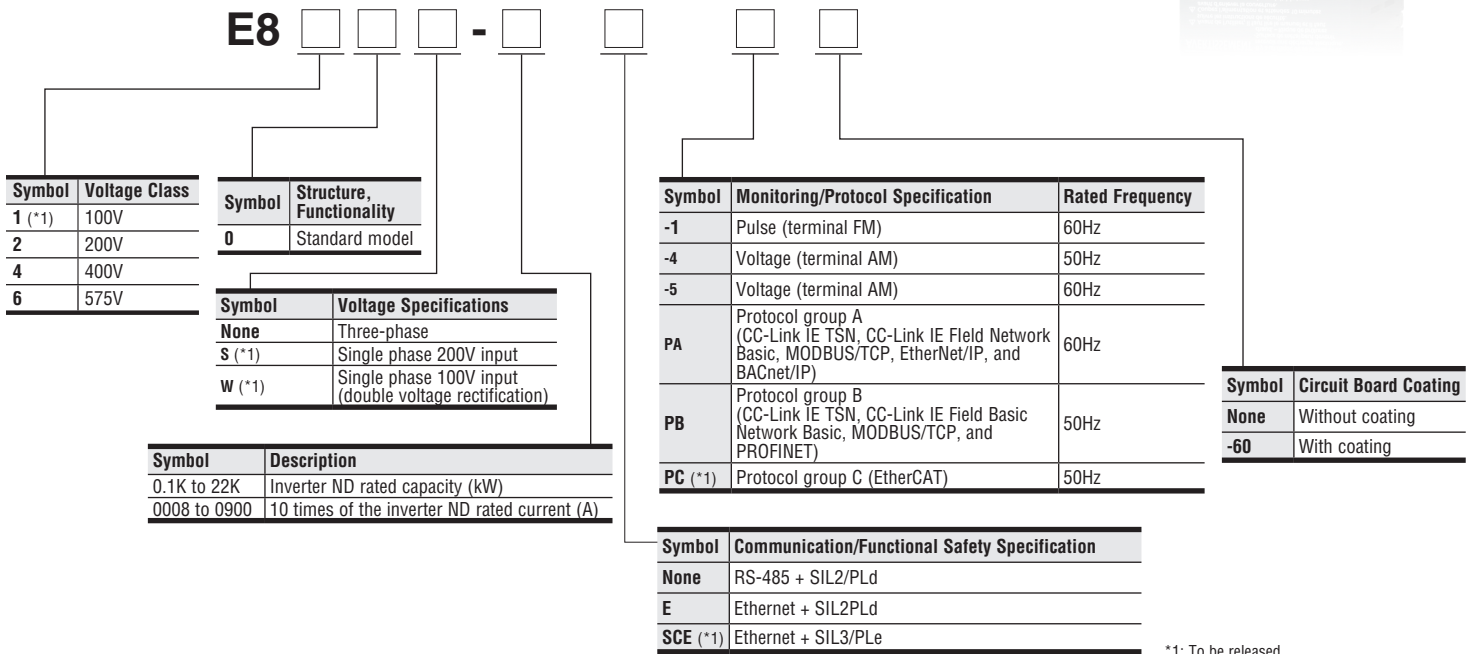# FR-E800 Series

World's smallest class inverter with high functionality.

- Improved usability by supporting CC-Link IE TSN as standard
- Multi-protocol support enables switching between various types of communication networks
- Enabled flexible connection with two Ethernet ports
- The AI fault diagnosis function is used to identify the cause of a fault, enabling the fastest troubleshooting procedure
- Enhanced predictive maintenance

- Using smartphones or tablets, you can scan the QR code on the product to access the setup information, or you can access inverters via wireless remote network with a mobile app.
- Various control methods such as Vector control (with encoder), Real sensorless vector control (without encoder), and positioning without using sensors are supported. Premium efficiency motors and PM motors are supported, enabling applications in various solutions

E8 ☐☐☐ - ☐ ☐ ☐ ☐

Symbol	Voltage Class
1 (*1)	100V
2	200V
4	400V
6	575V

Symbol	Structure, Functionality
0	Standard model

Symbol	Voltage Specifications
None	Three-phase
S (*1)	Single phase 200V input
W (*1)	Single phase 100V input (double voltage rectification)

Symbol	Description
0.1K to 22K	Inverter ND rated capacity (kW)
0008 to 0900	10 times of the inverter ND rated current (A)

Symbol	Monitoring/Protocol Specification	Rated Frequency
-1	Pulse (terminal FM)	60Hz
-4	Voltage (terminal AM)	50Hz
-5	Voltage (terminal AM)	60Hz
PA	Protocol group A (CC-Link IE TSN, CC-Link IE FIeld Network Basic, MODBUS/TCP, EtherNet/IP, and BACnet/IP)	60Hz
PB	Protocol group B (CC-Link IE TSN, CC-Link IE Field Basic Network Basic, MODBUS/TCP, and PROFINET)	50Hz
PC (*1)	Protocol group C (EtherCAT)	50Hz

Symbol	Circuit Board Coating
None	Without coating
-60	With coating

Symbol	Communication/Functional Safety Specification
None	RS-485 + SIL2/PLd
E	Ethernet + SIL2PLd
SCE (*1)	Ethernet + SIL3/PLe

*1: To be released

Dual Rating
For LD rating for light duty applications, a smaller capacity controller may be used to drive a larger motor, resulting in reduced footprint and cost.

200-240V	HP (ND)	AMPS (ND)	AMPS (LD)
E820-0008	1.8	0.8	1.3
E820-0015	1/4	1.5	2
E820-0030	1/2	3	3.5
E820-0050	1	5	6
E820-0080	2	8	9.6
E820-0110	3	11	12
E820-0175	5	17.5	19.6
E820-0240	7.5	24	30
E820-0330	10	33	40

380-480V	HP (ND)	AMPS (ND)	AMPS (LD)
E840-0016	1/2.	1.6	2.1
E840-0026	1	2.6	3.5
E840-0040	2	4	5.5
E840-0060	3	6	6.9
E840-0095	5	9.5	11.1
E840-0120	7.5	12	17.5
E840-0170	10	17	23

575-600V	HP (ND)	AMPS (ND)	AMPS (LD)
E860-0017	1	1.7	2.5
E860-0027	2	2.7	3.6
E860-0040	3	4	5.6
E860-0061	5	6.1	8.2
E860-0090	7.5	9	11
E860-0120	10	12	16

