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M2 Series

AC Servo System

Reliable Easy to use Fast
Intelligent Safe Professional

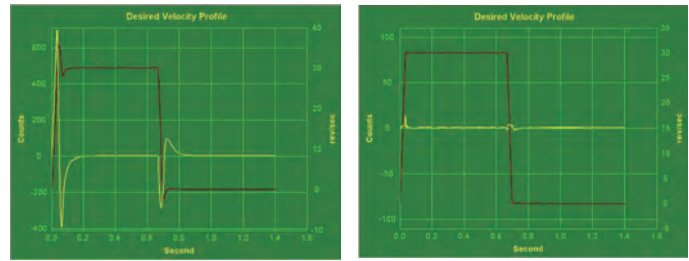


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■ Easy to Use On-line Auto Tuning

M2 servo system can accomplish real time response to the dynamic feedback of the load and optimize gain tuning parameters on-line automatically. This auto tuning function can greatly save debugging time and simplify the debugging procedure. These all can be done by the PC based software in only a few minutes.



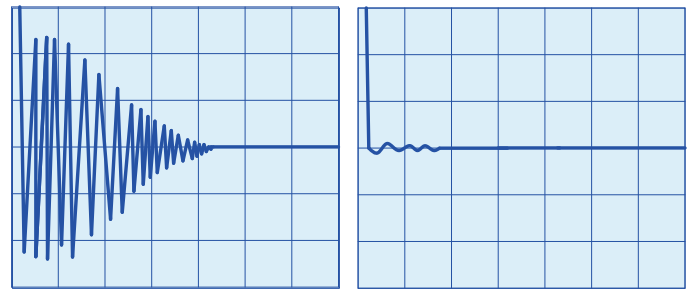
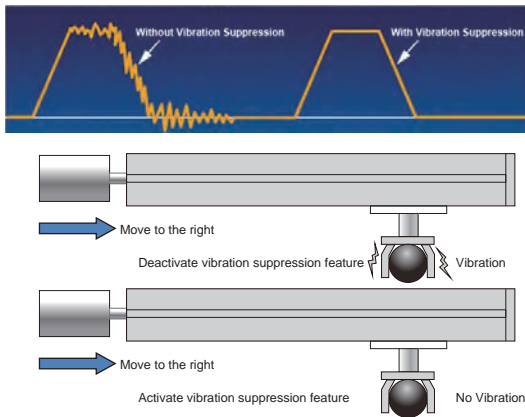
Before Auto Tuning

After Auto Tuning

■ Advanced Anti Vibration Function

M2 servo system has advanced anti vibration function which include anti resonance and vibration damping. Anti resonance uses two notch filters to overcome the resonance from the natural mechanical characteristic of the system.

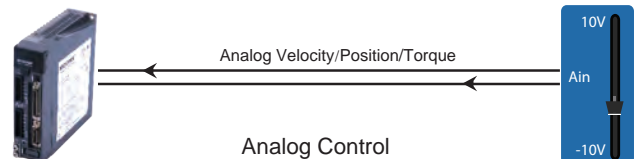
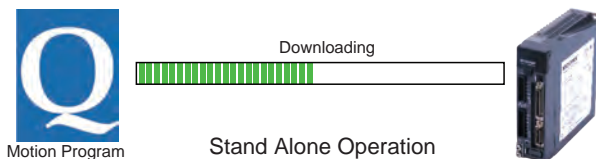
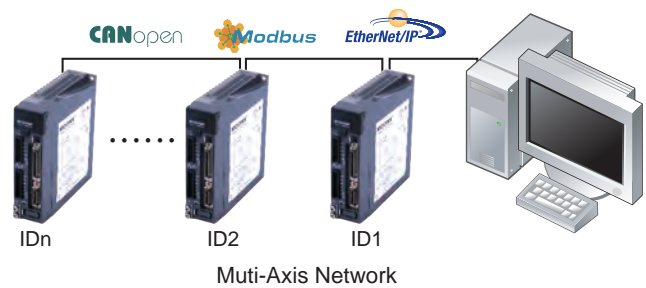
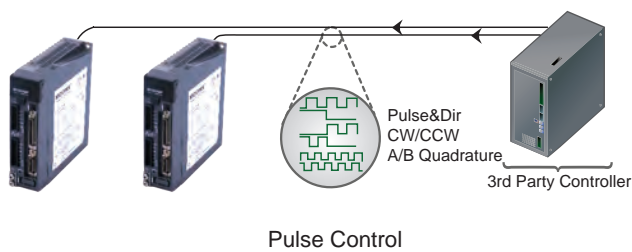
Vibration damping uses an adjustable damping ratio in the controller to improve the damping characteristic of the system, which can reduce the vibration of the system.



