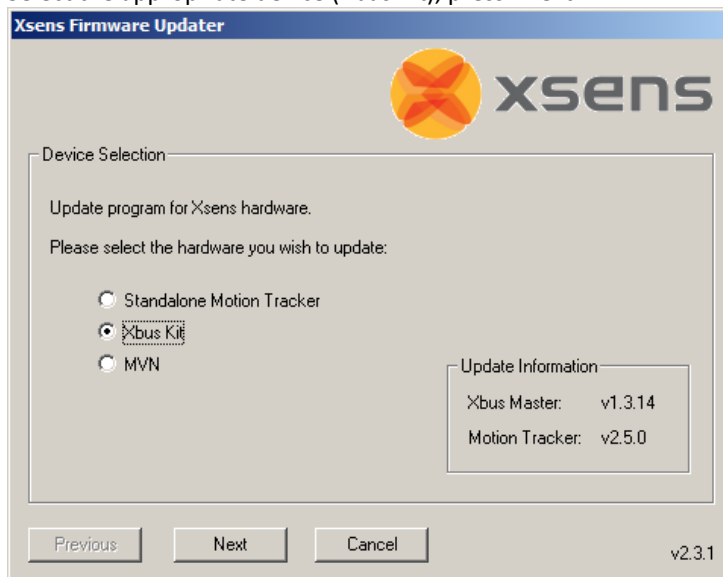


If you encounter a problem during the update, please go to www.xsens.com/support.

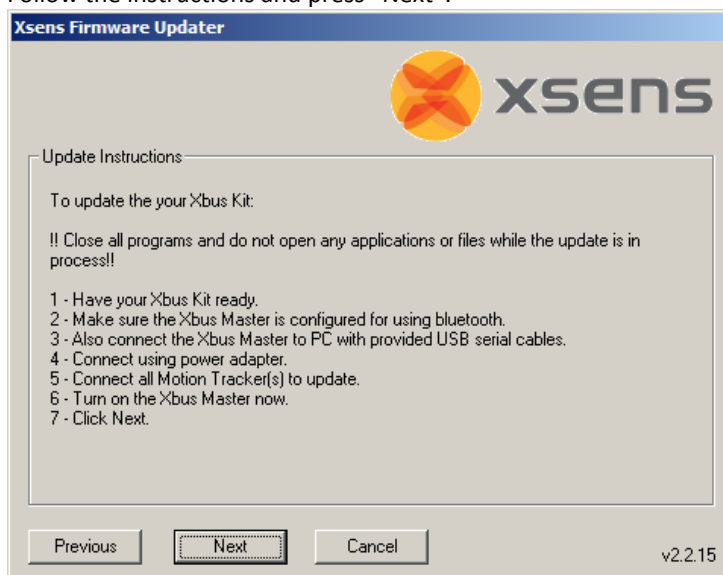
3.2 Xbus Kit

To start the Firmware Updater, go to Start → All Programs → Xsens → MT Manager.
In MT Manager, go to Tools Menu → Firmware Updater...

Select the appropriate device (Xbus Kit), press “Next”:

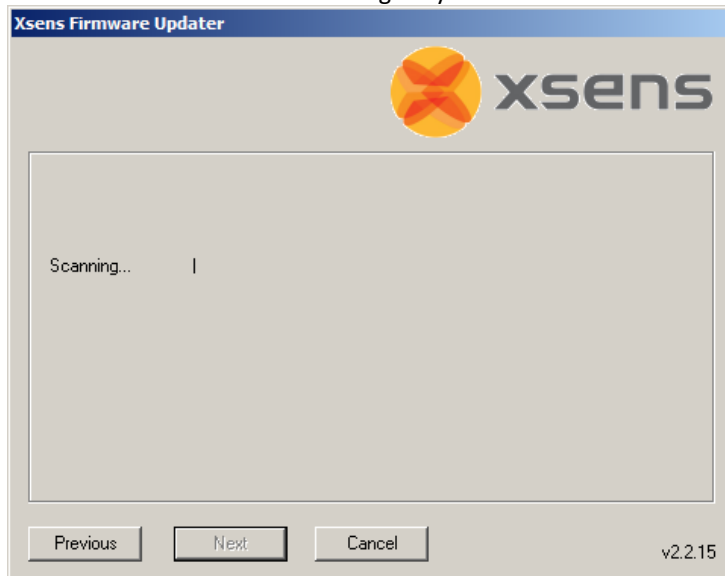


Follow the instructions and press “Next”:

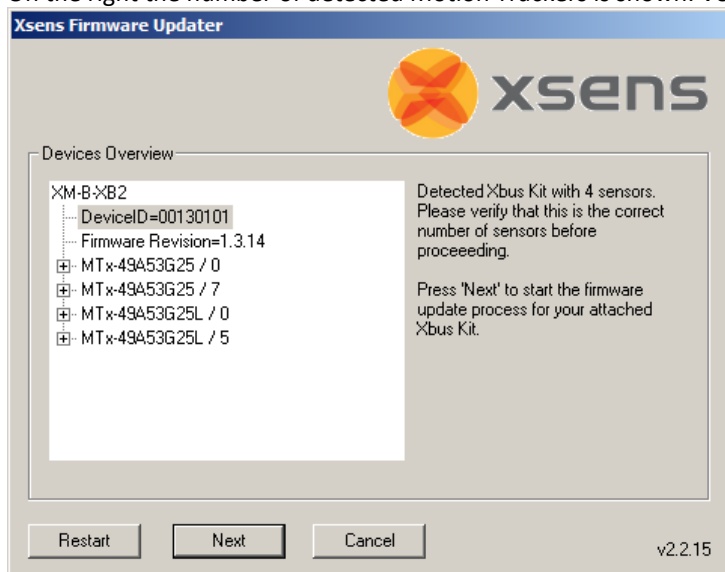


Also connect your extra trackers to the Xbus master to a maximum of 10 per Xbus master, if you have more contact support

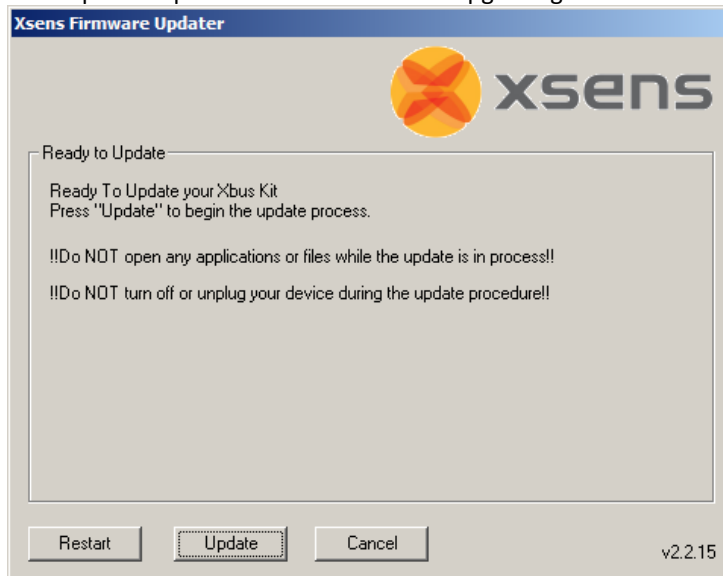
Wait while the software is scanning for your Xbus Kit:



An overview is shown of all detected hardware. If an Xbus Kit was found, the “Next” button is enabled. On the right the number of detected Motion Trackers is shown. Verify the number and click “Next” ...:

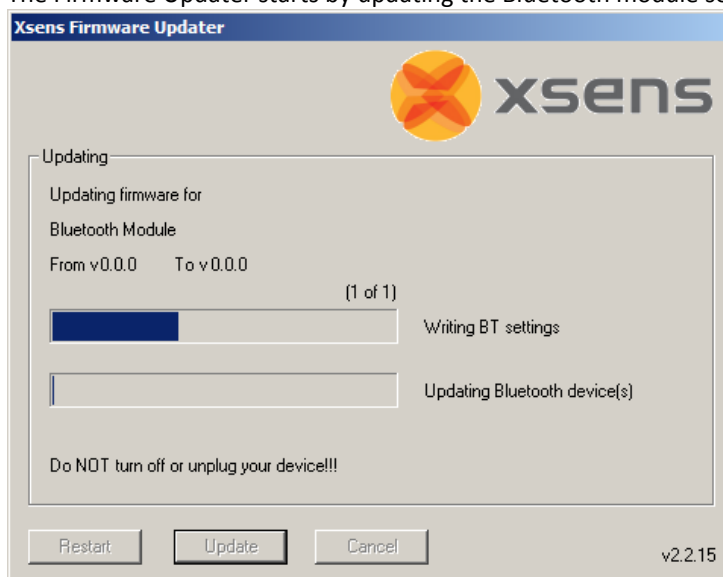


...then press "Update" to start the actual upgrading:

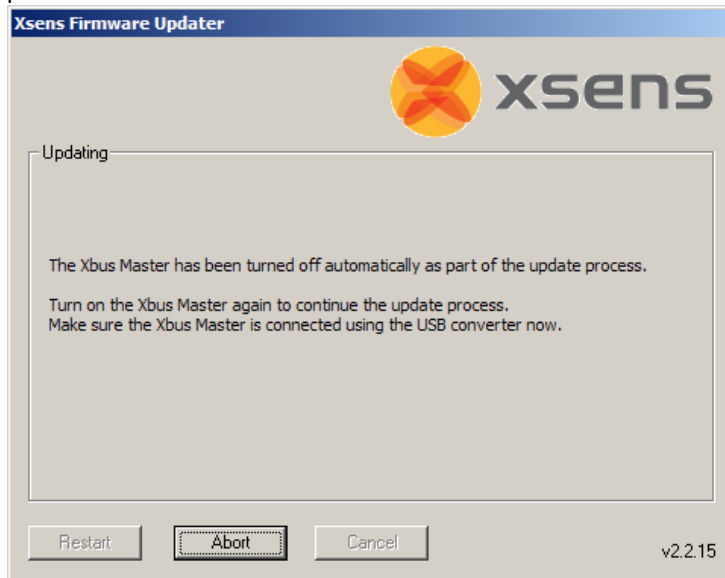


Important: Do NOT turn off or unplug your device during the update!