Specifications

Three-Phase 200V Power Supply

Model FR-E820-_		0.1K	0.2k	0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K
		0008	0015	0030	0050	0080	0110	0175	0240	0330
Stocked Item		S	S	S	S	S	S	S	S	S
Applicable Motor Capacity (kW) (*1)	LD	0.2	0.4	0.75	1.1	2.2	3.0	5.5	7.5	11
	ND	0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5
Output — Rated Capacity (kVA) (*2)	LD	0.5	0.8	1.4	2.4	3.8	4.8	7.8	12.0	15.9
	ND	0.3	0.6	1.2	2.0	3.2	4.4	7.0	9.6	13.1
Rated Current (A) (*7)	LD	1.3 (1.1)	2 (1.7)	3.5 (3.0)	6.0 (5.1)	9.6 (8.2)	12 (10.2)	19.6 (16.7)	30 (25.5)	40 (34)
	ND	0.8 (0.8)	1.5 (1.4)	3 (2.5)	5 (4.1)	8 (7)	11 (10)	17.5 (16.5)	24 (23)	33 (31)
Overload Current Rating (*3)	LD	120% 60 s, 150% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C								
	ND	150% 60 s, 200% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C								
Voltage (*4)		Three-phase 200 to 240V								
Regenerative Braking — Brake Transistor		–		Built-in						
Maximum Brake Torque (*5)		150%		100%		50%	20%			
Power Supply — Rated Input AC (DC) Voltage/Frequency		Three-phase 200 to 240V 50/60 Hz (283 to 339 VDC)								
Permissible AC (DC) Voltage Fluctuation		170 to 264V 50/60 Hz (240 to 373 VDC)								
Permissible Frequency Fluctuation		±5%								
Rated Input Current (A) (*8) — LD	Without DC Reactor	1.9	3.0	5.1	8.2	13	16	26	37	49
	With DC Reactor	1.3	2.0	3.5	6.0	9.6	12	20	30	40
ND	Without DC Reactor	1.4	2.3	4.5	7.0	11	15	23	30	41
	With DC Reactor	0.8	1.5	3.0	5.0	8.0	11	17.5	24	33
Power Supply Capacity (kVA) (*6) — LD	Without DC Reactor	0.7	1.1	1.9	3.1	4.8	6.2	9.7	14	19
	With DC Reactor	0.5	0.8	1.3	2.3	3.7	4.6	7.5	11	15
ND	Without DC Reactor	0.5	0.9	1.7	2.7	4.1	5.7	8.8	12	16
	With DC Reactor	0.3	0.6	1.1	1.9	3.0	4.2	6.7	9.1	13
Protective Structure (IEC 60529)		Open type (IP20)								
Cooling System		Natural				Forced air				
Approx. Weight (kg) (*8)		0.5	0.5	0.7	1.0	1.4	1.4	1.83	3.3	3.3

Three-Phase 400 V Class

Model FR-E840-_		0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K
		0016	0026	0040	0060	0095	0120	0170
Stocked Item		S	S	S	S	S	S	S
Applicable Motor Capacity (kW) (*1)	LD	0.75	1.5	2.2	3.0	5.5	7.5	11
	ND	0.4	0.75	1.5	2.2	3.7	5.5	7.5
Output — Rated Capacity (kVA) (*2)	LD	1.6	2.7	4.2	5.3	8.5	13.3	17.5
	ND	1.2	2.0	3.0	4.6	7.2	9.1	13.0
Rated Current (A) (*7)	LD	2.1 (1.8)	3.5 (3.0)	5.5 (4.7)	6.9 (5.9)	11.1 (9.4)	17.5 (14.9)	23 (19.6)
	ND	1.6 (1.4)	2.6 (2.2)	4 (3.8)	6 (5.4)	9.5 (8.7)	12	17
Overload Current Rating (*3)	LD	120% 60 s, 150% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C						
	ND	150% 60 s, 200% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C						
Rated Voltage (*4)		Three-phase 380 to 480V						
Regenerative Braking — Brake Transistor		Built-in						
Maximum Brake Torque (*5)		100%		50%	20%			
Power Supply — Rated Input AC (DC) Voltage/Frequency		Three-phase 380 to 480 V 50 Hz / 60 Hz						
Permissible AC (DC) Voltage Fluctuation		323 to 528 V 50/60 Hz (457 to 740 VDC)						
Permissible Frequency Fluctuation		±5%						
Rated Input Current (A) (*8) — LD	Without DC Reactor	3.3	6.0	8.9	11	16	25	32
	With DC Reactor	2.1	3.5	5.5	6.9	11	18	23
ND	Without DC Reactor	2.7	4.4	6.7	9.5	14	18	25
	With DC Reactor	1.6	2.6	4.0	6.0	9.5	12	17
Power Supply Capacity (kVA) (*6) — LD	Without DC Reactor	2.5	4.5	6.8	8.2	12	19	25
	With DC Reactor	1.6	2.7	4.2	5.3	8.5	13	18
ND	Without DC Reactor	2.1	3.4	5.1	7.2	11	14	19
	With DC Reactor	1.2	2.0	3.0	4.6	7.2	9.1	13
Protective Structure (IEC 60529)		Open type (IP20)						
Cooling System		Natural			Forced air			
Approx. Weight (kg) (*8)		1.2	1.2	1.4	1.8	1.8	2.4	2.4

Notes:
1. The applicable motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi Electric 4-pole standard efficiency motor.
2. The rated output capacity indicated assumes that the output voltage is 230 V for three-phase 200 V class and 440 V for three-phase 400 V class.
3. The % value of the overload current rating indicated 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.
4. The maximum output voltage does not exceed the power supply voltage. The maximum output voltage can be changed within the setting range. However, the pulse voltage value of the inverter output side voltage remains unchanged at about ±2 that of the power supply.
5. The braking torque indicated is a short-duration average torque (which varies with motor loss) when the motor alone is decelerated from 60 Hz in the shortest time and is not a continuous regenerative torque. When the motor is decelerated from the frequency higher than the base frequency, the average deceleration torque will reduce. Since the inverter does not contain a brake resistor, use the optional brake resistor when regenerative energy is large. A brake unit (FR-BU2) may also be used. (Option brake resistor cannot be used for 0.1K and 0.2K.)
6. The power supply capacity varies with the value of the power supply side inverter impedance (including those of the input reactor and cables).
7. Setting 2 kHz or more in Pr. 72 PWM frequency selection to perform low acoustic noise operation in the surrounding air temperature exceeding 40°C, the rated output current is the value in parenthesis.
8. The rated input current is the value when at the rated output current. The input power impedances (including those of the input reactor and cables) affect the value.

Three-Phase 575V Class

Model FR-E860-_			0.75K	1.5k	2.2K	3.7K	5.5K	7.5K
			0017	0027	0040	0061	00900	0120
Applicable Motor Capacity (kW) (*1)		LD	1.5	2.2	3.7	5.5	7.5	11
		ND	0.75	1.5	2.2	3.7	5.5	7.5
Output	Rated Capacity (kVA) (*2)	LD	2.5	3.6	5.6	8.2	11.0	15.9
		ND	1.7	2.7	4.0	6.1	9.0	12.0
	Rated Current (A) (*7)	LD	2.5 (2.1)	3.6 (3.0)	5.6 (4.8)	8.2 (7.0)	11 (9.0)	16 (13.6)
		ND	1.7	2.7	4	6.1	9	12
	Overload Current Rating (*3)	LD	120% 60 s, 150% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C					
		ND	150% 60 s, 200% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C					
	Rated Voltage (*4)		Three-phase 525 to 600 V					
	Regenerative Braking	Brake Transistor	Built-in					
		Maximum Brake Torque (*5)	100%	50%	20%			
Power Supply	Rated input AC Voltage/Frequency		Three-phase 575V 50 60 Hz					
	Permissible AC Voltage Fluctuation		490 to 632V 60 Hz					
	Permissible Frequency Fluctuation		±5%					
	Rated Input Current (A) (*8)	LD Without DC Reactor	4.3	5.9	8.9	12	16	22
		LD With DC Reactor	2.5	3.6	5.6	8.2	11	16
		ND Without DC Reactor	3.0	4.6	6.6	10	13	17
		ND With DC Reactor	1.7	2.7	4.0	6.1	9.0	12
	Power Supply Capacity (kVA) (*6)	LD Without DC Reactor	4.3	5.9	8.9	12	16	22
		LD With DC Reactor	2.5	3.6	5.6	8.2	11	16
		ND Without DC Reactor	3.0	4.6	6.6	9.5	13	17
		ND With DC Reactor	1.7	2.7	4.0	6.1	9.0	12
Protective Structure (IEC 60529)			Enclosed type (IP20)					
Cooling System			Natural				Forced air	
Approx. Weight (kg) (*8)			1.9	1.9	1.9	2.4	2.4	2.4

