

RELEASE NOTES

Author: Feifei Xu
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1 About this release

The Xsens DOT 2021.0 stable release is now available. This release includes the 2nd generation of Xsens DOT hardware (hereinafter referred to as v2), firmware and software upgrades to support the v2 hardware, as well as with other new features. The Xsens DOT v2 sensor and charger have been upgraded as a drop and replaceable hardware to the existing first generation. For the specific hardware improvements and changes, please refer to the [Product Change Notification](#). Section 4 lists out the new features and major improvements of the released components. Section 5 gives out the bugs fixed for this release and section 6 lists out the known issues.

The Xsens DOT v2 hardware is available for pre-order in our [online shop](#). Android and iOS Apps will be available for downloading in Google Play Store, and Apple Store respectively. SDK can be downloaded from [Xsens DOT developer page](#)¹. Using the "Device Firmware Upgrade" feature in the new App, user can upgrade to the latest firmware through OTA.

Table 1: Release versions

Release component	Product applicability	New version	Comments
Xsens DOT v2 Set	-	2.0	XS-DOT-SET-02
Xsens DOT v2 Sensor	-	2.0	XS-T02
Xsens DOT v2 Charger	-	2.0	XS-C02
Xsens DOT Firmware	Xsens DOT Sensor	2.0.0	Compatible with v1 and v2 sensors
Xsens DOT SDK	Xsens DOT Sensor	2021.0	Both Android and iOS
Xsens DOT App	Xsens DOT Sensor	2021.0	Both Android and iOS
Xsens DOT Data Exporter	Xsens DOT Sensor	2021.0.0	Windows and macOS

2 Note

Firmware – The first batch of the v2 sensors are shipped with firmware 1.9.0. To experience all the improvements, we advise you to update the Xsens DOT App to 2021.0, and then update the firmware to 2.0.0 right after you get the new v2 sensors.

¹ By downloading the Xsens DOT apps and SDKs, you accept the Xsens DOT APP and SDK EULAs accessible on our developer page

RELEASE NOTES

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3 Compatibility

Table 2: Supported platforms

Software	Supported platforms
Android APK and SDK	<ul style="list-style-type: none">Android OS 8.0 and aboveARMv8 CPU architecture, arm64-v8a ABI (64-bit)
iOS App and SDK	<ul style="list-style-type: none">iOS 11.0 and above
Xsens DOT Data Exporter	<ul style="list-style-type: none">Window, macOS
Bluetooth requirements	<ul style="list-style-type: none">Best performance with BLE 5.0, DLE² supportedCompatible with Bluetooth 4.2

Table 3: List of tested devices

Platform	Tested devices
Android	<ul style="list-style-type: none">Samsung Galaxy S9, Samsung Galaxy S10, Oppo Reno, Huawei Mate20 Pro, Huawei P30 and MI 9, Google pixel 3a.
iOS	<ul style="list-style-type: none">iPhone11 XS Max, iPhone X, iPhone XR, iPhone 8
Others	<ul style="list-style-type: none">Any³

4 Major improvements and new features

Meanings of icons: +added, ^changed, !note, #fixed, -removed

2021.0 release includes the following improvements:

4.1 Hardware

4.1.1 Sensor

- ^ The power button has been modified to make the power button easier to press for a better tactile experience.
- ^ The power button controller has been updated to enable powering ON the sensor via the power button
- ^ The LED has been updated to a three-color LED (green, yellow and red) from the color white.
- ^ The LED display area has been increased along with adjustments to the transparency of the housing for better indication.
- ^ The sensor internal storage has been increased from 16MB to 64MB.
- ^ The battery capacity has been increased - changed from a 45mAh LIR2032 to a 70mAh LIR2032H battery.

² Data Length Extension.

³ Embedded software engineers and System architects can make use of the Xsens DOT BLE Service Specification document to connect to Xsens DOT with any device that supports BLE 5.0.

RELEASE NOTES

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xsens DOT
PRECISION MOTION TRACKING

^ The way to reset the sensor via USB plugin is changed to hardware power off by pressing the power button for over 11 seconds and power on the sensor again by pressing the power button for 2 seconds.

4.1.2 Charger

+ The USB communication hub is integrated in the charger to enable sensor data exporting through the charger from 5 sensors simultaneously.

