

# ***FRENIC-Mini C2***

## **General Specifications**

---



## 1. Standard Specifications

1) Three-phase 200V series (0.1 to 15kW / 1/8 to 20HP) ( $\Delta = A, U$  only)

Items		Specifications											
Type (FRN□□□C2S-2Δ、 Δ = A,U)		0001	0002	0004	0006	0010	0012	0020	0025	0033	0047	0060	
Nominal applied motor <sup>*1)</sup> [kW] (Δ=A)		0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	
Nominal applied motor <sup>*1)</sup> [HP] (Δ=U)		1/8	1/4	1/2	1	2	3	5	7.5	10	15	20	
Output ratings	Rated capacity <sup>*2)</sup> [kVA]	0.30	0.57	1.3	2.0	3.5	4.5	7.2	9.5	12	17	22	
	Rated voltage <sup>*3)</sup> [V]	Three-phase 200~240V (With AVR)											
	Rated current [A]	0.8 (0.7) *4)	1.5 (1.4) *4)	3.5 (2.5) *4)	5.5 (4.2) *4)	9.2 (7.0) *4)	12.0 (10.0) *4)	19.1 (16.5) *4)	25.0 (23.5) *10)	33.0 (31.0) *10)	47.0 (44.0) *10)	60.0 (57.0) *10)	
	Overload capability	150% of rated current for 1min 150% of rated current for 1min or 200% of rated current for 0.5s (If the rated current is in parenthesis)							150% of rated current for 1min or 200% of rated current for 0.5s				
	Rated frequency	50, 60Hz											
Input ratings	Main power supply		Three-phase 200~240V, 50/60Hz										
	Voltage/frequency variations		Voltage: +10 to -15% (Voltage unbalance: 2% or less <sup>*7)</sup> ), Frequency: +5 to -5%										
	Rated current <sup>*8)</sup> [A]	With DCR	0.57	0.93	1.6	3.0	5.7	8.3	14.0	21.1	28.8	42.2	57.6
		Without DCR	1.1	1.8	3.1	5.3	9.5	13.2	22.2	31.5	42.7	60.7	80.0
	Required power supply capacity <sup>*5)</sup> [kVA]		0.2	0.3	0.6	1.1	2.0	2.9	4.9	7.4	10	15	20
Braking	Braking torque <sup>*6)</sup> [%]		150		100		50	30		20			
	DC braking		Starting frequency <sup>*9)</sup> : 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100%										
	Transistor for braking resistor		-		Built-in								
Applicable safety standards		UL508C, EN 61800-5-1:2007											
Enclosure		IP20 (IEC 60529:1989) / UL open type (UL50)											
Cooling method		Natural cooling					Fan cooling						
Mass [kg] (Δ=A)		0.6	0.6	0.7	0.8	1.7	1.7	2.5	3.1	3.1	4.5	4.5	
Mass [lbs] (Δ=U)		1.3	1.3	1.5	1.8	3.7	3.7	5.5	6.8	6.8	9.8	9.8	

\*1) Fuji Electric's/US 4-pole standard motor.

\*2) Rated capacity is calculated by regarding the output rated voltage as 220V for three-phase 200V series.

\*3) Output voltage cannot exceed the power supply voltage.

\*4) The load shall be reduced so that the continuous operating current is the rated current in parenthesis or less if the carrier frequency is set to 3kHz or above or ambient temperature exceeds 40°C(104°F).

\*5) Obtained when a DC REACTOR is used.

\*6) Average braking torque when a motor of no load decelerates from 60Hz.(Varies with the efficiency of the motor).

\*7) Voltage unbalance =  $\frac{\text{Max. voltage [V]} - \text{Min. voltage [V]}}{\text{Three-phase average voltage [V]}} \times 67\%$  (IEC 61800-3:2004)

If this value is 2 to 3%, use an AC REACTOR.

\*8) The currents are calculated on the condition that the inverters are connected to power supply of 500kVA (In the case of inverter capacity is more than 50kVA, it is 10 times of the inverter capacity), %X=5%.

\*9) Effective function only in induction motor drive.

\*10) The load shall be reduced so that the continuous operating current is the rated current in parenthesis or less if the carrier frequency is set to 4kHz or above or ambient temperature exceeds 40°C(104°F).

## 2) Three-Phase 400V Series (0.4 to 15kW / 1/2 to 20HP)

Items		Specifications									
Type (FRN□□□C2S-4Δ、 Δ = A,C,E,U)		0002	0004	0005	0007	0011	0013	0018	0024	0030	
Nominal applied motor <sup>*1)</sup> [kW] (Δ=A,C,E)		0.4	0.75	1.5	2.2	3.7(Δ=A,C)/ 4.0(Δ=E)	5.5	7.5	11	15	
Nominal applied motor <sup>*1)</sup> [HP] (Δ=U)		1/2	1	2	3	5	7.5	10	15	20	
Output ratings	Rated capacity <sup>*2)</sup> [kVA]	1.3	2.3	3.2	4.8	8.0	9.9	13	18	22	
	Rated voltage <sup>*3)</sup> [V]	Three-phase 380~480V (With AVR)									
	Rated current [A]	1.8 (1.5) <sup>*4)</sup>	3.1 (2.5) <sup>*4)</sup>	4.3 (3.7) <sup>*4)</sup>	6.3 (5.5) <sup>*4)</sup>	10.5 (9.0) <sup>*4)</sup>	13.0	18.0	24.0	30.0	
	Overload capability	150% of rated current for 1min 150% of rated current for 1min or 200% of rated current for 0.5s (If the rated current is in parenthesis)					150% of rated current for 1min or 200% of rated current for 0.5s				
	Rated frequency	50, 60Hz									
Input ratings	Main power supply		Three-phase 380~480V, 50/60Hz								
	Voltage/frequency variations		Voltage: +10 to -15% (Voltage unbalance: 2% or less <sup>*7)</sup> ), Frequency: +5 to -5%								
	Rated current <sup>*8)</sup> [A]	With DCR	0.85	1.6	3.0	4.4	7.3	10.6	14.4	21.1	28.8
		Without DCR	1.7	3.1	5.9	8.2	13.0	17.3	23.2	33.0	43.8
	Required power supply capacity <sup>*5)</sup> [kVA]		0.6	1.1	2.0	2.9	4.9	7.4	10	15	20
Braking	Braking torque <sup>*6)</sup> [%]		100		50	30		20			
	DC braking		Starting frequency <sup>*9)</sup> : 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100%								
	Transistor for braking resistor		Built-in								
Applicable safety Standards		UL508C, EN 61800-5-1:2007									
Enclosure		IP20 (IEC 60529:1989) / UL open type (UL50)									
Cooling method		Natural cooling			Fan cooling						
Mass [kg] (Δ=A,C,E)		1.2	1.3	1.7	1.7	2.5	3.1	3.1	4.5	4.5	
Mass [lbs] (Δ=U)		2.6	2.9	3.7	3.7	5.5	6.8	6.8	9.8	9.8	

\*1) Fuji Electric's/US 4-pole standard motor.

\*2) Rated capacity is calculated by regarding the output rated voltage as 440V for three-phase 400V series.

\*3) Output voltage cannot exceed the power supply voltage.

\*4) The load shall be reduced so that the continuous operating current is the rated current in parenthesis or less if the carrier frequency is set to 3kHz or above or ambient temperature exceeds 40°C(104°F).

\*5) Obtained when a DC REACTOR is used.

\*6) Average braking torque when a motor of no load decelerates from 60Hz. (Varies with the efficiency of the motor).

\*7) Voltage unbalance =  $\frac{\text{Max. voltage [V]} - \text{Min. voltage [V]}}{\text{Three - phase average voltage [V]}} \times 67\%$  (IEC 61800-3:2004)

If this value is 2 to 3%, use an AC REACTOR.

\*8) The currents are calculated on the condition that the inverters are connected to power supply of 500kVA (In the case of inverter capacity is more than 50kVA, it is 10 times of the inverter capacity), %X=5%.

\*9) Effective function only in induction motor drive.

