

INVERTER FR-E800

Addition of 0.1K to 0.75K models
for single-phase 100 V class inverters

Released in October 2022

Design future manufacturing

Open network and functional safety functions
in a compact size

E800



**GOOD
DESIGN
AWARD
2020**



NEW



**0.1K to 0.75K models available
for single-phase 100 V class inverters**

E800

E800-E

E800-SCE

► Expanded capacity range

Single-phase 100 V class inverters, included in the FR-E700 and FR-D700 series product line, are added to the FR-E800 series as well.

Three-phase 200/400/575 V and single-phase 200/100 V inverters support a wider range of motor power specifications.

Model	Applicable motor capacity (ND rating)[kW]												
	0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22
Three-phase 200 V FR-E820-[]K(E/SCE)	●	●	●	●	●	●	●	●	●	●	●	●	●
Three-phase 400 V FR-E840-[]K(E/SCE)	-	-	●	●	●	●	●	●	●	●	●	●	●
Three-phase 575 V FR-E860-[]K(E/SCE)	-	-	-	●	●	●	●	●	●	-	-	-	-
Single-phase 200 V FR-E820S-[]K(E/SCE)	●	●	●	●	●	●	-	-	-	-	-	-	-
Single-phase 100 V FR-E810W-[]K(E/SCE)	●	●	●	●	-	-	-	-	-	-	-	-	-

■:Released in October 2022 ●:Released - -:Not applicable

Application examples

The inverters are used for various applications such as ventilators in restaurants or kitchens and rice polishing machines.

► Ventilator in restaurant



The inverter enables stepless speed settings for ventilators, contributing to energy saving.

► Rice polishing machine



The inverter can adjust the optimum load and flow rate, enabling stable rice polishing.



Toward smart factory with CC-Link IE TSN

E800-E

E800-SCE

Various Ethernet networks such as CC-Link IE TSN, an open industrial network for the next generation, are supported.

▶ Multi-protocols

Inverter models that support protocols of major global industrial Ethernet networks are available.

FR-E800 inverters support a variety of open networks without using any options, enabling the use of inverters on the existing network and assuring compatibility with various systems. Users can select a protocol group suitable for the intended system. It is possible to switch between protocols only by setting parameters. (Supported protocols differ depending on the model.)

Model	CC-Link IE TSN (100 Mbps)*1	CC-Link IE Field Network Basic	MODBUS [®] /TCP	PROFINET	EtherNet/IP	BACnet/IP	EtherCAT
FR-E800-[]EPA	●	●	●	—	●	●	—
FR-E800-[]EPB	●	●	●	●	—	—	—
FR-E800-[]EPC	—	—	—	—	—	—	●

*1: 1 Gbps is optional (to be supported).

● Supported

MODBUS is a registered trademark of SCHNEIDER ELECTRIC USA, INC.
 EtherNet/IP is a trademark of ODVA, Inc.
 BACnet is a registered trademark of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).
 PROFINET is a trademark of PROFIBUS & PROFINET International.
 EtherCAT is a trademark of Beckhoff Automation GmbH.
 CC-Link IE TSN and CC-Link IE Field Network Basic are registered trademarks of CC-Link Partner Association.
 Other company and product names herein are the trademarks and registered trademarks of their respective owners.



Predictive and preventive maintenance of the system

E800

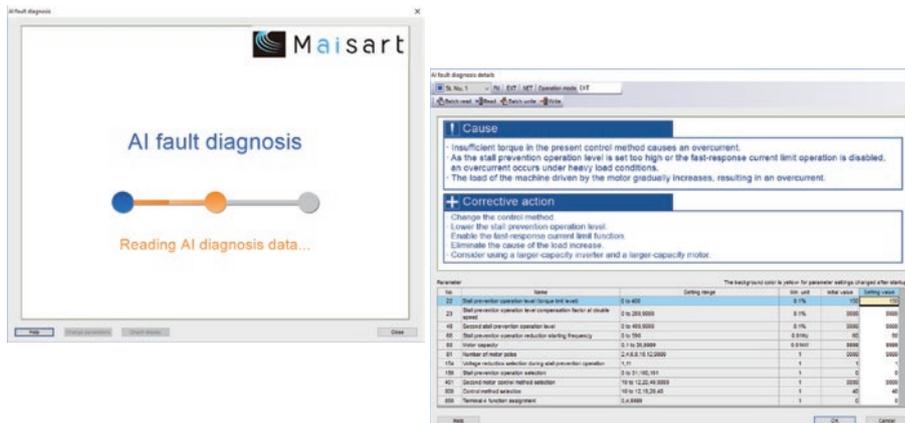
E800-E

E800-SCE

AI technology of FR Configurator2 helps analyze and identify the cause of a fault when the inverter output is shut off.

