

Main Features

Precision

- 30~50µm Unidirectional repeatability & Position feedback.
(Varied by each stroke version. See spec chart.)
- Absolute position sensing via Potentiometer (No Calibration needed)
- Position feedback
- 32Bit Micro controller, High resolution (4096) A/D converter

Durability

- Heavy Duty Reliable coreless or cored motor
- Smart Overload protection detects jam or over 50% duty-rate (Overridable)
- Life-cycle Reference Data in our homepage (Under 50% duty cycle recommended)
- Vertical (Z axis) use is possible due to mechanical Self-lock (Certain models are not applicable, see the model specification chart)

Easiness

- Compact size for space constraints
- Hassle-free, Built-in drive circuit
- Daisy chain serial connection between servos
- Various mounting solutions
- Detachable and 90° rotatable hinge design (Patented)
- Various APIs / Libraries / Examples of programming languages (C# / C++ / Python / Java / Raspberry Pi / Arduino etc.)
- Dedicated PC Software (Parameter setting & simple motion testing) and PC USB Interface (IR-USB01) available (Optional)
- LED Error indicator & LED self-diagnosis function
- Paired with various controller types (PC / PLC / Arduino / Raspberry-Pi / RC Controller / Dedicated embedded board etc.)

Variety

- Two types of motor choices (Coreless & Cored motor)
- Various Stroke options (26 to 96mm)
- Various Rated Load options (6 to 100N at 12V and 6N/12N at 7.4V)
- Various Speed options (7.7 to 110mm/s at No load condition)
- Two types of data communication options (TTL or RS-485)
- IR Robot open protocol (Download from homepage)
- TTL(Data comm.) or PWM(Pulse signal) is automatically recognized in TTL/PWM version
- Active on custom design orders upon customer's request

Applications

- Medical device and Lab equipment
- Vending and game machines
- Robotics
- Automation (Factory / Home / Agriculture etc)
- Production and inspection jigs
- UAV (Fixed wing / Helicopter / Multicopter etc)
- DIY, Education, Hobby, etc

Model Name System

Feature	Options
M : Motor Type	D : Cored L : Coreless
V : Voltage	7 : 7.4V 12 : 12V
L : Load (Rated)	XXX N (Newton)
C : Communication type	PT : PWM & TTL F : RS-485
S : Stroke	3 : 27mm* 4 : 41mm 6 : 56mm 10 : 96mm

- * 27mm can be extended to 30mm using IR-USB01
- * Basic stroke for cored motor version is 26mm and to be extended to max. 29mm using IR-USB01

Coreless Motor Line-up

- High force, highly durable coreless motor applied
 - Stroke option : 27mm*, 41mm , 56mm, 96mm
 - Rated Load option : 12 to100N
 - 12V Motor with 7 ~ 13V input voltage range
 - RS-485 or TTL/PWM communication type options
 - Metal alloy rod
 - Engineering plastic case (27mm stroke version)
 - Aluminum stroke case & engineering plastic motor case (41mm / 56mm / 96mm)
- * 27mm stroke can be extended to 30mm using IR-USB01



Cored Motor Line-up

- Heavy duty cored motor applied
- 26mm stroke (26mm stroke can be extended to 29mm using IR-USB01)
- RS-485 or TTL/PWM communication type options
- Rated Load option : 6N and 12N
- Engineering plastic rod
- Motor Voltage options
 - 7.4V Motor with 6.5 ~ 8.9V input voltage range
 - 12V Motor with 7 ~ 13V input voltage range



Standard Accessories



Optional Accessories

Extension Wire IR-EW01~04

We offer extension wires as below for application in your facilities.

- IR-EW01 : 1,000mm length with 3pins TTL/PWM
Molex connectors (50-37-5033)
- IR-EW02 : 2,000mm length with 3pins TTL/PWM
Molex connectors (50-37-5033)
- IR-EW03 : 2,000mm length with 4pins RS-485
Molex connectors (51065-0400)
- IR-EW04 : 4,000mm length with 4pins RS-485
Molex connectors (51065-0400)



Optional Accessories

End Bearing IR-EB01

Mount mightyZAP servo on applications using this end-bearing for most optimal installation. Put it on the Rod-end(M3) and on the end of mightyZAP servo case (M2.5).

