Powerful, Easy Versatile Drive

iMASTER C1

HD HYUNDAI ELECTRIC

AD Advanced Drive Technology
motor control & power conversion

iMASTER C1

Versatile Compact Drive

iMASTER C1

iMaster C1's compact size and
sensorless vector control technology
provide optimized performance
for industrial equipment.

Easy Maintenance

Removable Keypad

Soft Simple Control

Reliable Power module

Flexible I/O Interface

Product Range

- 1 Phase 220V 0.4kW ~ 2.2kW
- 3 Phase 220V 0.4kW ~ 18.5kW
- 3 Phase 440V 0.4kW ~ 200kW

High Performance

- V/F,User V/F, Enhanced Sensorless Vector control
- Dual Rating (Heavy Duty & Normal Duty)
- High Torque at low speed (150% @ 1 Hz)
- Built-in EMC Filter (Optional, Above 5.5kW~)

Excellent Applicability

- KEB Function
- External Brake Control (for Lift, Hoist)
- Automatic current suppression function
  (Minimization of inverter stop)
- Adoption of optimal algorithm to minimize
 the motor loss

Easy, Simple, User friendly Options

- Removable Keypad
- Side by Side Installation
- Built-in Fieldbus communication (Optional)
- Easy Installation & Simple Operation

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Specifications

■ Specifications (0.4kW~22kW)

Applied Motor		1Phase 220V (200~240V, ±10%, 50/60Hz)			3Phase 220V (200~240V, ±10%, 50/60Hz)			3Phase 440V (380~480V, ±10%, 50/60Hz)		
kW	HP	Frame	Model	A	Frame	Model	A	Frame	Model	A
0.4	0.5	F1	004SF	2.8 (3.2)	F1	004LF	2.8 (3.2)	F2	004HF	1.5 (1.8)
0.75	1	F1	007SF	4.8 (5.0)	F1	007LF	4.8 (5.0)	F2	007HF	2.7 (3.4)
1.5	2	F2	015SF	7.5 (8.5)	F1	015LF	7.5 (8.5)	F2	015HF	4.2 (4.8)
2.2	3	F2	022SF	11.0 (12.5)	F2	022LF	11.0 (12.5)	F2	022HF	5.5 (7.2)
3.7	5				F3	037LF	17.0 (19.5)	F3	037HF	9.0 (10.5)
5.5	7.5				F4	055LF	25 (30)	F4	055HF	14.8 (17.5)
7.5	10				F4	075LF	33 (40)	F4	075HF	18 (23)
11	15				F5	110LF	47 (56)	F5	110HF	24 (31)
15	20				F6	150LF	64 (73)	F5	150HF	32 (38)
18.5	25							F6	185HF	39 (44)
22	30							F6	220HF	45 (58)

■ Dimension
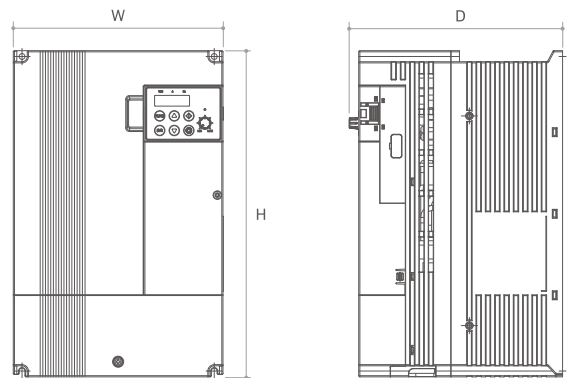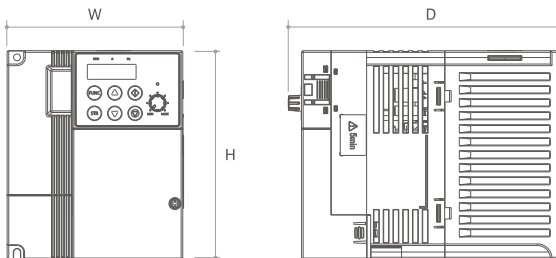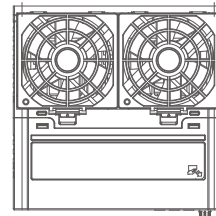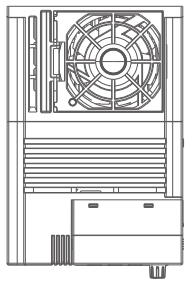
Frame	F1	F2	F3
W [mm]	68	108	140
H [mm]	128	128	128
D [mm]	160	167	172
Weight [kg]	0.8	1.0	1.3

Frame	F4	F5	F6
W [mm]	160	180	220
H [mm]	230	280	315
D [mm]	183	183	193
Weight [kg]	2.8	4.1	6.1

Specifications

■ Specifications (30kW~160kW)

Applied Motor		3Phase 440V (380~480V, ±10%, 50/60Hz)		
kW	HP	Frame	Model	A
30	40	F7	300HF	61 (71)
37	50	F7	370HF	75 (86)
45	60	F8	450HF	91 (102)
55	75	F8	550HF	110 (135)
75	100	F9	750HF	149 (160)
90	125	F9	900HF	176 (194)
110	150	F10	1100HF	217 (231)
132	200	F10	1320HF	260 (277)
160	250	F10	1600HF	300 (324)

