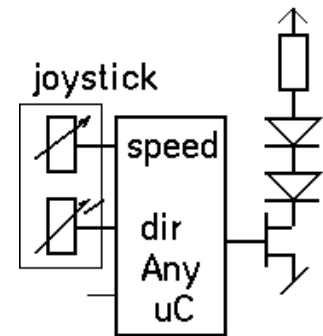




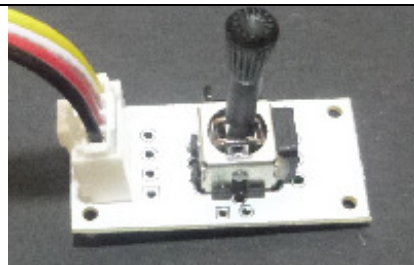
## How to control the Rollover or Turtle with Arduino

Rollover is briefly described under [www.didel.com/RolloverPub.pdf](http://www.didel.com/RolloverPub.pdf)  
 Turtle respond to the same IR protocol  
<https://hackaday.io/project/18836-miniature-turtle-bot>  
 You need a joystick connected for example on A0 and A1  
 You need two IR led in serie (better efficiency than one) and a 100 mA transistor. Limiting resistor is around 30 Ohm.  
 Both are available from Grove.

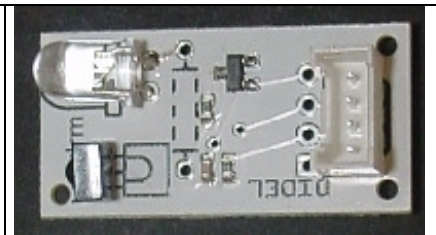
The transistor is indeed not required. Direct drive with a 330 Ohm resistor is good for 1-2 meter.



Grove and Digrove have joysticks and IR transmitters

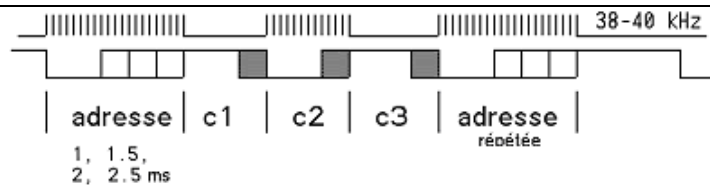


DgJoy



DgIrm

Three pulses stream at 38-40 kHz must be generated; time between the streams (silence) is also control information.



Pulse 1ms      37 pulses of 26 us initial pulse (address)

Silence 1-2 ms    37-75 nopulses of 26 us -- speed

Pulse 1-2 ms    37-75 pulses of 26 us -- turn

Silence 1ms      37 pulses, optionnal third channel

Pulse 1ms      37 pulses of 26 us, repeat initial address pulse

At power-up, the robot read the IR stream and store the initial pulse. Then it accept only data if initial and final pulses are the same +/-2 pulses. Four robots can be controlled with an address of 37, 50, 63, 76 pulses.

Pulse and no-pulse 26 us functions are the following on AVR 16MHz.

```
void Pulse (byte pp) {
  for (byte i ; i<pp ; i++) {
    digitalWrite (IrOut,IrOn);
    delayMicroseconds (10);
    digitalWrite (IrOut,!IrOn);
    delayMicroseconds (10);
  }
}
```

```
void NoPulse (byte np) {
  for (byte i ; i<np ; i++) {
    delayMicroseconds (28);
  }
}
```

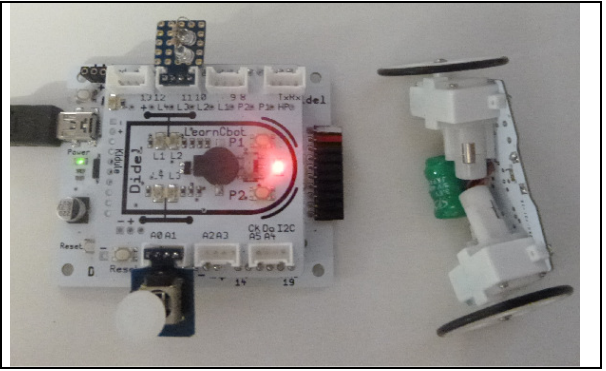
The stick values are easily converted with the map function.

Main program is:

```
int vit,tourne;
void loop()
{
  vit = analogRead (A0);
  tourne = analogRead (A1);
}
```

Test with Didel miniGrove modules on LearnCbot. Resistor of 220 Ohm, no transistor is good for 1-2 metre distance.

```
// Serial.print(vit);  
// Serial.print(" ");  
// Serial.println(tourne);  
Pulse (37);  
NoPulse (map (vit, 80, 1000, 37, 78));  
Pulse (map (tourne, 30, 1000, 37, 78));  
NoPulse (37);  
Pulse (37);  
delay (20); // between 10 and 100 ms  
}
```



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