

Fast Facts.....

GETTING TO KNOW YOUR LEGO NXT



Lego NXT Features

- ◆ The NXT is the brain of a MINDSTORMS® robot. It's an intelligent, computer-controlled LEGO® brick that lets a MINDSTORMS robot come alive and perform different operations.
- ◆ **Motor ports**
The NXT has three output ports for attaching motors - Ports A, B and C
- ◆ **Sensor ports**
The NXT has four input ports for attaching sensors - Ports 1, 2, 3 and 4.

More Lego NXT Features...

- ◆ **USB port**

Connect a USB cable to the USB port and download programs from your computer to the NXT (or upload data from the robot to your computer). You can also use the wireless Bluetooth connection for uploading and downloading.

- ◆ **Loudspeaker**

Make a program with real sounds and listen to them when you run the program

- ◆ **NXT Buttons**

Orange button : On/Enter /Run

Light grey arrows: Used for moving left and right in the NXT menu

Dark grey button: Clear/Go back

- ◆ **NXT Display**

Your NXT comes with many display features - see the MINDSTORMS NXT Users Guide that comes with your NXT kit for specific information on display icons and options

Technical specifications...

- ◆ 32-bit ARM7 microcontroller (runs our code)
- ◆ 256 Kbytes FLASH, 64 Kbytes RAM
- ◆ 8-bit AVR microcontroller (controls sensors)
- ◆ 4 Kbytes FLASH, 512 Byte RAM
- ◆ Bluetooth wireless communication
- ◆ USB full speed port (12 Mb/s) (bits per second)
- ◆ 4 input ports, 6-wire cable digital platform
- ◆ 3 output ports, 6-wire cable digital platform
- ◆ 100 x 64 pixel LCD graphical display
- ◆ Loudspeaker - 8 kHz sound quality
- ◆ Power source: 6 AA batteries (How many volts is this?)

All About Sensors

The Touch Sensor gives your robot a sense of touch. The Touch Sensor detects when it is being pressed by something and when it is released again.

Suggestions for use

You can use the touch Sensor to make your robot pick up things: a robotic arm equipped with a Touch Sensor lets the robot know whether or not there is something in its arm to grab.



Port 1

All About Sensors

The Sound Sensor makes your robot hear!

The Sound Sensor detects decibels. A decibel is a measurement of sound pressure.

The Sound Sensor can measure sound pressure levels up to 90 dB – about the level of a lawnmower.

- 4-5% is like a silent living room
- 5-10% would be someone talking some distance away
- 10-30% is normal conversation close to the sensor or music played at a normal level
- 30-100% are people shouting or music being played at a high volume



Port 2

All About Sensors

The Light Sensor makes your robot see!

The Light Sensor is one of the two sensors that give your robot vision [The Ultrasonic Sensor is the other].

Reads reflection from a built-in IR emitter - (the sensor responds to visible light and into the IR spectrum) (default mode)

Or, reads light intensity from surroundings with emitter turned off

A Calibration procedure is available to accommodate variable lighting conditions



Port 3

All About Sensors

The Ultrasonic Sensor makes your robot see!

The Ultrasonic Sensor is one of the two sensors that give your robot vision [The Light Sensor is the other]. The Ultrasonic Sensor enables your robot to see and detect objects. You can also use it to make your robot avoid obstacles, sense and measure distance, and detect movement.

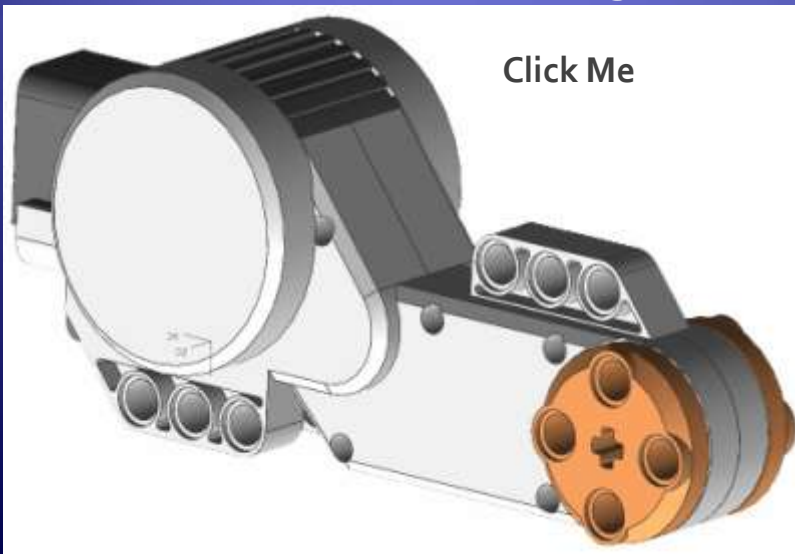
The Ultrasonic Sensor measures distance in centimeters and in inches. It is able to measure distances from 0 to 255 centimeters.



Port 4

NXT Servo Motors

- ♦ Forward is Clockwise on an NXT motor
- ♦ Note holes for Axles or other parts...
- ♦ A **Move** block in the program controls both motors
- ♦ The robot moves straight - motors will adjust speed as the robot moves
- ♦ Recommend programming tests for straight and curved movements, single and multiple Move blocks



Right Wheel Motor : Port B

Left Wheel Motor : Port C

Third Motor: Port A

