

INVERTER Е800-Е

INVERTER SAFETY GUIDELINE FR-E820-0008(0.1K) to 0900(22K)E FR-E840-0016(0.4K) to 0440(22K)E FR-E820S-0008(0.1K) to 0110(2.2K)E FR-E810W-0008(0.1K) to 0050(0.75K)E



800

instructions

IB-0600860ENG-H(2312)MEE cifications subject to change without not



Thank you for choosing Mitsubishi Electric inverter. This Inverter

use of this product. Do not use this product until you have full

knowledge of the product mechanism, safety information and

Please forward this Safety Guideline to the end user.

Safety Guideline provides handling information and precautions for

Related manuals

Manual name	Manual number	Details
FR-E800 Instruction Manual (Connection)	IB-0600865ENG	Manuals describing installation, wiring, specifications, outline dimensions, standards, and how to connect options.
FR-E800 Instruction Manual (Function)	IB-0600868ENG	Manual describing details of the functions.
FR-E800 Instruction Manual (Communication)	IB-0600871ENG	Manual describing details of the communications.
FR-E800 Instruction Manual (Maintenance)	IB-0600874ENG	Manual describing how to identify causes of faults and warnings.
FR-E800 Instruction Manual (Functional Safety)	BCN-A23488-000	Manual describing the functional safety.
FR Configurator2 Instruction Manual	IB-0600516ENG	Manual describing details of the software used to set inverter parameters using a persona computer.
PLC Function Programming Manual	IB-0600492ENG	Manual describing details of the PLC function.



 A person who possesses a certification in regard with electric appliance handling, or person took a proper engineering training. Such training may be available at your local Mitsubishi Electric office. Contact your local sales office for schedules and locations.
 A person who can access operating manuals for the protective devices (for example, light curtain) connected to the safety control system, or a person who has read these manuals thoroughly and familiarized themselves with the protective devices. In this Safety Guideline, the safety instruction levels are classified into "WARNING" and "CAUTION"

Incorrect handling may cause hazardous conditions, resulting in death or severe injury. **WAR**

Incorrect handling may cause hazardous conditions, resulting in medium or slight injury, or may cause only material

damage. Note that even the CAUTION level may lead to a serious consequence depending on conditions. Be sure to follow the instructions of both levels as they are critical to perso

Read this Guideline before use. In addition, scan the 2D code below to download the FR-E800 Instruction Manual (Connection) and read "Safety Instructions" The PDF manual can also be downloaded from the Mitsubishi Electric FA Global Website.



Allow clearance

 $\langle -$

or more *1*

1 10 cm

1 cm

10 cm

√ or more

or more *1*2

When using the inverters at the surrounding air temperature of 40°C or less, the inverters can be installed closely attached (0 cm clearance). For the FR-E820-0470(11K) or higher and FR-E840-0230(11K) or higher, allow 5 cm

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ets of the wiring c

INVERTER INSTALLATION AND PRECAUTIONS 1

When installing the inverter on the enclosure surface, remove the front

cover and wiring cover to fix the inverter.

- Install the inverter on a strong surface securely with screws. Leave enough clearances and take cooling measures. Avoid places where the inverter is subjected to direct sunlight, high temperature and high humidity. Install the inverter on a nonflammable wall surface. When tightening screws into the upper mounting holes, tilt the screwdriver seven to ten degrees (FR-E820-0050(0.75K) or lower, FR-E820S-0030(0.4K)
- or lower, FR-E810W-0030(0.4K) or lower). wdriver length: 135 mm or longer



2 INSTALLATION AND WIRING

Removal and reinstallation of covers 2.1



(a) Loosen the mounting screws of the cover. (These screws cannot be removed.) (b) Pull out the cover using its lower side as a support. With the cover removed, the control circuit terminals can be wired and

the plug-in option can be installed.



(a) Loosen the screws on the lower front cover. (These screws cannot be removed.)

(b) While holding the areas around the installation hooks on the sides of the (b) Tighten the screws on the lower part of the lower front cover. lower front cover, pull out the cover using its upper side as a support. (c) With the lower front cover removed, wiring of the main circuit terminals and control circuit terminals can be performed.

Removal of the wiring cover (FR-E820-0050(0.75K) or lower. FR-E820S-0030(0.4K) or lower, FR-E810W-0030(0.4K) or



Pull out the cover along the guides in the direction shown by the arrow in the Fit the cover to the inverter along the guides







(a) Insert a tool such as a flathead screwdriver into the half-hole above the "PUSH" mark on the wiring cover to push the stopper behind the wiring cover approx. 3 mm.

(b) Pull out the cover along the guides in the direction shown by the arrow in the figure above.



Pull out the cover along the guides in the direction shown by the arrow in the Fit the cover to the inverter along the guides.

Removal of the wiring cover (FR-E840-0120(5.5K), 0170(7.5K)) (a)





(a) Insert a tool such as a flathead screwdriver into the half-hole above the "PUSH" mark on the wiring cover to push the stopper behind the wiring cover approx. 3 mm.

(b) Pull out the cover along the guides in the direction shown by the arrow in the figure above.



Main circuit terminal layout and wiring to power supply and motor 2.2 Three-phase 200/400 V class



Reinstallation of the wiring cover (FR-E820-0050(0.75K) or lower, FR-E820S-0030(0.4K) or lower, FR-E810W-0030(0.4K) or lower)









Fit the cover to the inverter along the guides, and push the hook into the socket







Fit the cover to the inverter along the guides





- Wiring cover (a) Fit the cover to the inverter along the guides.

hielded *

onnect one or r

Cable type

2.3





Reinstallation of the lower front cover (FR-E820-0240(5.5K) or higher, FR-E840-0230(11K) or higher)

(a) Check the position of the hooks on the

(a) Install the lower front cover by inserting the upper hooks into the sockets on the inverter.



damage the inverte ct the motor to terminals U. V. and W. The motor wise when viewed from the motor load side when the forward rotation switch (signal) turns O

Applicable cables and wiring length

mended gauge size to ensure that the voltage drop will be 2% or less. Select cables of recon If the wiring distance is long between the inverter and motor, the voltage drop in the main circuit will cause the motor torque to decrease especially at a low speed.

The following table shows a selection example for the wiring length of 20 m at the ND rating. When using the inverter with the LD rating, refer to the FR-E800 Instruction

anual (Connection).													
			<u>.</u>		Cable gauge								
Applicable Inverter	Terminal	Tightening	Crimpt	erminal	HIV c	ables, etc	. (mm ²) *1	AW	G * 2	PVC c	ables, etc	c. (mm²) *3	
model	screw size *4	torque N∙m	R/L1, S/L2, T/L3 *5	U, V, W	R/L1, S/L2, T/L3 *5	U, V, W	Earthing (grounding) cable	R/L1, S/L2, T/L3 *5	U, V, W	R/L1, S/L2, T/L3 *5	U, V, W	Earthing (grounding) cable	
FR-E820-0008(0.1K) to 0050(0.75K)	M3.5	1.2	2-3.5	2-3.5	2	2	2	14	14	2.5	2.5	2.5	
FR-E820-0080(1.5K), 0110(2.2K)	M4	1.5	2-4	2-4	2	2	2	14	14	2.5	2.5	2.5	
FR-E820-0175(3.7K)	M4	1.5	5.5-4	5.5-4	3.5	3.5	3.5	12	12	4	4	4	
FR-E820-0240(5.5K)	M5	2.5	5.5-5	5.5-5	5.5	5.5	5.5	10	10	6	6	6	
FR-E820-0330(7.5K)	M5	2.5	14-5	8-5	14	8	5.5	6	8	16	10	6	
FR-E820-0470(11K)	M5	2.5	14-5	14-5	14	14	8	6	6	16	16	16	
FR-E820-0600(15K)	M6(M5)	4.4	22-6	22-6	22	22	14	4	4	25	25	16	
FR-E820-0760(18.5K)	M8(M6)	7.8	38-8	22-8	38	22	14	2	4	35	25	25	
FR-E820-0900(22K)	M8(M6)	7.8	38-8	38-8	38	38	22	2	2	35	35	25	
FR-E840-0016(0.4K) to 0095(3.7K)	M4	1.5	2-4	2-4	2	2	2	14	14	2.5	2.5	2.5	
FR-E840-0120(5.5K)	M4	1.5	5.5-4	2-4	3.5	2	3.5	12	14	4	2.5	4	
FR-E840-0170(7.5K)	M4	1.5	5.5-4	5.5-4	3.5	3.5	3.5	12	12	4	4	4	
FR-E840-0230(11K)	M4	1.5	5.5-4	5.5-4	5.5	5.5	5.5	10	10	6	6	10	
FR-E840-0300(15K)	M5	2.5	8-5	8-5	8	8	5.5	8	8	10	10	10	
FR-E840-0380(18.5K)	M6	4.4	14-6	8-6	14	8	8	6	8	16	10	16	
FR-E840-0440(22K)	M6	4.4	14-6	14-6	14	14	14	6	6	16	16	16	
FR-E820S-0008(0.1K) to 0030(0.4K)	M3.5	1.2	2-3.5	2-3.5	2	2	2	14	14	2.5	2.5	2.5	
FR-E820S-0050(0.75K)	M4	1.5	2-4	2-4	2	2	2	14	14	2.5	2.5	2.5	
FR-E820S-0080(1.5K)	M4	1.5	2-4	2-4	2	2	2	14	14	2.5	2.5	2.5	
FR-E820S-0110(2.2K)	M4	1.5	5.5-4	2-4	3.5	2	2	12	14	4	2.5	2.5	
FR-E810W-0008(0.1K) to 0030(0.4K)	M3.5	1.2	2-3.5	2-3.5	2	2	2	14	14	2.5	2.5	2.5	
FR-E810W-0050(0.75K)	M4	1.5	5.5-4	2-4	3.5	2	2	14	14	2.5	2.5	2.5	

