



Digitized Automation for a Changing World

# Delta Heavy Duty Vector Control Drive CH2000 Series



reddot design award  
winner 2010

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



# CH2000 Power in Hand

With years of experience and expertise in drive technology, Delta presents its new AC motor drive, the CH2000 Series, providing high performance with robust design. It is equipped with a larger starting torque and high overload capabilities to fulfill the needs of heavy load applications and to handle sudden load impact conditions.

The CH2000 Series is designed with a high tolerance for critical environments, especially for heavy load applications. Featuring outstanding controls for all fields and system performance improvements, the CH2000 Series offers exceptional quality and comprehensive services.

Introducing the CH2000 Series heavy load field-oriented vector control drive to enhance your competitive advantage for achieving greater success.





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## Standard Models (IP20 / NEMA1)

Power range: 230V 0.75 ~ 75 kW, 460V 0.75 ~ 450 kW

230V (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75		
230V (HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100		
Output (A)	5	8	11	17	25	33	49	65	75	90	120	146	180	215	255		
Frame Size	A				B			C		D			E		F		
Braking Chopper	Built-in										Optional						
DC Reactor	Optional										Built-in						
EMC Filter	Optional																
Protection Level	21 (IP20, NEMA1)										00 (IP00, UL Open Type) / 21 (IP20, NEMA1)						
460V (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110
460V (HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150
Output (A)	3	4	6	9	12	18	24	32	38	45	60	73	91	110	150	180	220
Frame Size	A				B			C			D0		D		E		
Braking Chopper	Built-in																
DC Reactor	Optional																
EMC Filter	Built-in (CH4EA Models)																
Protection Level	21 (IP20, NEMA1)										00 (IP00, UL						

## Advanced Drive Controls

### High Performance

1. Large starting torque
2. High overload capability
3. Super heavy duty setting
4. Fast response to load impact
5. A drive for both asynchronous and synchronous motors

### Flexible Applications

1. Control modes for speed, torque, position and synchronous control
2. Built-in PLC functions
3. Excellent 4-quadrant torque control and limit
4. Noise reduction operation



132	160	185	220	280	315	355	450
175	215	250	300	375	420	475	600
250	310	370	440	550	616	683	866
F	G		H				
Optional							
Built-in							
Optional							
Open Type) / 21 (IP20, NEMA1)							



### Modular Design

1. Hot pluggable LCD keypad
2. I/O extension card options
3. PG card options
4. Network cards for fieldbus modules
5. Removable fan

### Adaptability to Critical Environments

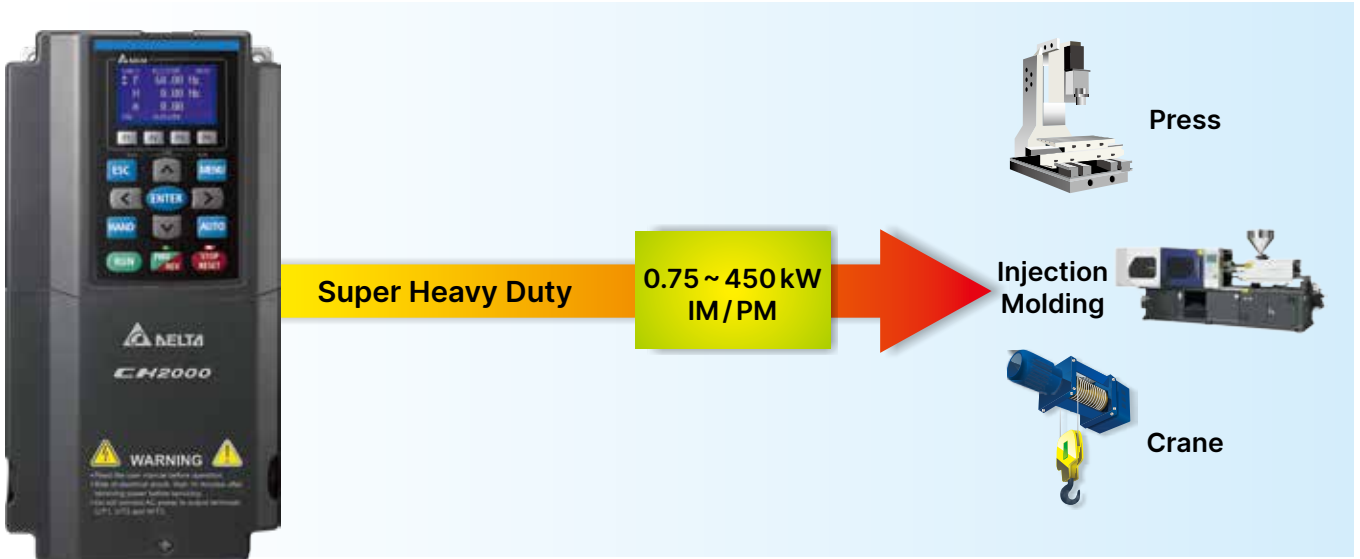
1. 50°C operating temperature
2. Built-in DC reactor \*
3. Coated circuit boards
4. Built-in EMC filter \*
5. International safety standard (CE/UL/cUL)

\*Note: Please refer to product specifications for more details



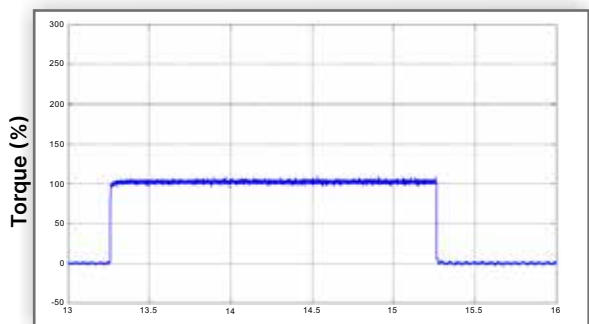
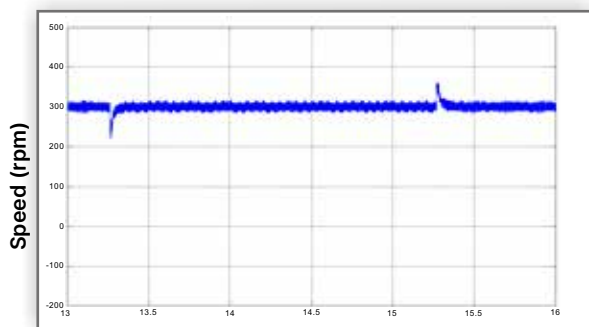
## Excellent Overload Capability

The super heavy duty setting is suitable for harsh environment applications with a current overload capability of 150% for 60 seconds and 200% for 3 seconds



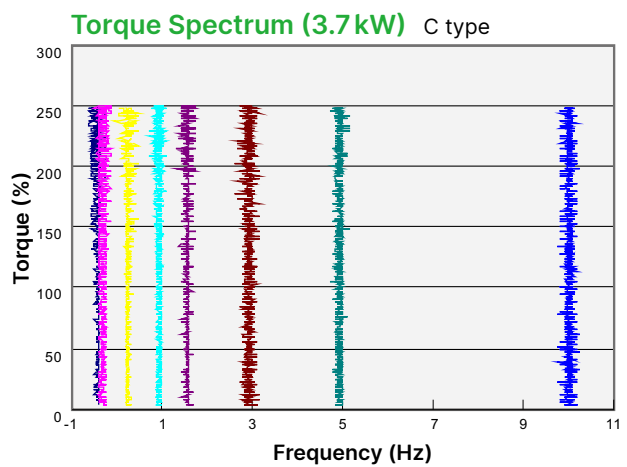
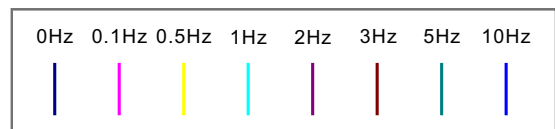
## Fast Response to Load Impact

Response to sudden load impact



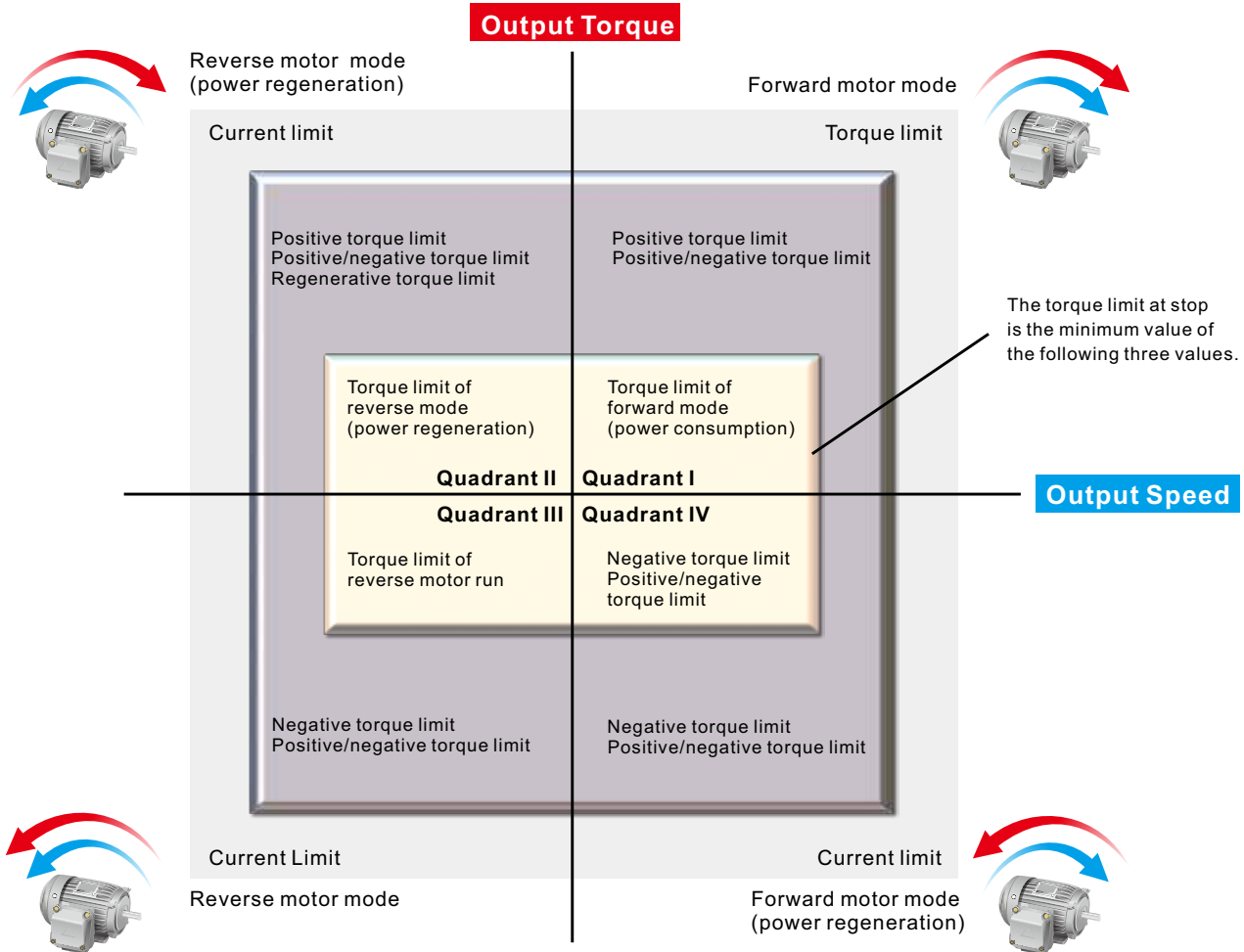
## Large Starting Torque

Large starting torque output up to 200% at very low speed under FOC + PG mode



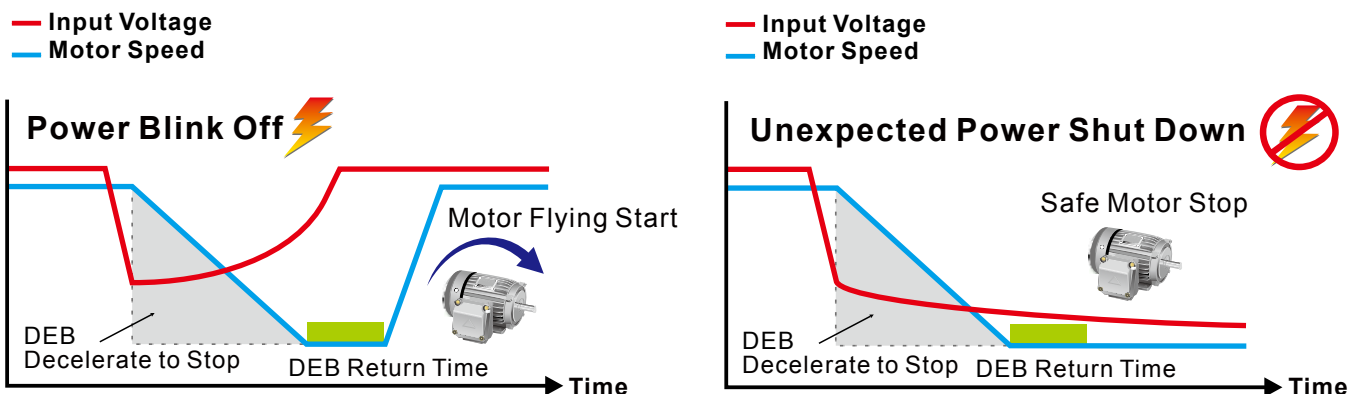
# Flexible Torque and Current Limit Settings

Prevents equipment damage from load impact. When the drive is in FOC control mode, setting torque limit can protect the machinery under many conditions

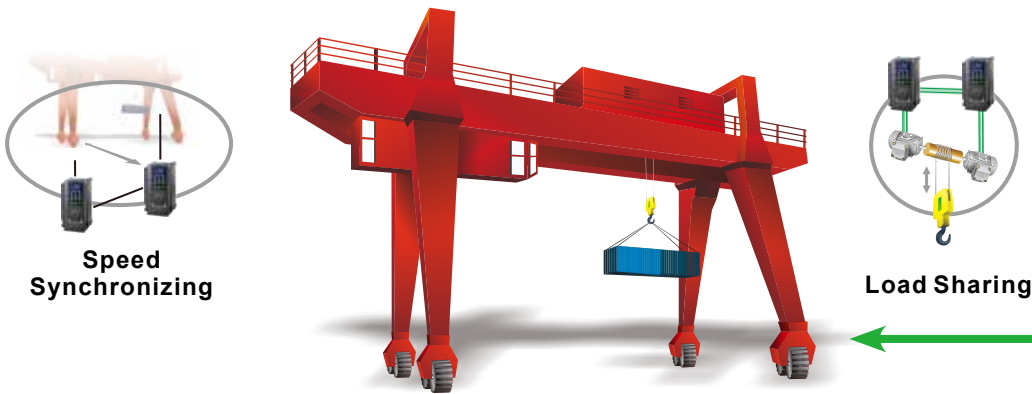


# Deceleration Energy Backup (DEB)

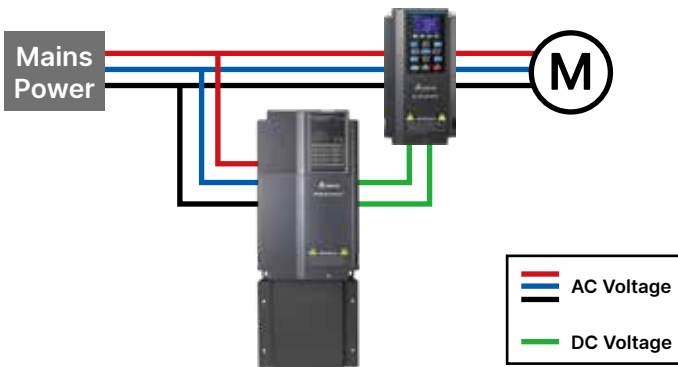
Controls the motor's deceleration to a stop when a sudden power outage occurs and accelerates it to its previous operation speed when power returns



# Industrial Applications



## Delta Power Regenerative Unit REG2000 Series



Provides the crane and hoist system four-quadrant operation and energy saving performance with the power regeneration function

## CNC Application (C-axis)



The CH2000 provides position control and pulse wave velocity following functions for C-axis applications with high overload capability providing excellent performance for high-speed rigid tapping

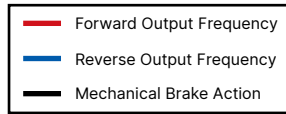
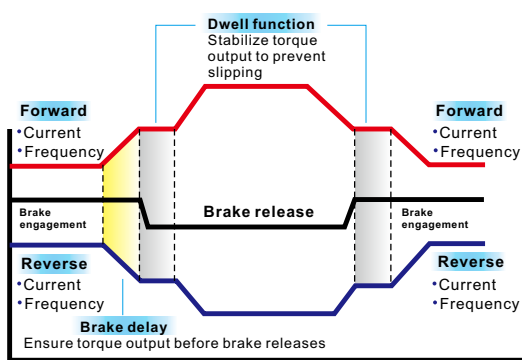
## Delta Active Front End AFE2000 Series



