



### **IABU Headquarters**

**Delta Electronics, Inc.**  
Taoyuan Technology Center  
No.18, Xinglong Rd., Taoyuan City,  
Taoyuan County 33068, Taiwan  
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

### **Asia**

**Delta Electronics (Jiangsu) Ltd.**  
Wujiang Plant 3  
1688 Jiangxing East Road,  
Wujiang Economic Development Zone  
Wujiang City, Jiang Su Province,  
People's Republic of China (Post code: 215200)  
TEL: 86-512-6340-3008 / FAX: 86-769-6340-7290

**Delta Greentech (China) Co., Ltd.**  
238 Min-Xia Road, Pudong District,  
Shanghai, P.R.C.  
Post code : 201209  
TEL: 86-21-58635678 / FAX: 86-21-58630003

**Delta Electronics (Japan), Inc.**  
Tokyo Office  
2-1-14 Minato-ku Shibadaimon,  
Tokyo 105-0012, Japan  
TEL: 81-3-5733-1111 / FAX: 81-3-5733-1211

**Delta Electronics (Korea), Inc.**  
1511, Byucksan Digital Valley 6-cha, Gasan-dong,  
Geumcheon-gu, Seoul, Korea, 153-704  
TEL: 82-2-515-5303 / FAX: 82-2-515-5302

**Delta Electronics Int'l (S) Pte Ltd**  
4 Kaki Bukit Ave 1, #05-05, Singapore 417939  
TEL: 65-6747-5155 / FAX: 65-6744-9228

**Delta Electronics (India) Pvt. Ltd.**  
Plot No 43 Sector 35, HSIIDC  
Gurgaon, PIN 122001, Haryana, India  
TEL : 91-124-4874900 / FAX : 91-124-4874945

### **Americas**

**Delta Products Corporation (USA)**  
Raleigh Office  
P.O. Box 12173, 5101 Davis Drive,  
Research Triangle Park, NC 27709, U.S.A.  
TEL: 1-919-767-3800 / FAX: 1-919-767-8080

**Delta Greentech (Brasil) S.A**  
Sao Paulo Office  
Rua Itapeva, 26 - 3° andar Edificio Itapeva One-Bela Vista  
01332-000-São Paulo-SP-Brazil  
TEL: +55 11 3568-3855 / FAX: +55 11 3568-3865

### **Europe**

**Deltronics (The Netherlands) B.V.**  
Eindhoven Office  
De Witbogt 15, 5652 AG Eindhoven, The Netherlands  
TEL: 31-40-2592850 / FAX: 31-40-2592851

\*We reserve the right to change the information in this catalogue without prior notice.



Automation for a Changing World

## **Delta Sensorless Vector Control Drives**

### **CP2000 Series**

**For HVAC Drive Applications**





**CP2000**

## **WHY CP2000?**

### **IABU green technology**

To fulfill Delta's mission "to provide innovative, clean and energy-efficient solutions for a better tomorrow", we are proud to introduce a sensorless vector control VFD which is made for pump and fan applications and HVAC systems.

With the best performance in the industry, this VFD is specially designed for related applications with an intelligent PID controller.

Functions such as sensorless vector control, multi-segment V/F control curve and soft start greatly improve the efficiency of the variable torque loads and constant horsepower loads.

# Water Circulating Pumps Control

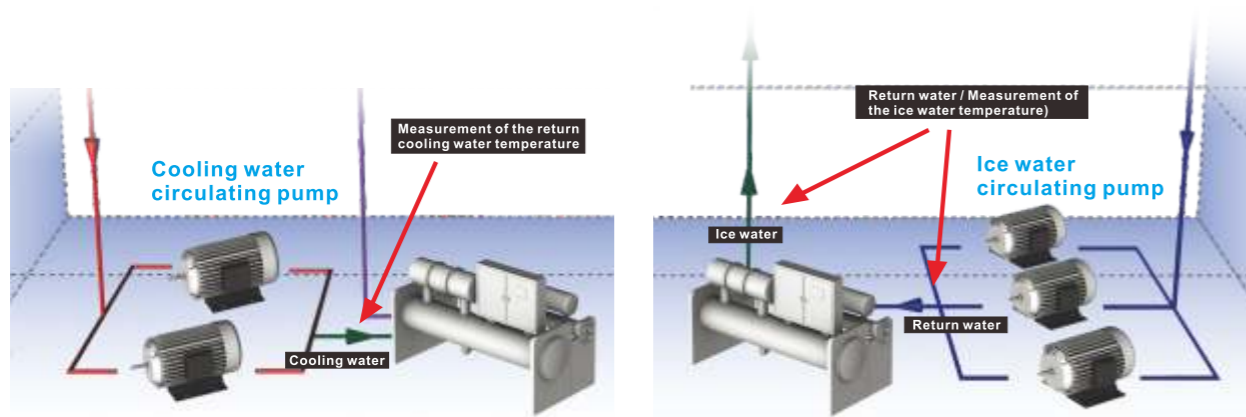


Figure 1: Multi-Pump Control

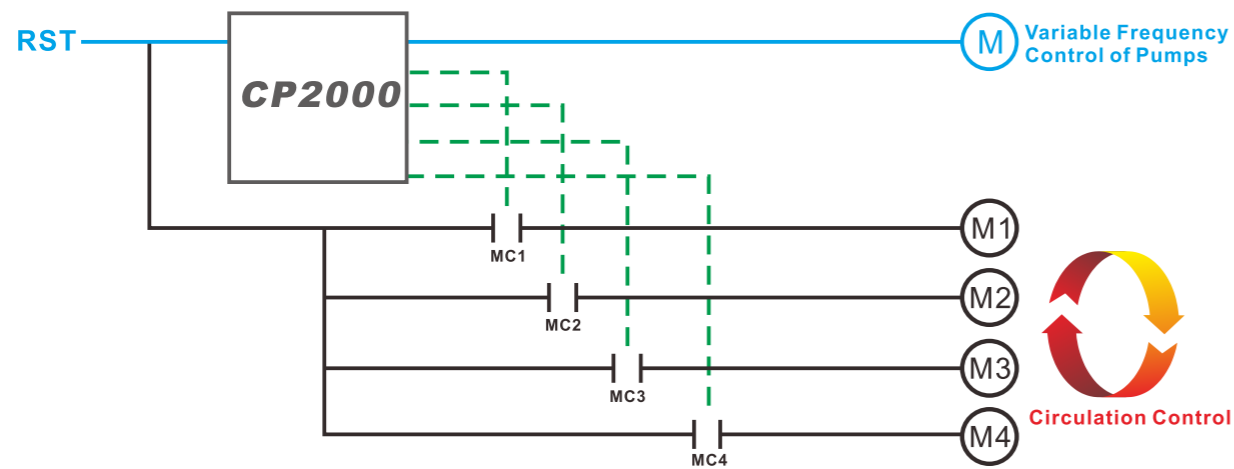


Figure 2: Fixed Quantity and Circulation Control of Pumps

## Features

- 01 LCD keypad offers a user-friendly operation interface. The display screen can be defined by the user with TP-Editor soft.
- 02 Quick setting, user defined parameter management, and parameter copy functions make the installation fast and easy.
- 03 Modular design for flexible extension and easy maintenance.
- 04 Built-in BACnet and MODBUS RS-485. Various optional communication cards such as Profibus-DP, DeviceNet, MODBUS TCP, EtherNet-IP, and CANopen.
- 05 Long-life design.
- 06 The PCB (Printed Circuit Board) coating enhances reliability and durability.
- 07 Fire mode and Bypass functions provide safe operation in an emergency.
- 08 Useful functions for pump and fan applications, such as: PID control, sleep/wake up functions, flying start, and skip frequency.
- 09 Multi-pumps control functions, such as: fixed time, fixed quantity, circulating controls. The driver can control a maximum of eight pumps at the same time. An optional relay extension card is available depending on the pump quantity.
- 10 Built-in PLC 10K step and Real Time Clock.

## Standard Models



Power range: 230V 0.75~90kW, 460V: 0.75~400kW

230V (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	
230V (HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	
Frame Size	A			B			C			D			E				
460V (kW)	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
460V (HP)	1	2	3	5	5	7.5	10	15	20	25	30	40	50	60	75	100	125
Frame Size	A			B			C			D							
460V (kW)	90	110	132	160	185	220	280	315	355	400							
460V (HP)	125	150	175	215	250	300	375	425	475	536							
Frame Size	E		F		G		H										

## Advanced Drive Technology

### High performance Variable Frequency Drive Technology

1. SVC Sensorless vector control
2. Dual rating design (Light duty & Normal duty)
3. Excellent variable torque control

### Modular Design

1. Hot plug LCD keypad
2. I/O extension card
3. Various communication card
4. Removable fans

### Versatile Drive Control

1. Built-in Programmable Logic Controller
2. Built in brake unit\*
3. Networking drive system
4. Auto energy saving design

### Environmental Adaptability

1. 50°C operation temperature
2. Built-in DC choke\*
3. Coated circuit boards
4. Built-in EMI filter\*
5. Global safety standards (CE/UL/cUL)



\* Note: Please refer to the Product Specification

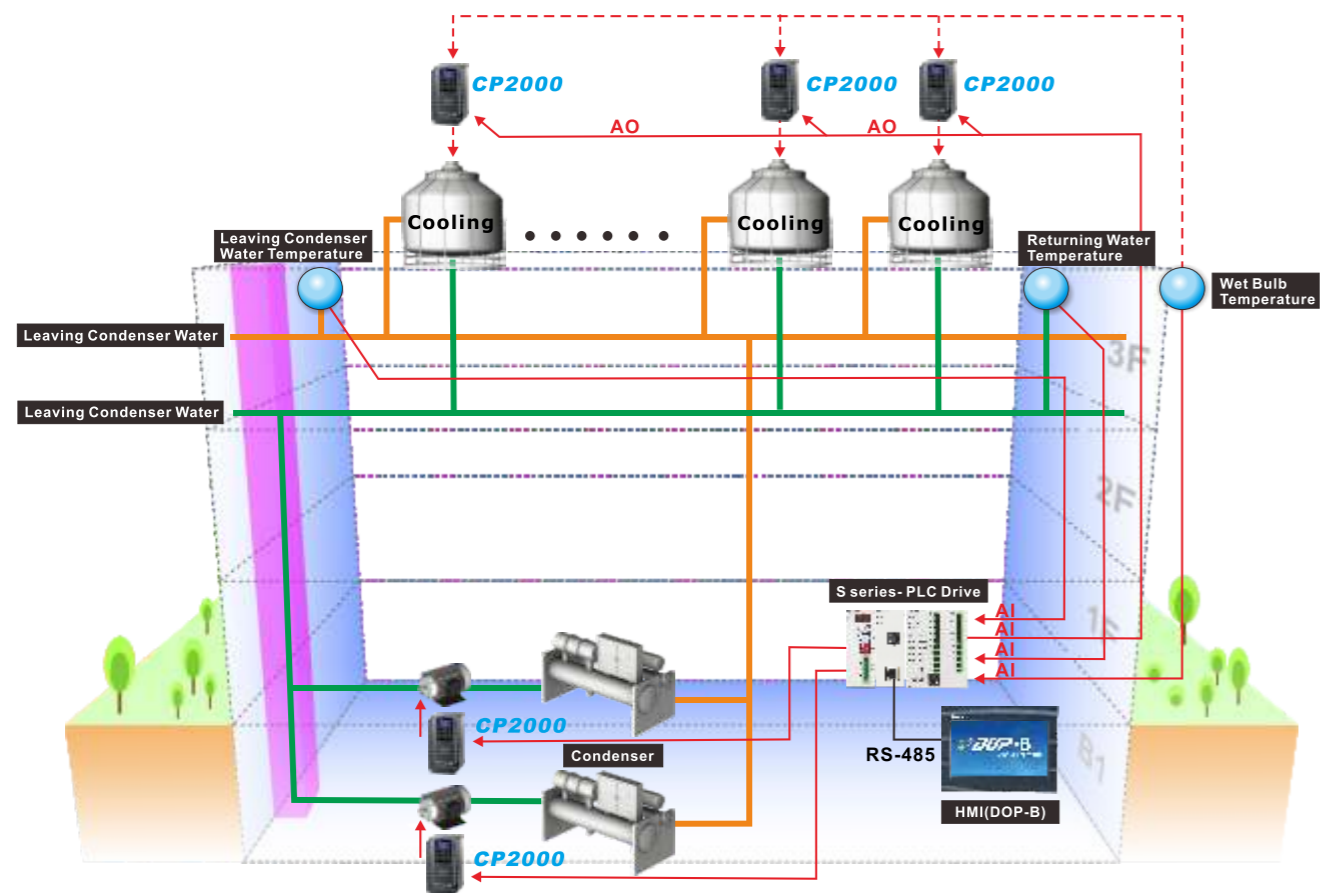
## High-Speed Network

- Advanced Network Functions.
  - RS-485 built in: International Standard Communication Interface.
  - Built-in BACnet, MODBUS
- Various communication network cards and field bus cards are available.



