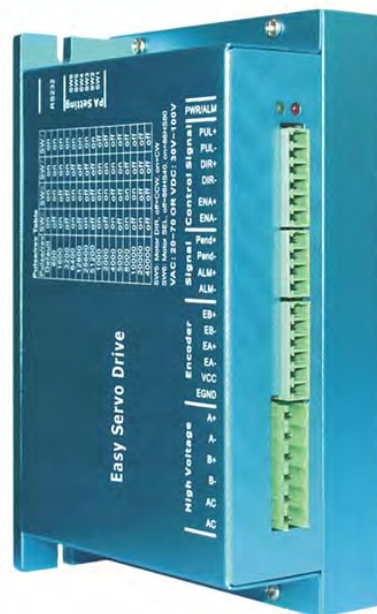




# Datasheet of the MEZ Stepper Servo Drive

## *MEZ-2D1080*



**20-70 VAC or 30-100VDC, 8.2A Peak, Closed-loop, No Tuning**

Version 0.1.1

<http://stepper.motorsmfg.com>

## China Stepper Motor Inc. *Features*

- Step and direction control
- Closed position loop for no loss of movement synchronization
- Operating voltage: 20-70 VAC or 30-100VDC
- Load based output current of 0.5 - 8.2 A
- High torque at starting and low speed
- No torque reservation
- High stiffness at standstill
- Significantly reduced motor heating
- Smooth motor movement and extra low motor noise
- Quick response, no delay and zero settling time
- No loss of steps; no hunting; no overshooting
- Plug-and-play and no tuning

## *Descriptions*

MEZ-2D1080 is one of the models in China Stepper Motor Inc. MEZ series servo drives which can take 20-70 VAC or 30-100 VDC operating voltage, and output 0.5 - 8.2 A continuous load-based current. It is capable of driving NEMA 23, 24 and 34 easy servo motors (stepper motors with encoders) with the position loop closed in real time.

Based on latest DSP technology and adopting MotionKing's advanced control algorithm, MEZ-2D1080 servo drive applies servo control on easy servo motors. When adopted with an easy servo motor, it combines features of both open loop steppers & brushless servo systems, and offers many unique advanced features for excellent motion control system performance.

When an MEZ-2D1080 servo drive is implemented with a China Stepper Motor Inc. ES-M series easy servo motor, there is No Configuration Needed for almost all applications. The factory setting of the resolution is 1,600 pulses per resolution (equal to 8 microstep in 2-phase stepper systems). Via DIP switches, a user can also easily change the output resolution to one of 15 output resolutions 800 to 51,200 (equal to 4-256 microstep in 2-phase stepper systems). With China Stepper Motor Inc. configuration software, ProTuner, an advanced user can also set custom settings of resolution, current & position loop parameters, idle current percentage, etc.

## *Applications*

With many unique advanced features, China Stepper Motor Inc. MEZ-2D1080 servo systems are ideal for many industries to upgrade stepper performance or replace brushless servo systems in many applications.

China Stepper Motor Inc. OEM clients have successfully implemented MEZ-2D1080 driven MEZ servo systems in applications such as small-to-large size CNC routers, CNC mills, plasmas, large-scale laser cutters / engravers, labeling equipments, robotics, gemstone processing machines, pick & place machines, X-Y tables.

