

WAT YAW & PITCH MOTOR

MOVING TO THE FUTURE WITH
YAW & PITCH MOTORS



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PITCH MOTOR DATA

Nominal Data

Nominal Frequency	F_n	170	Hz
Shaft Speed	N_n	2550	min ⁻¹
Shaft Power	P_{mech}	8.5	kW
Shaft Torque	T_n	32	Nm
Voltage	U_{L2}	375	V _{rms}
Current	I_{str}	14.5	I _{rms}

General Information

Motor Type	Permanent Magnet Synchronous Motor		
Frame Size	132		
Number of Pole	8		
Stator Connection	Y		
Cable Connector	Phoenix Contact Version 1628487		
Insulation Class	H		
Cooling Method	Self Cooling		
Temperature Sensor [Type And No.]	PT1000		
Degree Of Protection	IP55		
Corrosion Protection	LPS 3 HEAVY-DUTY RUST INHIBITOR		
Flange Material	Aluminum 383		
Ral Color Code	RAL 7035		
Ambient Temperature	t_{amb}	40	°C
Min. Operating Temperature	t_{min}	-20	°C
Max. Operating Temperature	t_{max}	58	°C
Demagnetization Temp. Magnets	t_{Limit}	180	°C
Total Weight	m_{total}	60.69	kg
Rotor Moment Of Inertia	J_{total}	0.034	kgm ²
Shaft Torsional Stiffness	c_t	178.831	Nm/rad
Diameter Flange	d_{fl}	299	mm
Diameter Shaft End	d_{sh}	38	mm
Length Total	L_{total}	612.9	mm
Diameter Total	D_{total}	437	mm
Max. Shaft Speed	n_{max}	3000	min ⁻¹
Rated Current	I_{rated}	14.5	A
Peak Current	I_{peak}	45.3	A
Torque Constant	k_T	2.206	Nm/A
Voltage Speed Constant	k_E	144.2	V/1000 min ⁻¹
Motor Constant Psi	ψ	2.050	Vs
Stator Resistance [Tamb]	R_{L-L}	397.8 @25°C	mΩ

Encoder

Type	Absolute rotary encoder without integral bearing		
Communication Interface	EnDat 2.2		
Single Turn Resolution	δ_{single}	19	Bits
Multi Turn Resolution	δ_{multi}	12	Bits
Supply Voltage	$U_{Encoder}$	5	V
Typical Current Consumption	$I_{Encoder, rated}$	<45 [at 12 V]	mA
Max. Current Consumption	$I_{Encoder, max}$	230	mA
Mean Time To Dangerous Failure	$MTTFd_{Encoder}$	<2.10 ⁻⁹	years
Max. Operating Temperature	$t_{Encoder, max}$	115	°C
Diameter Shaft End	D_{sh}	38	mm

Brake

Type	Electromagnetic Brake		
Cable Connector	Phoenix Contact version 1628487		
Brake Holding Torque	$M_{Brake, hold}$	100	Nm
Holding Torque Tolerance	Δ_{Hold}	7	%
Supply Voltage	U_{Brake}	24	V
Operating Current Consumption	$I_{Brake, rated}$	1.2	A
Max. Current Consumption	$I_{Brake, peak}$	1.5	A
Safety Value	$BIOd_{Brake}$	2.000.000	cycles

* Customization Option - Encoder and Electromagnetic Brake

** Customization Option - Electrical and Mechanical Interface

YAW MOTOR DATA

Nominal Data

Nominal frequency	F_n	183.33	Hz
Shaft speed	N_n	2750	min ⁻¹
Shaft power	P_{mech}	11.5	kW
Shaft torque	T_n	40	Nm
Voltage	U_{L2}	500	V _{rms}
Current	I_{str}	14.6	I _{rms}

General Information

Motor Type	Permanent Magnet Synchronous Motor		
Frame Size	132		
Number of Pole	8		
Stator Connection	Y		
Cable Connector	Phoenix Contact Version 1628487		
Insulation Class	H		
Cooling Method	Self Cooling		
Temperature Sensor [Type And No.]	PT1000		
Degree Of Protection	IP55		
Corrosion Protection	LPS 3 HEAVY-DUTY RUST INHIBITOR		
Flange Material	Aluminum 383		
Ral Color Code	RAL 7035		
Ambient temperature	t_{amb}	40	°C
Min. operating temperture	t_{min}	-20	°C
Max. operating temperature	t_{max}	50	°C
Demagnetization temp. magnets	t_{limit}	180	°C
Total weight	m_{total}	70.49	kg
Rotor moment of inertia	J_{total}	0.045	kgm ²
Shaft torsional stiffness	c_t	165.904	Nm/rad
Diameter flange	d_{fl}	299	mm
Diameter shaft end	d_{sh}	38	mm
Lenght total	L_{total}	634.9	mm
Diameter total	D_{total}	399	mm
Max. shaft speed	n_{max}	4400 [6000 for 3s]	min ⁻¹
Rated current	I_{rated}	14.6	A
Peak current	I_{peak}	48.4	A
Torque constant	k_T	2.739	Nm/A
Voltage speed constant	k_E	180.3	V/1000 min ⁻¹
Motor constant psi	ψ	0.256	Vs
Stator resistance [tamb]	R_{-L}	408.2 @25°C	mΩ

