



Digitized Automation for a Changing World

Delta High Performance Vector Control Drive C2000 Plus Series



www.deltaww.com



CFP2000

Delta's CFP2000 series is an AC motor drive specially designed for HVAC, fans & pumps, and water treatment applications. It is designed with an IP55 enclosure to provide effective protection against water, dust, and other particles, and features outstanding functions to help users reduce setup / tuning time and enhance operation efficiency in applications. In addition, it includes many outstanding features and built-in functions that reduce setup and tuning time in operation and provide higher efficiency.

The CFP2000 is equipped with a built-in EMC filter and a DC choke. This design replaces the need for an electrical distribution cabinet and saves space for other devices, while providing the benefits of harmonic suppression and better power quality to the system. Various parameter groups are also included, which allow you to simply select the needed application in the parameter group setting and the system setup is ready. If a higher safety standard is required, an optional main switch function is also available upon selection. Other outstanding features include support for both IM/PM motors, real-time clock, built-in 10k steps PLC capacity and various optional extension cards.

The CFP2000 Series integrates all of your needs in one drive, and is your friendliest and smartest choice available in the industry!

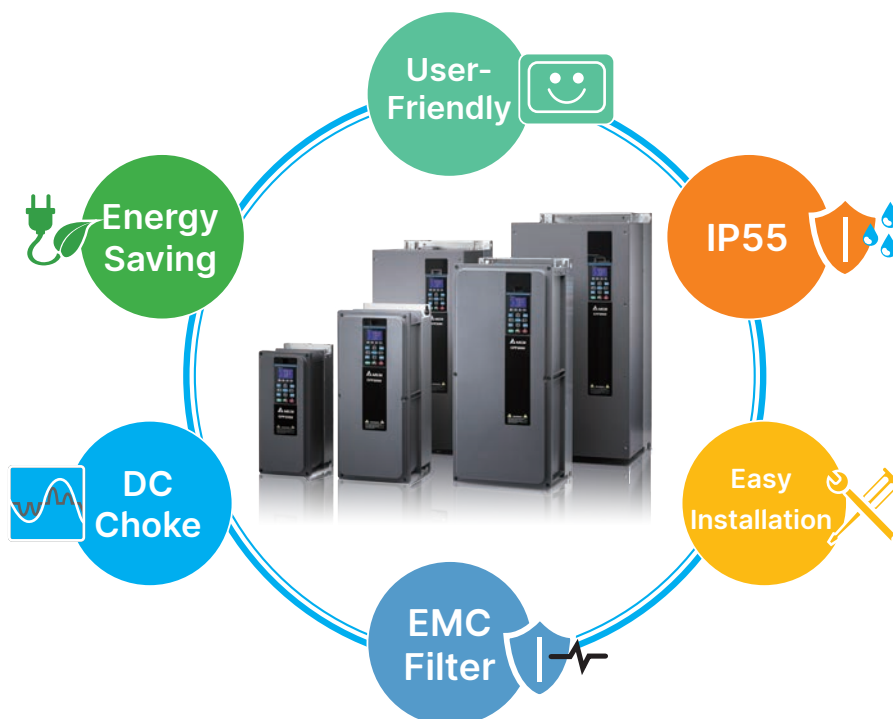


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Highlights



Standard Models

AC 230 V / 3-Phase

kW	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45
HP	1	2	3	5	7.5	10	15	20	25	30	40	50	60
Frame Size	A					B		C		D0		D	

AC 380 to 480 V / 3-Phase

kW	0.75	1.5	2.2	3.7	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
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	

AC 575 V / 3-Phase

kW	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
HP	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125
Frame Size	A					B			C			D0		D	

Application



HVAC



Fans



Chiller



Water treatment

Features

► Motor Controls



IM motor



PM motor



SynRM motor

► Overload Ability

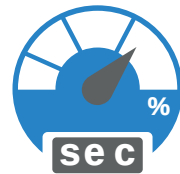
Light duty:

120% for 60sec

Normal duty:

120% for 60sec

160% for 3sec



► I/O Terminals

- 10 MI
- 3 AI
- Optional I/O extension cards
- 2 AO
- 3 relay



► Built-in STO SIL2



► Mains Switch (Optional)

- Available for all IP55 models 0.75kW to 90kW
- Allows users to turn off the power easily during daily maintenance and does not require an additional breaker box



► LCD Keypad

- Quick setting for frequent use modes and facilitates the installation process
- Multi-row display, Intuitive operation, user friendly operation interface
- Parameter management and copy
- Real time clock
- Multi-language: English, Spanish, Portuguese, French, Russian, Turkish, Polish
- TP Editor for users to define the display on the screen of the keypad



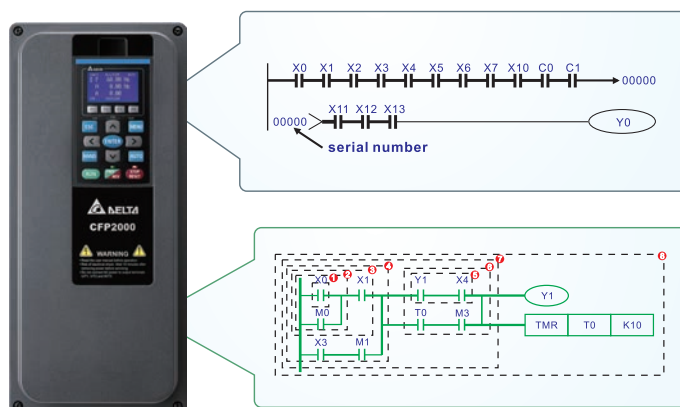
Editable message display



Features

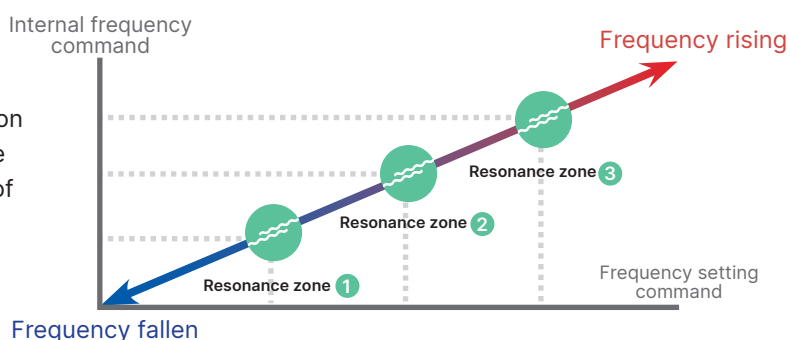
► Built-in PLC Function

- Built-in 10k steps PLC function supports independent and distributed control when connecting to a network system for high operation flexibility.
- Real Time Clock (RTC) function facilitates the PLC program writing process for ON/OFF chronology, daylight savings operation and many other settings.



► Skip Frequency

- Skip Frequency function avoids motor vibration at a specific frequency band and protects the equipment. Users can restrict up to 3 zones of frequency range



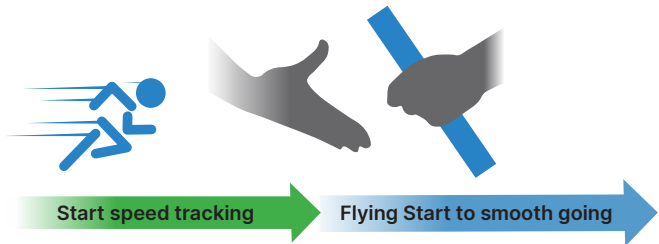
► Fire Mode

- Application: ventilation of buildings, tunnels, subways and more
- The drive will bypass the alarm warning in fire mode. When a fire occurs, it forces the drive to continue to operate to extract smoke or supplies water until the drive fails or runs out of emergency power
 - » Preset speed mode: set the drive to continue to operate under a preset speed
 - » BYPASS mode: the AC Mains Bypass breaker will bypass the drive and connect to the emergency power
 - » Fire mode with PID control: it balances the pressure between the stairwell and fire location to ensure the fire door can be easily opened



► Flying Start

- Ensures the drive runs smoothly under high inertial load without triggering the alarm, does not require the motor to stop
- When the drive restarts after momentary power loss (within 5s on LV), the speed searching allows the drive to activate flying start immediately and ensure a stable operation of the system without requiring the motor to fully stop in order to save time

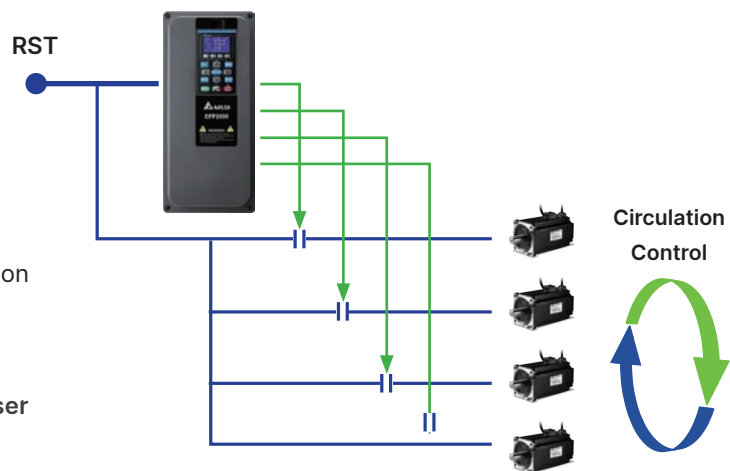


► Multi-pump Control

Built-in various modes for multi-pump control

- Fixed time circulation (by time)
- Fixed amount circulation (by PID)
- Fixed amount control (by PID)
- Fixed time circulation + fixed amount circulation
- Fixed time circulation + fixed amount control

Built-in 10k steps PLC function and RTC for user to program a time sequence control



► Parameter Groups

Without parameter group...



CFP2000 parameter group function simplifies the drive setting procedures. Various applications are provided:

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



► Advanced Networking

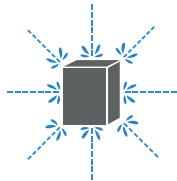
- Built-in RS-485 (Modbus)
- Built-in BACnet MS/TP 
- Various communication card options

PROFINET, , EtherNet/IP, BACnet IP, DeviceNet, Modbus TCP, CANopen (DS402)

Operating Environment

► Protection Class

IP55 NEMA12, IP41 NEMA1



Water
Resistant



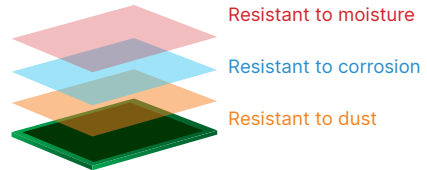
Dust Resistant

► Enhanced PCB Coating

Standard:

IEC 60721-3-3 class 3C3

Protects PCB from gases such as salt, SO₂, O₃, H₂S, and others to extend the product life when used in a water treatment application

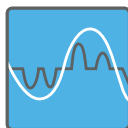


► Built-in DC Choke

Suppress harmonics

THDi < 48%

EN61000-3-12



► Built EMC Filter

EN61800-3 C2 & C1*

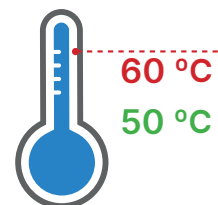


*A zero phase reactor is required to fulfill EMC category C1

► Operation Temperature

Up to 50 °C without derating

Up to 60 °C with derating



Environment for Operation, Storage and Transportation

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

Ambient Conditions	Installation Location	IEC60364-1/IEC60664-1 Pollution degree 2, indoor use only	
	Surrounding Temperature (°C)	Storage/Transportation	-25 ~ 70
		Only allowed at non-condensation, non-frost, non-conductive environment	
	Rated Humidity	Operation	Max. 95%
		Storage/Transportation	Max. 95%
		No condense water	
	Air Pressure (kPa)	Operation/Storage	86 ~ 106
		Transportation	70 ~ 106
	Environment	IEC60721-3-3	
		Operation	Class 3C3; Class 3S2
		Storage	Class 1C2; Class 1S2
		Transportation	Class 2C2; Class 2S2
In protective shipping package	Altitude	Operation	If the AC motor drive is installed at altitude 0 ~ 1000 m, follow normal operation restrictions. If it is installed at altitude 1000 ~ 2000 m, decrease 1% of rated current or lower 0.5° C of temperature for every 100 m increase in altitude. Maximum altitude for Corner Grounded is 2000 m. Contact Delta for more information if you need to use this motor drive at an altitude of 2000 m or higher.
	Vibration Operating	IEC 60068-2-6	
		Frame A: 2 Hz ≤ f ≤ 13.2 Hz/Amplitude 1mm; 13.2 Hz < f ≤ 55 Hz/Gravity 0.7G to 2.0G; 55 Hz < f ≤ 512 Hz/Gravity 2.0G	
		Frame B: 2 Hz ≤ f ≤ 13.2 Hz/Amplitude 1mm; 13.2 Hz < f ≤ 55 Hz/Gravity 0.7G to 1.5G; 55 Hz < f ≤ 512 Hz/Gravity 1.5G	
		Frame C/ D0/ D: 2 Hz ≤ f ≤ 13.2 Hz/Amplitude 1mm; 13.2 Hz < f ≤ 55 Hz/Gravity 0.7G to 1.0G; 55 Hz < f ≤ 512 Hz/Gravity 1.0G	
	Shock Operating	IEC 60068-2-27 Frame A; B; C; D0: Max. 30 G; 11 ms; Frame D: Max. 15 G; 11 ms	
	Vibration	IEC 60068-2-64	
		10 Hz ≤ f ≤ 100 Hz/ASD: 1.0 m2/s3; 100 Hz ≤ f ≤ 200 Hz/Slope: -3dB/octave	
	Shock	Cardboard box type: Free fall drop in accordance with ISTA 1A Wooden box type: In accordance with ISTA 1E (4 side incline) and ISTA 2B (Bottom side drop)	
Operation Position		Max. allowed offset angle ±10° (under normal installation position)	

Specifications for Operation Temperature and Protection Level

Model	Frame	Protection Level	Operation Temperature
VFDxxxFPxxx-52x	230 V: 0.75 ~ 45 kW 460 V: 0.75 ~ 90 kW	IP55/NEMA12	-10° C ~ 50° C*
VFDxxxFPxxx-41	575 V: 1.5 ~ 90 kW	IP41/NEMA1	

*Note: 15°C~50°C, without derating; 51°C~60°C, with derating

Specifications

230 V															
Frame Size			A					B		C		D0		D	
Models VFD-___FP2EA-___			007	015	022	037	055	075	110	150	185	220	300	370	450
OUTPUT RATING	LIGHT DUTY	Rated Output Capacity (kVA)	2	3.3	4	6	8.4	12	18	24	30	36	42	58	72
		Rated Output Current (A)	5	7.5	10	15	21	31	46	61	75	90	105	146	180
		Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45
		Applicable Motor Output (HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60
		Overload Tolerance	120% for 60 seconds in every 5 minutes												
	NORMAL DUTY	Rated Output Capacity (kVA)	1.2	2	3.2	4.4	6.8	10	13	20	26	30	36	48	58
		Rated Output Current (A)	3	5	8	11	17	25	33	49	65	75	90	120	146
		Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	33	30	37
		Applicable Motor Output (HP)	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50
		Overload Tolerance	120% for 60 seconds in every 5 minutes 160% for 3 seconds in every 25 seconds												
		Max. Output Frequency (Hz)	599												
	Carrier Frequency (kHz)	2 ~ 15 (default 6)								2 ~ 10 (default 6)				2 ~ 9 (default 6)	
INPUT RATING	Input Current (A) Light Duty		5	7.5	10	15	21	31	46	61	75	90	105	146	180
	Input Current (A) Normal Duty		3	5	8	11	17	25	33	49	65	75	90	120	146
	Rated Voltage/Frequency		3-Phase AC 200V ~ 240V (-15% ~ +10%), 50/60Hz												
	Operating Voltage Range		170 ~ 265 V _{AC}												
	Frequency Tolerance		47 ~ 63Hz												
Efficiency (%)			97												
Power factor			> 0.98												
Drive Weight (Kg)			6.8					14.5		26.5		42		59.5	
Cooling Method			Natural cooling		Fan cooling										
Braking Chopper			Optional												
DC Choke			Built-in DC choke meets EN61000-3-12												
EMC Filter			Built-in EMC filter meets EN61800-3 C1 ^{*1} & C2												

*1 A zero phase reactor is required to fulfill EMC category C1

NOTE

- The value of the carrier frequency is a factory setting. To increase the carrier frequency, the current needs to be decreased. Please see derating curve diagram of Pr. 06-55 for more information.
- When a load is a surge load, use a higher level model.