### 3) Single-Phase 200V Series (0.1 to 2.2kW / 1/8 to 3HP)

Items			Specifications					
Type (FRN□□□C2S-7Δ、 Δ = A,C,E,U)			0001	0002	0004 ②	0006	0010	0012
Nominal applied motor *1) [kW] (Δ=A,C,E)			0.1	0.2	0.4	0.75	1.5	2.2
Nominal applied motor *1) [HP] (Δ=U)			1/8	1/4	1/2	1	2	3
Output ratings	Rated capacity *2) [kVA]		0.30	0.57	1.3	2.0	3.5	4.5
	Rated voltage *3) [V]		Three-phase 200~240V (With AVR)					
	Rated current [A]*4)		0.8 (0.7)	1.5 (1.4)	3.5 (2.5)	5.5 (4.2)	9.2 (7.0)	12.0 (10.0)
	Overload capability		150% of rated current for 1min 150% of rated current for 1min or 200% of rated current for 0.5s (If the rated current is in parenthesis)					
	Rated frequency		50, 60Hz					
Input ratings	Main power supply		Single-phase 200~240V, 50/60Hz					
	Voltage/frequency variations		Voltage: +10 to -10%, Frequency: +5 to -5%					
	Rated current *7) [A]	With DCR	1.1	2.0	3.5	6.4	11.6	17.5
		Without DCR	1.8	3.3	5.4	9.7	16.4	24.0
	Required power supply capacity *5) [kVA]		0.3	0.4	0.7	1.3	2.4	3.5
Braking	Braking torque*6) [%]		150		100		50	30
	DC braking		Starting frequency *9) : 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100%					
	Transistor for braking resistor		-		Built-in			
Applicable safety standards			UL508C, EN 61800-5-1:2007					
Enclosure			IP20 (IEC 60529:1989) / UL open type (UL50)					
Cooling method			Natural cooling				Fan cooling	
Mass [kg] (Δ=A,C,E)			0.6	0.6	0.7	0.9	1.8	2.5
Mass [lbs] (Δ=U)			1.3	1.3	1.5	2.0	4.0	5.5

\*1) Fuji Electric's/US 4-pole standard motor.

\*2) Rated capacity is calculated by regarding the output rated voltage as 220V.

\*3) Output voltage cannot exceed the power supply voltage.

\*4) The load shall be reduced so that the continuous operating current is the rated current in parenthesis or less if the carrier frequency is set to 3kHz or above or ambient temperature exceeds 40°C(104°F).

\*5) Obtained when a DC REACTOR is used.

\*6) Average braking torque when a motor of no load decelerates from 60Hz. (Varies with the efficiency of the motor).

\*8) The currents are calculated on the condition that the inverters are connected to power supply of 500kVA (In the case of inverter capacity is more than 50kVA, it is 10 times of the inverter capacity), %X=5%.

\*9) Effective function only in induction motor drive.

#### 4) Single-Phase 100V Series (0.1 to 0.75kW / 1/8 to 1HP) ( $\Delta = U$ only)

Items			Specifications			
Type (FRN□□□C2S-6△、 △ = U)			0001	0002	0003	0005
Nominal applied motor *1) [HP]			1/8	1/4	1/2	1
Output ratings	Rated capacity *2) [kVA]		0.26	0.53	0.95	1.6
	Rated voltage *3) [V]		Three-phase 200~240V (With AVR)			
	Rated current [A]		0.7	1.4	2.5	4.2
	Overload capability		150% of rated current for 1min or 200% of rated current for 0.5s			
	Rated frequency		50, 60Hz			
Input ratings	Main power supply		Single-phase 100~120V, 50/60Hz			
	Voltage/frequency variations		Voltage: +10 to -10%, Frequency: +5 to -5%			
	Rated current *8) [A]	With DCR	2.2	3.8	6.4	12.0
		Without DCR	3.6	5.9	9.5	16.0
	Required power supply capacity *5) [kVA]		0.3	0.5	0.7	1.3
Braking	Braking torque*6) [%]		150		100	
	DC braking		Starting frequency *9) : 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100%			
	Transistor for braking resistor		-		Built-in	
Applicable safety standards			UL508C			
Enclosure			IP20 (IEC 60529:1989) / UL open type (UL50)			
Cooling method			Natural cooling			
Mass [kg]			0.7	0.7	0.8	1.3
Mass [lbs]			1.5	1.5	1.8	2.9

\*1) Fuji Electric's/US 4-pole standard motor.

\*2) Rated capacity is calculated by regarding the output rated voltage as 220V.

\*3) Output voltage cannot exceed the twice of power supply voltage.

\*5) Obtained when a DC REACTOR is used.

\*6) Average braking torque when a motor of no load decelerates from 60Hz. (Varies with the efficiency of the motor).

\*8) The currents are calculated on the condition that the inverters are connected to power supply of 50kVA, %X=5%.

\*9) Effective function only in induction motor drive.

#### Note

When driven by 100 VAC, the single-phase 100 V series of inverters limit their shaft output and maximum output torque as listed below. This is to prevent their output voltage from decreasing when load is applied.

	Shaft output (%)	Maximum torque (%)
w/o DC reactor (DCR)	90	150
w/ DC reactor (DCR)	85	120

## 2. Semi-Standard Specifications

### 1) EMC Filter Built-in Type in Three-Phase 400V Series (0.4 to 15kW / 1/2 to 20HP) ( $\Delta = C, E$ only)

Items		Specifications									
Type (FRN□□□C2E-4△、 △ = C,E)		0002	0004	0005	0007	0011	0013	0018	0024	0030	
Nominal applied motor <sup>*1)</sup> [kW]		0.4	0.75	1.5	2.2	3.7(△=C)/ 4.0(△=E)	5.5	7.5	11	15	
Nominal applied motor <sup>*1)</sup> [HP]		1/2	1	2	3	5	7.5	10	15	20	
Output ratings	Rated capacity <sup>*2)</sup> [kVA]	1.3	2.3	3.2	4.8	8.0	9.9	13	18	22	
	Rated voltage <sup>*3)</sup> [V]	Three-phase 380～480V (With AVR)									
	Rated current [A]	1.8 (1.5) *4)	3.1 (2.5) *4)	4.3 (3.7) *4)	6.3 (5.5) *4)	10.5 (9.0) *4)	13.0	18.0	24.0	30.0	
	Overload capability	150% of rated current for 1min 150% of rated current for 1min or 200% of rated current for 0.5s (If the rated current is in parenthesis)					150% of rated current for 1min or 200% of rated current for 0.5s				
	Rated frequency	50, 60Hz									
Input ratings	Main power supply	Three-phase 380～480V, 50/60Hz									
	Voltage/frequency variations		Voltage: +10 to -15% (Voltage unbalance: 2% or less <sup>*7)</sup> ), Frequency: +5 to -5%								
	Rated current <sup>*8)</sup> [A]	With DCR	0.85	1.6	3.0	4.4	7.3	10.6	14.4	21.1	28.8
		Without DCR	1.7	3.1	5.9	8.2	13.0	17.3	23.2	33.0	43.8
	Required power supply capacity <sup>*5)</sup> [kVA]		0.6	1.1	2.0	2.9	4.9	7.4	10	15	20
Braking	Braking torque <sup>*6)</sup> [%]	100		50	30		20				
	DC braking	Starting frequency <sup>*9)</sup> : 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100%									
	Transistor for braking resistor	Built-in									
Applicable safety Standards		UL508C, EN 61800-5-1:2007									
Applicable EMC standards (EN61800-3:2004 +A1:2012) (in progress)		Immunity : Second Environment (Industrial) Emission : Category C2					Immunity : Second Environment (Industrial) Emission : Category C3				
Enclosure		IP20 (IEC 60529:1989) / UL open type (UL50)									
Cooling method		Natural cooling			Fan cooling						
Mass [kg]		1.5	1.6	3.0	3.1	3.2	(T.B.D.)	(T.B.D.)	(T.B.D.)	(T.B.D.)	

\*1) Fuji Electric's/US 4-pole standard motor.

\*2) Rated capacity is calculated by regarding the output rated voltage as 440V for three-phase 400V series.

\*3) Output voltage cannot exceed the power supply voltage.

\*4) The load shall be reduced so that the continuous operating current is the rated current in parenthesis or less if the carrier frequency is set to 3kHz or above or ambient temperature exceeds 40°C(104°F).

\*5) Obtained when a DC REACTOR is used.

\*6) Average braking torque when a motor of no load decelerates from 60Hz. (Varies with the efficiency of the motor).

\*7) 
$$\text{Voltage unbalance} = \frac{\text{Max. voltage [V]} - \text{Min. voltage [V]}}{\text{Three-phase average voltage [V]}} \times 67\% \quad (\text{IEC61800-3:2004})$$

If this value is 2 to 3%, use an AC REACTOR.

\*8) The currents are calculated on the condition that the inverters are connected to power supply of 500kVA (In the case of inverter capacity is more than 50kVA, it is 10 times of the inverter capacity), %X=5%.

\*9) Effective function only in induction motor drive.