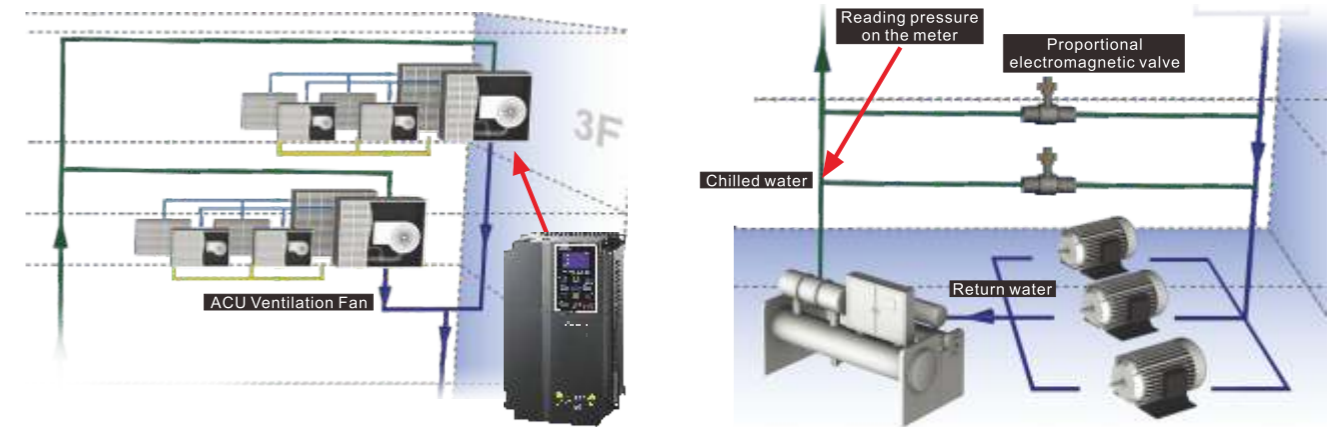
## Features for Building Automation Applications

- The four-segment exponential response curve can adjust the input voltage to increase performance for variable torque loads applications, especially for pump and fan applications.
- Flying start and restart functions avoids a momentary power down provide the best operation for fan applications.
- Skip frequency function avoids motor vibration at a specific frequency band and protects the equipment.
- Low current protection protects the motor from load loss.
- Built-in BACnet lowers the cost of wiring for building automation.



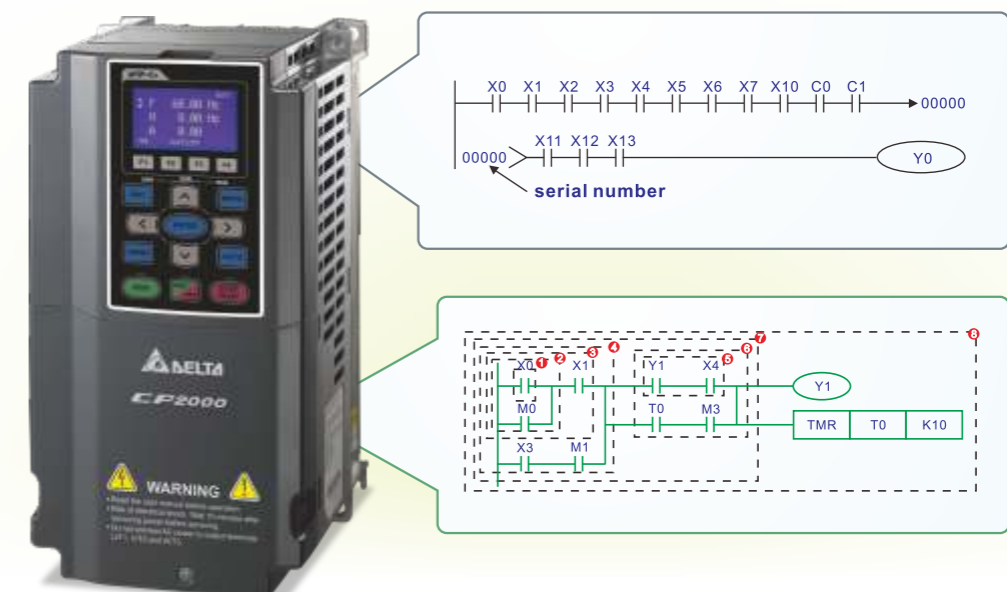
## Increases Motor Performance

- The sensorless vector control (SVC) and AUTO-TUNING functions increase motor performance for variable torque loads applications.
- Deceleration Energy Backup (DEB): when a power loss occurs the drive decelerates and stops the motor to protect the equipment.
- Optimal Acceleration/Deceleration function makes the motor run smoothly and reduces vibration during start and stop.
- Various control functions for saving energy, such as: PID control, sleep/wake up function, and auto energy saving mode.



## Intelligent Programmable Logic Controller

- By connecting the built-in Delta PLC (programmable logic controller) to a network, you can easily use distributed control mode and independent operation to create an intelligent control space.
- The real time clock & calendar function allows you to program the PLC procedure, ON/OFF in chronological order, daylight saving time and more.



## Modular Design

Modular design enhances drive and control. Depending on the requirements of system applications maintenance you can install input/output expansion cards, communication cards, hot plug LCD keypads, assembly terminal blocks and removable fans.



## Designed for Environmental Adaptability

- Built-in DC choke\*
- Built-in RFI filter
- Enhanced coating on the control board's PCB to ensure reliability of VFD in an adverse environment.
- Flange mounting: designed to completely separate the heat dissipating system and other electronic components. Its installation can disperse heat out of the VFD. Cooling fan method can blow cold air into aluminum heat sink. Both heat dissipating methods are efficient, choose the one that fits the working environment for the best heat dissipation results.



\*Note: Please refer to the Product Specification

## Operating Environment

DO NOT expose the AC motor drive to harsh environments, such as dust, direct sunlight, corrosive/ inflammable gasses humidity, liquid or vibrations. The salt in the air must be less than 0.01mg/cm<sup>2</sup> per year.

Environment	Installation location	IEC60364-1/IEC60664-1 Pollution degree 2, Indoor use only	
	Surrounding Temperature	Storage/ Transportation	-25°C ~ +70°C
		No-condensation, non-frozen	
	Rated Humidity	Operation	Max. 90%
		Storage/ Transportation	Max. 95%
	No condensed water		
	Air Pressure	Operation/ Storage	86 to 106 kPa
		Transportation	70 to 106 kPa
	Pollution Level	IEC721-3-3	
		Operation	Class 3C2 : Class 3S2
Storage		Class 2C2 : Class 2S2	
Transportation		Class 1C2 : Class 1S2	
No concentrate			
Altitude	Operation	If AC motor drive is installed at altitude 0~1000m, follow normal operation restriction. If it is installed at altitude 1000~3000m, decrease 2% of rated current or lower 0.5% of temperature for every 100m increase in altitude. Maximum altitude for Corner Grounded is 2000m.	
	Storage/ Transportation	ISTA procedure 1A (according to weight) IEC60068-2-31	
Package Drop	1.0mm, peak to peak value range from 2Hz to 13.2 Hz; 0.7G~1.0G range from 13.2Hz to 55Hz; 1.0G range from 55Hz to 512 Hz. Complies with IEC 60068-2-6		
Vibration	IEC/EN 60068-2-27		
Impact	Max. allowed offset angle ±10° (under normal installation position)		
Operation Position			

## Specification for Operation Temperature and Protection Level


Model	Frame	Top cover	Conduit Box	Protection Level	Operation Temperature	
VFDxxxxCP23A-21 VFDxxxxCP43A-21 VFDxxxxCP4EA-21 VFDxxxxCP43C-21	Frame A~C 230V: 0.75~30kW 460V: 0.75~37kW	Remove top cover	Standard conduit plate	IP20/UL Open Type	ND: -10°C ~50°C LD: -10°C ~40°C	
		Standard with top cover		IP20/UL Type1/NEMA1	ND: -10°C ~40°C LD: -10°C ~40°C	
	Frame D~H 230V: above 37kW 460V: above 45kW	N/A	With conduit box	IP20/UL Type1/NEMA1		ND: -10°C ~40°C LD: -10°C ~40°C
		IP00 IP20/UL Open Type		ND: -10°C ~50°C LD: -10°C ~40°C (ND=Normal Duty LD=Light Duty)		
VFDxxxxCP23A-00 VFDxxxxCP43A-00 VFDxxxxCP43C-00	Frame D~H 230V: above 37kW 460V: above 45kW	N/A	With conduit box	<p>Only the circled area is IP00, others parts are IP20.</p>	ND: -10°C ~50°C LD: -10°C ~40°C (ND=Normal Duty LD=Light Duty)	

## Product Specifications

230V		A					B					C					D					E				
Output Rating	Frame Size	A					B					C					D					E				
	Model : VFD-___CP23A-__	007	015	022	037	055	075	110	150	185	220	300	370	450	550	750	900									
	Rated Output Capacity (kVA)	2.0	3.0	4.0	6.0	8.4	12	18	24	30	36	42	58	72	86	110	128									
	Rated Output Current (A)	5	7.5	10	15	21	31	46	61	75	90	105	146	180	215	276	322									
	Applicable Motor Output(kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90									
	Applicable Motor Output(HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125									
	Overload tolerance	120% of rated current for 1 minute																								
	Max. output frequency (Hz)	600.00Hz										400.00Hz														
	Carrier Frequency (kHz)	2~15kHz(8KHz)					2~10kHz(6KHz)					2~9kHz(4KHz)														
	Rated Output Capacity (kVA)	1.8	2.0	3.2	4.4	6.8	10	13	20	26	30	36	48	58	72	86	102									
Normal Duty	Rated Output Current (A)	4.6	5	8	11	17	25	33	49	65	75	90	120	146	180	215	255									
	Applicable Motor Output(kW)	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75									
	Applicable Motor Output(HP)	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100									
	Overload tolerance	120% of rated current for 1 minute;160% of rated current for 3 seconds																								
	Max. output frequency (Hz)	600.00Hz										400.00Hz														
	Carrier Frequency (kHz)	2~15kHz(8KHz)					2~10kHz(6KHz)					2~9kHz(4KHz)														
	Input Rating	Input Current (A) Light Duty	6.4	9.6	15	22	25	35	50	65	83	100	116	146	180	215	276	322								
		Input Current (A) Normal Duty	3.9	6.4	12	16	20	28	36	52	72	83	99	124	143	171	206	245								
		Rated Voltage/Frequency	3-Phase AC 200V~240V( -15%~+10%), 50/60Hz																							
		Operating Voltage Range	170~265Vac																							
Frequency Tolerance		47~63Hz																								
Cooling method		Natural Cooling	Fan Cooling																							
Braking Chopper		Frame A,B,C Built-in										Frame D and above: Optional														
DC choke	Frame A,B,C Optional										Frame D and above: 3% built-in															
EMI Filter	Optional																									

