



General Purpose Inverter **iMASTER E1**

The Controlling Solution of Powerful Inverter Brand

ADT's Technology for the Best

High performance inverter for efficient business design
the best future with **iMASTER E1** series

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iMASTER E1 Series with Powerful Control Solution

| Excellent Applicability to Various Loads |

| Easy Maintenance & Simple Repair |

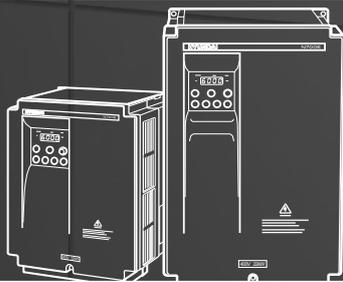
| High Reliability & Durability |

| Compliance with RoHS |

| Lower Audible Noise |



Clean Power ADT Inverter



For the highest quality,
for the highest customer satisfaction

iMASTER E1

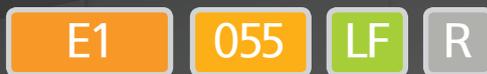
ADT iMaster E1's series inverter with high durability, elaborate speed controllability and excellent torque responsibility provides superb operability.

The iMaster E1's compact size and sensorless vector control technology provide perfectly optimized performance for industrial equipment.

Certificates of international standards (CE, UL / cUL) of iMaster E1 series make its applications ready for global business.

Model Name Indication

Model Name Indication



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	E1-004SF	E1-004LF	E1-004HF
0.7	E1-007SF	E1-007LF	E1-007HF
1.5	E1-015SF	E1-015LF	E1-015HF
2.2	E1-022SF	E1-022LF	E1-022HF
3.7		E1-037LF	E1-037HF
5.5		E1-055LF	E1-055HF
7.5		E1-075LF	E1-075HF
11		E1-110LF	E1-110HF
15		E1-150LF	E1-150HF
18.5		E1-185LF	E1-185HF
22		E1-220LF	E1-220HF
30			E1-300HF
37			E1-370HF
45			E1-450HF
55			E1-550HF
75			E1-750HF
90			E1-900HF
110			E1-1100HF
132			E1-1320HF
160			E1-1600HF
220			E1-2200HF
280			E1-2800HF
350			E1-3500HF



Features

▪ Improved Control Performance

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

- ADT'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, iMaster E1 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 operation 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

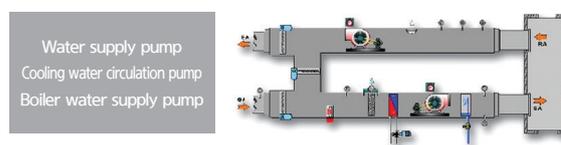
- iMaster E1 is available to replace the fan without separation.
- Fan on / off function increases fan's durability and minimizes fan's noise.

▪ **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

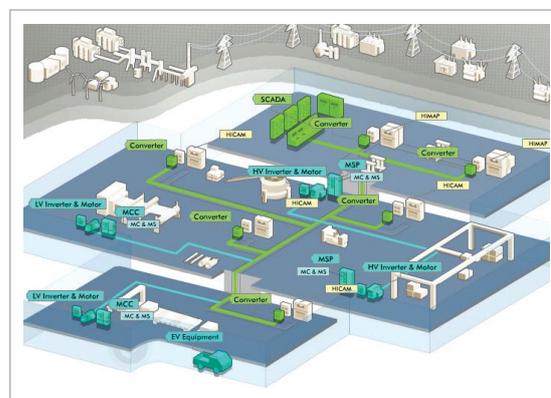
- Cooling Tower
 - Stable operation by supplying high qualified energy
 - Energy saving by speed and torque control



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 (E1-□□□□□)		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 (E1-□□□□□)		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 (E1-□□□□□)		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 $\pm 0.01\%$ / Analogue: Max frequency $\pm 0.1\%$	
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 k Ω variable resistor.
		External Signal	DC 0 - 10 V (input impedance 10 k Ω) ⁵⁾ , 4 - 20 mA (input impedance 200 Ω).
	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°C (over 40°C: set carrier frequency below 2.0 kHz) ⁶⁾	
	Storage Temperature	- 20 - 60°C (while transporting: short time)	
	Ambient Humidity	Below 90 % RH (non-condensing)	
	Vibration	5.9 m/s ² (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]

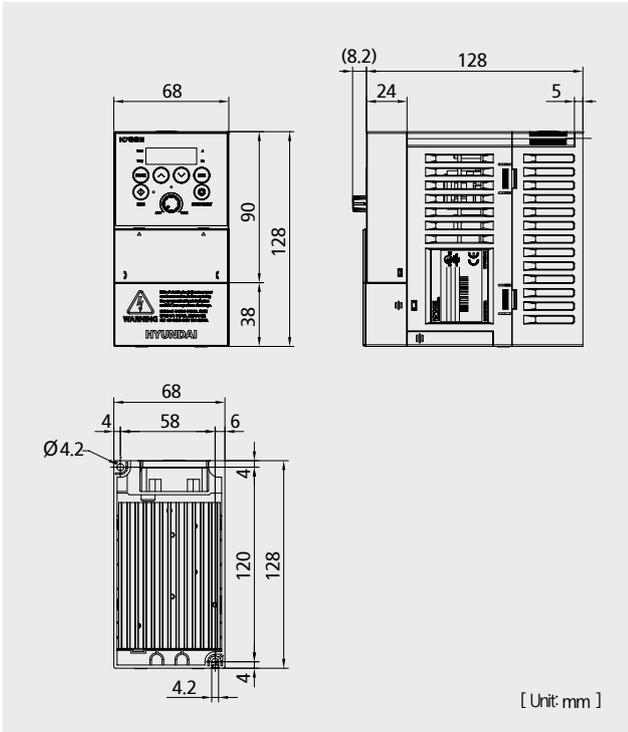
4) Normal duty support 5.5 kW and upper model.

