



Automation for a Changing World

## Delta Vector Control Drive C2000 Plus Series



reddot design award  
winner 2010

[www.deltaww.com](http://www.deltaww.com)

 **DELTA**  
Smarter. Greener. Together.

# **Delta Vector Control Drive C2000 Plus Series**

**The C2000 Plus Series features precise speed, torque and position control functions and sensorless types of synchronous and asynchronous motors.**

**With higher overload capacity, the power range of C2000 Plus Series 460V models reach performance and stability for a variety of heavy duty and constant torque applications, food industry, chemical industry, metal processing, rubber and plastics, municipal &**

**For advanced manufacturing, the C2000 Plus Series is equipped with built-in PLC protocols for the ultimate in system flexibility and fast data exchange.**

**As your best choice for highly efficient solution, the C2000 Plus Series is the power to for a Changing World!**



## Table of Contents



that are suitable for both sensor

up to 560 kW, providing the best  
such as production, processing,  
infrastructure, and other industries.

functions and supports various

drive you to reach the Automation

Standard Models 3

LCD Keypad 6

Features and Applications 7

Modular Design 9

High-Speed Network 11

Operation Temperature and  
Environment for Operation, Storage  
and Transportation 12

Specifications 13

Wiring 18

Dimensions 21

Option Cards 35

Ordering Information 43

## Standard Models C2000 Plus

**Power range : 230V 0.75 ~ 90 kW**

230V (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5
230V (HP)	1	2	3	5	7.5	10	15	20	25
Frame Size	A				B			C	

**Power range : 460V 0.75 ~ 560 kW**

460V (kW)	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15
460V (HP)	1	2	3	5	5	7.5	10	15	20
Frame Size	A				B			C	

## Standard Models C2000

**Power range: 575V 1.5~15 kW**

575V (kW)	1.5	2.2	3.7	5.5	7.5	11	15
575V (HP)	2	3	5	7.5	10	15	20
Frame Size	A			B			

**Power range: 690V 18.5~630 kW**

690V (kW)	18.5	22	30	37	45	55	75	90	110
690V (HP)	25	30	40	50	60	75	100	125	150
Frame Size	C				D			E	



### C2000 Plus Overload capability

- Heavy Duty 150% 60 / 180% 3s
- Super Heavy Duty 150% 60 / 200% 3s



\*Note : C2000 Plus power range is for 230V and 460V models

22	30	37	45	55	75	90
30	40	50	60	75	100	125
D		E			F	

18.5	22	30	37	45	55	75	90	110	132	160	185	220	280	315	355	450	500	560
25	30	40	50	60	75	100	125	150	175	215	250	300	375	425	475	600	650	750
C		D0			D	E			F	G			H					

132	160	200	250	315	400	450	560	630
175	215	270	335	425	530	600	745	840
F		G			H			



### C2000 Plus Power rating

- 460V      0.75kW~560kW (New)
- 230V      0.75kW~90kW



**460 V Max. power  
rated up to 560 kW**

# Advanced Drive Controls

## ▪ High Performance

1. For both synchronous and asynchronous motors
2. Dual rating design (heavy duty / super heavy duty)
3. Speed / torque / position control mode
4. High bandwidth control



## ▪ Versatile Drive Controls

1. Built-in safe stop function
2. Built-in PLC function
3. Built-in brake unit
4. Supports various network protocols
5. Position control

## ▪ Environmental Adaptability

1. 50°C operating temperature
2. Built-in DC reactor
3. Coated circuit boards
4. Built-in EMC filter
5. International safety standard (CE/UL/cUL)

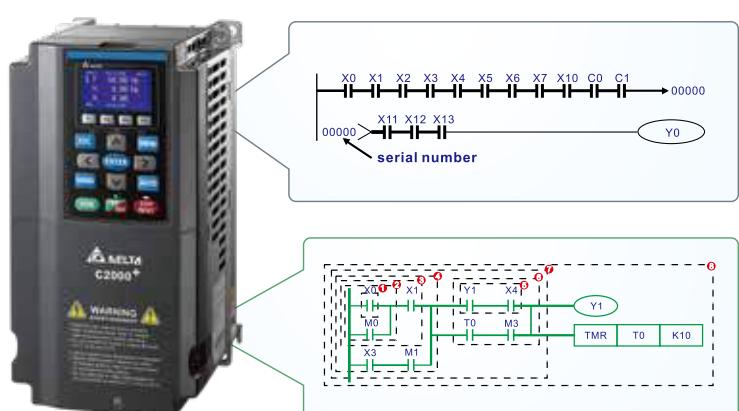
\*Note: Please refer to the Product Specification

## ▪ Modular Design

1. Hot pluggable LCD keypad
2. I/O extension cards
3. Various PG (encoder) feedback cards
4. Network cards for fieldbus modules
5. Removable fan

# Intelligent PLC Functions

- Built-in 10k steps capacity of PLC functions. Distributed control and independent operation are easily achieved via network connection.
- CANopen Master protocol and PLC functions provide synchronous control and fast data exchange.



# Quick and Easy Parameters Setting via the LCD Keypad

- Multi-column display for the drive status
- Simple and intuitive operation
- User-defined parameter groups
- Real-time clock (RTC) function
- Multi-language display for selection
- Copy function saves parameters and PLC programs to the keypad memory for later transfer to another drive
- IP66 protection level



## Start Wizard



## Multi-Language



- English
- German
- Italian
- French
- Spanish
- Portuguese
- Polish
- Russian
- Turkish
- Chinese

## Application Selection

Without parameter group.....



C2000 Plus parameter group function simplifies the drive setting procedures. Various applications are provided:

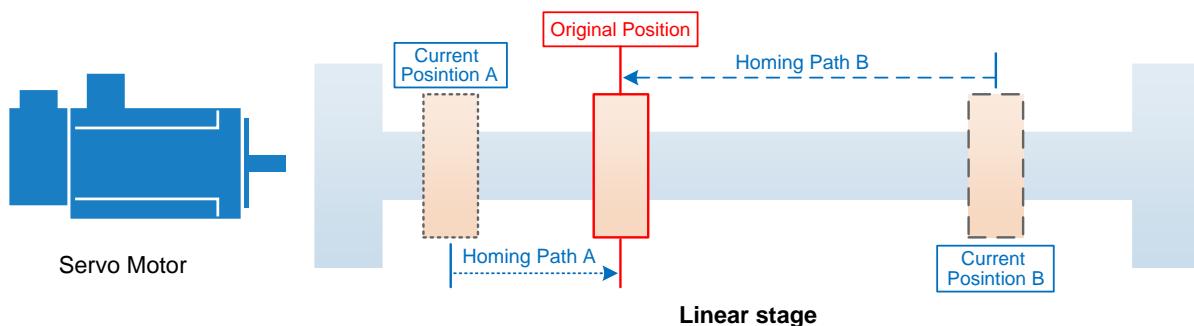
- 01: User-defined
- 02: AHU
- 03: Fan
- 04: Pump
- 05: Compressor



# Positioning Control

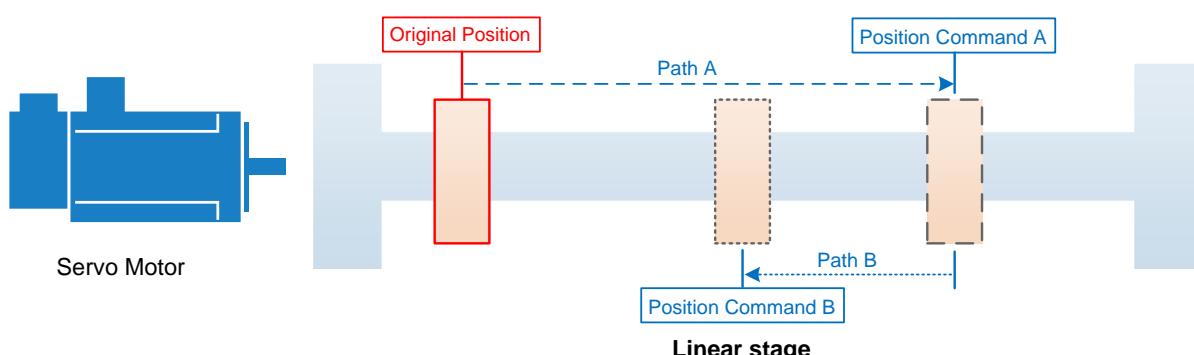
## Homing

Determines the original position of the motion system, so as to ensure the motor refers to the same coordinates during each machining process



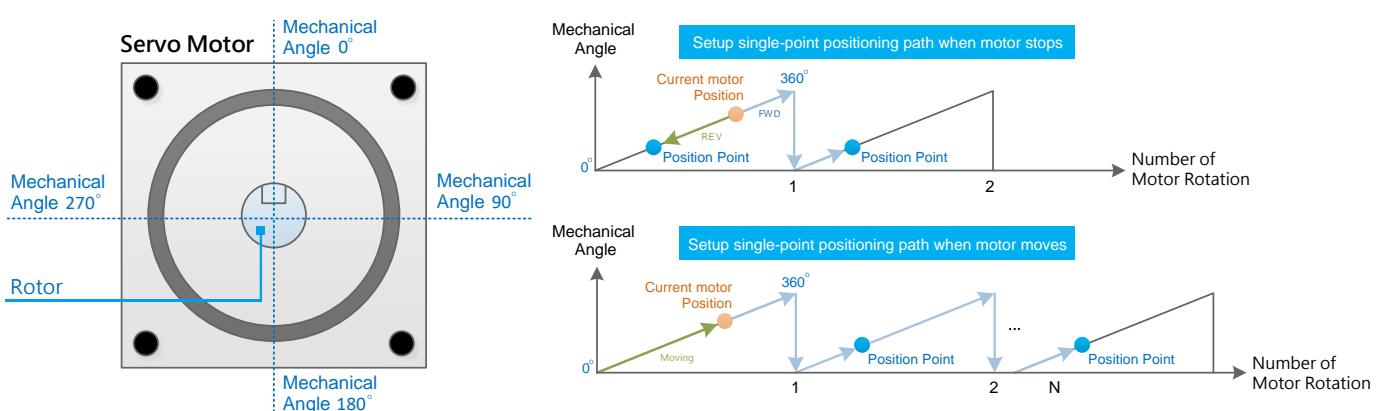
## Multi-point Positioning

Allows the motor to operate from one position to another, and switches up to 15 positions with 4 multi-function input terminals



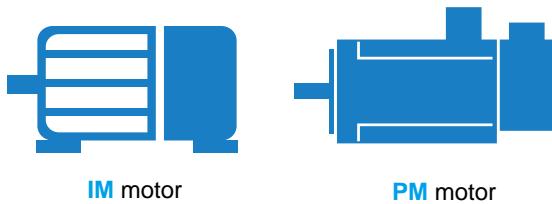
## Single-point Positioning

Positions the motor at a specific point (within a single rotation) for precise stop upon request



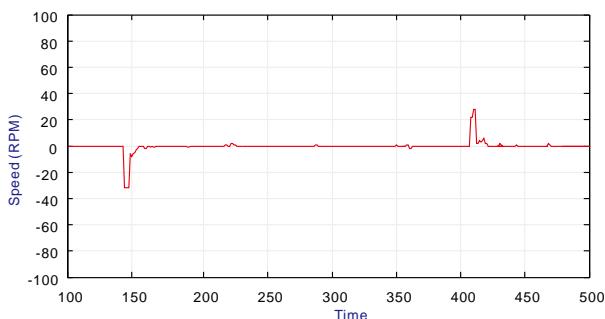
## A Drive for Permanent Magnet (PM) Motors

The C2000 is a dual mode drive to control both an induction motor and permanent magnet motor. The dynamic response of a PM motor provides precise control of position, speed and torque.



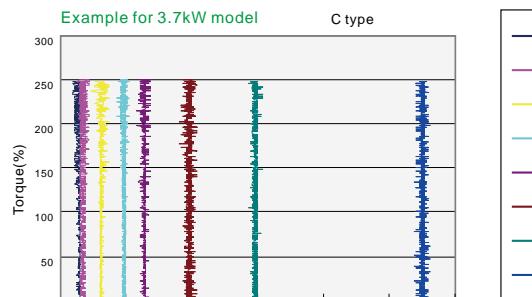
## Fast Response to Impact Load

During load changes, the C2000 Series calculates the required torque response and minimizes the vibration caused by load impact using FOC.



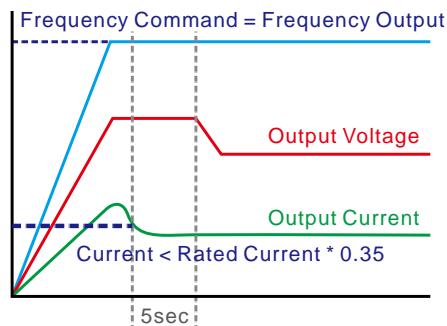
## High-Performance Field-oriented Control

The FOC+PG mode of C2000 Series can output 150% of starting torque at extremely low speeds for precise and stable speed control.



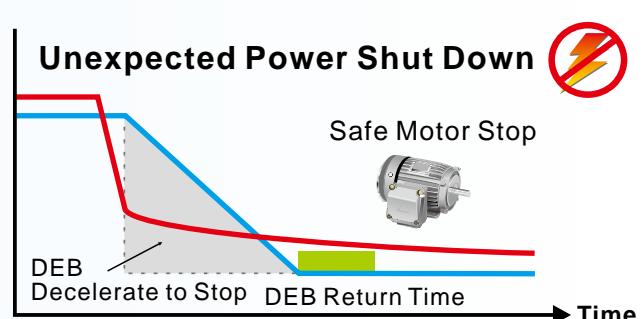
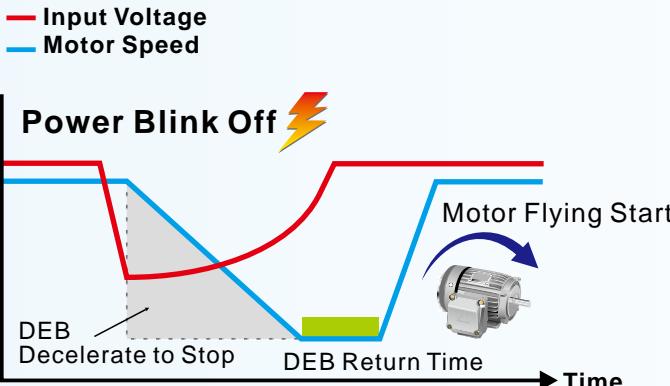
## Auto Energy-Saving Operation

Auto-calculates the optimal voltage for the load output using load power when under constant speed operation.



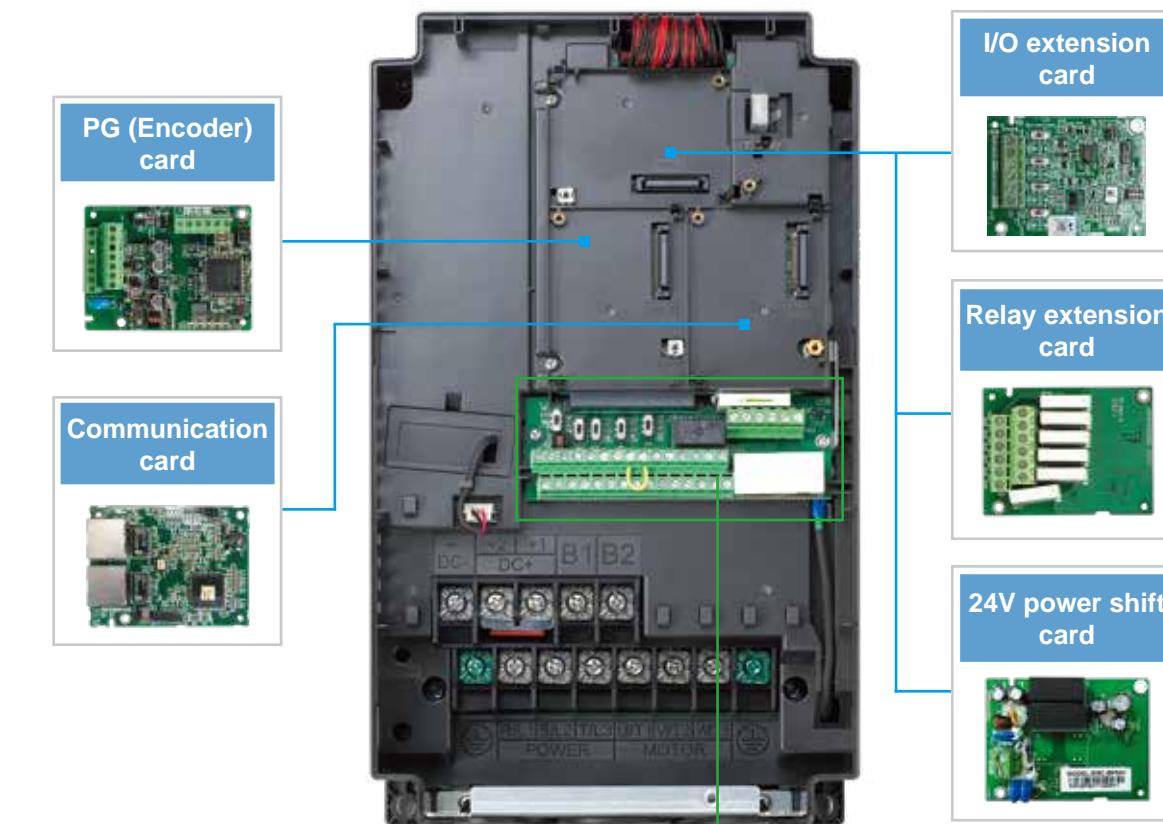
## Deceleration Energy Backup (DEB)

This function controls the motor deceleration to stop when power blinks off to prevent mechanical damage and then accelerates to its original operation speed when power resumes.



# Modular Design

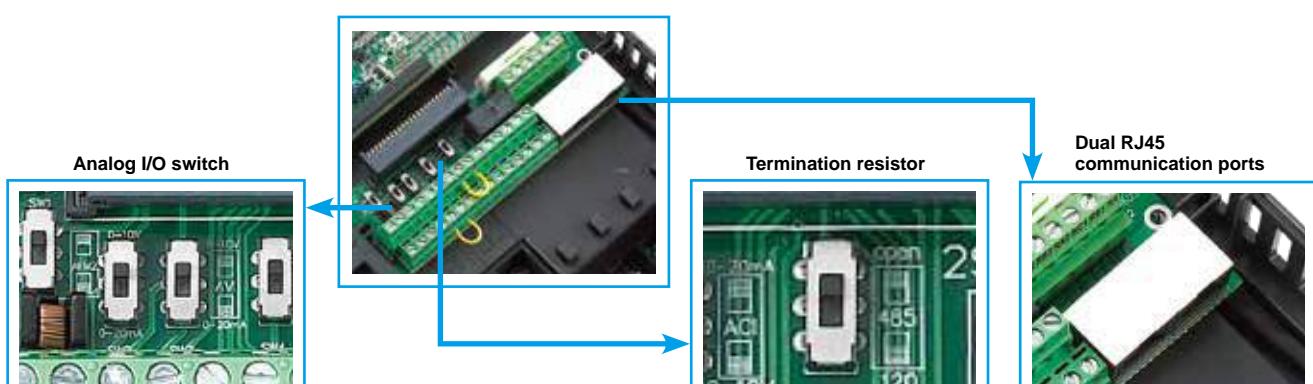
Various accessories options, such as I/O extension cards, encoder feedback cards, communication cards, hot pluggable LCD keypad, removable terminals and removable fans.



