

# BNO055 USB Stick Desktop Development 2.0 User Manual

## **BNO055 USB Stick User Manual**

Document revision	1.4
Document release date	June 2021
Document number	BST-DHW-SD0013-00
Sales Part Number	0273141 209

Notes Data and descriptions in this document are subject to change without notice. Product photos and pictures are for illustration purposes only and may differ from the real product appearance.

## 1. About user manual

This manual describes updating the firmware of BNO055 USB stick with the Development Desktop 2.0 UI; a Windows based PC software application developed by Bosch Sensortec

### 1.1 Who should read this manual

This information intended to users who wish to use DD2.0 to demonstrate use of the BNO055 USB stick.

### 1.2 DD2.0 Overview

DD2.0 is a PC based software used to read, capture, and display sensor data. To display the sensor data of BMI090L on DD2.0, mount the sensor on the **Bosch Sensortec** application board. This is a universal demonstration environment for **Bosch Sensortec** sensor products.

**Bosch Sensortec** sensors are mounted on sensor specific shuttle boards. All sensors shuttle boards have an identical footprint and can be plugged into the application board's shuttle board socket. DD2.0 automatically detects the sensor that has been plugged in and starts the corresponding software application.

### 1.3 Sensor Communication:

DD2.0 software supports both SPI and I<sup>2</sup>C to communicate with the sensor.

### 1.4 Graphical display:

DD2.0 UI displays the sensor data and interrupts in different graphical formats.

### 1.5 Data logging:

DD2.0 offers data logging of the sensor data.

## Table of Contents

<b>1. About user manual.....</b>	<b>2</b>
<b>1.1 Who should read this manual .....</b>	<b>2</b>
<b>1.2 DD2.0 Overview.....</b>	<b>2</b>
<b>1.3 Sensor Communication:.....</b>	<b>2</b>
<b>1.4 Graphical display:.....</b>	<b>2</b>
<b>1.5 Data logging:.....</b>	<b>2</b>
<b>2. About BNO055 USB stick.....</b>	<b>5</b>
<b>3. Getting Started .....</b>	<b>5</b>
<b>3.1 Steps to verify the “Bosch Sensortec BNO stick” under device manager.....</b>	<b>5</b>
<b>3.2 Steps to install the driver .....</b>	<b>6</b>
<b>3.3 How to connect BNO USB stick with DD2.0 .....</b>	<b>7</b>
<b>4. Steps to upload new firmware (*.fwu3) file into microcontroller.....</b>	<b>8</b>
<b>5. LED indications .....</b>	<b>8</b>
<b>6. Analog Switch indications .....</b>	<b>8</b>
<b>7. Legal disclaimer .....</b>	<b>9</b>
<b>8. Document history and modifications .....</b>	<b>9</b>

## List of figures

Figure 1 : Driver Software Installation .....	5
Figure 2 : Device Manager .....	6
Figure 3 : Windows Security .....	6
Figure 4 : Device Manager .....	7
Figure 5 : Communication Interface .....	7
Figure 6 : USB stick switch position .....	8
Figure 7 : Development Desktop 2.0_Boot mode .....	8

## List of tables

Table 1: Document History and Modification .....	9
--	---

## 2. About BNO055 USB stick

The BNO055 USB Stick contains a microcontroller (ATSAM3S2AA) and the BNO055. The microcontroller and the BNO055 communicate via I2C interface. The microcontroller and host communicate via Virtual COM port (UART) using USB interface. The user can update the microcontroller's firmware and BNO055's firmware.

## 3. Getting Started

The below sections highlight the procedure to install the BNO USB stick driver in PC.