Diagnosable faults: Overcurrent trip, overvoltage trip, inverter overload trip (electronic thermal relay function), motor overload trip (electronic thermal relay function). (Other faults will be applicable later.)

This function is available during speed control.



For the first time in the world¹, the Corrosion-Attack-Level Alert System (CALAS[™])² is integrated in the inverter.

Damage caused by corrosive gas around inverters can be predicted, urging operators to improve the environment.

*1: As of September 2019 (according to our investigation)

*2: Alert system for the risk of corrosive damage (degree of corrosion) of electrical equipment



Sewage treatment plant

Availability of described functions differs depending on the specification of the inverter. For the details, please contact your sales representative.

• Lineup

For the details of the lineup, please contact your sales representative.

FR-E8 1 0 W - 0.1K -1

Symbol	Voltage class
1	100V
2	200V
4	400V
6	575V

Symbol	Structure, functionality
0	Standard

Symbol	Description
0.1K to 22K	Inverter ND rated capacity (kW)
0008 to 0900	Inverter ND rated current (A) ¹

Symbol	Voltage specifications
(None)	Three-phase
S	Single-phase 200 V input
W	Single-phase 100 V input (double voltage rectification)

Symbol	Circuit board coating ³	Plated conductor
None	Without coating	Without plated conductors
-60	With coating	Without plated conductors
-06 ²	With coating	With plated conductors

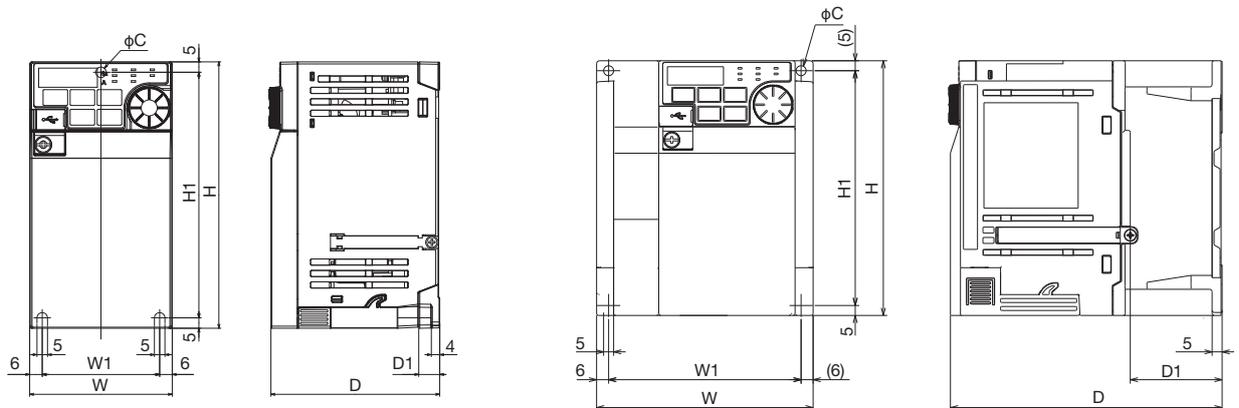
Symbol	Communication /functional safety specifications	Monitoring/protocol specifications	Rated frequency (initial setting)	Control logic (initial status)
-1	RS-485 + SIL2/PLd	Pulse (terminal FM)	60Hz	Sink logic
-4 ^{1,4}		Voltage (terminal AM)	50Hz	Source logic
-5		Voltage (terminal AM)	60Hz	Sink logic
EPA	Ethernet + SIL2/PLd	Protocol group A ⁵	60Hz	Sink logic
EPB		Protocol group B ⁵	50Hz	Sink logic / Source logic ⁶
EPC		Protocol group C ⁵	60Hz	Sink logic / Source logic ⁶
SCEPA	Ethernet + SIL3/PLe	Protocol group A ⁵	60Hz	Source logic ⁷
SCEPB		Protocol group B ⁵	50Hz	Source logic ⁷
SCEPC		Protocol group C ⁵	50Hz	Source logic ⁷