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

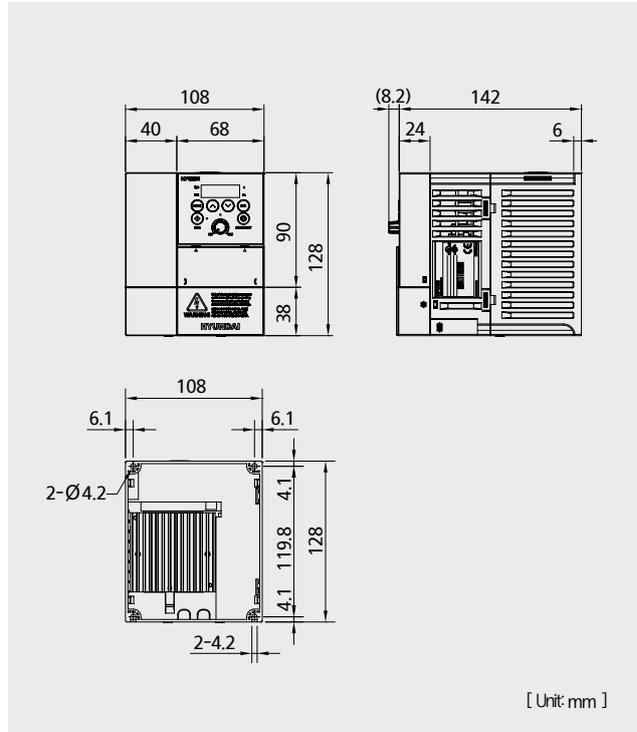
6) 5.5 kW and upper model support -10°C - 40°C ambient temperature.

Dimensions

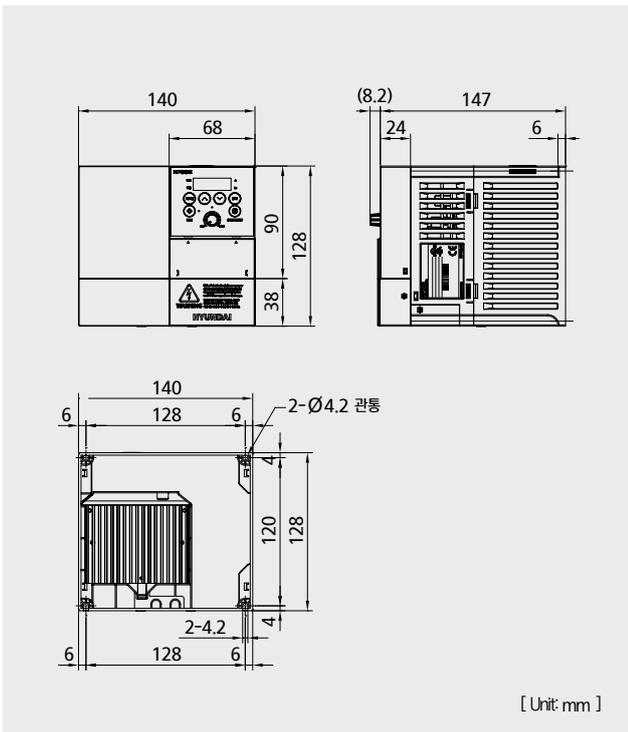
- E1-004SF/007SF,
E1-004LF/007LF/015LF



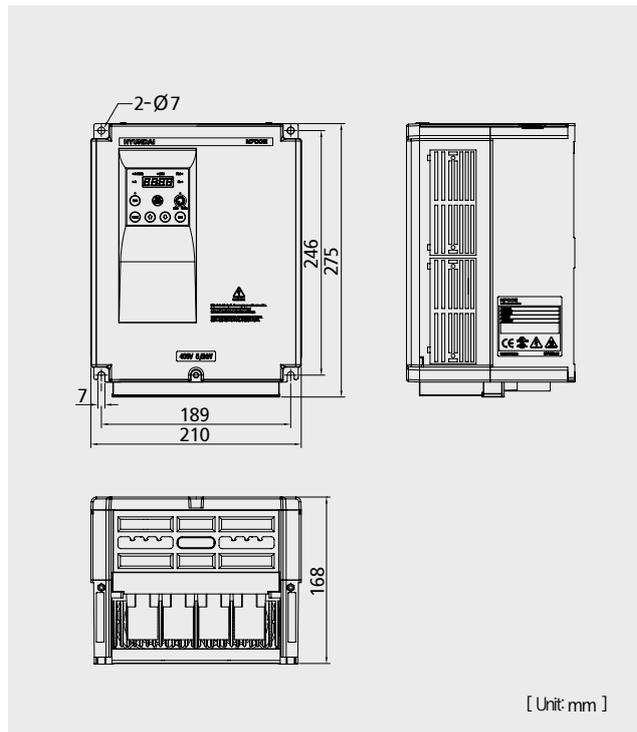
- E1-015SF/022SF, E1-022LF,
E1-004HF/007HF/015HF/022HF



