



NXT Buttons

Button: Enter button

Action: Pressed
 Released
 Bumped

- Enter button
- Left button
- Right button

NXT Buttons Block

This block outputs a "true" signal through a data wire when one of the NXT buttons is activated. Select the button and the action that will send the "true" signal.

[More help >](#)



Calibrate

Port: 1 2 3 4

Sensor: Light Sensor Sound Sensor

Action: Calibrate Delete

- Calibrate
- Delete
- Light Sensor
- Sound Sensor

Calibration Block

Use this block to calibrate the minimum (0%) and maximum (100%) values detected by a sound or light sensor.

[More help >](#)



Compare

Operation: Less than Greater than Equal to

A: B:

Compare Block

This block can determine if a number is greater than (>), less than (<), or equal to (=) another number. The input numbers can be typed in or supplied dynamically by data wires.

[More help >](#)



Display

Action: Image Text Drawing Reset

Position: X: Y:

File:

- Image
- Text
- Drawing
- Reset

Display Block

Use this block to display an image, write some text, or draw a shape on the NXT's display screen. Choose "Clear" to start with a fresh screen.

[More help >](#)



File Access

Action: Read Write Close Delete

Type: Text Number

Name:

- Read
- Write
- Close
- Delete
- Text
- Number

File Access Block

With this block you can save data from your robot in files on your NXT. After writing data to a file, you must use another File Access block to close the file before you can read or delete the file (using a third File Access block).

[More help >](#)



Keep Alive

Keep Alive Block

This block will keep the NXT from entering sleep mode. Add this block if your program needs to wait for longer than the NXT's set "sleep time" (that is configured using your NXT's menus).

[More help >](#)



Light Sensor

Port: 1 2 3 4

Compare: Light Generate light

Light:

Light Sensor Block

This sensor detects ambient (surrounding) light. Through data wires it can send a logic signal (true or false) or the current light reading. Turning on "Generated Light" will allow the sensor to detect its own reflected light.

[More help >](#)



Loop

Control: Forever Sensor Time Count Logic

Show: Counter

- Forever
- Sensor
- Time
- Count
- Logic

Loop Block

Use this block to repeat sequences of code. Set the condition that will end the loop: elapsed time, the number of repetitions, a logic signal or a sensor. You can also set a loop to go on forever.

[More help >](#)



Math

Operation:

A B

Addition
 Subtraction
 Multiplication
 Division

Math Block

This block performs simple arithmetic operations like addition, subtraction, multiplication, and division. The input numbers can be typed in or supplied dynamically by data wires.

[More help >](#)



Motor

Port: A B C

Control: Motor Power

Direction: ↑ ↓ ↻

Duration:

Action: Wait: Wait for Completion

Power: Next Action: Brake Coast

Unlimited
 Degrees
 Rotations
 Seconds

Motor Block

This block allows for precise control of one motor's speed. You can "ramp up" to a set speed or "ramp down" to a stop. By de-selecting "Wait for Completion," your program can move on to the next block once the Motor block has started a motor.

[More help >](#)



Move

Port: A B C

Power:

Direction: ↑ ↓ ↻

Duration:

Steering: C B A

Next Action: Brake Coast

Move Block

Use this block to set your robot to go forwards or backwards in a straight line or to turn by following a curve. Define how far your robot will go by using the Duration property.

[More help >](#)



Number to Text

Number:

Number To Text Block

This block will take a number (like a reading from a sensor) and turn it into text that can be displayed on the NXT's screen. The input number can be typed in or supplied dynamically by a data wire.

[More help >](#)



Random

Range: Minimum Maximum

Random Block

This block will output a random number through a data wire. You can use this number to generate unpredictable behavior in your robot. The minimum and maximum limits for the number can be typed in or supplied dynamically by data wires.

[More help >](#)



Range

Operation:

A B

Test value:

Range Block

This block can determine if a number is either inside or outside of a range of numbers. The input values can be typed in, set using the sliders, or supplied dynamically by data wires. The output logic (true/false) signal will be sent by a data wire.

[More help >](#)



Receive Message

Message:

Compare to:

Mailbox:

Text
 Number
 Logic

Receive Message Block

To receive a wireless message, set the message type and mailbox number to match those of the sending NXT. This block's output can be the incoming message itself or a "true/false" logic value (if you are comparing the incoming message to a test message).