■ Dimension
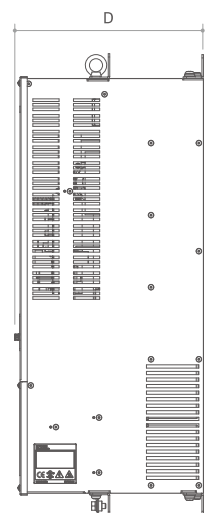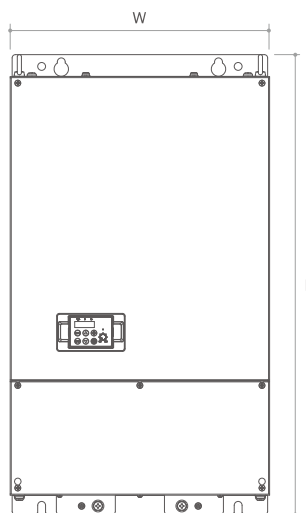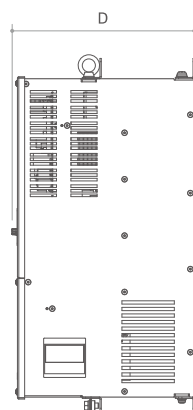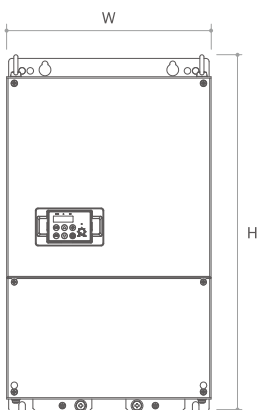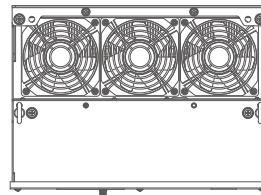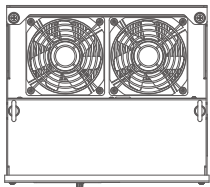
Frame	F7	F8
W [mm]	312	342
H [mm]	539	554
D [mm]	278	288
Weight [kg]	22.4	28.4

Frame	F9	F10
W [mm]	396	480
H [mm]	702	744
D [mm]	288	308
Weight [kg]	40.5	57.0

Specifications

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■ Diagram

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Terminal Block
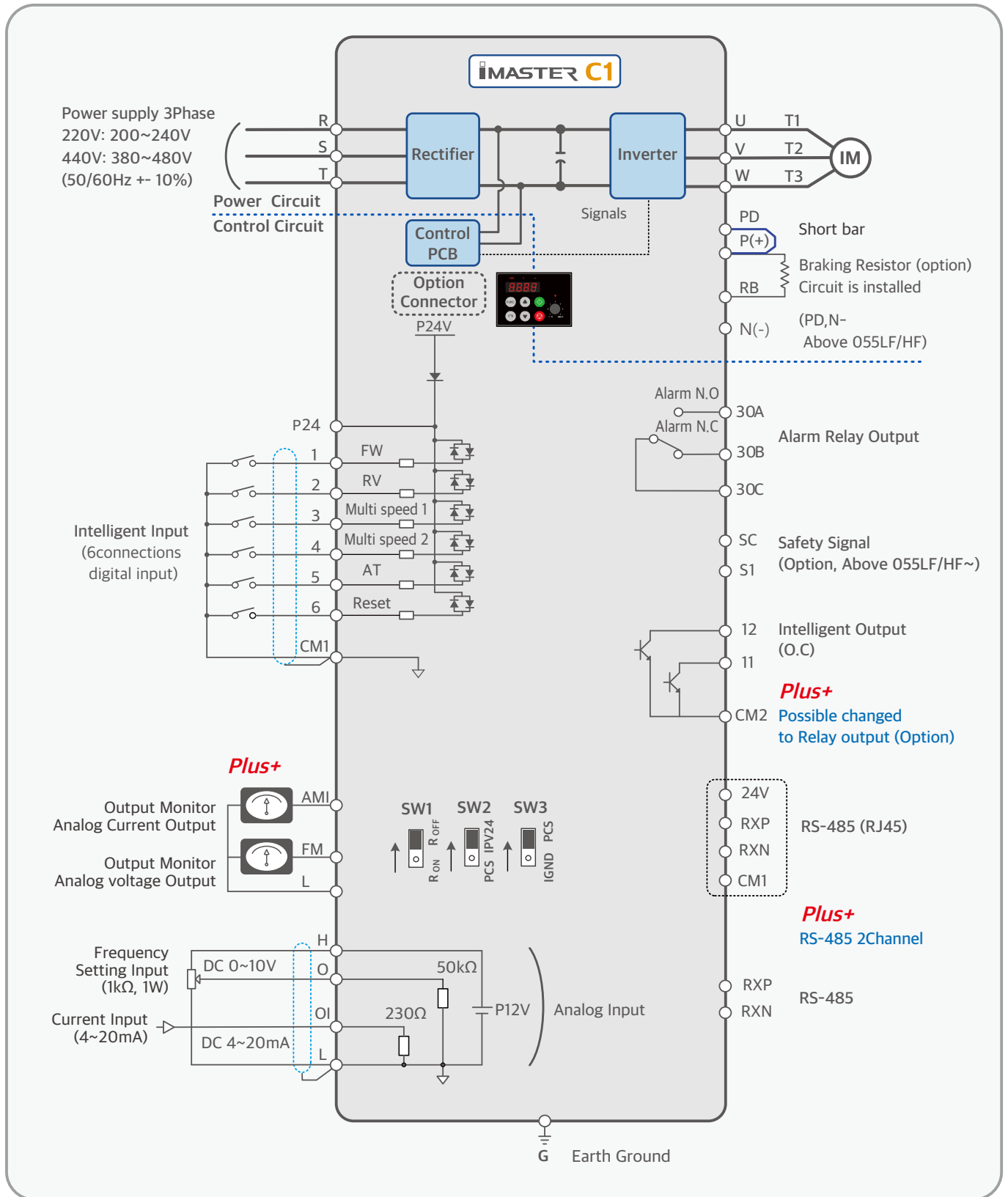
■ Control Circuit Terminal

