

**stepIM** Integrated Closed Loop Stepper Motor

**NEMA 17, NEMA 23 and NEMA 34**



NEMA		IP 20			IP20			IP65			IP20		IP65	
		17S	17M	17L	23S	23M	23L	23S	23M	23L	34M	34L	34M	34L
Input Power, Nominal ( $\pm 10\%$ )	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 ( $\pm 10\%$ )	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-cm <sup>2</sup>	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	4.5	4.5	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	6.5	6.5	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												

## Control

Feature	Specification	
Operation Modes	Selectable	Profile position, Velocity, Profile velocity, Profile torque, Homing, Cyclic synchronous position
Display		LEDs
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 $\mu$ s

## Protection and Environment

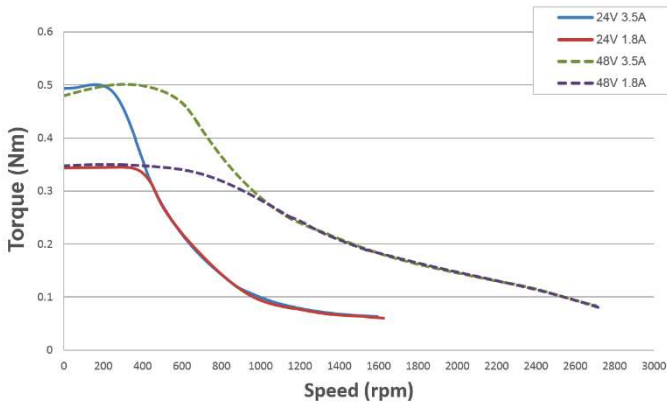
Feature	Specification
Protective Functions	I2T limit, Over-voltage, Under-voltage, Drive over-temperature, Over-speed, Velocity error, Position error, Magnet missing, Power stage fault, PLL lock lost, Position command error, Acceleration / deceleration violation
Standards	IP20 CE, IP65 CE
	UL Pending
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

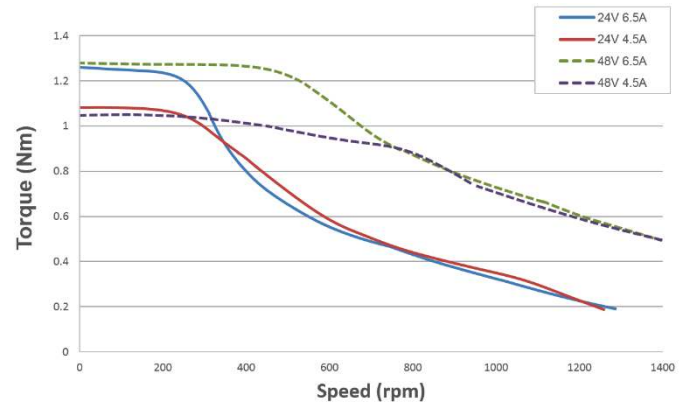
Feature	Specification	
1x Analog Input	Signal	Analog $\pm 10$ VDC differential
	Functions	User defined
	Input Resolution	12 bit
	Input Impedance	94 k $\Omega$
	Bandwidth (-3 db)	8 kHz
4x Digital Input  Exception: 3x Digital Input on NEMA 23 IP65 CANopen	Signal	Configurable opto-isolated. User defined 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 k $\Omega$ Except: 24 k $\Omega$ 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 NEMA 23 IP65 CANopen	Signal	Configurable open collector. User defined compatibility with opto-isolated sinking output.
	Functions	Motor speed set, Current, Motor speed set clear, Regen resistor control, Motion completed, In position, Zero speed, Software position limit switch, Active, Selectable.
	Voltage	30 V
	Max. Current	500 mA
	Min. Load Resistance	60 $\Omega$
	Output Voltage	0.25 V
	Min. Propagation Delay Time	1 ms (may be longer if load current is lower)

