

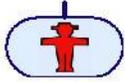


ROBO Pro Quick Guide



Start

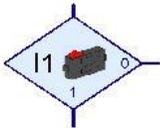
Use this to begin all programs.



End

Use this if you want the program to stop running. If you want the program to loop continuously; do not use this programming element.

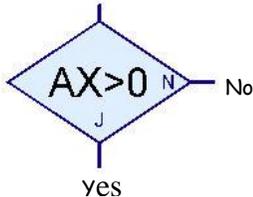
Digital Branch



Use this with pushbutton switches, phototransistors, and reed switches.

- If the switch (or other sensor) is CLOSED (=1), the program flows to the 1 exit.
- If the switch (or other sensor) is OPEN (=0), the program flows to the 0 exit.
- Connect switch (or other sensor) to the digital **inputs I1-I8** on the interface.
- See more about wiring switches later in this guide.

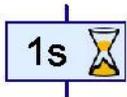
Analog Branch



Use this with thermal sensors and photo sensors.

- You set the value (temperature or amount of light). With a thermal sensor, for example, the program will flow to the YES branch when the set temperature is reached. Until that temperature is reached, the program will flow to the NO branch. You can also set the temperature for > (greater than), < (less than), etc.
- Connect sensor to the **AX input** on the interface.

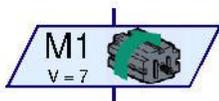
Time Delay



Use this to delay or pause the running of the program at any point.

- Delays can be in seconds, minutes, or hours. For delays of less than 1 second you can use decimals (.5 = 1/2 second).
- Use delays to pause before moving to the next part of the program.
- Use delays to prolong an action such as the running time of a motor or light.

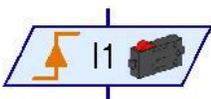
Motor Output



Use this to program motors, lamps, electromagnets, buzzers, etc.

- The speed of a motor, brightness of a lamp, strength of an electromagnet, or volume of a buzzer can be adjusted using a value of 1 - 8.
- Motors can be run clockwise, counterclockwise, or turned on or off.
- Lamps, electromagnets, and buzzers can be turned on or off.
- Use **inputs M1 - M4** on the interface.

Wait for Input



Use with pushbutton switches, phototransistor, or reed switches.

- The program will wait for something to happen before continuing on.
- Often used when more than one switch is operating some part of the robot.
- Example: if the input is connected to a switch, it can be set to wait until something (or someone) presses the switch.

1 waits for the switch to be *closed*

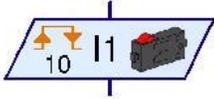
0 waits for the switch to be *open*

0>1 waits for the switch to change from *open to closed*

1>0 waits for the switch to change from *closed to open*

0>1 or 1>0 waits for *any change* in the switch

Pulse Counter



Use like the "Wait for Input" element above when you want the program to wait until a pushbutton switch, phototransistor, or reed switch has been activated *a certain number of times*. The "0>1" and the "1>0" settings will be used for this.

Also, use this element when your robot must move to a precise location (a simple time delay will not work for this).

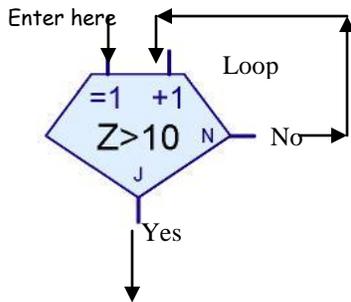
- The value (number of pulses) that you select will determine how far a gear will move. Use trial and error will determine the value.
- The "0>1 or 1>0" setting will be used for this.
- Use the digital **inputs I1 - I8** on the computer interface.

Setting Summary:

- 0 > 1 This will count the number of times a switch has changed from open to closed.
- 1 > 0 This will count the number of times a switch has changed from closed to open.
- 0 > 1 or 1 > 0 This will count the number of pulses in a gear to move a part of the robot a specific distance.

Counter Loop

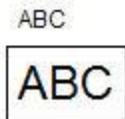
Use this to have a part of a program executed a specific number of times before moving on to the next part.



- the program will flow to the N (no) branch until the set number of loop counts has been reached (how many times the program has flowed through the counter). Once the set number of counts has been reached, the program will then flow through the "Y" (yes) branch.
- Hint: enter the loop counter at the "=1" branch and connect the loop from the "N" (no) branch and back to the counter at the "+1" branch.

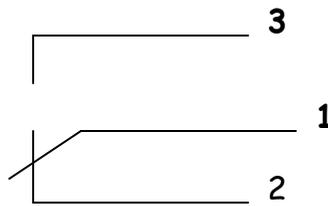
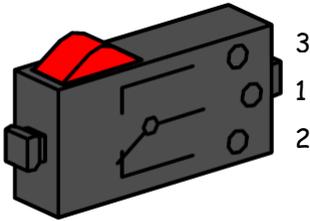
Drawing Functions

Use this function to place text in your program. At more advanced levels, many other things can be drawn into the program.



Pushbutton Switches

Pushbutton switches or "touch sensors" will function in two different ways depending upon how they are wired.



As a "closer" - Contacts 1 and 3 are connected with wires to the interface.

When the button is pressed, electricity flows.

When the button is not pressed, no electricity flows.

As a "opener" - Contacts 1 and 2 are connected with wires to the interface.

When the button is pressed, no electricity flows.

When the button is not pressed, electricity flows.

Pushbutton switches can be programmed with a Digital Branch, Wait for Input, or a Pulse Counter.

Pushbutton switches are wired to the **digital inputs I1 - I8** on the interface.

Sensors

Sensors detect input from the environment that can be used to program a response.



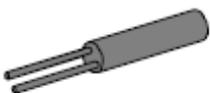
Thermal Sensor - detects changes in temperature. Using an analog branch, thermal sensors must be calibrated to respond to the specific temperature range needed. Thermal sensors are wired into the **AX terminals** of the computer interface.



Photo Sensor - detect changes in the amount of light. Using an analog branch, photo sensors must be calibrated to respond to the specific light range needed. Photo sensors are wired into the **AX terminals** of the computer interface.



Phototransistors - detect anytime a beam of light has been interrupted. Phototransistors are used with a lamp and are programmed with a digital branch. Phototransistors are wired to the **digital inputs I1 - I8** on the computer interface.



Reed Switches - detect a change in magnetic field. Reed switches will act as a switch when then come near a magnet. Reed switches are programmed with a digital branch and are wired to the **digital inputs I1 - I8** on the computer interface.