Without Anti vibration

With Anti vibration

■ Intelligent Q programming, Various Industrial Field Bus Supported



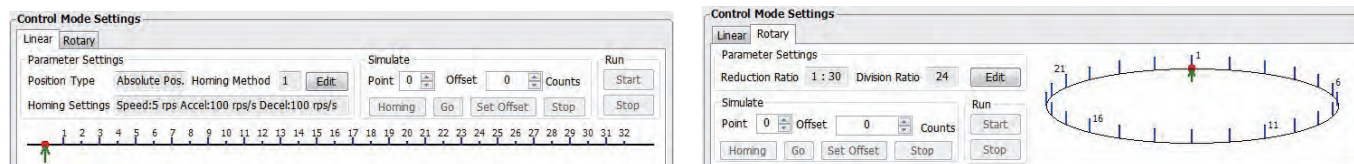
- Modbus/RTU
- CANopen CiA301 and CiA402
- EtherNet/IP
- eSCL



Flexible Internal Position Table

Position Table include Linear motion and Circular motion. Each Position can be triggered by the external digital inputs without the pulse & direction signals send by the motion controllers.

- Up to 64 points in Linear motion. Velocity, acceleration, deceleration can be set separately for each point.
- Up to 12 homing methods for Linear motion
- Up to 24 division ratios. Indexing Plate can be applied by setting the reduction gear ratio and division ratio.



Easy to Use Control Panel, Friendly Tuning Software

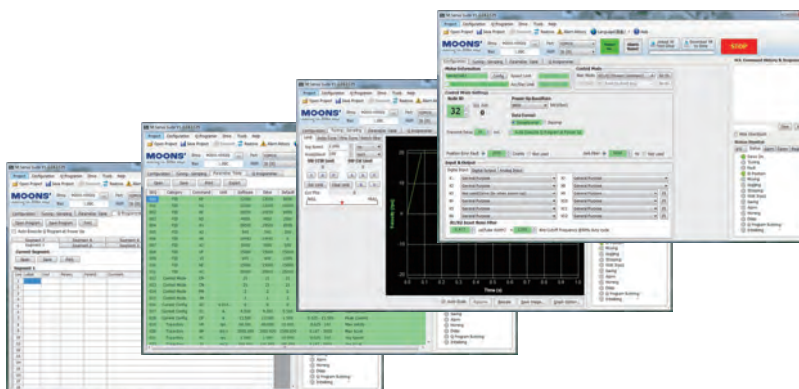
On board Control Panel

- Basic parameters setting and query
- Drive status LED display



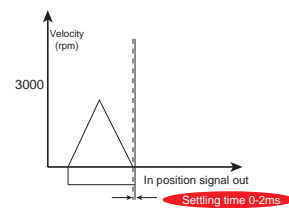
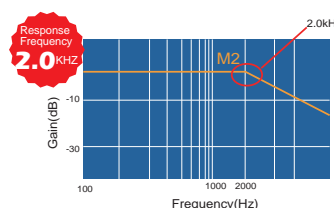
M Servo Suite tuning software

- Friendly interface
- Easy set up within just several steps
- Drive set up and configuration
- Easy to use on line auto tuning
- Built in oscilloscope for motion testing and monitoring
- Write and save SCL scripts
- On-line help integrated



Good Response Frequency and Settling Time

M2 has 2.0KHz response frequency and 0-2ms settling time. These come from the high sample rate control algorithm, fast response velocity feed forward and torque feed forward math model and flexible filter function. These greatly shorten the system response time, improve the accuracy and efficiency.



