

Hyundai Inverter-N700E

The Controlling Solution of Powerful Inverter Brand

HYUNDAI ELECTRIC

Hyundai's Technology for the Best

High performance inverter for efficient business design
the best future with HRUN N700E series

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HiRUN N700E Series with Powerful Control Solution

I Excellent Applicability to Various Loads I

I Easy Maintenance & Simple Repair I

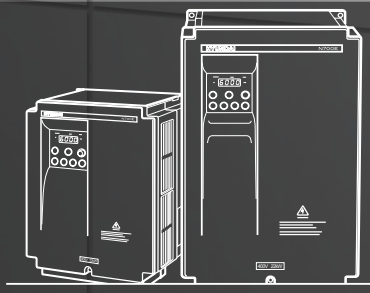
I High Reliability & Durability I

I Compliance with RoHS I

I Lower Audible Noise I



Clean Power
Hyundai Inverter



For the highest quality, for the highest customer satisfaction

HiRUN N700E

HYUNDAI N700E series inverter with high durability, elaborate speed controllability and excellent torque responsibility provides superb operability.

The N700E's compact size and sensorless vector control technology provide perfectly optimized performance for industrial equipment.

Certificates of international standards (CE, UL / cUL) of N700E series make its applications ready for global business.

Model Name Indication

Model Name Indication

N700E | 055 | LF | R

- Series Name
- Applicable Motor Capacity
  - 004: 0.4 kW
  - 055: 5.5 kW
  - 3500: 350 kW
- Power Source
  - SF: 1-Phase, 220 V
  - LF: 3-Phase, 220 V
  - HF: 3-Phase, 440 V
- Add Option
  - R: DC Reactor

Note) DC Reactor option for 30 ~ 132 kW

Model Configuration

Applicable Motor Capacity (kW)	1-Phase, 220 V	3-Phase, 220 V	3-Phase, 440 V
0.4	N700E-004SF	N700E-004LF	N700E-004HF
0.7	N700E-007SF	N700E-007LF	N700E-007HF
1.5	N700E-015SF	N700E-015LF	N700E-015HF
2.2	N700E-022SF	N700E-022LF	N700E-022HF
3.7		N700E-037LF	N700E-037HF
5.5		N700E-055LF	N700E-055HF
7.5		N700E-075LF	N700E-075HF
11		N700E-110LF	N700E-110HF
15		N700E-150LF	N700E-150HF
18.5		N700E-185LF	N700E-185HF
22		N700E-220LF	N700E-220HF
30			N700E-300HF
37			N700E-370HF
45			N700E-450HF
55			N700E-550HF
75			N700E-750HF
90			N700E-900HF
110			N700E-1100HF
132			N700E-1320HF
160			N700E-1600HF
220			N700E-2200HF
280			N700E-2800HF
350			N700E-3500HF


Economical Efficiency
High Performance
Simple Design
Multi-Function
Easy Operation
HYUNDAI
N700E
400V 22kW
WARNING
N700E
440V-37KW
HYUNDAI

Features

Improved Control Performance

High Torque Performance in Ultra Low Speed Zone by Using Sensorless Vector Control

- Hyundai's advanced sensorless vector control technology provides a motor with high torque performance in ultra low speed zone (Sensorless vector control: above 150 % at 1 Hz).
- In case of fast acceleration / deceleration of motor, N700E series provides powerful torque controllability without trip.
- Sensorless vector control technology expands the range of controlling speed.

Superb Speed Control Performance by Improved Tuning Technology for Motors

- Through technology of compensating the motor time constant while motor tuning minimizes the speed change, stable motor opeation can be achieved.

Intensified Protective Functions for Safety while Running

- Ground fault protection can prevent accidents.
- Countermeasure for output's phase loss protects motor while running.

Built-in Regenerative Braking System

- BRD is basically equipped with the inverter so that the easy operation for acceleration / deceleration time is achieved without additional options.
- Driving performance of acceleration and deceleration maximizes efficiency.

Enhanced Flexibility for Various Loads

- Provided various control function (3-Wire, Local / Remote control etc.)
- Built in PID function uniformly controls oil pressure and flow quantity without additional options.
- Improved torque characteristic, which is reduced to the 1.7th power, perfectly fits with loads for fans and pumps.
- Optimized energy saving according to the characteristics of loads is achieved.

Various Inverter Display Functions

- The operational status of the inverter are displayed on the monitor so that an user can understand the condition of the inverter.
- Cumulative hours of driving time and the actual running time are displayed for easy maintenance.

Convenient Maintenance and Repair

- N700E is available to replace the fan without separation.
- Fan on / off function increases fan's durability and minimizes fan's noise.

Various Load Compatibility

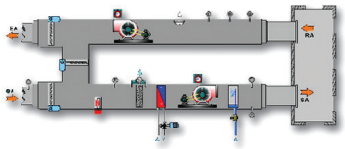
Fan & Pump



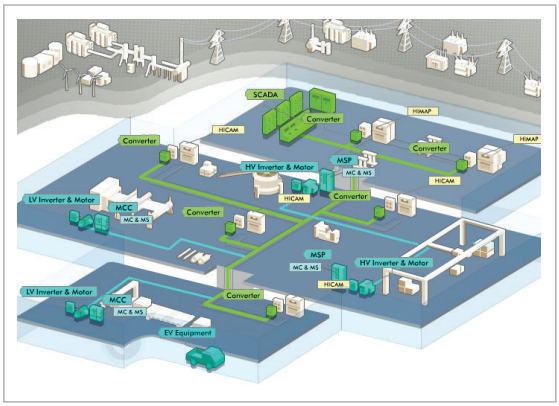
- Air Conditioning & Dust Collecting Fan
  - · Energy saving by selecting torque characteristic of a load
  - · Restart function in case of momentary power interruption
  - · Factory automation by PLC
  - · Machine protection by soft start / stop
  - · Auto operation by precise PID control function (sleep & wake up function)
  - · Low noise operation
  - · Quick responsiveness to load change by frequency jump and multi speed operation

- Cooling Tower
  - · Stable operation by supplying high qualified energy
  - · Energy saving by speed and torque control

Water supply pump
Cooling water circulation pump
Boiler water supply pump



Conveyor & Transport Machine



- Conveyor
  - · Multi relay output terminal
  - · Accurate acceleration & deceleration
  - · Overweight prevention by using over-torque signal
  - · Prevention of load slippage by curve acceleration and deceleration

- Factory Automation
  - · Factory automation with PLC
  - · High speed torque response to prevent slip down
  - · Soft start and stop

Textile Machine

- Spinning Machine
  - · Soft start / stop for prevention of snap and cut off
  - · Unit design for tough circumstances (dust, cotton)
  - · Improvement of product quality by stable operating speed

Washing Machine

- Washing Machine
  - · Powerful torque boost function
  - · Over torque limit function
  - · Separate setting of acceleration and deceleration time
  - · Built-in regenerative braking unit (below 22 kW)
  - · Soft start / stop

Specifications

▪ 220 V 1-Phase / 3-Phase

Inverter Model (N700E-□□□□□)		004SF	007SF	015SF	022SF	004LF	007LF	015LF	022LF	037LF	055LF/ 075LFP	075LF/ 110LFP	110LF/ 150LFP	150LF/ 185LFP	185LF/ 220LFP	220LF
Max. Available motor (4P, kW)	Heavy Duty	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5	22.0
	Normal Duty	-	-	-	-	-	-	-	-	-	7.5	11.0	15.0	18.5	22.0	-
Rated Capacity (kVA)	Heavy Duty	1.2	2.1	2.9	4.6	1.2	2.1	2.9	4.6	7.1	10.0	13.3	18.7	26.6	31.6	37.4
	Normal Duty	-	-	-	-	-	-	-	-	-	12.5	18.2	24.1	30.3	35.3	-
Rated Input AC Voltage		1-Phase 200 - 240 V±10 %, 50 / 60 Hz±5 %				3-Phase 200 - 240 V±10 %, 50 / 60 Hz±5 %										
Rated Output Voltage		3-Phase 200 - 240 V (Depend on receiving voltage)				3-Phase 200 - 240 V (Depend on receiving voltage)										
Rated Output Current (A)	Heavy Duty	3	5	7	11	3	5	7	11	17	24	32	45	64	76	90
	Normal Duty	-	-	-	-	-	-	-	-	-	30	44	50	73	85	-
Brake	Recover Brake	Built in Brake Circuit (Need to Additional Brake Resistor)				Built in Brake Circuit (Need to additional brake resistor)										
	Resistance (Ω)	50	50	50	50	50	50	50	50	35	17	17	17	8.7	6	6
Weight (kg)		0.7	0.7	0.7	0.98	0.7	0.7	0.7	0.98	1.2	4.2	4.5	4.5	6.5	7.5	8.0
Enclosure		IP20														

▪ 440 V 3-Phase

Inverter model (N700E-□□□□□)		004HF	007HF	015HF	022HF	037HF	055HF/ 075HFP	075HF/ 110HFP	110HF/ 150HFP	150HF/ 185HFP	185HF/ 220HFP	220HF/ 300HFP
Max. Available motor (4P, kW)	Heavy Duty	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5	22.0
	Normal Duty	-	-	-	-	-	7.5	11.0	15.0	18.5	22.0	30.0
Rated Capacity (kVA)	Heavy Duty	1.5	2.8	4	6	7.6	10.0	13.3	19.1	26.6	31.6	37.4
	Normal Duty	-	-	-	-	-	12.5	18.2	24.1	30.7	35.7	47.3
Rated Input AC Voltage		3-Phase 380 - 480 V±10 %, 50 / 60 Hz±5 %										
Rated Output Voltage		3-Phase 380 - 480 V (Depend on receiving voltage)										
Rated Output Current (A)	Heavy Duty	1.8	3.4	4.8	7.2	9.2	12	16	23	32	38	45
	Normal Duty	-	-	-	-	-	15	22	29	37	43	57
Brake	Recover Brake	Built in Brake Circuit (Need to additional brake resistor)										
	Resistance (Ω)	180	180	180	100	100	70	50	50	30	20	20
Weight (kg)		0.98	0.98	0.98	0.98	1.2	4.2	4.5	4.5	7.0	7.0	7.5
Enclosure		IP20										

▪ 440 V 3-Phase

Inverter model (N700E-□□□□□)		300HF/ 370HFP	370HF/ 450HFP	450HF/ 550HFP	550HF/ 750HFP	750HF/ 900HFP	900HF/ 1100HFP	1100HF/ 1320HFP	1320HF/ 1600HFP	1600HF/ 2000HFP	2200HF/ 2500HFP	2800HF/ 3200HFP	3500HF/ 3800HFP
Max. Available motor (4P, kW)	Heavy Duty	30	37	45	55	75	90	110	132	160	220	280	350
	Normal Duty	37	45	55	75	90	110	132	160	200	250	320	375
Rated Capacity (kVA)	Heavy Duty	48.2	62.4	74.8	91.5	123.9	146.3	180.4	216.2	230	315	400	500
	Normal Duty	58.1	70.1	87.2	112	133	162	191	245	285	360	470	550
Rated Input AC Voltage		3-Phase 380 - 480 V±10 %, 50 / 60 Hz±5 %											
Rated Output Voltage		3-Phase 380 - 480 V (Depend on receiving voltage)											
Rated Output Current (A)	Heavy Duty	58	75	90	110	149	176	217	260	300	415	525	656
	Normal Duty	70	85	105	135	160	195	230	285	370	450	600	680
Brake	Recover Brake	Need to Setup Recover Brake Unit											
	Resistance (Ω)	Refer to Option Table											
Weight (kg)		22	22	27	30	50	50	60	60	110	110	170	170
Enclosure		IP00											

Standard 200 V, 400 V Class

Specification			Description
Control Method [1]			Space vector PWM method
Output Frequency Range [2]			0.01 - 400 Hz
Frequency Accuracy [3]			Digital: Max frequency ±0.01 % / Analogue: Max frequency ±0.1 %
Frequency Resolution			Digital setting: 0.01 Hz (〈100 Hz), 0.1 Hz (〉100 Hz) Analogue: Max frequency / 500 (when DC 5 V input), Max frequency / 1,000 (DC 0 - 10 V, 4~20 mA)
V/f Characteristic			Base frequency: 0 - 400 Hz free set Torque pattern selection available (constant torque/reduced torque)
Overload Capacity			150 %, 1 minute (heavy duty) / 120 %, 1 minute (normal duty) [4]
Acceleration/Deceleration Time			0.1 - 3,000 sec (linear / curve selection available) 2nd Acceleration / Deceleration setting available
DC Braking			Performs between min frequency and established braking frequency. Level and time setting available
Input	Frequency Setting	Standard Operator	Set by volume up / down key. 1 W, 1 - 10 kΩ variable resistor. DC 0 - 10 V (input impedance 10 kΩ) [5], 4 - 20 mA (input impedance 200 Ω).
		External Signal	
	Forward Reverse Start/Stop	Standard Operator	Run key / Stop key (change forward/reverse by function command).
		External Signal	Forward run / stop, reverse run/stop set by terminal assignment (1a, 1b selection available)
	Intelligent Input Terminal		FW (Forward), RV (Reverse), CF1 - 4 (Multi-speed), RS (Reset), AT (Analog input current/voltage transfer), USP (Unattended start protection), EXT (External trip), FRS (Free run stop), JG (Jogging command), SFT (Software lock command), 2CH (2nd Acceleration/Deceleration), STA (Start), STP (Stop), F/R (Forward/Reverse), Remote Control UP / DOWM, O/R, T/R (Local/Remote), PID Integral Reset (PIDIR), PID Disable (PIDD)
Output	Intelligent Output Terminal		RUN (Run signal), FA1 [Frequency arrival signal (at the set frequency)], FA2 [Frequency arrival signal (at or above the set frequency)], OL (Overload advanced notice signal), OD (Output deviation of PID signal), AL (Alarm signal)
	Frequency Monitor		Analog meter (DC 0 - 10 V full scale. Max. 1 mA, 4 - 20 mA full scale. Max. 250 Ω), Analog output frequency signal, Analog output current signal, Analog output voltage signal, Analog output wattage signal
	Alarm Output Contact		OFF when inverter alarm (b contact output) / Auto switch ON and OFF / Intelligent output terminal use available
Main Functions			Auto-tuning, AVR Function, V/F Setting, Curve Accel. / Decel. Selection, Frequency Upper / Lower Limit, 16 Level Multi-speed, Start Frequency Set, Carrier Frequency Setting (0.5 - 15 kHz), PID Control, Frequency Jump, Analog Gain Bias Control, Jogging Run, Electronic Thermal Level Control, Retry, Auto Torque Boost, Trip History Monitor, Software Lock, S-shape Accel. / Decel., Frequency Conversion Display, USP, Flying Start, BRD
Protective Functions			Over-current Protection, Overload (electronic thermal), Over-voltage, Communication Error, Under-voltage, Output Short, USP Error, EEPROM Error, External Trip, Ground Fault, Temperature Trip, Inverter Overload Protection, Input Phase Loss Protection, CPU Error, Safety Function (Option), Braking Resistor Overload Protection
Environmental Conditions		Ambient Temperature	- 10 - 50℃ (over 40℃: set carrier frequency below 2.0 kHz) [6]
		Storage Temperature	- 20 - 60℃ (while transporting: short time)
		Ambient Humidity	Below 90 % RH (non-condensing)
		Vibration	5.9 m/s² (0.6 G). 10 - 55 Hz (JIS C0911 test methodology)
		Location	Less than 1,000 m above sea level, Indoor (no corrosive gas, no flammable gas, no oil-drop, no-dust)
Options			Noise filter, DC reactor, AC reactor, Remote operator, Remote operator cable, Regenerative braking resistor, Brake unit

※ **1)** Before control method setting A31 is set to 2 (sensorless vector control), the following instructions should be considered.
- Carrier frequency setting b11 should be above 2.1 kHz.
- When you use motors below half capacity of max applicable motor capacity, it is hard to get sufficient quality.
- When over 2 motors are about to be operated, sensorless vector control cannot be applied.

2) When you operate motor over 50 / 60 Hz, inquire about maximum available rotational number.

3) For the purpose of stable motor control, output frequency can exceed approximately 1.5 Hz at [A04]

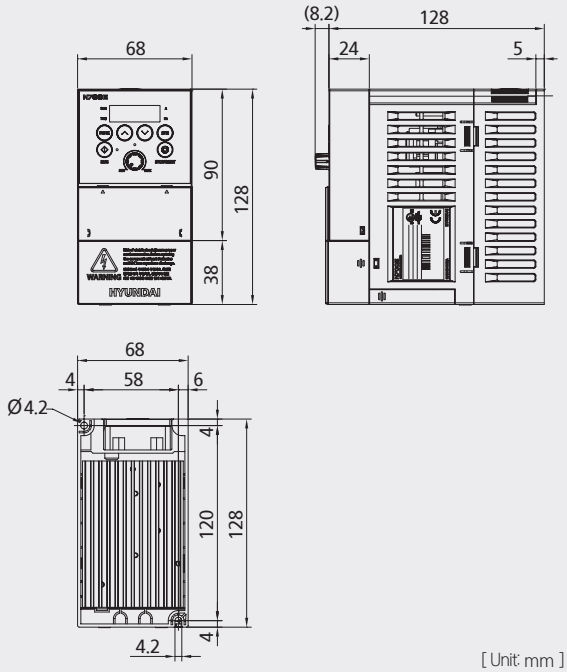
4) Normal duty support 5.5 kW and upper model.

5) 50 kΩ: 3.7 kW and under model, 10 kΩ: 5.5 kW and upper model

6) 5.5 kW and upper model support -10℃ - 40℃ ambient temperature.

