

EME Series E-Motor Emulator



- E-motor emulation ●
- Resolver simulation ●
- Encoding disk simulation ●
- Temperature simulation ●
- Hall signal ●
- Fault simulation ●

Production Introduction

The E-Motor Emulator is a new type electronic load utilizing both power conversion technologies and high-power high-frequency switching devices to emulate port characteristics of electric motors. Based on an accurate dynamic mathematical model, the emulator can output the characteristics of electric motors under working conditions. It can serve as:

An electronic load to the grid (at special power levels). Ideal for studying the characteristics of power system;

An E-Motor Emulator to perform functionality, endurance, fault diagnosis, and safety protection testing. Ideal for the R&D process of motor controllers and frequency converters.

Product Advantages

Bidirectional energy flow

Fault simulation

Accurate simulation of dynamic characteristics

Serve as an AC power supply under synchronous generator mode

Emulate the working conditions of both permanent magnet synchronous motor & asynchronous motor

No vibration & low noise

Protection for DUT (device under test)

Standard communication interfaces

Response time: ≤1ms



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Specifications & Parameters

E-Motor Emulator Parameters	
Phase	3
Min. Current Slew Rate	1500A/ms
Rated Rotating Speed	0~100000RPM (standard)
Motor Steering	Clockwise/Counterclockwise
Motor Torque	Positive/Negative
Number of Pole-pairs	1~20
Resolver Excitation	3kHz~20kHz
Motor Leakage Inductance	470uH~3000uH
Current Frequency	Max. 4,000Hz (rated current: 300A)
	Max. 5,000Hz (rated current: 600A)
Stator Resistance	0Ω~5Ω
Dynamic Rotational Speed of Rotor	$d\omega/dt > 10^6$ rpm/ms
Motor Model	Synchronous motor/Asynchronous motor
Position Sensor	Resolver/Encoder/Hall sensor
Fault Simulation	Short circuit/Disconnection real-time error simulation
Temperature Sensor	2-way NTC or PTC
Communication Interface	RS485/CAN/LAN
Protection Functions	Overload & DUT Protection

Motor Model	Parameter Setting
PMSM Model	d axis inductance $L_s=L_d$
	q axis inductance L_q
	Stator resistance R_s
	Magnetic flux Ψ
	Mechanical rotational inertia Mech
	Friction coefficient
ASM Model	Pole-pairs p
	Stator resistance R_s
	Rotor resistance R_r
	Stator leakage inductance U_s
	Rotor leakage inductance U_r
	Magnetic inductance L_m
	Mechanical rotational inertia Mech
	Friction Coefficient
Pole-pairs p	

Software Interfaces

The software is available with two types of electric motor emulation. Editable parameters include number of pole-pairs, stator resistance, moment of inertia, magnetic flux, resolver, encoding disk, and Hall sensor etc. Fault simulation includes phase fault, short circuit, locked-rotor, demagnetization, CAN failure, and position sensor failure etc. Automatic saving/generation of test data and curve.