Provides the crane and hoist system excellent operation quality with reduced torque ripple, harmonic suppression, high power factors and energy saving performance with the power regeneration function



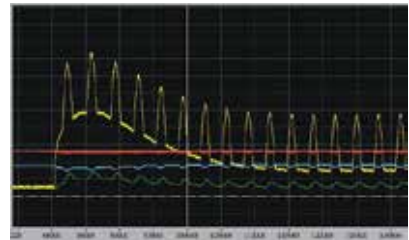
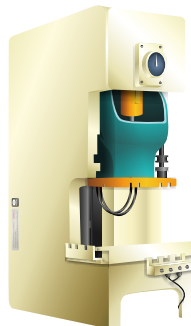
## Advanced Crane Function



- ▲ **Mechanical brake control**  
8 independent brake control setting to different criteria. High flexibility to meet complex application needs and ensure operation safety
- ▲ **Advanced crane time sequence**  
Brake delay and dwell function ensure smooth operation



## Fast Response to Load Impact



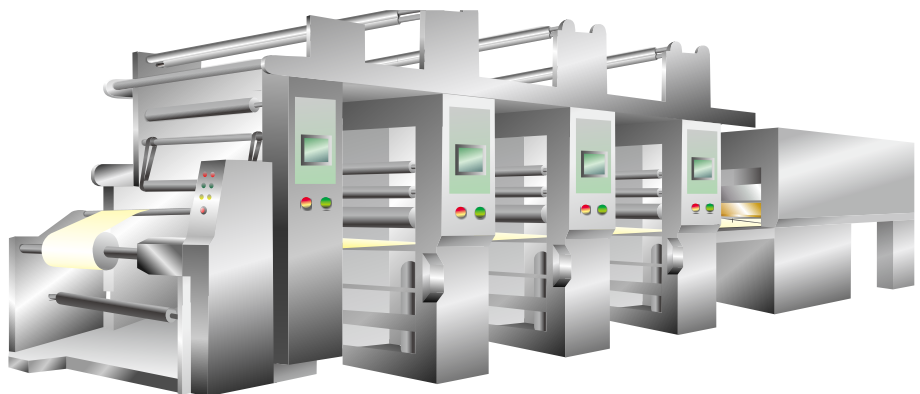
High endurance. Maintains a stable DC bus voltage when load impact occurs

## Tension Control



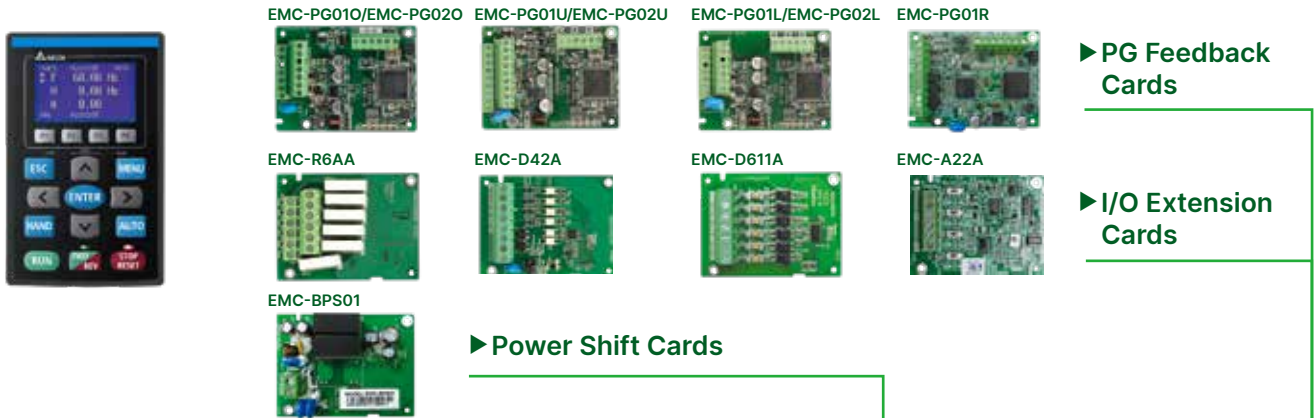
## Torque Ripple

- Other Delta Products
- CH2000
- CH2000+AFE2000



# Modular Design

Modular design for high flexibility for system design and maintenance.  
 Various accessories are available such as I/O extension cards, encoder feedback cards, communication cards, a hot pluggable LCD keypad, removable terminals and a removable fan



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



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



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



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

► Communication Cards

## Removable terminals

Easy to wire with high safety

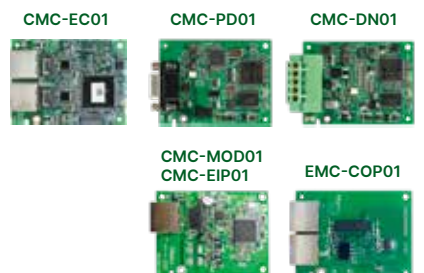
Analog I/O switch




Termination resistor



Dual RJ45 communication ports

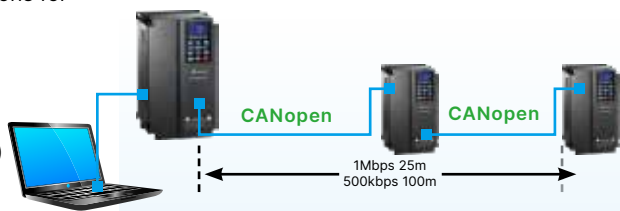


# High-Speed Network

- Provides option BUS 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

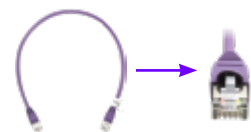
- Supports all Delta industrial automation products (Built-in EDS files for all Delta industrial automation products)
- I/O data configurations for each device on the CANopen network
- Motion control planning function
- WPLSoft (Software)



- 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 device 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

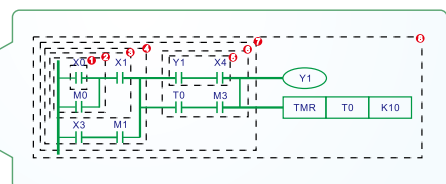
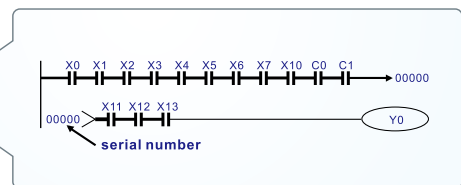
Delta provides communication integrator software that offers graphic module settings and a user friendly interface to support all Ethernet products settings and online monitoring

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



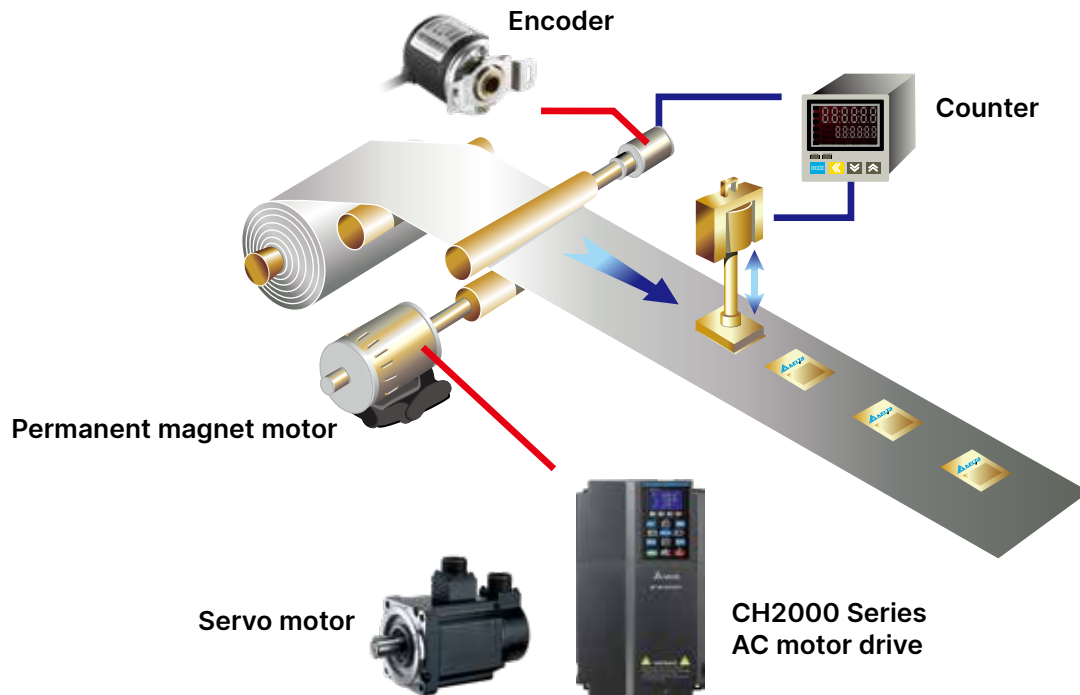
# Intelligent PLC Functions

- 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



## A Drive for Permanent Magnet (PM) Motors

The CH2000 Series can control both induction and permanent magnet (PM) motors  
 The benefits of using PM motors include dynamic response and precise position/speed/torque control



## Excellent Environment Adaptability

- Built-in DC choke\*
  - Built-in EMC filter
  - Enhanced conformal coating on PCBs for safe operation in harsh environment applications
  - Isolation design of heat dissipation system separate from other drive components
  - There are two heat dissipating methods:
    - (1) Flange mounting method helps disperse heat out of the drive
    - (2) Cooling fan design fan provides cold air to the aluminum heat sink
- Both methods are efficient and provide users with flexible options according to their working environment needs


\*Note: Please refer to the Product Specification



# Specifications

## 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 0.01mg/cm<sup>2</sup> per year

<b>Environment</b>	<b>Installation Location</b>	IEC60364-1/IEC60664-1 Pollution degree 2, indoor use only	
	<b>Surrounding Temperature (°C)</b>	Storage / Transportation	- 25 ~ 70
		Only allowed at non-condensation, non-frost, non-conductive environment	
	<b>Rated Humidity</b>	Operation	Max. 95
		Storage / Transportation	Max. 95
		No condense water	
	<b>Air Pressure (kPa)</b>	Operation/Storage	86 ~ 106
		Transportation	70 ~ 106
	<b>Pollution Level</b>	IEC 60721-3-3	
		Operation	Class 3C3; Class 3S2
Storage		Class 1C2; Class 1S2	
Transportation		Class 2C2; Class 2S2	
Only allowed at non-condensation, non-frost, non-conductive environment			
<b>Altitude</b>	Operation	If the AC motor drive is installed at an altitude 0 ~ 1000m, follow normal operation restriction. If it is installed at altitude 1000 ~ 3000m, 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	
<b>Package Drop</b>	Storage / Transportation	ISTA procedure 1A(according to weight) IEC60068-2-31	
<b>Vibration</b>	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		
<b>Impact</b>	IEC/EN 60068-2-27		
<b>Operation Position</b>	Max. allowed offset angle ±10° (under normal installation position)		

## Operation Temperature and Protection Level

Model	Frame	Top Cover	Conduit Box	Protection Level	Operation Temp.
VFD____CH____-21	Frame A~C 230V: 0.75~18.5kW 460V: 0.75~30kW	Remove top cover	Standard conduit plate	IP20/UL Open Type	SHD: -10°C ~ 50°C
		Standard with top cover		IP20/UL Type1/NEMA1	SHD: -10°C ~ 40°C
	Frame D~H 230V: 22kW and above 460V: 37kW and above		Conduit box	IP20/UL Type1/NEMA1	SHD: -10°C ~ 40°C
VFD____CH____-00	Frame D~H 230V: 22kW and above 460V: 37kW and above	N/A	Without standard conduit box	IP00 IP20/UL Open Type <b>Protection degree for the circled area is IP00; other areas are IP20</b>	SHD: -10°C ~ 50°C
VFD____CH____L-00	Frame D0-3 460V: 37kW			IP20/NEMA1	SHD: -10°C ~ 50°C
	Frame D3 460V: 45, 55, 75kW			IP00 <b>Protection degree for the circled area is IP00; other areas are IP20</b>	SHD: -10°C ~ 50°C

# Specifications

230V																	
Frame Size		A				B			C		D			E		F	
Model	VFD_ _ _CH23A-XX	007	015	022	037	055	075	110	150	185	220	300	370	450	550	750	
Output Rating	Super 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
		Rated Output Current (A)	5	8	11	17	25	33	49	65	75	90	120	146	180	215	255
		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
		Applicable Motor Output (HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
		Overload Tolerance	150% of rated current: 60 seconds 200% of rated current: 3 seconds														
		Max. Output Frequency (Hz)	0.00 ~ 599.00														
		Carrier Frequency (kHz)	5 ~ 15														
Input Rating	Input Current (A) Super Heavy Duty	6.4	12	16	20	28	36	52	72	83	99	124	143	171	206	245	
	Rated Voltage / Frequency	3-phase 200 ~ 240V <sub>Ac</sub> (-15 ~ +10%), 50/60Hz															
	Operating Voltage Range	170 ~ 265V <sub>Ac</sub>															
	Frequency Tolerance	47 ~ 63Hz															
	Power Supply Capacity (kVA)	2.1	3.3	4.6	7.1	10.4	13.7	20.4	27.0	31.2	37.4	43.6	60.7	74.8	89.4	106.0	
Efficiency (%)	97.8												98.2				
Displacement Power Factor (cos θ)	> 0.98																
Net 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		
Cooling Method	Natural cooling	Fan cooling															
Braking Chopper	Frame A to C: built-in										Frame D to F: optional						
DC Reactor	Frame A to C: optional										Frame D to F: built-in						
EMC Filter	Optional																

Notes:

1. The carrier frequency shown in the table is the default setting. Operate with lower current when raising the carrier frequency. Refer to the derating curve graph in chapter 9-5 of the manual.
2. Lower the current when controlled by FOC Sensorless, TQC+PG, TQC Sensorless, PM+PG, PM Sensorless. For more information, refer to Pr.06-55 of the manual.
3. The rated input current will be influenced by transformer, input reactor and input impedance.



460V													
Frame Size		A					B			C			
Model	VFD___CH43A-XX	007	015	022	037	055	075	110	150	185	220	300	
	VFD___CH4EA-XX												
Output Rating	Super Heavy Duty	Rated Output Capacity (kVA)	2.4	3.2	4.8	7.2	9.6	14	19	25	30	36	48
		Rated Output Current (A)	3	4	6	9	12	18	24	32	38	45	60
		Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30
		Applicable Motor Output (HP)	1	2	3	5	7.5	10	15	20	25	30	40
		Overload Tolerance	150% of rated current: 60 seconds 200% of rated current: 3 seconds										
		Max. Output Frequency (Hz)	0.00 ~ 599.00										
		Carrier Frequency (kHz)	5 ~ 15										
Input Rating	Input Current (A) Super Heavy Duty	4.3	5.9	8.7	14	17	20	26	35	40	47	63	
	Rated Voltage / Frequency	3-phase 380 ~ 480V <sub>AC</sub> (-15 ~ +10%), 50/60Hz											
	Operating Voltage Range	323 ~ 528V <sub>AC</sub>											
	Frequency Tolerance	47 ~ 63Hz											
	Power Supply Capacity (kVA)	2.5	3.3	5.0	7.5	10.0	15.0	20.0	26.6	31.6	37.4	49.9	
Efficiency (%)	97.8												
Displacement Power Factor (cos θ)	> 0.98												
Net Weight (kg)	2.6 ± 0.3					5.4 ± 1			9.8 ± 2				
Cooling Method	Natural cooling	Fan cooling											
Braking Chopper	Frame A to C: built-in												
DC Reactor	Frame A to C: optional												
EMC Filter	Frame A to C, VFD___CH4EA-21: built-in Frame A to C, VFD___CH43A-21: optional												

Notes:

1. The carrier frequency shown in the table is the default setting. Operate with lower current when raising the carrier frequency. Refer to the derating curve graph in chapter 9-5 of the manual.
2. Apply higher level model when having to take impact load.



# Specifications


460V																
Frame Size		D0	D				E		F	G			H			
Model	VFD_ _ _ _ CH43X-XX	370	450	550	750	900	1100	1320	1600	1850	2200	2800	3150	3550	4500	
Output Rating	Rated Output Capacity (kVA)	58	73	88	120	143	175	199	247	295	359	438	491	544	690	
	Rated Output Current (A)	73	91	110	150	180	220	250	310	370	450	550	616	683	866	
	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	420	475	600	
	Overload Tolerance	150% of rated current: 60 seconds 200% of rated current: 3 seconds														
	Max. Output Frequency (Hz)	0.00 ~ 599.00														
	Carrier Frequency (kHz)	5 ~ 15 (Default: 6)						4 ~ 10 (Default: 4)								
Input Rating	Input Current (A) Super Heavy Duty	74	101	114	157	167	207	240	300	380	400	494	555	625	866	
	Rated Voltage / Frequency	3-phase 380 ~ 480 V <sub>AC</sub> (-15 ~ +10%), 50/60Hz														
	Operating Voltage Range	323 ~ 528 V <sub>AC</sub>														
	Frequency Tolerance	47 ~ 63Hz														
	Power Supply Capacity (kVA)	60.7	75.7	91.4	124.7	149.6	182.9	207.8	257.7	307.6	365.8	457.2	512.1	567.8	720.0	
Efficiency (%)	97.8						98.2									
Displacement Power Factor (cos θ)	> 0.98															
Net Weight (kg)	38.5 ±1.5				64.8 ±1.5	86.5 ±1.5	134 ±4			228						
	36 ±1.5*		46 ±1.5*													
Cooling Method	Fan cooling															
Braking Chopper	Frame D/D0: optional Model VFD_ _ _ CH43L-00: built-in						Frame E above: optional									
DC Reactor	Frame D0 and above: built-in Model VFD370CH43L-00: optional															
EMC Filter	Frame D0 and above: optional															

Notes:

1. The carrier frequency shown in the table is the default setting. Operate with lower current when raising the carrier frequency. Refer to the derating curve graph in chapter 9-5 of the manual.
2. Apply higher level model when having to take impact load.
3. Calculation of rated output capacity is based on 460 V<sub>AC</sub> as the reference for inverters of utility power.
4. \*marks the weight of model VFD\_ \_ \_ CH43L-00.