Control Circuit Terminal

CM1	AMI	FM	CM1	6	5	4	3	2	1	P24
CM1	RXP	RXN	L	H	O	OI	CM2	12	11	

RS-485		SC	S1		30A	30B	30C
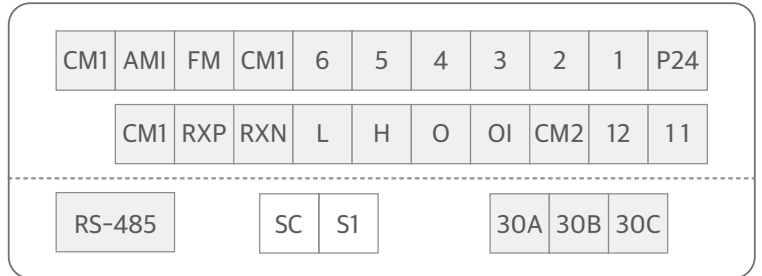
Terminal Symbols	Terminal Name	Specification	Remark
1~6	Intelligent Input Terminal	Min. on time: 12ms	Refer to Diagram
P24	Intelligent Input Terminal Power	24VDC±15%, 100mA	
CM1	Common Terminal for Input	-	
11, 12	Intelligent Output Terminal (O,C)	24VDC, 50mA MAX	Relay Output Changeable (Conversion Board-Optional)
CM2	Common Terminal for Output	-	
30A, 30B, 30C	Alram Relay Output Terminal	30A(NO),30B(NC),30C(Comm.)	Refer to Diagram
H, O, OI, L	Frequency Command Terminal (V,A)	H(+10V), O(0~10V), OI(4~20mA), L(-)	
FM, AMI, L	Analog Monitor Terminal	FM(0~10V), AMI(4~20mA), L(-)	FM (Output Frequency) AM (Output Current)
RJ45, RXP, RXN	RS-485 Communication Terminal	No. 1 Channel (RJ 45) No. 2 Channel (RXP, RXN)	
S1, SC	Safety Signal Input Terminal	S1(Contact Input), SC(Comm.)	Above 5.5kW ~

■ Main Circuit Terminal

Main Circuit Terminal

R/L1	S/L2	T/L2	RB	PD	P(+)	N(-)	U/T1	V/T2	W/T3

				G			G		
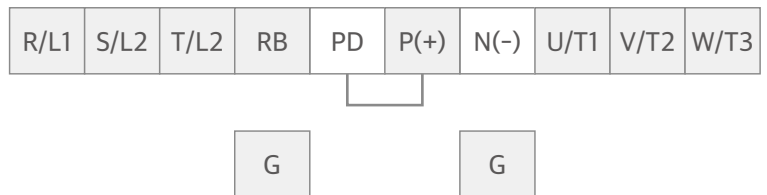
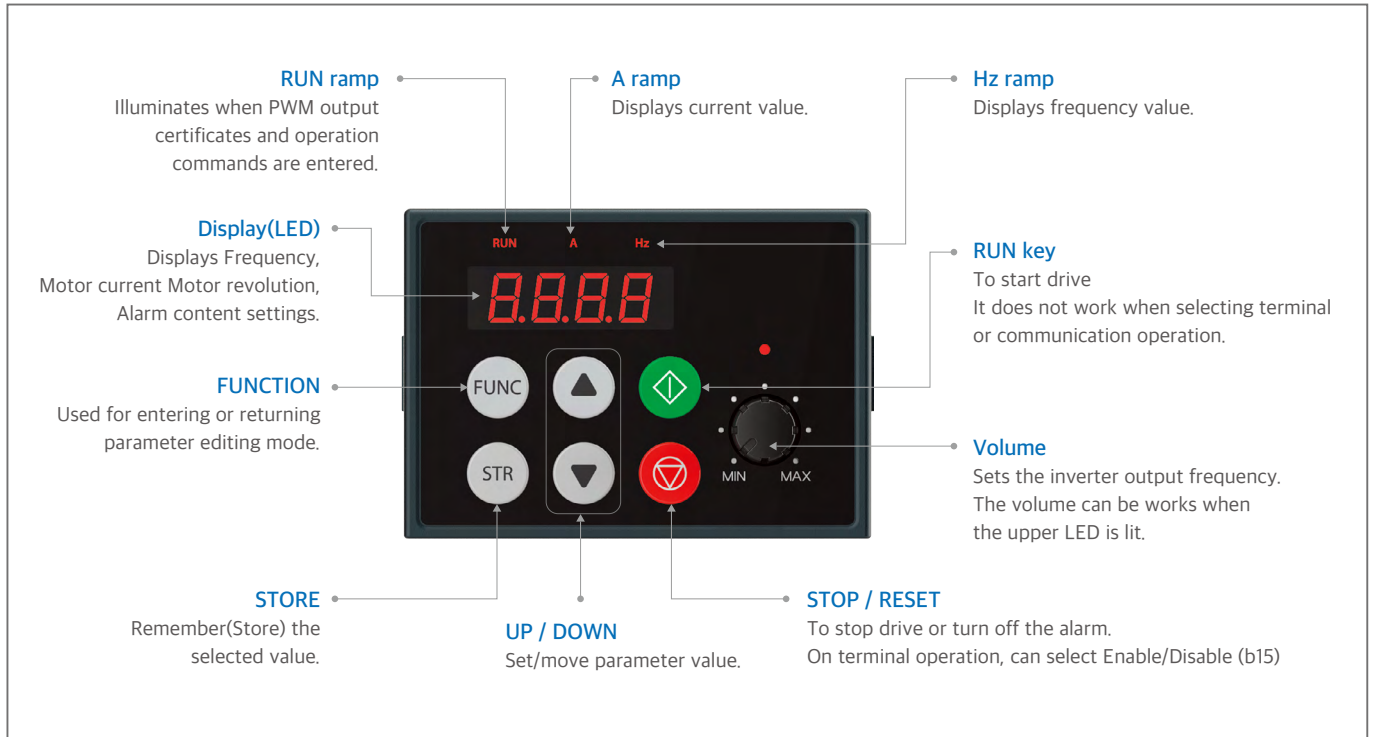| Terminal Symbols	Terminal Name	Function
R,S,T	Main Power Terminal	Connect input power
U,V,W	Inverter Output Terminal	Connect 3Phase motor
PD,P	DC Reactor Connection Terminal	Remove the short bar between PD and P and Conncect DC Reactor (Above 5.5kW~)
P, RB	External Braking Resistor Connection Terminal	Connect Braking Resitor (Option)
P, N	External Braking Unit Connection Terminal	Connect Braking Unit (Option, Above 5.5kW~)
G	Earth Ground	Ground the inverter for prevention of electric shock