460 V																			
Frame Size			A						B				C		D0		D		
Models VFD-___FP4EA-___			007	015	022	037	040	055	075	110	150	185	220	300	370	450	550	750	900
OUTPUT RATING	LIGHT DUTY	Rated Output Capacity (kVA)	2.4	3.3	4.4	6.8	8.4	10.4	14.3	19	25	30	36	48	58	73	88	120	143
		Rated Output Current (A)	3.0	4.2	5.5	8.5	10.5	13	18	24	32	38	45	60	73	91	110	150	180
		Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
		Applicable Motor Output (HP)	1	2	3	5	5	7.5	10	15	20	25	30	40	50	60	75	100	125
		Overload Tolerance	120% for 60 seconds in every 5 minutes																
		Max. Output Frequency (Hz)	599																
		Carrier Frequency (kHz)	2 ~ 15 (default 6)											2 ~ 10 (default 6)					2 ~ 9 (default 4)
	NORMAL DUTY	Rated Output Capacity (kVA)	1.4	2.4	3.2	4.8	7.2	8.4	9.6	14.3	19	25	30	36	48	58	73	88	120
		Rated Output Current (A)	1.7	3.0	4.0	6.0	9.0	10.5	12	18	24	32	38	45	60	73	91	110	150
		Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75
		Applicable Motor Output (HP)	0.5	1	2	3	5	5	7.5	10	15	20	25	30	40	50	60	75	100
		Overload Tolerance	120% for 60 seconds in every 5 minutes 160% for 3 seconds in every 25 seconds																
		Max. Output Frequency (Hz)	599																
		Carrier Frequency (kHz)	2 ~ 15 (default 6)											2 ~ 10 (default 6)					2 ~ 9 (default 4)
INPUT RATING	Input Current (A) Light Duty		3.0	4.2	5.5	8.5	10.5	13	18	24	32	38	45	60	73	91	110	150	180
	Input Current (A) Normal Duty		1.7	3	4	6	9.0	10.5	12	18	24	32	38	45	60	73	91	110	150
	Rated Voltage/Frequency		3-Phase AC 380 V ~ 480 V (-15% ~ +10%), 50/60 Hz																
	Operating Voltage Range		323 ~ 528 V _{AC}																
	Frequency Tolerance		47 ~ 63 Hz																
Efficiency (%)			97																
Power factor			> 0.98																
Drive Weight (Kg)			6.8						14.5				26.5		42		59.5		
Cooling Method			Natural cooling	Fan cooling															
Braking Chopper			Frame A, B, C, Built-in																
DC Choke			Built-in DC choke meets EN61000-3-12																
EMC Filter			Built-in EMC filter meets EN61800-3 C1 ¹ & C2																

*1 A zero phase reactor is required to fulfill EMC category C1

NOTE

- The value of the carrier frequency is a factory setting. To increase the carrier frequency, the current needs to be decreased. Please see derating curve diagram of Pr. 06-55 for more information.
- When a load is a surge load, use a higher level model.

Specifications

575 V																	
Frame Size			A					B			C			D0		D	
Models VFD-___FP5EA-___			015	022	037	055	075	110	150	185	220	300	370	450	550	750	900
OUTPUT RATING	LIGHT DUTY	Rated Output Capacity (kVA)	3	4.3	6.7	9.9	12.1	18.6	24.1	30	36	45	54	67	86	104	125
		Rated Output Current (A)	3	4.3	6.7	9.9	12.1	18.7	24.2	30	36	45	54	67	86	104	125
		Applicable Motor Output (kW)	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)	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125
		Overload Tolerance	120% for 60 seconds in every 5 minutes														
	NORMAL DUTY	Rated Output Capacity (kVA)	2.5	3.6	5.5	8.2	10	15.4	19.9	24	30	36	45	54	67	86	104
		Rated Output Current (A)	2.5	3.6	5.5	8.2	10	15.5	20	24	30	36	45	54	67	86	104
		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	120% for 60 seconds in every 5 minutes 160% for 3 seconds in every 25 seconds														
		Max. Output Frequency (Hz)	599														
	Carrier Frequency (kHz)	2 ~ 15 (default 6)									2 ~ 10 (default 6)				2 ~ 9 (default 6)		
INPUT RATING	Input Current (A) Light Duty		3	4.3	6.7	9.9	12.1	18.7	24.2	30	36	45	54	67	86	104	125
	Input Current (A) Normal Duty		2.5	3.6	5.5	8.2	10	15.5	20	24	30	36	45	54	67	86	104
	Rated Voltage/Frequency		3-Phase AC 525 V ~ 600 V (-15% ~ +10%), 50/60Hz														
	Operating Voltage Range		446 ~ 660 V _{AC}														
	Frequency Tolerance		47 ~ 63Hz														
Efficiency (%)			97														
Power factor			> 0.98														
Drive Weight (Kg)			6.8					14.5			26.5			42		59.5	
Cooling Method			Natural cooling	Fan cooling													
Braking Chopper			Frame A, B, C, Built-in														
DC Choke			Built-in DC choke meets EN61000-3-12														
EMC Filter			Built-in EMC filter meets EN61800-3 C2*1 & C3														

*1 A zero phase reactor is required to fulfill EMC category C2

NOTE

- The value of the carrier frequency is a factory setting. To increase the carrier frequency, the current needs to be decreased. Please see derating curve diagram of Pr. 06-55 for more information.
- When a load is a surge load, use a higher level model.

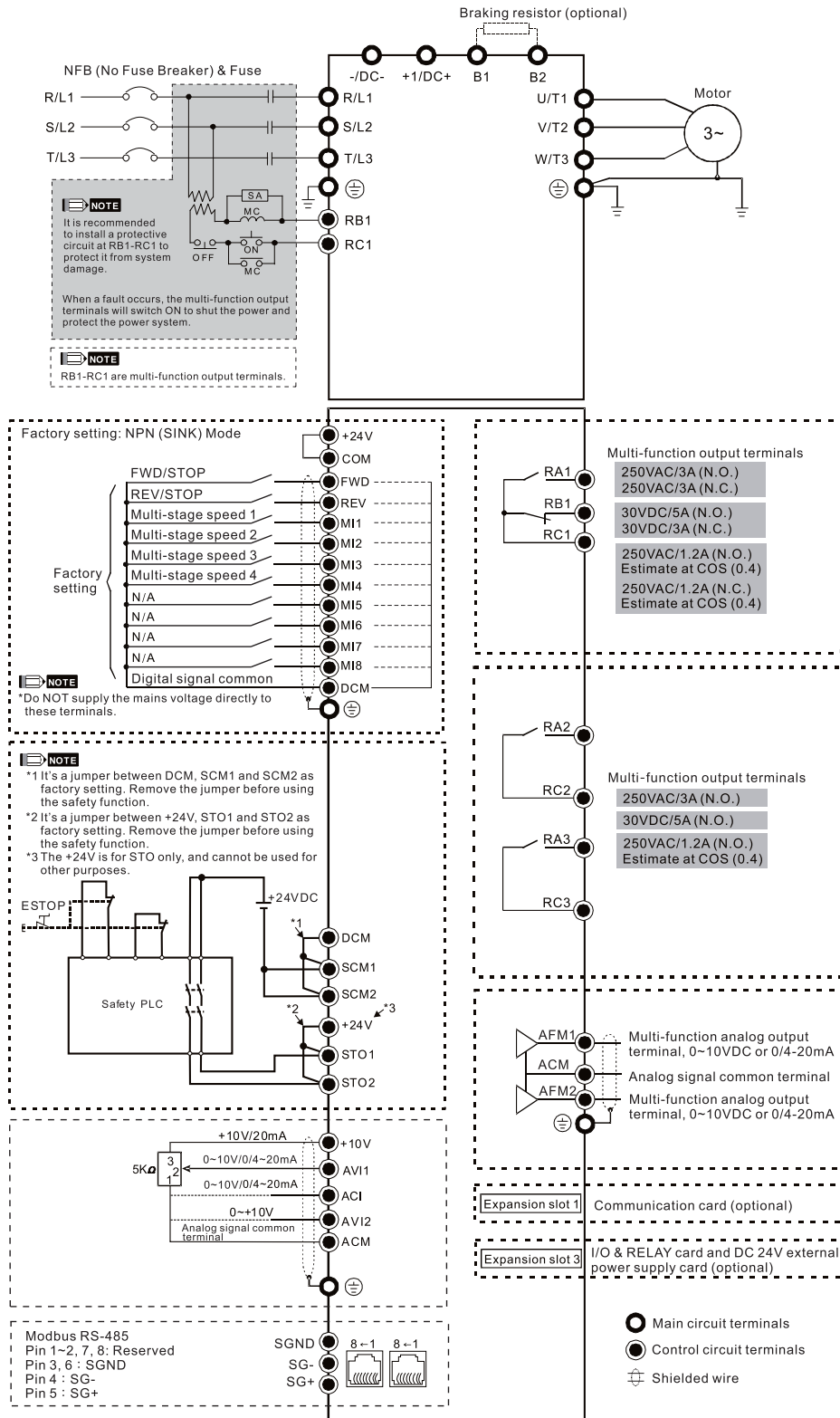
General Specifications

CONTROL CHARACTERISTICS	Control Method	Pulse Width Modulated (PWM)
	Control Mode	1: V/F (V/F control), 2: SVC (Sensorless Vector Control), 3: PM Sensorless 4: SynRM Sensorless (applied to 230V / 460V models)
	Starting Torque	Reach up to 150% or above at 0.5Hz.
	V/F Curve	4 point adjustable V/F curve and square curve
	Speed Response Ability	5 Hz (vector control can reach up to 40Hz)
	Torque Limit	Light Duty: Max. 130% torque current; Normal Duty: Max. 175% torque current
	Torque Accuracy	± 5%
	Max. Output Frequency	599.00 Hz
	Frequency Output Accuracy	Digital command: ± 0.01%, -10°C~+40 °C; Analog command: ±0.1%, 25°C ±10°C
	Output Frequency Resolution	Digital command: 0.01Hz; Analog command: Max. output frequency x 0.03 / 60 Hz (± 11-bit)
	Overload Tolerance	Light duty: 120% of rated current can endure for 1 minute Normal duty: 120% of rated current can endure for 1 minute; 150% of rated current can endure for 3 seconds
	Frequency Setting Signal	0 ~ +10V, 4 ~ 20 mA, 0 ~ 20 mA, pulse input
	Accel./decel. Time	0.00 ~ 600.00 / 0.0 ~ 6,000.0 seconds
	Main Control Function	Momentary power loss ride thru, Speed search, Over-torque detection, Torque limit, 16-step speed (max), Accel/decel time switch, S-curve accel/decel, 3-wire sequence, Auto-Tuning (rotational, stationary), Dwell, Slip compensation, Torque compensation, JOG frequency, Frequency upper/lower limit settings, DC injection braking at start/stop, High slip braking, Energy saving control, Modbus communication (RS-485 RJ45, max. 5.2 Kbps)
	Fan Control	Frame A ~ B are ON / OFF switch control. Frame C ~ D are PWM control
PROTECTION CHARACTERISTICS	Motor Protection	Electronic thermal relay protection
	Over-Current Protection	Light duty: Over-current protection for 200% rated current, Normal duty: Over-current protection for 240% rated current, Current clamp (Light duty: 130 ~ 135%) (Normal duty: 170 ~ 175%)
	Over-Voltage Protection	230V models: Drive stops when DC bus voltage exceeds 410V 460V models: Drive stops when DC bus voltage exceeds 820V 575V models: Drive stops when DC bus voltage exceeds 1,016V
	Over-Temperature Protection	Built-in temperature sensor
	Stall Prevention	Stall prevention during acceleration, deceleration and running independently
	Restart After Instantaneous Power Failure	Parameter setting up to 20 seconds
	Grounding Leakage Current Protection	Leakage current is higher than 50% of rated current of the AC motor drive
	Short-circuit Current Rating (SCCR)	Per UL508C, the drive is suitable for use on a circuit capable of delivering not more than 100 kA symmetrical amperes (rms) when protected by fuses given in the fuse table
	International Certifications	     SEMI F47