\*NOTE: "►" are optional accessories.

## ■ Removable terminals

Convenient wiring and safety equipment.



The modular design fulfills the needs of system applications and equipment maintenance.



## Excellent Environment Adaptability

- Built-in DC choke to suppress harmonics\*
- Built-in EMC filter to filter noise\*
- Conformal coating (Class 3C3 of IEC60721-3-3 standard) ensures drive operation stability and safety in critical environments.
- The electronic components of the drive are isolated from the cooling system to reduce heat interference. Dissipated heat can be discharged by flange-mounting installation, and forced fan cooling can import cold air into the heat sink. The heat dissipation performance is optimized by these two cooling methods.

\*Note: Please refer to the Product Specification



## Certifications

UL, cUL	CE
C-Tick	Low Voltage: EN61800-5-1 EMC: EN61000-3-12, EN61800-3, IEC61000-6-2, IEC61000-6-4, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8
ROHS	

# High-Speed Networking

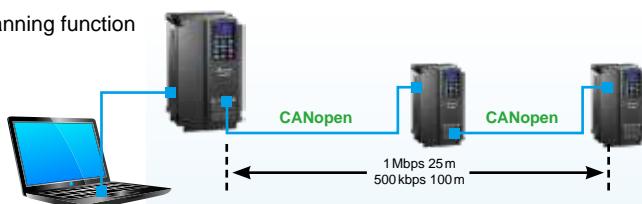
- ▶ Provides optional Modbus RTU and various fieldbus cards for flexible applications
- ▶ Advanced network functions
- ▶ Built-in Modbus communication

 DP / PROFINET /  / Modbus TCP /  / EtherCAT / CANopen

## ■ CANopen (DS402)

### Ability to control up to 8 Slave drives via the CANopen Master function

- Supports all Delta industrial automation products (Built-in EDS files for all Delta industrial automation products)
- I/O data configurations for each device on the CANopen network
- Motion control planning function
- WPL Soft



- TAP-CN03 distribution box for long distances



- RJ45 cable



## ■ DeviceNet

Through the Delta specially designed DeviceNet Builder software, users can easily establish a standard DeviceNet control network by the parameter pre-assignment function for each equipment and remote I/O.

- Supports all Delta industrial automation products (Built-in EDS files for all Delta industrial automation products)
- I/O data configurations for each device on the DeviceNet network
- DeviceNet layout software



## ■ EtherNet/IP

## ■ Modbus TCP

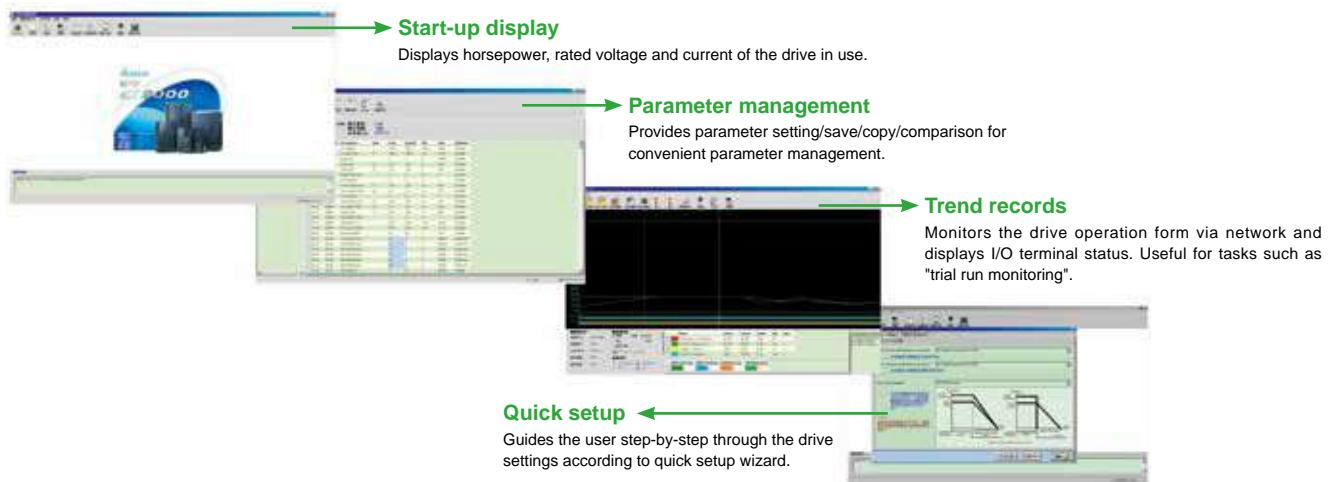
Delta provides communication integrator software that offers graphic module settings and a user friendly interface to support all Ethernet products settings and online monitoring.

- Delta software for Ethernet/Modbus TCP products
- Graphic module settings and a user friendly interface
- Auto search function
- Supports Virtual COM settings



# Convenient Drive System Management Platform

- Provides a complete operation platform for users' easy control and monitoring via PC, including parameters save/setting, real-time wave monitor, quick setup, for multiple languages and with multi-language operation systems.



**Start-up display**  
Displays horsepower, rated voltage and current of the drive in use.

**Parameter management**  
Provides parameter setting/save/copy/comparison for convenient parameter management.

**Trend records**  
Monitors the drive operation form via network and displays I/O terminal status. Useful for tasks such as "trial run monitoring".

**Quick setup**  
Guides the user step-by-step through the drive settings according to quick setup wizard.

\*NOTE: These software programs are available for download on Delta's website

## Operation Temperature and Protection Level

Model	Frame	Top Cover	Conduit Box	Protection Level	Operation Temperature
VFDxxxCxxx-21	Frame A~C 230V: 0.75~22kW 460V: 0.75~30kW 575V: 1.5~15kW 690V: 18.5~37kW	Remove top cover	Standard conduit plate	IP20 / UL Open Type	-10°C ~ 50°C
	Standard with top cover	IP20 / UL Type1 / NEMA1		-10°C ~ 40°C	
VFDxxxCxxx-21	Frame D0~H 230V: 22kW and above 460V: 37kW and above 690V: 45kW and above	N/A	Standard conduit box	IP20 / UL Type1 / NEMA1	-10°C ~ 40°C
VFDxxxCxxx-00	Frame D0-H 230V: 22kW and above 460V: 37kW and above 690V: 45kW and above	N/A	No conduit box	 <small>Degrees of protection: IP20 / IP00 for the circled area</small>	-10°C ~ 50°C

## Environment for Operation, Storage and Transportation

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

Environment	Installation Location	IEC60364-1/IEC60664-1 Pollution degree 2, indoor use only			
	Surrounding Temperature (°C)	Storage/Transportation	-25 ~ 70		
		Only allowed in non-condensation, non-frost, non-conductive environment.			
	Rated Humidity	Operation/Storage/Transportation	Max. 95%		
		Only allowed in non-condensation, non-frost, non-conductive environment.			
	Air Pressure (kPa)	Operation/Storage	86 ~ 106		
		Transportation	70 ~ 106		
	Pollution Level	IEC60721-3-3			
		Operation	Class 3C3; Class 3S2		
		Storage	Class 1C2; Class 1S2		
		Transportation	Class 2C2; Class 2S2		
	If the AC motor drive is to be used under harsh environment with high level of contamination (e.g. dew, water, dust), make sure it is installed in an environment qualified for IP54 such as in a cabinet.				
Altitude	Operation	If the AC motor drive is installed at an altitude 0 ~ 1000m, follow normal operation restriction. If it is installed at altitude 1000 ~ 2000m, decrease 1% of rated current or lower 0.5°C of temperature for every 100m increase in altitude. Maximum altitude for Corner Grounded TN system is 2000m, for application over 2000m please contact Delta for more details.			
Package Drop	Storage/Transportation	ISTA procedure 1A (according to weight) IEC60068-2-31			
Vibration	1.0mm, peak to peak value range from 2Hz to 13.2Hz; 0.7G ~ 1.0G range from 13.2 Hz to 55Hz; 1.0G range from 55Hz to 512Hz. Comply with IEC 60068-2-6.				
Impact	IEC/EN 60068-2-27				
Operation Position	Max. allowed offset angle ±10° (under normal installation position)				

# Specifications

## 230V

Frame Size		A			B			C			D		E		F													
<b>Model VFD□□□C23A-00 / -21</b>		007	015	022	037	055	075	110	150	185	220	300	370	450	550	750	900											
* Output Rating	HEAVY DUTY	<b>Power Facility Capacity (kVA)</b>	2.7	5	6.7	8.3	11.6	15	21.6	29.9	34.5	41.2	51.5	59.4	71.1	85.6	101.8	137.6										
		<b>Rated Output Current (A)</b>	5	8	11	17	25	33	49	65	75	90	120	146	180	215	255	346										
		<b>Applicable Motor Output (kW)</b>	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90										
		<b>Applicable Motor Output (HP)</b>	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	120										
		<b>Overload Capacity</b>	150% of rated current: 1 minute for every 5 minutes; 180% of rated current: 3 seconds for every 30 seconds																									
	SUPER HEAVY DUTY	<b>Max. Output Frequency (Hz)</b>	0.00 ~ 599.00							2 ~ 10 (default setting 6)				2 ~ 9 (default setting 4)														
		<b>Carrier Frequency (kHz)</b>	2 ~ 15 (default setting 8)							2 ~ 10 (default setting 6)				2 ~ 9 (default setting 4)														
		<b>Power Facility Capacity (kVA)</b>	1.6	2.7	5	6.7	8.3	11.6	15	21.6	29.9	34.5	41.2	51.5	59.4	71.1	85.6	101.8										
		<b>Rated Output Current (A)</b>	3	5	8	11	17	25	33	49	65	75	90	120	146	180	215	255										
		<b>Applicable Motor Output (kW)</b>	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	19	22	30	37	45	55	75										
		<b>Applicable Motor Output (HP)</b>	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100										
	<b>Overload Capacity</b>		150% of rated current: 1 minute for every 5 minutes; 200% of rated current: 3 seconds for every 30 seconds																									
Input Rating	<b>Max. Output Frequency (Hz)</b>		0.00 ~ 599.00																									
	<b>Carrier Frequency (kHz)</b>	2 ~ 15 (default setting 4)							2 ~ 10 (default setting 4)				2 ~ 9 (default setting 4)															
	Heavy Duty	<b>Input Current (A)</b>	6.4	12	16	20	28	36	52	72	83	99	124	143	171	206	245	331										
		<b>Super Heavy Duty</b>	3.9	6.4	12	16	20	28	36	52	72	83	99	124	143	171	206	245										
		<b>Rated Voltage/Frequency</b>	3-phase AC 200V ~ 240V (-15% ~ +10%), 50/60Hz																									
	<b>Operating Voltage Range</b>		170 ~ 264V <sub>AC</sub>																									
	<b>Frequency Tolerance</b>		±5% (47 ~ 63Hz)																									
	<b>Net Weight (kg)</b>		2.6 ± 0.3			5.4 ± 1			9.8 ± 1.5			38.5 ± 1.5		64.8 ± 1.5		86.5 ± 1.5												
	<b>Efficiency (%)</b>		97.8														98.2											
	<b>Power Factor</b>		> 0.98																									
	<b>Cooling Method</b>		Natural cooling	Fan cooling																								
	<b>Braking Chopper</b>		Frame A ~ C: Built-in														Frame D ~ F: Optional											
	<b>DC Choke</b>		Frame A ~ C: Optional														Frame D ~ F: Built-in											
	<b>EMC Filter</b>		Frame A ~ F: Optional																									
	<b>EMC-COP01</b>		Frame A ~ F: Optional																									

## 460V

Frame Size		A						B			C															
<b>Model VFD□□□C4□-00 / -21</b>		007	015	022	037	040	055	075	110	150	185	220	300													
* Output Rating	HEAVY DUTY	<b>Power Facility Capacity (kVA)</b>	3.6	4.9	7.2	11.6	12.9	14.1	16.6	21.6	29.1	33.3	39.1	33.3												
		<b>Rated Output Current (A)</b>	3.0	4.0	6.0	9.0	10.5	12	18	24	32	38	45	60												
		<b>Applicable Motor Output (kW)</b>	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30												
		<b>Applicable Motor Output (HP)</b>	1	2	3	5	5	7.5	10	15	20	25	30	40												
		<b>Overload Capacity</b>	150% of rated current: 1 minute for every 5 minutes; 180% of rated current: 3 seconds for every 30 seconds																							
	SUPER HEAVY DUTY	<b>Max. Output Frequency (Hz)</b>	0.00 ~ 599.00																							
		<b>Carrier Frequency (kHz)</b>	2 ~ 15 (default setting 8)							2 ~ 10 (default setting 6)				2 ~ 9 (default setting 4)												
		<b>Power Facility Capacity (kVA)</b>	2.9	3.6	4.9	7.2	11.6	12.9	14.1	16.6	21.6	29.1	33.3	39.1												
		<b>Rated Output Current (A)</b>	1.7	3	4	6	9	10.5	12	18	24	32	38	45												
		<b>Applicable Motor Output (kW)</b>	0.4	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22												
		<b>Applicable Motor Output (HP)</b>	0.5	1	2	3	5	5	7.5	10	15	20	25	30												
	<b>Overload Capacity</b>		150% of rated current: 1 minute for every 5 minutes; 200% of rated current: 3 seconds for every 30 seconds																							
Input Rating	<b>Max. Output Frequency (Hz)</b>		0.00 ~ 599.00																							
	<b>Carrier Frequency (kHz)</b>	2 ~ 15 (default setting 4)																								
	Heavy Duty	<b>Input Current (A)</b>	4.3	5.9	8.7	14	15.5	17	20	26	35	40	47	63												
		<b>Super Heavy Duty</b>	3.5	4.3	5.9	8.7	14	15.5	17	20	26	35	40	47												
		<b>Rated Voltage/Frequency</b>	3-phase AC 380V ~ 480V (-15% ~ +10%), 50/60Hz																							
	<b>Operating Voltage Range</b>		323 ~ 528V <sub>AC</sub>																							
	<b>Frequency Tolerance</b>		±5% (47 ~ 63Hz)																							
	<b>Net Weight (kg)</b>		2.6 ± 0.3			5.4 ± 1			9.8 ± 1.5			9.8 ± 1.5														
	<b>Efficiency (%)</b>		97.8																							
	<b>Power Factor</b>		> 0.98																							
	<b>Cooling Method</b>		Natural cooling	Fan cooling																						
	<b>Braking Chopper</b>		Frame A ~ C: Built-in																							
	<b>DC Choke</b>		Frame A ~ C: Optional																							
	<b>EMC Filter</b>		Frame A~C VFDXXXC43A-21: Optional; VFDXXXC4EA-21: Built-in																							
	<b>EMC-COP01</b>		Frame A~C VFDXXXC43A-21: Optional; VFDXXXC4EA-21: Built-in																							

460V														
Frame Size		D0		D		E		F						
Model VFD□□□C4□-00 / -21		370	450	550	750	900	1100	1320	1600					
HEAVY DUTY	Power Facility Capacity (kVA)	61.5	84	94.8	130.5	138.8	172.1	199.5	249.4					
HEAVY DUTY	Rated Output Current (A)	73	91	110	150	180	220	260	310					
HEAVY DUTY	Applicable Motor Output (kW)	37	45	55	75	90	110	132	160					
HEAVY DUTY	Applicable Motor Output (HP)	50	60	75	100	125	150	175	215					
Overload Capacity	150% of rated current: 1 minute for every 5 minutes; 180% of rated current: 3 seconds for every 30 seconds													
Max. Output Frequency (Hz)	0.00~599.00													
Carrier Frequency (kHz)	2 ~ 10 (default setting 6)				2 ~ 9 (default setting 4)									
SUPER HEAVY DUTY	Power Facility Capacity (kVA)	52.4	61.5	84	94.8	130.5	138.8	172.1	199.5					
SUPER HEAVY DUTY	Rated Output Current (A)	60	73	91	110	150	180	220	260					
SUPER HEAVY DUTY	Applicable Motor Output (kW)	30	37	45	55	75	90	110	132					
SUPER HEAVY DUTY	Applicable Motor Output (HP)	40	53	60	75	100	125	150	175					
Overload Capacity	150% of rated current: 1 minute for every 5 minutes; 200% of rated current: 3 seconds for every 30 seconds													
Max. Output Frequency (Hz)	0.00~599.00													
Carrier Frequency (kHz)	2 ~ 10 (default setting 4)				2 ~ 9 (default setting 4)									
Input Rating	Input Current (A)	Heavy Duty	74	101	114	157	167	207	240	300				
Input Rating	Input Current (A)	Super Heavy Duty	63	74	101	114	157	167	207	240				
Input Rating	Rated Voltage/Frequency	3 - phase AC 380V ~ 480V (-15% ~ +10%), 50/60Hz												
Input Rating	Operating Voltage Range	323~528V <sub>AC</sub>												
Input Rating	Frequency Tolerance	±5% ( 47 ~ 63 Hz )												
Net Weight (kg)	27 ± 1.5			38.5 ± 1.5			64.8 ± 1.5		86.5 ± 1.5					
Efficiency (%)	97.8								98.2					
Power Factor	> 0.98													
Cooling Method	Fan cooling													
Braking Chopper	Frame D0~F: Optional													
DC Choke	Frame D0~F : Built-in													
EMC Filter	Frame D0~F: Optional													
EMC-COP01	Frame D0~F VFDXXXC43A-00 : Optional ; VFDXXXC4EA-21 : Built-in													

460V													
Frame Size		G			H								
Model VFD□□□C4□-00 / -21		1850	2000	2200	2500	2800	3150	3550	4000	4500	5000	5600	
HEAVY DUTY	Power Facility Capacity (kVA)	315.9	328.4	332.5	371.6	410.7	461.4	519.6	640.1	720	773.2	909.5	
HEAVY DUTY	Rated Output Current (A)	370	395	460	481	550	616	683	770	866	930	1094	
HEAVY DUTY	Applicable Motor Output (kW)	185	200	220	250	280	315	355	400	450	500	560	
HEAVY DUTY	Applicable Motor Output (HP)	250	270	300	340	375	420	475	536	600	650	750	
Overload Capacity	150% of rated current: 1 minute for every 5 minutes; 180% of rated current: 3 seconds for every 30 seconds												
Max. Output Frequency (Hz)	0.00~599.00												
Carrier Frequency (kHz)	2~9 ( default setting 4 )												
SUPER HEAVY DUTY	Power Facility Capacity (kVA)	249.4	249.4	315.9	324.2	332.5	410.7	461.4	490.5	519.6	720	773.2	
SUPER HEAVY DUTY	Rated Output Current (A)	310	310	370	395	460	550	616	683	683	866	930	
SUPER HEAVY DUTY	Applicable Motor Output (kW)	160	160	185	200	220	280	315	355	355	450	500	
SUPER HEAVY DUTY	Applicable Motor Output (HP)	215	215	250	270	300	375	425	475	475	600	650	
Overload Capacity	150% of rated current: 1 minute for every 5 minutes; 200% of rated current: 3 seconds for every 30 seconds												
Max. Output Frequency (Hz)	0.00~599.00												
Carrier Frequency (kHz)	2~9 ( default setting 4 )				2~9 ( default setting 3 )								
Input Rating	Input Current (A)	Heavy Duty	380	395	400	447	494	555	625	770	866	930	1094
Input Rating	Input Current (A)	Super Heavy Duty	300	300	380	390	400	494	555	590	625	866	930
Input Rating	Rated Voltage/Frequency	3 - phase AC 380V~480V (-15% +10%) · 50 / 60Hz											
Input Rating	Operating Voltage Range	323~528VAC											
Input Rating	Frequency Tolerance	±5% ( 47 ~ 63 Hz )											
Net Weight (kg)	134 ± 4			228									
Efficiency (%)	98.2												
Power Factor	>0.98												
Cooling Method	Fan cooling												
Braking Chopper	Frame G~H : Optional												
DC Choke	Frame G~H : Built-in												
EMC Filter	Frame G~H : Optional												
EMC-COP01	Frame G~H VFDXXXC43A-00 : Optional ; VFDXXXC4EA-21 : Built-in												

\* The factory setting is Heavy Duty mode for model 230V / 460.

