

FE e-Front runners

High Performance Compact Inverters

FRENIC-Multi Series

Options & Accessories



FUJI INVERTERS

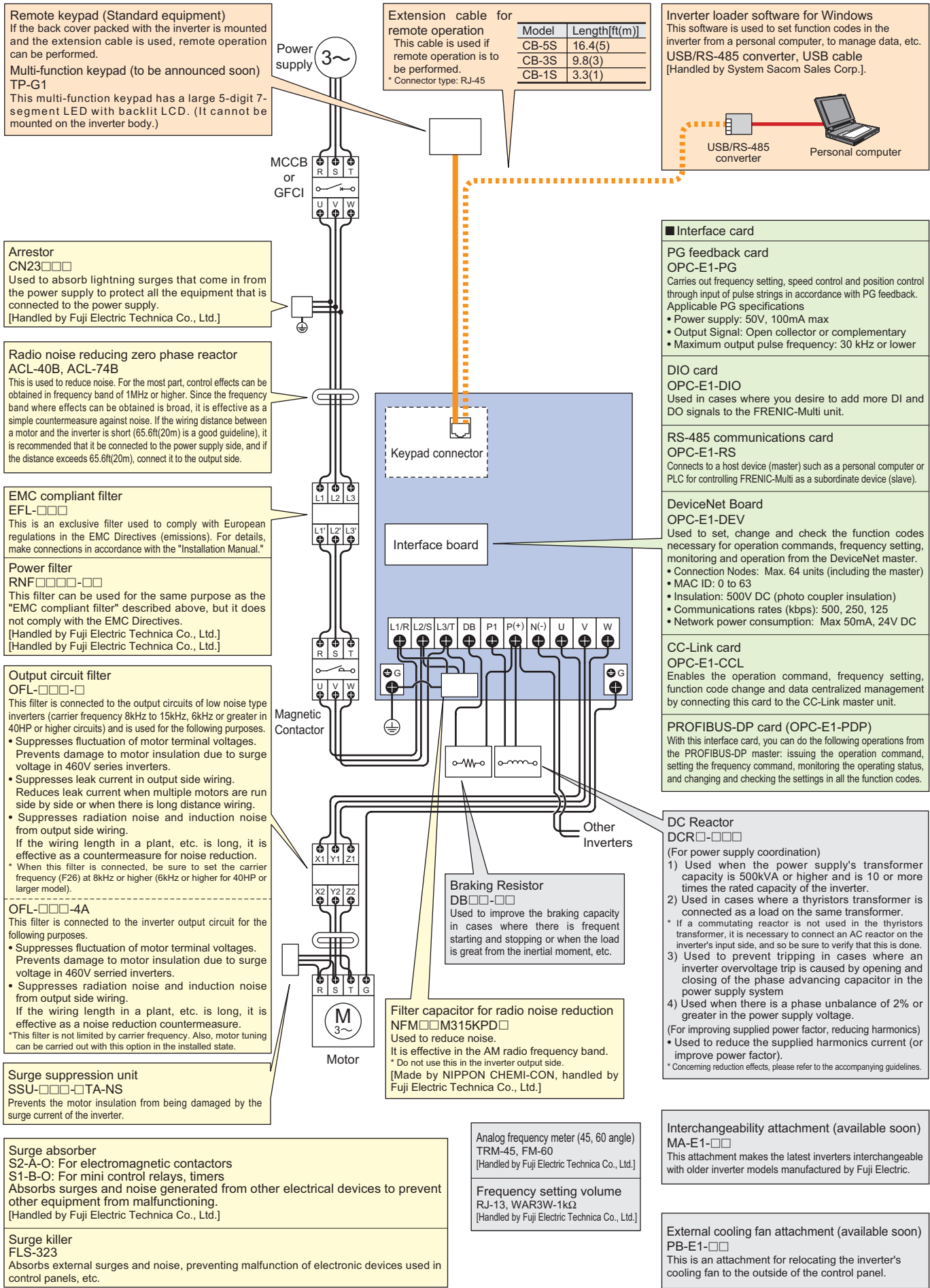
HIGH PERFORMANCE THROUGH COMPACT DEDICATED DESIGNS
WELCOME TO A NEW GENERATION OF MULTIPUSE INVERTERS



- Braking Accessories
- Option Boards
- Reactors & Remote Keypad
- External Cooling Adapter

UL US LISTED





Remote keypad (Standard equipment)
If the back cover packed with the inverter is mounted and the extension cable is used, remote operation can be performed.

Multi-function keypad (to be announced soon) TP-G1
This multi-function keypad has a large 5-digit 7-segment LED with backlit LCD. (It cannot be mounted on the inverter body.)

Extension cable for remote operation
This cable is used if remote operation is to be performed.
* Connector type: RJ-45

Model	Length[ft(m)]
CB-5S	16.4(5)
CB-3S	9.8(3)
CB-1S	3.3(1)

Inverter loader software for Windows
This software is used to set function codes in the inverter from a personal computer, to manage data, etc.

USB/RS-485 converter, USB cable
[Handled by System Sacom Sales Corp.]

Arrestor CN23□□□□
Used to absorb lightning surges that come in from the power supply to protect all the equipment that is connected to the power supply.
[Handled by Fuji Electric Technica Co., Ltd.]