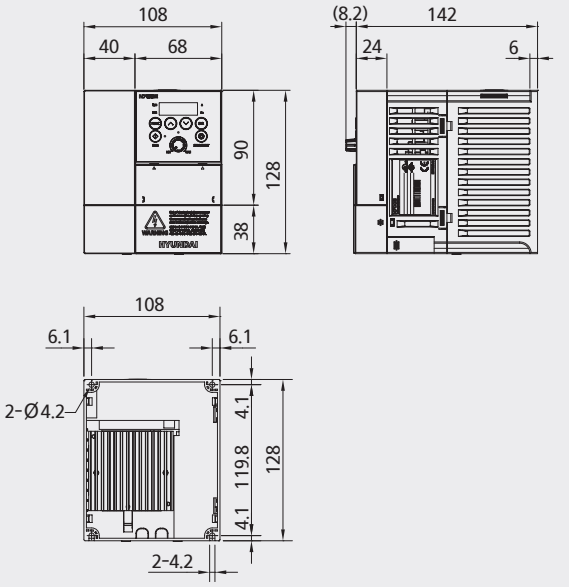
Dimensions

▪ N700E-004SF/007SF, N700E-004LF/007LF/015LF



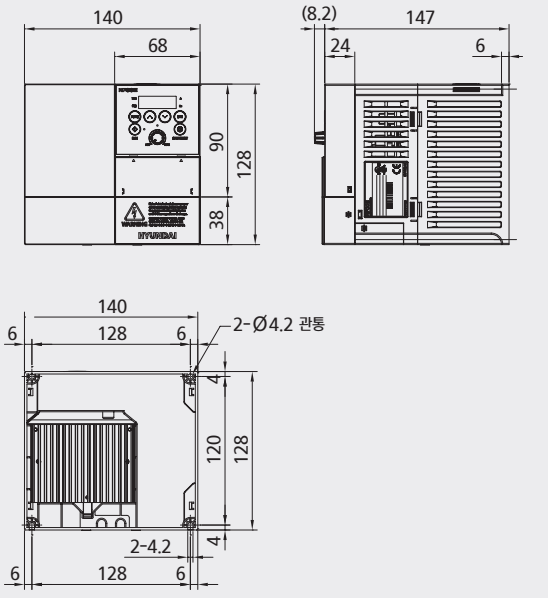
[Unit: mm]

▪ N700E-015SF/022SF, N700E-022LF, N700E-004HF/007HF/015HF/022HF



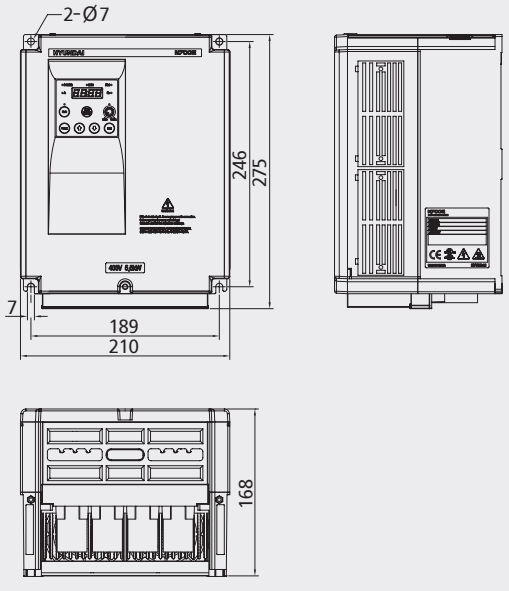
[Unit: mm]

▪ N700E-037LF/HF



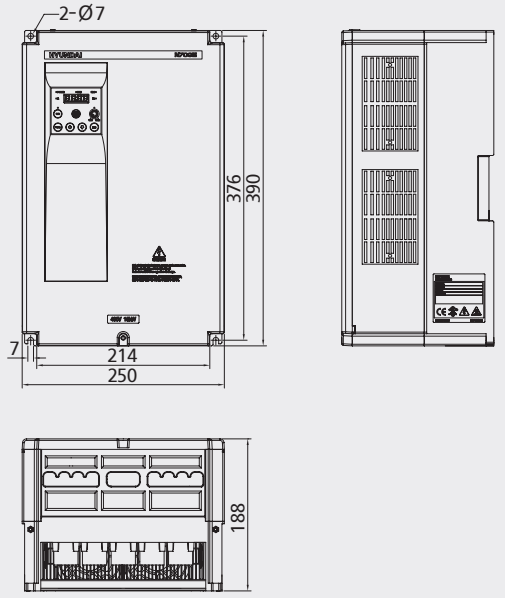
[Unit: mm]

▪ N700E-055LF/055HF, N700E-075LF/075HF, N700E-110LF/110HF



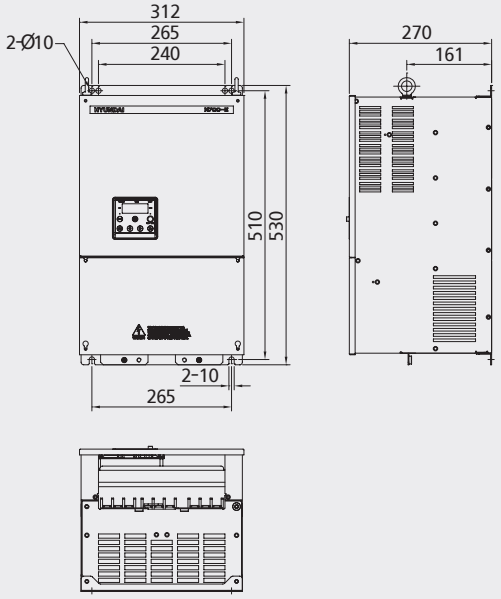
[Unit: mm]

▪ N700E-150LF/150HF, N700E-185LF/185HF, N700E-220LF/220HF



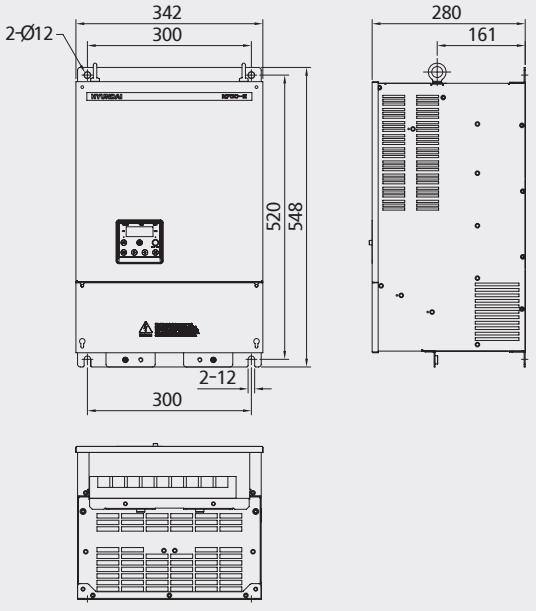
[Unit: mm]

▪ N700E-300HF, N700E-370HF



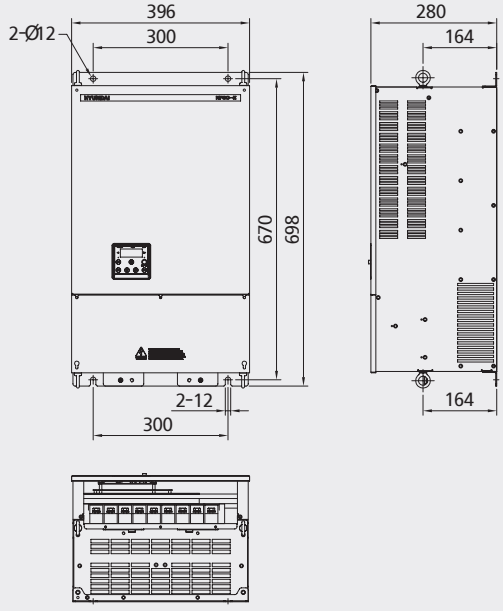
[Unit: mm]

▪ N700E-450HF, N700E-550HF



[Unit: mm]

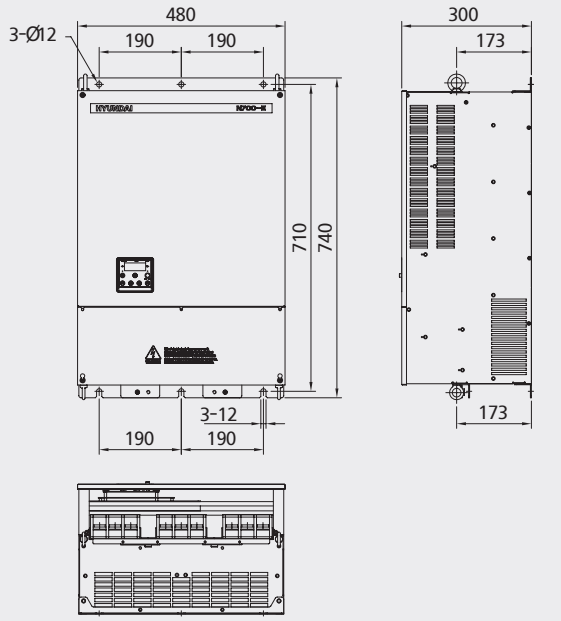
▪ N700E-750HF, N700E-900HF



[Unit: mm]

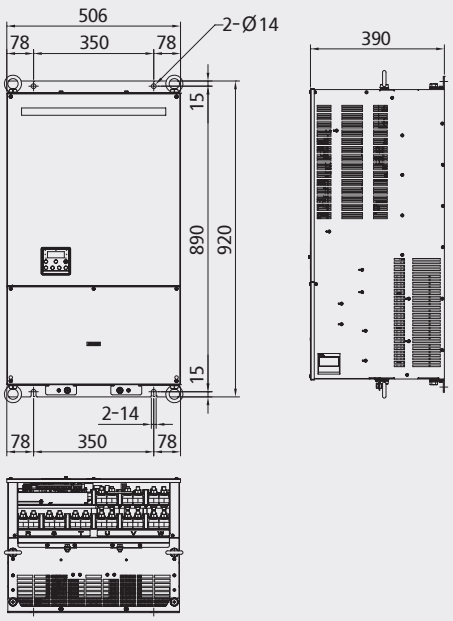
Dimensions

▪ N700E-1100HF, N700E-1320HF



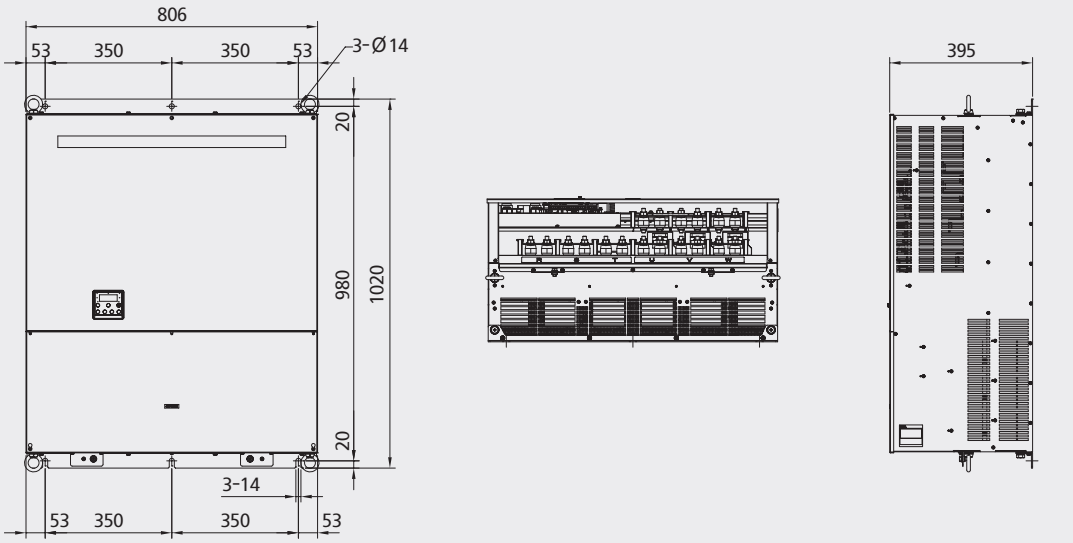
[Unit: mm]

▪ N700E-1600HF, N700E-2200HF



[Unit: mm]

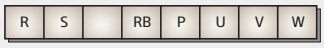
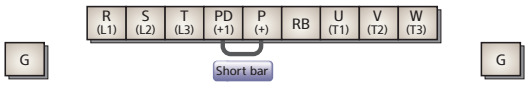
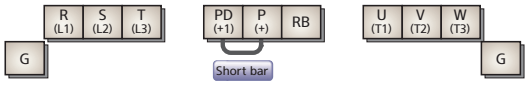
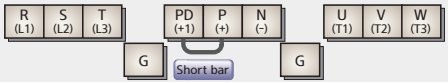
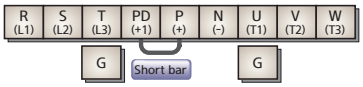
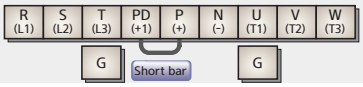
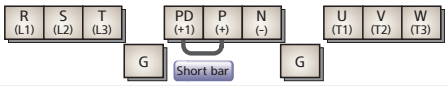
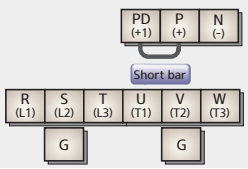
▪ N700E-2800HF, N700E-3500HF



[Unit: mm]

Terminal Functions

▪ Main Circuit Terminal Arrangement

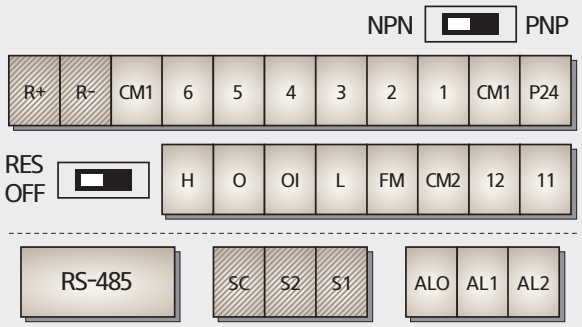
Main Circuit Terminal Block	Corresponding Type	Screw Size	Width (mm)
	N700E - 004SF N700E - 007SF	M3	7.62
	N700E - 004LF N700E - 007LF N700E - 015LF	M3	7.62
	N700E - 015SF N700E - 022SF	M4	11
	N700E - 022LF N700E - 037LF N700E - 004HF N700E - 007HF N700E - 015HF N700E - 022HF N700E - 037HF	M4	11
	N700E - 055LF N700E - 075LF N700E - 055HF N700E - 075HF N700E - 110HF	M4	10.6
	N700E - 110LF	M5	13
	N700E - 150LF N700E - 150HF N700E - 185HF N700E - 220HF	M5	13
	N700E - 185LF N700E - 220LF	M6	17
	N700E - 300HF N700E - 370HF	M6	17
	N700E - 450HF N700E - 550HF	M8	22
	N700E - 750HF N700E - 900HF	M8	29
	N700E - 1100HF N700E - 1320HF	M10	30
	N700E - 1600HF N700E - 2800HF N700E - 2200HF N700E - 3500HF	M10	38

▪ Explanation of Main Circuit Terminals

Symbol	Terminal Name	Explanation of Content
R, S, T (L1, L2, L3)	Main Power	Connect input power.
U, V, W (T1, T2, T3)	Inverter Output	Connect 3-phase motor.
PD, P (+1, +)	DC Reactor	After removing the short bar between PD and P, connect DC reactor for improvement of power factor.
P, RB (+, B+)	External Braking Resistor	Connect optional external braking resistor. (22 kW ↓)
P, N (+, -)	External Braking Unit	Connect optional external braking unit. (30 kW ↑)
G	Inverter Earth Terminals	Grounding terminal.

Terminal Functions

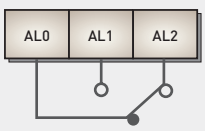
▪ Control Terminal Arrangement (004 - 022SF / 004 - 037LF/HF)



※1st Communication (RS485) is default option.
but, 2nd Communication (R+, R-) and Safety function (SC, S2, S1) are optional.
Contact to HYUNDAI ELECTRIC.

▪ Explanation of Control Circuit Terminals

Signal	Symbol	Terminal Name	Explanation of Content
Input Signal [1]	P24	Power Terminal for Input Signal	24 VDC ±10 %, 35 mA
	6 (RS) 5 (AT) 4 (CF2) 3 (CF1) 2 (RV) 1 (FW)	Intelligent Input Terminal: Forward Direction (FW), Reverse Direction (RV), Multi-speed 1-4 (CF1-4), 2-Level Accel / Decel Command (2CH), Reset (RS), Free-run Stop (FRS), External Trip (EXT), Soft Lock (SFT), Jogging Run (JG), Unattended Start Protection (USP) [2], Analog Input Voltage / Current Transferring (AT), Reset (RS), Start (STA), Stop (STP), FW / RV (F/R), Remote UP / DOWN, Local Keypad Operation (O/R), Local Terminal Input Operation (T/R) ,PID Integral Reset (PIDIR), PID Disable (PIDD)	Contact input: Close: On (run) Open: Off (stop) Minimum on time: over 12 ms
	CM1	Common Terminal for Input or Monitor Signal	
Monitor Signal	FM	Output Frequency Meter, Output Current Meter, Output Voltage Meter, Output Wattage Meter	Analog voltage output
Frequency Setup Signal	H	Power Supply for Frequency Command	10 VDC
	O	Voltage Frequency Command Terminal	0 - 10 VDC, input impedance 50 kΩ
	OI	Current Frequency Command Terminal	4 - 20 mA, input impedance 200 Ω
	L	Common Terminal for Frequency Command	
Output Signal [3]	11 12 CM2	Intelligent Output Terminal: Running Signal (RUN), Frequency Arrival Signal (at the set frequency) (FA1), Frequency Arrival Signal (at or above the set frequency) (FA2), Overload Advanced Notice Signal (OL), Output Deviation of PID Signal (OD), Alarm Signal (AL)	24 VDC, 50 mA Max.
Trip Alarm Output Signal [4]	AL0 AL1 AL2	Alarm Output Signal: at Normal Operation, Power Off (Initial Condition): AL0 - AL2 Closed at Abnormal: AL0 - AL1 Closed	Rated value for contact: AC 250 V 2.5 A (resisitive load) 0.2 A (induced load) DC 30 V 3.0 A (resisitive load) 0.7 A (induced load)



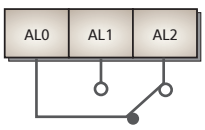
※ 1) Input signal terminals from 1 to 6 are contact "a"s.
When you want to change those terminals to contact "b"s, configuration should be set in C07 - C12.
2) USP: Protects inverter from restarting when power supply is on.
3) Intelligent output terminal 11 & 12 is "a" contact. When you use 11 & 12 as "b" contact, please set it to C16, C17.
4) Operator can select 'pre-warning alarm for overload' and 'arrival to the predefined frequency' signals with the intelligent output terminal.

Control Terminal Arrangement (055 - 220LF / 055 - 3500HF)



※ RS485 is 1st Communication, RXP, RXN is 2nd Communication.

