

# LPMS-AL2 Series

## Quick Start Guide ver. 1.0



LPMS-CANAL2



LPMS-RS232AL2



LPMS-TTLAL2



LPMS-USBAL2

## Revision History

Date	Revision	Changes
<b>2020-03-18</b>	1.0	- Initial release - Combine LPMS-CANAL2, LPMS-RS232AL2, LPMS-TTLAL2 and LPMS-USBAL2 quick start guide information into this LPMS-AL2 series quick start guide document.

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## I. Introduction

Welcome to the LP-RESEARCH Motion Sensor LPMS-AL2 series quick start guide. In this documentation we will explain everything you need to know to quickly set up the LPMS-AL2 series hardware, install its software and get started with sensor data acquisition. This series includes the following sensor part numbers.

- LPMS-CANAL2
- LPMS-RS232AL2
- LPMS-TTLAL2
- LPMS-USBAL2

We have put a lot of effort into making the LPMS-AL2 series a great product, but we are always eager to improve and work on new developments. If you have any further questions or comments regarding this documentation, please feel free to contact us anytime.

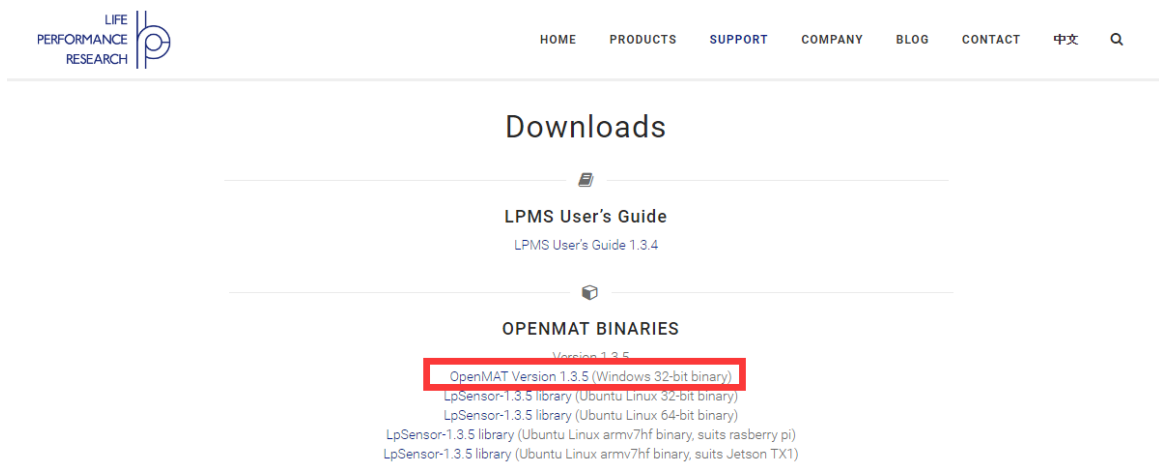
For more information on the LPMS-AL2 or other product series, please refer to related user manuals, available from the LP-RESEARCH website at the following address: <http://www.lp-research.com>.

## II. Operation

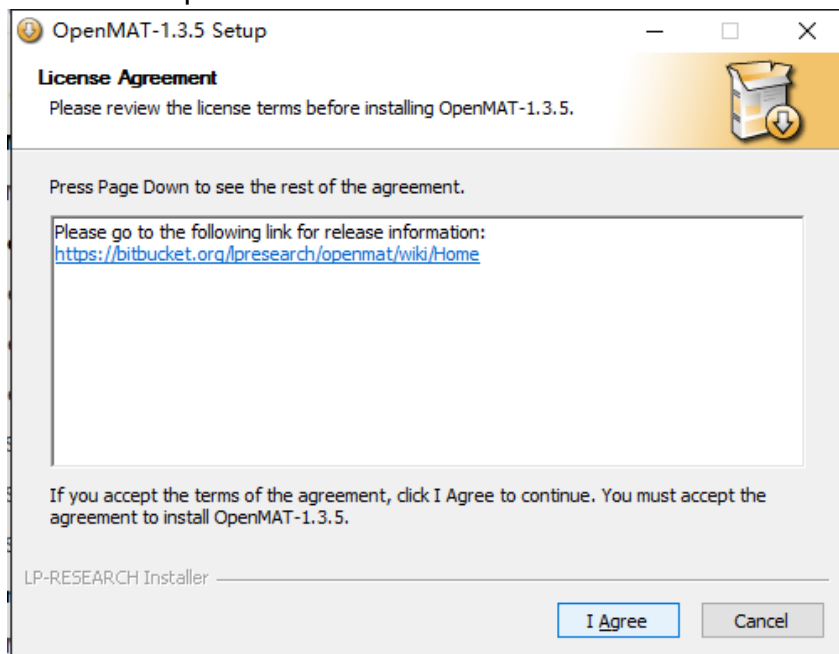
### OpenMAT Software Installation

We offer windows OS based software called LpmsControl for users to easily manipulate the sensors. The LpmsControl software is a sub program of OpenMAT software. Please choose a correct version of OpenMAT software from our homepage based on the operation system specification. The followings show an example of installing the OpenMAT software under Windows 7 64bit system.

- 1) Go to: <http://www.lp-research.com/support/>, and download the latest version of OpenMAT for the sensor, like OpenMAT Version 1.3.5 (Windows 32-bit binary) showed as below.