Radio noise reducing zero phase reactor ACL-40B, ACL-74B
This is used to reduce noise. For the most part, control effects can be obtained in frequency band of 1MHz or higher. Since the frequency band where effects can be obtained is broad, it is effective as a simple countermeasure against noise. If the wiring distance between a motor and the inverter is short (65.6ft(20m) is a good guideline), it is recommended that it be connected to the power supply side, and if the distance exceeds 65.6ft(20m), connect it to the output side.

EMC compliant filter EFL-□□□□
This is an exclusive filter used to comply with European regulations in the EMC Directives (emissions). For details, make connections in accordance with the "Installation Manual."

Power filter RNF□□□□-□□
This filter can be used for the same purpose as the "EMC compliant filter" described above, but it does not comply with the EMC Directives.
[Handled by Fuji Electric Technica Co., Ltd.]

Output circuit filter OFL-□□□□-□
This filter is connected to the output circuits of low noise type inverters (carrier frequency 8kHz to 15kHz, 6kHz or greater in 40HP or higher circuits) and is used for the following purposes.

- Suppresses fluctuation of motor terminal voltages. Prevents damage to motor insulation due to surge voltage in 460V series inverters.
- Suppresses leak current in output side wiring. Reduces leak current when multiple motors are run side by side or when there is long distance wiring.
- Suppresses radiation noise and induction noise from output side wiring.

If the wiring length in a plant, etc. is long, it is effective as a countermeasure for noise reduction.

* When this filter is connected, be sure to set the carrier frequency (F26) at 8kHz or higher (6kHz or higher for 40HP or larger model).

OFL-□□□□-4A
This filter is connected to the inverter output circuit for the following purposes.

- Suppresses fluctuation of motor terminal voltages. Prevents damage to motor insulation due to surge voltage in 460V series inverters.
- Suppresses radiation noise and induction noise from output side wiring.

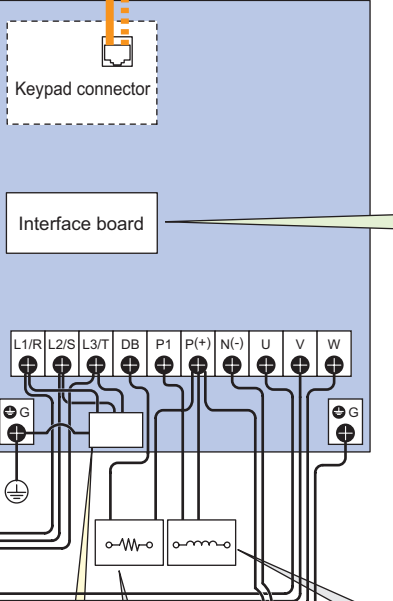
If the wiring length in a plant, etc. is long, it is effective as a noise reduction countermeasure.

*This filter is not limited by carrier frequency. Also, motor tuning can be carried out with this option in the installed state.

Surge suppression unit SSU-□□□□TA-NS
Prevents the motor insulation from being damaged by the surge current of the inverter.

Surge absorber
S2-A-O: For electromagnetic contactors
S1-B-O: For mini control relays, timers
Absorbs surges and noise generated from other electrical devices to prevent other equipment from malfunctioning.
[Handled by Fuji Electric Technica Co., Ltd.]

Surge killer FLS-323
Absorbs external surges and noise, preventing malfunction of electronic devices used in control panels, etc.



Interface card

PG feedback card OPC-E1-PG
Carries out frequency setting, speed control and position control through input of pulse strings in accordance with PG feedback. Applicable PG specifications

- Power supply: 50V, 100mA max
- Output Signal: Open collector or complementary
- Maximum output pulse frequency: 30 kHz or lower

DIO card OPC-E1-DIO
Used in cases where you desire to add more DI and DO signals to the FRENIC-Multi unit.

RS-485 communications card OPC-E1-RS
Connects to a host device (master) such as a personal computer or PLC for controlling FRENIC-Multi as a subordinate device (slave).

DeviceNet Board OPC-E1-DEV
Used to set, change and check the function codes necessary for operation commands, frequency setting, monitoring and operation from the DeviceNet master.

- Connection Nodes: Max. 64 units (including the master)
- MAC ID: 0 to 63
- Insulation: 500V DC (photo coupler insulation)
- Communications rates (kbps): 500, 250, 125
- Network power consumption: Max 50mA, 24V DC

CC-Link card OPC-E1-CCL
Enables the operation command, frequency setting, function code change and data centralized management by connecting this card to the CC-Link master unit.

PROFIBUS-DP card (OPC-E1-PDP)
With this interface card, you can do the following operations from the PROFIBUS-DP master: issuing the operation command, setting the frequency command, monitoring the operating status, and changing and checking the settings in all the function codes.

Braking Resistor DB□□□□
Used to improve the braking capacity in cases where there is frequent starting and stopping or when the load is great from the inertial moment, etc.

Filter capacitor for radio noise reduction NFM□□M315KPD□
Used to reduce noise. It is effective in the AM radio frequency band.
* Do not use this in the inverter output side.
[Made by NIPPON CHEMI-CON, handled by Fuji Electric Technica Co., Ltd.]

DC Reactor DCR□□□□
(For power supply coordination)

- 1) Used when the power supply's transformer capacity is 500kVA or higher and is 10 or more times the rated capacity of the inverter.
- 2) Used in cases where a thyristors transformer is connected as a load on the same transformer.
* If a commutating reactor is not used in the thyristors transformer, it is necessary to connect an AC reactor on the inverter's input side, and so be sure to verify that this is done.
- 3) Used to prevent tripping in cases where an inverter overvoltage trip is caused by opening and closing of the phase advancing capacitor in the power supply system
- 4) Used when there is a phase unbalance of 2% or greater in the power supply voltage.