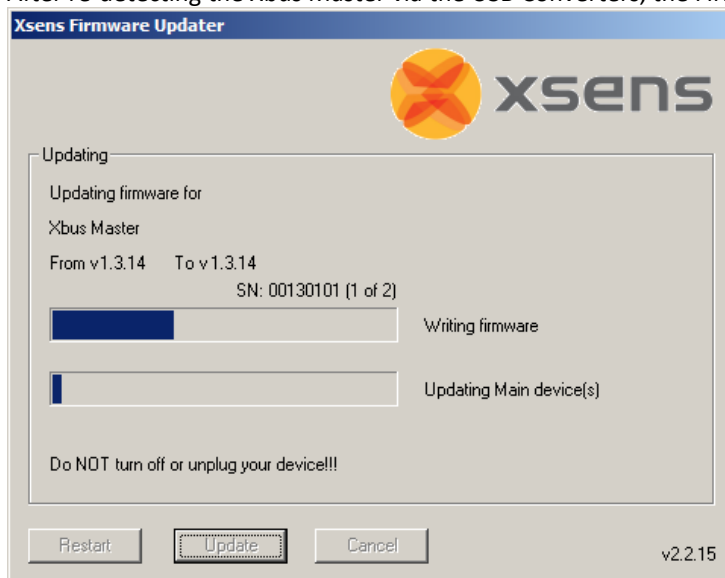
The Firmware Updater starts by updating the Bluetooth module settings...



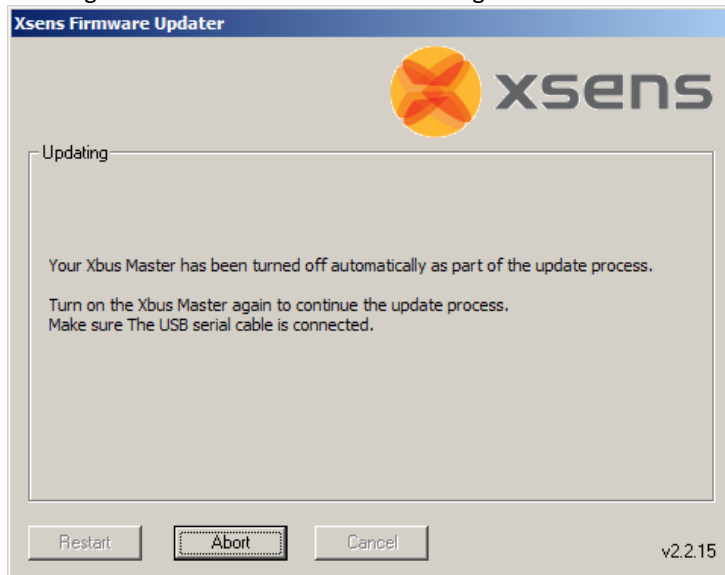
After updating the Bluetooth module, the Xbus Master is put into serial mode and is switched off by the Firmware Updater, also indicated by beeps of the Xbus master. Turn it on again to continue the update process.



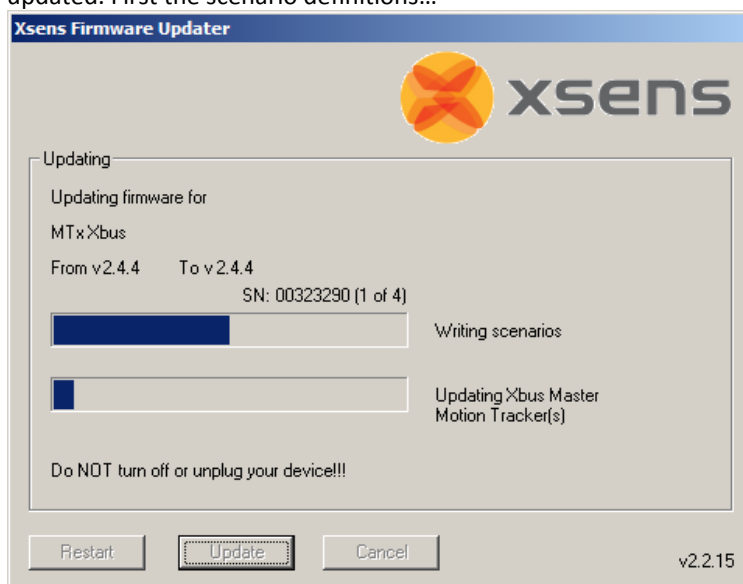
When the Xbus master is turned on it takes a couple of seconds for the firmware updater to detect it. After re-detecting the Xbus Master via the USB Converters, the Firmware the Xbus Master will be updated...



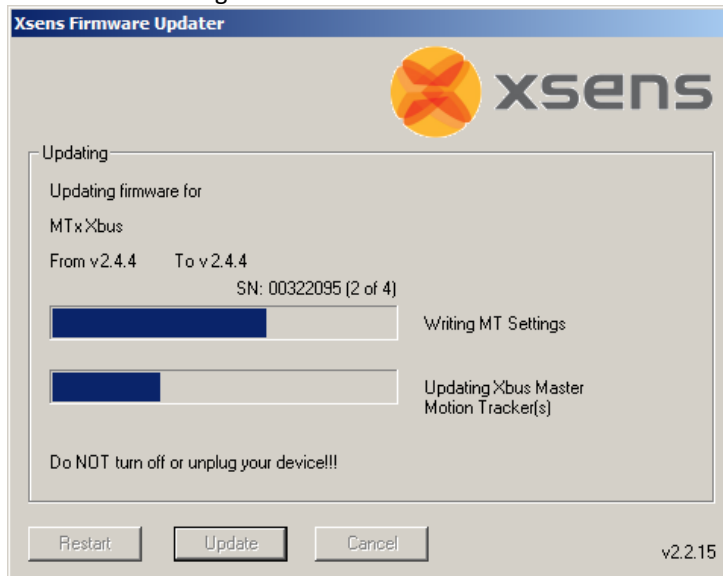
The firmware update of the Xbus Masters is ended by a shutdown of both Xbus Masters.
Turn them on again to update the firmware of the Motion Trackers.
Pressing abort here will cause loss of settings!



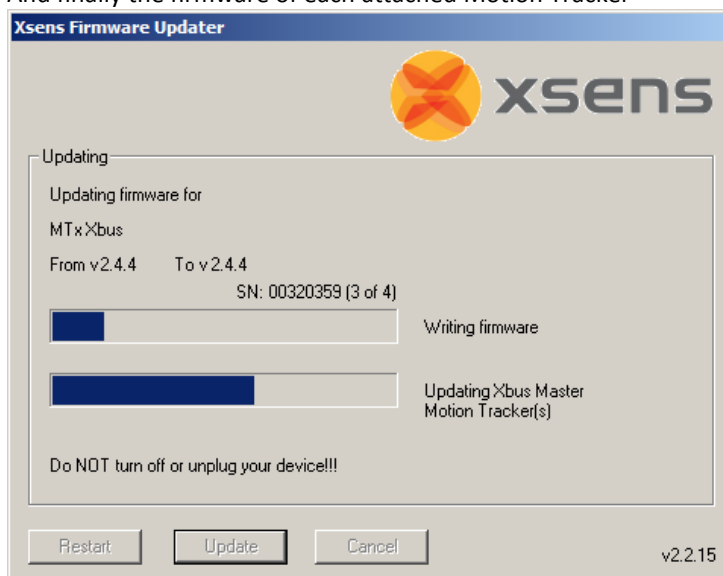
After re-detecting the Xbus Kit via the USB Converters, the Firmware of both all Motion Trackers will be updated. First the scenario definitions...