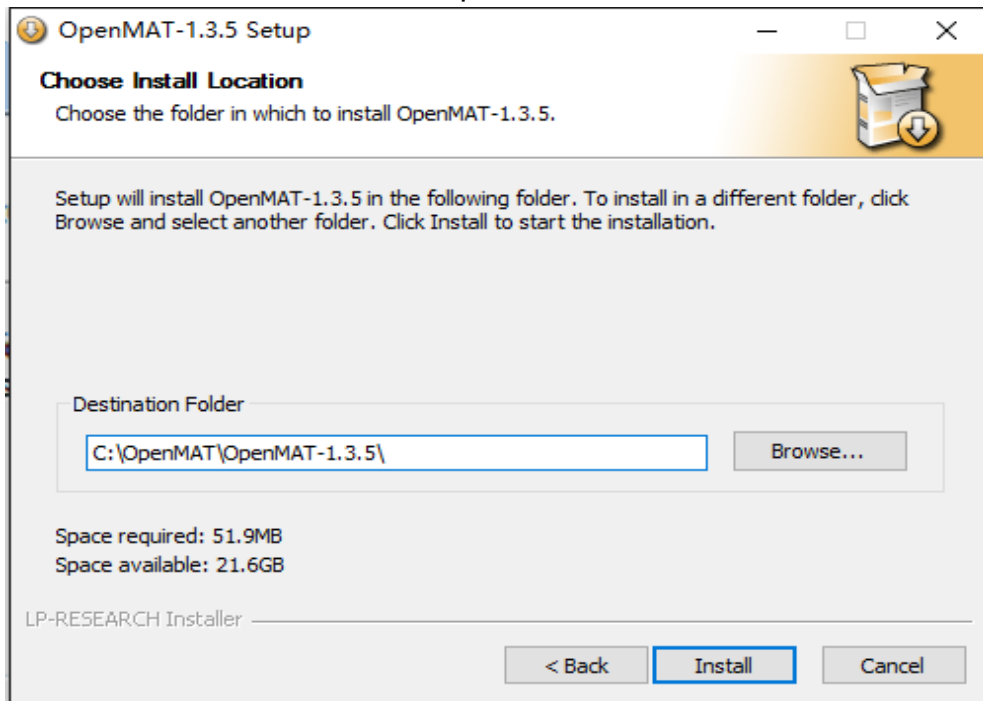


- 2) Run the installer after the download process is finished, and push the "I Agree" button for the next step.

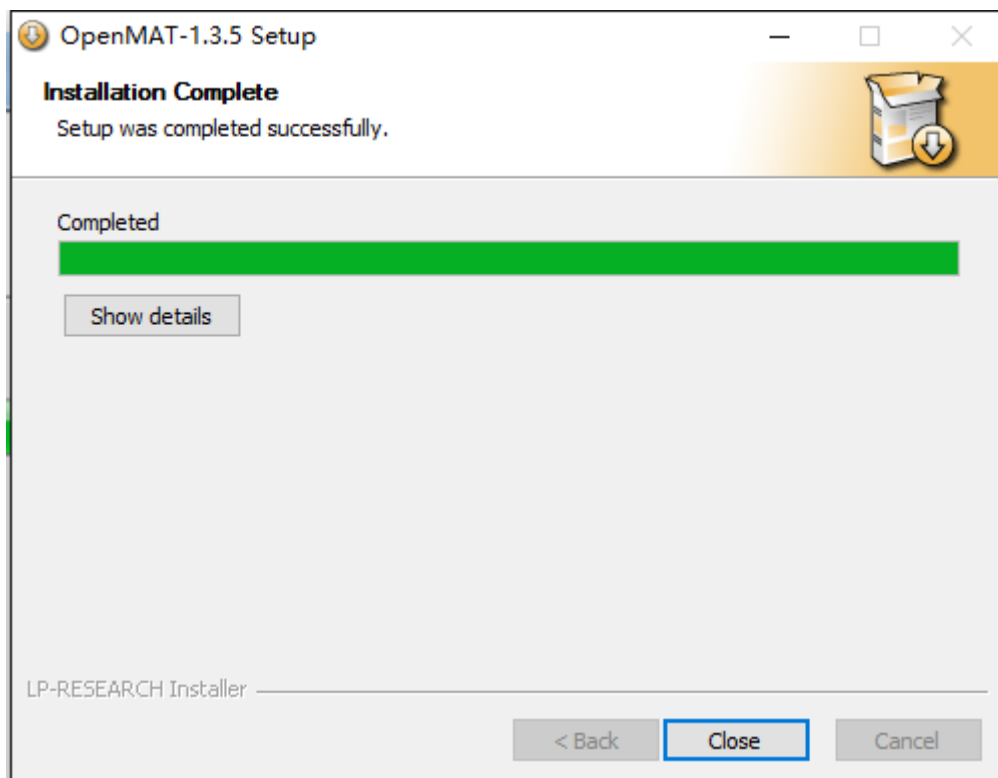


- 3) Push the "Browse" button to select the installation path of the program, and then