Specifications

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■ Controls

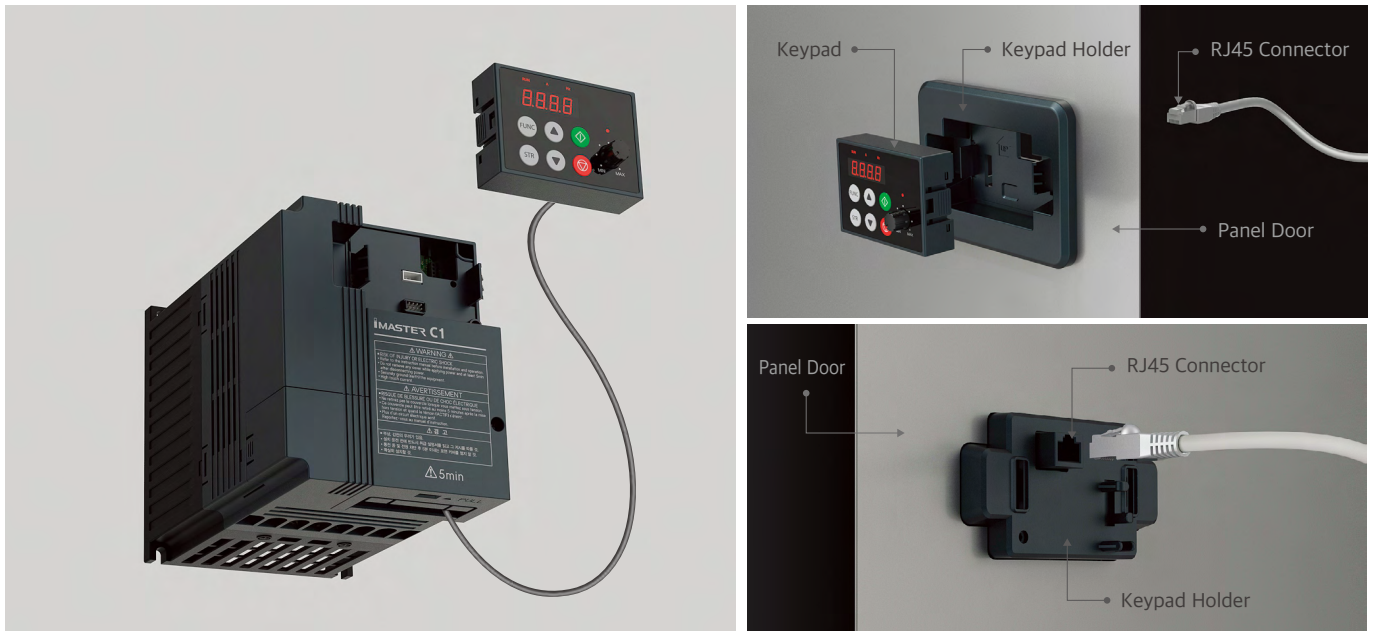| Item	Specification
Control Mode	V/F Control, User V/F, Enhanced sensorless vector control
Frequency Setting Range	0.01 to 400Hz
Frequency Tolerance	Digital Reference : ±0.01% Analog Reference : ±0.1%
Frequency Setting Resolution	Digital Command : 0.01 Hz Analog Command : 0.03 Hz / 60 Hz
Output Frequency Resolution	0.01 Hz
Frequency Setting	0~10 [V], 4~20 [mA], Keypad
Carrier Frequency	1~10kHz (default ND : 3kHz, HD : 5kHz)
ACC/DEC Time	0.1~3000sec (linear , S curve, U curve)
Starting Torque	100% / 3 Hz (V/f) 200% / 1 Hz (SLV)