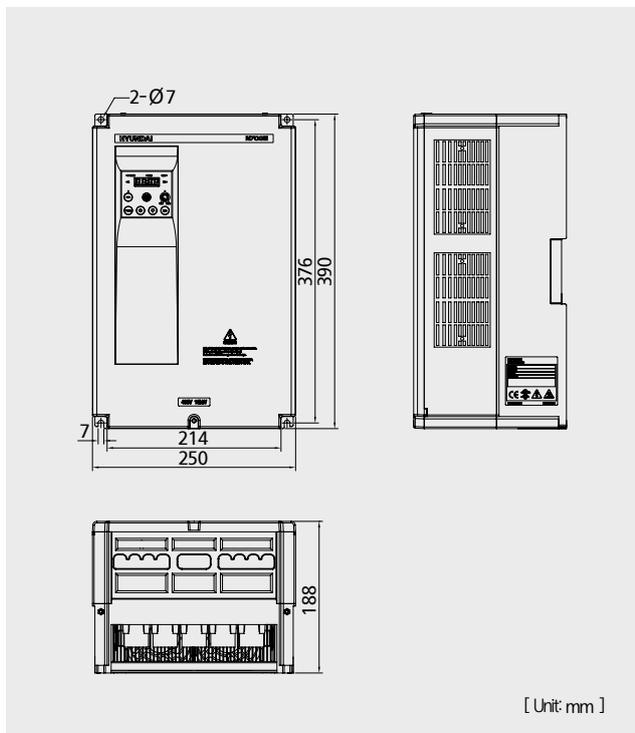
- E1-037LF/HF



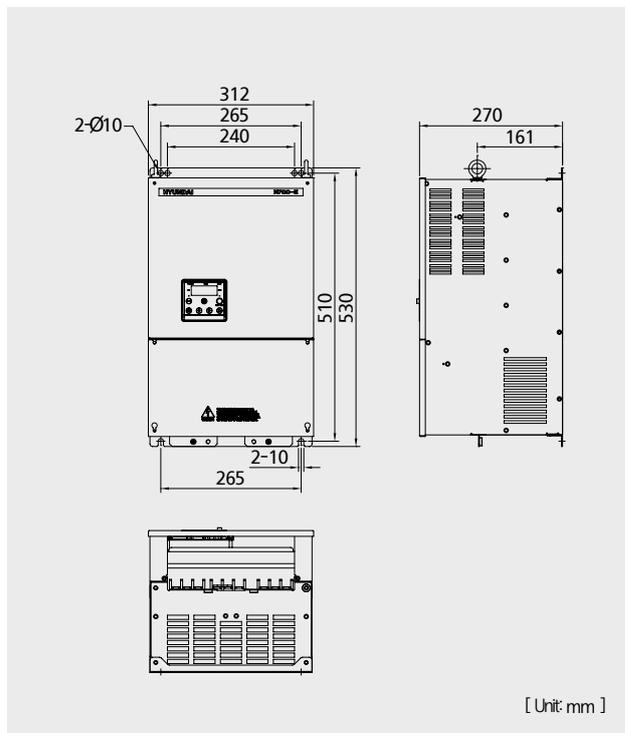
- E1-055LF/055HF,
E1-075LF/075HF, E1-110LF/110HF



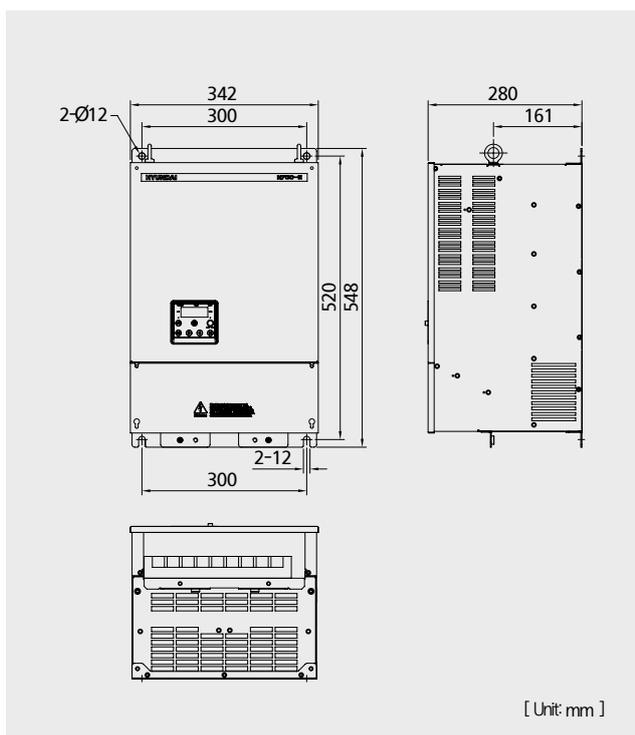
- E1-150LF/150HF,
E1-185LF/185HF, E1-220LF/220HF