Notes:
1. The applicable motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi Electric 4-pole standard efficiency motor.
2. The rated output capacity indicated assumes that the output voltage is 230 V for three-phase 200 V class and 440 V for three-phase 400 V class.
3. The % value of the overload current rating indicated 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.
4. The maximum output voltage does not exceed the power supply voltage. The maximum output voltage can be changed within the setting range. However, the pulse voltage value of the inverter output side voltage remains unchanged at about ±2 that of the power supply.
5. The braking torque indicated is a short-duration average torque (which varies with motor loss) when the motor alone is decelerated from 60 Hz in the shortest time and is not a continuous regenerative torque. When the motor is decelerated from the frequency higher than the base frequency, the average deceleration torque will reduce. Since the inverter does not contain a brake resistor, use the optional brake resistor when regenerative energy is large. A brake unit (FR-BU2) may also be used. (Option brake resistor cannot be used for 0.1K and 0.2K.)
6. The power supply capacity varies with the value of the power supply side inverter impedance (including those of the input reactor and cables).
7. Setting 2 kHz or more in Pr. 72 PWM frequency selection to perform low acoustic noise operation in the surrounding air temperature exceeding 40°C, the rated output current is the value in parenthesis.
8. The rated input current is the value when at the rated output current. The input power impedances (including those of the input reactor and cables) affect the value.
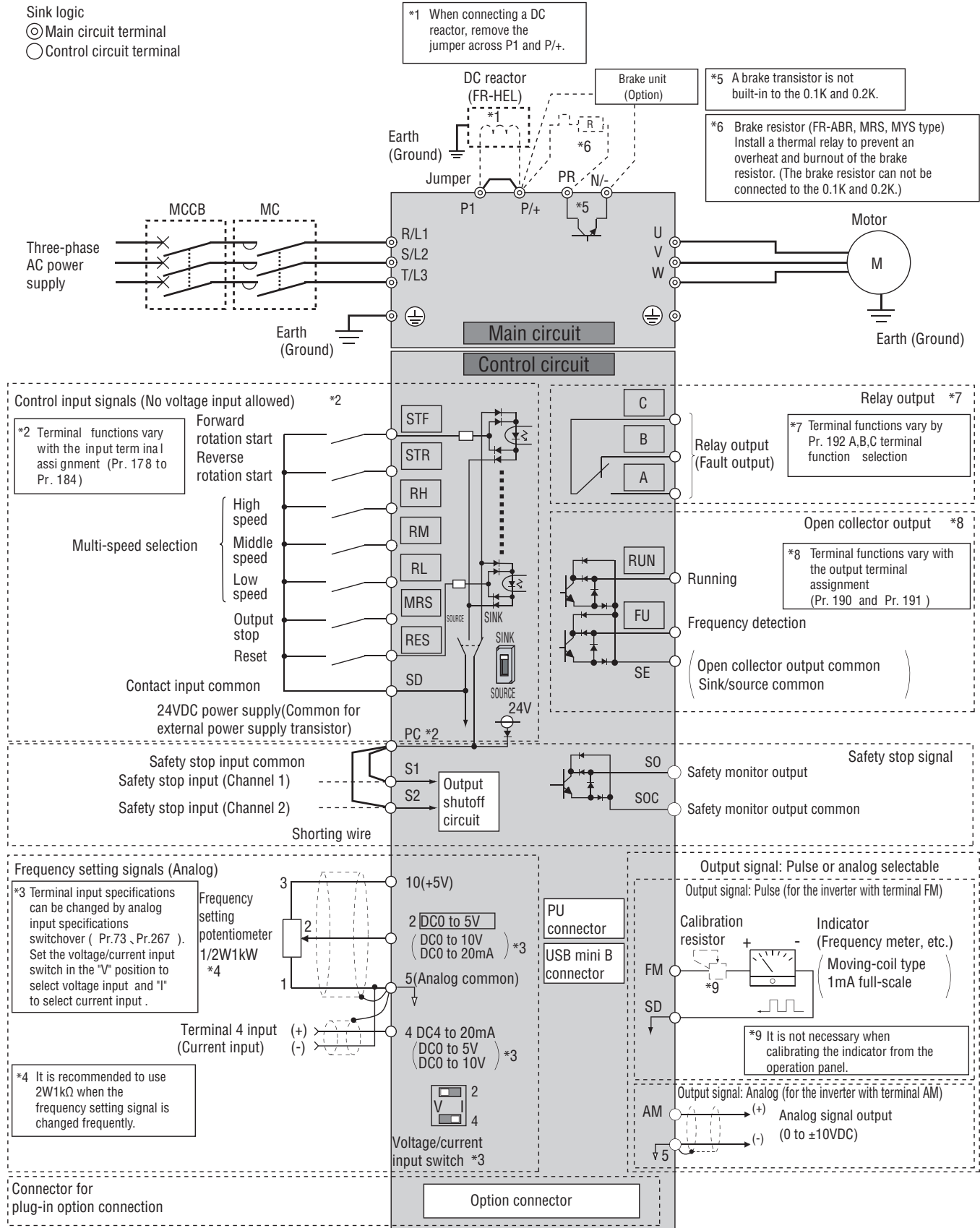
Common Specifications

