Datasheet of iDM Series Integrated Stepper Motor

Leadshine

iDM Series Integrated Stepper Motor

iDM series is integrated stepper motor which implements advanced control algorithm of leadshinebased on its tens of years' experience in stepper and servo controls. At very compact size can save mounting space, eliminate motor wiring time, reduce interference,and cut/reduce cable and labor costs.

The iDM series are reliable, affordable and performs excellent in many industrial applications such as CNC, 3D printer, stage equipment, medical, electronics, packaging...

- Feature
- No tuning for easy setup
- Soft-start with no "jump" when powered on
- Low noise and vibration, smooth motion
- Step & Direction and CW & CCW control
- 3 digital inputs, 1 optically isolated digital output
- RS232 communication for Leadshine software connection
- Over voltage, over current protections

- Model Designation

iDM - 42 03 □

Series Name
iDM:Integrated open loop stepper motor

Frame Size
42:NEMA17
57:NEMA23
60:NEMA24

Holding Torque
03: 0.3N.m
06: 0.6N.m
08: 0.8N.m
13: 1.3N.m
21: 2.1N.m
31: 3.1N.m
30: 3.0N.m
35: 3.5N.m

Remark
Blank:Normal type
Special type

Datasheet of iDM Series Integrated Stepper Motor

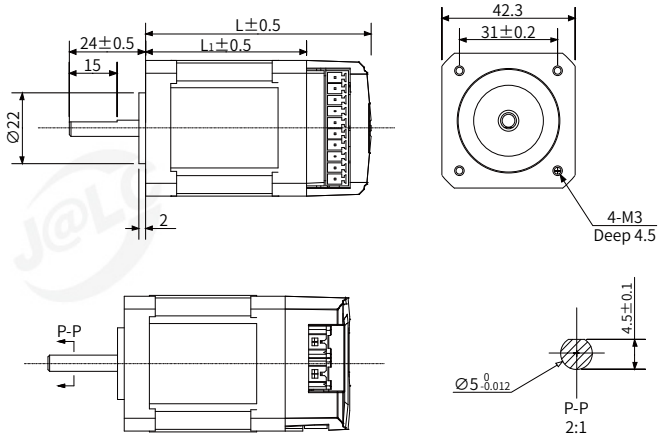
Leadshine

Technical Specification

Model	Frame Size	Length(mm)	Holding Torque(N.m)	Weight(Kg)	Command Source	
					PUL & DIR	CW & CCW
iDM42-03	NEMA17	64	0.3	0.5	√	x
iDM42-06		72	0.4	0.9	√	x
iDM42-08		85	0.8	1.1	√	x
iDM57-13	NEMA23	75	1.3	1.0	√	√
iDM57-23		96	1.9	1.3	√	√
iDM57-21		89	2.1	1.4	√	√
iDM57-31		109	3.1	1.6	√	√
iDM60-30	NEMA24	109	3.0	1.6	√	√
iDM60-35		122	3.5	1.9	√	√

Model	Electrical Parameters		Control Signal				
	Power Voltage (VDC)	Peak Current (A)	Logical Current	Logical Voltage	Max Input Frequency	MIN PUL Width	MIN DIR Setup
iDM42-03	20-36	0.3- 3.0					
iDM42-06	20-36	0.3- 3.0					
iDM42-08	20-36	0.3- 3.0					
iDM57-13	20-50	0.3- 4.5					
iDM57-23	20-50	0.3- 7.0	7-16mA	5V	200KHz	2.5μs	5.0μs
iDM57-21	20-50	0.3- 7.0					
iDM57-31	20-50	0.3- 7.0					
iDM60-30	20-50	0.3- 7.0					
iDM60-35	20-50	0.3- 7.0					

