MITSUBISHI ELECTRIC
Changes for the Better

Automating the World

FACTORY AUTOMATION

FR-D800 Series Inverter

Next-generation compact inverters

D800

- Easier, quicker wiring & setup right out of the box
- Supports various types of applications with its compact size and layout options
- Functions for predictive/preventive maintenance support reliable maintenance

FR-D800: COMPACT POWER, ENGINEERED FOR THE FUTURE

The FR-D800 inverter by Mitsubishi Electric is a modern and compact drive solution designed with efficiency, ease of use, and environmental sustainability in mind.

As an evolution of the well-known FR-D700 series, it offers even easier selection, installation, and operation.

The FR-D800 inverter stands out with its wide range of applications – from horizontal and vertical transport systems to industrial machinery, ventilation, agriculture and the food industry.

THIS EVOLUTION PAVES THE WAY FOR OUR FUTURE

Watch our video about our environmentally friendly compact inverters

It supports both induction and permanent magnet (PM) motors, making it suitable for a wide range of equipment.

This new series is equipped with advanced control functions, including sensorless vector control and magnetic flux vector control. Its compact design allows for side-by-side installation of multiple units, and the thoughtful construction significantly simplifies wiring. RS-485 communication and USB Type-C configuration without mains power make setup even more convenient.

The inverter also features a built-in braking transistor and STO safety functions, allowing compliance with European safety standards.

Thanks to IE5 motor drive technology and built-in monitoring of energy consumption and CO_2 emissions, the FR-D800 contributes to sustainability goals.

FR-D800 is the answer to the needs of modern industrial automation – compact, energy efficient and highly functional.

FEATURES OF THE FR-D800 SERIES

USER FRIENDLY

Inverters from the FR-D800 series are equipped with solutions for ease of use. Improves wiring work efficiency with the flip-type front cover and the wiring cover integrated into the inverter. In addition, you can set parameters with the power supplied from the computer (USB bus power connection) right out of the box.

SIMPLE TO ADAPT

The easy to use, compact FR-D800 inverter inherits and enhances the functions of the FR-D700 and FR-F700PJ series. It also provides various motor controls, both induction and PM motors. As a single inverter supports various control methods, inverters need not be prepared according to the motor type.

INCREASING SAFETY

The FR-D800 inverter is compatible with all necessary safety standards to ensure adherence to the EU Machinery Directive. In case of emergency, the shutoff circuit (hardware) securely shuts off the output. The inverter complies with the safety standards without incurring significant expenses.

SUSTAINABLE

Choosing FR-D800 inverters is a choice toward a more sustainable future. In the manufacturing process, we are taking measures to reduce our environmental impact, e.g., use recycled materials, reduce paper usage, promote digitisation, promote automation of the product production and packaging, and reduce material usage by downsising the products.

PREDICTIVE MAINTENANCE

The inverters are equipped with enhanced monitoring functions for predictive maintenance and planned maintenance. The life of the following parts can be diagnosed: main circuit capacitor, cooling fan, control circuit capacitor, inrush current limit circuit, fault contact relay, main circuit elements.

ECO-FRIENDLY

FR-D800 inverters are the eco-friendly choice for your business. They help reduce operating costs and CO_2 emissions by using high-efficiency motors and reducing standby power. Energy consumption can be reduced by about 9% compared to the SF-JR motor and by about 2% compared to the SF-PR motor. The inverters also enable continuous monitoring of the level of CO_2 reduction and energy savings.

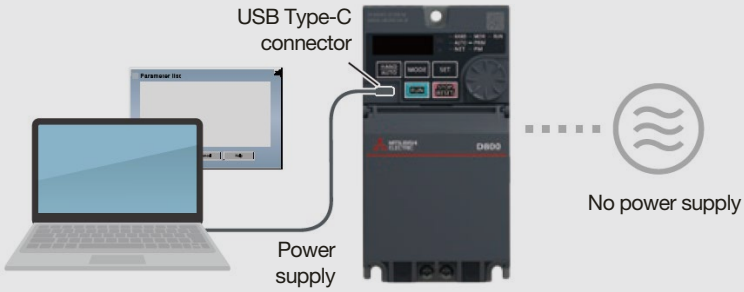
THE FR-D800 AND ITS MOST USEFUL FUNCTIONS

Easy setup allows smooth wiring and simple startup of networking

The FR-D800 series uses a new flip front cover. This reduces the screw tightening work for the front cover and prevents incorrect use of the wrong cover.