4.2 Firmware

- + Added product ID to distinguish different hardware versions.
- + Added a new payload mode - custom mode 4 which includes quaternion, high fidelity inertial data, mag and status.
- + Added an error state in bootloader mode indicated by solid red LED.
- + Added the power on options to allow user to configure the v2 sensor to be powered on by USB plugin or not.
- ^ Optimized the LED patterns with the new available colors on the v2 sensor.
- ^ The total available recording flash space is increased based on the 64MB internal storage size.

4.3 Android APK

- + Added hardware versions to the App
- + Added a feature where the user can power off the v2 sensor from the App when the sensor is in charging status
- + Added a new measurement mode in real-time streaming - custom mode 4, which includes quaternion, high fidelity inertial data, mag and status.
- + Added the power ON options to allow user to configure the v2 sensor to be powered on by USB plugin or not.
- + The sensor serial number can be copied in the App.
- ^ The recording time is increased based on the 64MB internal storage size (6 hours @60Hz).

4.4 Android SDK

- + Added product ID to distinguish different hardware versions.
- + Added a new measurement mode in real-time streaming - custom mode 4, which includes quaternion, high fidelity inertial data, mag and status.
- + Added the function of device firmware update via OTA in the SDK.
- + Added the power on options to allow user to configure the v2 sensor to be powered on by USB plugin or not.
- + Added the function to calculate the free acceleration from quaternion and acceleration during real-time streaming.
- Removed the new firmware update notifications as the firmware update functions are all public.

RELEASE NOTES

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XSENS DOT
PRECISION MOTION TRACKING

4.5 iOS App

- + Added hardware versions in the App
- + User can power off the v2 sensor from the App when the sensor is in charging status
- + Added a new measurement mode in real-time streaming - custom mode 4, which includes quaternion, high fidelity inertial data, mag and status.
- + Added the power ON options to allow user to configure the v2 sensor to be powered on by USB plugin or not.
- + The sensor serial number can be copied in the App.
- ^ The recording time is increased based on the 64MB internal storage size (6 hours @60Hz).
- ^ Optimized the DFU via OTA process by adding the packet re-send mechanism to avoid the OTA failure.

4.6 iOS SDK

- + Added product ID to distinguish different hardware versions.
- + Added a new measurement mode in real-time streaming - custom mode 4, which includes quaternion, high fidelity inertial data, mag and status.
- + Added the function of device firmware update via OTA in the SDK.
- + Added the power ON options to allow user to configure the v2 sensor to be powered on by USB plugin or not.
- + Added the function to calculate the free acceleration from quaternion and acceleration during real-time streaming.
- + Added the function compatibility check to indicate if a particular function is supported in the SDK.
- Removed the new firmware update notifications as the firmware update functions are all public.

5 Bug fixes

This release also fixes the following issues:

5.1 Firmware

- # Fixed the bug that sensor will enter power saving mode during real-time streaming, exporting or clearing recording data.
- # Fixed the bug that battery level cannot reach 100% even the battery is fully charged.

5.2 Android SDK

- # Fixed the wrong recording start time in the header of exported recording files.

RELEASE NOTES

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5.3 iOS App

- # Fixed the crash when trying to select export recording file if the sensor enters power saving mode.

5.4 iOS SDK

- # Fixed the crash when trying to select export recording file if the sensor enters power saving mode.
- # Fixed the wrong recording start time in the header of exported recording files.
- # Fixed the bug that heading reset does not work in some cases.

5.5 Data exporter

- # Fixed the bug that sensor cannot be scanned if it disconnects with the PC and connects again.
- # Fixed the bug that when the first digit of the MAC address is 0, it cannot be displayed in the Data Exporter.

6 Known issues

Issue	Affected version
Sensor will enter unknown status if starting sync when the sensor has already in recording status.	App 2021.0
Sensor will power off when connecting to USB in power saving mode.	FW 2.0.0
The battery life in power saving mode last for 20+ hours instead of the expected 7 days.	FW 2.0.0
The LED pattern after a successful sync or during recording can be changed from measurement pattern to connection pattern by other operations, such as identify the sensor and charge the sensor.	FW 2.0.0
There will be "NaN" values in the measurement data.	FW 2.0.0 and below
Information such as synchronization status, output rate and filter profile is not saved in recording files.	FW 2.0.0 and below
Cannot distinguish between sensors that have "synced" status that are synced in different synchronization sessions.	FW 2.0.0 and below
Tag name will be set to default value "Xsens DOT" when upgrading to FW1.6.0 or downgrading from FW1.6.0.	FW 1.6.0 and below