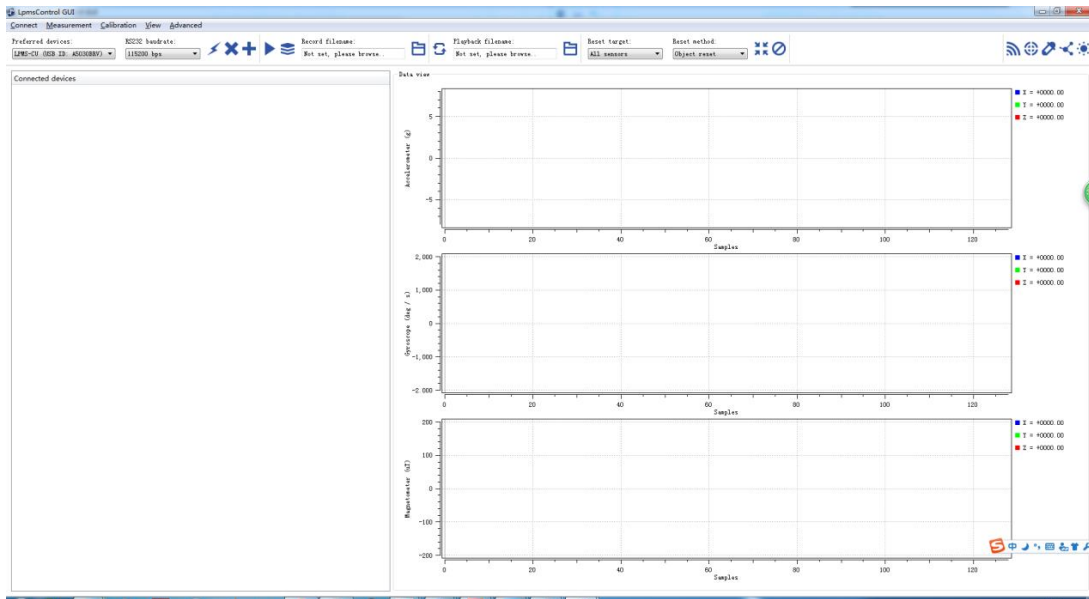
push "Install" to start the installation process.



4) Push the "Close" button to complete the installation.



To run the LpmsControl software from the start menu of your windows system, you can see the following interface.



## LPMS-CANAL2 Connection with PC

In order to connect the sensor to a PC via the CAN BUS port, a CAN-to-USB converter is needed. LpmsControl software is supporting the PCAN-USB cable from PEAK-System Technik GmbH. The detailed information of PCAN-USB can be referred to: <http://www.peak-system.com>.

After connecting the PCAN-USB cable to a PC, the system will pop out a notice of driver installation. Please download and install the corresponding driver of PCAN-USB from the webpage of PEAK-System. The device manager of windows operation system will show the PCAN-USB device if the driver is installed correctly, as showed in the following image.

Before connecting LPMS-CANAL2 with PCAN-USB cable, the hardware setting of the DB9 port on PCAN-USB needs to be modified. In default, the pin no.1 of this DB9 port is not outputting 5V voltage. Please refer to section "Voltage Supply of External Devices" in the manual of PCAN-USB to have the pin no.1 output +5V.

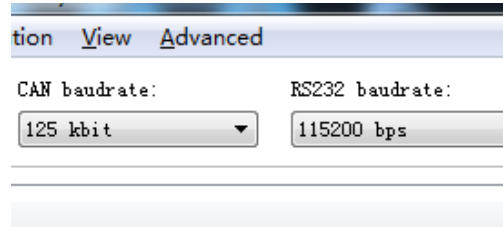


When the hardware setting of PCAN-USB is completed, users can connect it with LPMS-CANAL2 sensor with proper wiring between the M12 and DB9 connectors.

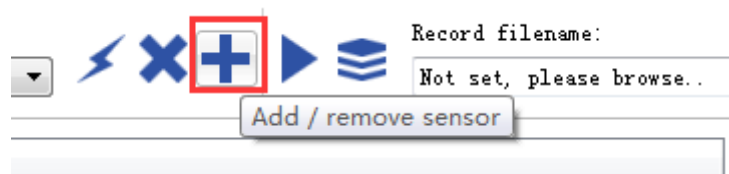
Then the PCAN-USB can be plugged into PC to power the sensor and acquire data.

Please follow the instructions below to complete the remaining steps.

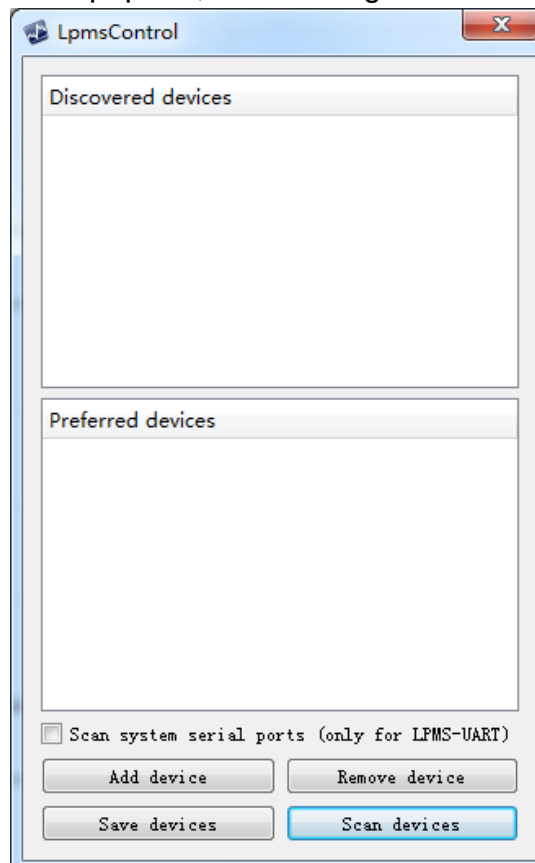
- 1) To start the LpmsControl software. If the PCAN-USB cable has been connected with PC, the CAN baudrate setting item should be showed up on the toolbar, seen as the following image. Please choose the correct baudrate according to your sensor setting. **The default CAN baudrate value is 125kbps.**



- 2) To select the "Add/remove sensor" under "Connect" menu or click the "+" button on toolbar.



