



DFROBOT
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DSS-M15S 270° 15KG DF Metal Servo with Analog Feedback SKU: SER0044

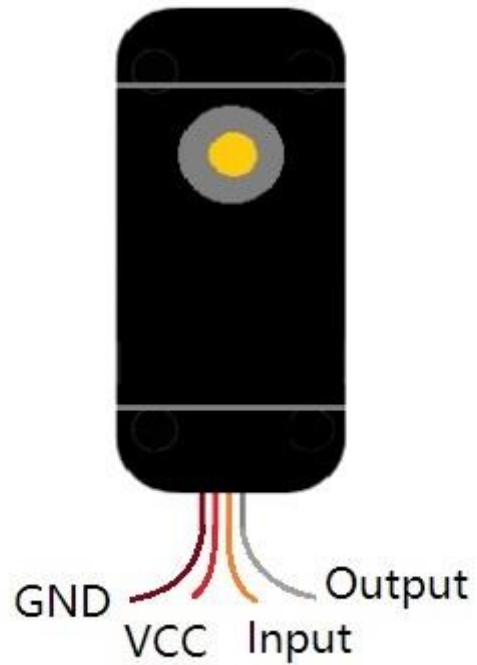
DSS-M15S servos have been well received by customers in these years. It has extremely wide angle control range, huge load capacity and excellent quality. This DSS-M15S with analog feedback has broken its internal potentiometer signal. This is an analog signal with 0~3.3V feedback. You can connect it to MCU to realize close-loop feedback control.

DSS-M15S 270° Metal servo with feedback is compatible with Arduino Servo library. You can drive it with Arduino Board and read the angle value from analog side.

Specification

- Electronic specifications
- Operating voltage: 4.8-7.2V
- 6V test environment
- Operating speed (no load): 0.18 sec/60 degrees
- Resting current: 80mA
- Locking torque: 13.5KG*cm
- Stall current: 1.8A
- Standby current: 4mA
- 7V test environment
- Operating speed (no load): 0.16sec/60 degrees
- Resting current: 100mA
- Locking torque: 15KG*cm
- Stall current: 2A
- Standby current: 5mA
- Mechanical specifications
- Gear material: metal gear
- Operating angle: 270 degrees
- Wiring gauge: 28PVC
- Data line length: 320mm
- Gear bracket spline: 25T/5.80
- Gear ratio: 310:1
- Size: 54.5*20*47.5mm
- Control specifications
- Feedback signal: 0-3.3V
- Control signal: RC PWM
- Pulse range: 500-2500 us
- Median signal value: 1500us
- Clockwise rotation: <1500us
- Control frequency: 50-330Hz (Arduion compatible)

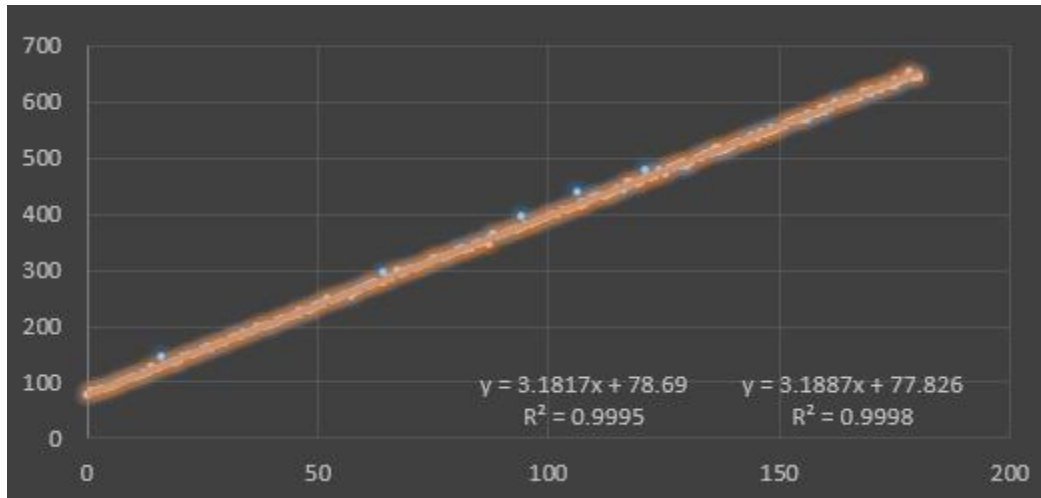
Servo Overview



DSS-M15S 270° 15KG DF Metal Servo with Analog Feedback

Num	Label	Description
1	GND	GND
2	VCC	4.8~7.2V
3	INPUT	PPM Signal
4	OUTPUT	Analog feedback