(For improving supplied power factor, reducing harmonics)

- Used to reduce the supplied harmonics current (or improve power factor).

* Concerning reduction effects, please refer to the accompanying guidelines.

Analog frequency meter (45, 60 angle) TRM-45, FM-60
[Handled by Fuji Electric Technica Co., Ltd.]

Frequency setting volume RJ-13, WAR3W-1kΩ
[Handled by Fuji Electric Technica Co., Ltd.]

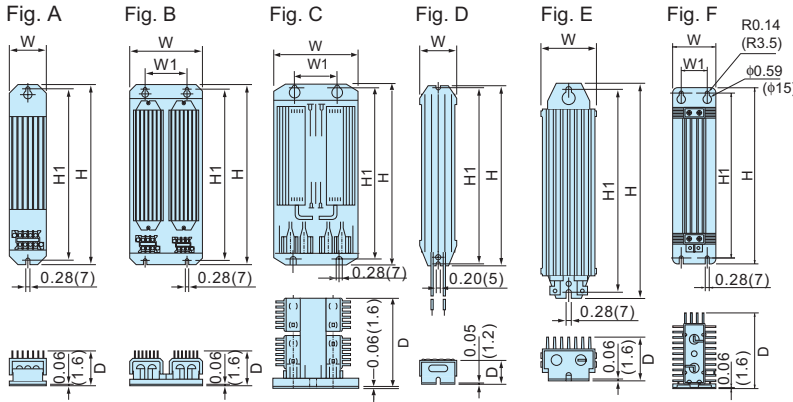
Interchangeability attachment (available soon) MA-E1-□□
This attachment makes the latest inverters interchangeable with older inverter models manufactured by Fuji Electric.

External cooling fan attachment (available soon) PB-E1-□□
This is an attachment for relocating the inverter's cooling fan to the outside of the control panel.

Options

Braking resistor Type, specifications and external dimensions [Unit: inch(mm)]

[Standard type] (DB□□□-2) (DB□□□-4)
 [10% ED type] (DB□□□-2C) (DB□□□-4C)



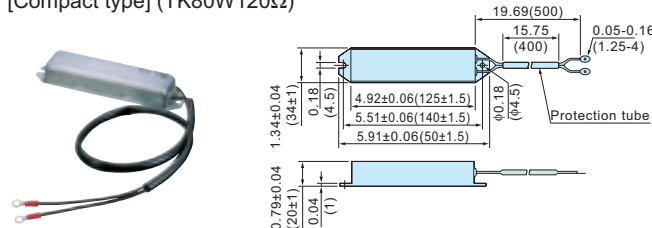
Standard type	Voltage		Fig	Dimensions [Unit: inch (mm)]				Mass [lbs.(kg)]	
	230V series	460V series		W	W1	H	H1		D
DB0.75-2	—	DB0.75-4	A	2.52(64)	—	12.20(310)	11.61(295)	2.64(67)	2.9(1.3)
DB2.2-2	—	—	A	2.99(76)	—	13.58(345)	13.07(332)	3.70(94)	4.4(2.0)
—	DB2.2-4	—	A	2.52(64)	—	18.50(470)	17.91(455)	2.64(67)	4.4(2.0)
DB3.7-2	—	—	A	2.99(76)	—	13.58(345)	13.07(332)	3.70(94)	4.4(2.0)
—	DB3.7-4	—	A	2.52(64)	—	18.50(470)	17.91(455)	2.64(67)	3.7(1.7)
DB5.5-2	—	—	B	3.54(90)	3.54(90)	17.72(450)	16.93(430)	2.66(67.5)	9.9(4.5)
—	DB5.5-4	—	B	2.91(74)	2.91(74)	18.50(470)	17.91(455)	2.64(67)	9.9(4.5)
DB7.5-2	—	—	B	3.54(90)	3.54(90)	15.35(390)	14.57(370)	3.54(90)	11(5.0)
—	DB7.5-4	—	B	2.91(74)	2.91(74)	20.47(520)	19.49(495)	2.64(67)	11(5.0)
DB11-2	—	—	C	5.59(142)	2.91(74)	16.93(430)	16.34(415)	6.30(160)	15(6.9)
—	DB11-4	—	C	5.59(142)	2.91(74)	16.93(430)	16.34(415)	6.30(160)	15(6.9)
DB15-2	—	—	C	5.59(142)	2.91(74)	16.93(430)	16.34(415)	6.30(160)	15(6.9)
—	DB15-4	—	C	5.59(142)	2.91(74)	16.93(430)	16.34(415)	6.30(160)	15(6.9)
10%ED type	DB0.75-2C	DB0.75-4C	D	1.69(43)	—	8.70(221)	8.46(215)	1.20(30.5)	1.1(0.5)
—	DB2.2-2C	DB2.2-4C	E	2.64(67)	—	7.40(188)	6.77(172)	2.17(55)	1.8(0.8)
—	DB3.7-2C	DB3.7-4C	E	2.64(67)	—	12.91(328)	12.28(312)	2.17(55)	3.5(1.6)
—	DB5.5-2C	DB5.5-4C	E	—	—	14.88(378)	14.25(362)	3.07(78)	6.4(2.9)
—	DB7.5-2C	DB7.5-4C	E	—	—	16.46(418)	15.83(402)	3.07(78)	7.3(3.3)
—	DB11-2C	DB11-4C	F	3.15(80)	1.97(50)	18.11(460)	17.32(440)	5.51(140)	9.5(4.3)
—	DB15-2C	DB15-4C	F	3.15(80)	1.97(50)	22.83(580)	17.32(440)	5.51(140)	12(5.6)