Flip-type front cover

Wiring cover integrated into the inverter



All parameters of the device can be set without needing to power the main circuit. Configuration is also facilitated by a web page with information on new configurations. It can be used on both smartphones and tablets.

Additionally enhanced compatibility between inverters and the GOT (human machine interface) brings various benefits to users. Connection with the GOT2000 series can be established just by setting the station number. Other necessary settings are done automatically.

Human-machine interface (GOT)

Designed with a compact body for improved freedom of panel

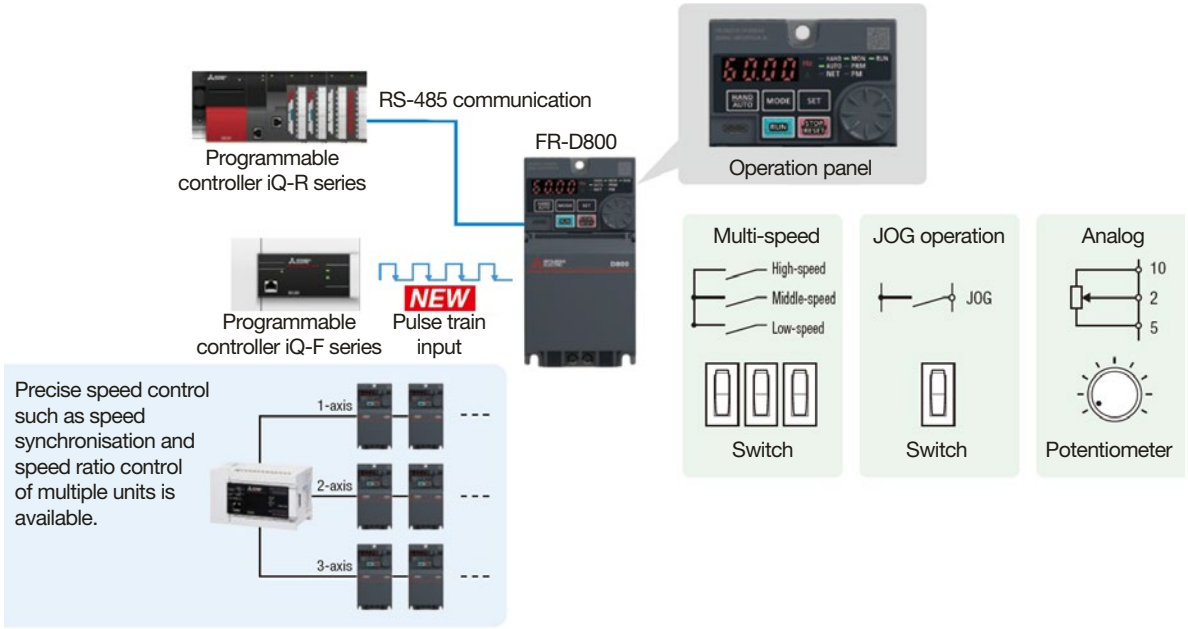
The FR-D800's compact body gives more freedom in panel design – allowing multiple inverters to be mounted side-by-side. Less wiring and smaller space ensures compliance with the Harmonic Suppression Guidelines.

The external size (width) of some capacity models has been reduced. Moreover, installation interchange attachment options will be available to replacement.