## 2) EMC Filter Built-in Type in Single-Phase 200V Series (0.1 to 2.2kW / 1/8 to 3HP) ( $\Delta$ = C, E only)

Items			Specifications					
Type (FRN□□□C2E-7△、 △ = C,E)			0001	0002	0004	0006	0010	0012
Nominal applied motor <sup>*1)</sup> [kW]			0.1	0.2	0.4	0.75	1.5	2.2
Nominal applied motor <sup>*1)</sup> [HP]			1/8	1/4	1/2	1	2	3
Output ratings	Rated capacity <sup>*2)</sup> [kVA]		0.30	0.57	1.3	2.0	3.5	4.5
	Rated voltage <sup>*3)</sup> [V]		Three-phase 200~240V (With AVR)					
	Rated current [A] <sup>*4)</sup>		0.8 (0.7)	1.5 (1.4)	3.5 (2.5)	5.5 (4.2)	9.2 (7.0)	12.0 (10.0)
	Overload capability		150% of rated current for 1min 150% of rated current for 1min or 200% of rated current for 0.5s (If the rated current is in parenthesis)					
	Rated frequency		50, 60Hz					
Input ratings	Main power supply		Single-phase 200~240V, 50/60Hz					
	Voltage/frequency variations		Voltage: +10 to -10%, Frequency: +5 to -5%					
	Rated current <sup>*7)</sup> [A]	With DCR	1.1	2.0	3.5	6.4	11.6	17.5
		Without DCR	1.8	3.3	5.4	9.7	16.4	24.0
	Required power supply capacity <sup>*5)</sup> [kVA]		0.3	0.4	0.7	1.3	2.4	3.5
Braking	Braking torque <sup>*6)</sup> [%]		150		100		50	30
	DC braking		Starting frequency <sup>*9)</sup> : 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100%					
	Transistor for braking resistor		-		Built-in			
Applicable safety standards			UL508C, EN 61800-5-1:2007					
Applicable EMC standards			EN61800-3:2004 +A1:2012 Immunity : Second Environment (Industrial) Emission : Category C2					
Enclosure			IP20 (IEC 60529:1989) / UL open type (UL50)					
Cooling method			Natural cooling				Fan cooling	
Mass [kg]			0.7	0.7	0.8	1.2	3.0	3.0

\*1) Fuji Electric's/US 4-pole standard motor.

\*2) Rated capacity is calculated by regarding the output rated voltage as 220V.

\*3) Output voltage cannot exceed the power supply voltage.

\*4) The load shall be reduced so that the continuous operating current is the rated current in parenthesis or less if the carrier frequency is set to 3kHz or above or ambient temperature exceeds 40°C(104°F).

\*5) Obtained when a DC REACTOR is used.



\*6) Average braking torque when a motor of no load decelerates from 60Hz. (Varies with the efficiency of the motor).

\*8) The currents are calculated on the condition that the inverters are connected to power supply of 500kVA (In the case of inverter capacity is more than 50kVA, it is 10 times of the inverter capacity), %X=5%.

\*9) Effective function only in induction motor drive.



### 3. Common Specifications

Items		Specifications	Remark
Output frequency	adjustment	Max. output frequency	25 to 400Hz adjustable
		Base frequency	25 to 400Hz adjustable
		Starting frequency	0.1 to 60.0Hz
		Carrier frequency	<ul style="list-style-type: none"> <li>0.75 to 16kHz adjustable</li> <li>Note) (*1) In the case of the carrier frequency is 6kHz or above, the carrier frequency may drop automatically according to the ambient temperature or output current to protect the inverter. (It has a stop function of automatic reduction.)</li> <li>Carrier frequency modulation: Motor noise may reduced by modulating the carrier frequency.</li> </ul>
	Accuracy		Analog setting: $\pm 2\%$ of max freq. (at 25°C), temperature drift: $\pm 0.2\%$ of max freq. (at 25 $\pm 10^\circ\text{C}$ ) Keypad setting: $\pm 0.01\%$ of max freq. (at 25°C), temperature drift: $\pm 0.01\%$ of max freq. (at 25 $\pm 10^\circ\text{C}$ )
	Setting resolution		<ul style="list-style-type: none"> <li>Analog setting : 1/1000 of maximum frequency</li> <li>Keypad setting : 0.01Hz(99.99Hz or below), 0.1Hz(100.0 to 400.0Hz)</li> <li>Link setting : 1/20000 of maximum frequency or 0.01Hz(Fixed)</li> </ul>
Control	Control method		Induction Motor <ul style="list-style-type: none"> <li>V/f control, Slip compensation, Auto-torque boost, Dynamic torque vector control, Automatic energy saving</li> </ul> Synchronous Motor (*2) <ul style="list-style-type: none"> <li>Synchronous motor drive(without speed/position sensor)</li> </ul> Speed control range : 10% or higher of base frequency
	Voltage/freq. characteristic	200V series	Possible to set output voltage at base frequency and at maximum respectively from 80 to 240V. AVR control (*1) can be turned ON or OFF. 2 points (Arbitrary voltage and frequency (*1) can be set.) Arbitrary voltage (0 to 240V), Arbitrary frequency(0 to 400Hz)
		400V series	Possible to set output voltage at base frequency and at maximum respectively from 160 to 500V. AVR control (*1) can be turned ON or OFF. 2 points (Arbitrary voltage and frequency (*1) can be set.) Arbitrary voltage (0 to 500V), Arbitrary frequency(0 to 400Hz)
	Torque boost (*1)		<ul style="list-style-type: none"> <li>Auto-torque boost(For constant torque load)</li> <li>Manual torque boost: Torque boost value can be set 0.0 to 20.0 percent.</li> <li>Selectable by load characteristics (Constant torque load, Variable torque load)</li> </ul>
	Starting torque (*1)		150% or more at setting frequency 1.0Hz with Slip compensation and auto-torque boost.
	Start/Stop	Keypad operation : Start/Stop with RUN, STOP keys (Standard keypad) Start/Stop with RUN, STOP keys (Remote keypad: Option)	
		External signals : Forward (Reverse) rotation, stop command (capable of 3-wire operation) (Digital input) coast-to-stop command, external alarm, alarm reset, etc.	
		Link operation : RS-485communications(Equipped as standard)	
		Operation command switch: Link switch	
	Frequency setting		Key operation: Can be set with   keys (Possible to lock the setting data) Also can be set with function code (only via communication) and be copied. (*2) Built-in potentiometer Analog input : DC0 to +10V/0 to 100%(Terminal 12) : DC4 to 20mA/0 to 100%, DC0 to 20mA/0 to 100% (Terminal C1) Multi-frequency: 16 frequencies at maximum are selectable. UP/DOWN operation: The frequency rises or lowers while the digital input signal is turned on. Link operation: Can be set with RS-485 communications. Frequency setting change: Two types of frequency settings can be switched with an external signal (Digital input). Frequency setups through communications or Multi-frequency are also possible. Auxiliary frequency setting: Built-in potentiometer, Inputs at terminal 12, C1 can be added to the main setting as auxiliary frequency settings.

\*1 : Effective function only in induction motor drive.

\*2 : These functions can be supported by the inverters having a ROM version 0500 or later.



Items		Specifications	Remark
Control	Frequency setting	Inverse action: The digital input signal and function code setting sets or switches between the normal and inverse actions DC0 to +10V/0 to 100% can be switched to DC+10 to 0V/0 to 100% DC4 to +20mA "DC0 to +20mA" /0 to 100% can be switched to DC+20 to 0mA "DC+20 to 0mA" /0 to 100%	
	Acceleration / Deceleration time	<ul style="list-style-type: none"> <li>0.00 to 3600s</li> <li>Two kinds of acceleration and deceleration time can be set and selected individually (A changeover is possible during operation)</li> <li>Acceleration and deceleration pattern can be selected from 4 types: Linear, S-curve (weak), S-curve (strong), Curvilinear (constant output max. capacity)</li> <li>Shutoff of the operation command coasts the motor to decelerate and stop.</li> <li>ACC./DEC time for Jogging operation can be set. (0.00 to 3600s)</li> </ul>	S-curve (free area setting is hidden function)
	Frequency limiter (Upper / lower)	Upper and lower limiters can be set. ( setting range: 0 to 400Hz)	
	Bias frequency	Bias of set frequency and PID command can be set in the range between 0 and $\pm 100\%$ .	
	Gain for frequency setting	The analog input gain can be set in the range from 0 to 200%.	
	Jump frequency setting	3 operation points and their common jump hysteresis width (0 to 30Hz) can be set. (ROM version 0499 or earlier) 6 operation points and their common jump hysteresis width (0 to 30Hz) can be set. (ROM version 0500 or later)	
	Timer operation	Operate and stop by the time set with keypad. (1 cycle operation)	
	Jogging operation (*1)	Jogging operation is possible by RUN key (Standard keypad) or digital input. (ACC./DEC. time for Jogging operation can be set. (ACC. and DEC. time is common.)	
	Restart after momentary power failure (*1)	<ul style="list-style-type: none"> <li>Trip at power failure: The inverter trips immediately after power failure.</li> <li>Trip at power recovery: Coast-to-stop at power failure and trip at power recovery</li> <li>Deceleration stop: Deceleration stop at power failure, and trip after stoppage (*2)</li> <li>Start at the frequency selected before momentary stop: Coast-to-stop at power failure and start after power recovery at the frequency selected before momentary stop.</li> <li>Start at starting frequency: Coast-to-stop at power failure and start at the starting frequency after power recovery.</li> </ul>	
	Current limit (*1) (Hardware current limiting)	Hardware current limiting is used avoiding overcurrent tripping of the inverter, when impact load change or momentary power failure that can be responded software current limiting. (Hardware current limiting can be inactive.)	
	Slip compensation (*1)	Compensate the lowering the motor speed and get the stabilized operation.	
	Current limiter	Control output current so that output current is preset limiting value or less.	
	PID control	PID control for process control is possible. PID command: Keypad, Analog input (Terminal 12,C1), RS-485 communications Feed back value: Analog input (Terminal 12,C1) Accessory functions Stop for Slow flowrate function, Normal operation/inverse operation Integration reset/hold	
	Automatic Deceleration	<ul style="list-style-type: none"> <li>If the calculated torque exceeds automatic deceleration level, the inverter avoids overvoltage trip by automatically controlling the frequency. (*1)</li> <li>If the DC link bus voltage exceeds the overvoltage limitation level during deceleration, the inverter automatically prolongs the deceleration time to three times to avoid overvoltage trip.</li> </ul>	
	Deceleration Characteristics	Make the motor loss increase during deceleration so as to reduce the regenerative energy from motor and avoid Overvoltage trip.	
	Auto-energy saving operation (*1)	Control the output voltage so as to minimize the sum of motor loss and inverter loss at constant speed.	
	Active drive	The output frequency is automatically reduced to suppress the overload protection trip of the inverter caused by an increase in the IGBT junction temperature or the ambient temperature, motor load or the like.	
	Off-line tuning (*1)	The motor parameters are automatically tuned. "r1, X $\sigma$ , no-load current" (ROM version 0499 or earlier) The motor parameters are automatically tuned. "r1, X $\sigma$ , no-load current, rated slip frequency" (ROM version 0500 or later)	
	Cooling fan ON/OFF control	Detects inverter internal temperature and stops cooling fan when the temperature is low.	
	Second motor parameters	<ul style="list-style-type: none"> <li>One inverter can drive the another motor changing from a motor. Only induction motor can be set as second motor. The function data set for second motor are base frequency, rated current, torque boost, Electronic overload protection for motor, slip compensation, etc...</li> <li>Second motor parameters can be preset in the inverter. Auto-tuning is possible.</li> </ul>	
	Limiting the direction of the motor rotation	Reverse rotation inhibited,/Forward rotation inhibited selectable	

