



Automation for a Changing World

Delta Vector Control Drive C2000 PLUS Series



www.deltaww.com



reddot design award
winner 2010

 **DELTA**
Smarter. Greener. Together.

Delta Vector Control Drive C2000 PLUS Series

The C2000 Plus Series features precise speed, torque and position control functions that are suitable for both sensor and sensorless types of synchronous and asynchronous motors.

With higher overload capacity, the power range of C2000 Plus Series 460V models reach up to 560 kW, providing the best performance and stability for a variety of heavy duty and constant torque applications, such as production, processing, food industry, chemical industry, metal processing, rubber and plastics, municipal & infrastructure, and other industries.

For advanced manufacturing, the C2000 Plus Series is equipped with built-in PLC functions and supports various 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 drive you to reach the Automation for a Changing World!



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Standard Models C2000 Plus

Power range : 230V 0.75 ~ 90 kW

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

Power range : 460V 0.75 ~ 560 kW

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

Standard Models C2000

Power range: 575V 1.5~15 kW

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

Power range: 690V 18.5~630 kW

690 V (kW)	18.5	22	30	37	45	55	75	90	110
690 V (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

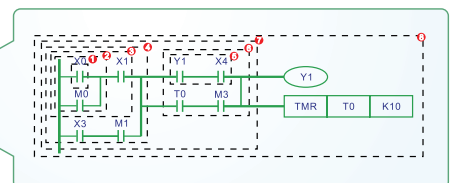
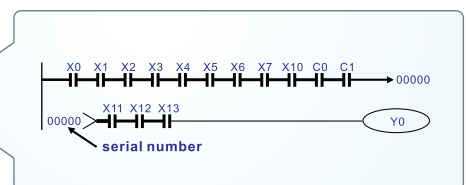
Modular Design

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



F1 to F4: User-defined function keys

Selection keys

LED displays the current drive status

Start Wizard

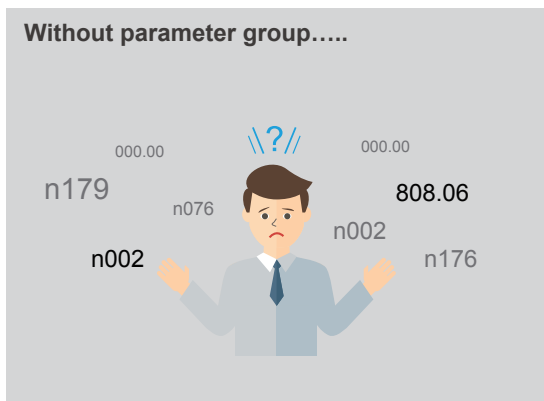


Multi-Language



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

Application Selection



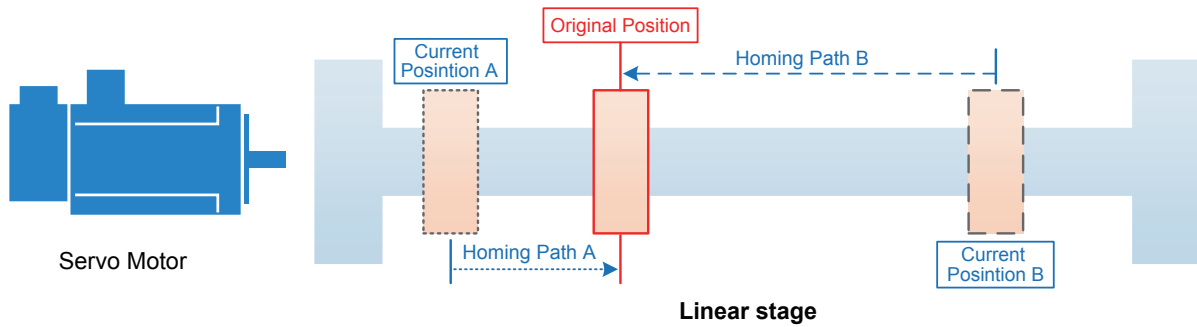
C2000 Plus parameter group function simplifies the drive setting procedures. Various applications are provided:

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

Positioning Control

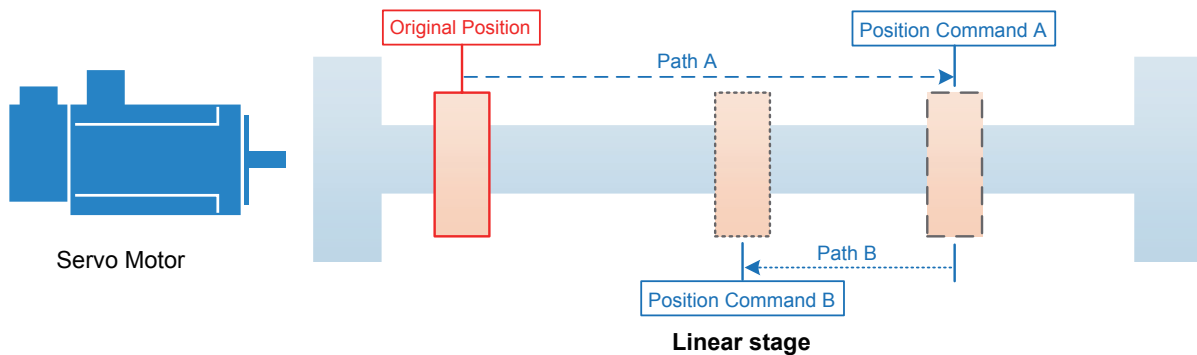
Homing

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



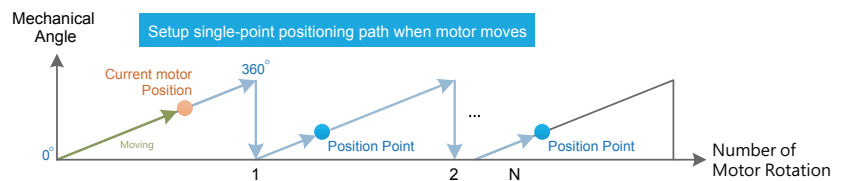
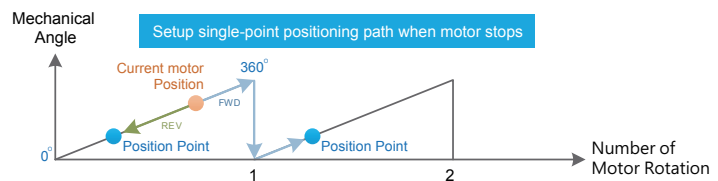
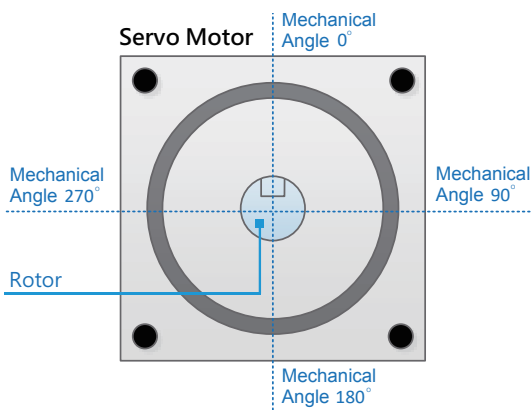
Multi-point Positioning

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



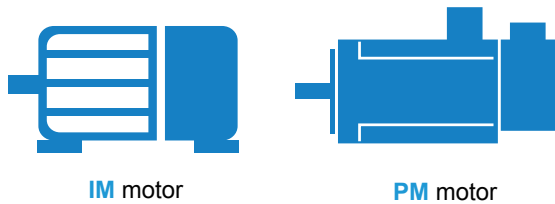
Single-point Positioning

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



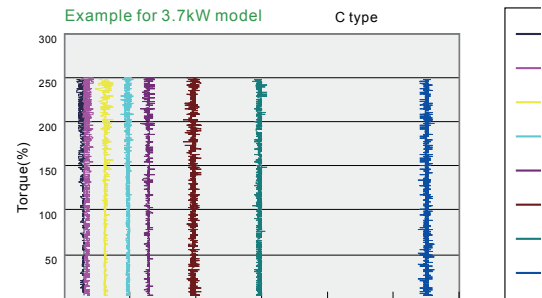
A Drive for Permanent Magnet (PM) Motors

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.



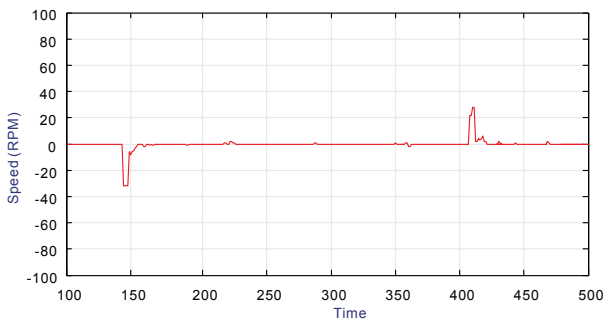
High-Performance Field-oriented Control

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



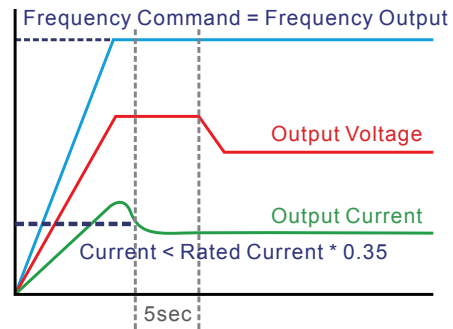
Fast Response to Impact Load

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



Auto Energy-Saving Operation

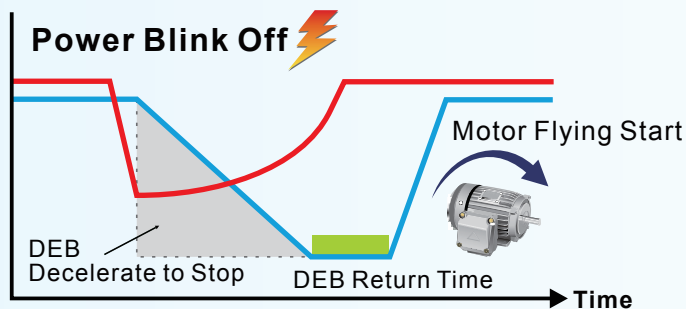
Auto-calculates the optimal voltage for the load output using load power when under constant speed operation.



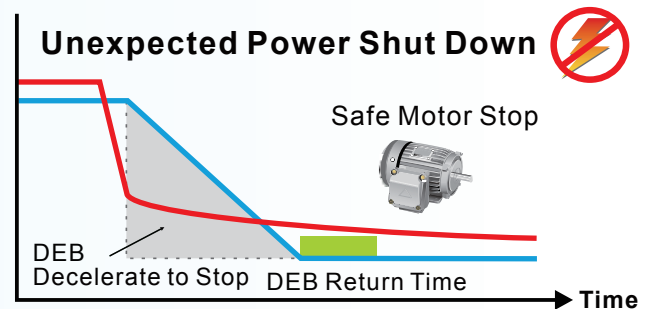
Deceleration Energy Backup (DEB)

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.