China Stepper Motor Inc. **Specifications**

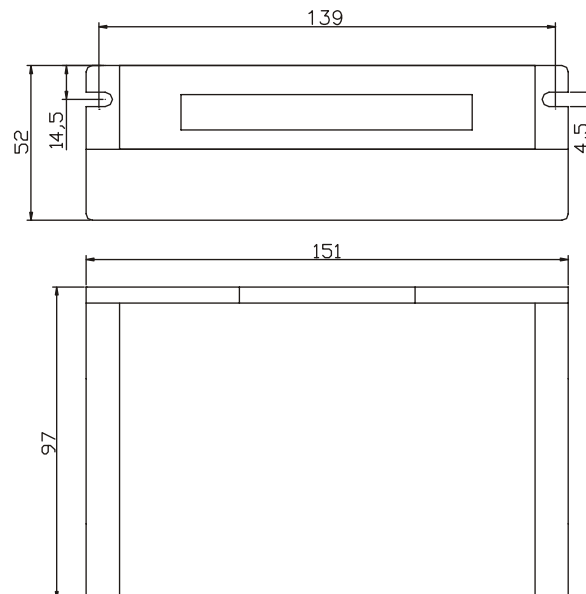
**Electrical Specifications**

Parameter	Min	Typical	Max	Unit
Input Voltage	20	-	70	VAC
	30	60	100	VDC
Output Current	0.5	-	8.2(Peak)	A
Pulse Input Frequency	0	-	200	kHz
Logic Signal Current	7	10	16	mA
Isolation Resistance	500	-	-	MΩ

**Operating Environment**

Cooling	Natural Cooling or Forced cooling	
Operating Environment	Environment	Avoid dust, oil fog and corrosive gases
	Storage Temperature	-20°C — 65°C (-4°F — 149°F)
	Ambient Temperature	0°C — 50°C (32°F — 122°F)
	Humidity	40%RH — 90%RH
	Operating Temperature (Heat Sink)	70°C (158°F) Max
Storage Temperature	-20°C — 65°C (-4°F — 149°F)	
Weight	580 g (20.5 oz)	

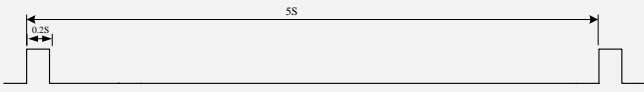
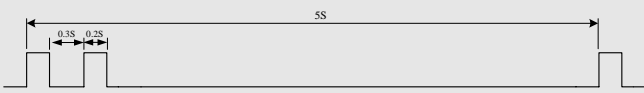

**Mechanical Specifications**



China Stepper Motor Inc. **Protection**

**Indications**

The green indicator turns on when power-up. When drive protection is activated, the red LED blinks periodically to indicate the errors

Priority	Time(s) of Blink	Sequence wave of RED LED	Description
1st	1		Over-current protection
2nd	2		Over-voltage protection
3rd	7		Position Following Error

**Connectors and Pin Assignment**

The MEZ-2D1080 has four connectors, connector for control signals connections, connector for status signal connections, connector for encoder feedback and connector for power and motor connections.

Control Signal Connector – Screw Terminal			
Pin	Name	I/O	Description
1	PUL+	I	<u>Pulse Signal</u> : In single pulse (pulse/direction) mode, this input represents pulse signal, each rising or falling edge active (software configurable, see easy servo drive software manual for more detail); In double pulse mode (software configurable), this input represents clockwise (CW) pulse, active both at high level and low level. 4.5-24V when PUL-HIGH, 0-0.5V when PUL-LOW. For reliable response, pulse width should be longer than 2.5μs.
2	PUL-	I	
3	DIR+	I	<u>Direction Signal</u> : In single-pulse mode, this signal has low/high voltage levels, representing two directions of motor rotation. In double-pulse mode (software configurable), this signal is counter-clock (CCW) pulse, active both at high level and low level. For reliable motion response, DIR signal should be ahead of PUL signal by 5μs at least. 4.5-24V when DIR-HIGH, 0-0.5V when DIR-LOW. Please note that rotation direction is also related to motor-driver-encoder wiring match. Exchanging both the connection of two wires for a coil and an encoder channel to the driver the connection will reverse motion direction. Or you can toggle the SW5 to reverse the motion direction.
4	DIR-	I	
5	ENA+	I	<u>Enable Signal</u> : This signal is used for enabling/disabling the driver. In default, high level (NPN control signal) for enabling the driver and low level for disabling the driver. Usually left <b>UNCONNECTED (ENABLED)</b> . Please note that PNP and Differential control signals are on the contrary, namely Low level for enabling. The active level of ENA signal is software configurable.
6	ENA-	I	

