DM556

Introduction

The DM556 is a versatility fully digital stepping drive based on a DSP with advanced control algorithm. The DM556 is the next generation of digital stepping motor controls. It brings a unique level of system smoothness, providing optimum torque and nulls mid-range instability. Motor self-test and parameter auto-setup technology offers optimum responses with different motors and easy-to-use. The driven motors can run with much smaller noise, lower heating, smoother movement than most of the drives in the markets. Its unique features make the DM556 an ideal solution for applications that require low-speed smoothness.
Compared to the DM432C, broader input voltage and output current ranges make the DM556 can drive much more motors than the DM432C. What's more, owing to its higher performance DSP, driven motors can achieve much higher speed (above 3000RPM) than that of the DM432C, offering servo-like performances.

Features

- Anti-Resonance, provides optimum torque and nulls mid-range instability
- Motor self-test and parameter auto-setup technology, offers optimum responses with different motors
- Multi-Stepping allows a low resolution step input to produce a higher microstep output for smooth system performance
- Supply voltage up to +50 VDC
- Output current programmable, from 0.5A to 5.6A
- Pulse input frequency up to 200 KHz
- TTL compatible and optically isolated input
- Automatic idle-current reduction
- Suitable for 2-phase and 4-phase motors
- Support PUL/DIR and CW/CCW modes
- Over-voltage, over-current, phase-error protections

Applications

Suitable for a wide range of stepping motors, from NEMA frame size 17 to 34. It can be used in various kinds of machines, such as laser cutters, laser markers, high precision X-Y tables, labeling machines, and so on. Its unique features make the DM556 an ideal solution for applications that require both low-speed smoothness and high speed performances.

Electrical Specifications (T_j = 25°C/77°F)

Parameters	DM556			
	Min	Typical	Max	Unit
Output current	0.5	-	5.6 (4.0 RMS)	A
Supply voltage	+20	-	+50	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	200	kHz
Isolation resistance	500			Mohm

Pin Assignment and Description

Connector P1 Configurations

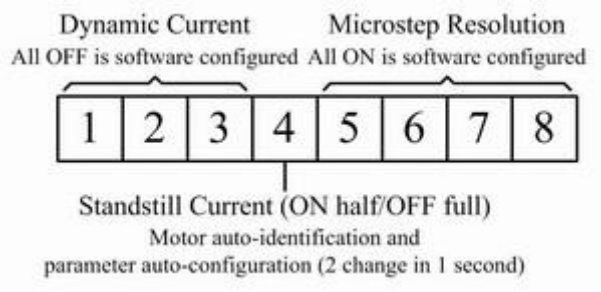
Pin Function	Details
PUL+ **PUL-**	Pulse signal: In single pulse (pulse/direction) mode, this input represents pulse signal, each rising or falling edge active (software configurable); 4-5V when PUL-HIGH, 0-0.5V when PUL-LOW. In double pulse mode (pulse/pulse) , this input represents clockwise (CW) pulse,active both at high level and low level (software configurable). 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 signals.
DIR+ **DIR-**	DIR 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 (software configurable). 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-drive wiring match. Exchanging the connection of two wires for a coil to the drive will reverse motion direction.
ENA+ **ENA-**	Enable signal: This signal is used for enabling/disabling the drive. High level (NPN control signal, PNP and Differential control signals are on the contrary, namely Low level for enabling.) for enabling the drive and low level for disabling the drive. Usually left **UNCONNECTED (ENABLED)**.

Connector P2 Configurations

Pin Function	Details
+Vdc	Power supply, 20~50 VDC, Including voltage fluctuation and EMF voltage.
GND	Power Ground.
A+, A-	Motor Phase A
B+, B-	Motor Phase B

Selecting Microstep Resolution and drive Output Current

Microstep resolutions and output current are programmable, the former can be set from full-step to 102,400 steps/rev and the latter can be set from 0.5A to 5.6A.
However, when it's not in software configured mode, this drive uses an 8-bit DIP switch to set microstep resolution, and motor operating current, as shown below:



Microstep Resolution Selection

When it's not in software configured mode, microstep resolution is set by SW5, 6, 7, 8 of the DIP switch as shown in the following table:

Microstep	Steps/rev.(for 1.8o motor)	SW5	SW6	SW7	SW8
1 to 512	**Default/Software configured**	on	on	on	on
2	**400**	off	on	on	on
4	**800**	on	off	on	on
8	**1600**	off	off	on	on
16	**3200**	on	on	off	on
32	**6400**	off	on	off	on
64	**12800**	on	off	off	on
128	**25600**	off	off	off	on
5	**1000**	on	on	on	off
10	**2000**	off	on	on	off
20	**4000**	on	off	on	off
25	**5000**	off	off	on	off
40	**8000**	on	on	off	off
50	**10000**	off	on	off	off
100	**20000**	on	off	off	off
125	**25000**	off	off	off	off

Current Settings

When it's not in software configured mode, the first three bits (SW1, 2, 3) of the DIP switch are used to set the dynamic current. Select a setting closest to your motor's required current.

RMS Current, A	SW1	SW2	SW3
1.4	ON	ON	ON
2.1	OFF	ON	ON
2.7	ON	OFF	ON
3.2	OFF	OFF	ON
3.8	ON	ON	OFF
4.3	OFF	ON	OFF
4.9	ON	OFF	OFF
5.8	OFF	OFF	OFF

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

Typical Connection