Various I/Os

- Two EIA-422 standard high speed differential inputs
- Four high speed inputs, accept 5-24VDC, input frequency up to 2MHz with digital filters
- Eight general purpose inputs, 5-24VDC
- Two analog inputs
- Five general purpose outputs, 30VDC 30mA max
- One motor brake control output, 30VDC 100mA max
- Integrated Internal Regeneration Absorbing Resistor, up to 40 Watts

Servo Drive Numbering Information

M2DV - □ □ □ 2 □ ***

M2 Series AC Servo Drive

Current Code	Continuous Current (RMS)	Boost Current (RMS)
1D8	1.75A	5.25A
3D0	3.00A	9.00A
4D5	4.50A	13.50A

Customized Specification (If Applicable)

Communication Type	Configuration	Description	Communication
S	Mini USB	Basic Type	-----
Q		Q Type	RS-232
R		Q Type (Modbus/RTU Type)	RS-485
C		CANopen Type	CANBus
E		eSCL Type	Ethernet
IP		EtherNet/IP Type	Ethernet

Voltage Code	Input Voltage
2	Single/Three-Phases 240VAC ± 15%, 50/60Hz

Servo Motor Numbering Information

SM 04 01 A E2-K CD-N N V**

Servo Motor

Frame Size
04-40mm
06-60mm
08-80mm

Motor Length			
	□40	□60	□80
01	50W	200W	
02	100W	400W	
03			750W

Winding
A: 320 VDC (240 VAC)

Shaft
K: Standard Keyway

Feedback
E4: 2500 ppr Optical Encoder and Shared Commutation Tracks

Customized Specification (If Applicable)

Shaft Seal
V: Shaft seal shipped with motor, but not placed on shaft

Thermal Protector

N: No Protector

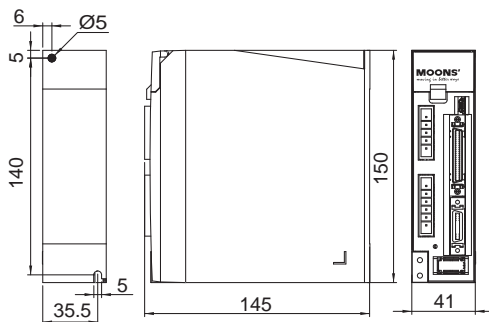
Brake Option

N: No Brake
B: 24VDC Brake

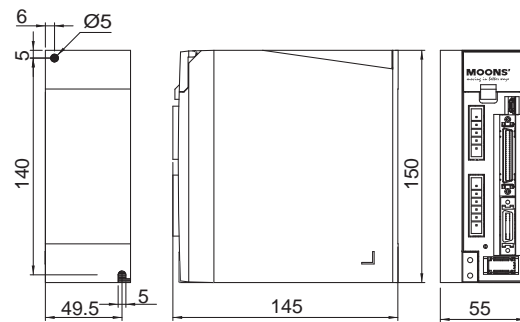
Connections

CD: 300mm (12") Shielded Cables with AMP 4 Pin, 6-7 Amp Motor Connector.

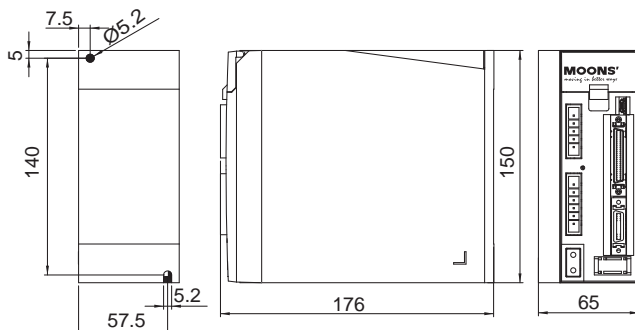
Drive Dimensions (Unit:mm)