Encoder

Type	Absolute rotary encoder without integral bearing		
Communication Interface	DRIVE-CLIQ		
Single Turn Resolution	δ_{single}	19	Bits
Multi Turn Resolution	δ_{multi}	12	Bits
Supply Voltage	$U_{Encoder}$	24	V
Typical Current Consumption	$I_{Encoder, rated}$	<24 [at 24 V]	mA
Max. Current Consumption	$I_{Encoder, max}$	120	mA
Mean Time To Dangerous Failure	$MTTFd_{Encoder}$	<27.10 ⁻⁹	years
Max. Operating Temperature	$t_{Encoder, max}$	115	°C
Diameter Shaft End	D_{sh}	38	mm

Brake

Type	Electromagnetic Brake		
Cable Connector	Phoenix Contact version 1628487		
Brake Holding Torque	$M_{Brake, hold}$	100	Nm
Holding Torque Tolerance	Δ_{Hold}	7	%
Supply Voltage	U_{Brake}	24	V
Operating Current Consumption	$I_{Brake, rated}$	1.2	A
Max. Current Consumption	$I_{Brake, peak}$	1.5	A
Safety Value	$BIOd_{Brake}$	2.000.000	cycles

* Customization Option - Encoder and Electromagnetic Brake

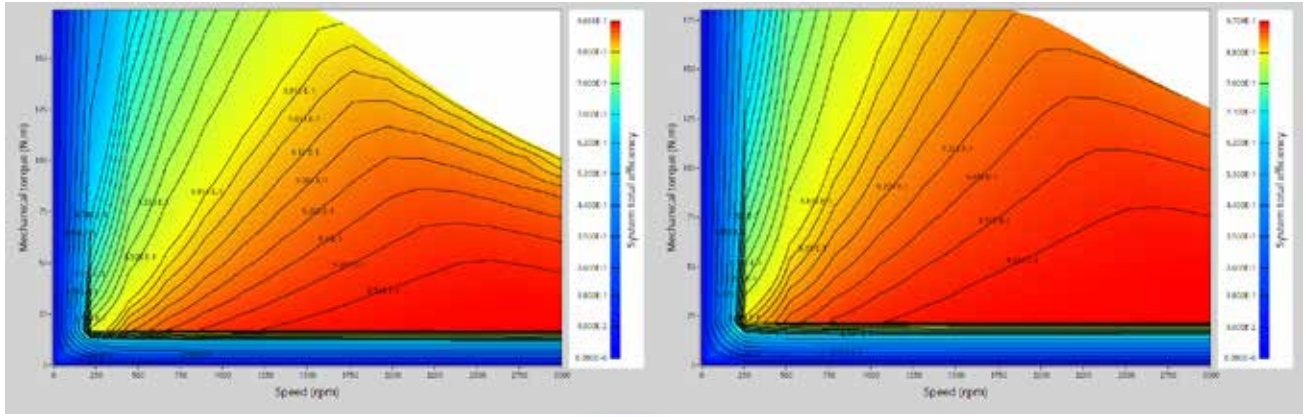
** Customization Option - Electrical and Mechanical Interface

THE ENERGY
OF THE FUTURE
IS HERE



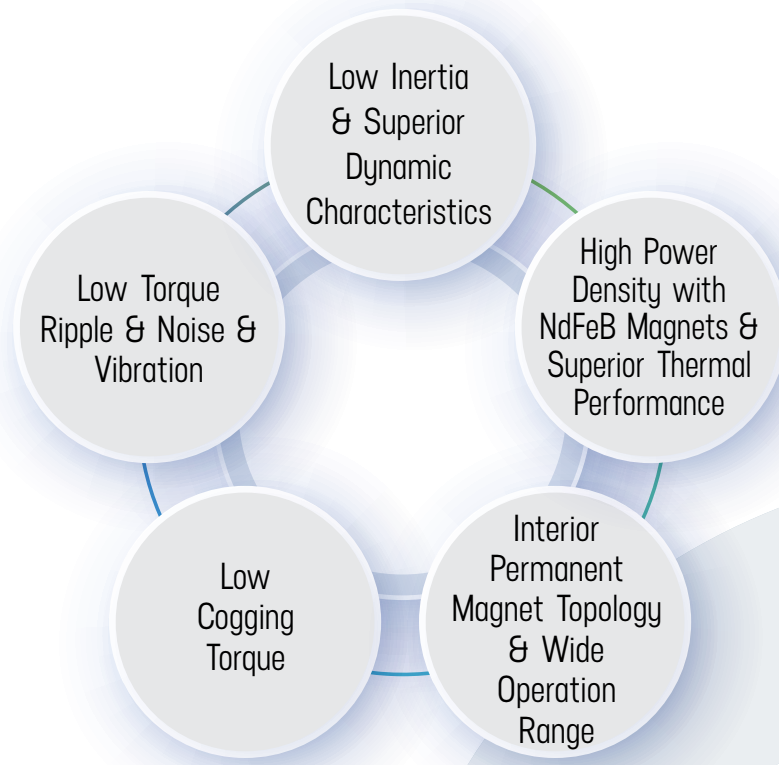
General Specifications

→ High Efficiency



Pitch

Yaw



Cogging Torque	
PITCH Motor:	<%1 for 32 Nm
YAW Motor:	<%1 for 40 Nm
Torque Ripple	
PITCH Motor:	<%3
YAW Motor:	<%3