#### NOTES

- 1) The carrier frequency is default. Increasing the carrier frequency requires a reduction in current.
- 2) The AC motor drive should operate in derating current when its control method is set to FOC Sensorless, TQC+PG, TQC sensorless, PM+PG, PM sensorless.
- 3) The rated input current will be affected not only by Power Transformer and the connection of the reactors on input side, but also fluctuates with the impedance of power side.

# Specifications

## 575V

Frame Size		A			B							
Model VFD-□□□C53A-21		015	022	037	055	075	110	150				
Output *	Light Duty	Power Facility Capacity (kVA)	3.9	5.6	10.8	15.5	17.6	22.1				
	Light Duty	Rated Output Current (A)	3	4.3	6.7	9.9	12.1	18.7				
	Light Duty	Applicable Motor Output (kW)	1.5	2.2	3.7	5.5	7.5	11				
	Light Duty	Applicable Motor Output (HP)	2	3	5	7.5	10	15				
	Normal Duty	Power Facility Capacity (kVA)	3.2	4.7	7.5	12.8	15.6	18.7				
	Normal Duty	Rated Output Current (A)	2.5	3.6	5.5	8.2	10	15.5				
	Normal Duty	Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	5.5	7.5				
	Normal Duty	Applicable Motor Output (HP)	1	2	3	5	7.5	10				
	Heavy Duty	Power Facility Capacity (kVA)	2.7	3.9	6	11.1	13	17.6				
	Heavy Duty	Rated Output Current (A)	2.1	3	4.6	6.9	8.3	13				
	Heavy Duty	Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	3.7	7.5				
	Heavy Duty	Applicable Motor Output (HP)	1	2	3	5	5	10				
Max. Output Frequency (Hz)		0.00 ~ 599.00										
Carrier Frequency (kHz)		2~15 (default setting 4)										
Input	Input Current (A)	Light Duty	3.8	5.4	10.4	14.9	16.9	21.3				
		Normal Duty	3.1	4.5	7.2	12.3	15	18				
		Heavy Duty	2.6	3.8	5.8	10.7	12.5	16.9				
	Rated Voltage/Frequency		3-Phase 525V <sub>AC</sub> ~ 600V <sub>AC</sub> (-15% ~ +10%), 50/60 Hz									
	Operating Voltage Range		446 ~ 660V <sub>AC</sub>									
Frequency Tolerance		±5% (47 ~ 63 Hz)										
Efficiency (%)		97			98							
Power Factor		>0.98										
Net Weight (kg)		3±0.3			4.8±1							
Cooling Method		Natural cooling			Fan cooling							
Braking Chopper		Built-in										
DC Choke		Optional										
EMC Filter		Optional										
EMC-COP01		Optional										

## 690V

Frame Size		C			D		E				
Model VFD-□□□C63B-00 / -21		185	220	300	370	450	550	750	900	1100	1320
Output *	Light Duty	Power Facility Capacity (kVA)	34.7	43	51.4	64.5	77.7	96.8	100.4	121.9	145.8
	Light Duty	Applicable Motor Output (690V, kW)	18.5	22	30	37	45	55	75	90	110
	Light Duty	Applicable Motor Output (690V, HP)	25	30	40	50	60	75	100	125	175
	Light Duty	Applicable Motor Output (575V, HP)	20	25	30	40	50	60	75	100	125
	Light Duty	Rated Output Current (A)	24	30	36	45	54	67	86	104	150
	Normal Duty	Power Facility Capacity (kVA)	28.7	34.7	43	51.4	64.5	77.7	78.9	100.4	121.9
	Normal Duty	Applicable Motor Output (690V, kW)	15	18.5	22	30	37	45	55	75	90
	Normal Duty	Applicable Motor Output (690V, HP)	20	25	30	40	50	60	75	100	125
	Normal Duty	Applicable Motor Output (575V, HP)	15	20	25	30	40	50	60	75	100
	Normal Duty	Rated Output Current (A)	20	24	30	36	45	54	67	86	125
Input	Heavy Duty	Power Facility Capacity (kVA)	23.9	28.7	34.7	43	51.4	64.5	63.3	78.9	100.4
	Heavy Duty	Applicable Motor Output (690V, kW)	11	15	18.5	22	30	37	45	55	75
	Heavy Duty	Applicable Motor Output (690V, HP)	15	20	25	30	40	50	60	75	100
	Heavy Duty	Applicable Motor Output (575V, HP)	10	15	20	25	30	40	50	60	75
	Heavy Duty	Rated Output Current (A)	14	20	24	30	36	45	54	67	86
	Max. Output Frequency (Hz)		0.00 ~ 599.00								
	Carrier Frequency (kHz)		2~9 (default setting 4)								
	Input Current (A)	Light Duty	29	36	43	54	65	81	84	102	122
		Normal Duty	24	29	36	43	54	65	66	84	102
		Heavy Duty	20	24	29	36	43	54	53	66	84
Input	Rated Voltage/Frequency		3-Phase 525V <sub>AC</sub> ~ 690V <sub>AC</sub> (-15% ~ +10%), 50/60Hz								
	Operating Voltage Range		446 ~ 759V <sub>AC</sub>								
	Frequency Tolerance		±5% (47 ~ 63 Hz)								
	Efficiency (%)		97								
	Power Factor		>0.98								
	Net Weight (kg)		10±1.5			39±1.5		61±1.5			
	Cooling Method		Fan cooling								
	Braking Chopper		Frame C (built-in)			Frame D and above (optional)					
	DC Choke		Frame C (optional)			Frame D and above (built-in)					
	EMC Filter		Optional								
	EMC-COP01		Optional								

690V										
Frame Size		F		G		H				
Model VFD-□□□C63B-00 / -21		1600	2000	2500	3150	4000	4500	5600	6300	
Output *	Light Duty	Power Facility Capacity (kVA)	212.7	259.3	349	421.9	542.6	560.5	711.1	813.8
	Applicable Motor Output (690V, kW)	160	200	250	315	400	450	560	630	
	Applicable Motor Output (690V, HP)	215	270	335	425	530	600	750	850	
	Applicable Motor Output (575V, HP)	175	200	250	350	400	450	500	750	
	Rated Output Current (A)	180	220	290	350	430	465	590	675	
Normal Duty	Power Facility Capacity (kVA)	176.9	212.7	265.3	349	421.9	463.7	602.3	813.8	
	Applicable Motor Output (690V, kW)	132	160	200	250	315	355	450	630	
	Applicable Motor Output (690V, HP)	175	215	270	335	425	475	600	850	
	Applicable Motor Output (575V, HP)	150	175	200	250	350	400	450	750	
	Rated Output Current (A)	150	180	220	290	350	385	465	675	
Heavy Duty	Power Facility Capacity (kVA)	147	176.9	216.3	265.3	349	374.1	505.5	813.8	
	Applicable Motor Output (690V, kW)	110	132	160	200	250	280	400	630	
	Applicable Motor Output (690V, HP)	150	175	215	270	335	375	530	850	
	Applicable Motor Output (575V, HP)	125	150	175	200	250	335	450	750	
	Rated Output Current (A)	125	150	180	220	290	310	420	675	
Max. Output Frequency (Hz)		0.00 ~ 599.00								
Carrier Frequency (kHz)		2~9 (default setting 4)						2~9 (default setting 3)		
Input	Input Current (A)	Light Duty	178	217	292	353	454	469	595	681
		Normal Duty	148	178	222	292	353	388	504	681
		Heavy Duty	123	148	181	222	292	313	423	681
	Rated Voltage/Frequency	3-Phase 525 V <sub>AC</sub> ~ 690 V <sub>AC</sub> (-15% ~ +10%), 50/60Hz								
Operating Voltage Range		446 ~ 759 V <sub>AC</sub>								
Frequency Tolerance		±5% (47 ~ 63 Hz)								
Efficiency (%)		97					98			
Power Factor							>0.98			
Net Weight (kg)		88 ± 1.5		135 ± 4			243 ± 5			
Cooling Method						Fan cooling				
Braking Chopper						Frame D and above (optional)				
DC Choke						Frame D and above (built-in)				
EMC Filter						Optional				
EMC-COP01						Optional				

\* Parameter 00-16 for model 575V / 690V; available load modes: Light Duty (LD), Normal Duty (ND) and Heavy Duty (HD); default setting is LD mode



# General Specifications

Control Characteristics	<b>Control Method</b>	Pulse Width Modulated (PWM)
	<b>Control Mode</b>	230V / 460V model: 1: V / F · 2: SVC · 3: VF+PG · 4: FOC+PG · 5: TQC+PG · 6: PM+PG · 7: FOC sensorless · 8: TQC sensorless · 9: PM sensorless 575V / 690V model: 1: V/F · 2: V/F+PG · 3: SVC
	<b>Starting Torque</b>	►IMVF, IMVF+PG, IMSVC: 150% / 3 Hz      ►PMSVC: 100% / (motor rated frequency / 20) IMFOC Sensorless: 200% / 0.5 Hz      PM Sensorless: 150% / 0 Hz IMFOC+PG: 200% / 0 Hz      PMFOC+PG: 200% / 0 Hz
	<b>V/F Curve</b>	4-point adjustable V/F curve and square curve
	<b>Speed Response Ability</b>	5Hz (vector control can reach up to 40Hz)
	<b>Torque Limit</b>	230V / 460V model: Heavy duty 180%, super heavy duty 220% of torque current ; 575V / 690V model: Maximum 200% of torque current
	<b>Torque Accuracy at TQC Mode</b>	TQC + PG : ±5% TQC Sensorless : ±15%
	<b>Max. Output Frequency (Hz)</b>	0.00~599.00Hz
	<b>Frequency Output Accuracy</b>	Digital command: ±0.01%, -10°C ~ +40°C, Analog command: ±0.1%, 25 ±10°C
	<b>Output Frequency Resolution</b>	Digital command: 0.01Hz, Analog command: 0.05 * max. output frequency (Parameter 01-00), 11 bit
Protection Characteristics	<b>Overload Capacity</b>	230V / 460V model: Heavy duty: 150% of rated current can endure for 1 minute during every 5 minutes ; 180% of rated current can endure for 3 seconds during every 30 seconds Super heavy duty: 150% of rated current can endure for 1 minute during every 5 minutes ; 200% of rated current can endure for 3 seconds during every 30 seconds  575V / 690V model: Light duty: 120% of rated current can endure for 1 minute Normal duty: 120% of rated current can endure for 1 minute, 150% can endure for 3 seconds Heavy duty: 150% of rated current can endure for 1 minute, 180% can endure for 3 seconds
	<b>Frequency Setting Signal</b>	+10V ~ -10V, 0 ~ +10V, 4 ~ 20mA, 0 ~ 20mA, pulse input
	<b>Accel./decel. Time</b>	0.00 ~ 600.00 / 0.0 ~ 6000.0 Seconds
	<b>Main Control Function</b>	Torque control, Speed/torque control switching, Feed forward control, Zero-servo control, Momentary power loss ride thru, Speed search, Over-torque detection, Torque Limit, 16-step speed (Max.), Accel/decel time switch, S-curve accel/decel, 3-wire sequence, Auto-Tuning (rotational, stationary), Dwell, Slip compensation, Torque compensation, JOG frequency, Fault restart, Frequency upper/lower limit settings, DC injection braking at start/stop, High slip braking, Parameter copy PID control (with sleep function), Energy saving control, MODOBUS communication (RS-485 RJ45, Max. 115.2 kbps)
	<b>Fan Control</b>	230V model: VFD150C2XX-XX and above: PMW control; VFD110C2XX-XX and below: on/off switch control 460V model: VFD185C4XX-XX and above: PMW control; VFD150C4XX-XX and below: on/off switch control 575V / 690V model: PWM control
	<b>Motor Protection</b>	Electronic thermal relay protection
	<b>Over-current Protection</b>	230V / 460V model: Over-current protection for 240% of rated current (Heavy duty); 250% of rated current (Super heavy duty) Current clamp (Heavy duty: around 190 ~ 195%); (Super Heavy duty: around 210 ~ 215%)  575V / 690V model (exclude 630kW): Over-current protection for 240% rated current (Normal duty) Current clamp (Light duty: around 125~145%); (Normal duty: around 170~175%); (Heavy duty: around 200% ~ 250%) 630 kW: Over-current protection for 240% rated current (Normal duty) Current clamp (Light duty / Normal duty / Heavy duty: around 170% ~ 175%)
	<b>Over-Voltage Protection</b>	The C2000 Series will shut down under below conditions: 230V: DC bus over 410V; 460V: DC bus over 820V; 575V / 690V: DC bus over 1189V
	<b>Over-Temperature Protection</b>	Built-in temperature sensor
	<b>Stall Prevention</b>	Stall prevention during acceleration, deceleration and running independently
	<b>Restart after Instantaneous Power Failure</b>	Parameter setting up to 20 seconds
	<b>Grounding Leakage Current Protection</b>	Leakage current is higher than 50% of rated current of the AC motor drive
	<b>Short-circuit Current Rating (SCCR)</b>	Per UL508C, the drive is suitable for use on a circuit capable of delivering not more than 100kA symmetrical amperes (rms) when protected by fuses given in the fuse table
<b>International Certifications</b>		   GB/T12668-2

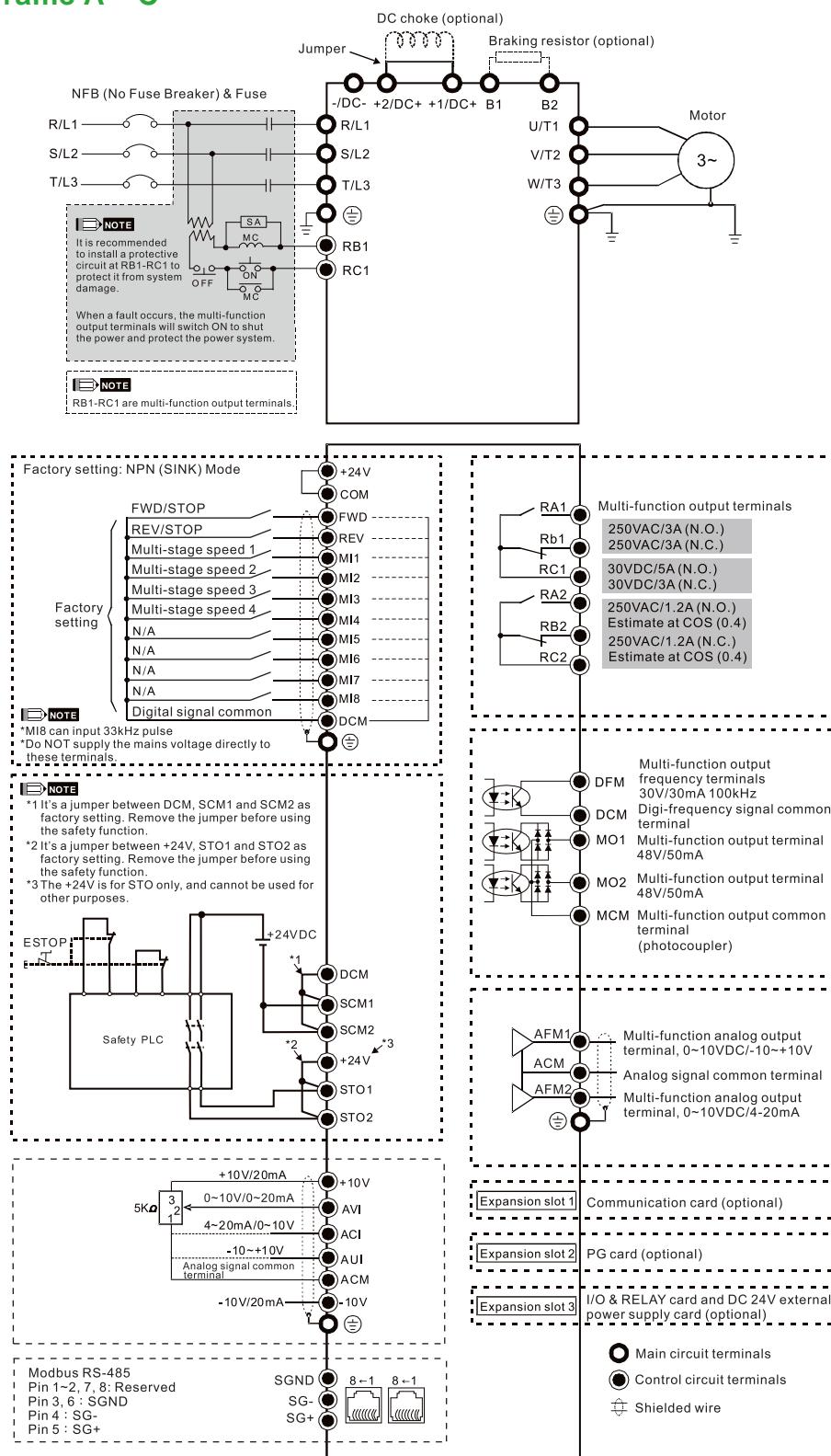
NOTES

- 1) The carrier frequency is default. Increasing the carrier frequency requires a reduction in current. please refer to manual Pr. 06-55 Derating Protection drawing.
- 2) UL Certification is not for model VFD4500C43x-xx, VFD5000C43x-xx, VFD5600C43x-x.
- 3) EAC Certification is for 230V and 460V models only.

