stepIM

Integrated Closed Loop Stepper Motor

Datasheet Rev. 5.2

NEMA 17, NEMA 23 and NEMA 34

		IP 20			IP20			IP65			IP20		IP65	
NEMA		17S	17M	17L	23S	23M	23L	23S	23M	23L	34M	34L	34M	34L
Input Power, Nominal (±10%)	VDC	14–48	14–48	14–48	14–48	14–48	14–48	14–48	14–48	14–48	14–48	14–48	14–75	14–75
Auxiliary Input Power, Nominal (±10%)	VDC	6–24	6–24	6–24	6–24	6–24	6–24	6–24	6–24	6–24	6–24	6–24	6–24	6–24
Auxiliary Input Power, Maximum	W	1	1	1	1	1	1	1	1	1	1	1	1	1
Detent Torque	mNm	15	25	25	40	70	120	40	70	120	250	350	250	350
Thrust Load Limit	kg	0.28	0.36	0.6	0.6	1.0	1.5	0.6	1.0	1.5	2.7	3.8	2.7	3.8
Overhung Load Limit (from shaft end)	N	20	20	20	50	50	50	50	50	50	260	260	260	260
Rotor Inertia	$g{\cdot}cm^2$	57	82	123	260	460	750	260	460	750	1850	2750	1850	2750
Holding torque at continuous current	Nm	0.35	0.45	0.65	1.1	1.8	2.6	1.1	1.8	2.6	3.5	5.5	5	7.7
Holding torque at peak current	Nm	0.5	0.6	1.05	1.3	2.1	3.25	1.3	2.1	3.25	4.5	7	6.3	9
Continuous Output Current	A	1.8	1.8	1.8	4.5	4.5	4.5	4.5	4.5	4.5	7	7	7	7
Peak Output Current (application dependent)	A	3.5	3.5	3.5	6.5	6.5	6.5	6.5	6.5	6.5	11.5	11.5	11.5	11.5
Step Angle	deg	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Magnetic Encoder, Resolution	ppr	4096	4096	4096	4096	4096	4096	4096	4096	4096	4096	4096	4096	4096
Circuit Loss	W	6	6	6	6	6	6	6	6	6	6	6	6	6
Weight	kg	0.37	0.44	0.59	0.80	1.13	1.75	0.84	1.18	1.83	3.05	4.30	3.30	4.50
Connection Hardware Screw Size/Torque	Nm	0.63	0.63	0.63	3	3	3	3	3	3	5.2	5.2	5.2	5.2
Under-Voltage Trip, Nominal	VDC	Logic												
Over-Voltage Trip	VDC	Logic												

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Control

Feature	Specification	
Operation Modes	Selectable	Profile position, Velocity, Profile velocity, Profile torque, Homing, Cyclic synchronous position
Display		Bi-color LED
Software Tools	User Interface	ServoStudio, Windows-based
	Functions	Connection settings, Drive info, Power info, I/O configuration, Motion settings and tuning, Fault history/display
Rotary Units	Position	Counts
	Velocity	rpm/100
	Acc/Dec	rpm/100/s

Communication

Feature	Specification
CANopen	CANopen – CiA 301 application layer and CiA 402 device profile for drives and motion control. Baud rate 10 kbps – 1 Mbps CAN ID 1 – 126 (Default 101) Heartbeat producer, SDO, PDO (dynamic mapping)
EtherCAT	CANopen – CiA 301 application layer and CiA 402 device profile for drives and motion control. Communication cycle time: up to 250 µs

