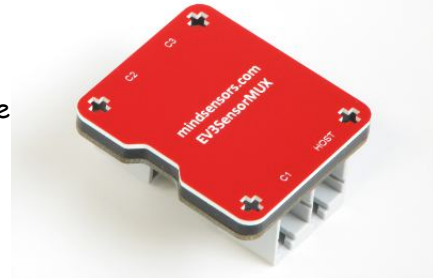


**What is EV3 Sensor Multiplexer**

EV3 Sensor Multiplexer is an in-line adapter to connect up to three EV3 sensors to NXT brick, EV3 brick, or Arduino using NXShield on a single port.



**\*\*Having difficulty getting started?**

**Check out the Getting Started Guide at <http://www.mindensors.com/docs/viewdoc/267>**

**Connections**

Connect the Host port to your NXT or EV3 (or NXShield or BrickPi).  
Connect your EV3 sensors to 1 of 3 channels.

**Supported Sensors**

Supported sensors as follows:

Sensor Name	Supported Modes	Mode Number	bytes	Expected data
EV3 Color	ReflectedLight	0	2	0(very dark) to 100(very light)
	AmbientLight	1	2	0(very dark) to 100(very light)
	Color	2	2	0 to 7
EV3 Gyro	Angle	0	2	-32768 to 32767 degrees
	Rate	1	2	-440 to 440 degrees/second
EV3 Infrared	Proximity	0	1	0(very close) to 100(far away)
	Beacon	1	8	proximity: (see above) heading: -25 to 25
	Remote	2	4	0 to 11
EV3 Ultrasonic	CM	0	2	3 to 255 cm
	Inches	1	2	1 to 99 in
	Presence	2	1	0(False) to 1(True)
EV3 Touch	State	15	1	0(not pressed) to 1(pressed)

**\*\*Chart only reflects modes supported by the Mindstorms block. Other possible modes may work with other programming environments.**

For details about data returned by each sensor or modes, please refer to EV3 IDE help pages.

## Programming Techniques for EV3 Sensor Multiplexer

### EV3:

To use capabilities of the sensor, please download EV3 blocks available at following URL:

[http://www.mindsensors.com/index.php?module=documents&JAS\\_DocumentManager\\_op=viewDocument&JAS\\_Document\\_id=235](http://www.mindsensors.com/index.php?module=documents&JAS_DocumentManager_op=viewDocument&JAS_Document_id=235)

Installation instructions for EV3 block are available at:

<http://www.mindsensors.com/pages/198>

Download EV3 sample program from following URL and modify it to suit your needs.

[http://www.mindsensors.com/index.php?module=documents&JAS\\_DocumentManager\\_op=viewDocument&JAS\\_Document\\_id=259](http://www.mindsensors.com/index.php?module=documents&JAS_DocumentManager_op=viewDocument&JAS_Document_id=259)

### NXT-G:

Not supported. It is recommended to use the new EV3 software for your NXT programming.

### NXC:

Download the sample programs and library file for the EV3 Sensor Adapter available at following location, and include the library file it in your program by #include directive. Be sure to modify the I2C address for the channel of the EV3 Sensor Multiplexer.

[http://www.mindsensors.com/index.php?module=documents&JAS\\_DocumentManager\\_op=viewDocument&JAS\\_Document\\_id=256](http://www.mindsensors.com/index.php?module=documents&JAS_DocumentManager_op=viewDocument&JAS_Document_id=256)

### RobotC:

To be implemented.

## Advanced Information

### I2C Bus address

#### Factory Default Addresses:

Channel 1: 0xA0

Channel 2: 0xA2

Channel 3: 0xA4

## I2C Registers:

The EV3 Sensor Multiplexer appears as a set of registers with following interpretation and operations.

Register	Read	Write
0x00-0x07	Software version - <i>Vx.nn</i>	-
0x08-0x0f	Vendor Id - <i>mndsnsrs</i>	-
0x10-0x17	Device ID - <i>Ev3SMux</i>	-
Sensor data		
0x52	Current selected mode.	Set sensor mode
0x54	Sensor read data	-
0x55	Sensor read data (depending on sensor and mode)	-
0x56	Sensor read data (depending on sensor and mode)	-
0x57	Sensor read data (depending on sensor and mode)	-
0x58	Sensor read data (only for infrared sensor)	-
0x59	Sensor read data (only for infrared sensor)	-
0x5A	Sensor read data (only for infrared sensor)	-
0x5B	Sensor read data (only for infrared sensor)	-
0x74	Ready Flag (returns value of 1 if the EV3 sensor is ready to send data, 0 if it is not)	