— Input Voltage
— Motor Speed

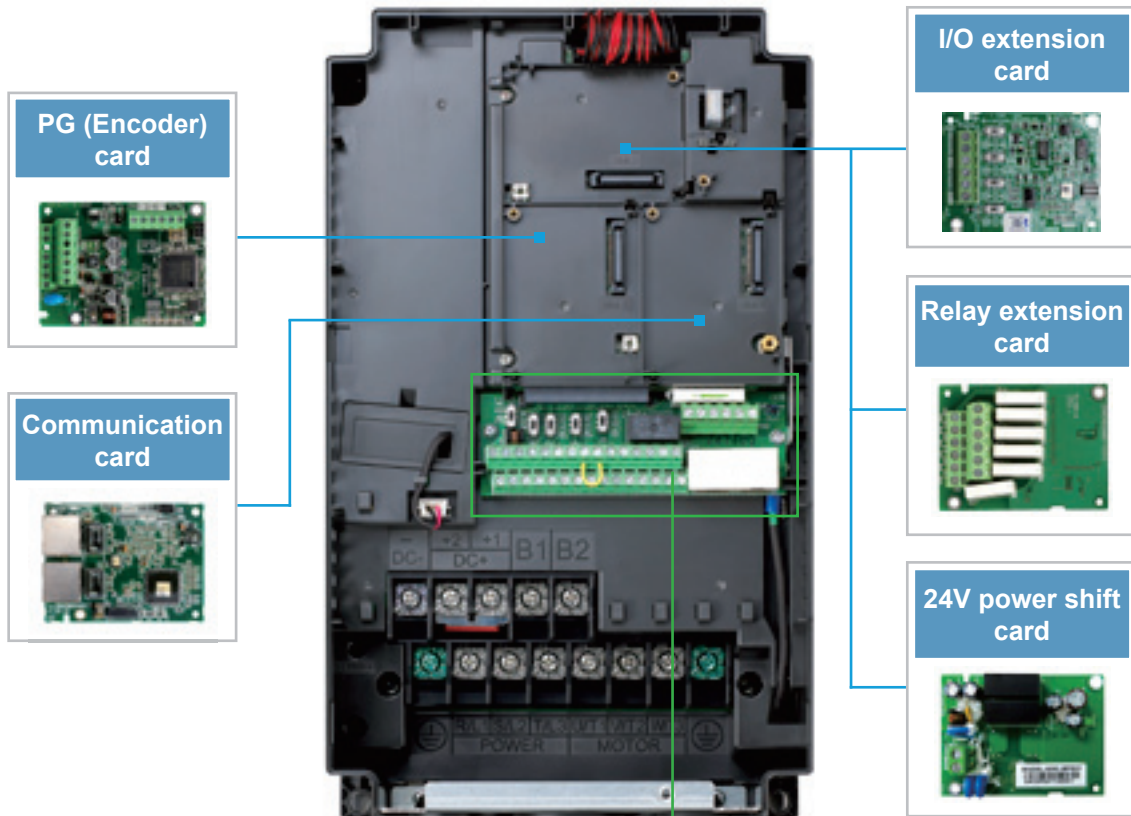


— Input Voltage
— Motor Speed



Modular Design

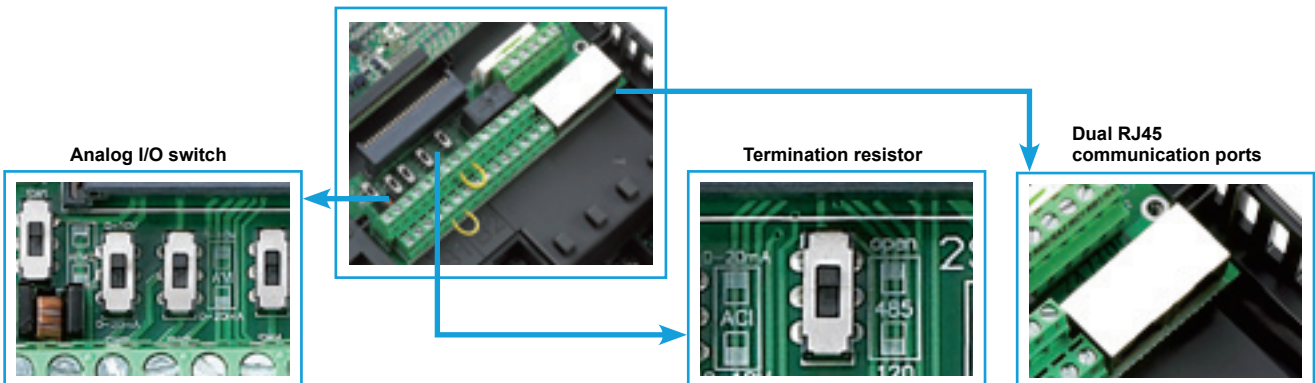
Various accessories options, such as I/O extension cards, encoder feedback cards, communication cards, hot pluggable LCD keypad, removable terminals and removable fans.



*NOTE: "▶" are optional accessories.

■ Removable terminals

Convenient wiring and safety equipment.



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

- KPC-CC01 keypad
- Standard RJ45 network cable for remote operation.
- Easy to remove with one press.



- The product nameplate shows the input / output voltage, input / output current, the frequency range, and more.



- Remove the safety screws and press on both side tabs to remove the cover.



- Modular fan design, easy to replace and clean, extending product service life.



- RFI Jumper




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
ROHS	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

High-Speed Networking

- ▶ Provides optional Modbus RTU and various fieldbus cards for flexible applications

- ▶ Advanced network functions
- ▶ Built-in Modbus communication



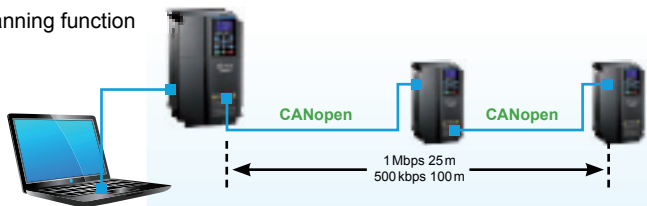
DP / PROFINET / DeviceNet / Modbus TCP / EtherNet/IP / EtherCAT / CANopen

■ CANopen (DS402)

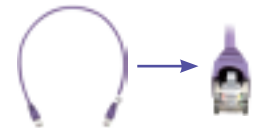
Ability to control up to 8 Slave drives via the CANopen Master function

- 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	 Degrees of protection: IP20 / IP00 for the circled area	-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/cm² 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 13.2Hz 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	
Model VFD-□□□C□□		007	015	022	037	055	075	110	150	185	220	300	370	450	550	750	900	
Output Rating *	HEAVY DUTY	Rated Output Capacity (kVA)	2.0	3.2	4.4	6.8	10	13	20	26	30	36	48	58	72	86	102	138
		Rated Output Current (A)	5	8	11	17	25	33	49	65	75	90	120	146	180	215	255	346
		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	120
		Overload Capacity	150% of rated current: 1 minute for every 5 minutes; 180% of rated current: 3 seconds for every 30 seconds															
	SUPER HEAVY DUTY	Max. Output Frequency (Hz)	0.00 ~ 599.00															
		Carrier Frequency (kHz)	2 ~ 15 (default setting 8)						2 ~ 10 (default setting 6)				2 ~ 9 (default setting 4)					
		Rated Output Capacity (kVA)	1.2	2	3.2	4.4	6.8	10	13	20	26	30	36	48	58	72	86	102
		Rated Output Current (A)	3	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	19	22	30	37	45	55	75
Input Rating	Input Current (A)	Heavy Duty	6.4	12	16	20	28	36	52	72	83	99	124	143	171	206	245	331
		Super Heavy 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%), 50/60 Hz																
	Operating Voltage Range	170 ~ 264V _{ac}																
Frequency Tolerance	47 ~ 63 Hz																	
Drive Weight (Kg)	2.6 ± 0.3				5.4 ± 1			9.8 ± 1.5			38.5 ± 1.5		64.8 ± 1.5			86.5 ± 1.5		
Efficiency (%)	97.8																	
Power Factor	> 0.98																	
Cooling Method	Natural cooling				Fan cooling													
Braking Chopper	Frame A ~ C: Built-in										Frame D ~ F: Optional							
DC Choke	Frame A ~ C: Optional										Frame D ~ F: Built-in							
EMC Filter	Frame A ~ F: Optional																	
EMC-COP01	Frame A ~ F: Optional																	

460V														
Frame Size		A					B				C			
Model VFD-□□□C□□		007	015	022	037	040	055	075	110	150	185	220	300	
Output Rating *	HEAVY DUTY	Rated Output Capacity (kVA)	2.4	3.2	4.8	7.2	8.4	10	14	19	25	30	36	48
		Rated Output Current (A)	3.0	4.0	6.0	9.0	10.5	12	18	24	32	38	45	60
		Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30
		Applicable Motor Output (HP)	1	2	3	5	5	7.5	10	15	20	25	30	40
		Overload Capacity	150% of rated current: 1 minute for every 5 minutes; 180% of rated current: 3 seconds for every 30 seconds											
	SUPER HEAVY DUTY	Max. Output Frequency (Hz)	0.00 ~ 599.00											
		Carrier Frequency (kHz)	2 ~ 15 (default setting 8)						2 ~ 10 (default setting 6)					
		Rated Output Capacity (kVA)	1.4	2.4	3.2	4.8	7.2	8.4	9.6	14	19	25	30	36
		Rated Output Current (A)	1.7	3	4	6	9	10.5	12	18	24	32	38	45
		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
Input Rating	Input Current (A)	Heavy Duty	4.3	5.9	8.7	14	15.5	17	20	26	35	40	47	63
		Super Heavy Duty	3.5	4.3	5.9	8.7	14	15.5	17	20	26	35	40	47
	Rated Voltage/Frequency	3-phase AC 380 V ~ 480 V (-15% ~ +10%), 50/60 Hz												
	Operating Voltage Range	323 ~ 528 V _{ac}												
Frequency Tolerance	47 ~ 63 Hz													
Drive Weight (Kg)	2.6 ± 0.3					5.4 ± 1				9.8 ± 1.5				
Efficiency (%)	97.8													
Power Factor	> 0.98													
Cooling Method	Natural cooling					Fan cooling								
Braking Chopper	Frame A ~ C: Built-in													
DC Choke	Frame A ~ C: Optional													
EMC Filter	Frame A~C VFDXXXC43A-21: Optional; VFDXXXC4EA-21: Built-in													
EMC-COP01	Frame A~C VFDXXXC43A-21: Optional; VFDXXXC4EA-21: Built-in													

460V

Frame Size		D0		D		E		F		
Model VFD-□□□C□□		370	450	550	750	900	1100	1320	1600	
Output Rating *	HEAVY DUTY	Rated Output Capacity (kVA)	58	73	88	120	143	175	207	247
		Rated Output Current (A)	73	91	110	150	180	220	260	310
		Applicable Motor Output (kW)	37	45	55	75	90	110	132	160
		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	Rated Output Capacity (kVA)	48	58	73	88	120	143	175	207
		Rated Output Current (A)	60	73	91	110	150	180	220	260
		Applicable Motor Output (kW)	30	37	45	55	75	90	110	132
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
		Super Heavy Duty	63	74	101	114	157	167	207	240
	Rated Voltage/Frequency	3 - phase AC 380V ~ 480V (-15% ~ +10%), 50/60Hz								
	Operating Voltage Range	323~528V _{AC}								
Frequency Tolerance	47~63Hz									
Drive 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-□□□C□□		1850	2200	2800	3150	3550	4500	5000	5600	
Output Rating *	HEAVY DUTY	Rated Output Capacity (kVA)	295	367	438	491	544	690	741	872
		Rated Output Current (A)	370	460	550	616	683	866	930	1094
		Applicable Motor Output (kW)	185	220	280	315	355	450	500	560
		Applicable Motor Output (HP)	250	300	375	420	475	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	Rated Output Capacity (kVA)	247	295	366	438	491	544	690	741
		Rated Output Current (A)	310	370	460	550	616	683	866	930
		Applicable Motor Output (kW)	160	185	220	280	315	355	450	560
Applicable Motor Output (HP)		215	250	300	375	425	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 (預 default setting 4)				2~9 (default setting 3)					
Input Rating	Input Current (A)	Heavy Duty	380	400	494	555	625	866	930	1094
		Super Heavy Duty	300	380	400	494	555	625	866	930
	Rated Voltage/Frequency	3 - phase AC 380V~480V (-15% +10%) · 50 / 60Hz								
	Operating Voltage Range	323~528V _{AC}								
Frequency Tolerance	47~63Hz									
Drive 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; VFDXXXC43A-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	Rated Output Capacity (kVA)	3	4.3	6.7	9.9	12.1	18.7	24.1
		Rated Output Current (A)	3	4.3	6.7	9.9	12.1	18.7	24.2
		Applicable Motor Output (kW)	1.5	2.2	3.7	5.5	7.5	11	15
	Normal Duty	Applicable Motor Output (HP)	2	3	5	7.5	10	15	20
		Rated Output Capacity (kVA)	2.5	3.6	5.5	8.2	10	15.4	19.9
		Rated Output Current (A)	2.5	3.6	5.5	8.2	10	15.5	20
	Heavy Duty	Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11
		Applicable Motor Output (HP)	1	2	3	5	7.5	10	15
		Rated Output Capacity (kVA)	2.1	3	4.6	6.9	8.3	12.9	16.7
		Rated Output Current (A)	2.1	3	4.6	6.9	8.3	13	16.8
		Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	3.7	7.5	7.5
		Applicable Motor Output (HP)	1	2	3	5	5	10	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	26.3
		Normal Duty	3.1	4.5	7.2	12.3	15	18	22.8
		Heavy Duty	2.6	3.8	5.8	10.7	12.5	16.9	19.7
	Rated Voltage/Frequency	3-Phase 525 V _{AC} ~ 600 V _{AC} (-15% ~ +10%), 50/60 Hz							
	Operating Voltage Range	446 ~ 660 V _{AC}							
	Frequency Tolerance	47 ~ 63 Hz							
	Efficiency (%)	97			98				
	Power Factor	>0.98							
	AC Drive Weight (Kg)	3±0.3			4.8±1				
	Cooling Method	Natural cooling			Fan cooling				
	Braking Chopper	Built-in							
	DC Choke	Optional							
	EMC Filter	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	Rated Output Capacity (kVA)	29	36	43	54	65	80	103	124	149	179
		Applicable Motor Output (690V, kW)	18.5	22	30	37	45	55	75	90	110	132
		Applicable Motor Output (690V, HP)	25	30	40	50	60	75	100	125	150	175
	Normal Duty	Applicable Motor Output (575V, HP)	20	25	30	40	50	60	75	100	125	150
		Rated Output Current (A)	24	30	36	45	54	67	86	104	125	150
		Rated Output Capacity (kVA)	24	29	36	43	54	65	80	103	124	149
	Heavy Duty	Applicable Motor Output (690V, kW)	15	18.5	22	30	37	45	55	75	90	110
		Applicable Motor Output (690V, HP)	20	25	30	40	50	60	75	100	125	150
		Applicable Motor Output (575V, HP)	15	20	25	30	40	50	60	75	100	125
		Rated Output Current (A)	20	24	30	36	45	54	67	86	104	125
		Rated Output Capacity (kVA)	17	24	29	36	43	54	65	80	103	124
		Applicable Motor Output (690V, kW)	11	15	18.5	22	30	37	45	55	75	90
	Applicable Motor Output (690V, HP)	15	20	25	30	40	50	60	75	100	125	
	Applicable Motor Output (575V, HP)	10	15	20	25	30	40	50	60	75	100	
	Rated Output Current (A)	14	20	24	30	36	45	54	67	86	104	
	Max. Output Frequency (Hz)	0.00 ~ 599.00										
	Carrier Frequency (kHz)	2~9 (default setting 4)										
Input	Input Current (A)	Light Duty	29	36	43	54	65	81	84	102	122	147
		Normal Duty	24	29	36	43	54	65	66	84	102	122
		Heavy Duty	20	24	29	36	43	54	53	66	84	102
	Rated Voltage/Frequency	3-Phase 525 V _{AC} ~ 690 V _{AC} (-15% ~ +10%), 50/60 Hz										
	Operating Voltage Range	446 ~ 759 V _{AC}										
	Frequency Tolerance	47 ~ 63 Hz										
	Efficiency (%)	97										
	Power Factor	>0.98										
	AC Drive 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										

