Queen's University
Department of Electrical & Computer Engineering

ELEC299 Q2WD Robot Project

Robot Kit of Parts

Kit Components:

QTY	Part Description
1	DFRobot 2WD robot kit, pre-assembled, including 2 6V DC motors with integrated 10-tooth wheel encoders, and DFRobot dual-motor controller board, top plate, bottom plate, bumper plate
1	3-servo gripper assembly on 1-inch standoffs (mounted on top plate) with 3 servo cables (BLACK/RED/YELLOW)
1	DFRobot DFRduino Duemilanove USB microcontroller board "black clone" (mounted on top plate)
1	DFRobot I/O board (plugged into top of DFRduino on top plate)
4	self-adhesive mini solderless breadboards ("bimboards" -- mounted on top plate)
1	power toggle switch (mounted on top plate), and 5A fuse (mounted bottom plate), and 2-wire power cable (from bottom plate to top plate)
2	6V Ni-Mh battery packs labelled 'A' and 'B' (one velcro'd to top plate, one in charger box)
1	4.8V-10.8V smart Ni-Mh battery charger (must have on 1.0A charge setting!) – do NOT leave battery pack plugged in when charger is not powered
1	reflective infrared 3-sensor LFM Line Tracker board (mounted beneath bumper plate) with 3-wire cable (YELLOW/RED/BLACK)
2	red VEX bumper switches (mounted on bumper plate with protective fishing line) with 3-wire cables (WHITE/BLACK/RED)
1	Circular Force Sensing resistor pad (mounted on inside of gripper jaws)
1	bag of pre-fabricated hookup wires (assortment of MM, FF, MF, red/black FF power –see below)
1	bag of switches and assorted pin headers (see below)
1	bag of components (LED's, resistors, piezospeaker, IR receiver for ELEC299)
1	Arduino Duemilanove USB microcontroller board "blue original" (used separate from robot)

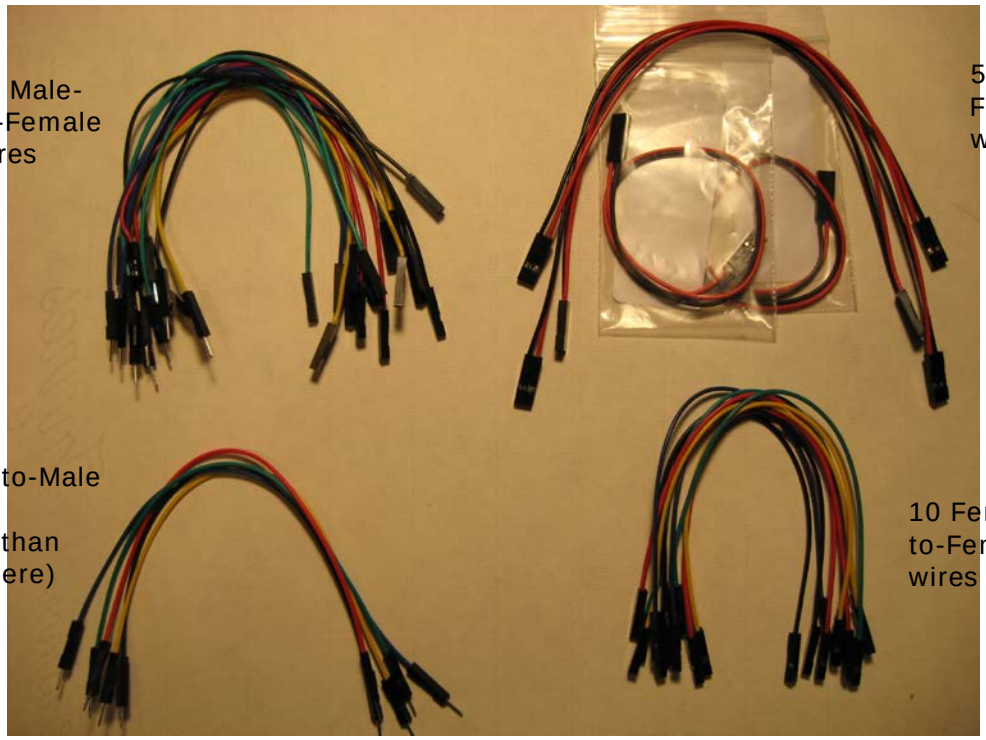
1	1-metre (3 foot) USB cable, the "short" one (Blue Arduino to PC)
1	6-foot USB cable, the "long" one (PC to Robot)
1	Global Specialities solderless breadboard ("bimboard" – for connection to Blue Arduino)
1	small Phillips-head ("star-head") #1-sized screwdriver (for tightening loose machine screws)
1	Vishay tuning wand (for tightening loose wires at blue screw-terminal blocks)

Batteries and Charger :

Two 5-cell Ni-Mh battery packs with a nominal voltage of 5 × 1.2V = 6V, and a blue smart charger Your smart charger controls charging current for maximum battery life. **One battery pack should be always on charge in the lab while the other is being used, and you must NOT leave a battery pack connected to the unpowered charger when you put your kit away (or else the pack can be damaged from over-discharging).**

