

Main Features

Precision

- 30~50 μm 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(1.02) to 96mm(3.78in))
- Various Rated Load options (6(1.3) to 100N(22.5lb) at 12V and 6N/12N(1.3lb/2.7lb) at 7.4V)
- Various Speed options (7.7(0.3) to 110mm/s(4.33in/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 : 26mm(1.02in) / 27mm(1.06in)* 4 : 41mm(1.61in) 6 : 56mm(2.20in) 10 : 96mm(3.78in)

Coreless Motor Line-up

- High force, highly durable coreless motor applied
- Stroke option : 27mm(1.06in)*, 41mm(1.61in), 56mm(2.20in), 96mm(3.78in)
- Rated Load option : 12 to 100N(2.7 to 22.5lb)
- 12V Motor with 7 ~ 13V input voltage range
- RS-485 or TTL/PWM communication type options
- Metal alloy rod
- Engineering plastic case (27mm(1.06in) stroke version)
- Aluminum stroke case & engineering plastic motor case (41mm(1.61in) / 56mm(2.20in) / 96mm(3.78in))
- * 27mm(1.06in) can be extended to 30mm(1.18in) using IR-USB01

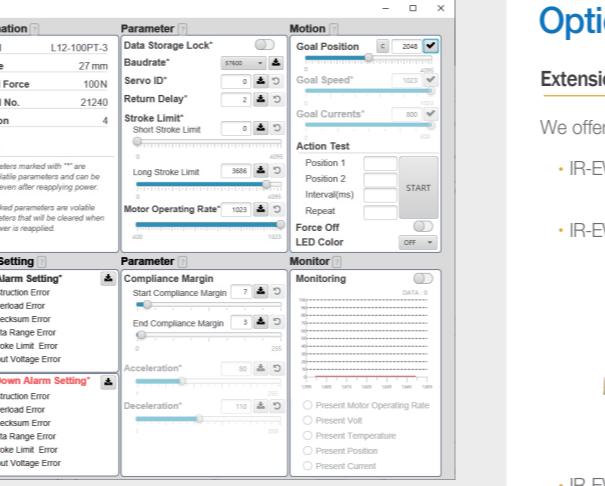


Cored Motor Line-up

- Heavy duty cored motor applied
- 26mm(1.02in) stroke (26mm(1.02in) stroke can be extended to 29mm(1.14in) using IR-USB01)
- RS-485 or TTL/PWM communication type options
- Rated Load option : 6N and 12N(1.3 and 2.7lb)
- 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

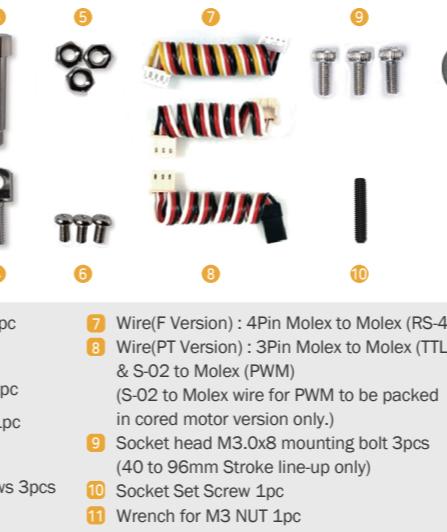


PC Software - mightyZAP Manager



- Setting for various operation parameters & memory parameters
 - Baud rate, ID, Delay, Stroke limit, Motor Operating rate, Goal Position
 - LED Alarm, Overload setting
- Simple Motion Test
- System reset and Firmware update
- Motor Operating rate, Voltage, Temperature, Present position monitoring
- Need optional "PC USB Interface IR-USB01"
- Windows compatible mightyZAP manager software enables user to set various parameters & test motions. (Able to download from our website for free)
- (PC Software will be updated from time to time, so it is recommended for the user to download and update PC software properly.)

