

EVE

tutorials



Device Browser

MicroPython

By Sanjay and Arvind Seshan



BEGINNER PROGRAMMING LESSON

LESSON OBJECTIVES

1. **Learn how to retrieve and use data from your sensors**
2. **Learn how to use Device Browser on the EV3 Brick**
3. **Learn some examples of when and the data from the Device Browser would be useful**
4. **Try to solve some common problems using this data**

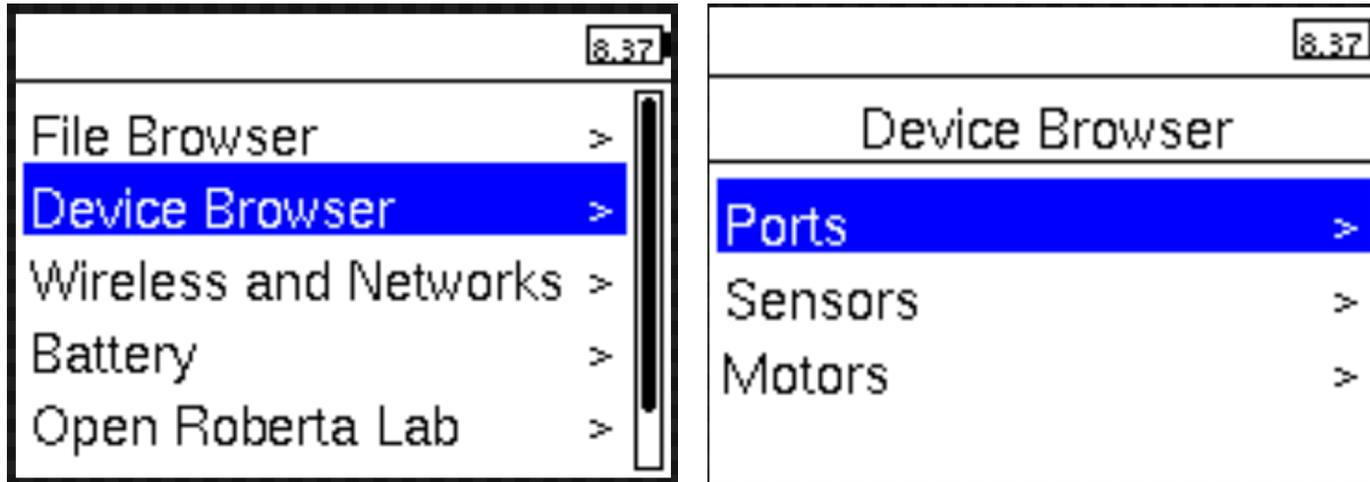
WHY DO YOU NEED SENSOR DATA?

Sensor data can be....

- Used to help program more easily (no more guess and check!!)
- Used to help program more accurately
- Used to debug code as well as build issues

Device Browser is an easy way to access SENSOR DATA!

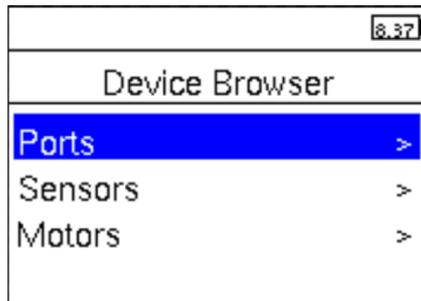
HOW DO YOU GET TO PORT VIEW?