Explanation of Control Circuit Terminals

Signal	Symbol	Terminal Name	Explanation of Content
Input Signal [1]	P24	Power Terminal for Input Signal	24 VDC±10 %, 35 mA
	6 (RS) 5 (AT) 4 (CF2) 3 (CF1) 2 (RV) 1 (FW)	Intelligent Input Terminal: Forward Direction (FW), Reverse Direction (RV), Multi-speed 1 - 4 (CF1 - 4), 2-Level Accel / Decel Command (2CH), Reset (RS), Free-run Stop (FRS), External Trip (EXT), Soft Lock (SFT), Jogging Run (JG), Unattended Start Protection (USP) [2], Analog Input Voltage / Current Transferring (AT), Reset (RS), Start (STA), Stop (STP), FW/RV (F/R), Remote UP / DOWN, Local Keypad Operation (O/R), Local Terminal Input Operation (T/R) ,PID Integral Reset (PIDIR), PID Disable (PIDD)	Contact input: Close: On (run) Open: Off (stop) Minimum on time: over 12 ms
	CM1	Common Terminal for Input or Monitor Signal	
Monitor Signal	FM	Output Frequency Meter, Output Current Meter, Output Voltage Meter, Output Wattage Meter	Analog voltage output
	AMI	Output Frequency Meter, Output Current Meter, Output Voltage Meter, Output Wattage Meter	Analog current output
Frequency Setup Signal	H	Power Supply for Frequency Command	10 VDC
	O	Voltage Frequency Command Terminal	0 - 10 VDC, input impedance 10 kΩ
	OI	Current Frequency Command Terminal	4 - 20 mA, input impedance 200 Ω
	L	Common Terminal for Frequency Command	
Output Signal [3]	RN0 RN1 RN2 RN3	Intelligent Output Terminal: Running Signal (RUN), Frequency Arrival Signal (at the set frequency) (FA1), Frequency Arrival Signal (at or above the set frequency) (FA2), Overload Advanced Notice Signal (OL), Output Deviation of PID Signal (OD), Alarm Signal (AL)	Rated value for contact: AC 250 V 2.5 A (resisitive load) 0.2 A (induced load) DC 30 V 3.0 A (resisitive load) 0.7 A (induced load)
Trip Alarm Output Signal [4]	AL0 AL1 AL2	Alarm Output Signal: at Normal Operation, Power Off (Initial Condition): AL0-AL2 Closed at Abnormal: AL0 - AL1 Closed	

※ **1)** Input signal terminals from 1 to 6 are contact "a"s.
When you want to change those terminals to contact "b"s, configuration should be set in C07 - C12

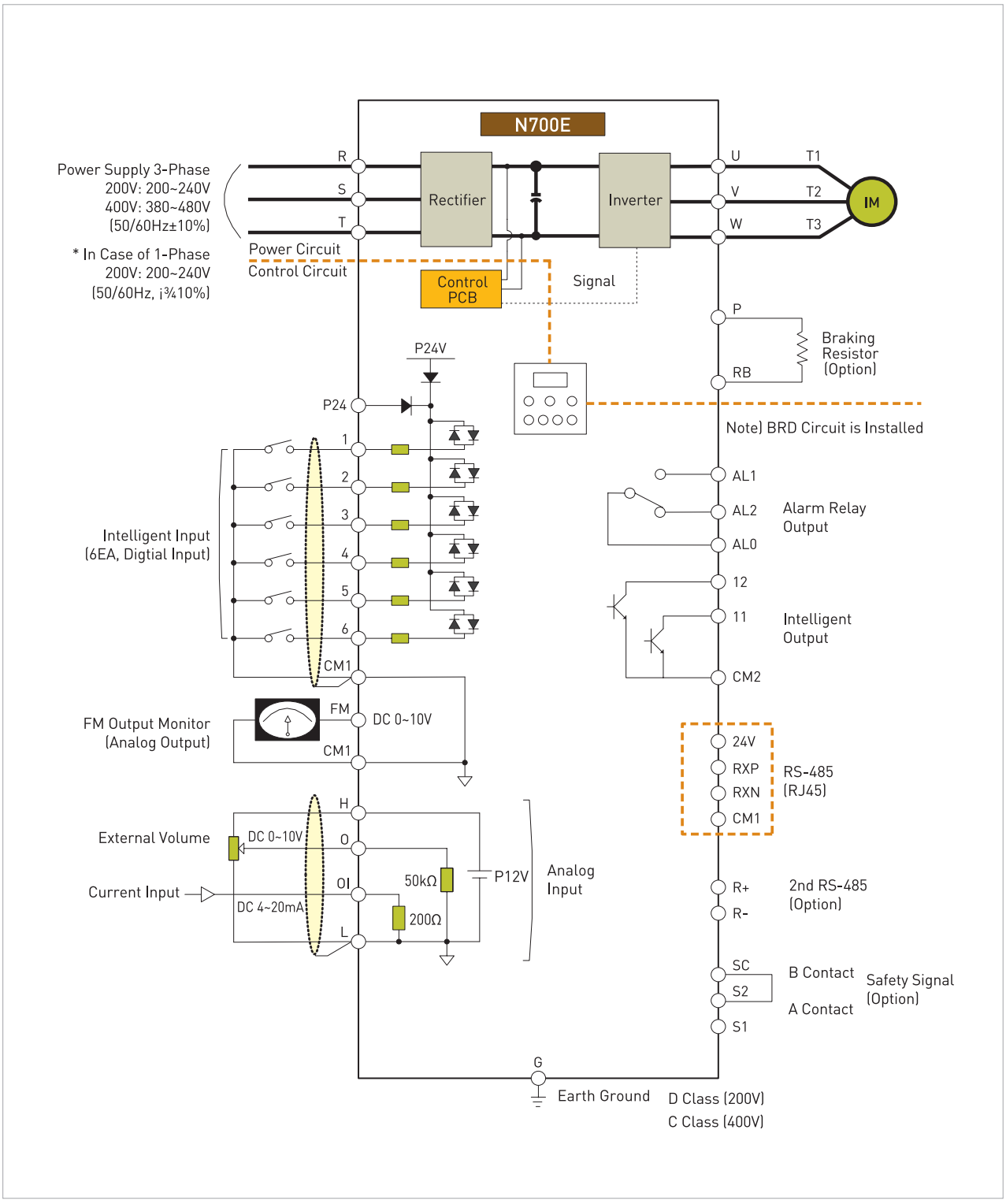
2) USP: Protects inverter from restarting when power supply is on.

3) Intelligent relay output terminal RN is "a" contact. When you use RN as "b" contact, please set it to C16, C17.

4) Operator can select 'pre-warning alarm for overload' and 'arrival to the predefined frequency' signals with the intelligent output terminal.

Connecting Diagram

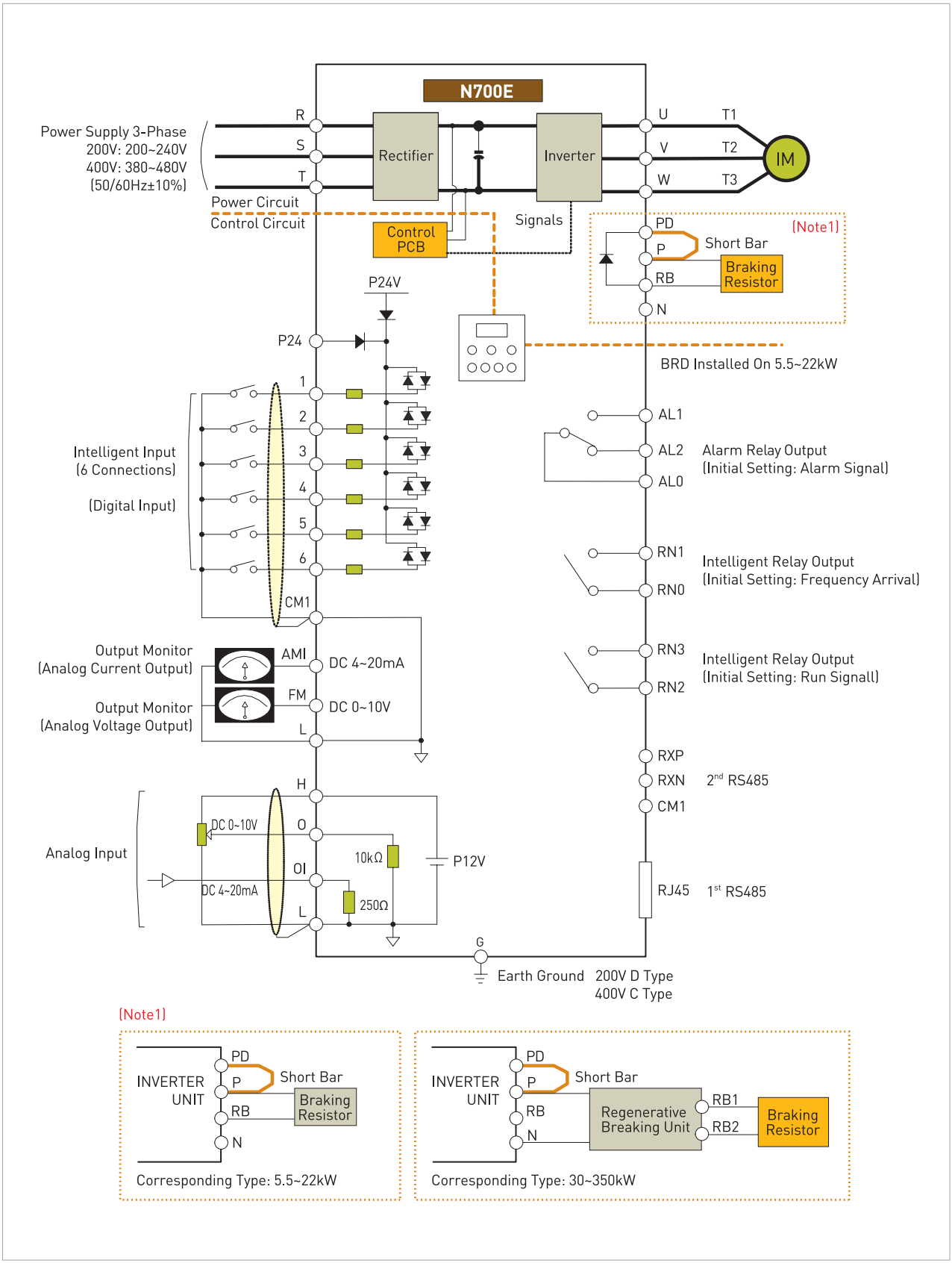
▪ Terminal Connecting Diagram (004 - 022SF / 004 - 037LF/HF)



Terminal Name	1, 2, 3, 4, 5, 6, P24, FM	H, O, OI
Common	CM1	L

※ Be careful as there are different kinds of common terminals.

▪ Terminal Connecting Diagram (055 - 220LF / 055 - 3500HF)

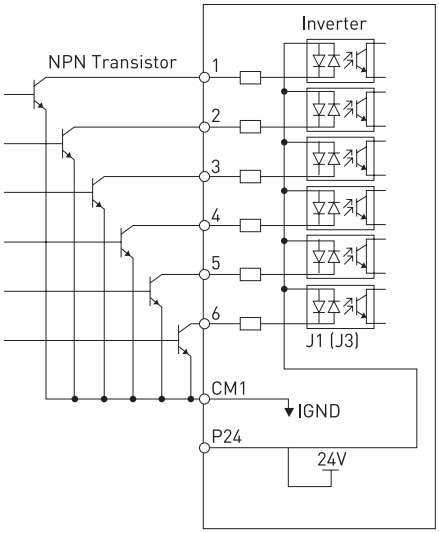


Connection to PLC

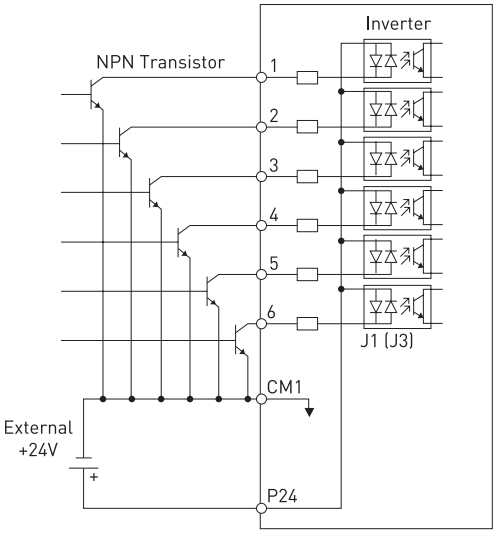
▪ Connection with Input Terminals

Sink Type

- Using Interface Power Inside Inverter



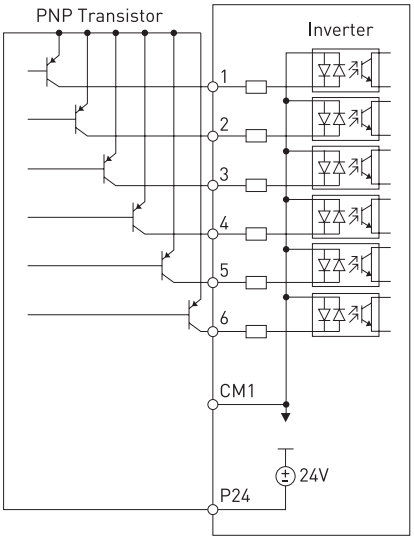
- Using External Power



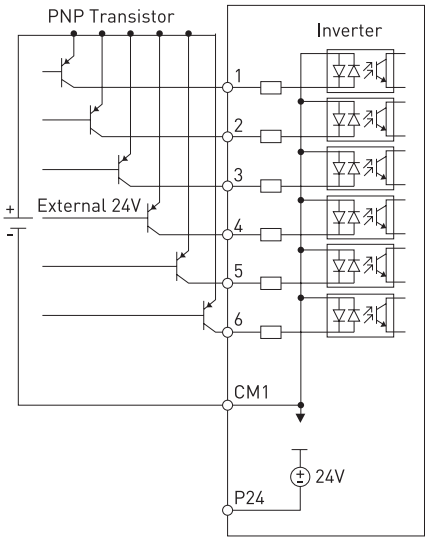
※ 004 - 022SF, 004 - 037LF/HF Model is not applicable.

Source Type

- Using Interface Power Inside Inverter



- Using External Power



Operations

Operations



Run lamp

Light is on when the inverter is generating PWM output or RUN command is entered.

Power lamp

Lamp for the controlling power

Display (LED signal)

Displays frequency, motor current, motor rotational number, alarm setting

Run key

Run the inverter. RUN key is disabled when the inverter is selected to run by terminal. RUN key is available only while the above LED is on.

Function key

Command selecting function.

Up/Down key

Increase / Decrease frequency value, and modify set values

PRG lamp

Light is on when the value is entering

Hz/A lamp

Show whether the displayed data is frequency value or data current value.

Stop / Reset key

Stop operating inverter and cancellation of alarm (available in both sides of operator and terminal) When the inverter is run through b15 terminal, operator can select valid or invalid state.

Volume key

Set output frequency.
(available only when the lamp is on)

Store key

Store the selected data or the set value.

※ The key arrangement of N700E's operator (0.4 ~ 3.7 kW) is different from the above. However, the function of key is the same as the above.

Operations

Standard Operator Setting



Display Running Frequency



Protective Functions

Error Codes

Name	Description	Display on Digital Operator
Over-current Protection	When the inverter output is short circuited or motor shaft is locked, excessive current for the inverter flows. To protect inverter from excessive current, inverter output is turned off by operating current protection circuit.	E04
Overload Protection	When an overload of motor is detected by the electronic thermal function, the inverter trips and turns off its output.	E05
Over-voltage Protection	When the DC bus voltage exceeds a threshold, due to regenerative energy from the motor, the inverter trips and turns off its output.	E07
Communication Error	An error between operator and inverter is detected.	E60
Under-voltage Protection	A decrease of internal DC bus voltage below a threshold results in a fault of controlling circuit. This condition can also generate excessive motor heat or cause low torque. The inverter trips and turns off its output when the voltage is below 150 ~ 160 V (200 V class) or below 300 ~ 320 V (400 V class) An instantaneous interruption may cause this error.	E09
Output Short-circuit	When outputs are short circuited, excessive current causes protection circuit to stop inverter output.	E04 or E34
USP Error	If power is on at the same time inverter is being operated in terminal mode, USP error will be seen (in case of USP function is enabled).	E13
EEPROM Error	When the external noise or temperature rise causes internal EEPROM error, an inverter output is turned off. Check the setting data because there is a case of alarm signal failure.	E08
External Trip	When the external equipment makes a failure, inverter receives this failure signal and turns off the output (Intelligent input terminal need to be set for this function).	E12
Temperature Trip	When the inverter internal temperature is higher than the specified value, the thermal sensor in the inverter module detects it and turns off the inverter output.	E21
Ground Fault Protection	The inverter is protected by the detection of ground faults between the inverter output and the motor.	E14
Inverter Overload Protection	The Inverter is protected by overheating. Protection will operate 150 % current for 1 minute (In case of base carrier frequency). Operation times are depend on inverter capacity.	E17
Input Phase Loss Protection	The inverter protected by (R, S, T) input phase loss (in case of 1-phase, R or S input phase).	E20
Braking Resistor Overload Protection	When BRD exceeds the usage ratio of the regenerative braking resistor, the over-voltage circuit activates and the inverter output is switched off	E06
CPU Error	Inverter main CPU error. When this trip occurs, the inverter power must be turned off and after discharging completely, it can be turned on.	E11
Safety Function (option)	Safety input signal is in active state. After removing the safety operation signal, the inverter can be reset. The safety operation pin is option.	E22

※ Protective functions protect inverter from over-current, over-voltage and under-voltage. Once protective functions are operated, all outputs of inverter are disconnected and motor is stopped by free-run stop. Inverter keeps this protective status until reset command is entered.

Function Lists (004 - 022SF / 004 - 037LF/HF)

▪ Monitor Modes (d-group) & Basic Setting Modes (F-group)

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Basic Monitor	d01	Output Frequency Monitor	0.00 - 400.0 Hz ("Hz"LED on)		
	d02	Output Current Monitor	0.0 - 99.9 A ("A"LED on)		
	d03	Output Voltage Monitor	Output voltage display [V]		
	d04	Motor Rotational Direction Monitor	"F": Forward direction, "r" : Reverse direction, "O": Stop		
	d05	PID Feedback Monitor	Display PID feedback value [%]		
	d06	Terminal Input Monitor	Display the state of Intelligent input terminal display		
	d07	Terminal Output Monitor	Display the state of intelligent input terminal and alarm output terminals		
	d08	Frequency Conversion Monitor	0 - 99.99 / 100.0 - 400.0 (= d01 x b14)		
	d09	Power Consumption Monitor	0 - 9999 [W]		
	d10	Cumulative Time Monitor During RUN (Hr)	0 - 9999 [Hr]		
	d11	Cumulative Time Monitor During RUN (Min)	0 - 59 [Min]		
	d12	DC Link Voltage Monitor	0 - 999 [V]		
	d13	Trip Monitor	Displays the details of the last trip		
	d14	Trip Monitor 1	Display the details for the last 1 protective trip		
	d15	Trip Monitor 2	Display the details for the last 2 protective trips		
	d16	Trip Monitor 3	Display the details for the last 3 protective trips		
	d17	Trip Counter	Display the number of inverter trips		
Basic Setting	F01	Output Frequency Setting	0.00 - 400.0 [Hz]	0.00 Hz	○
	F02	Accelerating Time Setting 1	0.1 - 3000 [sec]	10.0 sec	○
	F03	Decelerating Time Setting 1	0.1 - 3000 [sec]	10.0 sec	○
	F04	Driving Direction Selection	0 --- forward/1 --- reverse	0	X

▪ Expanded Function A Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Basic Setting	A01	Frequency Setting Method (Multi-speed Setting)	0: Keypad potentiometer / 1: Control terminal input 2: Standard operator 3: Remote operator (1st Comm-RJ45 connector) 4: Remote operator (2nd Comm-terminal strip)	1	X
	A02	Run Setting Method	0: Standard operator / 1: Control terminal input 2: Remote operator (1st Comm-RJ45 connector) 3: Remote operator (2nd Comm-terminal strip)	1	X
	A03	Base Frequency Setting	Set base frequency from 0 to max by 0.01Hz unit	60.00 Hz	X
	A04	Maximum Frequency	Base frequency (A03) - 400 [Hz] In SLV mode, Base frequency (A03) - 300 [Hz]	60.00 Hz	X
Analog Input Setting (External Frequency Setting)	A05	External Frequency Start Value	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A06	External Frequency End Value	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A07	External Frequency Start Value Ratio	0 - 100 (0.1 % unit)	0.0 %	X
	A08	External Frequency End Ratio	0 - 100 (0.1 % unit)	100.0 %	X
	A09	External Frequency Start Selection	0: Start from start frequency / 1: Start from 0 Hz	0	X
	A10	External Frequency Sampling	Set sampling number on analog input filter from 1 to 8.	4	X
Multilevel and Jogging Setting	A11 - A25	Multi-speed Frequency	0.00 - Maximum frequency (A04) [Hz]	Speed1: 5 Hz Speed2: 10 Hz Speed3: 15 Hz Speed4: 20 Hz Speed5: 30 Hz Speed6: 40 Hz Speed7: 50 Hz Speed8: 60 Hz Other : 0 Hz	○
	A26	Jogging Frequency	0.50 - 10.00 [Hz]	0.50 Hz	○
	A27	Selection of Jogging Stop Operation	0: Free-run stop / 1: Stop by decelerating 2: Stop by DC braking	0	X
V / F Characteristic	A28	Torque Boost Selection	0: Manual / 1: Automatic	0	X
	A29	Manual Torque Boost	0.0~50.0 [%]	2.5 %	○
	A30	Manual Torque Boost Frequency	Select frequency ratio out of base frequency from 0 - 100 %.	10.0 %	○
	A31	Control Method	0: Linear torque characteristic / 1: Reduced torque characteristic / 2: Sensorless vector control	3 Phase: 0 1 Phase: 2	X
	A32	Output Voltage Gain	20 - 110 %	100.0 %	○
DC Braking Setting	A33	DC Braking Selection	0: Disabled / 1: Enabled	0	X
	A34	DC Braking Frequency	0.50 - 10.00 [Hz]	0.50 Hz	X
	A35	DC Braking Waiting Time	0.0 - 5.0 sec (0.1 sec unit)	0.0 sec	X
	A36	DC Braking Force	0 - 100 % (0.1 % unit)	50 %	X
	A37	DC Braking Time	0.0 - 10.0 sec (0.1 sec unit)	0.0 sec	X
Frequency Related Setting	A38	Upper Limit of Frequency	A39 - A04 Hz (0.01 Hz unit)	0.00 Hz	X
	A39	Lower Limit of Frequency	0.00 - A38 Hz (0.01 Hz unit)	0.00 Hz	X
	A40 A42 A44	Frequency Jump	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A41 A43 A45	Frequency Jump Width	0.00 - 10.00 [Hz]	0.00 Hz	X