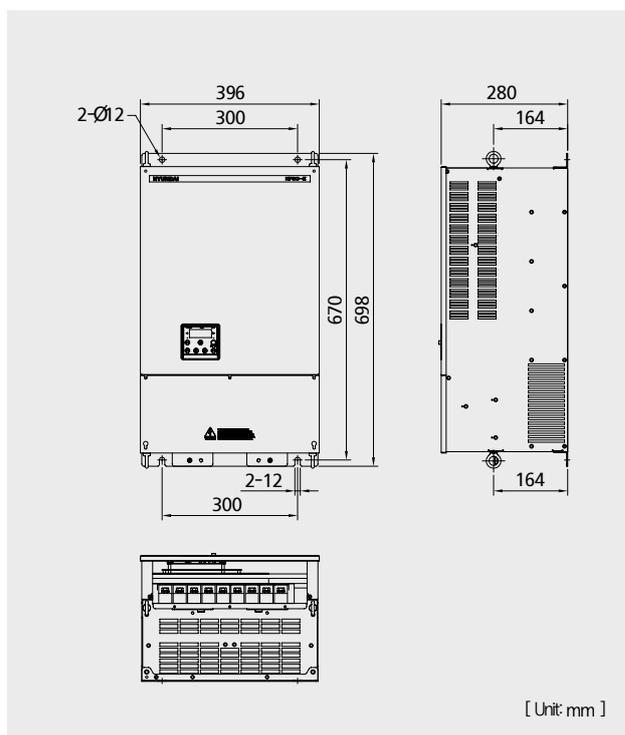
- E1-300HF, E1-370HF



- E1-450HF, E1-550HF

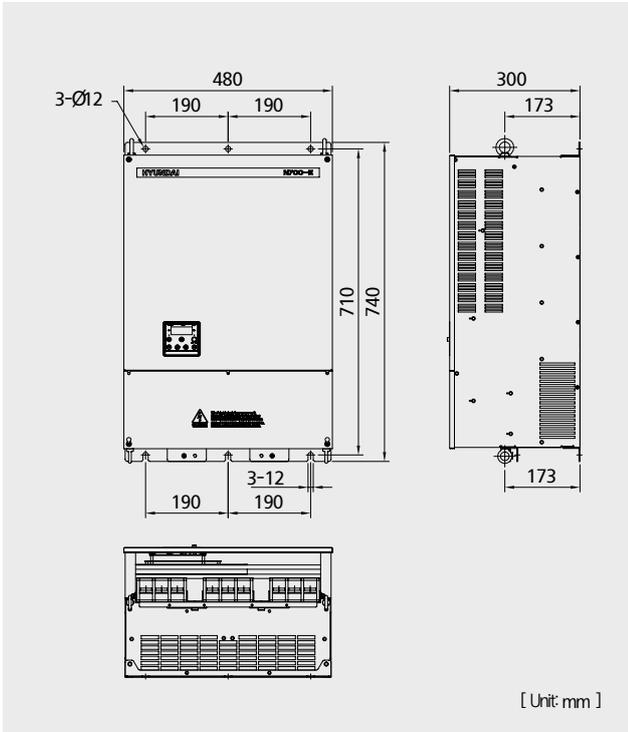


- E1-750HF, E1-900HF

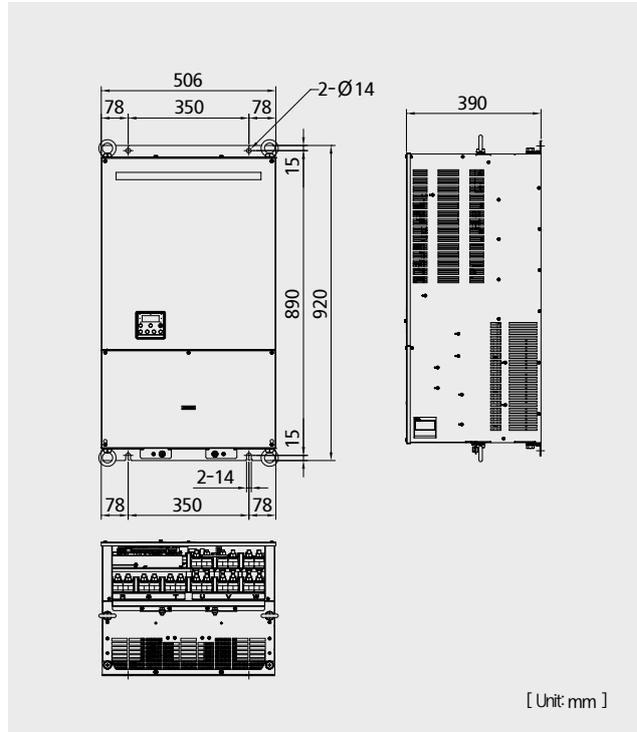


Dimensions

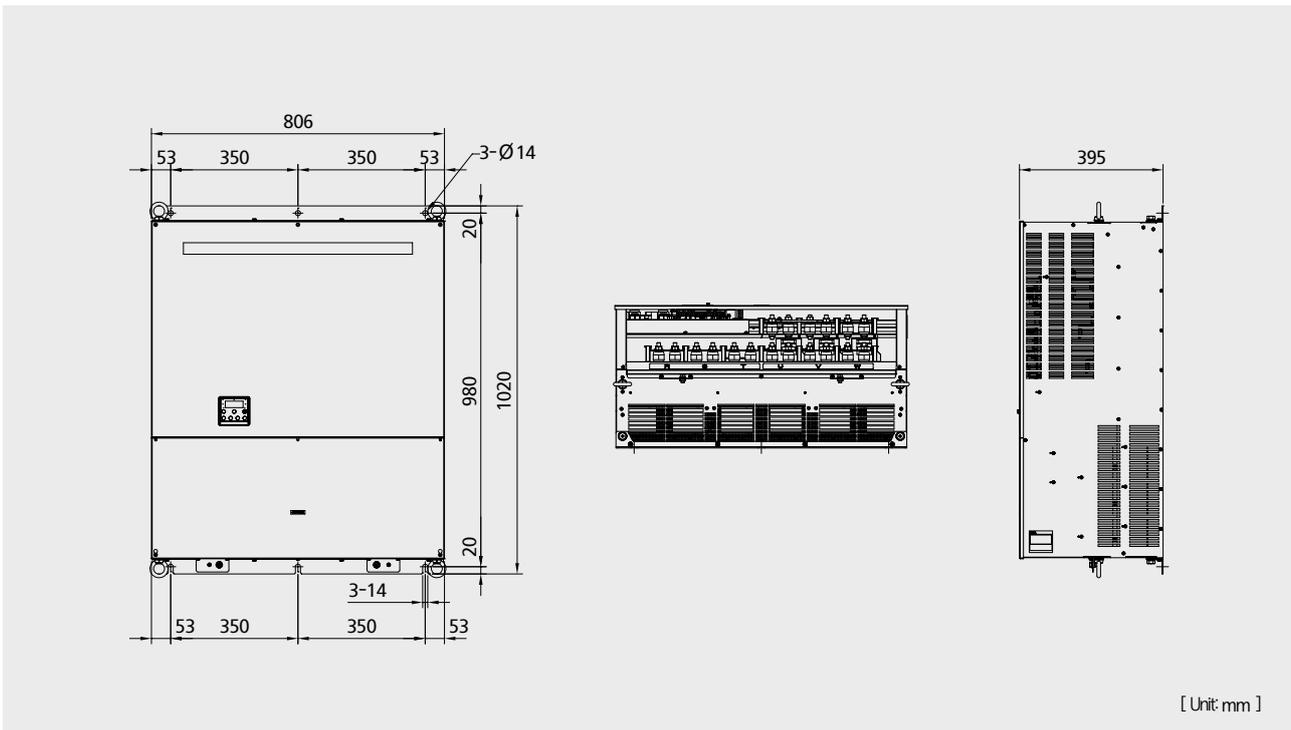
▪ E1-1100HF, E1-1320HF



▪ E1-1600HF, E1-2200HF



▪ E1-2800HF, E1-3500HF



Terminal Functions

▪ Main Circuit Terminal Arrangement

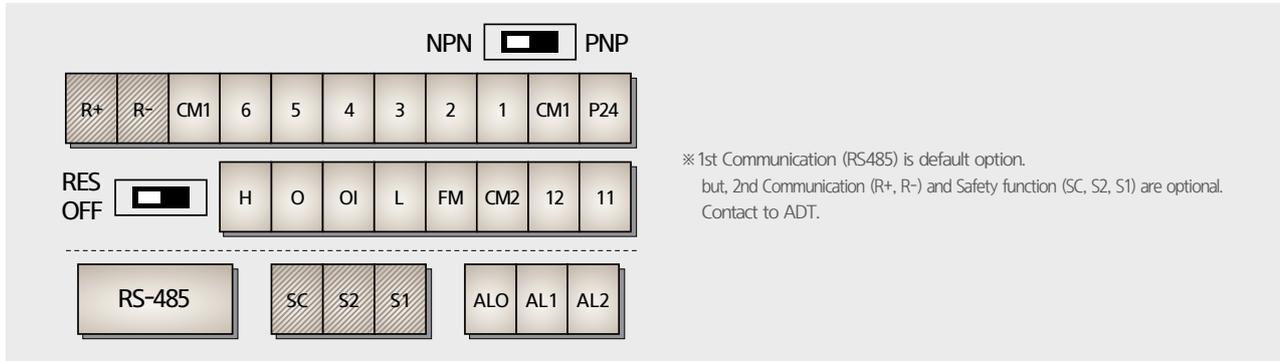
Main Circuit Terminal Block	Corresponding Type	Screw Size	Width (mm)
	E1 - 004SF E1 - 007SF	M3	7.62
	E1 - 004LF E1 - 007LF E1 - 015LF	M3	7.62
	E1 - 015SF E1 - 022SF	M4	11
	E1 - 022LF E1 - 037LF E1 - 004HF E1 - 007HF	M4	11
	E1 - 055LF E1 - 075LF E1 - 055HF	M4	10.6
	E1 - 110LF	M5	13
	E1 - 150LF E1 - 150HF	M5	13
	E1 - 185LF E1 - 220LF	M6	17
	E1 - 300HF E1 - 370HF	M6	17
	E1 - 450HF E1 - 550HF	M8	22
	E1 - 750HF E1 - 900HF	M8	29
	E1 - 1100HF E1 - 1320HF	M10	30
	E1 - 1600HF E1 - 2800HF	M10	38
