



Automation for a Changing World

Delta Vector Control Drive C2000 Series



reddot design award
winner 2010

www.deltawww.com

 **DELTA**
Smarter. Greener. Together.



Powerful Features. High Efficiency

The C2000 series AC motor drive provides the most efficient and cost-effective solution for all types of drive applications. It features precise speed, torque and position control functions that are suitable for both sensor and sensorless types of synchronous and asynchronous motors. The C2000 series is also equipped with built-in PLC functions and supports the CANopen Master/Slave extension for the ultimate in system flexibility and fast data exchange.

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Standard Models (IP20/NEMA1)

Power range: 230V 0.75~90kW, 460V 0.75~450kW

230V (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
230V (HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125
Frame Size	A				B			C			D		E		F	
Braking Chopper	Built-in										Optional					
DC Reactor	Optional										Built-in					
EMI Filter	Optional															
Protection Level	IP20										IP00 / IP20					

460V (kW)	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
460V (HP)	1	2	3	5	5	7.5	10	15	20	25	30	40	50	60	75	100	125
Frame Size	A						B			C			D0		D		E
Braking Chopper	Built-in																
DC Reactor	Optional																
EMI Filter	Built-in (VFD_ _ _C43E)																
Protection Level	IP20																

*Available in China and Taiwan only.

Advanced Drive Controls

■ Door Width Auto-tuning

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

■ Environmental Adaptability

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

*Note: Please refer to the Product Specification



110	132	160	185	220	280	315	355	450*
150	175	215	250	300	375	425	475	600
	F	G	H					
Optional								
Built-in								
Optional								
IP00 / IP20								

■ 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. Synchronous point-to-point control

■ Modular Design

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



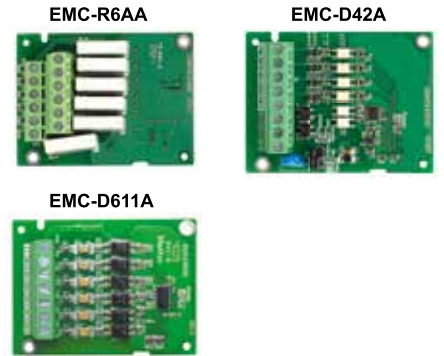
Modular Design

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

▶ PG (Encoder) cards



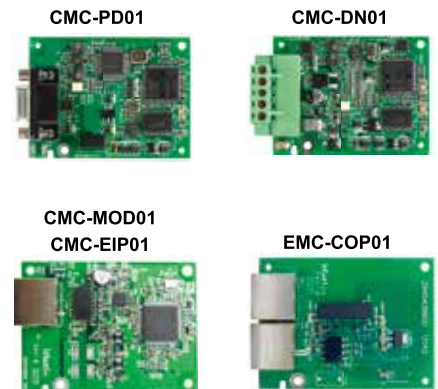
▶ I/O extension cards



▶ Power shift card



▶ Communication cards



■ Removable fan

To ensure personal safety, do not begin wiring before the indicator light is off.

■ Power indicator

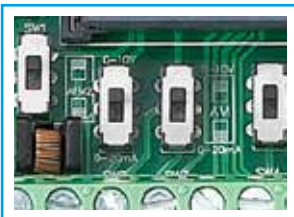
To prevent personal injury, please do not perform wiring before power indicator is off.

■ Removable terminals

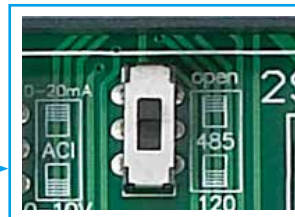
Convenient wiring and safety equipment.

*NOTE: "▶" are optional accessories.

Analog I/O switch



Termination resistor



Dual RJ45 communication ports



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

- KPC-CC01 keypad
- Standard RJ45 network cable.
- 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 two sides to remove the cover for wiring

- Modular fan design is easy to clean and replace providing longer service life.



Excellent Environment Adaptability

- Built-in DC choke to suppress harmonics*
- Built-in EMI filter to filter noise*
- Conformal coating (Class 3C2 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,

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 and calendar function
- Language selection for display
- Copy function saves parameters and PLC programs to the keypad memory for later transfer to another drive
- IP66 protection level



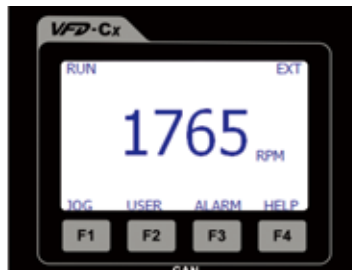
F1 to F4: User-defined function keys

Selection keys

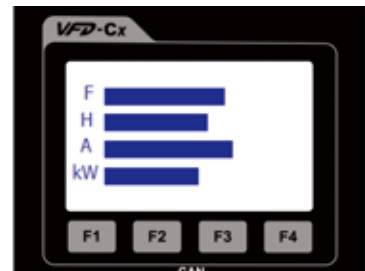
LED displays the current drive status



Create homepage logo



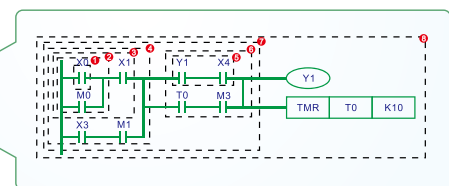
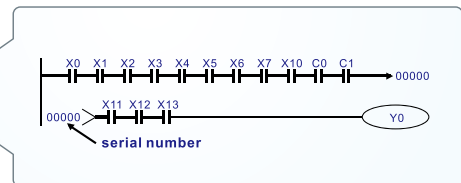
Editable message display



Editable chart display

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.



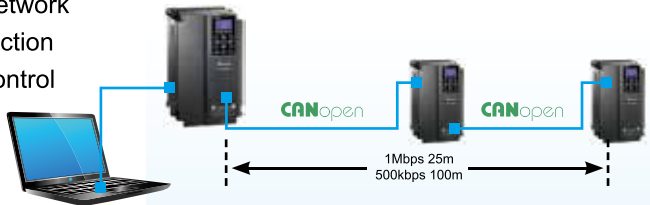
High-speed Network

- Provides optional MODBUS RTU and various fieldbus cards for flexible communication applications
- Advanced network functions
- Built-in MODBUS communication interface
- **CANopen (DS402)**

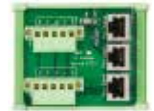


Ability to control up to 8 Slave drives via the CANopen Master function

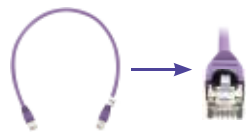
- Supports all Delta industrial automation products (all EDS files of Delta industrial automation products are built-in)
- I/O data layout of each piece of equipment on the CANopen Network
- Planning function for motion control
- WPL Soft



- TAP-CN03 distribution box for long distances



- RJ45 cable



Delta DeviceNet Builder software is specially designed for DeviceNet communication. With this software, it is easy to plan DeviceNet equipment and remote I/O via parameters to build a standard DeviceNet monitoring structure.

- Supports all Delta industrial automation products (all EDS files of Delta industrial automation products are built-in)
- I/O data layout of each piece of equipment in the DeviceNet network
- DeviceNet layout software



MODBUS TCP

Delta's communication integrator software not only provides graphic module setting and a human interface design but also supports settings and online monitoring for all Ethernet products.

- Delta software for Ethernet/MODBUS TCP products
- Graphic module setting and human interface design
- Auto search function
- Setting interface for virtual COM port



Convenient Operation Platform for Drive System Management

- 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.

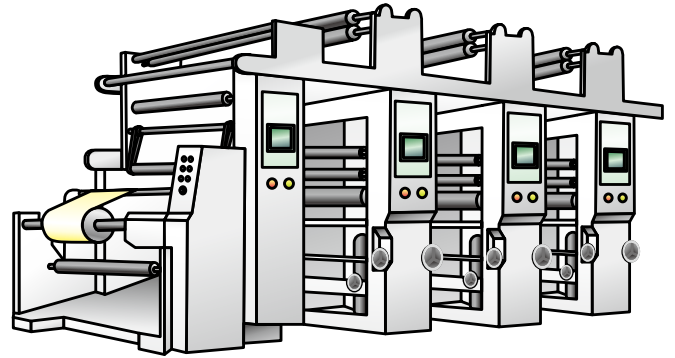
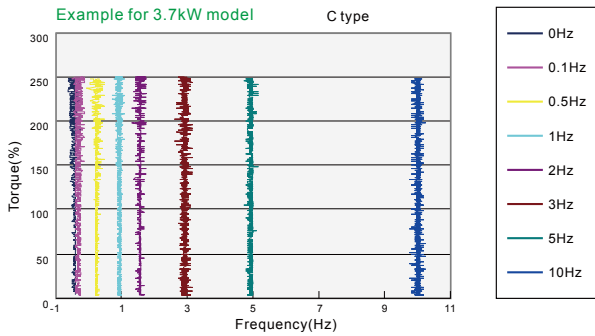
- Start-up display**
Displays horsepower, rated voltage and current of present model
- Parameter management**
Provides parameter setting/save/copy/comparison for convenient parameter management.
- Trend records**
Monitors operation curve of the drive by communication and displays I/O terminal status. 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: please download the software above at Delta website

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.

- Precise position and speed control ideal for printing machine applications.

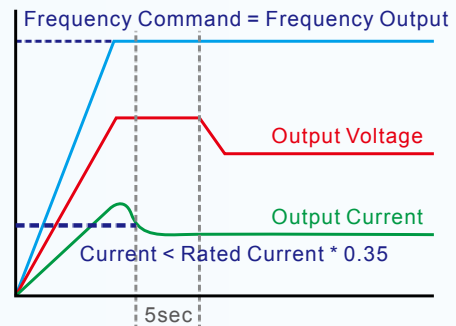
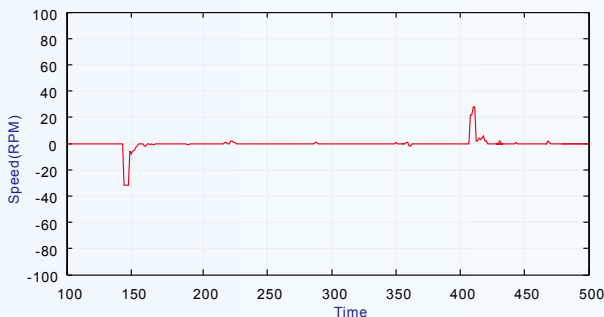


Fast Response to Impact Load

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

Auto Energy-Saving Operation

During constant speed operation, this function auto-calculates the best voltage value by the load power for the load.

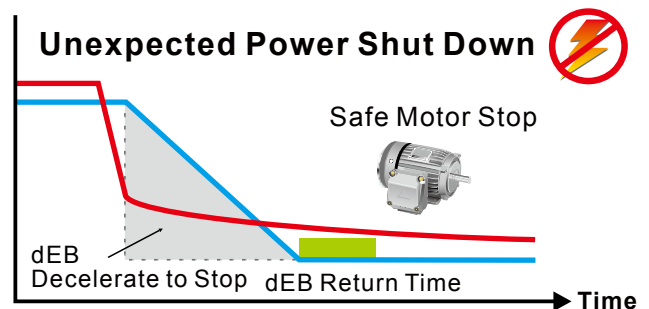
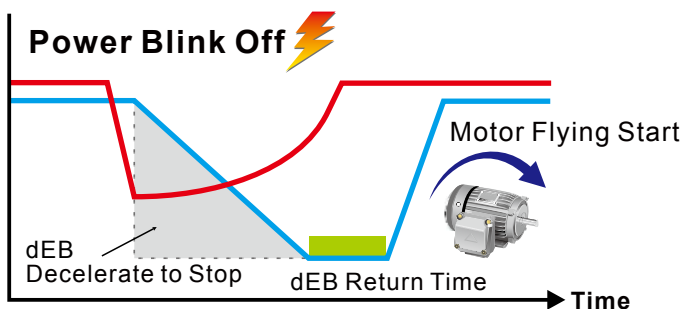


Deceleration Energy Backup (dEB)

This function controls the motor deceleration for stopping when an unexpected power shut down occurs to prevent mechanical damage. When power resumes, the motor will return to its previous speed.

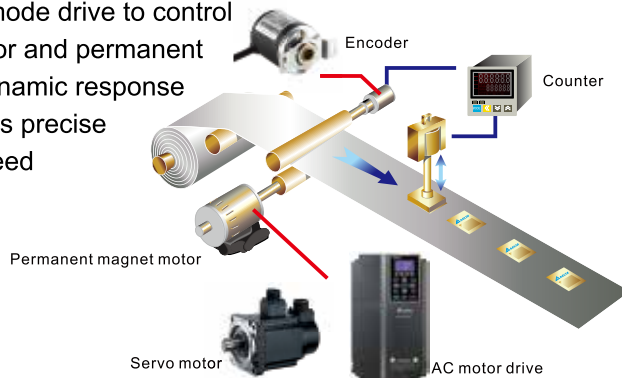
— Input Voltage
— Motor Speed

— Input Voltage
— Motor Speed



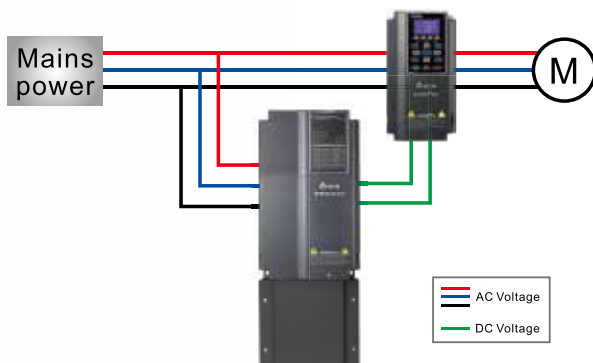
A Drive for Permanent Magnet (PM) Motors

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.



Delta REG2000 Series for Power Regeneration

Using the REG2000 with the C2000 in a crane and hoist application provides the user with a four-quadrant operation and energy saving results.