Function Lists (004~022SF / 004~037LF/HF)

▪ Expanded Function A Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
AVR Related Setting	A52	AVR Selection	0: Always ON / 1: Always OFF 2: OFF only when deceleration	2	X
	A53	Motor Voltage Capacity	200 / 220 / 230 / 240 (200 V class) 380 / 400 / 415 / 440 / 460 / 480 (400 V class)	220 V / 380 V	X
2nd Accel / Decel Related Functions	A54	2nd Acceleration Time	0.1 - 3000 [sec]	10.0 sec	○
	A55	2nd Deceleration Time	0.1 - 3000 [sec]	10.0 sec	○
	A56	2 Level Accel. / Decel. Switching Method Setting	0: Input from terminal [2CH] 1: Switching frequency setting from acc / dec1 to acc / dec2	0	X
	A57	Frequency Setting for Accel. / Decel. Time Switching in Acceleration[1)]	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A58	Frequency Setting for Accel. / Decel. Time Switching in Acceleration[1)]	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A59	Acceleration Pattern Selection	0: Linear / 1: S-curve / 2: U-curve	0	X
	A60	Deceleration Pattern Selection	0: Linear / 1: S-curve / 2: U-curve	0	X
Other Functions	A61	Voltage Input (O) Offset Setting	-10.0 - 10.0 [%]	0.0	○
	A62	Voltage Input (O) Gain Setting	0.0 - 200.0 [%]	100.0	○
	A63	Current Input (OI) Offset Setting	-10.0 - 10.0 [%]	0.0	○
	A64	Current Input (OI) Gain Setting	0.0 - 200.0 [%]	100.0	○
	A65	FAN Setting	0: Always ON / 1: ON only when RUN	0	X
PID Control Setting	A70	PID Function Selection	0: PID control disable 1: PID control enable 2: F / F control enable	0	X
	A71	PID Reference	0.00 - 100.0 [%]	0.00 %	○
	A72	PID Reference Source	0: Keypad potentiometer 1: Control terminal input 2: Standard operator (A71) 3: Remote operator (communication)	2	X
	A73	PID Feed-back Source	0: Current input (OI) 1: Voltage input (O)	0	X
	A74	PID P Gain	0.1 - 1000 [%]	100.0 %	○
	A75	PID I Gain	0.0 - 3600 [sec]	1.0 sec	○
	A76	PID D Gain	0.00 - 10.00 [sec]	0.00 sec	○
	A77	PID Error Limit	0.0 - 100.0 [%]	100.0 %	○
	A78	PID Output High Limit	-100.0 - 100.0 [%]	100.0 %	○
	A79	PID Output Low Limit	-100.0 - 100.0 [%]	0.00 %	○
	A80	PID Output Reverse	0: PID output reverse disable 1: PID output reverse enable	0	X
	A81	PID Scale Factor	0.1 - 1000 [%]	100.0 %	X
	A82	Pre PID Frequency	0.00 - Max frequency (A04) [Hz]	0.00 Hz	X
	A83	Sleep Frequency	0.00 - Max frequency (A04) [Hz]	0.00 Hz	X
	A84	Sleep Delay Time	0.0 - 30.0 [sec]	0.0 sec	X
	A85	Wake up Frequency	Sleep frequency (A83) - Max frequency (A04) [Hz]	0.00 Hz	X

※ **1)** If acceleration time and deceleration time is less than 1 second, an error occurs on the switching frequency.

Expanded Function b Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Restart Related Functions	b01	Instant Restart Selection	0: Alarm after trip / 1: Start from 0Hz when restart 2: Start from predefined frequency when restart 3: Stop by decelerating from predefined frequency when restart	0	X
	b02	Allowable Restart Time [1)]	0.3 - 1.0 sec (0.1 sec unit)	1.0 sec	X
	b03	Instant Restart Waiting Time	0.3 - 10.0 sec (0.1 sec unit)	1.0 sec	X
Electric Thermal Related Functions	b04	Electronic Thermal Level	Set electronic thermal level in 20 - 120 % of inverter rated current.	100.0 %	X
	b05	Electronic Thermal Characteristic Selection	0: Cooling fan is mounted on the motor shaft (self-cool) 1: Cooling fan is powered by independent source (forced-cool)	1	X
Overload Limiting Related Functions	b06	Overload and Over-voltage Limiting Mode	1: Overload, over-voltage restriction mode OFF 2: Overload limiting mode ON 3: Over-voltage limiting mode ON 4: Overload, over-voltage limiting mode ON	3	X
	b07	Overload Limiting Level Setting	Set overload limiting level in 20 - 200 % of rated current.	180 %	X
	b08	Overload Limiting Constant Setting	0.1 - 10.0 sec (0.1 unit)	1.0 sec	X
Other Functions	b09	Soft-lock Selection	0 - 3 (refer to instruction manual)	0	X
	b10	Start Frequnecy Adjustment	0.50 - 10.00 [Hz]	0.50 Hz	X
	b11	Carrier Frequency	3.0 - 16.0 [kHz]	5.0 kHz	○
	b12	Initialization Mode	0: Initialization of trip data / 1: Data initialization	0	X
	b13	Select Initial Value	0: for Korea / 1: for Europe / 2: for USA	0	X
	b14	RPM Conversion Factor Setting	0.01 - 99.99 (0.01 unit)	1.00	○
	b15	Stop Key Enable	0: Stop enable / 1: Stop disable	0	X
	b16	Stop Operation	0: Restart from 0 Hz 1: Restart from predefined frequency	0	X
	b17	Communication	Set inverter communication code from 1 - 32 when connect inverter with external control equipment	1	X
	b18	Ground Fault Detection	0: No detection	0	X
	b19	Speed Search Current Suppression Level	90 - 180 [%]	100 %	○
	b20	Voltage Increase Level During Speed Search	10 - 300 [%]	100 %	○
	b21	Voltage Decrease Level During Speed Search	10 - 300 [%]	100 %	○
	b22	Speed Decrease Level During Speed Search	1 - 200 [%] (operator display: 10 - 2000)	100 % (1,000)	○
	b23	Frequency Match Operation Selection	0: 0 Hz Starting operation 1: Frequency matching & Start operation	0	○
	b24	Fault Relay Configuration	0: Inactive incase of low voltage failure 1: Active in case of voltage failure (inactive in case of restart mode) 2: Active in case of all failure occurred include LV failure 3: Active in case of voltage failure (in case of low voltage failure, automatic restart).	0	○
	b25	Stop Method Selection	0: A normal decelerating stop 1: Free-run stop	0	○
	b27	Input Phase Loss Protection	0: Input phase loss protection disable 1: Time setting: 1 - 100 (sec)	10	○
	b28	Communication Time Out Setting	0 - 60 [sec] / 0: No detect time out	0	○
	b29	Communication Time Out Operation Mode	0: Always active / 1: Active in case of inverter is running	0	○
	b30	Display Code Setting	1 - 13	1	○
	b31	2nd Communication Channel (option) Baud Rate Setting	1: 2,400 [bps] / 2: 4,800 [bps] 3: 9,600 [bps] / 4: 19,200 [bps]	3	○
BRD Function	b32	BRD Selection	0: Invalid: BRD doesn't operate 1: BRD operate during run 2: BRD operate during run & stop	1	X
	b33	BRD Using Ratio	0.0~50.0 [%]	10.0 %	X

※ **1)** This function depends on the machine and load conditions. Before using this function, user must perform verification test.

Function Lists (004 - 022SF / 004 - 037LF/HF)

▪ Expanded Function C Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Input Terminal Setting	C01	Intelligent Input Terminal 1 Setting	0: FW (forward direction) 1: RV (reverse direction) 2: CF1 (multi-speed 1) 3: CF2 (multi-speed 2) 4: CF3 (multi-speed 3) 5: CF4 (multi-speed 4) 6: JG (jogging run) 8: 2CH (2-level accel / decel command) 9: FRS (free-run stop) 10: EXT (external trip) 11: USP (unattended start protection) 12: SFT (soft lock) 13: AT (analog input voltage / current transferring) 14: RS (reset) 15: STA (start) 16: STP (stop) 17: F/R (forward / reverse) 18: Remote Control UP 19: Remote Control DOWN 20: Local Keypad Operation (O/R) 21: Local Terminal Input Operation (T/R) 22: PID Integral Reset (PIDIR) 23: PID Disable (PIDD)	0	X
	C02	Intelligent Input Terminal 2 Setting	(Code)-Same as C01	1	X
	C03	Intelligent Input Terminal 3 Setting	(Code)-Same as C01	2	X
	C04	Intelligent Input Terminal 4 Setting	(Code)-Same as C01	3	X
	C05	Intelligent Input Terminal 5 Setting	(Code)-Same as C01	13	X
	C06	Intelligent Input Terminal 6 Setting	(Code)-Same as C01	14	X
Input Terminal Status Setting	C07	Contact Setting of a / b of Input Terminal 1 (NO / NC)	Set contacts of a / b of intelligent input terminal 1 0: a contacts (normal open) [NO] 1: b contacts (normal close) [NC]	0	X
	C08	Contact Setting of a / b of Input Terminal 2 (NO / NC)	Set contacts of a / b of intelligent input terminal 2	0	X
	C09	Contact Setting of a / b of Input Terminal 3 (NO / NC)	Set contacts of a / b of intelligent input terminal 3	0	X
	C10	Contact Setting of a / b of Input Terminal 4 (NO / NC)	Set contacts of a / b of intelligent input terminal 4	0	X
	C11	Contact Setting of a / b of Input Terminal 5 (NO / NC)	Set contacts of a / b of intelligent input terminal 5	0	X
	C12	Contact Setting of a / b of Input Terminal 6 (NO / NC)	Set contacts of a / b of intelligent input terminal 6	0	X
Output Terminal Function	C13	Intelligent Terminal Relay Output Setting	0: RUN (Run signal) 1: FA1 (Frequency arrival signal: Command arrival) 2: FA2 (Frequency arrival signal: Setting frequency or more) 3: OL (Overload advance notice signal) 4: OD (Output deviation for PID control) 5: AL (Alarm signal)	5	X
	C14	Intelligent Open Collector Output 11 Setting		1	X
	C15	Intelligent Open Collector Output 12 Setting		0	X
	C16	Output Terminal 11 a / b Contact Setting	0: a contact (normal open) [NO] 1: b contact (normal close) [NC]	0	X
	C17	Output Terminal 12 a / b Contact Setting		0	X
	C18	Monitor Signal Selection	0: Output frequency monitor 1: Output current monitor 2: Output voltage monitor	0	X
	C19	Analog Meter Gain Adjustment	0 - 250.0 [%]	100.0 %	○
	C20	Analog Meter Offset Adjustment	-3.0 - 10.0 [%]	0.0 %	○
	C21	Overload Advance Notice Signal Level Setting	0.5* (inverter rated current) - 2.0* (inverter rated current)	100.0 %	X
	C22	Acceleration Arrival Signal Frequency Setting	0.00 - Max frequency (A04) [Hz]	0.00 Hz	X
	C23	Deceleration Arrival Signal Frequency Setting	0.00 - Max frequency (A04) [Hz]	0.00 Hz	X
	C24	PID Deviation Level Setting	0.0 - 100.0 [%]	10.0 %	X

▪ Motor Constant Setting H Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Motor Constant Setting	H01	Auto-tuning Mode	0: Auto-tuning OFF 1: Auto-tuning ON (non-ratational mode)	0	X
	H02	Selection Motor Constant	0: Standard mode data 1: Auto-tuning data	0	X
	H03	Motor Capacity	00.4 L: 220 V / 0.4 kW 00.7 L: 220 V / 0.75 kW 01.5 L: 220 V / 1.5 kW 02.2 L: 220 V / 2.2 kW 03.7 L: 220 V / 3.7 kW 05.5 L: 220 V / 5.5 kW 00.4 H: 380 V / 0.4 kW 00.7 H: 380 V / 0.75 kW 01.5 H: 380 V / 1.5 kW 02.2 H: 380 V / 2.2 kW 03.7 H: 380 V / 3.7 kW 05.5 H: 380 V / 5.5 kW	-	X
	H04	Motor Pole Selection	2 / 4 / 6 / 8 poles (P)	4	X
	H05	Motor Rated Current	0.1 - 50.0 A	-	X
	H06	Motor No-load Current Io	0.1 - 50.0 A	-	X
	H07	Motor Rated Slip	0.01 - 10.0 %	-	X
	H08	1st Resistor R1 for Motor Constant	Setting range: 0.001 - 30.00 Ω	-	X
	H09	Overloaded Inductance Lsig for Motor Constant	Setting range: 0.01 - 100.00 mH	-	X
	H10	R1 Auto-tuning Data for Motor Constant	Setting range: 0.001 - 30.00 Ω	-	X
	H11	Lsig Auto-tuning Data for Motor Constant	Setting range: 0.01 - 100.00 mH	-	X

Function Lists (055 - 220LF / 055 - 3500HF)

▪ Monitor Modes (d-group) & Basic Setting Modes (F-group)

Main Function	Code	Function Name	Description	Initial Data	Change Mode on
Basic Monitor	d01	Output Frequency Monitor	0.00 - 400.0 [Hz] ("Hz"LED on)		
	d02	Output Current Monitor	0.0 - 999.9 [A] ("A"LED on)		
	d03	Output Voltage Monitor	Output voltage display [V]		
	d04	Motor Rotational Direction Monitor	"F": Forward direction, "r" : Reverse direction, "O": Stop		
	d05	PID Feedback Monitor	Display PID feedback value [%]		
	d06	Terminal Input Monitor	Display the state of Intelligent input terminal display		
	d07	Terminal Output Monitor	Display the state of intelligent input terminal and alarm output terminals		
	d08	Frequency Conversion Monitor	0 - 99.99 / 100.0 - 400.0 (= d01 x b14)		
	d09	Power Consumption Monitor	0 - 9999 [W]		
	d10	Cumulative Time Monitor During RUN (Hr)	0 - 9999 [Hr]		
	d11	Cumulative Time Monitor During RUN (Min)	0 - 59 [Min]		
	d12	DC Link Voltage Monitor	0 - 999 [V]		
	d13	Trip Monitor	Displays the details of the last trip		
	d14	Trip Monitor 1	Display the details for the last 1 protective trip		
	d15	Trip Monitor 2	Display the details for the last 2 protective trips		
	d16	Trip Monitor 3	Display the details for the last 3 protective trips		
	d17	Trip Counter	Display the number of inverter trips		
Basic Setting	F01	Output Frequency Setting	0.00 - 400.0 [Hz]	0.00 Hz	O
	F02	Accelerating Time Setting 1	0.1 - 3000 [sec]	30.0 sec	O
	F03	Decelerating Time Setting 1	0.1 - 3000 [sec]	30.0 sec	O
	F04	Driving Direction Selection	0 --- forward / 1 --- reverse	0	X

▪ Expanded Function A Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Basic Setting	A01	Frequency Setting Method (Multi-speed Setting)	0: Keypad potentiometer / 1: Control terminal input 2: Standard operator 3: Remote operator (1st Comm-RJ45 connector) 4: Remote operator (2nd Comm-terminal strip)	1	X
	A02	Run Setting Method	0: Standard operator / 1: Control terminal input 2: Remote operator (1st Comm-RJ45 connector) 3: Remote operator (2nd Comm-terminal strip)	1	X
	A03	Base Frequency Setting	Set base frequency from 0 to max by 0.01 Hz unit	60.00 Hz	X
	A04	Maximum Frequency	Base frequency (A03) - 400 [Hz] In SLV mode, Base frequency (A03)~300 [Hz]	60.00 Hz	X
Analog Input Setting (External Frequency Setting)	A05	External Frequency Start Value	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A06	External Frequency End Value	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A07	External Frequency Start Value Ratio	0 - 100 (0.1 % unit)	0.0 %	X
	A08	External Frequency End Ratio	0 - 100 (0.1 % unit)	100.0 %	X
	A09	External Frequency Start Selection	0: Start from start frequency / 1: Start from 0 Hz	0	X
	A10	External Frequency Sampling	Set sampling number on analog input filter from 1 to 8.	4	X
Multilevel and Jogging Setting	A11 ~ A25	Multi-speed Frequency	0.00 - Maximum frequency (A04) [Hz]	Speed1: 5 Hz Speed2: 10 Hz Speed3: 15 Hz Speed4: 20 Hz Speed5: 30 Hz Speed6: 40 Hz Speed7: 50 Hz Speed8: 60 Hz Other : 0 Hz	○
	A26	Jogging Frequency	0.50 - 10.00 [Hz]	0.50 Hz	○
	A27	Selection of Jogging Stop Operation	0: Free-run stop / 1: Stop by decelerating 2: Stop by DC braking	0	X
V/F Characteristic	A28	Torque Boost Selection	0: Manual / 1: Automatic	0	X
	A29	Manual Torque Boost	0.0 - 50.0 [%]	1.0 %	○
	A30	Manual Torque Boost Frequency	Select frequency ratio out of base frequency from 0 - 100 %.	10.0 %	○
	A31	Control Method	0: Linear torque characteristic / 1: Reduced torque characteristic / 2: Sensorless vector control	0	X
	A32	Output Voltage Gain	20 - 110 %	100.0 %	○
DC Braking Setting	A33	DC Braking Selection	0: Disabled / 1: Enabled	0	X
	A34	DC Braking Frequency	0.50 - 10.00 [Hz]	0.50 Hz	X
	A35	DC Braking Waiting Time	0.0 - 5.0 sec (0.1 sec unit)	0.0 sec	X
	A36	DC Braking Force	0 - 100 % (0.1 % unit)	7 - 50 % [1)]	X
	A37	DC Braking Time	0.0 - 10.0 sec (0.1 sec unit)	0.0 sec	X
Frequency Related Setting	A38	Upper Limit of Frequency	A39 - A04 Hz (0.01 Hz unit)	0.00 Hz	X
	A39	Lower Limit of Frequency	0.00 - A38 Hz (0.01 Hz unit)	0.00 Hz	X
	A40 A42 A44	Frequency Jump	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A41 A43 A45	Frequency Jump Width	0.00 - 10.00 [Hz]	0.00 Hz	X

※ **1)** Refer to user's manuals.