Relationship between Angle & Analog value



SER0044 Servo

Formula: **Actual angle = Analog value degree *0.47-33.4**

Before Usage

There will be some error between each servos. If you want to use the servos with scenes that require precise control, you can calibrate them separately. A quick three-point calibration method is provided here:

- 1. Drive the servo to 90 degrees (1500us), record the actual angle as reference angle A, and record the corresponding feedback analog value a;
- 2. Drive the servo to 0 degrees (500us), record the actual angle as reference angle B, and record the corresponding feedback analog value B;
- 3. Drive the servo to 270 degrees (2500c), record the actual angle as reference angle C, and record the corresponding feedback analog value C

The following formula gives the relationship between Analog value & Angle:

- Actual angle = m * Analog value + n
- $m = \frac{(A-B)/(a-b) + (C-A)/(c-a)}{2}$
- $n = \frac{(Ab-Ba)/(b-a) + (Bc-Cb)/(c-b)}{2}$

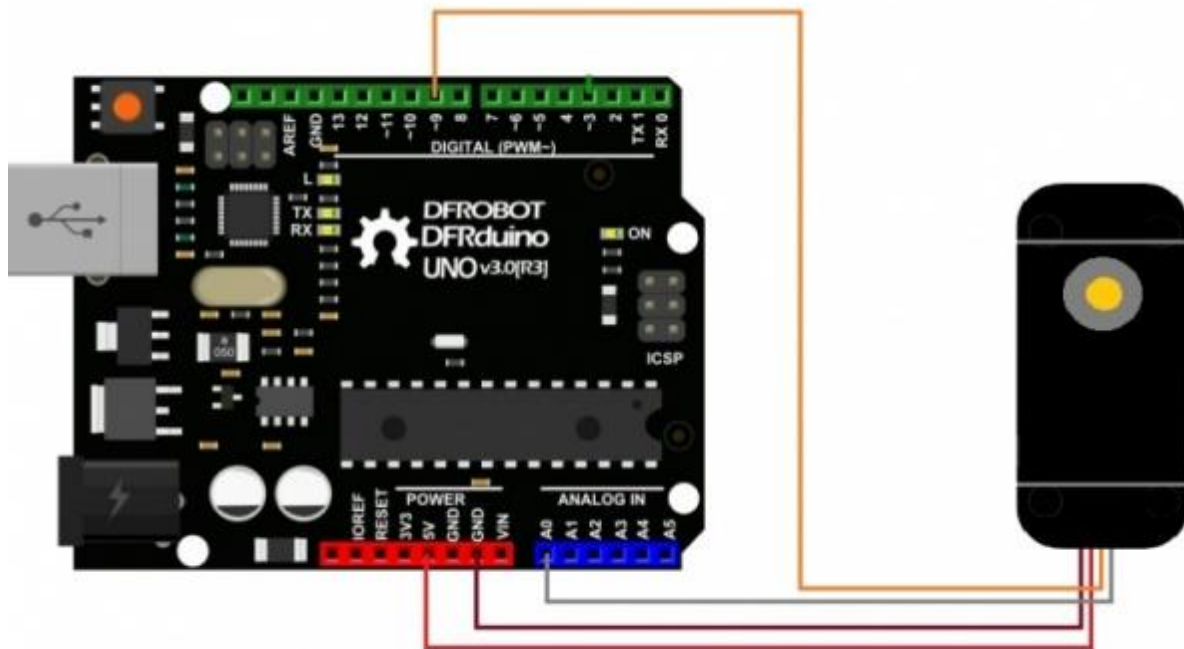
If you doesn't need such accurate value, you can use **m=0.47;n=-33.4** directly.

