1.4 TMN Rotary Tables

The TMN series is designed with an extremely low profile and a high resolution resolver/ optical encoder optimized to achieve high dynamic motion, high torque and high precision. The TMN series is a perfect fit for industries that require high precision but less force.

- Outer rotating structure
- Space saving with Low profile design
- High resolution optical encoder/ resolver selectable
- Maximum torque: 4.2~39.6 Nm

Model Numbers for TMN Series

Motor specification					Function	
TM	N	7	1	E	H	C

Series
TM：Torque Motor

Type
N：Low profile type

Size
4：External diameter Φ118mm
7：External diameter Φ180mm
9：External diameter Φ230mm

Rotor height
1：10mm
2：20mm
3：30mm

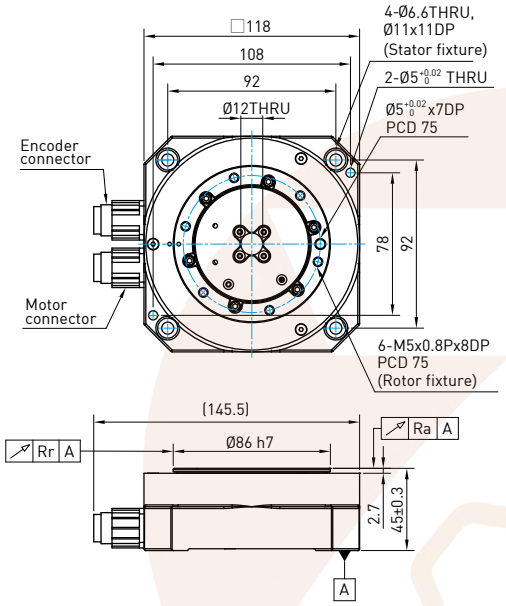
Feedback system
E：Encoder
A：Absolute resolver

Hall sensor
：Without hall sensor
H：With Hall sensor(Encoder Type)

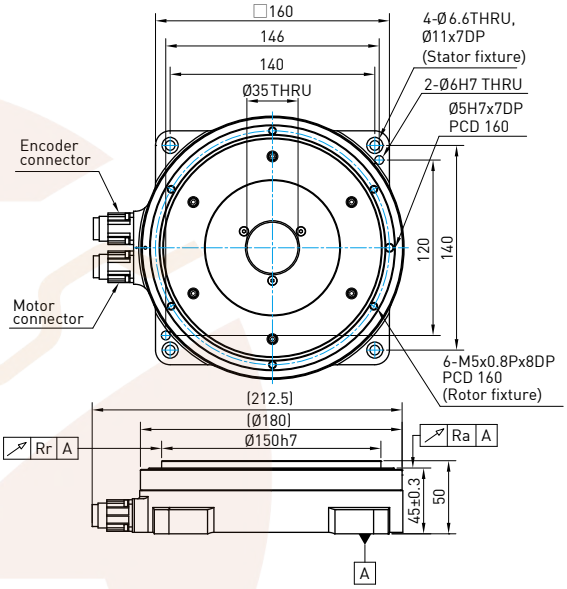
Optional Specifications
：Standard
C：Customized