# Wiring

## Wiring Diagram for Frame A ~ C

\*Input: 3-phase power

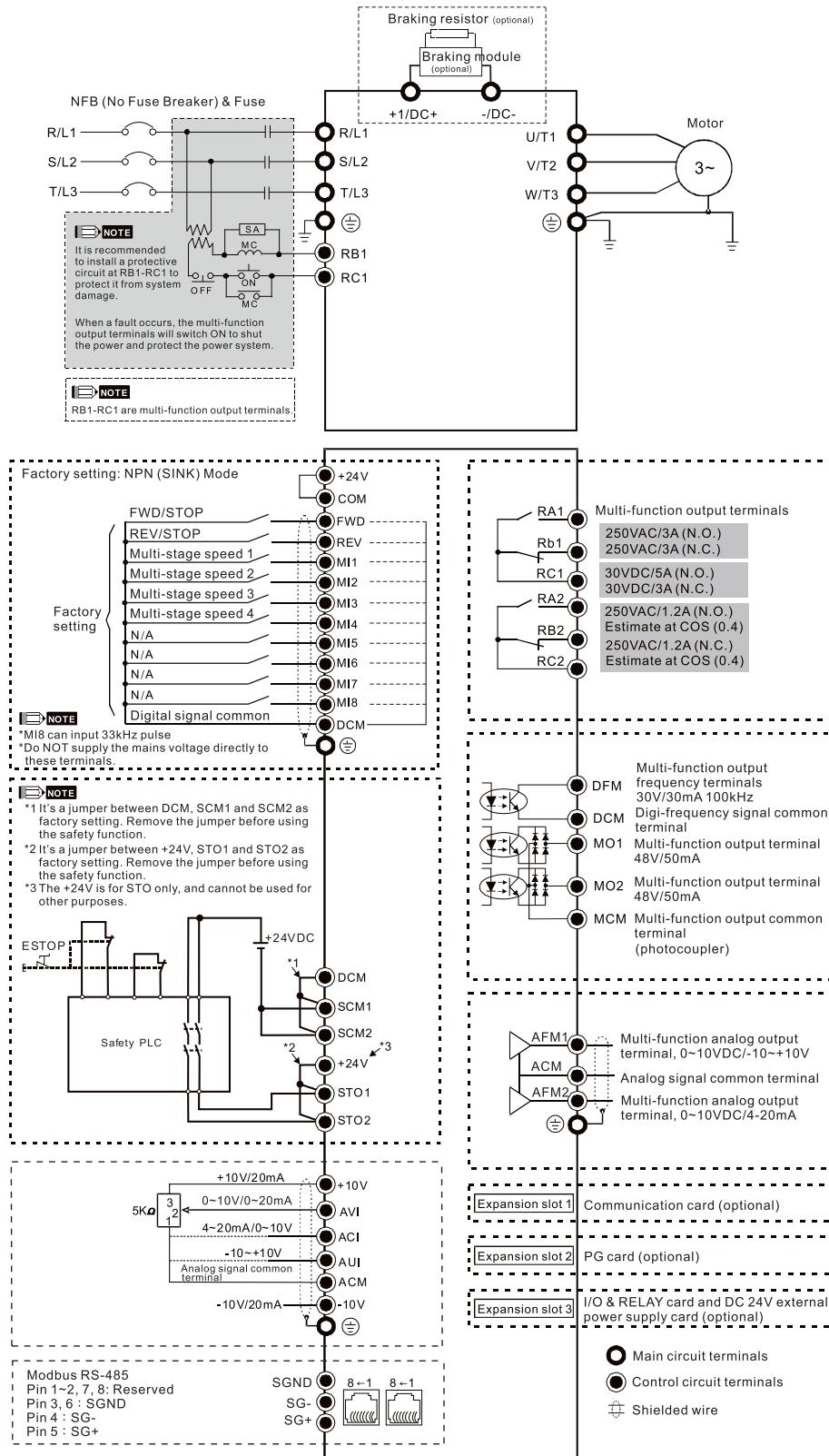


### NOTE

It is not recommended to use a power capacitor or automatic power factor regulator (APFR) at the power input side. If the system requires such a device, please make sure a reactor is installed between the drive and the power capacitor or APFR.

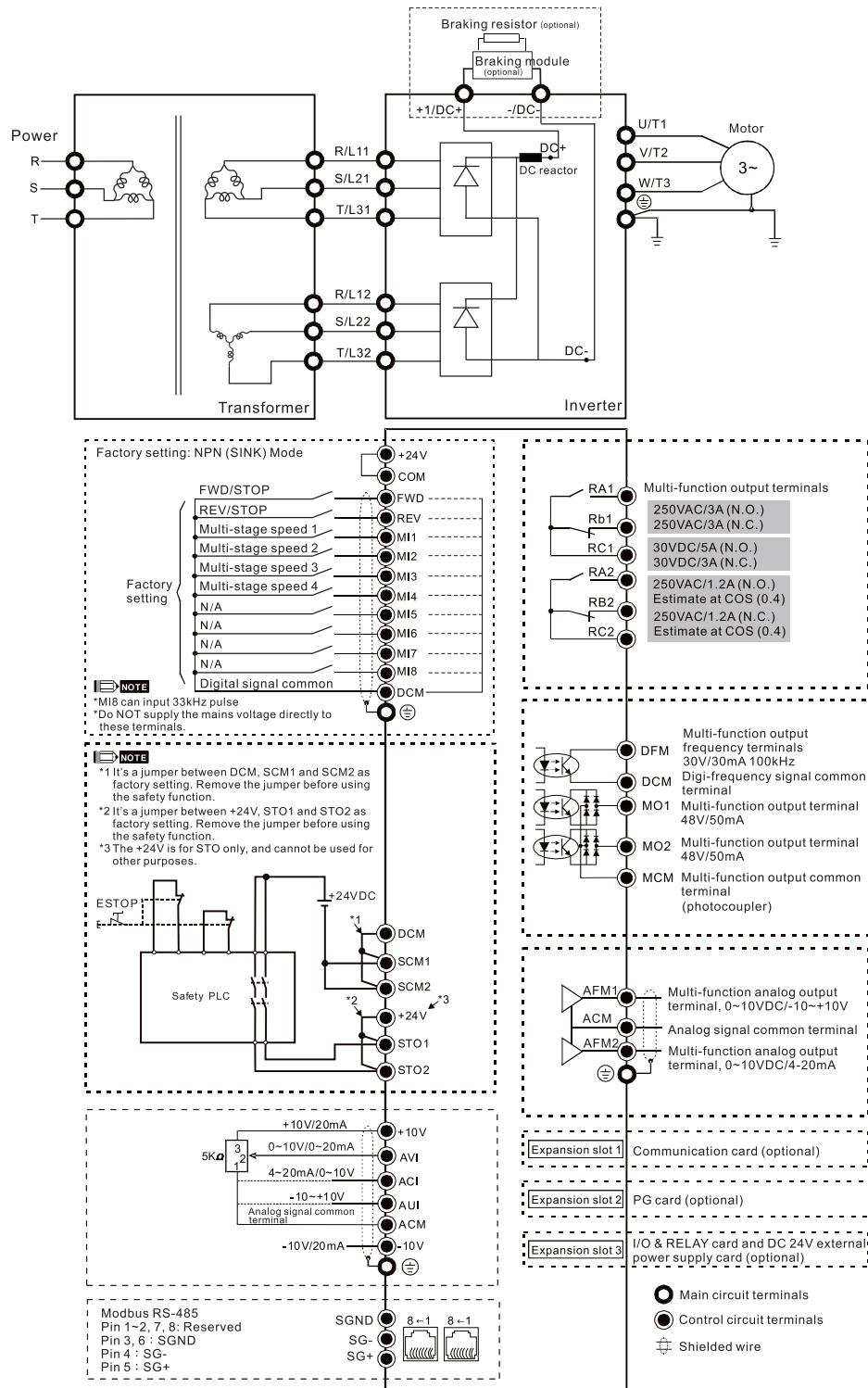
## Wiring Diagram for Frame D ~ F

\*Input: 3-phase power



## Wiring Diagram for Frame G ~ H

\*Input: 3-phase power

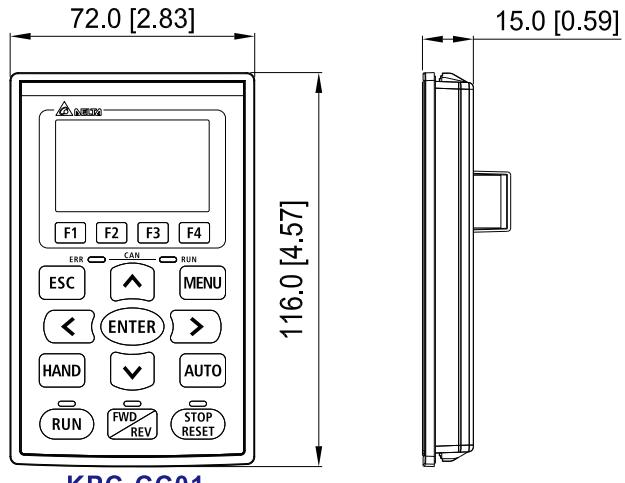


### NOTE

It is not recommended to use a power capacitor or automatic power factor regulator (APFR) at the power input side. If the system requires such a device, please make sure a reactor is installed between the drive and the power capacitor or APFR.

# Dimensions

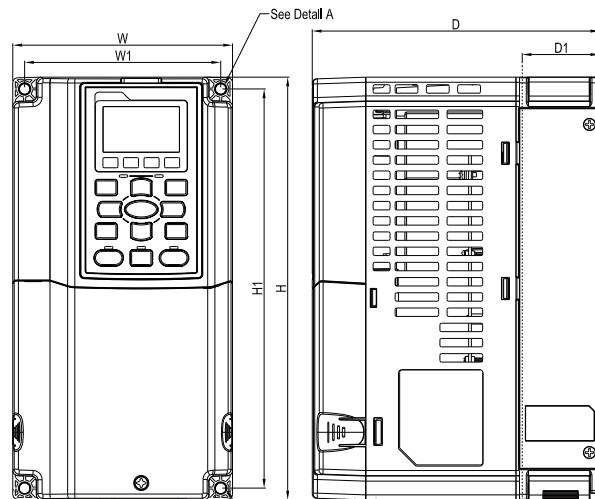
Digital Keypad    Unit: mm [inch]



**KPC-CC01**

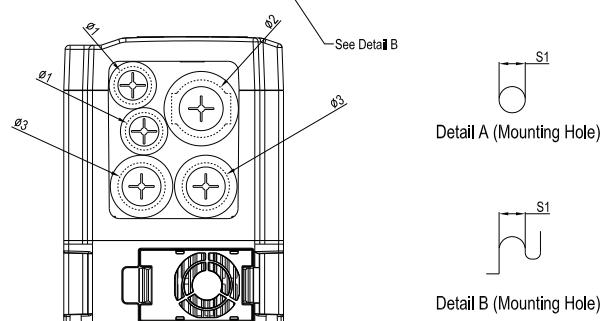
Standard LCD keypad

## Frame A



### MODEL

VFD007C23A-21	VFD007C4EA-21
VFD015C23A-21	VFD015C4EA-21
VFD022C23A-21	VFD022C4EA-21
VFD037C23A-21	VFD037C4EA-21
VFD007C43A-21	VFD040C4EA-21
VFD015C43A-21	VFD055C4EA-21
VFD022C43A-21	VFD015C53A-21
VFD037C43A-21	VFD022C53A-21
VFD040C43A-21	VFD037C53A-21
VFD055C43A-21	



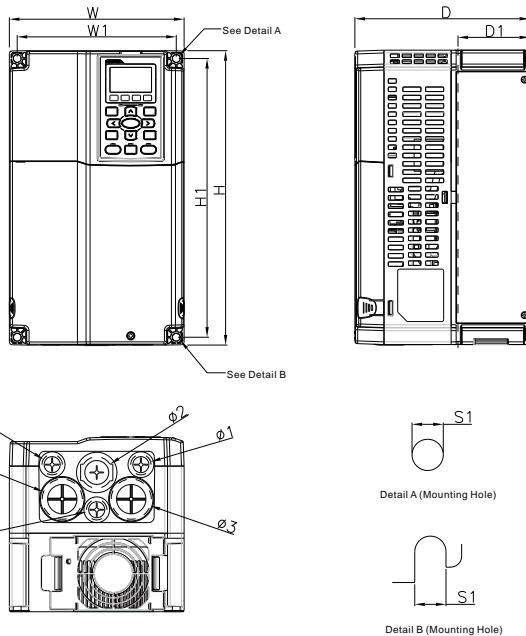
Frame	W	H	D	W1	H1	D1*	Ø	Ø1	Ø2	Ø3
A	mm	130.0	250.0	170.0	116.0	236.0	45.8	6.2	22.2	34.0
	inch	5.12	9.84	6.69	4.57	9.29	1.80	0.24	0.87	1.34

\*D1: Flange mount.

## Frame B

### MODEL

VFD055C23A-21	VFD055C53A-21
VFD075C23A-21	VFD075C53A-21
VFD110C23A-21	VFD110C53A-21
VFD075C43A-21	VFD150C53A-21
VFD110C43A-21	
VFD150C43A-21	
VFD075C4EA-21	
VFD110C4EA-21	
VFD150C4EA-21	



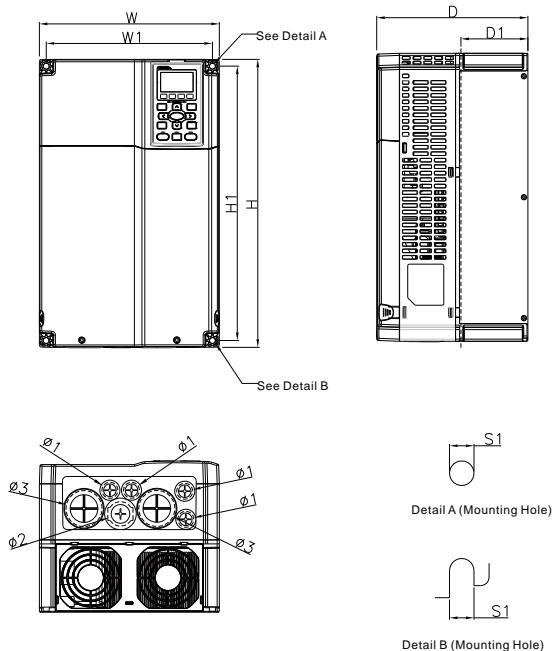
Frame	W	H	D	W1	H1	D1*	S1	Ø1	Ø2	Ø3
<b>B</b>	mm	190.0	320.0	190.0	173.0	303.0	77.9	8.5	22.2	34.0
	inch	7.48	12.60	7.48	6.81	11.93	3.07	0.33	0.87	1.34

\*D1: Flange mount.

## Frame C

### MODEL

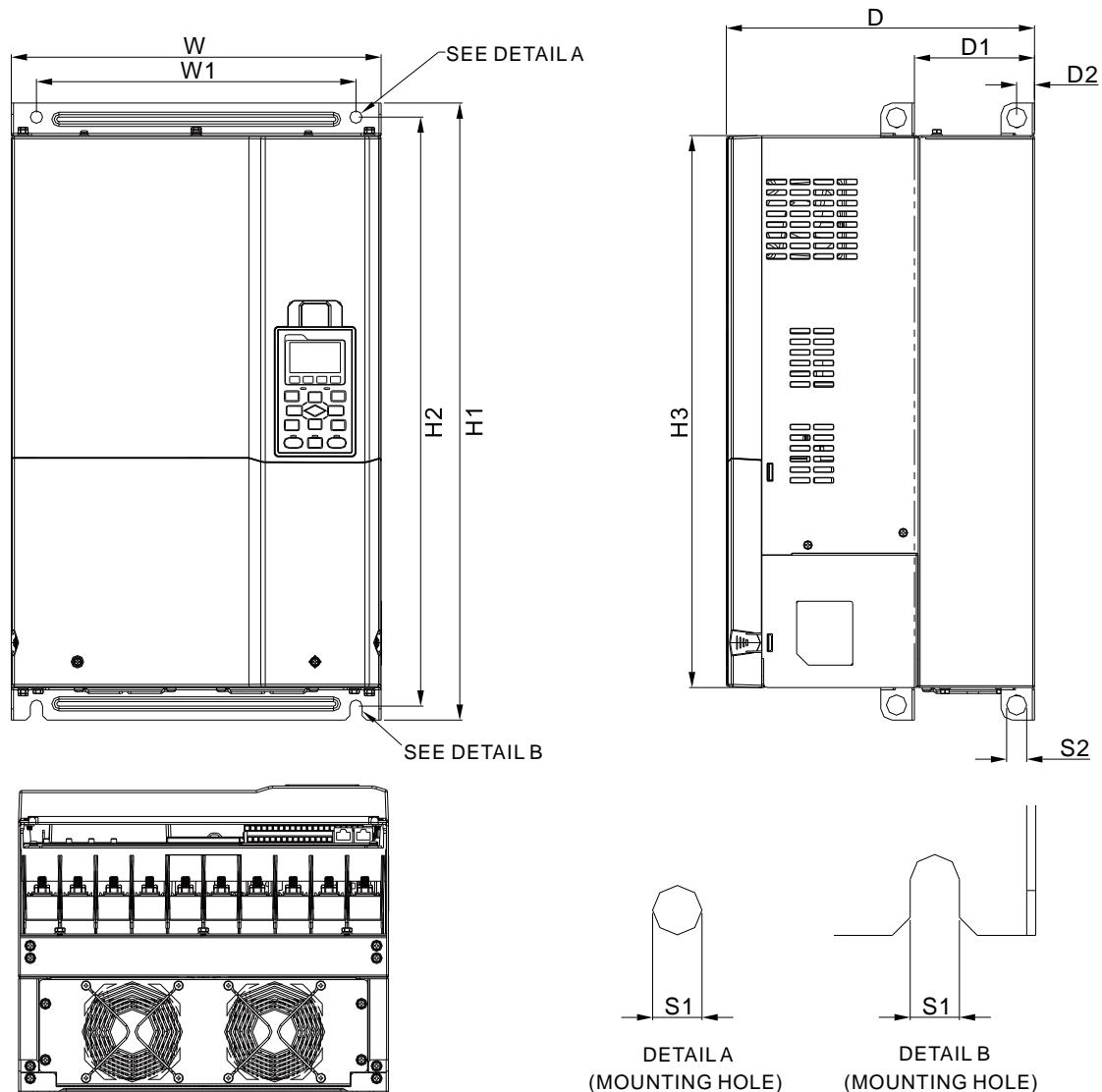
VFD150C23A-21	VFD185C63B-21
VFD185C23A-21	VFD220C63B-21
VFD220C23A-21	VFD300C63B-21
VFD185C43A-21	VFD370C63B-21
VFD220C43A-21	
VFD300C43A-21	
VFD185C4EA-21	
VFD220C4EA-21	
VFD300C4EA-21	



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

\*D1: Flange mount.