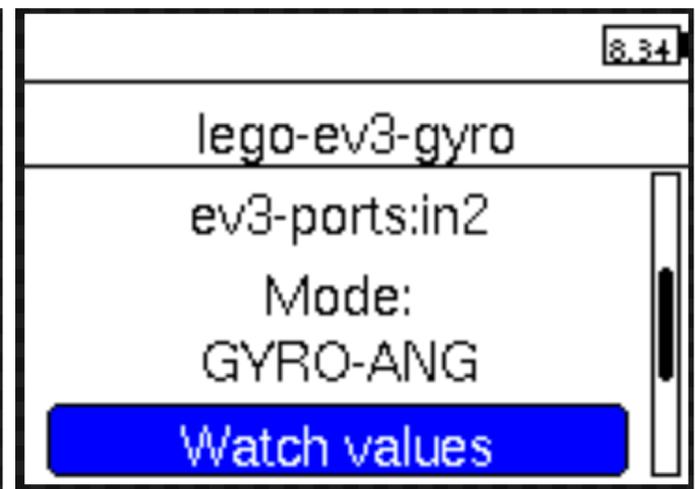
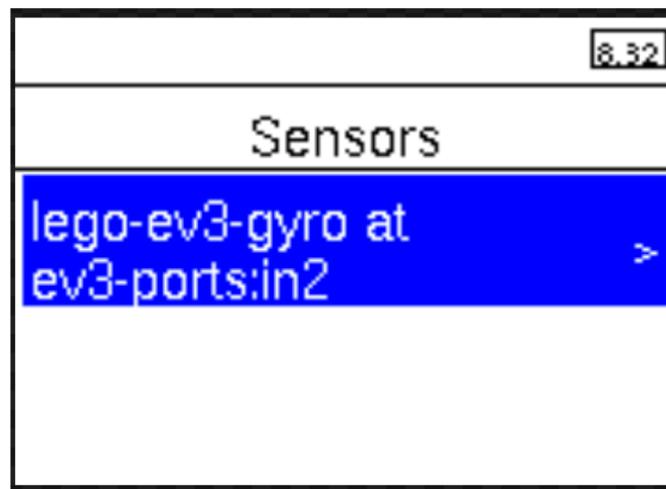
Information about sensors and motors can be found in the Device Browser

From the menu, use the down arrow on the EV3 brick to navigate to the Device Browser.