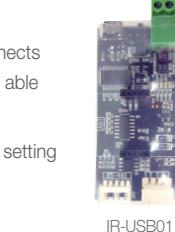
Two end bearings (M3 and M2.5) to be packed in a set.



Optional Accessories

PC USB Interface IR-USB01

The IR-USB01 is the interface board which connects mightyZAP servo with user's PC so that user is able to do various tasks shown below.



- Operation parameters and memory parameter setting
- Simple Motion Test
- System initialization and Firmware update
- Voltage, Load, Temperature, Present position monitoring

Servo Tester Shield IR-STS01

Control mightyZAP servo motions without PC software.

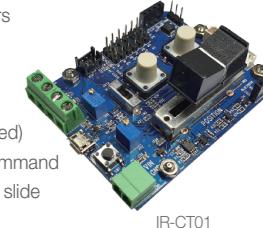


Built with Arduino Leonardo and our own servo shield, user controls servo motor using Arduino API & libraries.



EZ Controller IR-CT01

- mightyZAP controller/tester for customers who do not have their own controller
- Arduino based simple operation
- Built-in basic control program, User programmable (Arduino example provided)
- Built-in position setting dials, position command button switches and position command slide
- Controllable through external switch or voltage level signal
- 6 x I/O pins for analog/digital sensor connection
- External communication terminal for Bluetooth or Zigbee communication



MINI, BUT MIGHTY.

Position Control

Coreless Motor Line-up

Motor Voltage	Communication	Force 12N		Rated Load 20N			Rated Load 17N			Rated Load 40N			Rated Load 31N				
		27mm Stroke	27mm Stroke	41mm Stroke	56mm Stroke	96mm Stroke	27mm Stroke	41mm Stroke	56mm Stroke	96mm Stroke	27mm Stroke	41mm Stroke	56mm Stroke	96mm Stroke			
12V	RS-485	L12-12F-3	L12-20F-3	L12-20F-4	L12-20F-6	L12-20F-10	L12-40F-3	L12-30F-4	L12-30F-6	L12-30F-10	L12-30PT-3	L12-30PT-4	L12-30PT-6	L12-30PT-10			
	TTL/PWM	L12-12PT-3	L12-20PT-3	L12-20PT-4	L12-20PT-6	L12-20PT-10	L12-40PT-3	L12-30PT-4	L12-30PT-6	L12-30PT-10							
Applicable Max Load / Max. Speed(No Load)		24N / 110.0mm/s	40N / 80.0mm/s		34N / 80.0mm/s			80N / 28.0mm/s			62N / 28.0mm/s						
Mechanical Self Lock (Z Axis Application)		Not Available		Not Available				Available									
Gear Ratio / Gear Type / Rod Type				10:1 / Engineering Plastic Gears / Metal Alloy Rod													
Motor Type / Watt				Coreless Motor / 26W													
12V	Communication	Rated Load 64N		Rated Load 50N			Rated Load 100N			Rated Load 78N							
		27mm Stroke	41mm Stroke	56mm Stroke	27mm Stroke	41mm Stroke	56mm Stroke	27mm Stroke	41mm Stroke	56mm Stroke							
12V	RS-485	L12-64F-3	L12-50F-4	L12-50F-6	L12-100F-3	L12-80F-4	L12-80F-6										
	TTL/PWM	L12-64PT-3	L12-50PT-4	L12-50PT-6	L12-100PT-3	L12-80PT-4	L12-80PT-6										
Applicable Max Load / Max. Speed(No Load)		128N / 10.5mm/s		100N / 10.5mm/s			200N / 7.7mm/s			156N / 7.7mm/s							
Mechanical Self Lock (Z Axis Application)			Available				Available										
Gear Ratio			30:1				50:1										
Gear Type / Rod Type			4 Metal & 2 Engineering Plastic Gears / Metal Alloy Rod														
Motor Type / Watt			Coreless Motor / 26W														