Delta AFE2000 Series for Power Regeneration and Power Quality Improvement

The Active Front End Unit (AFE2000) helps to reduce torque ripple and harmonics with a higher power factor to provide excellent production quality and outstanding energy saving results.



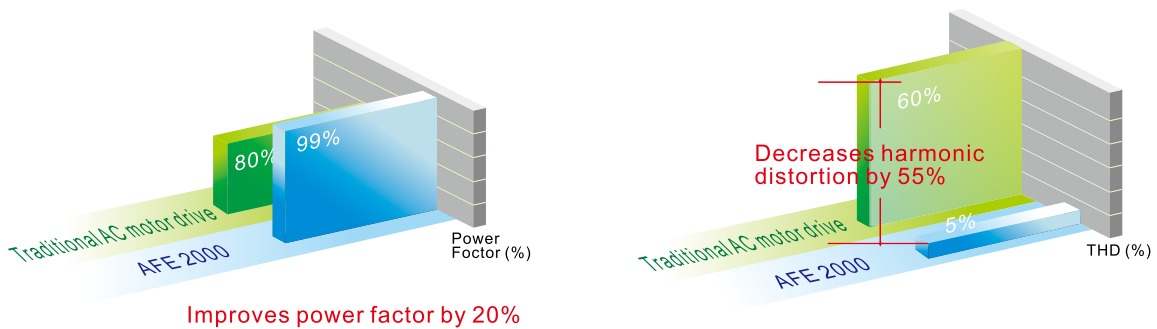
Delta Active Front End AFE2000 Series

Features

- Replaces traditional brake resistor to reduce heat generation.
- Clear energy savings: more than 95% of the regenerative energy is converted into electricity and supplied back to the mains.
- Full-load operation: input-side current THD lower than 5% and improves power factor up to 99%.
- AC motor drives with AFE2000: supports 4-quadrant operation with variable frequencies and adjustable system.
- Constant DC bus voltage: unaffected by mains voltage fluctuations.

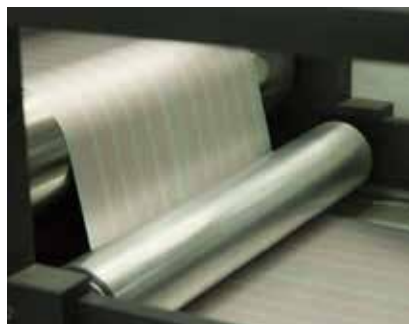


Improves power factor and decreases harmonic distortion.
THD ≤ 5%, power factor > 99%




Applications

- Large-inertia loads, such as centrifuge equipment, dewatering machines and roving machines
- 4-quadrant loads including elevators, cranes and pumpjacks (oil extraction machines)
- Quick braking, such as machine tools, bag making machines, auto storage and retrieval systems, and lathes
- Long-term energy feedback, such as wind power, water power, steel printing and paper making machinery (winding equipment)
- Improves power quality for industries such as semiconductor and panel industries



Operating Environment

DO NOT expose the AC motor drive to harsh environments, such as dust, direct sunlight, corrosive/ inflammable gasses, humidity, liquid or vibrations. The salt in the air must be less than 0.01 mg/cm² per year.

Installation location	IEC60364-1/IEC60664-1 Pollution degree 2, Indoor use only	
Surrounding Temperature	Storage/ Transportation	-25°C ~ +70°C
	No condensation, no frost	
Rated Humidity	Operation	Max. 95%
	Storage/ Transportation	Max. 95%
	No condensation, no frost	
Air Pressure	Operation/ Storage	86 to 106 kPa
	Transportation	70 to 106 kPa
Pollution Level	IEC60721-3-3	
	Operation	Class 3C2 : Class 3S2
	Storage	Class 2C2 : Class 2S2
	Transportation	Class 1C2 : Class 1S2
No condensation, no frost		
Altitude	Operation	If AC motor drive is installed at altitude 0~1000m, follow normal operation restriction. If it is install at altitude 1000~3000m, decrease 2% of rated current or lower 0.5°C of temperature for every 100m increase in altitude. Maximum altitude for Corner Grounded is 2000m.
Package Drop	Storage/ Transportation	ISTA procedure 1A(according to weight) IEC60068-2-31
Vibration	1.0mm, peak to peak value range from 2Hz to 13.2 Hz; 0.7G~1.0G range from 13.2Hz to 55Hz; 1.0G range from 55Hz to 512 Hz. Comply with IEC 60068-2-6	
Impact	IEC/EN 60068-2-27	
Operation Position	Max. allowed offset angle ±10° (under normal installation position)	

Specification for Operation Temperature and Protection Level

Model	Frame	Top Cover	Conduit Box	Protection Level	Operation Temperature
VFDxxxCxxA VFDxxxCxxS	Frame A~C 230V: 0.75~22kW 460V: 0.75~30kW	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
	Frame D~H 230V: >22kW 460V: >30kW	N/A	No conduit box	IP00 IP20/UL Open Type 	-10°C ~50°C
VFDxxxCxxE VFDxxxCxxU	Frame A~C 460V: 0.75~30kW	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
	Frame D~H 230V: >22kW 460V: >30kW	N/A	Standard conduit box	IP20/UL Type1/NEMA1	-10°C ~40°C

IP00: for the circled area
IP20: for all other area

Specifications

230V		A				B			C			D		E			F		
Frame Size																			
Model VFD__C__		007	015	022	037	055	075	110	150	185	220	300	370	450	550	750	900		
Applicable Motor Output (kW)		0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90		
Applicable Motor Output (HP)		1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125		
Output Rating	NORMAL 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
		Overload Capacity		Rated output current: 120% for 1 minute, 160% for 3 seconds.															
		Max. Output Frequency (Hz)		0.00~600.00Hz															
		Carrier Frequency (kHz)		2~15kHz (8kHz)						2~10kHz (6kHz)						2~9kHz (4kHz)			
	HEAVY DUTY	Rated Output Capacity (kVA)		1.9	2.8	4.0	6.4	9.6	12	19	25	28	34	45	55	68	81	96	131
		Rated Output Current (A)		4.8	7.1	10	16	24	31	47	62	71	86	114	139	171	204	242	329
		Overload Capacity		Rated output current: 150% for 1 minute, 180% for 3 seconds.															
		Max. Output Frequency (Hz)		0.00~300.00Hz															
		Carrier Frequency (kHz)		2~6kHz (2kHz)															
Input Rating	Input Current (A) Normal Duty		6.4	12	16	20	28	36	52	72	83	99	124	143	171	206	245	331	
	Input Current (A) Heavy Duty		6.1	11	15	18.5	26	34	50	68	78	95	118	136	162	196	233	315	
	Rated Voltage/Frequency		3-phase AC 200V~240V (-15%~+10%), 50/60Hz																
	Operating Voltage Range		170~265Vac																
	Frequency Tolerance		47~63Hz																
Drive Weight		2.6± 0.3Kg				5.4± 1Kg			9.8± 1.5Kg			38.5± 1.5Kg		64.8± 1.5Kg			86.5± 1.5Kg		
Efficiency (%)		96	96	96	96	96.5	96.5	96.5	96.5	96.5	96.5	97	97	97	97	97	97		
Cooling Method		Natural cooling				Fan cooling													
Braking Chopper		Frame A, B, C: built-in						Frame D and above: optional											
DC Choke		Frame A, B, C: optional						Frame D and above: built-in											
EMI Filter		Optional external EMI filter is available upon purchase																	
EMC-COP01		VFDXXC23A: optional; VFDXXC23E: built-in																	

460V		A					B			C						
Frame Size																
Model VFD__C__		007	015	022	037	040	055	075	110	150	185	220	300			
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			
Output Rating	NORMAL 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	
		Overload Capacity		Rated output current: 120% for 1 minute, 160% for 3 seconds.												
		Max. Output Frequency (Hz)		0.00~600.00Hz												
		Carrier Frequency (kHz)		2~15kHz (8kHz)								2~10kHz (6kHz)				
	HEAVY DUTY	Rated Output Capacity (kVA)		2.3	3.0	4.5	6.5	7.6	9.6	14	18	24	29	34	45	
		Rated Output Current (A)		2.9	3.8	5.7	8.1	9.5	11	17	23	30	36	43	57	
		Overload Capacity		Rated output current: 150% for 1 minute, 180% for 3 seconds.												
		Max. Output Frequency (Hz)		0.00~300.00Hz												
		Carrier Frequency (kHz)		2~6kHz (2kHz)												
Input Rating	Input Current (A) Normal Duty		4.3	5.9	8.7	14	15.5	17	20	26	35	40	47	63		
	Input Current (A) Heavy Duty		4.1	5.6	8.3	13	14.5	16	19	25	33	38	45	60		
	Rated Voltage/Frequency		3-phase AC 380V~480V (-15%~+10%), 50/60Hz													
	Operating Voltage Range		323~528Vac													
	Frequency Tolerance		47~63Hz													
Drive Weight		2.6± 0.3Kg					5.4± 1Kg			9.8± 1.5Kg						
Efficiency (%)		96	96	96	96	96	96	96	96	96	96.5	96.5	96.5	96.5		
Cooling Method		Natural cooling					Fan cooling									
Braking Chopper		Frame A, B, C: built-in ; Frame D and above: optional														
DC Choke		Frame A, B, C: optional ; Frame D and above: built-in														
EMI Filter		Frame A,B,C VFDXXC43E: built-in EMI filter Frame A,B,C VFD__C43A: no EMI filter (Optional external EMI filter is available upon purchase) , VFDXXC43E: built-in.														

NOTES:




- The carrier frequency is default. Increasing the carrier frequency requires a reduction in current, please refer to Pr. 06-55 Derating Protection drawing.
- The motor drive should operate in derating current when its control method is set to FOC Sensorless, TQC+PG, TQC Sensorless, PM+PG and PM Sensorless modes.
- When the application is performing impact load, select the motor drive with one grade larger capacity.
- For FRAME A, B and C, Model VFD__C43A is under IP20/NEMA1/UL TYPE1 protection level.
- For FRAME D and above, if the last character of the model is A then it is under IP20 protection level but the wiring terminal is under IP00 protection level; if the last character of the model is E, it is under IP20/NEMA1/UL TYPE1 protection level.

460V

Frame Size		D0	D				E		F		G		H				
Model VFD ___ C __		370	450	550	750	900	1100	1320	1600	1850	2200	2800	3150	3550	4500*		
Applicable Motor Output (kW)		37	45	55	75	90	110	132	160	185	220	280	315	355	450		
Applicable Motor Output (HP)		50	60	75	100	125	150	175	215	250	300	375	425	475	600		
Output Rating	NORMAL DUTY	Rated Output Capacity (kVA)		58	73	88	120	143	175	207	247	295	367	438	491	544	720
		Rated Output Current (A)		73	91	110	150	180	220	260	310	370	460	550	616	683	866
		Overload Capacity		Rated output current: 120% for 1 minute, 160% for 3 seconds.													
	Max. Output Frequency (Hz)		0.00~600.00Hz														
	Carrier Frequency (kHz)		2~10kHz (6kHz)						2~9kHz (4kHz)								
	HEAVY DUTY	Rated Output Capacity (kVA)		55	69	84	114	136	167	197	235	280	348	417	466	517	677
Rated Output Current (A)		69	86	105	143	171	209	247	295	352	437	523	585	649	816		
Overload Capacity		Rated output current: 150% for 1 minute, 180% for 3 seconds.															
Max. Output Frequency (Hz)		0.00~300.00Hz															
Carrier Frequency (kHz)		2~6kHz (2kHz)															
Input Rating	Input Current (A) Normal Duty		74	101	114	157	167	207	240	300	380	400	494	555	625	866	
	Input Current (A) Heavy Duty		70	96	108	149	159	197	228	285	361	380	469	527	594	816	
	Rated Voltage/Frequency		3-phase AC 380V~480V (-15%~+10%), 50/60Hz														
	Operating Voltage Range		323~528Vac														
	Frequency Tolerance		47~63Hz														
	Drive Weight		38.5±1.5Kg				64.8±1.5Kg		86.5±1.5Kg		134±4Kg		228				
Efficiency (%)		97	97	97	97	97	97	97	97	97.5	97.5	97.5	97.5	97.5	97.5		
Cooling Method		Fan cooling															
Braking Chopper		Frame A, B, C: built-in ; Frame D and above: optional															
DC Choke		Frame A, B, C: optional ; Frame D and above: built-in															
EMI Filter		Optional external EMI filter is available upon purchase															
EMC-COP01		VFDXXC43A: optional; VFDXXC43E: built-in															