M2DV-1D8



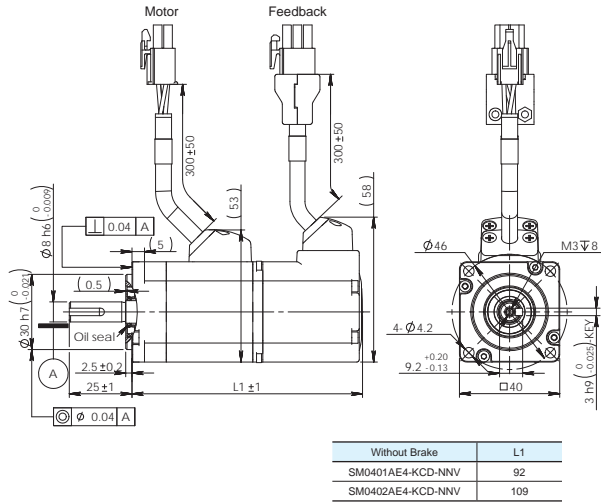
M2DV-3D0



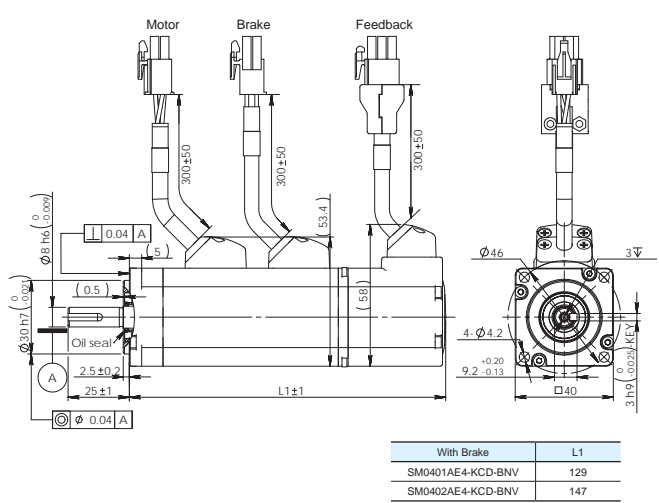
M2DV-4D5

Servo Motor Dimensions(Unit:mm)

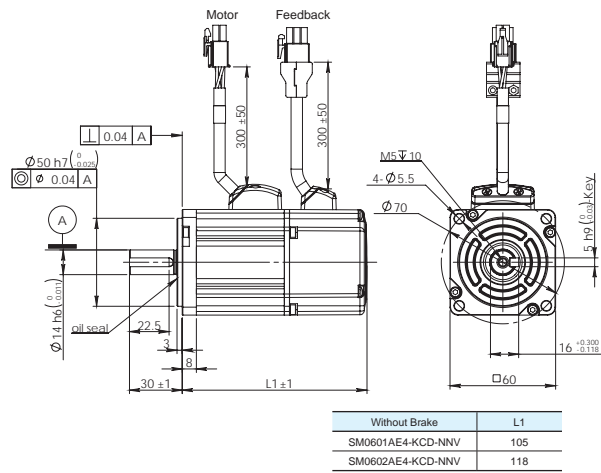
□ Frame Size 40mm Servo Motor without Brake



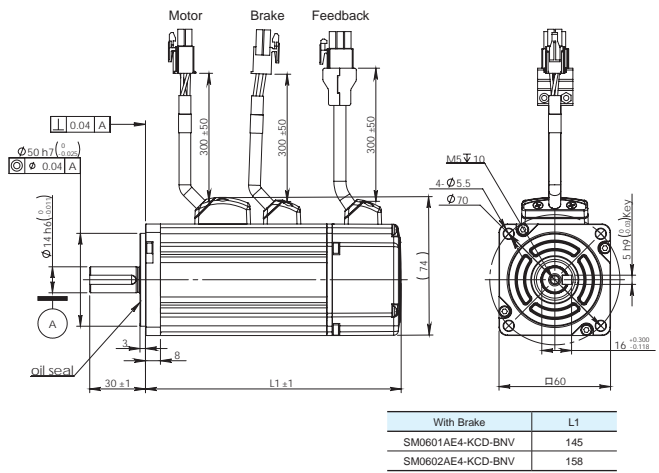
□ Frame Size 40mm Servo Motor with Brake



