

6 encoder A (yellow)

6 encoder B (orange)

6 encoder V+ (red)

6 encoder Ground (black)

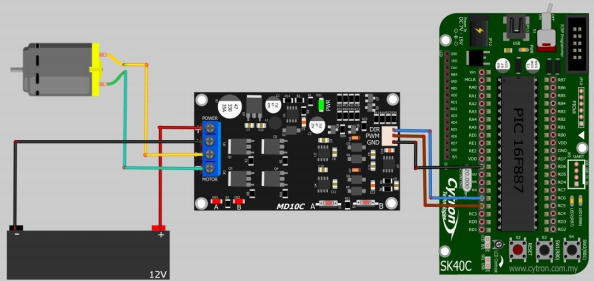
4 PWM (blue)

4 Direction (green)

2 Step (purple)

2 Enable (white)

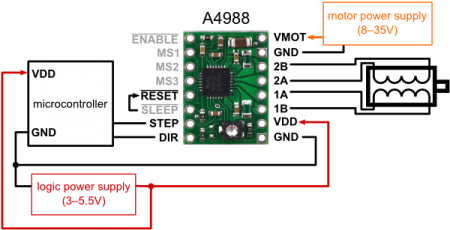
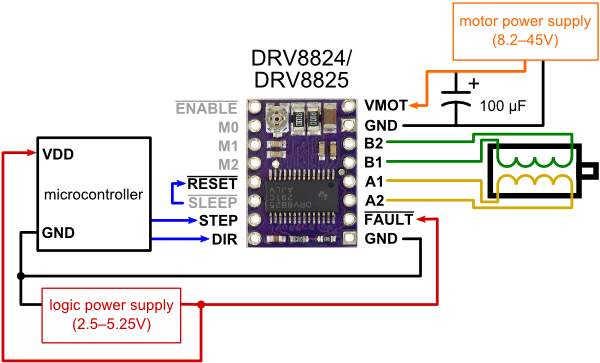
NOTE: THE COMMON GROUND IS ONLY FOR PROTOTYPING PURPOSES. THE SERVO’S POWER AND LOGIC CONNECTIONS WILL BE ISOLATED IN THE FINAL DESIGN

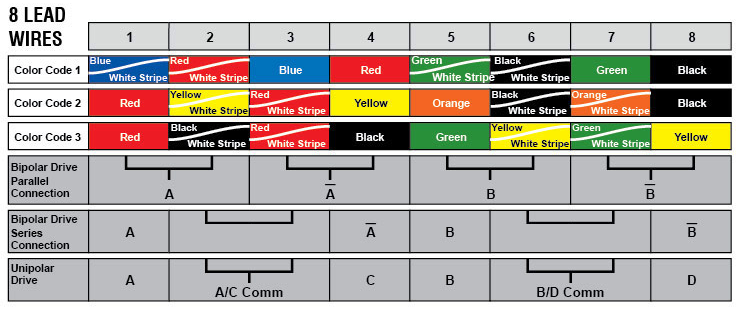


|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | VIN |  | GND |  |  |  |
|  |  |  |  | AGND |  | 0 |  | RX1 | RX\_ODROID |
|  |  |  |  | 3.3v |  | 1 |  | TX1 | TX\_ODROID |
| M3\_LIMIT\_SW\_EXTEND |  | PWM | A9 | 23 |  | 2 | PWM |  | M1\_ENABLE |
| M3\_LIMIT\_SW\_FLEX |  | PWM | A8 | 22 |  | 3 | PWM | SCL2 | RESERVED FOR I2C |
| M3\_STEP |  | PWM | A7 | 21 |  | 4 | PWM | SDA2 | RESERVED FOR I2C |
| M3\_DIR | SDA0 | PWM | A6 | 20 |  | 5 | PWM |  | M1\_DIR |
| M3\_ENCODER\_A | SCL0 |  | A5 | 19 |  | 6 | PWM |  | M1\_PWM |
| M3\_ENCODER\_B |  |  | A4 | 18 |  | 7 | PWM | RX3 | M1\_ENCODER\_A |
| M3\_ENABLE |  | PWM | A3 | 17 |  | 8 | PWM | TX3 | M1\_ENCODER\_B |
| M4\_LIMIT\_SW\_EXTEND |  | PWM | A2 | 16 |  | 9 | PWM | RX2 | M1\_LIMIT\_SW\_CW |
| M4\_LIMIT\_SW\_FLEX |  |  | A1 | 15 | TEENSY 3.6 | 10 | PWM | TX2 | M1\_LIMIT\_SW\_CCW |
| M4\_STEP |  | PWM | A0 | 14 |  | 11 |  |  | M4\_ENCODER\_A |
| HEARTBEAT |  |  |  | 13 |  | 12 |  |  | M4\_ENCODER\_B |
|  |  |  |  | GND |  | 3.3v |  |  |  |
|  |  |  | DAC1 |  |  | 24 |  |  | M4\_ENABLE |
|  |  |  | DAC0 |  |  | 25 |  |  | M4\_DIR |
|  |  |  | A20 | 39 |  | 26 |  |  | M2\_ENCODER\_A |
| M6\_ENCODER\_B | SDA1 | PWM | A19 | 38 |  | 27 |  |  | M2\_ENCODER\_B |
| M6\_ENCODER\_A | SCL1 | PWM | A18 | 37 |  | 28 |  |  | M2\_LIMIT\_SW\_FLEX |
| M6\_PWM |  | PWM | A17 | 36 |  | 29 | PWM |  | M2\_LIMIT\_SW\_EXTEND |
| M5\_PWM |  | PWM | A16 | 35 |  | 30 | PWM |  | M2\_PWM |
| M5\_ENCODER\_B | RX5 |  | A15 | 34 |  | 31 | A12 | RX4 | M2\_DIR\_PIN |
| M5\_ENCODER\_A | TX5 |  | A14 | 33 |  | 32 | A13 | TX4 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | DC Motors |  | Steppers |  | Servos |
|  | M1 |  | M3 |  | M5 |
| Encoder A | 7 | Encoder A | 19 | Encoder A | 33 |
| Encoder B | 8 | Encoder B | 18 | Encoder B | 34 |
| Direction | 5 | Enable | 17 | PWM | 35 |
| PWM | 6 | Step | 21 |  |  |
|  |  | Direction | 20 |  |  |
|  | M2 |  | M4 |  | M6 |
| Encoder A | 26 | Encoder A | 11 | Encoder A | 38 |
| Encoder B | 27 | Encoder B | 12 | Encoder B | 39 |
| Direction | 31 | Enable | 24 | PWM | 36 |
| PWM | 30 | Step | 14 |  |  |
|  |  | Direction | 25 |  |  |

NOTE: Orange and red means the encoders are unused right now. Red because it’s likely we won’t have encoders in the servos and orange because we may use the encoders in the steppers in the future.



In our case, we’re using the series connection for the stepper motor.