nt PVC insulated wire) with a continuous maximum permissible temperature of 75°C. It is assumed that the cables will be used in a surrounding air temperature of SUC or ress and the wring orsance of 2U m or shorter. THW cable with a continuous maximum permissible temperature of 75°C. It is assumed that the cables will be used in a surrounding air temperature of 40°C or less and the wring distance of 20 m or shorter. (For use in the United States or Canada, refer to the section 7.2 "Instructions for UL and cUL".) PVC cable with continuous maximum permissible temperature of 70°C. It is assumed that the cables will be used in a surrounding air temperature of 40°C or less and the wring distance of 20 m or PVC cable with continuous maximum permissible temperature of 70°C. It is assumed that the cables will be used in a surrounding air temperature of 40°C or less and the wring distance of 20 m or shorter (selection example mainly for use in Europe). The screw size for terminals RUL1, SUL2, TIL3, U, V, W, PR, P/+, N/-, and P1, and the earthing (grounding) t terminals RUL1, SUL2, U, V, W, PR, P/+, N/-, and P1, and the earthing (grounding) terminal is shown. For the terminals R/L1, S/L2, U, V, W, PR, Fr7, W-, and T, and S Schurzp of the approximate of the series of grounding) terminal is shown. The screw size fi When using a single-phase power input model, terminals are R/L1 and S/L2.

The line voltage drop can be calculated by the following formula:

Line voltage drop [V] = $\sqrt{3}$ × wire resistance [mΩ/m] × wiring distance [m] × current [A] / 1000

Use a larger diameter cable when the wiring distance is long or when it is desired to decrease the voltage drop (torque reduction) in the low speed range Total wiring length

ore	e motors within the total wiring length (sum of the wiring lengths of the motor and the inverter) shown in the following table.													
	Pr.72 setting (carrier frequency)	Voltage class	0.1K	0.2K	0.4K	0.75K	1.5K	2.2K	3.7K or higher					
1 (1	1 (1 kHz) or lower	100 V, 200 V	50 m (200 m)	50 m (200 m)	75 m (300 m)	100 m (500 m								
		400 V	—	—	50 m (200 m)	50 m (200 m)	75 m (300 m)	100 m (500 m)	100 m (500 m					
	2 (2 kHz) or higher	100 V, 200 V	10 m (30 m)	25 m (100 m)	50 m (200 m)	75 m (300 m)	100 m (500 m)	100 m (500 m)	100 m (500 m)					
	- ()g	400 V	—	—	10 m (30 m)	25 m (100 m)	50 m (200 m)	75 m (300 m)	100 m (500 m					

*1 The value in the parentheses is the total wiring length when unshielded cables are used.

When driving a 400 V class motor by the inverter, surge voltages attributable to the wiring constants may occur at the motor terminals, deteriorating the insulation of the motor. In this case, use a "400 V class inverter-driven insulation-enhanced motor" and set Pr.72 PWM frequency selection according to the wiring length: "14.5 kHz or less" when the wiring length is 50 m or shorter, "8 kHz or less" when the wiring length is from 50 m to 100 m, or "2 kHz or less" when the wiring length is longer than 100 m.

Terminal connection diagram

2.4



Details on the main circuit terminals and the control circuit terminals 2.5

Ту	pe	Terminal symbol	Common	Terminal name	e Terminal function description						
		R/L1, S/L2,	_	AC power input	Connected to the commercial power supply.	Do not connect anything to these termina	Is when using the high power				
		U, V, W		Inverter output	Connected to a three-phase squirrel cage r	motor or a PM motor.	mon pus regeneration mode.				
ţ		P/+, PR	_	Brake resistor connection	Connect an optional brake transistor (MRS E820-0008(0.1K), FR-E820-0015(0.2K), FR 0008(0.1K), and FR-E810W-0015(0.2K).)	, MYS, FR-ABR) between terminal P/+ R-E820S-0008(0.1K), and FR-E820S-0	and PR. (Not available for FR- 0015(0.2K), FR-E810W-				
oio Sio		P/+, N/-	_	Brake unit connection	Connect the brake unit (FR-BU2, FR-BU, o factor converter (FR-HC2) to these termina	or BU), multifunction regeneration conv als.	erter (FR-XC), or high power				
M		P/+, P1*2	_	DC reactor connection	Remove the jumper across terminals P/+ ar the single-phase 100 V power input models + and P1 should not be removed.	nd P1, and connect a DC reactor. (A DC s.) When a DC reactor is not connected	C reactor cannot be connected to d, the jumper across terminals P/				
			_	Earth (ground)	For earthing (grounding) the inverter chass	is. Be sure to earth (ground) the invert	er.				
	t input	DI0*3	SD (sink (negative common))	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	Input resistance: 4.7 kΩ Voltage when contacts are open:				
	Contact	DI1*3	PC (source (positive common))	Reverse rotation start	Turn ON the DI1 signal to start reverse rotation and turn it OFF to stop.	turned ON simultaneously, the stop command is given.	21 to 26 VDC Current when contacts are short-circuited: 4 to 6 mADC				
		10	5	Power supply for a frequency setting potentiometer	Used as the power supply for an external from potentiometer.	requency setting (speed setting)	5 ±0.5 VDC, Permissible load current: 10 mA				
Input signal	/ setting	2	5	Frequency setting (voltage)	Inputting 0 to 5 VDC (or 0 to 10 VDC) provid 5 V (or 10 V) and makes input and output p among input 0 to 5 VDC (initial setting), 0 to setting varies depending on the specificatio Set the voltage/current input switch to the " 20 mA).	des the maximum output frequency at oroportional. Use Pr.73 to switch o 10 VDC, and 0 to 20 mA. The initial on. I" position to select current input (0 to	For voltage input, Input resistance: 10 to 11 kΩ				
	Frequency	4	5	Frequency setting (current)	Inputting 4 to 20 mADC (or 0 to 5 VDC, 0 to output frequency at 20 mA and makes inpu- signal is valid only when the AU signal is 0 the terminal 4 (current input at initial setting (Input terminal function selection) before setting varies depending on the specificatio Use Pr.267 to switch among input 4 to 20 r to 10 VDC. Set the voltage/current input sw voltage input (0 to 5 V / 0 to 10 V).	20 VDC For current input, Input resistance: 245 ±5 Ω Permissible maximum current: 30 mA					
Output signal	Relay	A, B, C	_	Relay output (fault output)	1 changeover contact output indicates that activated and the outputs are stopped. Fault: discontinuity across B and C (continu continuity across B and C (discontinuity across B and C)	Contact capacity: 240 VAC 2A (power factor = 0.4) or 30 VDC 1 A					
		S1	PC	Safety stop input (Channel 1)	Use terminals S1 and S2 to receive the saf relay module. Terminals S1 and S2 can be	fety stop signal input from the safety used at a time (dual channel). The	Input resistance: 4.7 kΩ				
n function	p function	S2	PC	Safety stop input (Channel 2)	Inverter judges the condition of the internal (shorted/opened) between terminals S1 an the status is opened, the inverter output is In the initial status, terminal S1 and S2 are wires. Remove the shorting wires and corn using the safety stop function.	Voltage when contacts are open: 21 to 26 VDC Current when contacts are short-circuited: 4 to 6 mADC					
Cafety etc.	card and	so	SOC	Safety monitor output (open collector output)	The output status varies depending on the The output is in HIGH state during occurre The output is in LOW state otherwise. (The open collector transistor is ON (condu OFF (not conductive) in HIGH state.) Refer to the FR-E800 Instruction Manual (F when the signal is switched to HIGH while (Please contact your sales representative f	the output status varies depending on the input status of the safety stop signals. I e output is in HIGH state during occurrence of the internal safety circuit fault. I e output is in LOW state otherwise. The open collector transistor is ON (conductive) in LOW state. The transistor is FF (not conductive) in HIGH state.) effer to the FF-E800 Instruction Manual (Functional Safety) (BCN-A23488-000) hen the signal is switched to HIGH while both terminals S1 and S2 are open.					
				Contact input common (sink (negative common))	Common terminal for the contact input term	ninal (sink logic).					
		SD	-	External transistor common (source (positive common))	Connect this terminal to the power supply of such as a programmable controller, in the s	common terminal of a transistor output source logic to avoid malfunction by un	(open collector output) device, desirable current.				
				24 VDC power supply common	Common output terminal for 24 VDC 0.1 A	power supply (terminal PC). Isolated f	rom terminals 5 and SE.				
tominal				External transistor common (sink (negative common))	Connect this terminal to the power supply co (open collector output) device, such as a pr logic to avoid malfunction by undesirable co	ommon terminal of a transistor output rogrammable controller, in the sink urrent.					
		PC	-	Safety stop input terminal common	Common terminal for safety stop input term	ninals	Power supply voltage range 22 to 26.5 VDC Permissible load current: 100				
ć	3			Contact input common (source (positive common))	Common terminal for the contact input term	ninal (source logic).	mA				
	ļ		SD	24 VDC power supply common	Can be used as a 24 VDC 0.1 A power sup	oply.					
		5	-	Frequency setting common Safety monitor output terminal	Common terminal for the frequency setting	signal (terminal 2 or 4). Do not earth (ground).				
		SOC		common	Common terminal for terminal SO.		_				
minim		_	_	Ethernet connector (2 ports)*4	Communication can be made via Ethernet. Category: 100BASETX/10BASET Tran. Data transmission speed: 100 Mbps (100 Maximum segment length: 100 m betwee Number of cascade connection stages: U Number of interfaces available: 1 · IP vers	smission method: Baseband BASE-TX) / 10 Mbps (10BASE-T) In the hub and the inverter- Interface: F Jo to 2 (100BASE-TX) / up to 4 (10BAS ion: IPv4	RJ-45 E-T)				
- mo	50	_	_	USB connector*5	Use the USB connector to communicate with a personal computer. Setting and monitoring of the inverter is enabled using FR Configurator2. · Interface: conforms to USB 1.1· Transmission speed: 12 Mbps · Connector: USB mini B connector (receptacle mini B type)						
		*1 *2 *3 *4	Terminal T/L3 Terminal P1 is Terminal func Do not conne	B is not available for the single-phase pow s not available for the single-phase 100 \ tions can be selected using Pr.178 and I ct the parameter unit. The inverter may be	ver input models. / power input models. Pr.179 (Input terminal function selection). (Refer to t e damaged.comet	the FR-E800 Instruction Manual (Function).)					

