

MB11 Series

Minibot Configurable: MB11 - T300 - PS01 - M112 - L22 - Options

Travel

Actuator Travel (xxx = travel in mm)... Txxx

Leadscrew Drives

	Standard	Preloaded
Leadscrew: 1mm lead...	LS01	PS01
Leadscrew: 5mm lead...	LS05	PS05

Ballscrew Drives

	Rolled	Ground
Ballscrew: 1mm lead...	SR0401	SG0401
Ballscrew: 2mm lead...	SR0402	SG0402
Ballscrew: 4mm lead...	SR0504	SG0504
Ballscrew: 0.5mm lead...		SG0300.5

Motor Options

Standard Step Motor...	M112
Integrated Step Motor/Drive/Control with RS485...	MK112

End of Travel Sensor Options

OEM Optical Slot Sensors...	L11
Industrial Optical Slot Sensors...	L22

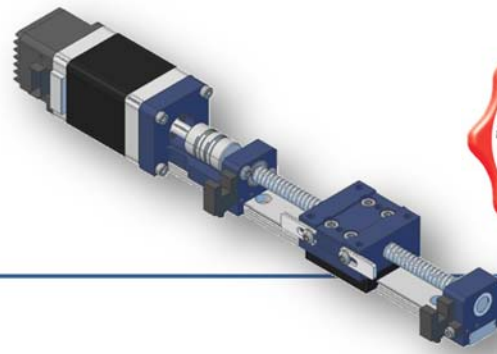
MB11 Performance Specifications

	LS01	PS01	LS05	PS05	SR0401	SG0401	SR0402	SG0402	SR0504	SG0504	SG0300.5
Screw Lead (mm/rev)	1	1	5	5	1	1	2	2	4	4	0.5
Max Travel (mm) ¹	300	300	300	300	300	150	300	150	300	150	300
Max Speed (mm/sec) ²	15	15	75	75	15	15	30	30	60	60	7.5
Rated Thrust (N)	85	50	30	21	175	175	100	100	50	50	220
Lead Accuracy (µm/mm)	0.6	0.6	0.6	0.6	0.170	0.075	0.170	0.075	0.170	0.075	0.075
Repeatability (µm)	20	12	20	12	20	5	20	5	20	5	5
Theoretical Resolution ³	0.00031	0.00031	0.00156	0.00156	0.00031	0.00031	0.00063	0.00063	0.00125	0.00125	0.00016
Straightness (µm)	Horizontal Plane: 25 µm Vertical Plane: 25 µm										
Load Capacity	Normal Load: 210 N Side Load: 210 N Roll: 1.5 Nm Yaw: 0.75 Nm Pitch: 0.75 Nm										

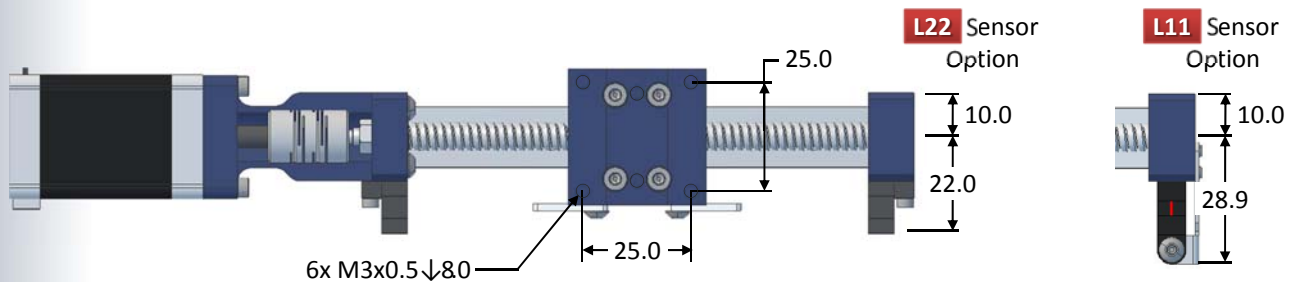
1) Based on 15 rps motor speed. Higher speed possible. 2) Consult factory for longer travels. 3) Based on 3200 steps/rev. Actual minimum step size will vary.