Wiring

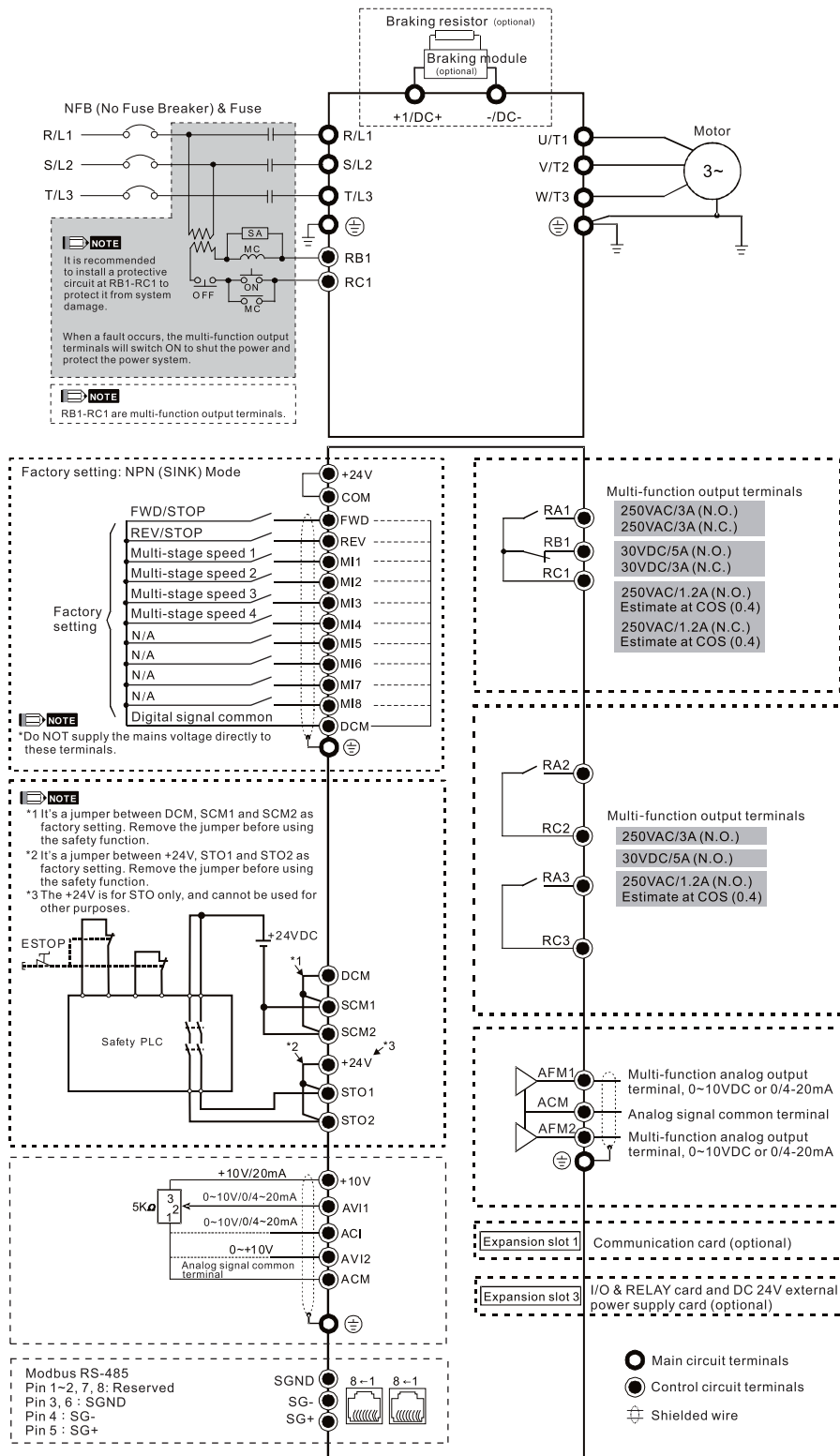
Wiring Diagram for Frame A ~ C

*Input: 3-phase power



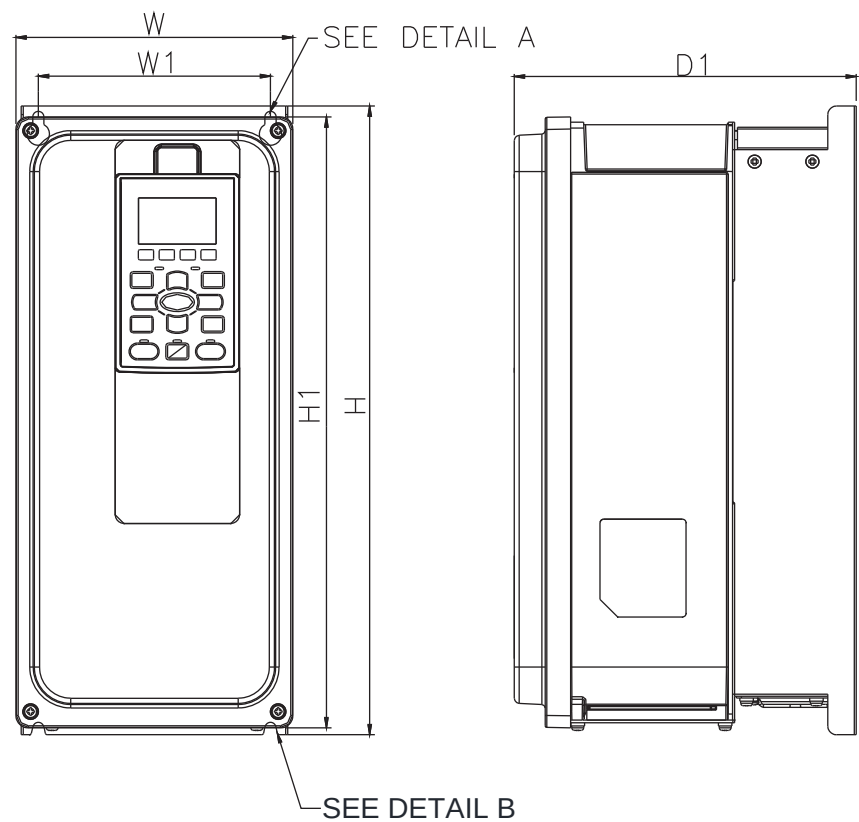
Wiring Diagram for Frame D0 ~ D

*Input: 3-phase power



Dimensions

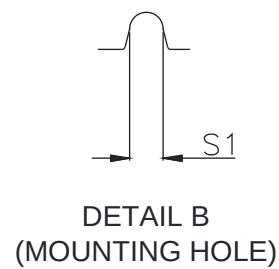
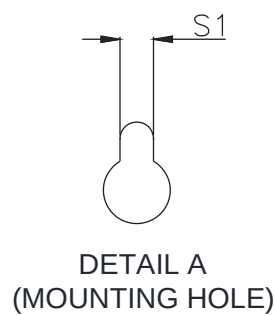
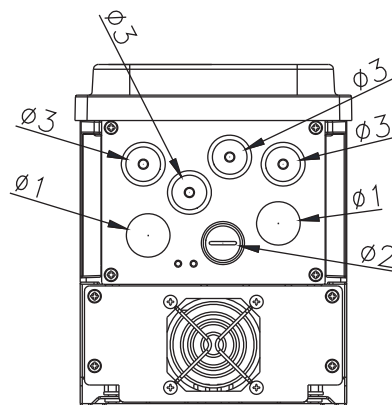
FRAME A (IP55)



MODEL

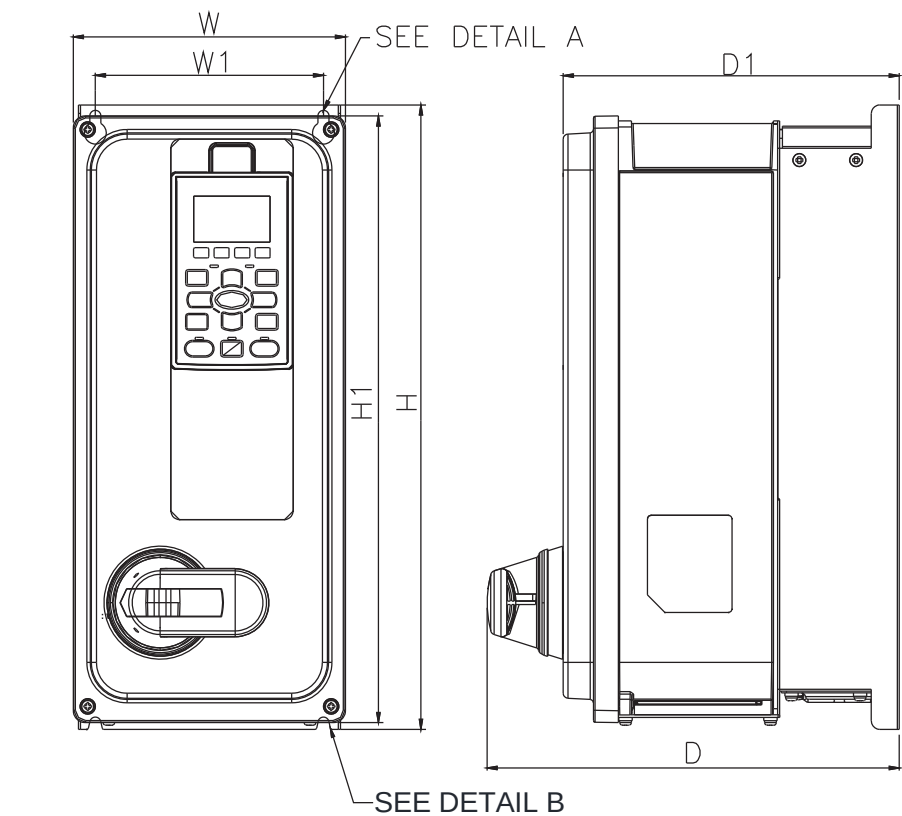
FRAME A-1

VFD007FP2EA-52
VFD015FP2EA-52
VFD022FP2EA-52
VFD037FP2EA-52
VFD055FP2EA-52
VFD007FP4EA-52
VFD015FP4EA-52
VFD022FP4EA-52
VFD037FP4EA-52
VFD040FP4EA-52
VFD055FP4EA-52
VFD075FP4EA-52
VFD015FP5EA-52
VFD022FP5EA-52
VFD037FP5EA-52
VFD055FP5EA-52
VFD075FP5EA-52



FRAME		W	H	D	W1	H1	D1	S1	Ø1	Ø2	Ø3
A-1	mm	161.0	366.4	-	135.0	356.0	199.0	6.5	25.4	20.3	20.3
	inch	6.34	14.43	-	5.31	14.02	7.83	0.26	1.00	0.80	0.80

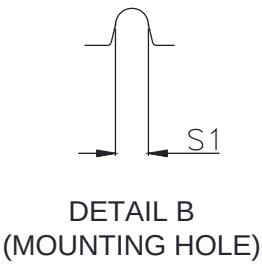
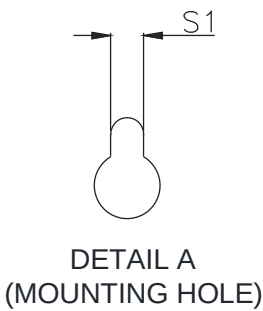
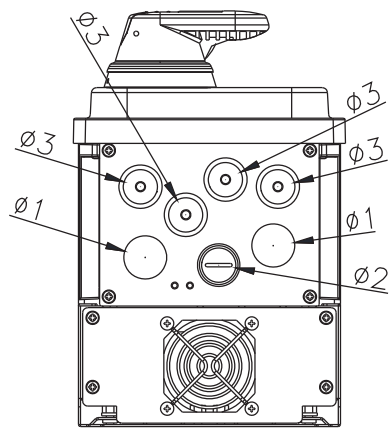
FRAME A (IP55)



MODEL

FRAME A-2

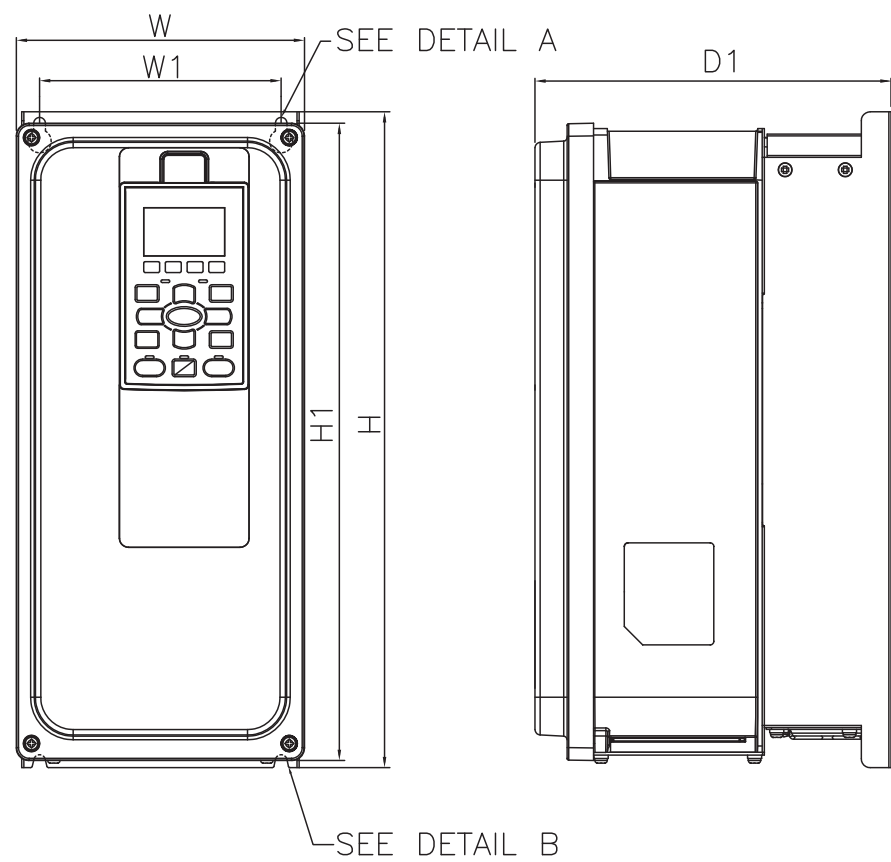
VFD007FP2EA-52S
VFD015FP2EA-52S
VFD022FP2EA-52S
VFD037FP2EA-52S
VFD055FP2EA-52S
VFD007FP4EA-52S
VFD015FP4EA-52S
VFD022FP4EA-52S
VFD037FP4EA-52S
VFD040FP4EA-52S
VFD055FP4EA-52S
VFD075FP4EA-52S
VFD015FP5EA-52S
VFD022FP5EA-52S
VFD037FP5EA-52S
VFD055FP5EA-52S
VFD075FP5EA-52S



