VAXOR MOTOR

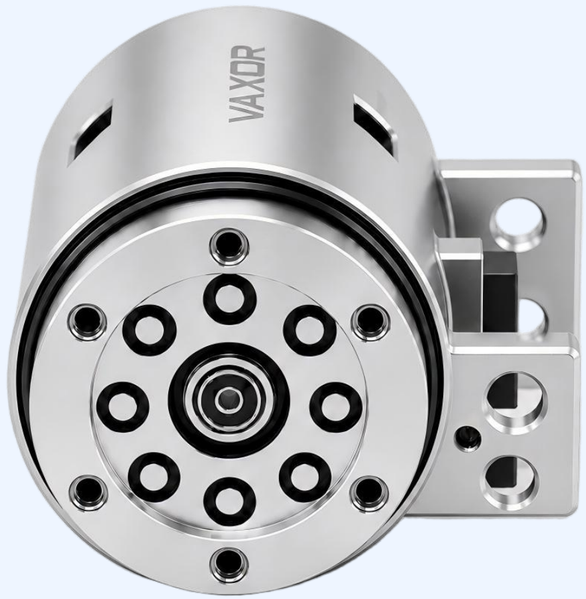
MICRO JOINT ACTUATOR

VAXOR X20 SERIES

Φ20 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.

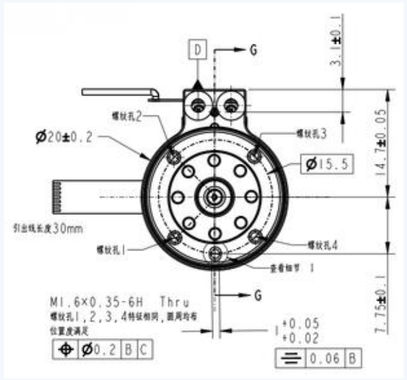
Φ20 mm	800 mN•m	30arcmin
Product Diameter	Maximum Initial Torque	Gear Backlash

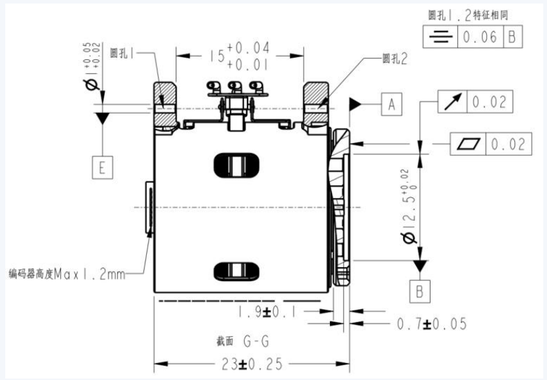


X20S / X20L

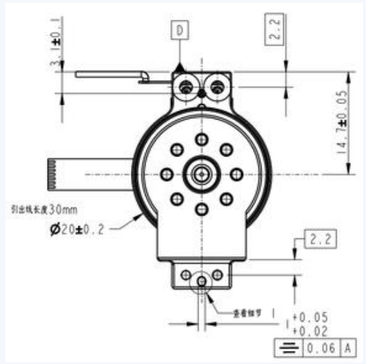
Mechanical Dimensions & Electrical Interface