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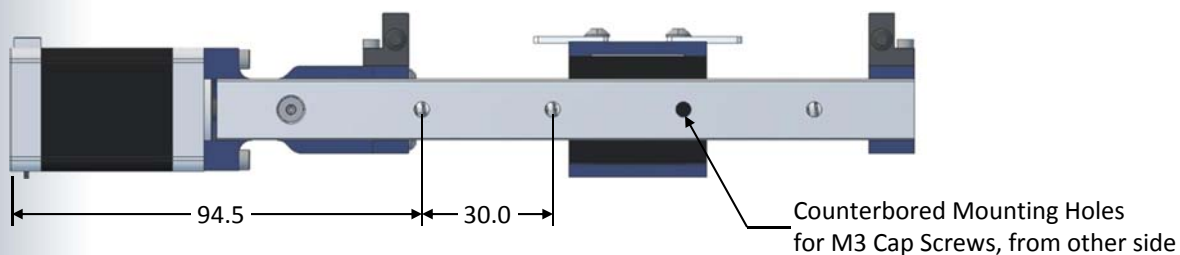
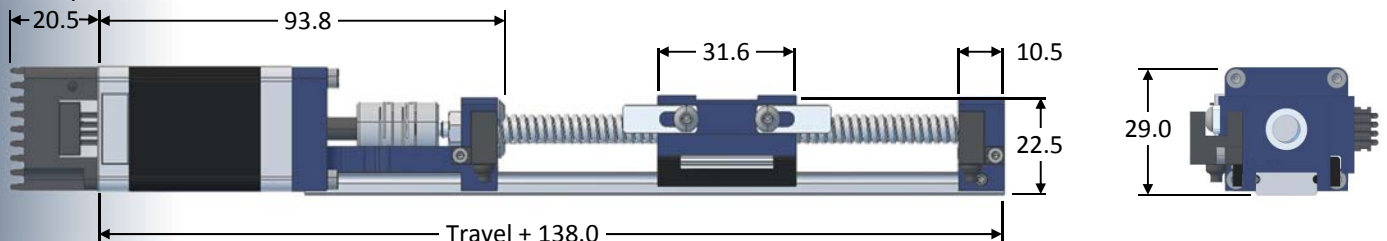


MB11 Dimensions (mm)