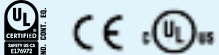
690 V

Frame Size		F		G		H				
Model VFD-□□□C63B-00 / -21		1600	2000	2500	3150	4000	4500	5600	6300	
Output *	Light Duty	Rated Output Capacity (kVA)	215	263	347	418	494.5	534.7	678.5	776
		Applicable Motor Output (690V, kW)	160	200	250	315	400	450	560	630
		Applicable Motor Output (690V, HP)	215	270	335	425	530	600	745	850
	Normal Duty	Applicable Motor Output (575V, HP)	175	200	250	350	400	450	500	745
		Rated Output Current (A)	180	220	290	350	430	465	590	675
		Rated Output Capacity (kVA)	179	215	239	347	402.5	442.7	534.7	776
		Applicable Motor Output (690V, kW)	132	160	200	250	315	355	450	630
	Heavy Duty	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	745
		Rated Output Current (A)	150	180	220	290	350	385	465	675
		Rated Output Capacity (kVA)	149	179	215	263	333.5	356.5	483	776
		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	745		
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 _{AC} ~690 V _{AC} (-15%~+10%), 50/60 Hz							
Operating Voltage Range		446~759 V _{AC}								
Frequency Tolerance		47~63Hz								
Efficiency (%)		97				98				
Power Factor		> 0.98								
AC Drive 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								

* 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	Control Method	Pulse Width Modulated (PWM)
	Control Mode	230 V / 460 V 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
		575 V / 690 V model: 1: V/F · 2: V/F+PG · 3: SVC
	Starting Torque	Reach up to 150% or above at 0.5Hz. Under FOC+PG mode, starting torque can reach 150% at 0Hz
	V/F Curve	4-point adjustable V/F curve and square curve
	Speed Response Ability	5 Hz (vector control can reach up to 40Hz)
	Torque Limit	230 V / 460 V model: Heavy duty 180%, super heavy duty 220% of torque current ; 575 V / 690 V model: Maximum 200% of torque current
	Torque Accuracy at TQC Mode	TQC + PG : ±5% TQC Sensorless : ±15%
	Max. Output Frequency (Hz)	0.00~599.00Hz
	Frequency Output Accuracy	Digital command: ±0.01%, -10° C ~ +40° C, Analog command: ±0.1%, 25 ±10° C
	Output Frequency Resolution	Digital command: 0.1Hz, Analog command: 0.05 * max. output frequency (Parameter 01-00), 11 bit
	Overload Capacity	230 V / 460 V 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
		575 V / 690 V 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
	Frequency Setting Signal	+10V~-10V, 0~+10V, 4~20mA, 0~20mA, pulse input
Accel./decel. Time	0.00~600.00 / 0.0~6000.0 Seconds	
Main Control Function	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)	
Fan Control	230 V model: VFD150C23A-21 and above: PMW control; VFD110C23A-21 and below: on/off switch control	
	460 V model: VFD185C4XX-21 and above: PMW control; VFD150C43A and below: on/off switch control	
	575 V / 690 V model: PWM control	
Protection Characteristics	Motor Protection	Electronic thermal relay protection
	Over-current Protection	230 V / 460 V 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 190 ~ 195%)
		575 V / 690 V 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%)
	Over-Voltage Protection	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
	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
	Short-circuit Current Rating (SCCR)	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
International Certifications	 GB/T12668-2	

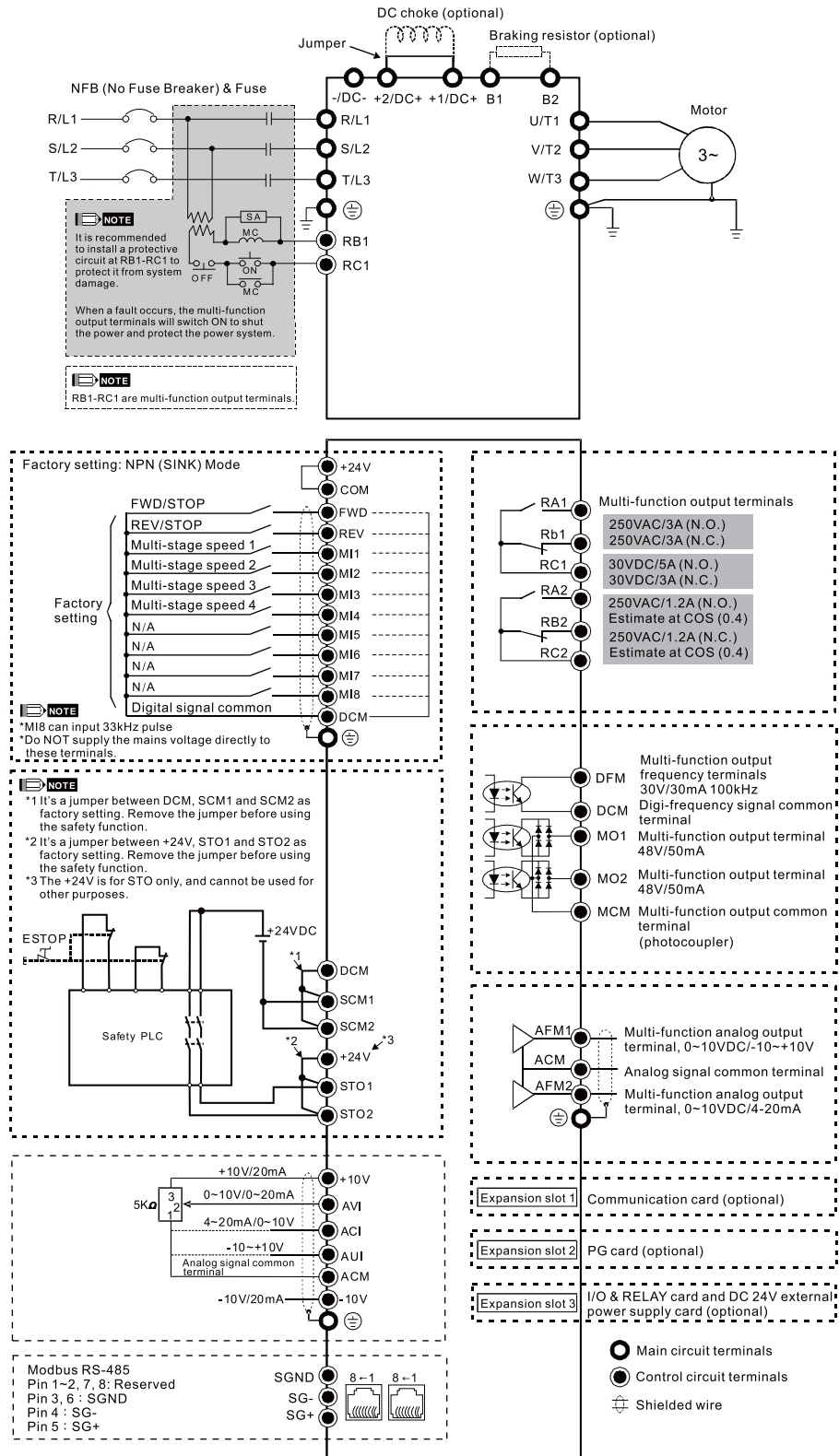
NOTES

- 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

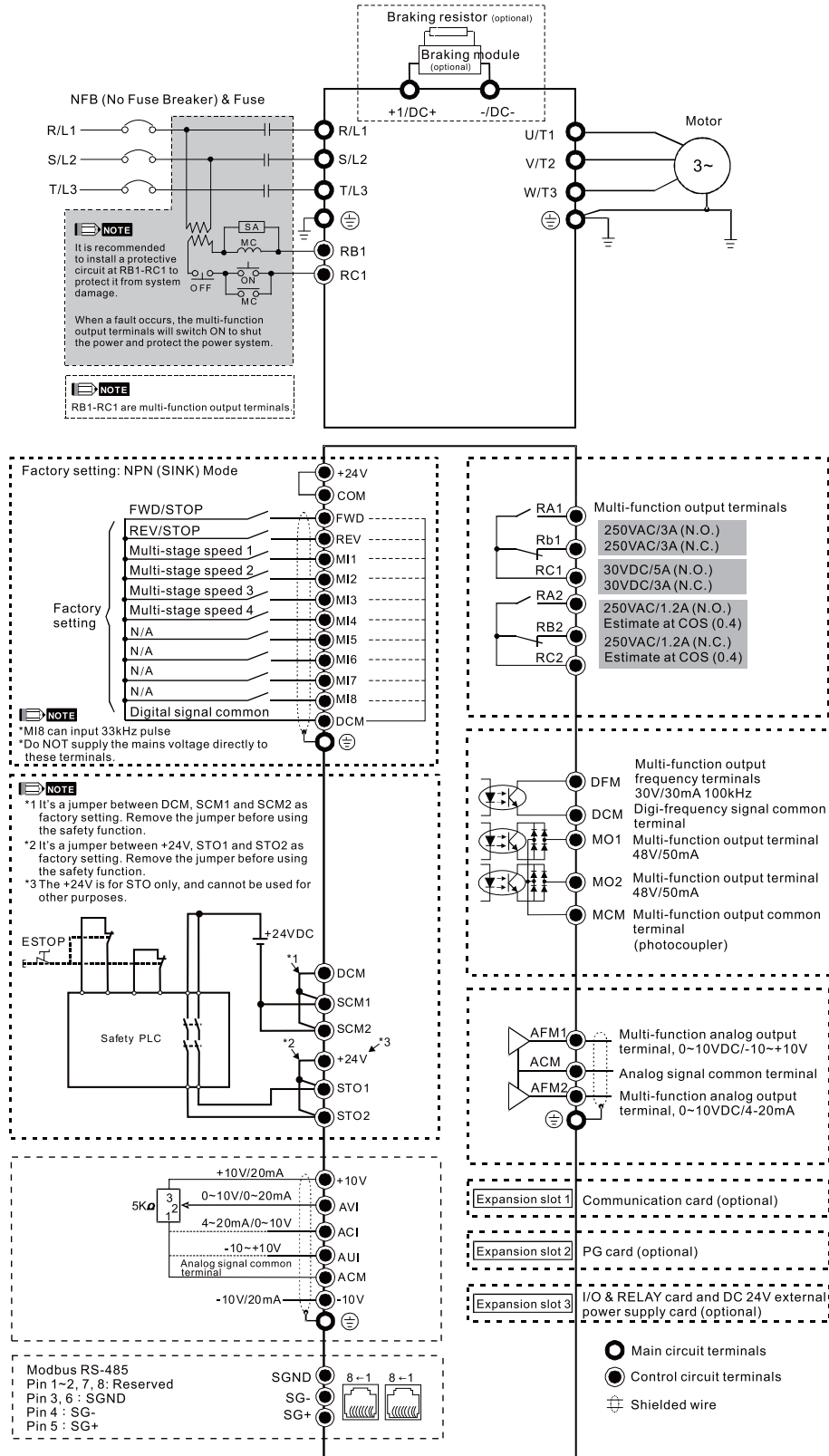


NOTE

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.

