

# TRM-310 Technical Information

Motor Parameters		Symbols	Units	TML-310-035		TML-310-070		TML-310-140	
PERFORMANCE	DC Bus Voltage	$V_{DC}$	V	24	48	24	48	24	48
	Rated Torque	$T_r$	Nm	68.4		125.8		219.9	
	Peak Torque	$T_p$	Nm	109		218		437.2	
	Rated Speed	$N_r$	rpm	80	185	55	135	35	85
	No-Load Speed	$N_{no-load}$	rpm	115	240	75	160	50	105
	Torque Constant	$K_t$	Nm/A	2.03		2.9		4.64	
	Voltage Constant	$K_v$	V/rpm	0.174		0.249		0.398	
	Max. Cogging Torque	$T_{cog}$	%			<1			
	Torque Ripple	$T_{ripple}$	%			<1			
	Number of Pole	$2p$	--			48			
ELECTRICAL	Rated Current	$I_r$	$A_{rms}$	33.7		43.4		47.4	
	Peak Current	$I_p$	$A_{rms}$	54		75.6		94.8	
	Line Resistance	$R_{LL}@25^{\circ}C$	Ohm	0.15 ( $\pm 20\%$ )		0.11 ( $\pm 20\%$ )		0.12 ( $\pm 20\%$ )	
	Line Inductance	$L_{LL}@60Hz$	mH	0.74 ( $\pm 30\%$ )		0.7 ( $\pm 30\%$ )		0.85 ( $\pm 30\%$ )	
MECHANICAL & THERMAL	Stator Weight	$W_s$	kg	5.80		10.40		19.76	
	Rotor Weight	$W_r$	kg	3.76		7.65		15.30	
	Total Weight	$W_{total}$	kg	9.56		18.05		35.06	
	Mech. Time Constant	$K_{mech}$	ms	2.34		1.79		1.45	
	Thermal Resistance <sup>(2)</sup>	$R_{th}$	$^{\circ}C/W$	0.243		0.182		0.141	
	Inertia	$J$	kg.m <sup>2</sup>	0.05439		0.11055		0.22116	
	Motor Constant	$K_m$	Nm/ $\sqrt{W}$	4.35		7.07		11.14	
	Rotor ID		mm			220			
Stator OD		mm			310				

Motor Parameters		Symbols	Units	TMH-310-035		TMH-310-070		TMH-310-140	
PERFORMANCE	DC Bus Voltage	$V_{DC}$	V	310	560	310	560	310	560
	Rated Torque	$T_r$	Nm	68.2		126.2		219.2	
	Peak Torque	$T_p$	Nm	226.8		455.5		907.3	
	Rated Speed	$N_r$	rpm	205	395	180	340	125	240
	No-Load Speed	$N_{no-load}$	rpm	255	465	215	390	150	270
	Torque Constant	$K_t$	Nm/A	12.18		14.5		20.88	
	Voltage Constant	$K_v$	V/rpm	1.044		1.243		1.789	
	Max. Cogging Torque	$T_{cog}$	%			<1			
	Torque Ripple	$T_{ripple}$	%			<1			
	Number of Pole	$2p$	--			48			
ELECTRICAL	Rated Current	$I_r$	$A_{rms}$	5.6		8.7		10.5	
	Peak Current	$I_p$	$A_{rms}$	20.2		34.2		47.2	
	Line Resistance	$R_{LL}@25^{\circ}C$	Ohm	5.2 ( $\pm 20\%$ )		2.8 ( $\pm 20\%$ )		2.4 ( $\pm 20\%$ )	
	Line Inductance	$L_{LL}@60Hz$	mH	26.8 ( $\pm 30\%$ )		17.5 ( $\pm 30\%$ )		17.4 ( $\pm 30\%$ )	
MECHANICAL & THERMAL	Stator Weight	$W_s$	kg	5.81		10.41		19.78	
	Rotor Weight	$W_r$	kg	3.76		7.65		15.30	
	Total Weight	$W_{total}$	kg	9.57		18.05		35.08	
	Mech. Time Constant	$K_{mech}$	ms	2.33		1.79		1.49	
	Thermal Resistance <sup>(2)</sup>	$R_{th}$	$^{\circ}C/W$	0.243		0.182		0.141	
	Inertia	$J$	kg.m <sup>2</sup>	0.05439		0.11055		0.22116	
	Motor Constant	$K_m$	Nm/ $\sqrt{W}$	4.36		7.08		11.0	
	Rotor ID		mm			220			
Stator OD		mm			310				

