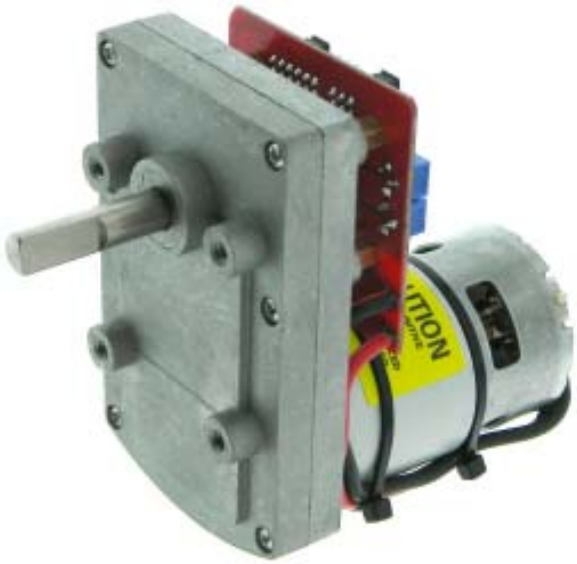
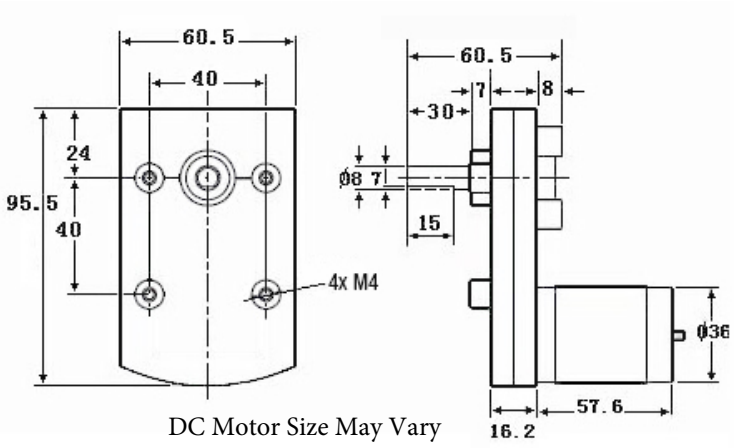
34109-MD

380kg/cm High Torque Servo Motor



Approxmate Dimns.



DC Motor Size May Vary

Heavy duty servo motor with metal case & metal gears for robotic arms and other high torque needs.
Rated :
Voltage: 12-24VDC
Current: 500mA No Load
Shaft: 8mm Dia. X 30mm (15mm "D")
Max Torque: 380kg/cm @ 24V, 190kg/cm @ 12V,
Speed: 0.5Sec/60deg @ 24V, 1.0sec/60deg @12V
Rotation: 300deg. Max Adjustable
Control Accuracy: 0.32deg.
Input: Dual Modes:

PWM: Digital from R/C servo controller or Microcontroller

Selectable: 0.5mS-2.5mS for wide range servo controllers

1mS-2mS for Microcontrollers (Arduino etc)

Analog Voltage: 0-5VDC with external variable resistor >10k

Connections:

Terminal Strip for Power
3 X 0.1”Pitch Header Pins for Analog Pot
3 X 0.1”Pitch Header Pins for PWM from Controller