General Specifications

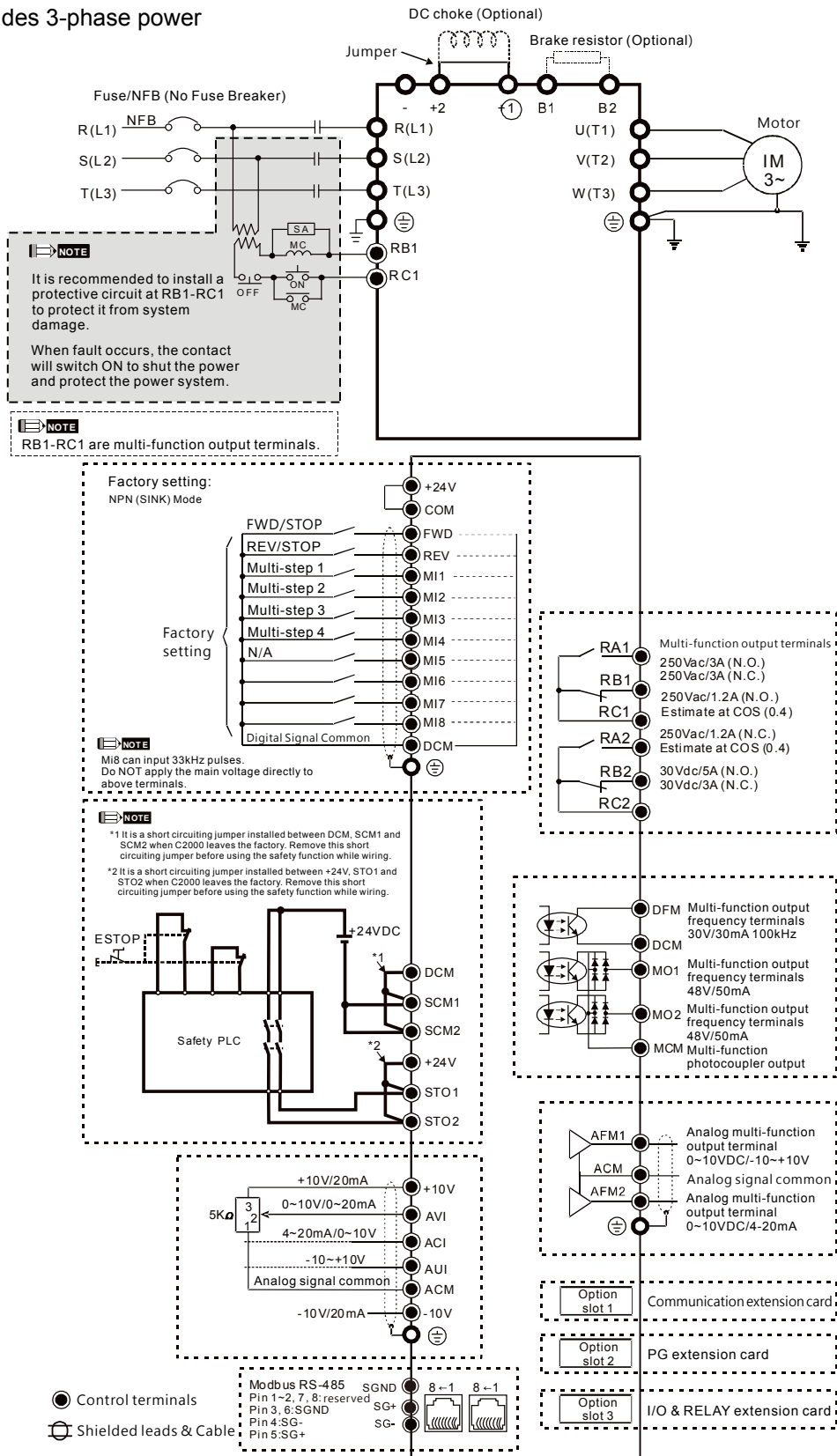
* Available in China and Taiwan only.

Control Characteristics	Control Method	Pulse Width Modulated (PWM)
	Control Mode	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
	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	5Hz (vector control can reach up to 40Hz)
	Torque Limit	Normal duty 160%, heavy duty 180% of torque current
	Torque Accuracy	±5%
	Max. Output Frequency (Hz)	Normal duty:0.00~600.00Hz; Heavy duty: 0.00 ~ 300.00 Hz
	Frequency Output Accuracy	Digital command:±0.01%, -10°C ~+40°C, Analog command:±0.1%, 25±10°C
	Output Frequency Resolution	Digital command:0.01Hz , Analog command: 0.03 X max. output frequency/60 Hz (±11 bit)
Protection Characteristics	Overload Capacity	Normal duty: rated output current is 120% for 60seconds, 160% for 3 seconds. Heavy duty: rated output current is 150% for 60seconds, 180% for 3 seconds.
	Frequency Setting Signal	+10V~-10,0~-+10V,4~20mA,0~20mA,Pulse input
	Accel./decel. Time	0.00~600.00/0.0~6000.0 Seconds
	Main Control Function	Torque control, Droop control, Speed/torque control switching, Feed forward control, Zero-servo control, Momentary power loss ride thru, Speed search, Over-torque detection, Torque limit, 17-step speed (max), Accel/decel time switch, S-curve accel/decel, 3-wire sequence, Auto-Tuning (rotational, stationary), Dwell, Cooling fan on/off switch, Slip compensation, Torque compensation, JOG frequency, Frequency upper/lower limit settings, DC injection braking at start/stop, High slip braking, PID control (with sleep function), Energy saving control, MODBUS communication (RS-485 RJ45, max. 115.2 kbps), Fault restart, Parameter copy
	Fan Control	230V model : VFD150C23A(include) and series above: PMW control; VFD110 C23A and series below: on/off switch control 460V model : VFD185 C43A(include) and series above: PMW control; VFD150C43A and series below: on/off switch control
	Motor Protection	Electronic thermal relay protection
	Over-current Protection	Over-current protection for 240% rated current current clamp 『Normal duty: around 170~175%』 ; 『Heavy duty: around 180~185%』
Over-voltage Protection	230: drive will stop when DC-BUS voltage exceeds 410V 460: drive will stop when DC-BUS voltage exceeds 820V	
Over-temperature Protection	Built-in temperature sensor	
Stall Prevention	Stall prevention during acceleration, deceleration and running independently.	
Restart after Instantaneous Power Failure	Parameter setting up to 20 seconds	
Grounding Leakage Current Protection	Leakage current is higher than 50% of the AC motor drive's rated current	
Certifications	  	

Wiring

Wiring Diagram for Frame A~C

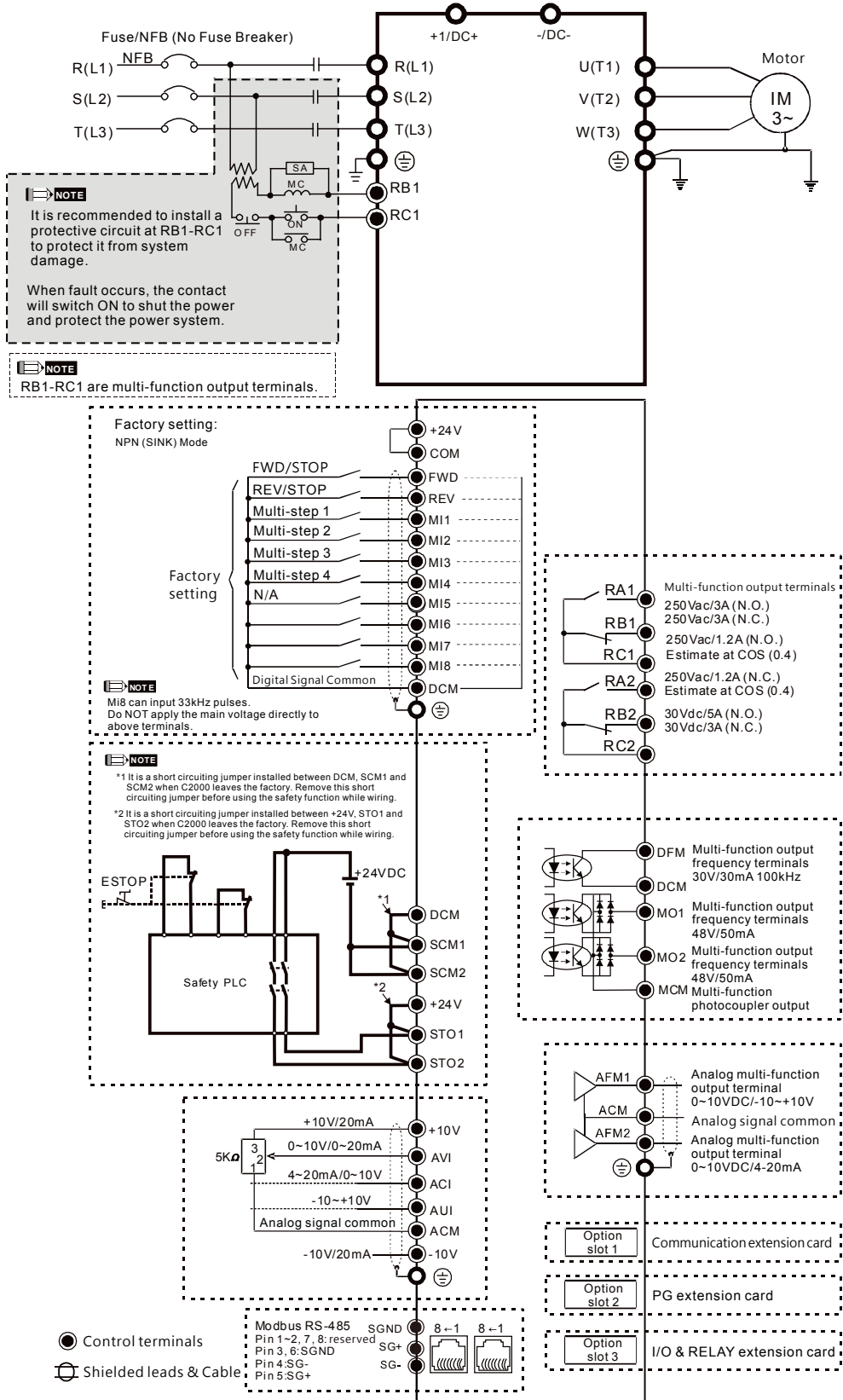
*It provides 3-phase power



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.

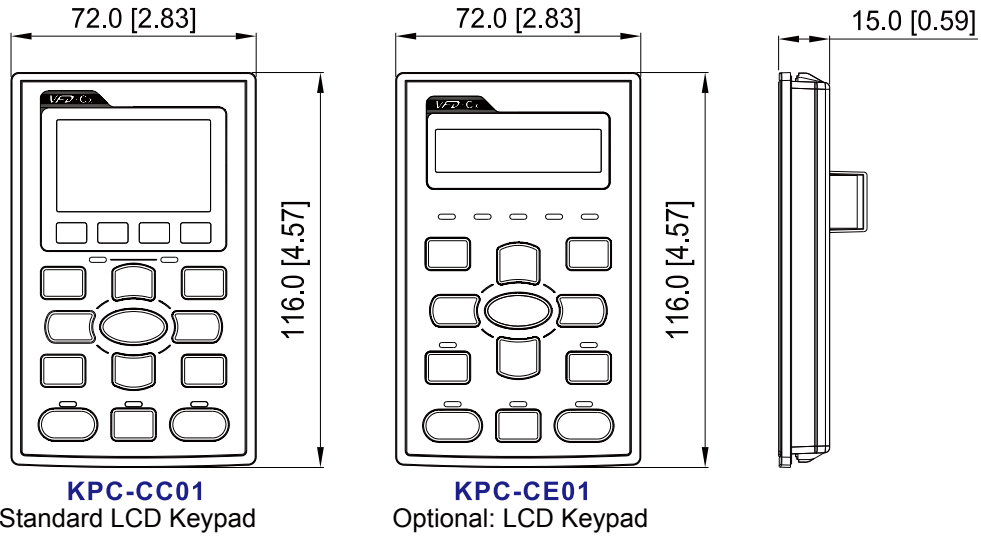
Wiring Diagram for Frame D and Frames Above