Function Lists (055 - 220LF / 055 - 3500HF)

▪ Expanded Function A Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
AVR Related Setting	A52	AVR Selection	0: Always ON / 1: Always OFF 2: OFF only when deceleration	2	X
	A53	Motor Voltage Capacity	200 / 220 / 230 / 240 (200 V class) 380 / 400 / 415 / 440 / 460 / 480 (400 V class)	LF: 220 V HF: 380 V / 440 V [1]	X
2nd Accel / Decel Related Functions	A54	2nd Acceleration Time	0.1 - 3,000 [sec]	30.0 sec	○
	A55	2nd Deceleration Time	0.1 - 3,000 [sec]	30.0 sec	○
	A56	2 Level Accel. / Decel. Switching Method Setting	0: Input from terminal [2CH] 1: Switching frequency setting from acc / dec1 to acc / dec2	0	X
	A57	Frequency Setting for Accel. / Decel. Time Switching in Acceleration [2]	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A58	Frequency Setting for Accel. / Decel. Time Switching in Acceleration [2]	0.00 - Maximum frequency (A04) [Hz]	0.00 Hz	X
	A59	Acceleration Pattern Selection	0: Linear / 1: S-curve / 2: U-curve	0	X
	A60	Deceleration Pattern Selection	0: Linear / 1: S-curve / 2: U-curve	0	X
Other Functions	A61	Voltage Input (O) Offset Setting	-10.0 - 10.0 [%]	0.0	○
	A62	Voltage Input (O) Gain Setting	0.0 - 200.0 [%]	100.0	○
	A63	Current Input (OI) Offset Setting	-10.0 - 10.0 [%]	0.0	○
	A64	Current Input (OI) Gain Setting	0.0 - 200.0 [%]	100.0	○
	A65	FAN Setting	0: Always ON / 1: ON only when RUN	0	X
PID Control Setting	A70	PID Function Selection	0: PID control disable 1: PID control enable 2: F / F control enable	0	X
	A71	PID Reference	0.00 - 100.0 [%]	0.00 %	○
	A72	PID Reference Source	0: Keypad potentiometer 1: Control terminal input 2: Standard operator (A71) 3: Remote operator (communication)	2	X
	A73	PID Feed-back Source	0: Current input (OI) 1: Voltage input (O)	0	X
	A74	PID P Gain	0.1 - 1,000 [%]	100.0 %	○
	A75	PID I Gain	0.0 - 3,600 [sec]	1.0 sec	○
	A76	PID D Gain	0.00 - 10.00 [sec]	0.00 sec	○
	A77	PID Err Limit	0.0 - 100.0 [%]	100.0 %	○
	A78	PID Output High Limit	-100.0 - 100.0 [%]	100.0 %	○
	A79	PID Output Low limit	-100.0 - 100.0 [%]	0.0 %	○
	A80	PID Output Reverse	0: PID output reverse disable 1: PID output reverse enable	0	X
	A81	PID Scale Factor	0.1 - 1,000 [%]	100.0 %	X
	A82	Pre PID Frequency	0.00 - Max frequency (A04) [Hz]	0.00 Hz	X
	A83	Sleep Frequency	0.00 - Max frequency (A04) [Hz]	0.00 Hz	X
	A84	Sleep Delay Time	0.0 - 30.0 [sec]	0.0 sec	X
	A85	Wake up Frequency	Sleep frequency (A83) - Max frequency (A04) [Hz]	0.00 Hz	X

※ **1)** LF model: 220 V, 055HF - 1320HF / 075HFP - 1600HFP: 380 V, 1600HF - 3500HF / 2000HFP - 3800HFP: 440 V
2) If acceleration time and deceleration time is less than 1 second, an error occurs on the switching frequency.

▪ Expanded Function b Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Restart Related Functions	b01	Instant Restart Selection	0: Alarm after trip / 1: Start from 0Hz when restart 2: Start from predefined frequency when restart 3: Stop by decelerating from predefined frequency when restart	0	X
	b02	Allowable Restart Time [2)]	0.3 ~ 1.0 sec (0.1 sec unit)	1.0 sec	X
	b03	Instant Restart Waiting Time	0.3 ~ 10.0 sec (0.1 sec unit)	1.0 sec	X
Electric Thermal Related Functions	b04	Electronic Thermal Level	Set electronic thermal level in 20 ~ 120 % of inverter rated current.	100.0 %	X
	b05	Electronic Thermal Characteristic Selection	0: Cooling fan is mounted on the motor shaft (self-cool) 1: Cooling fan is powered by independent source (forced-cool)	1	X
Overload Limiting Related Functions	b06	Overload and Over-voltage Limiting Mode	1: Overload, over-voltage restriction mode OFF 2: Overload limiting mode ON 3: Over-voltage limiting mode ON 4: Overload, over-voltage limiting mode ON	3	X
	b07	Overload Limiting Level Setting	Set overload limiting level in 20 ~ 200 % of rated current.	120 % 180 % [1)]	X
	b08	Overload Limiting Constant Setting	0.1 ~ 10.0 sec (0.1 unit)	1.0 sec	X
Other Functions	b09	Soft-lock Selection	0 ~ 3 (refer to instruction manual)	0	X
	b10	Start Frequnecy Adjustment	0.50 ~ 10.00 [Hz]	0.50 Hz	X
	b11	Carrier Frequency	1.0 ~ 16.0 [kHz]	2 ~ 5 kHz [1)]	○
	b12	Initialization Mode	0: Initialization of trip data / 1: Data initialization	0	X
	b13	Select Initial Value	0: for Korea / 1: for Europe / 2: for USA	0	X
	b14	RPM Conversion Factor Setting	0.01 ~ 99.99 (0.01 unit)	1.00	○
	b15	Stop Key Enable	0: Stop enable / 1: Stop disable	0	X
	b16	Stop Operation	0: Restart from 0 Hz 1: Restart from predefined frequency	0	X
	b17	Communication	Set inverter communication code from 1 ~ 32 when connect inverter with external control equipment	1	X
	b18	Ground Fault Detection	0: No detection	0.0	X
	b19	Speed Search Current Suppression Level	90 ~ 180 [%]	100 %	○
	b20	Voltage Increase Level During Speed Search	10 ~ 300 [%]	100 %	○
	b21	Voltage Decrease Level During Speed Search	10 ~ 300 [%]	100 %	○
	b22	Speed Decrease Level During Speed Search	1 ~ 200 [%] (operator display: 10 ~ 2,000)	100 % (1,000)	○
	b23	Frequency Match Operation Selection	0: 0 Hz Starting operation 1: Frequency matching & Start operation	0	○
	b24	Fault Relay Configuration	0: Inactive incase of low voltage failure 1: Active in case of voltage failure (Inactive in case of restart mode) 2: Active in case of all failure occurred include LV failure 3: Active in case of voltage failure (In case of low voltage failure, automatic restart).	0	○
	b25	Stop Method Selection	0: A normal decelerating stop / 1: Free-run stop	0	○
	b26	P Type Selection	0: Heavy duty 1: Normal duty (※ Accept for 5.5 kW ↑)	0	X
	b27	Input Phase Loss Protection	0: Input phase loss protection disable 1: Time setting: 1 ~ 100 [sec]	10	○
	b28	Communication Time Out Setting	0 ~ 60 [sec] / 0: No detect time out	0	○
	b29	Communication Time Out Operation mode	0: Always active / 1: Active in case of inverter is running	0	○
	b30	Display Code Setting	1 ~ 13	1	○
	b31	2nd Communication Channel (option) Baud Rate Setting	1: 2,400 [bps] / 2: 4,800 [bps] 3: 9,600 [bps] / 4: 19,200 [bps]	3	○
BRD Function	b32	BRD Selection	0: Invalid: BRD doesn't operate 1: BRD operate during run 2: BRD operate during run & stop	1	X
	b33	BRD using ratio	0.0 ~ 50.0 [%]	10.0 %	X

※ **1)** Refer to user's manuals.

2) This function depends on the machine and load conditions. Before using this function, user must perform verification test.

Function Lists (055 - 220LF / 055 - 3500HF)

▪ Expanded Function C Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Input Terminal Setting	C01	Intelligent Input Terminal 1 Setting	0: FW (forward direction) 1: RV (reverse direction) 2: CF1 (multi-speed 1) 3: CF2 (multi-speed 2) 4: CF3 (multi-speed 3) 5: CF4 (multi-speed 4) 6: JG (jogging run) 8: 2CH (2-level accel / decel command) 9: FRS (free-run stop)a 10: EXT (external trip) 11: USP (unattended start protection) 12: SFT (soft lock) 13: AT (analog input voltage / current transferring) 14: RS (reset) 15: STA (start) 16: STP (stop) 17: F/R (forward / reverse) 18: Remote Control UP 19: Remote Control DOWN 20: Local Keypad Operation (O / R) 21: Local Terminal Input Operation (T / R) 22: PID Integral Reset (PIDIR) 23: PID Disable (PIDD)	0	X
	C02	Intelligent Input Terminal 2 Setting	(Code) - Same as C01	1	X
	C03	Intelligent Input Terminal 3 Setting	(Code) - Same as C01	2	X
	C04	Intelligent Input Terminal 4 Setting	(Code) - Same as C01	3	X
	C05	Intelligent Input Terminal 5 Setting	(Code) - Same as C01	13	X
	C06	Intelligent Input Terminal 6 Setting	(Code) - Same as C01	14	X
Input Terminal Status Setting	C07	Contact Setting of a / b of Input Terminal 1 (NO / NC)	Set contacts of a / b of intelligent input terminal 1 0: a contacts (normal open) [NO] 1: b contacts (normal close) [NC]	0	X
	C08	Contact Setting of a / b of Input Terminal 2 (NO / NC)	Set contacts of a / b of intelligent input terminal 2	0	X
	C09	Contact Setting of a / b of Input Terminal 3 (NO / NC)	Set contacts of a / b of intelligent input terminal 3	0	X
	C10	Contact Setting of a / b of Input Terminal 4 (NO / NC)	Set contacts of a / b of intelligent input terminal 4	0	X
	C11	Contact Setting of a / b of Input Terminal 5 (NO / NC)	Set contacts of a / b of intelligent input terminal 5	0	X
	C12	Contact Setting of a / b of Input Terminal 6 (NO / NC)	Set contacts of a / b of intelligent input terminal 6	0	X
Output Terminal Function	C13	Intelligent Terminal Relay (Alarm) Output Setting	0: RUN (Run signal) 1: FA1 (Frequency arrival signal: Command arrival) 2: FA2 (Frequency arrival signal: Setting frequency or more) 3: OL (Overload advance notice signal) 4: OD (Output deviation for PID control) 5: AL (Alarm signal)	5	X
	C14	Intelligent Terminal Relay (RN0-RN1) Output Setting		1	X
	C15	Intelligent Terminal Relay (RN2-RN3) Output Setting		0	X
	C16	Output Terminal RN0 - RN1 a / b Contact Setting	0: a contact (normal open) [NO]	0	X
	C17	Output Terminal RN2 - RN3 a / b Contact Setting	1: b contact (normal close) [NC]	0	X
	C18	FM Monitor Signal Selection	0: Output frequency monitor 1: Output current monitor 2: Output voltage monitor 3: Output wattage monitor	0	X
	C19	FM Output GAIN Adjustment	0 - 250.0 [%]	100.0%	○
	C20	FM Output OFFSET Adjustment	-3.0 - 10.0 [%]	0.0%	○
	C21	Overload Advance Notice Signal Level Setting	0.1* (inverter rated current) - 2.0* (inverter rated current)	100.0%	X
	C22	Acceleration Arrival Signal Frequency Setting	0.00 - Max frequency (A04) [Hz]	0.00 Hz	X
	C23	Deceleration Arrival Signal Frequency Setting	0.00 - Max frequency (A04) [Hz]	0.00 Hz	X
	C24	PID deviation Level Setting	0.0 - 100.0 [%]	10.0 %	X
	C25	AMI Monitor Signal Selection	0: Output frequency monitor 1: Output current monitor 2: Output voltage monitor 3: Output wattage monitor	1	X
	C26	AMI Output GAIN Adjustment	0 - 250.0 [%]	100.0 %	○
	C27	AMI Output OFFSET Adjustment	-99.9 - 100.0 [%]	0.0 %	○

Motor Constant Setting H Mode

Main Function	Code	Function Name	Description	Initial Data	Change Mode on Run
Motor Constant Setting	H01	Auto-tuning Mode	0: Auto-tuning OFF 1: Auto-tuning ON (non-ratational mode)	0	X
	H02	Selection Motor Constant	0: Standard mode data 1: Auto-tuning data	0	X
	H03	Motor Capacity	2.2 L: 220 V / 2.2 kW 3.7 L: 220 V / 3.7 kW 5.5 L: 220 V / 5.5 kW 7.5 L: 220 V / 7.5 kW 11 L: 220 V / 11 kW 15 L: 220 V / 15 kW 18.5 L: 220 V / 18.5 kW 22 L: 220 V / 22 kW 30 L: 220 V / 30 kW 2.2 H: 380 V / 2.2 kW 3.7 H: 380 V / 3.7 kW 5.5 H: 380 V / 5.5 kW 7.5 H: 380 V / 7.5 kW 11 H: 380 V / 11 kW 15 H: 380 V / 15 kW 18.5 H: 380 V / 18.5 kW 22 H: 380 V / 22 kW 30 H: 380 V / 30 kW 37 H: 380 V / 37 kW 45 H: 380 V / 45 kW 55 H: 380 V / 55 kW 75 H: 380 V / 75 kW 90 H: 380 V / 90 kW 110 H: 380 V / 110 kW 132 H: 380 V / 132 kW 160 H: 380 V / 160 kW 200 H: 380 V / 200 kW 220 H: 380 V / 220 kW 250 H: 380 V / 250 kW 280 H: 380 V / 280 kW 320 H: 380 V / 320 kW 350 H: 380 V / 350 kW 380 H: 380 V / 375 kW	-	X
	H04	Motor Pole Selection	2 / 4 / 6 / 8 poles (P)	4	X
	H05	Motor Rated Current	0.1 - 800.0 [A]	-	X
	H06	Motor No-load Current Io	0.1 - 400.0 [A]	-	X
	H07	Motor Rated Slip	0.01 - 10.0 [%]	-	X
	H08	1st Resistor R1 for Motor Constant	Setting range: 0.001 - 30.00 Ω	-	X
	H09	Overloaded Inductance Lsig for Motor Constant	Setting range: 0.01 - 100.00 mH	-	X
	H10	R1 Auto-tuning Data for Motor Constant	Setting range: 0.001 - 30.00 Ω	-	X
	H11	Lsig Auto-tuning Data for Motor Constant	Setting range: 0.01 - 100.00 mH	-	X

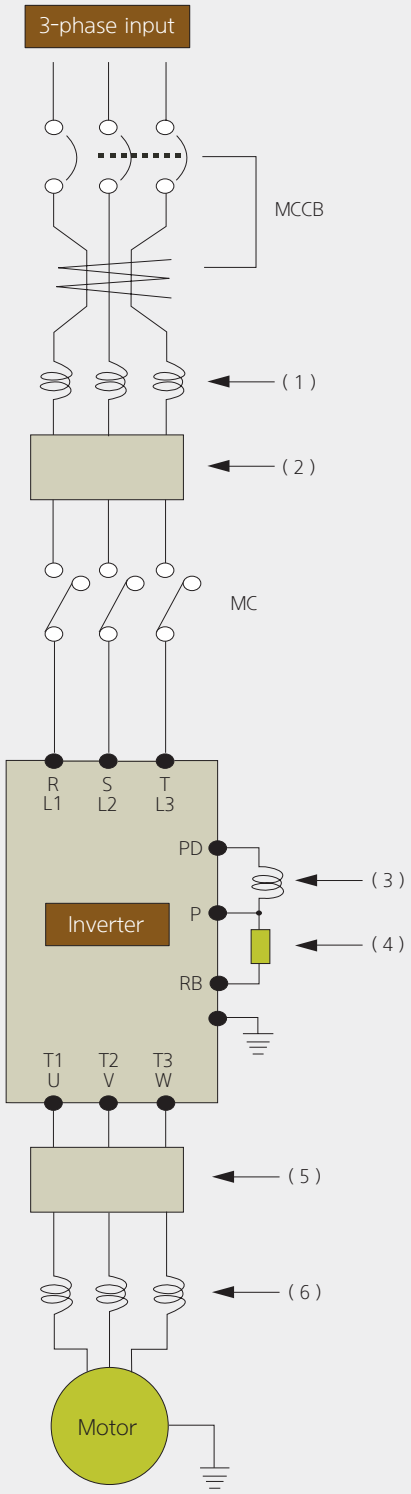
Wiring and Options

Common Applicable Tools

Class	Motor Output (kW)	Inverter Model	Power Cable (mm^2) R, S, T, U, V, W, PD, P	External Resistor between P and RB (mm^2)	Screw Size of Terminal	Torque (N·m)	Applicable Tools		
							Circuit Breaker (MCCB)		Magnetic Contactor (MC)
200 V Class	0.4	N700E-004SF	More than 1.25	-	M3	0.5	UAB30C	5A	HiMC10W
	0.4	N700E-004LF	More than 1.25	-	M3	0.5	UAB30C	5A	HiMC10W
	0.75	N700E-007SF	More than 1.25	-	M3	0.5	UAB30C	10A	HiMC10W
	0.75	N700E-007LF	More than 1.25	-	M3	0.5	UAB30C	10A	HiMC10W
	1.5	N700E-015SF	More than 2	-	M4	1.2	UAB30C	15A	HiMC10W
	1.5	N700E-015LF	More than 2	-	M3	0.5	UAB30C	15A	HiMC10W
	2.2	N700E-022SF	More than 2	-	M4	1.2	UAB30C	20A	HiMC20W
	2.2	N700E-022LF	More than 2	-	M4	1.2	UAB30C	20A	HiMC20W
	3.7	N700E-037LF	More than 3.5	-	M4	1.2	UAB30C	30A	HiMC20W
	5.5	N700E-055LF	More than 6	6	M4	1.2	UCB100R	50A	HiMC32
	7.5	N700E-075LF	More than 10	6	M4	1.2	UCB100R	50A	HiMC32
	11	N700E-110LF	More than 16	6	M5	3.0	UCB100R	75A	HiMC50
	15	N700E-150LF	More than 25	16	M5	3.0	UCB100R	100A	HiMC65
	18.5	N700E-185LF	More than 30	16	M6	4.5	UCB250S	150A	HiMC80
	22	N700E-220LF	More than 35	16	M6	4.5	UCB250S	150A	HiMC110
400 V Class	0.4	N700E-004HF	More than 1.25	-	M4	1.2	UAB30C	5A	HiMC10W
	0.75	N700E-007HF	More than 1.25	-	M4	1.2	UAB30C	5A	HiMC10W
	1.5	N700E-015HF	More than 1.25	-	M4	1.2	UAB30C	10A	HiMC10W
	2.2	N700E-022HF	More than 1.25	-	M4	1.2	UAB30C	10A	HiMC10W
	3.7	N700E-037HF	More than 2	-	M4	1.2	UAB30C	15A	HiMC20W
	5.5	N700E-055HF	More than 4	4	M4	1.2	UAB30C	30A	HiMC18
	7.5	N700E-075HF	More than 4	4	M4	1.2	UAB30C	30A	HiMC18
	11	N700E-110HF	More than 6	6	M4	1.2	UCB100R	50A	HiMC32
	15	N700E-150HF	More than 10	10	M5	3.0	UCB100R	50A	HiMC40
	18.5	N700E-185HF	More than 16	10	M5	3.0	UCB100R	75A	HiMC40
	22	N700E-220HF	More than 25	10	M5	3.0	UCB100R	75A	HiMC50
	30	N700E-300HF	More than 25	-	M6	4.5	UCB100R	100A	HiMC65
	37	N700E-370HF	More than 35	-	M6	4.5	UCB250S	100A	HiMC80
	45	N700E-450HF	More than 35	-	M8	6.0	UCB250S	150A	HiMC110
	55	N700E-550HF	More than 70	-	M8	6.0	UCB250S	175A	HiMC130
	75	N700E-750HF	More than 35 x 2	-	M8	6.0	UCB400S	250A	HiMC180
	90	N700E-900HF	More than 35 x 2	-	M8	6.0	UCB400S	250A	HiMC220
	110	N700E-1100HF	More than 50 x 2	-	M10	10.0	UCB400S	350A	HiMC260
	132	N700E-1320HF	More than 80 x 2	-	M10	10.0	UCB400S	350A	HiMC300
	160	N700E-1600HF	More than 0 x 2	-	M13	12	UCB800S	700A	HiMC400
	220	N700E-2200HF	More than 100 x 2	-	M13	12	UCB800S	800A	HiMC500
	280	N700E-2800HF	More than 150 x 2	-	M13	12	UCB1000S	1000A	HiMC630
	350	N700E-3500HF	More than 200 x 2	-	M13	12	UCB1250S	1250A	HiMC800

※ Use 600 V, 75°C copper wire.