\*1: Effective function only in induction motor drive.

\*2: These functions can be supported by the inverters having a ROM version 0500 or later.

Items		Specifications	Remark
Indication	Running /stopping	<ul style="list-style-type: none"> <li>Speed monitor, output current [A], output voltage [V], input power [kW], PID reference value, PID feedback value, PID output, Time [s] for timer operation, Integrating electric energy</li> <li>Select the speed monitor to be displayed among the following. Output frequency[Hz](Before slip compensation), Output frequency2 [Hz](After slip compensation), Set frequency, , motor speed [min<sup>-1</sup>], Line speed [m/min], Constant Feeding Rate Time [min]</li> </ul>	
	Life early warning	The life early warning of the main circuit capacitors, capacitors on the PC boards and the cooling fan can be displayed.	
	Cumulative run hours	The cumulative motor running hours, cumulative inverter running hours and cumulative watt-hours can be displayed.	

Items		Specifications	Remark
Indication	I/O checking	Indicate the status of the Di, Do on the control circuit.	
	Energy saving monitor	Input power, Input powerxcoefficient are indicated.	
	Trip mode	Displays the cause of trip by codes. <ul style="list-style-type: none"> <li>• OC1 (Overcurrent : during acceleration)</li> <li>• OC2 (Overcurrent : during deceleration)</li> <li>• OC3 (Overcurrent : at constant speed)</li> <li>• Lin (Input phase loss)</li> <li>• LU (Undervoltage)</li> <li>• OPL (Output phase loss)</li> <li>• OU1 (Overvoltage : during acceleration)</li> <li>• OU2 (Overvoltage : during deceleration)</li> <li>• OU3 (Overvoltage : at constant speed)</li> <li>• OH1 (Overheating of the heat sink)</li> <li>• OH2 (External alarm)</li> <li>• OH4 (Motor protection (PTC thermistor))</li> <li>• dbH (Braking resistor overload)</li> <li>• CoF (PID feedback breaking)</li> <li>• OL1 (Motor 1 overload)</li> <li>• OL2 (Motor 2 overload)</li> <li>• OLU (Inverter overload)</li> <li>• Er1 (Memory error)</li> <li>• Er2 (Keypad communications error)</li> <li>• Er3 (CPU error)</li> <li>• Er6 (Operation action error)</li> <li>• Er7 (Tuning error)</li> <li>• Er8 (RS-485 communications error)</li> <li>• ErF (Data save error due to undervoltage)</li> <li>• Erd (Step-out detection(for synchronous motor drive)) (*2)</li> <li>• Err (Mock alarm)</li> </ul>	
	Running or trip mode	Trip history: Saves and displays the last 4 trip codes and their detailed description	
Protection	Overcurrent protection	The inverter is stopped for protection against overcurrent caused by an overload.	LED indication
	Short circuit protection	The inverter is stopped for protection against overcurrent caused by a short circuit in the output circuit.	OC1
	Grounding fault protection	The inverter is stopped only upon start-up for protection against overcurrent caused by a grounding fault in the output circuit.	OC2 OC3
	Overvoltage protection	An excessive voltage (3-phase 200V series: 400VDC, 3-phase 400V series: 800VDC) in the DC link circuit is detected and the inverter is stopped. If a remarkably large voltage is applied by mistake, the protection cannot be made.	OU1 OU2 OU3
	Undervoltage protection	The voltage drop (3-phase 200V series: 200VDC, 3-phase 400V series: 400VDC) in the DC link circuit is detected to stop the inverter. However, when "F14: 4 or 5" is selected, an alarm is not issued even upon a voltage drop in the DC link circuit.	LU
	Input phase loss	The input phase loss is detected to shut off the inverter output. This function protects the inverter from being broken by adding extreme stress caused by a power phase loss or unbalance between phases. When the load to be connected is small or DC Reactor is connected even in the case of an input phase loss, a phase loss is not detected.	Lin
	Output phase loss	Detects breaks in inverter output wiring at the start of operation and during running, to shut off the inverter output.	OPL
	Overheating	The temperature of the heat sink in the event of cooling fan trouble and overload is detected to stop the inverter.	OH1
		Braking resistor is protected from overheat setting Electronic Thermal Overload Protection for braking resistor appropriately.	dbH
	Overload	The temperature inside the IGBT is calculated from the detection of output current and internal temperature, to shut off the inverter output.	OLU
	External alarm input	With the digital input signal (THR), the inverter is stopped as for an alarm.	OH2
	Motor protection	Electronic thermal The inverter is stopped upon an electronic thermal function setting to protect the motor. • The standard motor and inverter motor is protected in the range of all the frequencies. • Protection for send motor is also possible. *The operation level and thermal time constant ( 0.5 to 75.0 min) can be set.	OL1 OL2
		PTC thermistor A PTC thermistor input stops the inverter to protect the motor. • The PTC thermistor is connected between terminals C1 and 11, a resistor is connected between terminals 13 and C1 and setting function codes.	OH4
		Overload early warning Warning signal is output at the predetermined level before stopping the inverter with the electronic thermal function to protect the motor	—
	Memory error	Data is checked upon power-on and data writing to detect any fault in the memory and to stop the inverter.	Er1

\*2: These functions can be supported by the inverters having a ROM version 0500 or later.