### 3.1 Steps to verify the “Bosch Sensortec BNO stick” under device manager

- 1) Connect BNO USB stick in any ports(USB 2.0/USB3.0)
- 2) Once connected, below driver installation message is displayed with “No driver found”

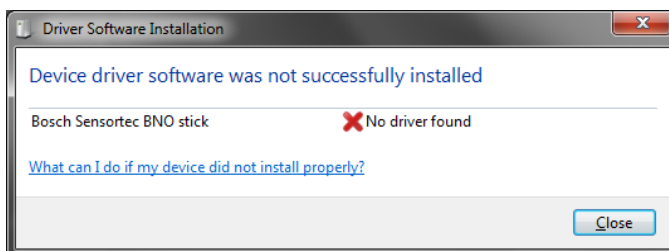


Figure 1 : Driver Software Installation

- 3) Open Control panel → Device manager and check under other devices for “Bosch Sensortec BNO stick” if the driver is not installed.

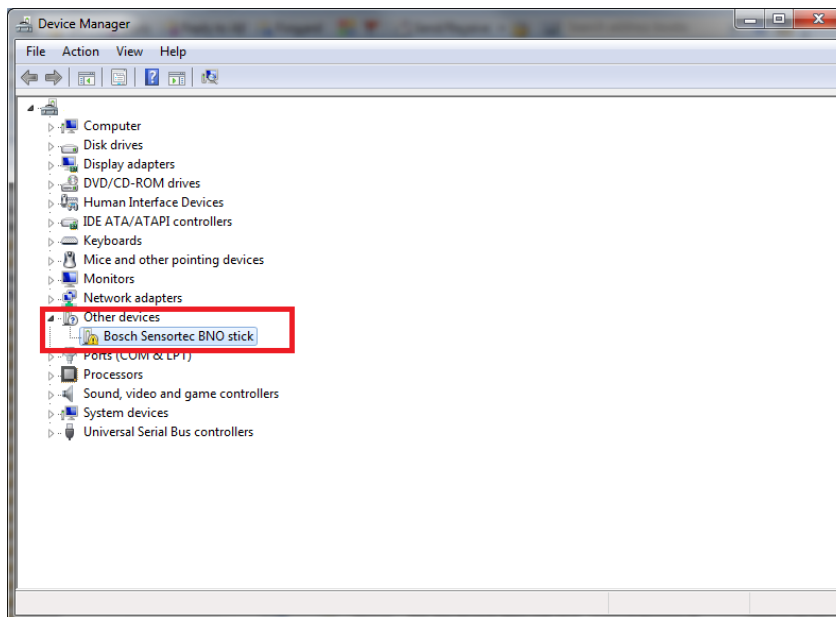


Figure 2 : Device Manager

### 3.2 Steps to install the driver

- 1) Connect BNO USB stick in any port(USB 2.0/USB3.0)
- 2) Open Control panel→Device manager→Other devices.
- 3) Right click on “Bosch Sensortec BNO stick” and click on update driver software
- 4) Select “Browse my computer for driver software” and enter the file location as “C:\Program Files\Bosch Sensortec\Development Desktop 2.0\ USBtoSerialDriver”
- 5) Click on “Next” after selecting the driver path
- 6) Click on “Install” in the windows security pop up to install the driver

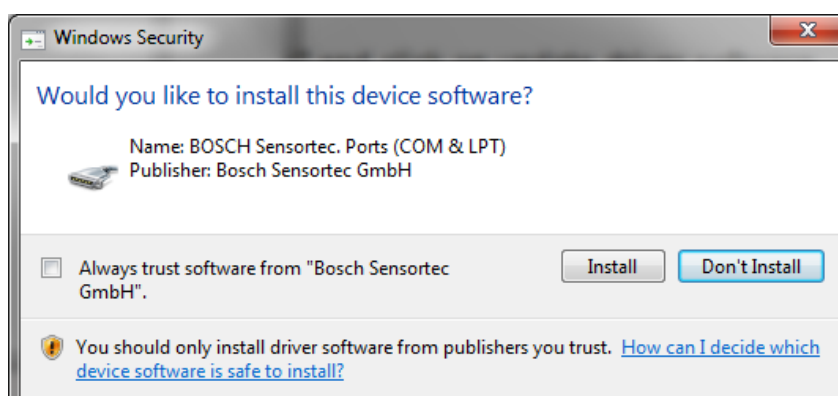


Figure 3 : Windows Security

- 7) Once the driver is installed, device manager will show the “Bosch Sensortec BNO stick” under **Ports(COM& LPT)** as below