Wiring and Options



Correct selection of peripherals is required in order to normal operation of inverter

- In case of an invalid system configuration and connection, it affect an abnormal operation or reduction in product life. In the worst case, there is a risk of burn out the inverter.
- The sensitivity of circuit breaker (MCCB) should be differentiated by the sums of wiring distances (inverter-power supply and inverter-motor).

Wiring Distance	Sensitive Current(mA)
Under 100 m	50
Under 300 m	100
Under 600 m	200

※ - IV line has high non-dielectric constant: current increases 8 times. When wiring distance is over 100 m, use CV line.
- ON / OFF operation is prohibited at the output side by using electromagnetic contactor. When it is necessary to apply electromagnetic contactor at the output side by using bypass circuit, ON / OFF should be applied while inverter is in normal operation.

Order	Function Name	Description
(1)	Input-side AC Reactor	As a measure of suppressing harmonics induced on the power supply lines, it is applied when imbalance of the main power voltage exceeds 3 % (and power source capacity is more than 500 kVA), or when the power voltage is rapidly changed. It also improves the power factor.
(2)	Input-side Noise Filter	This reduces common noise that is generated between input power and ground. Connect this filter to 1st side (input side) of inverter.
(3)	DC Reactor	Suppresses harmonics generated by the inverter
(4)	Regenerative Braking Unit	This will increase braking performance when inverter have high brake torque (or load have big inertial or invertor operate frequently ON / OFF).
(5)	Output-side Noise Filter	This reduces radiated noise from wiring in the inverter output side. This also reduces wave fault to radio and TV, and it is used for preventing malfunction of sensor and measuring instruments.
(6)	Output-side AC Reactor	This reactor reduces the vibration in the motor caused by the inverter's switching waveforms, by smoothing the waveforms to approximate commercial power quality. When wiring from the inverter to the motor is more than 10m in length, inserting a reactor prevents thermal relay's malfunction by harmonic generated by inverter's high switching.

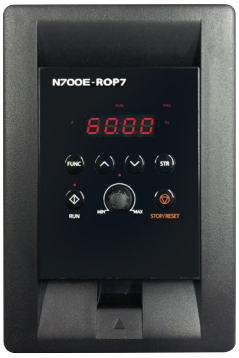
Wiring and Options

▪ Digital Operator

- Digital Operater is economical operater that can control main setting and order from a distance using exclusive cable.
- Digital Operater have four LED display, can observe the status of inverter from a distance.

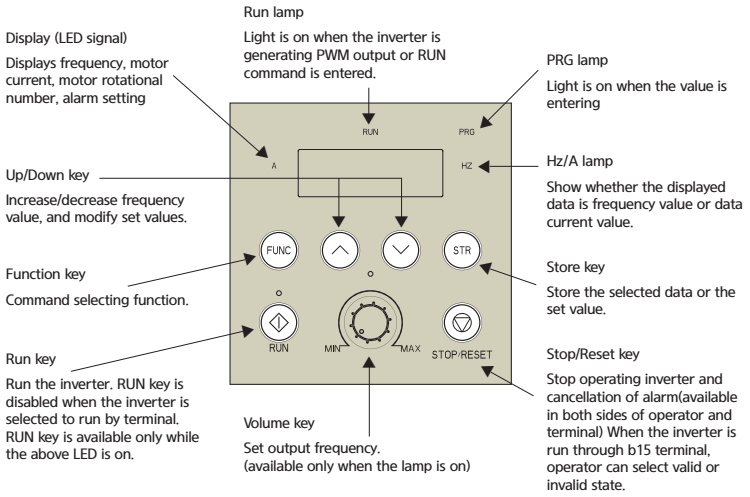
Layout and Specification ▸

Index		Content
Model Name		ROP7
Lay-out		150 mm (H) X100 mm (W) X32 mm (D)
Display	7-segment LED	4-digit 7-segment LED
	DOT LED	6 (RUN / PRG / Hz / A / RUN key / Volume LED)
Key-pad		7 (RUN / STOP (RESET) / FUNC / UP / DOWN / STR / Volume)
Communication		RS485 (Modular Method)
Function		Observe inverter running state
Cable		1.5 m, 3 m



Digital Operator (ROP7)

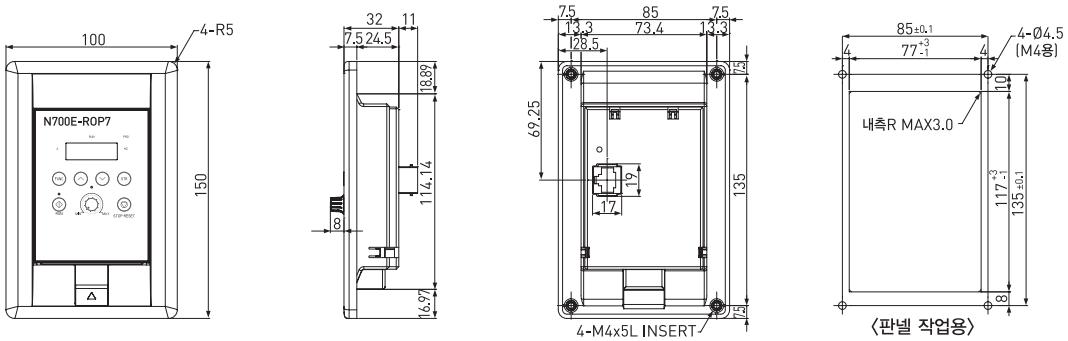
Keys



Example



Digtal Operator (ROP7)

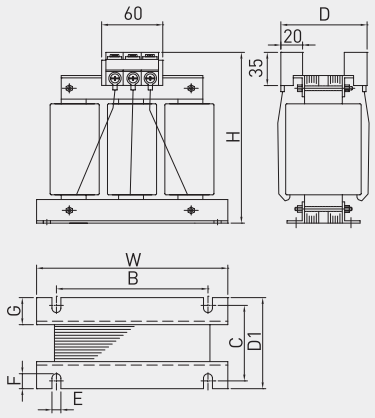


Input Reactor Specification

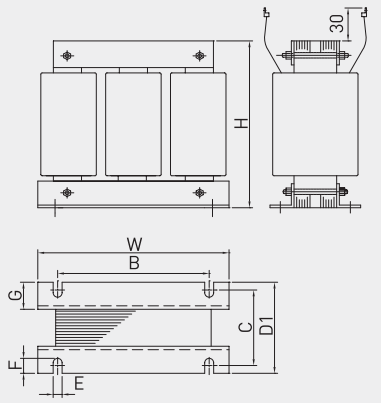
AC Reactor Model (High Harmonics)	Inverter	Current (A)	Inductance (mH)	Size (mm)								Weight (kg)	Drawing
				H	W	B	C	D	D1	G	ExF		
200V													
ACL-LI-1.5 (ACL-LI5-1.5)	004SF / LF	6	1.16 (2.91)	95 (130)	100 (155)	65 (125)	60 (72)	95 (110)	75 (92)	30 (33.5)	5Ⓘ	1.5 (2.5)	A (A)
ACL-LI-2.5 (ACL-LI5-2.5)	007SF / LF	8.3	0.78 (1.95)	130 (130)	155 (155)	125 (125)	72 (72)	110 (110)	92 (92)	30 (33.5)	7 x 20	2.5 (3.5)	A (A)
ACL-LI-3.5 (ACL-LI5-3.5)	015 - 022SF / LF	18	0.56 (1.39)	130 (145)	155 (155)	125 (125)	72 (75)	110 (120)	92 (95)	30 (30)	7 x 20	2.5 (4.5)	A (A)
ACL-LI-5.5 (ACL-LI5-5.5)	037LF	24	0.36 (0.89)	130 (145)	155 (155)	125 (125)	72 (75)	110 (120)	92 (95)	30 (30)	7 x 20	3 (5.5)	A (A)
ACL-LI-7.5 (ACL-LI5-7.5)	055LF	26.5	0.24 (0.60)	130 (145)	155 (155)	65 (125)	82 (75)	120 (120)	102 (95)	30 (30)	7 x 20	4 (6)	A (A)
ACL-LI-11 (ACL-LI5-11)	075LF	35	0.18 (0.46)	145 (145)	155 (155)	125 (125)	75 (85)	120 (125)	95 (105)	30 (30)	7 x 20	6 (7.5)	A (A)
ACL-LI-15 (ACL-LI5-15)	110LF	50.5	0.13 (0.32)	145 (150)	155 (180)	125 (155)	75 (80)	120 (-)	95 (100)	30 (30)	7 x 20	6 (9)	A (B)
ACL-LI-22 (ACL-LI5-22)	150LF	70.5	0.09 (0.23)	190 (150)	240 (180)	125 (155)	93 (105)	145 (-)	113 (125)	30 (30)	9 x 20	15 (14)	C (B)
ACL-LI-33 (ACL-LI5-33)	185 - 220LF	105	0.06 (0.15)	220 (150)	240 (180)	125 (155)	93 (105)	145 (-)	113 (125)	30 (30)	9 x 20	16 (16)	C (B)
400V													
ACL-HI-1.5 (ACL-HI5-1.5)	004 - 007HF	4	3.2 (8)	125 (140)	150 (150)	120 (120)	70 (70)	105 (110)	90 (95)	33.5 (30)	7 x 20	1.5 (3.5)	A (A)
ACL-HI-2.5 (ACL-HI5-2.5)	015HF	5.2	2.5 (6.5)	125 (140)	150 (150)	120 (120)	70 (70)	105 (110)	90 (95)	33.5 (30)	7 x 20	2 (4)	A (A)
ACL-HI-3.5 (ACL-HI5-3.5)	022HF	8.5	1.6 (4)	125 (140)	150 (150)	120 (120)	70 (70)	105 (110)	90 (95)	33.5 (30)	7 x 20	2.5 (4.5)	A (A)
ACL-HI-5.5 (ACL-HI5-6.5)	037HF	12	1.42 (3.56)	130 (145)	155 (155)	125 (125)	72 (75)	110 (115)	92 (95)	33.5 (30)	7 x 20	3 (5)	A (A)
ACL-HI-7.5 (ACL-HI5-8)	055HF	14.5	0.88 (2.21)	130 (145)	155 (155)	125 (125)	72 (75)	110 (115)	92 (95)	33.5 (30)	7 x 20	3.5 (5.5)	A (A)
ACL-HI-11 (ACL-HI5-11)	075HF	17.5	0.73 (1.83)	145 (145)	155 (155)	125 (125)	75 (85)	120 (125)	95 (105)	30 (30)	7 x 20	4.5 (7)	A (A)
ACL-HI-15 (ACL-HI5-16)	110HF	25	0.51 (1.28)	145 (145)	155 (155)	125 (125)	75 (85)	120 (125)	95 (105)	30 (30)	7 x 20	5.5 (7.5)	A (A)
ACL-HI-22 (ACL-HI5-22)	150HF	35	0.37 (0.91)	145 (170)	155 (180)	125 (155)	85 (80)	130 (120)	105 (100)	30 (30)	7 x 20	6.5 (10)	A (A)
ACL-HI-33 (ACL-HI5-33)	185 - 220HF	52	0.25 (0.62)	150 (150)	180 (180)	155 (155)	80 (100)	- (-)	100 (120)	30 (30)	7 x 20	8.5 (14)	B (B)
ACL-HI-40 (ACL-HI5-40)	300HF	63	0.2 (0.51)	150 (180)	180 (240)	155 (100)	80 (103)	- (165)	100 (123)	30 (30)	7 x 20	9.5 (20)	B (C)
ACL-HI-50 (ACL-HI5-50)	370HF	80	0.16 (0.4)	200 (210)	240 (280)	100 (100)	98 (108)	150 (165)	118 (128)	30 (30)	9 x 20	17 (22)	C (C)
ACL-HI-60 (ACL-HI5-60)	450HF	99	0.13 (0.32)	210 (220)	240 (280)	100 (100)	98 (98)	150 (165)	118 (118)	30 (30)	9 x 20	18 (23)	C (C)
ACL-HI-70 (ACL-HI5-70)	550HF	120	0.11 (0.27)	230 (230)	240 (290)	125 (125)	113 (113)	160 (170)	133 (133)	35 (35)	9 x 20	22 (28)	C (C)
ACL-HI-100 (ACL-HI5-100)	750HF	165	0.08 (0.19)	230 (260)	240 (280)	125 (125)	113 (113)	160 (175)	133 (133)	35 (30)	9 x 20	24 (33)	C (C)
ACL-HI-120 (ACL-HI5-120)	900HF	193	0.07 (0.17)	230 (230)	240 (290)	125 (125)	123 (123)	170 (185)	143 (143)	40 (30)	9 x 20	25 (37)	C (C)
ACL-HI-150 (ACL-HI5-150)	1100HF	235	0.05 (0.14)	230 (250)	240 (320)	125 (125)	143 (143)	180 (195)	163 (163)	50 (40)	9 x 20	26 (45)	C (C)
ACL-HI-180 (ACL-HI5-180)	1320HF	285	0.04 (0.11)	270 (270)	290 (320)	125 (125)	143 (143)	190 (200)	163 (163)	50 (45)	9 x 20	33 (48)	C (C)
ACL-HI-220 (ACL-HI5-200)	1600HF	358	0.04 (0.09)	300 (320)	290 (350)	125 (125)	133 (133)	190 (200)	153 (153)	40 (40)	11 x 20	40 (60)	C (C)
ACL-HI-300 (ACL-HI5-300)	2200HF	494	0.03 (0.06)	300 (300)	300 (350)	125 (125)	138 (138)	200 (205)	158 (158)	40 (40)	11 x 20	50 (67)	C (C)
ACL-HI-400 (ACL-HI5-400)	2800HF	578	0.02 (0.06)	300 (310)	300 (360)	125 (125)	158 (166)	215 (250)	178 (186)	50 (35)	11 x 20	58 (90)	C (C)
ACL-HI-500 (ACL-HI5-500)	3500HF	720	0.018 (0.044)	300 (380)	300 (420)	125 (125)	158 (166)	215 (250)	178 (186)	50 (45)	11 x 20	75 (120)	C (C)

Input / Output AC Reactor

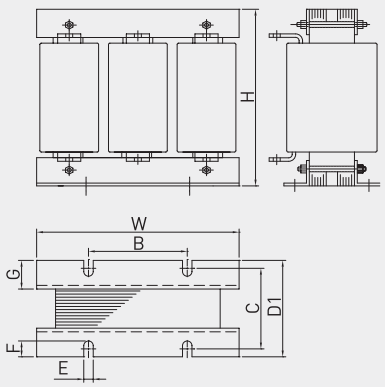
A TYPE



B TYPE



C TYPE



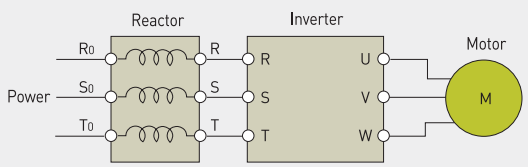
Wiring and Options

Output Reactor Specification

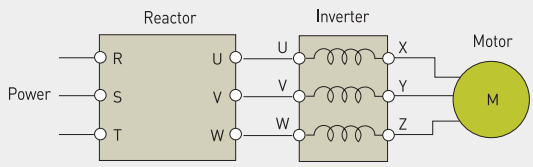
AC Reactor Model (High Harmonics)	Inverter	Current (A)	Inductance (mH)	Size (mm)								Weight (kg)	Drawing
				H	W	B	C	D	D1	G	ExF		
200V													
ACL-L-0.4	004SF / LF	3	1.5	130	155	125	72	105	92	33.5	7 x 20	2.5	A
ACL-L-0.75	007SF / LF	4.2	1.2	130	155	125	72	105	92	33.5	7 x 20	2.5	A
ACL-L-1.5	015SF / LF	7.5	0.67	130	155	125	72	105	92	33.5	7 x 20	3	A
ACL-L-2.2	022SF / LF	10.5	0.41	130	155	125	72	105	92	33.5	7 x 20	3	A
ACL-L-3.7	037LF	16	0.25	130	155	125	72	105	92	33.5	7 x 20	3.5	A
ACL-L-5.5	055LF	22	0.18	145	155	125	85	125	105	30	7 x 20	5	A
ACL-L-7.5	075LF	32	0.12	145	155	125	85	125	105	30	7 x 20	6	A
ACL-L-11	110LF	43	0.09	145	155	125	85	125	105	30	7 x 20	7	A
ACL-L-15	150LF	64	0.06	150	180	155	80	-	100	30	7 x 20	7.5	B
ACL-L-18.5	185LF	80	0.05	150	180	155	80	-	100	30	7 x 20	8	B
ACL-L-22	220LF	95	0.042	150	180	155	80	-	100	30	7 x 20	8	B
400V													
ACL-H-1.5	004 - 015HF	3.8	2.12	130	155	125	72	110	92	33.5	7 x 20	2.5	A
ACL-H-2.2	022HF	5.3	1.52	130	155	125	72	110	92	33.5	7 x 20	3	A
ACL-H-3.7	037HF	8	1.01	130	155	125	72	110	92	33.5	7 x 20	3.5	A
ACL-H-5.5	055HF	11	0.73	145	155	125	85	125	105	30	7 x 20	6	A
ACL-H-7.5	075HF	16	0.58	145	155	125	85	125	105	30	7 x 20	6.5	A
ACL-H-11	110HF	22	0.31	145	155	125	85	125	105	30	7 x 20	6.5	A
ACL-H-15	150HF	32	0.25	145	155	125	85	125	105	30	7 x 20	7	A
ACL-H-18.5	185HF	40	0.2	150	180	155	80	-	100	30	7 x 20	8.5	B
ACL-H-22	220HF	48	0.16	150	180	155	80	-	100	30	7 x 20	9	B
ACL-H-30	300HF	58	0.13	150	180	155	80	-	100	30	7 x 20	9.5	B
ACL-H-37	370HF	72	0.11	150	180	155	105	-	125	30	7 x 20	11	B
ACL-H-45	450HF	87	0.092	150	180	155	105	-	125	30	7 x 20	12	B
ACL-H-55	550HF	101	0.08	190	240	155	103	-	123	30	7 x 20	16	B
ACL-H-75	750HF	144	0.056	220	280	155	103	150	123	30	9 x 20	24	C
ACL-H-90	900HF	173	0.046	240	300	155	103	150	123	30	9 x 20	28	C
ACL-H-110	1100HF	217	0.037	260	310	155	123	170	143	40	11 x 20	32	C
ACL-H-132	1320HF	260	0.031	280	310	155	123	170	143	40	11 x 20	36	C
ACL-H-160	1600HF	300	0.024	260	320	290	123	185	143	40	11 x 20	38	C
ACL-H-220	2200HF	415	0.018	290	350	290	143	210	163	50	11 x 20	45	C
ACL-H-280	2800HF	525	0.015	310	350	290	153	220	173	50	11 x 20	57	C
ACL-H-375	3500HF	690	0.02	435	440	290	186	255	206	50	11 x 20	135	C

