MITSUBISHI ELECTRIC
Changes for the Better

Automating the World

FACTORY AUTOMATION

BODY & BRAIN FOR MAXIMUM AVAILABILITY

FR-F840 and FR-A840 frequency inverters

Automating the World

// Inexpensive modular system
// Available immediately! For standard FR-F/A 800 series
// Energy efficient
// With Ethernet, CC-Link IE Field or 2 serial interfaces
// Less than 3 minutes set-up time

POWER MEETS INTELLIGENCE

The Body & Brain Kit makes it easy, quick and inexpensive to modify standard FR-A/F800 series devices. By installing the brain (control board) in the body (power amplifier), a terminal device with four different variants can be created in just 3 minutes. The intelligence is automatically connected to the power amplifier via plug & play. This massively increases flexibility and is available immediately.

The Brain & Body system is characterised by its high flexibility and fast availability. One body in stock means four variants with serial RS-485 or Ethernet, CC-Link IE Field Basic and Modbus TCP/IP connection via Plug & Play.

Modular system
The control boards enable different variants by means of the modular system. The modular system includes the different brain kits, with the accessories listed below and the FR-A/F800 inverter bodies with different power sizes. Easy installation of the brain kit in the housing creates the desired inverter in less than 3 minutes.

What you need

1x screwdriver PZ1
1x screwdriver PZ2

and

- Circuit board (Brain)
- Terminal strip
- Grounding strip
- Earthing cable
- Flat cable

and three minutes of your time

4 easy steps

1. Open the front of the inverter
2. Position the circuit board and terminal strip in the correct location
3. Screw everything down and attach the grounding strip and earthing cable
4. Connect the board to the inverter with the flat cable

4 types of inverters possible

VARIABLE TORQUE - PUMP AND FAN (HVAC)

Rated power	30 - 500kW
FR-F800	2 x RS-485 serial ports
FR-F800	Ethernet-, CC-Link IE Field Basic, Modbus TCP/IP

CONSTANT TORQUE - CONVEYORS, CRANES, SHREDDER ETC.

Rated power	30 - 500kW
FR-A800	2 x RS-485 serial ports
FR-A800	Ethernet-, CC-Link IE Field Basic, Modbus TCP/IP

Training video

Training video for the Mitsubishi Electric FR-A800 / FR-F800 frequency inverter Brain & Body assembly.

FREQUENCY INVERTERS FOR EVERY APPLICATION

At Mitsubishi Electric, there is a solution for every kind of application! With more than 40 million AC drives installed, we are one of the world's leading manufacturers. Day after day, in heavy industrial use, our AC drives prove their high levels of cost-effectiveness, reliability, functionality and flexibility.

AC drives developed by Mitsubishi Electric are used worldwide in many industries and applications.

Some highlights

- Particularly powerful capacitors with a service life of 10 years in the high-quality intermediate circuit are one of the reasons why our inverters can withstand large overloads without any problems.
- Particularly resistant corrosion protection thanks to double-coated circuit boards.
- We can design very precisely based on motor current and therefore guarantee high overloads.
- 40 years of Mitsubishi Electric AC drives stand for 40 years of outstanding and reliable products.
- More stock thanks to the Body & Brain concept for higher power ratings from 30kW till 500kW.

The six ingredients for success

COST-EFFECTIVENESS Energy savings of up to 60% have been made possible by using Mitsubishi Electric variable speed drives , also reducing CO_2 emissions.	**RELIABILITY** Safe and fault-free operation is guaranteed by various protection mechanisms and overload functions, temperature-resistant capacitors, permanently oiled fans and double-coated power and control boards. Six Sigma certified production ensures a high level of quality at Mitsubishi Electric.	**STANDARDS** Besides complying with well-known international norms and standards, the AC drives are also certified by DNV, ABS, BV, LR and NK. An increased level of safety is ensured by the integrated emergency stop function (safety stop).
CONVENIENCE The integrated multifunctional control panel, complete with digital rotary knob, ensures fast and efficient input of all required drive parameters. It can also display various values and error messages.	**FLEXIBILITY** Compatible with all major networks such as CC-Link IE TSN (time-sensitive network), CC-Link IE Field, CC-Link IE Field Basic, CC-Link, Profibus-DP, Profinet, DeviceNet®, EtherNet IP, EtherCAT, CanOpen, SSCNET III/H, LonWorks, BACnet.	**FUNCTIONALITY** Functionality, compatibility and perfect mechanical design are the main features of the AC drives supplied

