

uArm Metal

detailed information and specifications

uArm Metal detailed specifications

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1. uArm Metal Specification



1-1.Application Condition

No.	Item	Specification
1.1	Storage Temperature	-20°C ~ 70°C
1.2	Operate Temperature Range	0°C ~ 30°C

1-2. Standard Test Environment

No.	Item	Specification
2.1	Temperature Range	-1 0°C~ 60°C
2.2	Humidity Range	65%±1 0%

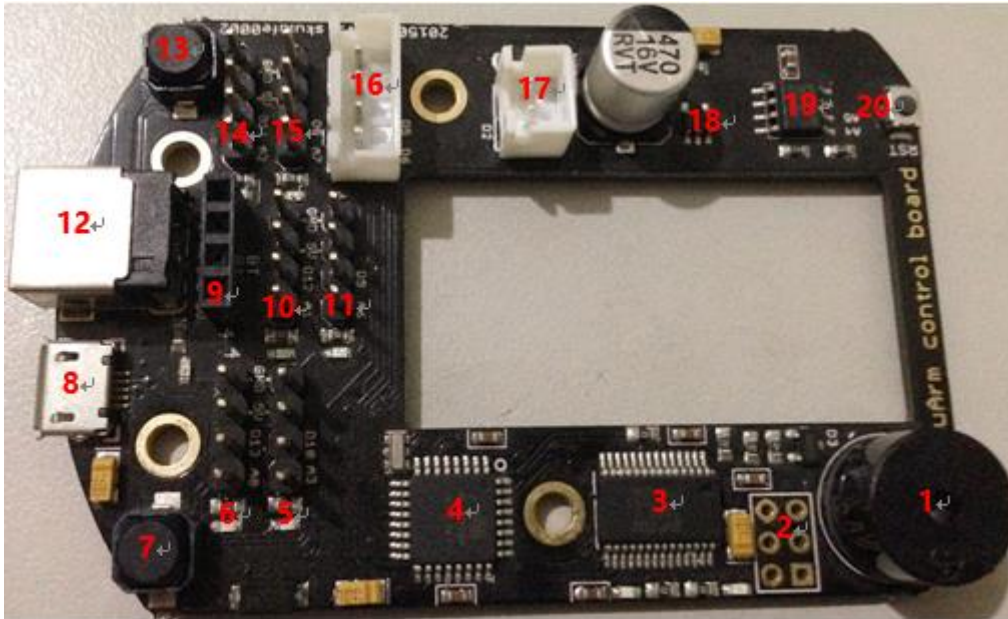
1-3. Mechanical Specification

No.	Item	Specification
3.1	Size	300*270*110mm
3.2	Weight	1.9kg
3.3	Material	Aluminum
3.4	Water Resistance	NO
3.5	Repeat ability	10mm(Maximum)
3.6	Action Radius	12CM~32CM (typical)
3.7	Max Lifting Weight	500g (with 15kg servo)
3.8	Accuracy	6~10MM (typical)
3.9	Lifetime	>100000 times

1-4. Electrical Specification

No.	Item	Specification
4.1	Operat voltage	DC5V
4.2	Idle current	200MA
4.3	working current	3.5A