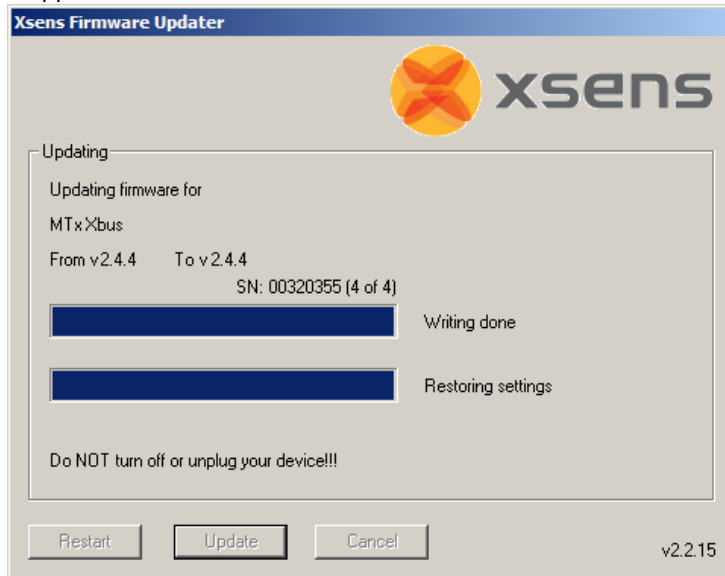
Then the MT Settings...



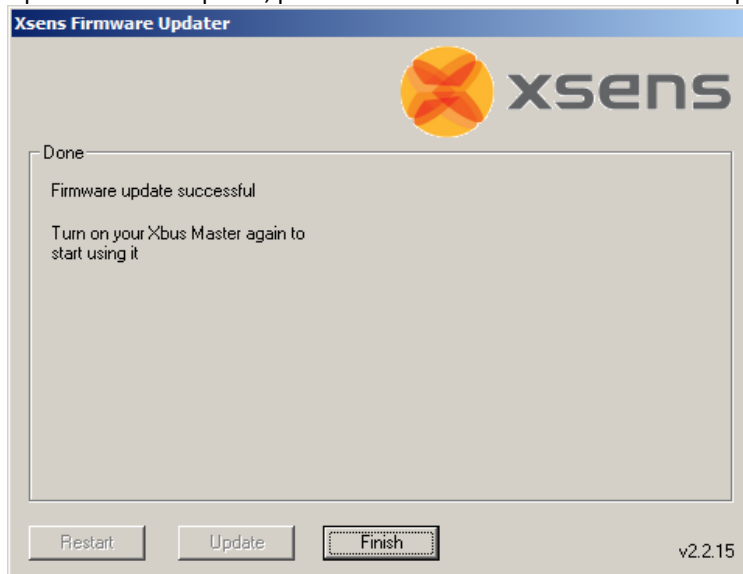
And finally the firmware of each attached Motion Tracker



When all Motion Trackers have been updated, baud rate, location ID's, alignment matrices and magnetic field mapper results are restored:



Upon successful update, press "Finish" to conclude the Firmware Update.

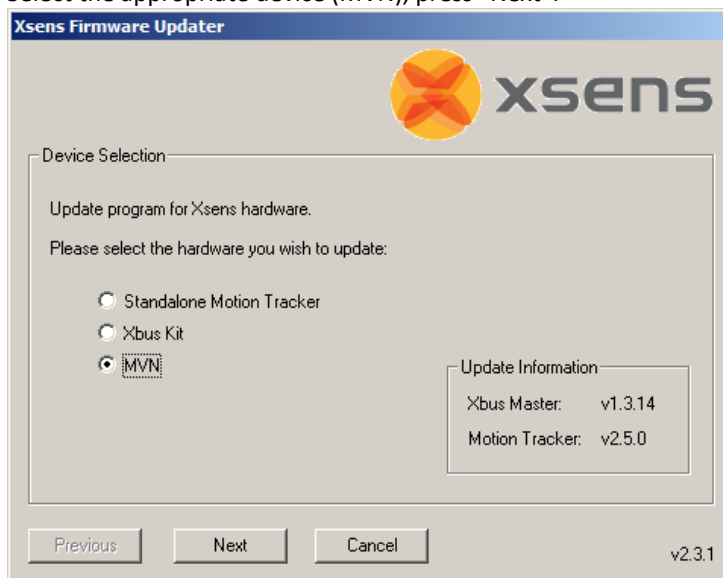


If you encounter a problem during the update, please go to www.xsens.com/support

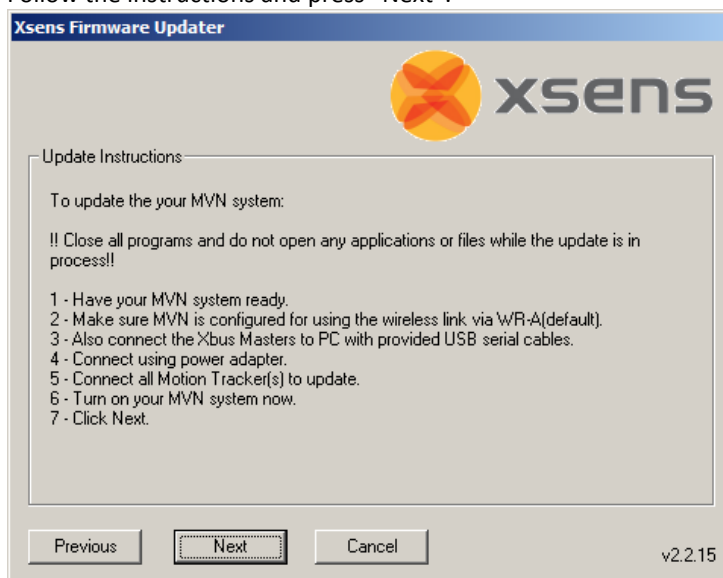
3.3 MVN

To start the Firmware Updater, run FirmwareUpdater.exe

Select the appropriate device (MVN), press “Next”:

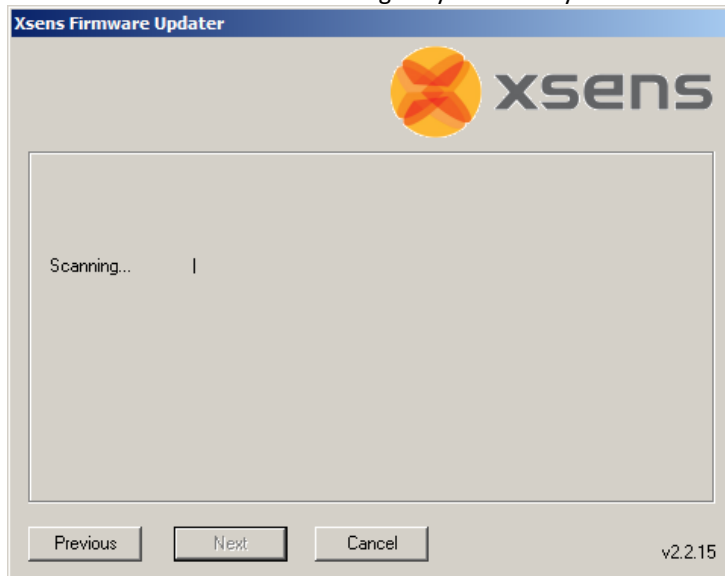


Follow the instructions and press “Next”:



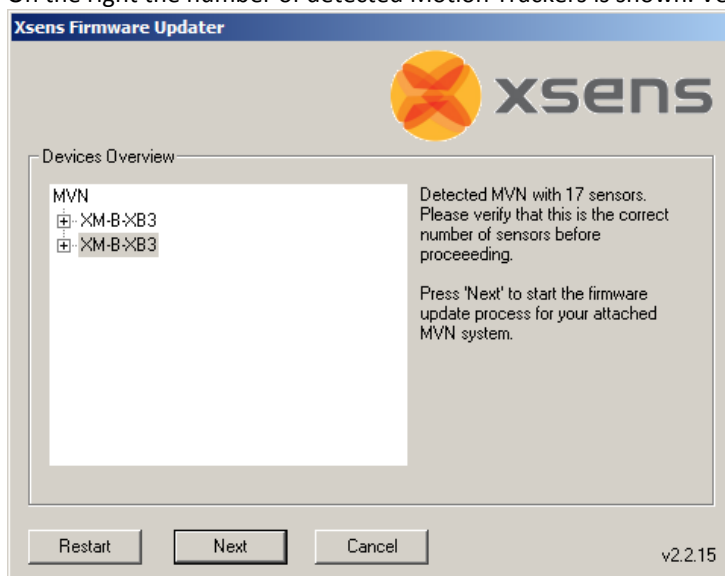
Also connect your extra trackers to the Xbus master to a maximum of 10 per Xbus master; if you have more, please go to www.xsens.com/support.