*It provides 3-phase power

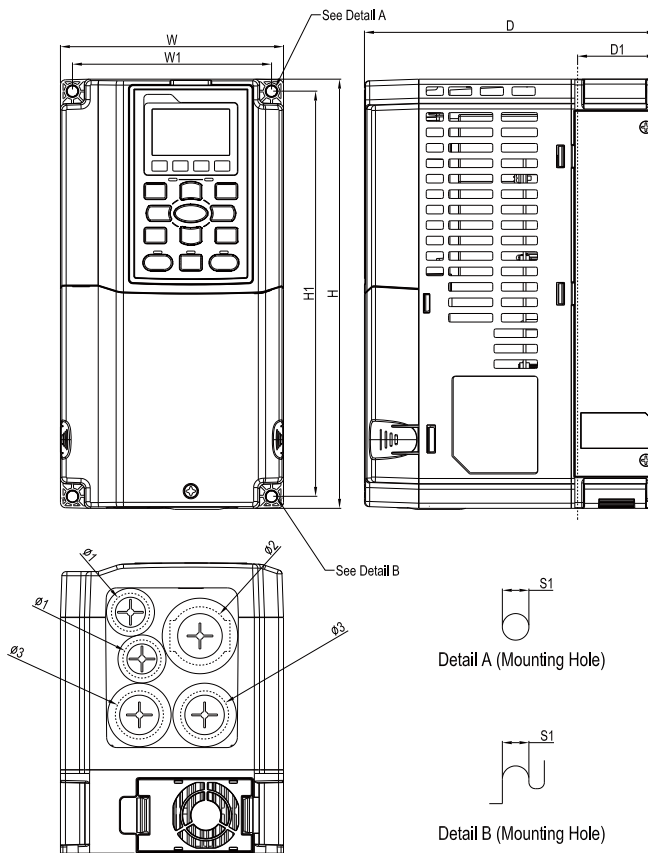


Dimensions

Digital Keypad



Frame A



MODEL

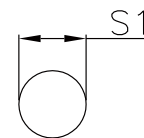
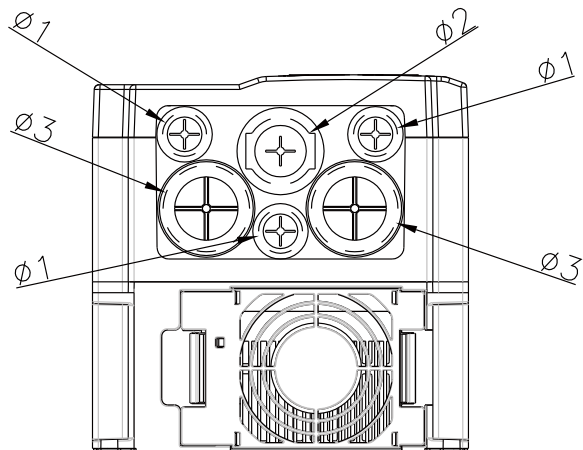
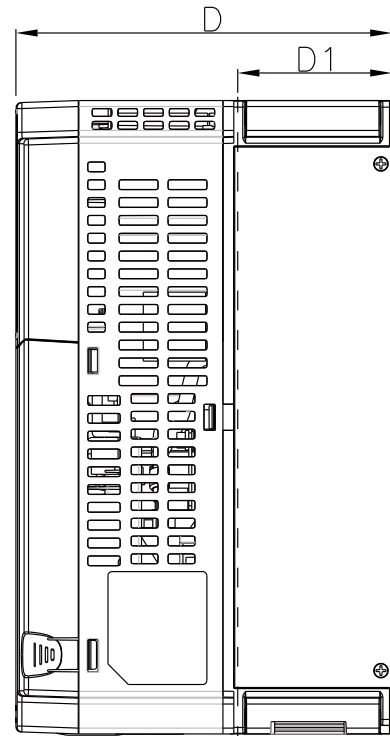
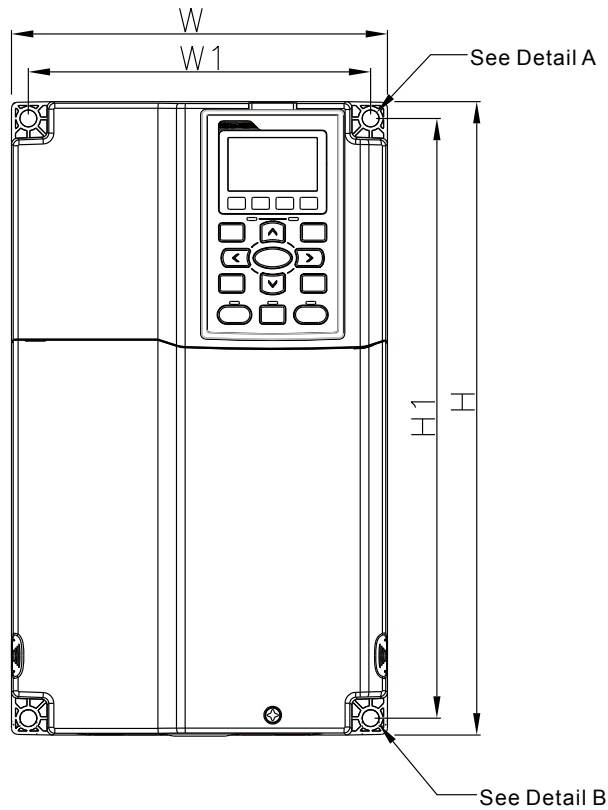
- VFD007C23A
- VFD015C23A
- VFD022C23A
- VFD037C23A
- VFD007C43A/43E
- VFD015C43A/43E
- VFD022C43A/43E
- VFD037C43A/43E
- VFD040C43A/43E
- VFD055C43A/43E

Unit : mm[inch]

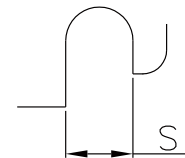
Frame		W	H	D	W1	H1	D1*	Ø	Ø1	Ø2	Ø3
A1	mm	130.0	250.0	170.0	116.0	236.0	45.8	6.2	22.2	34.0	28.0
	inch	5.12	9.84	6.69	4.57	9.29	1.80	0.24	0.87	1.34	1.10

D1*: Flange mounting

Frame B



Detail A (Mounting Hole)



Detail B (Mounting Hole)

MODEL

VFD055C23A
 VFD075C23A
 VFD110C23A
 VFD075C43A/43E
 VFD110C43A/43E
 VFD150C43A/43E

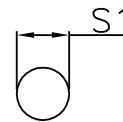
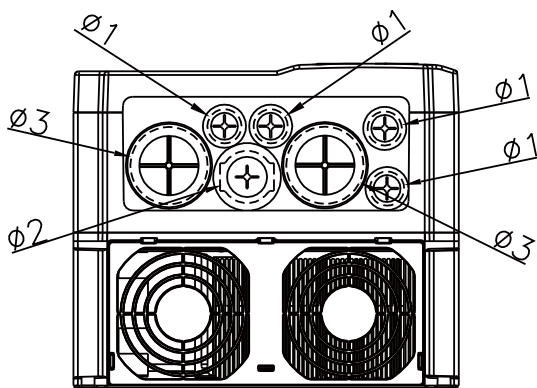
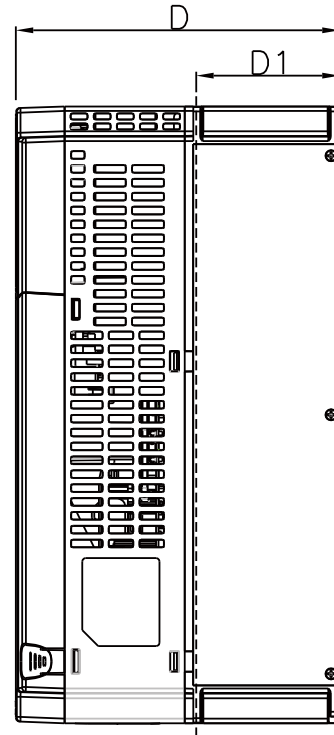
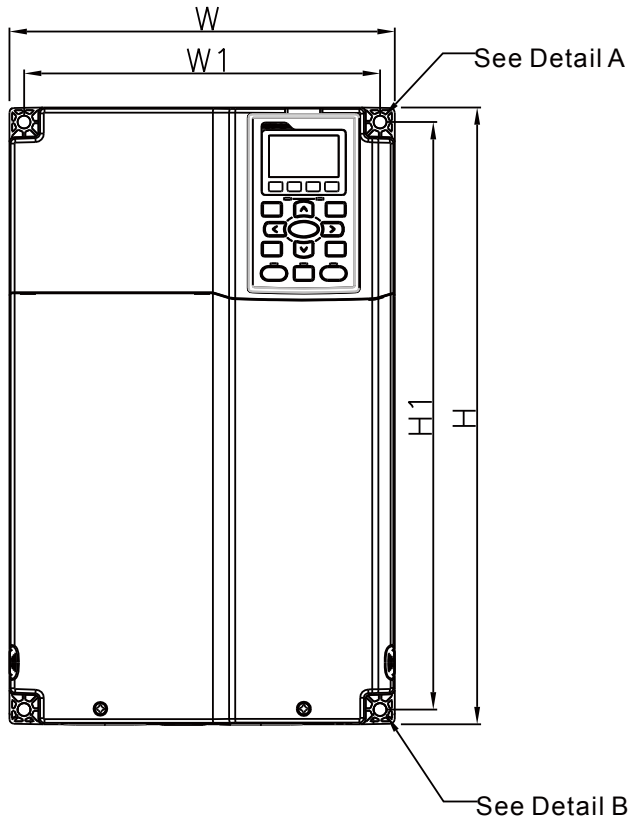
Unit : mm[inch]

Frame		W	H	D	W1	H1	D1*	S1	$\phi 1$	$\phi 2$	$\phi 3$
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

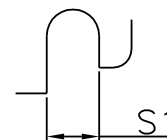
D1*: Flange mounting

Dimensions

Frame C



Detail A (Mounting Hole)



Detail B (Mounting Hole)

MODEL

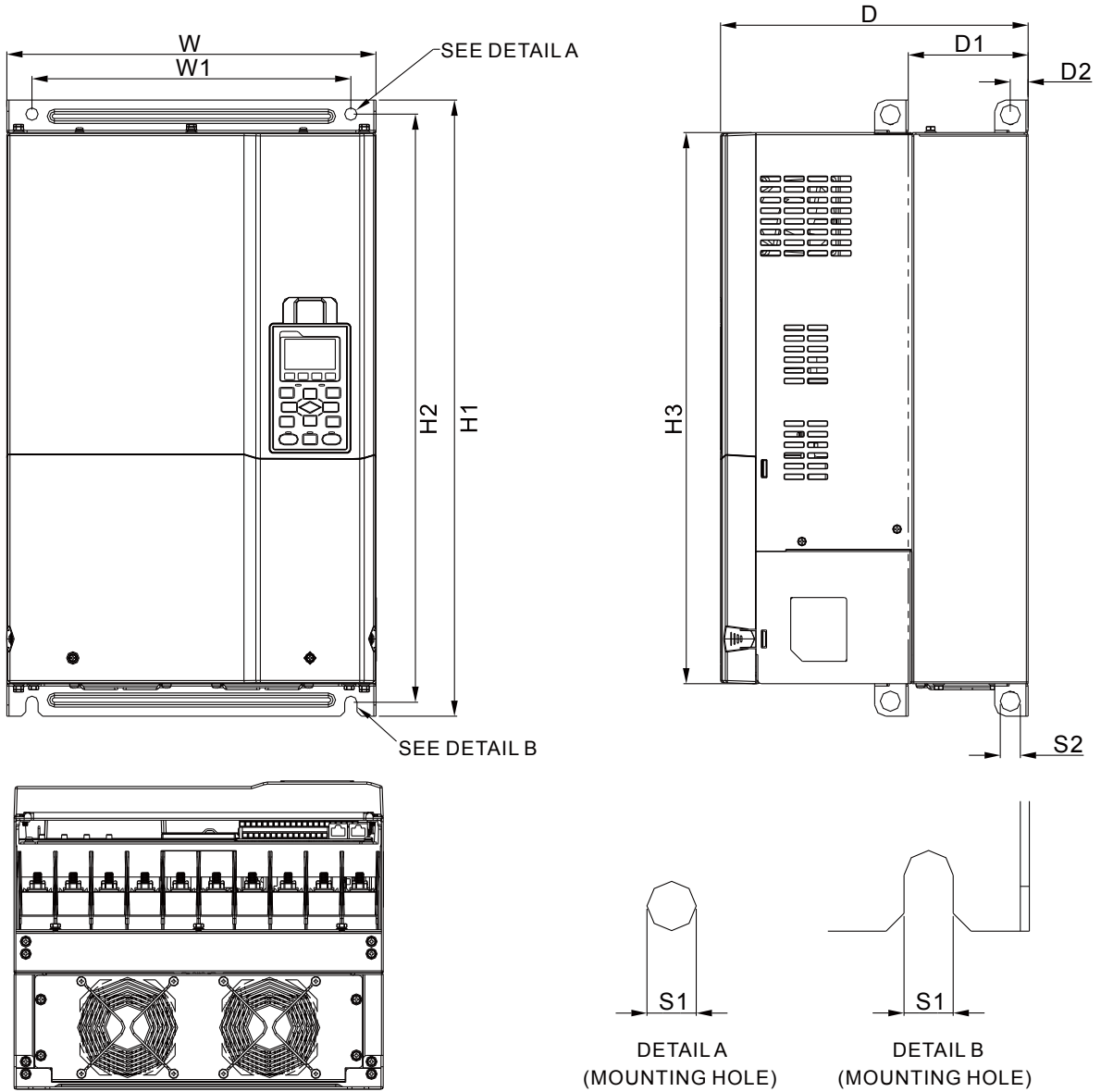
- VFD150C23A
- VFD185C23A
- VFD220C23A
- VFD185C43A/43E
- VFD220C43A/43E
- VFD300C43A/43E

Unit : mm[inch]

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 mounting

Frame D



MODEL

FRAME_D1	FRAME_D0-1
VFD300C23A	VFD370C43S
VFD370C23A	VFD450C43S
VFD550C43A	
VFD750C43A	

Unit : mm[inch]

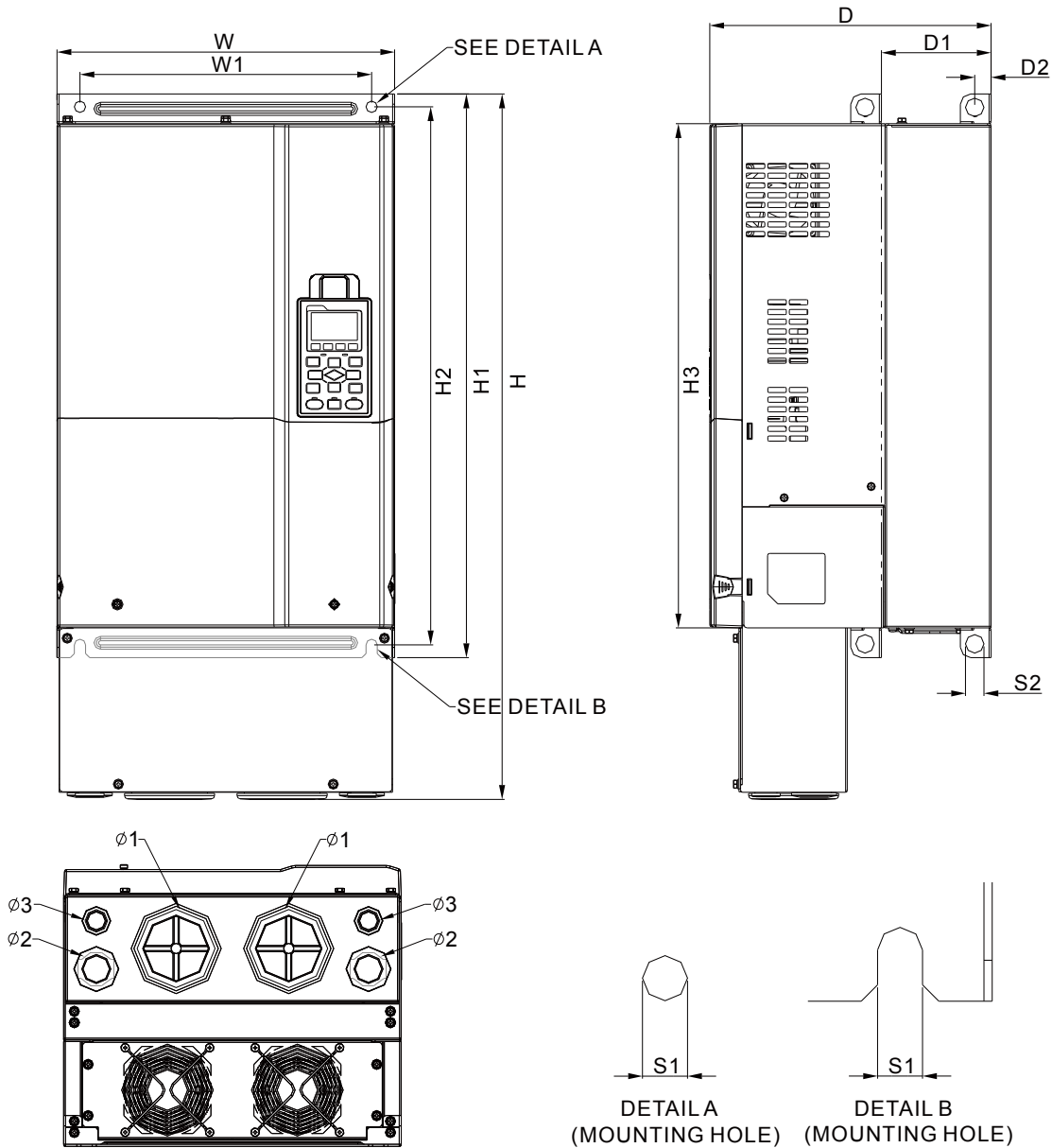
Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3	
D1	mm	330.0	-	275.0	285.0	550.0	525.0	492.0	107.2	16.0	11.0	18.0	-	-	-
	inch	12.99	-	10.83	11.22	21.65	20.67	19.37	4.22	0.63	0.43	0.71	-	-	-