Tutorial

Requirements

- **Hardware**
- [DFRduino UNO R3](#) (or similar) x 1
- SER0044 DSS-M15S 270° Metal Servo
- M-M/F-M/F-F Jumper wires
- **Software**
- Arduino IDE, [Click to Download Arduino IDE from Arduino®](#)

Connection Diagram



SER0044 Arduino Connection

Sample Code

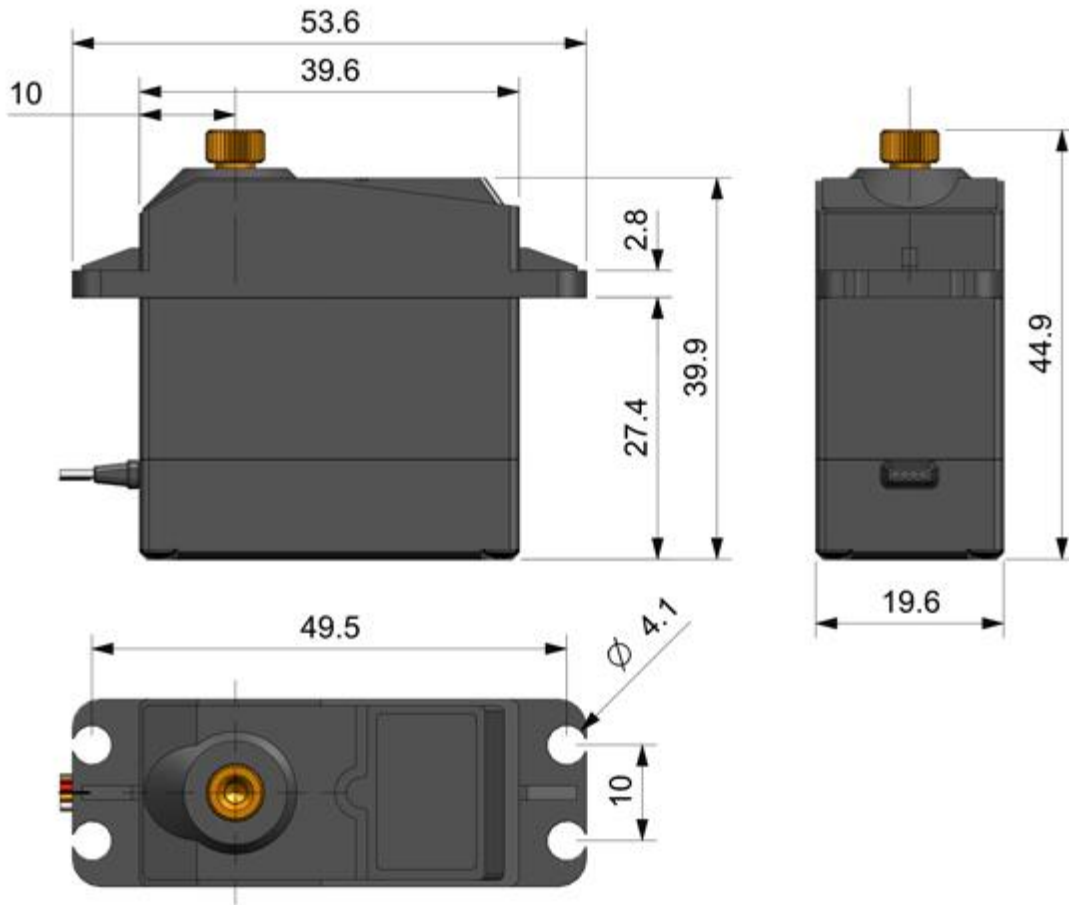
```
void setup()
{
    Serial.begin(9600);//Set Baud Rate to 9600 bps
}

void loop()
{
    uint16_t val;
    double dat;
    val=analogRead(A0);//Connect Analog pin to A0
    dat = (double) val * 0.47-33.4;
    Serial.print("Position:"); //Display the position on Serial monitor
    Serial.print(dat);
    Serial.println("Degree");
    delay(100);
}
```

Expected Results

Arduino will drive the servo with D9 pin, and receive the Analog feedback from A0 port.

Dimension



SER0044 Dimension