Wait while the software is scanning for your MVN system:

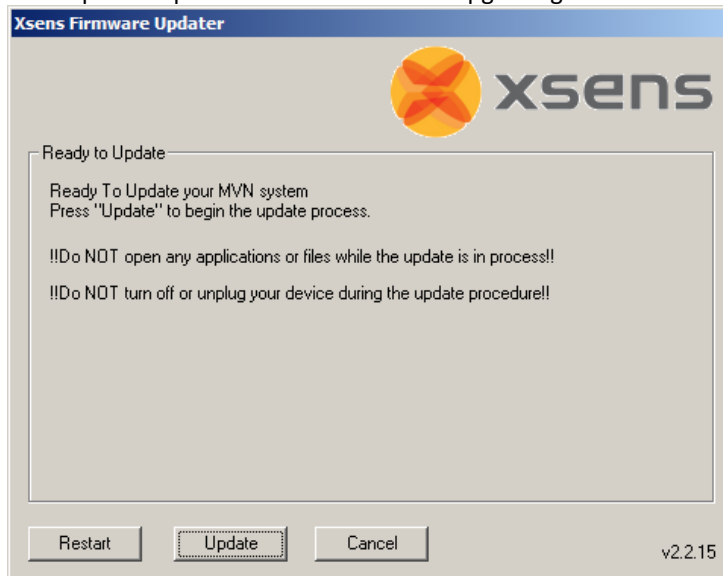


An overview is shown of all detected hardware. If a MVN system was found, the “Next” button is enabled. Update screen shot where MVN was correctly found.

On the right the number of detected Motion Trackers is shown. Verify the number and click “Next” ...:

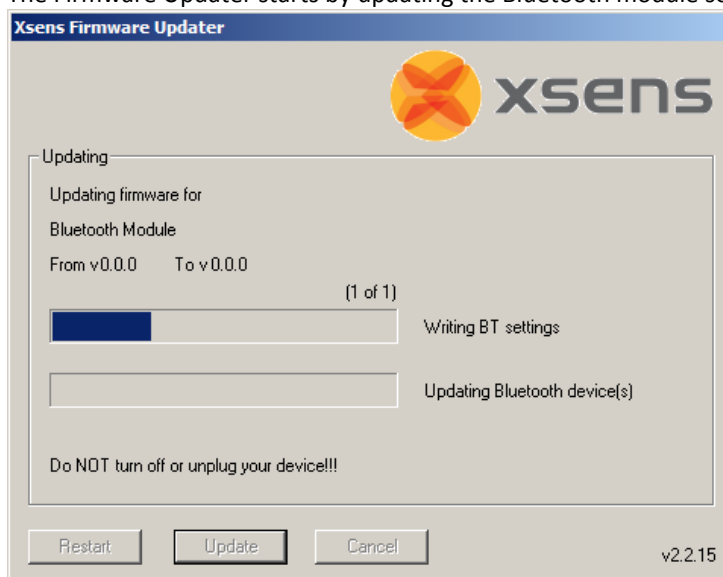


...then press "Update" to start the actual upgrading:



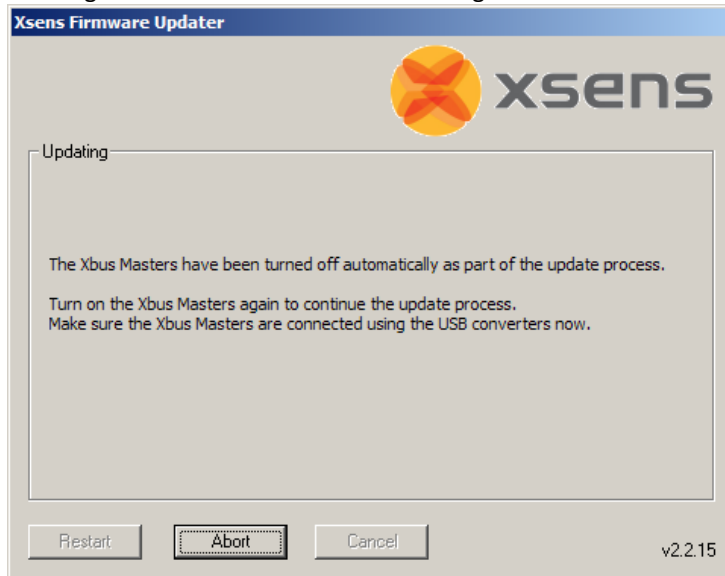
Important: Do NOT turn off or unplug your device during the update!

The Firmware Updater starts by updating the Bluetooth module settings...

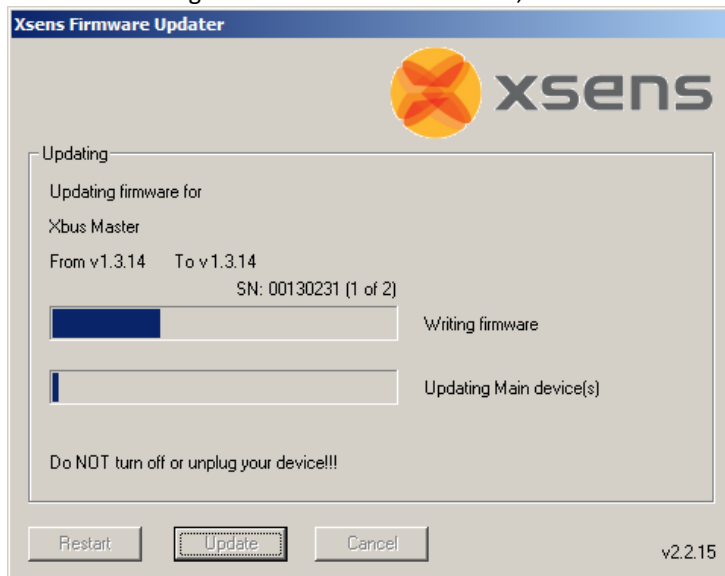


After updating the Bluetooth modules, the Xbus Masters are put into serial mode and are switched off by the Firmware Updater, also indicated by beeps of the Xbus masters. Turn them on again to continue the update process.

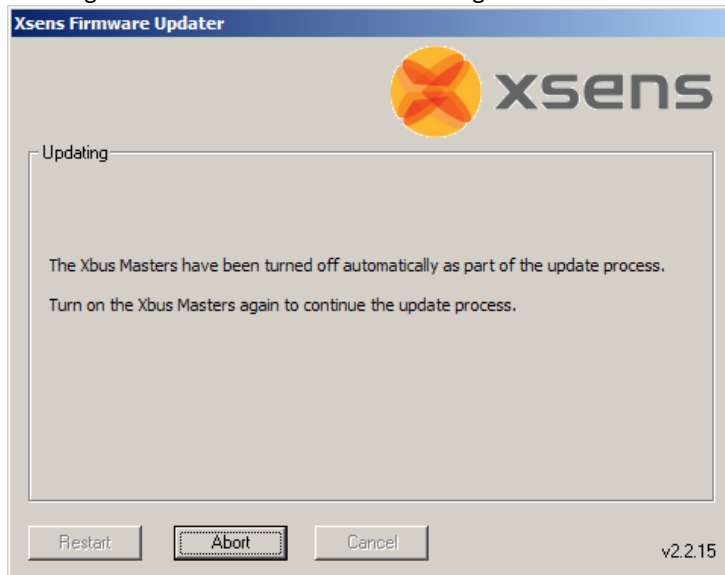
Pressing abort here will cause loss of settings!



When Xbus master are turned on it takes a couple of seconds for the firmware updater to detect them. After re-detecting MVN via the USB Converters, the Firmware of both the Xbus Masters will be updated...



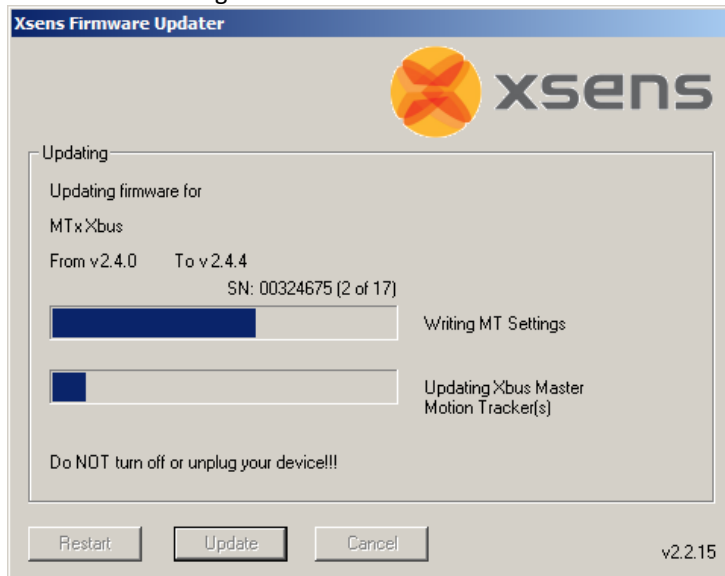
The firmware update of the Xbus Masters is ended by a shutdown of both Xbus Masters.
Turn them on again to update the firmware of the Motion Trackers.
Pressing abort here will cause loss of settings!