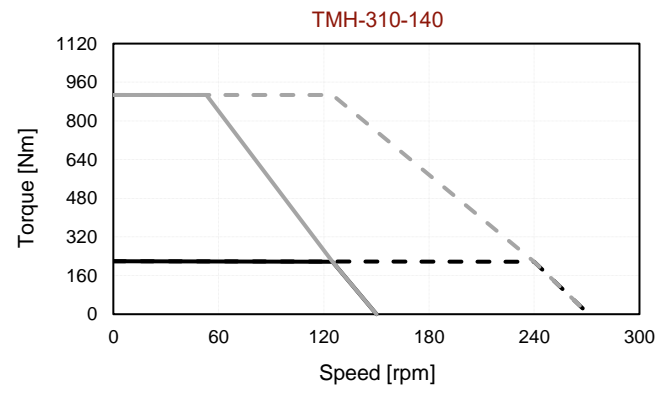
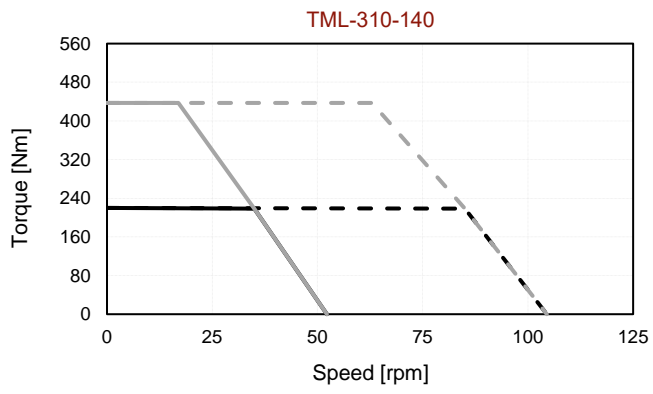
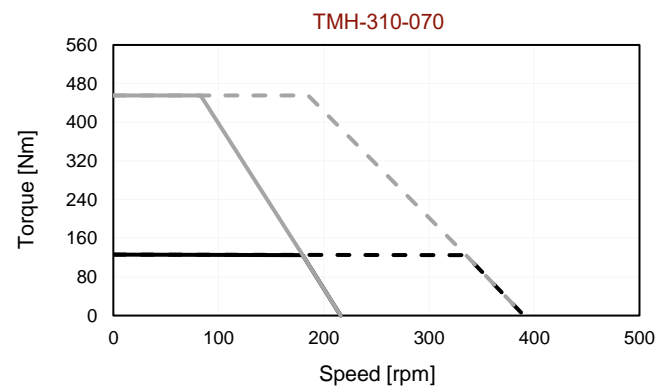
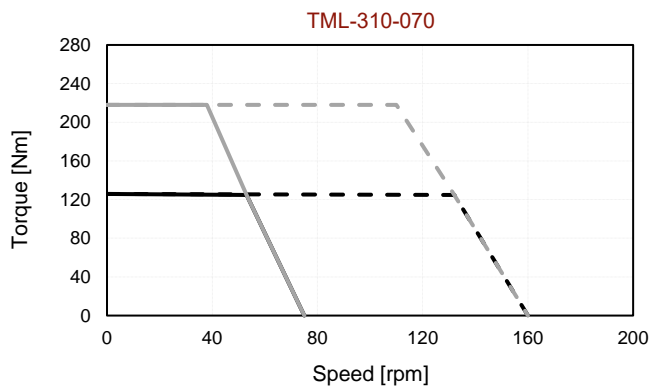
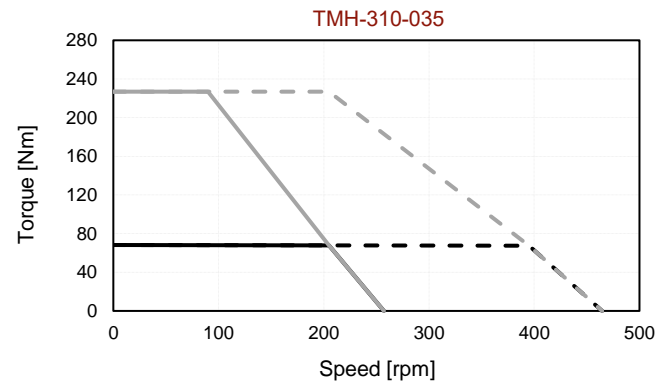
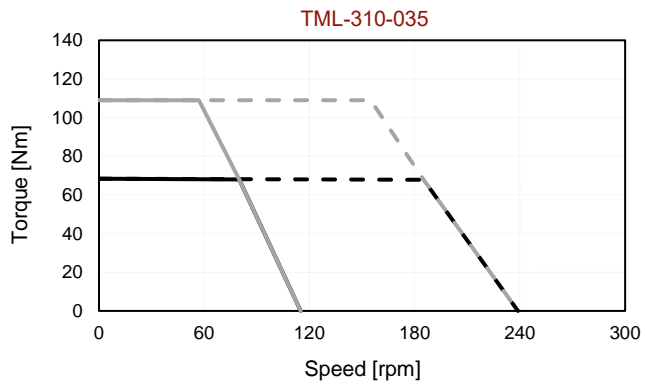
1. All performance and electrical specifications are obtained at 25°C ambient and may change  $\pm 10\%$ . 2. Housed version of motor mounted to 490 mm sq. x 20 mm aluminum heat sink (maximum winding temperature is 120°C). 3. All data referenced to sinusoidal commutation. 4. Higher torque and speed values as well as dimensions on request.