Control Specifications	**Control Method**		Soft-PWM control/high carrier frequency PWM control
		Induction Motor	Selectable among V/F control, Advanced magnetic flux vector control, and Real sensorless vector control
		PM Motor	PM sensorless vector control
	Output Frequency Range	**Induction Motor**	0.2 to 590 Hz (The upper-limit frequency is 400 Hz under Advanced magnetic flux vector control and Real sensorless vector control.)
		PM Motor	0.2 to 400 Hz (not operable at maximum motor frequency or higher)
	Frequency Setting Resolution	**Analog Input**	0.015 Hz /60 Hz at 0 to 10V / 12 bits (terminals 2 and 4) 0.03 Hz /60 Hz at 0 to 5V / 11 bits or 0 to 20 mA / 11 bits (terminals 2 and 4)
		Digital Input	0.01 Hz
	Frequency Accuracy	**Analog Input**	Within ±0.2% of the max. output frequency (25°C ± 10°C)
		Digital Input	Within 0.01% of the set output frequency
	Voltage/Frequency Characteristics		Base frequency can be set from 0 to 590 Hz. constant-torque/variable torque pattern can be selected. (available with induction motors only)
	Starting Torque	**Induction Motor**	150% 0.5 Hz (Adcanced magnetic flux vector control) 200% 0.3 Hz (0.4K to 3.7K), 150% 0.3 Hz (5.5K or more) (Real sensorless vector control)
		PM Motor	50%
	Torque Boost		Manual torque boost (available with induction motors only)
	Acceleration/Deceleration Time Setting		0 to 3600 s (acceleration and deceleration can be set individually), linear or S-pattern acceleration/deceleration mode
	DC Injection Brake	**Induction Motor**	Operation frequency (0 to 120 hz), operation time (0 to 10 s), operation voltage (0 to 30%) can be changed.
		PM Motor	Operation time (0 to 10 s) can be changed, operation coltage (operating current) is fixed.
	Stall Prevention Operation Level		Operation current level can be set (0 to 220% adjustable), whether to use the function or not can be selected.
	Torque Limit Level		Torque limit value can be set (0 to 400% variable).
Operation Specifications	**Frequency Setting Signal**	**Analog Input**	Terminals 2 and 4: 0 to 10V, 0 to 5V, 4 to 20 mA (0 to 20 mA) are available.
		Digital Input	Input using the operation panel. Four-digit BCD or 15-bit binary (when used with option FR-A8AX E kit)
	Start Signal		Forward and reverse rotation or start signal automatic self-holding input (3-wire input) can be selected.
	Input Signal (Standard Model: 7, Ethernet Model: 2)		Low-speed operation command, Middle-speed operation command, High-speed operation command, Output stop, Forward rotation command, Reverse rotation command, Inverter reset The input signal can be changed using Pr.178 to Pr.189 (input terminal function section)
	Operational Functions		Maximum and minimum frequency settings, multi-speed operation, acceleration/deceleration pattern, thermal protection, DC injection brake, starting frequency, JOG operation, output stop (MR3), stall prevention, regeneration avoidance, frequency jump, rotation display, automatic restart after instantaneous power failure, remote setting, automatic acceleration/deceleration, retry function, carrier frequency selection, fast-response current limit, forward/reverse rotation prevention, operation mode selection, slip compensation, droop control, speed smoothing control, traverse, auto tuning, applied motor selection, R3-485 communication (*1), Ethernet communication (*2), PID control, easy dancer control, cooling fan operation selection, stop selection (deceleration stop/coasting), power-failure deceleration stop function, stop-on-contact control, Plc function, life diagnosis, maintenance timer, current average monitor, multiple rating, speed control, torque control, torque limit, safety stop function
	Output Signal	**Open Collector Output (Standard Model: 2) Relay Output 1**	Inverter running, Up to frequency, Fault The output signal can be changed using Pr.190 to Pr.196 (output terminal function selection)
		Analog Output (AM Type)	-10 to _10 V /12 bits
Protective/Warning Function	**Protective Functions**		Overcurrent trip during acceleration, Overcurrent trip during constant speed, Overcurrent trip during deceleration or stop, Regenerative overvoltage trip during acceleration, Regenerative overvoltage trip during constant speed, Regenerative overvoltage trip during deceleration or stop, Inverter overload trip, Motor overload trip, Heat sink overheat, Undervoltage, Input phase loss, Stall prevention stop, Loss of synchronism detection (*3), Upper limit fault detection, Lower limit fault detection, Brake transistor alarm detection, Output side earth (ground) fault overcurrent, Output short circuit, Output phase loss, external thermal relay operation, Option fault, Communication option fault, Parameter storage device fault, PU disconnection, Retry count excess, CPU fault, Abnormal output current detection, Inrush current limit circuit fault, USB communication fault, analog input error, Safety circuit fault, Overspeed occurrence (*3), Speed deviation excess detection (*3), Brake sequence fault (*3), PID signal fault, Ethernet communication fault (*2), Opposite rotation deceleration fault (*3), internal circuit fault, User definition error by the PLC function, Board combination mismatch
	Warning Functions		Fan alarm, Stall prevention (overcurrent), Stall prevention (overvoltage), Regenerative brake pre-alarm (*3), Electronic thermal relay function pre-alarm, PU stop, Maintenance timer warning, Parameter write error, Operation panel lock (*3), Password locked, Speed limit indication, Safety stop, Ethernet communication fault (*2), Duplicate IP address (*2), IP address fault (*2), Incorrect parameter setting
Environment	**Surrounding Air Temperature**		-20°C to +60°C (-10°C to +60°C for the 575 V class) (The rated current must be reduced at a temperature above 50°C.)
	Ambient Humidity		95% RH or less (non-condensing) (With circuit board coating (conforming to IEC 60721-3-3 3C2)) 90% RH or less (non-condensing) (Without circuit board coating)
	Storage Temperature (*4)		-40°C to +70°C
	Atmosphere		Indoors (without corrosive gas, flammable gas, oil mist, dust and dirt, etc.)
	Altitude/Vibration (*5)		Maximum 3000m (Maximum 2000m for the 575 V class), 5.9m/s² or less at 10 to 55 Hz (directions of X, Y, Z areas)

Notes:
1. Enabled only for standard models.
2. Enabled only for Ethernet models.
3. This protective function is not available in the initial status.
4. Temperature applicable for a short time, e.g. in transit.
5. For the installation at an altitude above 1000m, consider a 3% reduction in the rated current per 500m increase in altitude.

Terminal Connection Diagram E800

Sink logic
◎ Main circuit terminal
◯ Control circuit terminal

*1 When connecting a DC reactor, remove the jumper across P1 and P/+.

DC reactor (FR-HEL)
*1

Brake unit (Option)

*5 A brake transistor is not built-in to the 0.1K and 0.2K.

*6 Brake resistor (FR-ABR, MRS, MYS type) Install a thermal relay to prevent an overheat and burnout of the brake resistor. (The brake resistor can not be connected to the 0.1K and 0.2K.)

Earth (Ground)

R

*6

Jumper

PR   N/-

P1   P/+   *5

MCCB   MC

Three-phase AC power supply

R/L1
S/L2
T/L3

Motor

U
V
W

M

Earth (Ground)

Main circuit

Earth (Ground)

Control circuit

Control input signals (No voltage input allowed) *2

*2 Terminal functions vary with the input terminal assignment (Pr. 178 to Pr. 184)

Forward rotation start
Reverse rotation start

STF

STR

Relay output *7

C

B

A

Relay output (Fault output)

*7 Terminal functions vary by Pr. 192 A,B,C terminal function selection

Multi-speed selection

High speed
Middle speed
Low speed

RH

RM

RL

Output stop

Reset

MRS

RES

SOURCE   SINK

SINK

SOURCE

24V

Open collector output *8

RUN   Running

FU   Frequency detection

SE

*8 Terminal functions vary with the output terminal assignment (Pr. 190 and Pr. 191)

Open collector output common
Sink/source common

Contact input common

SD

24VDC power supply(Common for external power supply transistor)

PC *2

Safety stop input common
Safety stop input (Channel 1)
Safety stop input (Channel 2)

S1

S2

Output shutoff circuit

SO   Safety monitor output

SOC   Safety monitor output common

Safety stop signal

Shorting wire

Frequency setting signals (Analog)

*3 Terminal input specifications can be changed by analog input specifications switchover (Pr.73 、Pr.267). Set the voltage/current input switch in the "V" position to select voltage input and "I" to select current input.

Frequency setting potentiometer 1/2W1kW *4

3

10(+5V)

2   2 DC0 to 5V
(DC0 to 10V)
(DC0 to 20mA) *3

1   5(Analog common)

Terminal 4 input (Current input)   (+)   4 DC4 to 20mA
(-)   (DC0 to 5V)
(DC0 to 10V) *3

PU connector

USB mini B connector

Output signal: Pulse or analog selectable

Output signal: Pulse (for the inverter with terminal FM)

Calibration resistor

+   -   Indicator (Frequency meter, etc.)

FM   *9   Moving-coil type 1mA full-scale

SD

*9 It is not necessary when calibrating the indicator from the operation panel.

*4 It is recommended to use 2W1kΩ when the frequency setting signal is changed frequently.

2
V I
4

Voltage/current input switch *3

Output signal: Analog (for the inverter with terminal AM)

AM   (+)   Analog signal output (0 to ±10VDC)
(-)