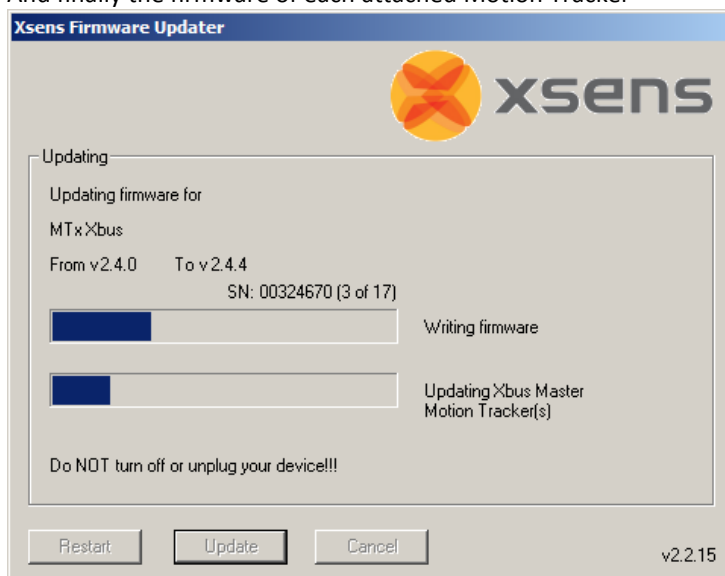
After re-detecting MVN via the USB Converters, the Firmware of both all Motion Trackers will be updated. First the scenario definitions...



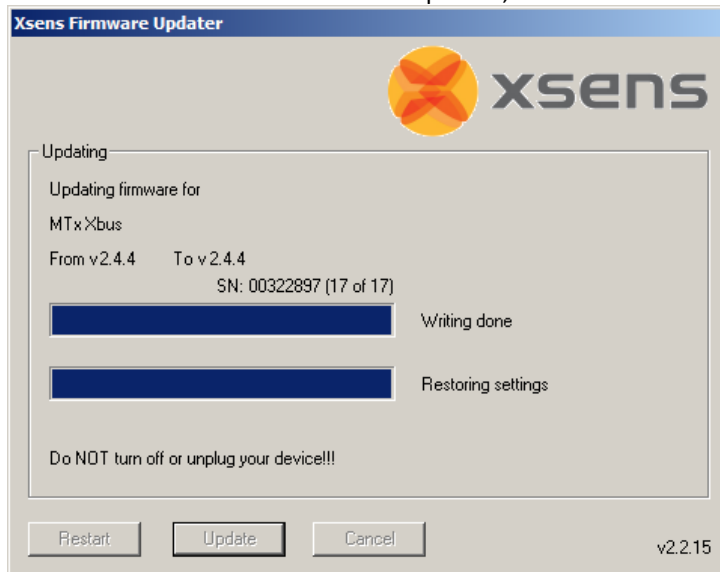
Then the MT Settings...



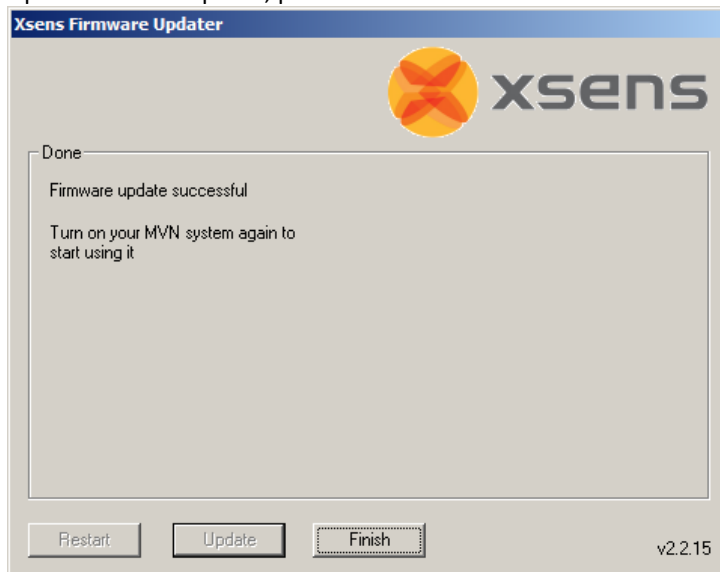
And finally the firmware of each attached Motion Tracker



When all Motion Trackers have been updated, all location ID's are restored:



Upon successful update, press "Finish" to conclude the Firmware Update.



If you encounter a problem during the update, please go to www.xsens.com/support.

4 Advanced Firmware update overview

The following sub-sections show the steps needed to update the firmware of the Xbus Masters and Xbus Master Motion Trackers individually. The recommended update procedure however is by updating the Xbus Kit or MVN (see section 2). To use the advanced options of the firmware updater, please go to www.xsens.com/support.

In section 5, a *detailed description* of how to individually update Xbus Masters and Xbus Master Motion Trackers is given.

Legend:

U = User action

S = Software action

4.1 Xbus Master

Note: preferable update mode is “Xbus Kit” or “MVN”, rather than the Xbus Master and Xbus Motion Trackers individually

1. U – Select ‘Xbus Master’ in firmware updater
2. U – Select the COM port detection method (Auto-detect or manual)¹

When connected via WR-A:

3. S – Update Xbus Master Bluetooth module settings
4. S – Update WR-A Bluetooth module settings
5. S – Shutdown Xbus Master
6. U – Turn on Xbus Master.
7. S – Xbus Master will be detected via serial port
8. S – Firmware update Xbus Master
9. S – Shutdown Xbus Master

When connected via Xsens USB Receiver:

3. S – Firmware update Xbus Master
4. S – Shutdown Xbus Master

4.2 Xbus Master Motion Trackers

Note: preferable update mode is “Xbus Kit” or “MVN”, rather than the Xbus Master and Xbus Motion Trackers individually

1. U – Select ‘Xbus Master Motion Trackers’ in firmware updater
2. U – Select the COM port detection method (Auto-detect or manual)
3. S – Update all Xbus Master Motion Trackers
4. S – Shutdown Xbus Masters when finished

¹ The firmware of the Xbus Master can be updated either with Motion Trackers attached or not. If no Motion Trackers have been attached, COM port selection can only be done manually.

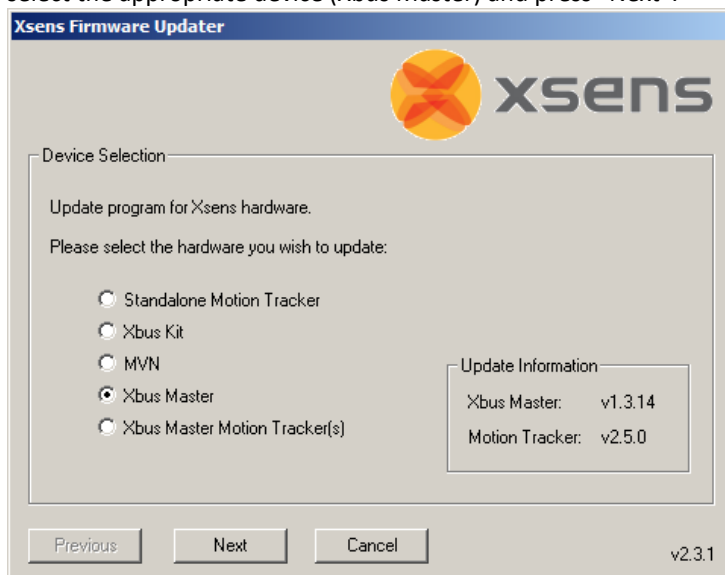
5 Advanced firmware update details

The recommended update procedure for the Xbus Kit, Xbus Master and the Xbus Motion Tracker(s) is via the Xbus Kit update option. The recommended updated procedure for MVN, MVN Xbus Masters or MVN Motion Trackers is via the MVN update option. Should it be necessary to update the components of the Xbus Kit of MVN individually, the support department (www.xsens.com/support) can enable these options. These advanced firmware update options are described in this chapter.

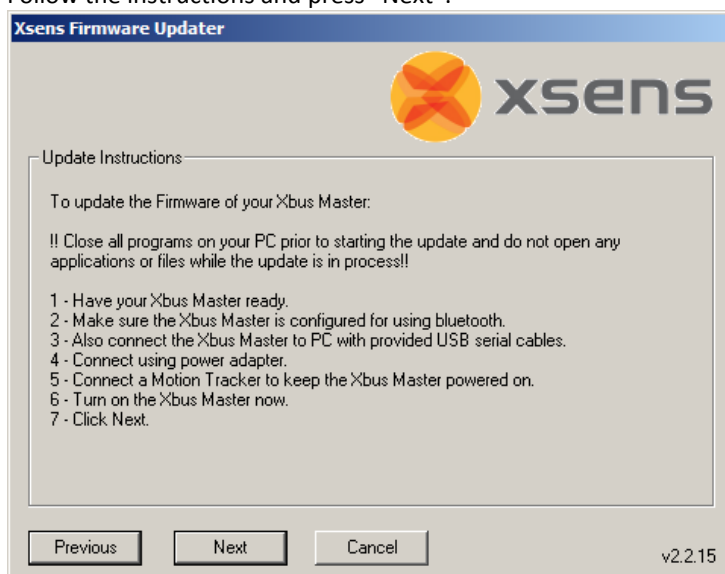
5.1 Xbus Master

Note: preferable update mode is “Xbus Kit” or “MVN”, rather than the Xbus Master and Xbus Motion Trackers individually.