The "add device" window will pop out, as following.

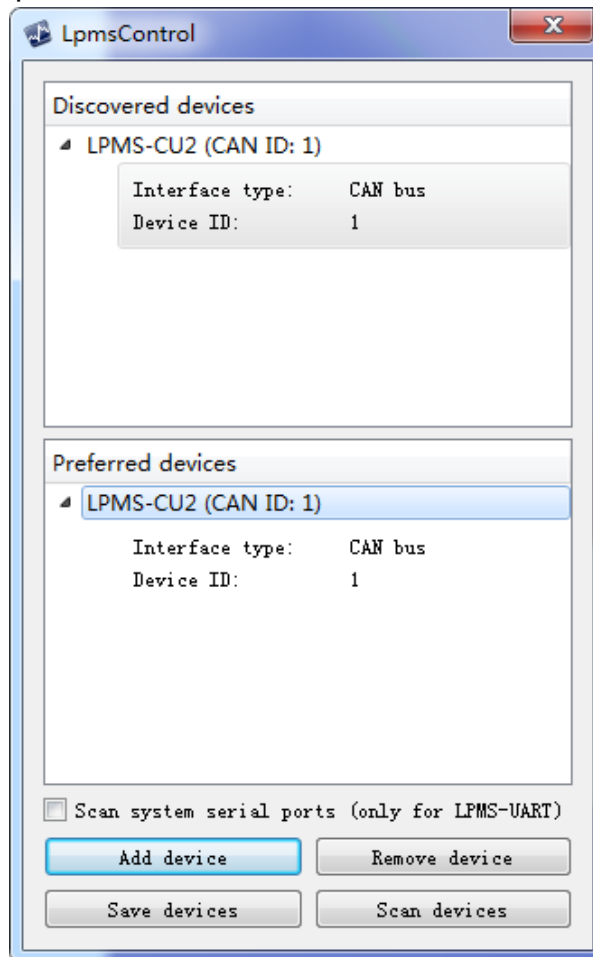


- 3) To click the "Scan devices" button and start the device discovery process. Please

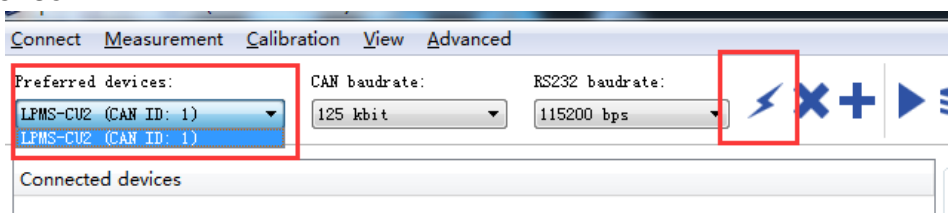


wait until the process is finished.

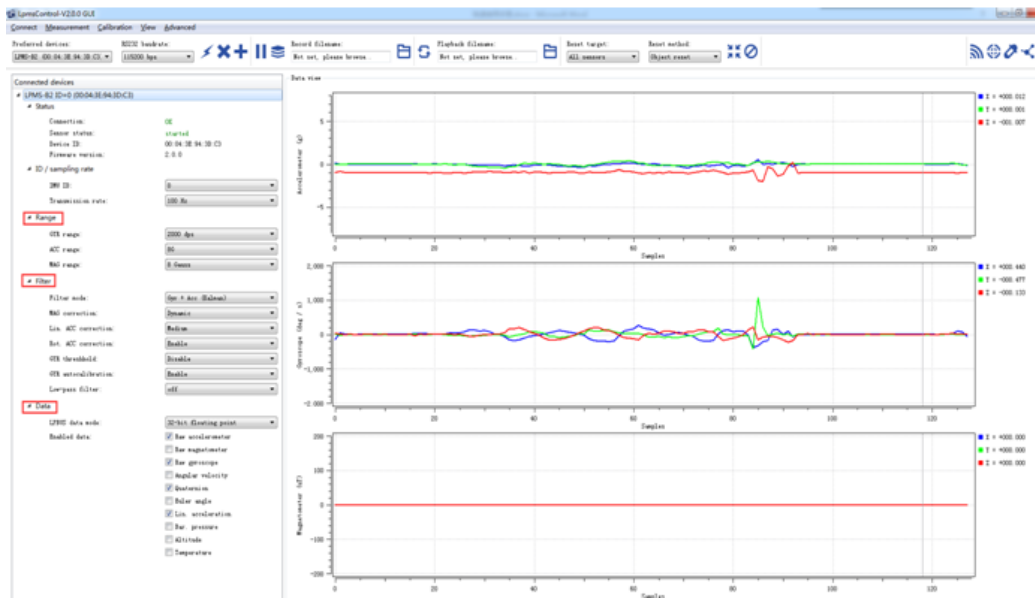
- 4) To select the target sensor ID from the "Discovered devices" list, for example, "LPMS-CU2 (CAN ID: 1)" in the following image.
- 5) To add the selected sensor to "Preferred devices" list by clicking the "Add device" button.
- 6) To click the "Save devices" button to save the preferred devices list, and return to main interface of LpmsControl.