# General Specifications

Control Characteristics	<b>Control Method</b>	1: V/F, 2: SVC, 3: VF + PG, 4: FOC + PG, 5: TQC + PG
	<b>Starting Torque</b>	Reach up to 200% or above at 0.5Hz. Under FOC + PG mode, starting torque can reach 200% at 0Hz
	<b>V/F Curve</b>	4 point adjustable V/F curve and square curve
	<b>Speed Response Ability</b>	5Hz (vector control can reach up to 40Hz)
	<b>Torque Limit</b>	Max. 220% torque current
	<b>Torque Accuracy</b>	±5%
	<b>Max. Output Frequency (Hz)<sup>*1</sup></b>	0.00~599.00Hz
	<b>Frequency Output Accuracy</b>	Digital command: ±0.01% of max. output current (parameter 01-00). (-10~+40°C) Analog command: ±0.01% of max. output current (parameter 01-00). (25±10°C)
	<b>Output Frequency Resolution</b>	Digital command: 0.1Hz Analog command: 0.05% of max. output frequency (parameter 01-00). (±11 bit)
	<b>Overload Tolerance</b>	150% of rated current: 1 minute for every 5 minutes; 200% of rated current: 3 seconds for every 30 seconds
<b>Frequency Setting Signal</b>	-10~+10V, 0~+10V, 4~20mA, 0~20mA, pulse input	
<b>Accel./Decel. Time</b>	0.00~600.00/0.0~6,000.0 seconds	
<b>Main Control Function</b>	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	
<b>Fan Control</b>	230V model: VFD150CH23A-21 (include) and series above: PWM control VFD110CH23A-21 (include) and series below: ON/OFF switch control 460V model: VFD185CH43A/4EA-21 (include) and series above: PWM control VFD150CH43A/4EA-21 (include) and series below: ON/OFF switch control	
Protection Characteristics	<b>Motor Protection</b>	Electronic thermal relay protection
	<b>Over-current Protection</b>	Output over-current protection Drive model 230V and 460V: over-current protection for 300% rated current Current clamp (Super heavy duty: 220%) Brake over-current protection Over-current protection for 150% rated current (Applicable models: VFD370CH43L-00, VFD450CH43L-00, VFD550CH43L-00, VFD750CH43L-00)
	<b>Over-voltage Protection</b>	230V model: drive will stop when DC-BUS voltage exceeds 410V 460V model: drive will stop when DC-BUS voltage exceeds 820V
	<b>Over-temperature Protection</b>	Built-in temperature sensor: capacitor, IGBT, braking chopper (Applicable models: VFD450CH43L-00, VFD550CH43L-00, VFD750CH43L-00)
	<b>Stall Prevention</b>	Stall prevention during acceleration, deceleration and running independently
	<b>Restart after Instantaneous Power Failure</b>	Parameter setting up to 20 seconds
	<b>Grounding Leakage Current Protection</b>	Leakage current is higher than 50% of rated current of the AC motor drive
	<b>Short Circuit Current Rating (SCCR)</b>	Under the regulation UL508C, the fuse applies to power supply system with short circuit capacity under 100kA
<b>Product Certifications<sup>*2</sup></b>	 GB/T12668-2	
<b>Safety Functions</b>	Emergency stop (STO according to EN/IEC61800-5-2), TUV Rheinland Certificate IEC62061/IEC61508, SIL CL2, EN ISO13849-1, Cat.3/PL d	

Notes:

1. Max. output current setting changes with the carrier wave and control mode.

Refer to detailed information about parameters 01-00 and 06-55 in manual.

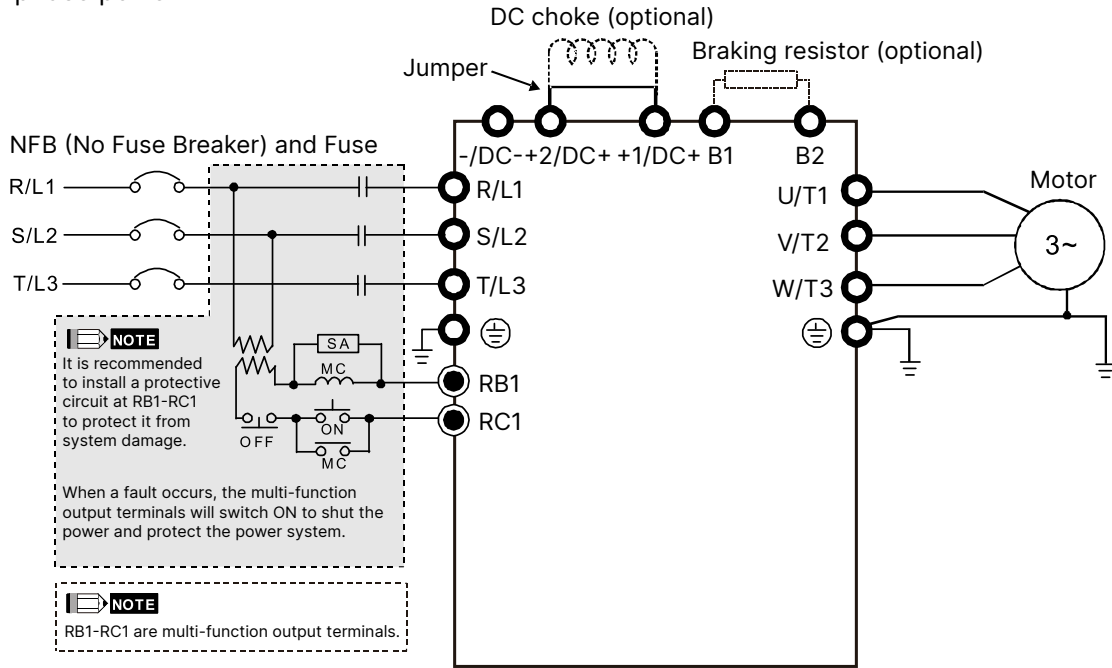
2. The following modules do not have UL and STO certificates:

VFD3150CH43A-00, VFD3150CH43C-21, VFD3550CH43A-00, VFD3550CH43C-21, VFD4500CH43A-00, VFD4500CH43C-21, VFD370CH43L-00, VFD450CH43L-00, VFD550CH43L-00, VFD750CH43L-00.

# Wiring

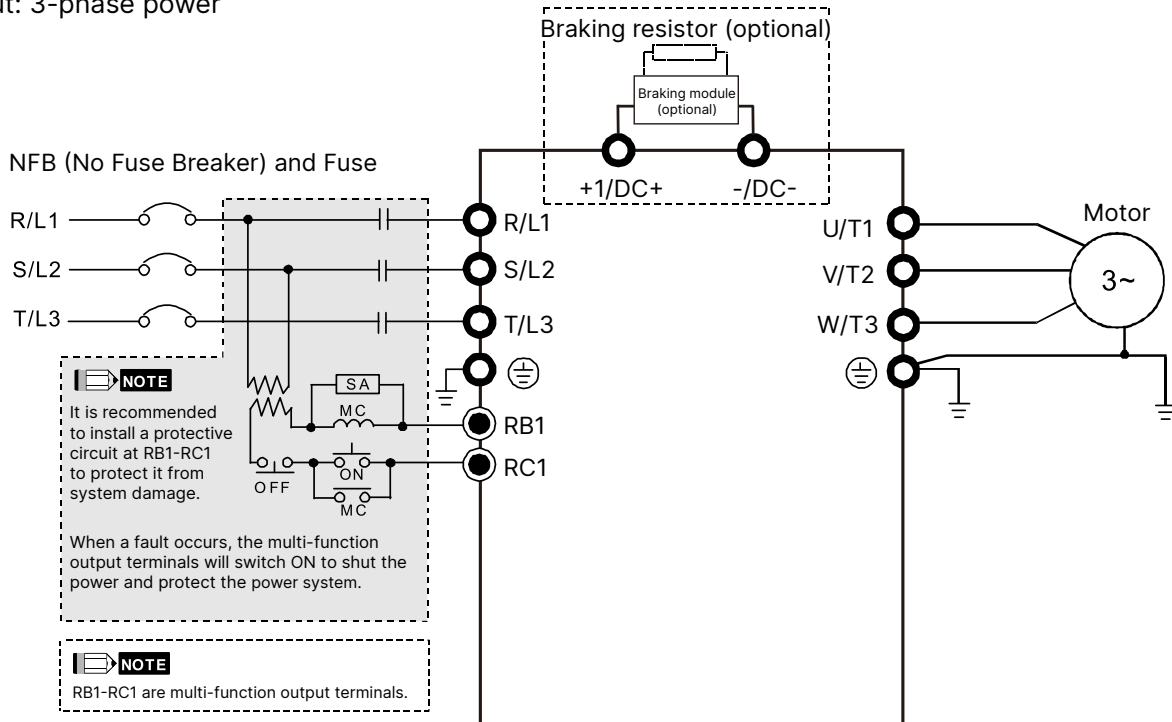
## Wiring Diagram for Frame A ~ C, D0-3 (VFD370CH43L-00)

\*Input: 3-phase power



## Wiring Diagram for Frame D ~ F

\*Input: 3-phase power

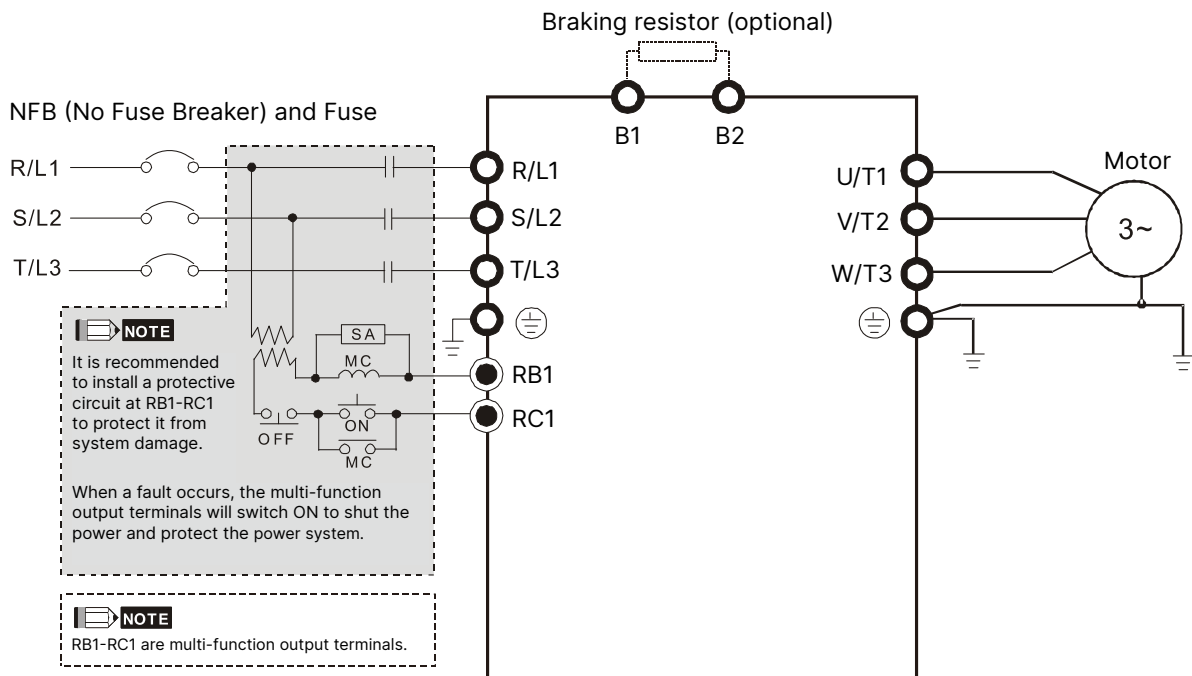


**NOTE**

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 D3 (VFD450CH43L-00, VFD550CH43L-00, VFD750CH43L-00)