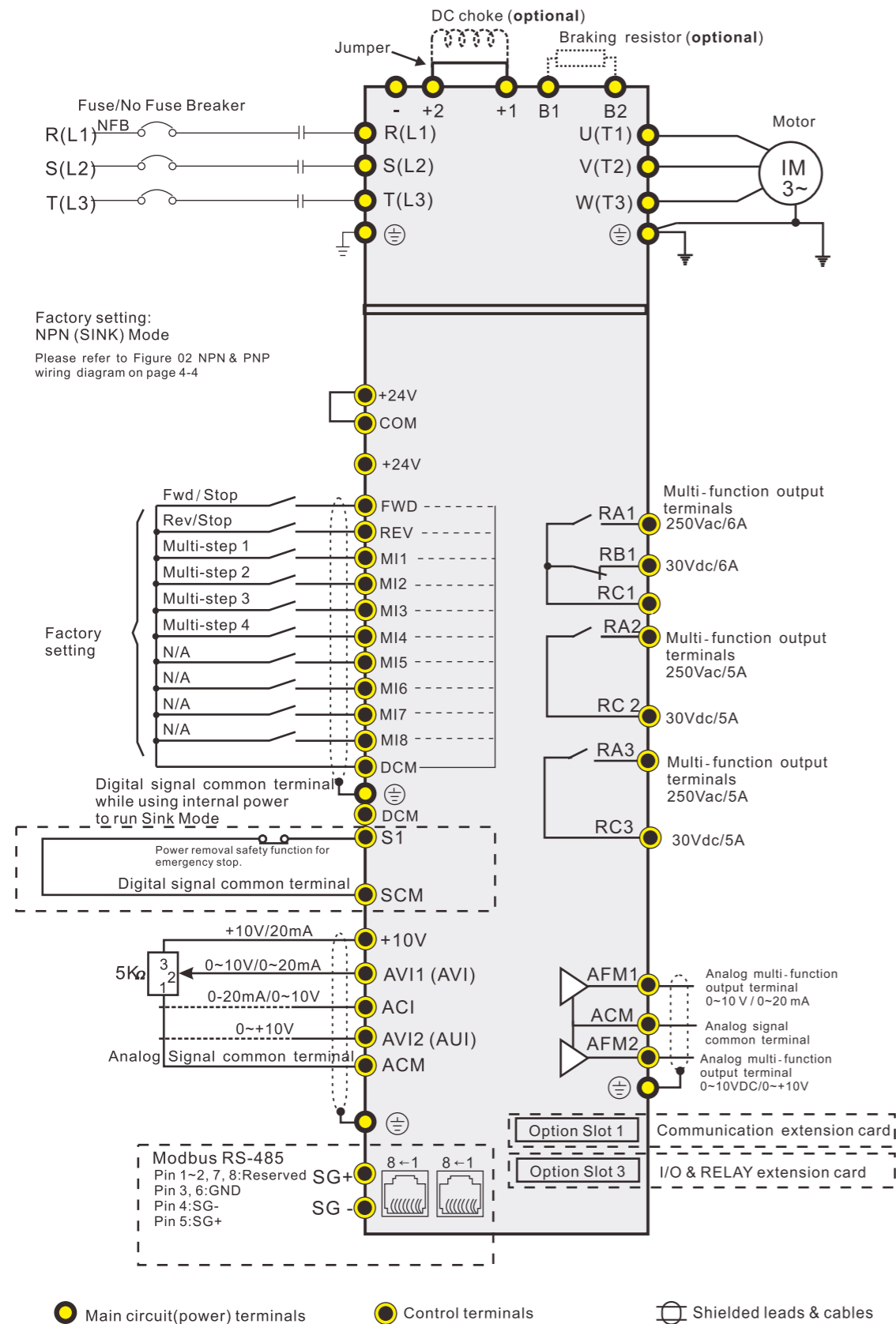
460V		A					B					C				
Output Rating	Frame	A					B					C				
	Models VFD-___CP43A-___; VFD-___CP4EA-___;	007	015	022	037	040	055	075	110	150	185	220	300	370		
	Rated Output Capacity(kVA)	2.4	2.9	4.0	6.0	8.4	9.6	11.2	18	24	29	36	45	57		
	Rated Output Current (A)	3	3.7	5	7.5	10.5	12	14	22.5	30	36	45	56	72		
	Applicable Motor Output(kW)	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30	37		
	Applicable Motor Output(HP)	1	2	3	5	5	7.5	10	15	20	25	30	40	50		
	Overload tolerance	120% of rated current for 1 minute														
	Max. output frequency(Hz)	600.00Hz														
	Carrier Frequency (kHz)	2~15kHz(8KHz)					2~10kHz(6KHz)									
	Rated Output Capacity (kVA)	2.2	2.4	3.2	4.8	7.2	8.4	10	14	19	25	30	36	48		
Normal Duty	Rated Output Current (A)	2.8	3.0	4.0	6.0	9.0	10.5	12	18	24	32	38	45	60		
	Applicable Motor Output(kW)	0.4	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30		
	Applicable Motor Output(HP)	0.5	1	2	3	5	5	7.5	10	15	20	25	30	40		
	Overload tolerance	120% of rated current for 1 minute;160% of rated current for 3 seconds														
	Max. output frequency(Hz)	600.00Hz														
	Carrier Frequency (kHz)	2~15kHz(8KHz)					2~10kHz(6KHz)									
	Input Rating	Input Current (A) Light Duty	4.3	5.4	7.4	11	16	18	20	25	33	39	47	58	76	
		Input Current (A) Normal Duty	3.5	4.3	5.9	8.7	14	15.5	17	20	26	35	40	47	63	
		Rated Voltage/Frequency	3-Phase AC 380V~480V( -15%~+10%), 50/60Hz													
		Operating Voltage Range	323~528Vac													
Frequency Tolerance		47~63Hz														
Cooling method		Natural Cooling	Fan Cooling													
Braking Chopper		Frame A,B,C Built-in														
DC choke	Frame A,B,C Optional															
EMI Filter	Frame A,B,C of VFD___CP4EA-___, Eml filter Built-in Frame A,B,C of VFD___CP43A-___, Eml filter NOT Built-in															

460V		D					E					F					G					H				
Output Rating	Frame	D					E					F					G					H				
	Models VFD-___CP43A-___; VFD-___CP43C-___;	450	550	750	900	1100	1320	1600	1850	2200	2800	3150	3550	4000												
	Rated Output Capacity(kVA)	73	88	115	143	175	196	247	273	367	422	491	544	613												
	Rated Output Current (A)	91	110	144	180	220	246	310	343	460	530	616	683	770												
	Applicable Motor Output(kW)	45	55	75	90	110	132	160	185	220	280	315	355	400												
	Applicable Motor Output(HP)	60	75	100	125	150	175	215	250	300	375	425	475	536												
	Overload tolerance	120% of rated current for 1 minute																								
	Max. output frequency(Hz)	600.00Hz					400.00Hz																			
	Carrier Frequency (kHz)	2~10kHz(6KHz)					2~9kHz(4KHz)																			
	Rated Output Capacity (kVA)	58	73	88	120	143	175	207	247	295	367	438	491	544												
Normal Duty	Rated Output Current (A)	73	91	110	150	180	220	260	310	370	460	550	616	683												
	Applicable Motor Output(kW)	37	45	55	75	90	110	132	160	185	220	280	315	355												
	Applicable Motor Output(HP)	50	60	75	100	125	150	175	215	250	300	375	425	475												
	Overload tolerance	120% of rated current for 1 minute;160% of rated current for 3 seconds																								
	Max. output frequency(Hz)	600.00Hz					400.00Hz																			
	Carrier Frequency (kHz)	2~10kHz(6KHz)					2~9kHz(4KHz)																			
	Input Rating	Input Current (A) Light Duty	91	110	144	180	220	246	310	343	460	530	616	683	770											
		Input Current (A) Normal Duty	74	101	114	157	167	207	240	300	380	400	494	555	625											
		Rated Voltage/Frequency	3-Phase AC 380V~480V( -15%~+10%), 50/60Hz																							
		Operating Voltage Range	323~528Vac																							
Frequency Tolerance		47~63Hz																								
Cooling method		Fan Cooling																								
Braking Chopper		Frame D and above: Optional																								
DC choke	Frame D and above: 3% built-in																									
EMI Filter	Frame D and above: Optional																									

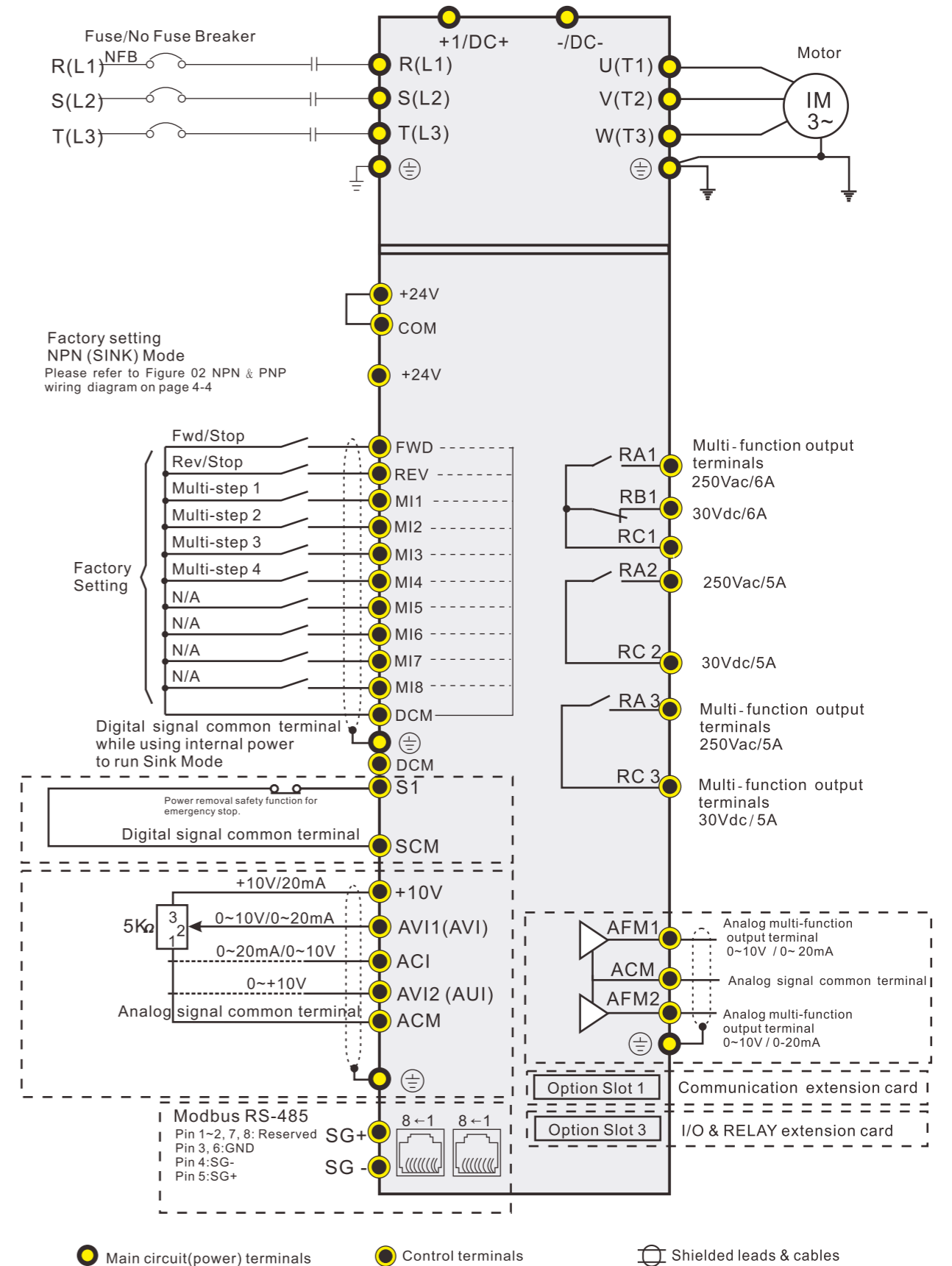
Control Method	1: V/F(V/F control), 2: SVC(Sensorless Vector Control)			
Starting Torque	Reach up to 160% or above at 0.5Hz			
V/F Curve	4 point adjustable V / F curve and square curve			
Speed Response Ability	5Hz			
Torque Limit	Normal Duty: Max. 170% torque current			
Torque Accuracy	±5%			
Max. Output Frequency (Hz)	230V series: 600.00Hz (55kW and above: 400.00Hz); 460V series: 600.00Hz (90kW and above: 400.00Hz)			
Frequency Output Accuracy	Digital command:±0.01%, -10°C~+40°C, Analog command: ±0.1%, 25±10°C			
Output Frequency Resolution	Digital command: 0.01Hz, Analog command: max. output frequency x 0.03/60Hz (±11 bit)			
Overload Tolerance	Light duty: 120% of rated current for 1 minute; Normal duty: 120% of rated current for 1 minute;160% of rated current for 3 seconds			
Frequency Setting Signal	0~+10V, 4~20mA, 0~20mA, pulse input			
Accel. / Decel. Time	0.00~600.00/0.0~6000.0 seconds			
Main control function	Fault restart	Torque limit	Smart stall	Dwell
	Speed search	Parameter copy	JOG frequency	Slip compensation
	S-curve accel/decel	Energy saving control	Accel/Decel. Time switch	Frequency upper/lower limit settings
	PID control (with sleep function)	Auto-Tuning (rotational, stationary)	DC injection braking at start/stop	BACnet Communication
			Over-torque detection	3-wire sequence
Fan Control	230V series: Models higher than VFD150CP23A-21 (included) are PWM control; Models lower than VFD150CP23A-21 (not included) are on / off switch control.			
	460V series: Models higher than VFD150CP43A-21 (included) are PWM control; Models lower than VFD150CP43A-21 (not included) are on / off switch control.			
Motor Protection	Electronic thermal relay protection			
Over-current Protection	Normal Duty: Over-current protection for 240% rated current Current clamp 『Normal duty: 170~175%』			
Over-voltage Protection	230: drive will stop when DC-BUS voltage exceeds 410V 460: drive will stop when DC-BUS voltage exceeds 820V			
Over-temperature Protection	Built-in temperature sensor			
Stall Prevention	Stall prevention during acceleration, deceleration and running independently			
Restart After Instantaneous Power Failure	Parameter setting up to 20 seconds			
Grounding Leakage Current Protection	Leakage current is higher than 50% of rated current of the AC motor drive			
International Certifications	CE  GB 12668.3			