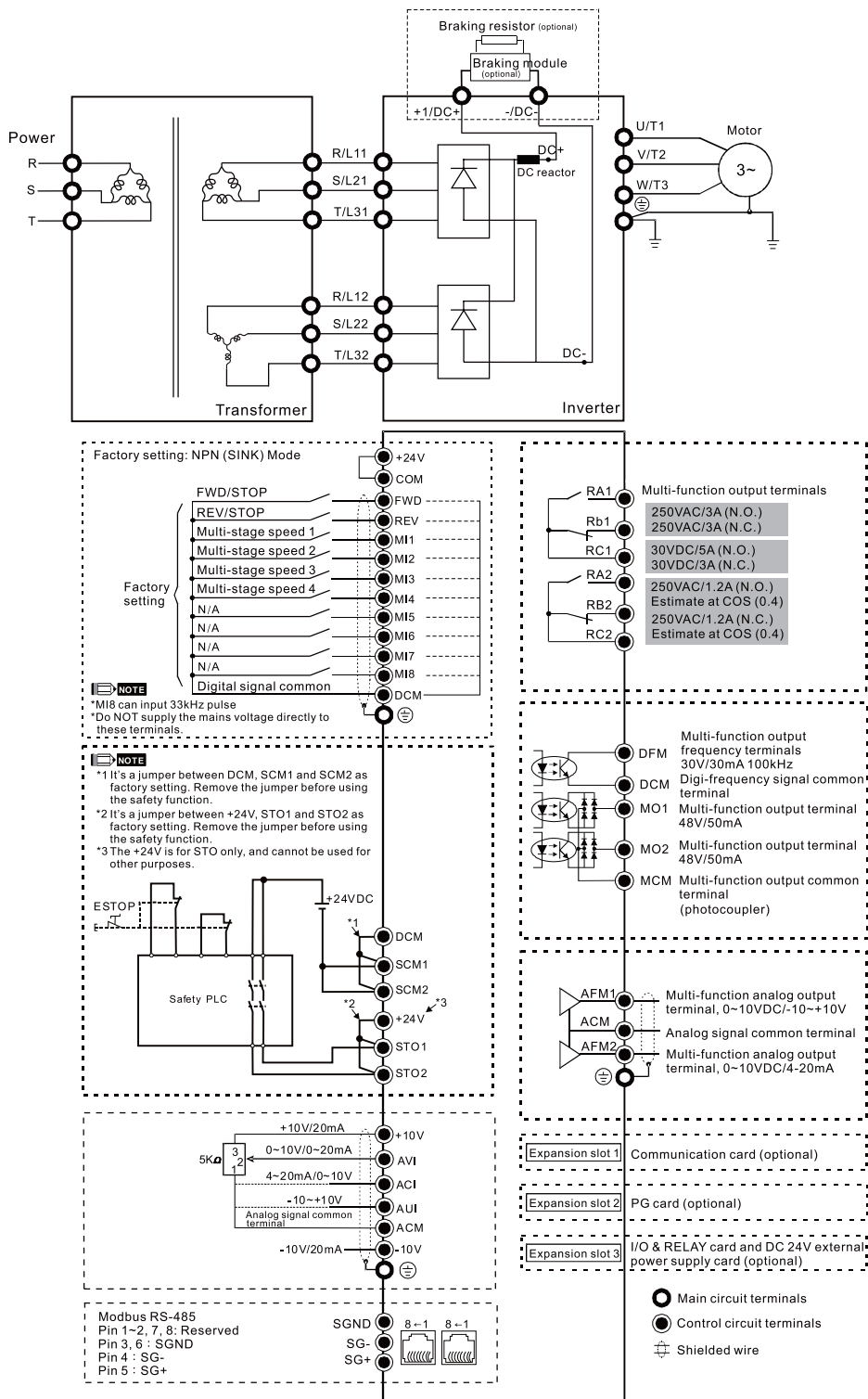
Wiring Diagram for Frame D ~ F

*Input: 3-phase power



Wiring Diagram for Frame G ~ H

*Input: 3-phase power

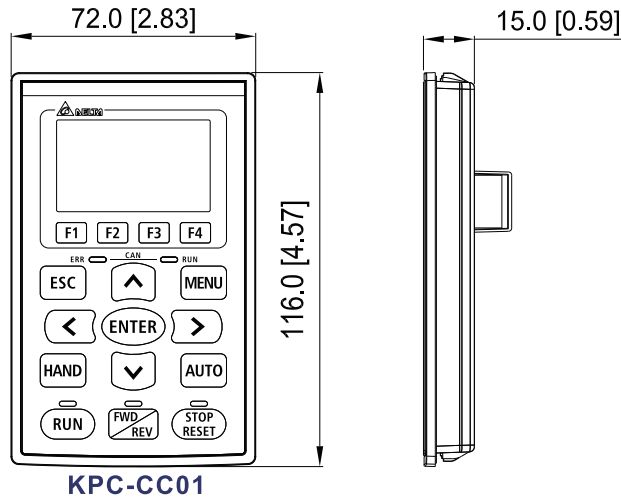


NOTE

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

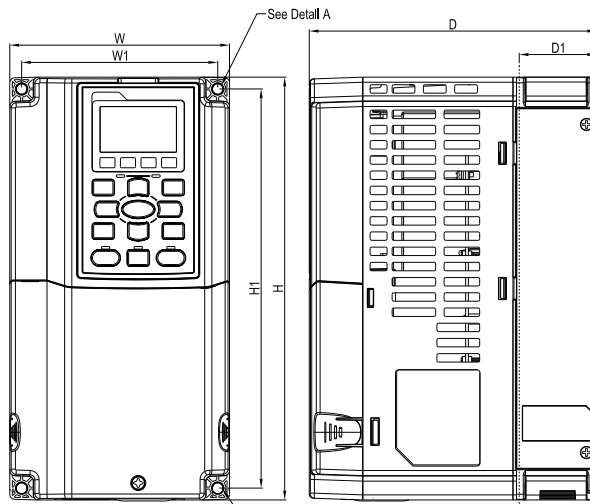
Digital Keypad Unit: mm [inch]



KPC-CC01

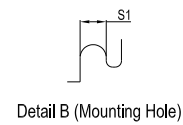
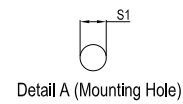
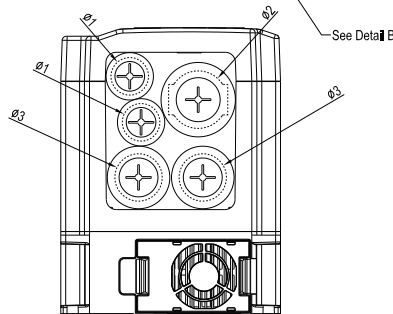
Standard LCD keypad

Frame A



MODEL

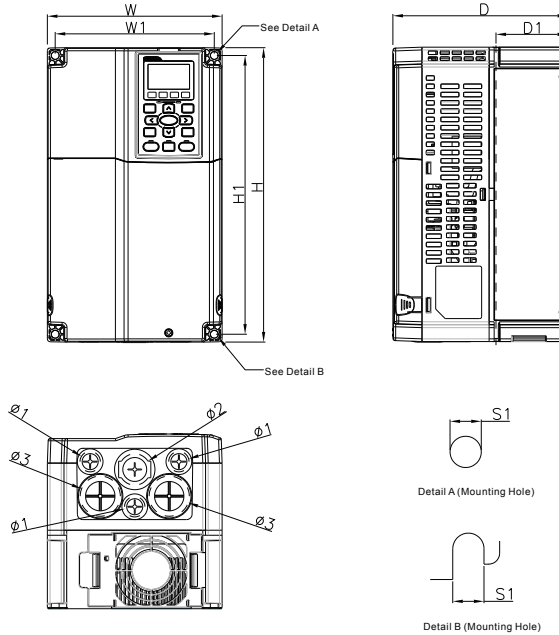
VFD007C23A-21	VFD007C4EA-21
VFD015C23A-21	VFD015C4EA-21
VFD022C23A-21	VFD022C4EA-21
VFD037C23A-21	VFD037C4EA-21
VFD007C43A-21	VFD040C4EA-21
VFD015C43A-21	VFD055C4EA-21
VFD022C43A-21	VFD015C53A-21
VFD037C43A-21	VFD022C53A-21
VFD040C43A-21	VFD037C53A-21
VFD055C43A-21	



Frame	W	H	D	W1	H1	D1*	ϕ	ϕ_1	ϕ_2	ϕ_3	
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 mount.

Frame B



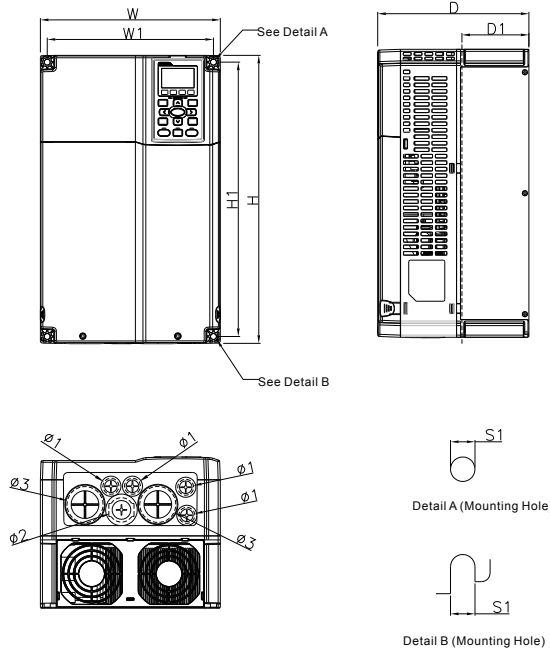
MODEL

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	
B1	mm	190.0	320.0	190.0	173.0	303.0	77.9	8.5	22.2	34.0	28.0
	inch	7.48	12.60	7.48	6.81	11.93	3.07	0.33	0.87	1.34	1.10

*D1: Flange mount.

Frame C



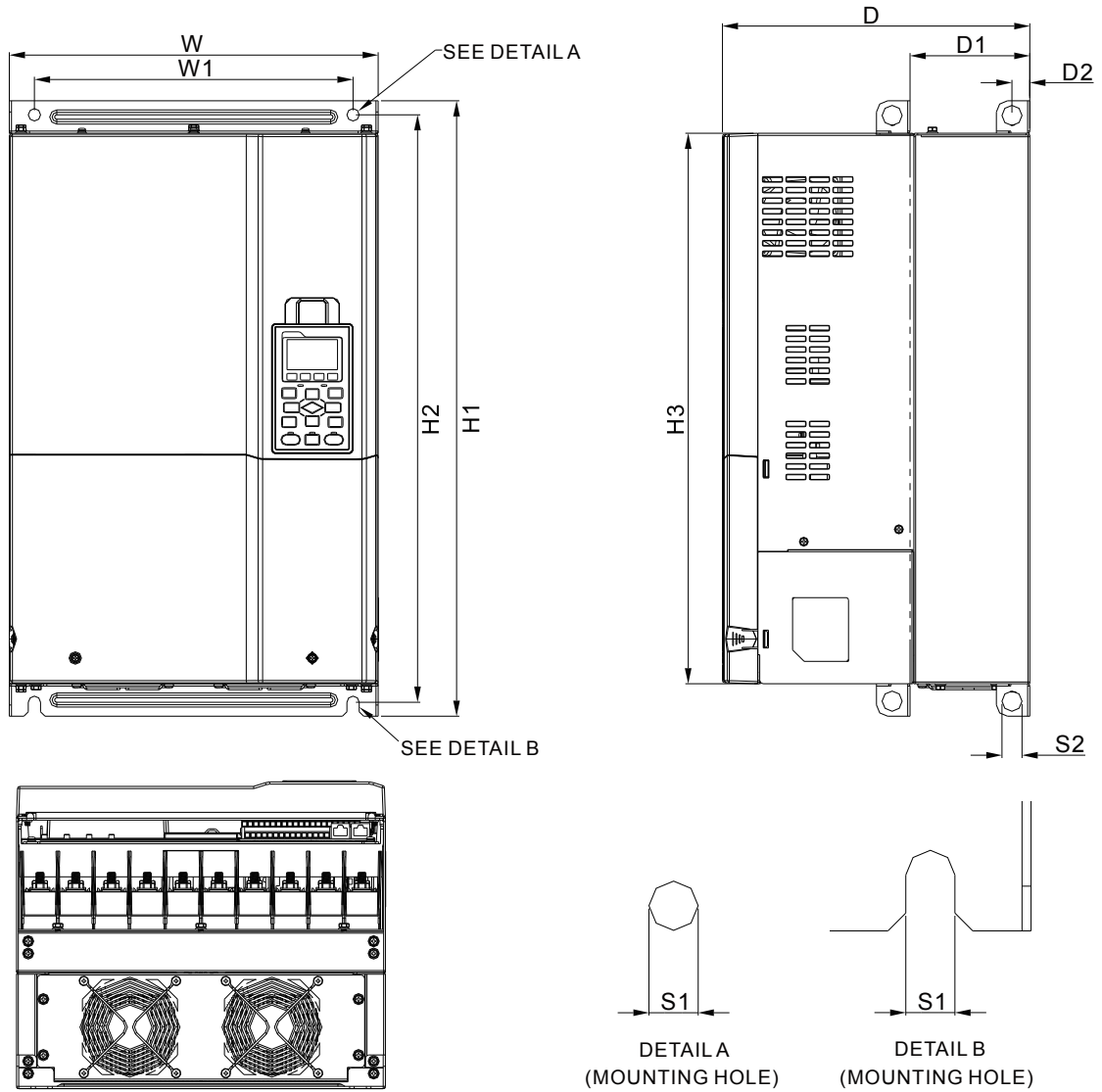
MODEL

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	
C1	mm	250.0	400.0	210.0	231.0	381.0	92.9	8.5	22.2	34.0	50.0
	inch	9.84	15.75	8.27	9.09	15.00	3.66	0.33	0.87	1.34	1.97

*D1: Flange mount.