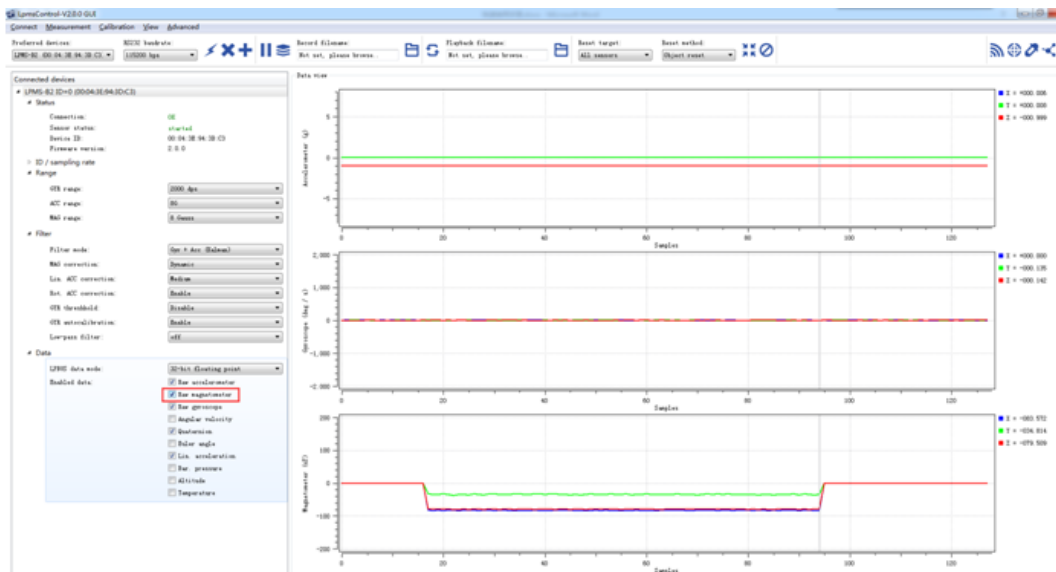
- 7) To select the target sensor ID from the Preferred devices list, and click Connect function under "Connect" menu or click the lightning button on toolbar to connect the sensor.



After completing all the steps above, the LPMS-CANAL2 should have been connecting with windows system. Users can check all the data visualization and parameter settings of the sensor from LpmsControl.



On the left side of the main interface of LpmsControl, users can change the sensor settings, like measurement range, filter modes, data updating rate, etc. Moreover, the types of output data can be modified by checking or unchecking the check box of each parameter. For example, in the following image the "raw magnetometer" is checked so that the acquisition of magnetic data is enabled.



For more information, please refer to our product datasheets and product manuals.

## LPMS-RS232AL2 Connection with PC

In order to connect the sensor to a PC via the RS232 port, a RS232-to-USB conversion cable is needed. Please connect the conversion cable with LPMS-RS232AL2 sensor based on the pinout description in section "Connector

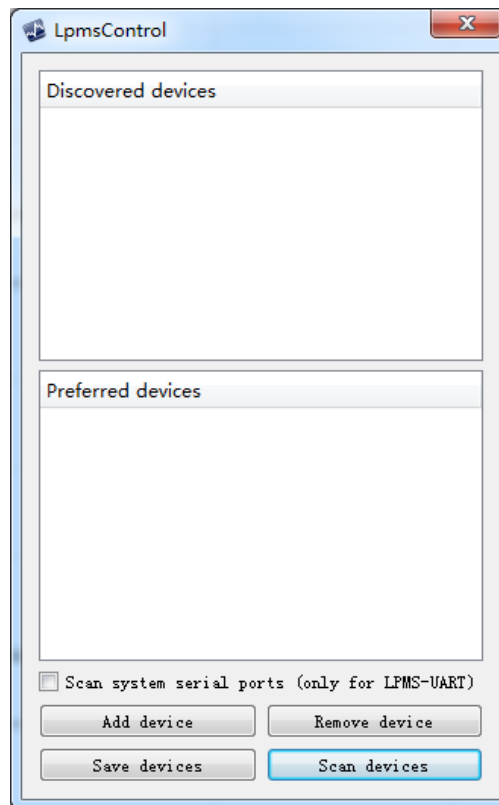
Pinout". After plugging the conversion cable to a windows OS PC, a COM port is supposed to be assigned to the cable, which can be confirmed through the device manager of windows system. Please remember that COM port number and use it for the sensor connection.

Please follow the instructions below to complete the remaining steps.

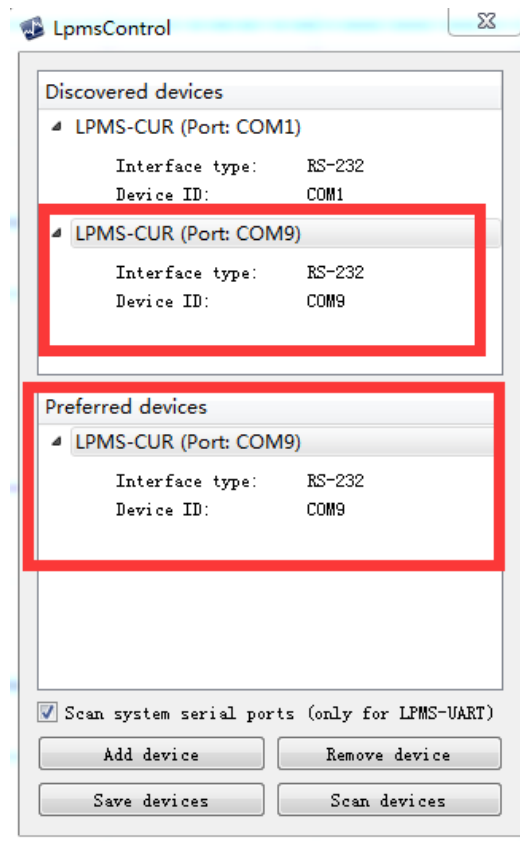
- 1) To select the "Add/remove sensor" under "Connect" menu or click the "+" button on toolbar.