	E1 - 2200HF E1 - 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 (+, +)	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.

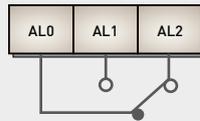
Terminal Functions

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



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
Output Signal ³⁾	L	Common Terminal for Frequency Command	
	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⁾	ALO AL1 AL2	Alarm Output Signal: at Normal Operation, Power Off (Initial Condition): ALO - AL2 Closed at Abnormal: ALO - AL1 Closed	Rated value for contact: AC 250 V 2.5 A (resistive load) 0.2 A (induced load) DC 30 V 3.0 A (resistive 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 (resistive load) 0.2 A (induced load) DC 30 V 3.0 A (resistive 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

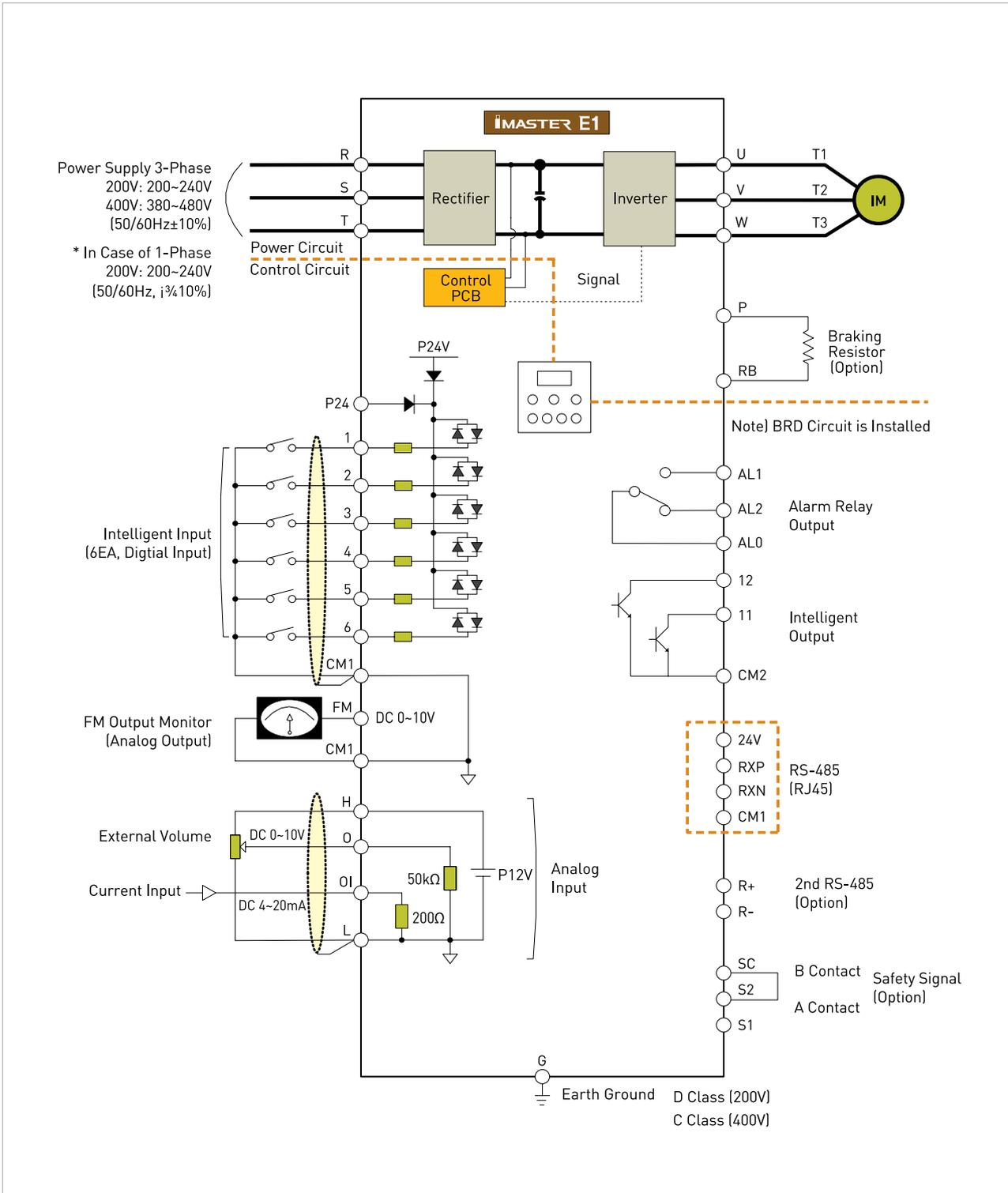
2) USP: Protects inverter from restarting when power supply is on.