FRAME		W	H	D	W1	H1	D1	S1	Ø1	Ø2	Ø3
A-2	mm	161.0	366.4	244.0	135.0	356.0	199.0	6.5	25.4	20.3	20.3
	inch	6.34	14.43	9.61	5.31	14.02	7.83	0.26	1.00	0.80	0.80

Dimensions

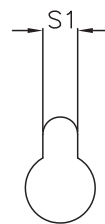
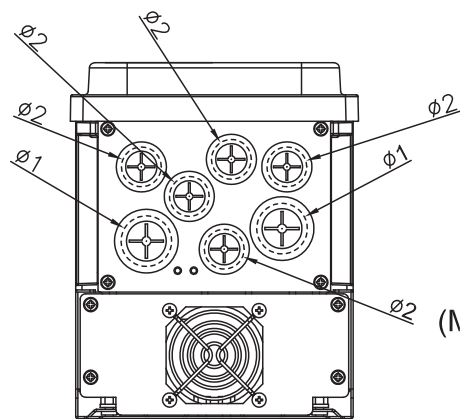
FRAME A (IP41)



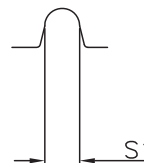
MODEL

FRAME A-3

VFD007FP2EA-41
VFD015FP2EA-41
VFD022FP2EA-41
VFD037FP2EA-41
VFD055FP2EA-41
VFD007FP4EA-41
VFD015FP4EA-41
VFD022FP4EA-41
VFD037FP4EA-41
VFD040FP4EA-41
VFD055FP4EA-41
VFD075FP4EA-41
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VFD022FP5EA-41
VFD037FP5EA-41
VFD055FP5EA-41
VFD075FP5EA-41



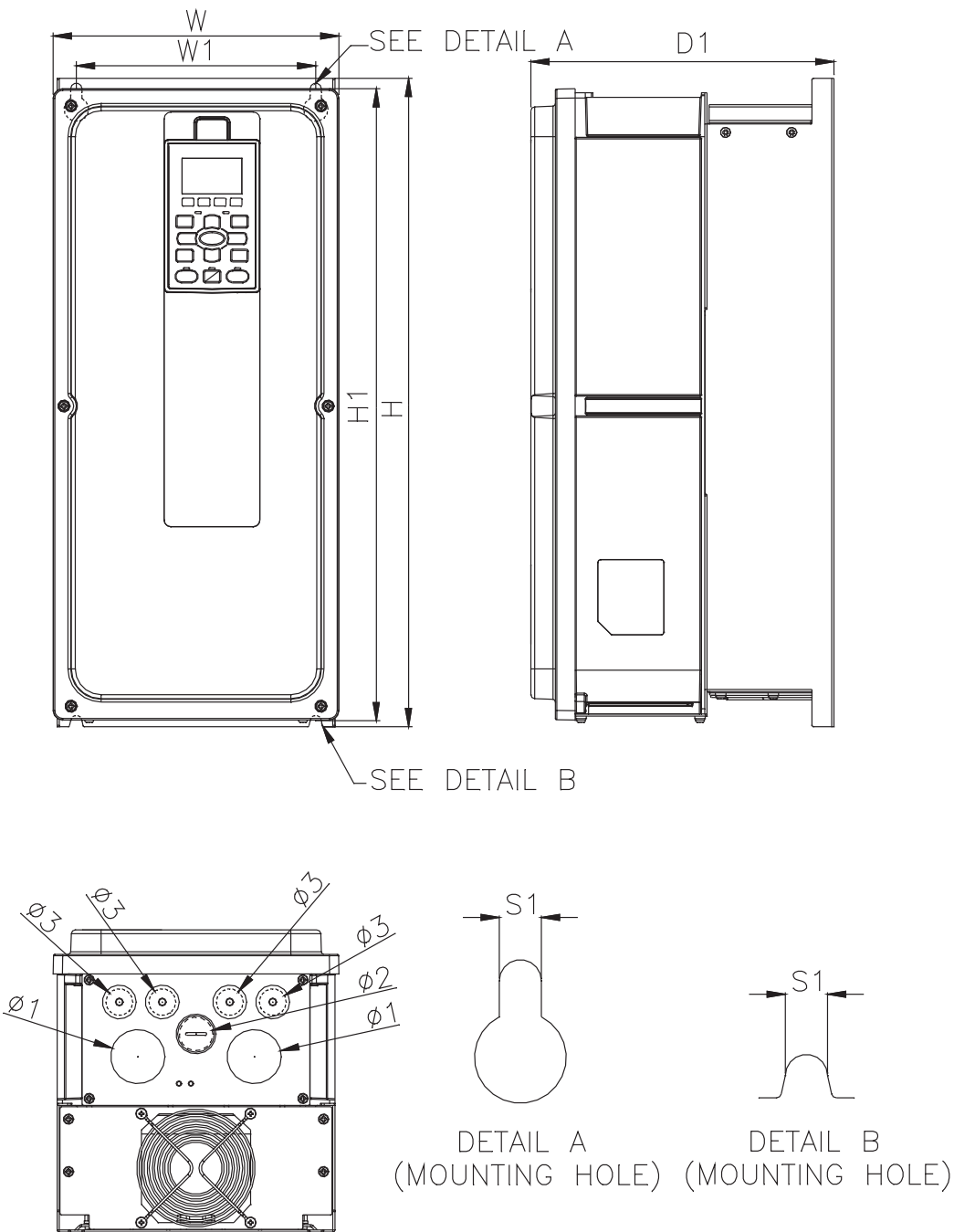
DETAIL A
(MOUNTING HOLE)



DETAIL B
(MOUNTING HOLE)

FRAME		W	H	D	W1	H1	D1	S1	$\phi 1$	$\phi 2$
A-3	mm	161.0	366.4	-	135.0	356.0	199.0	6.5	28.0	22.0
	inch	6.34	14.43	-	5.31	14.02	7.83	0.26	1.10	0.87

FRAME B (IP55)



MODEL

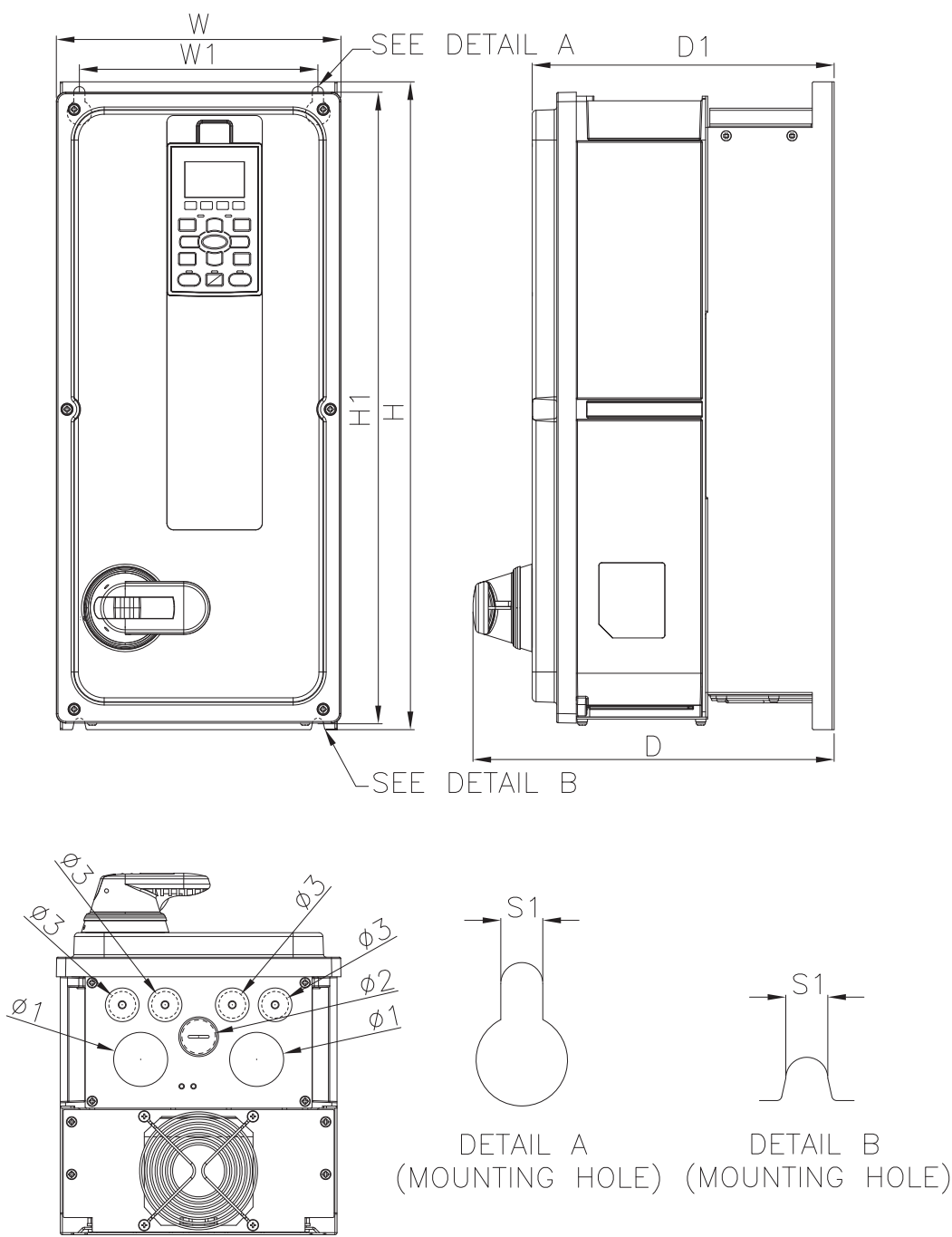
FRAME B-1

- VFD075FP2EA-52
- VFD110FP2EA-52
- VFD110FP4EA-52
- VFD150FP4EA-52
- VFD185FP4EA-52
- VFD220FP4EA-52
- VFD110FP5EA-52
- VFD150FP5EA-52
- VFD185FP5EA-52

FRAME		W	H	D	W1	H1	D1	S1	Ø1	Ø2	Ø3
B-1	mm	216.0	491.4	-	181.0	479.0	229.0	8.5	41.0	25.4	20.3
	inch	8.50	19.35	-	7.13	18.86	9.02	0.33	1.61	1.00	0.80

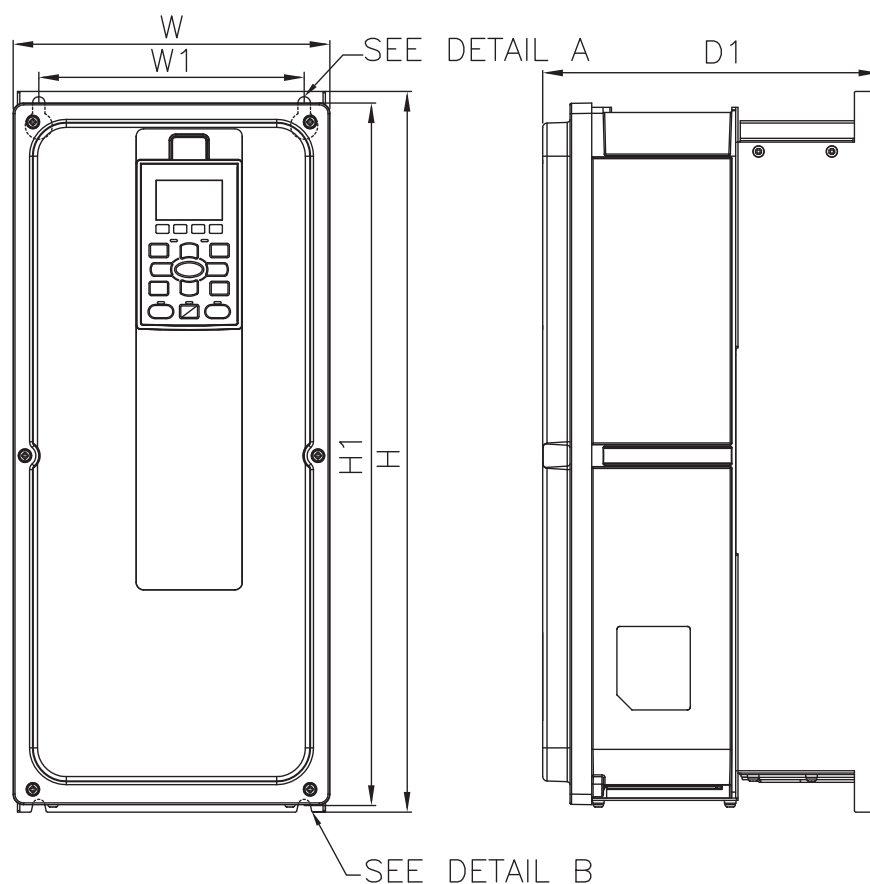
Dimensions

FRAME B (IP55)



FRAME		W	H	D	W1	H1	D1	S1	Ø1	Ø2	Ø3
B-2	mm	216.0	491.4	274.0	181.0	479.0	229.0	8.5	41.0	25.4	20.3
	inch	8.50	19.35	10.79	7.13	18.86	9.02	0.33	1.61	1.00	0.80

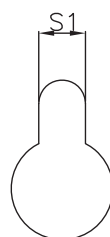
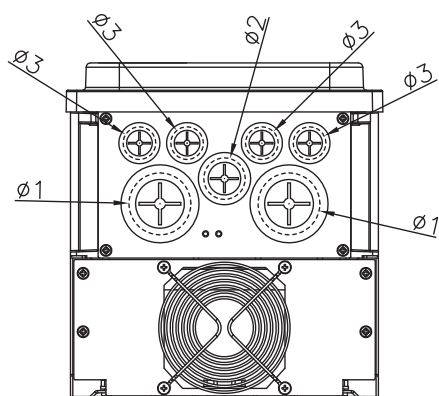
FRAME B (IP41)



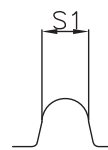
MODEL

FRAME B-3

VFD075FP2EA-41
VFD110FP2EA-41
VFD110FP4EA-41
VFD150FP4EA-41
VFD185FP4EA-41
VFD220FP4EA-41
VFD110FP5EA-41
VFD150FP5EA-41
VFD185FP5EA-41



DETAIL A
(MOUNTING HOLE)