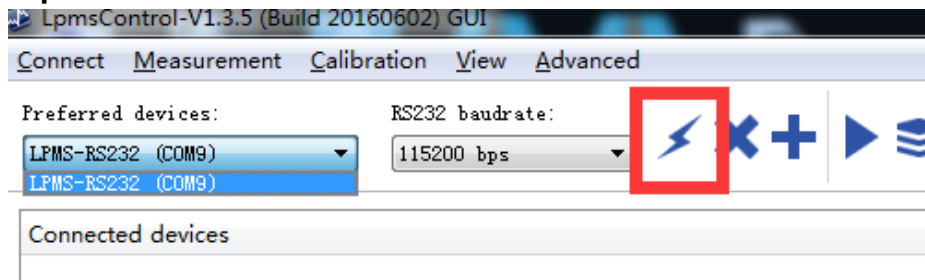
The "add device" window will pop out, as following.



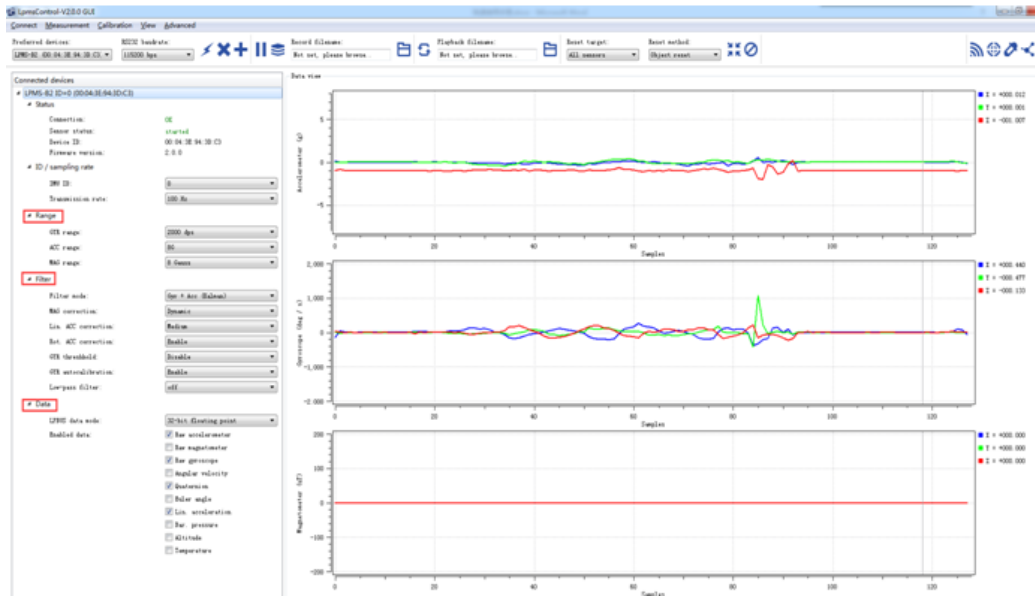
- 2) To check the option of "Scan system serial ports (only for LPMS-UART)" and click the "Scan devices" button to start the device discovery process. Please wait until the process is finished.
- 3) To select the target sensor ID from the "Discovered devices" list, for example, "LPMS-CUR(Port:COM9)" in the following image. This COM port should be same as the one of the conversion cable.
- 4) To add the selected sensor to "Preferred devices" list by clicking the "Add device" button.
- 5) To click the "Save devices" button to save the preferred devices list, and return to main interface of LpmsControl.



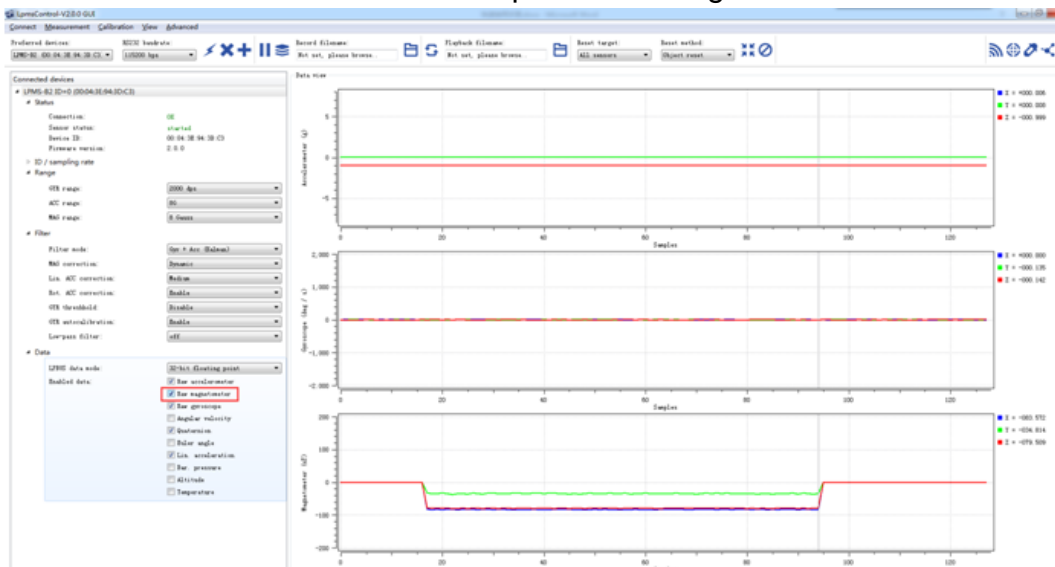
- 6) To select the target sensor ID from the Preferred devices list, and click Connect function under "Connect" menu or click the lightning button on toolbar to connect the sensor. **Note: The default baudrate of RS232 communication is 115200bps.**



After completing all the steps above, the LPMS-RS232AL2 should have been connecting with windows system. Users can check all the data visualization and parameter settings of the sensor from LpmsControl.