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

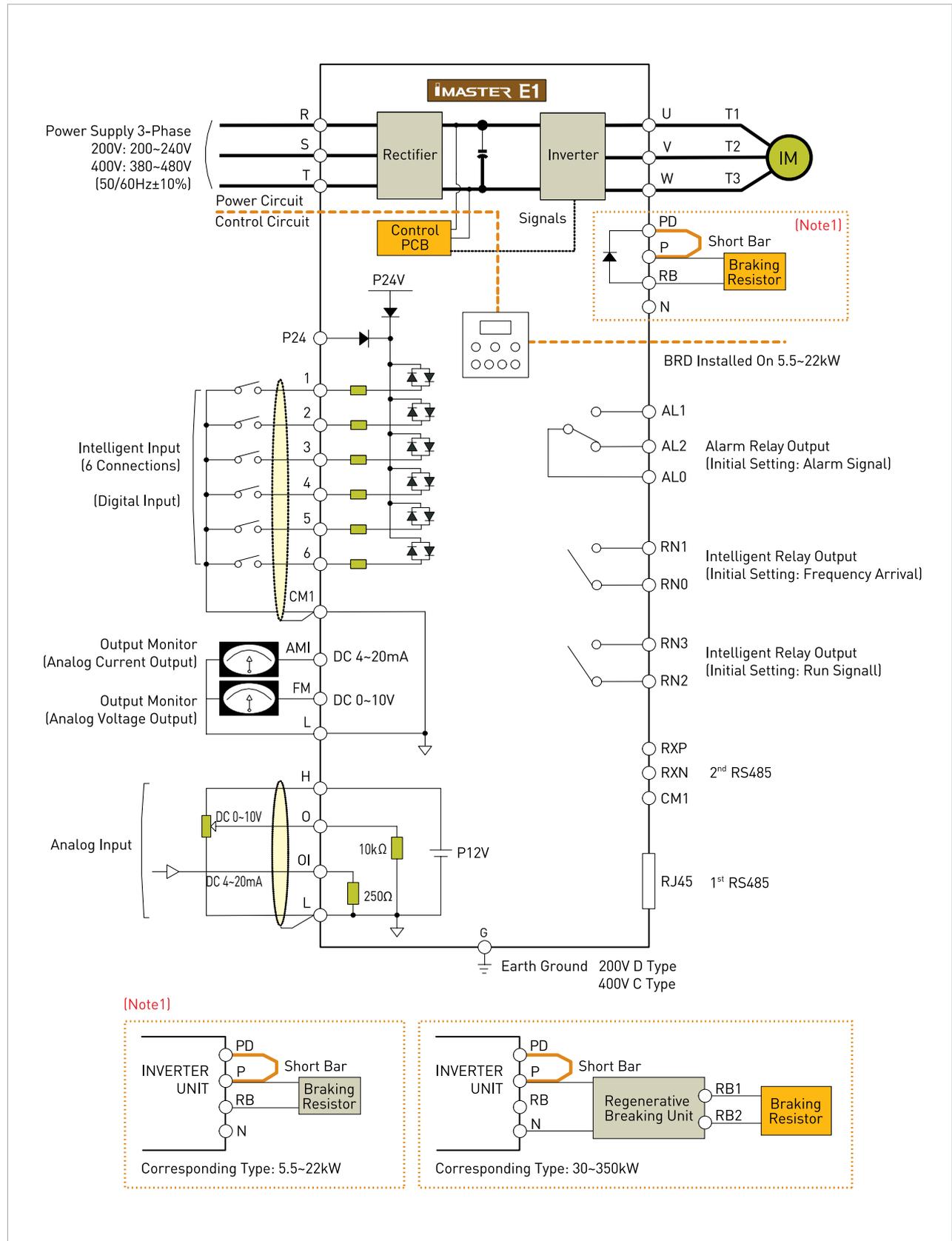
Terminal Connecting Diagram (004 - 022SF / 004 - 037LF/HF)



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)