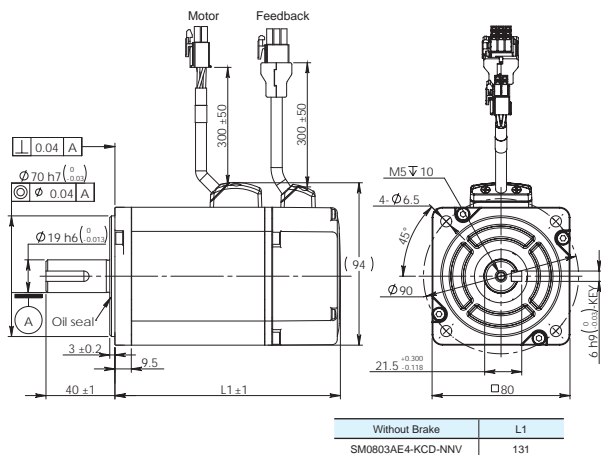
□ Frame Size 60mm Servo Motor without Brake



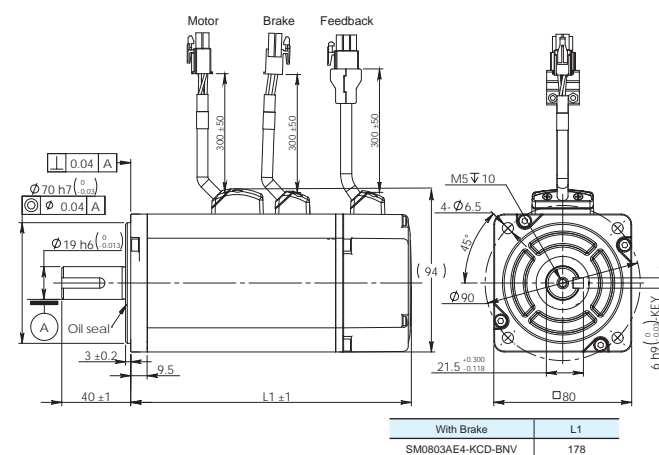
□ Frame Size 60mm Servo Motor with Brake



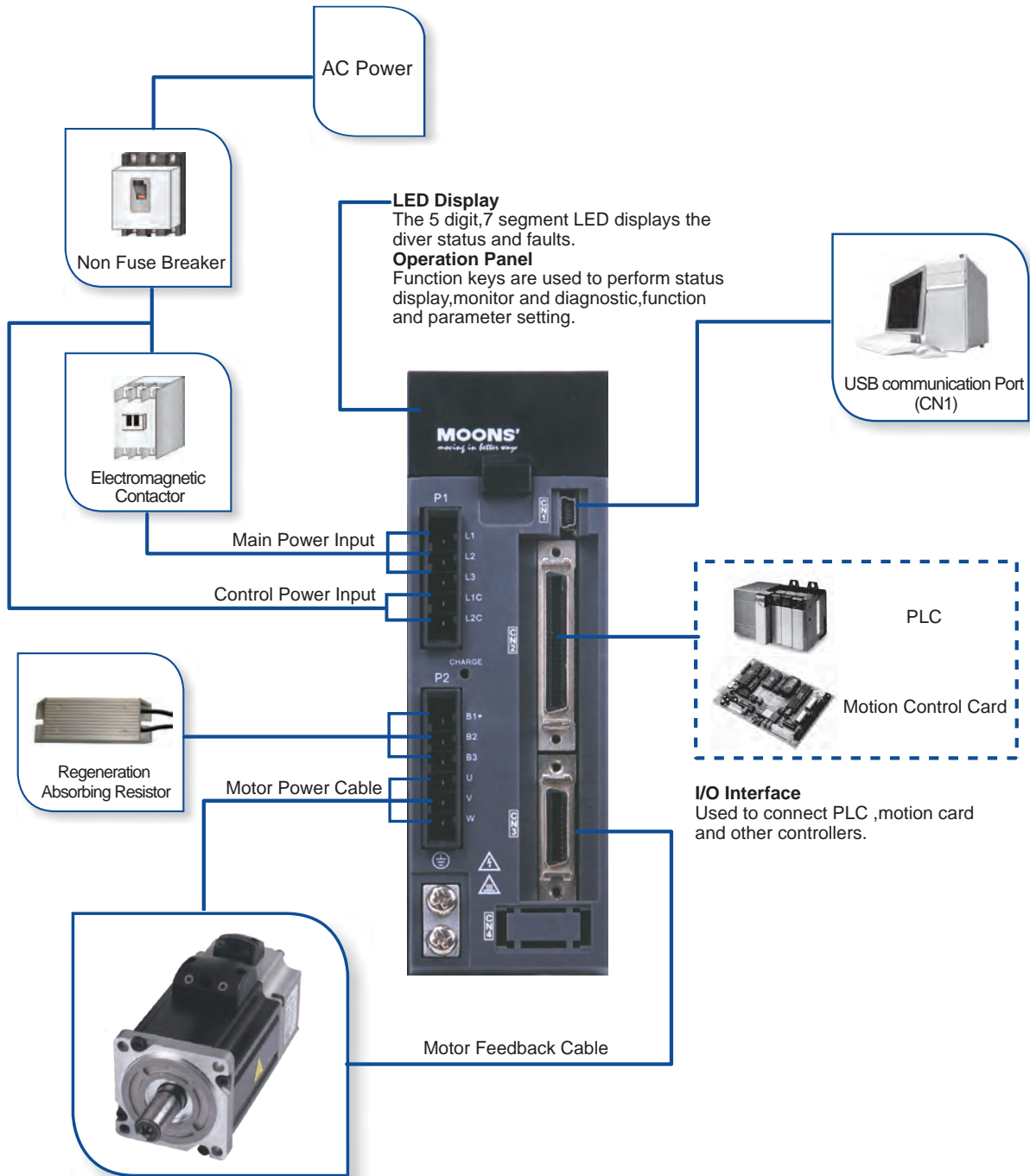
□ Frame Size 80mm Servo Motor without Brake



