



Automation for a Changing World

Delta IP55 Fan and Pump Drive CFP2000 Series



enertronic
PROYECTOS Y
SUMINISTROS S.A.

DELTA
DELTA ELECTRONICS, INC.

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

Power range: AC 380 to 480V/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		

Application



HVAC



Fans



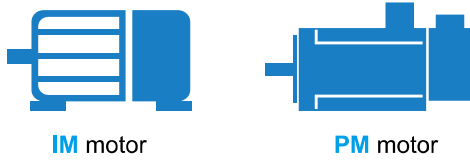
Chiller



Water treatment

Features

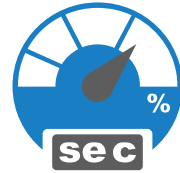
► Motor Controls



► 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



Create homepage logo

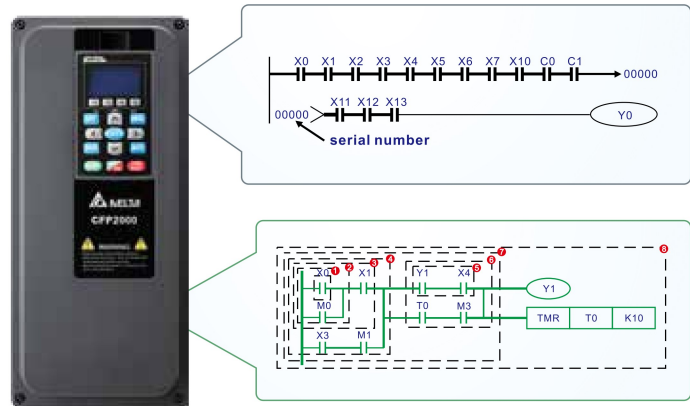


Editable message display



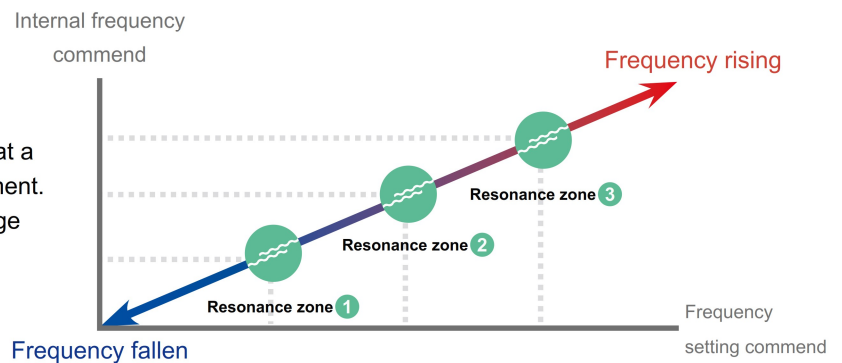
► Built-in PLC Function

- 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. User can restrict up to 3 zones of frequency range



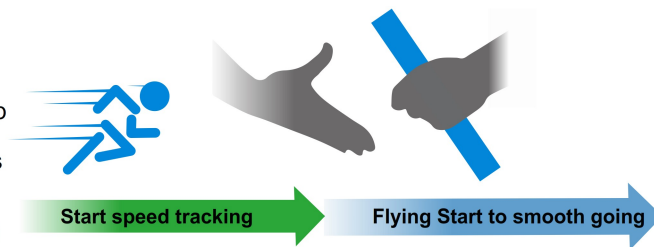
► Fire Mode

- 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

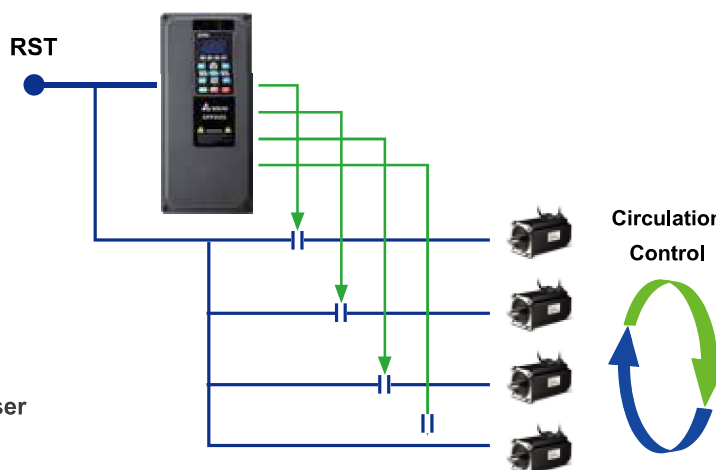


► Multi-pump Control

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

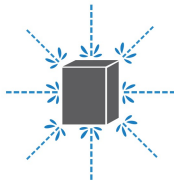
- Built-in RS-485 (Modbus)
- Built-in BACnet MS/TP 
- Various communication card options