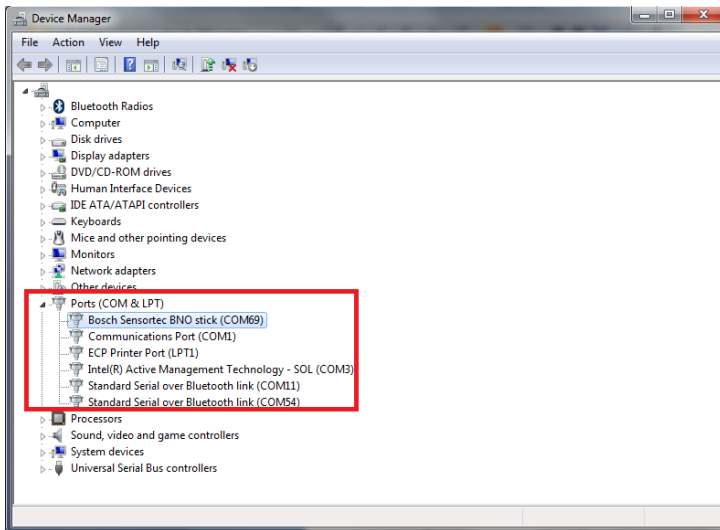


Figure 4 : Device Manager

**Note:- COM69 is the port number assigned by windows. Based on the availability of COM port different number will be assigned in different PC. Please make note of the COM port number it will be used in section 3.3**

### 3.3 How to connect BNO USB stick with DD2.0

- 1) Make a note of COM port number of Bosch Sensortec BNO stick under Ports in device manager, if the driver is installed successfully as “Figure 4”.
- 2) Open Development Desktop 2.0 UI.
- 3) In Communication interface window, select “Figure 4” noted COM port number from communication channel drop down.

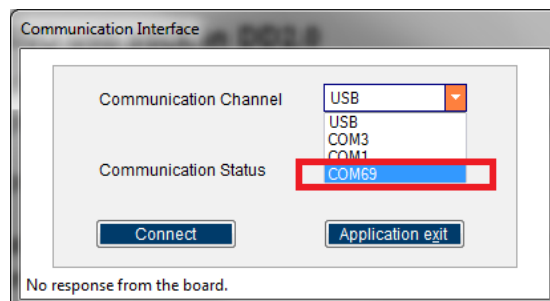


Figure 5 : Communication Interface

- 4) Once selected, click on “Connect” button and BNO055 view will be loaded

**\*Note: If the stick unplugged after connection establishment, please close the DD2.0 application and plug the stick again for normal operation**

## 4. Steps to upload new firmware (\*.fwu3) file into microcontroller

- 1) Place the switch to “L” position as below (Boot mode) and plug in to any port(USB 2.0/USB3.0)

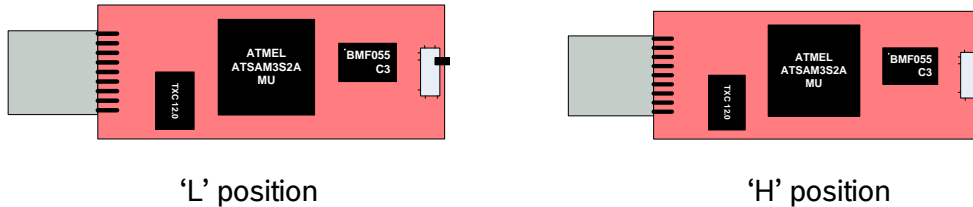


Figure 6 : USB stick switch position

- 2) Open the DD2.0 application and boot mode detected message is displayed as below