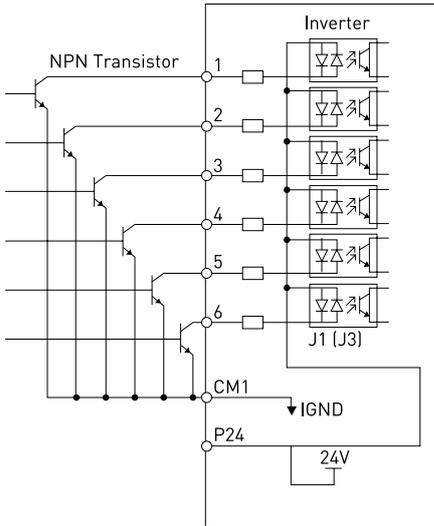


Connection to PLC

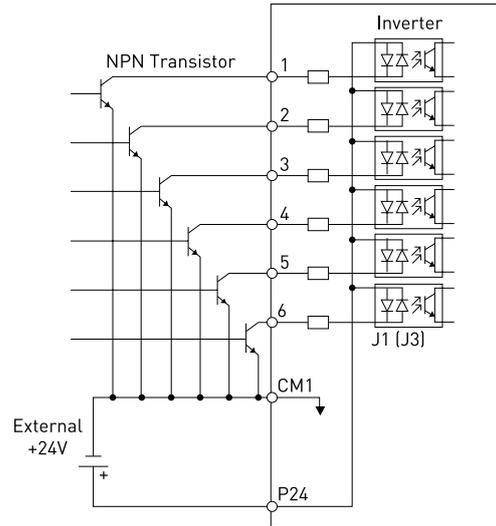
▪ Connection with Input Terminals

Sink Type

- Using Interface Power Inside Inverter



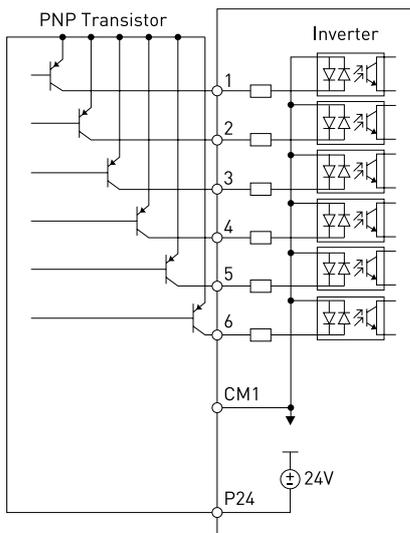
- Using External Power



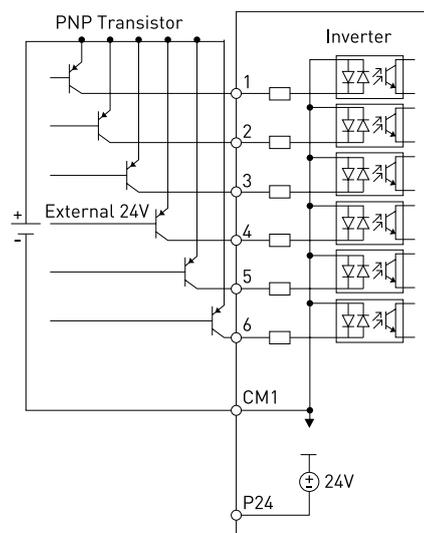
※ 004 - 022SF, 004 - 037LF/HF Model is not applicable.

Source Type

- Using Interface Power Inside Inverter



- Using External Power



Operations

▪ Operations

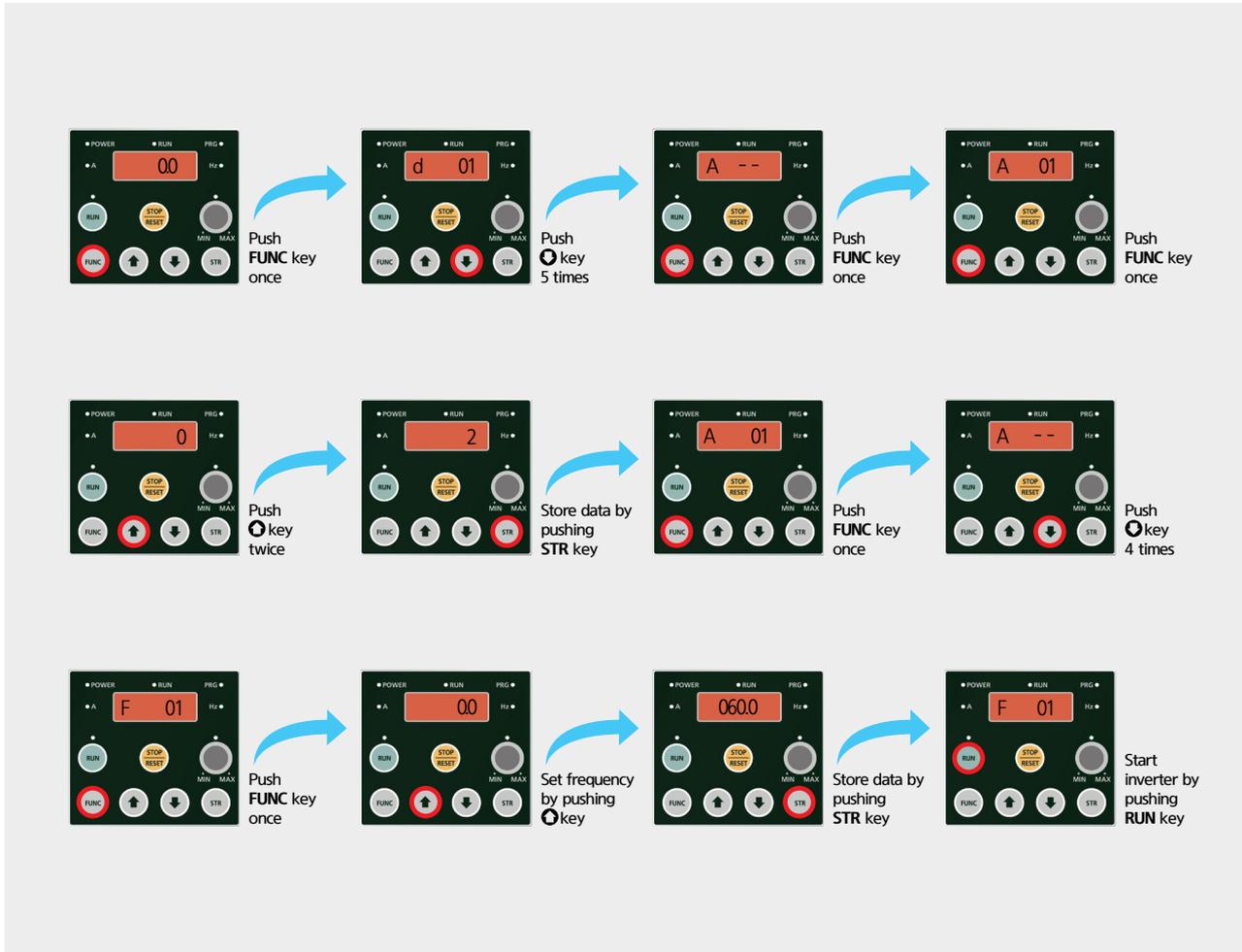
The diagram shows the operator control panel for the IMASTER E1 inverter. It features a central red LED display showing '8.8.8.8'. Above the display are three indicator lamps: POWER, RUN, and PRG. To the right of the display are two more indicator lamps: Hz/A and Hz. Below the display are several control keys: a RUN key, a STOP/RESET key, a Volume key (a rotary knob with MIN and MAX markings), a Function key (FUNC), an Up/Down key (two arrow keys), and a Store key (STR). Lines connect each label to its corresponding component on the panel.