MK112

Option Only



3D Models available at
www.linearpositioningsystems.com/cad

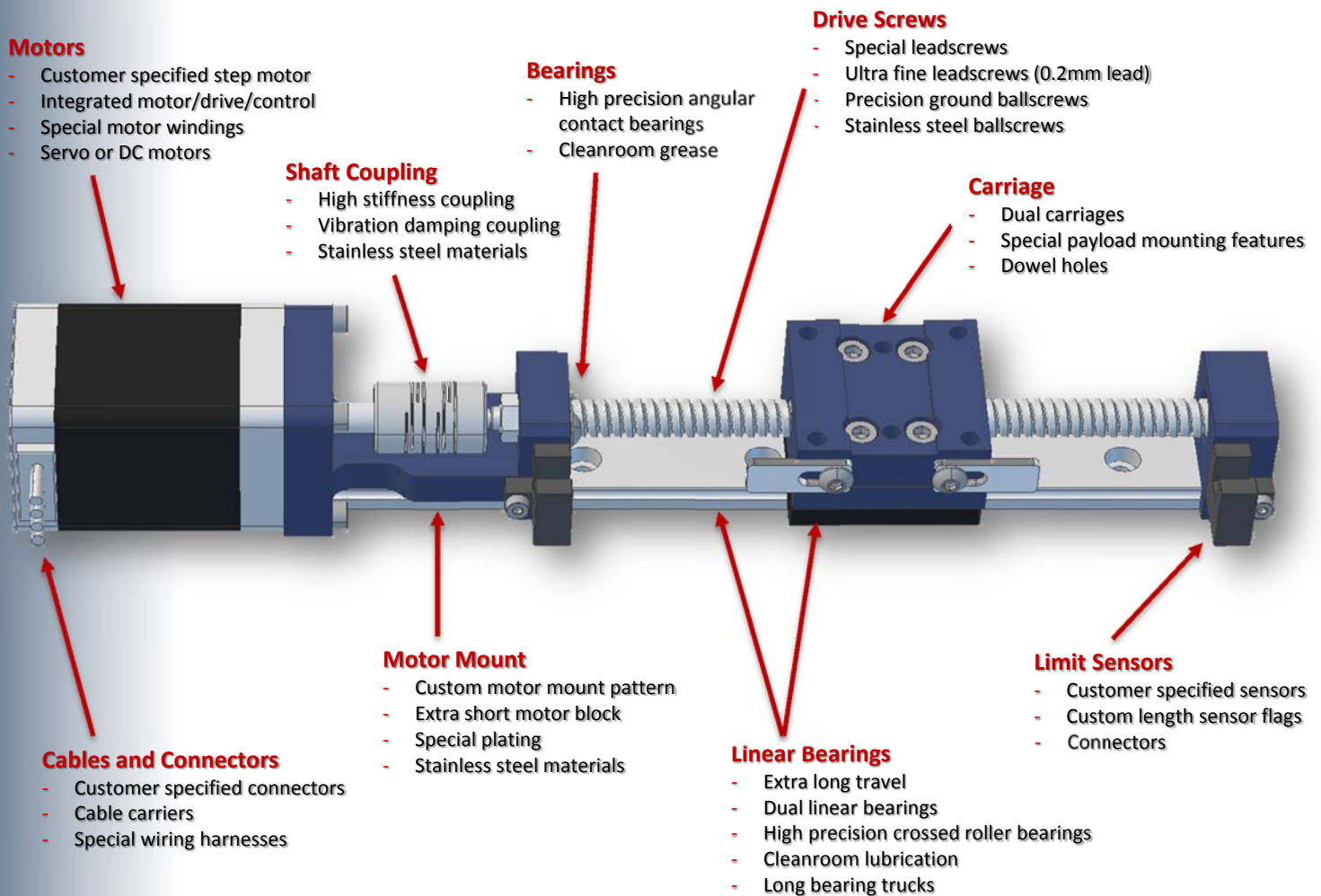


Minibot™ Series

Special Modifications

Especially for OEMs, sometimes the catalog product is not exactly what is needed due to space, environmental, or other reasons; and getting it exactly the way you need it is critical for optimizing cost, and minimizing time to market. In these instances, TPA is here to help. For OEMs with special requirements, we can modify our standard Minibot™ design or even design a completely new product to precisely fit your application.

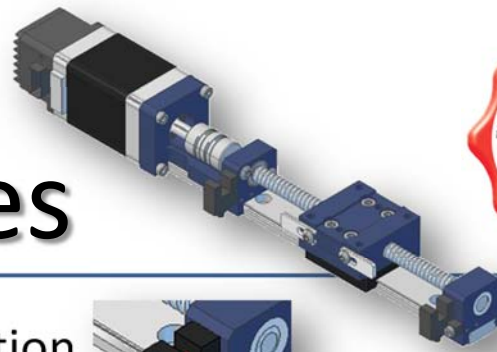
The following are some of the modifications we have or can do for you. If you do not see what you need, let us know.



3D Models available at
www.linearpositioningsystems.com/cad



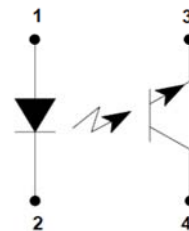
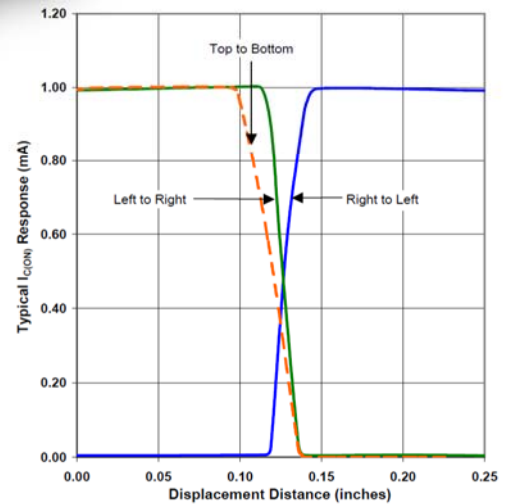
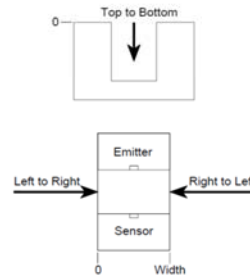
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L11 – OEM Slot Sensor Information

Ideal for OEMs that build their own control boards

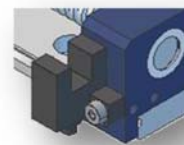
Sensor	Optek OPB880-P51Z
Input LED	Forward DC Current: 50mA Max Reverse DC Voltage: 2V Max Power Dissipation: 75mW Max $V_F=1.3V @ I_F=20mA$
Output Transistor	Collector-Emitter Voltage: 30V Max Emitter-Collector Voltage: 5V Max Collector DC Current: 30mA Max Power Dissipation: 100mW Max $V_{(BR)CEO}=30V \text{ MIN } @ I_C=1mA$ $V_{(BR)ECO}=5V \text{ MIN } @ I_E=100\mu A$ $I_{CEO}=100nA \text{ Max } @ V_{CE}=10V, I_F=0, E_E=0$
Coupled	$V_{CE(SAT)}=0.4V \text{ Max } @ I_C=400\mu A, I_F=20mA$ $I_{C(ON)}=0.5mA \text{ Min } @ V_{CE}=10V, I_F=20mA$
Environmental	-40 to +85°C Non-condensing Humidity
Leads	26 AWG, 24" Long
Material	Polysulfone IR Transmissive Shell
Mounting Fastener	M3x6 SHCS to Bracket M2x4 Phillips Cross Recess to Body