ENHANCED NEXT GENERATION ENERGY SAVING INVERTER FR-F800

The Mitsubishi Electric FR-F800 series is a high-performance frequency inverter designed for advanced motor control and energy efficiency, particularly in HVAC, pumps, and fans. It features intelligent motor control algorithms, energy saving functions, and user friendly operation. The series supports a wide range of applications, offering built-in PLC functionality, multi-pump control, and network compatibility with various communication protocols. Its advanced features include real time monitoring, automatic energy optimization, and a focus on reliability and durability for industrial environments.

Energy saving

- Advanced optimum excitation control, which has been newly developed, provides a large starting torque while maintaining the motor efficiency under the conventional Optimum excitation control.
- The tuning function enables operation of other manufacturers' induction motors and PM motors, which increases the use in the energy saving applications.

Functions ideal for fans and pumps

- The rating can be selected between the two types (LD (light duty) or SLD (superlight duty)) depending on the load of the fan/pump to be used (multiple rating).
- The inverter can perform PID control of the motor operation and control the external equipment at the same time (PID multiple loops). The system cost can be reduced.
- By controlling the pumps connected in parallel (up to four pumps) by the PID control, water volume, etc. can be adjusted by one inverter (multi-pump function).
- The integrated Ethernet communication function of the FR-F800-E inverter enables monitoring of the inverter's status or setting of parameters via Internet.

Security & safety

- The inverter is equipped with a temperature sensor, which outputs a signal when the internal temperature is high.
- Compatibility with the environment
- A built-in noise filter (EMC filter) minimizes the EMI emitted from inverters.
- By installing a DC reactor (FR-HEL), which is available as an option, they can conform to the Architectural Standard Specifications supervised by the Ministry of Land, Infrastructure, Transport and Tourism of Japan.

HIGH PERFORMANCE AND HIGH FUNCTIONALITY INVERTER FR-A800

The Mitsubishi Electric FR-A800 series is a high-performance frequency inverter designed for precise motor control and versatility across a wide range of industrial applications. It offers advanced features such as real-time auto-tuning, high-speed response, and compatibility with various motor types, including induction and permanent magnet motors. The FR-A800 series includes built-in safety functions, energy-saving capabilities, and support for multiple communication protocols, making it ideal for automation, manufacturing, and process control environments. Its robust design ensures reliability and long-term operation under demanding conditions.

Leading drive performance

- The enhanced Real sensorless vector control and vector control achieves improved speed response and high-speed operation.
- The PM motor auto tuning function enables operation of other manufacturers' permanent magnet (PM) motors.
- With Optimum excitation control, the excitation current is constantly adjusted to drive the motor in the most efficient method which leads to energy saving.

Security & safety

- Controls with safety functions can be easily performed. (Safety stop function)
- 24 VDC control power input is equipped as standard. The parameter setting and communication operation can be done without turning ON the main power.
- The operating status immediately before the protective function is activated can be stored with the trace function, facilitating the trouble analysis at a separate location by using a USB memory device and the inverter setup software (FR Configurator2).

Easy setup & easy to use

- A USB host connecter (A type) is equipped. Parameters can be copied to commercial USB memory devices.
- Highly reliable and easily wired spring clamp terminals have been adopted for control circuit terminals.
- Parameter setting mode can be changed to the group parameter mode, which provides intuitive and simple parameter settings.