[More help >](#)



Record/Play

Action: Record Play

Name:

Recording: A B C

Time:

Record/Play Block

To record an action, choose a name and the length of time you want to record. Then download the block. Run your program and act out the motion you want to record. Change the block to "play" to run the recorded motion (making sure that the name is the same as when you recorded).

[More help >](#)



Reset Motor

Port: A B C

Reset Motor Block

This advanced feature turns off the automatic error correction mechanism that precisely controls how far each servo motor turns.

[More help >](#)



Rotation Sensor

Port: A B C

Action: Read Reset

Compare: > < =

0

Reset

360 Degrees

✓ Degrees Rotations

Rotation Sensor Block

This block counts the number of degrees (one full rotation is 360 degrees) or full rotations that your motor turns. It will send a logic signal (true or false) or the current value through a data wire. The reset button clears any value in the feedback box as well as in the NXT.

[More help >](#)



Send Message

Connection: 0 1 2 3

Message: Text

Mailbox: 1

Send Message Block

To send a wireless message, first use the NXT's buttons to choose a different connection number for each NXT. Then select the connection number for the target NXT, input your message and data type, and choose a mailbox number where the message will be deposited.

[More help >](#)



Sound Sensor

Port: 1 2 3 4

Compare: > < =

Sound: 50

0

Need help?

Move the cursor over an object to read about its function. For additional help, click the "More help" link.

[More help >](#)



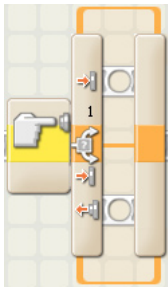
Stop

STOP

Stop Block

This block will stop your program and any running motors, lamps or sounds. Stopped motors will start to coast.

[More help >](#)



Switch

Control: Sensor

Port: 1 2 3 4

Sensor: Touch Sensor

Action: Pressed Released Bumped

Display: Flat view

0

✓ Sensor Value

- Light Sensor
- NXT Buttons
- Receive Message
- Rotation Sensor
- Sound Sensor
- Timer
- ✓ Touch Sensor
- Ultrasonic Sensor

Switch Block

Use this block to choose between two sequences of code. For example, when configured with a touch sensor, the switch block might run one series of blocks when the sensor is pressed and another when it is not.

[More help >](#)



Text

Text: A B C

Text Block

This block can add small pieces of text together to create longer pieces of text (like sentences). The input text can be typed in or supplied dynamically by data wires. The output text is sent out by a data wire.

[More help >](#)



Timer

Timer: 1

Action: Read Reset

Compare: > 5

Timer Block

When your program starts, the three built-in timers in the NXT will automatically start counting. With this block you can choose to either read a timer's current value or cause a timer to start counting again from zero.

[More help >](#)



Touch Sensor

Port: 1 2 3 4

Action: Pressed Released Bumped

Reset

Touch Sensor Block

This block sends a logic signal (true or false) through a data wire indicating the current condition of a touch sensor. Use the radio buttons to decide which action will produce the "true" signal.

[More help >](#)



Variable

List:

Name	Type
Logic 1	Logic
Number 1	Number
Text 1	Text

Action: Read Write

Value: True False

Variable Block

Create and name a variable by using the Define Variable command in the Edit menu. Then drag a Variable block into your program and, after selecting its name from the list, choose to either read or write to the variable.

[More help >](#)



Wait

Control: Sensor

Port: 1 2 3 4

Sensor: Touch Sensor

Action: Pressed Released Bumped

0

Wait Block

This block lets your robot sense its environment for a certain condition before it continues. Use the slider or type in a number to set a trigger point so that the program continues when sensor values are below or above it.

[More help >](#)

- Light Sensor
 - NXT Buttons
 - Receive Message
 - Rotation Sensor
 - Sound Sensor
 - Timer
 - Touch Sensor
 - Ultrasonic Sensor
- Sensor Time



Ultrasonic Sensor

Port: 1 2 3 4

Compare:

Distance:

Show:

0

Ultrasonic Sensor Block

This block has a range of about 250 cm (or 100 inches). By specifying a trigger point less than that (by using the slider or by typing in a number), you can have your robot react if something gets too close to it. Output is sent by a data wire.

[More help >](#)