Items		Specifications		Remark
Protection	Keypad communications error	The remote keypad (optional) is used to detect a communications fault between the keypad and inverter main body during operation and to stop the inverter.		Er2
	CPU error	Detects a CPU error caused by noise and so on and stops the inverter.		Er3
	Operation error	STOP key priority	Pressing the STOP key on the keypad forcibly decelerates and stops the motor even if the operation command is given through a terminal block or communications. (Er6 will be displayed after stoppage.)	Er6
		Start check	If the operation command is entered in the following cases, Er6 will be displayed on the LED monitor to prohibit operation. •Power-on •Alarm reset (PRG/RESET key ON) •The link operation selection "LE" is used to switch operation.	
	Tuning error (*1)	Stop the inverter output when tuning failure, interruption, or any fault as a result of tuning is detected during tuning for motor constant.		Er7
	RS-485 communications error	When the connection port of the keypad is connected via RS485 communications to the network to detect a communications error, the inverter is stopped to display the error.		Er8
	Data save error upon undervoltage	When the undervoltage protection works, an error is displayed if data cannot be stored.		ErF
	Step-out detection (*2)	Stop the inverter when the step-out of the synchronous motor is detected.		Erd
	PID feedback breaking detection	Stop the inverter output detecting a breaking when the input current is allocated to the PID control feedback. (Select valid/invalid.)		CoF
	Stall prevention	This is protected when the instantaneous overcurrent limitation works. Instantaneous overcurrent limitation: operates when the inverter output current goes beyond the instantaneous overcurrent limiting level, and avoids tripping (during acceleration and constant speed operation).		
	Alarm relay output (for any fault)	The relay signal is output when the inverter stops upon an alarm. <Alarm reset> The PRG/RESET key or digital input signal (RST) is used to reset the alarm stoppage state.		
	Retry function	When the motor is tripped and stopped, this function automatically resets the tripping state and restarts operation. (The number of retries and the length of wait before resetting can be set.)		
	Surge protection	The inverter is protected against surge voltages intruding across the main circuit power cable and ground.		
	Momentary power failure protection	A protective function (inverter stoppage) is activated upon a momentary power failure for 15ms or longer. If restart upon momentary power failure is selected, the inverter restarts upon recovery of the voltage within the set time.		
	Mock alarm	Simulated alarm is output by the keypad operation. To check the alarm sequence, simulated alarm can be output by the keypad operation.		Err
Environment	Installation location	Shall be free from corrosive gases, flammable gases, oil mist, dusts, and direct sunlight. (Pollution degree 2 (IEC60664-1:2007)). Indoor use only.		
	Surrounding air temperature	-10 to +50°C (14 to 122°F) (IP20)		
	Ambient humidity	5 to 95%RH (no condensation)		
	Altitude	1000m (3300ft) or less (Output derating is not necessary.) Above 1000m (3300ft) to 3000m (9800ft) or less (Output derating is necessary.) Above 1000m (3300ft) to 1500m (4900ft) or lower : 0.97、 Above 1500m (4900ft) to 2000m (6600ft) or lower : 0.95 Above 2000m (6600ft) to 2500m (8200ft) or lower : 0.91、 Above 2500m (8200ft) to 3000m (9800ft) lower : 0.88		
	Vibration	3mm(0.12inch) (vibration width) : 2 to less than 9Hz, 9.8m/s <sup>2</sup> (32ft/s <sup>2</sup> ) : 9 to less than 20Hz 2m/s <sup>2</sup> (6.6ft/s <sup>2</sup> ) : 20 to less than 55Hz 1m/s <sup>2</sup> (3.3ft/s <sup>2</sup> ) : 55 to less than 200Hz		
	Storage temperature	-25 to +70°C (-13 to 158°F)		
	Storage humidity	5 to 95%RH (no condensation)		

\*1: Effective function only in induction motor drive.

\*2: These functions can be supported by the inverters having a ROM version 0500 or later.

#### 4. Terminal Functions

	Symbol	Terminal name	Specification	Remark
Main circuit	L1/R, L2/S L3/T	Power input	Connect a three-phase power supply. (Three-phase 200V, 400V input)	
	L1/L, L2/N		Connect a single-phase power supply. (Single-phase 200V input)	
	U, V, W	Inverter output	Connect a three-phase motor.	
	P(+), P1	For DC REACTOR	Connect the DC reactor (DCR).	
	P(+),N(-)	For DC bus connection	Used for DC bus connection.	
	P(+), DB	For braking resistor	Connect a external braking resistor	0.4kW(1/2HP) or more only (No effect if use at 0.2kW(1/4HP) or less)
	⊕G	Grounding	Terminal for inverter grounding	Two terminals are provided.
Frequency settings	13	Potentiometer power supply	Used for frequency setting device power supply (variable resistance: 1 to 5kΩ)	DC10V
	12	Voltage input  (Inverse operation) (PID control)  (Frequency aux. setting)	<ul style="list-style-type: none"> <li>Used as a frequency setting voltage input. DC 0V to +10V/ 0 to 100%</li> <li>DC+10 to 0V // 0 to 100%</li> <li>Used for setting signal (PID command value) or feedback signal.</li> <li>Used as additional auxiliary setting to various frequency settings.</li> </ul>	
	C1	Current input	<ul style="list-style-type: none"> <li>Used as a frequency setting current input. DC4 to 20mA "DC0 to 20mA" / 0 to 100%</li> </ul>	
		(Inverse operation) (PID control)  (Frequency aux. setting)	<ul style="list-style-type: none"> <li>DC20 to 4mA "DC20 to 0mA" /0 to 100%</li> <li>Used for setting signal (PID command value) or feedback signal</li> <li>Used as additional auxiliary setting to various frequency settings.</li> </ul>	
		For PTC thermistor connection	<ul style="list-style-type: none"> <li>Connect a PTC thermistor for a motor protection.</li> </ul>	
	11	Common for analog input	Common for Frequency setting input/output signals. (12, 13, C1, FMA)	Two terminals are provided. Terminal 11 is isolated from terminal CM, Y1E.

	Symbol	Terminal name	Specification	Remark
Digital inputs	X1	Digital input 1	The following functions can be set at terminals X1 to X3, FWD and REV for signal input. <Common function> • Sink and source are changeable using the built-in sliding switch. • Input logic can be changed between short-circuit of terminals X1 and CM and open circuits of them. The same setting is possible between CM and any of the terminals among X2, X3, FWD and REV.	
	X2	Digital input 2		
	X3	Digital input 3		
	FWD	Forward operation command		
	REV	Reverse operation command		
	(FWD)	Forward operation command	The motor runs in the forward direction upon ON across (FWD) and CM. The motor decelerates and stops upon OFF.	This function can be set only for the terminals FWD and REV. Only an active ON signal is acceptable.
	(REV)	Reverse operation command	The motor runs in the reverse direction upon ON across (REV) and CM. The motor decelerates and stops upon OFF.	
	(SS1) (SS2) (SS4) (SS8)	Select Multi-frequency	16 frequencies can be selected with ON/OFF signals at (SS1) to (SS8).	
	(RT1)	Select ACC/DEC time	ACC1/DEC1 is select when (RT1) is OFF and ACC2/DEC2 is select when (RT1) is ON.	
	(HLD)	3-wire operation stop command	Used for 3-wire operation. ON across (HLD) and CM: The inverter self-holds FWD or REV signal. OFF across (HLD) and CM: The inverter releases self-holding.	
	(BX)	Coast to a stop	The inverter output is shut off immediately and the motor coasts to a stop when (BX) is ON.	
	(RST)	Reset alarm	Faults are reset when (RST) is ON.	0.1s or more signal required.
	(THR)	External alarm trip	The inverter output is shut off immediately and the motor coasts-to-stop when (THR) is OFF.	
	(JOG)	Ready for jogging	Operation mode is changed to Jogging mode and frequency, ACC/DEC time are changed to those for Jogging operation when (JOG) is ON.	(*1)
	(Hz2/Hz1)	Select frequency command 2/1	Frequency setting 2 is selected when (Hz2/Hz1) is ON.	
	(M2/M1)	Motor2/Moor1	Motor 1 is effective when (M2/M1) is OFF and Motor 2 is effective when (M2/M1) is ON.	
	(DCBRK)	Enable DC braking	DC braking is enable when (DCBRK) is ON.	
	(WE-KP)	Enable data change with keypad	Enable data change with keypad when (WE-KP) is ON.	
	(UP)	UP command	The output frequency increases while (UP) is ON.	
	(DOWN)	DOWN command	The output frequency decreases while (DOWN) is ON.	
	(Hz/PID)	Cancel PID control	PID control is canceled when (Hz/PID) is ON/ (Inverter runs with a selected frequency by Multi-frequency, Keypad, analog input, etc...)	
	(IVS)	Switch normal/inverse operation	The frequency setting or PID control output signal (frequency setting) action mode switches between normal and inverse actions according to (IVS) ON/OFF status.	
	(LE)	Enable communication link via RS-485 or field bus	Enable communication link via RS-485 or field bus when (LE) is ON.	
	(PID-RST)	Reset PID integral and differential component	Reset PID integral and differential component when (PID-RST) is ON.	
	(PID-HLD)	Hold PID integral component	Hold PID integral component when (PID-HLD) is ON.	
	PLC	PLC terminal	Connect to PLC output signal power supply. Common for 24V power.	+24V(22 to 27V), Max.50mA
	CM	Common for digital inputs	Common for digital inputs	CM is isolated from 11, Y1E. Two terminals are provided.

\*1: Effective function only in induction motor drive.

