





## 2.6 Control circuit terminal layout

Wiring method  
Use crimp terminals and stripped wire for the control circuit wiring. If only a single wire is used, the wire can be stripped and used without a ferrule.  
Connect the end of wires (crimp terminal or stranded wire) to the terminal block.

Crimp terminals commercially available (as of October 2020)  
Phoenix Contact Co., Ltd.

Wire gauge (mm <sup>2</sup> )	With insulation sleeve	Ferrule part No.	For UL wire <sup>1)</sup>	Crimping tool model No.
0.3	AI 0.34-10TG	—	—	—
0.5	AI 0.5-10WH	—	AI 0.5-10WH-GB	—
0.75	AI 0.75-10GY	A 0.75-10	AI 0.75-10GY-GB	CRIMPFOX 6
1	AI 1-10RD	A 1-10	AI 1-10RD/1000GB	—
1.25, 1.5	AI 1.5-10BK	A 1.5-10	AI 1.5-10BK/1000GB <sup>2)</sup>	—
0.75 (for 2 wires)	AI-TWIN 2x0.75-10GY	—	—	—

<sup>1)</sup> A ferrule terminal with an insulation sleeve compatible with the MTW wire which has a thick insulation.  
<sup>2)</sup> Applicable for terminals A1, B1, C1, A2, B2, C2.

## 3 BASIC OPERATION

### 3.1 Components of the operation panel

The operation panel cannot be removed from the inverter.

Name	Description
PU/EXT key	Switches between the PU operation mode, the PUJOG operation mode, and the External operation mode.
MODE key	Switches the operation panel to a different mode. Used to confirm each selection. Switches the monitor screen in the monitor mode.
RUN key	Start command. The direction of motor rotation depends on the Pr.40 setting.
STOP/RESET key	Used to stop operation commands. Used to reset the inverter when the protective function is activated.
UP/DOWN key	Used to change the setting of frequency or parameter.

### Starting/stopping the inverter on the operation panel

NET operation mode → PU operation mode → Change the setting.

Stop → Start → Applied to the set frequency

Parameter setting mode → Change the setting.

Parameter setting mode → The present setting is displayed.

### Parameter setting

Monitor mode → PU operation mode → Parameter setting mode

Parameter setting mode → Change the setting.

Parameter setting mode → The present setting is displayed.

## 4 PARAMETERS

For details, refer to the FR-E800 Instruction Manual (Function).  
The PDF manual can also be downloaded from the Mitsubishi Electric FA Global Website.

## 5 LIST OF FAULT DISPLAYS

For details, refer to the FR-E800 Instruction Manual (Maintenance).  
The PDF manual can also be downloaded from the Mitsubishi Electric FA Global Website.

## 6 SPECIFICATIONS

### 6.1 Inverter installation environment

Item	Description
Surrounding air temperature <sup>1)</sup>	-20°C to +60°C (The rated current must be reduced at a temperature above 50°C. To meet the UL/EN standards, use the product at temperatures from -20°C to 50°C.)
Ambient humidity	95% RH or less (non-condensing) (With circuit board coating (IEC 60721-3-3/1994-3C2 compatible)) 90% RH or less (non-condensing) (Without circuit board coating)
Storage temperature	-40°C to +70°C
Atmosphere	Indoors (free from corrosive gas, flammable gas, oil mist, dust and dirt)
Altitude/vibration	Maximum 3000 m, 5.9 m/s <sup>2</sup> or less (For installation at an altitude above 1000 m, consider a 3% reduction in the rated current per 500 m increase in altitude.)