Braking resistor type	Power supply voltage	Inverter type	Type	Qty.	Resistance [Ω]	Max braking torque [%]		Continuous braking		Repetitive braking										
						50 [Hz]	60 [Hz]	(100% torque conversion value)		[Each cycle is less than 100[s]]										
						[lb-in (N·m)]	[lb-in (N·m)]	Discharging capacity [HPs]	Braking time [s]	Average allowable loss [HP]	Duty cycle [%ED]									
Standard type	Three-phase 230V	FRNF50E1□-2U	DB0.75-2	1	100	35.6(4.02)	29.4(3.32)	9	45	0.06(0.044)	22									
												FRN001E1□-2U	1	40	133(15.0)	110(12.4)	34	30	0.10(0.075)	10
		FRN005E1□-2U	1	80	328(37.1)	270(30.5)	37	20	0.12(0.093)	5										
											FRN007E1□-2U	1	15	481(54.3)	358(40.5)	55	20	0.19(0.138)	5	
																				FRN010E1□-2U
		FRN015E1□-2U	1	8.6	956(108)	792(89.5)	55	10	0.37(0.275)	5										
											FRN020E1□-2U	1	150	1301(147)	1080(122)	75	5	0.50(0.375)	5	
																				FRNF50E1□-4U
	FRN001E1□-4U	1	40	133(15.0)	110(12.4)	34	30	0.10(0.075)	10											
										FRN003E1□-4U	1	33	195(22.0)	161(18.2)	33	30	0.10(0.077)	7		
																			FRN005E1□-4U	1
	FRN007E1□-4U	1	15	481(54.3)	398(45.0)	55	20	1.53(1.138)	5											
										FRN010E1□-4U	1	10	651(73.6)	545(61.6)	38	10	0.25(0.188)	5		
																			FRN015E1□-4U	1
	FRN020E1□-4U	1	150	1301(147)	1080(122)	75	5	0.50(0.375)	5											
										Single-phase 230V	FRNF50E1□-7U	DB0.75-2	1	100	35.6(4.02)	29.4(3.32)	9	45		
																			FRN001E1□-7U	1
FRN003E1□-7U	1	33	195(22.0)	161(18.2)	33	30	0.10(0.077)	7												
									FRNF50E1□-2U		DB0.75-2C	1	100	35.6(4.02)	29.4(3.32)	50	250	0.1(0.075)		
																			FRN001E1□-2U	1
FRN003E1□-2U	1	33	195(22.0)	161(18.2)	50	10	0.50(0.375)	10												
									FRN005E1□-2U		1	80	328(37.1)	270(30.5)	140	75	0.25(0.185)	10		
																			FRN007E1□-2U	1
FRN010E1□-2U	1	10	659(74.4)	545(61.6)	37	10	0.50(0.375)	10												
									FRN015E1□-2U	1	40	956(108)	792(89.5)	55	10	0.74(0.55)	10			
																		FRN020E1□-2U	1	150
Three-phase 460V	FRNF50E1□-4U	DB0.75-4C	1	200	35.6(4.02)	29.4(3.32)	50	250												
									FRN001E1□-4U	1	40	133(15.0)	110(12.4)	55	73	0.15(0.110)	14			
																		FRN003E1□-4U	1	33
	FRN005E1□-4U	1	80	328(37.1)	270(30.5)	140	75	0.25(0.185)												
									FRN007E1□-4U	1	15	481(54.3)	398(45.0)	55	20	0.37(0.275)	10			
																		FRN010E1□-4U	1	10
	FRN015E1□-4U	1	40	956(108)	792(89.5)	55	10	0.74(0.55)												
									FRN020E1□-4U	1	150	1301(147)	1080(122)	75	10	1.01(0.75)	10			
																		FRNF50E1□-7U	DB0.75-2C	1
FRN001E1□-7U	1	40	133(15.0)	110(12.4)	55	73	0.15(0.110)	14												
									FRN003E1□-7U	1	33	195(22.0)	161(18.2)	55	10	0.50(0.375)	10			

□: S or E S: standard E: EMC filter built-in type

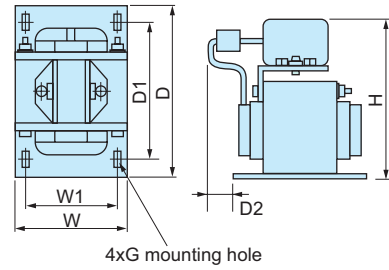
[Compact type] (TK80W120Ω)



Power source voltage	Type	TK80W120Ω				
		Resistance	Capacity [HP]	Resistance [Ω]		
Three-phase 230V	Resistance	120	0.11			
	Applicable inverter	FRNF50E1□-2U	FRN001E1□-2U	FRN003E1□-2U	FRN005E1□-2U	
	Applied motor output [HP]	1/2	1	2	3	5
	Average braking torque [%]	150	130	100	65	45
	Allowable limits	Allowable duty cycle [%]	15	5	5	5
	Continuous allowable braking time	15s	15s	10s	10s	10s

NOTE: This resistor is not applicable to three-phase 460V series and single-phase 230V series.