China Stepper Motor Inc. *Connectors and Pin Assignment (Continued)*

Status Signal Connector – Screw Terminal			
Pin	Name	I/O	Description
1	INP+	O	<u>In-position Signal</u> : OC output signal, active when the difference between the actual position and the command position is zero. This port can sink or source 20mA current at 24V. The resistance between INP+ and INP- is active at high impedance.
2	INP-	O	
3	FAULT+	O	<u>Fault Signal</u> : OC output signal, active when one of the following protection is activated: over-voltage, over current and position following error. This port can sink or source 20mA current at 24V. In default, the resistance between FAULT+ and FAULT- is low impedance in normal operation and become high when the MEZ-2D1080 goes into error. The active level of alarm signal is software configurable.
4	FAULT-	O	

Encoder Feedback Connector – Screw Terminal			
Pin	Name	I/O	Description
1	EB+	I	Encoder channel B+ input
2	EB-	I	Encoder channel B- input
3	EA+	I	Encoder channel A+ input
4	EA-	I	Encoder channel A- input
5	VCC	O	+5V @ 100 mA max.
6	EGND	GND	Signal ground

Power and Motor Connector – Screw Terminal			
Pin	Name	I/O	Description
1	A+	O	Motor Phase A+
2	A-	O	Motor Phase A-
3	B+	O	Motor Phase B+
4	B-	O	Motor Phase B-
5	AC	I	Power Input, 20-70VAC or 30-100VDC
6	AC	I	

China Stepper Motor Inc. **DIP Switch Settings**

**Microstep Resolution (SW1-SW4)**

Steps/Revolution	SW1	SW2	SW3	SW4
Software Configured (Default 200)	on	on	on	on
800	off	on	on	on
1600	on	off	on	on
3200	off	off	on	on
6400	on	on	off	on
12800	off	on	off	on
25600	on	off	off	on
51200	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

**Motor Direction (SW5) and Self-test (SW6)**

	Function	On	Off
SW5	Default Direction <sup>Note</sup>	CW (clock-wise)	CCW (counter-clock-wise)
SW6	Self-test	Self-test is active	Self-test is close

*Note: The actual direction is related to the DIR level. You can toggle SW5 to change it once.*

**Current Control**

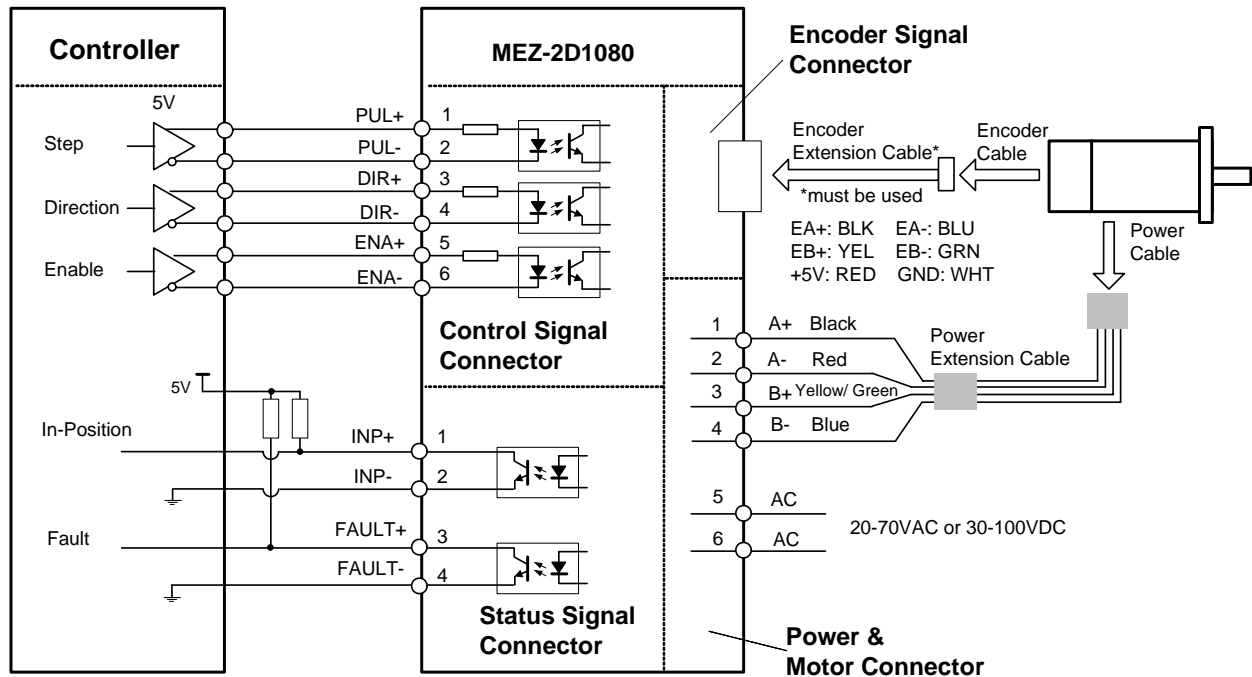
The motor current will be adjusted automatically regarding to the load or the stator-rotor relationship. However, the user can also configure the current in the tuning software. The configurable parameters include close-loop current, holding current, encoder resolution, micro step and etc. There are also PID parameters for the current loop, and have been tuned for MotionKing’s matching motor so the user does not need to tune them.