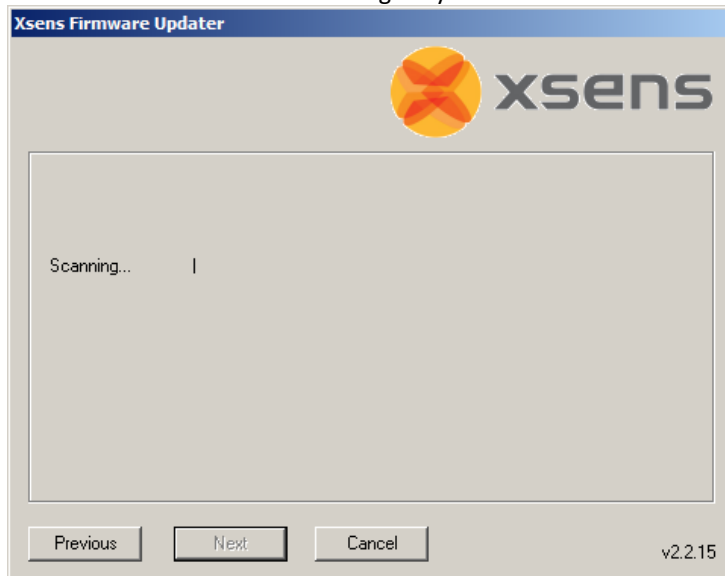
After enabling the advanced options of the firmware updater (contact www.xsens.com/support if required), select the appropriate device (Xbus Master) and press “Next”:



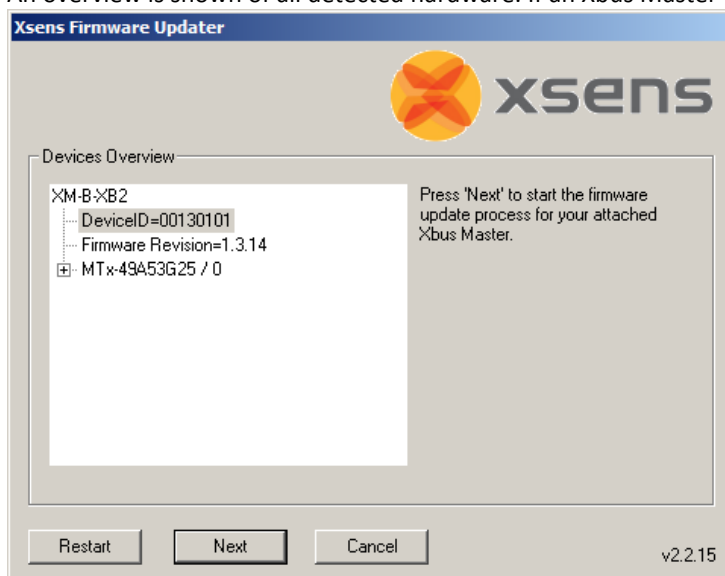
Follow the instructions and press “Next”:



Wait while the software is scanning for your Xbus Master.



An overview is shown of all detected hardware. If an Xbus Master was found, the “Next” button is enabled.

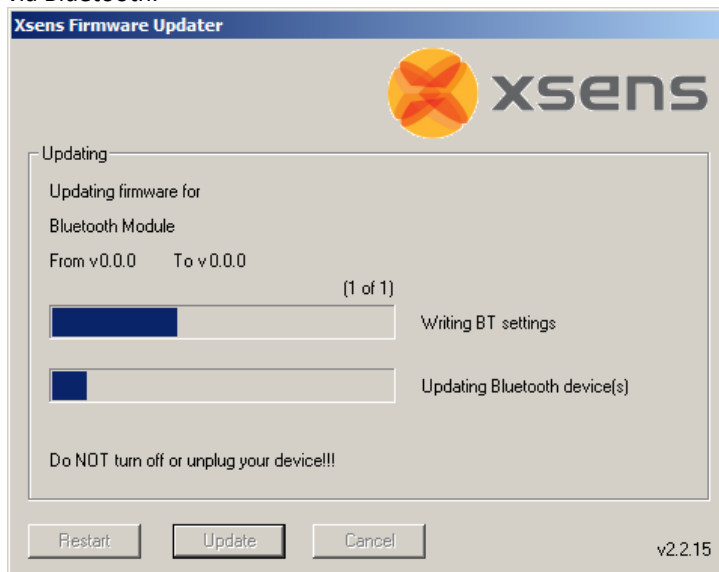


...then press "Update" to start the actual upgrading:

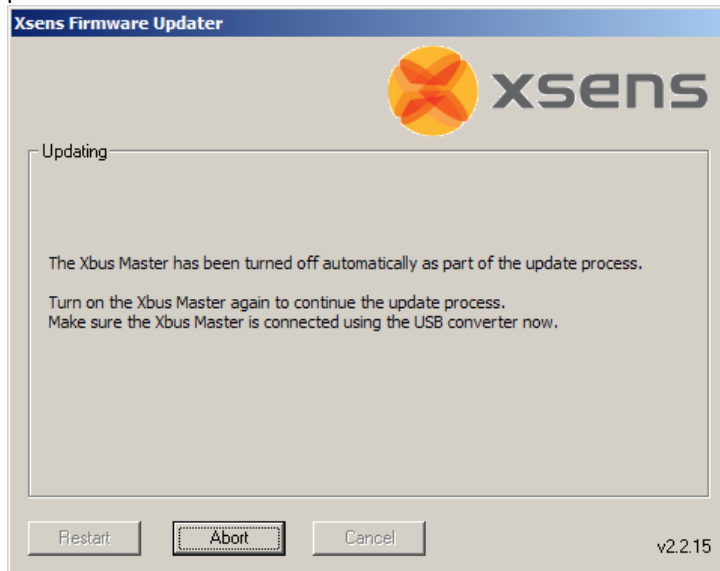


Important: Do NOT turn off or unplug your device during the update!

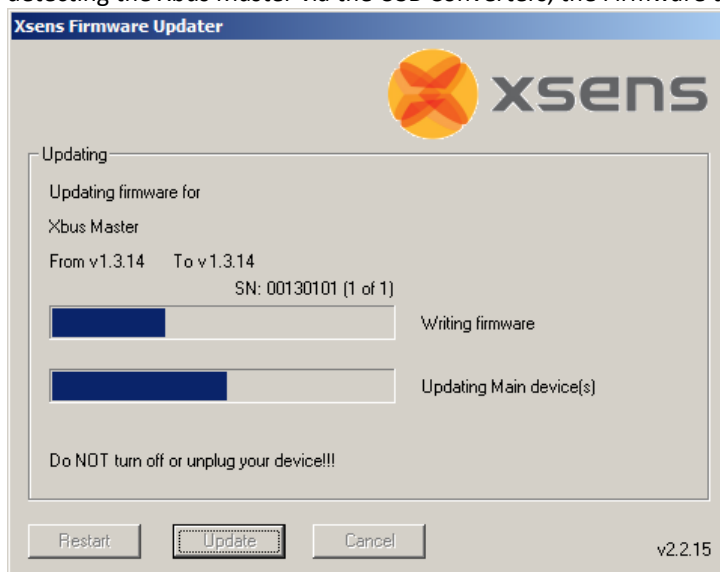
The Firmware Updater starts by updating the Bluetooth module settings when the Xbus Master is connected via Bluetooth.



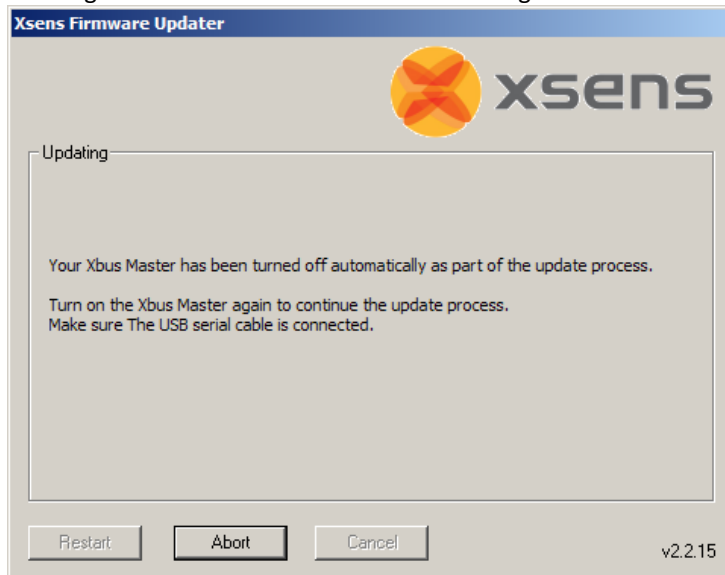
After updating the Bluetooth module, the Xbus Master is put into serial mode and is switched off by the Firmware Updater, also indicated by beeps of the Xbus master. Turn it on again to continue the update process.