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 mounting

Dimensions

Frame D



MODEL

FRAME_D2
 VFD300C23E
 VFD370C23E
 VFD550C43E
 VFD750C43E

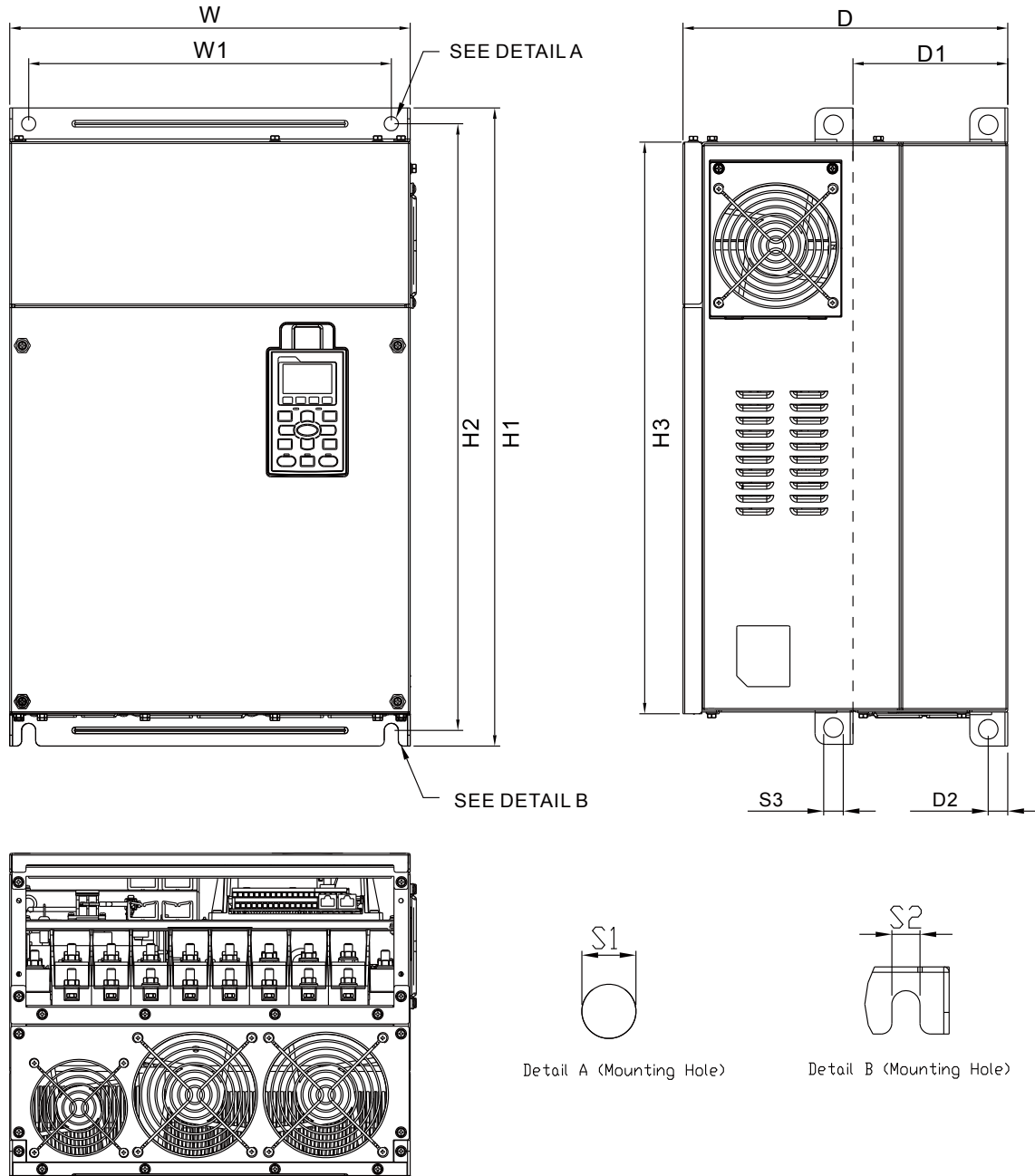
FRAME_D0-2
 VFD370C43U
 VFD450C43U

Unit : mm[inch]

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
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 mounting

Frame E



MODEL
FRAME_E1
 VFD450C23A
 VFD550C23A
 VFD750C23A
 VFD900C43A
 VFD1100C43A

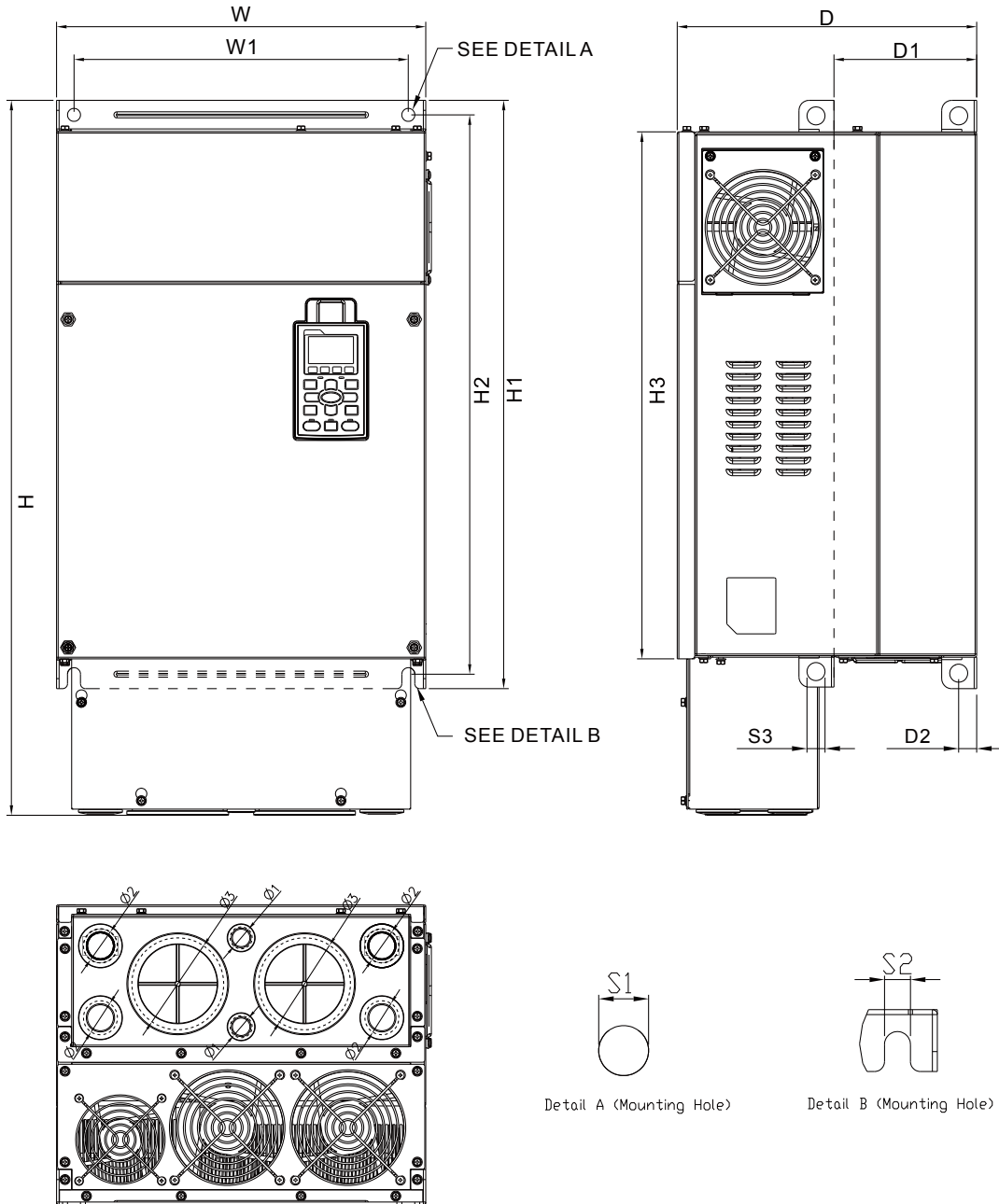
Unit : mm[inch]

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 mounting

Dimensions

Frame E



MODEL

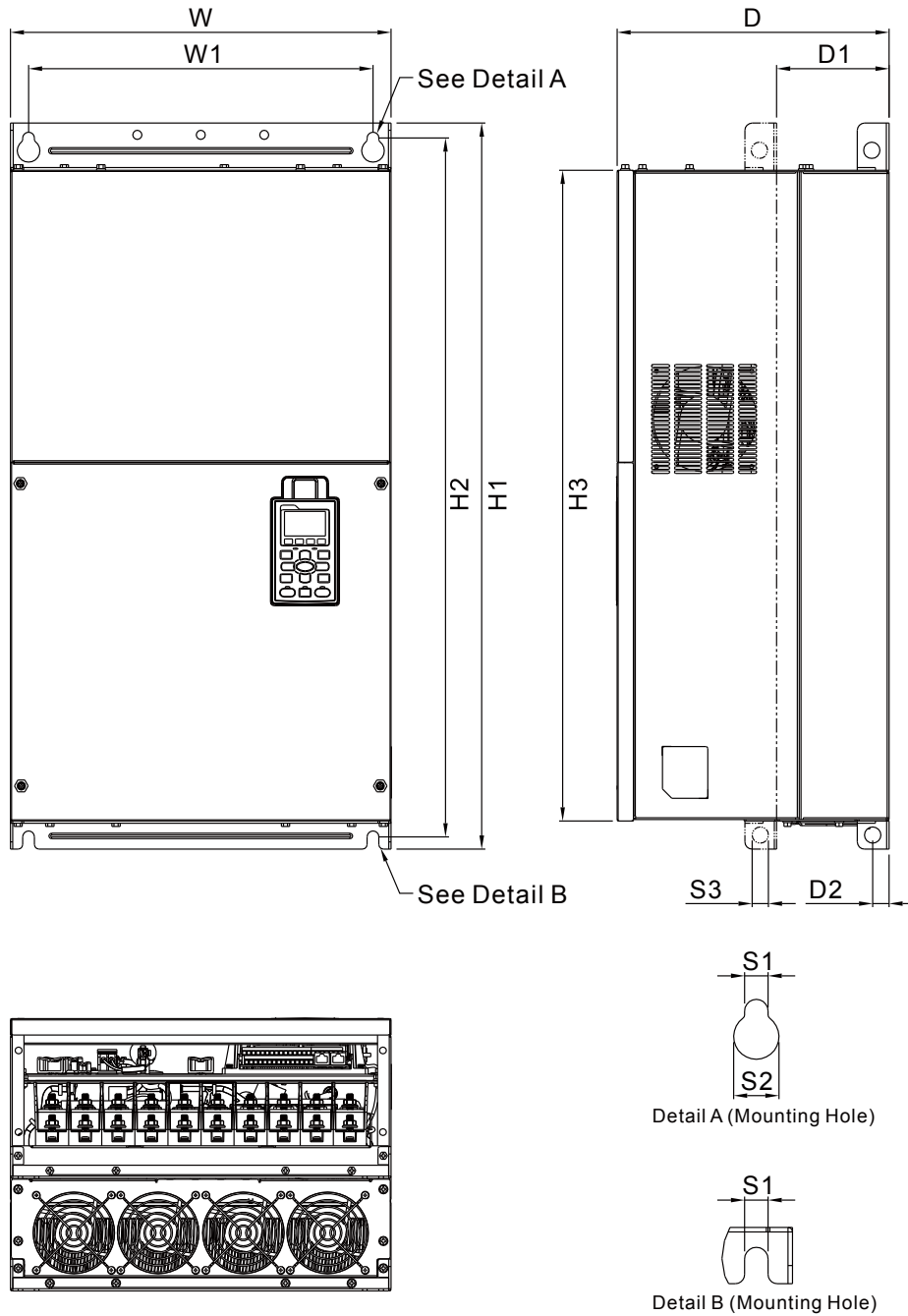
FRAME_E2
 VFD450C23E
 VFD550C23E
 VFD750C23E
 VFD900C43E
 VFD1100C43E

Unit : mm[inch]

Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
E2	mm	370.0	715.8	300.0	335.0	589	560.0	528.0	143.0	18.0	13.0	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 mounting