## Frame D

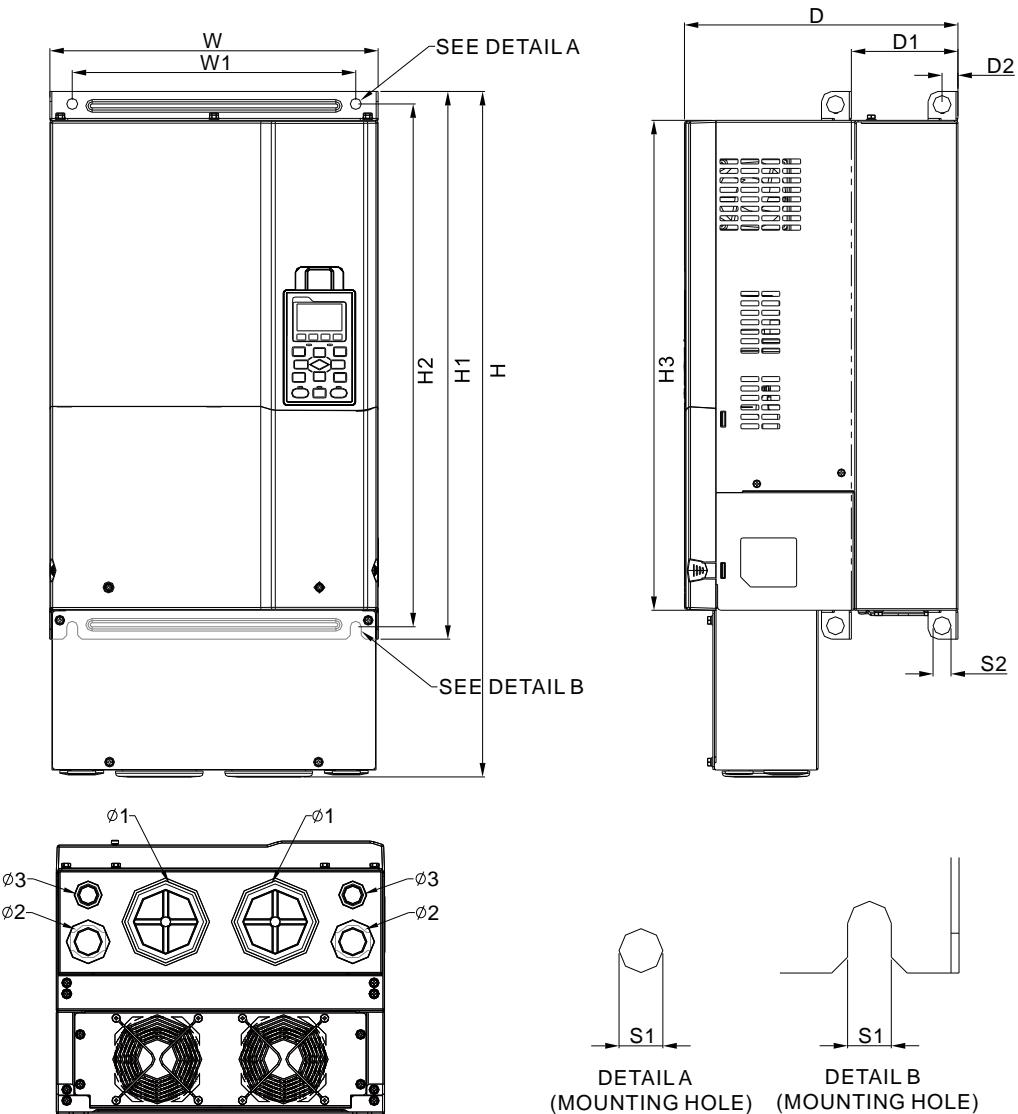


MODEL	FRAME_D1	FRAME_D0-1
VFD300C23A-00	VFD370C43S-00	
VFD370C23A-00	VFD450C43S-00	
VFD550C43A-00		
VFD750C43A-00		
VFD450C63B-00		
VFD550C63B-00		

Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3
<b>D1</b>	mm	330.0	-	275.0	285.0	550.0	525.0	492.0	107.2	16.0	11.0	18.0	-	-
	inch	12.99	-	10.83	11.22	21.65	20.67	19.37	4.22	0.63	0.43	0.71	-	-
Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2			
<b>D0-1</b>	mm	280.0	-	255.0	235.0	500.0	475.0	442.0	94.2	16.0	11.0	18.0		
	inch	11.02	-	10.04	9.25	19.69	18.70	17.40	3.71	0.63	0.43	0.71		

\*D1: Flange mount.

## Frame D

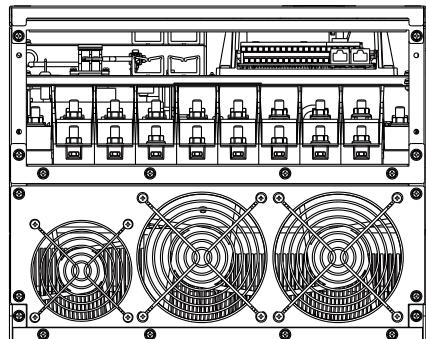
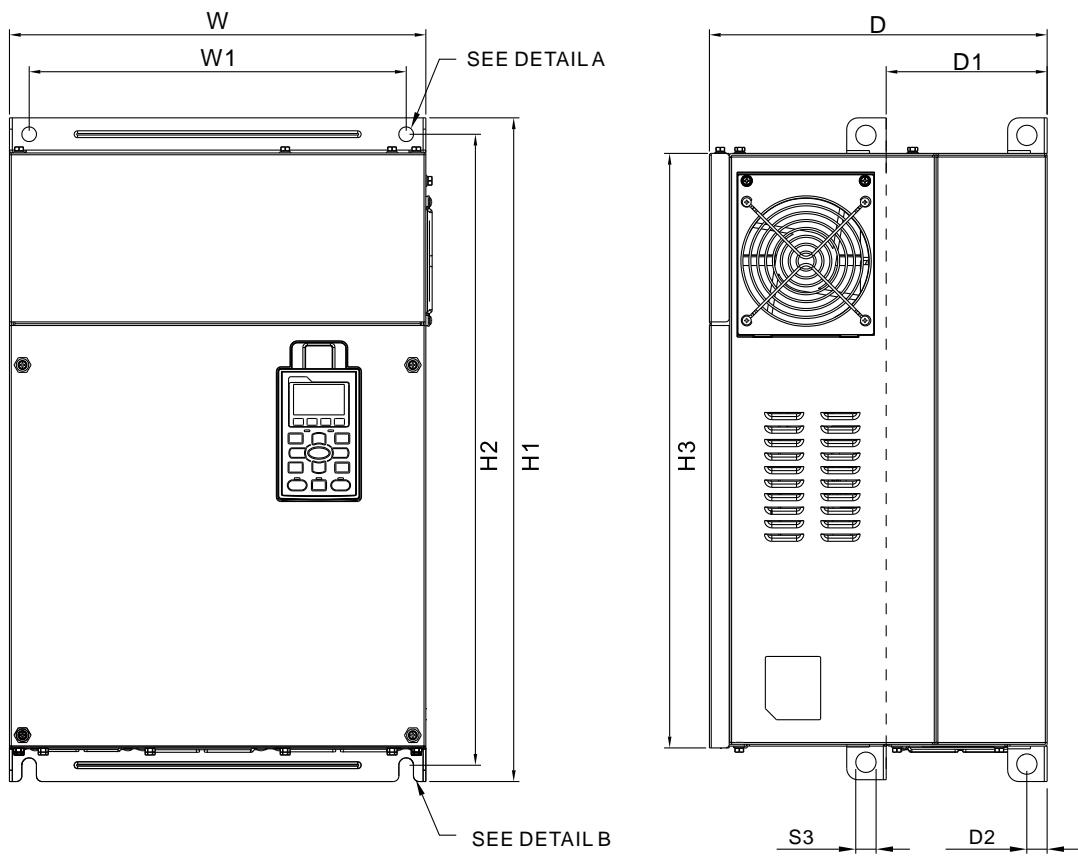


MODEL	FRAME_D2	FRAME_D0-2
VFD300C23A-21	VFD370C43S-21	
VFD370C23A-21	VFD450C43S-21	
VFD550C43A-21		
VFD750C43A-21		
VFD450C63B-21		
VFD550C63B-21		

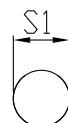
Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3
D2	mm	330.0	688.3	275.0	285.0	550.0	525.0	492.0	107.2	16.0	11.0	18.0	76.2	34.0
	inch	12.99	27.10	10.83	11.22	21.65	20.67	19.37	4.22	0.63	0.43	0.71	3.00	1.34
Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3
D0-2	mm	280.0	614.4	255.0	235.0	500.0	475.0	442.0	94.2	16.0	11.0	18.0	62.7	34.0
	inch	11.02	21.19	10.04	9.25	19.69	18.70	17.40	3.71	0.63	0.43	0.71	2.47	1.34

\*D1: Flange mount.

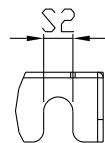
## Frame E1



Detail A (Mounting Hole)



Detail B (Mounting Hole)




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### MODEL FRAME\_E1

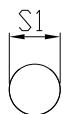
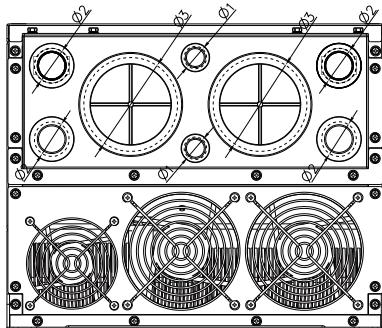
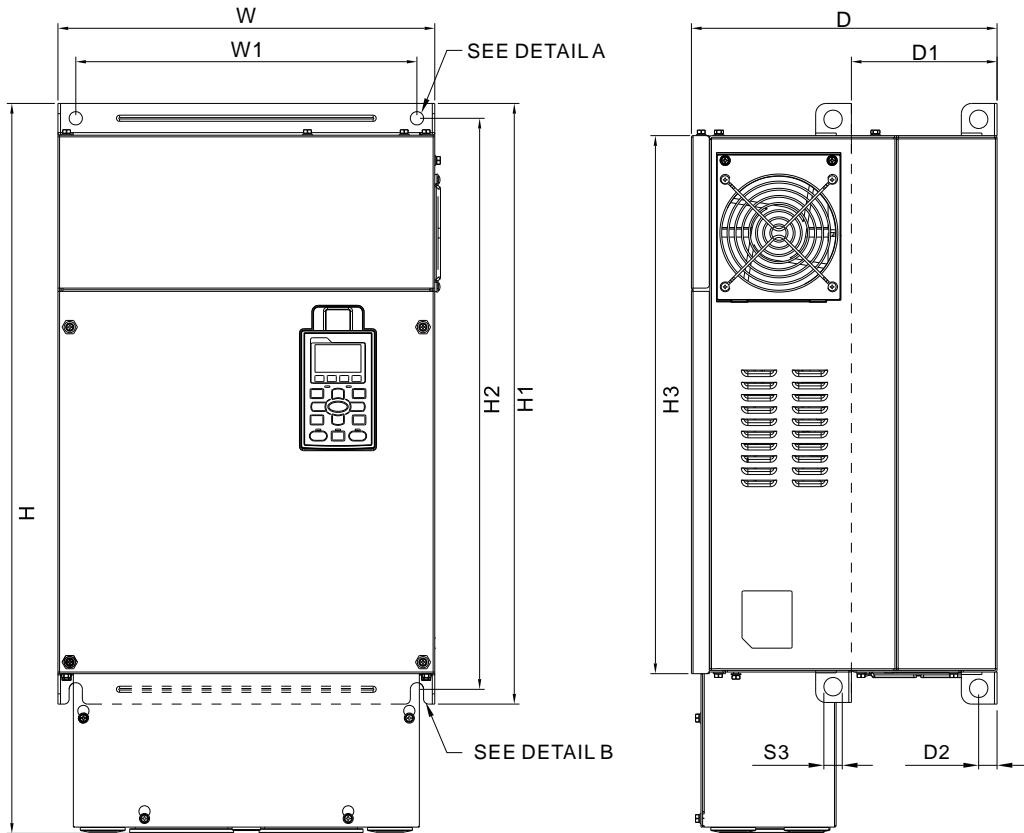
VFD450C23A-00	VFD750C63B-00
VFD550C23A-00	VFD900C63B-00
VFD750C23A-00	VFD1100C63B-00
VFD900C43A-00	VFD1320C63B-00
VFD1100C43A-00	

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Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
E1	mm	370.0	-	300.0	335.0	589.0	560.0	528.0	143.0	18.0	13.0	13.0	18.0	-	-
E1	inch	14.57	-	11.81	13.19	23.19	22.05	20.80	5.63	0.71	0.51	0.51	0.71	-	-

\*D1: Flange mount.

## Frame E2



Detail A (Mounting Hole)



Detail B (Mounting Hole)

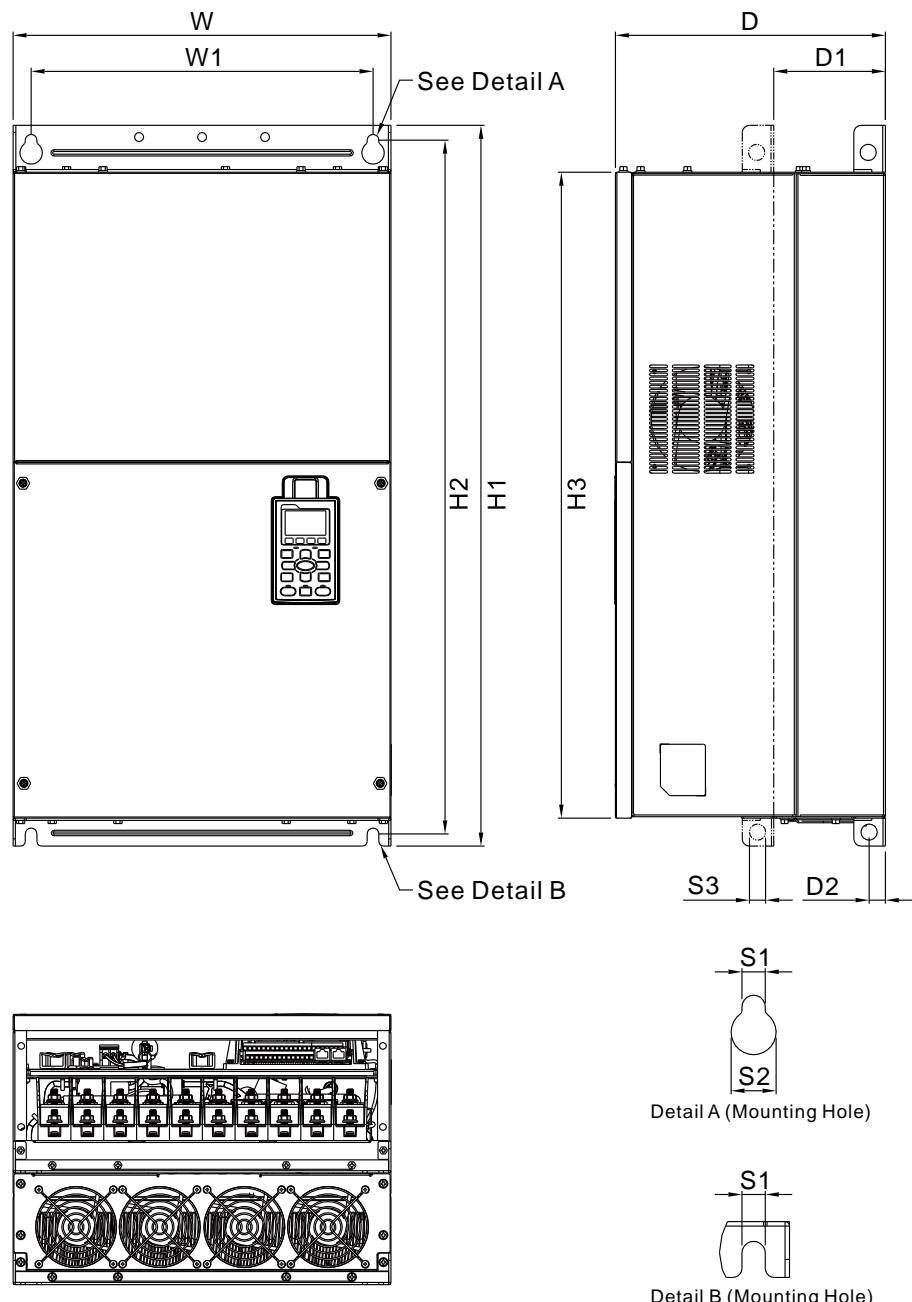
### MODEL FRAME\_E2

VFD450C23A-21	VFD750C63B-21
VFD550C23A-21	VFD900C63B-21
VFD750C23A-21	VFD1100C63B-21
VFD900C43A-21	VFD1320C63B-21
VFD1100C43A-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	589.0	560.0	528.0	143.0	18.0	13.0	13.0	18.0	22.0	34.0	92.0
	inch	14.57	28.18	11.81	13.19	23.19	22.05	20.80	5.63	0.71	0.51	0.51	0.71	0.87	1.34	3.62

\*D1: Flange mount.

## Frame F1



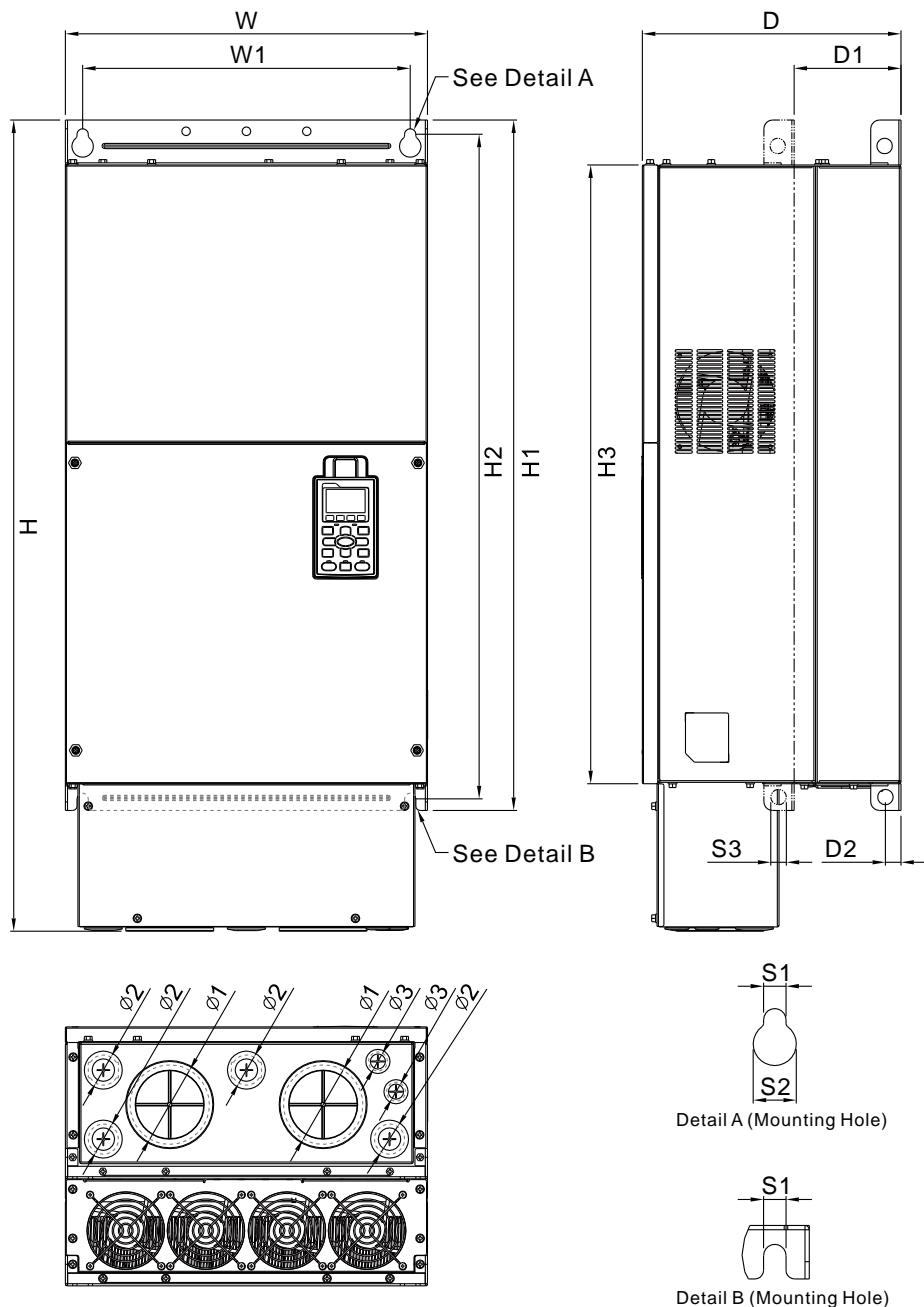
### MODEL FRAME\_F1

VFD900C23A-00  
VFD1320C43A-00  
VFD1600C43A-00  
VFD1600C63B-00  
VFD2000C63B-00

Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3	
F1	mm	420.0	-	300.0	380.0	800.0	770.0	717.0	124.0	18.0	13.0	25.0	18.0	92.0	35.0	22.0
	inch	16.54	-	11.81	14.96	31.50	30.32	28.23	4.88	0.71	0.51	0.98	0.71	3.62	1.38	0.87

\*D1: Flange mount.