*1: Models with circuit board coating (-60/-06) only.
 *2: Applicable for the FR-E820-0470(11K) or higher, and the FR-E840-0380(18.5K) or higher.
 *3: Compatible with IEC 60721-3-3:1994 3C2.
 *4: The kW indication is not available for models with a suffix "-4". When the kW indication is required, purchase the applicable model with a suffix "-5" and change the initial settings with reference to the Instruction Manual.
 (Refer to the Instruction Manual (Connection) for the switching of the control logic of the inverter, and the Instruction Manual (Function) for the rated frequency.)
 *5: Selectable protocols differ depending on the group.
 Protocol group A: CC-Link IE TSN, CC-Link IE Field Network Basic, MODBUS/TCP, EtherNet/IP, and BACnet/IP
 Protocol group B: CC-Link IE TSN, CC-Link IE Field Network Basic, MODBUS/TCP, and PROFINET
 Protocol group C: EtherCAT
 *6: The initial status of the control logic differs depending on the inverter model.
 Sink logic for the models indicated with the rated capacity (kW)
 Source logic for the models indicated with the rated current (A)
 *7: The control logic is fixed to the source logic.

• Outline dimensions

FR-E810W-0.1K to 0.4K

FR-E810W-0.75K



Inverter model	W	W1	H	H1	D	D1	C
FR-E810W-0.1K	68	56	128	118	80.5	10	5
FR-E810W-0.2K					110.5		
FR-E810W-0.4K					142.5		
FR-E810W-0.75K					155		

(Unit: mm)

• Inverter rating

Model FR-E810W-□		0.1K	0.2K	0.4K	0.75K	
		0008	0015	0030	0050	
Applicable motor capacity (kW) ^{*1}		ND	0.1	0.2	0.4	0.75
Output	Rated capacity (kVA) ^{*2}	ND	0.3	0.6	1.2	2
	Rated current (A) ^{*3}	ND	0.8 (0.8)	1.5 (1.4)	3.0 (2.5)	5.0 (4.1)
	Overload current rating ^{*4}	ND	150% 60 s, 200% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C			
	Voltage ^{*5*}		Three-phase 200 to 240 V			
	Regenerative braking	Brake transistor		Not used		Built-in
Maximum brake torque (ND reference) ^{*7}			150%		100%	
Power supply	Rated input AC voltage/frequency		Single-phase 100 to 120 V, 50/60 Hz			
	Permissible AC voltage fluctuation		90 to 132V 50/60Hz			
	Permissible frequency fluctuation		±5%			
	Rated input current (A) ^{*8}	ND	3.7	6.8	12.4	19.6
Protective structure (IEC 60529)			Open type (IP20)			
Cooling system			Natural			
Approx. mass (kg)			0.5	0.6	0.8	1.4

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

*2: The rated output capacity is the value with respect to 230 V output voltage.

*3: The value in parentheses is the rated output current when the low acoustic noise operation is performed with the surrounding air temperature exceeding 40°C while 2 kHz or higher value is selected in Pr.72 PWM frequency selection.

*4: The percentage of the overload current rating is the ratio of the overload current to the inverter's rated output current. For repeated duty, allow time for the inverter and motor to return to or below the temperatures under 100% load. For single-phase power input model, the bus voltage decreases to power failure detection level and the load of 100% or higher may not be available if the automatic restart after instantaneous power failure function (Pr.57) or the power failure stop function (Pr.261) is set and power supply voltage is low while the load increases.

*5: For the single-phase 100 V power input models, the maximum output voltage is twice the amount of the power supply voltage.

*6: For the single-phase 100 V power input models, output voltage decreases by applying motor load, and output current increases compared to the three-phase power input models. The load must be reduced so that output current does not exceed the rated motor current.

*7: The amount of braking torque is the average short-term torque (which varies depending on motor loss) that is generated when a motor decelerates in the shortest time by itself from 60 Hz. It is not continuous regenerative torque. The average deceleration torque becomes lower when a motor decelerates from a frequency higher than the base frequency. The inverter is not equipped with a built-in brake resistor. Use an option brake resistor for an operation with large regenerative power (not available for the FR-E810W-0008(0.1K) and FR-E810W-0015(0.2K)). The brake unit (FR-BU2) can be also used.

*8: The rated input current is the value at a rated output voltage. The input power impedances (including those of the input reactor and cables) affect the value.

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