<p>Run lamp Light is on when the inverter is generating PWM output or RUN command is entered.</p> <p>Power lamp Lamp for the controlling power</p> <p>Display (LED signal) Displays frequency, motor current, motor rotational number, alarm setting</p> <p>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.</p> <p>Function key Command selecting function.</p> <p>Up/Down key Increase / Decrease frequency value, and modify set values</p>	<p>PRG lamp Light is on when the value is entering</p> <p>Hz/A lamp Show whether the displayed data is frequency value or data current value.</p> <p>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.</p> <p>Volume key Set output frequency. (available only when the lamp is on)</p> <p>Store key Store the selected data or the set value.</p>
--	--

※ 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
	A28	Torque Boost Selection	0: Manual / 1: Automatic	0	X
V / F Characteristic	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 Deceleration 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
Other Functions	A60	Deceleration Pattern Selection	0: Linear / 1: S-curve / 2: U-curve	0	X
	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	○
PID Control Setting	A65	FAN Setting	0: Always ON / 1: ON only when RUN	0	X
	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 Frequency 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 in case 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) 13: AT (analog input voltage / current transferring) 1: RV (reverse direction) 14: RS (reset) 2: CF1 (multi-speed 1) 15: STA (start) 3: CF2 (multi-speed 2) 16: STP (stop) 4: CF3 (multi-speed 3) 17: F/R (forward / reverse) 5: CF4 (multi-speed 4) 18: Remote Control UP 6: JG (jogging run) 19: Remote Control DOWN 8: 2CH (2-level accel / decel command) 20: Local Keypad Operation (O/R) 9: FRS (free-run stop) 21: Local Terminal Input Operation (T/R) 10: EXT (external trip) 22: PID Integral Reset (PIDIR) 11: USP (unattended start protection) 23: PID Disable (PIDD) 12: SFT (soft lock)	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]	0	X
	C17	Output Terminal 12 a / b Contact Setting	1: b contact (normal close) [NC]	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-rotational 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	-	X
			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					
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 I ₀	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 L _{sig} 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	L _{sig} 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 Run
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	○
	F02	Accelerating Time Setting 1	0.1 - 3000 [sec]	30.0 sec	○
	F03	Decelerating Time Setting 1	0.1 - 3000 [sec]	30.0 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 0.01 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
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 A44 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 Deceleration 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
Other Functions	A60	Deceleration Pattern Selection	0: Linear / 1: S-curve / 2: U-curve	0	X
	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	○
PID Control Setting	A65	FAN Setting	0: Always ON / 1: ON only when RUN	0	X
	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 Frequency 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 in case 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) 13: AT (analog input voltage / current transferring) 1: RV (reverse direction) 14: RS (reset) 2: CF1 (multi-speed 1) 15: STA (start) 3: CF2 (multi-speed 2) 16: STP (stop) 4: CF3 (multi-speed 3) 17: F/R (forward / reverse) 5: CF4 (multi-speed 4) 18: Remote Control UP 6: JG (jogging run) 19: Remote Control DOWN 8: 2CH (2-level accel / decel command) 20: Local Keypad Operation (O / R) 9: FRS (free-run stop)a 21: Local Terminal Input Operation (T / R) 10: EXT (external trip) 22: PID Integral Reset (PIDIR) 11: USP (unattended start protection) 23: PID Disable (PIDD) 12: SFT (soft lock)	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)	5	X
	C14	Intelligent Terminal Relay (RN0-RN1) Output Setting	2: FA2 (Frequency arrival signal: Setting frequency or more) 3: OL (Overload advance notice signal) 4: OD (Output deviation for PID control)	1	X
	C15	Intelligent Terminal Relay (RN2-RN3) Output Setting	5: AL (Alarm signal)	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-rotational 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 I ₀	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 L _{sig} 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	L _{sig} Auto-tuning Data for Motor Constant	Setting range: 0.01 - 100.00 mH	-	X