DC REACTOR

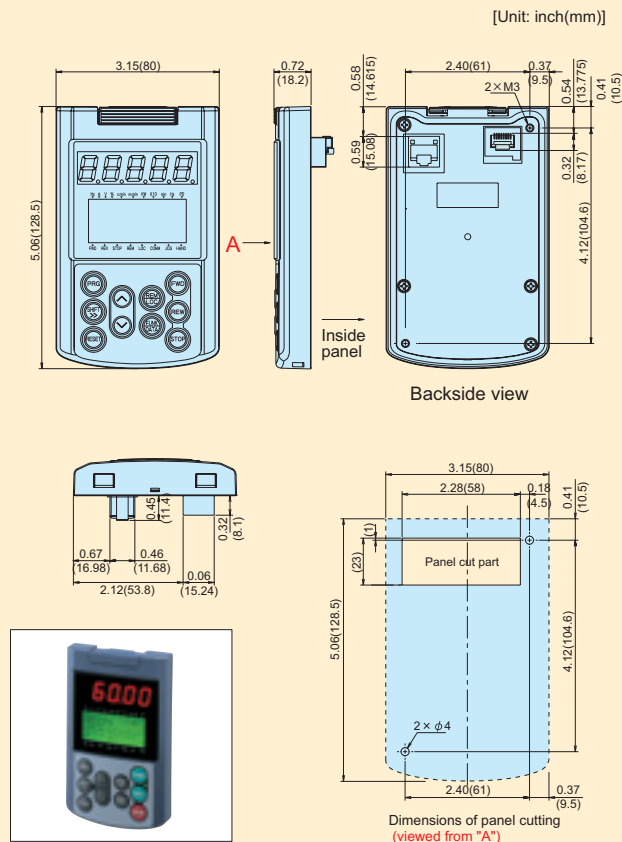


Power supply voltage	Applicable motor rating [HP]	Inverter type	REACTOR type	Dimensions Unit: inch (mm)							Mass [lbs (kg)]	
				W	W1	D	D1	D2	H	Mounting hole		
Three-phase 230V	1/8	FRNF12E1□-2U	DCR2-0.2	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.20(5)	3.70(94)	0.20x0.31(5.2x8)	M4	1.8(0.8)
	1/4	FRNF25E1□-2U										
	1/2	FRNF50E1□-2U	DCR2-0.4	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.59(15)	3.70(94)	0.20x0.31(5.2x8)	M4	2.2(1.0)
	1	FRN001E1□-2U	DCR2-0.75	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.79(20)	3.70(94)	0.20x0.31(5.2x8)	M4	3.1(1.4)
	2	FRN002E1□-2U	DCR2-1.5	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.79(20)	3.70(94)	0.20x0.31(5.2x8)	M4	3.5(1.6)
	3	FRN003E1S-2U	DCR2-2.2	3.39(86)	2.80(71)	3.94(100)	3.15(80)	0.39(10)	4.33(110)	0.24x0.43(6x11)	M4	4.0(1.8)
	5	FRN005E1□-2U	DCR2-3.7	3.39(86)	2.80(71)	3.94(100)	3.15(80)	0.79(20)	4.33(110)	0.24x0.43(6x11)	M4	5.7(2.6)
	7.5	FRN007E1□-2U	DCR2-5.5	4.37(111)	3.74(95)	3.94(100)	3.15(80)	0.79(20)	5.12(130)	0.24x0.43(6x11)	M5	7.9(3.6)
	10	FRN010E1□-2U	DCR2-7.5	4.37(111)	3.74(95)	3.94(100)	3.15(80)	0.91(23)	5.12(130)	0.28x0.43(7x11)	M5	8.4(3.8)
	15	FRN015E1□-2U	DCR2-11	4.37(111)	3.74(95)	3.94(100)	3.15(80)	0.94(24)	5.39(137)	0.28x0.43(7x11)	M5	9.5(4.3)
20	FRN020E1□-2U	DCR2-15	5.75(146)	4.88(124)	4.72(120)	3.78(96)	0.59(15)	7.09(180)	0.28x0.43(7x11)	M6	13(5.9)	
Three-phase 460V	1/2	FRNF50E1□-4U	DCR4-0.4	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.59(15)	3.70(94)	0.20x0.31(5.2x8)	M4	2.2(1.0)
	1	FRN001E1□-4U	DCR4-0.75	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.79(20)	3.70(94)	0.20x0.31(5.2x8)	M4	3.1(1.4)
	2	FRN002E1□-4U	DCR4-1.5	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.79(20)	3.70(94)	0.20x0.31(5.2x8)	M4	3.5(1.6)
	3	FRN003E1□-4U	DCR4-2.2	2.60(66)	2.80(71)	3.94(100)	3.15(80)	0.59(15)	4.33(110)	0.24x0.35(6x9)	M4	4.4(2.0)
	5	FRN005E1□-4U	DCR4-3.7	3.39(86)	2.80(71)	3.94(100)	3.15(80)	0.79(20)	4.33(110)	0.24x0.35(6x9)	M4	5.7(2.6)
	7.5	FRN007E1□-4U	DCR4-5.5	3.39(86)	2.80(71)	3.94(100)	3.15(80)	0.79(20)	4.33(110)	0.24x0.35(6x9)	M4	5.7(2.6)
	10	FRN010E1□-4U	DCR4-7.5	4.37(111)	3.74(95)	3.94(100)	3.15(80)	0.94(24)	5.12(130)	0.28x0.43(7x11)	M5	9.3(4.2)
	15	FRN015E1□-4U	DCR4-11	4.37(111)	3.74(95)	3.94(100)	3.15(80)	0.94(24)	5.12(130)	0.28x0.43(7x11)	M5	9.5(4.3)
Single-phase 230V	1/8	FRNF12E1□-7U	DCR2-0.2	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.20(5)	3.70(94)	0.20x0.31(5.2x8)	M4	1.8(0.8)
	1/4	FRNF25E1□-7U	DCR2-0.4	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.59(15)	3.70(94)	0.20x0.31(5.2x8)	M4	2.2(1.0)
	1/2	FRNF50E1□-7U	DCR2-0.75	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.79(20)	3.70(94)	0.20x0.31(5.2x8)	M4	3.1(1.4)
	1	FRN001E1□-7U	DCR2-1.5	2.60(66)	2.20(56)	3.54(90)	2.83(72)	0.79(20)	3.70(94)	0.20x0.31(5.2x8)	M4	3.5(1.6)
	2	FRN002E1□-7U	DCR2-2.2	3.39(86)	2.80(71)	3.94(100)	3.15(80)	0.39(10)	4.33(110)	0.24x0.43(6x11)	M4	4.0(1.8)
	3	FRN003E1□-7U	DCR2-3.7	3.39(86)	2.80(71)	3.94(100)	3.15(80)	0.79(20)	4.33(110)	0.24x0.43(6x11)	M4	5.7(2.6)