# Wiring

Wiring Diagram for Frame A~C, 3-phase power is provided

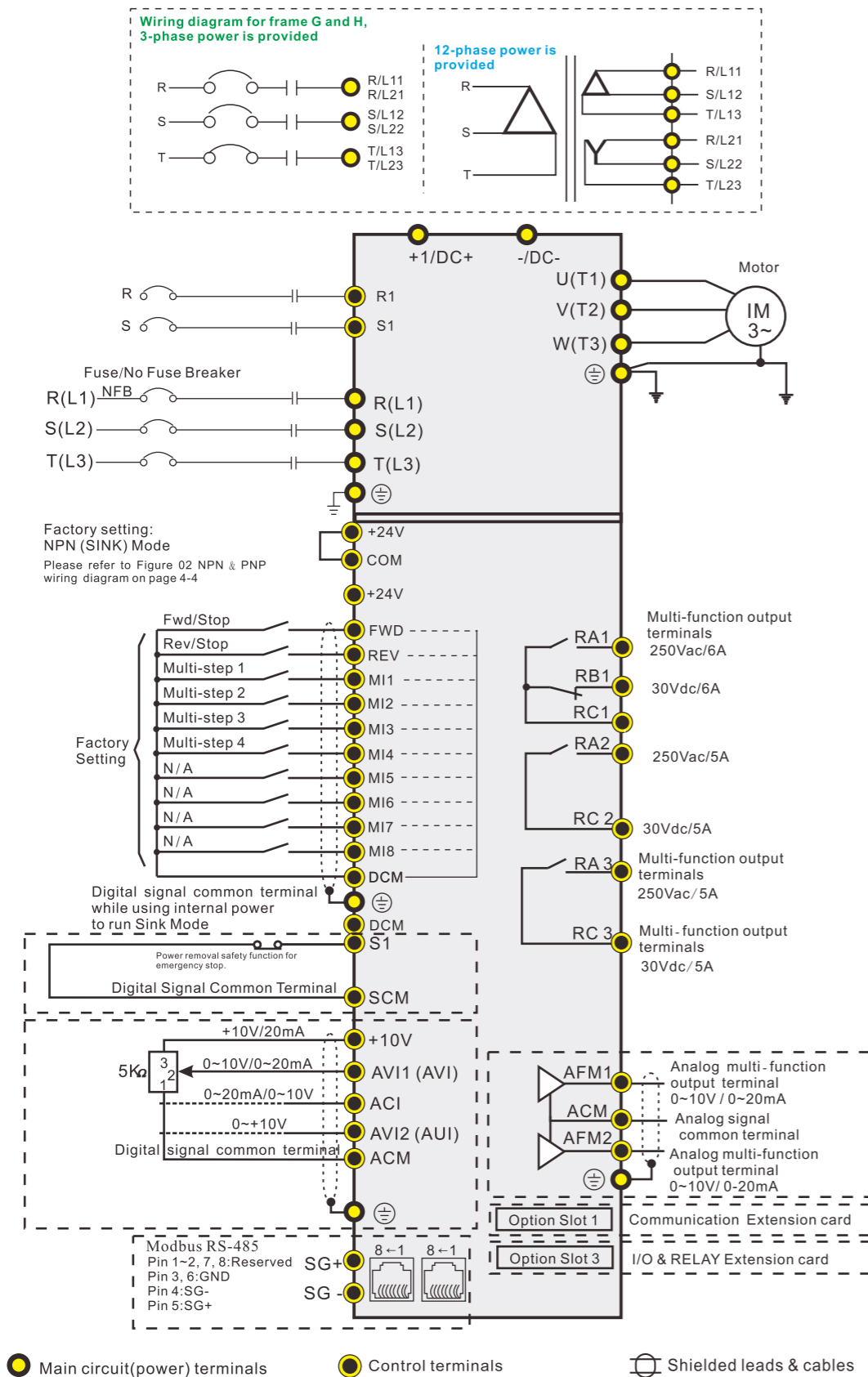


Wiring Diagram for Frame D, 3-phase power is provided



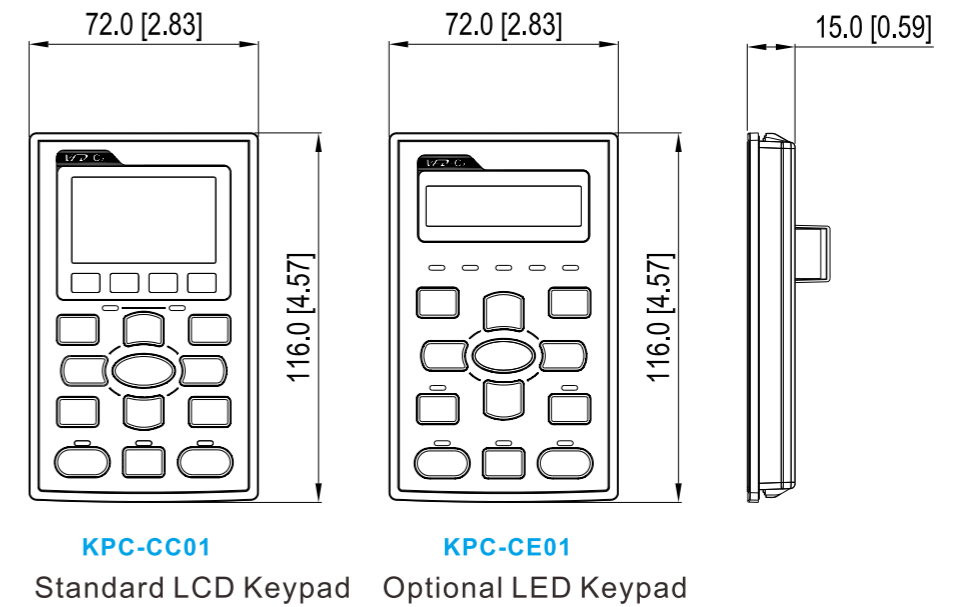
# Wiring

Wiring diagram for frame E and above, 3-phase power is provided

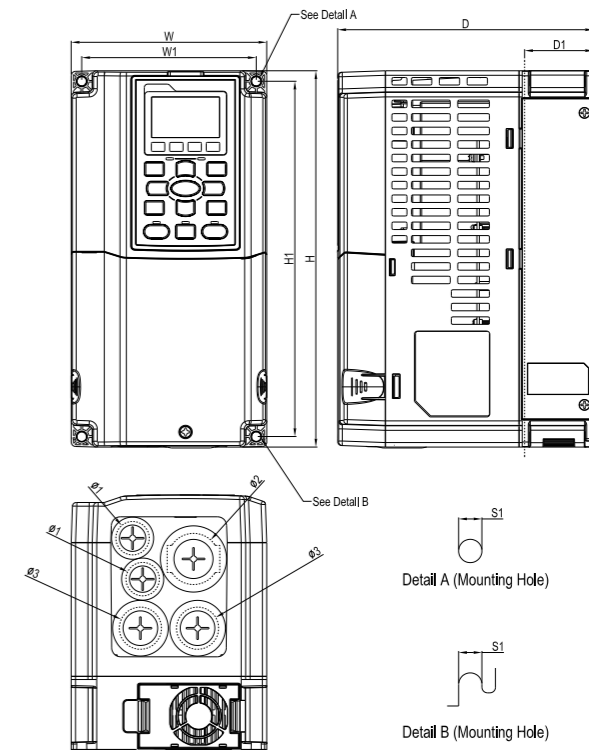


# Dimensions

■ Digital Keypad



■ Frame A



## MODEL

VFD007CP23A-21	VFD055CP43A-21
VFD015CP23A-21	VFD075CP43A-21
VFD022CP23A-21	VFD007CP4EA-21
VFD037CP23A-21	VFD015CP4EA-21
VFD055CP23A-21	VFD022CP4EA-21
VFD007CP43A-21	VFD037CP4EA-21
VFD015CP43A-21	VFD040CP4EA-21
VFD022CP43A-21	VFD055CP4EA-21
VFD037CP43A-21	VFD075CP4EA-21
VFD040CP43A-21	

Unit : mm[inch]

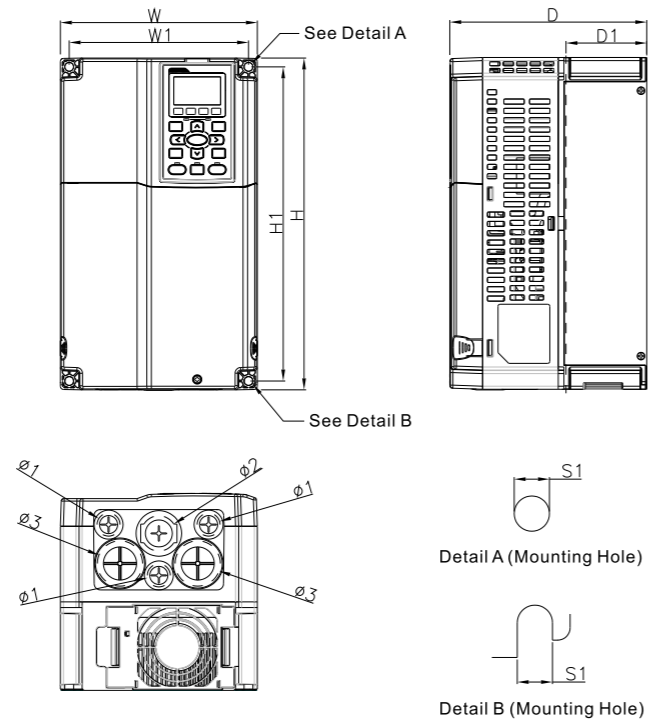
Frame	W	H	D	W1	H1	D1*	S1	Ø1	Ø2	Ø3	
A1	mm	130.0	250.0	170.0	116.0	236.0	45.8	6.2	22.2	34.0	28.0
	inch	[5.12]	[9.84]	[6.69]	[4.57]	[9.29]	[1.80]	[0.24]	[0.87]	[1.34]	[1.10]