ORDER INFORMATION

<table>
<tr><th></th><th></th><th colspan="2">Brain for FR-F800</th><th colspan="2">Brain for FR-A800</th></tr>
<tr><th>Art. No.</th><th>Body (Single Unit)</th><th>Art. No.</th><th>Brain</th><th>Art. No.</th><th>Brain</th></tr>
<tr><td>307162</td><td>FR-AF840-00770-60</td><td rowspan="12">307204

307205</td><td rowspan="12">FR-CF80-01-2-60
Serial version
FR-CF80-01-E2-60
Ethernet version</td><td>307200</td><td>FR-CA80-01-2-60 Serial version</td></tr>
<tr><td>307163</td><td>FR-AF840-00930-60</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>307164</td><td>FR-AF840-01160-60</td></tr>
<tr><td>307185</td><td>FR-AF840-01800-60</td><td>307200</td><td>FR-CA80-01-E2-60
Ethernet version</td></tr>
<tr><td>307186</td><td>FR-AF840-02160-60</td><td rowspan="8">207203

307201</td><td rowspan="8">FR-CA80-02-E2-60
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FR-CA80-02-E2-60
Ethernet version</td></tr>
<tr><td>307187</td><td>FR-AF840-02600-60</td></tr>
<tr><td>307188</td><td>FR-AF840-03250-60</td></tr>
<tr><td>307189</td><td>FR-AF840-03610-60</td></tr>
<tr><td>307190</td><td>FR-AF840-04320-60</td></tr>
<tr><td>307191</td><td>FR-AF840-04810-60</td></tr>
<tr><td>307192</td><td>FR-AF840-05470-60</td></tr>
<tr><td>307193</td><td>FR-AF840-06100-60</td></tr>
<tr><td>307194</td><td>FR-AF840-06830-60</td><td colspan="4"></td></tr>
<tr><th>Art. No.</th><th>Body (Double Unit)</th><th>Art. No.</th><th>Brain</th><th>Art. No.</th><th>Brain</th></tr>
<tr><td>307195</td><td>FR-AF842-07700-60</td><td rowspan="5">307204

307205</td><td rowspan="5">FR-CF80-01-2-60
Serial version
FR-CF80-01-E2-60
Ethernet version</td><td rowspan="5">207203

307201</td><td rowspan="5">FR-CA80-02-E2-60
Serial version
FR-CA80-02-E2-60
Ethernet version</td></tr>
<tr><td>307196</td><td>FR-AF842-08660-60</td></tr>
<tr><td>307197</td><td>FR-AF842-09620-60</td></tr>
<tr><td>307198</td><td>FR-AF842-10940-60</td></tr>
<tr><td>307199</td><td>FR-AF842-12120-60</td></tr>
<tr><th>Art. No.</th><th>Converter Unit</th><th>Art. No.</th><th>Brain</th><th>Art. No.</th><th>Brain</th></tr>
<tr><td>274507</td><td>FR-CC2-H315K-60</td><td colspan="4" rowspan="8">The brain is installed in the inverter body.</td></tr>
<tr><td>274508</td><td>FR-CC2-H355K-60</td></tr>
<tr><td>274509</td><td>FR-CC2-H400K-60</td></tr>
<tr><td>274510</td><td>FR-CC2-H450K-60</td></tr>
<tr><td>274511</td><td>FR-CC2-H500K-60</td></tr>
<tr><td>279637</td><td>FR-CC2-H560K-60</td></tr>
<tr><td>279638</td><td>FR-CC2-H630K-60</td></tr>
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LIFE HAS BECOME MORE COMPLEX AND TO SOME EXTENT MORE CONFUSING

The industry, and from a broader perspective society, has experienced enormous challenges and consequent changes.

The most impactful are the rapid adoption of digitalisation, the urgent need to become ‘sustainable’ in all aspects from energy consumption to pollution reduction and the need to cope with shrinking populations in many countries. It is important to address these social issues to achieve a sustainable global environment while striving for a safe, secure and comfortable society that respects all people.

Despite all these changes, it is reassuring to know that there are companies and partners you can rely on.

Mitsubishi Electric has consistently focused on creating ‘Changes for the Better’ for a vibrant and sustainable society through constant technological innovation and relentless creativity, and the Factory Automation Systems team prides itself on finding new ways through the application of cutting-edge technology, sharing knowledge and actively collaborating with one goal: to apply and use automation for the good of all.

We look forward to working with you to help automate the world of your industry.

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Mitsubishi Electric's e-F@ctory concept uses both FA and IT technologies to reduce the total cost of development, production and maintenance, with the aim of achieving production that is ‘one step ahead of time’. It is supported by e-F@ctory Alliance partners for software, equipment and systems integration, who create the optimal e-F@ctory architecture to meet end customers' needs and investment plans.

Automating the World

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