2.6 Control circuit terminal layout

Ha OPU OMONOBUI A OKEY OPUM OPM ® (

					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.
S2	PC	DI0	DI1	SD	· Crimp terminale commercially available (as of April 2022.)
2	5	4	SO	SOC	Phoenix Centert Co. 1 td

Wiring meth

		Ferrule part No		Onimation
Wire gauge (mm ²)	With insulation sleeve	Without insulation sleeve	For UL wire*1	tool model No.
0.3	AI 0,34-10TQ	—	—	
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	ODIMOTOV
1	AI 1-10RD	A 1-10	AI 1-10RD/1000GB	CRIMPFOX
1.25, 1.5	AI 1, 5-10BK	A 1,5-10	AI 1,5-10BK/1000GB*2	
0.75 (for 2 wires)	AI-TWIN 2×0,75-10GY	_	-	

BASIC OPERATION 3

Components of the operation panel 3.1 noved from the inve

A B C

	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.
DIDIDIDI A -NET - P.RUN	SET key	Used to confirm each selection. Switches the monitor screen in the monitor mode.
PU MODE SET A NS	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.
	LIP/DOWN kev(↑ ⊥)	Press this key to change the setting of frequency or parameter

Starting/stopping the inverter on the operation panel



Website

Website

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



For more info ation on the product

For details, refer to the FR-E800 Instruction Manual (Maintenance)

6 SPECIFICATIONS

6.1 Inverter rating Three-phase 200 V class

	Model EP	E020 II		0008	0015	0030	0050	0080	0110	0175	0240	0330	0470	0600	0760	0900
	Wodel FR-	E020-[]		0.1K	0.2K	0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K	11K	15K	18.5K	22K
Applics	able motor cana	city (k/M) *1	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
Applica	able motor capa		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) *2 LD ND		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 cur	rent (A)	LD	1.3 (1.1)	2.0 (1.7)	3.5 (3.0)	6.0 (5.1)	9.6 (8.2)	12.0 (10.2)	19.6 (16.7)	30.0 (25.5)	40.0 (34.0)	56.0 (47.6)	69.0 (58.7)	88.0 (74.8)	115.0 (97.8)
	*7		ND	0.8 (0.8)	1.5 (1.4)	3.0 (2.5)	5.0 (4.1)	8.0 (7.0)	11.0 (10.0)	17.5 (16.5)	24.0 (23.0)	33.0 (31.0)	47.0 (44.0)	60.0 (57.0)	76.0 (72.0)	90.0 (86.0)
Output	Overlead our	ont rating *2	LD	120% 60	s, 150%	3 s (invers	e-time ch	aracteristi	cs) at surr	ounding a	ir tempera	ture of 50	°C			
	Overload curre	sin raung 5	ND	150% 60	150% 60 s, 200% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C											
	Vo	oltage *4		Three-ph	Three-phase 200 to 240 V											
		Brake tran	nsistor	Not insta	lled	Built-in										
	Regenerative braking torque (ND reference) *5		brake Ie nce) *5	150% 100%				50%	20%							
	Rated input fre	Three-ph	ase 200 t	o 240 V 5	0/60 Hz (2	83 to 339	VDC *9)									
	Permissible AC (DC) voltage fluctuation			170 to 20	64 V, 50/6	0 Hz (240	to 373 VE	IC *9)								
	Permissible fr	equency fluc	tuation	±5%	±5%											
		Without	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
Power	Rated input	DC reactor	ND	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
supply	current (A) *8	With DC	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
		reactor	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
	_	Without	LD	0.7	1.1	1.9	3.1	4.8	6.2	9.7	15.0	19.0	29.0	35.0	43.0	54.0
	Power supply	DC reactor	ND	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
	(kVA) *6	With DC	LD	0.5	0.8	1.3	2.3	3.7	4.6	7.5	11.0	15.0	21.0	26.0	34.0	44.0
		reactor	ND	0.3	0.6	1.1	1.9	3.0	4.2	6.7	9.1	13.0	18.0	23.0	29.0	34.0
Pi	rotective structu	re (IEC 6052	9)	Open typ	e (IP20)											
	Cooling system							Forced a	ir							
	Approx. m	ass (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