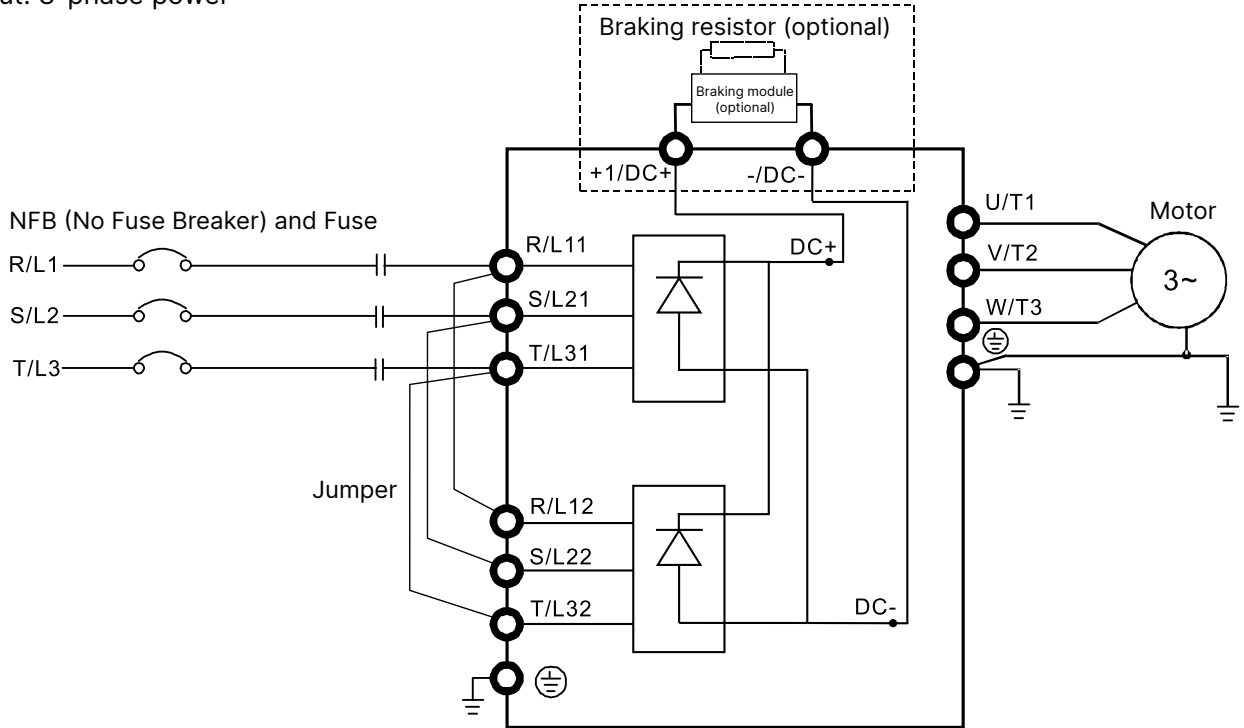
\*Input: 3-phase power



# Wiring

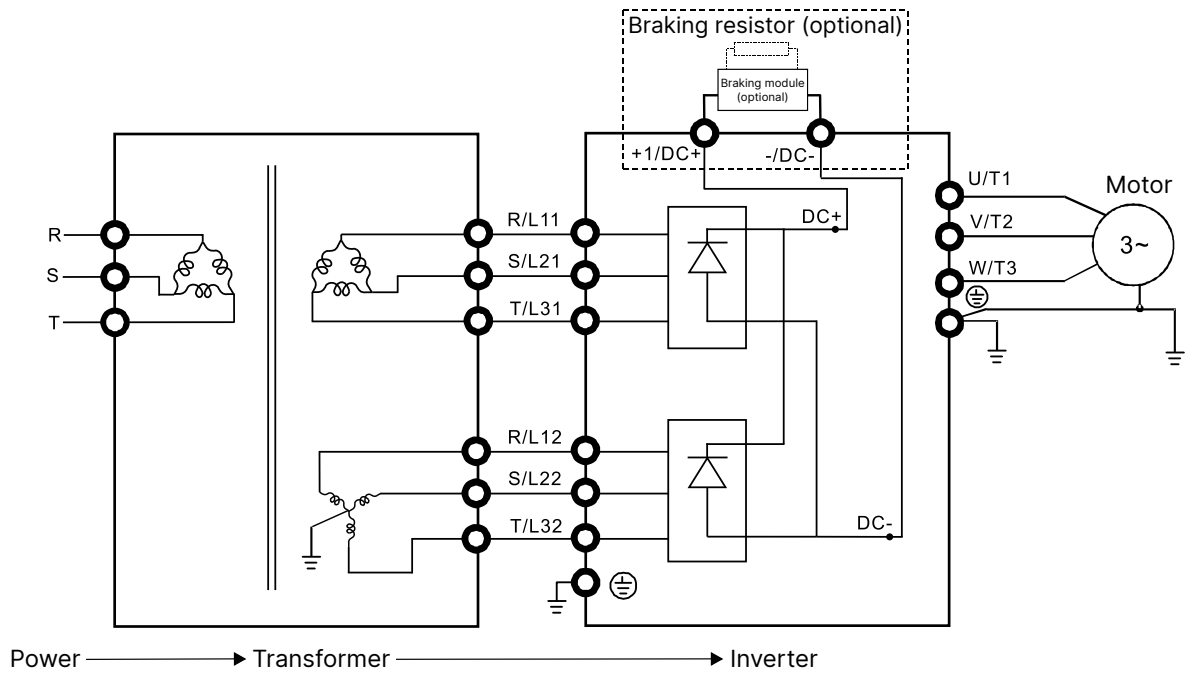
## Wiring Diagram for Frame G ~ H

\*Input: 3-phase power



## Wiring Diagram for Frame G ~ H

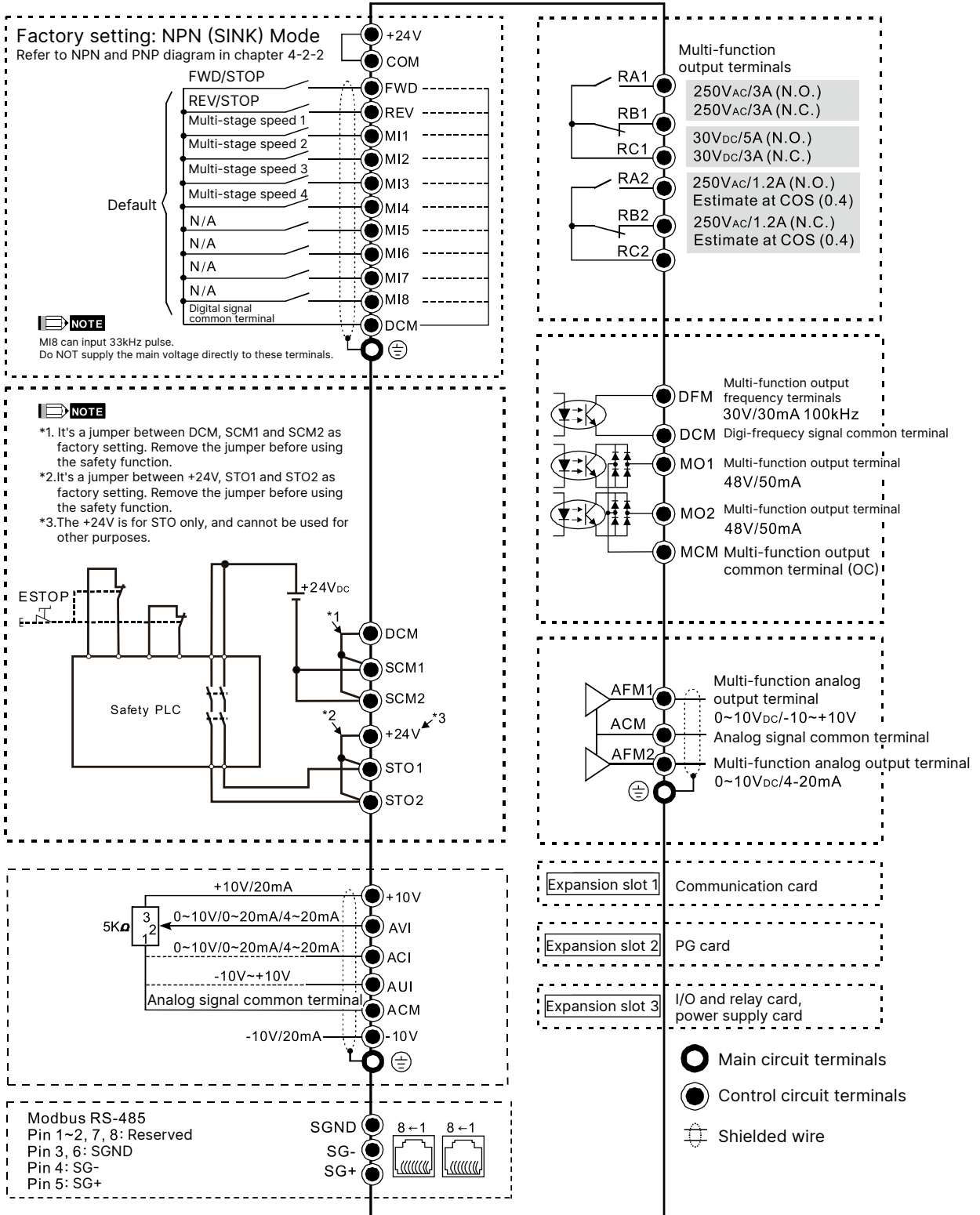
\*Input: 12 pulse rectifier



**NOTE**

Wiring must strictly follow the diagram above when having 12-pulse input.

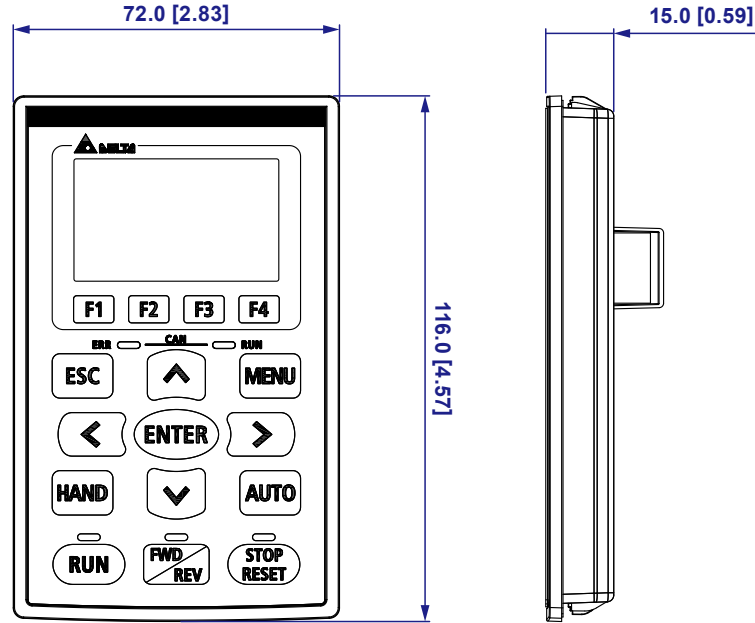
# Wiring Diagram for Frame A ~ H



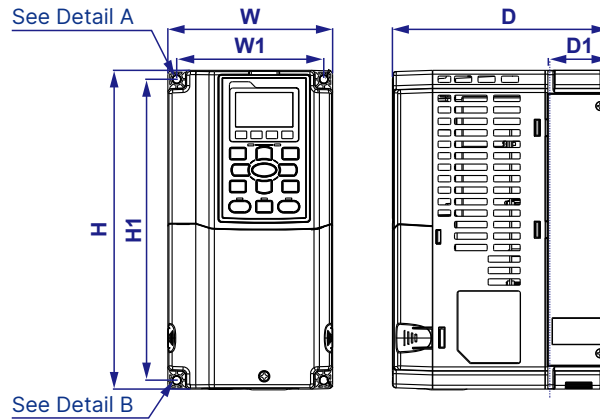
# Dimensions

## Digital Keypad KPC-CC01

Unit: mm [inch]

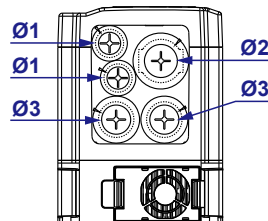


## Frame A



### Model

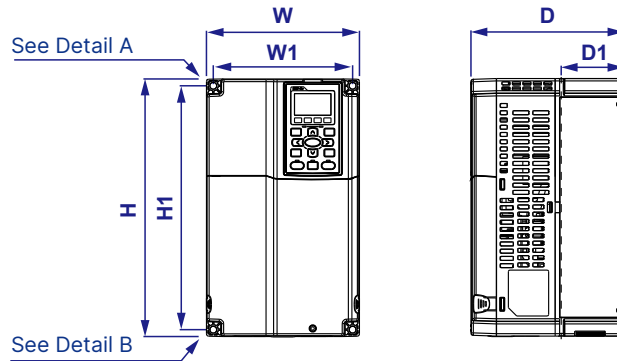
VFD007CH23A-21	VFD055CH43A-21
VFD015CH23A-21	VFD007CH4EA-21
VFD022CH23A-21	VFD015CH4EA-21
VFD037CH23A-21	VFD022CH4EA-21
VFD007CH43A-21	VFD037CH4EA-21
VFD015CH43A-21	VFD055CH4EA-21
VFD022CH43A-21	
VFD037CH43A-21	



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

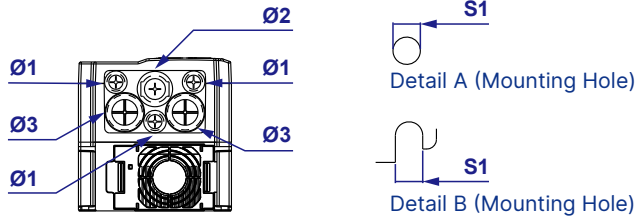
D1\*: Flange mount

### Frame B



**Model**

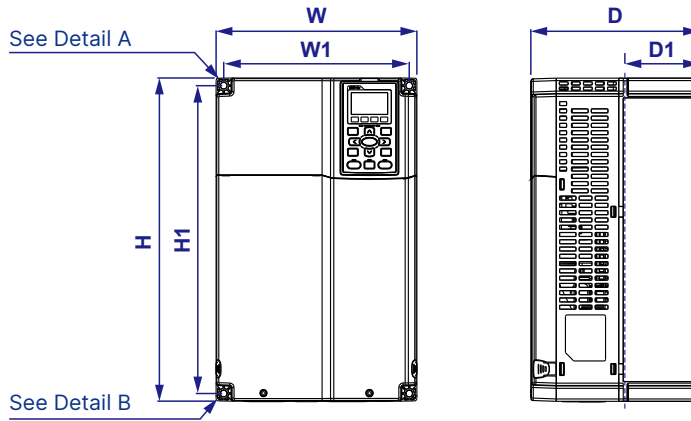
- VFD055CH23A-21
- VFD075CH23A-21
- VFD110CH23A-21
- VFD075CH43A-21
- VFD110CH43A-21
- VFD150CH43A-21
- VFD075CH4EA-21
- VFD110CH4EA-21
- VFD150CH4EA-21



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	43.8
	inch	7.48	12.60	7.48	6.81	11.93	3.07	0.33	0.87	1.34	1.72

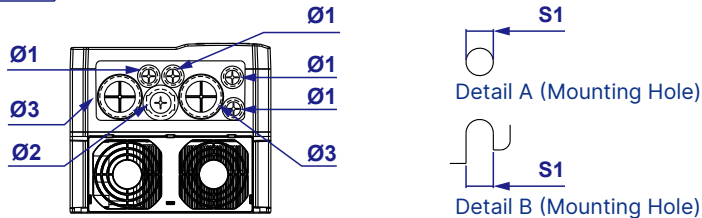
D1\*:Flange mount

### Frame C



**Model**

- VFD150CH23A-21
- VFD185CH23A-21
- VFD185CH43A-21
- VFD220CH43A-21
- VFD300CH43A-21
- VFD185CH4EA-21
- VFD220CH4EA-21
- VFD300CH4EA-21

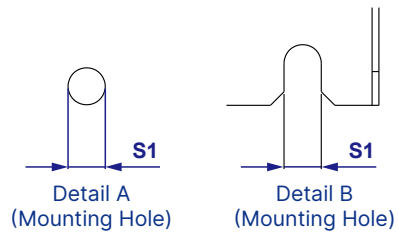
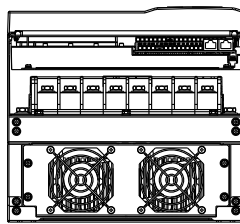
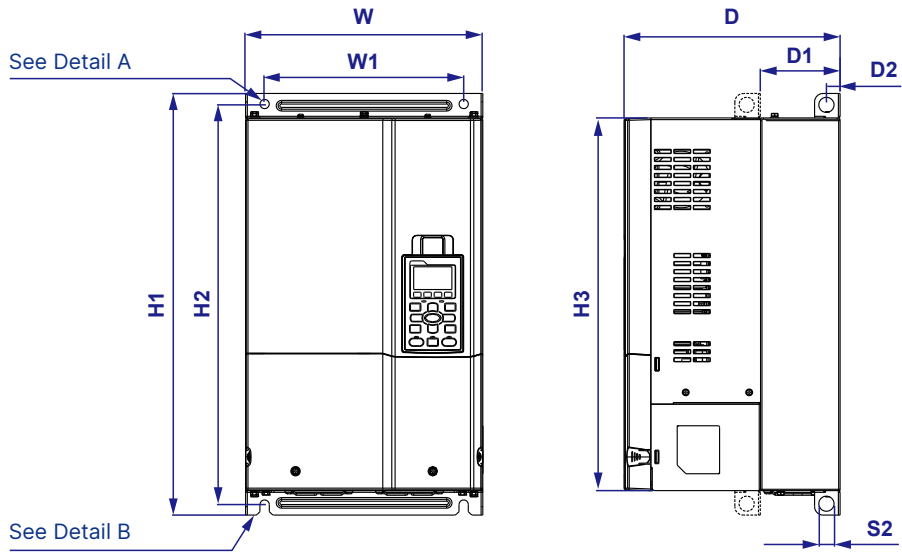


Frame		W	H	D	W1	H1	D1*	S1	Ø1	Ø2	Ø3
C1	mm	250.0	400.0	210.0	231.0	381.0	92.9	8.5	22.2	34.0	50.0
	inch	9.84	15.75	8.27	9.09	15.00	3.66	0.33	0.87	1.34	1.97