Protection and Environment

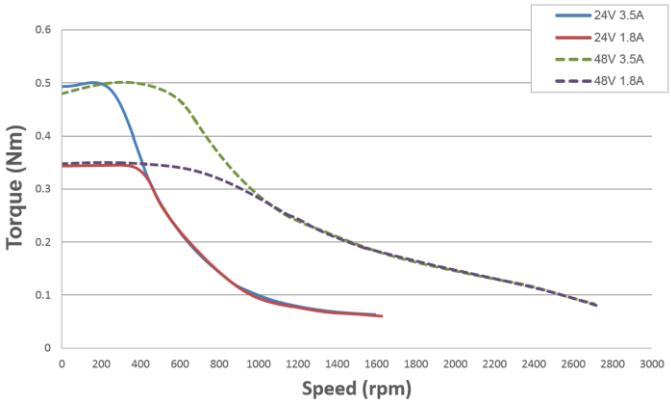
Feature	Specification
Protective Functions	I^2T limit, Over-voltage, Under-voltage, Drive over-temperature, Over-speed, Velocity error, Position error, Magnet missing, Power stage fault, PLL lock lost, Position command error, Acceleration / deceleration violation
Standards	IP20 CE, IP65 CE Pending
	UL Pending
Environment	Ambient temperature: Operation 0 – 40°C, Storage 0 – 70°C Heat sink max. temperature: 100°C Motor max. temperature: 120°C
	Humidity: 10 – 90%
	Altitude: If in accordance with specified clearances, per IEC 61800-5-1, the stepIM is rated for use at altitudes up to 2000m
	Vibration: under review
Operating Conditions	Protection class: IP20 or IP65 Pollution degree: 2 as per IEC 60664-1 Do not use where the following are present: corrosive gases, flammable gases, water, oil, chemicals, dust (including iron dust and salts)
Configuration	Flange mounting

Inputs/Outputs

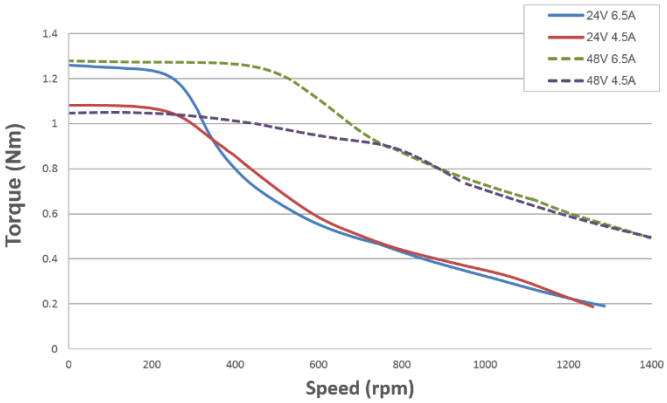
Feature	Specification	
1x Analog Input	Signal	Analog ±10 VDC differential
	Functions	User define
	Input Resolution	12 bit
	Input Impedance	94 kΩ
	Bandwidth (-3 db)	8 KHz
4x Digital Input Exception: 3x Digital Input on NEMA23 IP65	Signal	Configurable opto-isolated. User defined compatibility with sinking or sourcing input. Exception: sinking input only on NEMA 17.
	Functions	Homing, limit switch, remote enable, start motion command for profiled position operation mode
	Voltage High Level Input	30 V
	Min. High Level Input	11 V
	Max. Low Level Input	5 V
	Input Resistance	2.2 kΩ Except: 24 kΩ NEMA17 IP20
	Max. Input Frequency	1 kHz
	Isolation Voltage	2500 Vrms
	Max. Input Current	According to max. voltage level, input current is not limited, drive limits the input current
	Propagation Delay Time	1 ms
2x Digital Output Exception: 1x Digital Output on NEMA23 IP65	Signal	Configurable open collector. User defined compatibility with opto-isolated sinking output or sourcing output.
	Functions	Motor speed set, Current, Motor speed set clear, Regen resistor control, Motion completed, In position, Zero speed, Software position limit switch, Active, User selectable.
	Voltage	30 V
	Max. Current	500 mA
	Min. Load Resistance	60 Ω
	Output Voltage	0.25 V
	Min. Propagation Delay Time	1 ms (may be longer if load current is lower)

Speed/Torque Charts

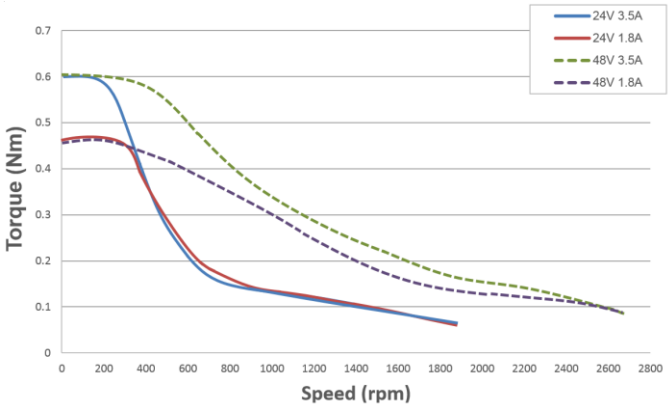
NEMA 17 Short (IP20)