Item		Specification
Protective Function	Overcurrent	Exceeds internal over current trip level
	Overload	150%(HD) ,120%(ND) 60s
	Overvoltage	200V Class:410 V / 400V Class:820 V
	Low voltage	200V Class:190 V / 400V Class:380 V
	Heat sink overheat	NTC on IGBT
	Stall Prevention	Stall prevention during acceleration
	Ground Fault	Protection by electric circuit
Environment	Area of Use	Indoor
	Ambient Temperature	HD : -10 to 50℃ / ND : -10 to 40℃
	Humidity	95% RH or less (no condensation)
	Storage Temperature	-20 to 60℃
	Altitude	Up to 1000 m
	Vibration	10Hz~20Hz 1G, 20Hz~55Hz 0.6G
Standard		UL 508C, EN61800-3 C3(2004/108/EC) EN61800-5-2, IEC6158:SIL 3
Protective Design		Open IP20

Terminal Block

■ Keypad

RUN ramp
Illuminates when PWM output certificates and operation commands are entered.

A ramp
Displays current value.

Hz ramp
Displays frequency value.

Display(LED)
Displays Frequency, Motor current Motor revolution, Alarm content settings.

RUN key
To start drive
It does not work when selecting terminal or communication operation.

FUNCTION
Used for entering or returning parameter editing mode.

Volume
Sets the inverter output frequency. The volume can be works when the upper LED is lit.

STORE
Remember(Store) the selected value.

UP / DOWN
Set/move parameter value.

STOP / RESET
To stop drive or turn off the alarm.
On terminal operation, can select Enable/Disable (b15)

■ Removable Keypad

Keypad
Keypad Holder
RJ45 Connector
Panel Door

Panel Door
RJ45 Connector
Keypad Holder

• Keypad holder order code

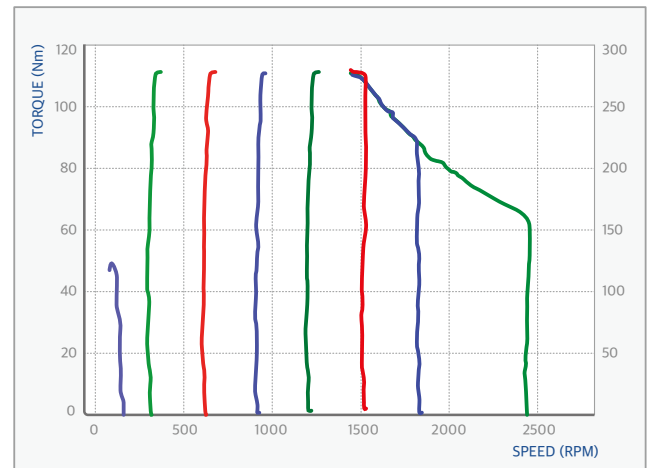| Order code	CP0-KEYPADHOLDER
Spec사 양	iMASTER C1 - Keypad Holder

Specialty

■ Strong torque performance

Stronger than or equal to competitors in terms of strong low-speed torque performance, high torque performance in all areas.

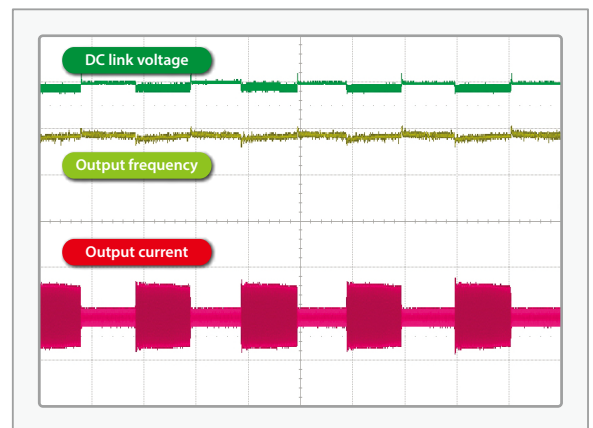### Previous model
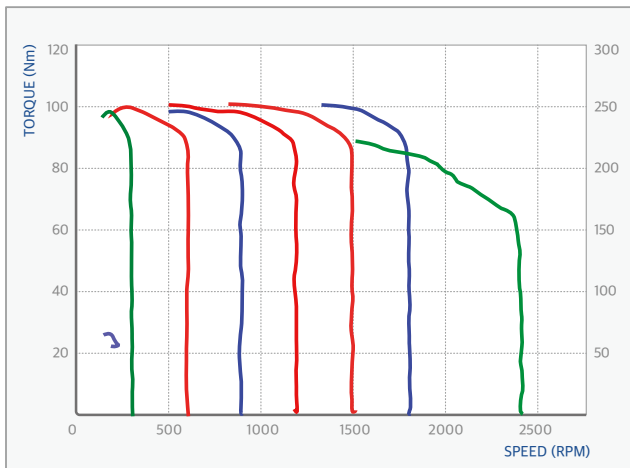
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■ Overvoltage Limit Performance (regeneration avoidance)

