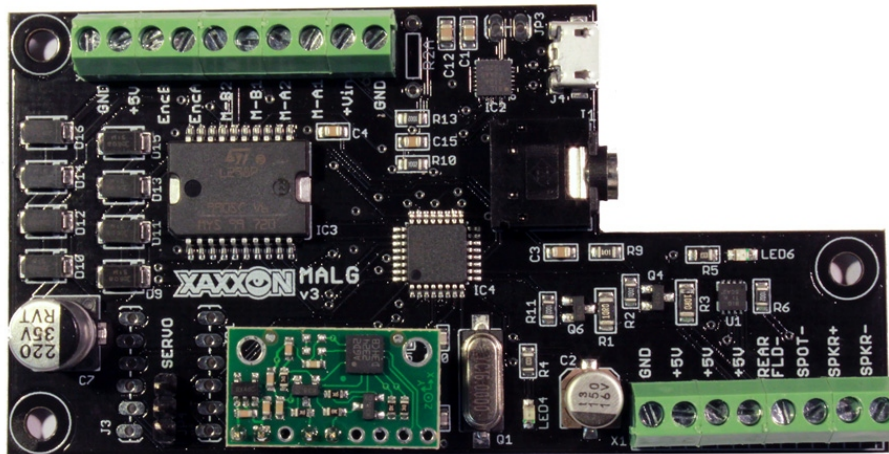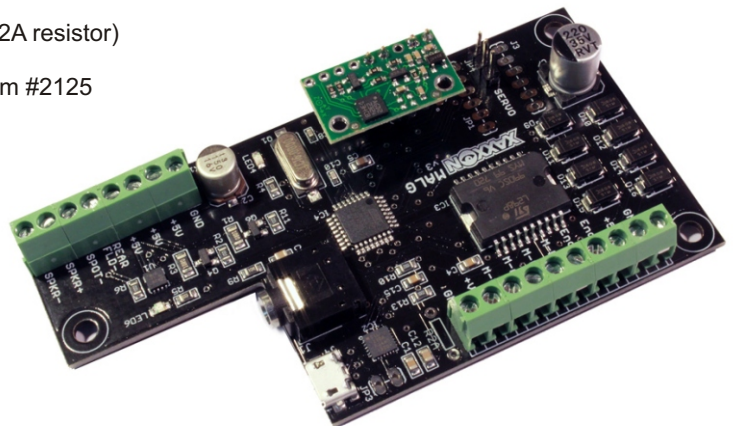# MALG PCB v3

Motors Audio Lights Gyro
Arduino Compatible Robot Microcontroller Board

Features/Specifications:

- Atmel ATMEGA 328P microcontroller, 16 Mhz
- 5V primary power via any +5V terminal, or USB (optional via JP3 jumper)
  5.5V absolute maximum
- L298 H-bridge motor controller
- Motor rotational encoder input (quadrature optional, requires R2A resistor)
- Servo header, 3 pin
- Gyro ST L3GD20 3 axis, on included daughter board Pololu item #2125
- CP2104 USB-UART bridge
- Micro-B USB female input
- Audio amplifier TPA2005 class-D mono
- 3.5mm audio input
- +/- speaker output: 8 Ohm, 1.4W max
- 2x high-intensity LED output PWM control
- Firmware can be uploaded via Arduino IDE
  as duemilanove/328P
- Overall size: 99mm x 51mm [3.9in x 2.0in]
- RoHS compliant

Power Requirements:

- 5V power required for microcontroller, other component logic, LEDs, audio, motor encoder
- Use any +5V screw terminal input (eg., obtain 5V regulated power from host PC), or USB input
- USB 5V input ships disconnected, requires JP3 jumper (not diode protected). USB 5V from host PC typically 500mV max, up to 2A auxiliary 5V external power recommended if using high power LEDs and/or audio
- Motors: separate +V power required via "+Vin" terminal. 46V max, 36W continuous, 60W peak

Gyro Daughter Board

-Typically ships with Pololu L3GD20 #2125 gyro daughter board inserted into 5-pin JP2 female header, mounted component side up
-Also accepts other Pololu gyros and 6/9 axis IMUs inserted into 4-pin J2 female header, mounted component side down

More details on following page

Schematic and example firmware code available for download at:
www.xaxxon.com/xaxxon/malgv3

Xaxxon MALG PCB (v3) - Board Connection Diagram

Motor encoder B input (ships disconnected to free up spare ATmega328 PC1 / A1 pin, place 10K resistor at **R2A** if needed)

Motor encoder A input (ATmega328 pin PC0 / A0)

Motor B

Motor A

Motor +V power input only

JP3
USB +V enable

USB Micro B Female

GND
+5V
EncB
EncA
M-B2
M-B1
M-A2
M-A1
+Vin
GND

3.5mm Audio IN

Red LED PB5/AD13

Green LED +5V Power

GND
+5V
+5V
+5V
REAR FLD-
SPOT-
SPKR+
SPKR-

LED + and/or 5V out

Speaker 8 Ohm 1.4W max

JP4
Servo Header
(from top as shown):
-PB2 / AD10 (signal)
-5V
-GND

JP2
Gyro Header--typically
occupied by Pololu
Gyro L3GD20 #2125
(from left as shown):
-5V
-GND
-not connected
-SCL
-SDA

J2
Alternate Gyro/IMU Header
(from left as shown):
-5V
-GND
-SDA
-SCL

LED GND
-LEDs 3.3V/200mA
-Spot PWM
 PD6 / AD6 pin
-Rear Fld PWM
 PD5/AD5 pin

J3
Atmel 328 spare, I2C
(from top as shown):
-PB1/AD9 (spare)
-PC1 / A1 (spare or EncB)
-PC2 / A2 (spare)
-PC3 / A3 (spare)
-PC4 / A4 / SCL (i2c)
-PC5 / A5 / SDA (i2c)

JP1
Atmel 328 ICSP pads
(from top as shown):
-5V
-PB3 / AD11
-GND
-PC6 / RESET
-PB5 / AD13
-PB4 / Ad12

3.8
67.3
50.8
43.2
Ø3.6
4.3
20.6
24.9
99.1
3.8