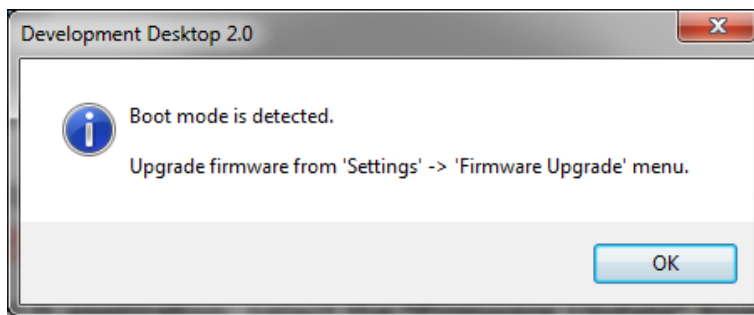


Figure 7 : Development Desktop 2.0\_Boot mode

- 3) Click on “OK” button in the boot mode detected screen (Figure 7).
- 4) Select the “Firmware Update” from the “Settings” menu.
- 5) Select and open the BNOinUSBStick\_Vx.x.fwu3
- 6) Click the “Flash” and it will download the fw to microcontroller.
- 7) Once the flash is completed, disconnect and place the switch into “H” position and connect again, restart the DD2.0 application.

*\*Note: Put the BNO USB Stick in boot mode (Refer: section 6 for boot mode) and connect it to PC before DD2.0 running*

## 5. LED indications

- 1) D1 and D2 both glows together thrice → uC is in boot mode
- 2) D1 alone glows continuously → uC is power on and is in application mode

## 6. Analog Switch indications

- 1) During power on, the switch in “H” position → uC will be in Application mode
- 2) During power on, the switch is in “L” position → uC will be in boot mode



## 7. Legal disclaimer

### i. Engineering samples

Engineering Samples are marked with an asterisk (\*) or (e). Samples may vary from the valid technical specifications of the product series contained in this data sheet. They are therefore not intended or fit for resale to third parties or for use in end products. Their sole purpose is internal client testing. The testing of an engineering sample may in no way replace the testing of a product series. Bosch Sensortec assumes no liability for the use of engineering samples. The Purchaser shall indemnify Bosch Sensortec from all claims arising from the use of engineering samples.

### ii. Product use

Bosch Sensortec products are developed for the consumer goods industry. They may only be used within the parameters of this product data sheet. They are not fit for use in life-sustaining or safety-critical systems. Safety-critical systems are those for which a malfunction is expected to lead to bodily harm, death or severe property damage. In addition, they shall not be used directly or indirectly for military purposes (including but not limited to nuclear, chemical or biological proliferation of weapons or development of missile technology), nuclear power, deep sea or space applications (including but not limited to satellite technology).

The resale and/or use of Bosch Sensortec products are at the purchaser's own risk and his own responsibility. The examination of fitness for the intended use is the sole responsibility of the purchaser.

The purchaser shall indemnify Bosch Sensortec from all third party claims arising from any product use not covered by the parameters of this product data sheet or not approved by Bosch Sensortec and reimburse Bosch Sensortec for all costs in connection with such claims.

The purchaser accepts the responsibility to monitor the market for the purchased products, particularly with regard to product safety, and to inform Bosch Sensortec without delay of all safety-critical incidents.

### iii. Application examples and hints

With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Bosch Sensortec hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights or copyrights of any third party. The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. They are provided for illustrative purposes only and no evaluation regarding infringement of intellectual property rights or copyrights or regarding functionality, performance or error has been made.

## 8. Document history and modifications

Table 1: Document History and Modification

Rev. No	Chapter	Description of modification/changes	Date
1.0		Document creation	09 July 2014
1.1	3	Updated BNO USB stick driver installation	27 Nov 2014
1.2	4	Updated the review comments	30 Jan 2015

1.3		Adopt to new format	21 August 2020
1.4		Corrected the List of Figure Link	08 June 2021

**Bosch Sensortec GmbH**  
Gerhard-Kindler-Straße 9  
72770 Reutlingen / Germany

[contact@bosch-sensortec.com](mailto:contact@bosch-sensortec.com)  
[www.bosch-sensortec.com](http://www.bosch-sensortec.com)

Modifications reserved  
Preliminary - specifications subject to change without notice  
Document number: BST-DHW-SD0013-00