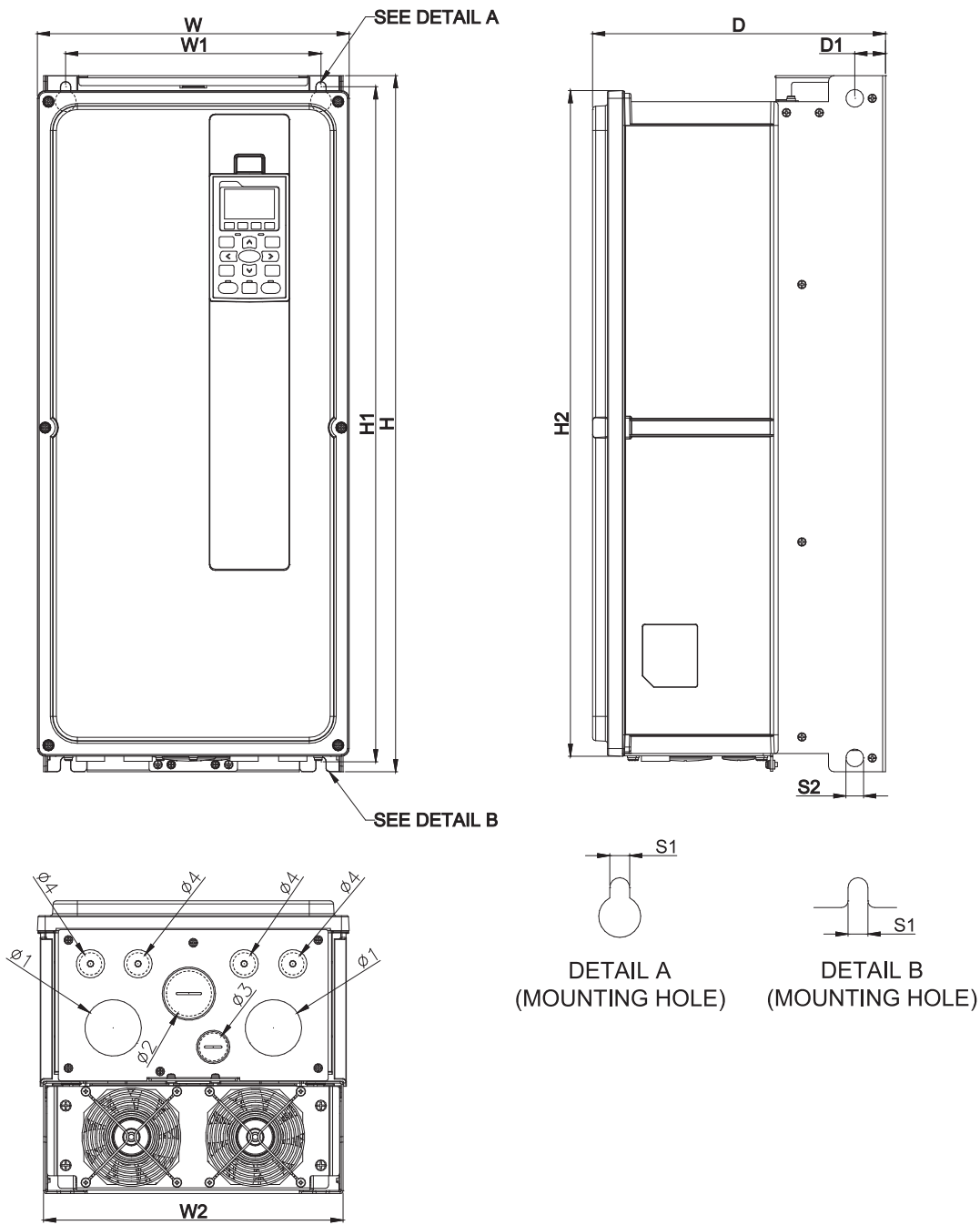


DETAIL B
(MOUNTING HOLE)

FRAME		W	H	D	W1	H1	D1	S1	$\phi 1$	$\phi 2$	$\phi 3$
B-3	mm	216.0	491.4	-	181.0	479.0	229.0	8.5	41.8	28.0	22.0
	inch	8.50	19.35	-	7.13	18.86	9.02	0.33	1.65	1.10	0.87

Dimensions

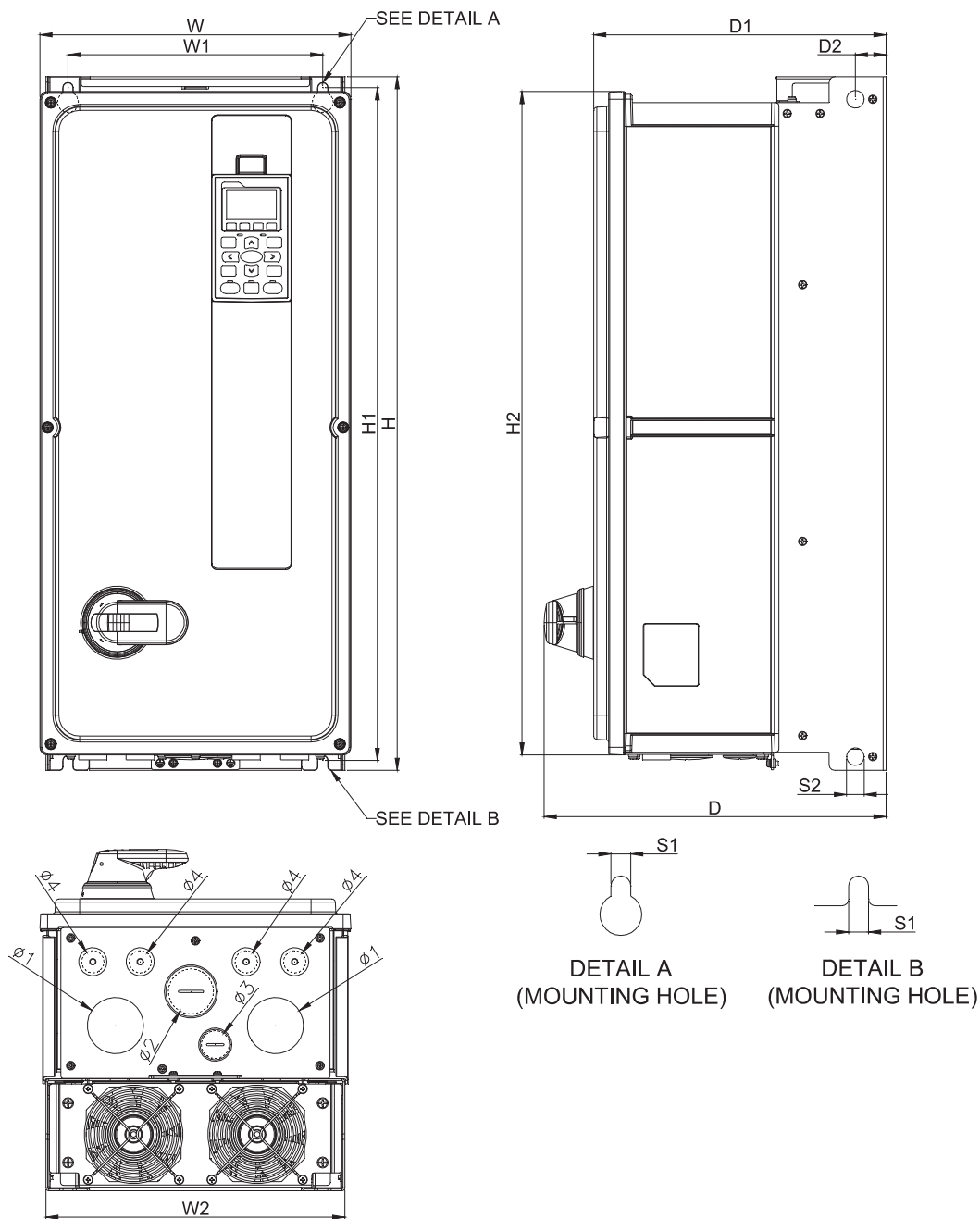
FRAME C (IP55)



MODEL	
FRAME C-1	
VFD150FP2EA-52	
VFD185FP2EA-52	
VFD300FP4EA-52	
VFD370FP4EA-52	
VFD220FP5EA-52	
VFD300FP5EA-52	
VFD370FP5EA-52	

FRAME		W	H	D	W1	H1	D1	S1	W2	H2	S2	Ø1	Ø2	Ø3	Ø4
C-1	mm	282.0	630.0	265.0	231.0	611.0	27.8	9.0	271.0	602.5	16.0	51.0	41.0	25.4	20.3
	inch	11.10	24.80	10.43	9.09	24.06	1.09	0.35	10.67	23.72	0.63	2.01	1.61	1.00	0.80

FRAME C (IP55)



MODEL

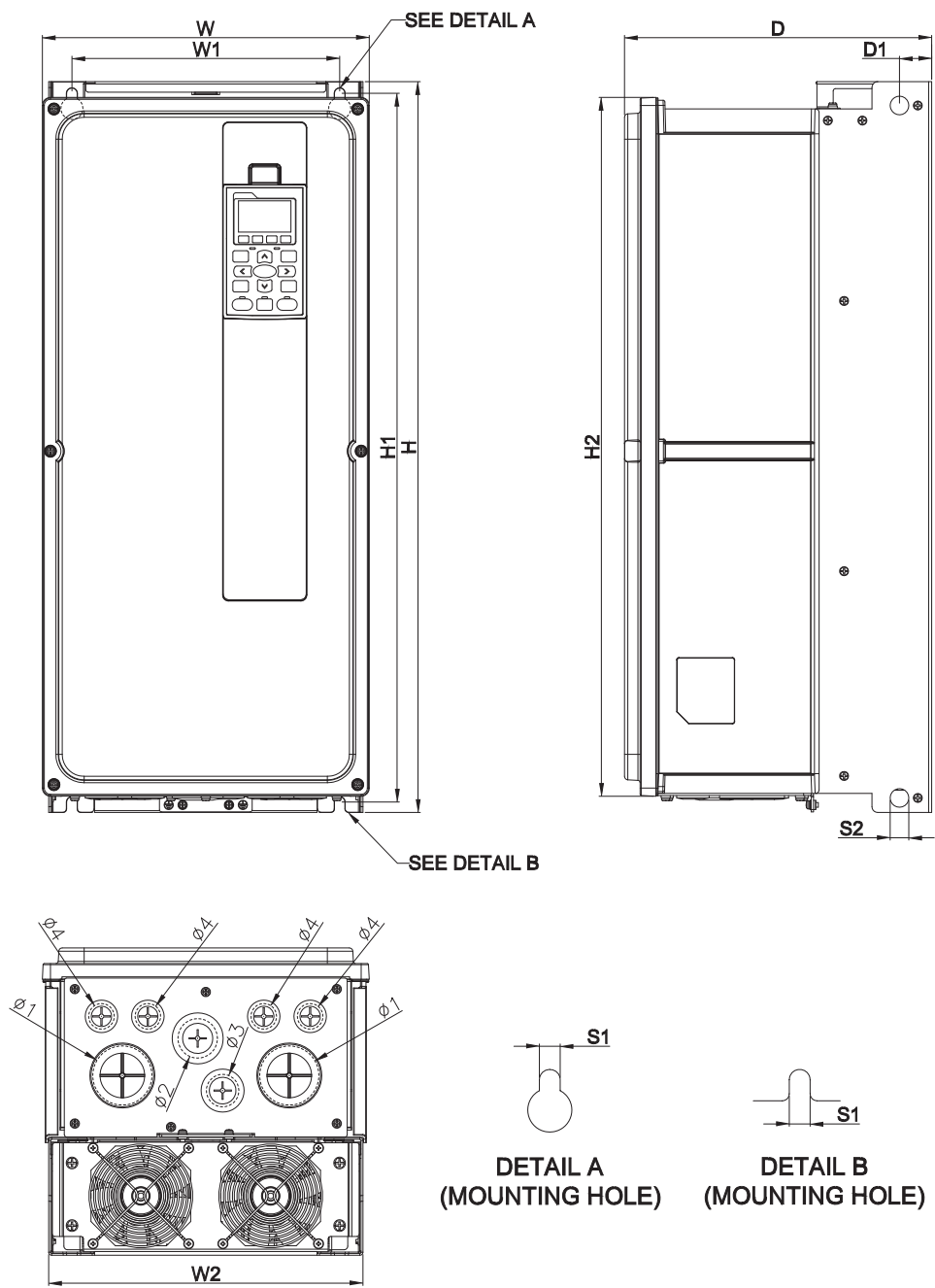
FRAME C-2

VFD150FP2EA-52S
VFD185FP2EA-52S
VFD300FP4EA-52S
VFD370FP4EA-52S
VFD220FP5EA-52S
VFD300FP5EA-52S
VFD370FP5EA-52S

FRAME	W	H	D	W1	H1	D1	S1	W2	H2	D2	S2	$\phi 1$	$\phi 2$	$\phi 3$	$\phi 4$
C-2	mm	282.0	630.0	310.0	231.0	611.0	9.0	271.0	602.5	27.8	16.0	51.0	41.0	25.4	20.3
	inch	11.10	24.80	12.20	9.09	24.06	0.35	10.67	23.72	1.09	0.63	2.01	1.61	1.00	0.80