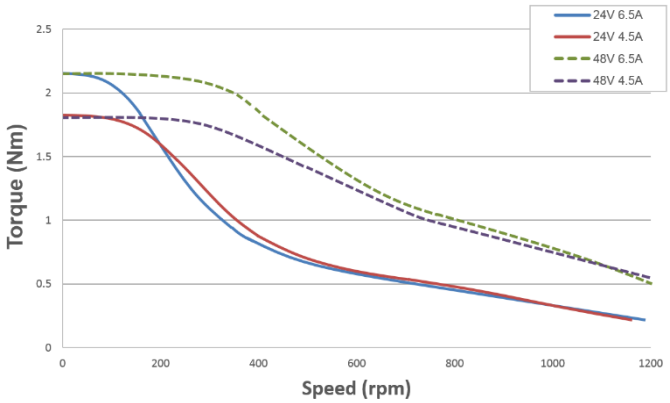
NEMA 23 Short (IP20, IP65)



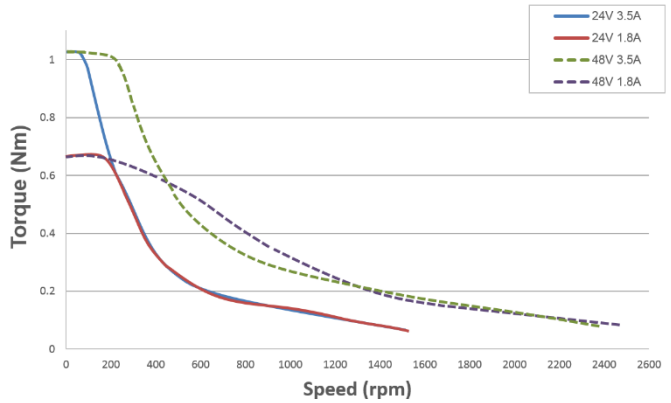
NEMA 17 Medium (IP20)



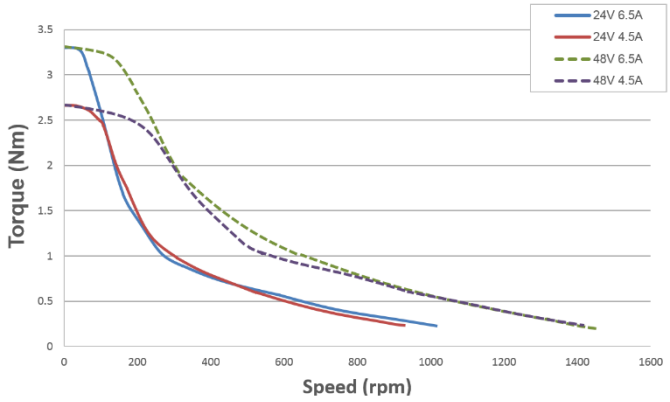
NEMA 23 Medium (IP20, IP65)



NEMA 17 Long (IP20)

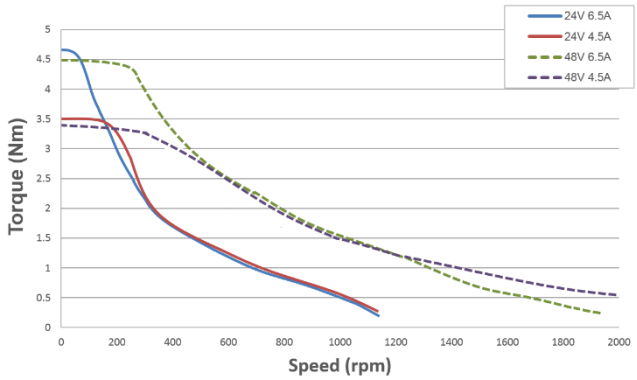


NEMA 23 Long (IP20, IP65)