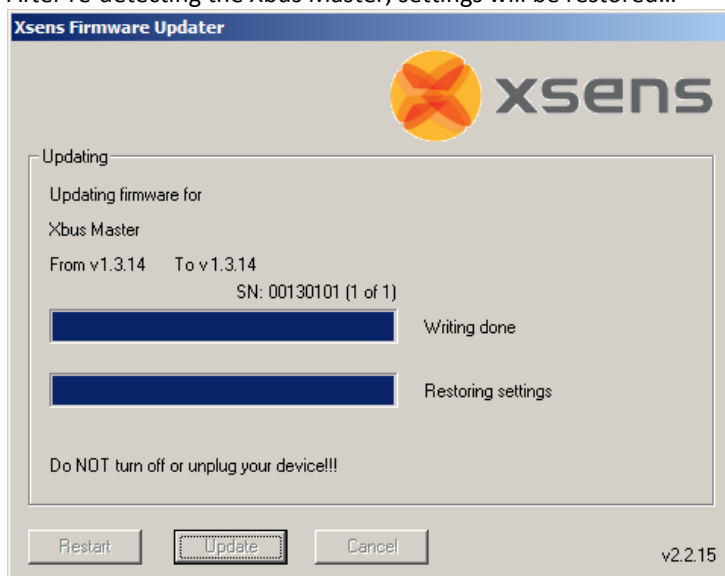
When the Xbus master is turned on it takes a couple of seconds for the firmware updater to detect it. After re-detecting the Xbus Master via the USB Converters, the Firmware the Xbus Master will be updated...



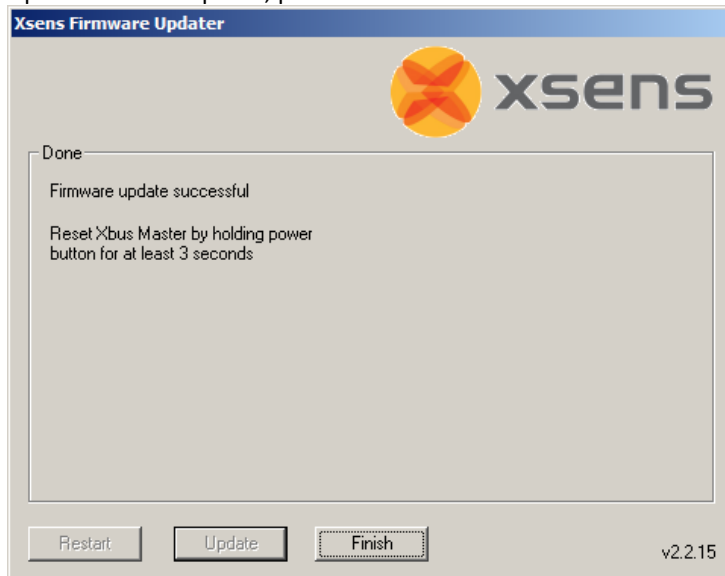
The firmware update of the Xbus Master is ended by a shutdown of the Xbus Master.
Turn it on again to restore the Xbus Master Bluetooth setting.
Pressing abort here will cause loss of this setting!



After re-detecting the Xbus Master, settings will be restored...



Upon successful update, press “Finish” to conclude the Firmware Update.

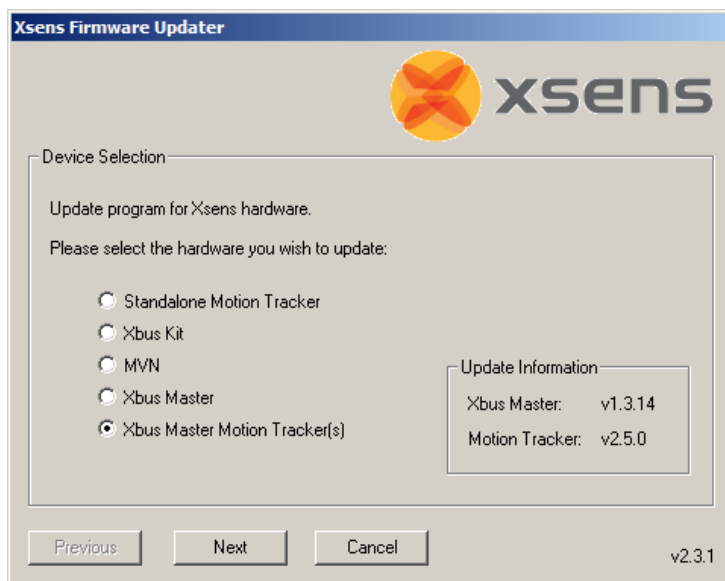


If you encounter a problem during the update, please go to www.xsens.com/support.

5.2 Xbus Master Motion Trackers

Note: preferable update mode is “Xbus Kit” or “MVN”, rather than the Xbus Master and Xbus Motion Trackers individually

After enabling the advanced options of the firmware updater (contact www.xsens.com/support if required), select the appropriate device (Xbus Master Motion Tracker(s)) and press “Next”:

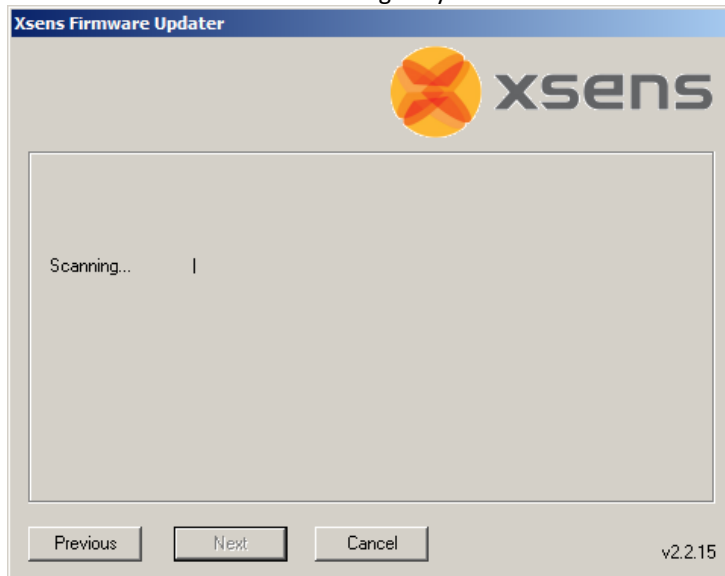


Follow the instructions and press “Next”:

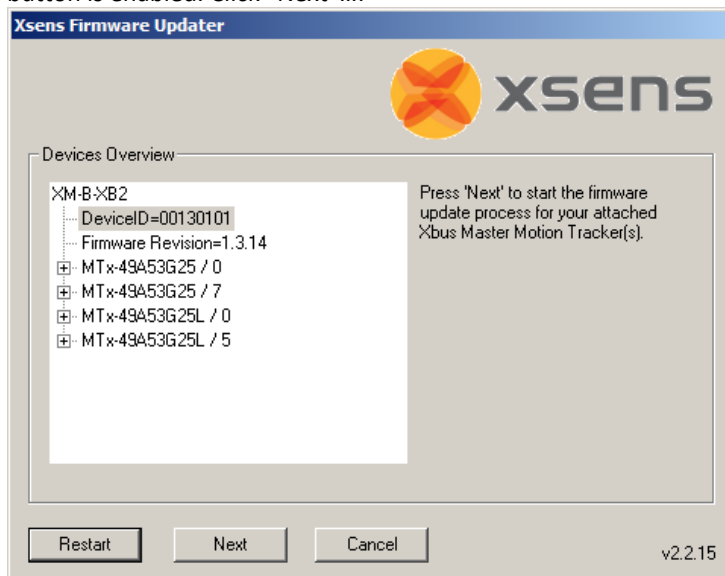


Connect all Motion Trackers to the Xbus master to a maximum of 10 per Xbus master, you which to update.

