Stepper Motor Driver — DM2282

1. Features:

- Anti-Resonance provides optimal torque and nulls mid-range instability
- Operating voltage: 150 - 230 VAC or 212 - 325 VDC
- 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
- Soft-start with no "jump" when powered on
- 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

2. Description:

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.

3. 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

4. Electrical Specification:

Parameters	Min.	Typ.	Max.	Unit
Output current	0,5	-	8.2	A
Supply Voltage	80 (115)	230 (325)	253 (325)	VAC (VDC)
Logical Signal Current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Minimal pulse width	2.5			µs
Minimal direction setup	5.0			µs
Isolation Resistance	500			MΩ

5. Further Specifications:

Parameters	Min.	Typ.	Max.
Microsteps / 1.8°	200		25600
Puls / Direction (PUL / DIR)		X	
Double pulse (CW / CCW)		X	
NEMA Sizes	23		34
Motor Type Mecheltron	57BYGH-XXX		86BYGH-XXX
Weight	1.58 kg		

6. Environment:

Cooling	Natural or forces cooling	
Operating Environment	Environment	Avoid dust, oil, fog and corrosive gases
	Ambient Temperature	0 °C - 40 °C
	Humidity	40 % RH bis 90 % RH
	Operating Temperature	max. 90 ℃
Storage Temperature	-20 °C to 65 °C	

7. DIP Switch Settings:

Dynamic Current Configuration				
Peak Current	**RMS Current**	**SW 1**	**SW 2**	**SW 3**
(Default)		Off	Off	Off
2,20 A	1,60 A	On	Off	Off
3,20 A	2,30 A	Off	On	Off
4,50 A	3,20 A	On	On	Off
5,20 A	3,70 A	Off	Off	On
6,20 A	4,40 A	On	Off	On
7,30 A	5,20 A	Off	On	On
8,20 A	5,90 A	On	On	On

SW4 is used to set the percentage of the motor idle current. In the OFF position, this means that the stall current is set to 50% of the selected output current. In the ON position, this means that the stall current is set equal to the selected dynamic current. The current is automatically reduced to 50% of the selected dynamic current 0.4 seconds after the last pulse.

Micro-Step-Resolution Configuration					
Micro Steps	**Steps/rev. (1,8°)**	**SW 5**	**SW 6**	**SW 7**	**SW 8**
Default		On	On	On	On
1/2	400	Off	On	On	On
1/4	800	On	Off	On	On
1/8	1600	Off	Off	On	On
1/16	3200	On	On	Off	On
1/32	6400	Off	On	Off	On
1/64	12800	On	Off	Off	On
1/128	25600	Off	Off	Off	On
1/5	1000	On	On	On	Off
1/10	2000	Off	On	On	Off
1/20	4000	On	Off	On	Off
1/25	5000	Off	Off	On	Off
1/40	8000	On	On	Off	Off
1/50	10000	Off	On	Off	Off
1/100	20000	On	Off	Off	Off
1/125	25000	Off	Off	Off	Off

8.Pin Assignment:

Pin	I / O	Details
Power and Motor Terminal Block		
PE	-	Connect for Protective Earth (Generally green-yellow wire)
N	I	Power supply inputs. If AC input, recommend use isolation transformers with theoretical output voltage
L	I	of 150 ~ 230 V AC
A +	O	Motor Phase A +
A -	O	Motor Phase A -
B +	O	Motor Phase B +
B -	O	Motor Phase B -

Signal Terminal Connector

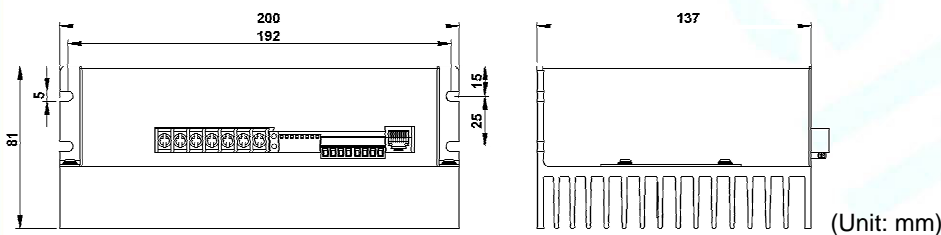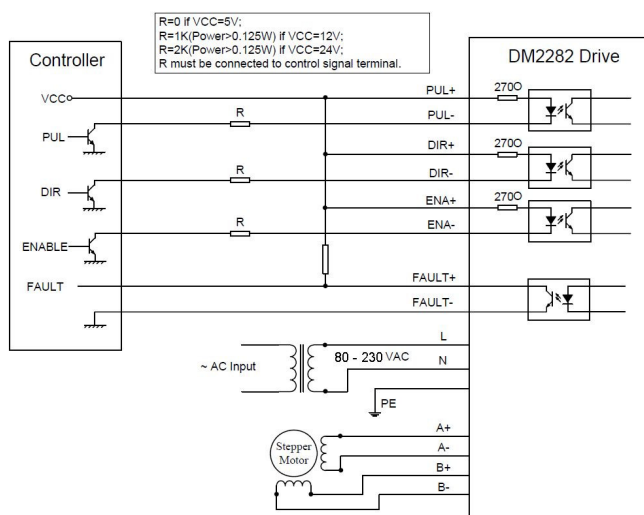|		
FLT-	O	Fault Signal: OC output signal, active when one of the following protection is activated: over-voltage, over current, low voltage, phase error and over-temperature. This port can sink or source 20mA current at 24V. In default, the resistance between FAULT+ and FAULT- is high impedance in normal operation and become low when DM2282 goes into error.
FLT+	O	
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.
ENA+	I	
DIR-	I	Direction signal: In single pulse mode, this signal has low/high voltage levels that represent two directions of rotation of the motor. In double pulse mode (configurable via software), this signal is a counter-clock pulse (CCW) that is active at both high and low levels. For reliable movement behaviour, the DIR signal should be at least 5µs ahead of the PUL signal. 4-5V for DIR-HIGH, 0-0.5V for DIR-LOW.
DIR+	I	
PUL-	I	Pulse signal: In single pulse mode (pulse/direction), this input represents a pulse signal, with each rising or falling edge being active (configurable via software). In double pulse mode (configurable via software), this input represents a clockwise pulse (CW), which is active at both high and low levels. 4-5V for PUL-HIGH, 0-0.5V for PUL-LOW. For a reliable response, the pulse width should be longer than 2.5µs.
PUL+	I	

9. Protection Indication:

Prio.	Number Flashing	Sequence of the red LED	Description
1.	1		Overcurrent protection activated when the peak current exceeds the limit.
2.	2		Overvoltage protection activated when the operating voltage is higher than 60 V DC
3.	3		Reserved

10. Mechanical Data:

(Unit: mm)

11. Wiring:

R=0 if VCC=5V;
R=1K(Power>0.125W) if VCC=12V;
R=2K(Power>0.125W) if VCC=24V;
R must be connected to control signal terminal.

A complete system consists of stepper motor, stepper motor driver, power supply and controller (pulse generator). A typical connection diagram is shown in the left figure.