



# EC-SERVO MOTORS with brushless drive

## EC 60 TM 400W 48V



- brushless
- small & compact
- maintenance-free
- Protection IP65

### ORDERING DATA

EC 60 TM 400W 48V  
Part no. 474400 0048  
EC 60 TM 400W 48V with brake  
Part no. 474400 1048

### CHARACTERISTICS

- permanently energized 3-phase synchronous motor
- incremental position encoder / encoder integrated in the motor - supply 5VDC, RS422, tracks A, / A, B, / B, Z, / Z,
- integrated commutator signals U, V, W - 5V PUSH / PULL
- applications: positioning controls, CNC controls
- optionally with holding brake
- recommended control electronics see catalog

BASIC INDEX	
Working time	continue
Thermal endurance class	class F
Dielectric voltage withstand	AC1500V 1min
Insulation resistance	DC500V 100M Ω
Ambient temperature	0 ~ +40°C
Ambient humidity	20 ~ 80% without condensation
Vibration class	V15
Connection way	direct connection
Motor mounting	flange
Excitation way	permanent magnet
Degree of protection	whole sealing, self cooling, IP 65 (except the pass-through parts of the axle)
Direction of rotation	anticlockwise rotation from the side of axle stretch end

BASIC PARAMETERS	without brake	with brake
Rated power [W]		400
Pole number		8
Rated voltage [V AC]		48
Rated speed [rpm]		3000
Max. speed [rpm]		5000
Rated torque [N.m]		1.27
Peak torque [N.m]		3.8
Rated current [A]		10.25
Peak current [A]		31.8
Line counter EMF coefficient [mV / rpm]		7
Torque coefficient [N.m / A]		0.128
Moment of inertia of the rotor [kg.m <sup>2</sup> .10 <sup>-4</sup> ]		0.342
Line resistance [Ω]		0.27 @ 25°C
Line inductance [mH]		0.67 @ 1 kHz, 1 V
Rated voltage of the brake [V]	n/a	24
Rated power of the brake [W]	n/a	7.5
Holding torque of the brake [N.m]	n/a	1.3
Moment of inertia of the brake [kg.m <sup>2</sup> .10 <sup>-4</sup> ]	n/a	0.0117
Weight [kg]	1.7	2.4
Sensor	Incremental, ABZ+uvw, 2500 PPR	

TEST CONDITION
1. The motor is installed on a 200 x 200 x 20 mm aluminium panel horizontally, with a 25°C and free-flowing air environment.
2. Adopt interference fitting, unlimited inertia loading are imposed on the extension part of the motor axle.
3. Typical error of the standard value is less than 10%.

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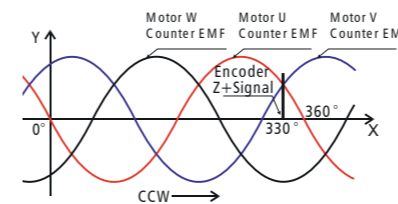
### PIN ASSIGNMENT

Power Line		with brake				
Color	yellow-green	red	blue	black	brown	white
Signal	FG	U	V	W	Br+	Br-

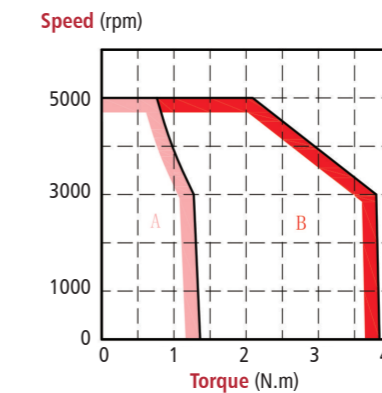
Encoder Line												
PIN No.	1	2	3	4	5	6	7	8	9	10	11	12
Signal	Shield	Gnd	Vcc 5V	A+	A-	B+	B-	Z+	Z-	Hall U	Hall V	Hall W
Connector:	JST PHR-12, PH-Series											

### CHARACTERISTICS CURVES

#### RELATIONSHIP between Encoder Zero and Motor Phase Position:

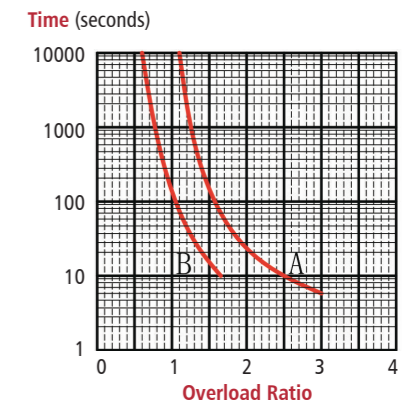


### TORQUE – SPEED:



A: Continuous Duty Zone, B: Intermittent Duty Zone

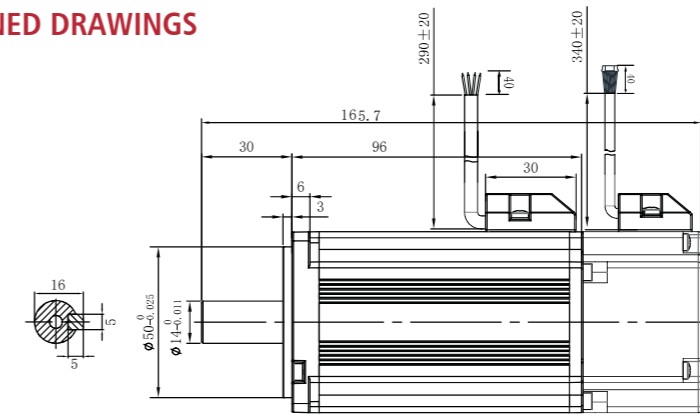
### OVERLOAD:



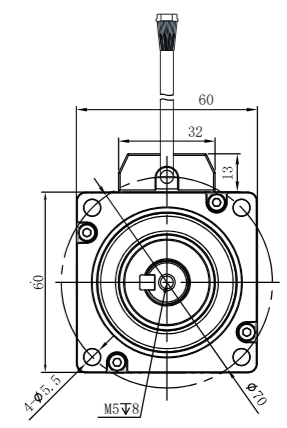
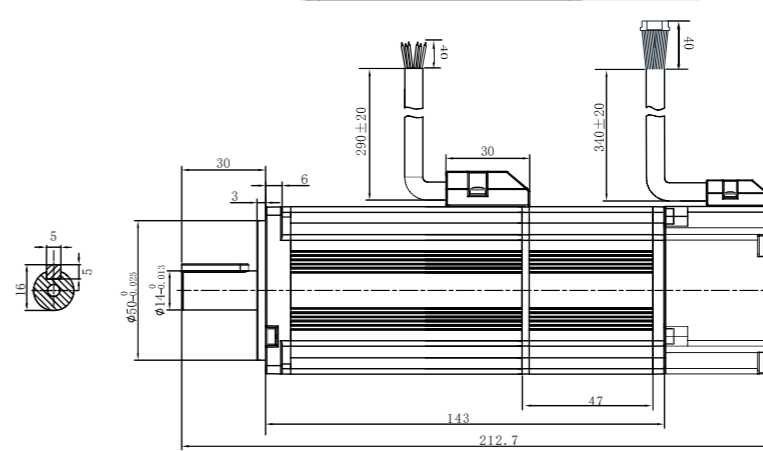
A: 3000 rpm, B: 5000 rpm

### DIMENSIONED DRAWINGS

Motor without brake



Motor with brake



### Further information:

