MMB Series
Rolled Ball Screw + All in One Stepping Servo Motor

●Features

- Stepping Servo Motor is mounted directly onto the shaft end of a Ct7 grade Rolled Ball Screw, which is the best for space saving & high-speed, non-step-out operation.
- Enables to bind Rotary Encoder, Servo Driver and Controller within the Actuator body by simplified circuits due to high-speed operation processing of Servo and Controller using Digital Signal Processor(DSP).
- Enables to set parameters, servo control or control program through PC(RS-422/485 communication) by using exclusive software.
- The wiring is completed inside the Actuator, enabling significant saving in wiring.

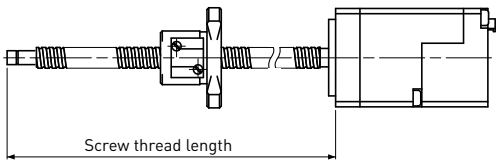
●Model number notation

Model number notation for customized MMB series is as follows.
In case of standard style, model number is described in catalogue in page P138.

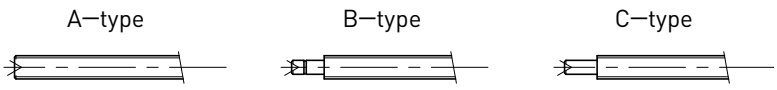
MMB R 06 02 - 94 B 1 - XXX
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①Series No.
MMB : Moons type Linear Actuator
②Ball Screw type
R : Rolled Ball Screw
③Screw Shaft nominal diameter (mm)
06 means 6mm
④Lead (mm)
02 means 2mm
⑤Screw Shaft length (mm)
Screw length which is exposed from Motor (see below)
⑥End journal profile (see below)
A : Cut only
B : Journal with snap ring groove (standard)
C : Journal only
⑦Motor length symbol
1 : Short type
2 : Long type
⑧Extra notation

【⑤Screw thread length】



【⑥End journal profile】



●Specifications

Model	Shaft Nominal Dia. (mm)	Lead (mm)	Travel (mm)	Travel per pulse (μm)	Reference Thrust (N)	Mass (g)
MMBR0602-94B1	φ6	2	62	0.1	65	162
MMBR0602-94B2	φ6	2	62	0.1	104	205

Repeatability(reference)	max. ±0.01mm
Lost Motion(reference)	max. 0.01mm

※The reference value about Repeatability and Lost Motion represents when the actuator built into KSS original Stage. Please make a contact to KSS for actual value.

Note1) Detail specifications & dimensions are shown in drawing from page P138.
Note2) Travel per pulse represents the value of default setting.
Note3) Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

●Motor Specifications

Model	Motor size	Rated voltage (V)	Rated current (A/phase)	Winding resistance (Ω)	Holding torque (Nm)	Rotor Inertia ($g \cdot cm^2$)	Load limit in Vertical Position (N)
MMBR0602-94B1	NEMA 11 (□28)	DC2.6	1.0	2.6	0.05	9	150
MMBR0602-94B2	NEMA 11 (□28)	DC1.7	1.0	1.7	0.08	12	150

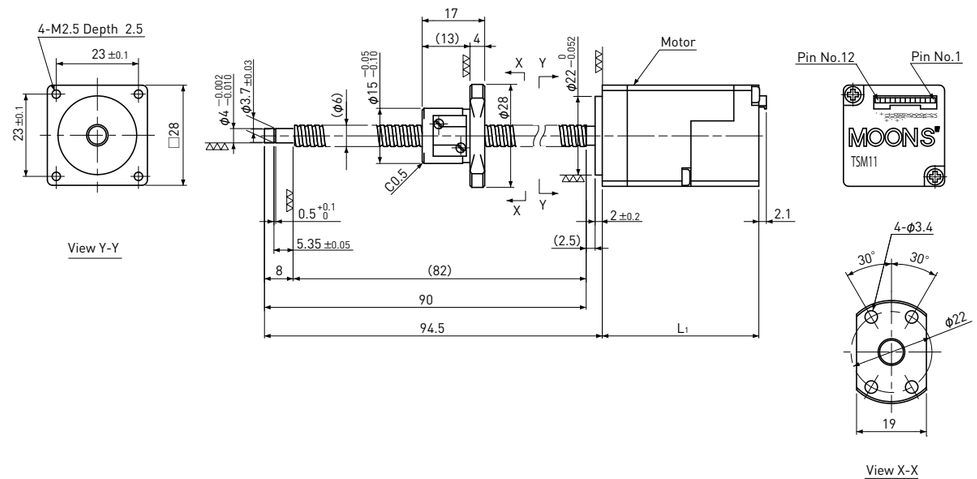
Standard style of MMB series

Dimensions & Specifications

Rolled Ball Screw + Stepping Servo Motor

MMB □28 / NEMA 11

Shaft dia.φ6



Note1) Please contact KSS if different journal profile or length from the above is required.
Note2) Recommended journal profile is type B(journal with snap ring groove). Please use Bearing to support the shaft end.