D1\*:Flange mount

# Dimensions

## Frame D0-1



Model

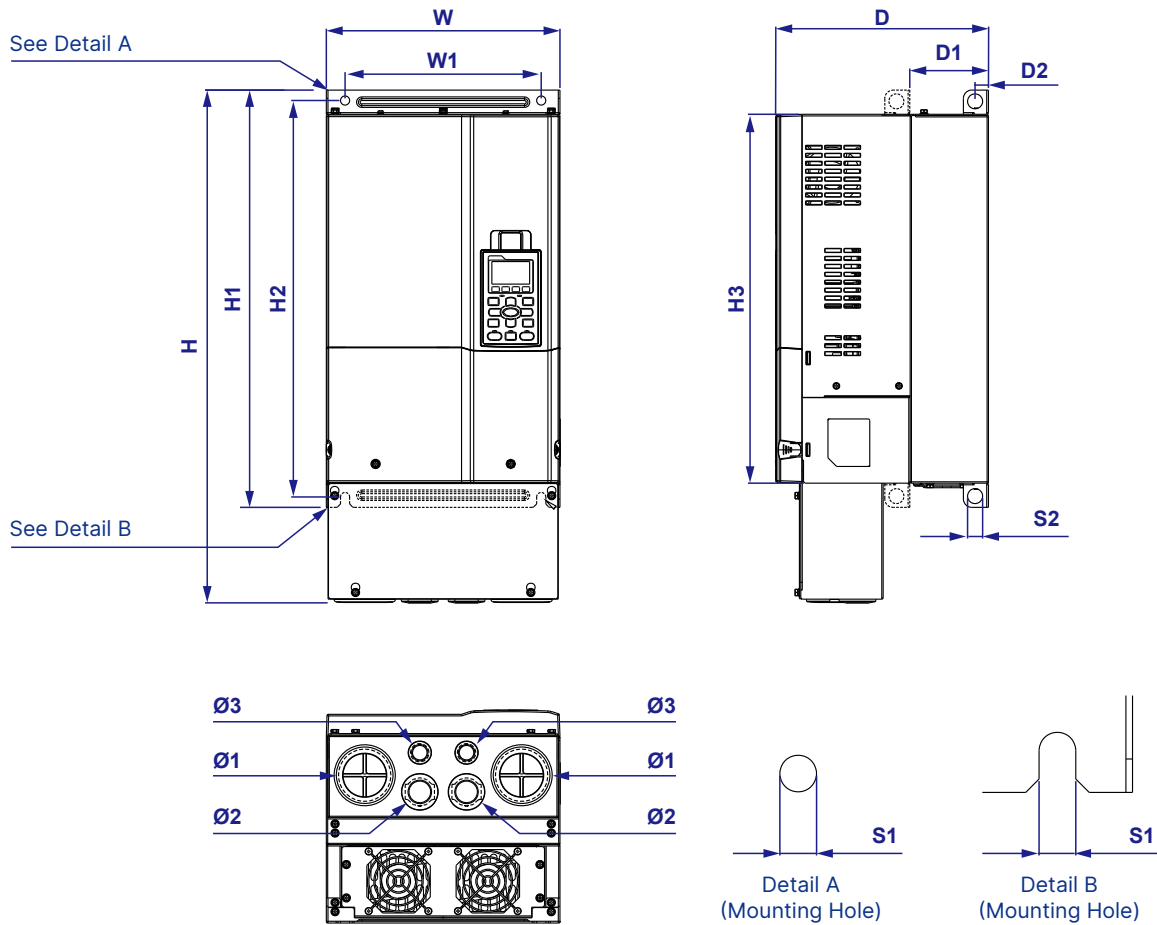
VFD370CH43S-00

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 D0-2



Model

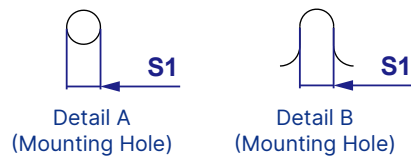
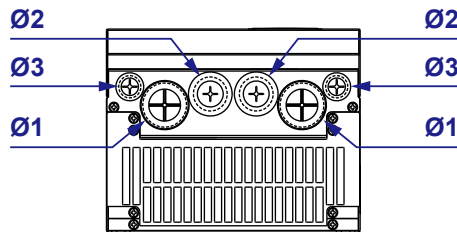
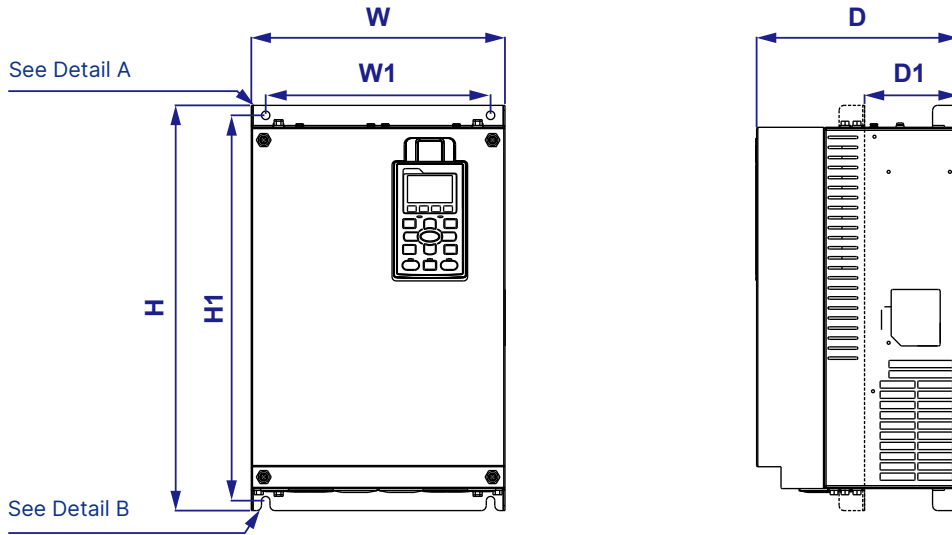
VFD370CH43S-21

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	24.19	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

# Dimensions

## Frame D0-3



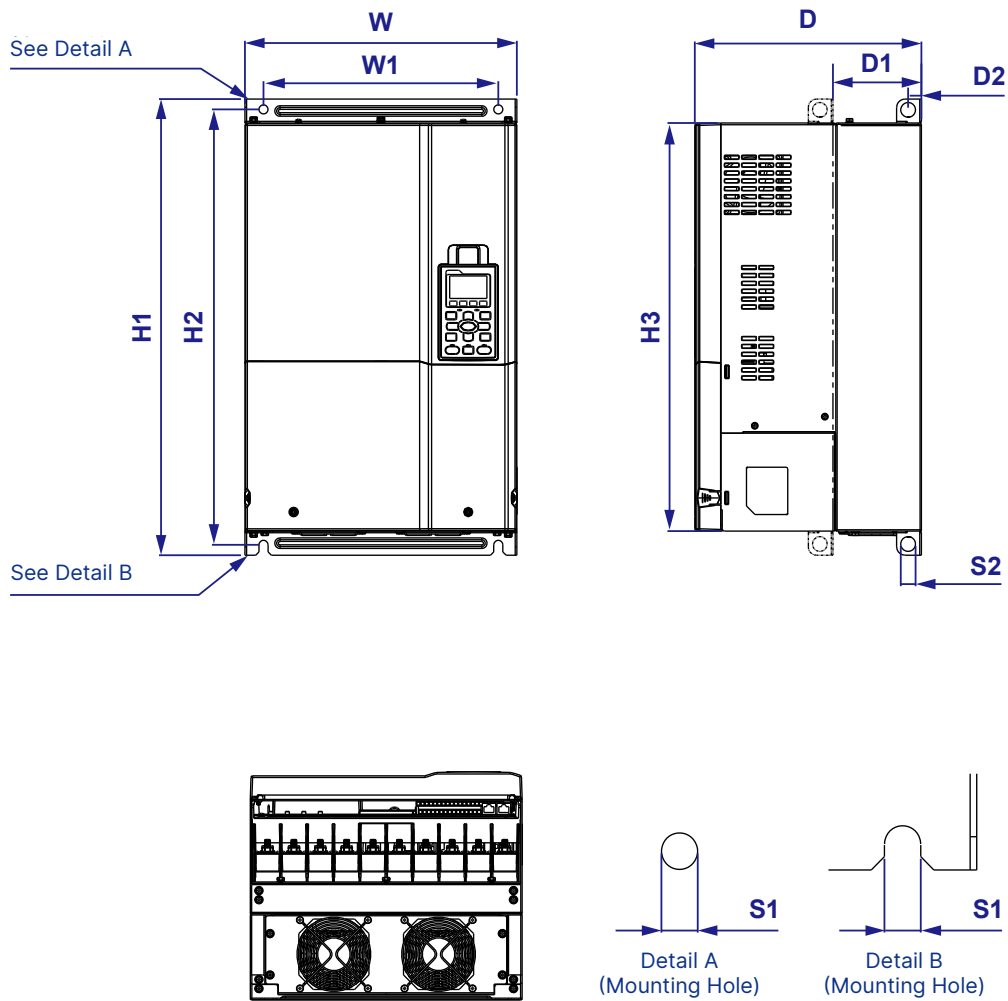
Model

VFD370CH43L-00

Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3
D0-3	mm	255.0	403.8	202.5	226.0	384.0	-	-	94.0	-	8.5	-	44.0	34.0	22.3
	inch	10.04	15.90	7.97	8.90	15.12	-	-	3.70	-	0.33	-	1.73	1.34	0.88

D1\*: Flange mount

## Frame D1



### Model

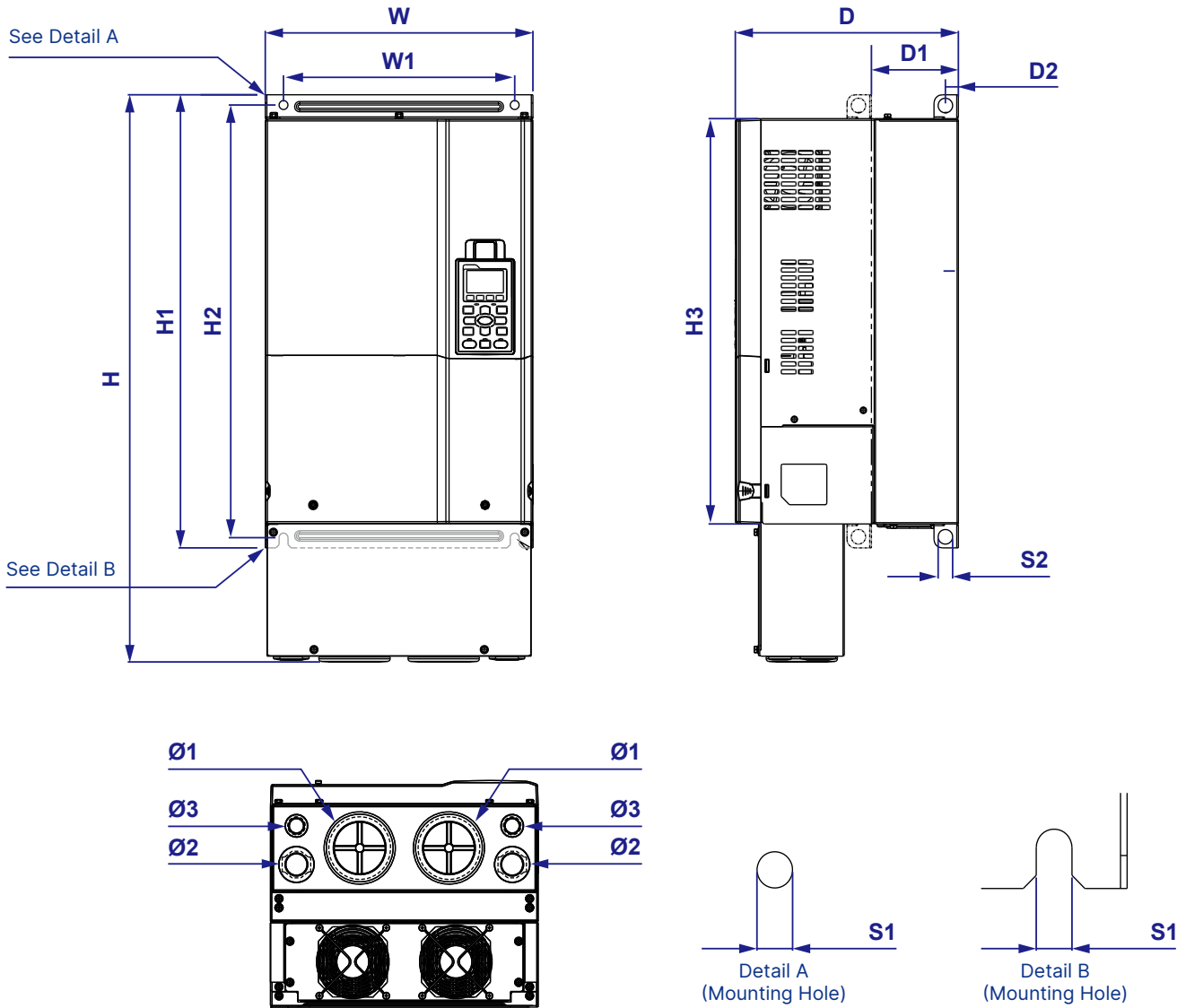
VFD220CH23A-00  
VFD300CH23A-00  
VFD370CH23A-00  
VFD450CH43A-00  
VFD550CH43A-00  
VFD750CH43A-00

Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2
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

D1\*: Flange mount

# Dimensions

## Frame D2



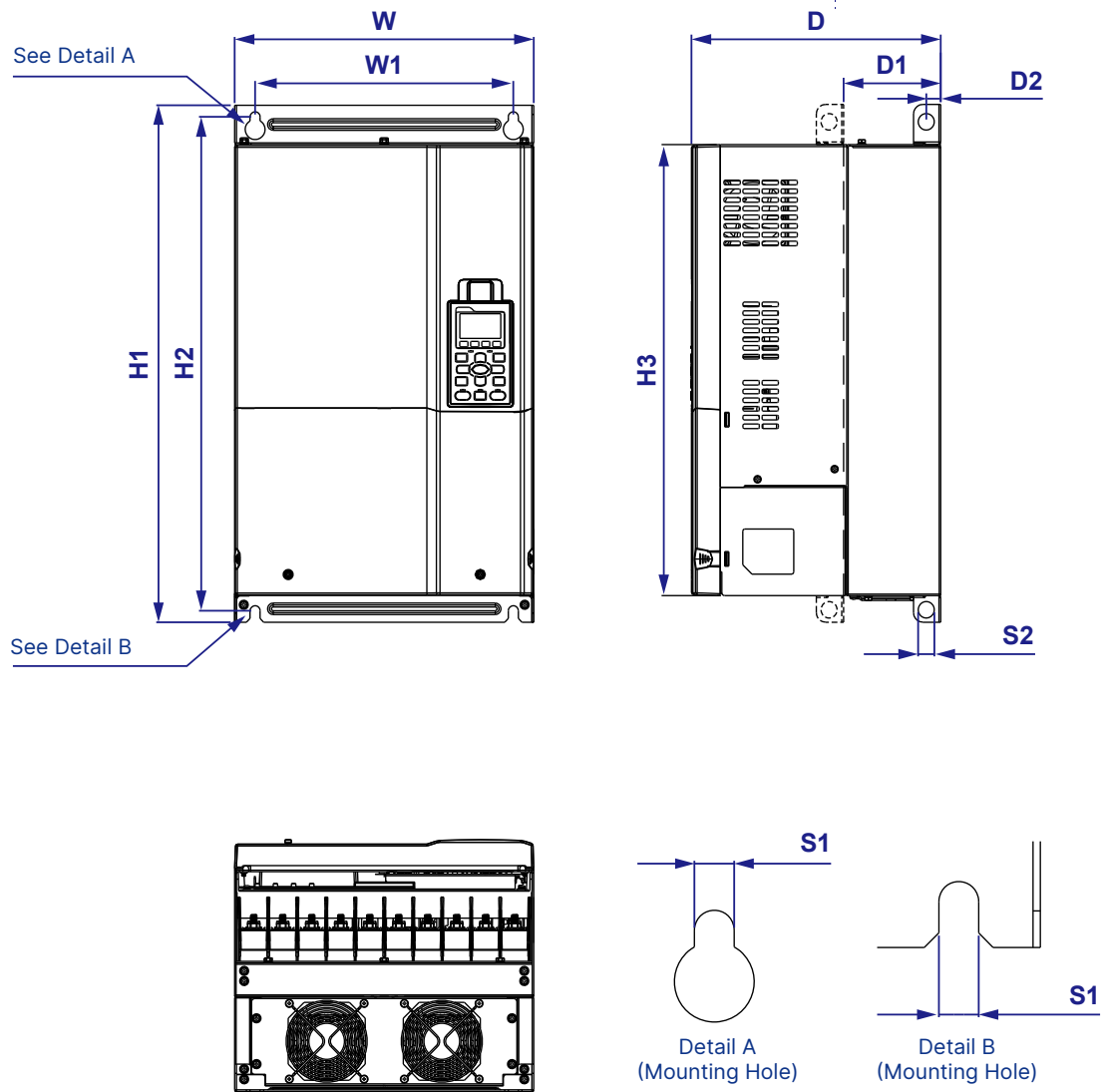
### Model

- VFD220CH23A-21
- VFD300CH23A-21
- VFD370CH23A-21
- VFD450CH43A-21
- VFD550CH43A-21
- VFD750CH43A-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	27.1	10.83	11.22	21.65	20.67	19.37	4.22	0.63	0.43	0.71	3.00	1.34	0.87

D1\*: Flange mount

## Frame D3



### Model

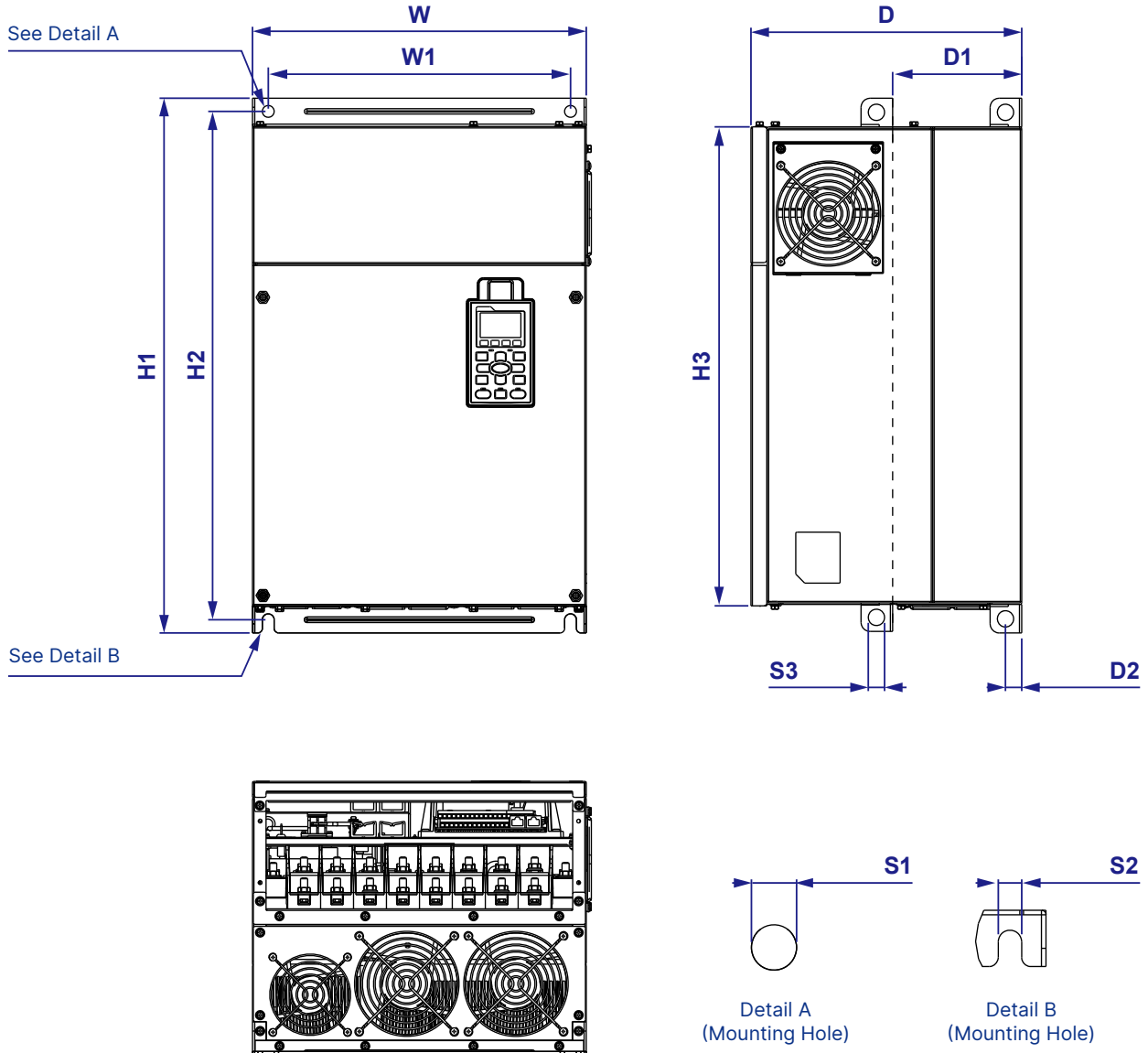
VFD450CH43L-00  
 VFD550CH43L-00  
 VFD750CH43L-00