Frame F



MODEL
FRAME_F1
 VFD900C23A
 VFD1320C43A
 VFD1600C43A

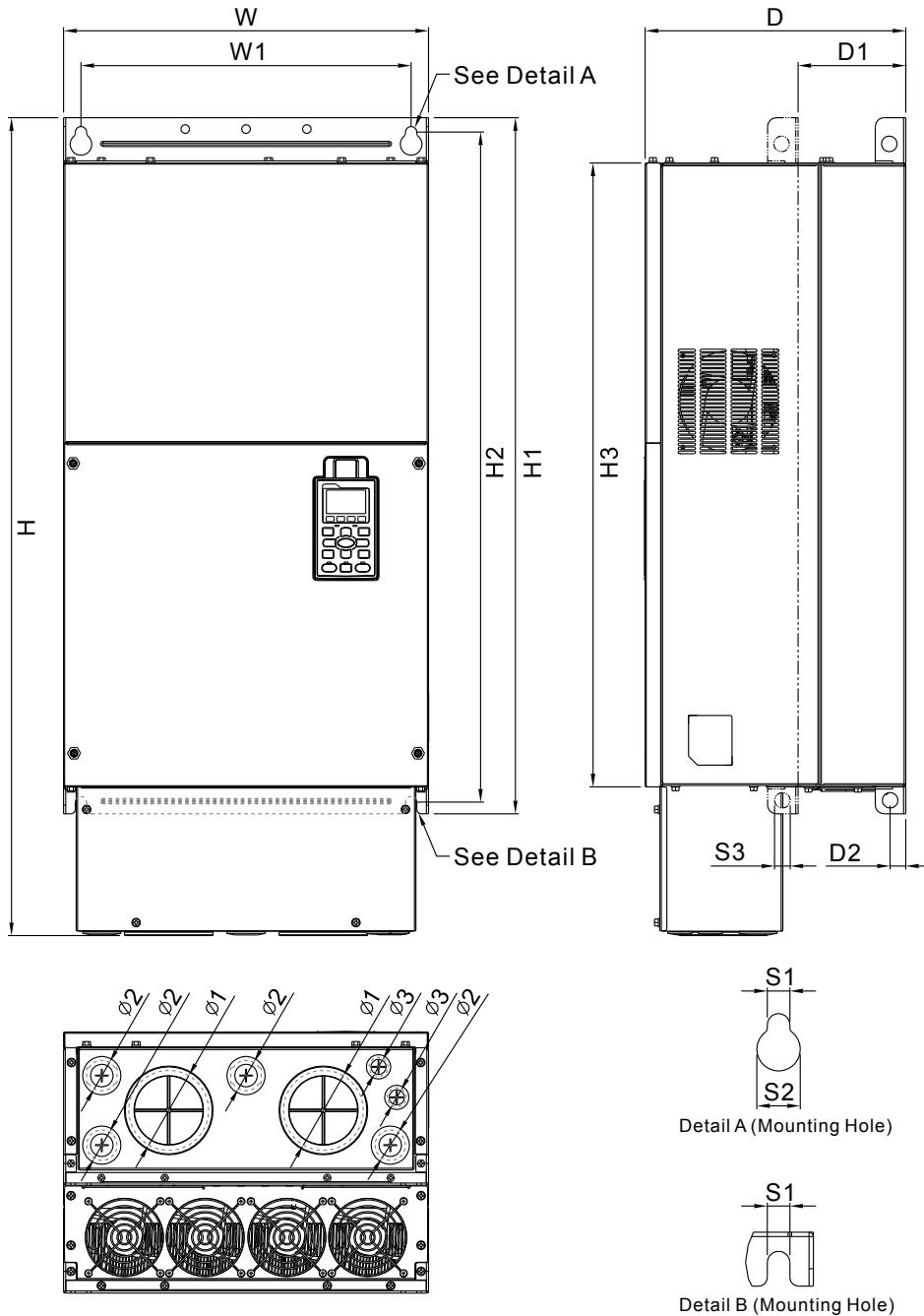
Unit : mm[inch]

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 mounting

Dimensions

Frame F



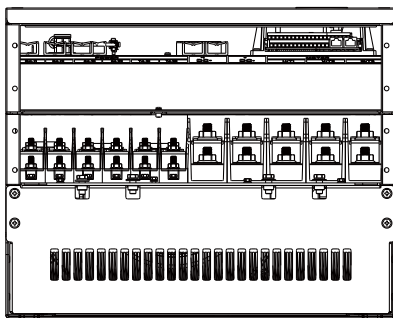
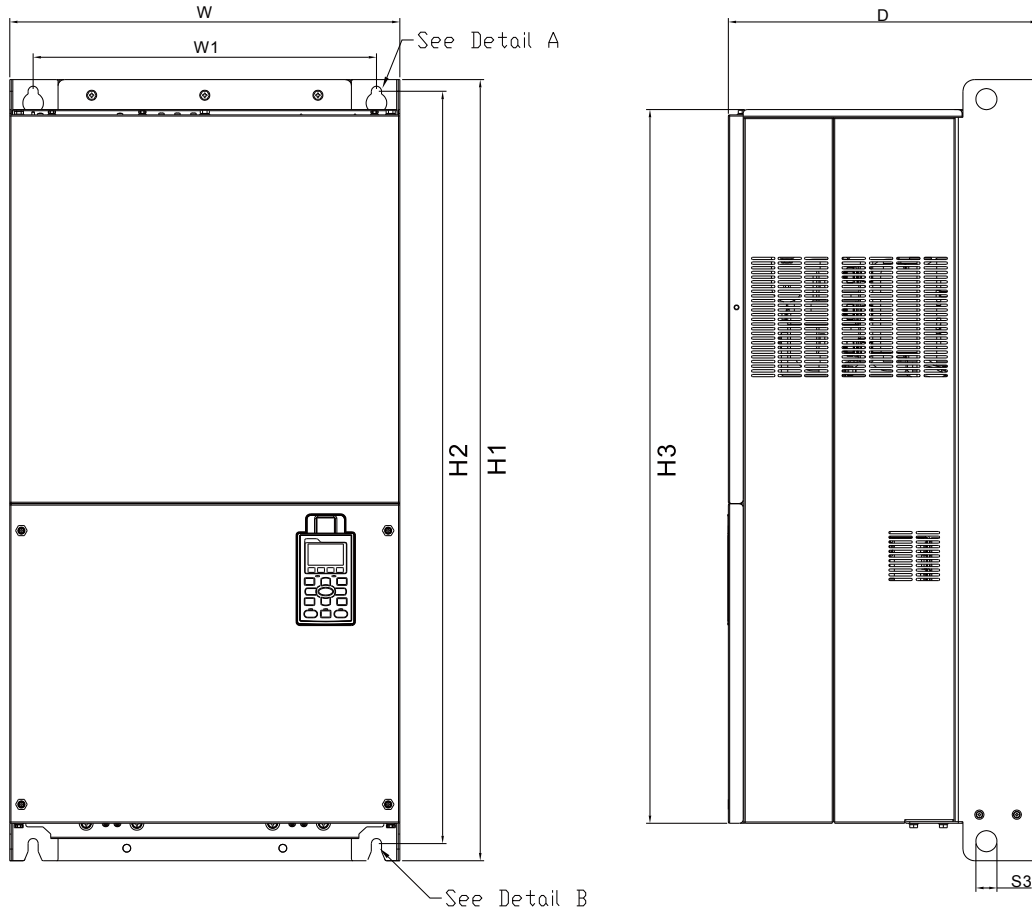
MODEL
FRAME_F2
 VFD900C23E
 VFD1320C43E
 VFD1600C43E

Unit : mm[inch]

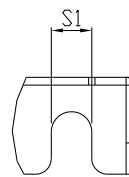
Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
F2	mm	420.0	940.0	300.0	380.0	800.0	770.0	717.0	124.0	18.0	13.0	25.0	18.0	92.0	35.0	22.0
	inch	16.54	37.00	11.81	14.96	31.50	30.32	28.23	4.88	0.71	0.51	0.98	0.71	3.62	1.38	0.87

D1*: Flange mounting

Frame G



Detail A (Mounting Hole)



Detail B (Mounting Hole)

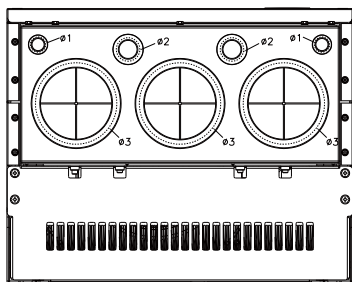
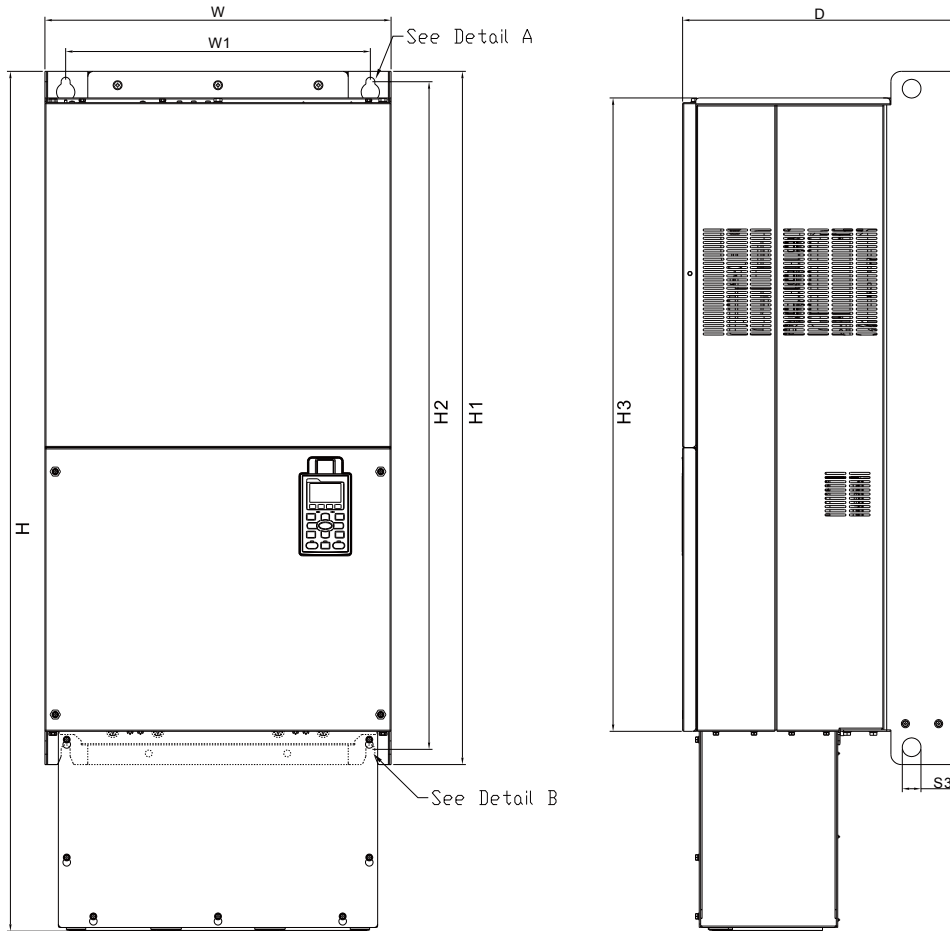
MODEL
FRAME_G1
 VFD1850C43A
 VFD2200C43A

Unit : mm[inch]

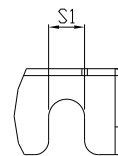
Frame		W	H	D	W1	H1	H2	H3	S1	S2	S3	Ø1	Ø2	Ø3
G1	mm	500.0	-	397.0	440.0	1000.0	963.0	913.6	13.0	26.5	27.0	-	-	-
	inch	19.69	-	15.63	217.32	39.37	37.91	35.97	0.51	1.04	1.06	-	-	-

Dimensions

Frame G



Detail A (Mounting Hole)



Detail B (Mounting Hole)

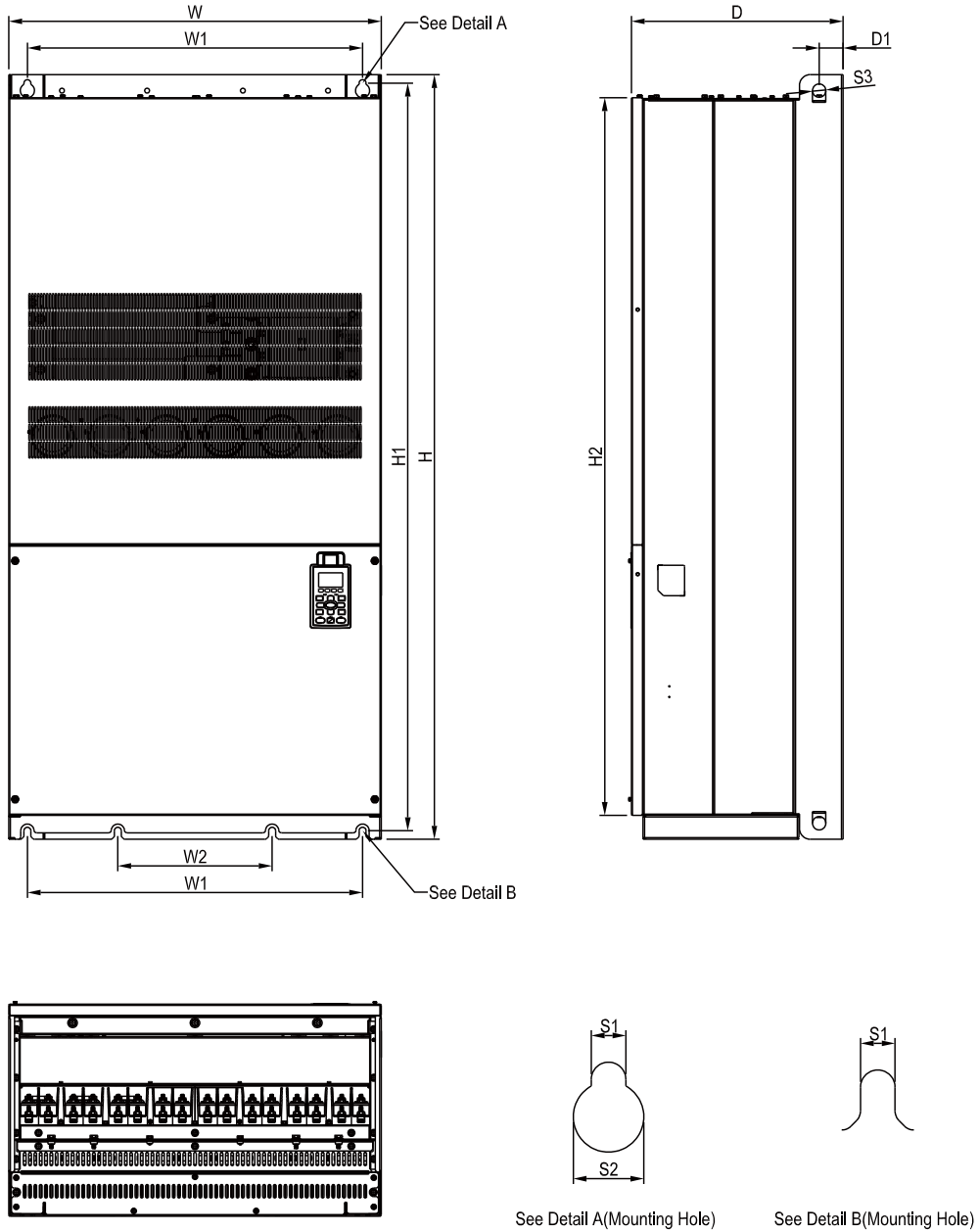
MODEL

FRAME_G2
VFD1850C43E
VFD2200C43E

Unit : mm[inch]