Input / Output AC Reactor

Input Input AC Reactor



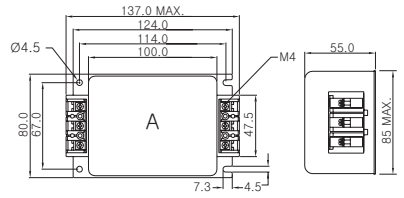
Output Output AC Reactor



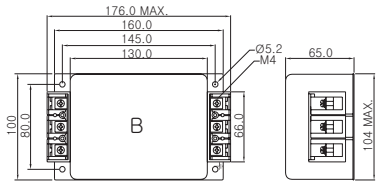
▪ Inverter Noise Filter

Drawing ▶

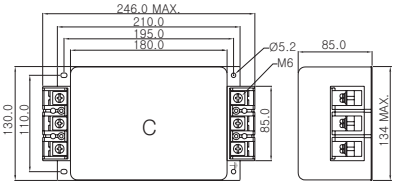
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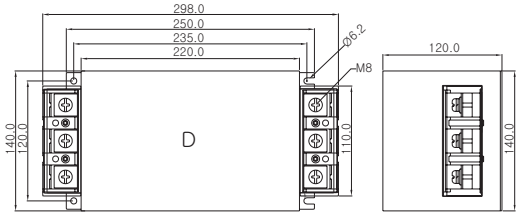
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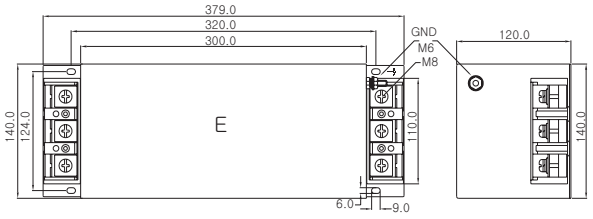
C TYPE



D TYPE

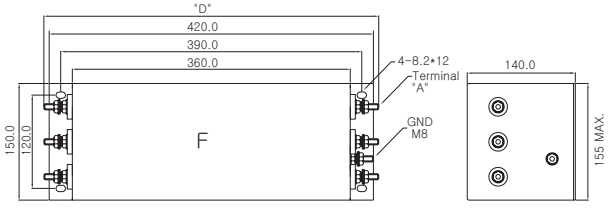


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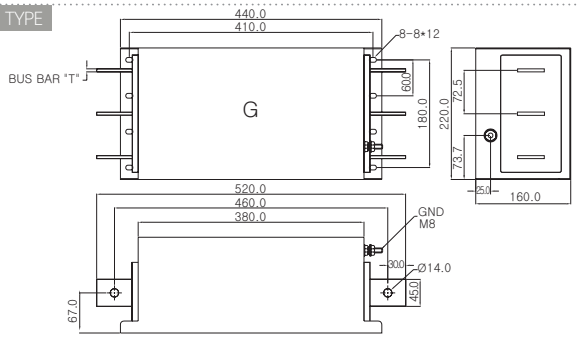


F TYPE

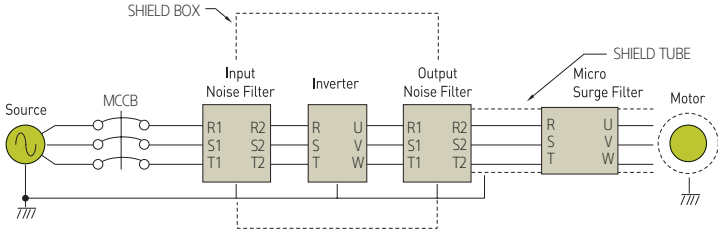
RATED CURRENT (A)	STUD SIZE (A, mm)	TOTAL LENGTH (D, mm)
250	M10	445
300	M12	455



G TYPE



Wiring ▶



Wiring and Options

▪ Input Noise Filter Specification

Model	Rated Current (A)	Model Name	Specification						Drawing
			Voltage (V)	Current (A)	Size [W x H x D·X (mm)]	G	T	Weight (kg)	
200 V									
004 ~ 022SF	3~11	A2B2020-UB	250	20	176 x 100 x 65		M4	1	B
004 ~ 015LF	3~7	AB3AK-5010A	500	10	137 x 80 x 55		M3	0.7	A
022LF	11	AB3AK-5015A	500	15	137 x 80 x 55		M3	0.8	A
037LF	17	DB3AK-5030A	500	30	176 x 100 x 65		M4	1.35	B
055LF	24	DB3AK-5030A	500	30	176 x 100 x 65		M4	1.35	B
075LF	32	EB3AK-5040A	500	40	246 x 130 x 85		M6	2.5	C
110LF	46	EB3AK-5050A	500	50	246 x 130 x 85		M6	2.6	C
150LF	64	EB3AK-5080L	500	80	246 x 130 x 85		M6	2.8	C
185LF	76	EB3AK-5080L	500	80	246 x 130 x 85		M6	2.8	C
220LF	90	GB3AK-5100A	500	100	298 x 140 x 120		M8	5.2	D
400 V									
004 ~ 022HF	1.8 ~ 7.2	AB3AK-5010A	500	10	137 x 80 x 55		M3	0.75	A
037 ~ 055HF	9.2 ~ 12	AB3AK-5015A	500	15	137 x 80 x 55		M3	0.8	A
075HF	16	DB3AK-5020A	500	20	176 x 100 x 65		M4	1.3	B
110HF	23	DB3AK-5030A	500	30	176 x 100 x 65		M4	1.35	B
150HF	32	EB3AK-5040A	500	40	246 x 130 x 85		M6	2.5	C
185HF	38	EB3AK-5040A	500	40	246 x 130 x 85		M6	2.5	C
220HF	45	EB3AK-5050A	500	50	246 x 130 x 85		M6	2.6	C
300HF	58	EB3AK-5060A	500	60	246 x 130 x 85		M6	2.7	C
370HF	75	EB3AK-5080L	500	80	246 x 130 x 85		M6	2.8	C
450HF	90	GB3AK-5100A	500	100	298 x 140 x 120		M8	5.2	D
550HF	110	GB3AK-5120A	500	120	298 x 140 x 120		M8	5.4	D
750HF	149	FB3AK-5150A	500	150	379 x 140 x 120	M6	M8	8.5	E
900HF	176	FB3AK-5180A	500	180	379 x 140 x 120	M6	M8	9	E
1100HF	217	HT3AK-5250A	500	250	445 x 150 x 140	M8	M10	12	F
1320HF	260	HT3AK-5300A	500	300	455 x 150 x 140	M8	M12	12.4	F
1600HF	300	A3R5400-KLH	500	400	440 x 220 x 160	M8	3T	19	G
2200HF	415	A3R5500-KLH	500	500	440 x 220 x 160	M8	3T	19	G
2800HF	525	A3R5700-KLH	500	700	440 x 220 x 160	M8	5T	20	G
3500HF	656	A3R5700-KLH	500	700	440 x 220 x 160	M8	5T	20	G

Output Noise Filter Specification

Model	Rated Current (A)	Model Name	Specification						Drawing
			Voltage (V)	Current (A)	Size [W x H x D·X (mm)]	G	T	Weight (kg)	
200 V									
004 ~ 022SF	3~11	DB2CZ-2020	250	20	176 x 100 x 65		M4	1	B
004 ~ 015LF	3~7	AB3CZ-5010	500	10	137 x 80 x 55		M3	0.7	A
022LF	11	AB3CZ-5015	500	15	137 x 80 x 55		M3	0.75	A
037LF	17	DB3CZ-5030	500	30	176 x 100 x 65		M4	1.35	B
055LF	24	DB3CZ-5030	500	30	176 x 100 x 65		M4	1.35	B
075LF	32	EB3CZ-5040	500	40	246 x 130 x 85		M6	2.5	C
110LF	46	EB3CZ-5050	500	50	246 x 130 x 85		M6	2.6	C
150LF	64	EB3CZ-5080	500	80	246 x 130 x 85		M6	2.8	C
185LF	76	EB3CZ-5080	500	80	246 x 130 x 85		M6	2.8	C
220LF	90	GB3CZ-5100	500	100	298 x 140 x 120		M8	5.2	D
400 V									
004 ~ 022HF	1.8 ~ 7.2	AB3CZ-5010	500	10	137 x 80 x 55		M3	0.7	A
037 ~ 055HF	9.2 ~ 12	AB3CZ-5015	500	15	137 x 80 x 55		M3	0.75	A
075HF	16	DB3CZ-5020	500	20	176 x 100 x 65		M4	1.3	B
110HF	23	DB3CZ-5030	500	30	176 x 100 x 65		M4	1.35	B
150HF	32	EB3CZ-5040	500	40	246 x 130 x 85		M6	2.5	C
185HF	38	EB3CZ-5040	500	40	246 x 130 x 85		M6	2.5	C
220HF	45	EB3CZ-5050	500	50	246 x 130 x 85		M6	2.6	C
300HF	58	EB3CZ-5060	500	60	246 x 130 x 85		M6	2.7	C
370HF	75	EB3CZ-5080	500	80	246 x 130 x 85		M6	2.8	C
450HF	90	GB3CZ-5100	500	100	298 x 140 x 120		M8	5.2	D
550HF	110	GB3CZ-5120	500	120	298 x 140 x 120		M8	5.4	D
750HF	149	FB3CZ-5150	500	150	379 x 140 x 120	M6	M8	9	E
900HF	176	FB3CZ-5180	500	180	379 x 140 x 120	M6	M8	10	E
1100HF	217	HT3CZ-5250	500	250	445 x 150 x 140	M8	M10	13	F
1320HF	260	HT3CZ-5300	500	300	455 x 150 x 140	M8	M12	14	F
1600HF	300	Z3R5400-KL	500	400	440 x 220 x 160	M8	5T	20	G
2200HF	415	Z3R5500-KL	500	500	440 x 220 x 160	M8	5T	20	G
2800HF	525	Z3R5700-KL	500	700	440 x 220 x 160	M8	8T	22	G
3500HF	656	Z3R5700-KL	500	700	440 x 220 x 160	M8	8T	22	G

Wiring and Options

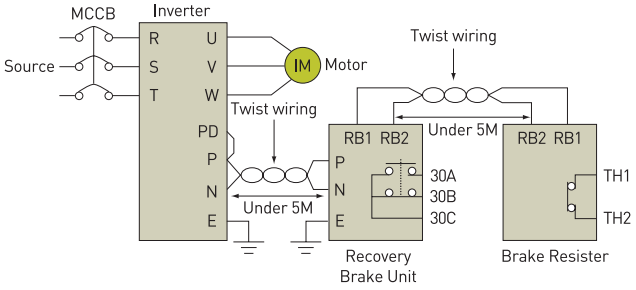
▪ Brake Resistor & Brake Unit

Voltage	Inverter Model	Brake Resistor											Brake Unit	
		Light Load					Heavy Load					Qty's	Model Name	Qty's
		Model Name	Capacity (kW)	Resistance (Ω)	Weight (Kg)	Drawing	Model Name	Capacity (kW)	Resistance (Ω)	Weight (Kg)	Drawing			
200 V	004SF/LF	RB-00P3-50	0.3	50	0.99	A	RB-00P3-50	0.3	50	0.99	A		Default Bulit-in	-
	007SF/LF	RB-00P3-50	0.3	50	0.99	A	RB-00P3-50	0.3	50	0.99	A			
	015SF/LF	RB-00P3-50	0.3	50	0.99	A	RB-00P3-50	0.3	50	0.99	A			
	022SF/LF	RB-00P3-50	0.3	50	0.99	A	RB-00P6-35	0.6	35	1.39	A	1		
	037LF	RB-00P6-35	0.6	35	1.39	A	RB-01P2-35	1.2	35	2.19	A	1		
	055LF	RB-01P0-17	1	17	1.85	A	RB-01P2-17	1.2	17	2.19	A	1		
	075LF	RB-01P0-17	1	17	1.85	A	RB-01P2-17	1.2	17	2.19	A	1		
	110LF	RB-01P0-17	1	17	1.85	A	RB-01P2-17	1.2	17	2.19	A	1		
	150LF	RB-02P5-8.7	2.5	8.7	9.85	B	RB-04P5-8.7	4.5	8.7	14.82	B	1		
	185LF	RB-03P0-6	3	6	12.5	B	RB-05P6-6	5.6	6	21	B	1		
	220LF	RB-04P0-6	4	6	14.82	B	RB-06P6-6	6.6	6	21	B	1		
400 V	004HF	RB-00P6-100	0.6	100	1.39	A	RB-00P6-100	0.6	100	1.39	A	1	Default Bulit-in	-
	007HF	RB-00P6-100	0.6	100	1.39	A	RB-00P6-100	0.6	100	1.39	A	1		
	015HF	RB-00P6-100	0.6	100	1.39	A	RB-00P6-100	0.6	100	1.39	A	1		
	022HF	RB-00P6-100	0.6	100	1.39	A	RB-00P6-100	0.6	100	1.39	A	1		
	037HF	RB-00P6-100	0.6	100	1.39	A	RB-00P6-100	0.6	100	1.39	A	1		
	055HF	RB-01P2-70	1.2	70	2.19	A	RB-01P8-70	1.8	70	2.83	A	1		
	075HF	RB-01P2-50	1.2	50	2.19	A	RB-02P4-50	2.4	50	9.85	B	1		
	110HF	RB-02P0-50	2	50	2.83	A	RB-03P3-50	3.3	50	12.5	B	1		
	150HF	RB-02P5-30	2.5	30	9.85	B	RB-04P5-30	4.5	30	14.82	B	1		
	185HF	RB-03P0-20	3	20	12.5	B	RB-05P6-20	5.6	20	21	B	1		
	220HF	RB-04P0-20	4	20	14.82	B	RB-06P6-20	6.6	20	21.05	B	1		
	300HF	RB-05P0-12	5	12	14.82	B	RB-09P0-12	9	12	26	B	1	BRD-VZ3-370H	1
	370HF	RB-06P0-12	6	12	21	B	RB-11P2-12	11.2	12	30.38	B	1	BRD-VZ3-370H	1
	450HF	RB-08P5-8	8.5	8	25	B	RB-13P5-8	13.5	8	35	B	1	BRD-VZ3-550H	1
	550HF	RB-08P5-8	8.5	8	25	B	RB-16P5-8	16.5	8	40	B	1	BRD-VZ3-550H	1
	750HF	RB-11P2-6	11.2	6	30.38	B	RB-22P5-6	22.5	6	44	B	1	BRD-VZ3-750H	1
	900HF	RB-11P2-6	11.2	6	30.38	B	RB-22P5-6	22.5	6	44	B	2	BRD-VZ3-550H	2
	1100HF	RB-11P2-6	11.2	6	30.38	B	RB-22P5-6	22.5	6	44	B	2	BRD-VZ3-750H	2
	1320HF	RB-11P2-6	11.2	6	30.38	B	RB-22P5-6	22.5	6	44	B	2	BRD-VZ3-750H	2
	1600HF	RB-22P5-3	22.5	3	44	B	RB-45P0-3	45	3	75	B	2	FBU100-160-4	1
	2200HF	RB-22P5-3	22.5	3	44	B	RB-45P0-3	45	3	75	B	2	FBU100-220-4	1
	2800HF	RB-22P5-3	22.5	3	44	B	RB-45P0-3	45	3	75	B	4	FBU100-160-4	2
	3500HF	RB-33P7-2	33.7	2	70	B	RB-67P5-3	67.5	3	100	B	2	FBU100-220-4	2

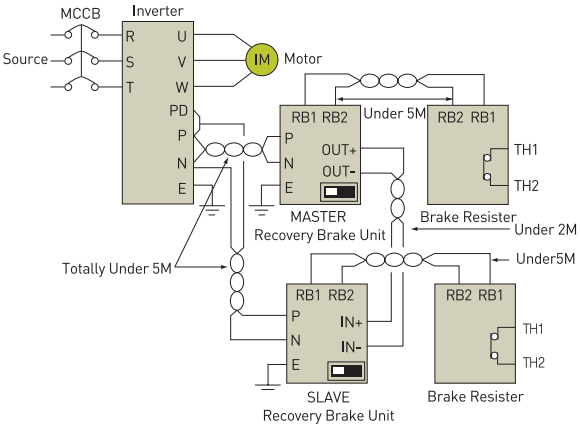
※ Please arrange parallel connection of 2set of brake resistor for 1set of brake unit.

▪ Wiring of Inverter, Brake Unit and Brake Resistor

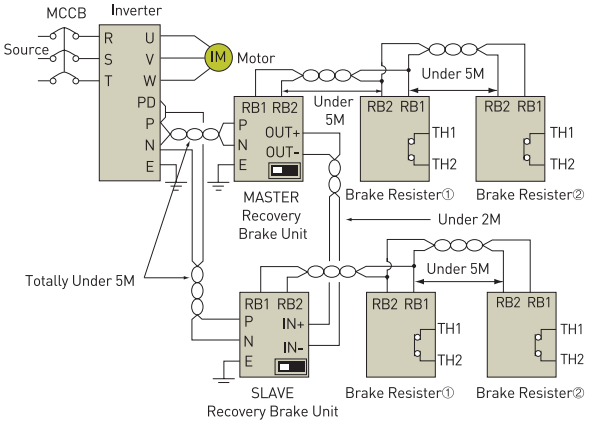
Case 1: Use Brake Unit Only ▶



Case 2: Link Brake Unit Together (2 brake unit, 2 brake resistor) ▶

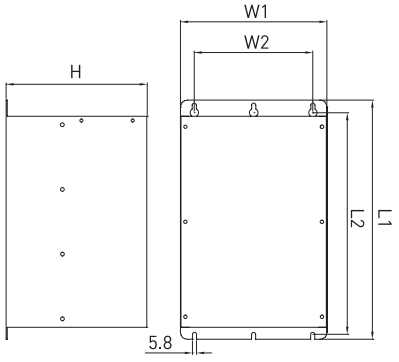


Case 2: Link Brake Unit Together (2 brake unit, 4 brake resistor) ▶



▪ Brake Unit Drawing

BRD-VZ3 / FBU100 ▶

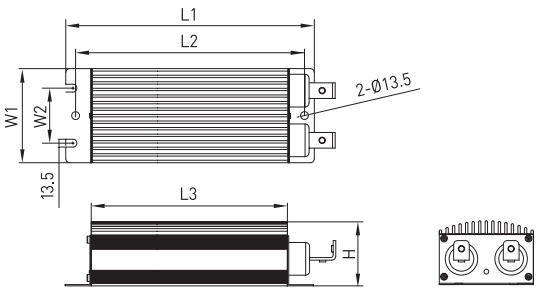


Model	L1±2	L2±2	W1±2	W2±2	H±2
BRD-VZ3	285	274	140	100	166
FBU100-160-4	411	371	240	200	165
FBU100-220-4					

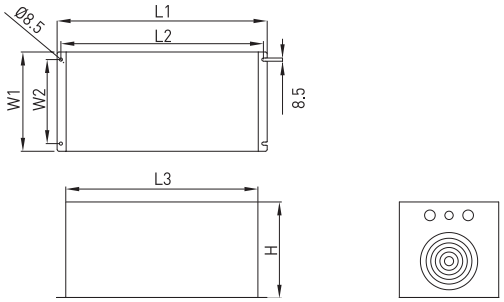
Wiring and Options

▪ Brake Resistor Drawing / Size

A TYPE: RB-01P0 - RB-02P0 ▶



B TYPE: RB-02P4 - RB-22P5 ▶



A TYPE	L1	L2	L3	W1	W2	H
RB-00P3	190	172	152	70	39	45
RB-00P6	260	245	222			
RB-01P0	340	325	302			
RB-01P2	400	385	362			
RB-01P8 - RB-02P0	510	495	472			

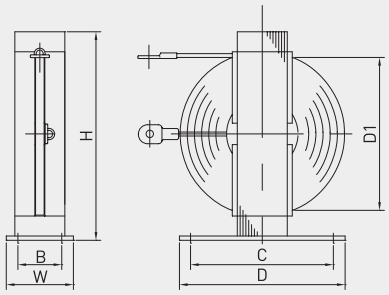
B TYPE	L1	L2	L3	W1	W2	H
RB-02P4 - RB-02P5	550	530	503	180	140	126
RB-03P0 - RB-03P3				260	220	126
RB-04P0 - RB-05P6				180	140	182
RB-06P0 - RB-07P0				260	220	182
RB-08P0 - RB-09P0						252
RB-11P2 - RB-13P5				260	220	322
RB-16P5						392
RB-22P5				340	300	392
RB-33P7				420	380	462
RB-45P0				500	460	462
RB-67P5				580	540	602

Reactor Specification

Inverter Model	DC Reactor Model	Current [A]	Inductance [mH]	Size [mm]						Weight [KG]	Drawing
				H	W	B	C	D	D1		
200 V											
004SF - 22SF 004LF - 022LF	DCL-L-2.2	13.8	2.51	175	60	40	90	110	150	4	A
037LF	DCL-L-3.7	22.3	1.6	175	60	40	90	110	150	4	A
055LF	DCL-L-5.5	30.9	1.11	175	60	40	90	110	150	4	A
075LF	DCL-L-7.5	43.7	0.84	185	60	40	90	110	160	5	A
110LF	DCL-L-11	61.4	0.59	185	60	40	90	110	160	6	A
150LF	DCL-L-15	85.9	0.44	205	60	40	90	110	170	7	A
185LF	DCL-L-22	127.5	0.3	210	80	60	120	140	175	10	A
220LF	DCL-L-22	166.2	0.23	250	80	60	120	140	205	15	A
400 V											
004HF - 022HF	DCL-H-2.2	6.9	10.1	225	60	40	90	110	200	4	A
037HF	DCL-H-3.7	11.6	6.4	215	60	40	90	110	200	5	A
055HF	DCL-H-5.5	16.7	4.41	200	60	40	90	110	175	5	A
075HF	DCL-H-7.5	21.9	3.35	205	60	40	90	110	180	5	A
110HF	DCL-H-11	30.7	2.33	225	60	40	90	110	190	6	A
150HF	DCL-H-15	43	1.75	225	60	40	90	110	190	6	A
185HF - 220HF	DCL-H-22	64.4	1.2	205	60	40	90	110	160	7	A
300HF	DCL-H-30	79.7	0.92	250	80	60	120	140	205	8	A
370HF	DCL-H-37	104.2	0.74	245	80	60	120	140	200	10	A
450HF	DCL-H-45	123.6	0.61	295	80	60	120	140	240	15	A
550HF	DCL-H-55	152.9	0.5	295	80	60	120	140	240	20	A
750HF	DCL-H-75	209.4	0.37	295	100	80	150	170	240	25	A
900HF	DCL-H-90	244.6	0.31	290	100	80	150	170	235	25	A
1100HF	DCL-H-110	298.1	0.25	295	100	80	150	170	240	25	A
1320HF	DCL-H-132	361.3	0.21	300	100	80	150	170	245	30	A
1600HF	DCL-H-160	451.6	0.18	365	100	80	150	170	300	40	A
2200HF	DCL-H-220	611.4	0.13	350	100	80	150	170	290	40	A

※ For 280 kW - 350 kW model, contact to HYUNDAI ELECTRIC.