Unit:mm

Model	Lead	Travel	Reference Thrust (N)	L1	Mass (g)
MMBR0602-94B1 (Short type)	2	62	65	44	162
MMBR0602-94B2 (Long type)	2	62	104	53	205

Ball Screw Specifications	
Accuracy grade	JIS Ct7
Thread direction	Right
Axial play	Max 0.03mm
Ball Screw material	Chrome-molybdenum steel
Surface hardness	Min. HRC58 (Thread area)
Lubricant	KSS original grease MSG No.2

Motor Specifications		
	Short type	Long type
Basic step angle	1.8°	1.8°
Driving method	2-phase Bi-polar	
Rated Voltage	DC 2.6 V	DC 1.7 V
Rated current	DC 1.0 A/phase	
Winding resistance	2.6Ω	1.7Ω
Holding Torque	0.05Nm	0.08Nm
Rotor inertia	9g·cm²	12g·cm²
Operating temperature	0℃～40℃	

Connector Pin Diagram

Pin No.	Name	Description
1	Y2	Open drain outputs with freewheeling diode (30VDC 100 mA in max.)
2	Y1	
3	X4	Digital inputs (input high voltage 5~24VDC, input low voltage below 1VDC, signal frequency 1MHz in max.)
4	X3	
5	X2	Digital inputs (input high voltage 5~24 VDC, input low voltage below 2VDC, signal frequency 1MHz in max.)
6	X1	
7	RX-	RS-422 / 488 interface differential signals
8	RX+	
9	TX-	
10	TX+	
11	+	V+ Power supply (typ. 24 VDC)
12	-	V- Power ground (GND)

Driver Specification

Power Amplifier	
Amplifier Type	Dual H-Bridge, 4 Quadrant
Current Control	4 state PMW at 20 KHz
Power Supply	External 24VDC power supply required, Current capacity 6.5A
Input Voltage Range	15-30 VDC min/max (nominal 24VDC)
Protection	Over-voltage, under-voltage, over-temperature, internal motor shorts (phase-to-phase, phase-to-ground)
Ambient Temperature	0℃~40℃(32~104℉) when mounted to a suitable heatsink
Humidity	90% non-condensing

Controller Specification

Controller	
Current Control	Advanced digital current control provides excellent high speed torque
Microstep Resolution	Software selectable from 200 to 51200 steps/rev. in increments of 2 steps/rev.
Speed Range	Max.60rps
Distance Range	Over 10,000,000 revolutions (at 200 step/rev.)
Noise Filtering	Programmable hardware digital noise filter. Software noise filter
Serial Commanding	Support Serial Command Language (SCL)
Encorder Feedback	4096 counts/rev. encorder feedback
Non-Volatile Storage	Configurations are saved in FLASH memory on-board the DSP
X1/Step	Input:5~24 vdc, single-ended signals, max. pulse frequency 1MHz Functions:Step, CW Step, A Quadrature, CW Limit, CW Jog, Run/Stop, general purpose input. ＊Adjustable bandwidth digital noise rejection filter ＊Connect with NPN type output ONLY
X2/Direction	Input:5~24 VDC, signal-ended signals, max. pulse frequency 1MHz Functions:Dir, CCW Step, B Quadrature, CCW Limit, CCW Jog, general purpose input. ＊Adjustable bandwidth digital noise rejection filter ＊Connect with NPN type output ONLY
X3/Enable	Inputs:5~24 VDC, single-ended signals, max. pulse frequency 1MHz Functions:Enable, general purpose input. ＊Connect with NPN type output ONLY
X4/Alarm Reset	Inputs:5~24 VDC, single-ended signals, max. pulse frequency 1MHz Functions:Alarm reset, Change speed, general purpose input. ＊Connect with NPN type output ONLY
Y1/FAULT	Open drain output:maximum current 100mA with maximum voltage of 30 VDC Functions: Fault detection, general purpose
Y2/BRAKE	Open drain output:maximum current 100mA with maximum voltage of 30 VDC Functions: Brake, In Position, Tach Output, general purpose
Communication Interface	RS - 422/485 Modbus/RTU available to use for TSM 11Q