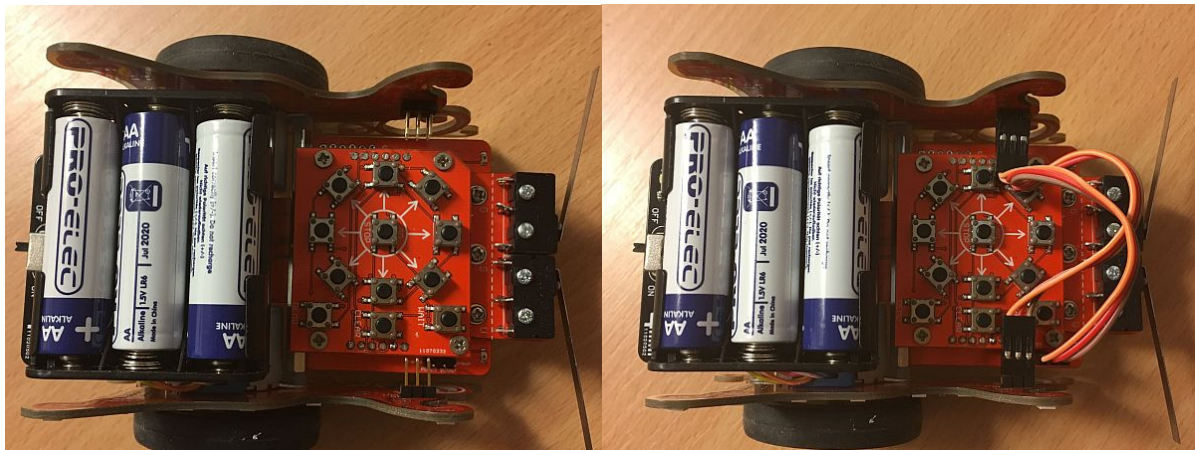


Keypad / Controller

Today you get to fit the final part, a keypad which you can use to control and program your robot. To fit it, place it over the 4 pillars you fitted yesterday and push it down into the black connectors. You will need to have removed the side cables. Screw the keypad into place using the 4 screws provided, then refit the side cables. See next page for programming instructions.



Programming Santa's Sleigh

Using these instructions, you can program Santa's Sleigh to go and fetch your presents and bring them back to you! If you have ever programmed a Bee-Bot then you'll be able to do this as well.

The Keypad has three groups of buttons:

1. Go / Stop button in the centre
2. A Ring of movement buttons
3. Three control buttons down the right side

Go/Stop Button

When you first attach the Keypad and turn the robot on, the standard demo will run (moving a square, then an octagon, etc.). Press the Go / Stop button and it will stop the demo and enter programming mode. You can tell it is in programming mode because all the LEDs will pulse in Purple.

Whatever it is doing, press the Go/Stop button and it will stop moving and enter programming mode. Press the Go/Stop button in programming mode and it will start running the selected program

Movement Buttons

When you are in programming mode (Purple pulsing) then you can add a new movement to the sequence just by pressing the movement button. Pressing Forward arrow or Backward arrow will make it move 10cm either forward or backward. Pressing any of the other arrows will make it turn on the spot (45, 90 or 135 degrees left or right).

When you press the Go/Stop button it will run the program/sequence that you have just made, then stop. If you press Go/Stop again, it will run the same program again.

After it has stopped, if you press another movement button, it will add it to the end of the previous sequence, extending the sequence as long as you want.

The program is also stored in its memory when you switch the robot off. When you switch it back on again, you can press Go/Stop and it will run the program that you last used

Wait button: There's a bug in your code – the Wait instruction inserts a 1 second pause in the movement of the robot. Unfortunately, the line of code that stores this command in the sequence is missing in your firmware, so pressing Wait has no effect. If you have the technology to program an Arduino without USB interface (using a CH340 or CP2102 USB to serial converter) then I can send the corrected code.

Command Buttons

Clear: This Clears the sequence and removes all movement commands allowing you to start a new program/sequence

Demo: This will cycle through the various Demonstration programs that are available, shining a different colour to indicate which demo is selected

- Red: The standard demo you have been using up until now (square, octagon, square, etc,)
- Green: Candlelight demo (useful if you don't want it moving!)
- Blue: Obstacle avoider. Just goes forwards until it hits something, then reverses and turns
- White: Light follower. Turns towards the side that is lightest. Shine a torch at one light sensor or the other (Front corners) to see it turn to the light.

When you press Go/Stop, it will start that Demo immediately. It will also store the demo in its memory and start it again when you switch the unit back on.

Power On Settings

It is possible to configure a couple of things by holding down one of the buttons when switching the robot on.

Go/Stop: Holding this button when switching on the robot will mute the speaker so you don't get those annoying little beeps every time it moves or stops etc! It will forget this setting when switched off.

Clear: Holding the Clear button during Power Up will set the robot back to the factory settings and start the standard (squares/octagons) demo.