Dimensions

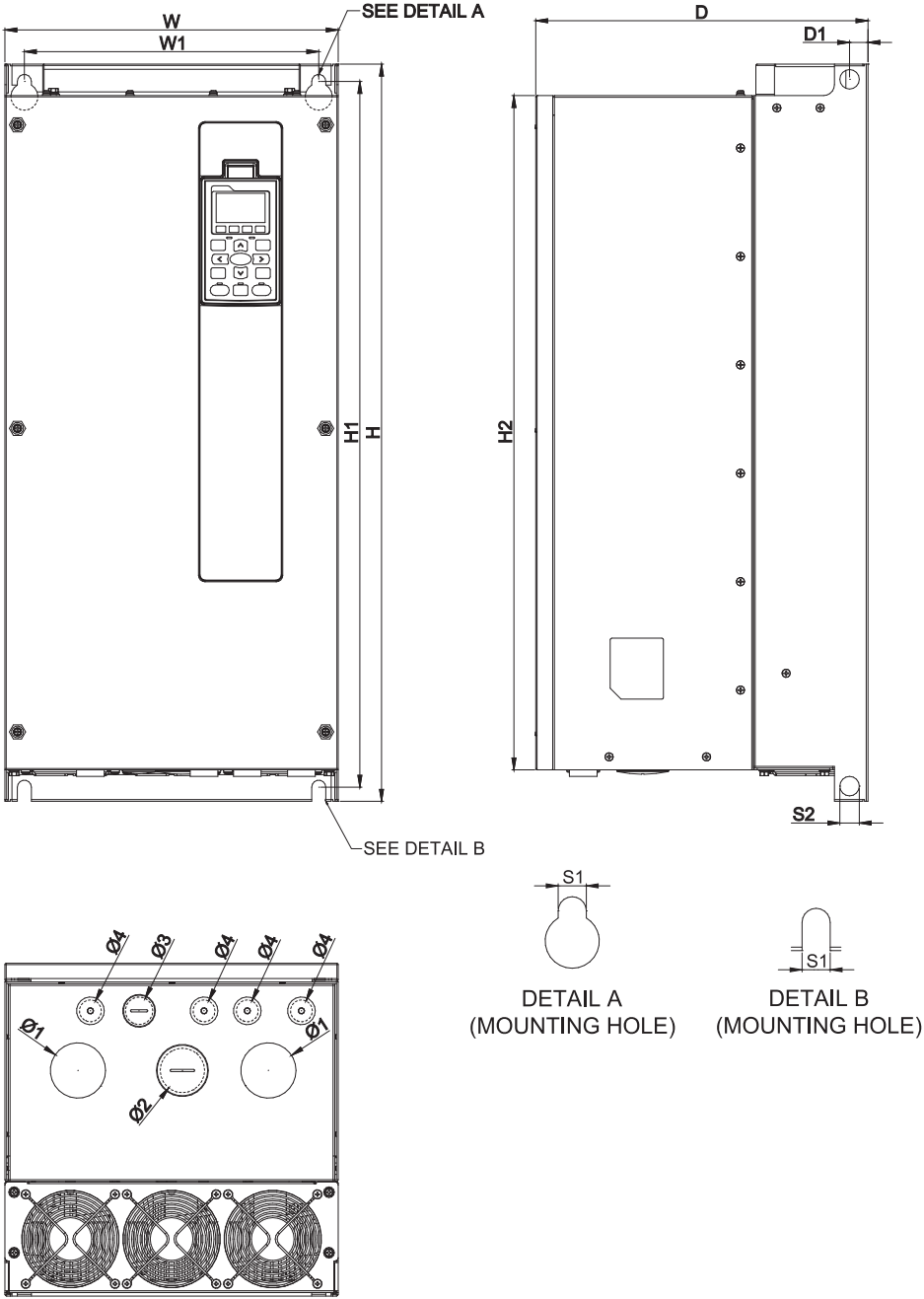
FRAME C (IP41)



MODEL	
FRAME C-3	
VFD150FP2EA-41	
VFD185FP2EA-41	
VFD300FP4EA-41	
VFD370FP4EA-41	
VFD220FP5EA-41	
VFD300FP5EA-41	
VFD370FP5EA-41	

FRAME		W	H	D	W1	H1	D1	S1	W2	H2	S2	Ø1	Ø2	Ø3	Ø4
C-3	mm	282.0	630.0	265.0	231.0	611.0	27.8	9.0	271.0	602.5	16.0	51.0	34.0	28.0	22.0
	inch	11.10	24.80	10.43	9.09	24.06	1.09	0.35	10.67	23.72	0.63	2.01	1.34	1.10	0.87

FRAME D0 (IP55)

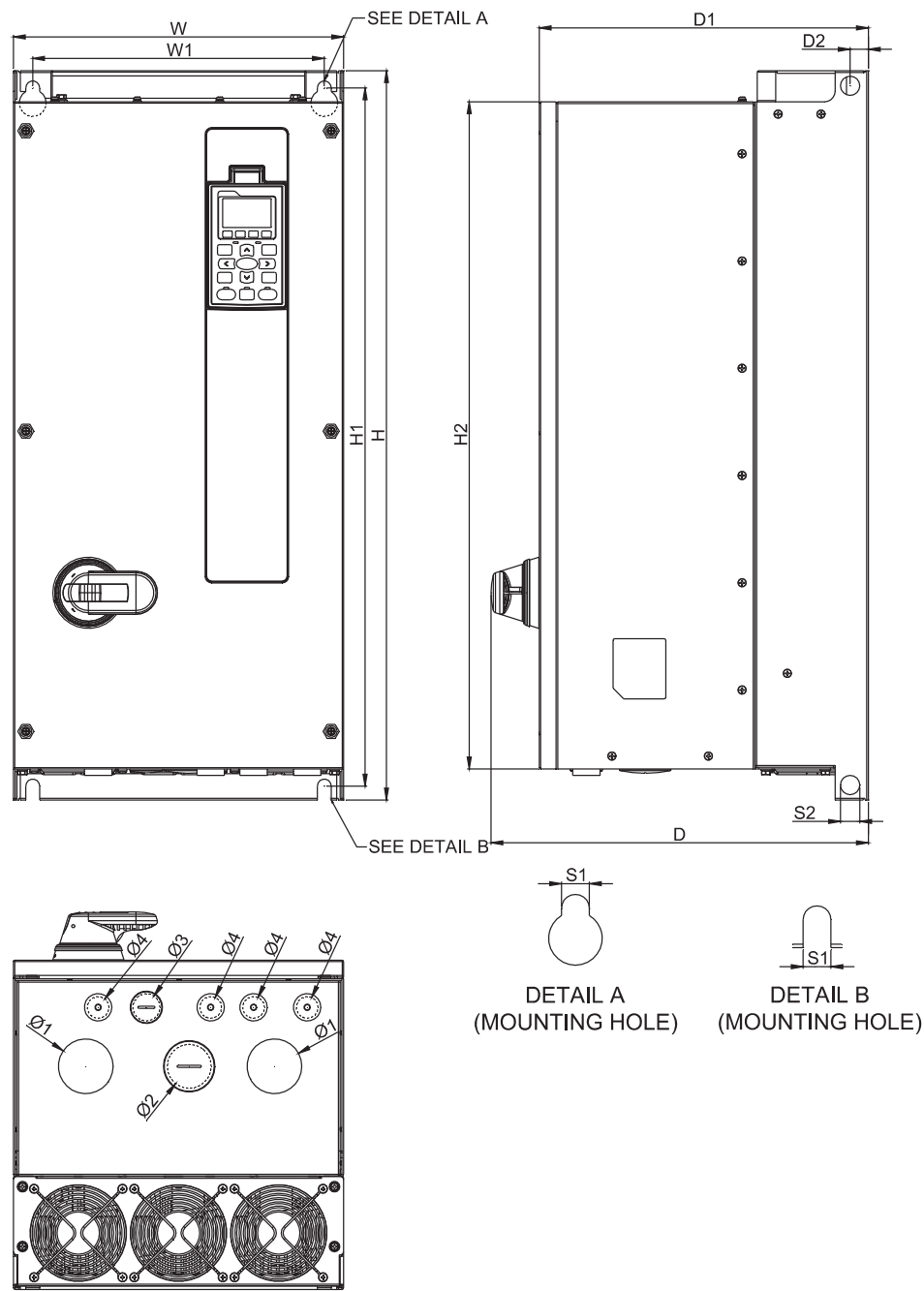


MODEL	
FRAME D0-1	
VFD220FP2EA-52	
VFD300FP2EA-52	
VFD450FP4EA-52	
VFD550FP4EA-52	
VFD450FP5EA-52	
VFD550FP5EA-52	

FRAME		W	H	D	W1	H1	D1	S1	H2	S2	Ø1	Ø2	Ø3	Ø4
D0-1	mm	308.0	680.0	307.0	272.0	651.0	17.0	13.0	622.0	18.0	51.0	41.0	25.4	20.3
	inch	12.13	26.77	12.09	10.71	25.63	0.67	0.51	24.49	0.71	2.01	1.61	1.00	0.80

Dimensions

FRAME D0 (IP55)

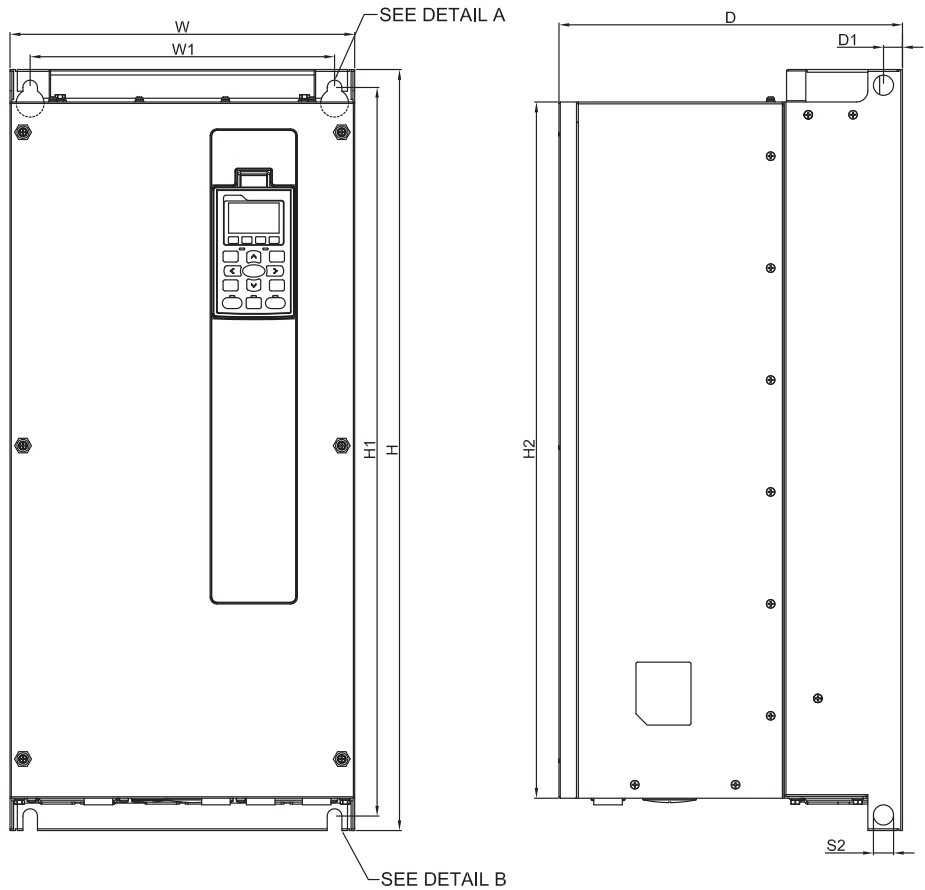


MODEL

FRAME D0-2
VFD220FP2EA-52S
VFD300FP2EA-52S
VFD450FP4EA-52S
VFD550FP4EA-52S
VFD450FP5EA-52S
VFD550FP5EA-52S

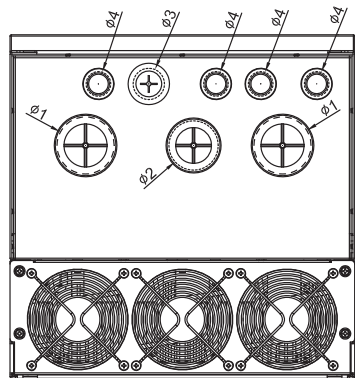
FRAME		W	H	D	W1	H1	D1	S1	H2	D2	S2	Ø1	Ø2	Ø3	Ø4
D0-2	mm	308.0	680.0	352.0	272.0	651.0	307.0	13.0	622.0	17.0	18.0	51.0	41.0	25.4	20.3
	inch	12.13	26.77	13.86	10.71	25.63	12.09	0.51	24.49	0.67	0.71	2.01	1.61	1.00	0.80

FRAME D0 (IP41)



MODEL

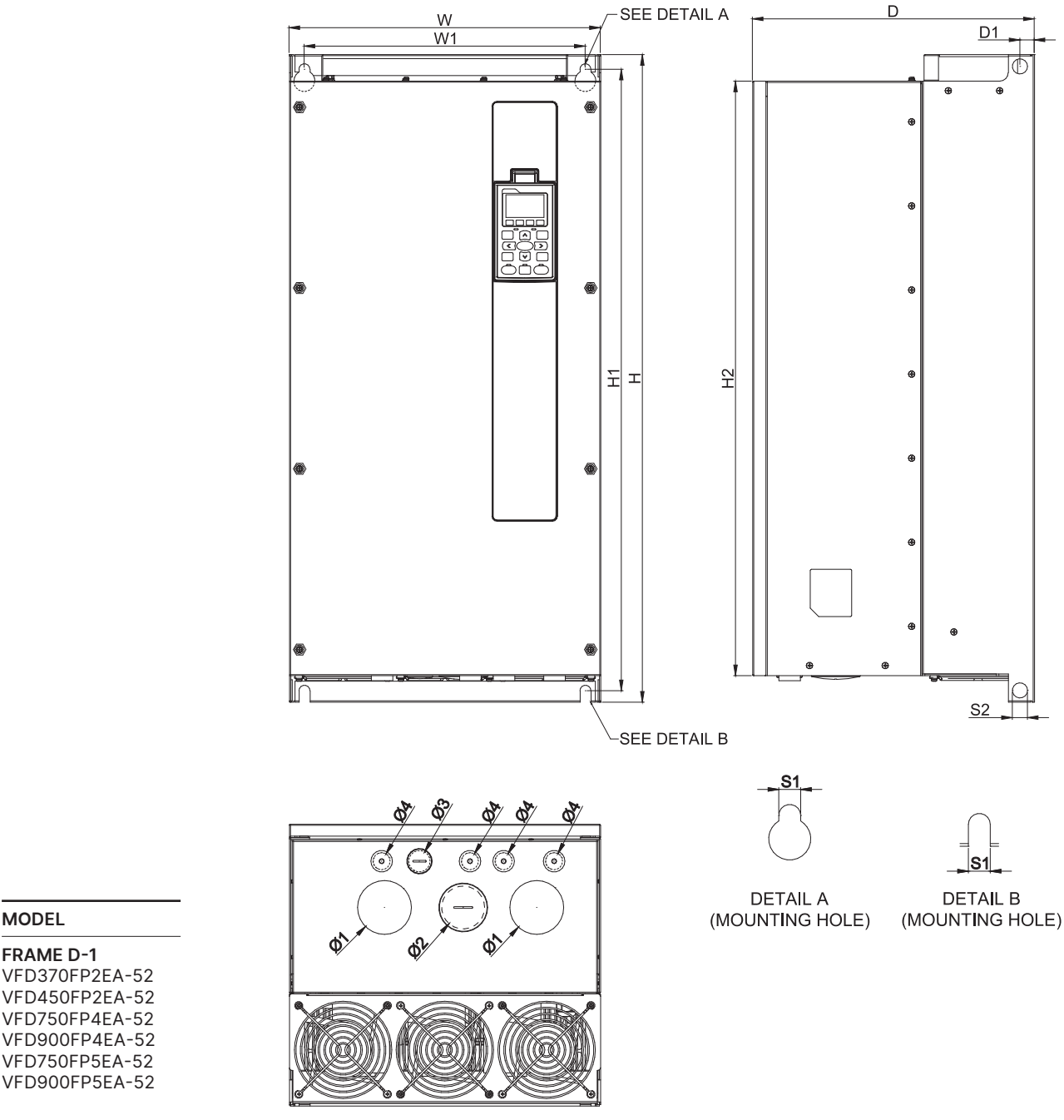
FRAME D0-3
VFD220FP2EA-41
VFD300FP2EA-41
VFD450FP4EA-41
VFD550FP4EA-41
VFD450FP5EA-41
VFD550FP5EA-41