Frame D

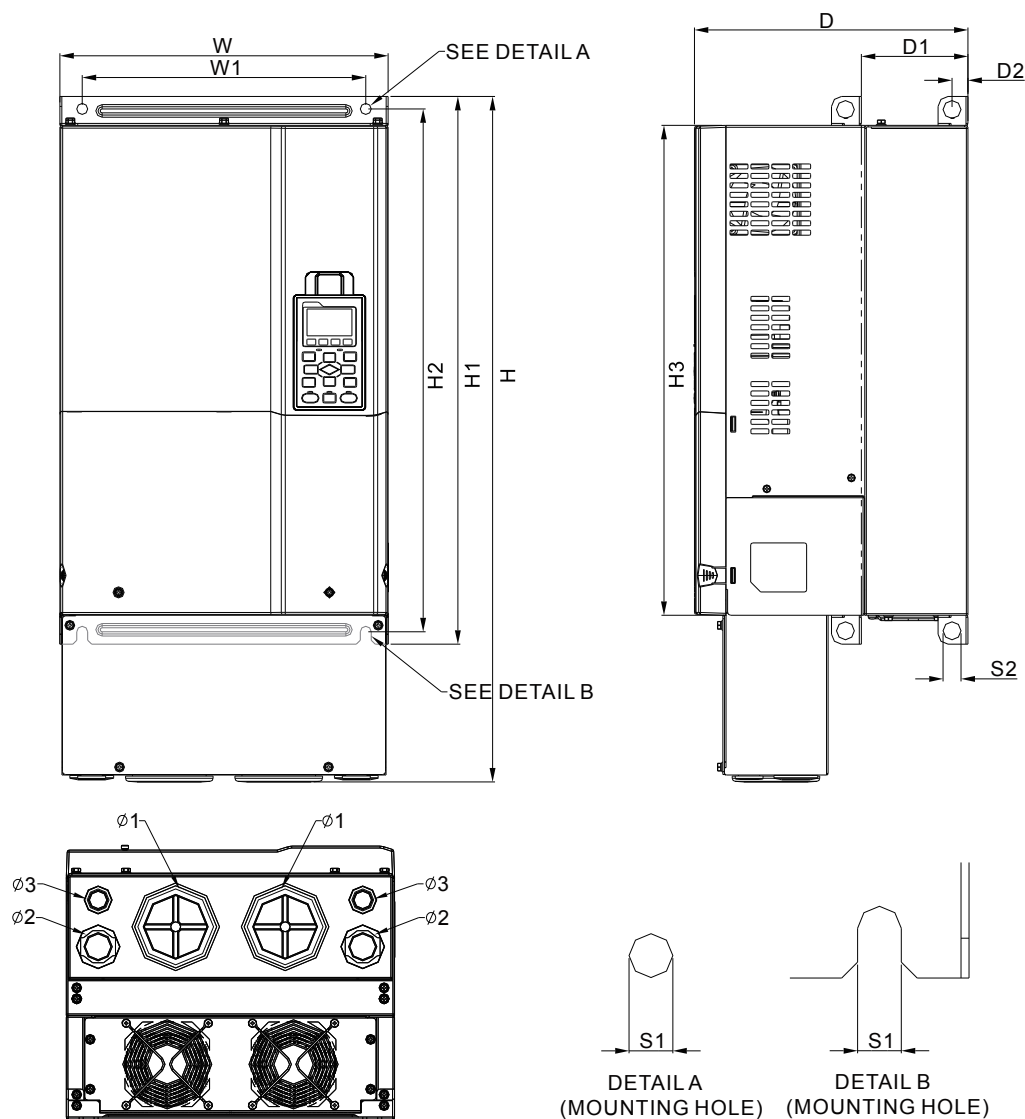


MODEL	
FRAME_D1	FRAME_D0-1
VFD300C23A-00	VFD370C43S-00
VFD370C23A-00	VFD450C43S-00
VFD550C43A-00	
VFD750C43A-00	
VFD450C63B-00	
VFD550C63B-00	

Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3	
D1	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				
D0-1	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

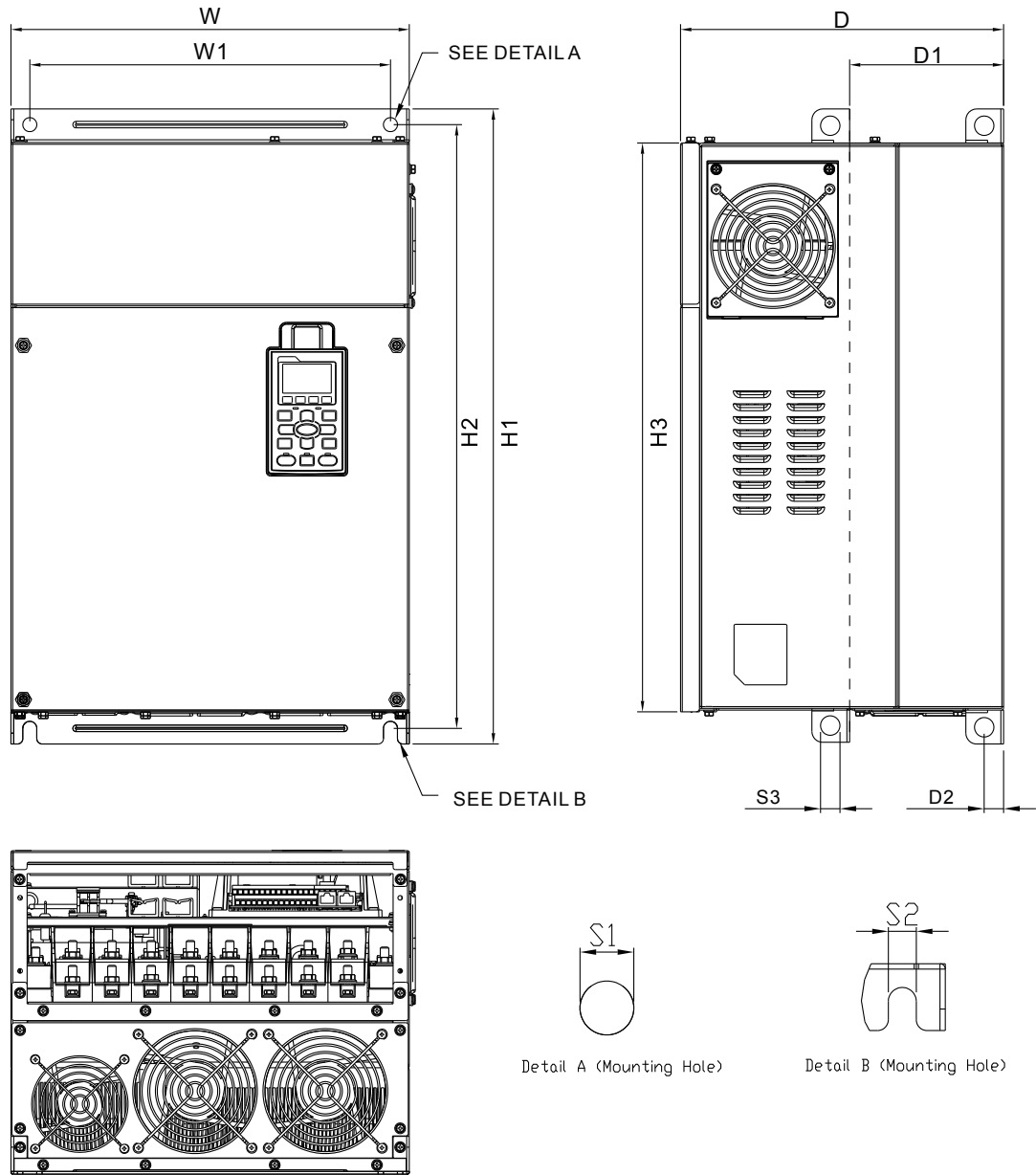


MODEL	FRAME_D2	FRAME_D0-2
VFD300C23A-21		VFD370C43S-21
VFD370C23A-21		VFD450C43S-21
VFD550C43A-21		
VFD750C43A-21		
VFD450C63B-21		
VFD550C63B-21		

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	22.0
	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	0.87
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	22.0
	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	0.87

*D1: Flange mount.

Frame E1



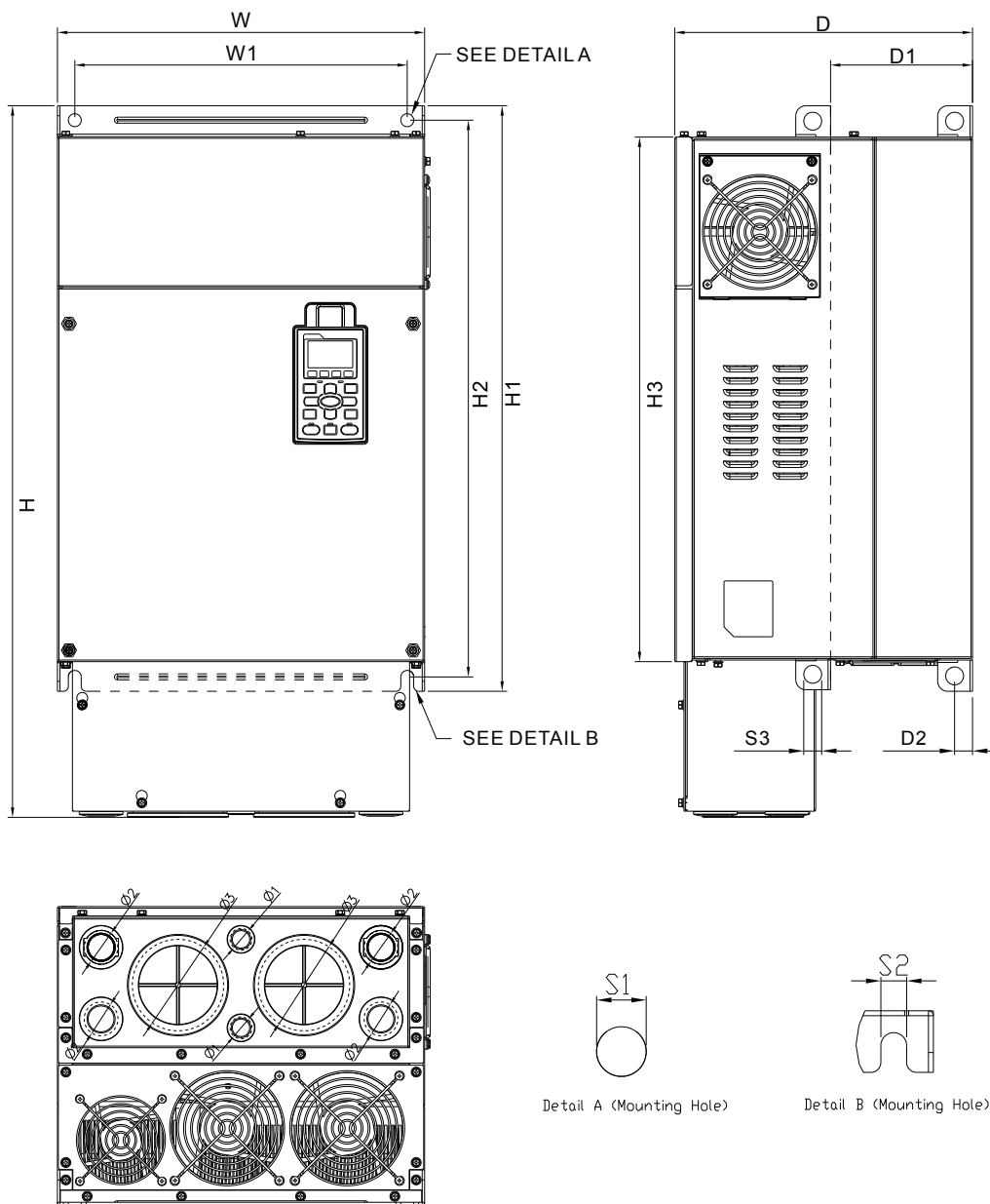
MODEL
FRAME_E1

VFD450C23A-00	VFD750C63B-00
VFD550C23A-00	VFD900C63B-00
VFD750C23A-00	VFD1100C63B-00
VFD900C43A-00	VFD1320C63B-00
VFD1100C43A-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	13.0	18.0	-	-	-
	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