5

Connector for plug-in option connection

Option connector

Terminal Specifications E800

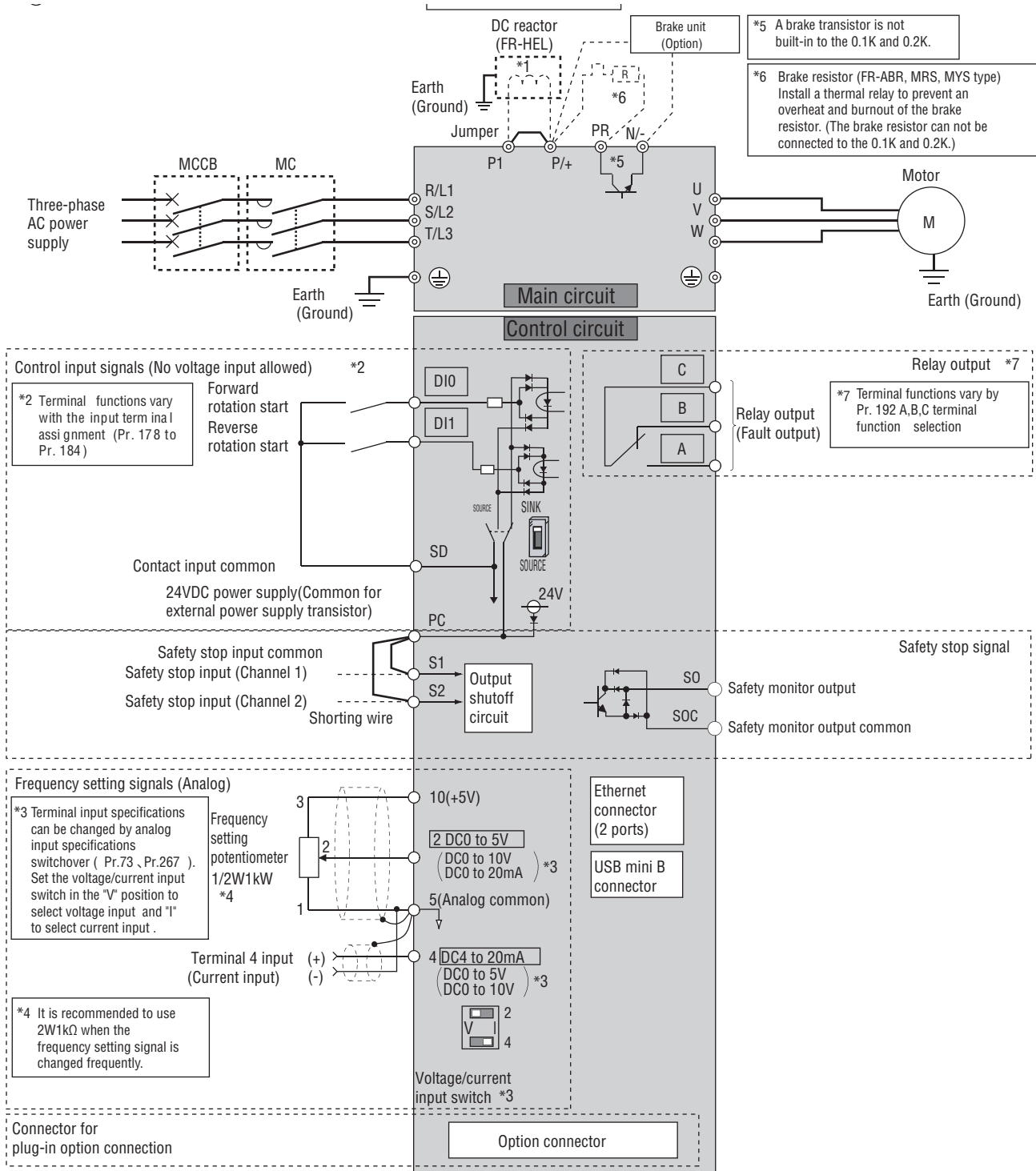| Type	Terminal Symbol	Terminal Name	Description		
Main Circuit	R/L1, S/L2, T/L3	AC Power Input	Connect to the commercial power supply. Do not connect anything to these terminals when using the high power actor converter (FR-HC2) or the multifunction regeneration converter (FR-XC) in common bus regeneration mode.		
	U, V, W	Inverter Output	Connect a three-phase squirrel-cage motor or PM motor.		
	P/+, PR	Brake Resistor Connection	Connect a brake transistor (MRS type, MYS type, FR-ABR) across terminals P/+-PR. (The brake resistor cannot be connected to the 0.1K or 0.2K)		
	P/+, N/-	Brake Unit Connection	Connect the brake unit (FR-BU2), multifunction regeneration converter (FR-XC), or high power factor converter (FR-HC2).		
	P/+, P1	DC Reactor Connection	Remove the jumper across terminals P/+-P1 and connect a DC reactor. When a DC reactor is not connected, the jumper across terminals P/+ and P1 should not be removed.		
		Earth (Ground)	For earthing (grounding) the inverter chassis. Must be earthed (grounded).		
Input Signal — Contact Input	STF (*1)	Forward Rotation Start	Turn on the STF signal to start forward rotation and turn it off to stop.	When the STF and STR signals are turned on simultaneously, the stop command is given.	Input resistance: 4.7Ω, voltage when contacts are open: 21 to 26 VDC, current when contacts are short-circuited: 4 to 6 mADC
	STR (*1)	Reverse Rotation Start	Turn on the STR signal to start reverse rotation and turn it off to stop.		
	RH, RM, RL (*1)	Multi-speed Selection	Multi-speed can be selected according to the combination of RH, RM and RL signals.		
	MRS (*1)	Output Stop	Turn on the MRS signal (20ms or more) to stop the inverter output. Use to shut off the inverter output when stopping the motor by electromagnetic brake.		
	RES (*1)	Reset	Use to reset alarm output provided when protective circuit is activated. Turn on the RES signal for more than 0.1s, then turn it off. It is possible to set the initial setting to "always enabled". By setting Pr. 75, reset can be set enabled only at fault occurrence. Recover about 1s after reset is canceled.		
	SD	Contact Input Common (Sink) (Initial Setting)	Common terminal for contact input terminal (sink logic) and terminal FM.		
		External Transistor Common (Source)	Connect this terminal to the power supply common terminal of a transistor output (open collector output) device, such as a programmable controller, in the source logic to avoid malfunction by undesirable currents.		
		24VDC power supply common	Common output terminal for 24VDC 0.1A power supply (PC terminal). Isolated from terminals 5 and SE.		
	PC	External Transistor Common (Sink) (Initial Setting)	Connect this terminal to the power supply common terminal of a transistor output (open collector output) device, such as a programmable controller, in the sink logic to avoid malfunction by undesirable currents.		Power supply voltage range: 22.5 to 27 VDC, permissible load current: 100 mA
		Safety Stop Input Terminal Common	Common terminal for safety stop input terminals.		
		Contact Input Common (Source)	Common terminal for contact input terminal (source logic).		
		24VDC Power Supply	Can be used as 24 VDC 0.1 A power supply.		
Input Signal — Frequency Setting	10	Frequency Setting Power Supply	Used as power supply when connecting potentiometer for frequency setting (speed setting) from outside of the inverter.		5 VDC ± 0.5 V permissible load current 10 mA
	2	Frequency Setting (Voltage)	Inputting 0 to 5 VDC (or 0 to 10 VDC) provides the maximum output frequency at 5 V (or 10 V) and makes input and output proportional. Use Pr.73 to switch between input 0 to 5 VDC (initial setting) and 0 to 10 VDC input. Set the voltage/current input switch to the "I" position to select current input (0 to 20 mA).		Voltage input: Input resistance 10 kΩ ± 1 kΩ Permissible maximum voltage 20 VDC
	4	Frequency Setting (Current)	Inputting 4 to 20 mADC (or 0 to 5 VDC, 0 to 10 VDC) provides the maximum output frequency at 20 mA and makes input and output proportional. This input signal is valid only when the AU signal is ON (terminal 2 input is invalid). To use the terminal 4 (current input at initial setting), assign "4" to any parameter from Pr.178 to Pr.184 (Input terminal function selection) before turning ON the AU signal. Use Pr.267 to switch among input 4 to 20 mA (initial setting), 0 to 5 VDC, and 0 to 10 VDC. Set the voltage/current input switch in the "V" position to select voltage input (0 to 5 V / 0 to 10 V).		Current input: Input resistance 245Ω ± 5Ω Maximum permissible current 30 mA.
	5	Frequency Setting Common	Common terminal for the frequency setting signals (terminals 2 or 4). Do not earth (ground).		