Frame	W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3	
D3	mm	330.0	-	275.0	285.0	565.0	540.0	492.0	107.2	16.0	11.0	18.0	-	-	-
	inch	12.99	-	10.83	11.22	22.24	20.67	19.37	4.22	0.63	0.43	0.71	-	-	-

D1\*: Flange mount

# Dimensions

## Frame E1



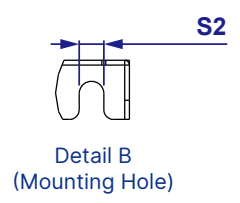
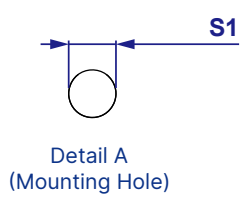
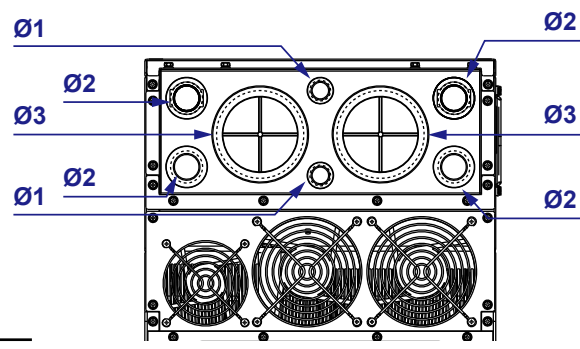
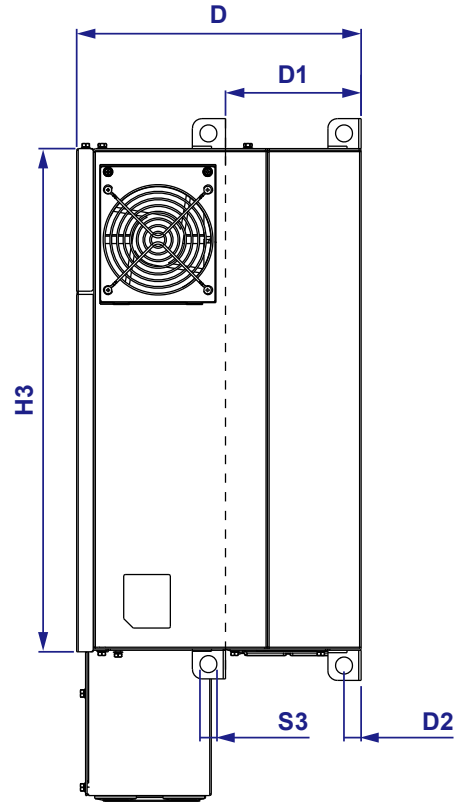
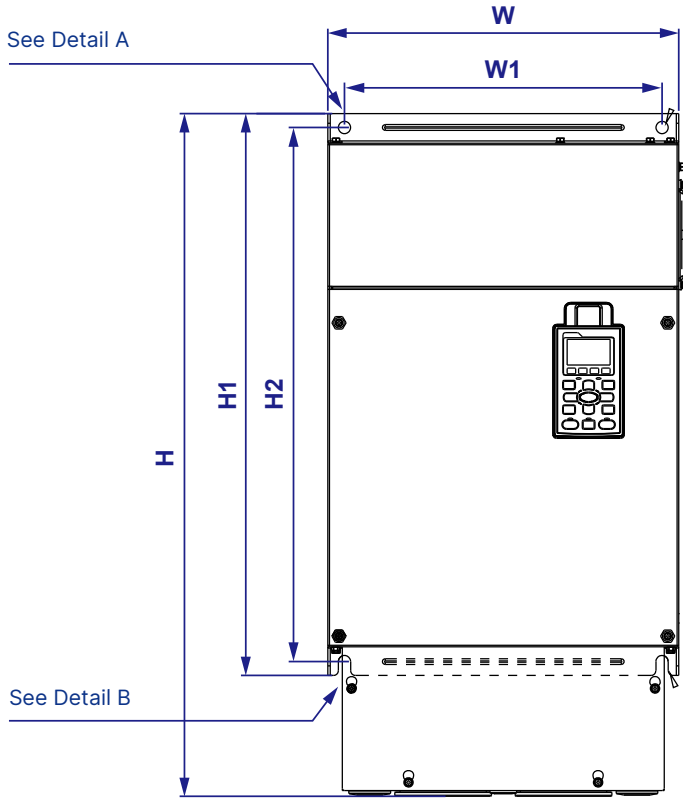
### Model

VFD450CH23A-00  
 VFD550CH23A-00  
 VFD900CH43A-00  
 VFD1100CH43A-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	589.0	560.0	528.0	143.0	18.0	13.0	18.0	-	-	-	
	inch	14.57	-	11.81	13.19	23.19	22.05	20.80	5.63	0.71	0.51	0.71	-	-	-	

D1\*: Flange mount

# Frame E2



**Model**

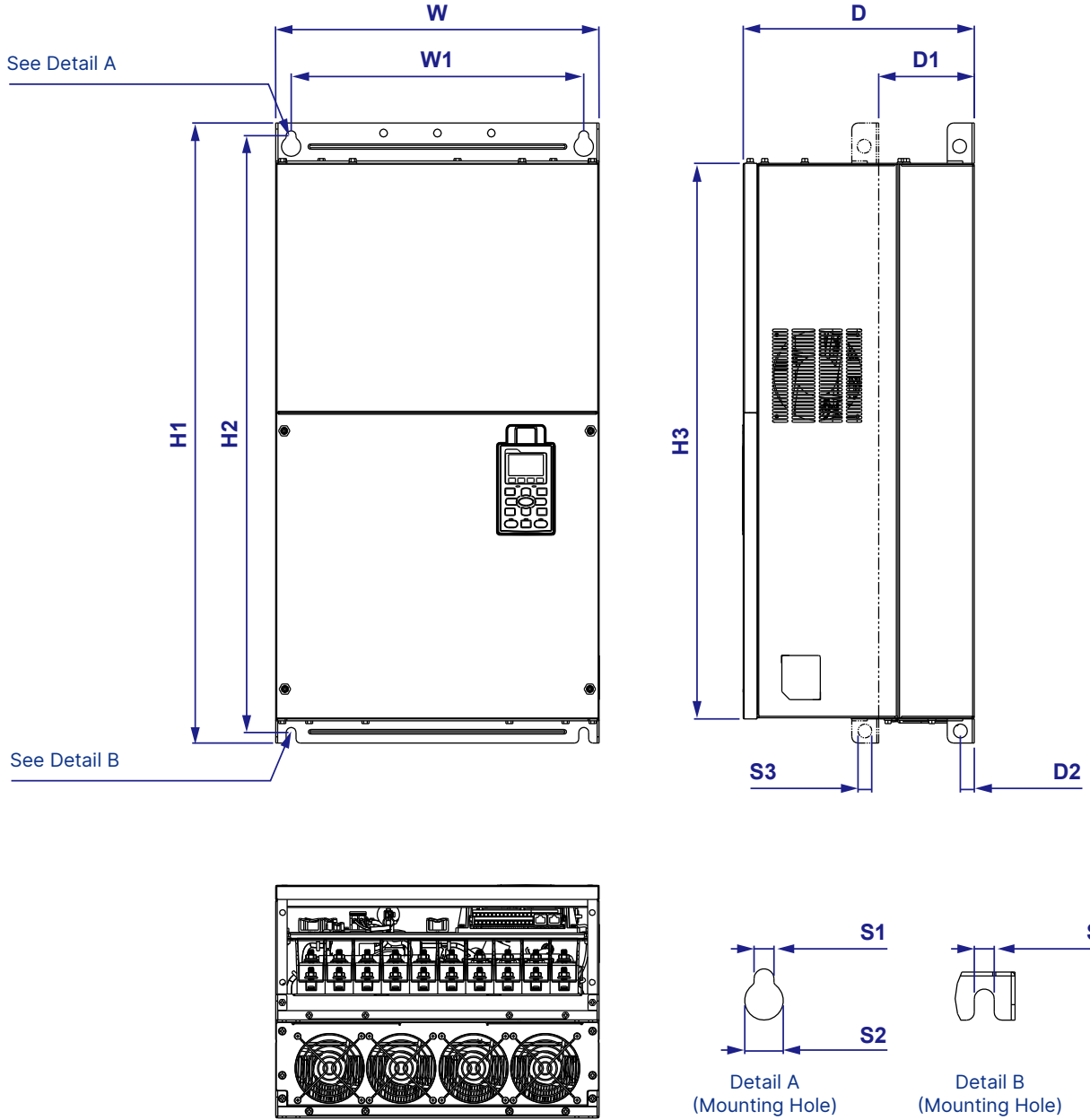
VFD450CH23A-21  
 VFD550CH23A-21  
 VFD900CH43A-21  
 VFD1100CH43A-21

Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
E2	mm	370.0	715.8	300.0	335.0	589.0	560.0	528.0	143.0	18.0	13.0	18.0	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	0.71	0.71	0.87	1.34	3.62

D1\*: Flange mount

# Dimensions

## Frame F1



**Model**

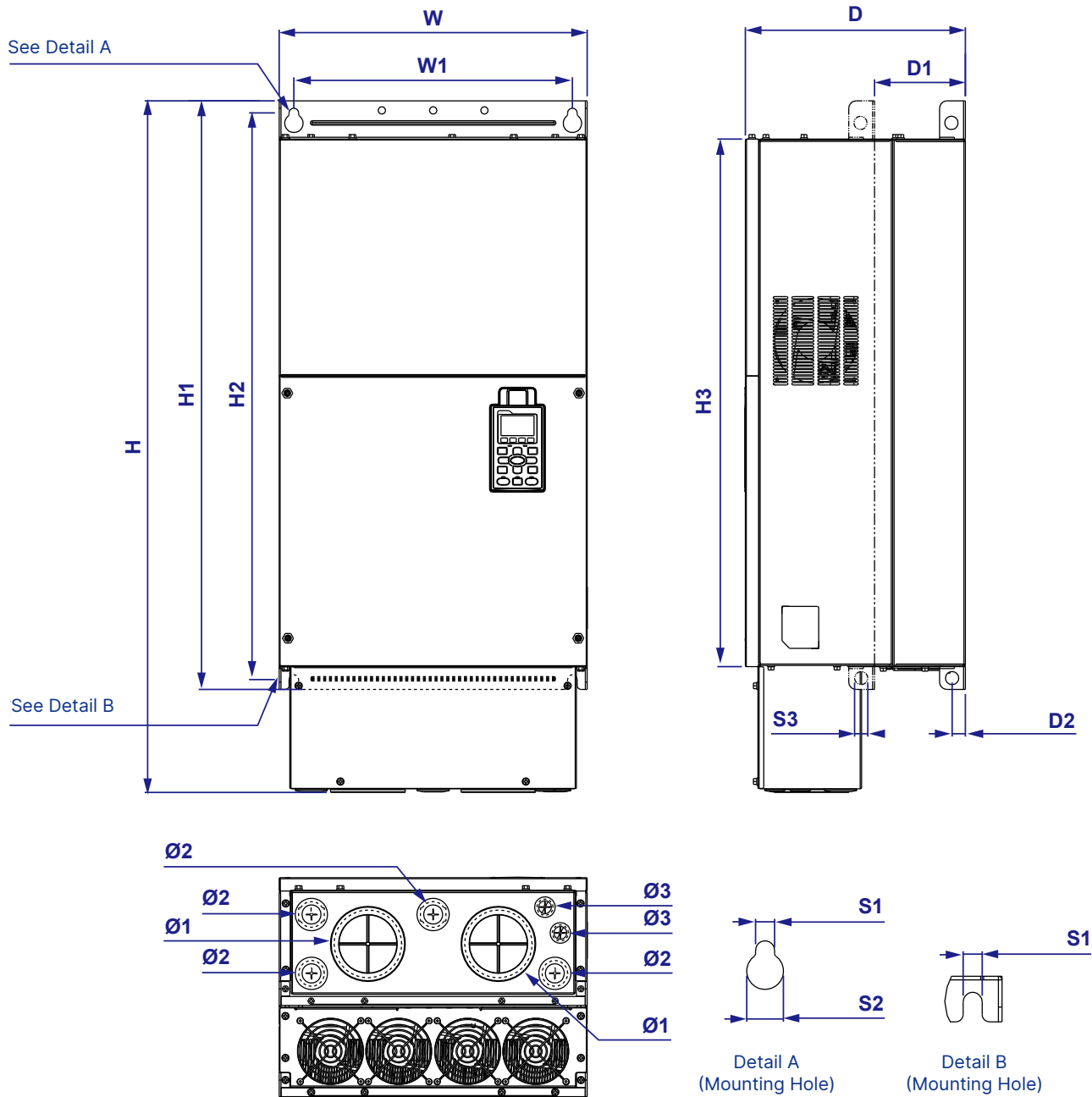
VFD750CH23A-00  
VFD1320CH43A-00

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

D1\*: Flange mount



## Frame F2



### Model

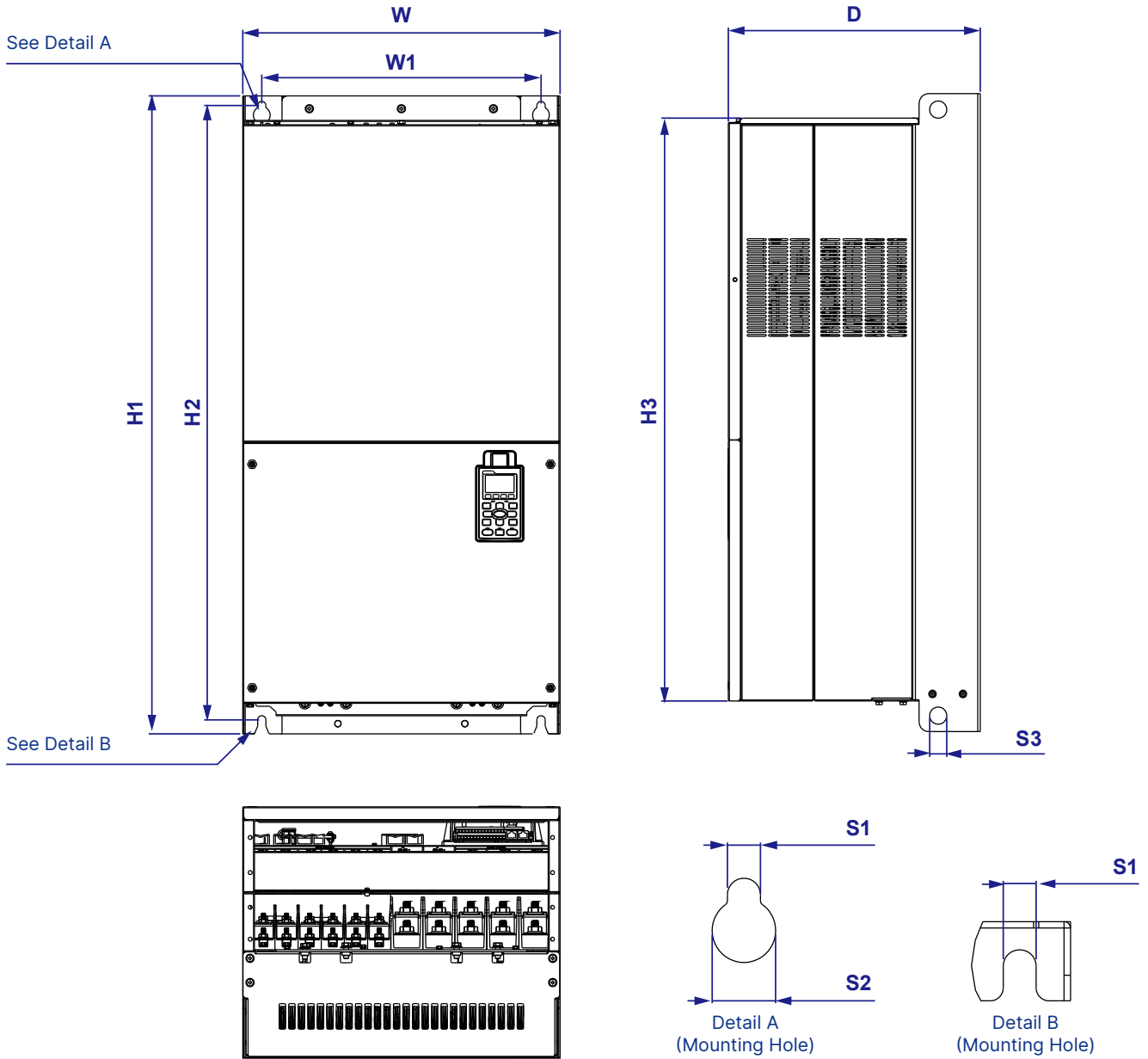
VFD750CH23A-21  
VFD1320CH43A-21

Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
F2	mm	420.0	940.0	300.0	380.0	800.0	770.0	717.0	124.0	18.0	13.0	25.0	18.0	92.0	35.0	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 mount