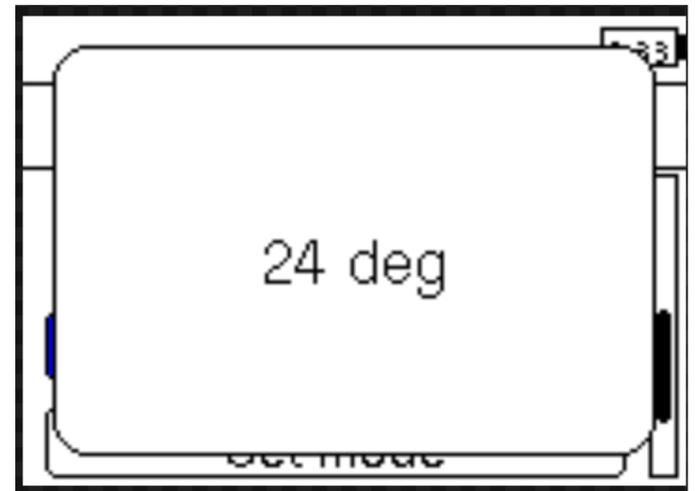
OBTAINING SENSOR VALUES



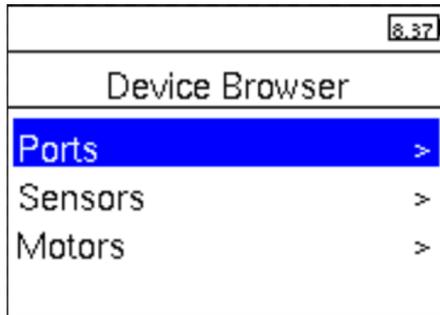
Example: Gyro sensor in port 2



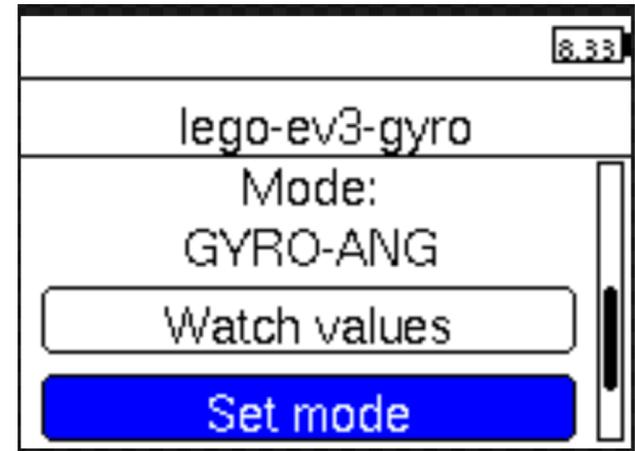
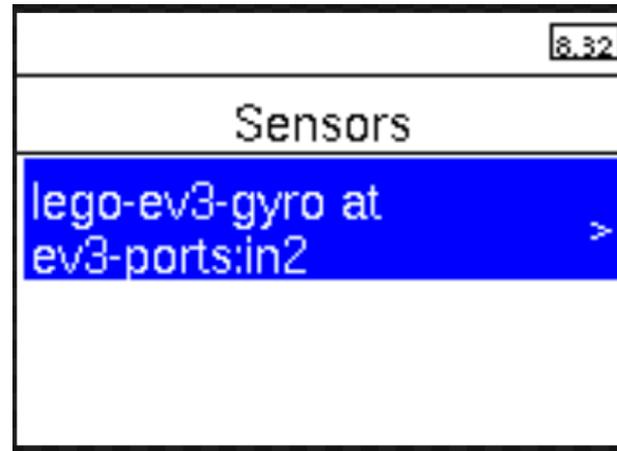
- **Inside Device Browser, use the down button the EV3 brick to get to Sensors**
- **Pick the sensor you want**
- **Go down using the down button to Watch Values**
- **Select Watch Values using the middle button on the EV3 brick**