FRAME		W	H	D	W1	H1	D1	S1	H2	S2	Ø1	Ø2	Ø3	Ø4
D0-3	mm	308.0	680.0	307.0	272.0	651.0	17.0	13.0	622.0	18.0	51.0	44.0	28.0	22.0
	inch	12.13	26.77	12.09	10.71	25.63	0.67	0.51	24.49	0.71	2.01	1.73	1.10	0.87

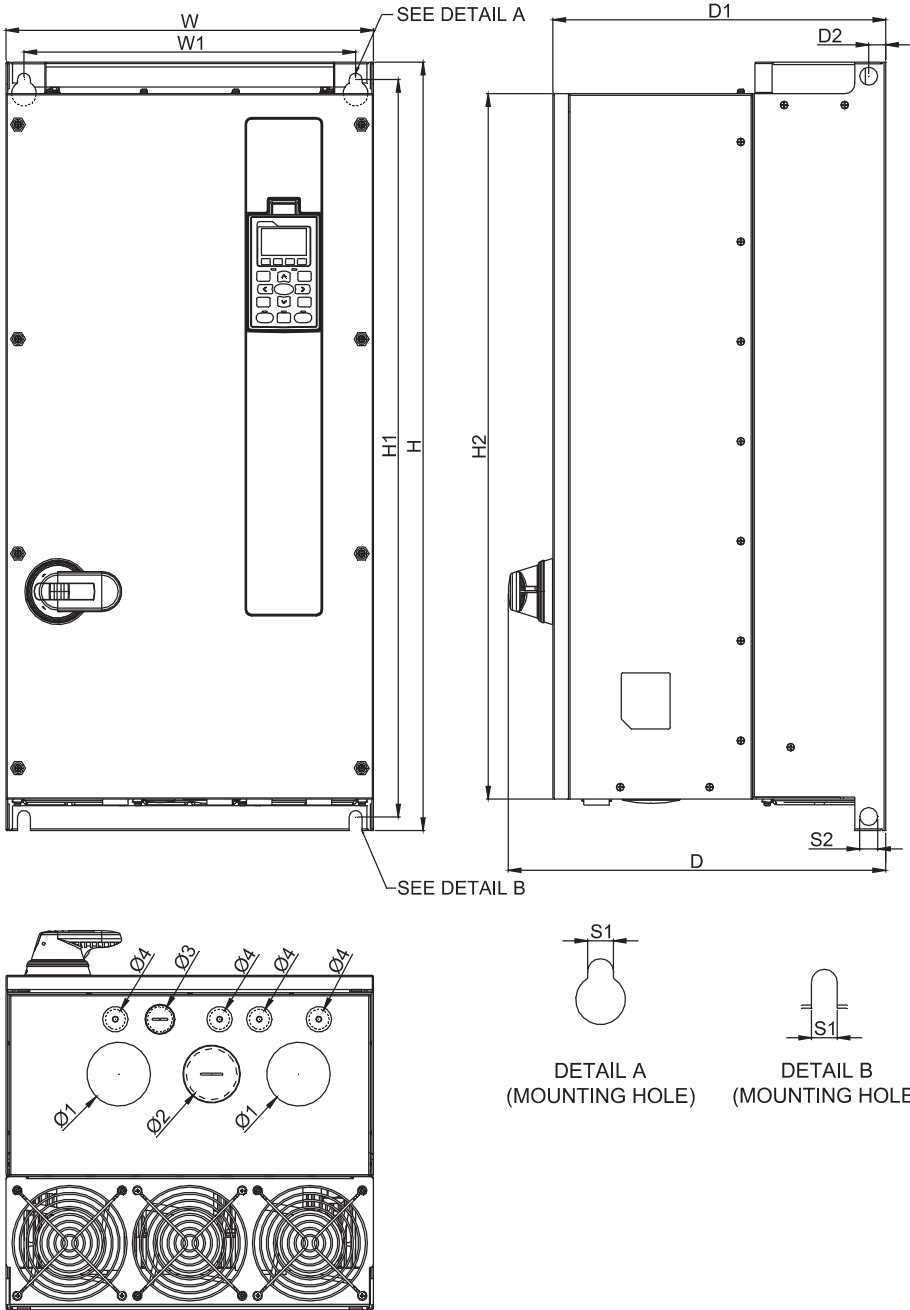
Dimensions

FRAME D (IP55)



FRAME		W	H	D	W1	H1	D1	S1	H2	S2	Ø1	Ø2	Ø3	Ø4
D-1	mm	370.0	770.0	335.0	334.0	739.0	17.0	13.0	707.0	18.0	64.0	51.0	25.4	20.3
	inch	14.57	30.31	13.19	13.15	29.09	0.67	0.51	27.83	0.71	2.52	2.01	1.00	0.80

FRAME D (IP55)



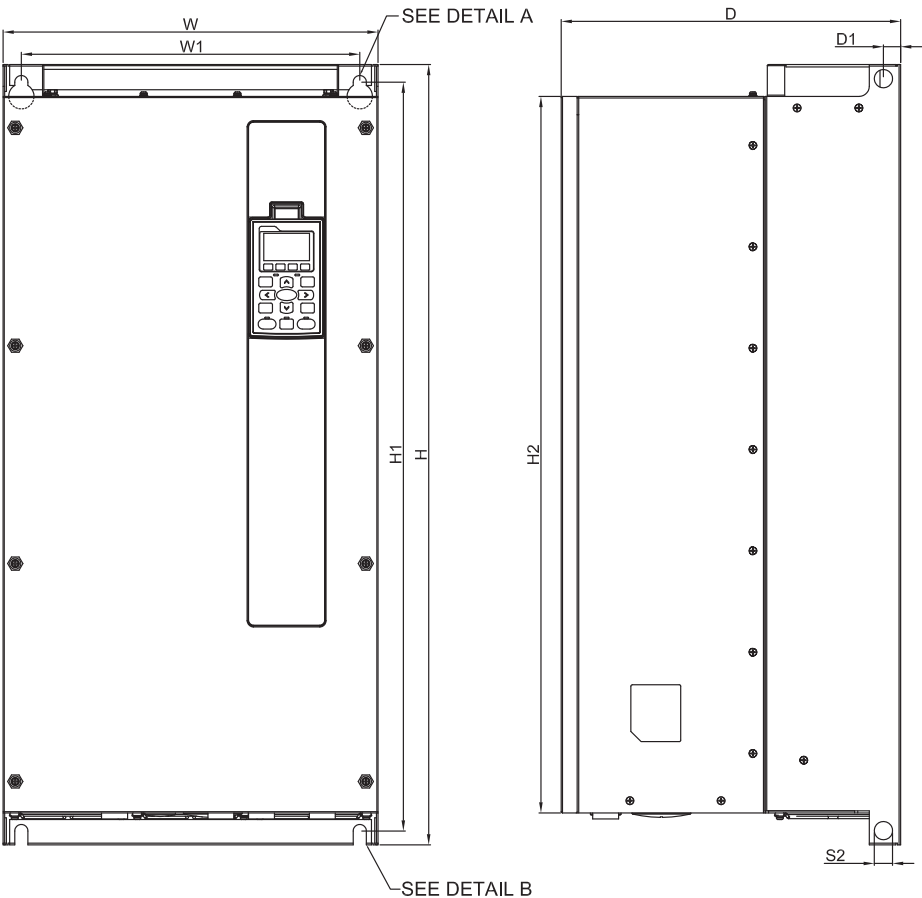
MODEL

FRAME D-2
VFD370FP2EA-52S
VFD450FP2EA-52S
VFD750FP4EA-52S
VFD900FP4EA-52S
VFD750FP5EA-52S
VFD900FP5EA-52S

FRAME		W	H	D	W1	H1	D1	S1	H2	D2	S2	Ø1	Ø2	Ø3	Ø4
D-2	mm	370.0	770.0	380.0	334.0	739.0	335.0	13.0	707.0	17.0	18.0	64.0	51.0	25.4	20.3
	inch	14.57	30.31	14.96	13.15	29.09	13.19	0.51	27.83	0.67	0.71	2.52	2.01	1.00	0.80

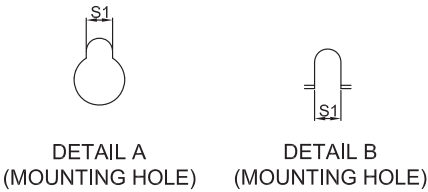
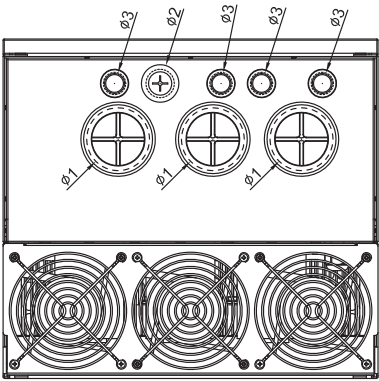
Dimensions

FRAME D (IP41)



MODEL

FRAME D-3
VFD370FP2EA-41
VFD450FP2EA-41
VFD750FP4EA-41
VFD900FP4EA-41
VFD750FP5EA-41
VFD900FP5EA-41

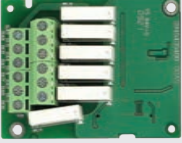


FRAME		W	H	D	W1	H1	D1	S1	H2	S2	Ø1	Ø2	Ø3
D-3	mm	370.0	770.0	335.0	334.0	739.0	17.0	13.0	707.0	18.0	62.0	28.0	22.0
	inch	14.57	30.31	13.19	13.15	29.09	0.67	0.51	27.83	0.71	2.44	1.10	0.87

Accessories

Relay Extension Card

■ EMC-R6AA

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

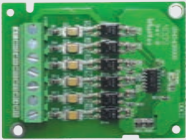
Analog I/O Extension Card

■ EMC-A22A

	Terminals	Description
	 AVI10 AVI11	Refer to Pr. 14-00 ~ Pr. 14-01 for function selection (input), and Pr. 14-18 ~ Pr. 14-19 for mode selection Two sets of AVI port for AVI or ACI switch: SSW3 (AVI10) and SSW4 (AVI11) AVI: Input 0 ~ 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 Two sets of AFM port for AVO or ACO switch: SSW1 (AFM10) and SSW2 (AFM11) AVO: Output 0 ~ 10.00 V ACO: Output 0 ~ 20.0 mA / 4.0 ~ 20.0 mA
	ACM	Analog signal common terminal

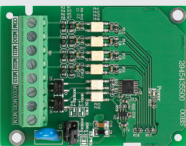
I/O Extension Card

■ EMC-D611A

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

I/O Extension Card

■ EMC-D42A

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

Accessories

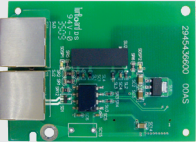
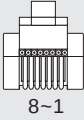
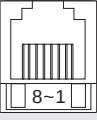
24 V Power Shift Card

EMC-BPS01

	Terminals	Descriptions
	24 V GND	Allows operation of network system, PLC function and partial functions when the AC motor drive is power off Input power: 24 VDC $\pm$ 5% Maximum input current: 0.5 A 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.

CANopen Card

EMC-COP01

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

EtherNet/IP, Modbus TCP Card

CMC-EIP01



Features

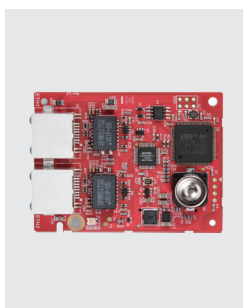
- ▶ Support EtherNet/IP and Modbus TCP protocol
- ▶ User-defined parameter mapping
- ▶ IP Filter, basic firewall function

Network Interface

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

BACnet Card

eZVFD-CC



Features

- ▶ Supports native BACnet protocol Rev 12
- ▶ Supports BACnet/IP, BACnet over Ethernet communication protocols
- ▶ Dual port Ethernet supports daisy-chaining multiple VFD devices
- ▶ Maps VFD I/O terminals as BACnet I/O
- ▶ Fully programmable in GCL+
- ▶ Setup and configure using Delta Controls facility management software enteliWEB
- ▶ Real-time clock with supercap power backup

eZVFD Connector

Interface	Dual Port RJ45
Transmission Method	Ethernet
Transmission Cable	Shielded CAT 5e/6

eZVFD Communication

Transmission Speed	10/100 Base-T
Network Protocol	BACnet/IP, BACnet Ethernet
BACnet Protocol	Rev 12
Device Addressing	Software Addressed

PROFINET Card

CMC-PN01



Features

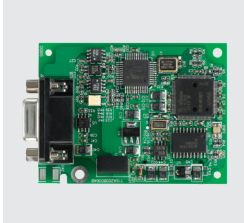
- ▶ Supports PROFINET IO device
- ▶ Supports synchronous data transmission and synchronous parameter access
- ▶ Provides GSDML file for PROFINET communication

Network Interface

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

PROFIBUS DP Card

CMC-PD01



Features

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

PROFIBUS DP Connector

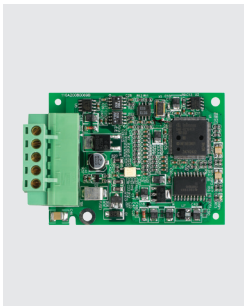
Interface	DB9 connector
Transmission Method	High-speed RS-485
Transmission Cable	Shielded twisted pair cable
Electrical Isolation	500 V _{DC}

Communication

Message Type	Cyclic data exchange
Module Name	CMC-PD01
GSD Document	DELA08DB.GSD
Company ID	08DB (HEX)
Serial Transmission Speed Supported (auto-detection)	9.6 Kbps; 19.2 Kbps; 93.75 Kbps; 187.5 Kbps; 125 Kbps; 250 Kbps; 500 Kbps; 1.5 Mbps; 3 Mbps; 6 Mbps; 12 Mbps (bits per second)