Terminal Specifications **E800** (CONTINUED)

Output Signal	Relay	A, B, C	**Relay Output (Fault Output)**	1 changeover contact output indicates that the inverter fault occurs. Fault: discontinuity across B-C (continuity across A-C), Normal: continuity across B-C (discontinuity across A-C)	Contact capacity 240 VAC 2A (power factor = 0.4) 30 VDC 1A
	Open Collector	RUN	**Inverter Running**	The output is in LOW state when the inverter output frequency is equal to or higher than the starting frequency (initial value: 0.5 Hz). The output is in HIGH state during stop or DC injection brake operation. (*2)	Permissible load 24 VDC (Maximum 27 VDC) 0.1 A (a voltage drop is 3.4 V maximum when the signal is on)
		FU	**Frequency Detection**	The output is in LOW state when the inverter output frequency is equal to or higher than the preset detection frequency, and is in HIGH state when it is less than the preset detection frequency. (*2)	
		SE	**Open Collector Output Common**	Common terminal of terminal RUN and FU.	
	Pulse	FM (*3)	**For Meter**	Select one e.g. output frequency from monitor items. (Not output during inverter reset.) The output signal is proportional to the magnitude of the corresponding monitoring item.	Output item: output frequency (initial setting)	Permissible load current 1 mA 1440 pulses/s at 60 Hz
	Analog	AM (*3)	**Analog Voltage Output**			Output signal 0 to ±10 VDC, permissible load current 1 mA (load impedance 10 kΩ or more), resolution 8 bit
Safety Stop Signal		S1	**Safety Stop Input (Channel 1)**	Terminals S1 and S2 are used for the safety stop input signal for the safety relay module. Terminals S1 and S2 are used at the same time (dual channel). Inverter output is shutoff by shortening/opening between terminals S1 and SIC, or between S2 and SIC. In the initial status, terminals S1 and S2 are shorted with terminal PC by shorting wires. Terminal SIC is shorted with terminal SD. Remove the shorting wires and connect the safety relay module when using the safety stop function.	Input resistance 4.7 kΩ Voltage when contacts are open 21 to 26 VDC Current when contacts are short-circuited 4 to 6 mADC
		S2	**Safety Stop Input (With 24 VDC Input) (Channel 2)**		
		SO	**Safety Monitor Output (Open Collector Output)**	Indicates the safety stop input signal status. Switched to LOW when the status is other than the internal safety circuit failure. Refer to the FR-E800 Instruction Manual (Functional Safety) (BCNA23488-000) when the signal is switched to HIGH while both terminals S1 and S2 are open. (Please contact your sales representative for the manual.)	Permissible load 24 VDC (maximum 27 VDC) 0.1 A (The voltage drop is 3.4 V at maximum while the signal is ON.)
		SOC	**Safety Monitor Output Terminal Common**	Common terminal for terminal SO.	—
Communication		–	**PU Connector**	With the PU connector, RS-485 communication can be made. • Conforming standard: EIA-485 (RS-485) • Transmission format: Multi-drop link • Communication speed: 300 to 115200bps • Overall extension: 500m	
		–	**USB Connector (*4)**	USB connection with a personal computer can be established. Setting, monitoring and testing of the inverter can be performed using FR Configurator2. • Interface: conforms to USB 1.1 • Transmission Speed: 12 Mbps • Connector: USB mini B connector (receptacle mini B type)	

Notes:
1. Terminal functions can be selected using Pr.178 to Pr.184 (Input terminal function selection).
2. An open collector transistor is ON (conductive) in LOW state. The transistor is OFF (not conductive) in HIGH state.
3. Terminal FM is provided for the FM type inverter. Terminal AM is provided for the AM type inverter.
4. USB bus power connection is available. The maximum SCCR should be 500 mA. A PU connector cannot be used during USB bus power connection.

Terminal Connection Specifications E800-E

DC reactor (FR-HEL)

Brake unit (Option)

*5 A brake transistor is not built-in to the 0.1K and 0.2K.

*6 Brake resistor (FR-ABR, MRS, MYS type) Install a thermal relay to prevent an overheat and burnout of the brake resistor. (The brake resistor can not be connected to the 0.1K and 0.2K.)

Earth (Ground)

*1

*6

R

Jumper   PR   N/-
P1   P/+   *5

MCCB   MC

Three-phase AC power supply

R/L1
S/L2
T/L3

Motor

U
V
W

M

Main circuit

Earth (Ground)

Earth (Ground)

Control circuit

Control input signals (No voltage input allowed) *2

*2 Terminal functions vary with the input terminal assignment (Pr. 178 to Pr. 184)

Forward rotation start

Reverse rotation start

DI0

DI1

SOURCE   SINK

SOURCE

Contact input common

SD

24VDC power supply(Common for external power supply transistor)

24V

PC

Relay output *7

C

B

A

Relay output (Fault output)

*7 Terminal functions vary by Pr. 192 A,B,C terminal function selection

Safety stop input common
Safety stop input (Channel 1)
Safety stop input (Channel 2)

Shorting wire

S1
S2

Output shutoff circuit

SO
SOC

Safety monitor output

Safety monitor output common

Safety stop signal

Frequency setting signals (Analog)

*3 Terminal input specifications can be changed by analog input specifications switchover (Pr.73 、Pr.267). Set the voltage/current input switch in the "V" position to select voltage input and "I" to select current input.

Frequency setting potentiometer 1/2W1kW *4

3

2

1

10(+5V)

2 DC0 to 5V
(DC0 to 10V
DC0 to 20mA) *3

5(Analog common)

*4 It is recommended to use 2W1kΩ when the frequency setting signal is changed frequently.

Terminal 4 input (+)
(Current input) (-)

4 DC4 to 20mA
(DC0 to 5V
DC0 to 10V) *3

V I   2
V I   4

Voltage/current input switch *3

Ethernet connector (2 ports)

USB mini B connector

Connector for plug-in option connection

Option connector

Terminal Specifications E800-E

| Type	Terminal Symbol	Terminal Name	Description		
Main Circuit	R/L1, S/L2, T/L3	AC Power Input	Connect to the commercial power supply. Do not connect anything to these terminals when using the high power factor converter (FR-HC2) or the multifunction regeneration converter (FR-XC) in common bus regeneration mode.		
	U, V, W	Inverter Output	Connect a three-phase squirrel-cage motor or PM motor.		
	P/+, PR	Brake Resistor Connection	Connect a brake transistor (MRS type, MYS type, FR-ABR) across terminals P/+-PR. (The brake resistor cannot be connected to the 0.1K or 0.2K)		
	P/+, N/-	Brake Unit Connection	Connect the brake unit (FR-BU2), multifunction regeneration converter (FR-XC), or high power factor converter (FR-HC2).		
	P/+, P1	DC Reactor Connection	Remove the jumper across terminals P/+-P1 and connect a DC reactor. When a DC reactor is not connected, the jumper across terminals P/+ and P1 should not be removed.		
		Earth (Ground)	For earthing (grounding) the inverter chassis. Must be earthed (grounded).		
Input Signal / Contact Input	DI0 (*1)	Forward Rotation Start	Turn on the DI0 signal to start forward rotation and turn it off to stop.	When the DI0 and DI1 signals are turned on simultaneously, the stop command is given.	Input resistance: 4.7Ω, voltage when contacts are open: 21 to 26 VDC, current when contacts are short-circuited: 4 to 6 mADC
	DI1 (*1)	Reverse Rotation Start	Turn on the DI1 signal to start reverse rotation and turn it off to stop.		
	SD	Contact Input Common (sink) (Initial Setting)	Common terminal for contact input terminal (sink logic) and terminal FM.		
		External Transistor Common (Source)	Connect this terminal to the power supply common terminal of a transistor output (open collector output) device, such as a programmable controller, in the source logic to avoid malfunction by undesirable currents.		
		24VDC Power Supply Common	Common output terminal for 24VDC 0.1A power supply (PC terminal). Isolated from terminals 5 and SE.		
	PC	External Transistor Common (Sink) (Initial Setting)	Connect this terminal to the power supply common terminal of a transistor output (open collector output) device, such as a programmable controller, in the sink logic to avoid malfunction by undesirable currents.	Power supply voltage range: 22.5 to 27 VDC, permissible load current: 100 mA	
		Safety Stop Input Terminal Common	Common terminal for safety stop input terminals.		
		Contact Input Common (Source)	Common terminal for contact input terminal (source logic).		
		24VDC power supply	Can be used as 24 VDC 0.1 A power supply.		
Frequency Setting	10	Frequency Setting Power Supply	Used as power supply when connecting potentiometer for frequency setting (speed setting) from outside of the inverter.	5 VDC ± 0.5 V permissible load current 10 mA	
	2	Frequency Setting (Voltage)	Inputting 0 to 5 VDC (or 0 to 10 VDC) provides the maximum output frequency at 5 V (or 10 V) and makes input and output proportional. Use Pr.73 to switch between input 0 to 5 VDC (initial setting) and 0 to 10 VDC input. Set the voltage/current input switch to the "I" position to select current input (0 to 20 mA).	Voltage input: Input resistance 10 kΩ ± 1 kΩ Permissible maximum voltage 20 VDC Current input: Input resistance 245Ω ± 5Ω Maximum permissible current 30 mA.	
	4	Frequency Setting (Current)	Inputting 4 to 20 mADC (or 0 to 5 VDC, 0 to 10 VDC) provides the maximum output frequency at 20 mA and makes input and output proportional. This input signal is valid only when the AU signal is ON (terminal 2 input is invalid). To use the terminal 4 (current input at initial setting), assign "4" to any parameter from Pr.178 to Pr.184 (Input terminal function selection) before turning ON the AU signal. Use Pr.267 to switch among input 4 to 20 mA (initial setting), 0 to 5 VDC, and 0 to 10 VDC. Set the voltage/current input switch in the "V" position to select voltage input (0 to 5 V / 0 to 10 V).		
	5	Frequency Setting Common	Common terminal for the frequency setting signals (terminals 2 or 4). Do not earth (ground).		