	Madal ED	E940 II		0016	0026	0040	0060	0095	0120	0170	0230	0300	0380	0440
	would FR-	-040-[]		0.4K	0.75K	1.5K	2.2K	3.7K	5.5K	7.5K	11K	15K	18.5K	22K
Applical	ble motor capa	city (kW) *1	LD	0.75	1.5	2.2	3.0	5.5	7.5	11.0	15.0	18.5	22.0	30.0
			LD	1.6	2.7	4.2	5.3	3.7 8.5	13.3	17.5	26.7	31.2	34.3	45.7
	Rated capaci	ty (kVA) *2	ND	1.2	2.0	3.0	4.6	7.2	9.1	13.0	17.5	22.9	29.0	33.5
			LD	2.1	3.5	5.5	6.9	11.1	17.5	23.0	35.0	41.0	45.0	60.0
	Rated cur	rent (A)		(1.8)	(3.0)	(4.7)	(5.9) 6.0	(9.4)	(14.9)	(19.6)	(29.8)	(34.9)	(38.3)	(51.0)
			ND	(1.4)	(2.2)	(3.8)	(5.4)	(8.7)	12.0	17.0	23.0	30.0	38.0	44.0
Output	Overload curre	ent rating *3	LD	120% 60	s, 150% 3	s (inverse	-time chara	cteristics)	at surroun	ding air ter	nperature	of 50°C		
-		ltage *4	ND	150% 60	150% 60 s, 200% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C									
ŀ	Vo	Brake tran	sistor	Built-in	ase 380 to	40U V								
	Regenerative	Maximum	brake	Duitein										
	braking	torqu (ND referen	e 200) *5	100%		50%	20%							
	Rated input	AC (DC) volt	tage/			<u> </u>	I							
L	fre	equency		Three-ph	ase 380 to	480 V 50/	60 Hz (537	to 679VD	C *9)					
	Permissible	AC (DC) vol	tage	323 to 52	8 V, 50/60	Hz (457 to	740VDC	'9)						
ŀ	Permissible fr	equency fluc	tuation	+5%										
F		Without	LD	3.3	6.0	8.9	10.7	16.2	24.9	32.4	46.7	54.2	59.1	75.6
Power	Rated input	DC reactor	ND	2.7	4.4	6.7	9.5	14.1	17.8	24.7	32.1	41.0	50.8	57.3
suppry	current (A) *8	With DC	LD	2.1	3.5	5.5	6.9	11.0	18.0	23.0	35.0	41.0	45.0	60.0
-		reactor	ND	1.6	2.6	4.0	6.0	9.5	12.0	17.0	23.0	30.0	38.0	44.0
	Power supply	DC reactor	ND	2.0	4.0	5.1	0.2 7.2	12.4	14.0	20.0	25.0	32.0	40.0	44.0
	capacity (kVA) *6	With DC	LD	1.6	2.7	4.2	5.3	8.5	13.0	18.0	27.0	31.0	34.0	46.0
		reactor	ND	1.2	2.0	3.0	4.6	7.2	9.1	13.0	18.0	23.0	29.0	34.0
Pro	otective structu	re (IEC 6052	9)	Open typ	e (IP20)									
	Cooling s	ystem		Natural	4.6	Forced a	ir Luc	4.6		-		4.0	44.5	
A 01	Approx. ma	ass (kg)		1.2	1.2	1.4	1.8	1.8	2.4	2.4	4.8	4.9	11.0	11.0
♥ Since	gie-phase 2	200 V cla	SS											
	Model FR-E	820S-[]		0008	0015	0030	0050	0080	0110	-				
Applical	ble motor cara	city (kW) *1	ND	0.1K	0.2K	0.4K	0.75K	1.5K	2.2K	1				
phoat	Rated capaci	ty (kVA) *2	ND	0.3	0.6	1.2	2.0	3.2	4.4	1				
	Rated cur	rent (A)	ND	0.8	1.5	3.0	5.0	8.0	11.0	1				
-	*7			(0.8)	(1.4)	(2.5)	(4.1)	(7.0)	(10.0)	-				
Output	Overload curre	ent rating *3	ND	150% 60 s, 200% 3 s (inverse-time characteristics) at surrounding air temperature of 50°C										
Sutput	Vo	ltage *4		Three-ph	ase 200 to	240 V				1				
	Regenerative	Brake tran	sistor	Not instal	Not installed				-	-				
	braking	Maximum torqu	orake e	150%		100%		50%	20%					
		(ND refere	nce) *5							1				
-	Rated input A	C voltage/free	quency	Single-ph	ase 200 to	240 V 50/	60 Hz			-				
-	Permissible AC voltage fluctuation				4 V, 50/60	Hz				ł				
F	r ennissible In	Without	Laation	10/0		7.6		47.5	05.5	ł				
Power	Rated input	DC reactor	ND	2.3	4.1	7.9	11.2	17.9	25.0	1				
supply	current (A) *8	With DC		1.4	2.6	5.2	8.7	13.9	19.1					
F	_	Without		0.5	0.0	17	25	20	5.5	1				
	Power supply capacity	DC reactor	ND	0.0	0.9	1.7	2.0	3.8	0.0					
	(kVA) *6	With DC reactor		0.3	0.6	1.1	1.9	3.0	4.2					
	otoctivo ctructu	re (IEC 6052	9)	Open typ	e (IP20)	1	1	1	1	1				
Pro	olective structu			Natural	. /			Forced a	ir	1				
Pro	Cooling s	ystem					1		1	1				
Pro	Cooling s Approx. ma	ystem ass (kg)		0.5	0.5	0.8	1.3	1.4	1.9	J				
Pre Pre	Cooling s Approx. ma gle-phase '	ystem ass (kg) 100 V cla:	ss	0.5	0.5	0.8	1.3	1.4	1.9]				
Pro Pro	Cooling s Approx. ma gle-phase '	ystem ass (kg) 100 V cla 810W-11	ss	0.5 0008	0.5 0015	0.8	1.3 0050	1.4	1.9]				
Pro ♦ Sing	Cooling s Approx. ma gle-phase ' Model FR-E	ystem ass (kg) 100 V cla 810W-[]	SS	0.5 0008 0.1K	0.5 0015 0.2K	0.8 0030 0.4K	1.3 0050 0.75K	1.4	1.9]				
Pro Pro Applical	Cooling s Approx. ma gle-phase ' Model FR-E ble motor capa	ystem ass (kg) 100 V cla: 3810W-[] city (kW)*1	SS ND	0.5 0008 0.1K	0.5 0015 0.2K	0.8 0030 0.4K	1.3 0050 0.75K 0.75	1.4	1.9	J				
♦ Sing	Cooling s Approx. ma gle-phase ' Model FR-E ble motor capa Rated capaci	ystem ass (kg) 100 V cla: 810W-[] city (kW)*1 ity (kVA)*2	SS ND ND	0.5 0008 0.1K 0.1 0.3 0.8	0.5 0015 0.2K 0.2 0.6 1.5	0.8 0030 0.4K 0.4 1.2 3.0	1.3 0050 0.75K 0.75 2.0 5.0	1.4	1.9	J				
♦ Sing	Cooling s Approx. ma gle-phase ' Model FR-E ble motor capa Rated capaci	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7	ND ND ND	0.5 0008 0.1K 0.1 0.3 0.8 (0.8)	0.5 0015 0.2K 0.2 0.6 1.5 (1.4)	0.8 0030 0.4K 0.4 1.2 3.0 (2.5)	1.3 0050 0.75K 0.75 2.0 5.0 (4.1)	1.4	1.9]				
♦ Sinç	Cooling s Approx. ma gle-phase ' Model FR-E ble motor capa Rated capaci Rated curre Overload curre	ystem ass (kg) 100 V cla: 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3	ND ND ND	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character	0.5 0015 0.2K 0.2 0.6 1.5 (1.4) s, 200% 3 istics) at su	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse- urrounding	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) -time air	1.4	1.9]				
Pro Pro Applicat Output	Cooling s Cooling s Approx.m gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Overload curre	ystem ass (kg) 100 V cla: 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3	ND ND ND ND	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperatu	0.5 0015 0.2K 0.2 0.6 1.5 (1.4) s, 200% 3 istics) at sure of 50°C	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse- urrounding	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) -time air	1.4	1.9]				
Pro Sing Applical	Cooling s Cooling s Approx.m gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated curre Overload curre Volt	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Party -	ND ND ND	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperati Three-ph	0.5 0015 0.2K 0.2 0.6 1.5 (1.4) s, 200% 3 istics) at si ure of 50°C ase 200 to led	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse- urrounding 240 V	1.3 0050 0.75K 0.75 2.0 5.0 ((4.1) time air	1.4	1.9]				
Pro Sing Applical Output	Cooling s Cooling s Approx.ma gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated curre Overload curre Volt Regenerative	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum	SS ND ND ND sistor	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperater Three-ph Not instal	0.5 0015 0.2K 0.2 0.6 1.5 (1.4) s, 200% 3 istics) at si ure of 50°C ase 200 to led	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) 240 V Built-in	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) -time air	1.4	1.9	J				
Pro	Cooling s Cooling s Approx.ma gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated curre Overload curre Volt Regenerative braking	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum torqu	SS ND ND ND Sistor brake e	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperati Three-ph Not instal 150%	0.5 0.2 0.2 0.6 1.5 (1.4) s, 200% 3 istics) at surve of 50°C ase 200 to led	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse urrounding 240 V Built-in 100%	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) time air	1.4	1.9	J				
Pro Pro Applica Output	Cooling s Cooling s Approx.ma gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated currer Overload currer Volt Regenerative braking	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere Combine_r**	ND ND ND ND sistor brake e nce)*5	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperati Three-ph Not instal 150%	0.5 0015 0.2K 0.6 1.5 (1.4) s, 200% 3 istics) at surve of 50°C ase 200 to led	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse urrounding 240 V Built-in 100%	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) time air	1.4	1.9	J				
Pro Pro Applica Output	Cooling s Cooling s Approx.m gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated currer Overload currer Volt Regenerative braking Rated input A	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage/free 2 voltare firm	ND ND ND ND sisistor brake e nce)*5 quency stuation	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperate Three-ph Not instal 150% Single-ph 90 to 122	0.5 0015 0.2K 0.2 0.6 1.5 (1.4) s, 200% 3 istics) at st ure of 50°C ase 200 to led ase 100 to V, 50/RD F	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse- urrounding) 240 V Built-in 100% 120 V 50/ 47	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) (4.1) 	1.4	1.9	J				
Prr Applica Output Power supply	Cooling s Cooling s Approx.mg gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Rated capaci Rated capaci Votro Votro Regenerative braking Rated input Al Permissible AC Permissible AC	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage/fruc equency fluc	ND ND ND ND sistor brake e nce)*5 quency :tuation	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) (150% 60 character temperati Three-ph Not instal 150% Single-ph 90 to 132 ±5%	0.5 0015 0.2K 0.2 0.6 1.5 (1.4) s, 200% 3 istics) at st ure of 50°C ase 200 to led ase 100 to V, 50/60 F	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse urrounding 240 V Built-in 100% 120 V 50/ iz	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) (4.1) (4.1) -time air	1.4	1.9	J				
Prr Prr Applica Output Power supply	Cooling s Cooling s Approx.mg gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Rated capaci Voit Overload curre Voit Regenerative braking Rated input Ai Permissible Ai Permissible Ai	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage/fre C voltage/fre C voltage fuc equency fluc urrent (A) *8	ND ND ND ND sisistor brake e nce)*5 quency :tuation tuation ND	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperatu Three-ph Not instal 150% Single-ph 90 to 132 ±5% 3.7	0.5 0.15 0.2K 0.2 0.6 1.5 (1.4) s, 200% 3 sitics) at sit sitics) at sit sitics at sit sit sit sit sit sit sit sit sit si	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) 240 V Built-in 100% 120 V 50/ iz 12.4	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) time air 60 Hz 19.6	1.4	1.9	J				
Prr Applica Output Power supply Pro	Cooling s Cooling s Approx.mg gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Rated capaci Vorload curro Vorload c	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage/fre c voltage/fuc equency fluc urrent (A) *8 re (IEC 60525	ND ND ND ND sisistor brake e nce)*5 quency :tuation tuation ND 9)	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperature temperature 150% Single-ph 90 to 132 ±5% 3.7 Open typ	0.5 0.15 0.2K 0.2 0.6 1.5 (1.4) s. 200% 3 sitics) at sit sitics, at sit sitics, at sit sitics, at sit sitics, at sit sites, at s	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) 240 V Built-in 100% 120 V 50/ 4z 12.4	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) time air 60 Hz 19.6	1.4	1.9	J				