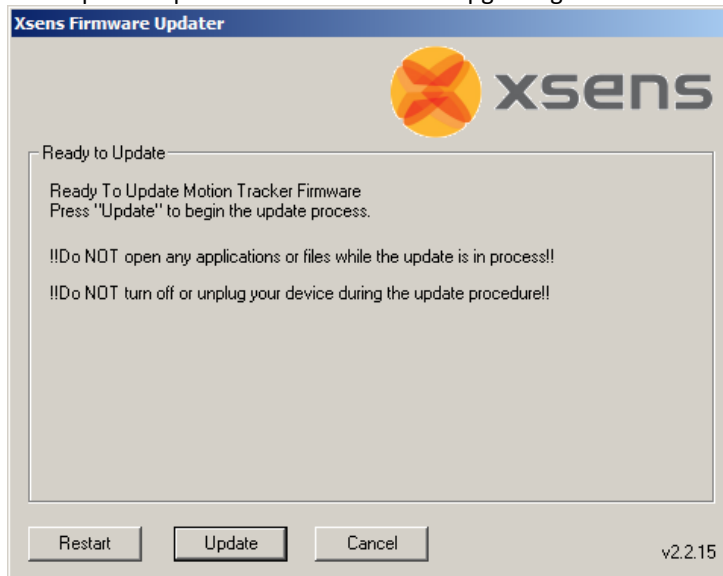
Wait while the software is scanning for your Xbus Master Motion Tracker(s):



An overview is shown of all detected hardware. If Xbus Master Motion Tracker(s) were found, the “Next” button is enabled. Click “Next”....:

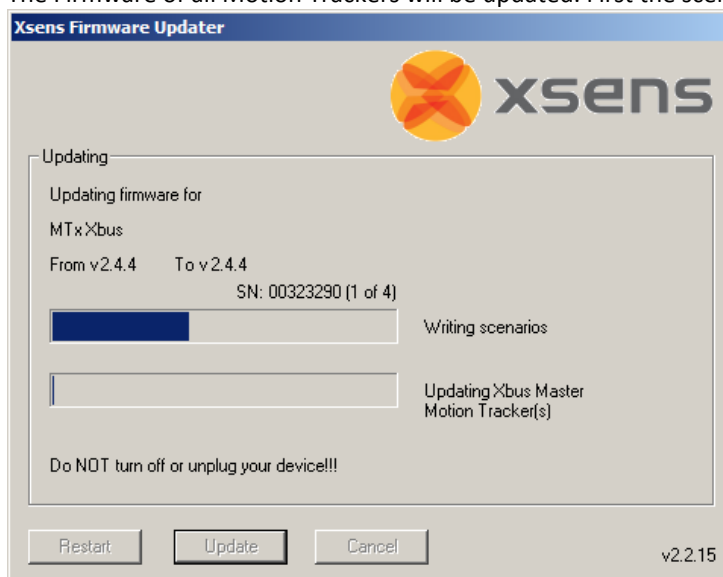


...then press "Update" to start the actual upgrading:

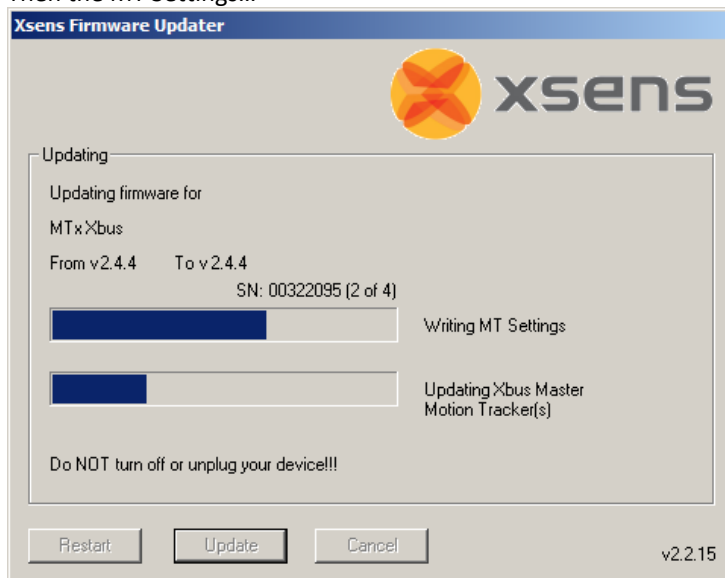


Important: Do NOT turn off or unplug your device during the update!

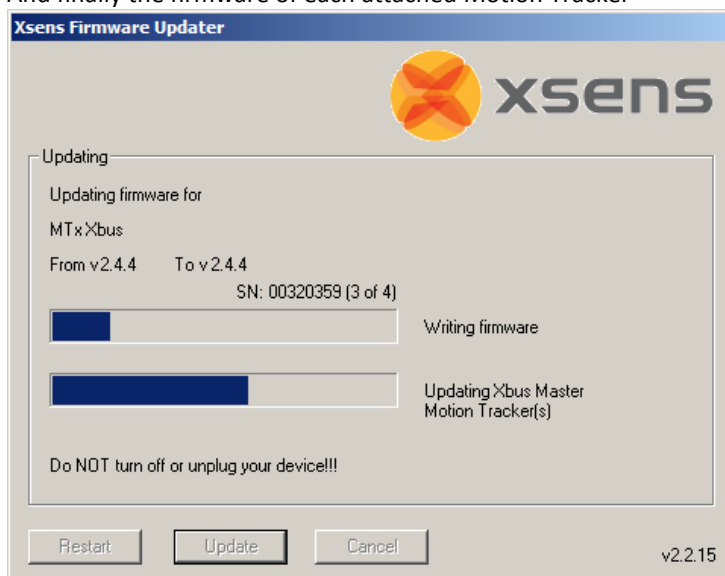
The Firmware of all Motion Trackers will be updated. First the scenario definitions...



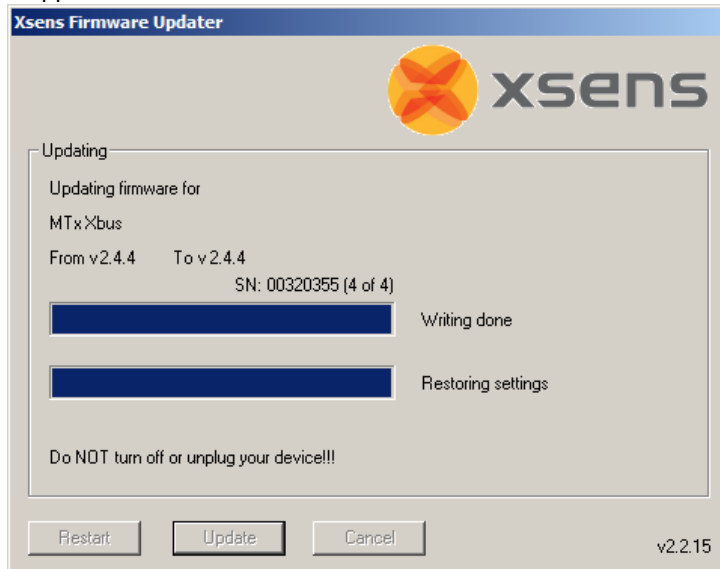
Then the MT Settings...



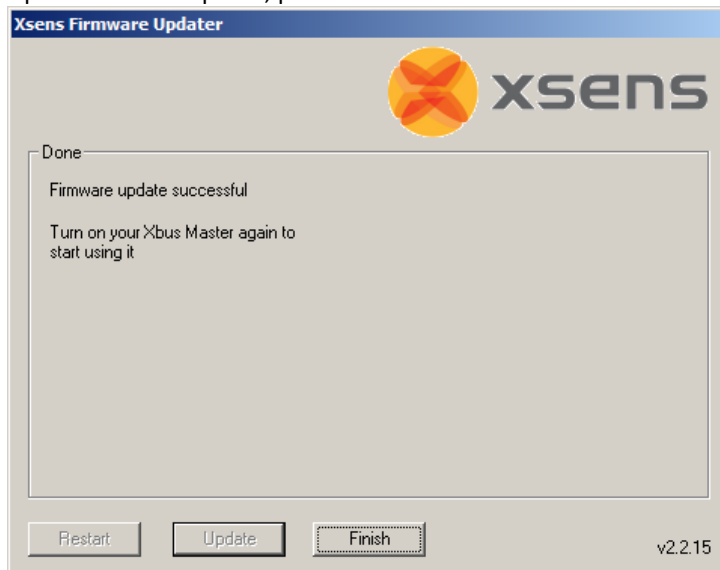
And finally the firmware of each attached Motion Tracker



When all Motion Trackers have been updated, baud rates, location ID's, alignment matrices and magnetic field mapper results are restored:



Upon successful update, press “Finish” to conclude the Firmware Update.



If you encounter a problem during the update, please go to www.xsens.com/support.

6 System requirements

The Firmware Updater is designed for Windows XP/Vista and the following system setup is recommended to properly run the software:

- Windows XP (Service Pack 2 installed) or Windows Vista
- Intel® Pentium® or AMD® processor, 1 GHz (minimum)
Pentium® IV 2.00 GHz or AMD Athlon® XP 2000+ or higher (recommended)
- USB port (1.1 or higher) or standard PC serial COM-port (RS-232)^{2,3}

6.1 Technical Support

Xsens Technologies B.V. is glad to help you with any questions you may have about the firmware updater or about the use of the technology for your application. Please contact Xsens' Support Team:

by e-mail: www.xsens.com/support
telephone: +31(0)88-9736700 (+31 88 XSENS 00)

To be able to help you, please mention your **Firmware Updater version number** and **software license registration number** in your e-mail.

² RS-232 add-on cards are not supported

³ Custom RS-232 USB converters are not supported