Terminal Specifications E800-E (CONTINUED)

Output Signal	**Relay**	A, B, C	**Relay Output (Fault Output)**	1 changeover contact output indicates that the inverter fault occurs. Fault: discontinuity across B-C (continuity across A-C), Normal: continuity across B-C (discontinuity across A-C)	Contact capacity 240 VAC 2 A (power factor = 0.4) 30 VDC 1 A
Safety Stop Signal		S1	**Safety Stop Input (Channel 1)**	Terminals S1 and S2 are used for the safety stop input signal for the safety relay module. Terminals S1 and S2 are used at the same time (dual channel). Inverter output is shutoff by shortening/opening between terminals S1 and SIC, or between S2 and SIC. In the initial status, terminals S1 and S2 are shorted with terminal PC by shorting wires. Terminal SIC is shorted with terminal SD. Remove the shorting wires and connect the safety relay module when using the safety stop function.	Input resistance 4.7 kΩ Voltage when contacts are open 21 to 26 VDC Current when contacts are short-circuited 4 to 6 mADC
		S2	**Safety Stop Input (with 24 VDC Input) (Channel 2)**		
		SO	**Safety Monitor Output (Open Collector Output)**	Indicates the safety stop input signal status. Switched to LOW when the status is other than the internal safety circuit failure. Switched to HIGH during the internal safety circuit failure status. (LOW is when the open collector output transistor is ON (conducted). HIGH is when the transistor is OFF (not conducted).) Refer to the FRE800 Instruction Manual (Functional Safety) (BCN-A23488-000) when the signal is switched to HIGH while both terminals S1 and S2 are open. (Please contact your sales representative for the manual.)	24 VDC (maximum 27 VDC) 0.1 A (The voltage drop is 3.4 V at maximum while the signal is ON.)
		SOC	**Safety Monitor Output Terminal Common**	Common terminal for terminal SO.	–
Communication		–	**Ethernet Connector (2-port) (*2)**	Communication can be made via Ethernet. • Category: 100BASE-TX/10BASE-T • Data transmission speed: 100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T) • Transmission method: Baseband • Maximum segment length: 100m between the hub and the inverter • Number of cascade connection stages: Up to 2 (100BASE-TX) / up to 4 (10BASE-T) • Interface: RJ-45 • Number of interfaces available: 1 • IP version: IPv4	
		–	**USB Connector (*3)**	USB connection with a personal computer can be established. Setting, monitoring and testing of the inverter can be performed using FR Configurator2. • Interface: conforms to USB 1.1 • Transmission Speed: 12 Mbps • Connector: USB mini B connector (receptacle mini B type)	

Notes:
1. Terminal functions can be selected using Pr.178, Pr.179 (Input terminal function selection).
2. Do not connect the parameter unit. The inverter may be damaged.
3. USB bus power connection is available. The maximum SCCR should be 500 mA.

Outline Dimension Drawings

- FR-E820-0.1K to 0.75K
- FR-E820-1.5K to 7.5K
- FR-E840-0.4K to 7.5K
- FR-E860-0.75K to 7.5K

When used with the plug-in option
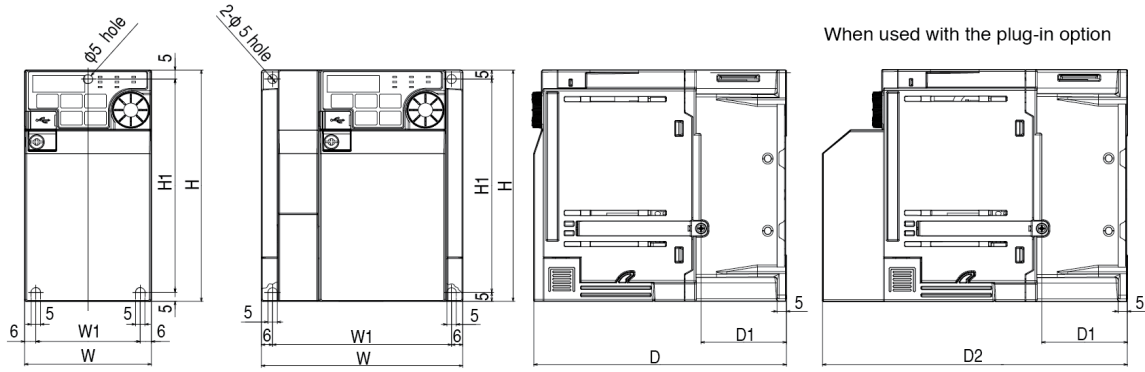
(Unit: mm)

200-240V [-5, -E, -SCE]

Inverter Model	W	W1	H	H1	D	D1	D2
E820-0008	68	56	128	118	80.5	10	108.1
E820-0015	68	56	128	118	80.5	10	108.1
E820-0030	68	56	128	118	112.5	42	140.1
E820-0050	68	56	128	118	132.5	42	160.1
E820-0080	108	96	128	118	135.5	46	163.1
E820-0110	108	96	128	118	135.5	46	163.1
E820-0175	140	128	128	118	142.5	52.5	170.1
E820-0240	180	164	260	244	165	71.5	192.6
E820-0330	180	164	260	244	165	71.5	192.6

380-480V [-5, -E, -SCE]

Inverter Model	W	W1	H	H1	D	D1	D2
E840-0016	108	96	128	118	129.5	40	157.1
E840-0026	108	96	128	118	129.5	40	157.1
E840-0040	108	96	128	118	135	46	163.1
E840-0060	140	128	150	138	135	43.5	163.1
E840-0095	140	128	150	138	135	43.5	163.1
E840-0120	220	208	150	138	147	68	174.6
E840-0170	220	208	150	138	147	68	174.6

575-600V [-5, -E, -SCE]