D1\* : Flange mounting



# Dimensions

## ■ Frame B



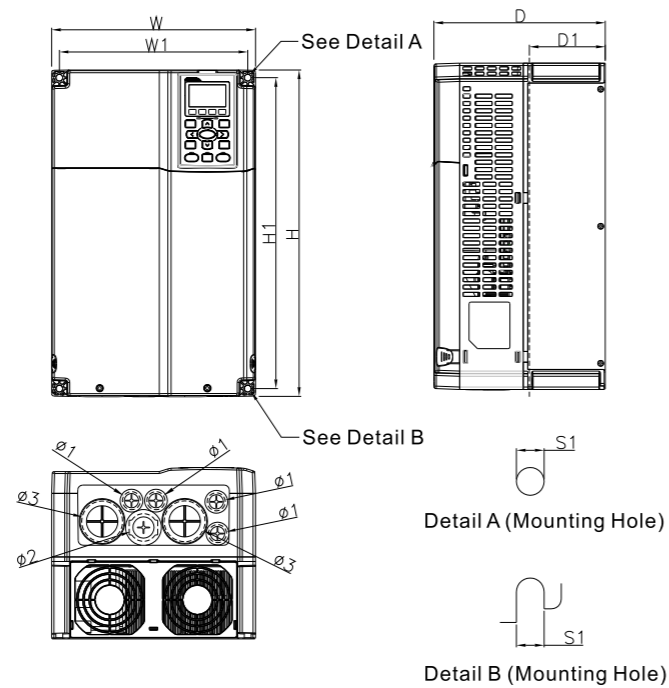
### MODEL

- VFD075CP23A-21
- VFD110CP23A-21
- VFD150CP23A-21
- VFD110CP43A-21
- VFD150CP43A-21
- VFD185CP43A-21
- VFD110CP4EA-21
- VFD150CP4EA-21
- VFD185CP4EA-21

Unit : mm[inch]

Frame	W	H	D	W1	H1	D1*	S1	Ø1	Ø2	Ø3	
B1	mm inch	190.0 7.48	320.0 12.60	190.0 7.48	173.0 6.81	303.0 11.93	77.9 3.07	8.5 0.33	22.2 0.87	34.0 1.34	28.0 1.10

## ■ Frame C



### MODEL

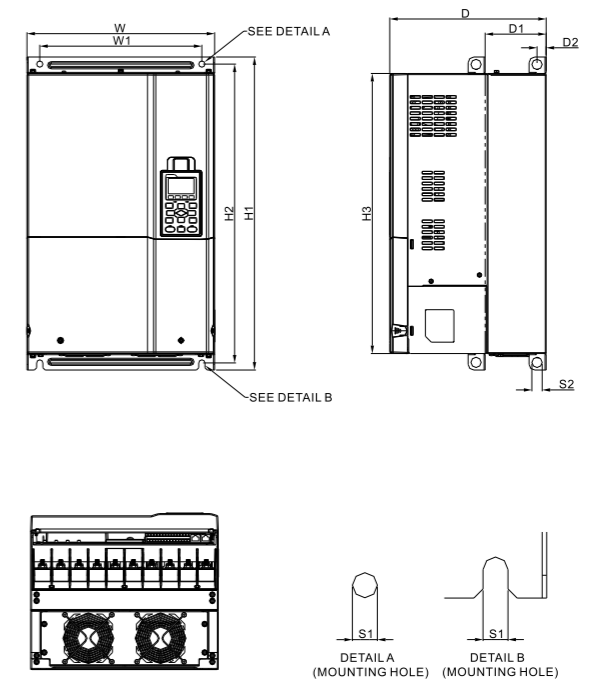
- VFD185CP23A-21
- VFD220CP23A-21
- VFD300CP23A-21
- VFD220CP43A-21
- VFD300CP43A-21
- VFD370CP43A-21
- VFD220CP4EA-21
- VFD300CP4EA-21
- VFD370CP4EA-21

Unit : mm[inch]

Frame	W	H	D	W1	H1	D1*	S1	Ø1	Ø2	Ø3	
C1	mm inch	250.0 9.84	400.0 15.75	210.0 8.27	231.0 9.09	381.0 15.00	92.9 3.66	8.5 0.33	22.2 0.87	34.0 1.34	50.0 1.97

D1\* : Flange mounting

## ■ Frame D1



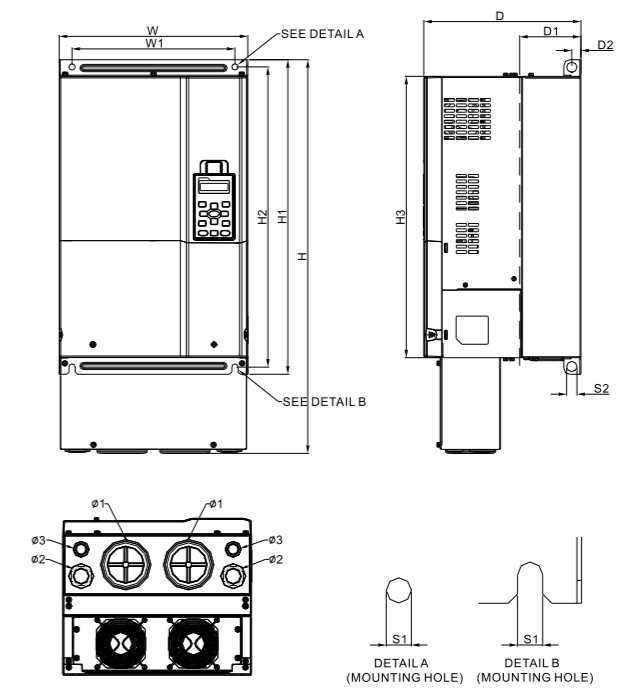
### MODEL

- VFD370CP23A-00
- VFD450CP23A-00
- VFD450CP43A-00
- VFD750CP43A-00
- VFD900CP43A-00

Unit : mm[inch]

Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3	
D1	mm inch	330.0 [12.99]	-	275.0 [10.83]	285.0 [11.22]	550.0 [21.65]	525.0 [20.67]	492.0 [19.37]	107.2 [4.22]	16.0 [0.63]	11.0 [0.43]	18.0 [0.71]	-	-	-

## ■ Frame D2



### MODEL

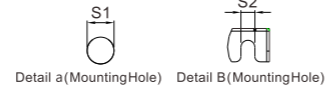
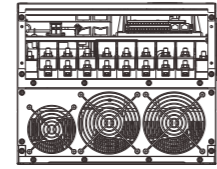
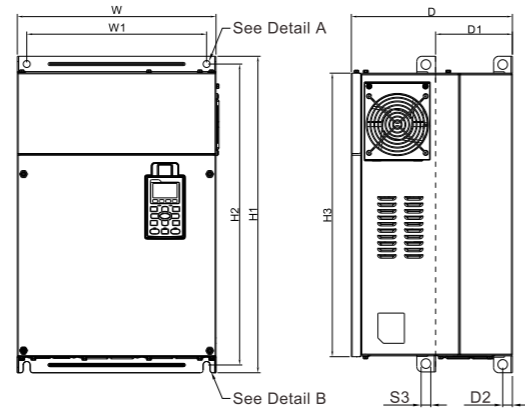
- VFD370CP23A-21
- VFD450CP23A-21
- VFD450CP43A-21
- VFD750CP43A-21
- VFD900CP43A-21

Unit : mm[inch]

Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3	
D1	mm inch	330.0 [12.99]	688.3 [27.10]	275.0 [10.83]	285.0 [11.22]	550.0 [21.65]	525.0 [20.67]	492.0 [19.37]	107.2 [4.22]	16.0 [0.63]	11.0 [0.43]	18.0 [0.71]	76.2 [3.00]	34.0 [1.34]	22.0 [0.87]

# Dimensions

## ■ Frame E1



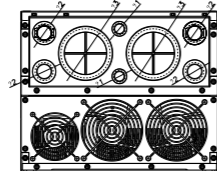
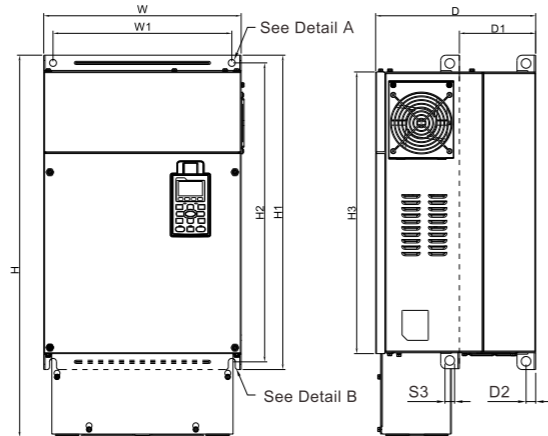
Unit : mm[inch]

## MODEL

- VFD550CP23A-00
- VFD750CP23A-00
- VFD900CP23A-00
- VFD1100CP43A-00
- VFD1320CP43A-00

Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1,S2	S3	Ø1	Ø2	Ø3
E1	mm	370.0	-	300.0	335.0	589	560.0	528.0	143.0	18.0	13.0	18.0	-	-
	inch	[14.57]	-	[11.81]	[13.19]	[23.19]	[22.05]	[20.80]	[5.63]	[0.71]	[0.51]	[0.71]	-	-

## ■ Frame E2



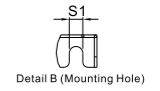
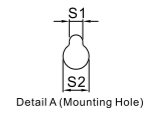
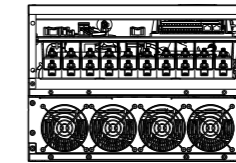
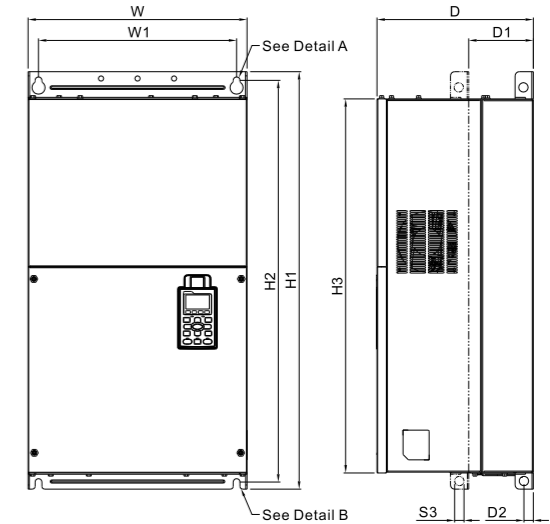
Unit : mm[inch]

## MODEL

- VFD550CP23A-21
- VFD750CP23A-21
- VFD900CP23A-21
- VFD1100CP43A-21
- VFD1320CP43A-21

Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1,S2	S3	Ø1	Ø2	Ø3
E2	mm	370.0	715.8	300.0	335.0	589	560.0	528.0	143.0	18.0	13.0	18.0	22.0	34.0
	inch	[14.57]	[28.18]	[11.81]	[13.19]	[23.19]	[22.05]	[20.80]	[5.63]	[0.71]	[0.51]	[0.71]	[0.87]	[1.34]

## ■ Frame F1



## MODEL

- VFD1600CP43A-00
- VFD1850CP43A-00

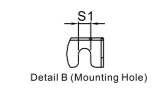
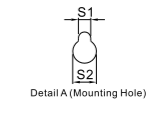
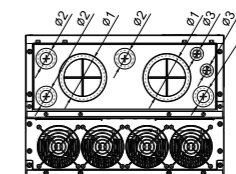
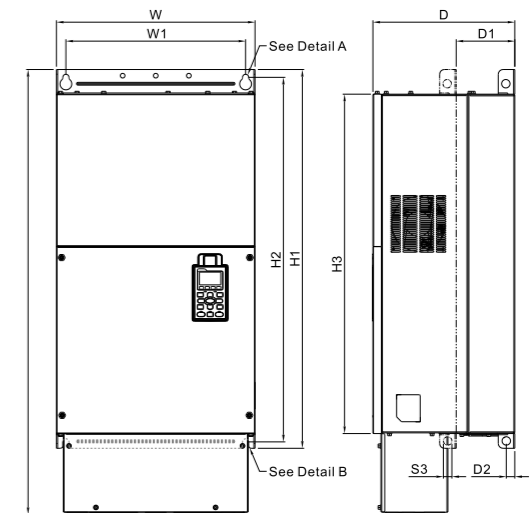
Unit : mm[inch]

Frame	W	H	D	W1
F1	mm	420.0	-	300.0
	inch	[16.54]	-	[11.81]

Frame	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
F1	mm	800.0	770.0	717.0	124.0	18.0	13.0	25.0	18.0	92.0	35.0
	inch	[31.50]	[30.32]	[28.23]	[4.88]	[0.71]	[0.51]	[0.98]	[0.71]	[3.62]	[1.38]

D1\* : Flange mounting

## ■ Frame F2



## MODEL

- VFD1600CP43A-21
- VFD1850CP43A-21

Unit : mm[inch]

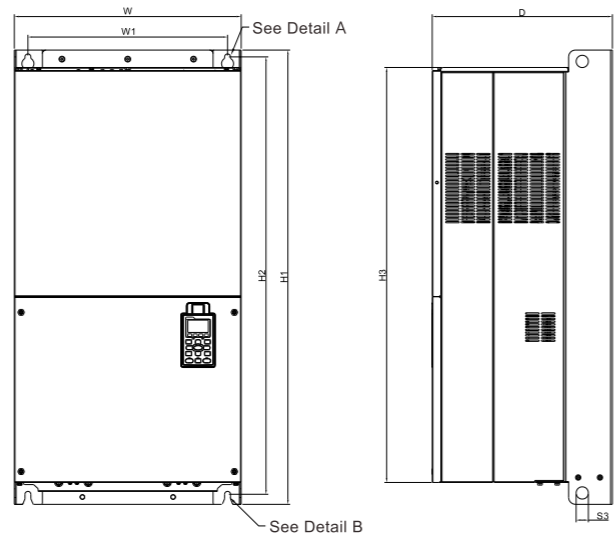
Frame	W	H	D	W1
F2	mm	420.0	940.0	300.0
	inch	[16.54]	[37.00]	[11.81]

Frame	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
F2	mm	800.0	770.0	717.0	124.0	18.0	13.0	25.0	18.0	92.0	35.0
	inch	[31.50]	[30.32]	[28.23]	[4.88]	[0.71]	[0.51]	[0.98]	[0.71]	[3.62]	[1.38]

D1\* : Flange mounting

# Dimensions

## ■ Frame G1

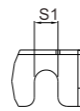
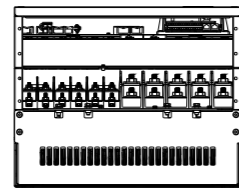


### MODEL

VFD2200CP43A-00  
VFD2800CP43A-00

Unit : mm[inch]

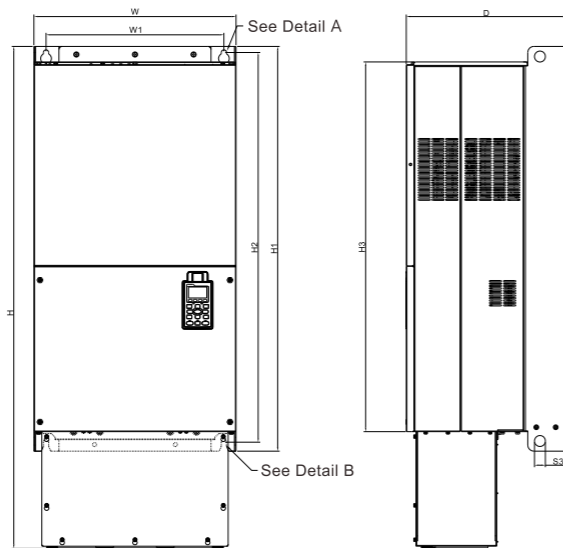
Frame	W	H	D
G1	mm 500.0	-	397.0
	inch [19.69]		[15.63]



Detail a(MountingHole) Detail B(MountingHole)

Frame	W1	H1	H2	H3	S1	S2	S3	Ø1	Ø2	Ø3
G1	mm 440.0	1000.0	963.0	913.6	13.0	26.5	27.0	-	-	-
	inch [217.32]	[39.37]	[37.91]	[35.97]	[0.51]	[1.04]	[1.06]			

## ■ Frame G2

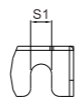
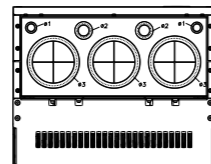


### MODEL

VFD2200CP43A-21  
VFD2800CP43A-21

Unit : mm[inch]

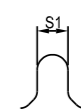
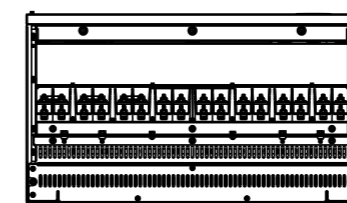
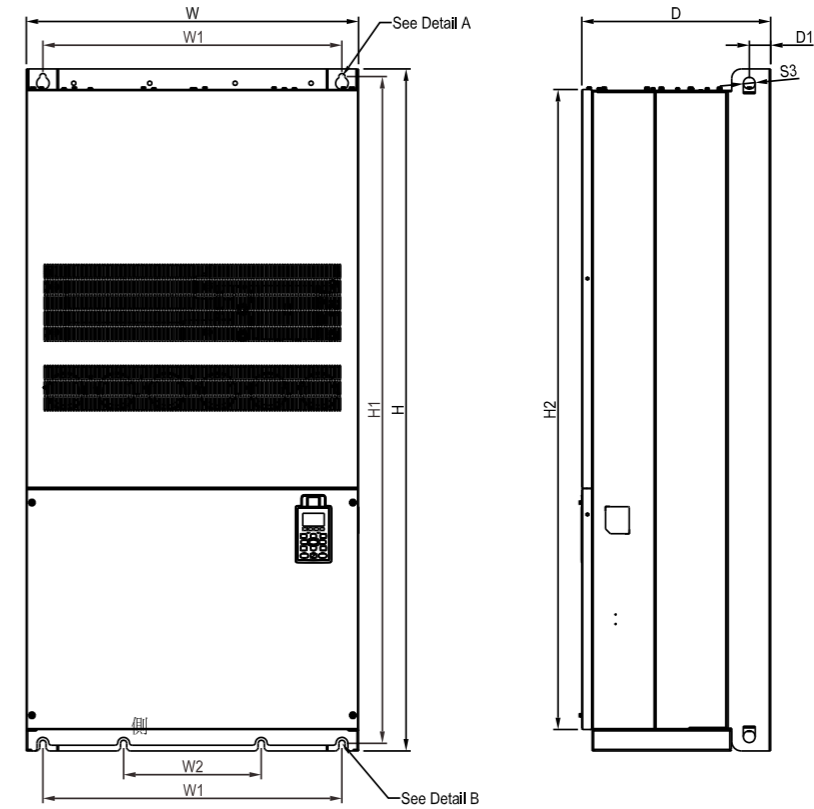
Frame	W	H	D
G2	mm 500.0	1240.2	397.0
	inch [19.69]	[48.83]	[15.63]



Detail a(MountingHole) Detail B(MountingHole)

Frame	W1	H1	H2	H3	S1	S2	S3	Ø1	Ø2	Ø3
G2	mm 440.0	1000.0	963.0	913.6	13.0	26.5	27.0	22.0	34.0	117.5
	inch [217.32]	[39.37]	[37.91]	[35.97]	[0.51]	[1.04]	[1.06]	[0.87]	[1.34]	[4.63]

## ■ Frame H1



See Detail A(Mounting Hole)

See Detail B(Mounting Hole)

### MODEL

VFD3150CP43A-00  
VFD3550CP43A-00  
VFD4000CP43A-00

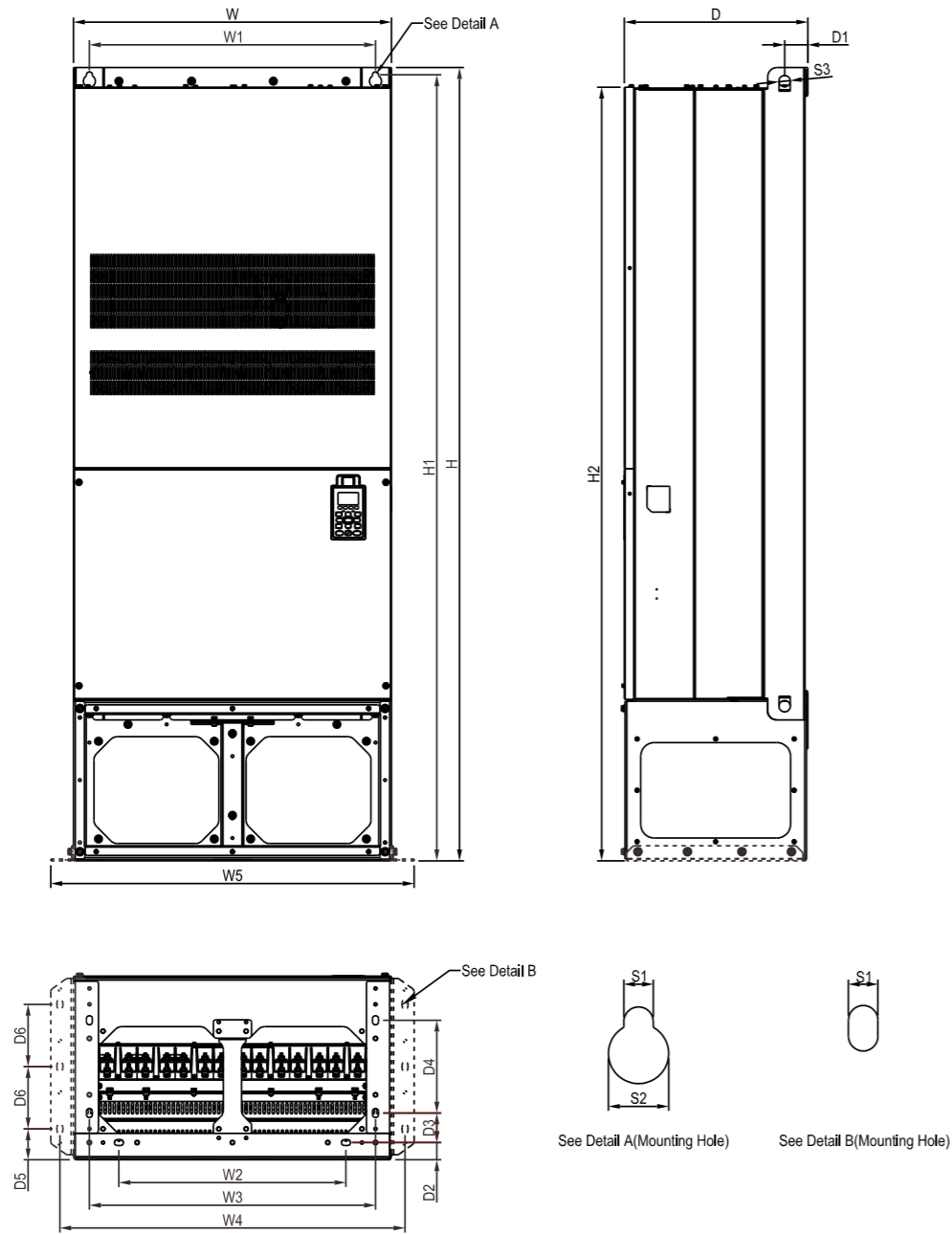
Unit : mm[inch]