## Frame F2




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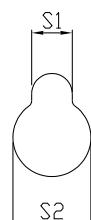
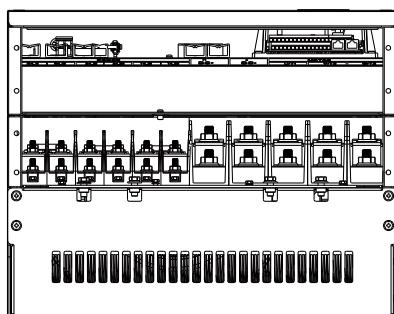
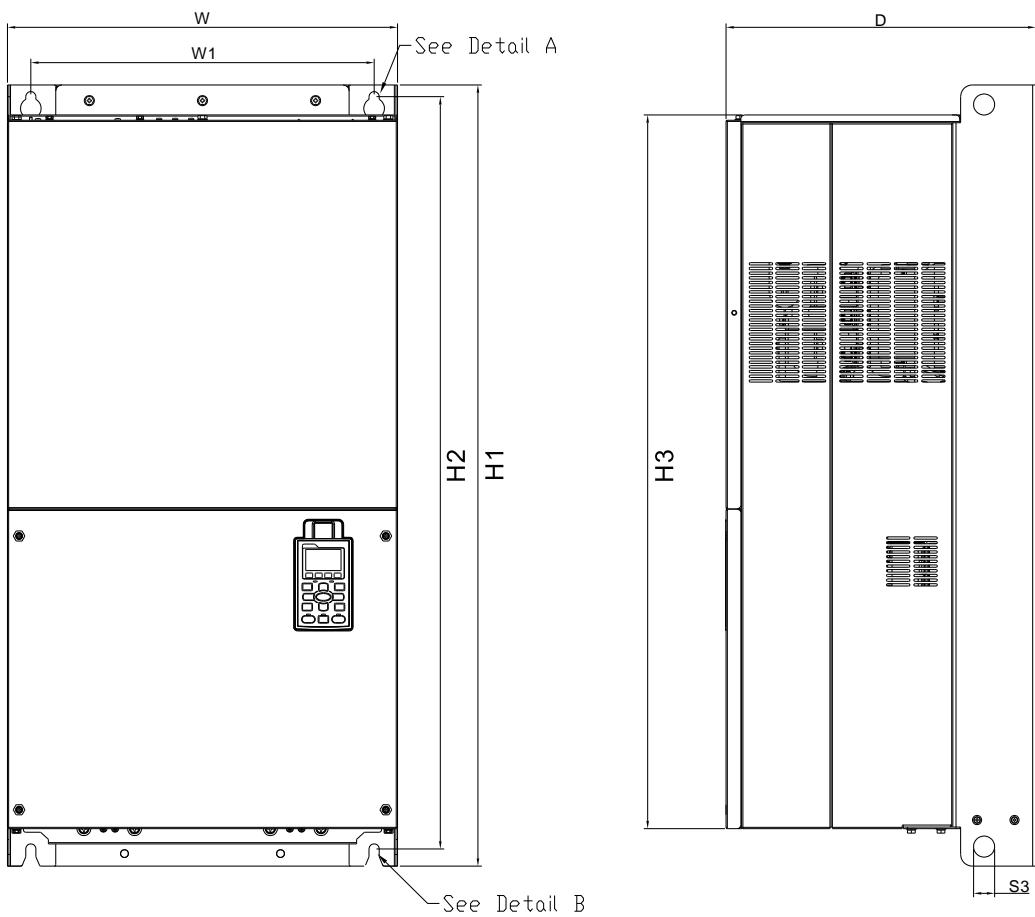
### MODEL FRAME\_F2

VFD900C23E-21  
VFD1320C43E-21  
VFD1600C43E-21  
VFD1600C63B-21  
VFD2000C63B-21

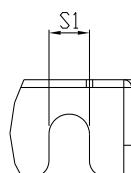
Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
F2	mm	420.0	940.0	300.0	380.0	800.0	770.0	717.0	124.0	18.0	13.0	25.0	18.0	92.0	35.0
	inch	16.54	37.00	11.81	14.96	31.50	30.32	28.23	4.88	0.71	0.51	0.98	0.71	3.62	1.38

\*D1: Flange mount.

## Frame G1



Detail A (Mounting Hole)



Detail B (Mounting Hole)

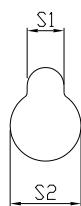
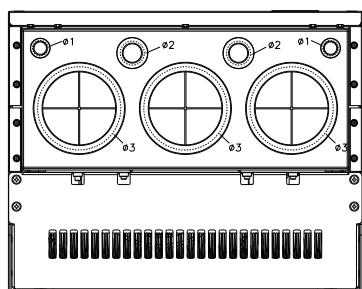
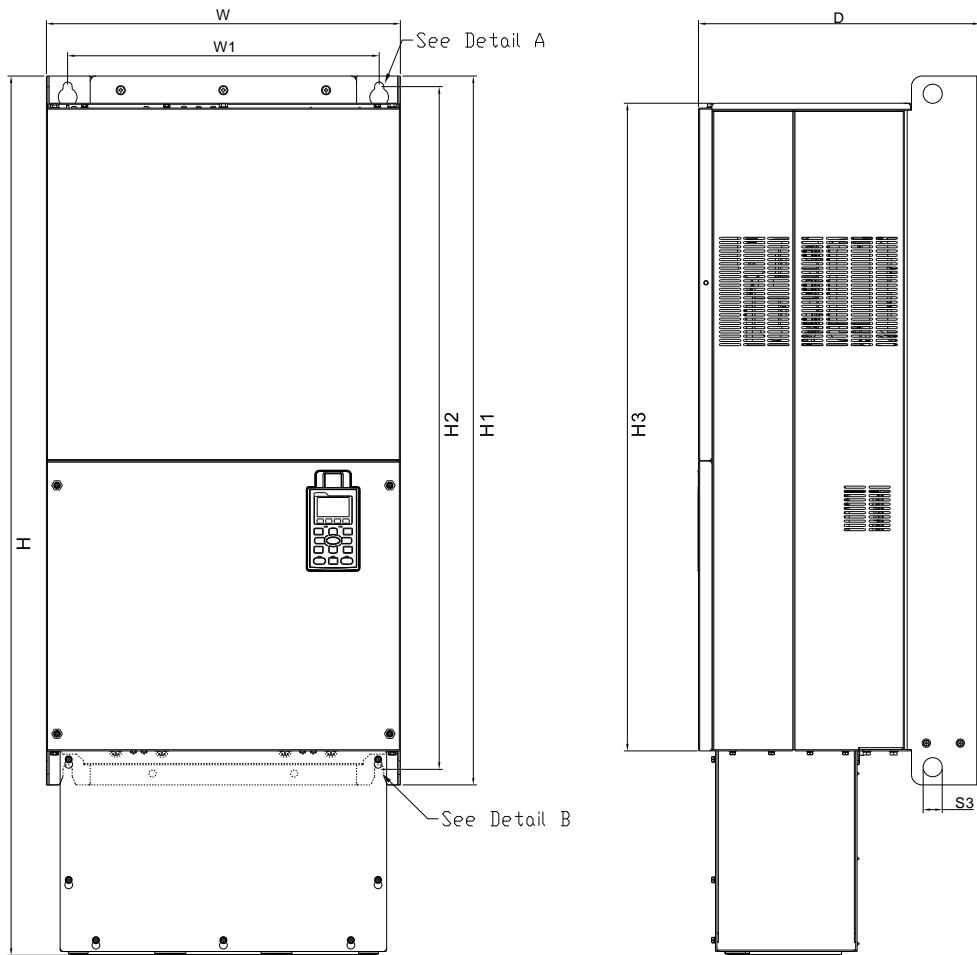
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### MODEL FRAME\_G1

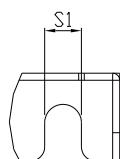
VFD1850C43A-00  
VFD2200C43A-00  
VFD2500C63B-00  
VFD3150C63B-00

Frame	W	H	D	W1	H1	H2	H3	S1	S2	S3	Ø1	Ø2	Ø3
G1	mm	500.0	-	397.0	440.0	1000.0	963.0	913.6	13.0	26.5	27.0	-	-
	inch	19.69	-	15.63	217.32	39.37	37.91	35.97	0.51	1.04	1.06	-	-

## Frame G2



Detail A (Mounting Hole)



Detail B (Mounting Hole)

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### MODEL FRAME\_G2

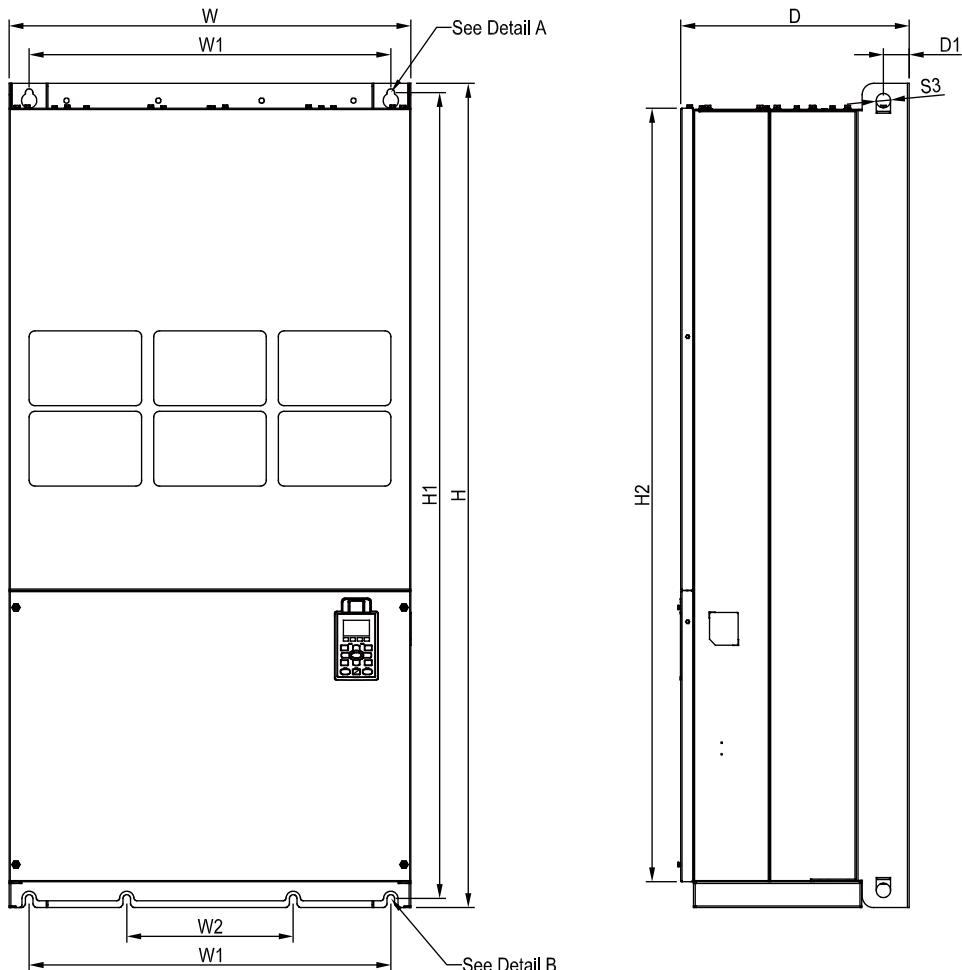
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VFD1850C43A-21  
VFD2200C43A-21  
VFD2500C63B-21  
VFD3150C63B-21

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Frame	W	H	D	W1	H1	H2	H3	S1	S2	S3	Ø1	Ø2	Ø3	
G2	mm	500.0	1240.2	397.0	440.0	1000.0	963.0	913.6	13.0	26.5	27.0	22.0	34.0	117.5
	inch	19.69	48.83	15.63	217.32	39.37	37.91	35.97	0.51	1.04	1.06	0.87	1.34	4.63

## Frame H1



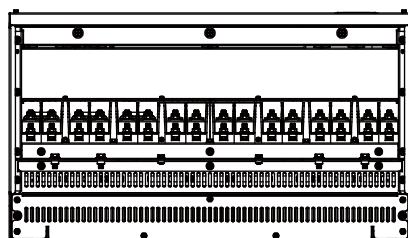

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### MODEL FRAME\_H1

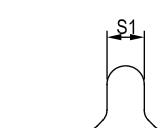
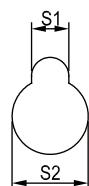
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VFD2800C43A-00  
VFD3150C43A-00  
VFD3550C43A-00  
VFD4500C43A-00  
VFD5000C43A-00  
VFD5600C43A-00

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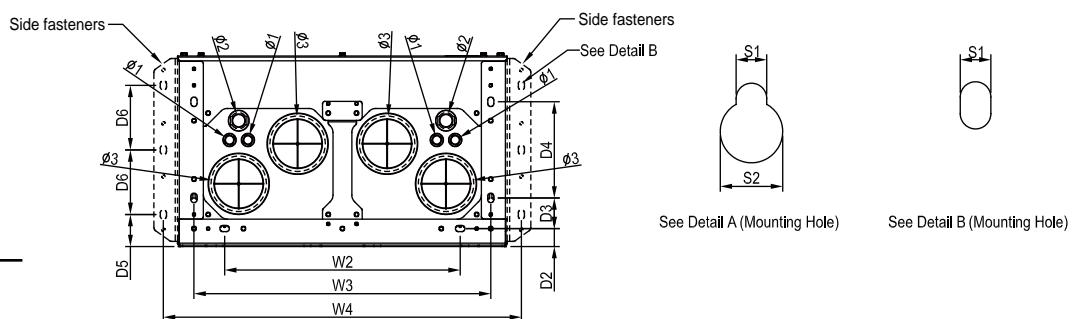
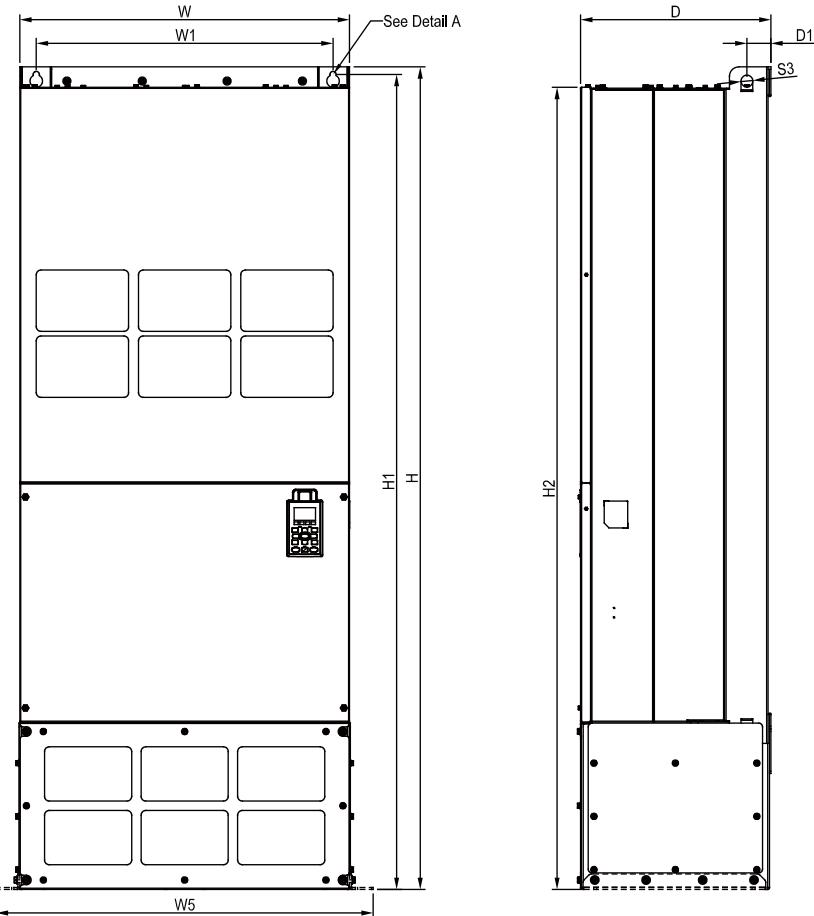
See Detail A (Mounting Hole)



See Detail B (Mounting Hole)

Frame		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H1	mm	700.0	1435.0	398.0	630.0	290.0	-	-	-	-	1403.0	1346.6	-	-
	inch	27.56	56.50	15.67	24.80	11.42	-	-	-	-	55.24	53.02	-	-
Frame		H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H1	mm	-	45.0	-	-	-	-	-	13.0	26.5	25.0	-	-	-
	inch	-	1.77	-	-	-	-	-	0.51	1.04	0.98	-	-	-

## Frame H2




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### MODEL FRAME\_H2

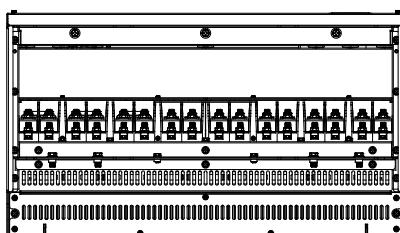
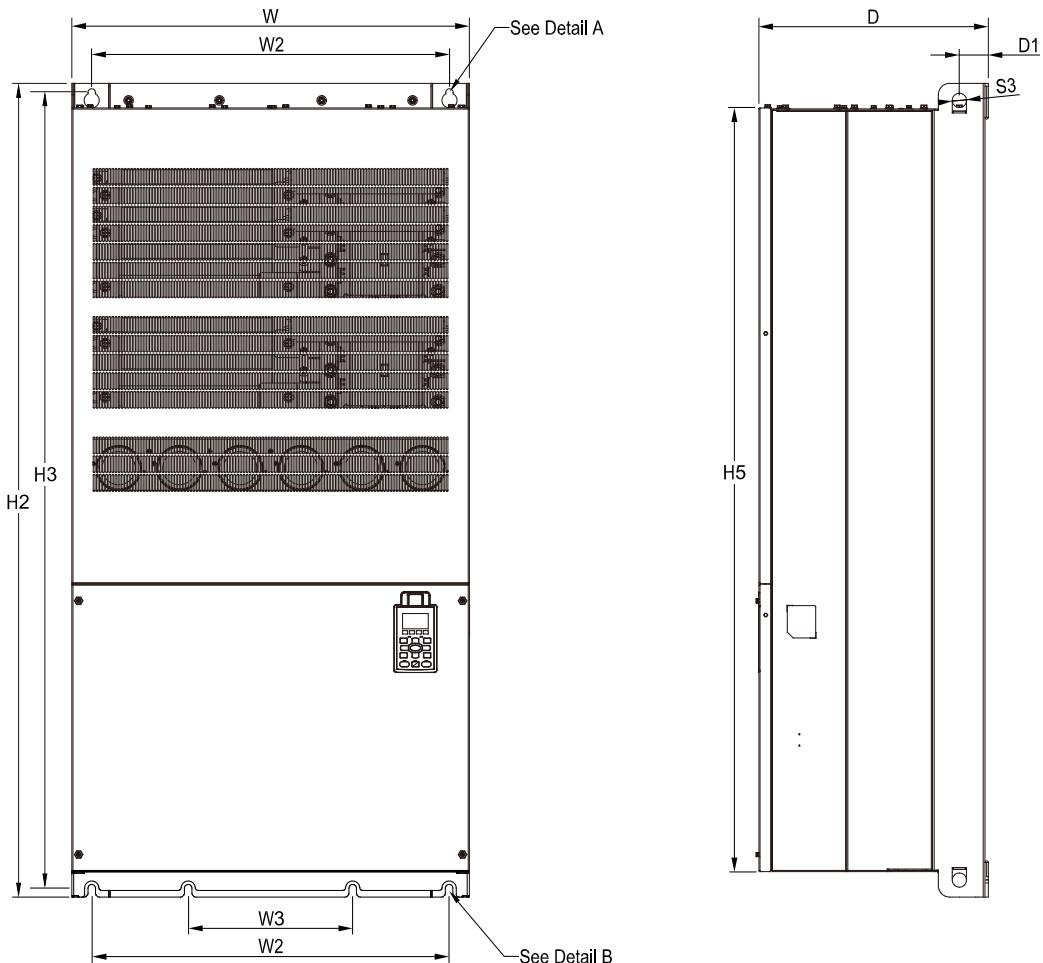
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VFD2800C43C-21  
VFD3150C43C-21  
VFD3550C43C-21  
VFD4500C43C-21  
VFD5000C43C-21  
VFD5600C43C-21

