DM2282 2-phase Digital Stepper Drive

80-220VAC, 0.5-8.2A peak, Auto-configuration, Low Noise

- Anti-Resonance provides optimal torque and nulls mid-range instability
- Motor auto-identification and parameter auto-configuration technology, offers optimal responses with different motors
- Multi-Stepping allows a low resolution step input to produce a higher microstep output, thus offers smoother motor movement
- Microstep resolutions programmable, from full-step to 102,400. It can also be set via DIP switches.
- Soft-start with no “jump” when powered on
- Supply voltage up to +220 VAC
- Output current programmable, from 0.5A to 8.2A. It can also be set via DIP switches.
- Pulse input frequency up to 200 KHz
- TTL compatible and optically isolated input
- Automatic idle-current reduction (Reduction rate can be software configured)
- Suitable for 2-phase and 4-phase motors
- Support PUL/DIR and CW/CCW modes
- Over-voltage, Under-voltage, over-current, phase-error protections

Descriptions

The DM2282 is a high voltage, fully digital stepper drive developed with advanced DSP control algorithm based on the latest motion control technology. It has achieved a unique level of system smoothness, providing optimal torque and nulls mid-range instability. Its motor auto-identification and parameter auto-configuration feature offers quick setup to optimal modes with different motors. Compared with traditional analog drives, DM2282 can drive a stepper motor at much lower noise, lower heating, and smoother movement. Its unique features make DM2282 an ideal choice for high requirement applications.

Applications

Suitable for a wide range of stepper motors, from NEMA size 34 to 51. It can be used in various applications such as laser cutters, laser markers, high precision X-Y tables, labeling machines, CNC router, etc. Its unique features make the DM2282 an ideal choice for applications that require both low-speed smoothness and high speed performances

Specifications

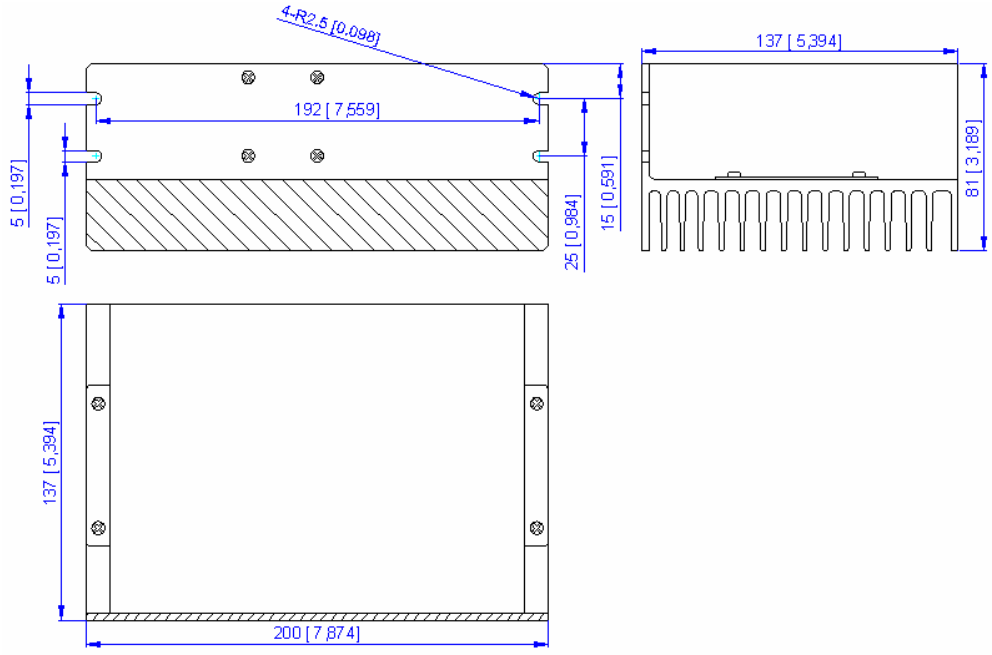
Electrical Specifications

Parameter	Min	Typical	Max	Unit
Input Voltage	80	220	230	VAC
Pulse Input Frequency	0	-	200	kHz
Logic Signal Current	7	10	16	mA
Isolation Resistance	500	-	-	MΩ

Operating Environment

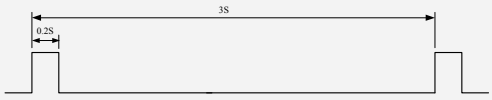
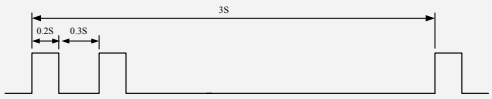
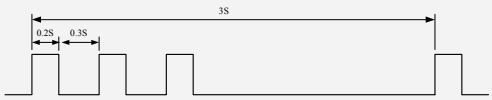
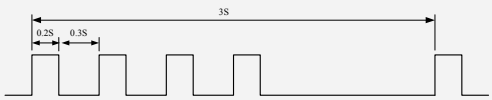
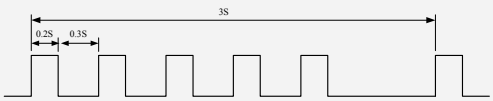
Cooling	Natural Cooling or Forced cooling	
Operating Environment	Environment	Avoid dust, oil fog and corrosive gases
	Storage Temperature	-20℃ — 65℃ (-4℉ — 149℉)
	Ambient Temperature	0℃ — 50℃ (32℉ — 122℉)
	Humidity	40%RH — 90%RH
	Operating Temperature (Heat Sink)	70℃ (158℉) Max
Storage Temperature	-20℃ — 65℃ (-4℉ — 149℉)	
Weight	1.3Kg (2.87lbs)	