Enclosure

### 6.2 Inverter rating

#### ◆ Three-phase 200 V class

Model FR-E820-[]	0008		0015		0030		0050		0080		0110		0175		0240		0330		0600		0760		0900					
	0.1K	0.2K	0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K	11K	15K	18.5K	22K															
Applicable motor capacity (kW) <sup>1)</sup>	LD	0.2	0.4	0.75	1.1	2.2	3.0	5.5	7.5	11.0	15.0	18.5	22.0	30.0														
	ND	0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5	22.0														
Rated capacity (kVA) <sup>2)</sup>	LD	0.5	0.8	1.4	2.4	3.8	4.8	7.8	12.0	15.9	22.3	27.5	35.1	45.8														
	ND	0.3	0.6	1.2	2.0	3.2	4.4	7.0	9.6	13.1	18.7	23.9	30.3	35.9														
Rated current (A) <sup>3)</sup>	LD	1.3	2.0	3.5	6.0	9.6	12.0	19.6	30.0	40.0	56.0	69.0	88.0	115.0														
	ND	0.8	1.5	3.0	5.0	8.0	11.0	17.5	24.0	33.0	47.0	60.0	76.0	90.0														
Overload current rating <sup>3)</sup>	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																										
Output	Voltage <sup>4)</sup>		Three-phase 200 to 240 V																									
	Regenerative braking		Not installed		Built-in																							
Power supply	Rated input AC (DC) voltage/frequency		Three-phase 200 to 240 V 50/60 Hz (283 to 339 VDC <sup>5)</sup> )																									
	Permissible AC (DC) voltage fluctuation		170 to 264 V, 50/60 Hz																									
Permissible frequency fluctuation	±5%																											
	Without DC reactor		LD	1.9	3.0	5.1	8.2	12.5	16.1	25.5	37.1	48.6	74.3	90.5	112.9	139.5												
Rated input current (A) <sup>8)</sup>	With DC reactor		LD	1.4	2.3	4.5	7.0	10.7	15.0	23.1	30.5	41.0	63.6	79.9	99.0	114.3												
	Without DC reactor		LD	1.3	2.0	3.5	6.0	9.6	12.0	20.0	30.0	40.0	56.0	69.0	88.0	115.0												
Power supply capacity (kVA) <sup>6)</sup>	Without DC reactor		LD	0.7	1.1	1.9	3.1	4.8	6.2	9.7	15.0	19.0	30.0	35.0	43.0	54.0												
	With DC reactor		LD	0.5	0.9	1.7	2.7	4.1	5.7	8.8	12.0	16.0	25.0	31.0	38.0	44.0												
Protective structure (IEC 60529)	Cooling system		Natural																									
	Approx. mass (kg)		0.5 0.5 0.7 1.0 1.4 1.4 1.8 3.3 3.3 5.4 5.6 11.0 11.0																									

#### ◆ Three-phase 400 V class

Model FR-E840-[]	0016		0026		0040		0060		0095		0120		0230		0300		0380		0440									
	0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K	11K	15K	18.5K	22K																	
Applicable motor capacity (kW) <sup>1)</sup>	LD	0.75	1.5	2.2	3.0	5.5	7.5	11.0	15.0	18.5	22.0	30.0																
	ND	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5	22.0																
Rated capacity (kVA) <sup>2)</sup>	LD	1.6	2.7	4.2	5.3	8.5	13.3	17.5	26.7	31.2	34.3	45.7																
	ND	1.2	2.0	3.0	4.6	7.2	9.1	13.0	17.5	22.9	29.0	33.5																
Rated current (A) <sup>3)</sup>	LD	2.1	3.5	5.5	6.9	11.1	17.5	23.0	35.0	41.0	45.0	60.0																
	ND	1.6	2.6	4.0	6.0	9.5	12.0	17.0	23.0	30.0	38.0	44.0																
Overload current rating <sup>3)</sup>	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																										
Output	Voltage <sup>4)</sup>		Three-phase 380 to 480 V																									
	Regenerative braking		Not installed		Built-in																							
Power supply	Rated input AC (DC) voltage/frequency		Three-phase 380 to 480 V 50/60 Hz (537 to 679VDC <sup>5)</sup> )																									
	Permissible AC (DC) voltage fluctuation		323 to 528 V, 50/60 Hz (457 to 740VDC <sup>6)</sup> )																									
Permissible frequency fluctuation	±5%																											
	Without DC reactor		LD	3.3	6.0	8.9	10.7	16.2	24.9	32.4	46.7	54.2	59.1	75.6														
Rated input current (A) <sup>8)</sup>	With DC reactor		LD	2.7	4.4	6.7	9.5	14.1	17.8	24.7	32.1	41.0	50.8	57.3														
	Without DC reactor		LD	2.1	3.5	5.5	6.9	11.0	18.0	23.0	35.0	41.0	45.0	60.0														
Power supply capacity (kVA) <sup>6)</sup>	Without DC reactor		LD	2.5	4.5	6.8	8.2	12.4	19.0	25.0	36.0	42.0	45.0	58.0														
	With DC reactor		LD	1.6	2.7	4.2	5.3	8.5	13.0	18.0	27.0	31.0	34.0	46.0														
Protective structure (IEC 60529)	Cooling system		Natural																									
	Approx. mass (kg)		1.2 1.2 1.4 1.8 1.8 2.4 2.4 4.8 4.8 9.9 11.0 11.0																									