TMN Dimensions

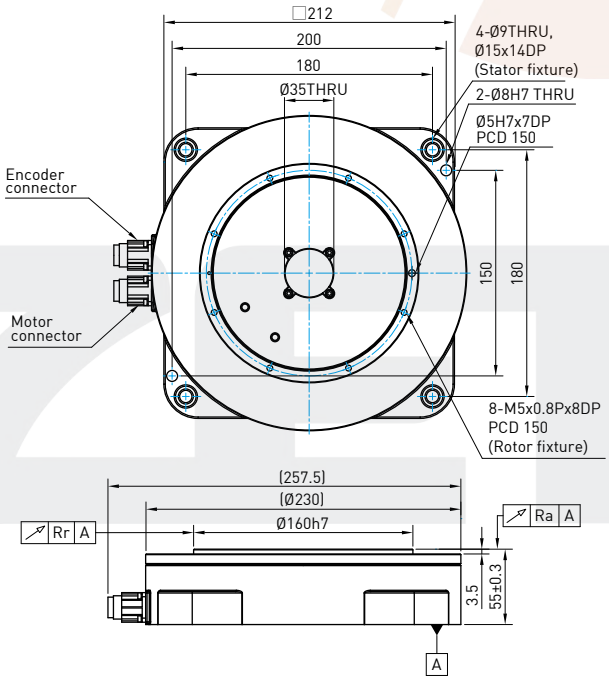
TMN42



TMN71



TMN93



1.4.1 TMN Incremental Series

Table 1.9 TMN Specifications

	Symbol	Unit	TMN42E	TMN71E	TMN93E
Continuous torque	T_c	Nm	1.4	3.7	13.2
Continuous current	I_c	A_{rms}	1.5	3.4	3.4
Peak torque (Within 1s.)	T_p	Nm	4.2	11.1	39.6
Peak current (Within 1s.)	I_p	A_{rms}	4.5	10.2	10.2
Torque constant	K_t	Nm/A_{rms}	0.97	1.09	3.9
Electrical time constant	T_e	ms	1.8	4.1	5.4
Resistance (line to line at 25°C)	R_{25}	Ω	4.59	2.22	4.3
Inductance (line to line)	L	mH	8.18	9.02	23.2
Number of poles	$2p$		16	16	22
Back emf constant (line to line)	K_v	$V_{rms}/(rad/s)$	0.56	0.63	2.25
Motor constant(line to line at 25°C)	K_m	$Nm/\sqrt{W}$	0.4	0.6	1.5
Thermal resistance	R_{th}	K/W	4.84	1.95	1.01
Temperature sensor			PTC SNM100		
Nominal input voltage		V_{DC}	500(600[2])		
Inertia of rotating parts	J	kgm^2	0.003	0.008	0.012
Mass of motor	M_m	kg	2	3.5	7.5
Max. axial load	F_a	N	600	1000	1000
Max. moment load	M	Nm	30	50	50
Max. speed		rpm	700	600	500
Resolution		p/rev	4,325,376		4,320,000
			(Incremental rotary encoder, sin/cos 1Vpp)		
Repeatability		arc-sec	±2.5	±2.5	±2.5
Accuracy		arc-sec	±45/±10[1]	±45/±10[1]	±45/±10[1]
Axial runout	R_a	mm	0.03(0.005[2])		
Radial runout	R_r	mm	0.03(0.015[2])		
Size	WxLxH	mm	118x118x45	160x160x50	212x212x55

Note : [1] After error mapping
[2] Optional
*All the specifications in the table are in ±10% of tolerance except dimensions.

1.4.2 TMN absolute Series

Table 1.10 TMN Specifications

	Symbol	Unit	TMN71A	TMN93A
Continuous torque	T_c	Nm	3.7	13.2
Continuous current	I_c	A_{rms}	3.4	3.4
Peak torque (Within 1s.)	T_p	Nm	11.1	39.6
Peak current (Within 1s.)	I_p	A_{rms}	10.2	10.2
Torque constant	K_t	Nm/A_{rms}	1.09	3.9
Electrical time constant	T_e	ms	4.1	5.4
Resistance (line to line at 25°C)	R_{25}	Ω	2.22	4.3
Inductance (line to line)	L	mH	9.02	23.2
Number of poles	2p		16	22
Back emf constant (line to line)	K_v	$V_{rms}/(rad/s)$	0.63	2.25
Motor constant(line to line at 25°C)	K_m	$Nm/\sqrt{W}$	0.6	1.5
Thermal resistance	R_{th}	K/W	1.95	1.01
Temperature sensor			PTC SNM100	
Nominal input voltage		V_{DC}	500(600[2])	
Inertia of rotating parts	J	kgm^2	0.008	0.012
Mass of motor	M_m	kg	3.5	7.5
Max. axial load	F_a	N	1000	1000
Max. moment load	M	Nm	50	50
Max. speed		rpm	300	300
Resolution		p/rev	920,000 (Absolute Resolver [1])	
Repeatability		arc-sec	±2.5	±2.5
Accuracy		arc-sec	±30	±30
Axial runout	R_a	mm	0.03(0.005[2])	
Radial runout	R_r	mm	0.03(0.015[2])	
Size	WxLxH	mm	160x160x50	212x212x55

Note：[1] The motor should be matched with corresponding HIWIN driver.
[2] Optional
*All the specifications in the table are in ±10% of tolerance except dimensions.

1.5.3 TMN Series T-N curves

(DC bus voltage=325V_{DC})