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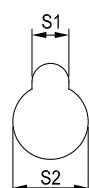
Frame		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H2	mm	700.0	1745.0	404.0	630.0	500.0	630.0	760.0	800.0	-	1729.0	1701.6	-	-
	inch	27.56	68.70	15.9	24.80	19.69	24.80	29.92	31.50	-	68.07	66.99	-	-
Frame		H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H2	mm	-	51.0	38.0	65.0	204.0	68.0	137.0	13.0	26.5	25.0	22.0	34.0	117.5
	inch	-	2.0	1.50	2.56	8.03	2.68	5.4	0.51	1.04	0.98	0.87	1.34	4.63

## 690V Frame H1



**MODEL**  
**690V FRAME\_H1**

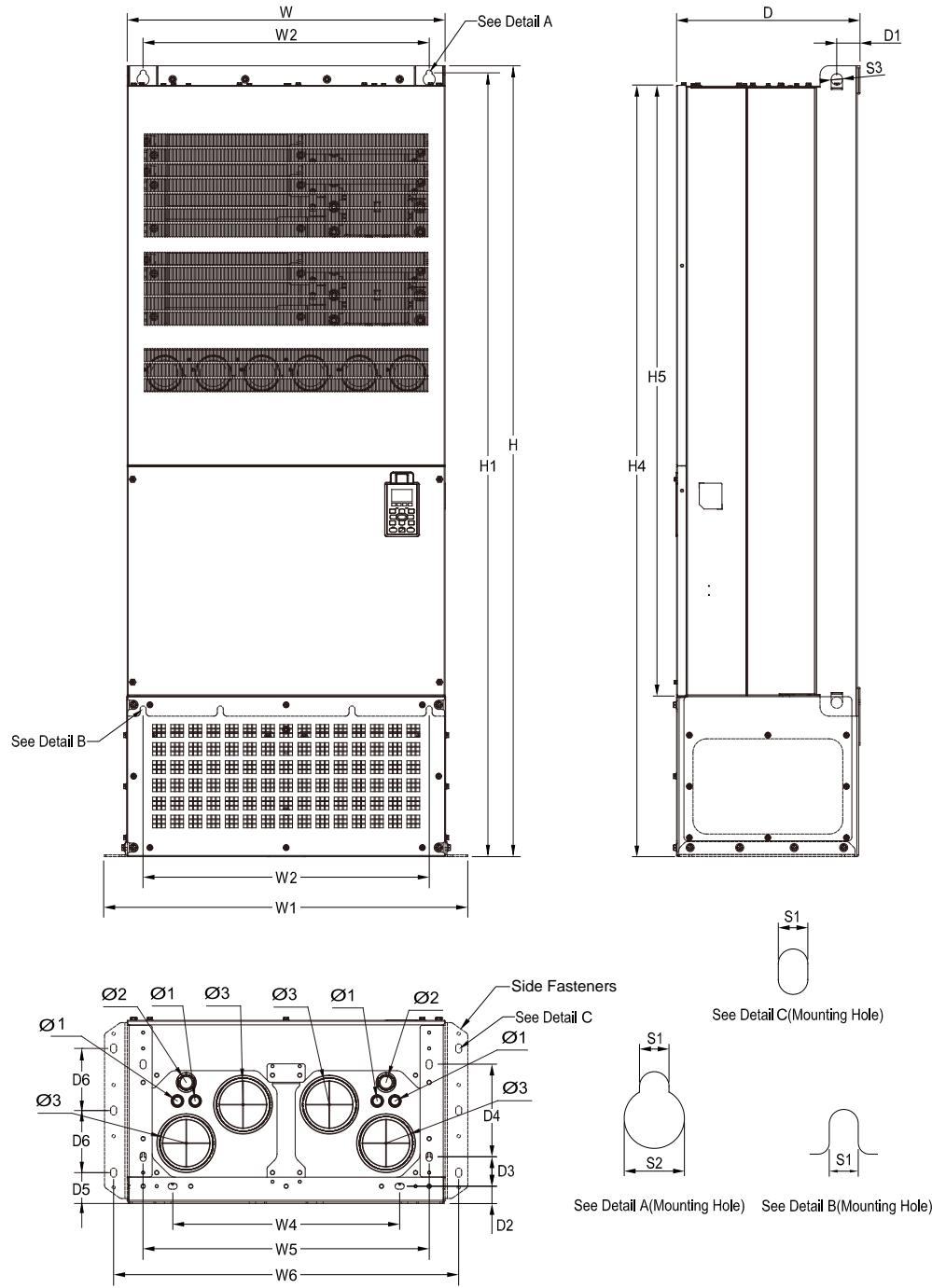
VFD4000C63B-00  
VFD4500C63B-00  
VFD5600C63B-00  
VFD6300C63B-00



See Detail A(Mounting Hole) See Detail B(Mounting Hole)

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	-	-	-

## 690V Frame H2



Frame		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
<b>H2</b>	mm	700.0	1745.0	404.0	800.0	630.0	-	500.0	630.0	760.0	1729.0	-	-	1701.6
	inch	27.56	68.70	15.91	31.50	24.80	-	19.69	24.80	29.92	68.07	-	-	66.99
Frame		H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
<b>H2</b>	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	117.5
	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	4.63

# Accessories

## PG Card

### ▪ EMC-PG01L / EMC-PG02L

Terminals		Description
 Set by Pr.10-00 ~ 10-02	PG1	<b>VP</b> Output voltage for power: +5V/+12V ± 5% (use FSW3 to switch +5V/+12V) Max. output current: 200mA
	DCM	Common for power and signal
	A1, /A1, B1, /B1, Z1, /Z1	Encoder input signal (Line Driver) Open collector input: +5 V / +24 V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG01L: 300KHz; EMC-PG02L: 30KHz
PG2	A2, /A2, B2, /B2	Pulse input signal (Line Driver or Open Collector) Open collector input: +5V/+24V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG01L: 300KHz; EMC-PG02L: 30KHz
PG OUT	AO, /AO, BO, /BO, ZO, /ZO, SG	PG card output signals. Division frequency function: 1 ~ 255 times Max. output voltage for Line driver: 5 V <sub>dc</sub> Max. output current: 15 mA Max. output frequency: EMC-PG01L: 300KHz; EMC-PG02L: 30KHz SG: The GND of PG card is the same as the host controller or PLC, so a common output signal is attained.

## PG Card

### ▪ EMC-PG01O / EMC-PG02O

Terminals		Description
 Set by Pr.10-00 ~ 10-02	PG1	<b>VP</b> Output voltage for power: +5V/+12V ± 5% (use FSW3 to switch +5V/+12V) Max. output current: 200mA
	DCM	Common for power and signal
	A1, /A1 , B1, /B1, Z1, /Z1	Encoder input signal (Line Driver or Open Collector) Open collector input: +5V/+24V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG01O: 300KHz; EMC-PG02O: 30KHz
PG2	A2, /A2, B2, /B2	Pulse input signal (Line Driver or Open Collector) Open collector input: +5V/+24V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG01O: 300KHz; EMC-PG02O: 30KHz
PG OUT	V+, /V-	Needs external power source for PG OUT circuit. Input voltage of power: +12V ~ +24V
	V-	Negative power supply input
	A/O, B/O, Z / O	PG card output signals. Division frequency function: 1 ~ 255 times Add a pull-up resistor to the open collector output signals to avoid signal interferences. [Three pull-up resistors are included in the package (1.8 KΩ / 1 W)] Max. Output current: 20 mA Max output frequency: EMC-PG01O: 300KHz; EMC-PG02O: 30KHz

## PG Card

### ▪ EMC-PG01R

Terminals		Description
 Set by Pr.10-00 ~ 10-02	PG1	<b>R1- R2</b> Resolver output power 7 Vrms, 10kHz
	S1,S2, S3, S4	Resolver input signal 3.5 ± 0.175 Vrms, 10kHz
PG OUT	PG2	<b>A2, /A2, B2, /B2</b> Pulse input signal (Line Driver or Open Collector) Open collector input: +5V/+24V (Note1) 1-phase or 2-phase input; Max. input frequency: 300KHz
	AO, /AO, BO, /BO, ZO, /ZO, SG	PG card output signals. Division frequency function: 1 ~ 255 times Max. output voltage for Line driver: 5 V <sub>dc</sub> Max. output current: 15 mA Max. output frequency: 300KHz SG: The GND of PG card is the same as the host controller or PLC, so a common output signal is attained.

## PG Card

▪ EMC-PG01U / EMC-PG02U

FJMP1 **S**: Standard UVW Output Encoder; **D**: Delta Encoder

Terminals		Description
PG1	VP	Output voltage for power: +5V/+12V ± 5% (use FSW3 to switch +5V/+12V) Max. output current: 200mA
	DCM	Common for power and signal
	A1, /A1, B1, /B1, Z1, /Z1	Encoder input signal (Line Driver) 1-phase or 2-phase input. Max. input frequency: 300 KHz
	U1, /U1, V1, /V1, W1, /W1	Encoder input signal
PG2	A2, /A2, B2, /B2	Pulse input signal Open collector input: +5V/+24V (Note1) 1-phase or 2-phase input; Max. input frequency: 300KHZ
PG OUT	AO, /AO, BO, /BO, ZO, /ZO, SG	PG card output signals. Division frequency function: 1 ~ 255 times Max. output voltage for Line driver: 5V <sub>DC</sub> Max. output current: 15 mA Max. output frequency: 300 KHz SG: The GND of PG card is the same as the host controller or PLC, so a common output signal is attained.

## PG Card

▪ EMC-PG01H 

Terminals		Description
PG1	VP	Output voltage for power: +5V/+8V ± 5% (use FSW1 to switch +5V/+8V) Max. output current: 200mA
	DCM	Common for power and signal
	A+, A-, B+, B-, R+, R-	Encoder Incremental differential signal input terminals Max. input frequency : 600kHz
	C+, C-, D+, D-	Encoder Absolute differential signal input terminals
PG2	A2, /A2, B2, /B2	Pulse-train signal input terminals (Line Driver or Open Collector) Open collector input: +5V~+24V(Note1) 1-phase or 2-phase input; Max. input frequency: 300KHZ
PG OUT	AO, /AO, BO, /BO, ZO, /ZO, SG	PG card output signals terminals. Division frequency function: 1 ~ 255 times Max. output voltage for Line driver: 5 VDC Max. output current: 15 mA Max. output frequency: 600 KHz ± 5% SG: The GND of PG card is the same as the host controller or PLC, so a common output signal is attained.

Note 1: For the Open Collector, set input voltage to 5 ~ 15mA and install a pull-up resistor

[5 V] Recommend pull-up resistor: 100 ~ 220 Ω, 1/2 W and above

[12 V] Recommend pull-up resistor: 510 ~ 1.35 KΩ, 1/2 W and above

[24 V] Recommend pull-up resistor: 1.8K ~ 3.3 KΩ, 1/2 W and above

## Relay Extension Card

### ▪ EMC-R6AA

Terminals	Descriptions
 RA10~RA15 RC10~RC15	<p>Refer to Pr. 02-36~Pr. 02-41 for multi-function output selection            Resistive load:            3A (N.O.)/250V<sub>AC</sub>            5A (N.O.)/30V<sub>DC</sub>            Inductive load (COS 0.4)            1.2A (N.O.)/250V<sub>AC</sub>            2.0A (N.O.)/30V<sub>DC</sub></p> <p>It is used to output each monitor signal, such as for drive in operation, frequency attained or overload indication.</p>

## Analog I/O Extension Card

### ▪ EMC-A22A

Terminals	Description
 AVI10 AVI11	<p>Refer to Pr. 14-00~Pr. 14-01 for function selection (input), and Pr. 14-18~Pr. 14-19 for mode selection            Two sets of AVI port for AVI or ACI switch: SSW3 (AVI10) and SSW4 (AVI11)            AVI: Input 0~10V            ACI: Input 0~20mA/4~20mA</p>
 AFM10 AFM11	<p>Refer to Pr. 14-12~Pr. 14-13 for function selection (output), and Pr. 14-36~Pr. 14-37 for mode selection            Two sets of AFM port for AVO or ACO switch: SSW1 (AFM10) and SSW2 (AFM11)            AVO: Output 0~10V            ACO: Output 0~20.0mA/4.0~20.0mA</p>
 ACM	Analog signal common terminal

## I/O Extension Card

### ▪ EMC-D611A

Terminals	Descriptions
 AC	AC power common for multi-function input terminal (Neutral)
 MI10~MI15	<p>Refer to Pr. 02-26~Pr. 02-31 for multi-function input selection            Input voltage: 100~130V<sub>AC</sub>; Input frequency: 57~63Hz            Input impedance: 27KΩ            Terminal response time: ON: 10ms; OFF: 20ms</p>

## I/O Extension Card

### ▪ EMC-D42A

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

## 24V Power Shift Card

### ▪ EMC-BPS01

Terminals	Descriptions
 <b>24V GND</b>	<p>Allows operation of network system, PLC function and partial functions when the AC motor drive is power off</p> <p>Input power: 24 VDC ± 5%</p> <p>Maximum input current: 0.5A</p> <p>Note: Do not connect the control terminal +24 V (Digital control signal common: SOURCE) directly to the EMC-BPS01 input terminal 24V. Do not connect control terminal GND directly to the EMC-BPS01 input terminal GND.</p>

## CANopen Card

### ▪ EMC-COP01

	 8~1 Male	 8~1 Female	RJ-45 Pin	Pin name	Definition
			1	<b>CAN_H</b>	CAN_H bus line (dominant high)
			2	<b>CAN_L</b>	CAN_L bus line (dominant low)
			3	<b>CAN_GND</b>	Ground/0V/V-
			6	<b>CAN_GND</b>	Ground/0V/V-

## EtherCAT Card

### ▪ CMC-EC01 NEW

#### Features



- ▶ Supports EthernetCAT protocol
- ▶ Supports standard CiA402 speed mode
- ▶ Supports SDO (Service Data Objects) function:
  - To write motor drive parameters
  - To read motor drive information
- ▶ Auto shutdown function for interruptions during data transmission

## Network Interface

Interface	RJ-45	Transmission speed	100 Mbps
Number of ports	2 Ports	Network protocol	EtherCAT
Transmission method	IEEE 802.3, IEEE 802.3u		
Transmission cable	Category 5e shielding 100M		

## PROFINET Card

### ▪ CMC-PN01 NEW



#### Features

- ▶ Supports PROFINET IO device
- ▶ Supports synchronous data transmission and synchronous parameter access
- ▶ Provides GSDML file for PROFINET communication

#### Network Interface

<b>Interface</b>	RJ-45	<b>Transmission Cable</b>	Category 5e shielding 100M
<b>Number of Ports</b>	2 Ports	<b>Transmission Speed</b>	10/100 Mbps auto-negotiate
<b>Transmission Method</b>	IEEE 802.3	<b>Network Protocol</b>	PROFINET

## PROFIBUS DP Card

### ▪ CMC-PD01



#### Features

- ▶ Supports PZD control data exchange
- ▶ Supports PKW polling AC motor drive parameters
- ▶ Supports user diagnosis function
- ▶ Supports remote I/O function
- ▶ Baud (auto-detection): max. 12Mbps

#### PROFIBUS DP Connector

#### Communication

<b>Interface</b>	DB9 connector	<b>Message Type</b>	Cyclic data exchange
<b>Transmission Method</b>	High-speed RS-485	<b>Module Name</b>	CMC-PD01
<b>Transmission Cable</b>	Shielded twisted pair cable	<b>GSD Document</b>	DELA08DB.GSD
<b>Electrical Isolation</b>	500 V <sub>DC</sub>	<b>Company ID</b>	08DB (HEX)
		<b>Serial Transmission Speed Supported (auto-detection)</b>	9.6 Kbps; 19.2 Kbps; 93.75 Kbps; 187.5 Kbps; 125 Kbps; 250 Kbps; 500 Kbps; 1.5 Mbps; 3 Mbps; 6 Mbps; 12 Mbps (bits per second)

## EtherNet/IP, Modbus TCP Card

### ▪ CMC-EIP01

#### Features

- ▶ Support EtherNet/IP and MODBUS TCP protocol
- ▶ User-defined parameter mapping
- ▶ IP Filter, basic firewall function



#### Network Interface

<b>Interface</b>	RJ-45 with Auto MDI/MDIX	<b>Transmission Cable</b>	Category 5e shielding 100 M
<b>Number of Ports</b>	1 Port	<b>Transmission Speed</b>	10/100 Mbps Auto-Detect
<b>Transmission Method</b>	IEEE 802.3, IEEE 802.3u	<b>Network Protocol</b>	ICMP, IP, TCP, UDP, DHCP, BOOTP, SMTP, EtherNet/IP, Modbus TCP

## DeviceNet Card

### ▪ CMC-DN01



#### Features

- ▶ Based on the high-speed communication interface of Delta HSSP protocol, able to conduct immediate control of an AC motor drive
- ▶ Supports Group 2 only connection and polling I/O data exchange
- ▶ Supports max. 32 words input / 32 words output and remote I/O function for I/O mapping
- ▶ Node address and serial transmission speed can be set up on AC motor drive
- ▶ Power supplied from AC motor drive

#### DeviceNet Connector

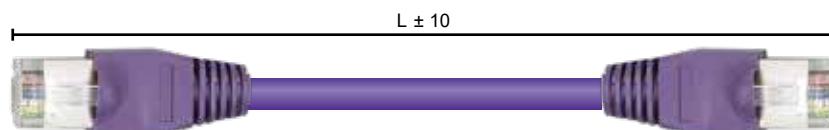
Interface	5-Pin 5.08mm Pluggable Connector
Transmission Method	CAN
Transmission Cable	Shielded twisted pair cable (with 2 power cables)
Transmission Speed	125 Kbps, 250 Kbps, 500 Kbps and extendable serial transmission speed mode
Network Protocol	DeviceNet protocol

#### DeviceNet Connector

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

## Delta Standard Fieldbus Cables

Delta Cables	Part Number	Description	Length
CANopen Cable	UC-CMC003-01A	CANopen cable, RJ45 connector	0.3m
	UC-CMC005-01A	CANopen cable, RJ45 connector	0.5m
	UC-CMC010-01A	CANopen cable, RJ45 connector	1m
	UC-CMC015-01A	CANopen cable, RJ45 connector	1.5m
	UC-CMC020-01A	CANopen cable, RJ45 connector	2m
	UC-CMC030-01A	CANopen cable, RJ45 connector	3m
	UC-CMC050-01A	CANopen cable, RJ45 connector	5m
	UC-CMC100-01A	CANopen cable, RJ45 connector	10m
	UC-CMC200-01A	CANopen cable, RJ45 connector	20m
DeviceNet Cable	UC-DN01Z-01A	DeviceNet cable	305 m
	UC-DN01Z-02A	DeviceNet cable	305 m
EtherNet Cable	UC-EMC003-02A	EtherNet cable, Shielding	0.3m
	UC-EMC005-02A	EtherNet cable, Shielding	0.5m
	UC-EMC010-02A	EtherNet cable, Shielding	1m
	UC-EMC020-02A	EtherNet cable, Shielding	2m
	UC-EMC050-02A	EtherNet cable, Shielding	5m
	UC-EMC100-02A	EtherNet cable, Shielding	10m
	UC-EMC200-02A	EtherNet cable, Shielding	20m
PROFIBUS Cable	UC-PF01Z-01A	PROFIBUS DP cable	305 m