DeviceNet Card

CMC-DN01



Features

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

DeviceNet Connector

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

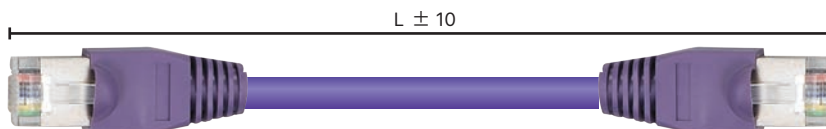
DeviceNet Connector

Interface	50-Pin communication terminal
Transmission Method	SPI communication
Terminal Function	1. Communicating with AC motor drive 2. Transmitting power supply from AC motor drive
Communication Protocol	Delta HSSP protocol

Accessories

Delta Standard Fieldbus Cables

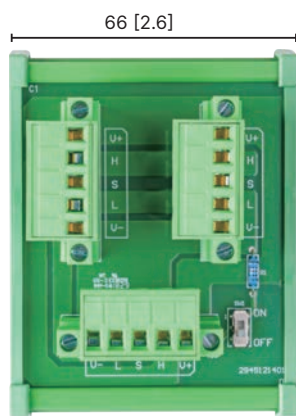
Delta Cables	Part Number	Description	Length
CANopen Cable	UC-CMC003-01A	CANopen cable, RJ45 connector	0.3m
	UC-CMC005-01A	CANopen cable, RJ45 connector	0.5m
	UC-CMC010-01A	CANopen cable, RJ45 connector	1m
	UC-CMC015-01A	CANopen cable, RJ45 connector	1.5m
	UC-CMC020-01A	CANopen cable, RJ45 connector	2m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



CANopen / DeviceNet TAP Breakout Boxes

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

Unit: mm [inch]



TAP-CN01



TAP-CN02



TAP-CN03

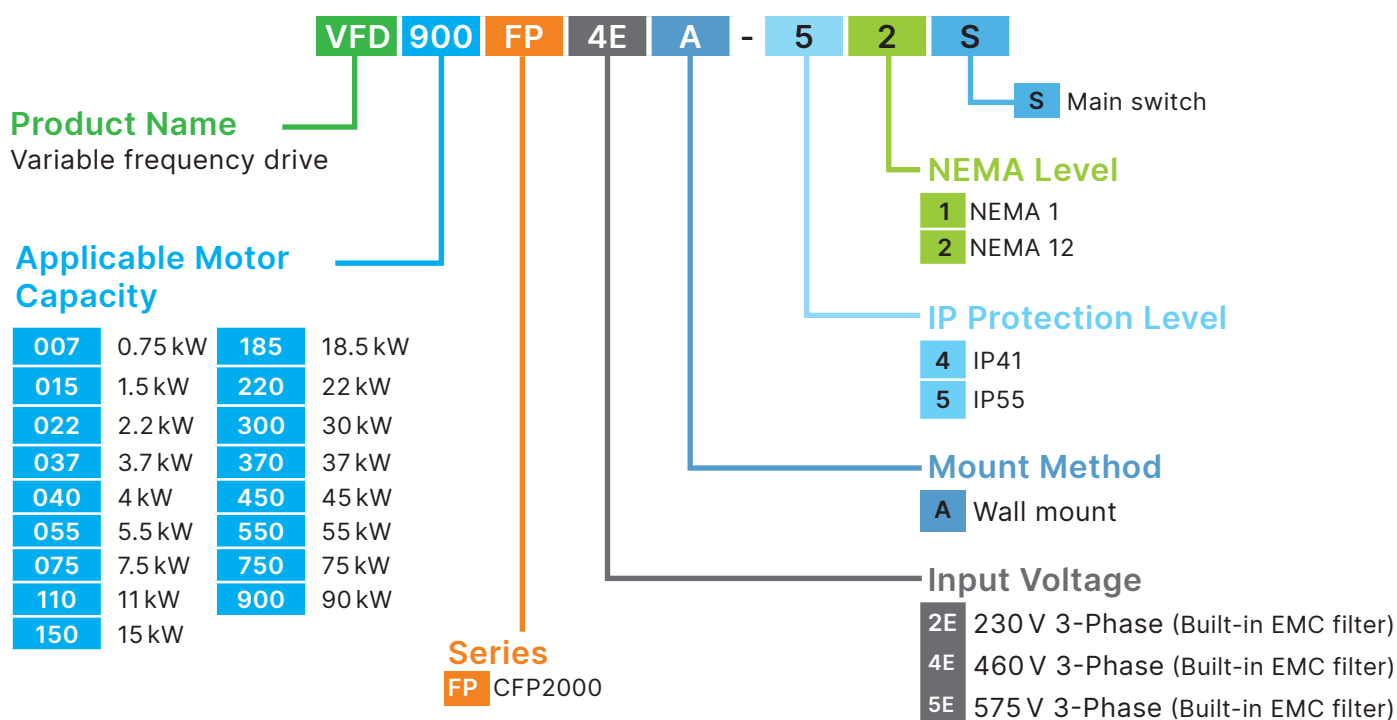
Ordering Information

Model	Frame	Power Range	IP41 NEMA1	IP55 NEMA12 w/o Mains Switch	IP55 with Mains Switch
230 V	A	0.75 kW	VFD007FP2EA-41	VFD007FP2EA-52	VFD007FP2EA-52S
		1.5 kW	VFD015FP2EA-41	VFD015FP2EA-52	VFD015FP2EA-52S
		2.2 kW	VFD022FP2EA-41	VFD022FP2EA-52	VFD022FP2EA-52S
		3.7 kW	VFD037FP2EA-41	VFD037FP2EA-52	VFD037FP2EA-52S
		5.5 kW	VFD055FP2EA-41	VFD055FP2EA-52	VFD055FP2EA-52S
	B	7.5 kW	VFD075FP2EA-41	VFD075FP2EA-52	VFD075FP2EA-52S
		11 kW	VFD110FP2EA-41	VFD110FP2EA-52	VFD110FP2EA-52S
	C	15 kW	VFD150FP2EA-41	VFD150FP2EA-52	VFD150FP2EA-52S
		18.5 kW	VFD185FP2EA-41	VFD185FP2EA-52	VFD185FP2EA-52S
	D0	22 kW	VFD220FP2EA-41	VFD220FP2EA-52	VFD220FP2EA-52S
		30 kW	VFD300FP2EA-41	VFD300FP2EA-52	VFD300FP2EA-52S
	D	37 kW	VFD370FP2EA-41	VFD370FP2EA-52	VFD370FP2EA-52S
		45 kW	VFD450FP2EA-41	VFD450FP2EA-52	VFD450FP2EA-52S
460 V	A	0.75 kW	VFD007FP4EA-41	VFD007FP4EA-52	VFD007FP4EA-52S
		1.5 kW	VFD015FP4EA-41	VFD015FP4EA-52	VFD015FP4EA-52S
		2.2 kW	VFD022FP4EA-41	VFD022FP4EA-52	VFD022FP4EA-52S
		3.7 kW	VFD037FP4EA-41	VFD037FP4EA-52	VFD037FP4EA-52S
		4 kW	VFD040FP4EA-41	VFD040FP4EA-52	VFD040FP4EA-52S
		5.5 kW	VFD055FP4EA-41	VFD055FP4EA-52	VFD055FP4EA-52S
		7.5 kW	VFD075FP4EA-41	VFD075FP4EA-52	VFD075FP4EA-52S
	B	11 kW	VFD110FP4EA-41	VFD110FP4EA-52	VFD110FP4EA-52S
		15 kW	VFD150FP4EA-41	VFD150FP4EA-52	VFD150FP4EA-52S
		18.5 kW	VFD185FP4EA-41	VFD185FP4EA-52	VFD185FP4EA-52S
		22 kW	VFD220FP4EA-41	VFD220FP4EA-52	VFD220FP4EA-52S
	C	30 kW	VFD300FP4EA-41	VFD300FP4EA-52	VFD300FP4EA-52S
		37 kW	VFD370FP4EA-41	VFD370FP4EA-52	VFD370FP4EA-52S
	D0	45 kW	VFD450FP4EA-41	VFD450FP4EA-52	VFD450FP4EA-52S
		55 kW	VFD550FP4EA-41	VFD550FP4EA-52	VFD550FP4EA-52S
	D	75 kW	VFD750FP4EA-41	VFD750FP4EA-52	VFD750FP4EA-52S
		90 kW	VFD900FP4EA-41	VFD900FP4EA-52	VFD900FP4EA-52S

Ordering Information

Model	Frame	Power Range	IP41 NEMA1	IP55 NEMA12 w/o Mains Switch	IP55 with Mains Switch
575 V	A	1.5 kW	VFD015FP5EA-41	VFD015FP5EA-52	VFD015FP5EA-52S
		2.2 kW	VFD022FP5EA-41	VFD022FP5EA-52	VFD022FP5EA-52S
		3.7 kW	VFD037FP5EA-41	VFD037FP5EA-52	VFD037FP5EA-52S
		5.5 kW	VFD055FP5EA-41	VFD055FP5EA-52	VFD055FP5EA-52S
		7.5 kW	VFD075FP5EA-41	VFD075FP5EA-52	VFD075FP5EA-52S
	B	11 kW	VFD110FP5EA-41	VFD110FP5EA-52	VFD110FP5EA-52S
		15 kW	VFD150FP5EA-41	VFD150FP5EA-52	VFD150FP5EA-52S
		18.5 kW	VFD185FP5EA-41	VFD185FP5EA-52	VFD185FP5EA-52S
	C	22 kW	VFD220FP5EA-41	VFD220FP5EA-52	VFD220FP5EA-52S
		30 kW	VFD300FP5EA-41	VFD300FP5EA-52	VFD300FP5EA-52S
		37 kW	VFD370FP5EA-41	VFD370FP5EA-52	VFD370FP5EA-52S
	D0	45 kW	VFD450FP5EA-41	VFD450FP5EA-52	VFD450FP5EA-52S
		55 kW	VFD550FP5EA-41	VFD550FP5EA-52	VFD550FP5EA-52S
	D	75 kW	VFD750FP5EA-41	VFD750FP5EA-52	VFD750FP5EA-52S
		90 kW	VFD900FP5EA-41	VFD900FP5EA-52	VFD900FP5EA-52S

Model Name





Global Operations

ASIA (Taiwan)



Taoyuan Technology Center (Green Building)



Taoyuan Plant 1



Tainan Plant (Diamond-rated Green Building)

ASIA (China)



Wujiang Plant 3



Shanghai Office

▲ 9 Factories



ASIA (Japan)



Tokyo Office



ASIA (India)



Rudrapur Plant
(Green Building)

EUROPE



Amsterdam, the Netherlands

AMERICA

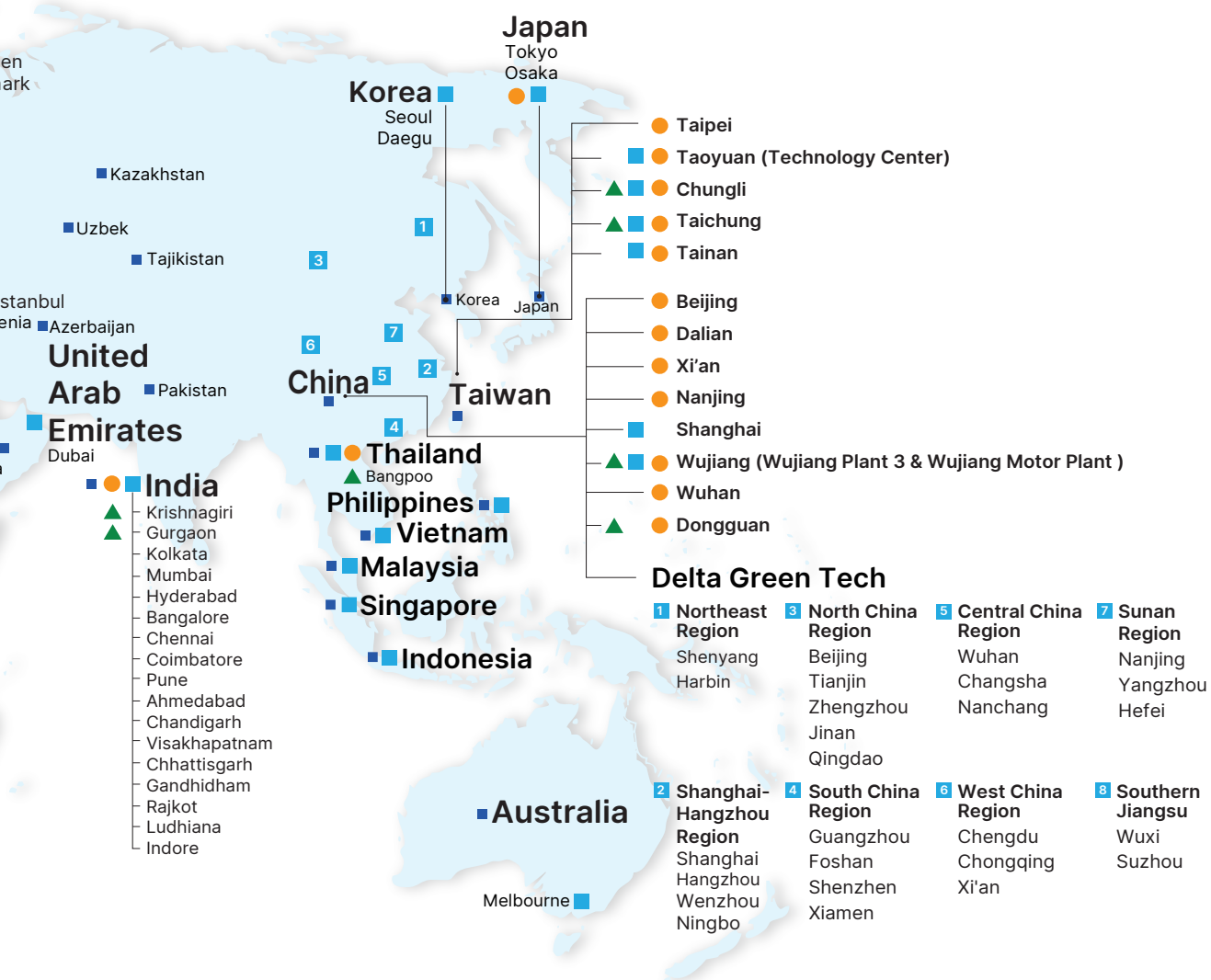


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