Inverter Model	W	W1	H	H1	D	D1	D2
E860-0017	140	128	150	138	135	43.5	163.1
E860-0027	140	128	150	138	135	43.5	163.1
E860-0040	140	128	150	138	135	43.5	163.1
E860-0061	220	208	150	138	147	68	174.6
E860-0090	220	208	150	138	147	68	174.6
E860-0120	220	208	150	138	147	68	174.6

Options

Name		Type	Applications	Applicable Inverter			Remarks
				E800	E800-E	E800-SCE	
Plug-In Type	Vector Control Orientation Control Encoder Feedback Control	FR-A8AP E Kit	Vector control can be performed for encoder-equipped motors (induction motors). The main spindle can be stopped at a specified position (orientation) in combination with an encoder. The motor speed is sent back and the speed is maintained constant.	○	○	○	Shared among all models
	16-bit Digital Input	FR-A8AX E Kit	This input interface sets the high frequency accuracy of the inverter using an external BCD or binary digital signal. · BCD code 3 digits (maximum 999) · BCD code 4 digits (maximum 9999) · Binary 12 bits (maximum FFFH) · Binary 16 bits (maximum FFFFH)	●	●	○	
	Digital Output Extension Analog Output	FR-A8AY E Kit	This option provides the inverter with open collector outputs selected from among the standard output signals. This option adds 2 different signals that can be monitored such as the output frequency and output voltage. 20mADC or 10VDC meter can be connected.	●	●	○	
	Relay Output	FR-A8AR E Kit	Output any three output signals available with the inverter as standard from the relay contact terminals.	●	●	○	
	CC-Link Communication	FR-A8NC E Kit		●	●	○	
	DeviceNet Communication	FR-A8ND E Kit	This option allows the inverter to be operated or monitored or the parameter setting to be changed from a computer or programmable controller.	○	○	○	
	PROFIBUS-DP Communication	R-A8NP E Kit		○	○	○	
Stand-Alone Type	Liquid Crystal Display Operation Panel	FR-LU08 (-01)	Graphical operation panel with liquid crystal display	○	–	–	Shared among all models
	Parameter Unit	FR-PU07	Interactive parameter unit with LCD display	○	–	–	
	Parameter Unit with Battery Pack	FR-PU07BB (-L)	This parameter unit enables parameter setting without connecting the inverter to power supply.	○	–	–	
	Enclosure Surface Operation Panel	FR-PA07	This operation panel enables inverter operation and monitoring of frequency, etc. from the enclosure surface	●	–	–	
	Parameter Unit Connection Cable	F R-CB20_	Cable for connection of operation panel or parameter unit _ indicates a cable length. (1m, 3m, 5m)	●	–	–	
	Encoder Cable Mitsubishi Electric Vector Control Dedicated Motor (SFV5RU)	FR-V7CBL_	Connection cable for the inverter and encoder for Mitsubishi Electric vector control dedicated motor (SFV5RU). _ indicates a cable length. (5m, 15m, 30m)	○	○	○	
	USB Cable	MR-J3USBCBL3M Cable Length: 3 m	Amplifier connector Personal computer connector Mini B connector (5-pin) A connector	●	●	○	
	Intercompatibility Attachment	FR-E7AT 01/02/03	For installation of a FR-E800 series inverter to the installation holes of FR-A024/A044 series inverter.	●	●	○	3.7K or lower. The option's model varies with the inverter's model.
	Intercompatibility Attachment	FR-E8AT03	For installation of a FR-E700/E800 inverter to the installation holes of FR-A024/A044/E700 inverter.	●	●	○	3.7K
	DIN Rail Attachment	FR-UDA 01 to 03	Attachment for installation on DIN rail	○	○	○	3.7K or lower. The option's model varies with the inverter's model.
	Panel Through Attachment	FR-E8CN 01 to 06	Using this attachment dissipates the inverter's heat by having the inverter heatsink protrude from the back side of the enclosure.	○	○	○	All capacities. The option's model varies with the inverter's model.
	Totally Enclosed Structure Specification Attachment (IP40)	FR-E8CV 01 to 04	Installing the attachment to the inverter changes the protective structure of the inverter to the totally enclosed structure (IP40 equivalent as specified by JEM1030).	○	○	○	
	AC Reactor	FR-HAL	For harmonic current reduction and inverter input power factor improvement	▲	▲	○	
	DC Reactor	FR-HEL		▲	▲	○	
	EMC Directive Compliant Noise Filter	SF, FR-E5NF, FR-S5NFSA	C Directive (EN 61800-3 C3) compliant noise filter	▲	▲	○	
	EMC Compliant EMC Filter Installation Attachment	FR-A5AT03 FR-AAT02 FR-E5T(-02)	For installation of the inverter to the EMC Directive compliant EMC filter (SF).	▲	▲	○	

●: Supported   ○: To be supported soon   ▲: Supported (UL/cUL not yet met)   –: Not Supported

Options (CONTINUED)

Name		Type	Applications	Applicable Inverter			Remarks
				E800	E800-E	E800-SCE	
Stand-Alone Type	Radio Noise Filter	FR-BIF(H)	For radio noise reduction (connect to the input side)	●	●	○	All capacities.
	Line Noise Filter	FR-BSF01 FR-BLF	For line noise reduction	●	●	○	
	Filterpack	FR-BFP2	Combination of power factor improving DC reactor, common mode choke, and capacitative filter	○	○	○	0.4K or higher of the three-phasepower input model. The option's model varies with the inverter's model.
	Brake Resistor	MRS Type, MYS Type	For increasing the regenerative braking capability (permissible duty 3%ED)	●	●	○	0.4K or higher. The option's model varies with the inverter's model.
	High-Duty Brake Resistor	FR-ABR	For increasing the regenerative braking capability (permissible duty 10%/6%ED)	▲	▲	○	
	Brake unit, Resistor Unit, Discharging Resistor	FR-BU2, FR-BR, GZG, GRZG Type	For increasing the braking capability of the inverter (for high-inertia load or negative load) Brake unit, electrical-discharge resistor and resistor unit are used in combination	●	●	○	
	Multifunction Regeneration Converter Dedicated Stand-Alone Reactor Dedicated Box-Type Reactor	FR-XC FR-XCL/FR-XCG FR-XCB	One inverter can handle harmonic suppression and power regeneration. Functions that match the application can be selected by combining the inverter/ converter with the dedicated reactor FR-XCB (box-type) or FR-XCL/FR-XCG.	●	●	–	According to capacities
	High Power Factor Converter	FR-HC2	The high power factor converter switches the converter section on/off to reshape an input current waveform into a sine wave, greatly suppressing harmonics. (Used in combination with the standard accessory.)	●	●	–	
	Surge Voltage Suppression Filter	FR-ASF FR-BMF	Filter for suppressing surge voltage on motor	●	●	○	
Others	Pilot Generator	QVAH-10	For tracking operation. 70 V / 35 VAC 500 Hz (at 2500 r/min)	●	●	○	Shared among all models.
	Deviation Sensor	YVGC-500WNS	For continuous speed control operation (mechanical deviation detection) Output 90VAC /90°	●	●	○	
	Analog Frequency Meter (64mm x 60mm)	YM-206NRI 1mA	Dedicated frequency meter (graduated to 130 Hz). Moving-coil type DC ammeter	●	–	–	
	Calibration Resistor	RV24YN 10kΩ	For frequency meter calibration. Carbon film type B characteristic	●	●	○	
	FR Configurator2 (Inverter setup software)	SW1DND-FRC2	Supports an inverter startup to maintenance.	●	●	○	
	Configurator Mobile (Mobile App for Inverters)	–	The app enables operation of inverters using smart phones or tablets.	○	○	○	

●: Supported   ○: To be supported soon   ▲: Supported (UL/cUL not yet met)   –: Not Supported