In the case of regular occurrence of regeneration load, it is possible to increase the output frequency of motor in regeneration zone and control DC link voltage rise.
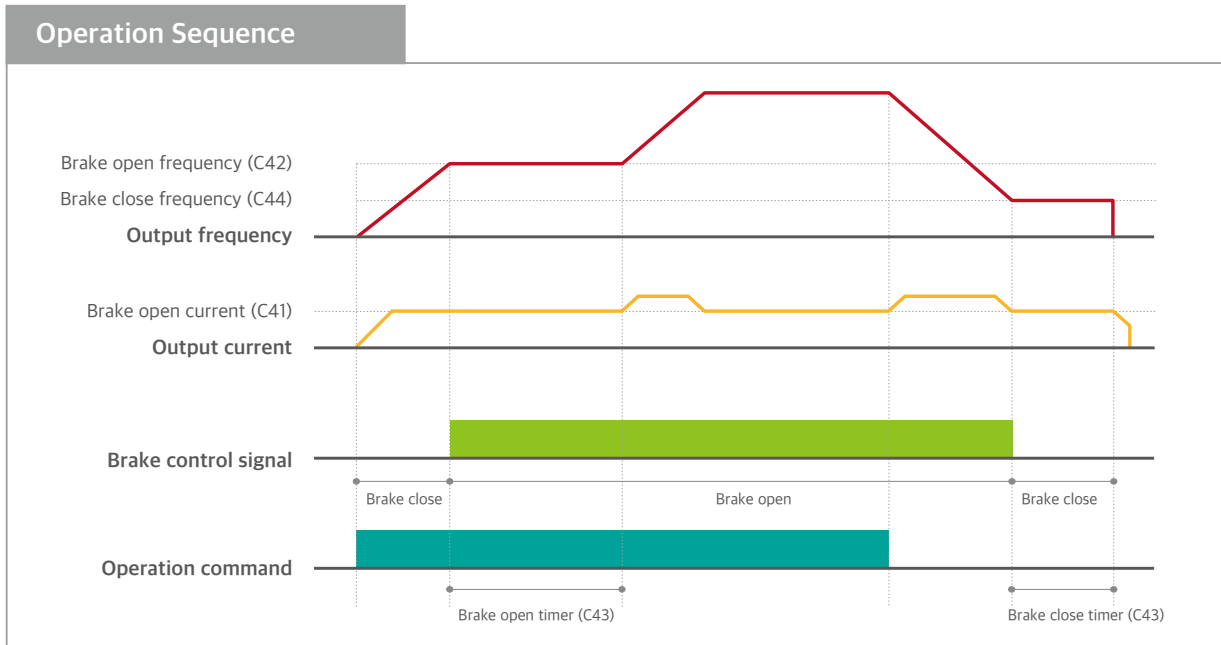

■ Overcurrent Limit Performance

Even in the case of step load, it is possible to control output current smoothly and keep output frequency constantly.
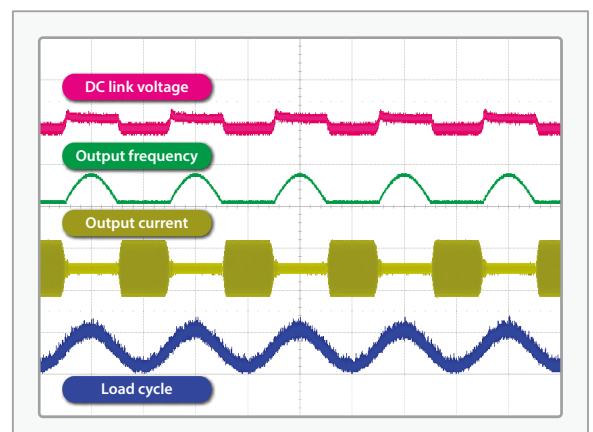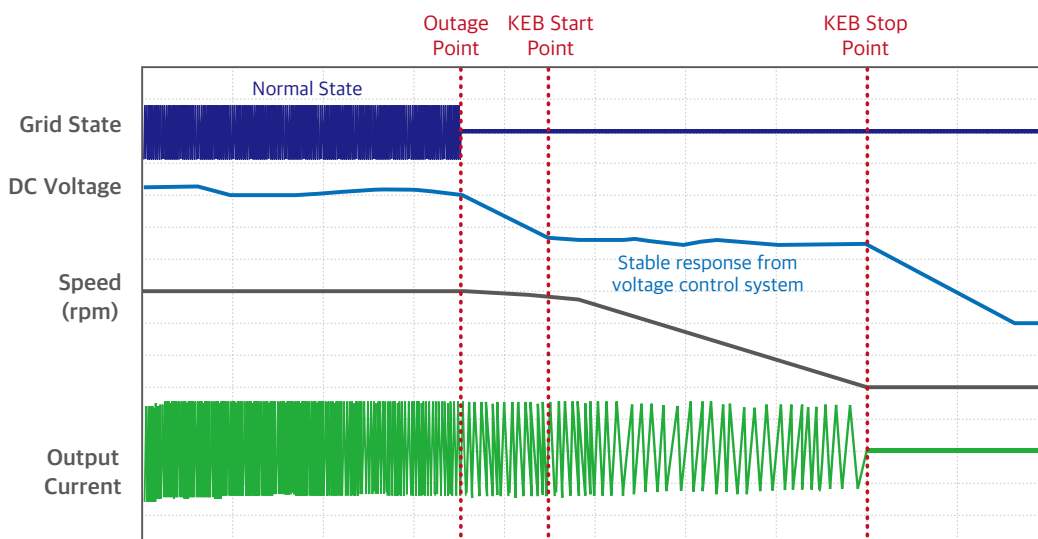
External Brake Control Function (for Lift)

When using external brakes, such as the lift system, it provides safe and elaborated control for all variables, and the operation speed can be changed depending on the load.

