

# MicroStrain Quick Start Guide: 3DM-CX5-25 AHRS



The 3DM-CX5-25 is a high-performance, industrial-grade, board-level Attitude and Heading Reference System (AHRS) that utilizes micro inertial sensors for use in a wide range of industrial-grade applications, such as unmanned vehicle navigation, platform stabilization, and vehicle health monitoring. The 3DM-CX5-25 combines the strengths of an integrated multi axis gyroscope, accelerometer, and magnetometer, in combination with temperature and pressure readings to provide highly accurate attitude and inertial measurements.

The 3DM-CX5-25 communicates through a serial connection and is monitored by a host computer. Sensor measurements and computed outputs can be viewed and recorded with the LORD Sensing Sensor Connect software that is available as a free download from the LORD Sensing website. Alternatively, users can write custom software with the open source data communication protocol. The data is time-aligned and available by either polling or continuous stream.

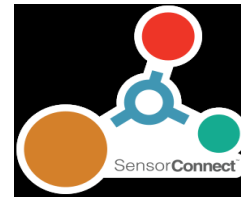


The sensor and development kit are purchased separately. There are two variations of the kit, USB (p/n 6212-3009) and RS232 (p/n 6212-3010). The C-series Connectivity Board supports both interfaces and is included in both part numbers, along with appropriate cables and mounting screws.

**This guide assumes that you have a development kit and will download the latest version of SensorConnect™ software.**

## Step 1:

Download and install the latest SensorConnect™ software:  
[http://updates.microstrain.com/SensorConnect\\_12.1.4\\_x64.msi](http://updates.microstrain.com/SensorConnect_12.1.4_x64.msi)



## Step 2:

Unpack the development kit, and remove the connectivity board from its anti-stat bag.

## Step 3:

Remove the sensor from its packaging, and place it on the mating connector on the connectivity board. Fasten in place with three 2-56 brass screws, provided.

## Step 4:

Attach the interface cable to the connectivity board, tighten using a small straight blade screwdriver. If you are using the RS232 version, you must also plug the power supply into the power jack on the RS232 DB9 connector, and then plug it into AC power.

## Step 5:

Plug the interface cable into the appropriate computer input. The green LED on the connectivity board will illuminate, and the LED on the sensor should first blink, then pulse slowly to indicate it is in the idle mode.

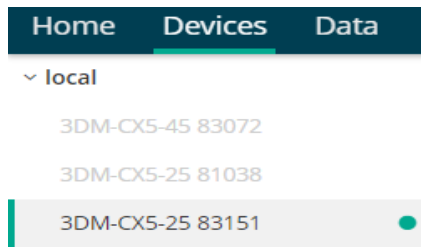
## Step 6:

Start SensorConnect. The first thing you must do is identify a repository file to which you will store settings and data. Click 'home' to bring up this screen:

Data Repositories			
Active	Data Repo	Created	Last Used
<input checked="" type="checkbox"/>	Your Test	2019/12/12 10:01:13 AM	2019/12/12 10:01:13 AM

## Step 7:

If you are using a USB interface, the sensor will initiate communications with SensorConnect automatically. This is indicated by a green dot just right of the sensor name. Click on 'devices' to see this on screen:



If you are using RS232, click on Devices, and '+ Add Device'. This will bring up the following screen:

USB devices are automatically discovered when plugged in.  
To add a TCP/IP or Serial device, use the form below.

Connection:

---

Port:

Baud Rate:

Select serial, and identify your serial port. Clicking the port select arrow should identify available comm's ports. Sensors are factory set to 115200 baud. Click Add Device, and Done:

Add a Device ×

USB devices are automatically discovered when plugged in.  
To add a TCP/IP or Serial device, use the form below.

Connection:

---

Found Network Devices

Name	IP Address	Port	Port:
W020000000090353	10.6.11.95	5000	<input type="text" value="5000"/>

## Step 8:

Click on your device to see settings and operations:

3DM-CX5-15 84211

Model  
3DM-CX5-15  
6274-4260

Serial  
6274.84211

Firmware  
1.1.68

Options  
8g.300dps

Connection  
Serial, COM7, 115200

---

Last Communication  
2 minutes 31 seconds ago

Last Known State  
Unknown

### Options

Settings and operations for your device.

