

# MULTI-PHASE SYNCHRONOUS MOTORS & CONTROLLERS

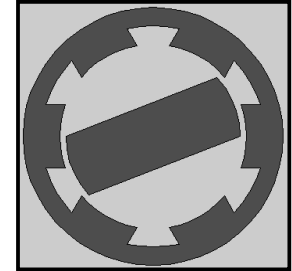
MSYNCH -Series

## Introduction:

MSYNCH series of synchronous motors are available in more than 100 different models (100 to 100.0 kilo watts), virtually offering solutions to variety of application viz captive power generation, load based wind/hydroelectric generation, constant torque industrial application, power factor correction applications sugar, textiles, heavy electrical/mechanical industries, research and development organizations and many defense applications. Special machine design, updated design topology and material ensure better efficiency and enhanced torque transmission with improved controllability. Company offers tailor made solution to / requirement.

## Operating Principle:

Primary element of these motors is magnetic rotor occupies least reluctance Rotary magnetic path, when stator is excited. These motors normally operate in constant torque mode These motors are most suitable for high torque regulation applications. Its torque or speed can be stably controlled using an A.C/A.C. controller operating in feedback. This power output of these motor is as under.....



**Numerically, the approximate power relation is as under....**

$$P = E_f \cdot V_t \cdot \sin(O) / X_d + V_t^2 / 2 (1/X_q - 1/X_d) \cdot \sin(2.O) \dots$$

Where P: Power transfer, Vt: terminal voltage: Ef :excitation voltage , O: load angle  
Xd: Direct axis reactance , Xq: Quadrature reactance

characteristic of synchronous motor



MSYNCH -0500010



MSYNCH -0030015



sectional view of synchronous motor

## Mechanical Specifications of Synchronous motors:

Model	Power Watts	Torque n.m.	rpm x10 ( max)	Residual Torque x10 <sup>-2</sup>	Volt	Model	Power Watts	Torque n.m. x10 <sup>-2</sup>	rpm X10 ( max)	Residual Torque x10 <sup>-2</sup>	Volt
MSYNCH -0005030	500.0	1.59	300	0.008	220	MSYNCH -0050030	5000.0	15.8	300	0.090	220
MSYNCH -0008015	735.0	2.33	300	0.010	220	MSYNCH -0050015	5000.0	31.8	150	0.090	220
MSYNCH -0010030	1000.0	3.18	300	0.015	220	MSYNCH -0100030	10000.0	286.2	300	0.50	220
MSYNCH -0010015	1000.0	6.36	150	0.020	220	MSYNCH -0200010	20000.0	190.0	100	0.70	220
MSYNCH -0030030	3000.0	9.54	300	0.030	220	MSYNCH -0100030	10000.0	286.2	300	0.50	220
MSYNCH -0030015	3000.0	19.1	150	0.050	220	MSYNCH -0200010	20000.0	190.0	100	0.70	220
MSYNCH -0050030	5000.0	15.9	300	0.070	220	MSYNCH -0500010	50000.0	636.9	075	0.90	220

## Electrical/mechanical specification of Synchronous motor

Topological type: Radial field/axial  
Generated power: 50-500,000 Watts  
N0-voltage: 240 +/- 5% of rated voltage ( rms)  
Frequency: 45-55 Hz/or option  
Direct axis-Armature reactance: .5-1.5 % ohm p.u.  
Quadrature axis armature reactance: 0.08 - 0.15% ohm p.u.  
Armature resistance/phase: 0.5 – 1.5 %p.u. ohm/phase  
Excitation vol/current: 200 v//1.0amps - 800 volt/5.0 amps  
Rpm: 250-350 Rpm  
Pole: 4/8/12 no  
Nominal torque: as in data sheet.  
Overall electrical efficiency: approx 85%  
Frame diameter: 6-24" with flange mounting  
Frame length: 24"/Shaft diameter: 2"  
Coupling: star  
Cooling: forced cooling  
Insulation: class – H Noise levell: as per practices



A.C.SYNCHRONOUS MOTOR CONTROLLER:

MSYNCH -0500030