Operation Sequence

- Brake open frequency (C42)
- Brake close frequency (C44)
- **Output frequency**
- Brake open current (C41)
- **Output current**
- **Brake control signal**
- Brake close | Brake open | Brake close
- **Operation command**
- Brake open timer (C43) | Brake close timer (C43)

## KEB (Kinetic Energy Buffering) function

The KEB function maintains the DC voltage by control the inverter speed during the power failure period, thereby helping maintain the interval between the instantaneous outage and the low voltage trip for a longer time.
The KEB function helps to keep user's facilities safe from any power failure situation.

Outage Point | KEB Start Point | KEB Stop Point

- Normal State
- **Grid State**
- **DC Voltage**
- **Speed (rpm)**
- Stable response from voltage control system
- **Output Current**

Specialty

■ RS-485 Communication (2 Channel)

Two channels of Modus RS-485 communications provide two-way multiple access and multiple inverters integrated operation and monitoring with minimal control wiring and cost savings.
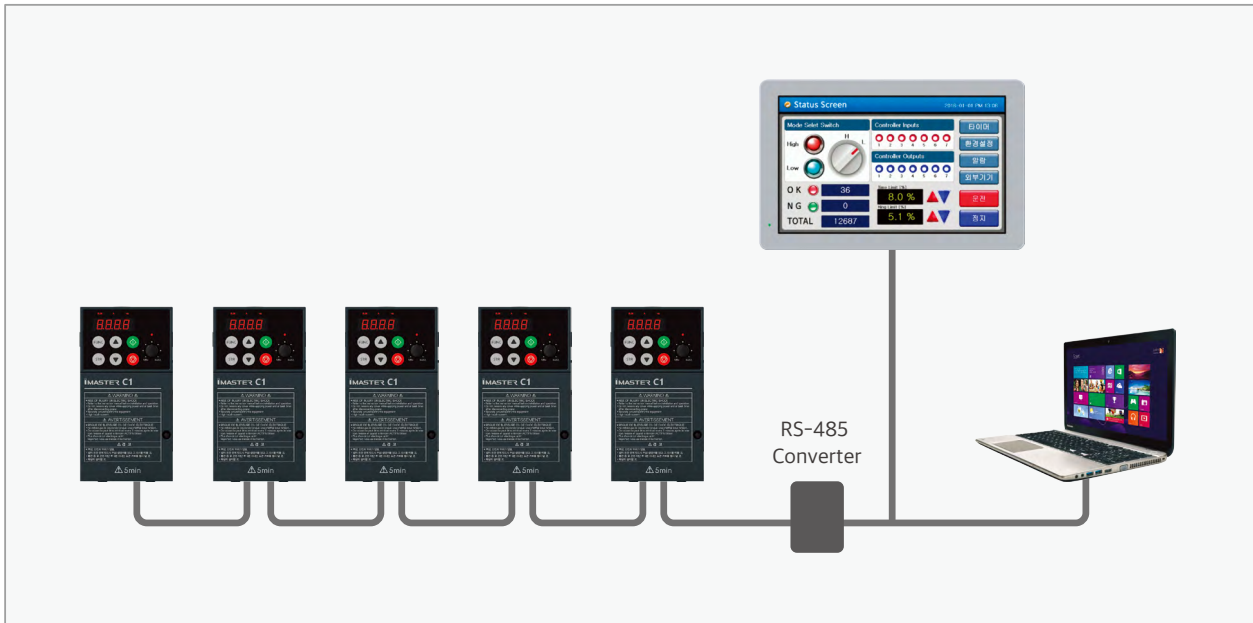
■ Extended Cooling Fan Life

The cooling fan on/off function allows more efficient use of the cooling fan.
This feature helps you take longer cooling fan replacement cycles than before.
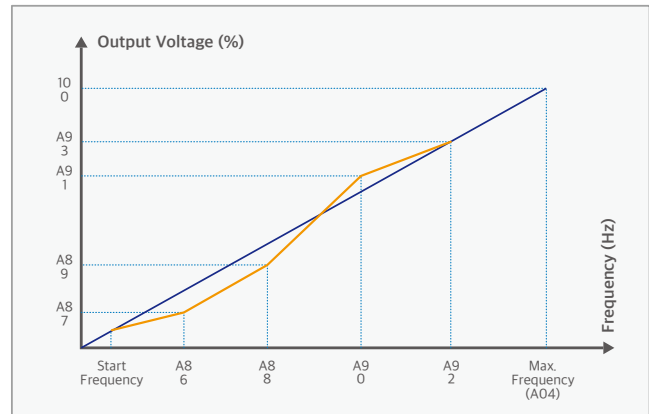
Specialty