SETTING SENSOR MODES

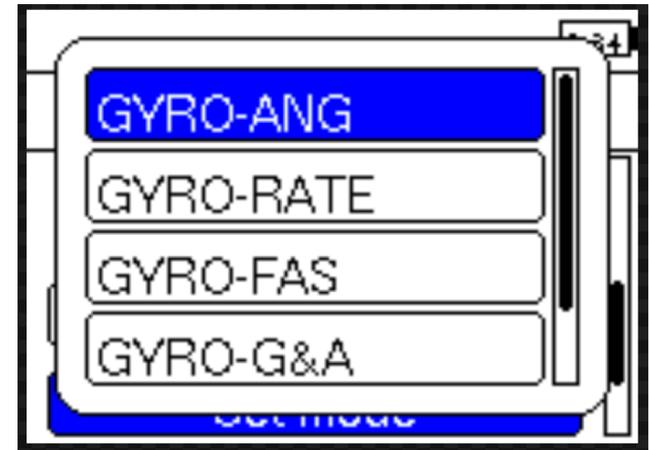


Example: Gyro sensor in port 2

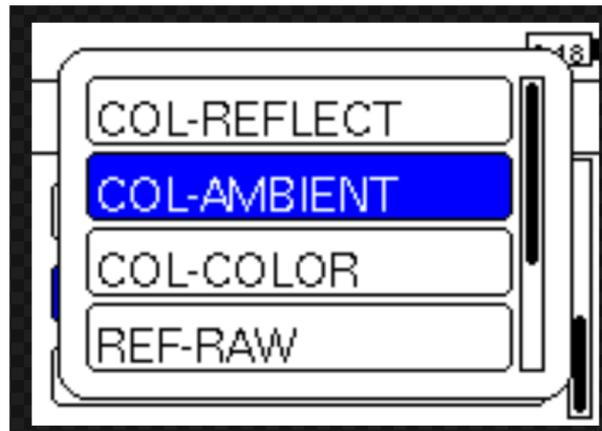
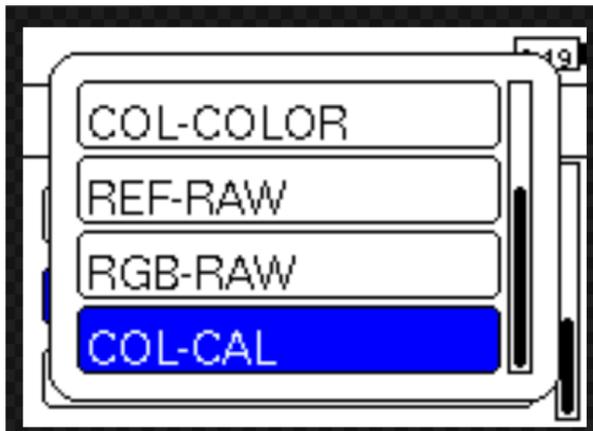
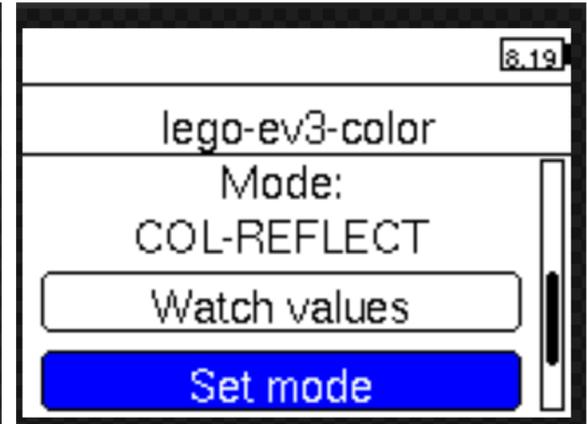
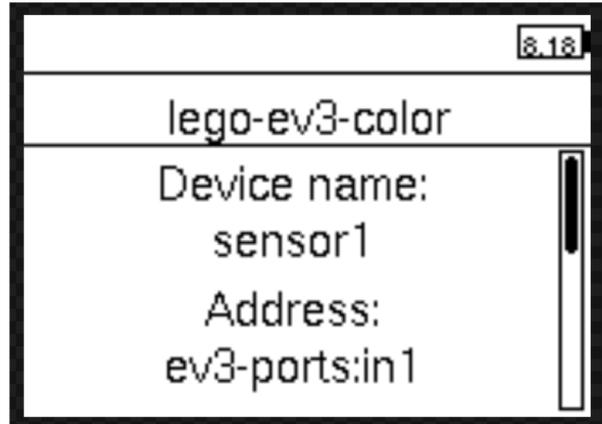
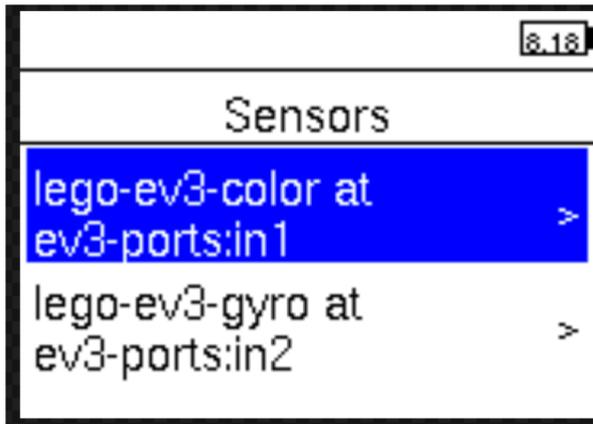


- **Scroll down to Sensors in Device Browser using the down button on the brick**
- **Pick the sensor you want and scroll down to Set Mode**
- **Change the modes of the sensor**

- You can access more modes on the Gyro Sensor in Python than you can using EV3-G
- See http://docs.ev3dev.org/projects/lego-linux-drivers/en/ev3dev-stretch/sensor_data.html#lego-ev3-gyro