Frame	W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H1	mm 700.0	-	398.0	-	630.0	290.0	-	-	-	-	1435.0	1403.0	-
	inch [27.56]		[15.67]		[24.80]	[11.42]					[56.50]	[55.24]	

Frame	H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H1	mm 1346.6	45.0	-	-	-	-	-	13.0	26.5	25.0	-	-	-
	inch [53.02]	[1.77]						[0.51]	[1.04]	[0.98]			

# Dimensions

## ■ Frame H2



## MODEL

VFD3150CP43C-00  
 VFD3550CP43C-00  
 VFD4000CP43C-00

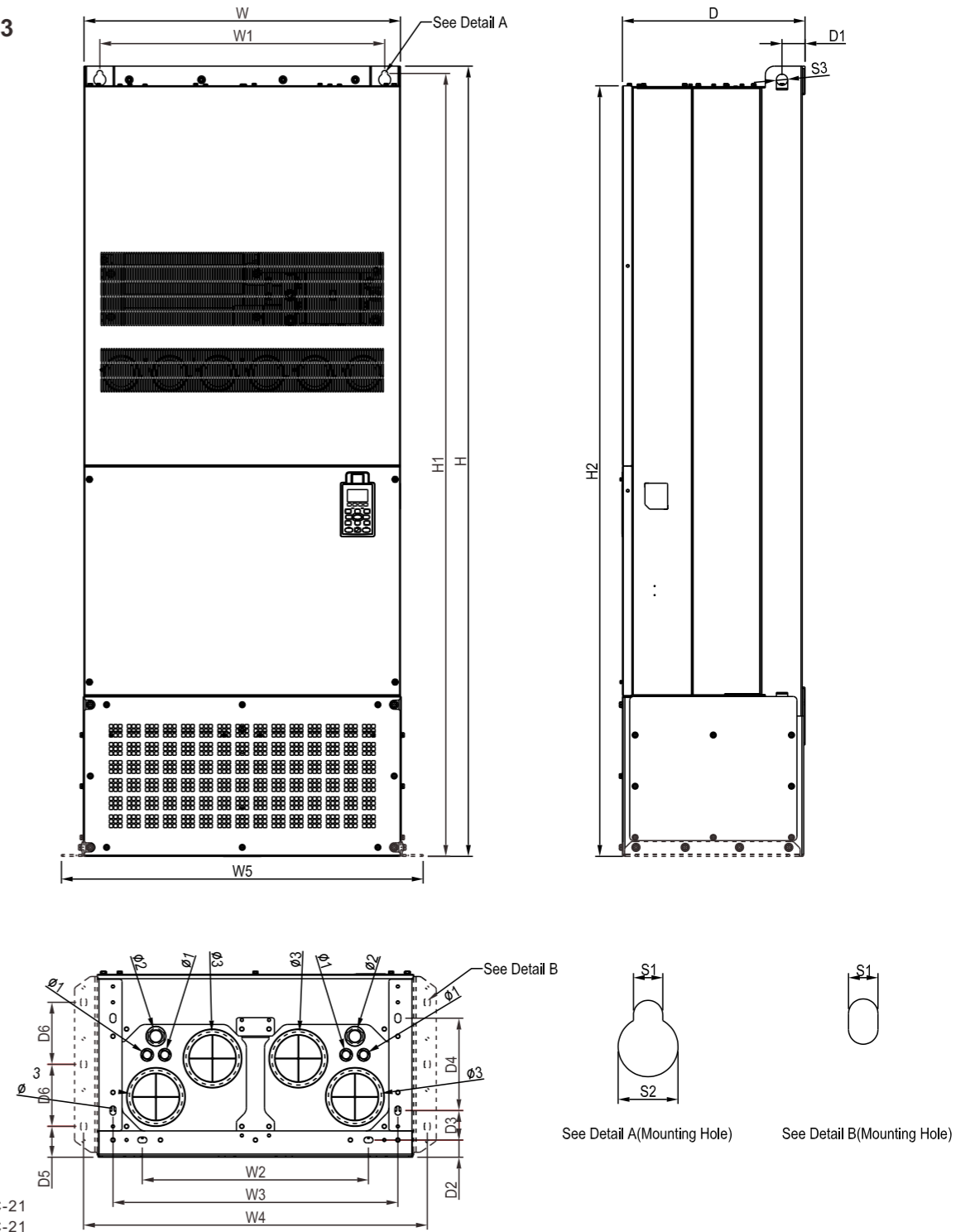
Unit : mm[inch]

Frame	W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4	
H2	mm	700.0	1745.0	404.0	800.0	-	-	500.0	630.0	760.0	1729.0	-	-	1701.6
	inch	[27.56]	[68.70]	[15.91]	[31.50]	-	-	[19.69]	[24.80]	[29.92]	[68.07]	-	-	[66.99]

Frame	H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H2	mm	1346.6	51.0	38.0	65.0	204.0	68.0	137.0	13.0	26.5	25.0	-	-
	inch	[53.02]	[2.01]	[1.50]	[2.56]	[8.03]	[2.68]	[5.39]	[0.51]	[1.04]	[0.98]	-	-

## ■ Frame H3



## MODEL

VFD3150CP43C-21  
 VFD3550CP43C-21  
 VFD4000CP43C-21

Unit : mm[inch]


Frame	W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4	
H3	mm	700.0	1745.0	404.0	800.0	-	-	500.0	630.0	760.0	1729.0	-	-	1701.6
	inch	[27.56]	[68.70]	[15.91]	[31.50]	-	-	[19.69]	[24.80]	[29.92]	[68.07]	-	-	[66.99]


Frame	H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H3	mm	1346.6	51.0	38.0	65.0	204.0	68.0	137.0	13.0	26.5	25.0	22.0	34.0
	inch	[53.02]	[2.01]	[1.50]	[2.56]	[8.03]	[2.68]	[5.39]	[0.51]	[1.04]	[0.98]	[0.87]	[1.34]

## Option Cards


### EMC-D42A

	Terminals	Descriptions
 I/O Extension Card	COM	Common for multi-function input terminals Select SINK (NPN) /SOURCE (PNP) in J1 jumper / external power supply
	MI10~ MI13	Refer to parameters 02-26~02-29 to program the multi-function inputs MI10~MI13. Internal power is applied from terminal E24: +24Vdc±5% 200mA, 5W External power +24Vdc: max. voltage 30Vdc, min. voltage 19Vdc, 30W ON: the activation current is 6.5mA OFF: leakage current tolerance is 10μA
	MO10~MO11	Multi-function output terminals (photocoupler) Duty-cycle: 50% Max. output frequency: 100Hz Max. current: 50mA Max. voltage: 48Vdc
	MXM	Common for multi-function output terminals MO10, MO11(photocoupler) Max 48Vdc 50mA


### EMC-D611A

	Terminals	Descriptions
	AC	AC power common for multi-function input terminal (Neutral)
	MI10~ Mi15	Refer to Pr. 02.26~ Pr. 02.31 for multi-function input selection Input voltage: 100~130VAC Input frequency: 57~63Hz Input impedance: 27Kohm Terminal response time: ON: 10ms OFF: 20ms


### EMC-R6AA

	Terminals	Descriptions
 Relay Extension Card	R10A~R15A R10C~R15C	Refer to Pr. 02.36~ Pr. 02.41 for multi-function input selection Resistive load: 5A(N.O.)/3A(N.C.) 250VAC 5A(N.O.)/3A(N.C.) 30Vdc Inductive load (COS 0.4) 2.0A(N.O.)/1.2A(N.C.) 250VAC 2.0A(N.O.)/1.2A(N.C.) 30Vdc It is used to output each monitor signal, such as for drive in operation, frequency attained or overload indication.


### EMC-BPS01

	Terminals	Descriptions
 External Power Supply Card	24V GND	Input Power Specification: 24V±5% Maximum input current:0.5A Note: 1) Do not connect the control terminal +24V terminal directly to the EMC-BPS01 input terminal 24V. 2) Do not connect the control terminal GND directly to the EMC-BPS01 input terminal GND to ensure a proper grounding.


### CMC-MOD01

	<b>Features</b>	
	<ul style="list-style-type: none"> <li>■ MDI/MDI-X auto-detect</li> <li>■ Virtual serial port.</li> <li>■ Supports Modbus TCP protocol</li> <li>■ AC motor drive keypad/Ethernet configuration</li> </ul>	<ul style="list-style-type: none"> <li>■ E-mail alarm</li> <li>■ Baud rate: 10/100Mbps auto-detect</li> </ul>
<b>Network Interface</b>		
Interface	RJ-45 with Auto MDI/MDIX	
Number of ports	1 Port	
Transmission method	IEEE 802.3, IEEE 802.3u	
Transmission cable	Category 5e shielding 100M	
Transmission speed	10/100 Mbps Auto-Detect	
Network protocol	ICMP, IP, TCP, UDP, DHCP, SMTP, MODBUS OVER TCP/IP, Delta Configuration	

### CMC-EIP01

	<b>Features</b>	
	<ul style="list-style-type: none"> <li>■ MDI/MDI-X auto-detect</li> <li>■ Supports Modbus TCP and Ethernet/IP protocol</li> <li>■ Baud rate: 10/100Mbps auto-detect</li> <li>■ AC motor drive keypad/Ethernet configuration</li> </ul>	<ul style="list-style-type: none"> <li>■ Virtual serial port</li> </ul>
<b>Network Interface</b>		
Interface	RJ-45 with Auto MDI/MDIX	
Number of ports	1 Port	
Transmission method	IEEE 802.3, IEEE 802.3u	
Transmission cable	Category 5e shielding 100M	
Transmission speed	10/100 Mbps Auto-Detect	
Network protocol	ICMP, IP, TCP, UDP, DHCP, HTTP, SMTP, MODBUS OVER TCP/IP, EtherNet/IP, Delta Configuration	

### CMC-PD01

	<b>Features</b>	
	<ul style="list-style-type: none"> <li>■ Supports PZD control data exchange.</li> <li>■ Supports PKW polling AC motor drive parameters.</li> <li>■ Supports user diagnosis function.</li> <li>■ Auto-detects baud rates; supports Max. 12Mbps.</li> </ul>	
<b>PROFIBUS DP Connector</b>		
Interface	DB9 connector	
Transmission method	High-speed RS-485	
Transmission cable	Shielded twisted pair cable	
Electrical isolation	500VDC	
<b>Communication</b>		
Message type	Cyclic data exchange	
Module name	CMC-PD01	
GSD document	DELA08DB.GSD	
Company ID	08DB (HEX)	
Serial transmission speed supported (auto-detection)	9.6kbps; 19.2kbps; 93.75kbps; 187.5kbps; 125kbps; 250kbps; 500kbps; 1.5Mbps; 3Mbps; 6Mbps; 12Mbps (bits per second)	

## Option Cards

### CMC-DN01



#### Features

- Based on the high-speed communication interface of Delta HSSP protocol, able to conduct immediate control of AC motor drive.
- Supports Group 2 only connection and polling I/O data exchange.
- For I/O mapping, supports Max. 32 words of input and 32 words of output.
- Supports EDS file configuration in DeviceNet configuration software.
- Supports all baud rates on DeviceNet bus: 125kbps, 250kbps, 500kbps and extendable serial transmission speed mode.
- Node address and serial transmission speed can be set up on AC motor drive.
- Power supplied from AC motor drive.