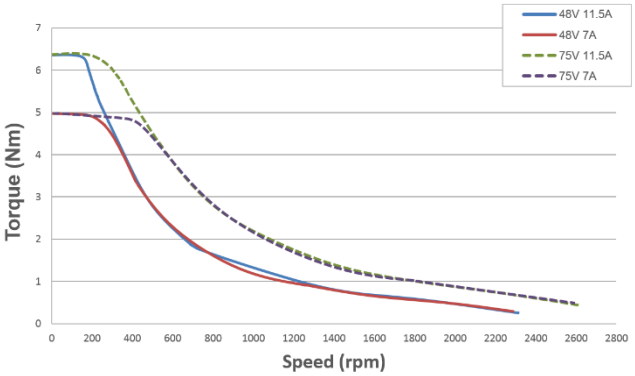


Speed/Torque Charts

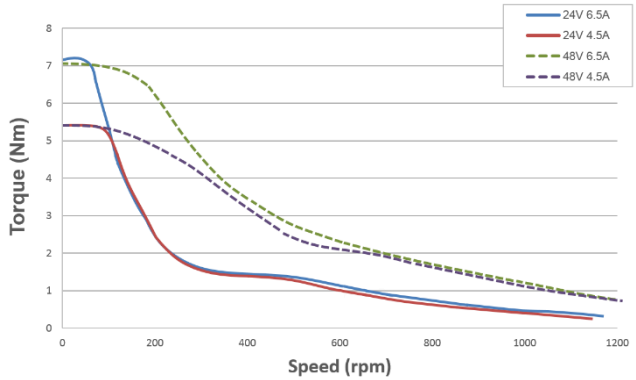
NEMA 34 Medium (IP20)



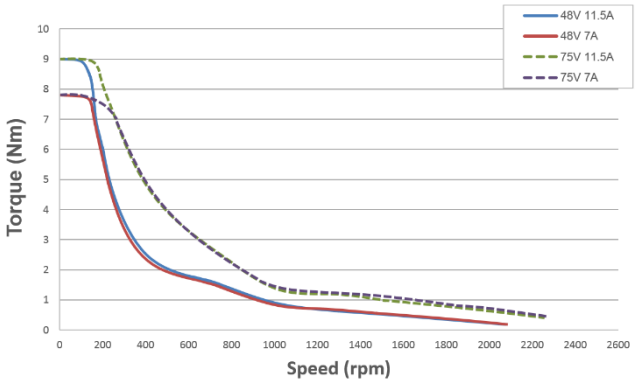
NEMA 34 Medium (IP65)



NEMA 34 Long (IP20)



NEMA 34 Long (IP65)



Ordering Info

		IS	T	-	23M	1	2	CO	1	0	-	0
	Integrated Stepper Motor											
	Type											
T	High torque											
	Frame Size and Length											
17S	NEMA 17 Short											
17M	NEMA 17 Medium											
17L	NEMA 17 Long											
23S	NEMA 23 Short											
23M	NEMA 23 Medium											
23L	NEMA 23 Long											
34M	NEMA 34 Medium											
34L	NEMA 34 Long											
	Shaft											
1	Single flat											
2	Double flat											
3	Keyway											
4	Full											
	Connector and Degree of Protection											
2	Crimp connectors, IP20											
6	M-connectors, IP65 (Frame size 23, 34 only)											
	Communication											
CO	CANopen											
EC	EtherCAT											
	Feedback											
1	Standard – 12-bit absolute single turn											
	Brake											
0	Without brake											
	Options											
0	Standard: Frame size 17, 14–48V, 1.8A Frame size 23, 14–48V, 4.5A Frame size 34, 14–75V, 7A											
1	Frame size 34, 14–48V, 4.5A (IP20 only)											

Available Part Numbers

NEMA 17 CANopen	NEMA 23 CANopen	NEMA 23 EtherCAT	NEMA 34 CANopen	NEMA 34 EtherCAT
IST-17S12CO10-0	IST-23S12CO10-0	IST-23S16EC10-0	IST-34M22CO10-1	IST-34M26EC10-0
IST-17M12CO10-0	IST-23M12CO10-0	IST-23M16EC10-0	IST-34L22CO10-1	IST-34L26EC10-0
IST-17L12CO10-0	IST-23L12CO10-0	IST-23L16EC10-0	IST-34M26CO10-0	
	IST-23S16CO10-0		IST-34L26CO10-0	
	IST-23M16CO10-0			
	IST-23L16CO10-0			

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