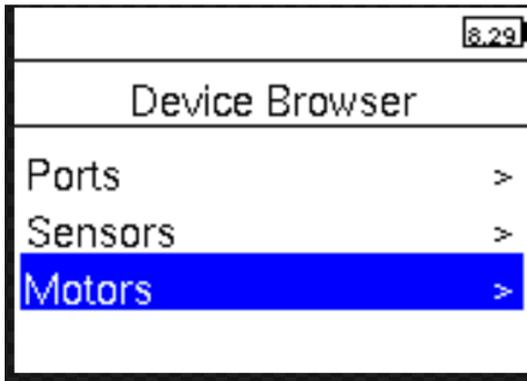


ANOTHER EXAMPLE: COLOR SENSOR IN PORT 1

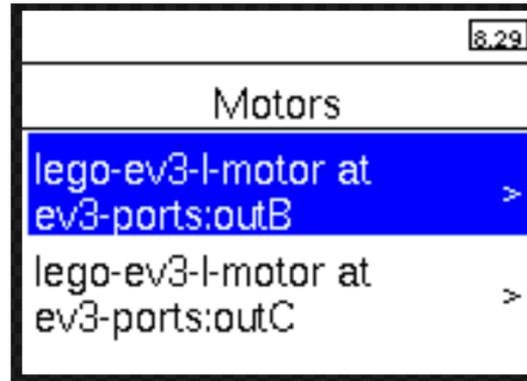


- You can access more modes on the Color Sensor in Python than you can using EV3-G
- See http://docs.ev3dev.org/projects/lego-linux-drivers/en/ev3dev-stretch/sensor_data.html#lego-ev3-color

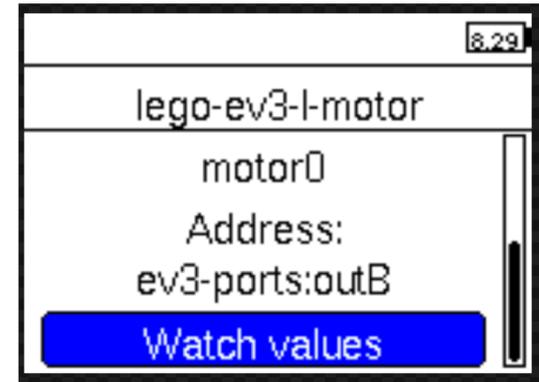
OBTAINING MOTOR VALUES



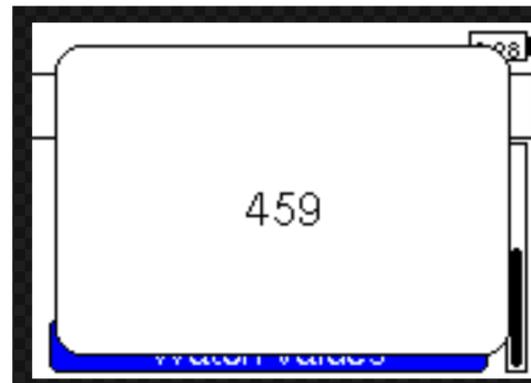
Device Browser →
Motors



Select Motor
e.g. Motor B



Select Watch Values



Rotate a motor and
watch the values
change

DEVICE BROWSER CAN BE POWERFUL

As you go through the rest of the lessons on EV3Tutorials.com, you might need to use this feature on the EV3 brick

As you complete each challenge, think about data from Device Browser might be helpful

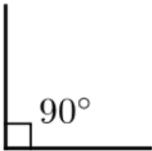
The next page has many several examples to think about.

OTHER PROBLEMS YOU CAN SOLVE WITH PORT VIEW



Challenge 1: Program Easier/More Accurately

I want to go from a starting point up to a LEGO model. I keep having to guess and check. How can I figure out how far away the LEGO model is?



Challenge 2: Program Easier/More Accurately

I want my robot to turn 90 degrees. But 90 degrees in the real world is not 90 degrees in the steering block. So, how much does my robot have to turn to make a 90 degree turn?

Challenge 3: Debug Code

The robot does not follow the green line like I programmed it to do. Why not? What color does the robot think that green line is? Try placing the robot on different objects or parts of mat/picture – what colors or reflected light values does the sensor read



Challenge 4: Check Builds

I built my robot with the touch sensor a little bit inside the robot. I am not sure that the touch sensor is getting pressed enough. How can I make sure the sensor is getting pressed?



Challenge 5: Test Sensors

I told my robot to stop when the Ultrasonic sensor is 20cm away. But it seems to stop earlier. Is the sensor working correctly? How can I see what the ultrasonic sensor sees?

CREDITS

Author: Sanjay and Arvind Seshan

More lessons are available at www.ev3tutorials.com



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