# Dimensions

## Frame G1

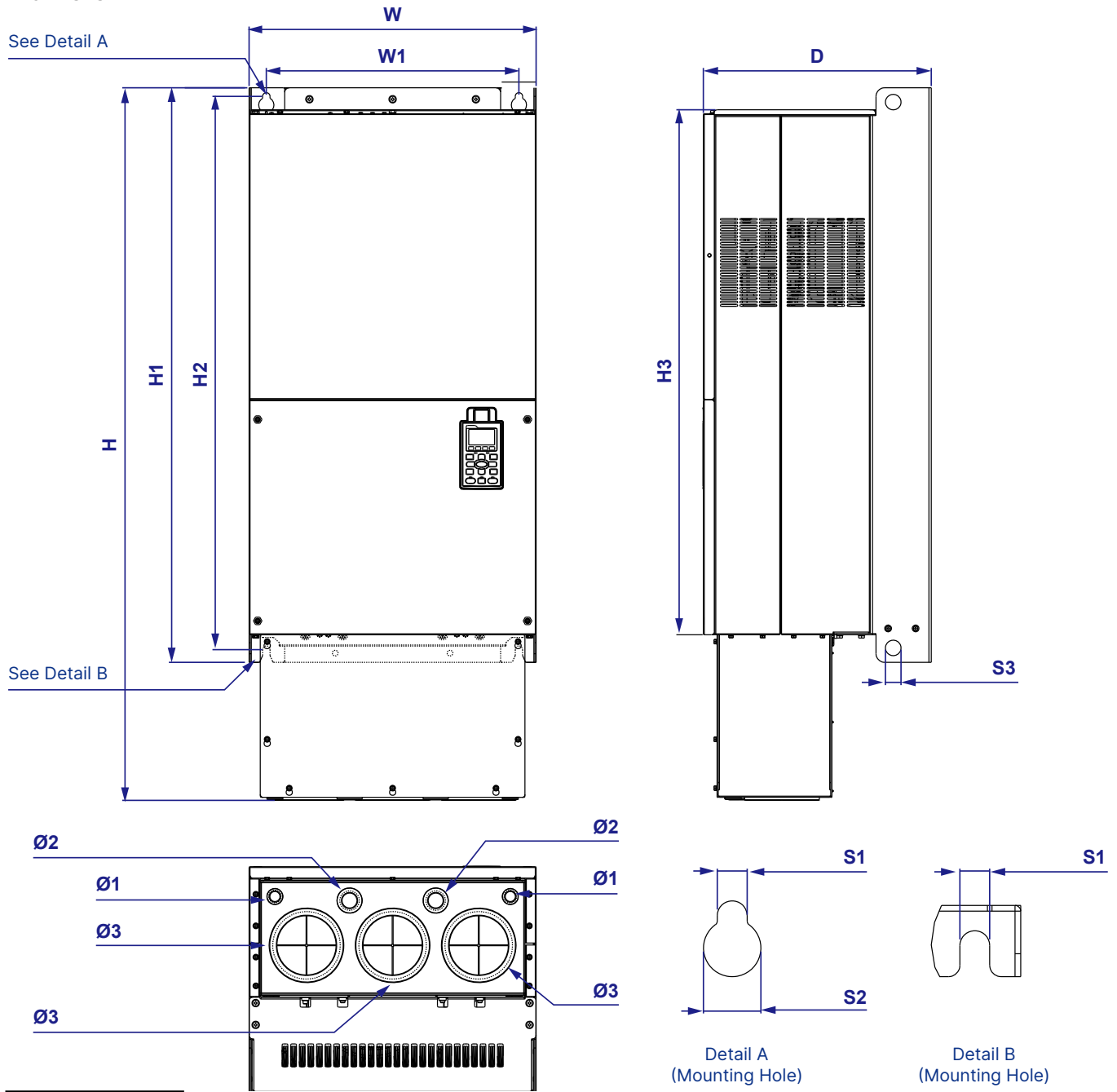


### Model

VFD1600CH43A-00  
 VFD1850CH43A-00  
 VFD2200CH43A-00

Frame		W	H	D	W1	H1	H2	H3	S1	S2	S3	Ø1	Ø2	Ø3
G1	mm	500.0	-	397.0	440.0	1,000.0	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



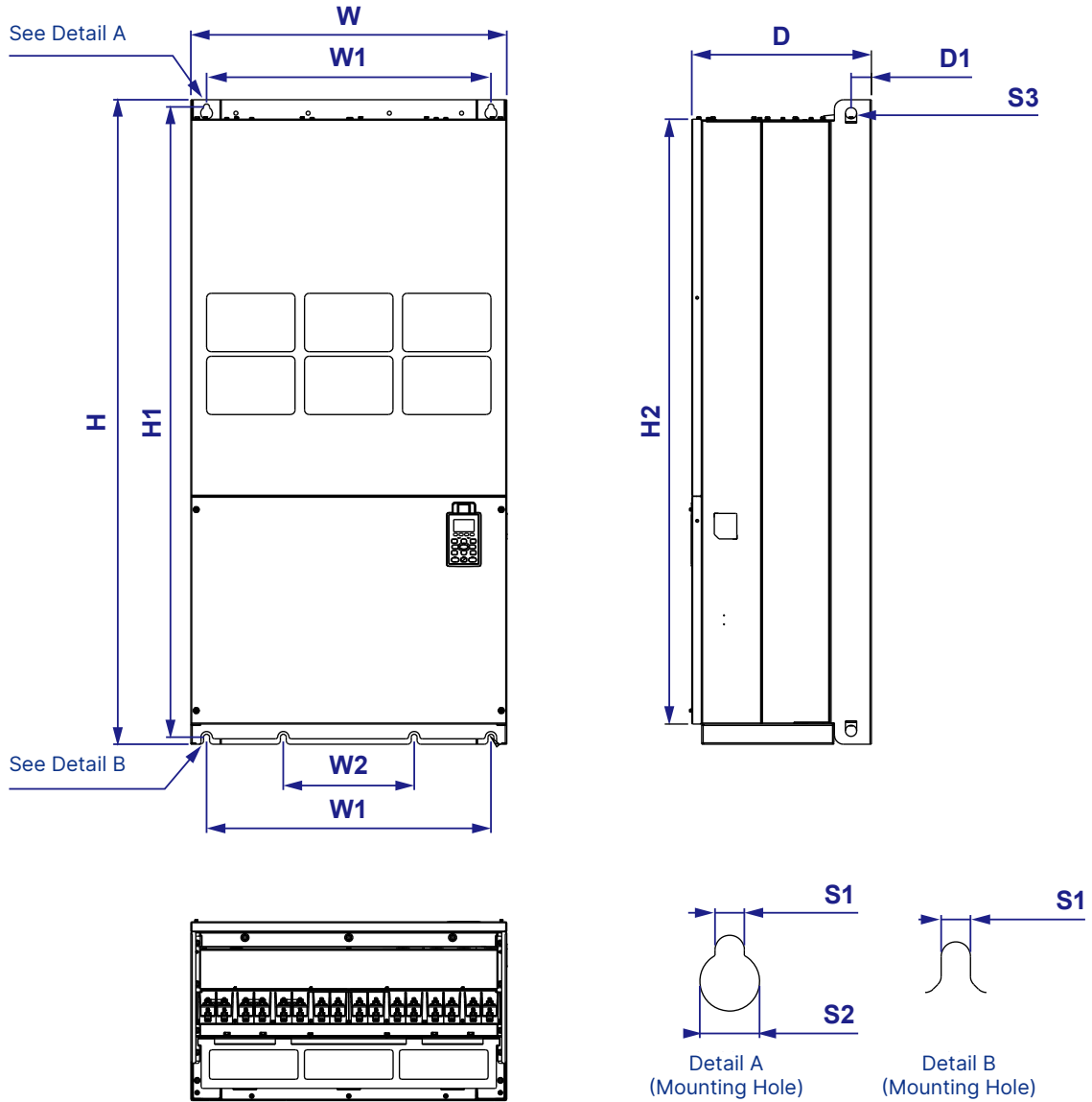
### Model

VFD1600CH43A-21  
 VFD1850CH43A-21  
 VFD2200CH43A-21

Frame		W	H	D	W1	H1	H2	H3	S1	S2	S3	Ø1	Ø2	Ø3
G2	mm	500.0	1,240.2	397.0	440.0	1,000.0	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

# Dimensions

## Frame H1

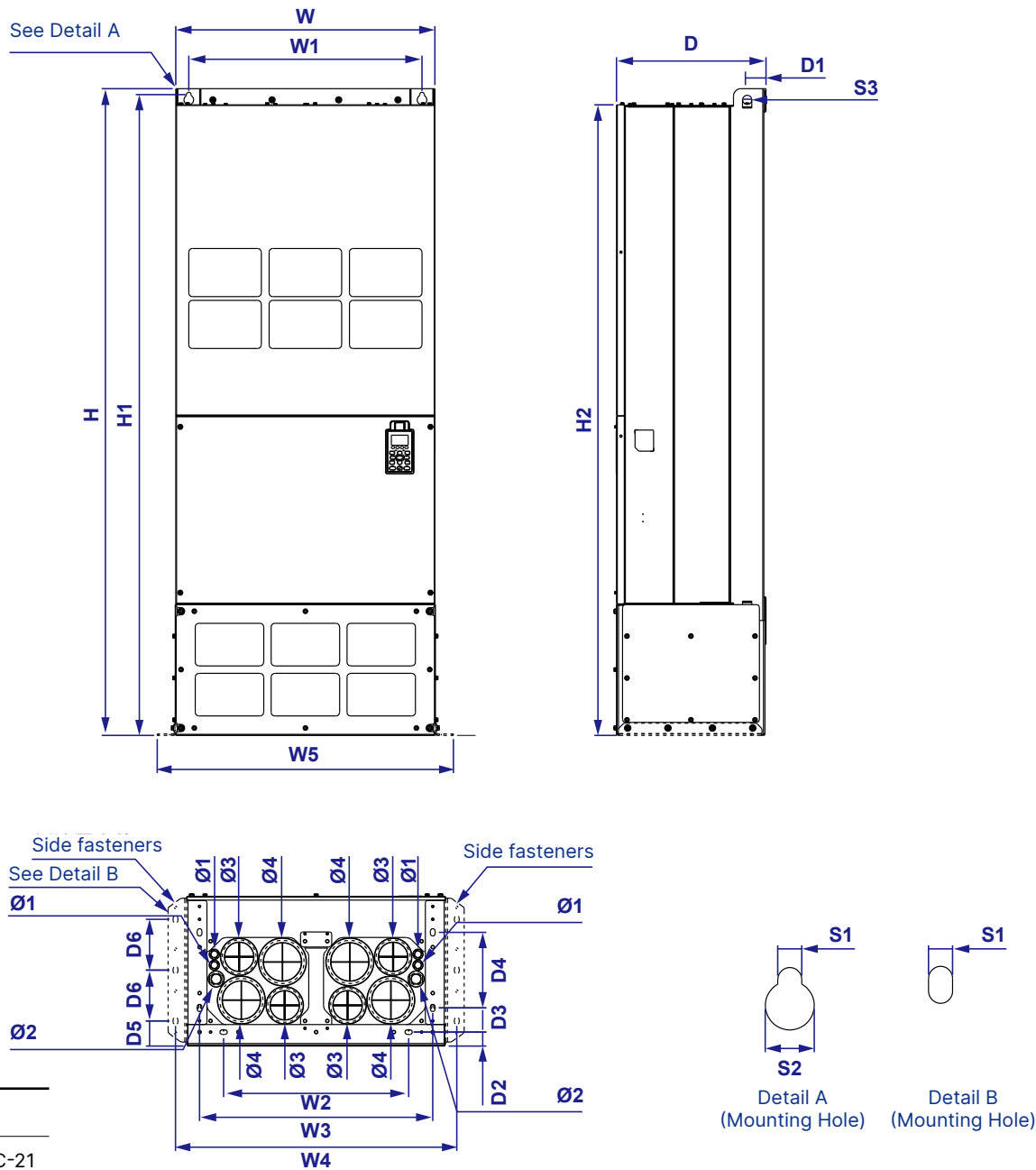


### Model

VFD2800CH43A-00  
 VFD3150CH43A-00  
 VFD3550CH43A-00  
 VFD4500CH43A-00

Frame		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H1	mm	700.0	1,435.0	398.0	630.0	290.0	-	-	-	-	1,403.0	1,346.0	-	-
	inch	27.56	56.5	15.67	24.8	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 H3



### Model


VFD2800CH43C-21  
VFD3150CH43C-21  
VFD3550CH43C-21  
VFD4500CH43C-21

Frame	W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4	
H3	mm	700.0	1,745.0	404.0	630.0	500.0	630.0	760.0	800.0	-	1,729.0	1,701.6	-	-
	inch	27.56	68.70	15.9	24.8	19.69	24.8	29.92	31.5	-	68.07	66.99	-	-
Frame	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3	Ø4	
H3	mm	51.0	38.0	65.0	204.0	68.0	137.0	13.0	26.5	25.0	22.0	34.0	91.5	117.5
	inch	2.0	1.5	2.56	8.03	2.68	5.4	0.51	1.04	0.98	0.87	1.34	3.60	4.63


# Accessories

## PG Cards


### ▪ 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: 200 mA
		DCM	Common for power and signal
		A1, $\overline{A1}$ , B1, $\overline{B1}$ , Z1, $\overline{Z1}$	Encoder input signal (Line Driver) Open collector input: +5 ~ +24 V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG01L: 300 kHz; EMC-PG02L: 30 kHz
	PG2	A2, $\overline{A2}$ , B2, $\overline{B2}$	Pulse input signal (Line Driver or Open Collector) Open collector input: +5 ~ +24 V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG01L: 300 kHz; EMC-PG02L: 30 kHz
	PG OUT	AO, $\overline{AO}$ , BO, $\overline{BO}$ , ZO, $\overline{ZO}$ , SG	PG card output signals. Division frequency function: 1 ~ 255 times Max. output voltage for Line driver: 5V <sub>DC</sub> Max. output current: 15 mA Max. output frequency: EMC-PG01L: 300 kHz; EMC-PG02L: 30 kHz SG: The GND of PG card is the same as the host controller or PLC, so a common output signal is attained.