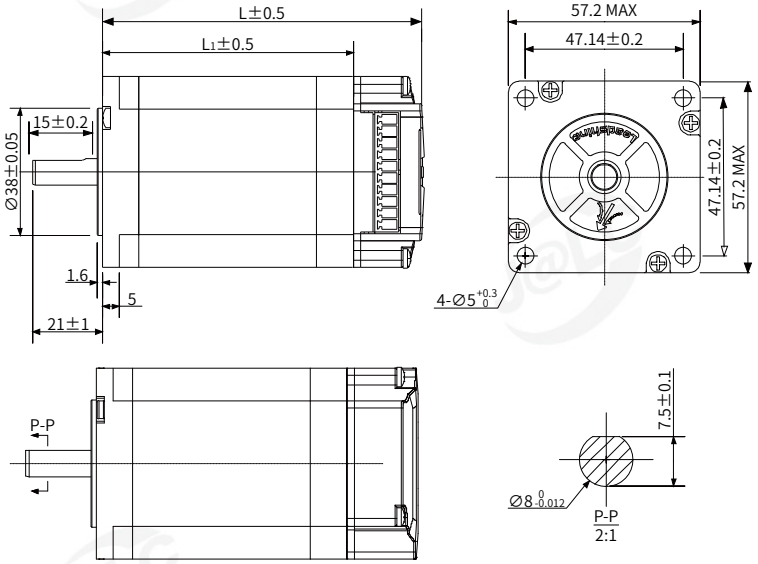
Dimension
(Unit: mm [1inch=25.4mm])



Model	L1 Length	L Length
iDM42-03	43	64
iDM42-06	51	72
iDM42-08	64	85

Datasheet of iDM Series Integrated Stepper Motor

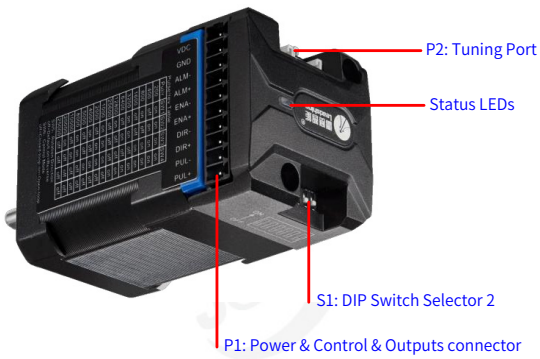
Leadshine



Model	L1 Length	L Length
iDM57-13	54	75
iDM57-23	75	96
iDM57-21	68	89
iDM57-31	88	109
iDM60-30①	88	109
iDM60-35②	101	122

Note:
① Frame size is 60mm, center diameter is 36mm.
②Frame size is 60mm, center diameteris 36mm, shaft diameter is 10mm.

Connector and Pin Assignment



PIN	I/O	Details
VCC	I	Power supply positive connection. iDM-42xx:20-36VDC iDM-57xx and iDM-60xx: 20-50 VDC
GND	I	Power supply ground connection.
ALM-	O	Alarm: An OC output signal. It takes a sinking or sourcing at 5-24V@30mA
ALM+	O	
ENA-	I	Enable Signals: Optional, not connected by default. (1) Effective high level is 4.5-5V; Effective low level is 0-0.5V connection (2) ENA signal requires advance DIR signal minimum 200ms in single pulse mode
ENA+	I	
DIR-	I	Pulse and Direction Connection: (1) Optically isolated, high level 4.5-5V, low voltage 0-0.5V. (2) Max 200 KHz input frequency. (3) The width of PUL signal is at least 2.5μs, duty cycle is recommended 50%. (4) Single pulse (step & direction), iDM-57xx and iDM-60xx support double pulse (CW&CCW), while iDM-42xx do not support. (5) DIR signal requires advance PUL signal minimum 5 μs.
DIR+	I	
PUL-	I	
PUL+	I	

Notes:
(1) Shielding control signal wires is suggested;
(2) To avoid/reduce interference, do not tie control signal cables and power wires together.