2. uArm Metal Main Board

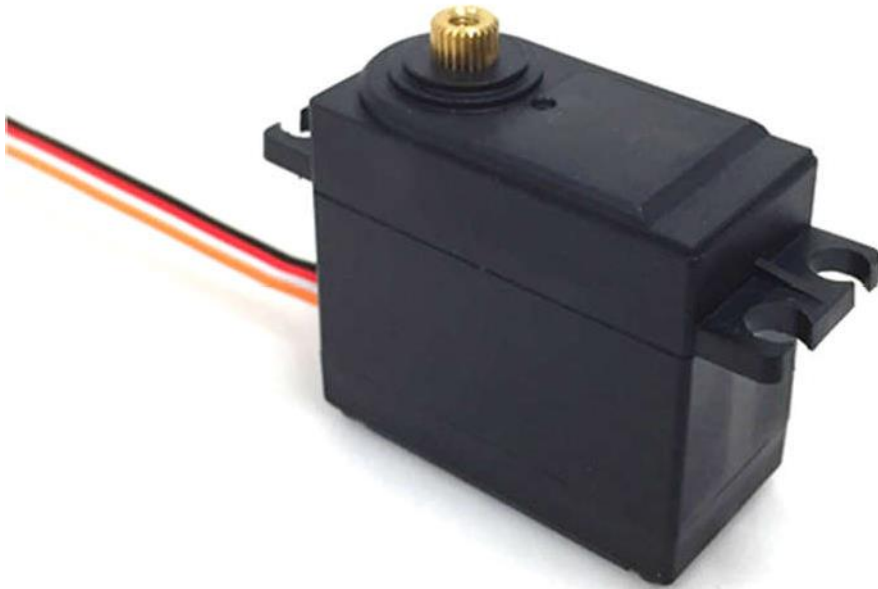


Main Board Specification

No.	Item	Description
1	buzzer	Sound reminder- to remind you the position of uArm, port D3-PD3(INT1).
2	ISP Download Access	From Upper-left to Bottom- GND->D11-PB3(MOSI)->VCC(+5V); From Upper-right to the Bottom: RESET-PC6(RESET)->D13-PB5(SCK)->D12-PB4(MISO).PS:PB/PC's COM is on ATmega168.
3	USB converts to Serial port communication- FT232RL	Online debug
4	ATmega168	-
5	Servo Operator Connector	From Top to Bottom-GND->VCC(+5V)->D10-PB2(SS)->A3-PC3(ADC3), D10 is PWM output and A3 is analog input.
6	Servo connector	From Top to Bottom- GND->VCC(+5V)->D13-PB5(SCK)->A0-PC0(ADC0) D10 is PWM output and A3 is analog input.
7	Switch D4-PD4(T0)	uArm condition exchange.

8	MINIUSB-A	Download software and in-out communication.
9	Bluetooth port	From Top to Bottom- D1-PD1(TXD)->D0-PD0(RXD)->VCC(+5V)->GND:uArm condition and specification setting and operation.
10	Servo connector	From Top to Bottom- GND->VCC(+5V)->D12-PB4(MISO)->A1-PC1(ADC1) D12 is PWM output and A1 is analog input.
11	Servo connector	From Top to Bottom- GND->VCC(+5V)->D9-PB1(OC1)->A6-(ADC6) D9 is PWM output and A6 is analog input.
12	Power	5V power adapter and input currenncy >5A
13	Switch D7-PD7(AIN1)	Change uArm condition.
14	Servo connector (left)	From Top to Bottom- GND->VCC(+5V)->D11-PB3(MOSI)->A2-PC2(ADC2).D11 is PWM output and A2 is analog input.
15	Servo connector (preserved)	From Top to Bottom- GND->VCC(+5V)->D8-PB0(ICP)->A7-(ADC7).D8 is PWM output and A7 is analog input.
16	Pump connector	From Top to Bottom- GND->VCC(+5V)->D8-PB0(ICP)->A7-(ADC7).D8 is PWM output and A7 is analog input.