	Symbol	Terminal name	Specification	Remark
Transistor outputs	(PLC)	Power supply for transistor outputs	Power supply for transistor outputs (DC24V DC50mA Max.) (This terminal is same for PLC terminal for digital input.)	Connect CM with Y1E when this terminal is used for transistor outputs.
	Y1	Transistor outputs	The following functions can be set at terminals Y1, SO for signal output. • The setting of "short circuit upon active signal output" or "open upon active signal output" is possible.	Max. voltage:27Vdc, max. current:50mA, leak current:0.1mA <sup>max</sup> , ON voltage : within 2V (at 50mA)
	(RUN)	Inverter running (speed exists)	An active signal is issued when the inverter runs at higher than the stop frequency.	
	(FAR)	Frequency arrival	An active signal is issued when the difference between output freq. and set freq. is equal or less than the value of function code E30 Freq. arrival (Hysteresis width).	
	(FDT)	Frequency detected	An active signal is issued when output freq. gets equal or higher than the value specified by function code E31. The signal is deactivated if the output frequency falls below the freq. less than function data E31 minus function data E32.	
	(LU)	Undervoltage detected	An active signal is issued when inverter dc link voltage is undervoltage detection level or below.	
	(IOL)	Inverter output limiting	An active signal is issued when the current limiting, Automatic Deceleration or torque limiting limits inverter output.	
	(IPF)	Auto-restarting after momentary power failure	An active signal is issued until restarting is completed after momentary power failure.	
	(OL)	Motor overload early warning	An active signal is issued when the calculated value of electronic thermal overload exceeds the preset detection level.	
	(SWM2)	Select Motor 2	An active signal is issued when motor 2 is selected.	
	(TRY)	Auto-resetting	An active signal is issued when the auto-resetting is in progress.	
	(LIFE)	Service lifetime alarm	An active signal is issued when the service lifetime of DC link bus capacitor, capacitor on the PCBs, cooling fans have expired.	
	(PID-CTL)	Under PID control	This signal comes ON when the PID control is enabled.	
	(PID-STP)	Motor stopped due to slow flowrate under PID control	This signal is ON when the inverter is in a stopped state by the slow flowrate stopping function under the PID control. (The inverter is stopped even if a run command is entered.)	
	(RUN2)	Inverter output on	An active signal is issued when the inverter runs at higher than stop frequency or is in DC braking.	
	(OLP)	Overload prevention control	An active signal is issued when overload prevention function is in effective.	
	(ID2)	Current detected 2	An active signal is issued when the output current comes to the current detection level (for ID) or above and the condition continues for the time specified current detection timer.	
	(THM)	Motor overheat detected by thermistor	This signal comes ON when the motor overheat is detected with the PTC/NTC thermistor.	
	(BRKS)	Brake signal	This signal is issued to make the mechanical brake ON/OFF.	(*1)
	(MNT) <sup>⑥</sup>	Maintenance timer	Alarm signal is generated when time passes or start-up exceeds over the preset value.	(*2)
	(FARFDT)	Logical AND signal of (FAR) and (FDT)	Logical AND signal of (FAR) and (FDT)	
	(C1OFF)	Terminal [C1] wire break	When Input current to C1 terminal become less than 2mA, this is interpreted as wire brake and then ON-signal is generated.	
	(ID)	Current detected	An active signal is issued when the output current comes to the current detection level (for ID) or above and the condition continues for the time specified current detection timer.	
	(IDL)	Low current detected	This output signal comes ON when the output current drops below the low current detection level specified by E37 for the period specified by E38 (Low current detection (Timer)).	
	(ALM)	Alarm output (for any alarm)	An active signal is issued when the inverter is in alarm mode.	
	Y1E	Transistor output common	Common terminal for transistor output.	Y1E is isolated from 11,CM.

\*1: Effective function only in induction motor drive.

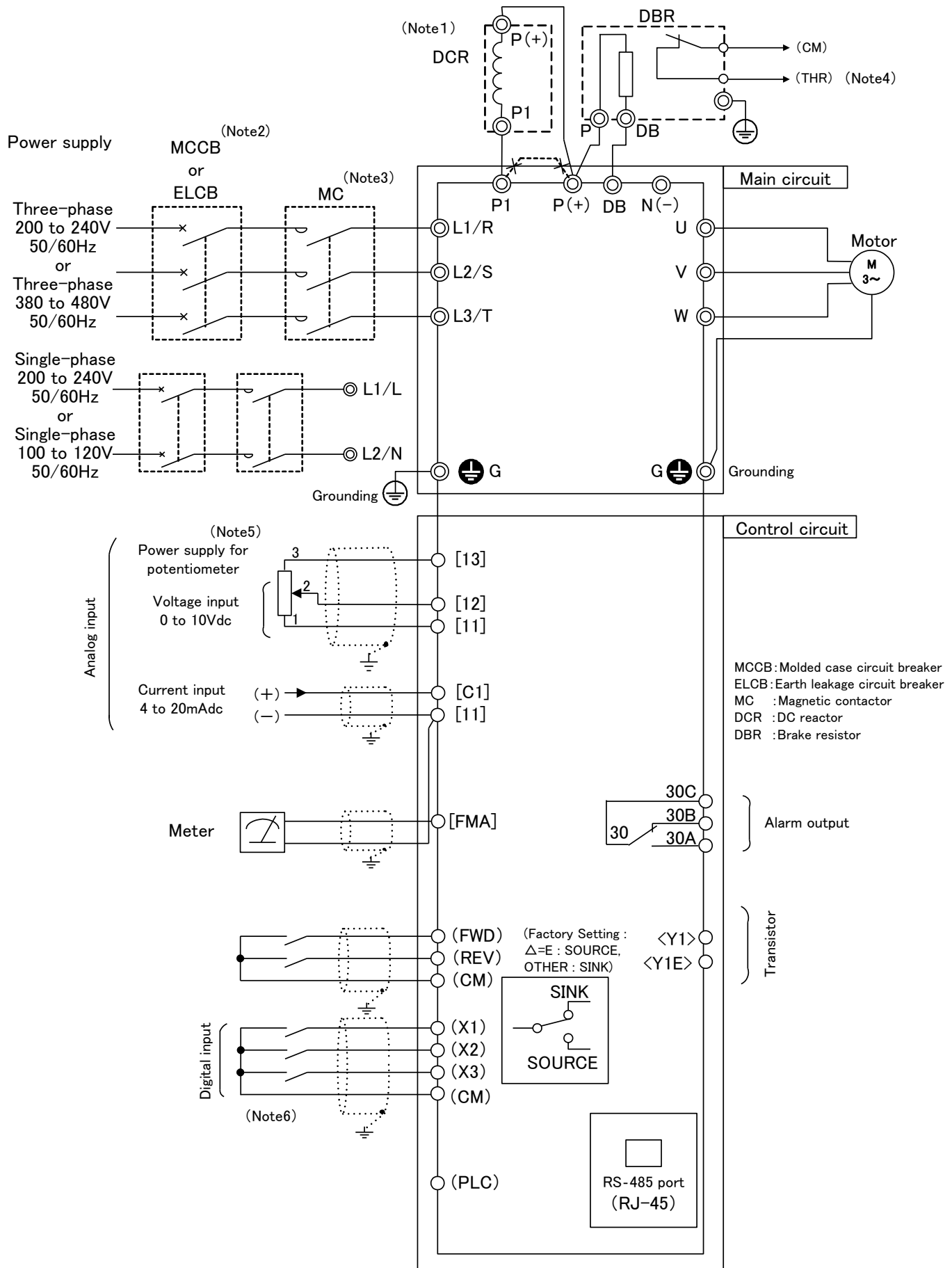
\*2: These functions can be supported by the inverters having a ROM version 0500 or later.



	Symbol	Terminal name	Specification	Remark
Relay output	30A,30B, 30C	Alarm output (for any alarm)	A no-voltage contact signal (1c) is issued when the inverter is stopped due to an alarm. • Multi-purpose relay output; signals similar to above-mentioned signals Y1 can be selected. • An alarm output is issued upon either excitation or no excitation according to selection.	Contact rating: AC250V, 0.3A, cosφ=0.3 DC48V, 0.5A
Analog output	FMA	Analog monitor	Output signal: DC voltage (0 to 10V) The one of the following signals can be monitored at terminal FMA. • Output frequency 1 ( Before slip compensation ) • Output frequency 1 ( After slip compensation ) • Output current      • Output voltage • Input power      • PID feed back value • DC link voltage      • Calibration analog output (+) • PID reference      • PID output	Gain: 0 to 300%
Communications		Built-in RJ-45 connector (RS-485)	The one of the following protocol can be selectable. • Protocol for keypad (Automatically selected) • Modbus RTU • FGI bus • SX protocol for loader software	With power source for the keypad and the switch for changeover of terminating resistor ON/OFF.  Communication data storage can be selected. (*2)

\*2 : These functions can be supported by the inverters having a ROM version 0500 or later.

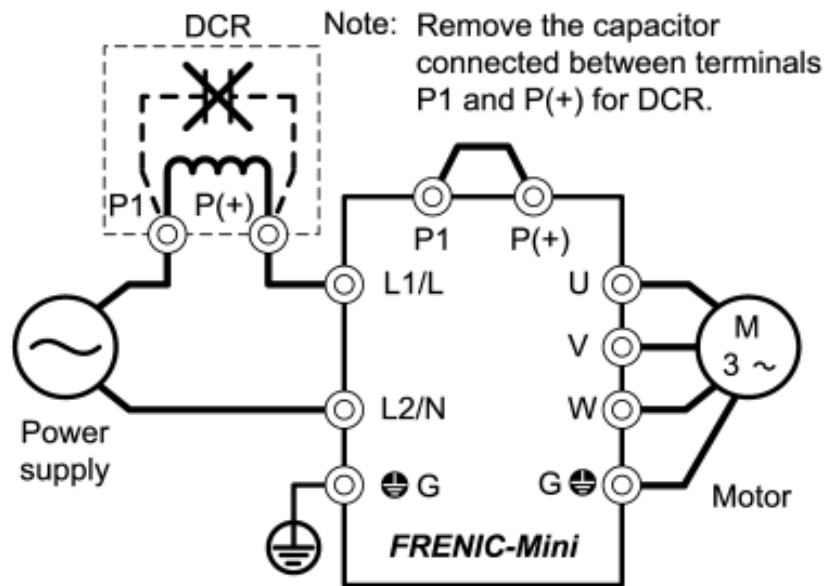
## 5. Basic Wiring Diagram



\* Switch for termination resistor is built-in.