Mechanical Specifications



Protection Indications

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

Priority	Time(s) of Blink	Sequence wave of RED LED	Description
1st	**1**		Over-current Protection
2nd	**2**		Over-voltage Protection
3rd	**3**		Low-voltage Protection
4th	**4**		Phase Error Protection
5th	**5**		Over Temperature Protection

Pin Assignment

The DM2282 has one barrier strip connector for power and motor connections and one screw terminal for control signal connections.

Power and Motor Connector			
Pin	**Name**	**I/O**	**Description**
1	**PE**	-	Recommend connect this port to the ground for better safety.
2	**L**	I	Power supply inputs. If AC input, recommend use isolation transformers with theoretical output voltage of 80~220VAC. DC input range is115~305VDC
3	**N**	I	
4	**A+**	O	Motor Phase A+
5	**A-**	O	Motor Phase A-
6	**B+**	O	Motor Phase B+
7	**B-**	O	Motor Phase B-

Pin Assignment

Control Signal Connector			
Pin	**Name**	**I/O**	**Description**
1	**PUL+**	I	Pulse Signal: In single pulse (pulse/direction) mode, this input represents pulse signal, each rising or falling edge active (software configurable, see DM drives software operational manual for the detail); In double pulse mode (software configurable), this input represents clockwise (CW) pulse, active both at high level and low level. 4-5V when PUL-HIGH, 0-0.5V when PUL-LOW. For reliable response, pulse width should be longer than 2.5μs. Series connect resistors for current-limiting when +12V or +24V used. The same as DIR and ENA signal.
2	**PUL-**	I	
3	**DIR+**	I	Direction Signal: 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. 4-5V when DIR-HIGH, 0-0.5V when DIR-LOW. Please note that rotation direction is also related to motor-driver wiring match. Exchanging the connection of two wires for a coil to the driver will reverse motion direction. The direction signal's polarity is software configurable.
4	**DIR-**	I	
5	**ENA+**	I	Enable signal: This signal is used for enabling/disabling the drive. In default, high level (NPN control signal) for enabling the driver and low level for disabling the driver. Usually left **UNCONNECTED (ENABLED)**. 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	
7	**FAULT+**	O	Fault Signal: OC output signal, active when one of the following protection is activated: over-voltage, over current, low voltage, phase error and over-temperature. This port can sink or source 20mA current at 24V. In default, the resistance between FAULT+ and FAULT- is high impedance in normal operation and become low when DM2282 goes into error.
8	**FAULT-**	O	

RS232 Communication Port

The RS232 communication port is used to configure the DM2282's peak current, microstep, active level, current loop parameters and anti-resonance parameters. See DM driver's software operational manual for more information.

RS232 Communication Port			
Pin	**Name**	**I/O**	**Description**
1	**NC**	-	Not connected.
2	**+5V**	O	+5V power only for STU (Simple Tuning Unit).
3	**TxD**	O	RS232 transmit.
4	**GND**	GND	Ground.
5	**RxD**	I	RS232 receive.
6	**NC**	-	Not connected.

DIP Switch Settings

Dynamic Current

Peak	RMS	SW1	SW2	SW3
Default	**Default**	OFF	OFF	OFF
2.2A	**1.6A**	ON	OFF	OFF
3.2A	**2.3A**	OFF	ON	OFF
4.2A	**3.2A**	ON	ON	OFF
5.2A	**3.7A**	OFF	OFF	ON
6.3A	**4.4A**	ON	OFF	ON
7.2A	**5.2A**	OFF	ON	ON
8.2A	**5.9A**	ON	ON	ON

Note: Due to motor inductance, the actual current in the coil may be smaller than the dynamic current setting, particularly under high speed condition.

Idle-Current

SW4 determines whether current-reduction is performed when there is no pulse applied to DM2282..

	ON	OFF
SW4	Motor current reduces automatically when there is no pulse applied to DM2282.	Motor current is the same as the dynamic current when there is no pulse applied to DM2282.

Microstep Resolution

Steps/Revolution	SW5	SW6	SW7	SW8
Software Configured (Default 200)	ON	ON	ON	ON
400	OFF	ON	ON	ON
800	ON	OFF	ON	ON
1600	OFF	OFF	ON	ON
3200	ON	ON	OFF	ON
6400	OFF	ON	OFF	ON
12800	ON	OFF	OFF	ON
25600	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
25000	OFF	OFF	OFF	OFF

Auto-Configuration

Switch **SW4** two times in two seconds will activate parameter Auto-configuration for DM2282's current loop. That is, OFF-ON-OFF or ON-OFF-ON. During Auto-configuration, motor parameters are identified and DM2282's current loop parameters are calculated automatically. The motor shaft will vibrate a little during the process of Auto-configuration which takes about 1 to 3 seconds.

Typical Connections

NPN Control Signal