Premium Lineup Specification

	12V, TTL/PWM 12V, RS-485 7.4V, TTL/PWM	**L12-20PT-3** **L12-20F-3** **L7-20PT-3**	High Speed	12V, TTL/PWM 12V, RS-485 7.4V, TTL/PWM	**L12-40PT-3** **L12-40F-3** **L7-40PT-3**	High Force
Peak Power Point	40N@55mm/s (8.8lb@2.2in/s)			80N@16mm/s (17.6lb@0.64in/s)		
Rated Force/Speed	**20N@90mm/s (4.4lb@3.54in/s)**			**40N@28mm/s (8.8lb@1.1in/s)**		
Max. Speed (No load)	110mm/s			37mm/s		
Gear Type / Rod Type	Super Engineering Plastic Gears / Self Lubricative Polymer Rod					

	12V, TTL/PWM 12V, RS-485 7.4V, TTL/PWM	**L12-13PT-3** **L12-13F-3** **L7-13PT-3**	Mega Speed	12V, TTL/PWM 12V, RS-485 7.4V, TTL/PWM	**L12-64PT-3** **L12-64F-3** **L7-64PT-3**	Mega Force	12V, TTL/PWM 12V, RS-485 7.4V, TTL/PWM	**L12-100PT-3** **L12-100F-3** **L7-100PT-3**	Ultra Force
Peak Power Point	26N@70mm/s (5.6lb@2.76in/s)			128N@6mm/s (28lb@0.24in/s)			200N@3.7mm/s (44lb@0.15in/s)		
Rated Force/Speed	**13N@112mm/s (2.86lb@4.4in/s)**			**64N@10mm/s (14lb@0.4in/s)**			**100N@6mm/s (22lb@0.24in/s)**		
Max. Speed (No load)	149mm/s			12.4mm/s			7.46mm/s		
Gear Type / Rod Type	Super Engineering Plastic Gears / Self Lubricative Polymer Rod			2 Metal & 4 Super Engineering Plastic Gears / Metal Alloy Rod			4 Metal & 2 Super Engineering Plastic Gears / Metal Alloy Rod		
Motor Type	High Performance Coreless Motor								

Economical Lineup Specification

	12V, TTL/PWM 7.4V, TTL/PWM	**D12-6PT-3** **D7-6PT-3**	Speed	12V, TTL/PWM 7.4V, TTL/PWM	**D12-12PT-3** **D7-12PT-3**	Force
Peak Power Point	12N@18mm/s (2.6lb@0.70in/s)			24N@6mm/s (5.2lb@0.24in/s)		
Rated Force/Speed	**6N@30mm/s (1.3lb@1.18in/s)**			**12N@10mm/s (2.6lb@0.4in/s)**		
Max. Speed (No load)	36mm/s			12mm/s		
Gear Type / Rod Typ	Super Engineering Plastic Gears / Super Engineering Plastic Rod					
Motor Type	Heavy Duty Cored Motor					

Common Specification

Stroke	30mm	**Microcontroller**	32bit ARM Core, 4096 Resolution (A/D converter)
Positional Accuracy	0.1mm (100μm)	**Pulse Range**	900μs(Retracted)~1500μs(Center)~2100μs(Extended)
Mechanical Backlash	0.05mm (50μm)	**Parameter Setting**	Programmable (more than 50 Operating and Setting Parameters)
Position Sensor	10kΩ +/-1% linearity	**Ingress Protection**	IP-54 (Dust & Water Tight)
Input Voltage	7.4V or 12.1V (Rated)	**Dimension/Weight**	57.5(L)x29.9(W)x15(H)mm (excludes Rod End, hinge) / 45~65g
Stall Current	**Premium :** 3.4A at 7.4V / 2.3A at 12.1V **Economical :** 0.46A at 7.4V / 0.33A at 12.1V	**Operating Temp.**	-10℃ ~ 50℃
Comm. Protocol	**Premium :** RS-485 or TTL/PWM **Economical :** TTL/PWM	**Standard Accessories**	1 Mounting Bracket, 2 types Rod end (Detachable linkage and Metal nut(M2.5) type), Wire Harnesses
LED Indication	7 Error indications (Overload, Checksum, Range, Overheat, Stroke Limit, Input voltage, Instruction Error)	**Wire Harness**	**PWM/TTL(PT version) :** Molex to S-02 and Molex to Molex Type (Molex 50-37-5033, 3pins) / 200mm length, 0.08x60(22AWG) **or** **RS485(F version) :** Molex to Molex Type(Molex 051065-0400, 4pins) / 200mm length, 0.08x60(22AWG)

※Specification and design is subject to be changed without prior notice for further improvement.

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ZAP MIGHTY
MINI LINEAR SERVO MOTOR

MINI, BUT MIGHTY.