Prr Applica Output Power supply Pro	Cooling s Cooling s Approx.mg gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Overload curre Voit Regenerative braking Rated input A Permissible AC Permissible fin Rated input Cooling s	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage/fre equency fluc arrent (A) *8 re (IEC 60525 ystem	ND ND ND ND sisistor brake e nce)*5 quency ctuation tuation ND 9)	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperate 150% Single-ph 90 to 132 ±5% 3.7 Open typ Natural	0.5 0.15 0.2K 0.2 0.6 1.5 (1.4) s. 200% 3 sitics) at sit sitics, at sit sitics, at sit sitics, at sit sitics, at sit sites, at sites	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) 240 V Built-in 100% 120 V 50/ 4z 12.4	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) time air 60 Hz 19.6	1.4	1.9	J				
Pro Applica Output Power Supply Pro	Cooling s Cooling s Approx.mg gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Overload curre Voit Regenerative braking Rated input A Permissible A Permissible fin Rated input cu cooling s Approx.mg	ystem ass (kg) 100 V Cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage/frec C voltage/frec C voltage fluc equency fluc equency fluc equency fluc set (IEC 6052! ystem ass (kg)	ND ND ND ND sisistor brake e nce)*5 quency ctuation tuation ND D)	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperature temperature 150% Single-ph 90 to 132 ±5% 3.7 Open typ Natural 0.5	0.5 0.15 0.2K 0.2 0.6 1.5 (1.4) s. 200% 3 sitics) at sit sitics) at sit sitics) at sit ase 200 to led asse 100 to V, 50/60 F 6.8 e (IP20) 0.6 1.5 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.5 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse urinounding 240 V Built-in 100% 120 V 50/ 4z 12.4	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) time air 60 Hz 19.6	1.4	1.9	1				
Pro Applica Output Power Supply Pro	Cooling s Cooling s Approx.mg gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Voit Voit Regenerative braking Rated input A Permissible fir Rated input cu Cooling s Approx.mg	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum (ND refere C voltage/frec C voltage/f	ND ND ND ND sisistor brake e nce)*5 quency :tuation tuation ND a)	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperatu 150% Single-ph 90 to 132 ±5% 3.7 Open typ Natural 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.5 0.5 0.15 0.2K 0.2 0.6 1.5 (1.4) s, 200% 3 istics) at st istics) at s	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse urrounding 240 V Built-in 100% 120 V 500 tz 12.4 0.8 y applicable 0.9 V for the set	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) -time air 19.6 1.4 for use of the 200 y Class 200 y Class	1.4 Milaubishi El 2.75K Inverter Cass and *in	lectic 4-pole infor a 1-pole- pie-piero 27	standard effe	iency motor 04400 V ctes ₂ and 440 V	s 2.2K invertes	r fora 8.3 KW µ ≅8 400 V cb≈	nolo;
Pro Applica Output Power Supply Pro	Cooling s Cooling s Approx.m gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Voit Voit Regenerative braking Rated input A Permissible fir Rated input co cooling s Approx.m *1 Thea *2 Thea *3 Thep	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum (ND refere C voltage/free C voltage/free C voltage fluc equency fluc equency fluc equency fluc contage/free C voltage fluc equency fluc equ	ND ND ND ND sisistor brake e nce)*5 quency ctuation tuation ND e) e	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperatu Three-ph Not instal 150% Single-ph 90 to 132 ±5% 3.7 Open typ Natural 0.5 od is the original od is the original temperatural 0.7 Open typ Natural	0.5 0.5 0.2K 0.2 0.6 1.5 (1.4) s. 200% 3 istics) at signature of 50°C asse 200 to led asse 100 to V, 50/60 P 6.8 e (IP20) 0.6 impun capacity 0.6 impun capacity 0.7 impun capacity	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse urrounding 240 V Built-in 100% 120 V 500 tz 12.4 0.8 V for three so the 0.4 V Built-in 100%	1.3 0050 0.75K 0.75 2.0 (4.1) 1.4 19.6 1.4 19.6	1.4 Milsubiah El 2.75K Invente class and sin start after th	I.9	standard effe minor standard francisco standard fra	iancy motor. 5, and 440 V ds V d duty, allow	s 2.2K invertes for three-pha time for the in d the power	r for a 3 kW f se 400 V clas nverter and m allure stop (€	notor s. s. zelo functo returno
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Prr Prr Applica Output Power Supply Prc	Cooling s Cooling s Approx.ms gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Voit Voit Regenerative braking Rated input A Permissible fir Rated input c cooling s Approx.ms *1 The a *3 The per *3 The per *4 The model *5 The state *5 The	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage/fue c voltage fluc equency fluc c voltage fluc equency fluc equency fluc c voltage fluc equency fluc c voltage fluc equency fluc c voltage fluc equency fluc c voltage fluc equency fluc s at (A) *8 rrent (A) *8 rrent (A) *8 rrent (A) *4 s at (A) *4 rrent (A) *4 r	ND ND ND ND Sisistor brake e nce)*5 quency tuation tuation ND e) e sacity indicat fric high-pet fric	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperatu 150% 60 character temperatu 150% 50 Single-ph 90 to 132 ±5% 3.7 Open typ Natural 0.5 ed is the max formance and formance and to a large lea t exceed the powerage short of a large lea t exceed the powerage short for powerage	0.5 0.5 0.5 0.2K 0.2 0.6 1.5 (1.4) 5.200% 3 istics) at si ure of 50°C ase 200 to led asse 100 to V, 50/60 I+ 6.8 e (IP20) 0.6 imum capacit groups at the first of the to 0.7 0.6 imum capacit of the to 0.7 0.6 imum capacit for the to 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	0.8 0030 0.4K 0.4 1.2 3.0 (2.5) s (inverse (2.5) s (inverse 240 V Built-in 100% 120 V 50) tz 12.4 0.8 0.8 0.120 V 50) tz 12.4	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) time air 60 Hz 19.6 1.4 19.6	1.4 Mitsubishi El 275K inverte 275K inverte ofters rated stata fater bievel recogn public decast	1.9 isctric 4-poles in for a 1.1 kW public current is instantance ized as a pove can be chang that is generar itales from - 6	standard effici motor 20 For repeate su power failure, di ed within the acquerer the tage	iency motor. 04400 V class dduty, allow dduty, allow rei (Pr.57) astling range setting range motor decele	s 2.2K inverted for three-pha time for the in- verter to drive. - The maxim rates in the sl page free-units.	r for a 3 kW i se 400 V clas nverter and m allure stop (P e a load 100% um point of the hortest time b y. The invest-	store of the store
Prr Applica Output Power Supply Prc	Cooling s Cooling s Approx.mi gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Rated capaci Voit Voit Regenerative braking Rated input A Permissible fir Rated input c Cooling s Approx.mi *1 Thea *3 Thep *3 Thep * 3 Thep * 4 Them * 5 Total * 5 Tota	ystem ass (kg) 100 V cla: 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage fluc equency fluc c voltage fluc equency fluc c voltage fluc equency fluc c voltage fluc equency fluc equency fluc c voltage fluc equency	ND ND ND ND sisistor brake e nce)*5 quency ctuation tuation ND e) entry indicates fill shares in fill shares in	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperatu 150% Single-ph 90 to 132 ±5% 3.7 Open typ Natural 0.5 of a large lea t exceed the part strange lea t exceed the strange lea t exce	0.5 0.5 0.5 0.2 0.6 1.5 (1.4) 5.200% 3 istics) at signature of 50°C asse 200 to led asse 100 to to V, 50/60 F 6.8 e (IP20) 0.6 imum capacity is a voltage is voltage v	0.8 0.8 0.4 0.4 1.2 3.0 (2.5) s (inverse (2.5) 240 V Built-in 100% 120 V 500 12 12.4 0.8 0.8 0.7 12.4	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) time air 60 Hz 19.6 14 19.6 1.4 10 d by 6. od by 9.0	1.4 Mitsubishi El 2.75K inverte 2.75K inverte ofters rated start after the level recogn put voltage ontor deceler er (Not availi in be also us	iectric 4-pole : if or a 1.1 s instantance	standard effici motor v 20 For repeate us power failure, di equivitin the sup ower failure, di equivitin the sup ower failure, di equivitin the sup ower failure, di equivitin the sup ower failure, di sup ower failure, d	iency motor. 04400 V.class dduty, allow dduty, allow rei (Pr.57) astilling range setting range motor decele er than the b K), FR-E820	s 2.2K inverted for three-pha time for the ir d the power to drive e. The maxim rates in the st base frequence i-0015(0.2K).	r for a 3 kW f se 400 V clas nverter and m alliure stor (P a a load 100% um point of the hortest time b y. The inverter FR-E820S-00	tedor. Solor to return Solor to return V keel from e voltage w v keel from e voltage w
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Prr Prr Applica Output - Power - Supply - Pro	Cooling s Cooling s Approx.ma gle-phase ' Model FR-E ble motor capa Rated capaci Rated capaci Rated capaci Coverload curre Volt Regenerative braking Rated input A Permissible fir Rated input curre Cooling s Approx.ma *1 The a *3 The per *3 The per *4 The m output *5 The per *5 The	ystem ass (kg) 100 V cla 810W-[] city (kW)*1 ty (kVA)*2 ent (A)*7 ent rating*3 age*10*11 Brake tran Maximum torqu (ND refere C voltage/free C vo	ND ND ND ND sisistor brake e nce)*5 quency tuation tuation ND e) e sacity indicat intic high-pet fice high-pet fic	0.5 0008 0.1K 0.1 0.3 0.8 (0.8) 150% 60 character temperatu 150% Single-ph 90 to 132 ±5% 3.7 Open typ Natural 0.5 d is the max formance entry to 132 ±5% 3.7 Open typ Natural 0.5 d is the max formance entry to 25% 150% 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	0.5 0.5 0.5 0.2K 0.2 0.6 1.5 (1.4) 0.2 0.6 1.5 (1.4) 0.2 0.6 1.5 0.2 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	0.8 0.8 0.4 0.4 1.2 3.0 (2.5) s (inverse urrounding 240 V Built-in 100% 120 V 500 tz 12.4 0.8 122.4 0.8 0.8 0.8 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	1.3 0050 0.75K 0.75 2.0 5.0 (4.1) 5.0 (4.1) time air 60 Hz 19.6 1.4 19.6 1.4 19.6 1.4 1.4 19.6	1.4 Mitsubishi El 1. D.75K inverte class and sir start after the invotor decay invotor decay invotor decay invotor decay in be also us is performe (including th terminal of the irring)	1.9 iectric 4-pole to for a 1.1 kW glo-phase 20 istraturation istraturation istraturation that is generative able for FR-EI able for FR-EI able for FR-EI able for FR-EI able for FR-EI able for the input reactor and with the sum once of the input reactor and the power support	standard effici motor, or 20 For repatate sus power failure, di equancy high 820-0008(0:1 di cables). rounding alf tu tut reactor an My to termina	iency motor. 0/400 Y 4 das d duty, allow re (Pr.57) astilling the in sabling the in sabling the is satilling range with an the b K), FR-E820 emperature of d cables) affi [P/+ and the	s 2 2K invertes for three-pha time for the in d the power to drive e. The maxim passe frequence i-0015(0.2K). exceeding 40 ect the value. negative terr negative terr	rr for a 3 kW r se 400 V clas share stor (P e a load 100% um point of the hortest time b y, TB280500 **********************************	notor. Sor to request or of higher wighted from the root equipation 0008(0.1K), F z or higher to the root equipation 2 z or higher to the root equipation to the root equipation 2 z or higher to the root equipation to the root equ
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6.2 Inverter installation environment