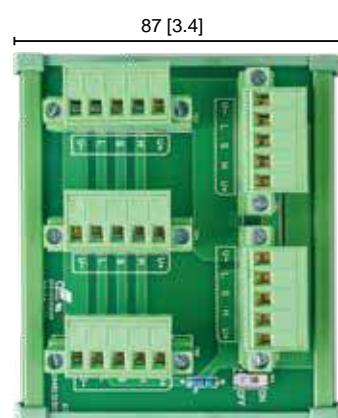
## CANopen / DeviceNet TAP Breakout Boxes

Part Number	Description
TAP-CN01	1 in 2 out, built-in 121Ω terminal resistor
TAP-CN02	1 in 4 out, built-in 121Ω terminal resistor
TAP-CN03	1 in 4 out, RJ45 connector, built-in 121Ω terminal resistor

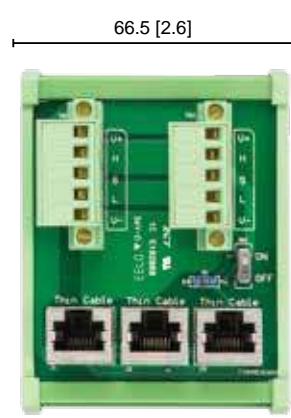
Unit: mm [inch]



TAP-CN01

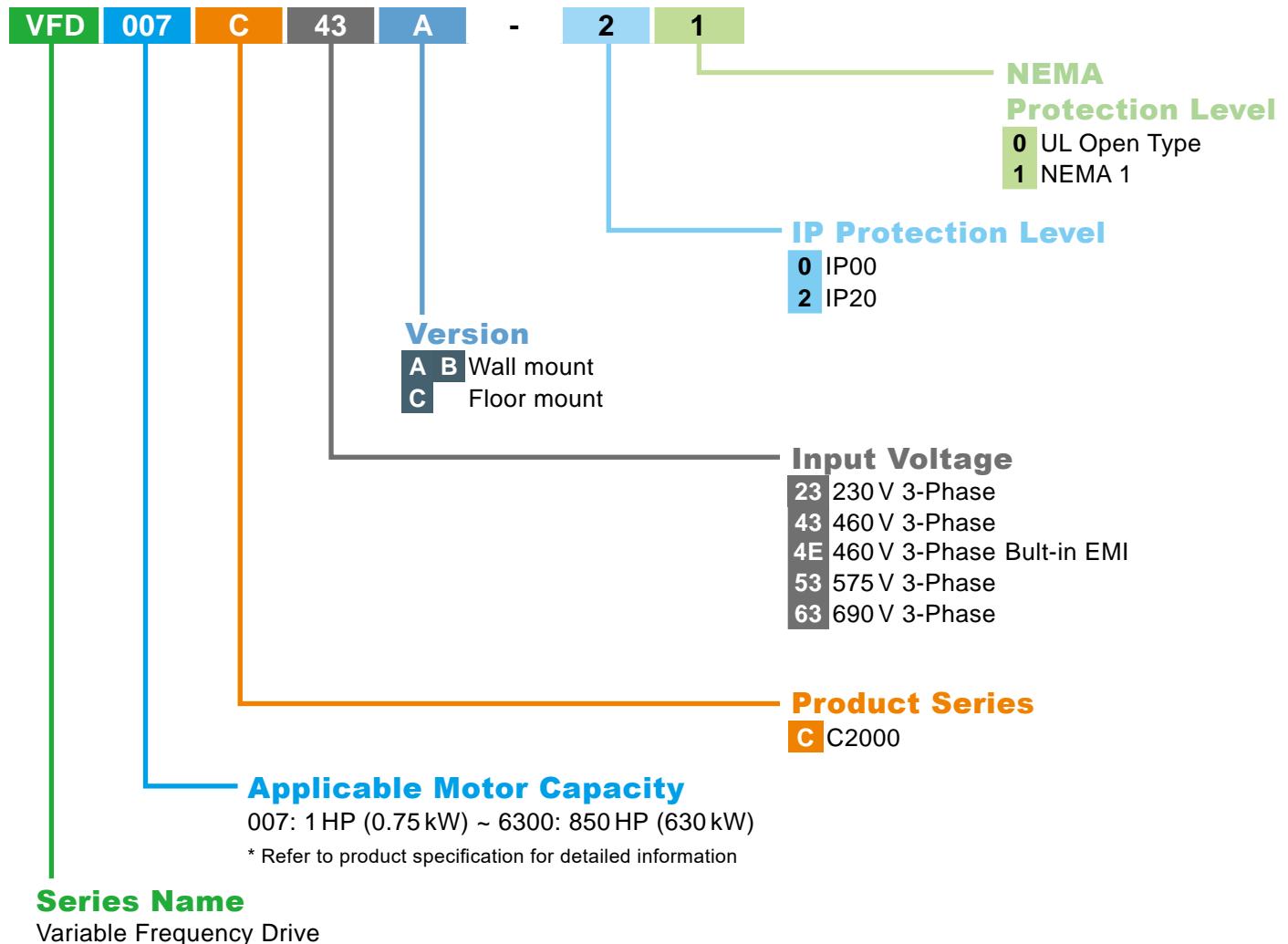


TAP-CN02



TAP-CN03

# Model Name



## Series Name

Variable Frequency Drive

## Ordering Information

Frame Size		Power Range	Models			
Frame A		230V: 0.75~3.7kW  460V: 0.75~5.5kW  575V: 1.5~3.7kW	VFD007C23A-21 VFD015C23A-21 VFD022C23A-21 VFD037C23A-21	VFD007C43A-21 VFD015C43A-21 VFD022C43A-21 VFD037C43A-21 VFD040C43A-21 VFD055C43A-21	VFD007C4EA-21 VFD015C4EA-21 VFD022C4EA-21 VFD037C4EA-21 VFD040C4EA-21 VFD055C4EA-21	VFD015C53A-21 VFD022C53A-21 VFD037C53A-21
Frame B		230V: 5.5~11kW  460V: 7.5~15kW  575V: 5.5~15kW	VFD055C23A-21 VFD075C23A-21 VFD110C23A-21	VFD075C43A-21 VFD110C43A-21 VFD150C43A-21	VFD075C4EA-21 VFD110C4EA-21 VFD150C4EA-21	VFD055C53A-21 VFD075C53A-21 VFD110C53A-21 VFD150C53A-21
Frame C		230V: 15~22kW  460V: 18.5~30kW  690V: 18.5~37kW	VFD150C23A-21 VFD185C23A-21 VFD220C23A-21	VFD185C43A-21 VFD220C43A-21 VFD300C43A-21	VFD185C4EA-21 VFD220C4EA-21 VFD300C4EA-21	VFD185C63B-21 VFD220C63B-21 VFD300C63B-21 VFD370C63B-21
Frame D		230V: 30~37kW  460V: 37~75kW  690V: 45~55kW	<b>Frame_D1</b> VFD300C23A-00 VFD370C23A-00	<b>Frame_D0-1</b> VFD370C43S-00 VFD450C43S-00	<b>Frame_D2</b> VFD300C23A-21 VFD370C23A-21 VFD550C43A-21 VFD750C43A-21 VFD450C63B-21 VFD550C63B-21	<b>Frame_D0-2</b> VFD370C43S-21 VFD450C43S-21
Frame E		230V: 45~75kW  460V: 90~110kW  690V: 75~132kW	<b>Frame_E1</b> VFD450C23A-00 VFD550C23A-00 VFD750C23A-00 VFD900C43A-00 VFD1100C43A-00 VFD750C63B-00 VFD900C63B-00 VFD1100C63B-00 VFD1320C63B-00	<b>Frame_E2</b> VFD450C23A-21 VFD550C23A-21 VFD750C23A-21 VFD900C43A-21 VFD1100C43A-21 VFD750C63B-21 VFD900C63B-21 VFD1100C63B-21 VFD1320C63B-21		
Frame F		230V: 90kW  460V: 132~160kW  690V: 160~200kW	<b>Frame_F1</b> VFD900C23A-00 VFD1320C43A-00 VFD1600C43A-00 VFD1600C63B-00 VFD2000C63B-00	<b>Frame_F2</b> VFD900C23A-21 VFD1320C43A-21 VFD1600C43A-21 VFD1600C63B-21 VFD2000C63B-21		

Frame Size		Power Range	Models	
<b>Frame G</b>		460V: 185~220 kW  690V: 250~315 kW	<b>Frame_G1</b> VFD1850C43A-00 VFD2200C43A-00 VFD2500C63B-00 VFD3150C63B-00	<b>Frame_G2</b> VFD1850C43A-21 VFD2200C43A-21 VFD2500C63B-21 VFD3150C63B-21
<b>Frame H</b>		460V: 280~560 kW	<b>Frame_H1</b> VFD2800C43A-00 VFD3150C43A-00 VFD3550C43A-00 VFD4500C43A-00 VFD5000C43A-00 VFD5600C43A-00	<b>Frame_H2</b> VFD2800C43C-21 VFD3150C43C-21 VFD3550C43C-21 VFD4500C43C-21 VFD5000C43C-21 VFD5600C43C-21
<b>Frame H (690 V Model)</b>		690V: 400~630 kW	<b>Frame_H1</b> VFD4000C63B-00 VFD4500C63B-00 VFD5600C63B-00 VFD6300C63B-00	<b>Frame_H2</b> VFD4000C63B-21 VFD4500C63B-21 VFD5600C63B-21 VFD6300C63B-21



# Global Operations

**ASIA (Taiwan)**



Taoyuan  
Technology Center  
(Green Building)



Taoyuan Plant 1



Tainan Plant  
(Diamond-rated Green Building)

**ASIA (China)**



Wujiang Plant 3



Shanghai Office



**ASIA (Japan)**

Tokyo Office

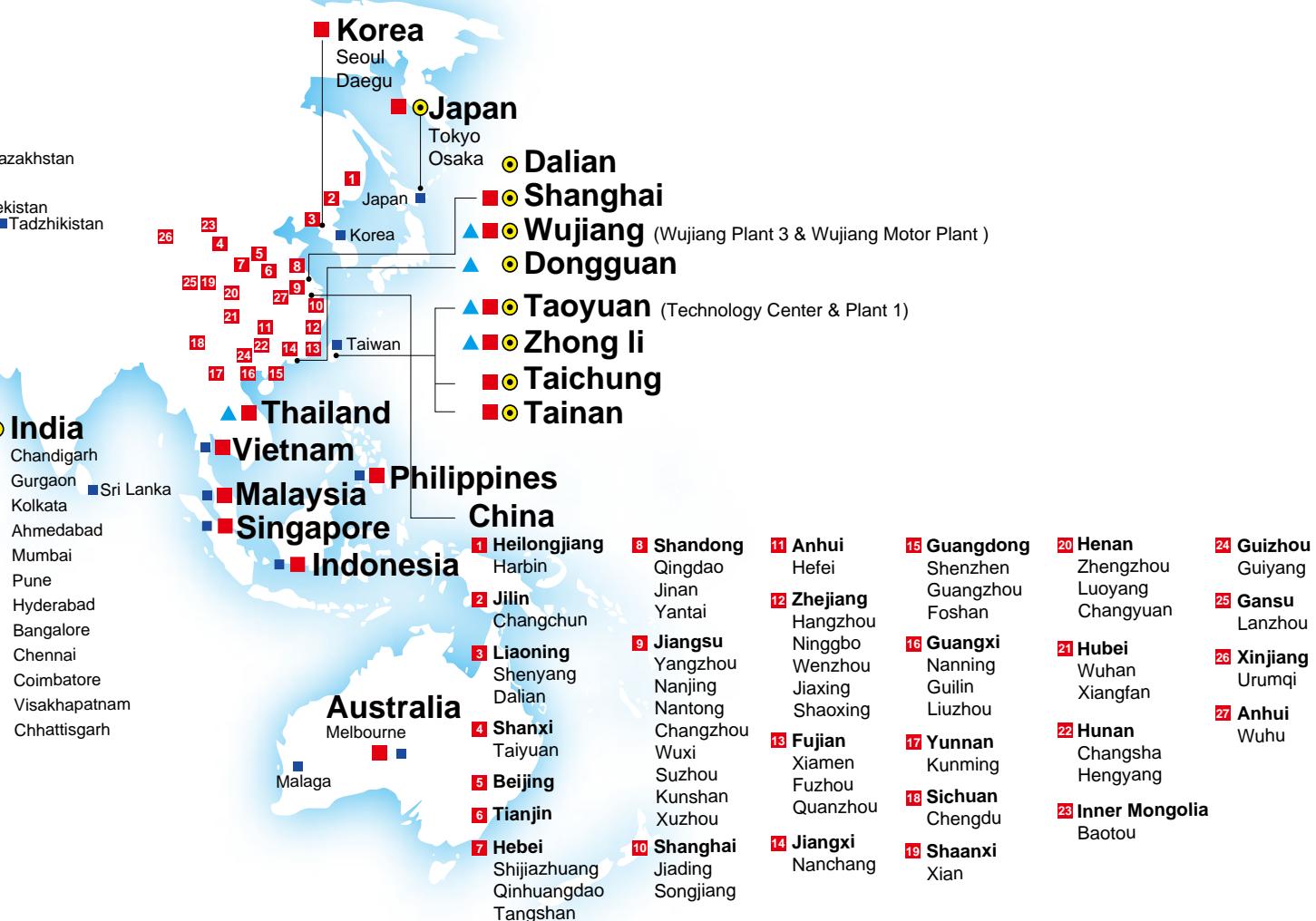
**ASIA (India)**Rudrapur Plant  
(Green Building)**EUROPE**

Amsterdam, the Netherlands

**AMERICA**

Research Triangle Park, U.S.A.

▲ 6 Factories ■ 117 Branch Offices ○ 13 R&D Centers ■ 915 Distributors





Smarter. Greener. Together.

## Industrial Automation Headquarters

### **Delta Electronics, Inc.**

Taoyuan Technology Center  
No.18, Xinglong Rd., Taoyuan District,  
Taoyuan City 33068, Taiwan  
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

### **Asia**

#### **Delta Electronics (Shanghai) Co., Ltd.**

No.182 Minyu Rd., Pudong Shanghai, P.R.C.  
Post code : 201209  
TEL: 86-21-6872-3988 / FAX: 86-21-6872-3996  
Customer Service: 400-820-9595

#### **Delta Electronics (Japan), Inc.**

Tokyo Office  
Industrial Automation Sales Department  
2-114 Shibadaimon, Minato-ku  
Tokyo, Japan 105-0012  
TEL: 81-3-5733-1155 / FAX: 81-3-5733-1255

#### **Delta Electronics (Korea), Inc.**

Seoul Office  
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,  
Seoul, 08501 South Korea  
TEL: 82-2-515-5305 / FAX: 82-2-515-5302

#### **Delta Energy Systems (Singapore) Pte Ltd.**

4 Kaki Bukit Avenue 1, #05-04, 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

#### **Delta Electronics (Thailand) PCL.**

909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),  
Pattana 1 Rd., T.Phraaksa, A.Muang,  
Samutprakarn 10280, Thailand  
TEL: 66-2709-2800 / FAX : 662-709-2827

#### **Delta Electronics (Australia) Pty Ltd.**

Unit 20-21/45 Normanby Rd., Notting Hill Vic 3168, Australia  
TEL: 61-3-9543-3720

### **Americas**

#### **Delta Electronics (Americas) Ltd.**

Raleigh Office  
P.O. Box 12173, 5101 Davis Drive,  
Research Triangle Park, NC 27709, U.S.A.  
TEL: 1-919-767-3813 / FAX: 1-919-767-3969

#### **Delta Greentech (Brasil) S/A**

São Paulo Office  
Rua Itapeva, 26 – 3° Andar - Bela Vista  
CEP: 01332-000 – São Paulo – SP - Brasil  
TEL: 55-11-3530-8643 / 55-11-3530-8640

#### **Delta Electronics International Mexico S.A. de C.V.**

Mexico Office  
Gustavo Baz No. 309 Edificio E PB 103  
Colonia La Loma, CP 54060  
Tlalnepantla, Estado de México  
TEL: 52-55-3603-9200

### **EMEA**

#### **Headquarters: Delta Electronics (Netherlands) B.V.**

Sales: Sales.IA.EMEA@deltaww.com  
Marketing: Marketing.IA.EMEA@deltaww.com  
Technical Support: iatechnicalsupport@deltaww.com  
Customer Support: Customer-Support@deltaww.com  
Service: Service.IA.emea@deltaww.com  
TEL: +31(0)40 800 3900

#### **BENELUX: Delta Electronics (Netherlands) B.V.**

De Witboogt 20, 5652 AG Eindhoven, The Netherlands  
Mail: Sales.IA.Benelux@deltaww.com  
TEL: +31(0)40 800 3900

#### **DACH: Delta Electronics (Netherlands) B.V.**

Coesterweg 45, D-59494 Soest, Germany  
Mail: Sales.IA.DACH@deltaww.com  
TEL: +49(0)2921 987 0

#### **France: Delta Electronics (France) S.A.**

ZI du bois Challand 2, 15 rue des Pyrénées,  
Lisses, 91090 Evry Cedex, France  
Mail: Sales.IA.FR@deltaww.com  
TEL: +33(0)1 69 77 82 60

#### **Iberia: Delta Electronics Solutions (Spain) S.L.U**

Ctra. De Villaverde a Vallecas, 265 1º Dcha Ed.  
Hormigueras – P.I. de Vallecas 28031 Madrid  
TEL: +34(0)91 223 74 20

Carrer Llacuna 166, 08018 Barcelona, Spain

Mail: Sales.IA.Iberia@deltaww.com

#### **Italy: Delta Electronics (Italy) S.r.l.**

Via Meda 2-22060 Novedrate(CO)  
Piazza Grazioli 18 00186 Roma Italy  
Mail: Sales.IA.Italy@deltaww.com  
TEL: +39 039 8900365

#### **Russia: Delta Energy System LLC**

Vereyskaya Plaza II, office 112 Vereyskaya str.  
17 121357 Moscow Russia  
Mail: Sales.IA.RU@deltaww.com  
TEL: +7 495 644 3240

#### **Turkey: Delta Greentech Elektronik San. Ltd. Sti. (Turkey)**

Serifali Mah. Hendem Cad. Kule Sok. No:16-A  
34775 Ümraniye – İstanbul  
Mail: Sales.IA.Turkey@deltaww.com  
TEL: + 90 216 499 9910

#### **GCC: Delta Energy Systems AG (Dubai BR)**

P.O. Box 185668, Gate 7, 3rd Floor, Hamarain Centre  
Dubai, United Arab Emirates  
Mail: Sales.IA.MEA@deltaww.com  
TEL: +971(0)4 2690148

#### **Egypt + North Africa: Delta Electronics**

Unit 318, 3rd Floor, Trivium Business Complex, North 90 street,  
New Cairo, Cairo, Egypt  
Mail: Sales.IA.MEA@deltaww.com