Devices / 3DM-CX5-15 84211

#### Control

▶  
Sampling

!  
Set To Idle

↺  
Resume

#### Setup

⚙️  
Configure

@  
Initialize/Reset  
Estimation Filter

💾  
Save/Load  
Settings

#### Advanced

📄  
Calibration  
Report

🖨️  
Monitor Bytes

## Step 9:

Click on sampling, + add channel field, and Attitude (Euler RPY). Set data rate to 10Hz. Then click "apply" and "start"

### IMU

Time Field:  GPS Correlation Timestamp

×	Channel Field	Data Rate
×	Attitude (Euler RPY)	<input type="text" value="10Hz"/>
+ Add Channel Field		

## Step 10:

Click on Data, and +Add Widget.

SensorConnect

Home
Devices
Data

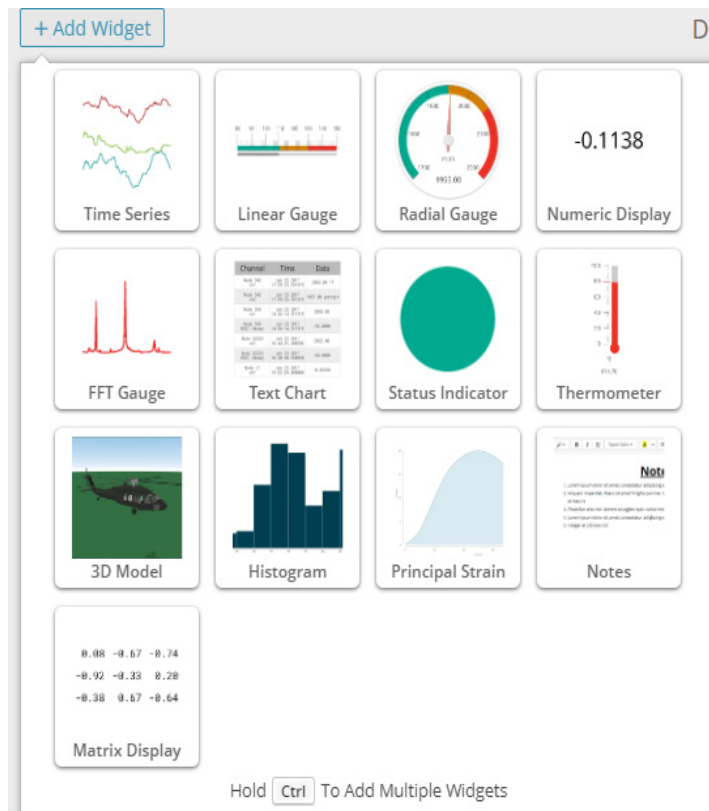
Channels

Settings

+ Add Widget

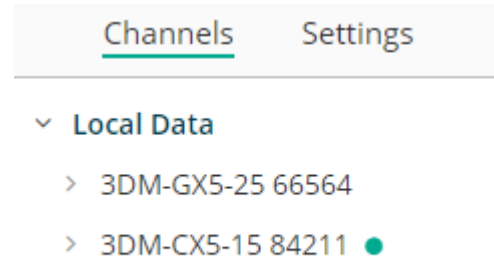
## Step 11:

Click on 3D Model.

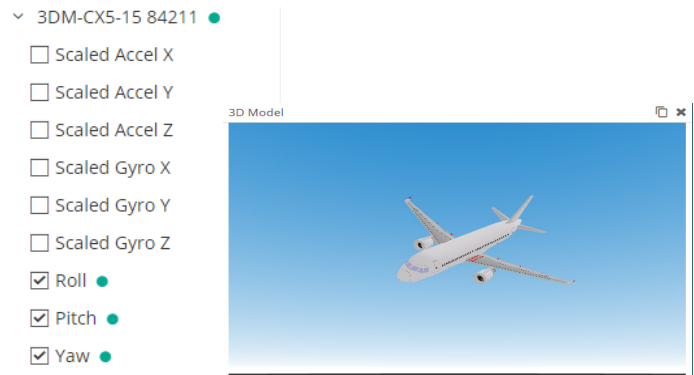


## Step 13:

Now let's get data into the model. Under Channels, click on local data, and click on your device. There should be a green dot alongside the sensor name, indicating that it's connected.

