

OPTIMIZED CONTROL IN PUMPING APPLICATIONS

PRODUCT OVERVIEW



- **Advanced dual PID**
- **Reliable anti-clogging**
- **Built-in Ethernet communication**

FR-F800-E Series

Optimize control in water treatment or water pumping applications with energy-saving variable speed technology. Dedicated variable frequency drives (VFDs) are used to combat common challenges in these applications, such as clogging, water hammering, cavitation, and more. Mitsubishi Electric's robust solution for water pumping and treatment is the robust FR-F800-E Series drive.

KEY BENEFITS:

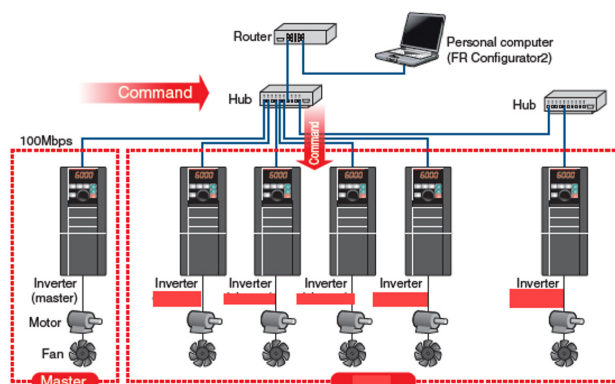
- **Optimize control with advanced dual PID** – The VFD can perform PID control for both the motor and an external safety valve.
- **Reliable anti-clogging** – FR-F800-E executes a forward/reverse timing sequence to remove clogging materials from the pump's impellers, preventing damage from pump lockup.
- **Avoid water hammering** – To avoid water hammering inside the pipe, the VFD operates the pump at a constant speed until the pipe fills to a set water level. Once this level is reached, the PID control is activated and continues normal pumping operation.
- **Dry run monitoring** – FR-F800-E will monitor the water flow rate (measured value) inside the pipe to avoid running the pump when the pipes are empty.
- **Cavitation avoidance** – In order to prevent air intake and cavitation inside the pump, the VFD monitors the suction pressure dangerous level and automatically reduces pump speed to prevent cavitation.
- **Control up to four pumps to maintain constant pressure** – FR-F800-E uses smart multi-pump control to maintain constant pressure regardless of the flow fluctuations. The VFD can automatically alternate the control of the pumps to insure uniform wear and tear occurs for both the motors and pumps to extend operation life.
- **Built-in Ethernet communication** – FR-F800-E features seamless connections to BMS systems using embedded protocols. Flexible options are available for other popular networks.

Load	Rating	Overload Current Rating
Superlight Duty	SLD rating	110% 60 s, 120% 3 s (inverse-time characteristics) at surrounding air temperature of 40°C
Light Duty	LD rating	120% 60 s, 150% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C

FR-F800-E can store the motor speed / torque characteristics to monitor the actual motor speed / torque conditions for fast recognition of light or overloaded mechanical issues including:

-
- The graph plots Torque (Y-axis, 1 to 5) against Output frequency (X-axis, Minimum frequency to Maximum frequency). A red curve shows the torque-frequency relationship. A shaded blue area represents the 'Fault detection width'. The graph is divided into two regions: '<Overload range> Clogged filter, clogged pipe, etc.' (top) and '<Light load range> Broken belt, broken blade, idling, etc.' (bottom). The X-axis is marked with 'Minimum frequency', 'Frequency range 1/4', 'Frequency range 1/2', 'Frequency range 3/4', and 'Maximum frequency'. The Y-axis is marked with 'Torque 1', 'Torque 2', 'Torque 3', 'Torque 4', and 'Torque 5'.

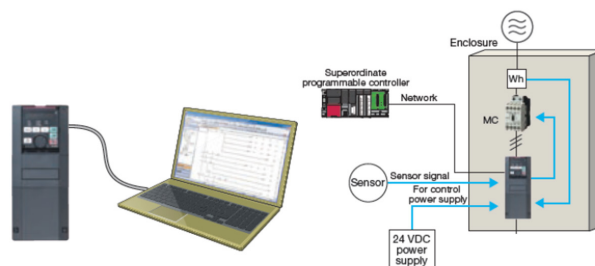
A master / follower configuration will allow multiple FR-F800 to communicate data at fast rate to perform accurate and precise motor control for pump load sharing applications.



FR-F800-E automatically adjusts the excitation current to an optimal level to increase motor operating efficiency and further reduction of power usage.



- The FR-F800 built-in 6K step PLC allows user customization to meet their process requirements
- Avoids the need for a separate master
- I/O cards can be added to expand the PLC function
- The PLC function can also manage external functions



L-VH-04101