## Speed/Torque Charts

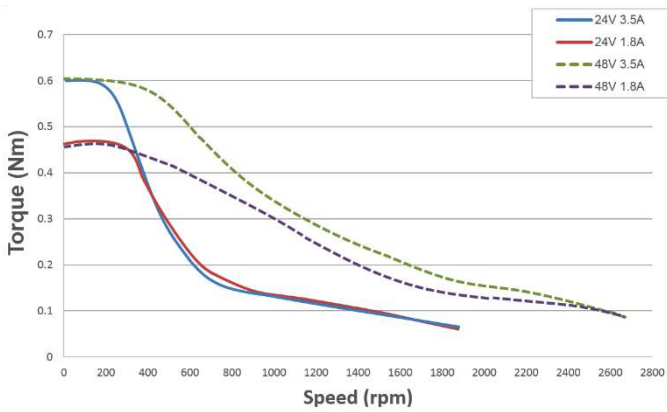
### NEMA 17 Short (IP20)



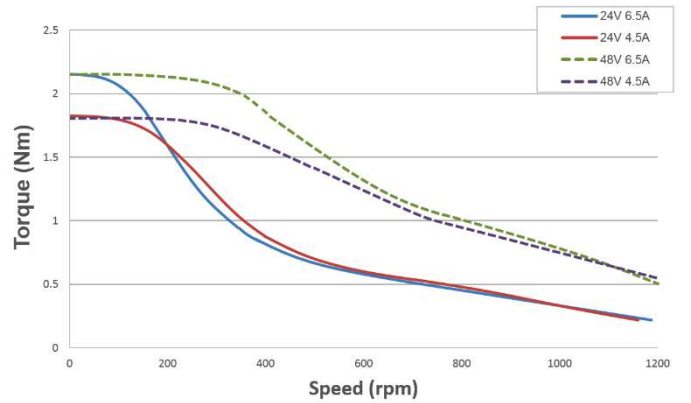
### NEMA 23 Short (IP20, IP65)



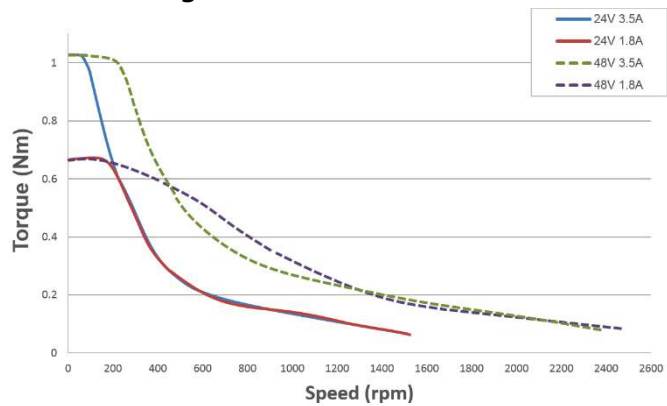
### NEMA 17 Medium (IP20)



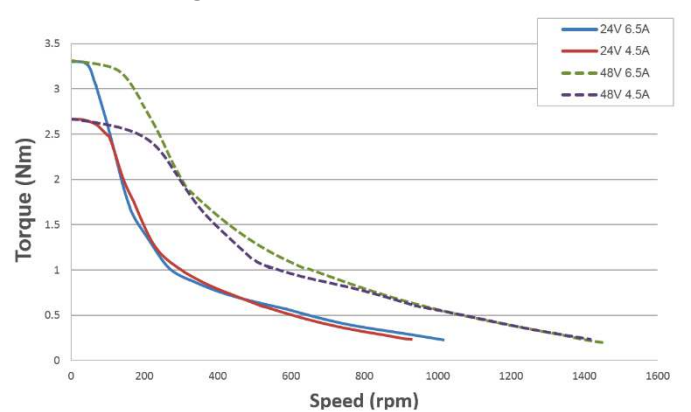
### NEMA 23 Medium (IP20, IP65)



