

New inverter class for demanding applications

10 November 2020

The latest FR-E800 inverter series offers multiple networks and high performance predictive maintenance through AI and built-in corrosive gas alert

A highly flexible, compact inverter series with multiple built-in networks, including TSN (Time Sensitive Networking), has been released by Mitsubishi Electric to support the needs of smart factories. Industries including machine building and automotive, as well as food & beverage, life sciences and water treatment will benefit from the control capabilities. Using AI, the FR-E800 reduces downtime with its extended predictive maintenance capabilities featuring the world's first¹ corrosive gas alert system². The inverters also achieve high performance control of induction and permanent magnet motors to Safety Integrity Level (SIL) 3 Pl.

The FR-E800 series offers increased flexibility by incorporating multiple communications without the need for option cards. Major industrial Ethernet networks are supported as standard, including CC-Link IE TSN. Network flexibility is also increased with two Ethernet ports which support line, ring and star topologies.

Enhancing predictive maintenance, the inverter features the industry's first corrosive gas environment detection circuit. In conjunction with Mitsubishi Electric's drives AI

diagnostic technology, this helps to reduce overall downtime by allowing early identification and resolution of fault causes without the need for specialist skills.

To maintain safety and productivity, the inverter achieves SIL2 PId and 3 PLe. Safety functionality is featured as standard without the need for an encoder and includes Safe Torque Off (STO), Safe Stop 1 (SS1), Safe Brake Control (SBC) and Safe Speed Monitor (SSM).

Enhanced, customised control is provided by the built-in PLC functionality which is configured via the FR-Configurator2 software. Multiple inverters can be controlled by a single master, removing the cost of an external PLC. The FR E800's autotune can be used for Surface Permanent Magnet (SPM), Interior Permanent Magnet (IPM) and in future, synchronous reluctance motors and offering maximum flexibility by reducing spares stock holding. Control modes including closed loop vector control (with encoder), real sensorless vector control (without encoder) and positioning without sensors are supported.

With scalable power for application diversity, the FR-E800 series has output from 0.1 kW to 7.5 kW extending to 22 kW (normal duty) / 30kW (light duty) in future, supporting 200V single/three phase, 400 and 575 V three-phase.

¹According to Mitsubishi Electric research as of September 10, 2019

²Patent pending. Relevant press release dated September 4, 2019: "Mitsubishi Electric Develops World's First Metal Corrosion Sensor Designed for Mounting on Printed Circuit Boards" www.MitsubishiElectric.com/news/2019/0904.html

Image captions:

Image 1: The latest Mitsubishi Electric FR-E800 inverter series offers highly flexible, compact inverters with multiple, built-in communications, including TSN, suited for a wide range of applications including Automotive, Food & Beverage and Water and Wastewater.

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About Mitsubishi Electric

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The role of Industrial Automation – UK Branch is to manage sales, service and support across its network of local branches and distributors throughout the United Kingdom.

*U.S. dollar amounts are translated from yen at the rate of ¥221=U.S.\$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2022.

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