On the left side of the main interface of LpmsControl, users can change the sensor settings, like measurement range, filter modes, data updating rate, etc. Moreover, the types of output data can be modified by checking or unchecking the check box of each parameter. For example, in the following image the "raw magnetometer" is checked so that the acquisition of magnetic data is enabled.



For more information, please refer to our product datasheets and product manuals.

## LPMS-TTLAL2 Connection with PC

In order to connect the sensor to a PC via the TTL port, a TTL-to-USB conversion cable is needed. The operation process is similar to the case of LPMS-RS232AL2 sensor. Please refer to section “LPMS-TTLAL2 Connection with PC” for detailed information.

## LPMS-USBAL2 Connection with PC

In order to connect LPMS-USBAL2 sensor to your Windows system via USB interface, a proper hardware driver must be installed. The sensor is embedded with a CP210X-series USB chip from Silicon Labs. Therefore, the host Windows system needs to install the related drivers which could be downloaded from:

- our webpage: <https://lp-research.com/support/>
- to search "CP210x\_Windows\_Drivers" on webpage of Silicon Labs

**NOTE: Windows might automatically install a wrong USB driver for the USB interface while the sensor is connected for the first time. In this case, user has to manually confirm the driver version and reinstall the correct ones.**

After the installation of USB drivers, USBXpress device will be showed up in the device manager if the driver has been installed successfully, seen as following.

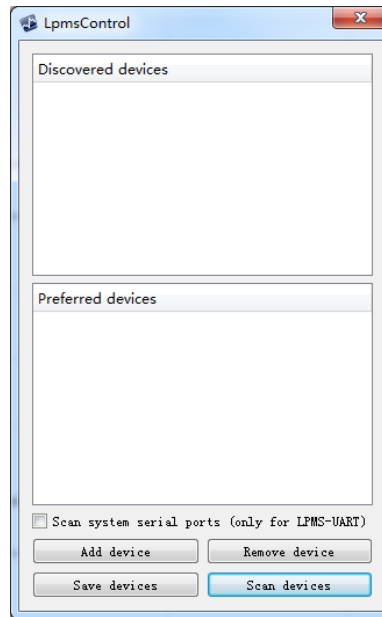


Please follow the instructions below to complete the remaining steps.

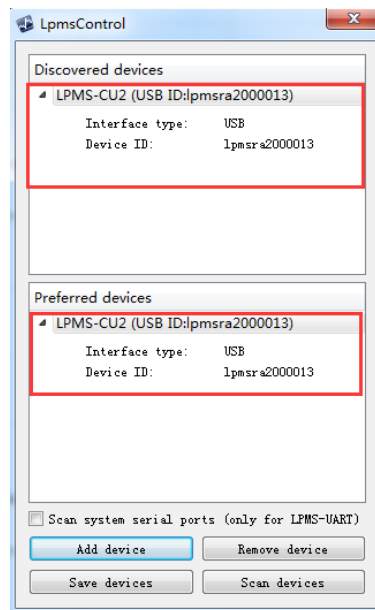
- 1) To select the "Add/remove sensor" under "Connect" menu or click the "+" button on toolbar of LpmsControl.



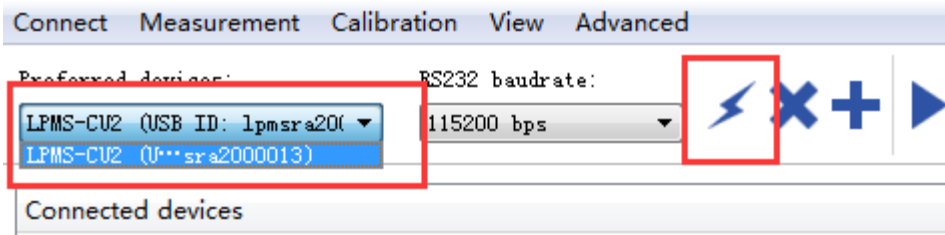
The "add device" window will pop out, as following.