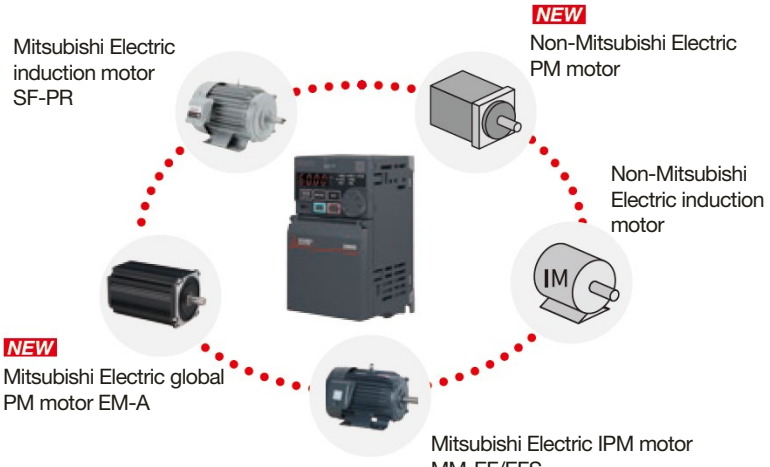
[1] Illustration of the FR-D820-3.7K-165. Actual figures differ according to capacity.

Outstanding drive performance and various functions bring higher added values

The FR-D800 provides support for various speed commands. In addition to command input from the operation panel, various other speed commands are supported, including those using the multi-speed operation by switches, JOG operation, RS-485 communication, and pulse train input. An improved regeneration function increases productivity and reduces tact time. In addition, the rotation speed can be set according to the material to be processed, and furthermore, stable high-speed rotation is possible.



Not only induction motors but also PM motors are supported for synchronous motor drive. The auto-tuning function enables operation of non-Mitsubishi Electric PM motors[1]. Even if the control method differs depending on the application, such as V/F control for fans and pumps or advanced magnetic flux vector control for conveyors, the FR-D800 can switch between control methods, reducing the requirement for spare inverters.



[1] Tuning may be disabled depending on the motor characteristics.

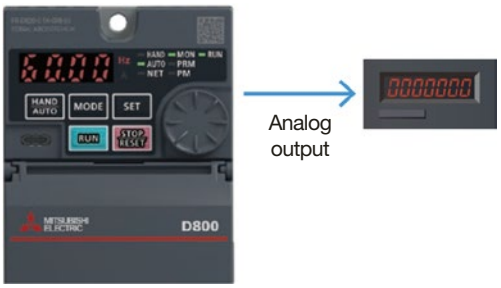
Outstanding drive performance and various functions mean higher added values

The FR-D800 inverters help achieve greater production efficiency while maintaining the highest safety standards. The device complies with all the necessary safety standards required by the EU Machinery Directive. The inverters are also equipped with STO (safe torque off) function – the driving power to the motor is electronically shut off by responding to the input signal from external equipment. In addition, the device provides the ability to set a 4-digit password, which can limit the reading/writing of parameters.

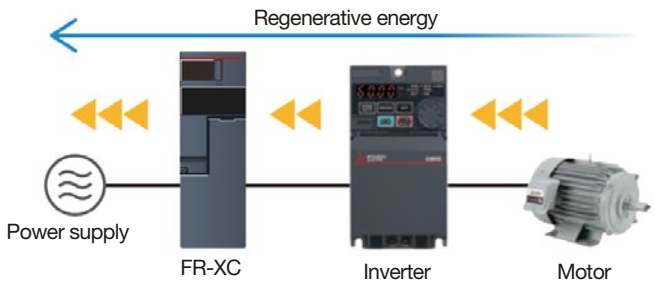
Contributing to a decarbonised society by driving energy-saving motors

The use of inverters contributes to the decarbonisation of society and energy savings. The FR-D800 provides lower energy consumption and CO_2 emissions compared to conventional motors. The effect of the energy savings (instantaneous value, average value, etc.) can be checked via the operation panel, output terminal, or RS-485 communication.

In addition, the amount of output power (CO_2 emission) can be measured in the inverter and output as an analog signal, enabling the checking of the cumulative electric power value.



[Power regeneration]



Energy savings are also provided by the power regeneration function. While the motor rotates to drive the machine during power driving, the machine rotates the motor during regenerative driving, which results in energy saved, since the motor serves as a generator that returns the power to the power supply.

By using the multifunction regeneration converter (FRXC) as a common converter, the power returned from an inverter during regeneration drive can be supplied to another inverter, which in turn saves energy.