1	RED – Emitter Anode
2	BLACK – Emitter Cathode
3	GREEN – Transistor Emitter
4	WHITE – Transistor Collector

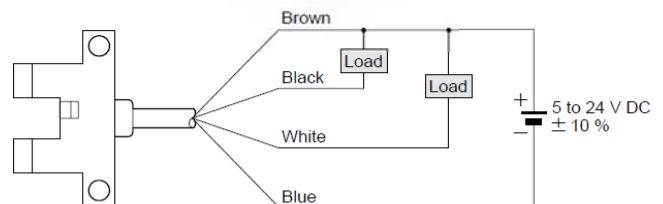
L22 – Industrial Slot Sensor Information

Ideal for wiring to motion controllers and PLCs



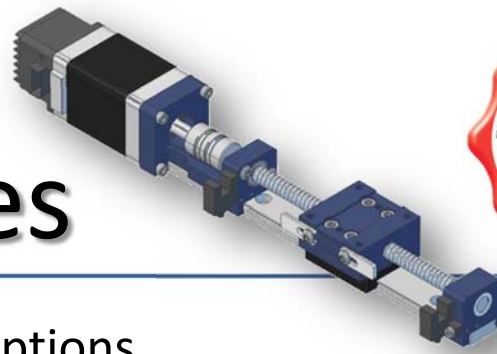
Power	5 to 24VDC +/-10% 15mA or less
Output	NPN Open Collector Transistor Max Sink Current: 50mA Applied Voltage: 30VDC or less Residual Voltage (0.7V at 50mA) (0.4V at 16mA)
Repeatability	Unidirectional: 0.03mm or better Bidirectional: 0.05mm or better Response Time: 100µs or less
Environmental	-25 to +55°C, non-condensing humidity
Material	PBT and Polycarbonate
Mounting Fastener	M2x6 Socket Head Cap Screw

Wiring diagram



Output operation

	Color code	Output operation
Output 1	Black	Light-ON
Output 2	White	Dark-ON



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M11x and M17x Step Motor Options

	M112	M111	M113	M172	M171	M173
Rated Current	0.67 A _{RMS}	0.67 A _{RMS}	0.67 A _{RMS}	1.68 A _{RMS}	1.33 A _{RMS}	1.68 A _{RMS}
Resistance	6.8 ohms ±10%	5.6 ohms ±10%	9.2 ohms ±10%	1.65 ohms ±10%	2.1 ohms ±10%	1.65 ohms ±10%
Inductance	4.9 mH ±20%	4.2 mH ±20%	7.2 mH ±20%	3.2 mH ±20%	2.5 mH ±20%	2.8 mH ±20%
Rated Voltage	4.56 V	3.8 V	6.2 V	2.8 V	2.8 V	2.8 V
Step Angle	1.8° ± 5%, Rotation CW from front					
Temperature	Ambient: -20°C to +50°C Max Rise: 80°C					
Rotor Inertia	12E-7 Kg-m ²	9E-7 Kg-m ²	12E-7 Kg-m ²	5.4E-8 Kg-m ²	3.5E-8 Kg-m ²	6.8E-8 Kg-m ²
Weight	0.14 Kg	0.11 Kg	0.20 Kg	0.28 Kg	0.22 Kg	0.35 Kg
Length	44.5 mm	31.5 mm	50.5 mm	40 mm	34 mm	48 mm
Mounting Fastener	M2.5 x 12 SHCS			M3 x 14 SHCS		
Wires	4x Leads, AWG26, 300mm Long; A+ (RED), A- (BLUE), B+ (BLACK), B- (GREEN)					

MK112 , MK172 , MJ172 Integrated Controller/Drive Options

	MK112	MK172	MJ172
Communications	RS485	RS485/RS232	USB 2.0
Power	12 to 24 VDC, 1.5 A max	12 to 35 VDC, 2.5 A max	12 to 24 VDC, 2.0 A max
Inputs	Limit+, Limit-, Home 12 to 24 VDC, NPN, 0.45 mA	Limit+, Limit-, Home, 6x Digital Inputs 12 to 24 VDC, NPN, 0.45 mA	Limit+, Limit-, Home, 2x Digital Inputs 12 to 24 VDC, NPN, 0.45 mA
Output	1x Opto-isolated PNP Output +24 VDC Max; 90 mA Max	3x Opto-isolated NPN Outputs +24 VDC Max; 90 mA Max	2x Opto-isolated NPN Outputs +24 VDC Max; 45 mA Max
Resolution	3200 Steps/rev max	3200 Steps/rev max	3200 Steps/rev max
Max Speed	15 rps	15 rps	15 rps
Encoder	Integrated 256 count/rev (Optional: Single Turn Absolute)	Integrated 4000 count/rev	N/A
Operating Temp	0°C to +70°C	0°C to +70°C	0°C to +85°C
Length	65.5 mm	65.5 mm	63 mm
Mounting Fastener	M2.5 x 12 SHCS	M3 x 14 SHCS	M3 x 14 SHCS

Contact TPA for additional details and product manuals