VAXOR MOTOR

MICRO JOINT ACTUATOR

VAXOR X16 SERIES

Φ16 mm Micro Joint Actuator

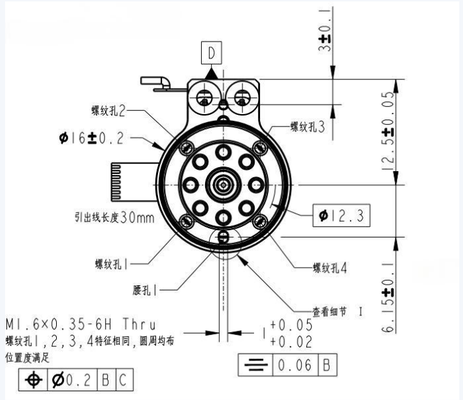
*Designed for dexterous hands, highly integrated robots, and other applications requiring precision motion-control actuators.Refer to the specifications during use and avoid operating beyond the stated limits. Please contact us with any product-related questions.

Φ16 mm	400 mN•m	36 arcmin
Product Diameter	Maximum Initial Torque	Gear Backlash

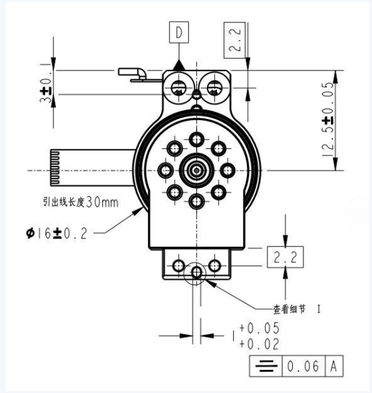
X16S / X16L

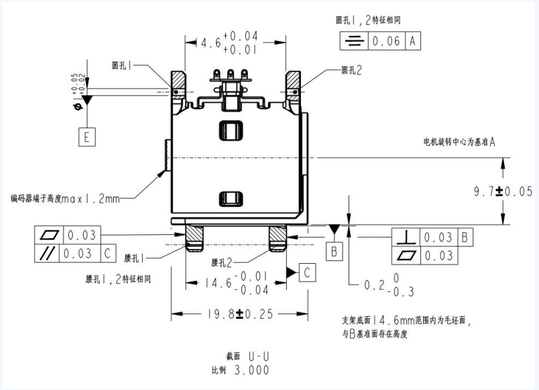
Mechanical Dimensions & Electrical Interface

X16S-UM30/50-MH-4

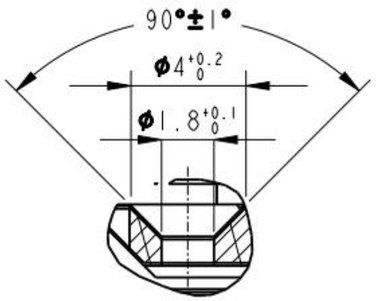


X16L-UM30/50-MH-4

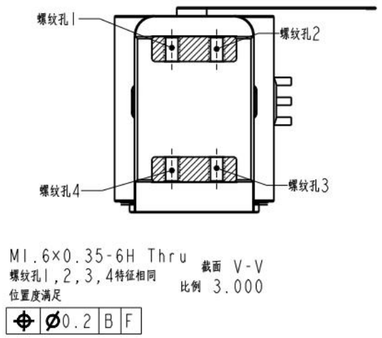




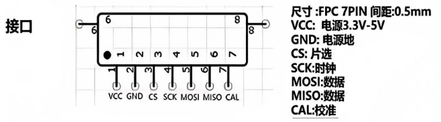
Housing Mounting Hole Detail

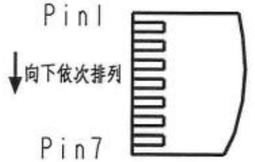


L-Bracket Mounting Hole Detail



ELECTRICAL INTERFACE





Technical Specifications & Performance Curves

12 / 24 V
Nominal Voltage

400 mN•m
Maximum Initial Torque

36 arcmin
Gear Backlash

24.3 / 26.1 g
Total Weight

Test Conditions Gear Ratio 50:1 · DC Bus Voltage 18V · duty cycle 0.6

Motor Data

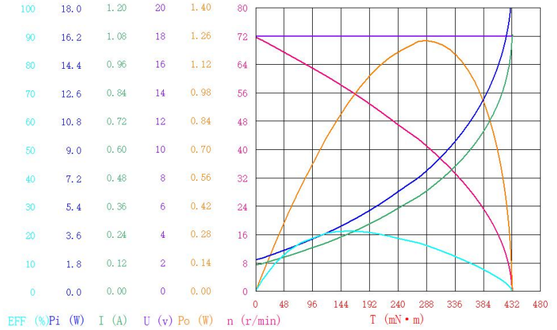
Parameter	Unit	Value
No Load Speed	rpm	≤3500
Nominal Speed	rpm	≤2000
Continuous Stalling Torque* (Chassis Temperature130°)	mN·m	>7.1
Initial Torque* (Chassis Temperature25°)	mN·m	>11.1
Continuous Stalling Phase Current* (Chassis Temperature130°)	A	0.57
Stalling Torque (Max)*	mN·m	>18.6
Stalling Phase Current (Max)* (bus voltage ≥18V)	A	1.5
Terminal Resistance*	Ω	6
Unbalanced Three-Phase Resistance	%	≤2
Terminal Inductance*	mH	0.57
Unbalanced Three-Phase Inductance	%	≤2
Torque Constant	mN·m/A	14.5
Speed Constant	rpm/V	658
Rotor Inertia	gcm2	0.84

Assembly Data

Parameter	Unit	Gear Ratio30:1	Gear Ratio50:1
Gear Efficiency (maximum)	%	72	68
Gear Efficiency (Stalling Point)	%	62	58
Continuous Stalling Torque	mN·m	130	200
Maximum Initial Torque	mN·m	250	400
Encoder	—	Absolute Magnetic Encoder	
Communication Protocol	—	SPI	
Total Weight	g	24.3(S)/26.1(L)	
Total Inertia	g·cm²	1.77	

Backdrive Torque & Backlash

Precision	Parameter	Unit	Gear Ratio30:1	Gear Ratio50:1
P0	Counter-Drive Torque	mN·m	90	130
	Gear Backlash	arcmin	≤36	≤36
P1	Counter-Drive Torque	mN·m	220	400
	Gear Backlash	arcmin	≤60	≤60



Efficiency • Current • Speed • Output Power

Thermal Data

Loss Power	W	2.2	3	4.2
Chassis Temperature	℃	80	110	130

Note: 1. * Indicates a ±10% deviation between actual and theoretical values. 2. Motor thermal data was measured under natural cooling (without metal contact); performance will be better on a test bench or in the customer's complete system. 3. Contact Sales for customized backdrive torque and backlash performance.