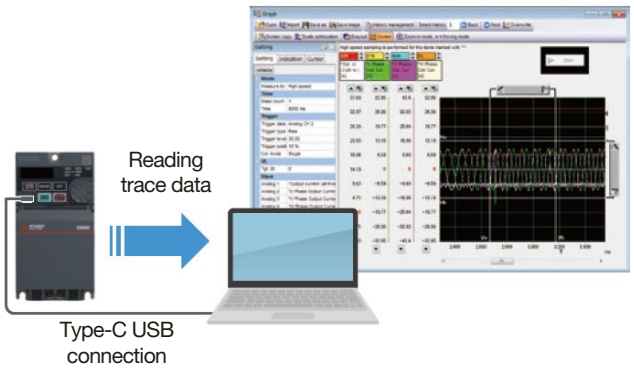
Enhanced monitoring functions for predictive maintenance and preventive maintenance

The FR-D800 is equipped with numerous features to provide more effective predictive and preventive maintenance for even better production performance. The device allows you to monitor the life of parts such as the inrush current limit circuit, fault contact relay or main circuit elements. The lifetime data for each part is displayed in a dedicated configurator window. In addition, when a mechanical fault such as clogging of the filter occurs, the inverter outputs a warning or shuts off the output to prevent system damage.

The life of the following parts can be diagnosed:

- Main circuit capacitor
- Cooling fan
- Control circuit capacitor
- Inrush current limit circuit
- Fault contact relay NEW
- Main circuit elements NEW

Troubleshooting support tool to reduce downtime



The FR-D800 inverter is equipped with graph and trace functions that analyse and visualise data in the form of easy-to-read graphs. This makes it possible to react quickly if a fault occurs.

In addition, the inverter is also listed with an emergency drive and an automatic restart after instantaneous power failure function, which enables it to maintain continuous operation.

INVERTERS ARE USED IN MANY MANUFACTURING SECTORS – READ ABOUT EXAMPLES!

Industry	Major system	Major user benefits	Description
Everyday devices 	Washing machine / platform screen door / car washers / storey parking lot (turntable)	System downsizing	A compact body contributes to system downsizing.
		Supporting various speed commands	The speed command suited to each system canbe input.
Crane 	Small hoist	System downsizing	A compact body helps minimise the installation area.
		Slippage prevention for lifting	High-torque power in the low-speed range prevents slippage.
		Enabling quick downward operation	High regenerative braking operation is possible with the inverter and brake resistor.
Metal processing machine 	CNC spindle machine	High-speed operation	High machining accuracy and improved work efficiency are achieved through high-speed rotation of over 400 Hz.
Air conditioning system 	Air handling unit/fan/ rooftop unit	Providing optimal cooling and heating	The speed adjustment of fans in air conditioning systems contributes to the creation of optimal air conditioning systems.
		Energy savings	Eco-friendly operation is achieved with a high-efficiency motor drive.
Food and beverage 	Conveyor/slicer/fan/ mixer/pump	System downsizing	A compact body contributes to system downsizing.
		Continuing the operation during trouble	Even if an instantaneous power failure occurs, the system can be restarted smoothly after the power is restored.
		Energy saving	Speed control can save more energy compared to the commercial power supply operation.
Warehouse 	Horizontal/vertical conveyor	Enabling quick downward operation	High regenerative braking is possible with the inverter and brake resistor.
		Stable transfer operation	The shock at the start and stop of the machine is reduced.
		Operation capable of handling heavy objects	A stable operation is possible by using high-torque power in a low-speed range.
Livestock production and agriculture 	Pump/fan	Early detection of signs of abnormalities	Signs of load failure can be detected early before systems fail.
		Providing an optimal environment in the facility	Maintaining a constant temperature in the facility provides a livestock-friendly environment.
		Energy savings	Speed control can save more energy compared to the commercial power supply operation.
Textile industry 	Conveyor/pump/ fan/drier/ winding machine	Functions specialised for each system	Equipment-specific functions, such as control of the winding drums of spinning/wiring machines, are provided.
		Energy savings	Speed control can save more energy compared to the commercial power supply operation.

Mitsubishi Electric's e-F@ctory concept utilises both FA and IT technologies to reduce the total cost of development, production and maintenance, with the aim of achieving manufacturing that is 'one step ahead of the curve'. It is supported by e-F@ctory Alliance partners covering software, equipment and system integration, creating the optimal e-F@ctory architecture to meet end customers needs and investment plans.

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