4x M4-0.7 mounting Holes

H: 3-7/8” O/A **W:** 2-38” **T:** 5” O/A **WT:** 1.7

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34109-MD

GENERAL INFOMATION
Figure1
Input & Control Locations

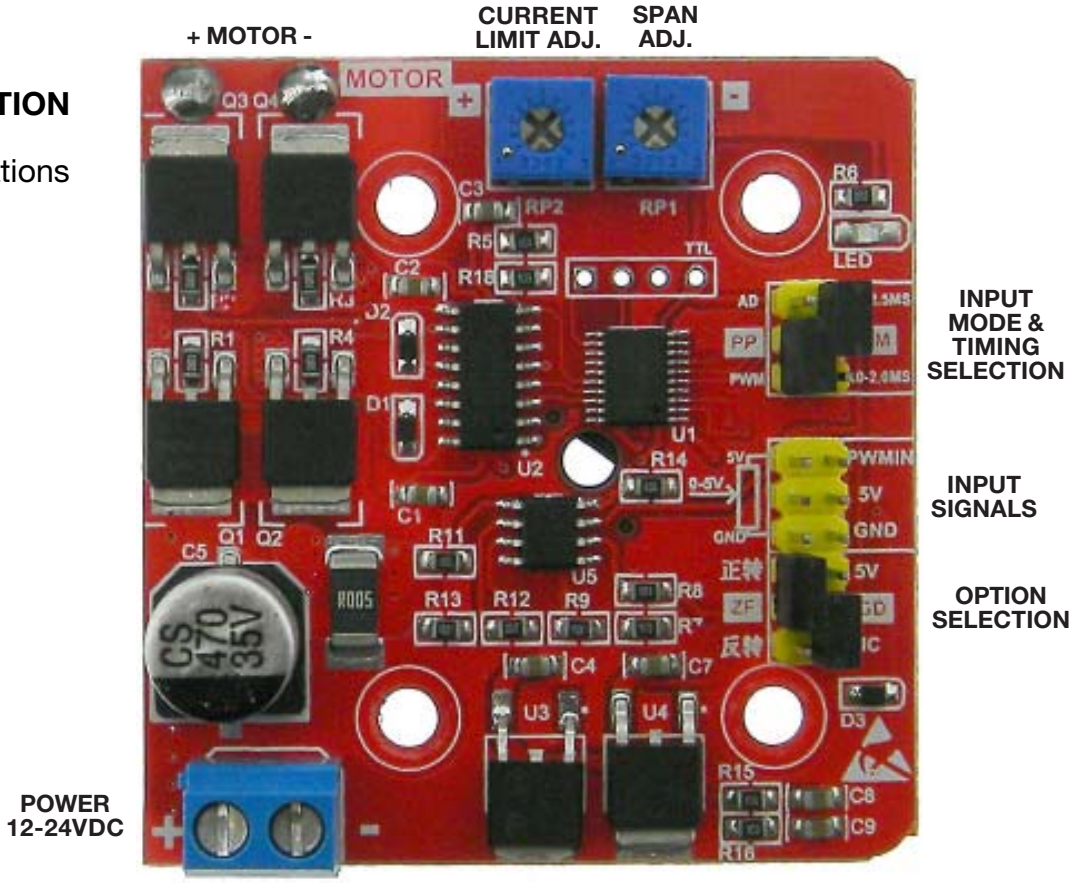


FIGURE 1

Power Connection: 12-24V DC power supply, it is recommended to use a 10A power supply.

CURRENT & SPAN ADJUST
Figure2:

FIGURE 2

1. Current Limit Adjust Control RP2: Sets the Max. output current available to motor:
   As the mechnical load increasesor a jam occures, the drive current will increase.
   To prevent damage to load or motor; Set the Current limit to shut down the motor.
   Clockwise: Increase the current limit
   Counter clockwise: Lower the current limit
2. Span Adjustment Control RP1: Clockwise: Bi-directional angle increases, Counter cvlockwise the angle decreases
   Max: 300^{O} (+-150^{O})

34109-MD

ANALOG & DIGITAL INPUT
Figure 3

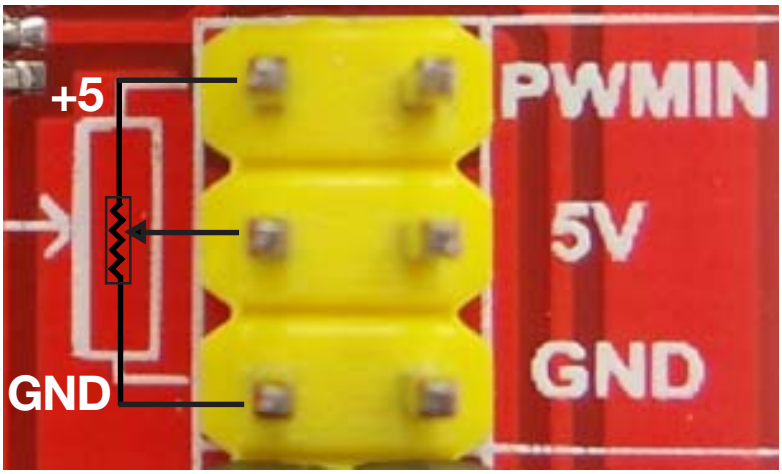


FIGURE 3

1. The three-pin header with a potentiometer symbol (on the left above) is the Analog input signal using an external potentiometer, 10KOhm or greater. NOTE the Connections)
   0 R (ohms)= 0° 1/2R= Neutral (1/2 Span) 1R (max ohms) = Full Span
2. The 3 pin header labeled "PWMIN" (on the right above) is the input from servo driver (receiver, controller)
   Period 20MS, 50HZ,
   Selectable pulse width see **Figure 4**
   1-2ms pulse range
   0.5-2.5ms pulse range
   If generating your own signal pulse train, be sure that it is within these parameters.
   As long as the signal will control a standard servo it will work.