The code in □ represents followings; S: standard model, E: EMC filter built-in type

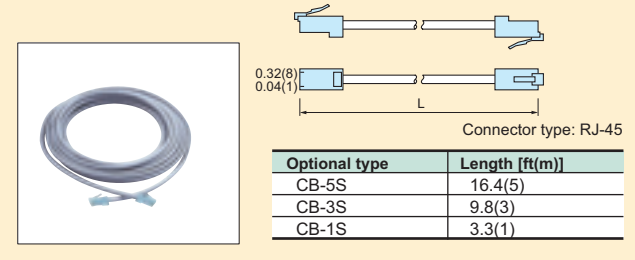
Multi-function keypad (TP-G1)

Connection with FRENIC-Multi using an extension cable for remote operation (optional) enables remote operation, function code data setting, monitoring, etc. from the keypad keys and panel. The keypad is equipped with an LCD panel (with backlight) and the copy function (for three inverter data).



Extension cable for remote operation(CB-□S)

This is used to connect the inverter and the remote keypad.



Options

Interface card

RS-485 communication card (OPC-F1-RS)

Built-in type

Connection with a host (master) device such as PC or PLC allows you to control FRENIC-Multi as a subordinate (slave) device. (The card is added to the RS-485 communication devices for FRENIC-Multi.)

NOTE: This option card cannot be connected with the keypad or a support loader.

- Number of connectable devices: 1 host device and 31 inverters
- Number of ports: 2 ports
- Electric specifications: EIA RS-485
- Synchronization method: Start/stop
- Communication method: Half-duplex
- Transmission speed (bps): 2400, 4800, 9600, 19200 and 38400
- Maximum communication distance: 1600ft(500m)
- Terminating resistor: Built-in

PG interface card (OPC-E1-PG) for 5V

Built-in type

When this card is built in the inverter, positioning accuracy will improve, resulting in reduced positioning time and improved measuring accuracy by the measuring instrument.

PG interface card (OPC-E1-PG3) for 12V

Built-in type

Incorporating the interface card in the inverter permits accurate speed control and position control. The interface card can be used simultaneously with the communication bus for FRENIC-Multi series, optional DeviceNet card (OPC-E1-DEV), CC-Link card (OPC-E1-CCL), and PROFIBUS-DP card (OPC-E1-PDP).

DeviceNet card (OPC-E1-DEV)

Front installation type

Connection with the DeviceNet master unit permits application to the system that requires operation commands and frequency settings.

DIO card (OPC-E1-DIO)

Front installation type

This card allows frequency setting or status monitoring by exchanging digital signal data with the host controller.

SY card (synchronized operation) NOTE2)

Built-in type

Using this card allows synchronized operation of the two motors having a pulse generator (PG).

PROFIBUS-DP card (OPC-E1-PDP)

Front installation type

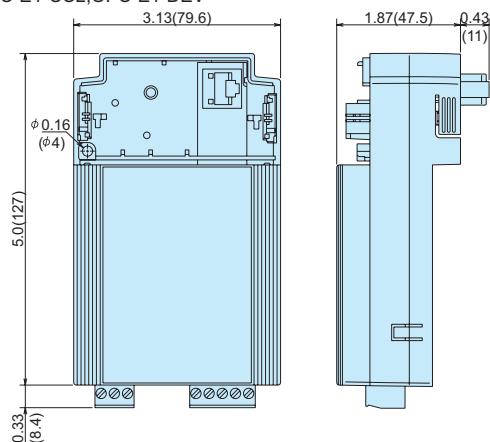
Connection with the PROFIBUS-DP card permits application to the system that requires operation commands and frequency settings.

Note1) An external power supply of 24V is needed to use a separately sold option card.