**Note 1:**

When connecting a DC REACTOR (DCR) (option), remove the jumper bar from across the terminals [P1] and [P (+)].  
For single-phase 100V input series, DCR shall be connected to the point that is shown below.

**Note 2:**

Install a recommended molded-case circuit breaker (MCCB) or an earth leakage circuit breaker (ELCB) (with an overcurrent protection function) in the primary circuit of the inverter to protect wiring. At this time, ensure that the circuit breaker capacity is equivalent to or lower than the recommended capacity.

**Note 3:**

Install a magnetic contactor (MC) recommended for each inverter to separate the inverter from the power supply, apart from the MCCB or ELCB, when necessary. Connect a surge suppressor in parallel when installing a coil such as the MC or solenoid near the inverter.

**Note 4:**

(THR) is available when one of terminal functions for X1 to X3, FWD, REV (function code E01 to E03, E98 or E99) is set to the data "9".

**Note 5:**

Frequency can be set by connecting a frequency setting device (external potentiometer) among the terminals 11, 12 and 13 instead of inputting voltage signal (0 to +10V DC, 0 to +5V DC or +1 to +5V DC) between the terminals 12 and 11.

**Note 6:**

For the control signal wires, use shielded or twisted wires. Ground shielded wires. To prevent malfunction due to noise, keep the control circuit wiring away from the main circuit wiring as far as possible (recommended: 10cm(3.94inches) or more), and never set them in the same wire duct. Ⓢ

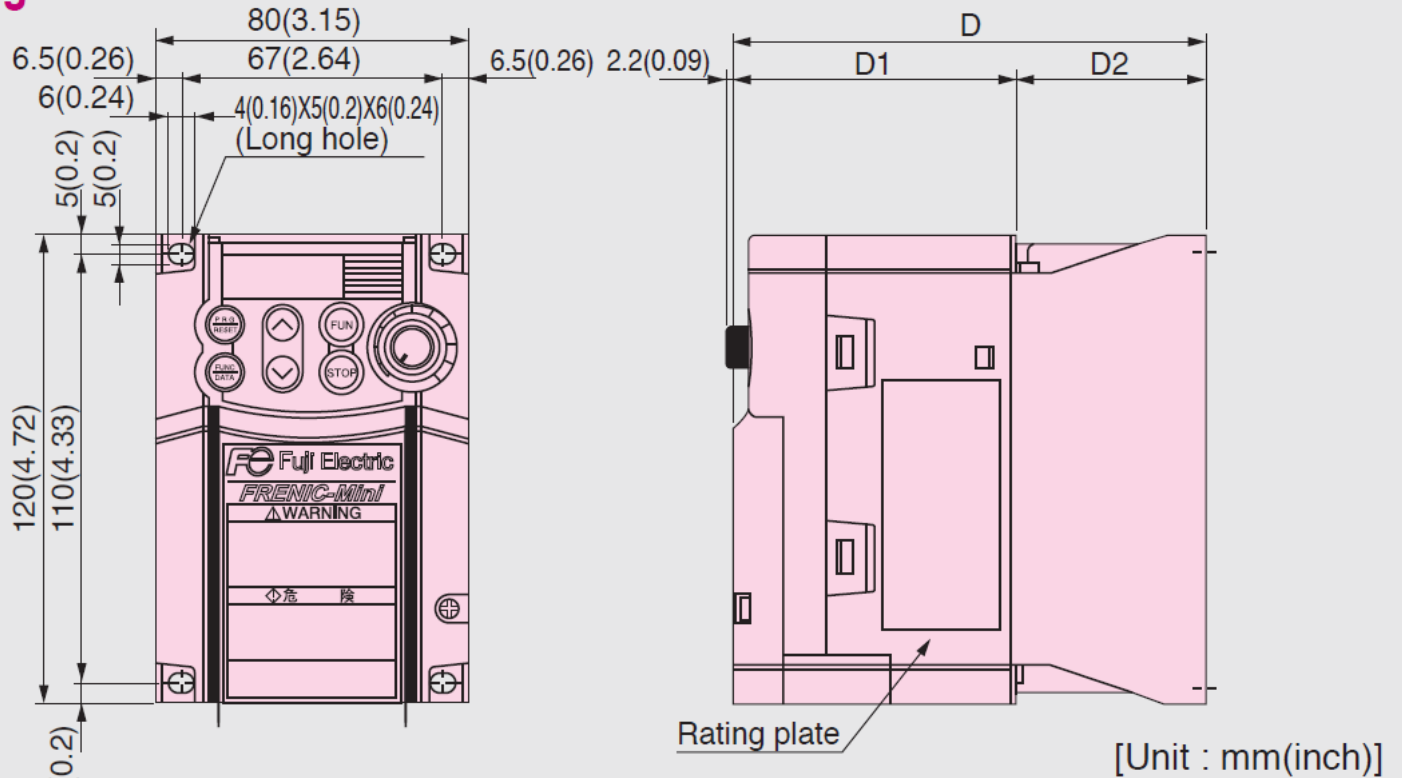
When crossing the control circuit wiring with the main circuit wiring, set them at right angles.

**Note 7:**

Three-phase 4wire cable is recommended for motor wiring to reduce the noise emitted. Connect the motor grounding wire to the inverter grounding terminal ⓈG.