Cored Motor Line-up

Motor Voltage	Communication	Rated Load 6N			Rated Load 12N															
		26mm Stroke			26mm Stroke															
12V	RS-485	12V, RS-485	D12-6F-3		12V, RS-485	D12-12F-3														
	TTL/PWM	12V, TTL/PWM	D12-6PT-3		12V, TTL/PWM	D12-12PT-3														
7.4V	RS-485	7.4V, RS-485	D7-6F-3		7.4V, RS-485	D7-12F-3														
	TTL/PWM	7.4V, TTL/PWM	D7-6PT-3		7.4V, TTL/PWM	D7-12PT-3														
Applicable Max Load / Max. Speed(No Load)		12N / 36mm/s			24N / 12mm/s															
Mechanical Self Lock (Z Axis Application)			Not Available			Available														
Gear Ratio / Gear Type / Rod Type		10:1 / Engineering Plastic Gears / Engineering Plastic Rod																		
Motor Type / Watt		Cored Motor / 4.2W																		

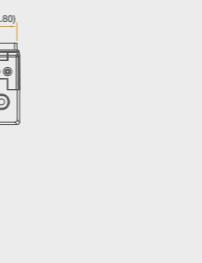
Common Specification

Positional Accuracy	Stroke			Unidirectional			Wire Harness (Molex to S-02 PWM wire to be packed in Cored Motor Version only)	Pulse Width Modulation (PWM) / TTL (Time Division Multiplexing) / Position Sensor						
	26mm	27mm	41mm	30μm (0.03mm)				10kΩ linear Potentiometer						
	56mm			40μm (0.04mm)				RS-485 or TTL (Time Division Multiplexing) / Data Communication / Pulse Width Modulation (PWM) / Position Sensor						
Mechanical Backlash	0.03mm (30μm)						Position Sensor	10kΩ linear Potentiometer						
Input Voltage Range	7 ~ 13V for 12V Motor, 6.5~8.9V for 7.4V Motor							RS-485 or TTL (Time Division Multiplexing) / Data Communication / Pulse Width Modulation (PWM) / Position Sensor						
LED Indication	7 Error Indications (Overload, Checksum, Data Range, Overheat, Stroke Limit, Input voltage, Instruction Error)							Pulse Width Modulation (PWM) / Position Sensor						
Recommend Duty Cycle	At rated Load			At applicable Max Load			Ingress Protection	IP-54 (Dust & Water Tight)						
	Max 50%			Max 20%				Audible Noise						
	7.4V			12V				Approx. 50db at 1m						
Current Consumption	Idle: 30mA, Rated: 250mA, Stall: 0.48A			Idle: 30mA, Rated: 140mA, Stall: 0.3A			Size / Weight (Excluding rod-end & hinge)	26/27mm	57.4(L)x29.9(W)x15(H)mm / 49-52g					
	Cored			41mm				41mm	86.9(L)x36(W)x18(H)mm / 96-99g					
	Coreless			56mm				56mm	111.5(L)x36(W)x18(H)mm / 124-127g					
	-			96mm				96mm	151.5(L)x36(W)x18(H)mm / Approx. 177g					

* Design and Specification can be changed without prior notice for further improvement.

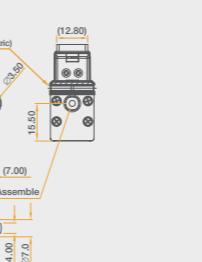
Dimension (Coreless Motor Lineup)

27mm Stroke Version



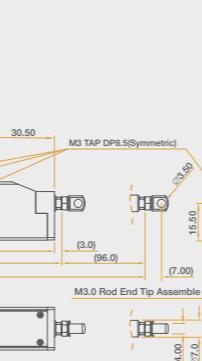
* Stroke can be extended to 30mm using IR-USB01

41mm Stroke Version



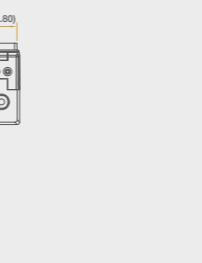
* Stroke can be extended to 29mm using IR-USB01

96mm Stroke Version



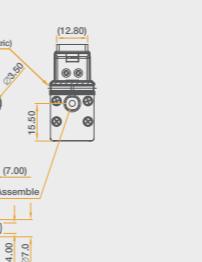
Dimension (Cored Motor Lineup)

26mm Stroke Version



* Stroke can be extended to 29mm using IR-USB01

56mm Stroke Version



* Stroke can be extended to 60mm using IR-USB01

60mm Stroke Version