Note2) The inverter that can be used with the SY card includes special specifications. When ordering the SY card, please order together with the inverter in a set.

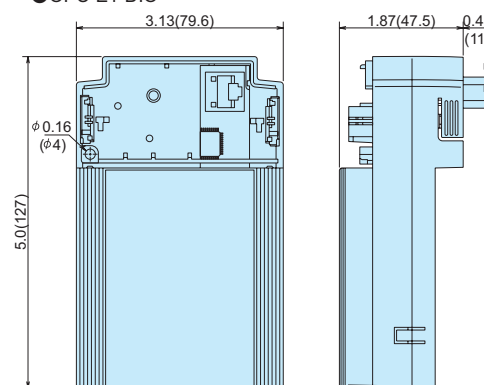
Front installation type External dimensions

- OPC-E1-CCL, OPC-E1-DEV



- OPC-E1-DIO

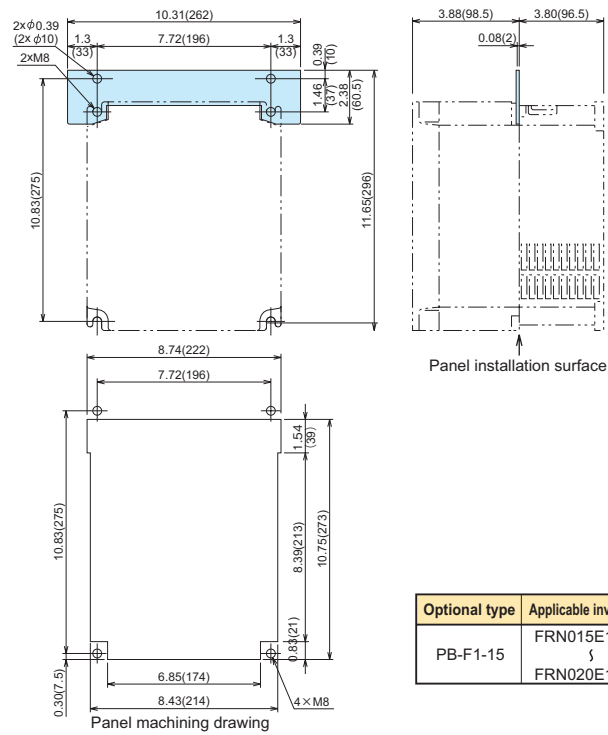
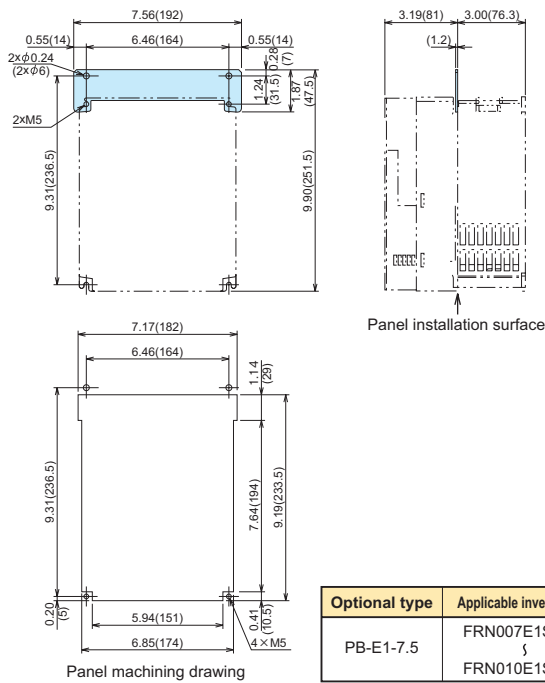
[Unit: inch(mm)]



External cooling attachment

External cooling attachment (PB-E1-7.5/PB-F1-15)

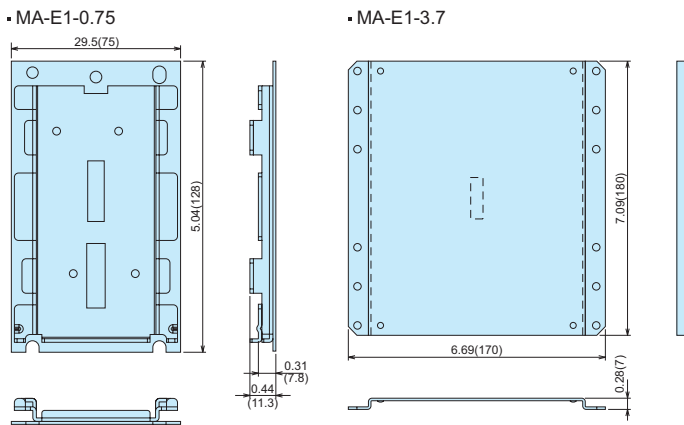
This attachment allows installation of the inverter heat sink outside the panel. With this attachment, it is possible to improve the cooling effect and to make the panel more compact.



Compatible attachment

Compatible attachment (MA-E1-□□)

This attachment allows replacing our previous model with the new one without machining.



Optional type	Applicable inverter type	Previous inverter type
MA-E1-0.75	FRNF12E1S-2U	FVR0.1E11S-2
	FRNF25E1S-2U	FVR0.2E11S-2
	FRNF50E1S-2U	FVR0.4E11S-2
	FRN001E1S-2U	FVR0.75E11S-2
	FRNF12E1S-7U	FVR0.1E11S-7
	FRNF25E1S-7U	FVR0.2E11S-7
MA-E1-3.7	FRNF50E1S-7U	FVR0.4E11S-7
	FRN005E1S-2U	FVR3.7E11S-2
	FRN005E1S-4U	FVR3.7E11S-4
	FRN003E1S-7U	FVR2.2E11S-7

*The table below shows the previous and new inverters with are compatible and do not need attachment for replacement.