Frame		W	H	D	W1	H1	H2	H3	S1	S2	S3	$\varnothing 1$	$\varnothing 2$	$\varnothing 3$
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 H



MODEL

FRAME_H1

VFD2800C43A

VFD3150C43A

VFD3550C43A

VFD4500C43A*

Unit : mm[inch]

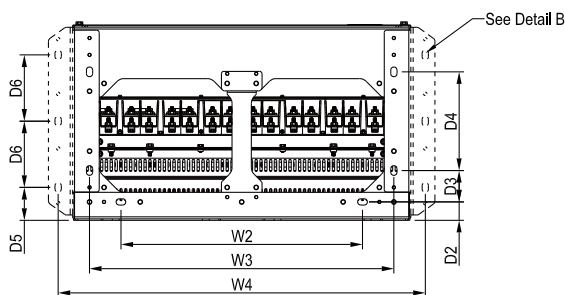
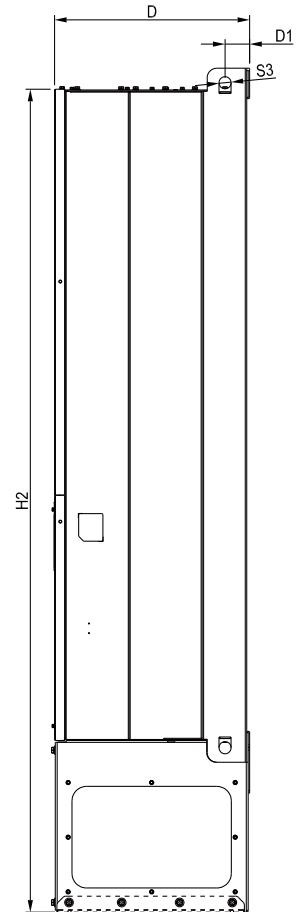
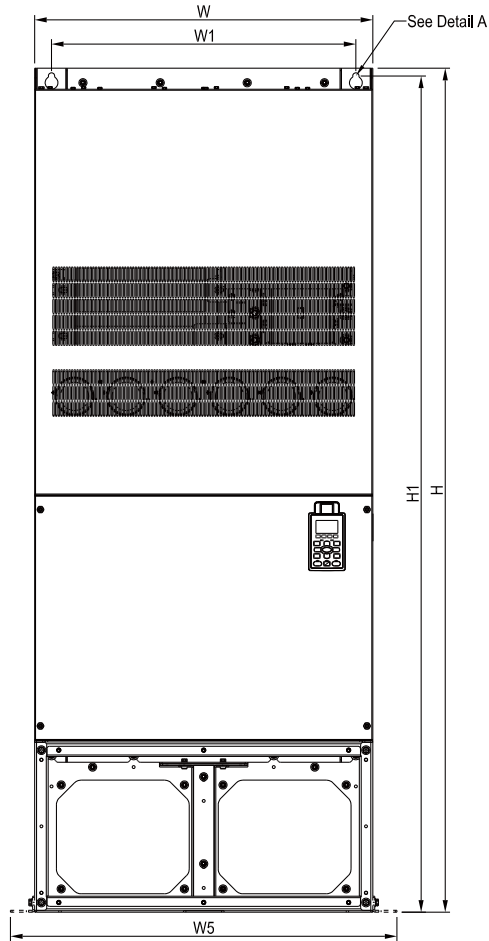
Frame	W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H1	mm	700.0	1435.0	398.0	630.0	290.0	-	-	-	1403.0	1346.6	-	-
	inch	27.56	56.50	15.67	24.80	11.42	-	-	-	55.24	53.02	-	-

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	-	-	-

* Available in China and Taiwan only.

Dimensions

Frame H



See Detail A(Mounting Hole)



See Detail B(Mounting Hole)

MODEL
FRAME_H2
 VFD2800C43E-1
 VFD3150C43E-1
 VFD3550C43E-1
 VFD4500C43E-1*

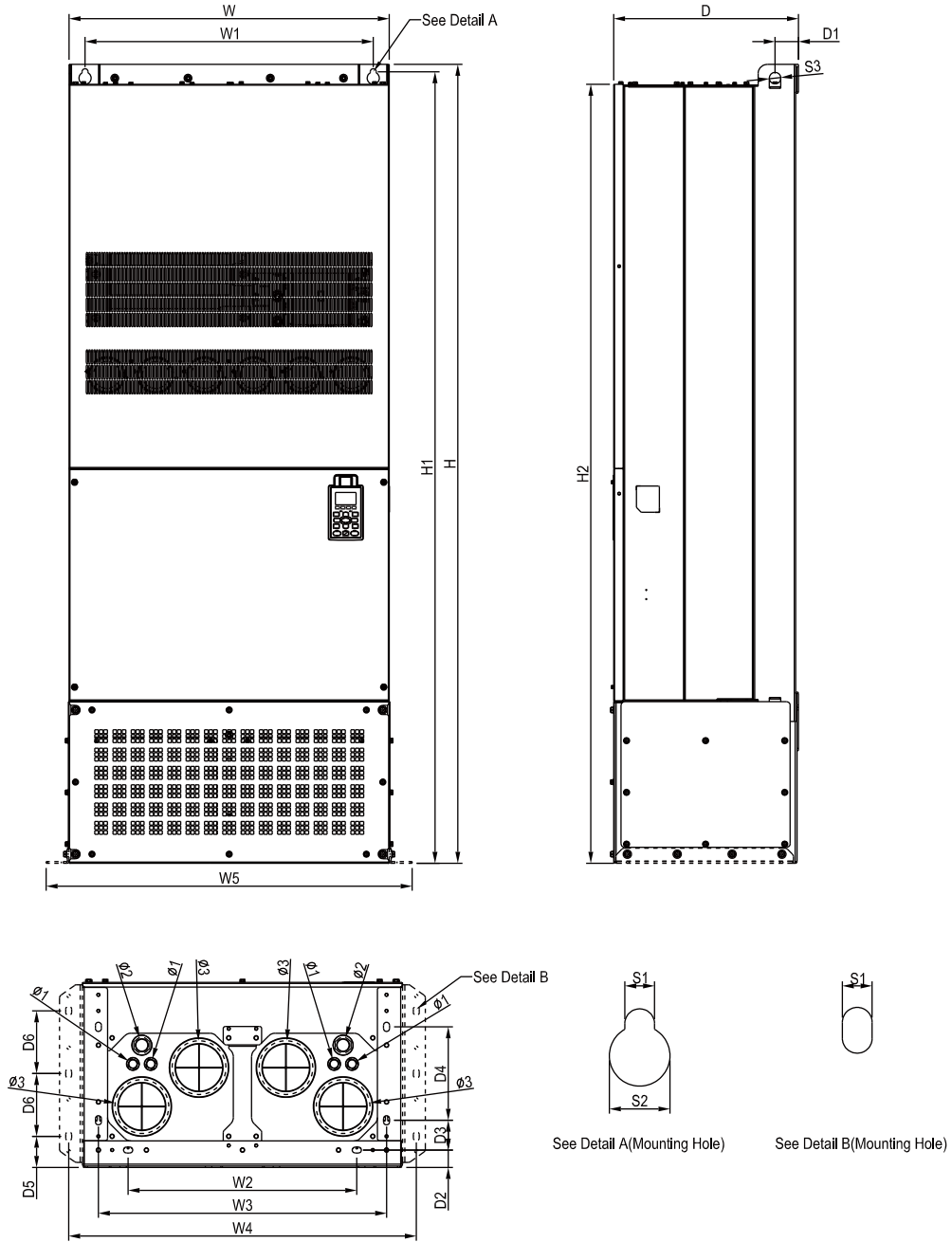
Unit : mm[inch]

Frame	W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4	
H2	mm	700.0	1745.0	404.0	630.0	500.0	630.0	760.0	800.0	-	1729.0	1701.6	-	-
	inch	27.56	68.70	15.91	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	-	-
	inch	-	2.01	1.50	2.56	8.03	2.68	5.39	0.51	1.04	0.98	-	-

* Available in China and Taiwan only.

Frame H



MODEL
FRAME_H3
 VFD2800C43E
 VFD3150C43E
 VFD3550C43E
 VFD4500C43E*

Unit : mm[inch]

Frame	W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H3	mm	700.0	1745.0	404.0	630.0	500.0	630.0	760.0	-	1729.0	1701.6	-	-
	inch	27.56	68.70	15.91	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
H3	mm	-	51.0	38.0	65.0	204.0	68.0	137.0	13.0	26.5	25.0	22.0	34.0
	inch	-	2.01	1.50	2.56	8.03	2.68	5.39	0.51	1.04	0.98	0.87	1.34

* Available in China and Taiwan only.

Option Cards

EMC-PG01L



Set by Pr.10-00~10-02

	Terminals	Descriptions
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) It can be 1-phase or 2-phase input; Max. input frequency: 300kP/sec
PG2	A2, /A2, B2, /B2	Pulse input signal (Line Driver or Open Collector) Open collector input: +5V/+12V (Note1) It can be 1-phase or 2-phase input; Max. input frequency: 300kP/sec.
PG OUT	AO, /AO, BO, /BO, ZO, /ZO, SG	PG card output signals. It has division frequency function: 1~255 times Max. output voltage for Line driver: 5Vdc Max. output current: 50mA; Max. output frequency: 300kP/sec SG: The GND of PG card is the same as the host controller or PLC, so a common output signal is attained.

EMC-PG010



Set by Pr.10-00~10-02

	Terminals	Descriptions
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/+12V (Note1) It can be 1-phase or 2-phase input; Max. input frequency: 300kP/sec
PG2	A2, /A2, B2, /B2	Pulse input signal (Line Driver or Open Collector) Open collector input: +5V/+12V (Note1) It can be 1-phase or 2-phase input; Max. input frequency: 300kP/sec.
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, ZO,	PG card output signals. It has 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: 300KP/Sec

EMC-PG01R




Set by Pr.10-00~10-02

	Terminals	Descriptions
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/+12V (Note1) It can be 1-phase or 2-phase input; Max. input frequency: 300kP/sec.
PG OUT	AO, /AO, BO, /BO, ZO, /ZO, SG	PG card output signals. It has division frequency function: 1~255 times Max. output voltage for Line driver: 5Vdc Max. output current: 50mA Max. output frequency: 300kP/sec SG: The GND of PG card is the same as the host controller or PLC, so a common output signal is attained.

EMC-PG01U

■ FJMP1[S]: Standard UVW Output Encoder; [D]: Delta Encoder

		Terminals	Descriptions
 <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: 300kP/sec
		U1, /U1, V1, /V1, W1, /W1	Encoder input signal
	PG2	A2, /A2, B2, /B2	Pulse input signal Open collector input: +5V/+12V (Note1) 1-phase or 2-phase input; Max. input frequency: 300kP/sec.
	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: 5Vdc Max. output current: 50mA Max. output frequency: 300kP/sec 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

[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


Screw Specifications for Option Card Terminals

EMC-D42A / EMC-D611A EMC-BPS01	Wire gauge	24~12AWG (0.205~3.31mm ²)
	Torque	4Kg-cm [3.47lb-in]
EMC-R6AA	Wire gauge	24~16AWG (0.205~1.31mm ²)
	Torque	6Kg-cm [5.21lb-in]
EMC-PG01L / EMC-PG01O EMC-PG01R / EMC-PG01U	Wire gauge	30~16AWG (0.0509~1.31mm ²)
	Torque	2Kg-cm [1.74lb-in]




Option Cards


EMC-D42A

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


EMC-D611A

	Terminals	Descriptions
 <p>I/O Extension Card</p>	AC	AC power common for multi-function input terminal (Neutral)
	MI10~MI15	Refer to Pr. 02.26~ Pr. 02.31 for multi-function input selection Input voltage: 100~130VAC; Input frequency: 57~63Hz Input impedance: 27Kohm Terminal response time: ON: 10ms; OFF: 20ms


EMC-R6AA

	Terminals	Descriptions
 <p>Relay Extension Card</p>	RA10~RA15 RC10~RC15	Refer to Pr. 02.36~ Pr. 02.41 for multi-function input selection Resistive load: 3A(N.O.)/250VAC 5A(N.O.)/30Vdc Inductive load (COS 0.4) 2.0A(N.O.)/250VAC 2.0A(N.O.)/30Vdc It is used to output each monitor signal, such as for drive in operation, frequency attained or overload indication.

EMC-BPS01

	Terminals	Descriptions
 <p>Power Shift Card</p>	24V GND	When the AC motor drive power is off, the external power supply card provides external power to the network system, PLC function, and other functions to allow continued operations. Input power: 24V±5% Maximum input current: 0.5A Note: (1) Do not connect the control terminal +24V (Digital control signal common: SOURCE) directly to the EMC-BPS01 input terminal 24V. (2) Do not connect control terminal GND directly to the EMC-BPS01 input terminal GND.