Standard Accessories



Optional Accessories

Extension Wire IR-EW01~04

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

- IR-EW01 : 1,000mm(39.37in) length with 3pins TTL/PWM Molex connectors (50-37-5033)
- IR-EW02 : 2,000mm(78.74in) length with 3pins TTL/PWM Molex connectors (50-37-5033)



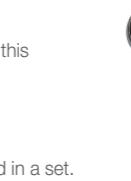
- IR-EW03 : 2,000mm(78.74in) length with 4pins RS-485 Molex connectors (51065-0400)
- IR-EW04 : 4,000mm(157.48in) length with 4pins RS-485 Molex connectors (51065-0400)



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.



Metal Bracket IR-MB02

Mounting bracket IR-MB02 is dedicated for 26/27mm(1.02/1.06in) stroke line-up. Referring to the published drawings, user is also able to make this bracket at their end if necessary.

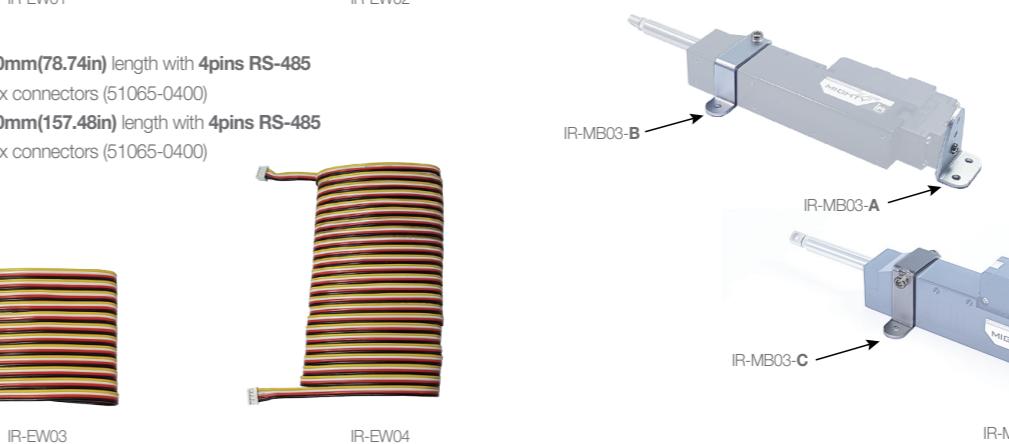


Metal Bracket IR-MB03

Mounting bracket IR-MB03 is dedicated for IR-MB03 is for 40 to 96mm(1.57 to 3.78in) stroke line-up. Referring to the published drawings, user is also able to make this bracket at their end if necessary.



40 to 96mm(1.57 to 3.78in) stroke line-up can be installed through the tapped hole of the body without bracket according to application.



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.

Raspberry Pi HAT(Hardware Attached on Top) IR-STS02

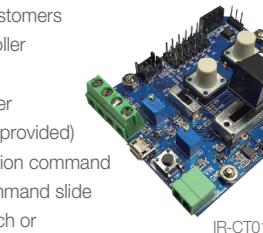
IR-STS02 is a Raspberry Pi add-On board which is compatible with Raspberry Pi B3 or Raspberry Pi Zero.



With TTL/RS-485/PWM communication interface, power connector and GPIO pins, user is able to control mightyZAP servo on Raspberry Pi. API and Library can be downloaded from our web.