ltem	Description		
rrounding air nperature *1	-20°C to +60°C (The rated current must be reduced at a temperature above 50°C. For details, refer to the FR-E800 Instruction Manual (Connection). To meet the UL/EN standards, use the product at temperatures from -20°C to 50°C.)	Er	iclosure
bient 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)		Inverter Measurement position
rage temperature	-40°C to +70°C		⁵ cm Measurement x → 5 cm position
nosphere	Indoors (free from corrosive gas, flammable gas, oil mist, dust and dirt)		
tude/vibration	Maximum 3000 m, 5.9 m/s ² or less (For installation at an altitude above 1000 m, consider a 3% reduction in the	rated	current per 500 m increase in altitude
*1 Si	urrounding air temperature is a temperature measured at a measurement position in an enclosure. Ambient temperature is a temperature ou	itside a	n enclosure.

7 APPENDIX

At

Alt

Three-phase 400 V class

For information on other applicable standards not found in this document, refer to the FR-E800 Instruction Manual (Connection)

7.1 Instructions for compliance with the EU Directives

· The authorized representative in the EU The authorized representative in the EU is shown below

Name: Mitsubishi Electric Europe B.V.

Address: Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany

 EMC Directive We declare that this inverter conforms with the EMC Directive and affix the CE marking on the inverter.

EMC Directive: 2014/30/EU

Standard: IEC 61800-3 (Category "C3" / Second environment) This inverter is not intended to be used on a low-voltage public network which supplies domestic premises. When using the inverter in a residential area, take appropriate

and ensure the conformity of the inverter used in the residential area.

Radio frequency interference is expected if used on such a network.

Notes Set the EMC Directive compliant EMC filter to the inverter. Insert line noise filters and ferrite cores to the power and control cables as required.

Connect the inverter to an earthed power supply. Install the motor and controller cable found in the EMC Installation Guidelines (BCN-A21041-204) and Technical News (MF-S-175 and 176) according to the instructions.

Star	ndard: EN 61800-5-1
٠	Outline of instru
•	Do not use an eart
	securely.
•	Wire the earth term
•	Select appropriate
•	Use a tinned (platir
	as a product comp
•	Use PVC cables for
•	Use the molded ca
•	If an earth leakage
•	Use the inverter un
•	To use the inverter
•	Attach the fan cove

Ise the following Inverter mode FR-E820-0008(0.1K 0015(0.2K) FR-E820-0030(0.4K) FR-E820-0050(0.75k FR-E820-0080(1.5K) FR-E820-0110(2.2K) FR-E820-0175(3.7K) FR-E820-0240(5.5K) FR-E820-0330(7.5K) FR-E820-0470(11K) FR-E820-0600(15K) FR-E820-0760(18.5K FR-E820-0900(22K) FR-E840-0016(0.4K) FR-E840-0026(0.75k FR-E840-0040(1.5K)

FR-E840-0060(2.2K)

For other information, refer to the FR-E800 Instruction Manual (Connection).

-AVERTISSEMENT-

Branch circuit protection and any applicable local codes. any applicable local codes.

A hard copy of this information may be ordered at +1 (847) 478-2100 (Mitsubishi Electric Automation, Inc. in USA). • Precautions for opening the branch-circuit protective device / Précautions pour ouvrir le dispositif de protection du circuit de dérivation -WARNING- If the fuse melts down or the breaker trips on the input side of this product, check for wiring faults (such as short circuits). Identify and remove the cause of melting down or the trip before replacing the fuse or resetting the tripped breaker (or before applying the power to the inverter again).

-AVERTISSEMENT-

power OFF, and it is dangerous. ATTENTION - Risque de choc électrique

FR-E840-0440(22K)

FR-E840-0380(18.5k

(Contact your sales representative for the manual.) To make full use of the EMC Directive compliant noise filter, motor cable lengths should not exceed 20 m. Ensure that the finalized system which includes an inverter complies with the EMC Directive.

Low Voltage Directive We have self-confirmed our inverters as products compliant to the Low Voltage Directive and affix the CE marking on the inverters Low Voltage Directive: 2014/35/EU

of instructions

- e an earth leakage circuit breaker as an electric shock protector without connecting the equipment to the earth. Connect the equipment to the earth (ground)
- ... earth terminal independently. (Do not connect two or more cables to one terminal.) ppropriate wire according to EN 60204-1 or IEC 60364-5-52. (Refer to the selection examples of cable sizes in 2.3 Applicable cables and wiring length.) ned (plating should not include zinc) rimping terminal to connect the earth (ground) cable. When tightening the screw, be careful not to damage the threads. For use duct compliant with the Low Voltage Directive, use PVC cables.
- Such compliant with the Low Voltage Directive, use PVC cables. 2 cables for I/O wring. molded case circuit breaker and magnetic contactor which conform to the EN or IEC Standard. th leakage circuit breaker is required, use a type-B earth leakage circuit breaker (AC/DC detection compatible). inverter under the conditions of overvoltage category III specified in IEC 60664. he inverter under the conditions of pollution degree 3, install it in the enclosure of IP54 or higher for protection against electric shock and fire. he fan cover to the fan with the fan cover fixing screws enclosed with the inverter. ER-E820-0470(11K) or higher 1
 FR-E820-0080(1.5K) to 0330(7.5K)
 Fan cover
 FR-E820-0470(11K) or higher

 FR-E840-0040(1.5K) to 0170(7.5K)
 Fan cover
 FR-E820-0470(11K) or higher

 FR-E820-080(1.5K) to 0170(7.5K)
 FR-E820-0470(11K) or higher
 FR-E820-0470(11K) or higher
 1 Fan cove
- FR-E820S-0080(1.5K) or higher

If the cover is not fixed, the inverter protective structure is regarded as IP00. When using the relay output terminals A, B, and C with voltage of 230 VAC, use a power supply classified as overvoltage category II specified in IEC 60664 f the cover is not fixed, the inverter pro