CMC-MOD01

	Features
	<ul style="list-style-type: none"> ■ MDI/MDI-X auto-detect ■ Virtual serial port. ■ Supports MODBUS TCP protocol ■ AC motor drive keypad/Ethernet configuration ■ E-mail alarm ■ Baud rate: 10/100Mbps auto-detect

Network Interface

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		

CMC-EIP01



Features

- MDI/MDI-X auto-detect
- Supports MODBUS TCP and Ethernet/IP protocol
- Baud rate: 10/100Mbps auto-detect
- AC motor drive keypad/Ethernet configuration
- Virtual serial port

Network Interface

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		

CMC-PD01



Features

- Supports PZD control data exchange
- Supports PKW polling AC motor drive parameters
- Supports user diagnosis function
- Auto-detects baud rates; supports Max. 12Mbps

PROFIBUS DP Connector

Interface	DB9 connector
Transmission method	High-speed RS-485
Transmission cable	Shielded twisted pair cable
Electrical isolation	500VDC

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)

CMC-DN01



Features

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

DeviceNet Connector

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

AC Motor Drive Connection Port

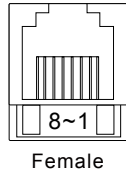
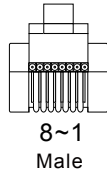
Interface	50 PIN communication terminal
Transmission method	SPI communication
Terminal function	1. Communicating with AC motor drive 2. Transmitting power supply from AC motor drive
Communication protocol	Delta HSSP protocol

Option Cards

EMC-COP01

Built-in EMC-COP01 card are available for VFD_ _ _C23E and VFD_ _ _C43E.

RJ-45 Pin definition



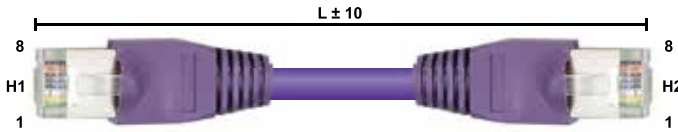
Pin	Pin name	Definition
1	CAN_H	CAN_H bus line (dominant high)
2	CAN_L	CAN_L bus line (dominant low)
3	CAN_GND	Ground/0V/V-
6	CAN_GND	Ground/0V/V-

Network Interface

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

CANopen Communication Cable

Model: TAP-CB05, TAP-CB10



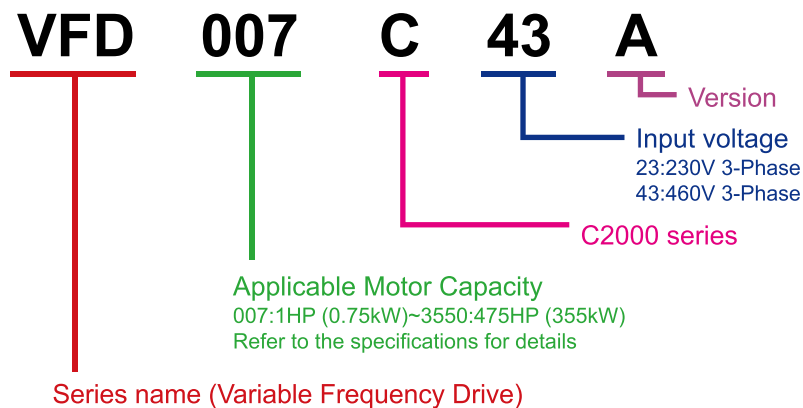
Title	Part No.	L	
		mm	inch
1	TAP-CB05	500±10	19±0.4
2	TAP-CB10	1000±10	39±0.4

Digital Keypad Accessories: RJ45 Extension Leads and CMC-EIP01 Cables

Applicable Models: CBC-K3FT、CBC-K5FT、CBC-K7FT、CBC-K10F、CBC-K16FT

Title	Part No.	Explanation
1	CBC-K3FT	RJ45 extension lead, 3 feet (approximately 0.9m)
2	CBC-K5FT	RJ45 extension lead, 5 feet (approximately 1.5m)
3	CBC-K7FT	RJ45 extension lead, 7 feet (approximately 2.1m)
4	CBC-K10FT	RJ45 extension lead, 10 feet (approximately 3m)
5	CBC-K16FT	RJ45 extension lead, 16 feet (approximately 4.9m)

Model Name



Ordering information

Frame Size	Power Range	Models			
Frame A 	230V: ND: 0.75~3.7kW HD: 0.4~2.2kW 460V: ND: 0.75~5.5kW HD: 0.4~4.0kW	VFD007C23A VFD015C23A VFD022C23A VFD037C23A	VFD007C43A VFD015C43A VFD022C43A VFD037C43A VFD040C43A VFD055C43A	VFD007C43E VFD015C43E VFD022C43E VFD037C43E VFD040C43E VFD055C43E	
Frame B 	230V: ND: 5.5~11kW HD: 3.7~7.5kW 460V: ND: 7.5~15kW HD: 5.5~11kW	VFD055C23A VFD075C23A VFD110C23A	VFD015C43A VFD110C43A VFD110C43A	VFD075C43E VFD110C43E VFD150C43E	
Frame C 	230V: ND: 15~22kW HD: 11~18.5kW 460V: ND: 18.5~30kW HD: 15~22kW	VFD150C23A VFD185C23A VFD220C23A	VFD185C43A VFD220C43A VFD300C43A	VFD185C43E VFD220C43E VFD300C43E	
Frame D 	230V: ND: 30~37kW HD: 20~30kW 460V: ND: 37~75kW HD: 30~45kW	Frame_D1 VFD300C23A VFD370C23A VFD550C43A VFD750C43A	Frame_D0-1 VFD370C43S VFD450C43S	Frame_D2 VFD300C23E VFD370C23E VFD550C43E VFD750C43E	Frame_D0-2 VFD370C43U VFD450C43U
Frame E 	230V: ND: 45~75kW HD: 37~55kW 460V: ND: 90~110kW HD: 55~90kW	Frame_E1 VFD450C23A VFD550C23A VFD750C23A VFD900C43A VFD1100C43A	Frame_E2 VFD450C23E VFD550C23E VFD750C23E VFD900C43E VFD1100C43E		
Frame F 	230V: ND: 90kW HD: 75kW 460V: ND: 132~160kW HD: 110~132kW	Frame_F1 VFD900C23A VFD1320C43A VFD1600C43A	Frame_F2 VFD900C23E VFD1320C43E VFD1600C43E		
Frame G 	460V: ND: 185~220kW HD: 160~185kW	Frame_G1 VFD1850C43A VFD2200C43A	Frame_G2 VFD1850C43E VFD2200C43E		
Frame H 	460V: ND: 280~450kW HD: 220~355kW	Frame_H1 VFD2800C43A VFD3150C43A VFD3550C43A VFD4500C43A*	Frame_H2 VFD2800C43E-1 VFD3150C43E-1 VFD3550C43E-1 VFD4500C43E-1*	Frame_H3 VFD2800C43E VFD3150C43E VFD3550C43E VFD4500C43E*	

* Available in China and Taiwan only.



Attention

Standard Motors

Used with 400V Standard Motors

It is recommended to add an AC output reactor when using with a 400V standard motor to prevent damage to motor insulation.

Torque Characteristics and Temperature Rise

When a standard motor is drive controlled, the motor temperature will be higher than with DOL operation.

Please reduce the motor output torque when operating at low speeds to compensate for less cooling efficiency.

For continuous constant torque at low speeds, external forced motor cooling is recommended.

Vibration

When the motor drives the machine, resonances may occur, including machine resonances. Abnormal vibration may occur when operating a 2-pole motor at 60Hz or higher.

Noise

When a standard motor is drive controlled, the motor noise will be higher than with DOL operation.

To lower the noise, please increase the carrier frequency of the drive. The motor fan can be very noisy when the motor speed exceeds 60Hz.

Special Motors

High-speed Motor

To ensure safety, please try the frequency setting with another motor before operating the high-speed motor at 120Hz or higher.

Explosion-proof Motor

Please use a motor and drive that comply with explosion-proof requirements.

Submersible Motor & Pump

The rated current is higher than that of a standard motor.

Please check before operation and select the capacity of the AC motor drive carefully. The motor temperature characteristics differ from a standard motor, please set the motor thermal time constant to a lower value.

Brake Motor

When the motor is equipped with a mechanical brake, the brake should be powered by the mains supply. Damage may occur when the brake is powered by the drive output. Please DO NOT drive the motor with the brake engaged.

Gear Motor

In gearboxes or reduction gears, lubrication may be reduced if the motor is continuously operated at low speeds. Please DO NOT operate in this way.

Synchronous Motor

These motors need suitable software for control. Please contact Delta for more information.

Single-phase Motor

Single-phase motors are not suitable for being operated by an AC Motor Drive. Please use a 3-phase motor instead when necessary.

Environmental Conditions

Installation Position

1. The drive is suitable for installation in a place with ambient temperature from -10 to 50^oC.
2. The surface temperature of the drive and brake resistor will rise under specific operation conditions. Therefore, please install the drive on materials that are noncombustible.
3. Ensure that the installation site complies with the ambient conditions as stated in the manual.

Wiring

Limit of Wiring Distance

For the remote operation, please use twist-shielding cable and the distance between the drive and control box should be less than 20m.

Maximum Motor Cable Length

Motor cables that are too long may cause overheating of the drive or current peaks due to stray capacitance. Please ensure that the motor cable is less than 30m. If the cable length can't be reduced, please lower the carrier frequency or use an AC reactor.

Choose the Right Cable

Please refer to current value to choose the right cable section with enough capacity or use recommended cables.

Grounding

Please ground the drive completely by using the grounding terminal.

How to Choose the Drive Capacity

Standard Motor

Please select the drive according to applicable motor rated current listed in the drive specification.

Please select the next higher power AC drive in case higher starting torque or quick acceleration/deceleration is needed.

Special Motor

Please select the drive according to: Rated current of the drive > rated current of the motor

Transportation and Storage

Please transport and store the drive in a place that meets environment specifications.

Peripheral Equipment

Molded-Case Circuit Breakers (MCCB)

Please install the recommended MCCB or ELCB in the main circuit of the drive and make sure that the capacity of the breaker is equal to or lower than the recommended one.

Add a Magnetic Contactor(MC) in the Output Circuit

When a MC is installed in the output circuit of the drive to switch the motor to commercial power or other purposes, please make sure that the drive and motor are completely stopped and remove the surge absorbers from the MC before switching it.

Add a Magnetic Contactor (MC) in the Input Circuit

Please only switch the MC ONCE per hour or it may damage the drive. Please use RUN/STOP signal to switch many times during motor operation.

Motor Protection

The thermal protection function of the drive can be used to protect the motor by setting the operation level and motor type (standard motor or variable motor). When using a high-speed motor or a water-cooled motor the thermal time constant should be set to a lower value.

When using a longer cable to connect the motor thermal relay to a motor, high-frequency currents may enter via the stray capacitance. It may result in malfunctioning of the relay as the real current is lower than the setting of thermal relay. Under this condition, please lower the carrier frequency or add an AC reactor to solve this.

DO NOT Use Capacitors to Improve the Power Factor

Use a DC reactor to improve the power factor of the drive. Please DO NOT install power factor correction capacitors on the main circuit of the drive to prevent motor faults due to over current.

Do NOT Use Surge Absorber

Please DO NOT install surge absorbers on the output circuit of the drive.

Lower the Noise

To ensure compliance with EMC regulations, usually a filter and shielded wiring is used to lower the noise.

Method Used to Reduce the Surge Current

Surge currents may occur in the phase-lead capacitor of the power system, causing an overvoltage when the drive is stopped or at low loads.

It is recommended to add a DC reactor to the drive.



Leading the Future of Drive Technology

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Industrial Automation Headquarters

Delta Electronics, Inc.

Taoyuan Technology Center
18 Xinglong Road, Taoyuan District,
Taoyuan City 33068, Taiwan (R.O.C.)
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

Asia

Delta Electronics (Jiangsu) Ltd.

Wujiang Plant 3
1688 Jiangxing East Road,
Wujiang Economic Development Zone
Wujiang City, Jiang Su Province, P.R.C. 215200
TEL: 86-512-6340-3008 / FAX: 86-769-6340-7290

Delta Greentech (China) Co., Ltd.

238 Min-Xia Road, Pudong District,
ShangHai, P.R.C. 201209
TEL: 86-21-58635678 / FAX: 86-21-58630003

Delta Electronics (Japan), Inc.

Tokyo Office
2-1-14 Minato-ku Shibadaimon,
Tokyo 105-0012, Japan
TEL: 81-3-5733-1111 / FAX: 81-3-5733-1211

Delta Electronics (Korea), Inc.

1511, Byucksan Digital Valley 6-cha, Gasan-dong,
Geumcheon-gu, Seoul, Korea, 153-704
TEL: 82-2-515-5303 / FAX: 82-2-515-5302

Delta Electronics Int'l (S) Pte Ltd.

4 Kaki Bukit Ave 1, #05-05, Singapore 417939
TEL: 65-6747-5155 / FAX: 65-6744-9228

Delta Electronics (India) Pvt. Ltd.

Plot No 43 Sector 35, HSIIDC
Gurgaon, PIN 122001, Haryana, India
TEL : 91-124-4874900 / FAX : 91-124-4874945

Americas

Delta Products Corporation (USA)

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

Delta Greentech (Brasil) S.A.

Sao Paulo Office
Rua Itapeva, 26 - 3º andar Edifício Itapeva One-Bela Vista
01332-000-São Paulo-SP-Brazil
TEL: 55 11 3568-3855 / FAX: 55 11 3568-3865

Europe

Deltronics (The Netherlands) B.V.

Eindhoven Office
De Witbogt 20, 5652 AG Eindhoven, The Netherlands
TEL: 31-40-2592850 / FAX: 31-40-2592851

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