#### DeviceNet Connector

Interface	5-PIN open removable connector. Of 5.08mm PIN interval
Transmission method	CAN
Transmission cable	Shielded twisted pair cable (with 2 power cables)
Transmission speed	125kbps, 250kbps, 500kbps and extendable serial transmission speed mode
Network protocol	DeviceNet protocol

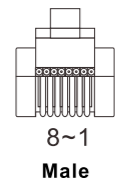
#### AC Motor Drive Connection Port

Interface	50 PIN communication terminal
Transmission method	SPI communication
Terminal function	1. Communicating with AC motor drive 2. Transmitting power supply from AC motor drive
Communication protocol	Delta HSSP protocol

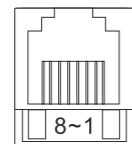
### EMC-COP01



#### RJ-45 Pin Definition



8~1  
Male



8~1  
Female

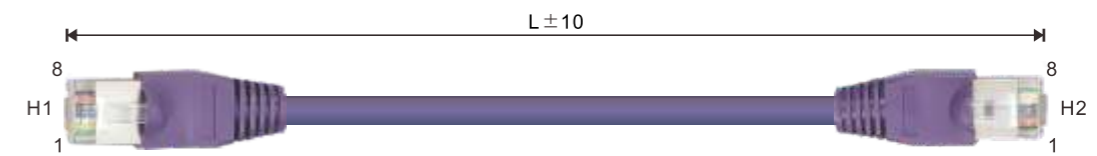
Pin	Pin name	Definition
1	CAN_H	CAN_H bus line (dominant high)
2	CAN_L	CAN_L bus line (dominant low)
3	CAN_GND	Ground/0V/V-
7	CAN_GND	Ground/0V/V-

#### Specifications

Interface	RJ-45
Number of ports	1 Port
Transmission method	CAN
Transmission cable	CAN standard cable
Transmission speed	1M 500k 250k 125k 100k 50k
Communication protocol	CANopen

### CANopen Communication Cable

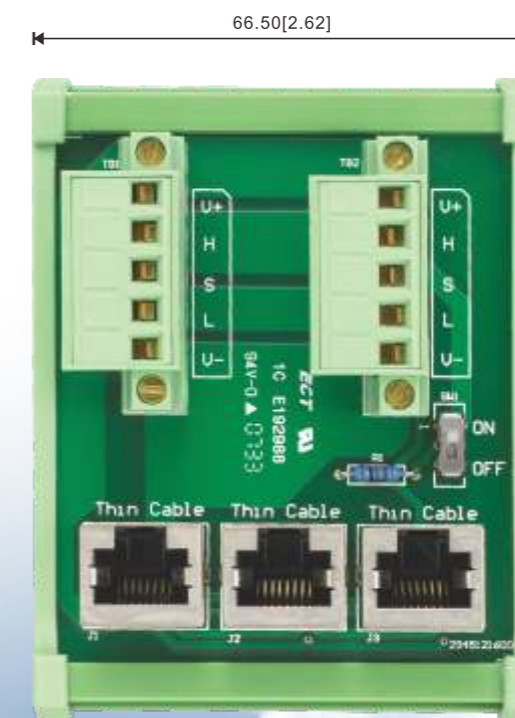
Model: TAP-CB03, TAP-CB04



Title	Part No.	L	
		mm	inch
1	TAP-CB03	500±10	19±0.4
2	TAP-CB04	1000±10	39±0.4



### CANopen Breakout Box

Model: TAP-CN03

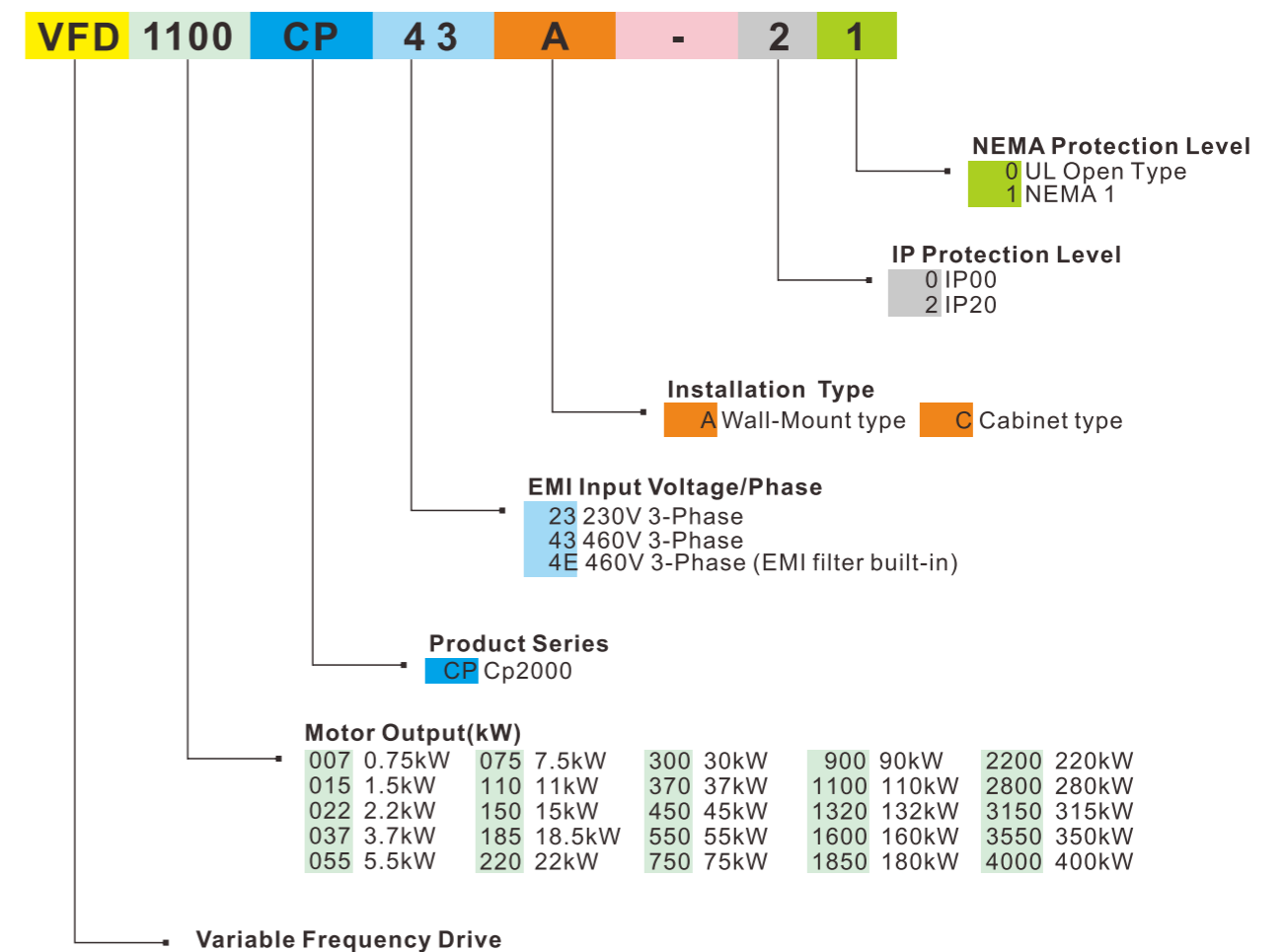


## Ordering Information

<b>Frame A</b> 	<b>230V:</b> 0.75kW~5.5kW  <b>460V:</b> 0.75kW~7.5kW	VFD007CP23A-21 VFD007CP43A-21 VFD007CP4EA-21 VFD015CP23A-21 VFD015CP43A-21 VFD015CP4EA-21 VFD022CP23A-21 VFD022CP43A-21 VFD022CP4EA-21 VFD037CP23A-21 VFD037CP43A-21 VFD037CP4EA-21 VFD055CP23A-21 VFD040CP43A-21 VFD040CP4EA-21 VFD055CP43A-21 VFD055CP4EA-21 VFD075CP43A-21 VFD075CP4EA-21
<b>Frame B</b> 	<b>230V:</b> 7.5kW~15kW  <b>460V:</b> 11kW~18.5kW	VFD075CP23A-21 VFD110CP43A-21 VFD110CP4EA-21 VFD110CP23A-21 VFD150CP43A-21 VFD150CP4EA-21 VFD150CP23A-21 VFD185CP43A-21 VFD185CP4EA-21
<b>Frame C</b> 	<b>230V:</b> 18.5kW~30kW  <b>460V:</b> 22kW~37kW	VFD185CP23A-21 VFD220CP43A-21 VFD220CP4EA-21 VFD220CP23A-21 VFD300CP43A-21 VFD300CP4EA-21 VFD300CP23A-21 VFD370CP43A-21 VFD370CP4EA-21
<b>Frame D</b> 	<b>230V:</b> 37kW~45kW  <b>460V:</b> 45kW~90kW	<b>Frame D1:</b> VFD370CP23A-00 VFD370CP23A-21 VFD450CP23A-00 VFD450CP23A-21 VFD450CP43A-00 VFD450CP43A-21 VFD750CP43A-00 VFD750CP43A-21 VFD900CP43A-00 VFD900CP43A-21 <b>Frame D2:</b> VFD370CP23A-21 VFD370CP23A-21 VFD450CP23A-21 VFD450CP23A-21 VFD450CP43A-21 VFD450CP43A-21 VFD750CP43A-21 VFD750CP43A-21 VFD900CP43A-21 VFD900CP43A-21
<b>Frame E</b> 	<b>230V:</b> 55kW~90kW  <b>460V:</b> 110kW~132kW	<b>Frame E1:</b> VFD550CP23A-00 VFD550CP23A-21 VFD750CP23A-00 VFD750CP23A-21 VFD900CP23A-00 VFD900CP23A-21 VFD1100CP43A-00 VFD1100CP43A-21 VFD1320CP43A-00 VFD1320CP43A-21 <b>Frame E2:</b> VFD550CP23A-21 VFD550CP23A-21 VFD750CP23A-21 VFD750CP23A-21 VFD900CP23A-21 VFD900CP23A-21 VFD1100CP43A-21 VFD1100CP43A-21 VFD1320CP43A-21 VFD1320CP43A-21
<b>Frame F</b> 	<b>460V:</b> 160kW~185kW	<b>Frame F1:</b> VFD1600CP43A-00 VFD1600CP43A-21 VFD1850CP43A-00 VFD1850CP43A-21 <b>Frame F2:</b> VFD1600CP43A-21 VFD1600CP43A-21 VFD1850CP43A-21 VFD1850CP43A-21

<b>Frame G</b> 	<b>460V:</b> 220kW~280kW	<b>Frame G1:</b> VFD2200CP43A-00 VFD2200CP43A-21 VFD2800CP43A-00 VFD2800CP43A-21 <b>Frame G2:</b> VFD2200CP43A-21 VFD2800CP43A-21
<b>Frame H</b> 	<b>460V:</b> 315kW~400kW	<b>Frame H1:</b> VFD3150CP43A-00 VFD3150CP43C-00 VFD3150CP43C-21 VFD3550CP43A-00 VFD3550CP43C-00 VFD3550CP43C-21 VFD4000CP43A-00 VFD4000CP43C-00 VFD4000CP43C-21 <b>Frame H2:</b> VFD3150CP43C-00 VFD3550CP43C-00 VFD4000CP43C-00 <b>Frame H3:</b> VFD3150CP43C-21 VFD3550CP43C-21 VFD4000CP43C-21

## Model Name



# Global Operations

## ASIA (Taiwan)



Taoyuan Technology Center (Green Building)



Taoyuan Plant 1



Tainan Plant (Diamond-rated Green Building)

## ASIA (China)



Wujiang Plant 3



Delta Electronics

## ASIA (Japan)



Tokyo Office

## ASIA (India)



Rudrapur Plant (Green Building)

## EUROPE



Amsterdam, Netherlands

## AMERICA



Research Triangle Park

Sales Channels of Delta Industrial Automation are Located Worldwide in 74 Countries

▲ Factories 2 ■ Branch offices 60 ● R&D Centers 5 □ Distributors 581