3. uArm servo specification and control



1. Apply Environmental Condition

Storage Temperature Range	-20°C~70°C
Operating Temperature Range	-10°C~60°C

2. Mechanical Specification

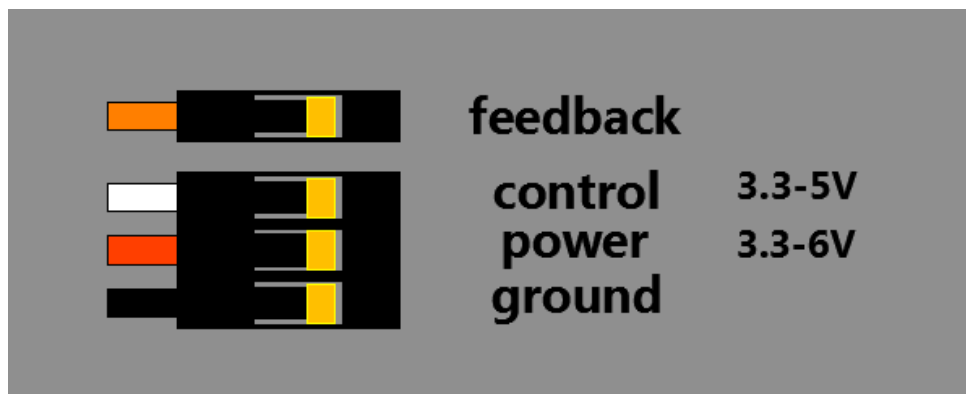
Size	40x20x38mm
Weight	56g
Gear type	metal gear
Limit angle	210°±5°
Bearing	2BB
Horn gear spline	25T
Horn type	Plastic, POM
Case	Engineering plastics(Polyamide)
Connector wire	300mm±5mm
Motor	DC motor
Splash water resistance	No

3. Electric Specification

Horn type	Plastic, POM
Case	Engineering plastics(Polyamide)
Connector wire	300mm±5mm
Motor	DC motor
Splash water resistance	No

The definition of port for uArm Metal servo

DM1500A is fully compactable with normal 3 pin port and the forth is used for the output of potentiometer as position feedback of uArm.



Voltage and angle

Angle	Value (TYP)
0°	0.364mV
90°	1.723mV
180°	3.076mV

Ps:1, because of the correspondence-difference of potentiometer inside servo, different servo might have $\pm 10\%$ difference.

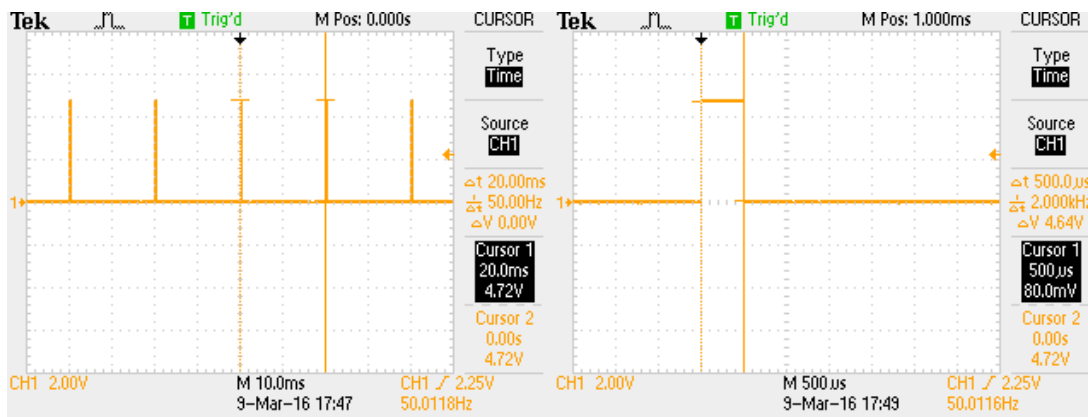
2, Different ADC will leads different sample number when output.

Control methods

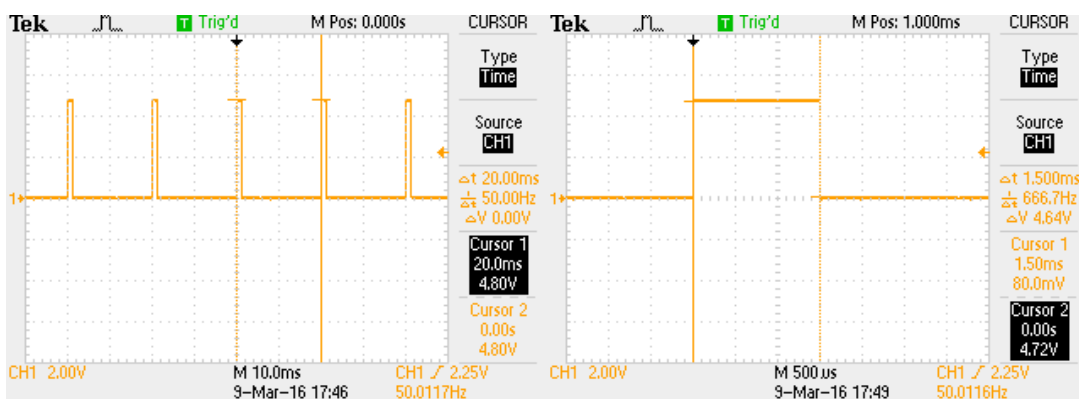
PWM and specification as following:

Command signal	Pulse width modification
Pulse frequency	50Hz
Pulse width range	500~2500usec
Neutral position	1500usec
Running degree	180°±3°(when 500~2500usec)
Dead band width	2 usec
Rotating direction	Clockwise(when 500~2500usec)

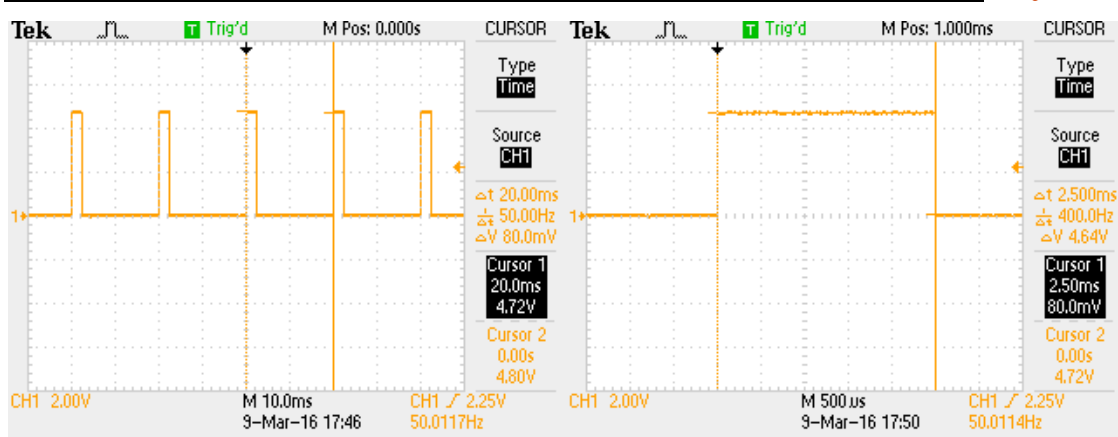
When control port is 0°, the oscillo-gram is the pic below (the pic on the right is enlarged drawing of a single wave).



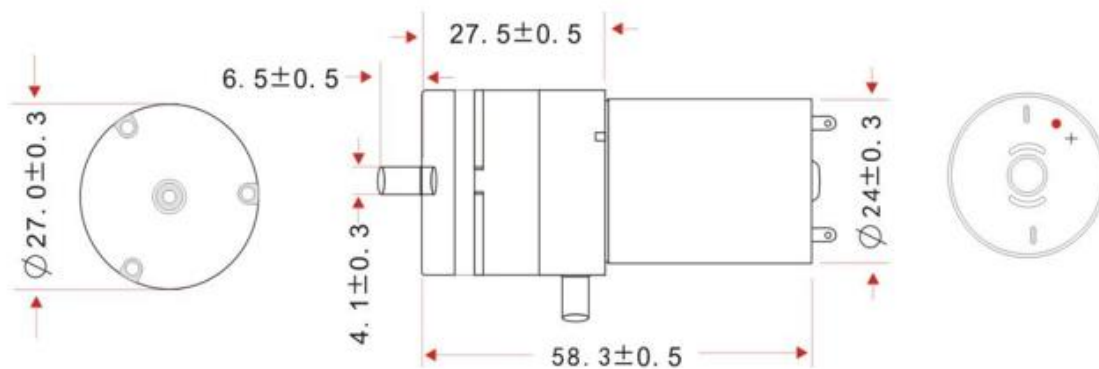
When control port is 90°, the oscillo-gram is the pic below (the pic on the right is enlarged drawing of a single wave).



When control port is 180°, the oscillo-gram is the pic below (the pic on the right is enlarged drawing of a single wave).



4. Pump speciation



voltage: DC 4-5V
current: <400mA