Size Comparison

IR ROBOT
Imagination to Realization

Main Features

Precision

- 100 μm Positional Accuracy
- Thanks to 32Bit Micro controller, High resolution(4096) A/D converter, and High Linearity Potentiometer, QUADRUPLE accuracy has been realized comparing to existing products.
- Low Mechanical back-lash and Superior Return tolerance by dedicated gear train

Durability

- High force/highly durable coreless motor applied(For Premium Lineup)
- Specialized modular design of case for high tensile strength
- High strength metal feeding nut
- Super Engineering Plastic Gear & Metal Gear
- Highly durable Potentiometer

Easiness

- Simplification by Built-in Drive circuit
- Servo serial connection available (Daisy Chain)
- Flexible & convenient installation by Rotatable Hinge(Patent)
- Dedicated PC Software (Parameter setting & Control test) and PC USB Interface (IR-USB01) to be supplied. (Optional)

Variety

- Wide product range from economical lineup(w/ cored motor) to premium lineup (w/coreless motor).
- Various force/speed combination from 6N to 100N
- PWM/TTL(3pin) or RS-485(4pin) protocol
- 7.4V or 12V input voltage

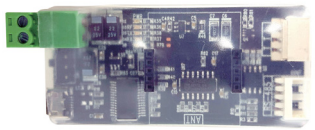
Applications

- Good substitute for pneumatic cylinder which is hard to control position and stoke adjustment.
- Factory automations, Test handlers, Jig facilities
- Medical equipments
- UAVs / Drones
- Robotics

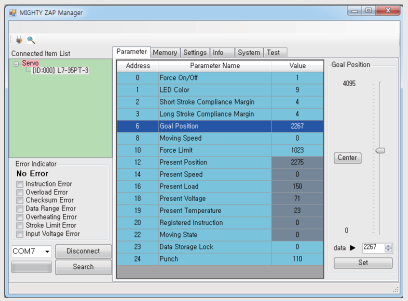
PC USB Interface IR-USB01(Optional)

IR-USB01 is an interface board to control parameters in user's PC.
Dedicated software to be provided.

- Operating parameter setting
- Storage memory setting
- Error indication settting
- System reset
- Firmware update

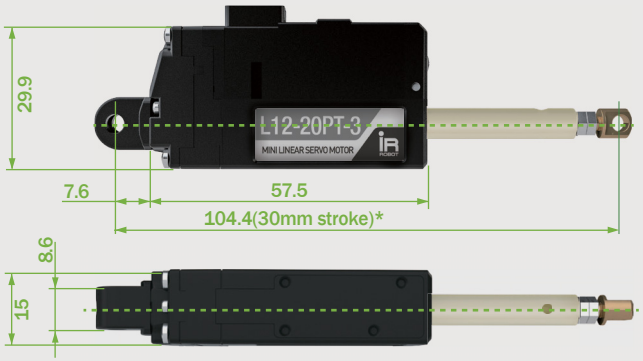


PC Software



- More than 50 parameter settings available through PC software - mightyZAP Manager
- PC connection via optional USB interface IR-USB01

Dimension



*The length to the end of rod-end(104.4mm) is subject to be varied according to the number of rod-end nuts and how to fix the rod-end nuts

Model Name System

Naming System : MV-FFF / PP-SS	
Feature	Options
M : Motor Type	**D** : Cored **L** : Coreless **B** : Brushless (B to be released later)
V : Voltage	**7** : 7.4V **12** : 12V
F : Force (Rated)	XXX N (Newton)
P : Protocol	**PT** : PWM & TTL **F** : RS-485
S : Stroke	**3** : 30mm **6** : 60mm **10** : 100mm (60 / 100mm to be released later.)

Premium Lineup

- High force, highly durable coreless motor applied.
- Various force lineup - 13N, 20N, 40N, 64N and 100N (Selectable)
- 7.4V or 12V input voltage (Selectable)
- RS-485 or TTL/PWM protocol (Selectable)
- Self lubricative polymer rod (for 13N/20N/40N lineup)
- Metal alloy rod (for 64N, 100N lineup)

13/20/40N lineup

64/100N lineup

Economical Lineup

- Heavy duty cored motor applied
- 6N, 12N forces lineup (Selectable)
- 7.4V or 12V input voltage (Selectable)
- TTL/PWM protocol
- Super Engineering Plastic Rod

6/12N lineup

Standard Accessories

1. Hinge Base 1pc
2. Hinge 1pc
3. M3 NUT 2pcs
4. Hinge Shaft 1pc
5. Rod End Tip 1pc
6. M2.5x6 Screws 3pcs
7. Wire(F Version) : 4Pin Molex to Molex (RS-485)
8. Wire(PT Version) : 3Pin Molex to Molex (TTL) & S-02 to Molex (PWM)