• Fuse selection for branch circuit protection

11110		onoun protootion	-					
	Cat. No	Manufacturer	Rating	1	Inverter model	Cat. No	Manufacturer	Rating
,	170M1408, 170M1308 or 170M1358	Bussmann	700 V, 10 A		FR-E840-0095(3.7K)	170M1414, 170M1314 or 170M1364	Bussmann	700 V, 50 A
	170M1409, 170M1309 or 170M1359	Bussmann	700 V, 16 A		FR-E840-0120(5.5K), 0170(7.5K)	170M1416, 170M1316 or 170M1366	Bussmann	700 V, 80 A
.)	170M1411, 170M1311 or 170M1361	Bussmann	700 V, 25 A		FR-E840-0230(11K)	170M1419, 170M1319 or 170M1469	Bussmann	700 V, 160 A
	170M1413, 170M1313 or 170M1363	Bussmann	700 V, 40 A		FR-E840-0300(15K)	170M1419, 170M1319 or 170M1469	Bussmann	700 V, 160 A
	170M1414, 170M1314 or 170M1364	Bussmann	700 V, 50 A		FR-E840-0380(18.5K)	170M1420, 170M1320 or 170M1370	Bussmann	700 V, 200 A
	170M1416, 170M1316 or 170M1366	Bussmann	700 V, 80 A		FR-E840-0440(22K)	170M1421, 170M1321 or 170M1471	Bussmann	700 V, 250 A
	170M1418, 170M1318 or 170M1368	Bussmann	700 V, 125 A		FR-E820S-0008(0.1K)	170M1408, 170M1308 or 170M1358	Bussmann	700 V, 10 A
	170M1419, 170M1319 or 170M1369	Bussmann	700 V, 160 A		FR-E820S-0015(0.2K)	170M1409, 170M1309 or 170M1359	Bussmann	700 V, 16 A
	170M1420, 170M1320 or 170M1370	Bussmann	700 V, 200 A		FR-E820S-0030(0.4K)	170M1411, 170M1311 or 170M1361	Bussmann	700 V, 25 A
	170M1421, 170M1321 or 170M1471	Bussmann	700 V, 250 A		FR-E820S-0050(0.75K)	170M1413, 170M1313 or 170M1363	Bussmann	700 V, 40 A
)	170M1422, 170M1322 or 170M1472	Bussmann	700 V, 315 A		FR-E820S-0080(1.5K)	170M1415, 170M1315 or 170M1365	Bussmann	700 V, 63 A
	170M1422, 170M1322 or 170M1472	Bussmann	700 V, 315 A		FR-E820S-0110(2.2K)	170M1417, 170M1317 or 170M1367	Bussmann	700 V, 100 A
	170M1408, 170M1308 or 170M1358	Bussmann	700 V, 10 A		FR-E810W-0008(0.1K)	170M1409, 170M1309 or 170M1359	Bussmann	700 V, 16 A
.)	170M1410, 170M1310 or 170M1360	Bussmann	700 V, 20 A		FR-E810W-0015(0.2K)	170M1410, 170M1310 or 170M1360	Bussmann	700 V, 20 A
	170M1411, 170M1311 or 170M1361	1411, 170M1311 or 11361 Bussmann 700 V, 25 A			FR-E810W-0030(0.4K)	170M1413, 170M1313 or 170M1363	Bussmann	700 V, 40 A
	170M1312, 170M1362 or 170M1412	Bussmann	700 V, 32 A		FR-E810W-0050(0.75K)	170M1415, 170M1315 or 170M1365	Bussmann	700 V, 63 A

Motor overload protection
 For details, refer to 7.2 Instructions for UL and cUL: Motor overload protection.

EU RoHS Directive
We have declared that our inverters are compliant to the EU RoHS Directive and affix the CE marking on the inverters

7.2 Instructions for UL and cUL

(Standard to comply with: UL 61800-5-1, CSA C22.2 No. 274)

 Product handling information / Informations sur la manipulation du produit
 -WARNING- Operation of this product requires detailed installation and operation instructions provided in this Safety Guideline and the Instruction Manual (Connection) intended for use with this product. Please forward relevant manuals to the end user. The manuals can also be downloaded in PDF form from the Mitsubishi Electric FA Global Website. To order manuals, please contact your sales representative.

L'utilisation de ce produit nécessite des instructions détaillées d'installation et d'utilisation fournies dans le présent document de la Directive de sécurité et le Manuel d'instructions (Connexion) destiné à être utilisé avec ce produit. Veuillez transmettre les manuels correspondants à l'utilisateur final. Les manuels peuvent également être téléchargés au format PDF sur Mitsubishi Electric FA Global Website. Pour commander des manuels, veuillez contacter votre représentant commercial.

For installation in the United States, use the branch circuit protection equipment specified in Technical News MF-S-187, in accordance with the National Electrical Code For installation in Canada, use the branch circuit protection equipment specified in Technical News MF-S-187, in accordance with the Canadian Electrical Code and

Short circuit protection of the inverter cannot be used as branch circuit protection. Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.

The installation/operation manual is available via the internet at https://www.mitsubishielectric.com/fa/products/drv/inv/support/e800/e800e.html

Si le fusible fond ou si le disjoncteur se déclenche du côté entrée de ce produit, vérifier les défauts de câblage (tels que les courts-circuits). Identifier et éliminer la cause de la fonte ou du déclenchement avant de remplacer le fusible ou de réinitialiser le disjoncteur déclenché (ou avant de remettre sous tension l'onduleur).

• Capacitor discharge time / Temps de décharge du condensateur CAUTION - Risk of Electric Shock -

Before wiring or inspection, check that the LED display of the operation panel is OFF. Any person who is involved in wiring or inspection shall wait for 10 minutes or longer after power OFF, and check that there are no residual voltage using a digital multimeter or the like. The capacitor is charged with high voltage for some time after

Avant le câblage ou l'inspection, vérifier que le témoin LED s'éteint. Toute personne impliquée dans le câblage ou l'inspection doit attendre 10 minutes ou plus après la mise hors tension et vérifier l'absence de tension résiduelle à l'aide d'un multimètre numérique ou similaire. Le condensateur est chargé avec une haute tension pendant un certain temps après la mise hors tension, ce qui est dangereux. Précautions pour ouvrir le dispositif de protection du circuit de dérivation

Wiring to the power supply and the motor

Wring to the power supply and the motor Refer to the National Electrical Code (Article 310) regarding the allowable current of the cable. Select the cable size for 125% of the rated current according to the National Electrical Code (Article 430). For wiring the input (R/L1, S/L2, T/L3) and output (U, V, W) terminals of the inverter, use the UL listed copper, stranded wires (rated at 75°C) and round crimp terminals. Crimp the terminals with the crimping tool recommended by the terminal manufacturer.

The following table shows examples when the inverter rating is 125% of the LD rating, when the cable is the THHW cable with continuous maximum permissible temperature of 75°C, when the surrounding air temperature is 40°C or less, and when the wiring length is 20 m or shorter.

			Crimen term	inal	Cable gauge		
le inverter model	Terminal screw size	Tightening torque	Crimp term	mai	AWG		
		((()))	R/L1, S/L2, T/L3	U, V, W	R/L1, S/L2, T/L3	U, V, W	
to 0050(0.75K)	M3.5	1.2	2-3.5	2-3.5	14	14	
	M4	1.5	3.5-4	2-4	12	14	
	M4	1.5	5.5-4	2-4	10	14	
	M4	1.5	8-NK4	5.5-4	8	10	
	M5	2.5	8-5	8-5	8	8	
	M5	2.5	14-5	8-5	6	8	
	M5	2.5	38-S5	22-5	3	4	
	M6(M5)	4.4	38-S6	38-S6	2	3	
)	M8(M6)	7.8	60-8	38-8	1/0	2	
	M8(M6)	7.8	60-8	60-8	1/0×2	1/0	
o 0060(2.2K)	M4	1.5	2-4	2-4	14	14	
	M4	1.5	5.5-4	2-4	10	14	
0170(7.5K)	M4	1.5	8-NK4	5.5-4	8	10	
	M4	1.5	14-4	8-4	6	8	
	M5	2.5	22-85	14-5	4	6	
	M6	4.4	22-6	14-6	4	6	
	M6	4.4	38-6	22-6	3	4	

*1 The screw size for terminals RL1, SL2, TL3, U, V, W, PR, P/+, N/-, and P1, and the earthing (grounding) terminal is shown. The screw size for the earthing (grounding) terminal on FR-E820-0600(15K) to FR-E820-0900(22K) is indicated in parentheses.

The following table shows examples when the inverter rating is 125% of the ND rating, when the cable is the THHW cable with continuous maximum permissible temperature of 75°C, when the surrounding air temperature is 40°C or less, and when the wiring length is 20 m or shorter.

			Crimp terminal		Cable gauge AWG	
Applicable inverter model	Terminal screw size	Tightening torque (N·m)				
	•		R/L1, S/L2	U, V, W	R/L1, S/L2	U, V, W
FR-E820S-0008(0.1K) to 0030(0.4K)	M3.5	1.2	2-3.5	2-3.5	14	14
FR-E820S-0050(0.75K)	M4	1.5	2-4	2-4	14	14
FR-E820S-0080(1.5K)	M4	1.5	5.5-4	2-4	10	14
FR-E820S-0110(2.2K)	M4	1.5	8-NK4	2-4	8	14
FR-E810W-0008(0.1K), 0015(0.2K)	M3.5	1.2	2-3.5	2-3.5	14	14
FR-E810W-0030(0.4K)	M3.5	1.2	5.5-S3	2-3.5	12	14
FR-E810W-0050(0.75K)	M4	1.5	5.5-4	2-4	10	14

Instantion deute the version of the transistor at the inverter inverter output by stopping the operation of the transistor at the inverter output side. (The operation characteristic is shown on the left.) • When using the Mitsubishi Electric constant torque motor

2) Set the rated motor current in Pr.9.

motor with built-in thermal protector.

Symbol Year Month Control numb

and month, and six characters indicating the control number.

indicated by 1 to 9, X (October), Y (November), or Z (December)

SERIAL

The SERIAL consists of two symbol, three characters indicating the production year

The last two digits of the production year is indicated as the Year, and the Month is

external thermal relay.

1) Set one of "10, 13, 15, 16, 50, 53, 70, 73, 1800, or 1803" in Pr.71.

If rated motion current in Pr.3. When setting Pr.9 to a value (current value) of 50% of the inverter rated output current. The % value denotes the percentage to the inverter rated output current. It is not the percentage to the rated motor current. When the electronic thermal relay function declarated to the Miksuishi Electric constant-longue motor is set, this characteristic curve applies to operation at 6 Hz or higher.

(This setting enables the 100% constant-torque charact the low-speed range.)