Datasheet of iDM Series Integrated Stepper Motor

Leadshine

- Tuning Port P2

The P2 connector in Figure 2 is a RS232 communication port for Leadshine software connection. It is just used to modify parameter, not for equipment control because neither precision nor stability is sufficient. If you need a Modbus-RS485 control, use a Leadshine iDM-RS series integrated stepper motor. The interface definition is as follows:

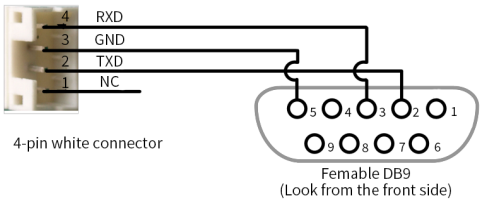
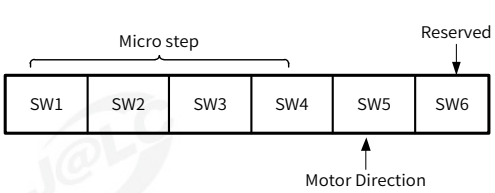


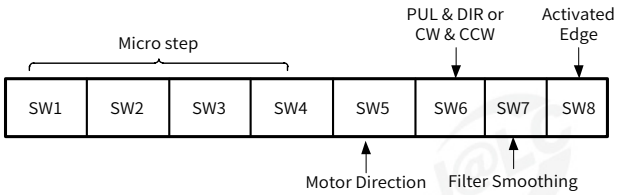
Figure5: RS232 Tuning Port

- DIP Switch Configurations

The iDM series has a row of DIP switches, of which the iDM17xx and iDM-23xx DIP switches are a bit different, as follows,



iDM-42xx



iDM-57xx and iDM-60xx

- For iDM-42xx Series

Microstep resolution is set by SW1, 2, 3, 4 of the DIP switches as shown in the following table:

Steps/Revolution	SW1	SW2	SW3	SW4
200(Default)	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

Datasheet of iDM Series Integrated Stepper Motor

Leadshine

For iEM-57xx and iEM-60xx Series

Steps/Revolution	SW1	SW2	SW3	SW4
400(Default)	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

Other DIP Switch Settings
For iDM-42xx Series (SW5-SW6)

	Function	On	Off
SW5	Default Direction	CW (clockwise)	CCW (counterclockwise)
SW6	Reserved	—	—

For iEM-57xx and iEM-60xx Series (SW5-SW8)

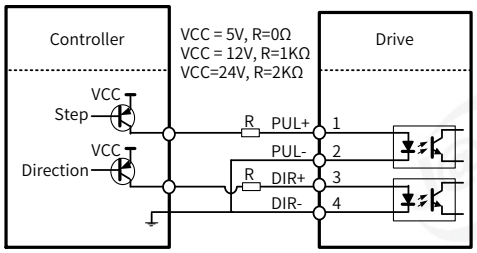
	Function	On	Off
SW5	Default Direction	CW (clockwise)	CCW (counterclockwise)
SW6	Pulse Mode	CW&CCW	PUL&DIR
SW7	Smoothing Time	Enable	Disable
SW8	Activated Edge	Rising edge	Falling edge

Datasheet of iDM Series Integrated Stepper Motor

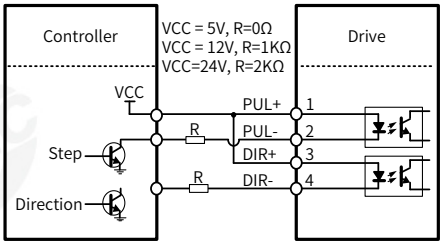
Leadshine

Wiring

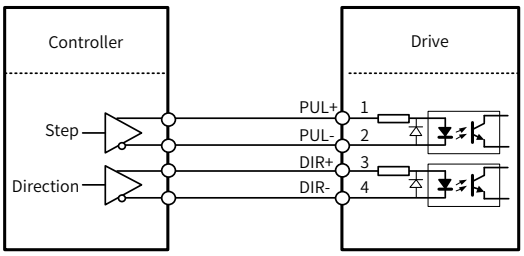
The iDM series motor can accept differential and single-ended control signal inputs (open-collector and PNP output). It has 3 optically isolated control inputs,PUL, DIR, and ENA. Refer to the following two figures for connections of PNP and NPN signals.



Connections to PNP signals
(common-cathode)



Connections to NPN Signals
(common-anode)



Connections to Differential signals