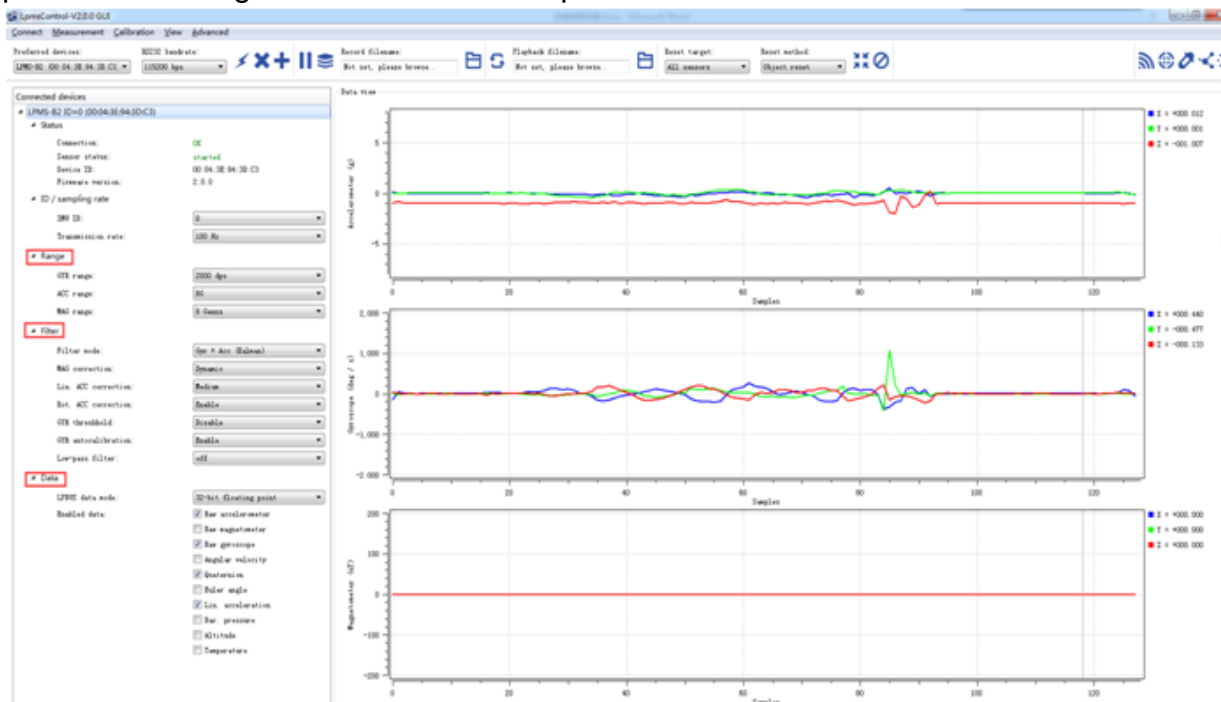
- 2) To click the "Scan devices" button and start the device discovery process. Please wait until the process is done.
- 3) To select the target sensor ID from the "Discovered devices" list, for example, "LPMS-CU2 (USB ID: lpmsra2000013)" in the following image.
- 4) To add the selected sensor to "Preferred devices" list by clicking the "Add device" button.



- 5) To click the "Save devices" button to save the preferred devices list and return to main interface of LpmsControl.
- 6) To select the target sensor ID from the Preferred devices list and click Connect function under "Connect" menu or click the lightning button on toolbar to connect the sensor. **The default baudrate value is 921.6kbps.**



After completing all the steps above, the LPMS-USBAL2 should have been connecting with windows system. Users can check all the data visualization and parameter settings of the sensor from LpmsControl.

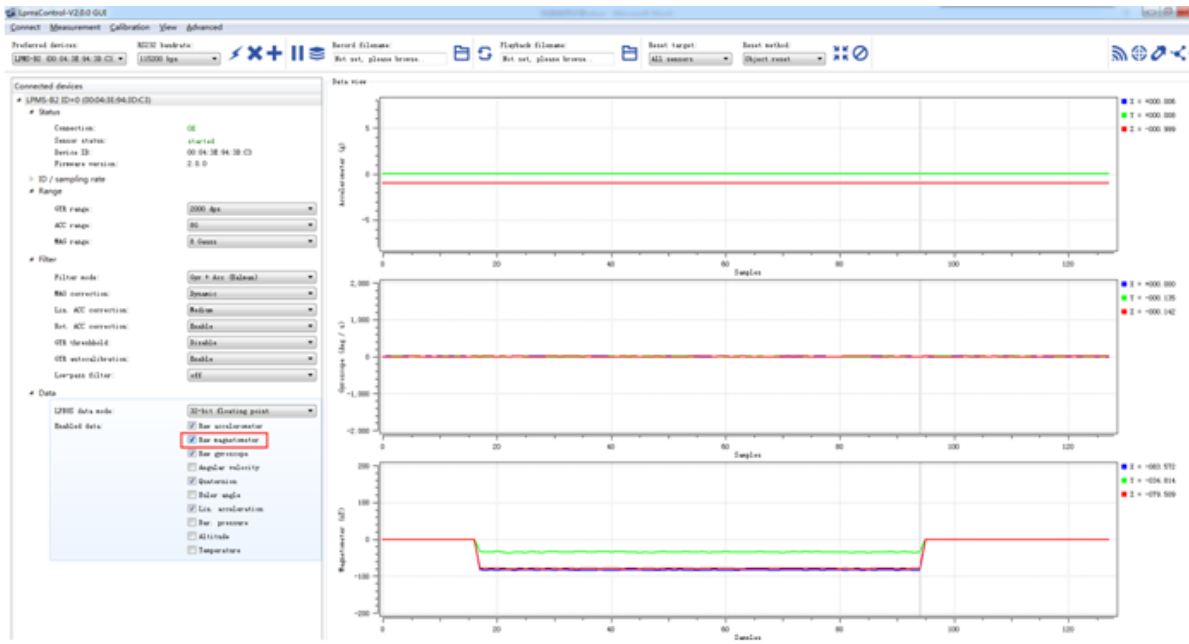


On the left side of the main interface of LpmsControl, users can change the sensor settings, like measurement range, filter modes, data updating rate, etc. Moreover, the types of output data can be modified by checking or unchecking the check box of each parameter. For example, in the following image the "raw magnetometer" is checked so that the acquisition of magnetic data is enabled.





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