ANALOG OR DIGITAL INPUT SELECT
PULSE WIDTH SELECT
Figure 4

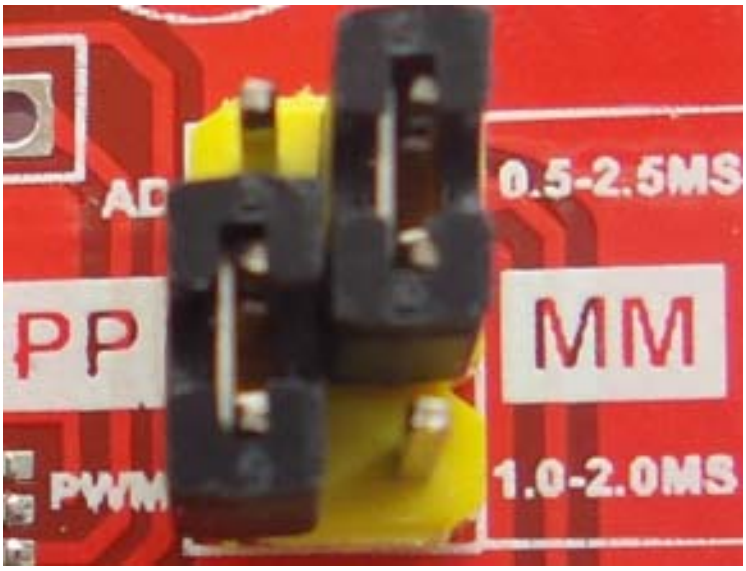
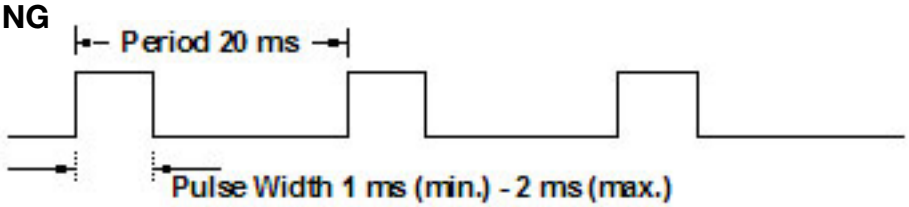


FIGURE 4

1. The three-pin header labeled "PP" (on the left above) selects either the Analog or the Digital (PWM) input for control
2. The 3 pin header labeled "MM" (on the right above) selects either:
   1-2ms PWM pulse width range
   0.5-2.5ms PWM pulse range

34109-MD

SERVO PWM TIMING



1. Servos are controlled by a pulse of variable width. The control pin is used to receive this pulse. The parameters for this pulse are: a minimum pulse width, a maximum pulse width, and a repetition rate. The neutral position is the place where the servo has the same amount of rotational range in both the clockwise and the counter clockwise direction (Span)
Note that different servos will have different constraints on their rotation but they all have a neutral position, and that position is always around 1.5 milliseconds (ms).
To hold a position; the pulse must be repeted ~ every 20ms
~1ms = 0^{O}
~1.5ms = 1/2 Span
~2.0ms= Full Rotation

REVERSING & INTERFACE POWER
Figure 5

FIGURE 5

1. The three-pin “ZF” header (on the left above) is used to switch the forward and reverse rotation of the DC Motor without having to dismount the servo or unsolder the Motor leads from the board.

2. The three-pin “GD” header (on the right above) is used to control the voltage of the “PWMIN” signal interface.
Looking at **Figure 3**, the “PWMIN” interface has three pins, one is labeled “5V”
Now looking at **Figure 5**,
When the center “GD” pin is jumpered to the “5V” pin.
This connects 5VDC power to the “5V” pin on the “PWMIN” header **(Figure 3)**
When center “GD” pin is jumpered to the “NC” pin, the “5V” pin on the “PWMIN” header **(Figure 3)** is floating.
The purpose of this design is if your Servo controller is 5V powered; such as model aircraft receiver, then you can directly use the “5V” PWMIN header signal line with the “GD” pin jumpered to “5V” pin.
If your controller supply voltage is more than 5V, you will need a separate power supply,
You then jumper the “GD” pin to the “NC” header pin to avoid damage to the Servo