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	Rated Load 12N(2.7lbf)		Rated Load 17N(4.5lbf)			Rated Load 40N(9.0lbf)		Rated Load 31N(7.0lbf)									
		27mm(1.06in) Stroke	27mm(1.06in) Stroke	41mm(1.61in) Stroke	56mm(2.20in) Stroke	96mm(3.78in) Stroke	27mm(1.06in) Stroke	41mm(1.61in) Stroke	56mm(2.20in) Stroke	96mm(3.78in) 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								
	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 (5.7lbf / 4.33in/s)	40N / 80.0mm/s (9.0lbf / 3.15in/s)	34N / 80.0mm/s (7.6lbf / 3.15in/s)			80N / 28.0mm/s (18.0lbf / 1.10in/s)	62N / 28.0mm/s (13.9lbf / 1.10in/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																	
Motor Voltage	Communication	Rated Load 64N(14.4lbf)		Rated Load 50N(10.5lbf)		Rated Load 100N(22.5lbf)		Rated Load 78N(17.5lbf)										
12V	RS-485	L12-64F-3	L12-50F-4	L12-50F-6	L12-100F-3	L12-80F-4	L12-80F-6	L12-80PT-4	L12-80PT-6									
	TTL/PWM	L12-64PT-3	L12-50PT-4	L12-50PT-6	L12-100PT-3	L12-80PT-4	L12-80PT-6	200N / 7.7mm/s (45.0lbf / 0.3in/s)			156N / 7.7mm/s (35.0lbf / 0.30in/s)							
Applicable Max Load / Max. Speed(No Load)		128N / 10.5mm/s (28.8lbf / 0.41in/s)	100N / 10.5mm/s (22.5lbf / 0.41in/s)			200N / 7.7mm/s (45.0lbf / 0.3in/s)			156N / 7.7mm/s (35.0lbf / 0.30in/s)									
Mechanical Self Lock (Z Axis Application)		Available			Available			Available										
Gear Ratio		30:1																
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(1.3lbf)		Rated Load 12N(2.7lbf)									
		26mm(1.02in) Stroke	41mm(1.61in) Stroke	12V, RS-485	D12-12F-3								
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 (2.7lbf / 1.42in/s)		24N / 12mm/s (5.4lbf / 0.47in/s)									
Mechanical Self Lock (Z Axis Application)		Not Available			Available								
Gear Ratio / 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)	Position Sensor		
	26mm / 27mm / 41mm (1.02in) / (1.06in) / (1.61in)	30µm (0.03mm)	40µm (0.04mm)	50µm (0.05mm)	10KΩ linear Potentiometer		Data Communication / Protocol	Pulse Signal / Pulse Range	Operating Temperature
Mechanical Backlash	0.03mm (30µm)						RS-485 or TTL(PT version) / IR Robot open protocol	PWM (PT version, Used in RC model hobby) / 900µs(Rettracted)-1500 µs(Center)-2100µs (Extended)	-10°C ~ 60°C
Input Voltage Range	7 ~ 13V for 12V Motor, 6.5~8.9V for 7.4V Motor								
LED Indication	7 Error Indications (Overload, Checksum, Data Range, Overheat, Stroke Limit, Input voltage, Instruction Error)								
Recommend Duty Cycle	At rated Load		At applicable Max Load				Ingress Protection	IP-54 (Dust & Water Tight)	
	Max 50%		Max 20%				Audible Noise	Approx. 50db at 1m	
	7.4V		12V						
Current Consumption	Idle	Rated	Stall	Idle	Rated	Stall	Size / Weight (Excluding rod-end & hinge)	26/27mm (1.02/1.06in)	57.4(L)x29.9(W)x15(H)mm / 49~52g
	30mA	250mA	0.48A	30mA	140mA	0.3A		41mm(1.61in)	86.9(L)x36(W)x18(H)mm / 96~99g
	Cored							56mm(2.20in)	111.5(L)x36(W)x18(H)mm / 124~127g
	Coreless	-	-					96mm(3.78in)	151.5(L)x36(W)x18(H)mm / Approx. 177g
									5.96(L)x1.42(W)x0.71(H)in / 4.4~4.5oz

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

Dimension (Coreless Motor Lineup)

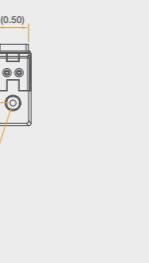
27mm(1.06in) Stroke Version



* Stroke can be extended to 1.18in using IR-USB01

Dimension (Cored Motor Lineup)

26mm(1.02in) Stroke Version



* Stroke can be extended to 1.14in using IR-USB01

In case that our standard actuator does not meet your requirement, Please feel free to contact us to inquire customization.

Benefits for corporate customers

- Quantity Discount program
- Customization
- Instant technical support

96mm(3.78in) Stroke Version



Size Comparison

MINI, BUT MIGHTY.

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