#### ◆ Single-phase 100 V class

Model FR-E820S-[]	0008		0015		0030		0050		0080		0120	
	0.1K	0.2K	0.4K	0.75K	1.5K	2.2K						
Applicable motor capacity (kW) <sup>1)</sup>	ND	0.1	0.2	0.4	0.75	1.5	2.2					
	LD	0.3	0.6	1.2	2.0	3.2	4.4					
Rated capacity (kVA) <sup>2)</sup>	ND	0.8	1.6	3.0	5.0	8.0	11.0					
	LD	0.8	1.6	3.0	5.0	8.0	11.0					
Overload current rating <sup>3)</sup>	LD	150% 60 s, 200% 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										
Output	Voltage <sup>4)</sup>		Three-phase 200 to 240 V									
	Regenerative braking		Not installed		Built-in							
Power supply	Rated input AC voltage/frequency		Single-phase 200 to 240 V, 50/60 Hz									
	Permissible AC voltage fluctuation		170 to 264 V, 50/60 Hz									
Permissible frequency fluctuation	±5%											
	Without DC reactor		LD	2.3	4.1	7.9	11.2	17.9	25.0			
Rated input current (A) <sup>8)</sup>	With DC reactor		LD	1.4	2.6	5.2	8.7	13.9	19.1			
	Without DC reactor		LD	0.4	0.8	1.5	2.5	4.5	5.5			
Power supply capacity (kVA) <sup>6)</sup>	Without DC reactor		LD	0.3	0.6	1.1	1.9	3.0	4.2			
	With DC reactor		LD	0.3	0.6	1.1	1.9	3.0	4.2			
Protective structure (IEC 60529)	Cooling system		Natural									
	Approx. mass (kg)		0.5 0.5 0.8 1.3 1.4 1.9									

#### ◆ Single-phase 100 V class

Model FR-E810W-[]	0008		0015		0030		0050	
	0.1K	0.2K	0.4K	0.75K				
Applicable motor capacity (kW) <sup>1)</sup>	LD	0.1	0.2	0.4	0.75			
	ND	0.1	0.2	0.4	0.75			
Rated capacity (kVA) <sup>2)</sup>	LD	0.3	0.6	1.2	2.0			
	ND	0.3	0.6	1.2	2.0			
Rated current (A) <sup>3)</sup>	LD	0.8	1.5	3.0	5.0			
	ND	0.8	1.5	3.0	5.0			
Overload current rating <sup>3)</sup>	LD	150% 60 s, 200% 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						
Output	Voltage <sup>4)</sup>		Three-phase 200 to 240 V					
	Regenerative braking		Not installed		Built-in			
Power supply	Rated input AC voltage/frequency		Single-phase 100 to 120 V 50/60 Hz					
	Permissible AC voltage fluctuation		90 to 132 V, 50/60 Hz					
Permissible frequency fluctuation	±5%							
	Without DC reactor		LD	3.7	5.8	12.4	19.6	
Protective structure (IEC 60529)	Cooling system		Natural					
	Approx. mass (kg)		0.5 0.6 0.8 1.4					

<sup>1)</sup> The applicable motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi Electric 4-pole standard efficiency motor.  
<sup>2)</sup> To drive a Mitsubishi Electric high-performance energy-saving motor, use the 200 V class 7.5R inverter for a 1 kW motor or 200A03 V class 2.2K inverter for a 3 kW motor.  
<sup>3)</sup> The rated output capacity assumes that the output voltage is 230 V for three-phase 200 V class and 480 V for three-phase 480 V class.  
<sup>4)</sup> 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 below the temperature rise 20°C (class 100) after the stop time after the stop time. The inverter and motor shall be cooled to below the temperature rise 20°C (class 100) after the stop time. The inverter and motor shall be cooled to below the temperature rise 20°C (class 100) after the stop time. The inverter and motor shall be cooled to below