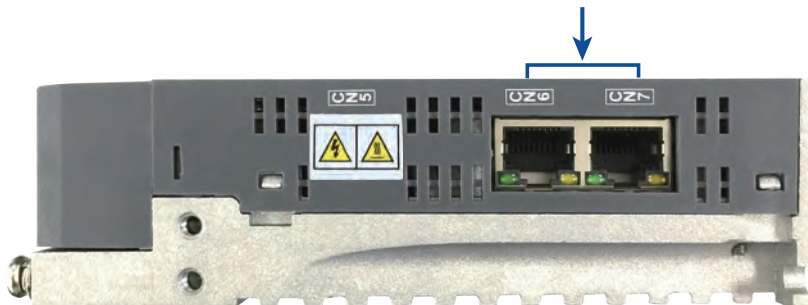
□ Frame Size 80mm Servo Motor with Brake



■ System Configuration



CANBus, RS-485, Ethernet
Communication Port



■ Specification and Ordering Information

			50W	100W	200W	400W	750W	
			AC Servo Motor	2500ppr Increment Encoder	Without Brake	SM0401AE4-KCD-NNV	SM0402AE4-KCD-NNV	SM0601AE4-KCD-NNV
With Brake	SM0401AE4-KCD-BNV	SM0402AE4-KCD-BNV			SM0601AE4-KCD-BNV	SM0602AE4-KCD-BNV	SM0803AE4-KCD-BNV	
Rated Speed	(RPM)	3000						
Maximum Speed	(RPM)	6000						
Maximum Torque	(N•m)	0.19		0.32	0.64	1.27	2.4	
Maximum Torque	(N•m)	0.48		0.93	1.9	3.8	6.9	
Rated Current	(A)	0.7		1.2	1.5	2.75	4.5	
Maximum Current	(A)	1.75		3.6	4.5	8.3	13.5	
Rotor Inertia	Kg•m ²	0.0232×10 ⁻⁴ *0.0298×10 ⁻⁴ (*With Brake)		0.0428×10 ⁻⁴ *0.0494×10 ⁻⁴ (*With Brake)	0.165×10 ⁻⁴ *0.22×10 ⁻⁴ (*With Brake)	0.272×10 ⁻⁴ *0.326×10 ⁻⁴ (*With Brake)	0.89×10 ⁻⁴ *0.97×10 ⁻⁴ (*With Brake)	
Insulation Class		Class B						
Protection Class		IP65(except shaft through hole and cable end connetor)						
Oil Seal		With Oil seal						
AC Servo Drive	Pulse&Direction Type	---		Basic Type	M2DV-1D82S	M2DV-1D82S	M2DV-1D82S	M2DV-3D02S
		RS-232	Q Type	M2DV-1D82Q	M2DV-1D82Q	M2DV-1D82Q	M2DV-3D02Q	M2DV-4D52Q
	Fieldbus Type	RS-485	SCL	M2DV-1D82R	M2DV-1D82R	M2DV-1D82R	M2DV-3D02R	M2DV-4D52R
			Modbus RTU	M2DV-1D82C	M2DV-1D82C	M2DV-1D82C	M2DV-3D02C	M2DV-4D52C
		CAN	CANopen	M2DV-1D82IP	M2DV-1D82IP	M2DV-1D82IP	M2DV-3D02IP	M2DV-4D52IP
		EtherNet/IP	EtherNet	M2DV-1D82E	M2DV-1D82E	M2DV-1D82E	M2DV-3D02E	M2DV-4D52E
		eSCL		M2DV-1D82E	M2DV-1D82E	M2DV-1D82E	M2DV-3D02E	M2DV-4D52E
	Specifications	Rated Current	(A)	1.8			3	4.5
		Maximum Current	(A)	5.4			9	13.5
		Input Power	AC Input	Single Phase 240VAC ±10% 50/60Hz			Single /Three Phase 240VAC ±10% 50/60Hz	
		Heat Sinking Method		Natural cooling (without fan)				
		Control Signal (Digital I/O)	Input	8 Configurable Optically isolate digital general inputs, 5-24VDC, max input current 20mA 4 Configurable Optically isolate digital high speed inputs, 5-24VDC, max input current 20mA				
			Output	5 Configurable optically isolated digital outputs, 30VDC, max input current 30mA One motor brake control output, 30VDC 100mA max				