**China Stepper Motor Inc.**  
**Easy Servo Motors**

The MEZ-2D1080 can work with the following easy servo motors from China Stepper Motor Inc .

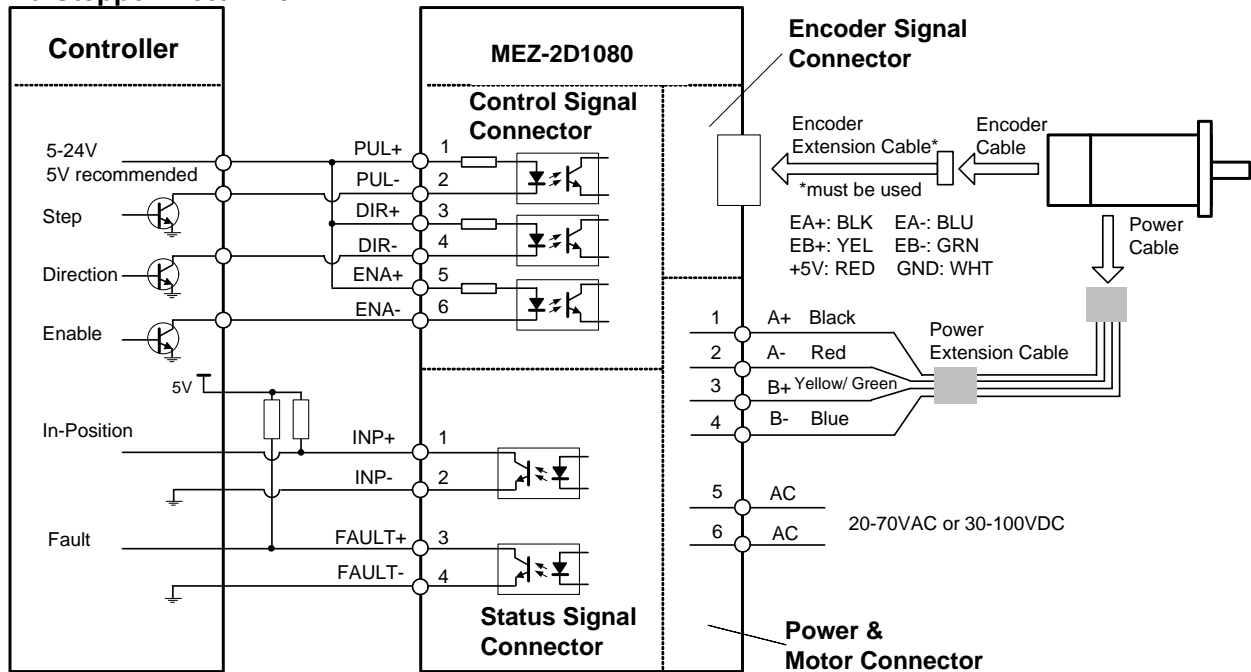
	MEZ-M2-3442-E10	MEZ-M2-3442-E10	Wiring Diagram
Step Angle (Degree)	1.8	1.8	
Holding Torque (N.m)	4.2	8.0	
Phase Current (A)	5.6	7.0	
Phase Resistance (Ohm)	0.3	0.38	
Phase Inductance (mH)	3.0	3.2	
Inertia (g.cm <sup>2</sup> )	1500	2580	
Weight (Kg)	2.8	4.0	
Encoder (lines / Rev.)	1000	1000	