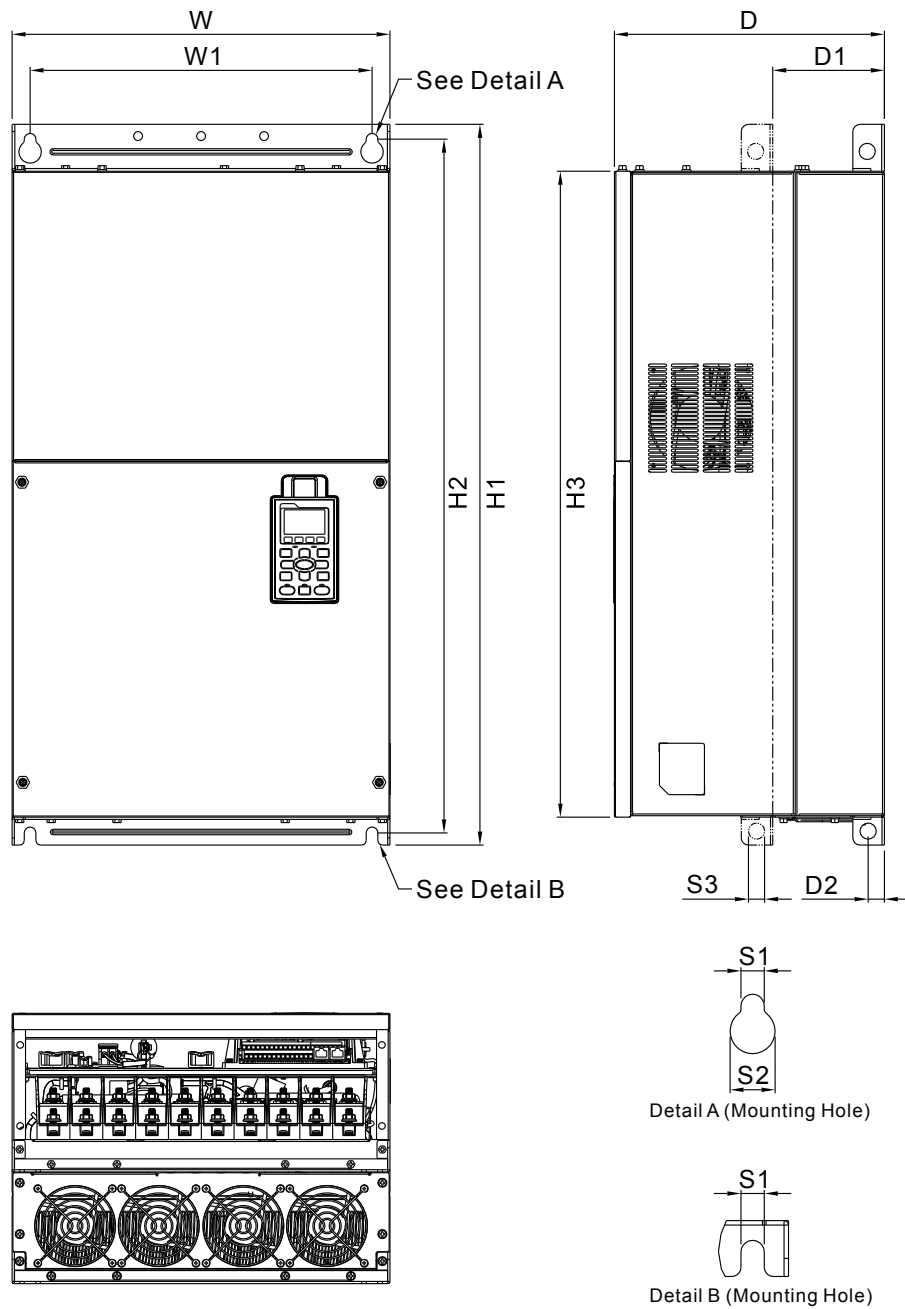
MODEL FRAME_E2

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	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	3.62

*D1: Flange mount.

Frame F1



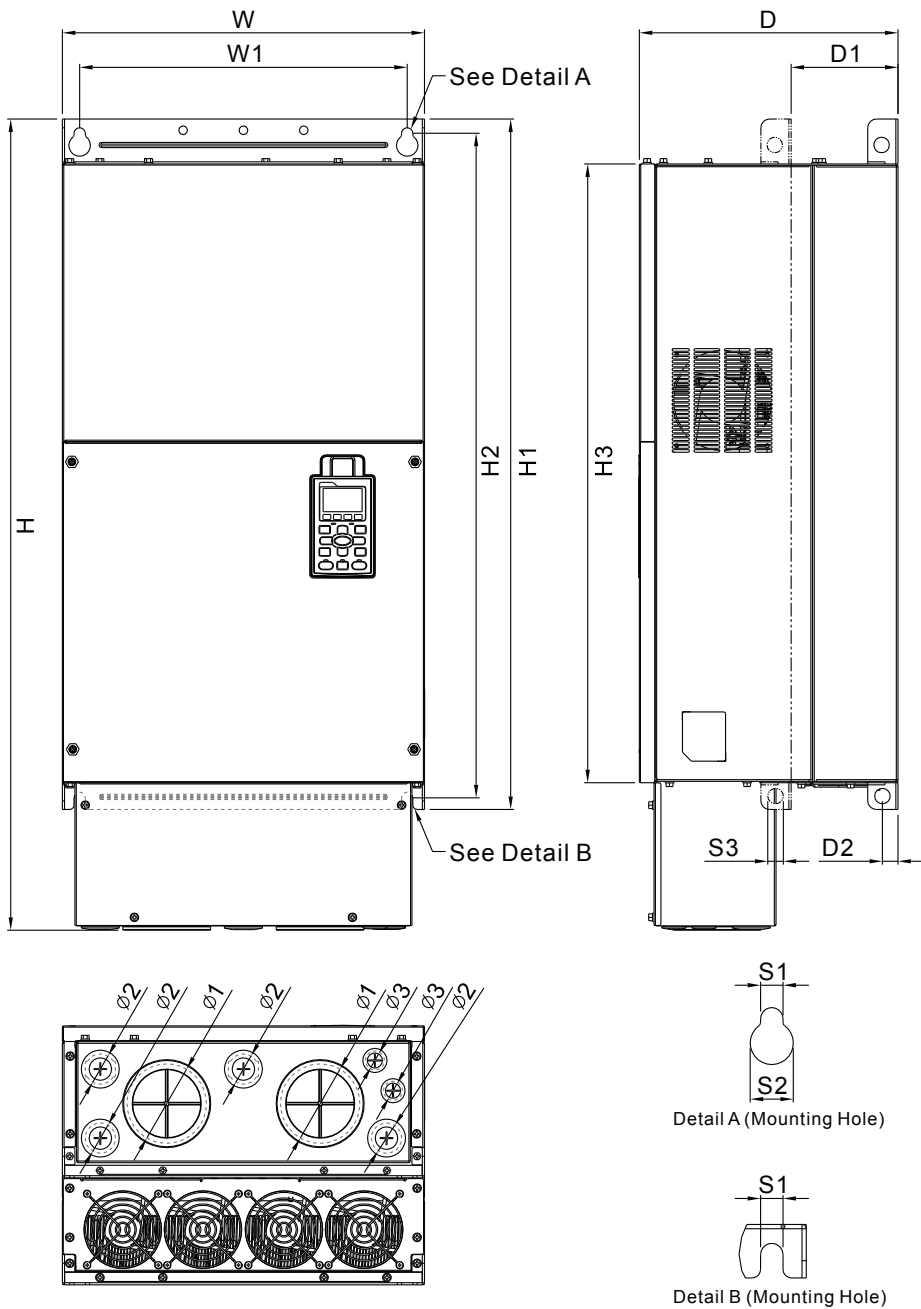
MODEL
FRAME_F1

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	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	4.88	0.71	0.51	0.98	0.71	3.62	1.38	0.87

*D1: Flange mount.

Frame F2



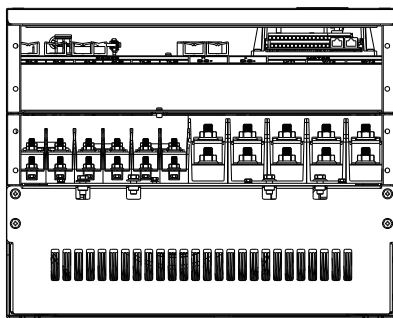
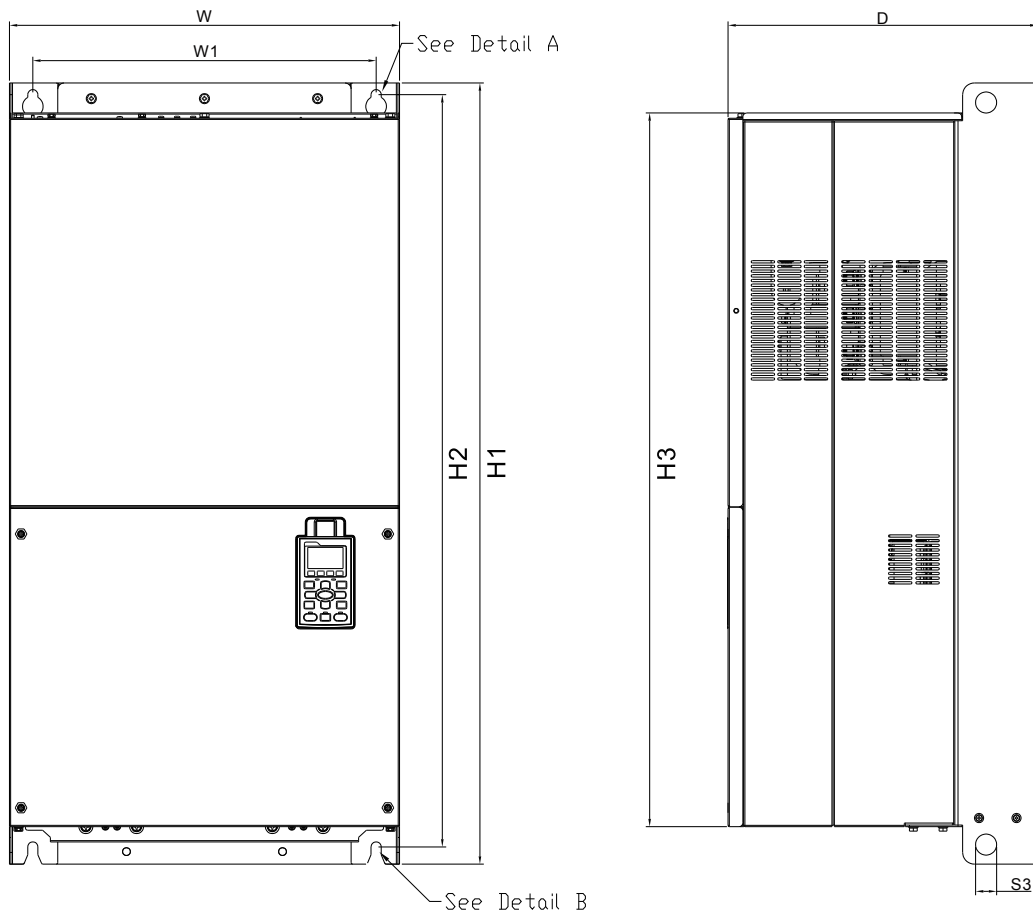
**MODEL
FRAME_F2**

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

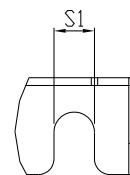
Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
F2	mm	420.0	940.0	300.0	380.0	800.0	770.0	124.0	18.0	13.0	25.0	18.0	92.0	35.0	22.0
	inch	16.54	37.00	11.81	14.96	31.50	30.32	28.23	4.88	0.71	0.51	0.98	0.71	3.62	1.38

*D1: Flange mount.

Frame G1



Detail A (Mounting Hole)



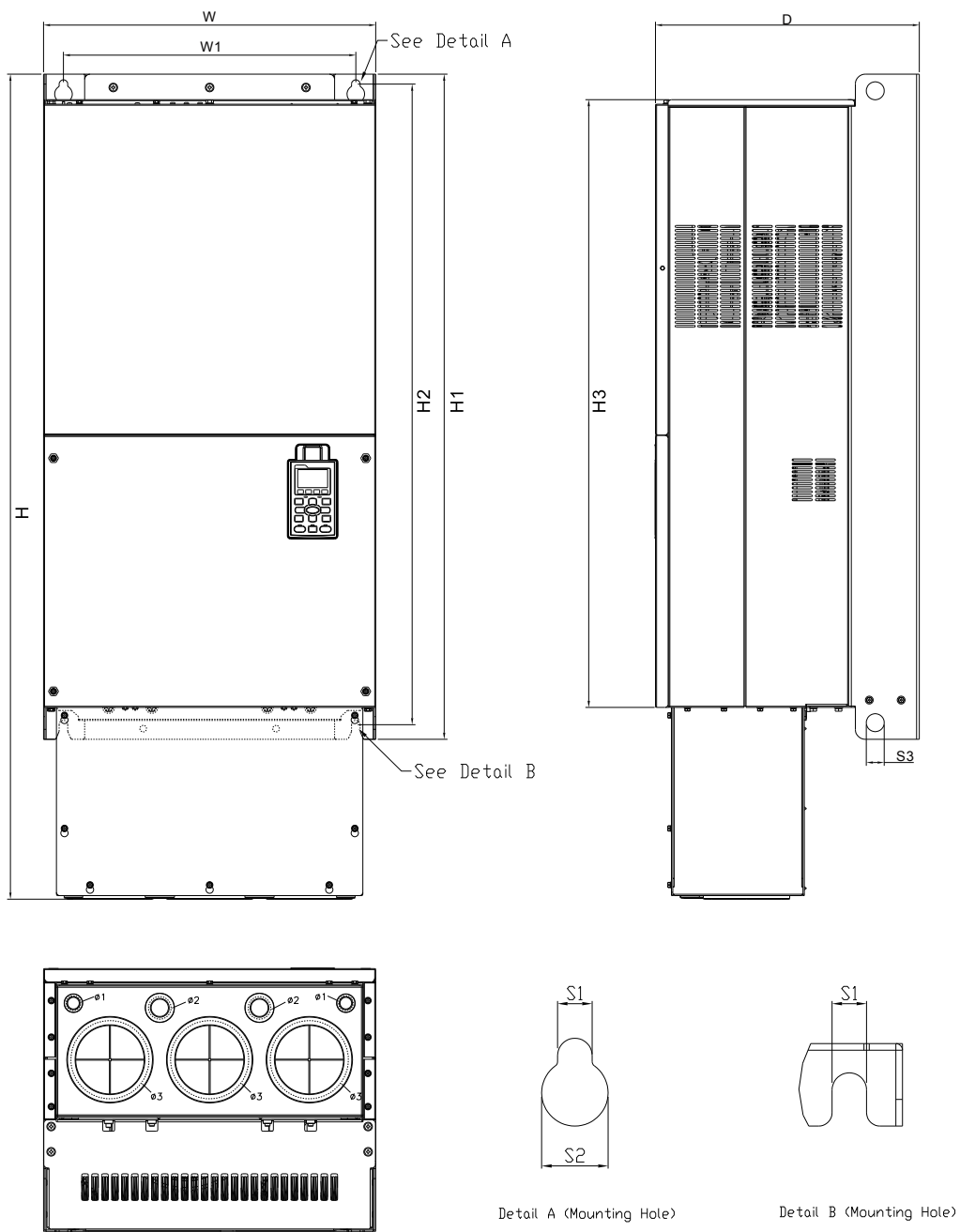
Detail B (Mounting Hole)