Applicable inverter type	Previous inverter type
FRN002E1S-2U	FVR1.5E11S-2
FRN003E1S-2U	FVR2.2E11S-2
FRNF50E1S-4U	FVR0.4E11S-4
FRN001E1S-4U	FVR0.75E11S-4
FRN002E1S-4U	FVR1.5E11S-4
FRN003E1S-4U	FVR2.2E11S-4
FRN002E1S-7U	FVR1.5E11S-7
FRN003E1S-7U	FVR2.2E11S-7
FRN007E1S-2U	FVR5.5E11S-2
FRN007E1S-4U	FVR5.5E11S-4
FRN010E1S-2U	FVR7.5E11S-2
FRN010E1S-4U	FVR7.5E11S-4

To all our customers who purchase Fuji Electric products included in this catalog:

Please take the following items into consideration when placing your order.

When requesting an estimate and placing your orders for the products included in these materials, please be aware that any items such as specifications which are not specifically mentioned in the contract, catalog, specifications or other materials will be as mentioned below.

In addition, the products included in these materials are limited in the use they are put to and the place where they can be used, etc., and may require periodic inspection. Please confirm these points with your sales representative or directly with this company.

Furthermore, regarding purchased products and delivered products, we request that you take adequate consideration of the necessity of rapid receiving inspections and of product management and maintenance even before receiving your products.

1. Free of Charge Warranty Period and Warranty Range

1-1 Free of charge warranty period

- (1) The product warranty period is " Three years from shipment"
- (2) However, in cases where the use environment, conditions of use, use frequency and times used, etc., have an effect on product life, this warranty period may not apply.
- (3) Furthermore, the warranty period for parts restored by Fuji Electric's Service Department is "6 months from the date that repairs are completed."

1-2 Warranty range

- (1) In the event that breakdown occurs during the product's warranty period which is the responsibility of Fuji Electric, Fuji Electric will replace or repair the part of the product that has broken down free of charge at the place where the product was purchased or where it was delivered. However, if the following cases are applicable, the terms of this warranty may not apply.
 - 1) The breakdown was caused by inappropriate conditions, environment, handling or use methods, etc. which are not specified in the catalog, operation manual, specifications or other relevant documents.
 - 2) The breakdown was caused by the product other than the purchased or delivered Fuji's product.
 - 3) The breakdown was caused by the product other than Fuji's product, such as the customer's equipment or software design, etc.
 - 4) Concerning the Fuji's programmable products, the breakdown was caused by a program other than a program supplied by this company, or the results from using such a program.
 - 5) The breakdown was caused by modifications or repairs affected by a party other than Fuji Electric.
 - 6) The breakdown was caused by improper maintenance or replacement using consumables, etc. specified in the operation manual or catalog, etc.
 - 7) The breakdown was caused by a chemical or technical problem that was not foreseen when making practical application of the product at the time it was purchased or delivered.
 - 8) The product was not used in the manner the product was originally intended to be used.
 - 9) The breakdown was caused by a reason which is not this company's responsibility, such as lightning or other disaster.
- (2) Furthermore, the warranty specified herein shall be limited to the purchased or delivered product alone.
- (3) The upper limit for the warranty range shall be as specified in item (1) above and any damages (damage to or loss of machinery or equipment, or lost profits from the same, etc.) consequent to or resulting from breakdown of the purchased or delivered product shall be excluded from coverage by this warranty.

1-3. Trouble diagnosis

As a rule, the customer is requested to carry out a preliminary trouble diagnosis. However, at the customer's request, this company or its service network can perform the trouble diagnosis on a chargeable basis. In this case, the customer is asked to assume the burden for charges levied in accordance with this company's fee schedule.

2. Exclusion of Liability for Loss of Opportunity, etc.

Regardless of whether a breakdown occurs during or after the free of charge warranty period, this company shall not be liable for any loss of opportunity, loss of profits, or damages arising from special circumstances, secondary damages, accident compensation to another company, or damages to products other than this company's products, whether foreseen or not by this company, which this company is not be responsible for causing.

3. Repair Period after Production Stop, Spare Parts Supply Period (Holding Period)

Concerning models (products) which have gone out of production, this company will perform repairs for a period of 7 years after production stop, counting from the month and year when the production stop occurs. In addition, we will continue to supply the spare parts required for repairs for a period of 7 years, counting from the month and year when the production stop occurs. However, if it is estimated that the life cycle of certain electronic and other parts is short and it will be difficult to procure or produce those parts, there may be cases where it is difficult to provide repairs or supply spare parts even within this 7-year period. For details, please confirm at our company's business office or our service office.

4. Transfer Rights

In the case of standard products which do not include settings or adjustments in an application program, the products shall be transported to and transferred to the customer and this company shall not be responsible for local adjustments or trial operation.

5. Service Contents

The cost of purchased and delivered products does not include the cost of dispatching engineers or service costs. Depending on the request, these can be discussed separately.

6. Applicable Scope of Service

Above contents shall be assumed to apply to transactions and use of the country where you purchased the products. Consult the local supplier or Fuji for the detail separately.