Outside View



MSF(Micro Surge Filter) Specification

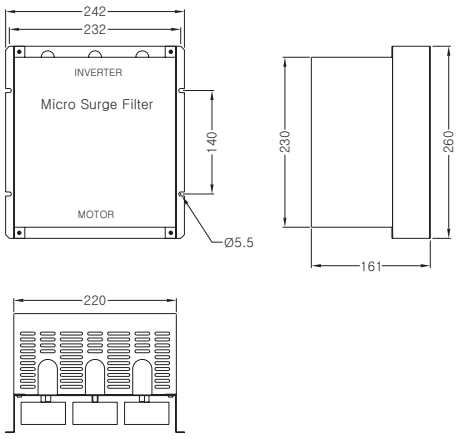
MODEL	SM3-7CLS SERIES			SM3-7CLL SERIES			
Applicable Motor [3Φ480V]	2.2KW~45KW	70KW~160KW	220KW~375KW	2.2KW~15KW	22KW~45KW	22KW~45KW	160KW~375KW
Acceleration time	At least 2us	At least 1us		At least 2us		At least 1us	
Line Reactance	2%Z	2%Z	3%Z	2%Z	3%Z	2%Z	3%Z
Maximum distance	100M			300M			
Maximum Carrier frequency	6KHz			6KHz			
Test voltage L-L	4000VDC 2 seconds			4000VDC 2 seconds			
Test voltage L-G(CASE)	2000VAC 1minute			2000VAC 1minute			
Insulation resistance L-G	500MΩ /500VDC 1minute			500MΩ /500VDC 1minute			
Overload current	Overload current * 150% 1minute			Overload current * 150% 1minute			
Usage temperature/ humidity	-20℃ ~ 40℃ / under 90%RH			-20℃ ~ 40℃ / under 90%RH			

Applicable Model

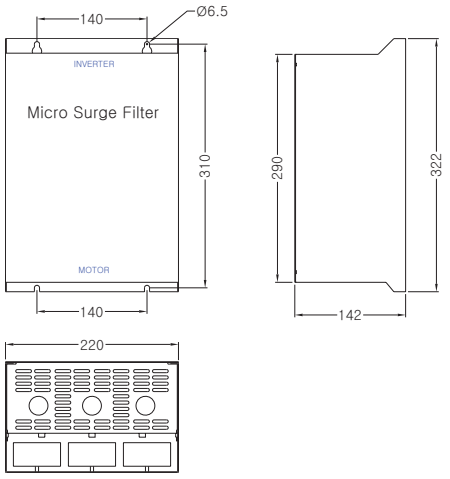
① SM3-7CLS SERIES (under 100 meters)															
SM3-7CLS-		005	008	013	018	030	050	080	130	170	260	340	450	600	750
Max. Applicable Motor [KW]	220V	0.75	1.5	2.2	3.7	5.5	11	18.5	30	37	55	75	90	132	160
	380V	1.5	2.2	3.7	5.5	11	18.5	30	55	75	110	132	160	220	315
	440V	2.2	3.7	5.5	7.5	11	22	37	55	75	110	160	185	280	350
	480V	2.2	3.7	5.5	7.5	15	22	37	55	90	132	160	220	315	375
Drawing		A			B			D					E		F
② SM3-7CLL SERIES (under 300 meters)															
SM3-7CLL-		005	008	013	018	030	050	080	130	170	260	340	450	600	750
Max. Applicable Motor [KW]	220V	0.75	1.5	2.2	3.7	5.5	11	18.5	30	37	55	75	90	132	160
	380V	1.5	2.2	3.7	5.5	11	18.5	30	55	75	110	132	160	220	315
	440V	2.2	3.7	5.5	7.5	11	22	37	55	75	110	160	185	280	350
	480V	2.2	3.7	5.5	7.5	15	22	37	55	90	132	160	220	315	375
Drawing		A		B	C			D				E		F	

▪ MSG(Micro Surge Filter) Drawing

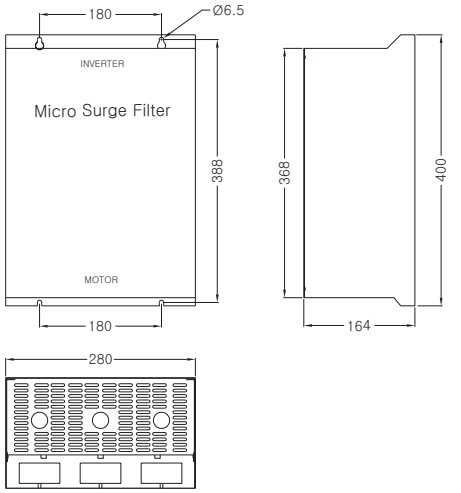
A TYPE



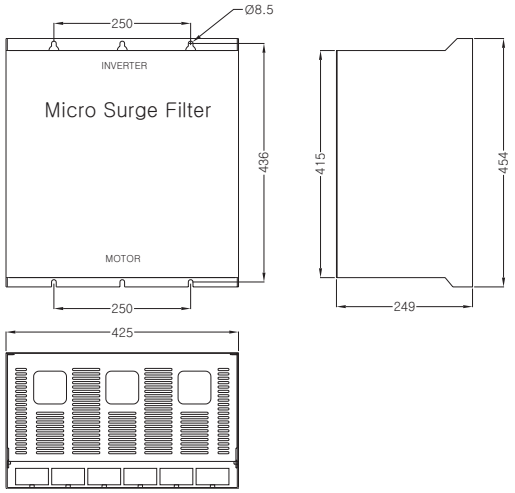
B TYPE



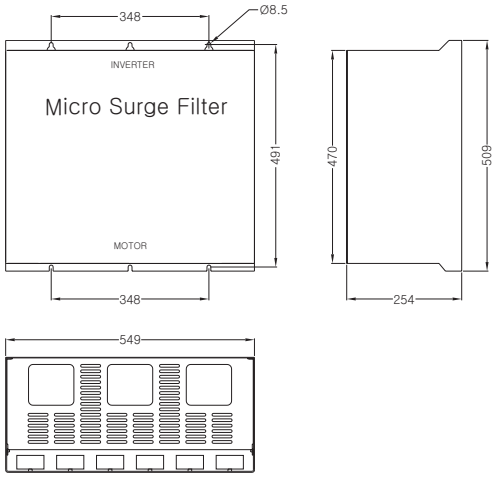
C TYPE



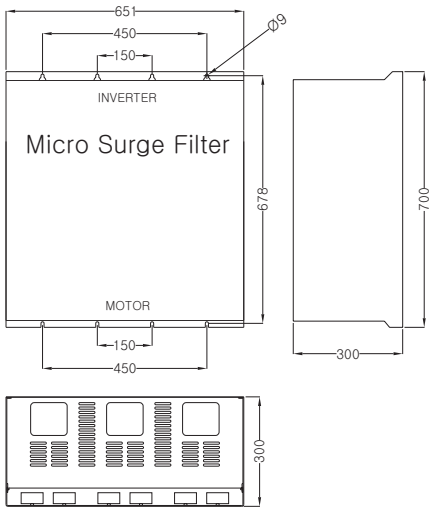
D TYPE



E TYPE



F TYPE



For Correct Operation

※ Before use, be sure to read through the Instruction manual to insure proper use of the inverter.
※ Note that the inverter requires electrical wiring; a trained specialist should carry out the wiring.
※ The inverter in this catalogue is designed for general industrial applications. For special applications in fields such as aircraft, nuclear power, transport, vehicles, clinics, and underwater equipment, please consult us in advance.
※ For application in a facility where human life is involved or serious losses may occur, make sure to provide safety devices to avoid a serious accident.
※ The inverter is intended for use with a three-phase AC motor. For use with a load other than this, please consult with us.

▶ Application to Motors | Application to General-purpose Motors

Operating Frequency	The overspeed endurance of a general-purpose motor is 120 % of the rated speed for 2 minutes (JIS C4004). For operation at higher than 60 Hz, it is required to examine the allowable torque of the motor, useful life of bearings, noise, vibration, etc. In this case, be sure to consult the motor manufacturer as the maximum allowable rpm differs depending on the motor capacity, etc.
Torque Characteristics	The torque characteristics of driving a general-purpose motor with an inverter differ from those of driving it using commercial power (starting torque decreases in particular). Carefully check the load torque characteristic of a connected machine and the driving torque characteristic of the motor.
Motor Loss and Temperature Increase	An inverter-driven general-purpose motor heats up quickly at lower speeds. Consequently, the continuous torque level (output) will decrease at lower motor speeds. Carefully check the torque characteristics and speed range requirements.
Noise	When run by an inverter, a general-purpose motor generates noise slightly greater than by commercial power.
Vibration	When run by an inverter at variable speeds, the motor may generate vibrations, especially because of (a) unbalance of the rotor including a connected machine, or (b) resonance caused by the natural vibration frequency of a mechanical system. Particularly, be careful of (c) when a machine previously fitted with a constant speed is operated at variable speed. Vibration can be minimized by (1) avoiding resonance points by using the frequency jump function of the inverter, (2) using a tire-shaped coupling, or (3) placing a rubber shock absorber under the motor base.
Power Transmission Mechanism	Under continued, low-speed operation, oil lubrication can deteriorate in a power transmission mechanism with an oil type gear box (gear motor) or transmission. Check with the motor manufacturer for the permissible range of continuous speed. To operate at more than 60 Hz, confirm the machine's ability to withstand the centrifugal force generated.

▶ Application to Motors | Application to Special Motors

Gear Motor	The allowable rotation range of continuous drive varies depending on the lubrication method or motor manufacturer (Particularly in case of oil lubrication, pay attention to the low frequency range). Grease lubrication has no degradation of lubrication ability even when the number of rotation decreases (Allowable frequency range: 6 ~ 120 Hz).
Brake-equipped Motor	For use of a brake-equipped motor, power supply for braking operation should be separately prepared. Connect the braking power supply to the primary side power of the inverter. Use brake operation (inverter stop) and free run stop (FRS) terminal to turn off inverter power.
Pole-change Motor	There are different kinds of pole-change motors (constant output characteristic type, constant torque characteristic type, etc.), with different rated current values. In motor selection, check the maximum allowable current for each motor of a different pole count. At the time of pole change, be sure to stop the motor.
Submersible Motor	The rated current of a submersible motor is significantly larger than that of the general-purpose motor. In inverter selection, be sure to check the rated current of the motor.
Explosion-proof Motor	Inverter drive is not suitable for a safety-enhanced explosion-proof type motor. The inverter should be used in combination with a pressure-proof and explosion-proof type of motor. ※ Explosion-proof verification is not available for N700E series.
Synchronous (MS) Motor / High-speed (HFM) Motor	In most cases, the synchronous (MS) motor and the high-speed (HFM) motor are designed and manufactured to meet the specifications suitable for a connected machine. As to proper inverter selection, consult the manufacturer.
Single-phase Motor	A single-phase motor is not suitable for variable-speed operation by an inverter drive. Therefore, use a three-phase motor.

▶ Application to Motors | Application to the 400 V-class Motor

A system applying a voltage-type PWM inverter with IGBT may have surge voltage at the motor terminals resulting from the cable constants including the cable length and the cable laying method. Depending on the surge current magnification, the motor coil insulation may be degraded. In particular, when a 400 V class motor is used, a longer cable is used, and critical loss can occur. Take the following countermeasures: (1) install the LCR filter between the inverter and the motor, (2) install the AC reactor between the inverter and the motor, or (3) enhance the insulation of the motor coil.

▶ Notes on Use | Drive

Run / Stop	Run or stop of the inverter must be done with the keys on the operator panel or through the control circuit terminal. Installing an electromagnetic contactor (Mg) should not be used as a switch of run / stop.
Emergency Motor Stop	When the protective function is operating or the power supply stops, the motor enters the free run stop state. When emergency stop or protection of motor is required, use of a mechanical brake should be considered.
High-frequency Run	N700E series can be set up to 400 Hz. However it is extremely dangerous for rotational speed of two-pole motor to reach up to approx 24,000 rpm. Therefore, carefully make selection and settings after checking the mechanical strength of the motor and connected machines. Consult the motor manufacturer when it is necessary to drive a standard (general-purpose) motor above 60 Hz.

▶ Notes on Use | Installation Location and Operating Environment

Avoid installation in areas of high temperature, excessive humidity, or easy condensation of dew, as well as areas that are dusty, subject to corrosive gases, residue of grinding solution, or salt. Install the inverter away from direct sunlight in a well-ventilated room that is free of vibration.
The inverter can be operated in the ambient temperature range from -10°C to 50°C

▶ Notes on Use | Main Power Supply

Installation of an AC reactor on the Input Side	In the following examples involving a general-purpose inverter, a large peak current flows on the main power supply side, and could destroy the converter module. When such situations are predictable or connected crucial device is required to meet high reliability, install an AC reactor between the power supply and the inverter. Also, when influence of indirect lightning strike is possible, install a lightning arrester. A) The unbalance factor of the power supply is 3 % or higher 1. [2)] B) The power supply capacity is at least 10 times greater than the inverter capacity (the power supply capacity is 500 kVA or more). C) Abrupt power supply changes are expected. Examples) ① Several inverters are interconnected with a short bus. ② A thyristor converter and an inverter are interconnected with a short bus. ③ Junction and disjunction of installed phase advance capacitor. In cases (A), (B) and (C), it is recommended to install an AC reactor on the main power supply side. 1) Example of how to calculate voltage unbalanced ratio. (voltage between lines on RS: VRS = 205 V, voltage between lines on ST: VST = 201 V, voltage between lines on TR: VTR=200 V), max voltage between lines-average between lines = VRS- (VRS+VST+VTR) / 3=205-202 · Voltage unbalanced ratio = $\frac{\text{Max. voltage between lines - Average voltage between lines}}{\text{Average voltage between lines}} \times 100 = \frac{\text{VRS-(VRS+VST+VTR)/3}}{\text{(VRS+VST+VTR)/3}} \times 100 = \frac{205 - 202}{202} \times 100 = 1.5\ (\%)$
Using an Independent Electric Power Plant	If an inverter is run by an independent electric power plant, harmonic current can cause to overheat the generator or distort output voltage waves of the generator. Generally, the generator capacity should be five times that of the inverter (kVA) in a PWM control system, or six times greater in a PAM control system.

▶ Notes on Peripheral Equipment Selection

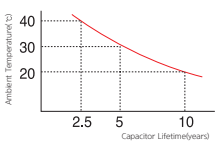
Wiring Connections		(1) Be sure to connect main power wires with R (L1), S (L2), and T (L3) (input) terminals and motor wires to U (T1), V (T2), and W (T3) terminals (output). (Incorrect connection will cause an immediate failure.) (2) Be sure to provide a grounding connection with the ground terminal(⏚)
Wiring between Inverter and Motor	Electromagnetic Contactor	When an electromagnetic contactor is installed between the inverter and the motor, do not perform on-off switching during running.
	Thermal Relay	When used with standard output motors (standard three-phase squirrel cage four pole motors), the N700E series does not need a thermal relay for motor protection due to the internal electronic protective circuit. A thermal relay, however, should be used: during continuous running out of a range of 30 Hz to 60 Hz for motors exceeding the range of electronic thermal adjustment (rated current). When several motors are driven by the same inverter, install a thermal relay for each motor. The RC value of the thermal relay should be more than 1.1 times the rated current of the motor. Where the wiring length is 10 m or more, the thermal relay tends to turn off readily. In this case, provide an AC reactor on the output side or use a current sensor.
Installing a Circuit Breaker		Install a circuit breaker on the main power input side to protect inverter wiring and ensure personal safety. Choose a circuit breaker compatible with inverter.
Wiring Distance		The wiring distance between the inverter and the remote operator panel should be 20 meters or less. When this distance is exceeded, use CVD-E (current - voltage converter) or RCD-E (remote control device). Shielded cable should be used on the wiring. Beware of voltage drops on main circuit wires (A large voltage drop reduces torque).
Earth Leakage Relay		If the earth leakage relay (or earth leakage breaker) is used, it should have a sensitivity level of 15 mA or more (per inverter). Leakage current is depending on the length of the cable.
Phase Advance Capacitor		Do not use a capacitor for improvement of power factor between the inverter and the motor because the high-frequency components of the inverter output may overheat or damage the capacitor

▶ High-frequency Noise and Leakage Current

(1) High-frequency components are included in the input/output of the inverter main circuit, and they may cause interference in a transmitter, radio, or sensor if used near the inverter. The interference can be minimized by attaching noise filters (option) in the inverter.
(2) The switching of an inverter causes an increase of leakage current. Be sure to ground the inverter and the motor.

▶ Lifetime of Primary Parts

Because a DC bus capacitor deteriorates as it undergoes internal chemical reaction, it should normally be replaced every five years. Be aware, however, that its life expectancy is considerably shorter when the inverter is subject to such adverse factors as high temperatures or heavy loads exceeding the rated current of the inverter. The figure at the right shows the approximate lifetime of the capacitor when it is used 24 hours. Also, such moving parts as a cooling fan should be replaced. Maintenance, inspection and replacing parts must be performed by only specified professional engineers.



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