### NEMA 17 Long (IP20)

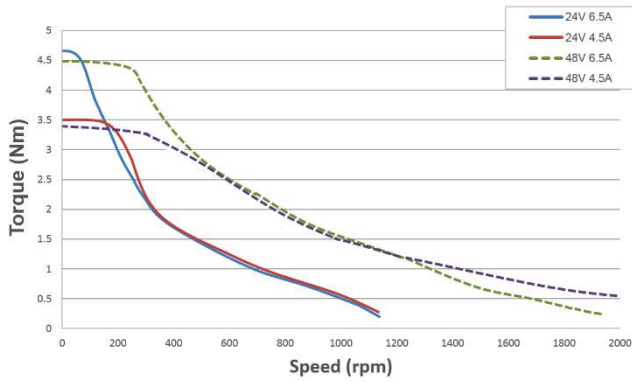


### NEMA 23 Long (IP20, IP65)

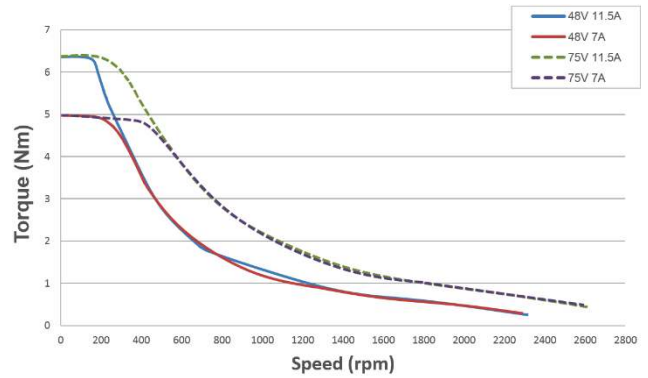


## Speed/Torque Charts

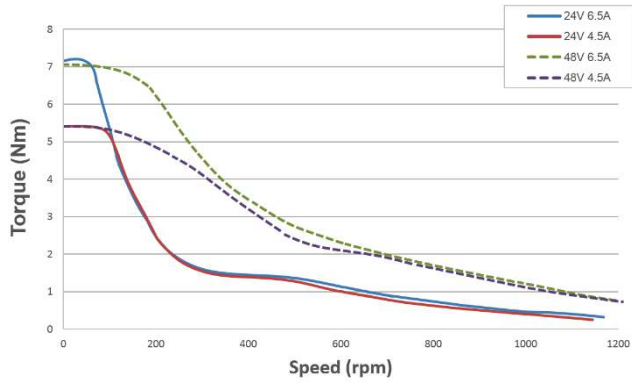
### NEMA 34 Medium (IP20)



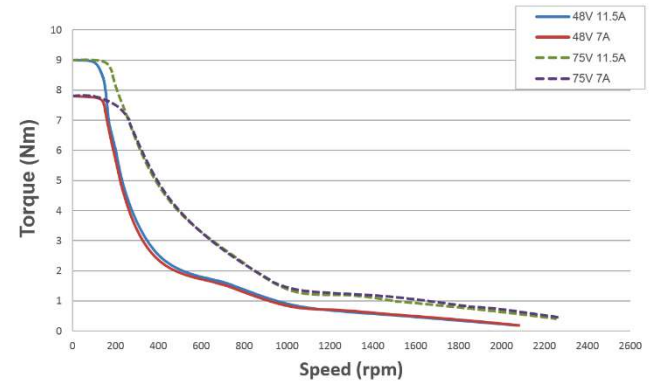
### NEMA 34 Medium (IP65)



### NEMA 34 Long (IP20)



### NEMA 34 Long (IP65)



## Ordering Information

	IS	T	-	23M	1	2	CO	1	0	-	0
<b>Integrated Stepper Motor</b>											
<b>Type</b>											
T	High torque										
<b>Frame Size and Length</b>											
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										
<b>Shaft</b>											
1	Single flat (Frame size 17 and 23 only)										
2	Double flat (Frame size 34 only)										
3	Keyway										
4	Full round										
<b>Connector and Degree of Protection</b>											
2	Crimp connectors, IP20										
6	M-connectors, IP65 (Frame size 23, 34 only)										
<b>Communication</b>											
CO	CANopen (Frame size 17, IP20 only)										
EC	EtherCAT (Frame size 17, IP65 only)										
<b>Feedback</b>											
1	Standard – 12-bit absolute single turn										
<b>Brake</b>											
0	No brake										
1	With brake (Frame size 23, 34 only)										
<b>Options</b>											
0	Standard:										
1	NEMA 34, 14–48V, 4.5A (IP20 only)										

For Brake options and Gearbox options, contact STXI Motion.