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

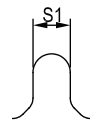
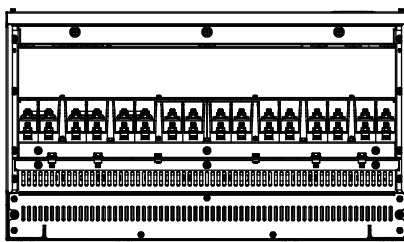
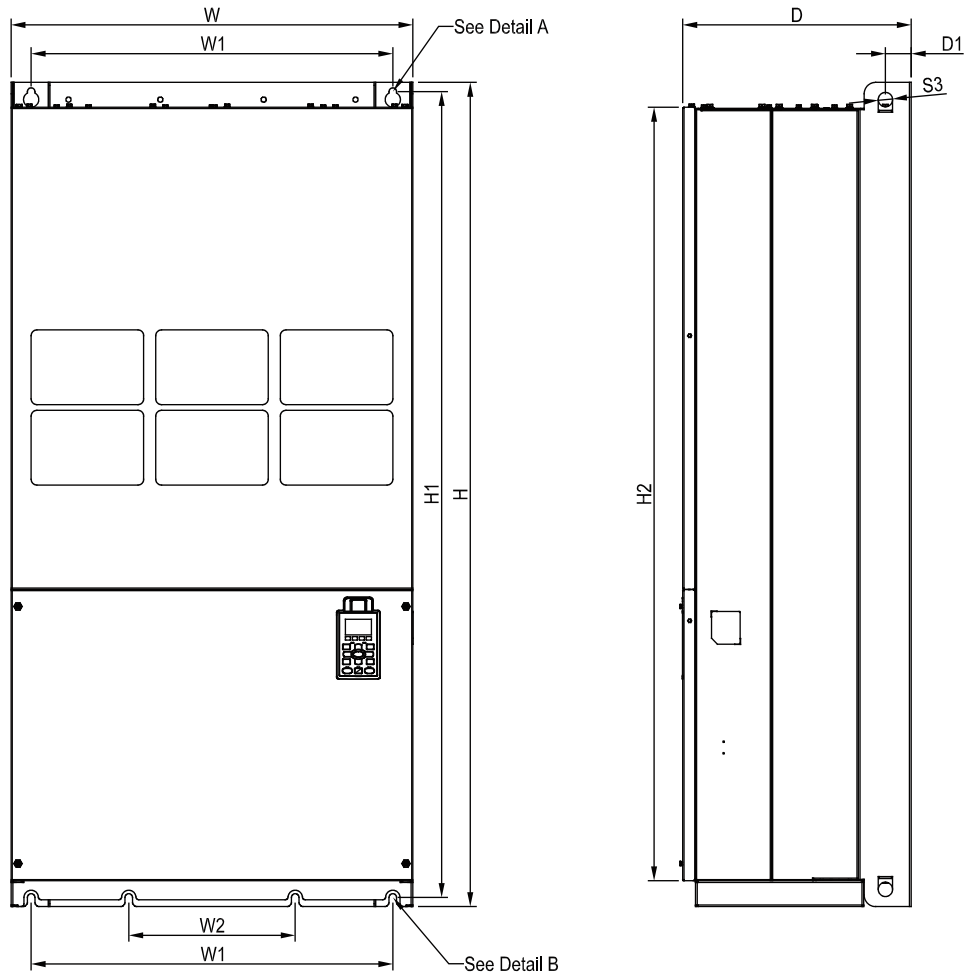


MODEL FRAME_G2

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

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



See Detail A (Mounting Hole)

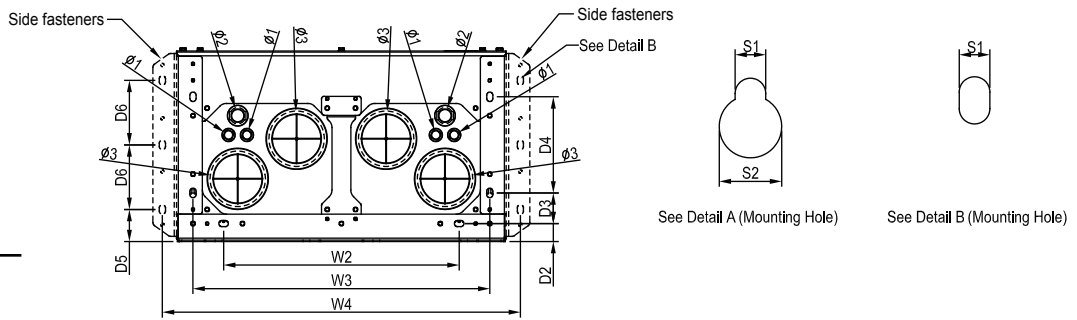
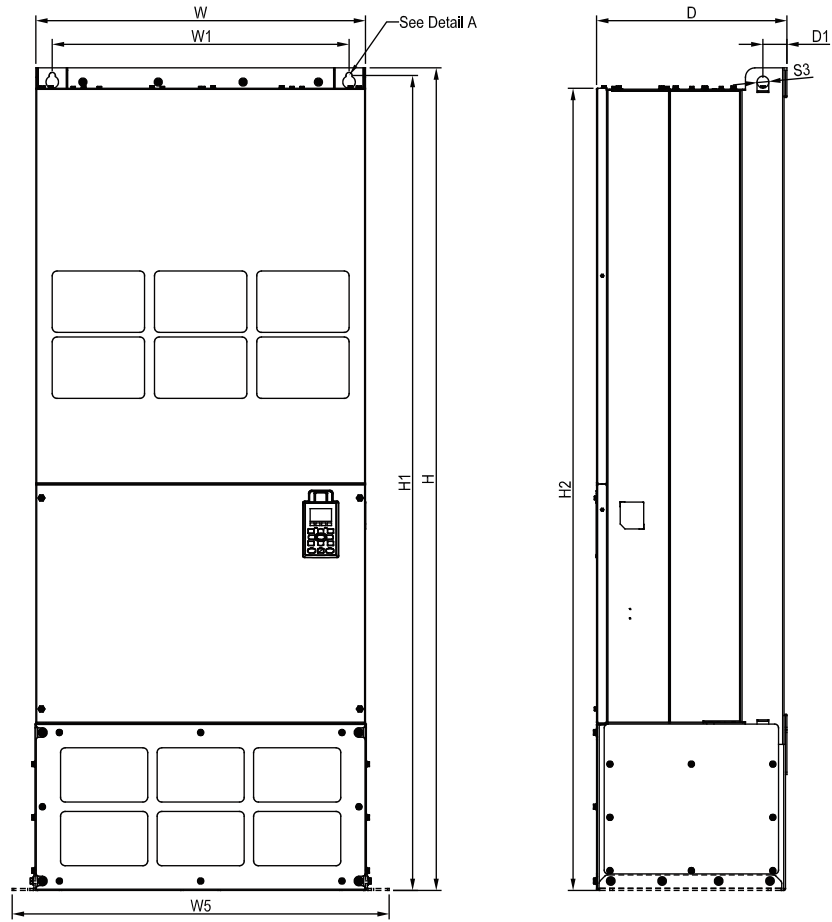
See Detail B (Mounting Hole)