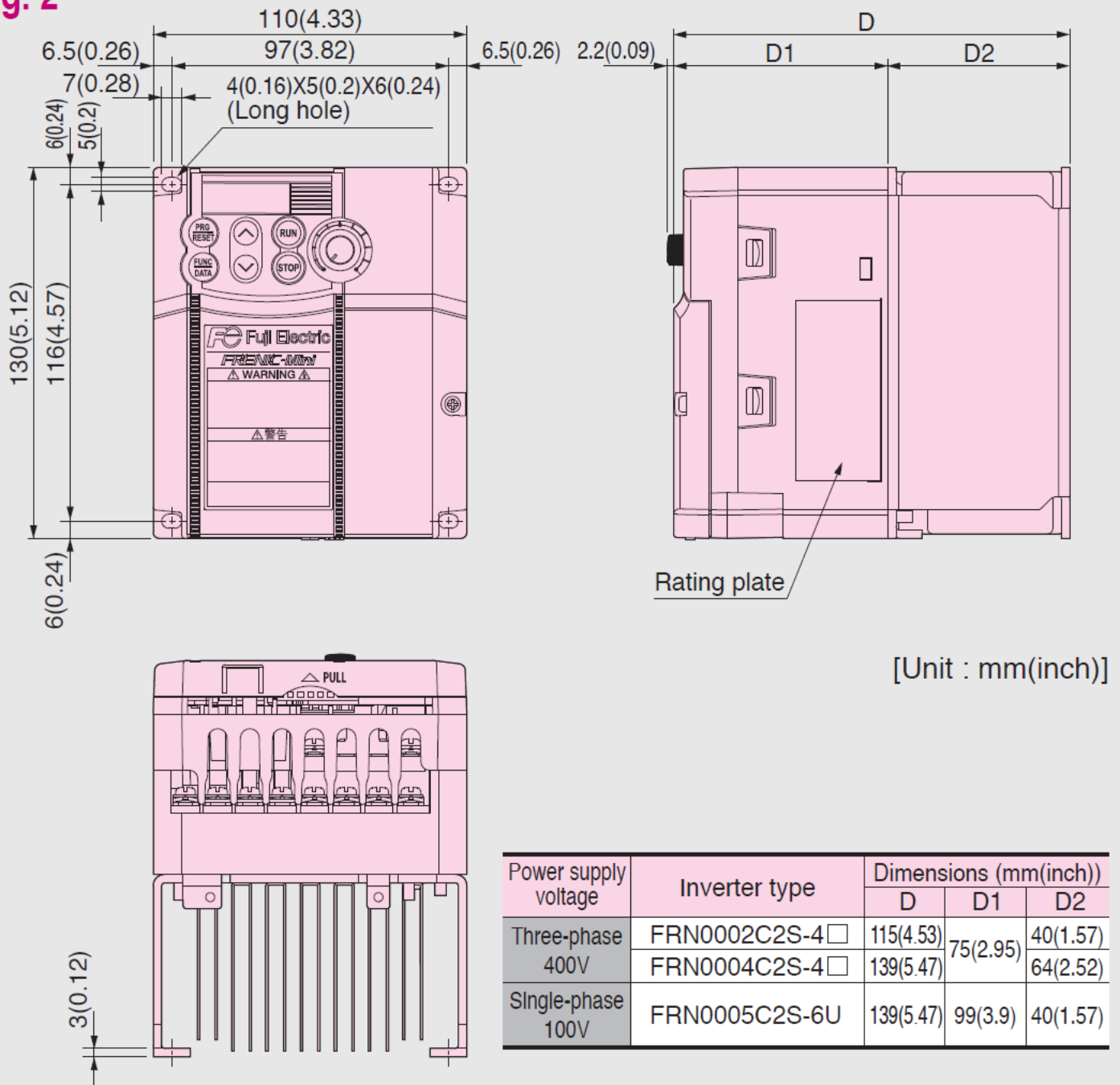
## 6. Outline: Standard Models

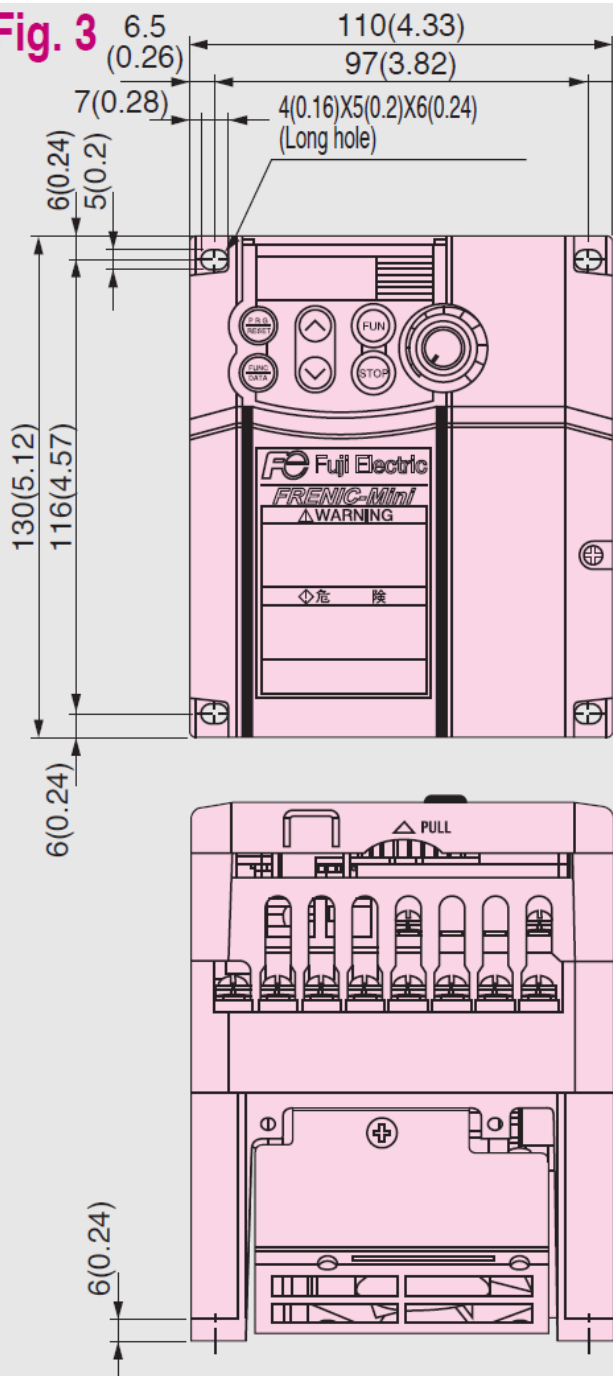
**Fig. 1**



Power supply voltage	Inverter type	Dimensions (mm(inch))		
		D	D1	D2
Three-phase 200V	FRN0001C2S-2□	80(3.15)	70(2.76)	10(0.39)
	FRN0002C2S-2□	80(3.15)		10(0.39)
	FRN0004C2S-2□	95(3.74)		25(0.98)
	FRN0006C2S-2□	120(4.72)		50(1.97)
Single-phase 200V	FRN0001C2S-7□	80(3.15)	70(2.76)	10(0.39)
	FRN0002C2S-7□	80(3.15)		10(0.39)
	FRN0004C2S-7□	95(3.74)		25(0.98)
	FRN0006C2S-7□	140(5.51)		50(1.97)
Single-phase 100V	FRN0001C2S-6U	100(3.94)	90(3.54)	10(0.39)
	FRN0002C2S-6U	100(3.94)		10(0.39)
	FRN0003C2S-6U	115(4.53)		25(0.98)

**Fig. 2**



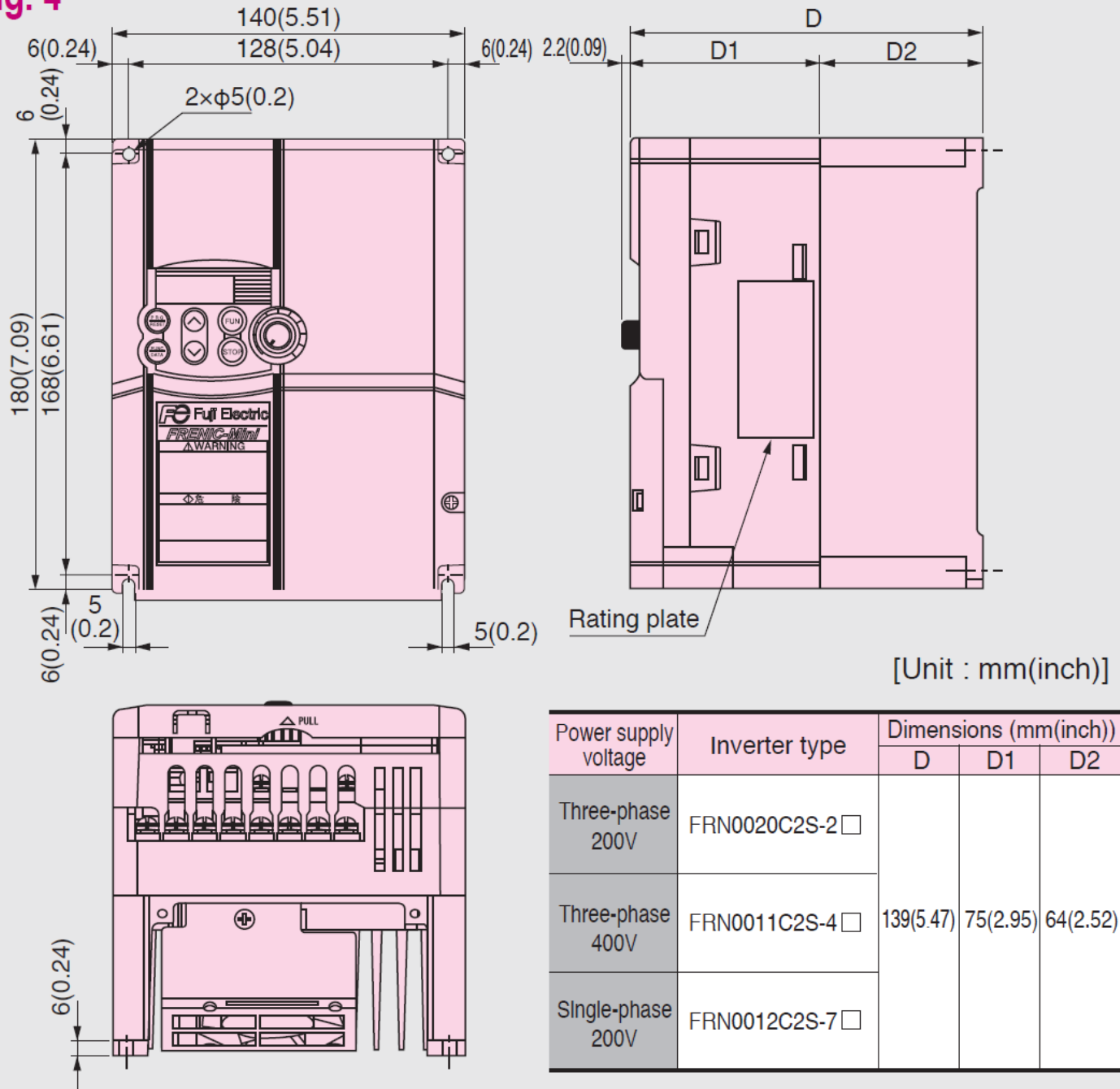
**Fig. 3**

Rating plate

[Unit : mm(inch)]

Power supply voltage	Inverter type	Dimensions (mm(inch))		
		D	D1	D2
Three-phase 200V	FRN0010C2S-2 □	139(5.47)	75(2.95)	64(2.52)
	FRN0012C2S-2 □			
Three-phase 400V	FRN0005C2S-4 □	139(5.47)	75(2.95)	64(2.52)
	FRN0007C2S-4 □			
Single-phase 200V	FRN0010C2S-7 □	149(5.87)	85(3.35)	

### Fig. 4



**Fuji Electric Corp. of America**  
47520 Westinghouse Drive, Fremont, CA 94539  
Phone: 510-440-1060

**[www.americas.fujielectric.com](http://www.americas.fujielectric.com)**

**FE** Fuji Electric  
Innovating Energy Technology