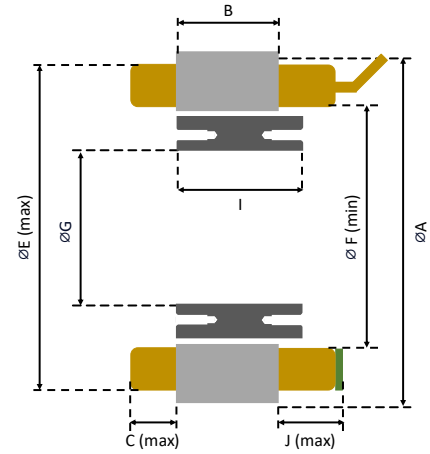
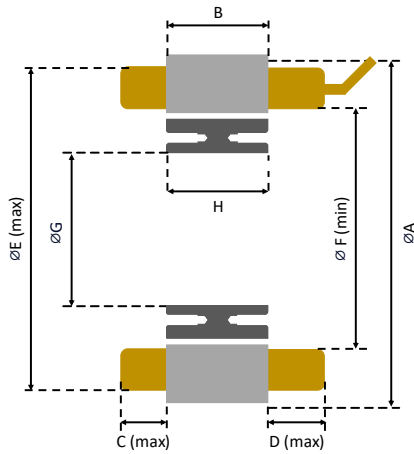
# TM(L/H)-310 Torque-Speed Curves

Tr: Rated Torque  
Tp: Peak Torque

— @Tr 24V    - - - @Tr 48V  
— @Tp 24V    - - - @Tp 48V

— @Tr 310V    - - - @Tr 560V  
— @Tp 310V    - - - @Tp 560V





Hall Effect Sensor Option

Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)
TM(L/H)-310-035	310	35	16	18	302	263.7	220	35.1	40.1	21
TM(L/H)-310-070	310	70	16	18	302	263.7	220	70.2	75.2	21
TM(L/H)-310-140	310	140	16	18	302	263.7	220	140.4	145.4	21

**Notes:**

**MOTOR LEADS:**

310-TML: #7 AWG Teflon® insulated, 500 mm (optional) length, 1-Red, 1-White, 1-Black.  
 310-TMH: #11 AWG Teflon® insulated, 500 mm (optional) length, 1-Red, 1-White, 1-Black.

**THERMISTOR LEADS:**

#26 AWG Teflon® insulated, 500 mm (optional) length, 2-Brown or Blue.

**SENSOR LEADS:**

#23 AWG Teflon® insulated, 500 mm (optional) length, 1-Blue, 1-Green, 1-Brown, 1-White, 1-Yellow.

**MOUNTING OPTION:**

#Stator: 3x3 Keyway

#Rotor: (24X on each side) M5 Bolt Hole

(For detailed mounting information, including tolerances, please contact MDS Motor or refer to the MDS Motor mounting document)