MODEL FRAME_H1

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

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

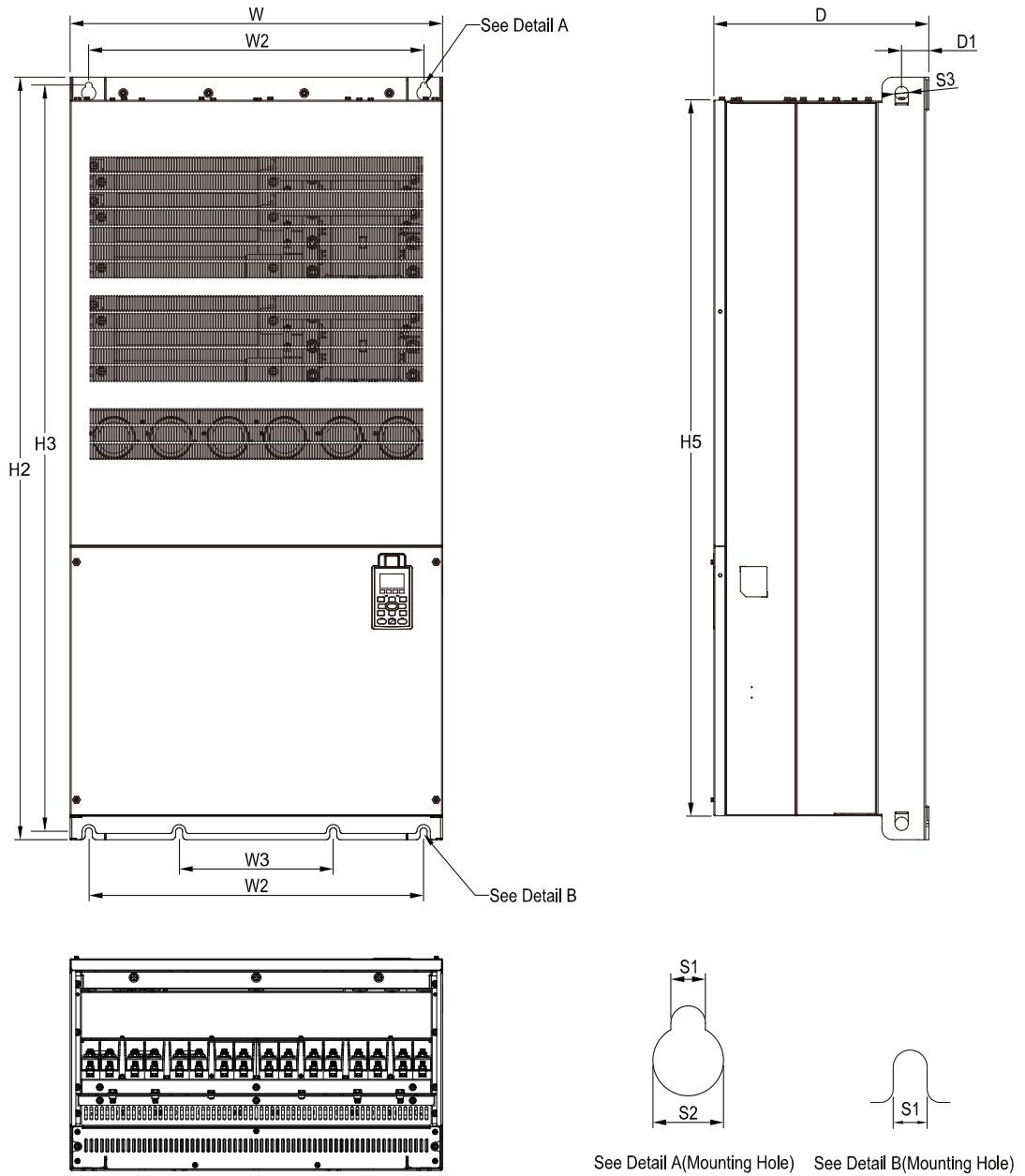


MODEL FRAME_H2

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

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

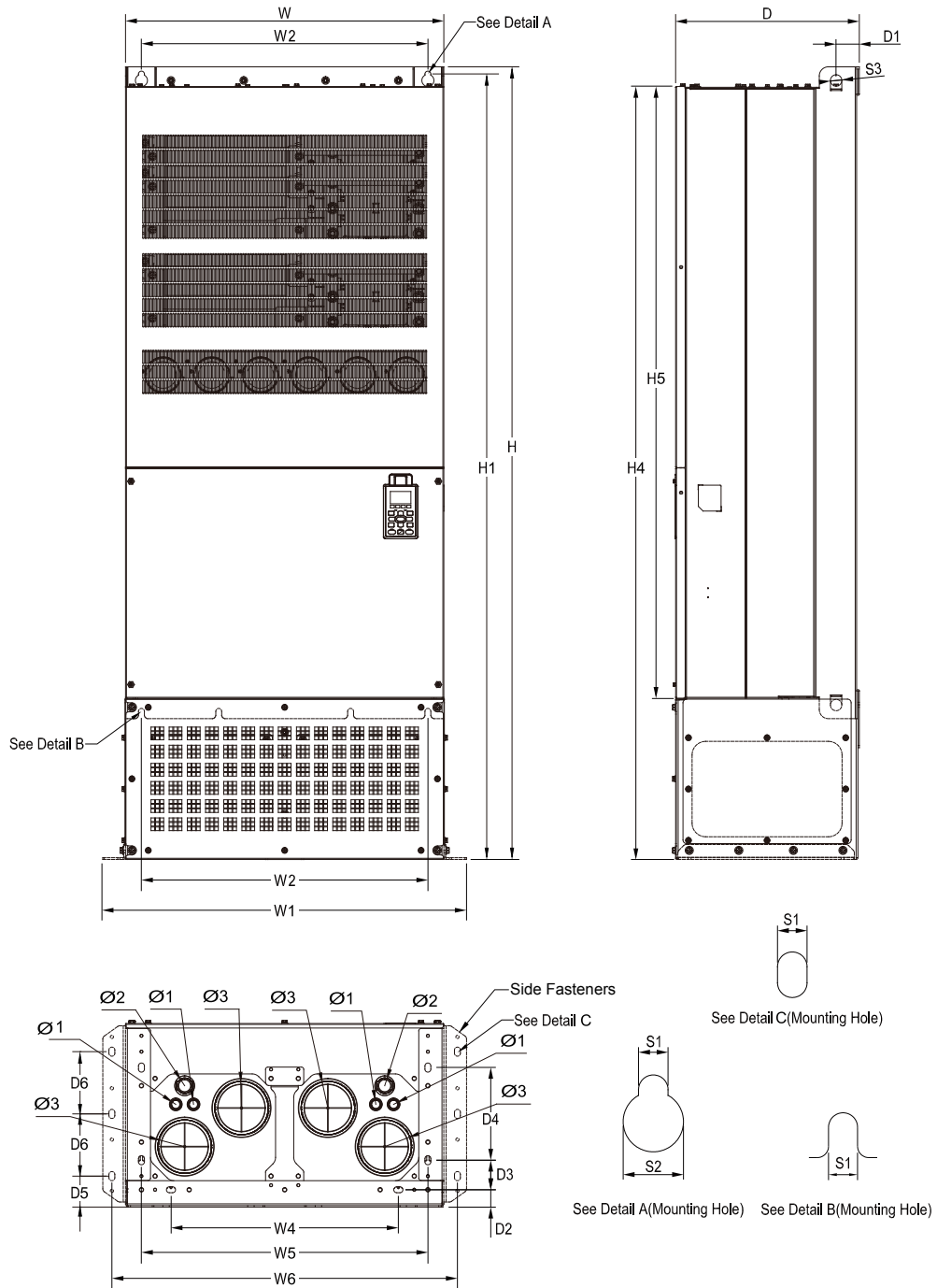


MODEL
690V FRAME_H1

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

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	-	-	-

690 V Frame H2



MODEL
690V FRAME_H2


- VFD4000C63B-21
- VFD4500C63B-21
- VFD5600C63B-21
- VFD6300C63B-21

Frame	W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4	
H2	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	
H2	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
 <p>Set by Pr.10-00 ~ 10-02</p>	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) 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: 5V _{DC} Max. output current: 15mA 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-PG010 / EMC-PG020

		Terminals	Description
 <p>Set by Pr.10-00 ~ 10-02</p>	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 or Open Collector) Open collector input: +5V/+24V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG010: 300KHz; EMC-PG020: 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-PG010: 300KHz; EMC-PG020: 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 (1.8KΩ/1W)] Max. Output current: 20mA Max output frequency: EMC-PG010: 300KHz; EMC-PG020: 30KHz

PG Card


EMC-PG01R

		Terminals	Description
 <p>Set by Pr.10-00 ~ 10-02</p>	PG1	R1- R2	Resolver output power 7Vrms, 10kHz
		S1,S2, S3, S4	Resolver input signal 3.5 ± 0.175Vrms, 10kHz
	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: 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 _{DC} Max. output current: 15mA 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 : Standard UVW Output Encoder; : Delta Encoder

		Terminals	Description
 <p>Set by Pr.10-00 ~ 10-02</p>	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: 300KHz
		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 _{DC} 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-PG01H 

		Terminals	Description
 <p>Set by Pr.10-00 ~ 10-02</p>	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 ~ 15 mA and install a pull-up resistor


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

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

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


Relay Extension Card

EMC-R6AA

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


Analog I/O Extension Card

EMC-A22A

	Terminals	Description
	AVI10 AVI11	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 0~20 mA/4~20 mA
	AFM10 AFM11	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 0~20.0 mA/4.0~20.0 mA
	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	Refer to Pr. 02-26~Pr. 02-31 for multi-function input selection Input voltage: 100~130 V _{AC} ; Input frequency: 57~63 Hz Input impedance: 27 K Ω Terminal response time: ON: 10 ms; OFF: 20 ms


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	Refer to Pr. 02-26~Pr. 02-29 to program the multi-function inputs MI10~MI13 Internal power is applied from terminal E24: +24 V _{DC} \pm 5% 200 mA, 5W External power +24 V _{DC} : max. voltage 30 V _{DC} , min. voltage 19 V _{DC} , 30W ON: the activation current is 6.5 mA; OFF: leakage current tolerance is 10 μ A
	MO10~MO11	Multi-function output terminals (photocoupler) Duty-cycle: 50%; Max. output frequency: 100 Hz Max. current: 50 mA; Max. voltage: 48 V _{DC}
	MXM	Common for multi-function output terminals MO10, MO11 (photocoupler) Max. 48 V _{DC} 50 mA


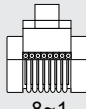
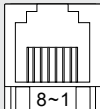
24V Power Shift Card

EMC-BPS01

Terminals	Descriptions
 <p>24V GND</p>	<p>Allows operation of network system, PLC function and partial functions when the AC motor drive is power off Input power: 24 VDC \pm 5% Maximum input current: 0.5A</p> <p>Note: Do not connect the control terminal +24V (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>

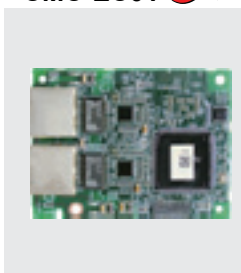
CANopen Communication Card

EMC-COP01

	 <p>8~1 Male</p>	 <p>8~1 Female</p>	RJ-45 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-
			6	CAN_GND	Ground/0V/V-

EtherCAT Communication 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	100Mbps
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

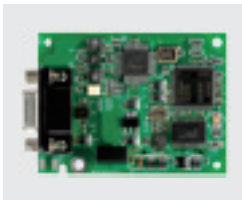
- ▶ Supports PROFINET IO device
- ▶ Supports synchronous data transmission and synchronous parameter access
- ▶ Provides GSDML file for PROFINET communication

Network Interface

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

Interface	DB9 connector
Transmission Method	High-speed RS-485
Transmission Cable	Shielded twisted pair cable
Electrical Isolation	500 V _{DC}

Communication

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)

EtherNet/IP Card

▪ CMC-EIP01



Features

- ▶ Supports parameters input (max. 32 words input/32 words output)
- ▶ User-defined parameter mapping
- ▶ IP Filter, basic firewall function
- ▶ Supports remote I/O function

Network Interface

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

Modbus TCP Card

▪ CMC-MOD01



Features

- ▶ IP Filter, basic firewall function
- ▶ Supports remote I/O function

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

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

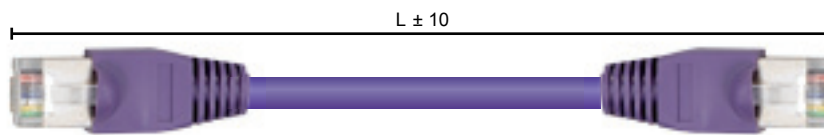
Interface	5-Pin 5.08mm Pluggable Connector
Transmission Method	CAN
Transmission Cable	Shielded twisted pair cable (with 2 power cables)
Transmission Speed	125 Kbps, 250 Kbps, 500 Kbps and extendable serial transmission speed mode
Network Protocol	DeviceNet protocol

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



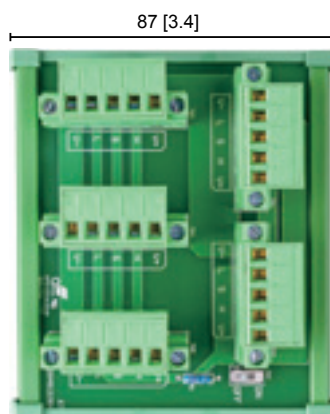
CANopen / DeviceNet TAP Breakout Boxes

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

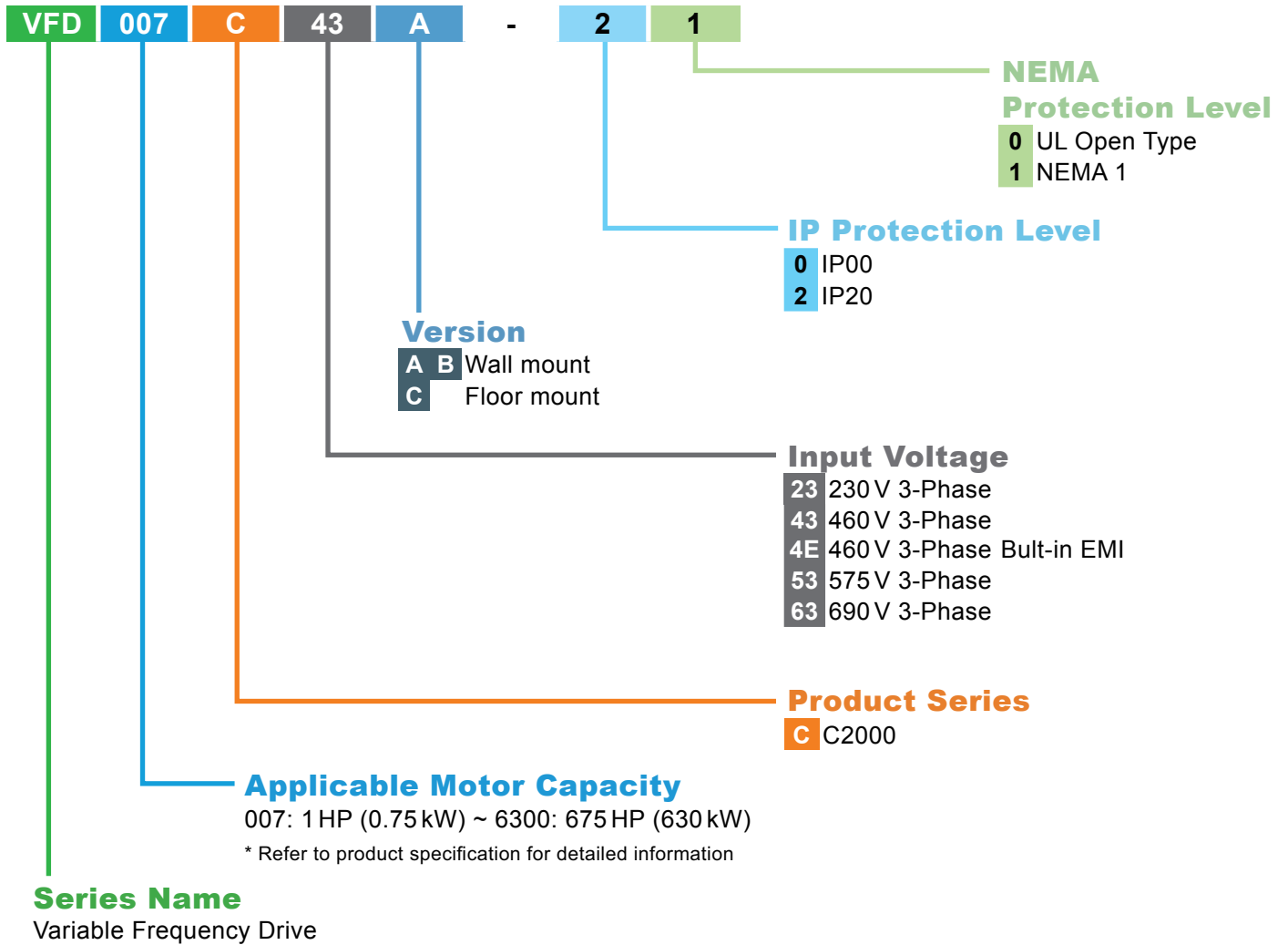


TAP-CN02



TAP-CN03

Model Name



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	Frame_D1 VFD300C23A-00 VFD370C23A-00 VFD550C43A-00 VFD750C43A-00 VFD450C63B-00 VFD550C63B-00	Frame_D0-1 VFD370C43S-00 VFD450C43S-00	Frame_D2 VFD300C23A-21 VFD370C23A-21 VFD550C43A-21 VFD750C43A-21 VFD450C63B-21 VFD550C63B-21	Frame_D0-2 VFD370C43S-21 VFD450C43S-21
Frame E		230V: 45~75kW 460V: 90~110kW 690V: 75~132kW	Frame_E1 VFD450C23A-00 VFD550C23A-00 VFD750C23A-00 VFD900C43A-00 VFD1100C43A-00 VFD750C63B-00 VFD900C63B-00 VFD1100C63B-00 VFD1320C63B-00	Frame_E2 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	Frame_F1 VFD900C23A-00 VFD1320C43A-00 VFD1600C43A-00 VFD1600C63B-00 VFD2000C63B-00	Frame_F2 VFD900C23A-21 VFD1320C43A-21 VFD1600C43A-21 VFD1600C63B-21 VFD2000C63B-21		

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



Delta Electronics



ASIA (Japan)



Tokyo Office

ASIA (India)



Rudrapur Plant
(Green Building)

EUROPE



Amsterdam, Netherlands

AMERICA



Research Triangle Park

▲ Factories 5 ■ Branch Offices 102 ● R&D Centers 6 ■ Distributors 824

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Smarter. Greener. Together.

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