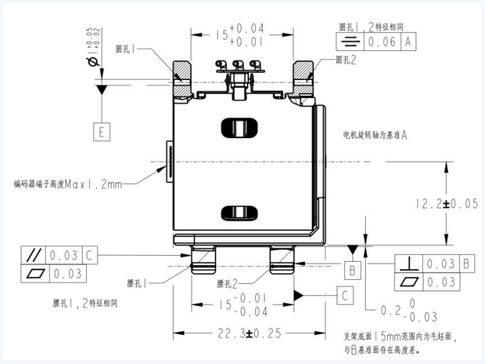
X20S-UM15/30/50-MH-4



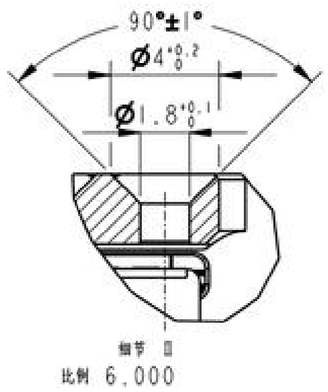


X20L-UM15/30/50-MH-4

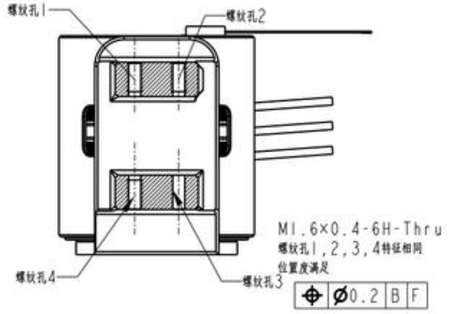




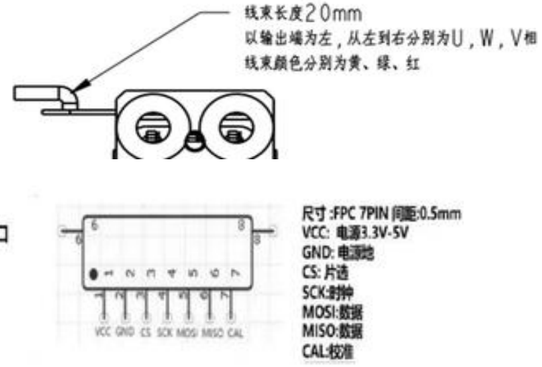
Housing Mounting Hole Detail



L-Bracket Mounting Hole Detail



ELECTRICAL INTERFACE



Technical Specifications & Performance Curves

12 / 24 / 48 V
Nominal Voltage

800 mN•m
Maximum Initial Torque

30 arcmin
Gear Backlash

37.2 / 41.6 g
Total Weight

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

Motor Data

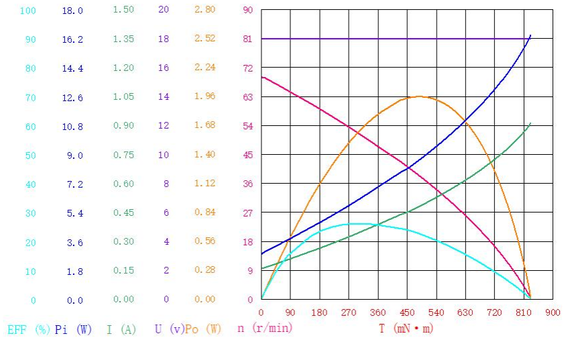
Parameter	Unit	Value
No Load Speed	rpm	≤3500
Nominal Speed	rpm	≤2000
Continuous Stalling Torque* (Chassis Temperature130°)	mN·m	>17.2
Initial Torque (cold state)* (Chassis Temperature25°)	mN·m	>26.9
Continuous Stalling Phase Current* (Chassis Temperature130°)	A	0.7
Stalling Torque (Max)*	mN·m	>37.1
Maximum Stalling PhaseCurrent* (bus voltage ≥18V)	A	1.5
Terminal Resistance*	Ω	6.2
Unbalanced Three-Phase Resistance	%	≤2
Terminal Inductance*	mH	1.65
Unbalanced Three-Phase Inductance	%	≤2
Torque Constant	mN·m/A	29.5
Speed Constant	rpm/V	323
Rotor Inertia	gcm2	1

Assembly Data

Parameter	Unit	Gear Ratio 15:1	Gear Ratio 30:1	Gear Ratio 50:1
Gear Efficiency (maximum)	%	65	65	64
Gear Efficiency (Stalling Point)	%	55	55	58
Continuous Stalling Torque	mN·m	180	350	450
Maximum Initial Torque	mN·m	280	550	800
Encoder	—	Absolute Magnetic Encoder		
Communication Protocol	—	SPI		
Total Weight	g	37.2(S)/41.6(L)		
Total Inertia	g·cm²	2.52		

Backdrive Torque & Backlash

Precision	Parameter	Unit	Gear Ratio 15:1	Gear Ratio 30:1	Gear Ratio 50:1
P0	Counter-Drive Torque	mN·m	60	110	180
	Gear Backlash	arcmin	≤30	≤30	≤30
P1	Counter-Drive Torque	mN·m	150	300	500
	Gear Backlash	arcmin	≤50	≤50	≤50



Efficiency • Current • Speed • Output Power

Thermal Data

Loss Power	W	3	5	6.5
Chassis Temperature	℃	60	95	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.