for a greener tomorrow

MITSUBISHI ELECTRIC
Changes for the Better

FR-E800 PM CONTROLLER FOR HVAC

Product Overview

The FR-E800 permanent magnet (PM) controller is built upon Mitsubishi Electric's proven variable speed control technology through years of reliable operation across various HVAC applications, including pumps, fans, and compressors. It is designed to save energy, reduce footprint, and minimize cost with advances in quality, performance, and maintenance capabilities.

KEY BENEFITS:

- **Compact designs –** Compact footprint to control motors up to 10HP, with extension to 30HP by 2021. Mount multiple controllers side by side to minimize enclosure size.
- **Dual overload rating –** Light Duty (LD) and Normal Duty (ND) overload current ratings to help achieve the desired performance in smaller frame sizes.
- **Extended environmental rating –** Operates in ambient temperature from -20°C to +60°C and conformal coated to withstand harsh environments
- **Corrosion alert system –** World's first system to identify signs of damage caused by hydrogen sulfide or other corrosive gas. Notifies operators when the production environment needs to be improved and reduces unplanned downtime.
- **Auto-tune to PM motors –** FR-E800 provides energy savings when combined with IPM based technology. Our embedded auto-tuning system allows plug and play optimization with many 3rd party IPM motors. This provides quick and easy setup and commissioning without time-consuming 'tuning" or the need for on-site support.
- **Energy savings –** Optimum excitation control reduces energy consumption by removing over current during steep acceleration/deceleration.
- **Power regeneration and harmonic suppression–** When paired with the FR-XC multifunction converter one PM controller can handle harmonic suppression and power regeneration. In power regeneration mode, regenerative energy can be supplied to another drive or returned to the power supply in order to save energy.
- **Life diagnostics function –** diagnose remaining lifetime of critical components including capacitor, contact relays, cooling fan, and inrush current limit resistor.

FR-E800 PM CONTROLLER FOR HVAC – Product Overview

DUAL RATING

When using LD rating for light duty applications, a smaller capacity controller may be used to drive a larger motor, resulting in reduced footprint and cost.

List of inverters by rating

200 V class

Model FR-E820-[]		Applicable motor capacity (kW)*1	
		LD	ND
0.1K	0008	0.2	0.1
0.2K	0015	0.4	0.2
0.4K	0030	0.75	0.4
0.75K	0050	1.1	0.75
1.5K	0080	2.2	1.5
2.2K	0110	3	2.2
3.7K	0175	5.5	3.7
5.5K	0240	7.5	5.5
7.5K	0330	11	7.5

400 V class

Model FR-E840-[]		Applicable motor capacity (kW)*1	
		LD	ND
0.4K	0016	0.75	0.4
0.75K	0026	1.5	0.75
1.5K	0040	2.2	1.5
2.2K	0060	3	2.2
3.7K	0095	5.5	3.7
5.5K	0120	7.5	5.5
7.5K	0170	11	7.5

575 V class

Model FR-E860-[]		Applicable motor capacity (kW)	
		LD	ND
0.75K	0017	1.5	0.75
1.5K	0027	2.2	1.5
2.2K	0040	3.7	2.2
3.7K	0061	5.5	3.7
5.5K	0090	7.5	5.5
7.5K	0120	11	7.5

Overload current rating

LD	120% 60 s, 150% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C
ND	150% 60 s, 200% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C

*1: The applicable motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi Electric 4-pole standard motor.

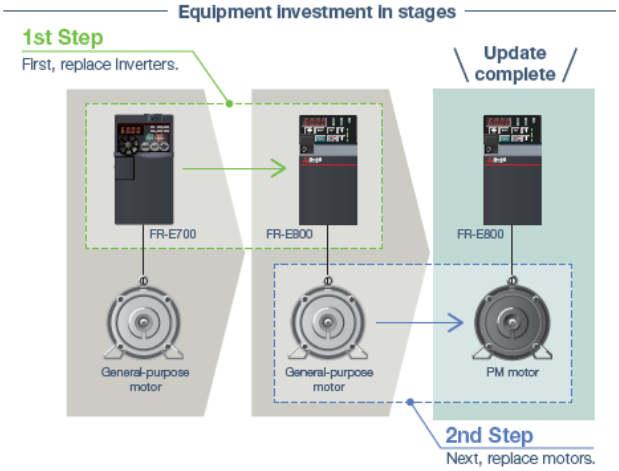
BOOKSHELF-STYLE LAYOUT

When the surrounding air temperature is 40°C or less, multiple inverters may be installed side-by-side to maximize space utilization within the cabinet.

Side-by-side Installation

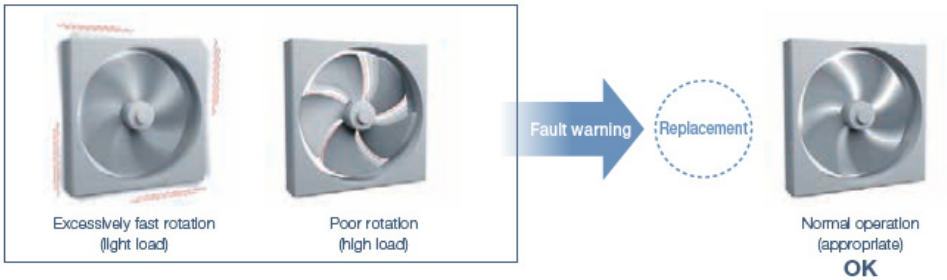
CONTROL BOTH IM AND PM MOTORS

Auto-tune to both IE3/IE4 induction motors and permanent magnet motors via simple parameter setup to increase performance, minimize noise level, and reduce commissioning time.



EARLY CLOGGING DETECTION

The speed–torque characteristic under normal operating condition is captured and compared against real time data. When a mechanical fault such as clogging of the filter occurs, the controller outputs a warning or shuts off the output to prevent system damage.



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