Analog Signal		Input	2 Analog inputs, DC-10V~+10V					
		Output	N/A					
Pulse Signal		Input	2 optically isolated inputs 500Khz(Open collector), 2 high speed differential input 2MHz					
		Output	10000counts/rev,A/B/Z Line Driver					
Communication Port		USB	Online Auto-Tuning					
Operation Panel		5 digit, 7 segment LED display, 4 setting switch						
Regenerative Resistor		Build-in						
Faults & Warning		Over-voltage, Under-voltage, Over-current, Encoder feedback loss, Drive over temperature, Position error, Safety Function STO						
Environment		Ambient Temperature:0~40°C, Humidity 10~85%, Altitude<1000m, Vibration 0.5g						
Certification		RoHS, CE IEC 61800-3: 2004, IEC 61800-5-1: 2007						

Optional Accessories

P/N	Category	Description
REG25W50	Regeneration Absorbing Resistor	50Ω 25W
REG25W100	Regeneration Absorbing Resistor	100Ω 25W
REG50W25	Regeneration Absorbing Resistor	25Ω 50W
REG50W50	Regeneration Absorbing Resistor	50Ω 50W
2620-150	Cable	M2 USB mini Cable, 1.5M
1620-100	Cable	M2 Motor Flexible Cable, 1M
1620-300	Cable	M2 Motor Flexible Cable, 3M
1620-500	Cable	M2 Motor Flexible Cable, 5M
1620-1000	Cable	M2 Motor Flexible Cable, 10M
1621-100	Cable	M2 Motor Standard Cable, 1M
1621-300	Cable	M2 Motor Standard Cable, 3M
1621-500	Cable	M2 Motor Standard Cable, 5M
1621-1000	Cable	M2 Motor Standard Cable, 10M
1602-300	Cable	M2 Motor Brake Cable, 3M
2621-100	Cable	M2 Encoder Flexible Cable, 1M
2621-300	Cable	M2 Encoder Flexible Cable, 3M
2621-500	Cable	M2 Encoder Flexible Cable, 5M
2621-1000	Cable	M2 Encoder Flexible Cable, 10M
2622-100	Cable	M2 Encoder Standard Cable, 1M
2622-300	Cable	M2 Encoder Standard Cable, 3M
2622-500	Cable	M2 Encoder Standard Cable, 5M
2622-1000	Cable	M2 Encoder Standard Cable, 10M
M2 Driver Kit	Connector	M2 driver connector set (Power supply, Control Connector, Encoder Connector)
M2-50P	Connector	CN2 Controller Connector
M2-26P	Connector	CN3 Encoder Connector
M2 Motor Kit	Connector	M2 servo motor and drive inter connector (power and encoder)



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