Hookup Wires :

A variety with different terminations (a few are already mounted on your pre-configured Robot):

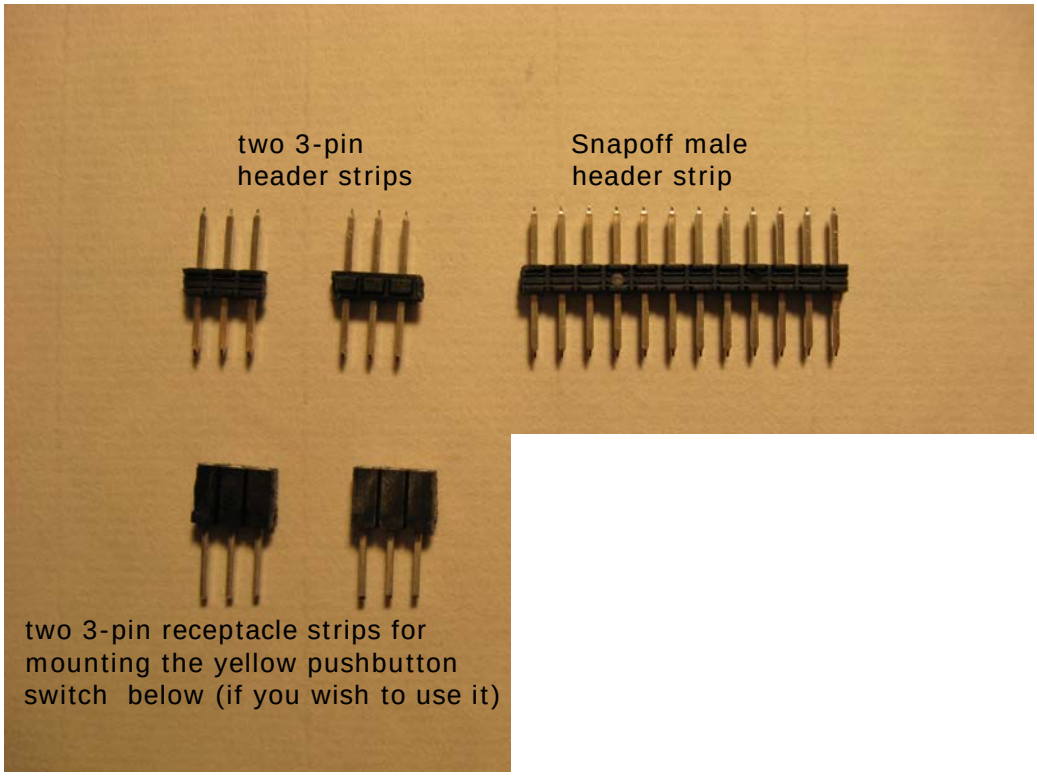


Components : (in a separate baggie)

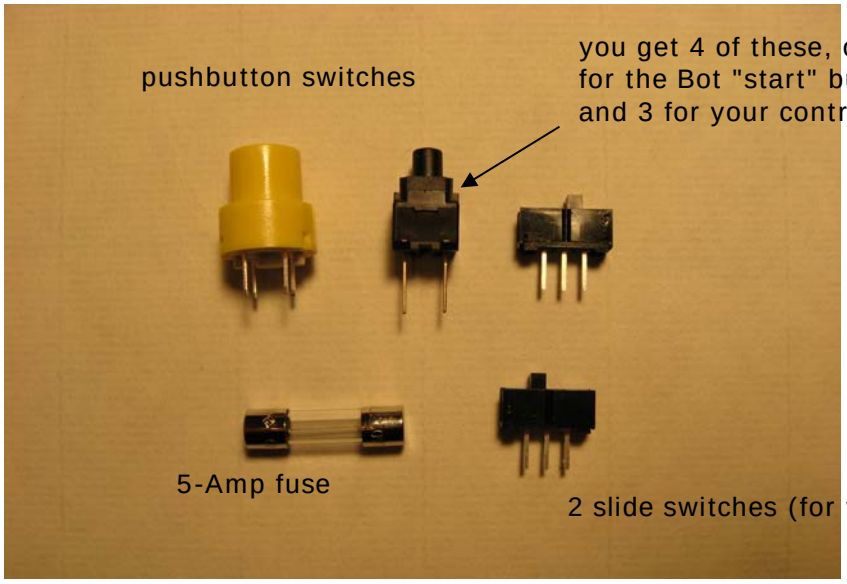
QTY	Part Description
4	small black pushbutton switches
4	red LEDs
2	green LEDs
1	yellow LED
1	piezospeaker
7	470-ohm resistors
5	10 k-ohm resistors

Bimboard Headers and Receptacles :

(not in all kits and available if necessary)



Switches and Fuse :



Mounting Hardware :

(most on assembled robot and additional ones available if necessary)

You pre-assembled Bot uses mostly #4 size machines screws and associated mounting hardware. The "#4"refers to a standardized ANSI diameter, 40 refers to the number of threads per inch. There are some metric fasteners used in your kits – M5 panhead screws. Note that these have specialized uses and will NOT fit properly into a #4-40 threaded hole.