The internal accumulated heat value of the electronic thermal O/L relay is

reset to the initial value by the inverter's power reset or reset signal input.

operate several motors, a multi-pole motor or a dedicated motor with one invertee When configuring an external thermal relay, note that the current indicated on the motor rating plate is affected by the line-to-line leakage current. (Refer to the

Instruction Manual (Function).) The cooling effect of the motor drops during lowspeed operation. Use a motor with built-in thermal protector. When the difference between the inverter and motor capacities is large and the set value is small, the protective characteristics of the electronic thermal relay function will be

deteriorated. Use an external thermal relay in such cases. The cooling effect of the motor drops during low-speed operation. Use a

The electronic thermal memory retention function is not provided by the drive.

protector, set **Pr.9** = "0" if another thermal protector is connected. Motor over temperature sensing is not provided by the drive.

The electronic thermal relay function is not a speed sensing function

Avoid unnecessary reset and power-OFF. Install an external thermal relay (OCR) between the inverter and motors to

For the single-phase 200 V power input models, the screw size for terminals RL1, Sl2, U, V, W, PR, PH, NL, and Pi, and the earthing (grounding) terminal is shown. For the single-phase 100 V power input models, the screw size for terminals RL1, Sl2, U, V, W, PR, and the earthing (grounding) terminal is shown.

- Short circuit ratings
 100 V class: Suitable for use in a circuit capable of delivering not more than 65 kA rms symmetrical amperes, 120 V maximum.
 200 V class: Suitable for use in a circuit capable of delivering not more than 100 kA ms symmetrical amperes, 240 V maximum.
- 400 V class: Suitable for use in a circuit capable of delivering not more than 100 kA rms symmetrical amperes, 480 Y / 277 V maximum
- Motor overload protection The following explains the details of the motor overload protection

When using the electronic thermal relay function as motor overload protection, set the rated motor current in Pr.9 Electronic thermal O/L relay.

7.3 SERIAL number check

The SERIAL number can be checked on the inverter rating plate or package.

realing plate example			
		INVERTER	PASSED
Inverter model —	MODEL :FR-E820-	-0008EPA	
Input rating	► INPUT ∶XXXXX		
Output rating	► OUTPUT : XXXXX		
SERIAL	► SERIAL:XXXXXXX	XXX	

Country of origin	<u> </u>	MADE	τη χχχχχ
Country of origin		INAUL	

7.4 EU ErP Directive (Ecodesign Directive) The following table shows the power loss data according to Ecodesign Directive. The regulation covers 3-phase variable speed drives from 0.12 kW < Pn < 1 000 kW.

LD rated / ND rated)			5	5		5					
Model name	Rated Apparent power (kVA)	Stand by loss (W)	load point 1 (90;100) (%)	load point 2 (50;100) (%)	load point 3 (0;100) (%)	load point 4 (90;50) (%)	load point 5 (50;50) (%)	load point 6 (0;50) (%)	load point 7 (50;25) (%)	load point 8 (0;25) (%)	IE class
FR-E820-0015(0.2K)	0.8 / 0.6	5.1	3.1 / 3.2	3.1 / 3.2	3.1/3.3	2.6 / 2.8	2.6 / 2.8	2.6 / 2.8	2.5 / 2.7	2.5 / 2.8	IE2
FR-E820-0030(0.4K)	1.4 / 1.2	5.1	2.9 / 2.9	2.9 / 2.9	3.0 / 2.9	2.3 / 2.3	2.3/2.3	2.4 / 2.4	2.3 / 2.3	2.3 / 2.3	IE2
FR-E820-0050(0.75K)	2.4 / 2	5.1	2.7 / 2.6	2.7 / 2.6	2.7 / 2.7	1.8 / 1.8	1.8 / 1.8	1.8 / 1.8	1.5 / 1.5	1.5 / 1.5	IE2
FR-E820-0080(1.5K)	3.8 / 3.2	9.2	2.7 / 2.6	2.7 / 2.6	2.7 / 2.7	1.8 / 1.8	1.8 / 1.8	1.9 / 1.9	1.5 / 1.5	1.5 / 1.5	IE2
FR-E820-0110(2.2K)	4.8 / 4.4	9.2	2.5 / 2.5	2.5 / 2.5	2.5/2.5	1.7 / 1.7	1.7 / 1.7	1.7 / 1.7	1.4 / 1.4	1.4 / 1.4	IE2
FR-E820-0175(3.7K)	7.8/7	10.2	2.5 / 2.5	2.5 / 2.5	2.5/2.5	1.7 / 1.7	1.7 / 1.7	1.7 / 1.7	1.4 / 1.3	1.4 / 1.4	IE2
FR-E820-0240(5.5K)	12 / 9.6	16.9	2.4 / 2.3	2.4 / 2.3	2.4 / 2.3	1.3 / 1.3	1.3 / 1.3	1.3 / 1.3	1.0 / 1.0	1.0 / 1.0	IE2
FR-E820-0330(7.5K)	15.9 / 13.1	16.9	2.4 / 2.3	2.4 / 2.3	2.4 / 2.3	1.3 / 1.3	1.3 / 1.3	1.3 / 1.3	0.9 / 0.9	0.9 / 0.9	IE2
FR-E820-0470(11K)	22.3 / 18.7	28.9	2.2 / 2.2	2.2 / 2.2	2.2/2.2	1.2 / 1.2	1.2 / 1.2	1.2 / 1.2	0.9 / 0.9	0.9 / 0.9	IE2
FR-E820-0600(15K)	27.5 / 23.9	28.9	2.3 / 2.2	2.3 / 2.2	2.3/2.2	1.2 / 1.2	1.2 / 1.2	1.2 / 1.2	0.9 / 0.9	0.9 / 0.9	IE2
FR-E820-0760(18.5K)	35.1 / 30.3	23.0	2.3 / 2.3	2.3 / 2.2	2.3/2.2	1.2 / 1.2	1.2 / 1.2	1.2 / 1.2	0.9 / 0.9	0.9 / 0.9	IE2
FR-E820-0900(22K)	45.8 / 35.9	23.0	2.5 / 2.3	2.5 / 2.3	2.5/2.3	1.3 / 1.2	1.3 / 1.2	1.3 / 1.2	0.9 / 0.9	0.9 / 0.9	IE2
FR-E840-0016(0.4K)	1.6 / 1.2	5.7	2.2 / 2.2	2.1/2.2	2.2/2.2	1.8 / 1.9	1.8 / 1.9	1.8 / 1.9	1.7 / 1.8	1.8 / 1.9	IE2
FR-E840-0026(0.75K)	2.7 / 2	5.7	2.2 / 2.0	2.1 / 2.0	2.2/2.0	1.4 / 1.5	1.4 / 1.4	1.4 / 1.5	1.2 / 1.2	1.2 / 1.2	IE2
FR-E840-0040(1.5K)	4.2/3	9.7	2.1 / 2.0	2.1 / 2.0	2.1/2.0	1.4 / 1.4	1.4 / 1.4	1.4 / 1.4	1.2 / 1.2	1.2 / 1.2	IE2
FR-E840-0060(2.2K)	5.3 / 4.6	9.8	1.8 / 1.8	1.8 / 1.8	1.8 / 1.8	1.3 / 1.3	1.3 / 1.3	1.3 / 1.3	1.1 / 1.1	1.1 / 1.1	IE2
FR-E840-0095(3.7K)	8.5 / 7.2	9.8	1.7 / 1.7	1.7 / 1.7	1.7 / 1.7	1.2 / 1.2	1.2 / 1.2	1.2 / 1.2	1.0 / 1.1	1.0 / 1.1	IE2
FR-E840-0120(5.5K)	13.3 / 9.1	14.5	1.7 / 1.6	1.6 / 1.6	1.7 / 1.6	0.9 / 0.9	0.9/0.9	0.9 / 0.9	0.7 / 0.7	0.7 / 0.7	IE2
FR-E840-0170(7.5K)	17.5 / 13	14.5	1.7 / 1.6	1.7 / 1.6	1.7 / 1.6	0.9/0.9	0.9/0.9	0.9 / 0.9	0.7 / 0.7	0.7 / 0.7	IE2
FR-E840-0230(11K)	26.7 / 17.5	26.5	1.7 / 1.6	1.7 / 1.6	1.7 / 1.6	0.9/0.9	0.9 / 0.9	0.9 / 0.9	0.7 / 0.7	0.7 / 0.7	IE2
FR-E840-0300(15K)	31.2 / 22.9	26.5	1.7 / 1.6	1.7 / 1.6	1.7 / 1.6	0.9 / 0.9	0.9/0.9	0.9 / 0.9	0.7 / 0.7	0.7 / 0.7	IE2
FR-E840-0380(18.5K)	34.3 / 29	26.5	1.6 / 1.2	1.6 / 1.2	1.6 / 1.2	0.9 / 0.7	0.9/0.7	0.9 / 0.7	0.7 / 0.5	0.7 / 0.5	IE2
FR-E840-0440(22K)	45.7 / 33.5	26.5	1.3 / 1.2	1.3 / 1.2	1.3 / 1.2	0.7 / 0.7	0.7 / 0.7	0.7 / 0.7	0.5 / 0.5	0.5 / 0.5	IE2

WARRANTY 8

Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi Electric shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi Electric (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi Electric products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than

Mitsubishi Electric products. (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.