■ User V/F

User can randomly set the required V/F ratio according to the motor.
User can use following parameters to obtain a suitable V/F pattern for a special motor.
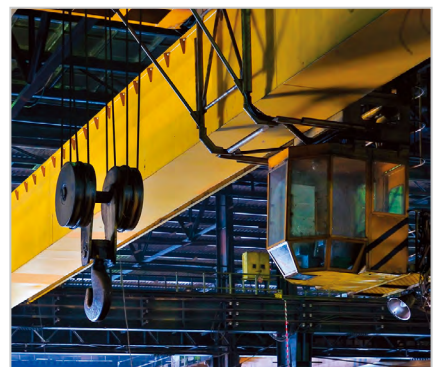

■ Droop Control

To drive the same load, the product responds to the torque change in each of multiple motors to control a speed and to enable each motor to keep an even load.
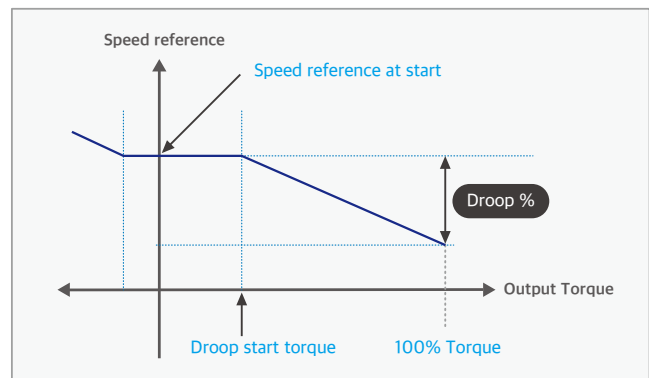
[Load balancing by droop control]

Application

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Protective Function

■ Protective Function 1

Name	Cause(s)	Error code
Overcurrent protection	When the inverter output current exceeds the rated current during the motor locked or reduced in speed. Protection circuit activates, halting inverter output.	E04
Overload protection	When the inverter output current causes the motor to overload, the electronic thermal trip in the inverter cuts off the inverter output.	E05
Overvoltage protection	If regenerative energy from the motor or the main power supply voltage is high, the protective circuit activates to cut off the inverter output when the voltage of DC link exceeds the specification.	E07
Communication error	Communication error between inverter and its operator. If the Reset signal persists for more than 4 seconds, it will occur.	E60
Under-voltage protection	When input voltage drops below the low-voltage detection level, the control circuit does not function normally. It will cause of overheat of motor and lack of torque that is why if receiving voltage is under 150~160V (200V class) or 300~320V (400V class), the inverter output is cut off.	E09
Output short-circuit	The inverter output was short-circuited. This condition causes excessive current for the inverter that is why, the inverter output is turned off.	E04 or E34
USP error	The USP error is indicated when the power is turned on with the Inverter in RUN state. (Enabled when the USP function selected)	E13
External trip	When the external equipment or unit has an error, the inverter receives the corresponding signal and cuts off the output.	E12
Temperature trip	When the temperature in the main circuit increases due to cooling fan stop, the inverter output is cut off.	E21
Inverter overload	The power device IGBT is protected from over heat. The operating time of inverter is 1 minute with 150% load of HD or 120% load of ND. The operating time is changed depending on carrier frequency, load, ambient temperature and power rating.	E17
Input phase loss	A function that detects phase loss in the input AC source to prevent damages.	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
OVS fail	The OVS output frequency is higher than maximum OVS output frequency during the setting time when the OVS function is enabled.	E02
CPU error	It occurred it has error between inverter logic board and I/O board or communication error occurred. Turn off inverter completely, check there is any connection losses then power on.	E11
Ground fault	When ground fault is detected on running condition, the output is cut off.	E14

Protective Function

■ Protective Function 2

Name	Cause(s)	Error code
EEPROM	The inverter output is cut off when EEPROM in the inverter has an error due to external noise, excessive temperature rise, or other factors. If the error is occurred, please check setting data again. If error is occurred when power-on and does not off, please turn off the inverter at least 10minutes and power on again.	E08
System overload detection fault	The output current of the drive is greater than the detection level set for this feature when it is enabled.	E23
System underload detection fault	The output current of the drive is less than the detection level set for this feature when it is enabled.	E24
FAN fault	The Fan fault is occurred, inverter output is cut off.	E33
Profibus fault (Option)	ProfibusDP optional card only. Host disconnection, or invalid host setting cause this error.	E40
DeviceNet fault (Option)	DeviceNet optional card only. Communication cable power loss, disconnect to host, or invalid host setting cause this error.	E41
HW Power fault 1	It occurred when inverter internal power is problem. Turn off power completely and try power on again.	E50
HW Power fault 2	It occurred when inverter internal power is problem. Turn off power completely and try power on again.	E51
Keypad fault	It occurred keypad communication error. Turn off power completely and try power on again.	E61
External trip 2	When the external equipment or unit has an error, the inverter receives the corresponding signal and cuts off the output. (Need setting for intelligent input terminal)	EE2
External trip 3	When the external equipment or unit has an error, the inverter receives the corresponding signal and cuts off the output. (Need setting for intelligent input terminal)	EE3
External trip 4	When the external equipment or unit has an error, the inverter receives the corresponding signal and cuts off the output. (Need setting for intelligent input terminal)	EE4
External trip 5	When the external equipment or unit has an error, the inverter receives the corresponding signal and cuts off the output. (Need setting for intelligent input terminal)	EE5
External trip 6	When the external equipment or unit has an error, the inverter receives the corresponding signal and cuts off the output. (Need setting for intelligent input terminal)	EE6

Global Power Electronics Company

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