**Typical Connections**



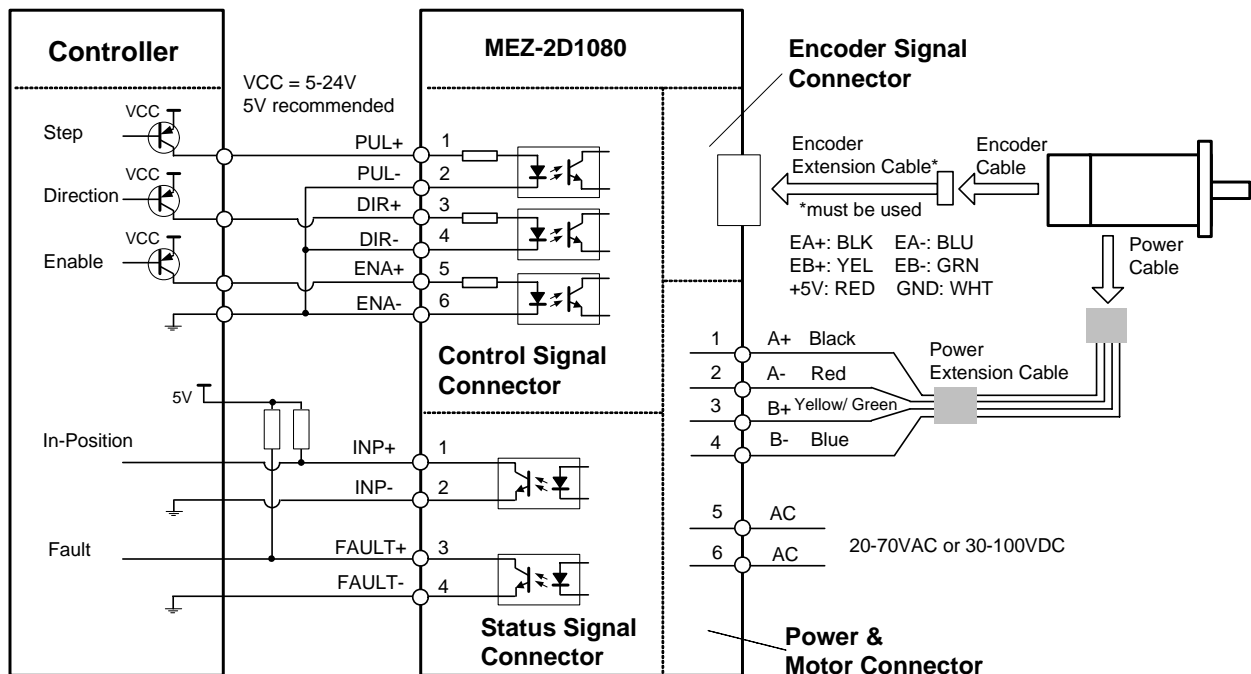
Connections to controller of differential output

China Stepper Motor Inc.



Connections to controller of sinking output

**Typical Connections (Continued)**



Connections to controller of sourcing output