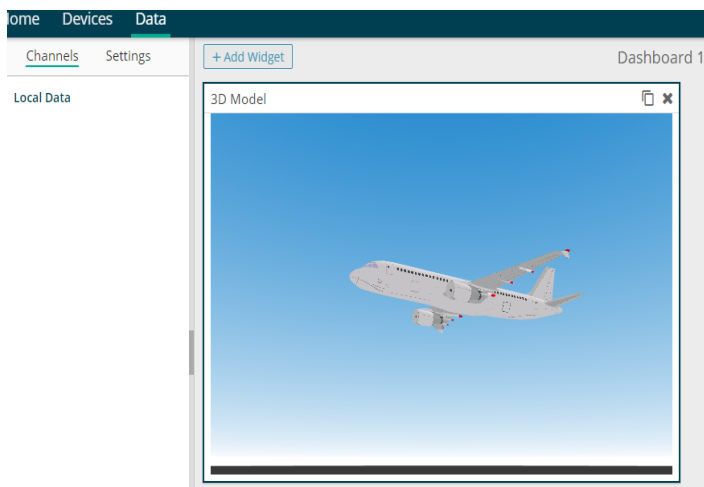


Clicking on your sensor will bring up a selection of data channels. Click on Roll, Pitch and Yaw:



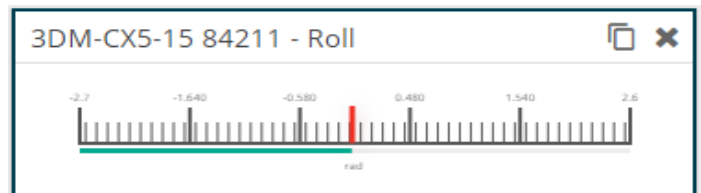
## Step 12:

Your screen will look like this:



Test the linkage to the widget aircraft...pick up the sensor, and move it in 3 axes. The plane should respond.

Now you know that your sensor is working, and you're in command. Let's add some other widgets. Click on + Add Widget, and select Linear Gauge. Click on the Gauge icon, and select the Roll data channel.



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If you click on the duplicate icon in this window, you can place two more linear gauges. Click on each of them, and select pitch and yaw data. You'll see the gauge displays move, as you manipulate the sensor.

3DM-CX5-45 83072 - Roll



## Step 15:

When you're done exploring SensorConnect, click on Home, and select a data repository to save your setup and data.

Active	Data Repo	Created	Last Used		
<input checked="" type="checkbox"/>	cx5-15 test	2019/11/21 03:06:56 PM	2019/11/22 12:07:15 PM		

Buttons: Import Repo, Create New Repo

Now, you're ready to put your sensor to work in your application. For sensor pinout and other details, refer to the user manual, which is found on the MicroStrain website:

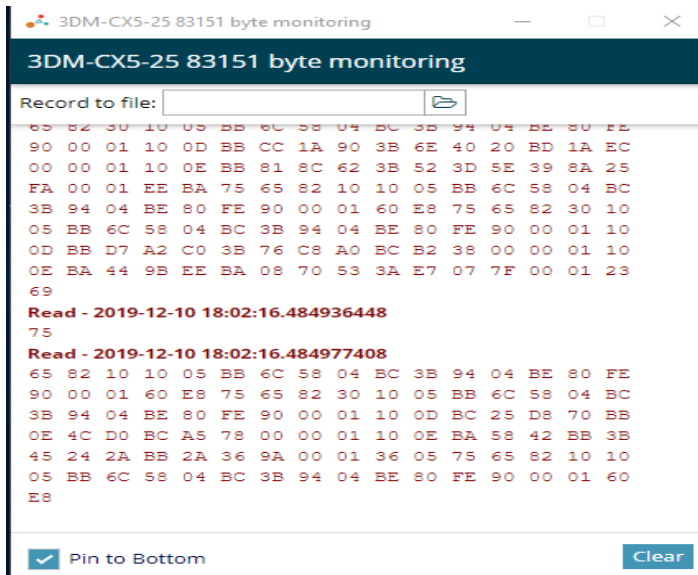
<https://www.microstrain.com/inertial/3dm-cx5-45>

Details about other MicroStrain software can be found here: <https://www.microstrain.com/software#web>

## Step 14:

There is one last step to consider, before exploring SensorConnect further, or incorporating the sensor into your own data handling system.

Click on Devices, and select Monitor Bytes. You can see streaming data:



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For a listing of our worldwide locations, visit [LORD.com](http://LORD.com)