### ▪ 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: 200 mA
		DCM	Common for power and signal
		A1, $\overline{A1}$ , B1, $\overline{B1}$ , Z1, $\overline{Z1}$	Encoder input signal (Line Driver or Open Collector) Open collector input: +5 ~ +24 V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG010: 300 kHz; EMC-PG020: 30 kHz
	PG2	A2, $\overline{A2}$ , B2, $\overline{B2}$	Pulse input signal (Line Driver or Open Collector) Open collector input: +5 ~ +24 V (Note1) 1-phase or 2-phase input Max. input frequency: EMC-PG010: 300 kHz; EMC-PG020: 30 kHz
	PG OUT	V+, $\overline{V-}$	Needs external power source for PG OUT circuit. Input voltage of power: +7 ~ +24 V
		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 frequency: EMC-PG010: 300 kHz; EMC-PG020: 30 kHz	

### ▪ EMC-PG01R


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

▪ 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, $\overline{A1}$ , B1, $\overline{B1}$ , Z1, $\overline{Z1}$	Encoder input signal (Line Driver) 1-phase or 2-phase input; Max. input frequency: 300kHz
		U1, $\overline{U1}$ , V1, $\overline{V1}$ , W1, $\overline{W1}$	Encoder input signal
	PG2	A2, $\overline{A2}$ , B2, $\overline{B2}$	Pulse input signal Open collector input: +5 ~ +24V (Note1) 1-phase or 2-phase input; Max. input frequency: 300kHz
	PG OUT	AO, $\overline{AO}$ , BO, $\overline{BO}$ , ZO, $\overline{ZO}$ , SG	PG card output signals. Division frequency function: 1 ~ 255 times Max. output voltage for Line driver: 5V <sub>DC</sub> Max. output current: 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

▪ 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 sinusoidal differential signal input (incremental signal) Max. input frequency: 600kHz
		C+, C-, D+, D-	Encoder sinusoidal differential signal input (absolute signal)
	PG2	A2, $\overline{A2}$ , B2, $\overline{B2}$	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
	PG OUT	AO, $\overline{AO}$ , BO, $\overline{BO}$ , ZO, $\overline{ZO}$ , SG	PG card output signals. Division frequency function: 1 ~ 255 times Max. output voltage for Line driver: 5V <sub>DC</sub> Max. output current: 15mA; Max. output frequency: 600kHz, deviation 5% SG: The GND of PG card is the same as the host controller or PLC, so a common output signal is attained

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

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


**[12V]** Recommend pull-up resistor: 0.51 ~ 1.35kΩ, 1/2W and above

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

## Accessories


### Relay Extension Card

#### ▪ EMC-R6AA

	Terminals	Description
	RA10 ~ RA15 RC10 ~ RC15	Refer to Pr. 02-36 ~ Pr. 02-41 for multi-function output selection Resistive load: 3 A(N.O.) / 250 V <sub>AC</sub> 5 A(N.O.) / 30 V <sub>DC</sub> Inductive load (COS 0.4) 1.2 A(N.O.) / 250 V <sub>AC</sub> 2.0 A(N.O.) / 30 V <sub>DC</sub> 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. There are two sets of AVI port, SSW3 (AVI10) and SSW4 (AVI11), which can be switched to AVI or ACI. AVI: Input 0 ~ 10 V 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. There are two sets of AFM port, SSW1 (AFM10) and SSW2 (AFM11), which can be switched to AVO or ACO. AVO: Output 0 ~ 10 V ACO: Output 0 ~ 20.0 mA / 4.0 ~ 20.0 mA
	ACM	Analog signal common terminal

### I/O Extension Cards

#### ▪ EMC-D611A

	Terminals	Description
	AC	AC power common for multi-function input terminals (Neutral)
	MI10 ~ MI15	Refer to Pr. 02-26 ~ Pr. 02-31 for multi-function input selection Input voltage: 100 ~ 130 V <sub>AC</sub> ; Input frequency: 47 ~ 63 Hz Input impedance: 27 K $\Omega$ Terminal response time: ON: 10 ms; OFF: 20 ms


#### ▪ EMC-D42A

	Terminals	Description
	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 <sub>DC</sub> $\pm$ 5% 200 mA, 5 W External power +24 V <sub>DC</sub> : Max. voltage 30 V <sub>DC</sub> , Min. voltage 19 V <sub>DC</sub> ON: the activation current is 6.0 mA; OFF: leakage current tolerance is 10 $\mu$ A
	MO10 ~ MO11	Multi-function output terminals (photocoupler) Duty-cycle: 50%; Max. output frequency: 100 Hz Max. current: 50 mA; Max. voltage: 48 V <sub>DC</sub>
	MXM	Common for multi-function output terminals MO10, MO11 (photocoupler) Max. 48 V <sub>DC</sub> 50 mA




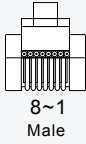
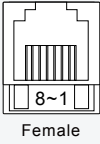
## 24V Power Shift Card

### EMC-BPS01

	Terminals	Description
	<p>24 V GND</p>	<p>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: 24 V<sub>DC</sub> ±5%                      Maximum input current: 0.5 A</p> <p>Note:                      Do not connect the control terminal +24 V (Digital control signal common: SOURCE) directly to the EMC-BPS01 input terminal 24 V.                      Do not connect control terminal GND directly to the EMC-BPS01 input terminal GND.</p>

## Communication Cards

### EMC-COP01 (CANopen)

	 8~1 Male	 8~1 Female	<table border="1"> <thead> <tr> <th>Pin</th> <th>Pin Name</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CAN_H</td> <td>CAN_H bus line (dominant high)</td> </tr> <tr> <td>2</td> <td>CAN_L</td> <td>CAN_L bus line (dominant low)</td> </tr> <tr> <td>3</td> <td>CAN_GND</td> <td>Ground / 0V / V-</td> </tr> <tr> <td>7</td> <td>CAN_GND</td> <td>Ground / 0V / V-</td> </tr> </tbody> </table>	Pin	Pin Name	Definition	1	CAN_H	CAN_H bus line (dominant high)	2	CAN_L	CAN_L bus line (dominant low)	3	CAN_GND	Ground / 0V / V-	7	CAN_GND	Ground / 0V / V-
Pin	Pin Name	Definition																
1	CAN_H	CAN_H bus line (dominant high)																
2	CAN_L	CAN_L bus line (dominant low)																
3	CAN_GND	Ground / 0V / V-																
7	CAN_GND	Ground / 0V / V-																

### CMC-EC01 (EtherCAT)



#### Features

- ▶ Supports EtherCAT 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 Cable	Category 5e shielding 100M
Number of Ports	2	Transmission Speed	10/100 Mbps
Transmission Method	IEEE 802.3, IEEE 802.3u	Communication Protocol	EtherCAT



# Accessories

## Communication Cards

### CMC-PN01 (PROFINET) NEW



#### Features

- ▶ Supports PROFINET IO device
- ▶ Supports synchronous data transmission and non-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-detect
Transmission Method	IEEE 802.3	Network Protocol	PROFINET

### CMC-PD01 (PROFIBUS DP)



#### Features

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

#### PROFIBUS DP Connector

#### Communication

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

### CMC-DN01 (DeviceNet)



#### 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
- ▶ For I/O mapping, supports Max. 32 words of input, 32 words of output, and Remote I/O
- ▶ Supports EDS file configuration in DeviceNet configuration software
- ▶ Node address and serial transmission speed can be set up on AC motor drive
- ▶ Power supplied from AC motor drive

#### DeviceNet Connector

#### DeviceNet Connector

Interface	5-Pin 5.08 mm pluggable connector	Interface	50 PIN communication terminal
Transmission Method	CAN	Transmission Method	SPI communication
Transmission Cable	Shielded twisted pair cable (with 2 power cables)	Terminal Function	1. Communicating with AC motor drive 2. Transmitting power supply from AC motor drive
Transmission Speed	125 Kbps, 250 Kbps, 500 Kbps and extendable serial transmission speed mode	Communication Protocol	Delta HSSP protocol
Network Protocol	DeviceNet protocol		

▪ CMC-EIP01 (EtherNet/IP, Modbus TCP)



**Features**

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

**Network Interface**

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

▪ CMC-EIP02 (EtherNet/IP, Modbus TCP Dual Port Communication Card) NEW



**Features**

- ▶ Supports EtherNet/IP and Modbus TCP daisy chain topology cable
- ▶ MDI/MDI-X auto-detection
- ▶ Supports AC motor drive/Ethernet configuration setting
- ▶ Supports virtual serial port

**Network Interface**

<b>Interface</b>	RJ-45 with Auto MDI/MDIX	<b>Transmission Cable</b>	Category 5e shielding 100M
<b>Number of Ports</b>	2 Ports (Switch)	<b>Transmission Speed</b>	10/100 Mbps Auto-detect
<b>Transmission Method</b>	IEEE 802.3, IEEE 802.3u	<b>Network Protocol</b>	ICMP, IP, TCP, UDP, DHCP, BOOTP, SMTP, EtherNet/IP, Modbus TCP

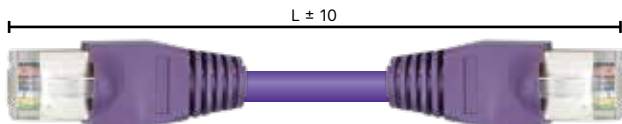


# Accessories

## Delta Standard Fieldbus Cables

Delta Cables	Part Number	Description	Length
CANopen Cable / Digital Keypad RJ45 Extension Cable	UC-CMC003-01A	CANopen cable, RJ45 connector	0.3m
	UC-CMC005-01A	CANopen cable, RJ45 connector	0.5m
	UC-CMC010-01A	CANopen cable, RJ45 connector	1m
	UC-CMC015-01A	CANopen cable, RJ45 connector	1.5m
	UC-CMC020-01A	CANopen cable, RJ45 connector	2m
	UC-CMC030-01A	CANopen cable, RJ45 connector	3m
	UC-CMC050-01A	CANopen cable, RJ45 connector	5m
	UC-CMC100-01A	CANopen cable, RJ45 connector	10m
	UC-CMC200-01A	CANopen cable, RJ45 connector	20m
DeviceNet Cable	UC-DN01Z-01A	DeviceNet cable	305m
	UC-DN01Z-02A	DeviceNet cable	305m
EtherNet/EtherCAT Cable	UC-EMC003-02A	EtherNet/EtherCAT cable, Shielding	0.3m
	UC-EMC005-02A	EtherNet/EtherCAT cable, Shielding	0.5m
	UC-EMC010-02A	EtherNet/EtherCAT cable, Shielding	1m
	UC-EMC020-02A	EtherNet/EtherCAT cable, Shielding	2m
	UC-EMC050-02A	EtherNet/EtherCAT cable, Shielding	5m
	UC-EMC100-02A	EtherNet/EtherCAT cable, Shielding	10m
	UC-EMC200-02A	EtherNet/EtherCAT cable, Shielding	20m
CANopen/DeviceNet TAP	TAP-CN01	1 in 2 out, built-in 121Ω terminal resistor	1 in 2 out
	TAP-CN02	1 in 4 out, built-in 121Ω terminal resistor	1 in 4 out (RJ45)
	TAP-CN03	1 in 4 out, RJ45 connector, built-in 121Ω terminal resistor	1 in 4 out
PROFIBUS Cable	UC-PF01Z-01A	PROFIBUS DP cable	305m

Unit: mm



## CANopen Breakout Box

Model: TAP-CN03


Unit: mm [inch]



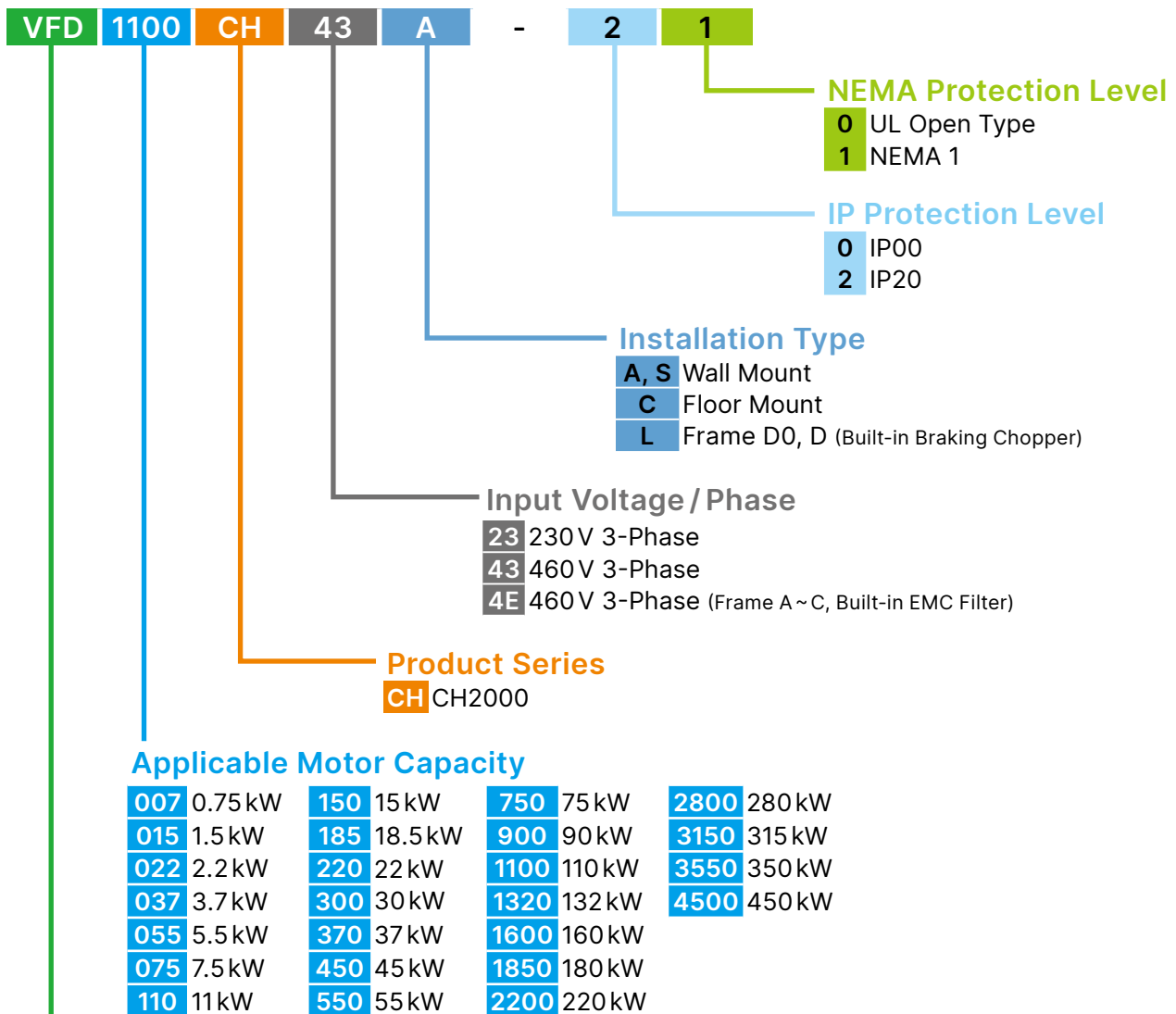
# Ordering Information

Frame Size		Power Range	Models		
Frame A		230 V: 0.75 kW ~ 3.7 kW  460 V: 0.75 kW ~ 5.5 kW	VFD007CH23A-21 VFD015CH23A-21 VFD022CH23A-21 VFD037CH23A-21	VFD007CH43A-21 VFD015CH43A-21 VFD022CH43A-21 VFD037CH43A-21 VFD055CH43A-21	VFD007CH4EA-21 VFD015CH4EA-21 VFD022CH4EA-21 VFD037CH4EA-21 VFD055CH4EA-21
Frame B		230 V: 5.5 kW ~ 11 kW  460 V: 7.5 kW ~ 15 kW	VFD055CH23A-21 VFD075CH23A-21 VFD110CH23A-21	VFD075CH43A-21 VFD110CH43A-21 VFD150CH43A-21	VFD075CH4EA-21 VFD110CH4EA-21 VFD150CH4EA-21
Frame C		230 V: 15 kW ~ 18.5 kW  460 V: 18.5 kW ~ 30 kW	VFD150CH23A-21 VFD185CH23A-21	VFD185CH43A-21 VFD220CH43A-21 VFD300CH43A-21	VFD185CH4EA-21 VFD220CH4EA-21 VFD300CH4EA-21
Frame D0		460 V: 37 kW  230 V: 22 kW ~ 37 kW  460 V: 45 kW ~ 75 kW	Frame D0-1	Frame D0-2	Frame D03
			VFD370CH43S-00	VFD370CH43S-21	VFD370CH43L-00
Frame D			Frame D1	Frame D2	Frame D3
			VFD220CH23A-00 VFD300CH23A-00 VFD370CH23A-00 VFD450CH43A-00 VFD550CH43A-00 VFD750CH43A-00	VFD220CH23A-21 VFD300CH23A-21 VFD370CH23A-21 VFD450CH43A-21 VFD550CH43A-21 VFD750CH43A-21	VFD450CH43L-00 VFD550CH43L-00 VFD750CH43L-00
Frame E		230 V: 45 kW ~ 55 kW  460 V: 90 kW ~ 110 kW	Frame E1		Frame E2
			VFD450CH23A-00 VFD550CH23A-00 VFD900CH43A-00 VFD1100CH43A-00	VFD450CH23A-21 VFD550CH23A-21 VFD900CH43A-21 VFD1100CH43A-21	
Frame F		230 V: 75 kW  460 V: 132 kW	Frame F1		Frame F2
			VFD750CH23A-00 VFD1320CH43A-00	VFD750CH23A-21 VFD1320CH43A-21	
Frame G		460 V: 160 kW ~ 220 kW	Frame G1		Frame G2
			VFD1600CH43A-00 VFD1850CH43A-00 VFD2200CH43A-00	VFD1600CH43A-21 VFD1850CH43A-21 VFD2200CH43A-21	

# Ordering Information

Frame Size		Power Range	Models	
Frame H		460V: 280kW~450kW	Frame H1	Frame H3
			VFD2800CH43A-00 VFD3150CH43A-00 VFD3550CH43A-00 VFD4500CH43A-00	VFD2800CH43C-21 VFD3150CH43C-21 VFD3550CH43C-21 VFD4500CH43C-21

# Model Name Explanation



**Product**  
Variable Frequency Drive





Smarter. Greener. Together.

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