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

Operating Environment

► Protection Class

IP55 NEMA12, IP41 NEMA1



Water
Resistant



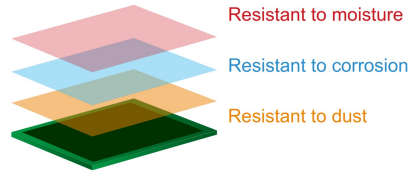
Dust
Resistant

► 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

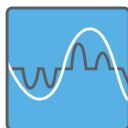


► Built-in DC Choke

Suppress harmonics

THDi < 48%

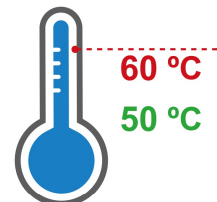
EN61000-3-12



► Operation Temperature

Up to **50 °C** without derating

Up to **60 °C** with derating



► Built EMC Filter

EN61800-3 C2 & C1*



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

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%
		Only allowed at non-condensation, non-frost, non-conductive environment	
	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
	Altitude	Operation	If the AC motor drive is installed at an altitude 0 ~ 1,000m, follow normal operation restrictions. For every 100m increase in altitude, the AC motor drive needs to either lower rated current by 1% or by 0.5°C of temperature for operation.If the drive is installed at an altitude above 2,000m, please refer to the voltage derating graph in the user manual for more instructions Note: Voltage derating is not needed for a Center Ground System, and maximum installation altitude is 4,000m.
	Vibration Operating	IEC 60068-2-6	
		Frame A: 2Hz ≤ f ≤ 13.2Hz/Amplitude 1mm; 13.2Hz < f ≤ 55Hz/Gravity 0.7G to 2.0G; 55Hz < f ≤ 512Hz/Gravity 2.0G	
		Frame B: 2Hz ≤ f ≤ 13.2Hz/Amplitude 1mm; 13.2Hz < f ≤ 55Hz/Gravity 0.7G to 1.5G; 55Hz < f ≤ 512Hz/Gravity 1.5G	
Frame C/ D0/ D: 2Hz ≤ f ≤ 13.2Hz/Amplitude 1mm; 3.2Hz < f ≤ 55Hz/Gravity 0.7G to 1.0G; 155Hz < f ≤ 512Hz/Gravity 1.0G			
Shock Operating	IEC 60068-2-27		
	Frame A; B; C; D0: Max. 30G; 11ms; Frame D: Max. 15G; 11ms		
In protective shipping package	Vibration	IEC 60068-2-64	
		10Hz ≤ f ≤ 100Hz/ASD: 1.0m2/s3; 100Hz ≤ f ≤ 200Hz/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-52	Frame A ~ D: 0.75~90kW	IP55/NEMA12	-10 °C ~ 50 °C*
VFDxxxFPxxx-41	Frame A ~ D: 0.75~90kW	IP41/NEMA1	-10 °C ~ 50 °C*

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

Specifications

Frame Size			A							B				C		D0		D	
Models VFD-____FP4E-__			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	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	4.0	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 6)
	NORMAL DUTY	Rated Output Capacity (kVA)	1.4	2.4	3.2	4.8	7.2	8.4	10	14	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	4.0	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	53	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) ^{*1}					2~9 (default 6)
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	3.0	4.0	6.0	9.0	10.5	12	18	24	32	38	45	60	73	91	110	150
	Rated Voltage/Frequency		3-phase AC 380V~480V (-15%~+10%), 50/60Hz																
	Operating Voltage Range		323~528V _{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 EN6100-3-12																
EMC Filter			Built-in EMC filter meets EN61800-3 C2 & C1 ^{*2}																

*1 The carrier frequency range of VFD900FP4EA-xx is 2~9 kHz, default setting 6 kHz

*2 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.

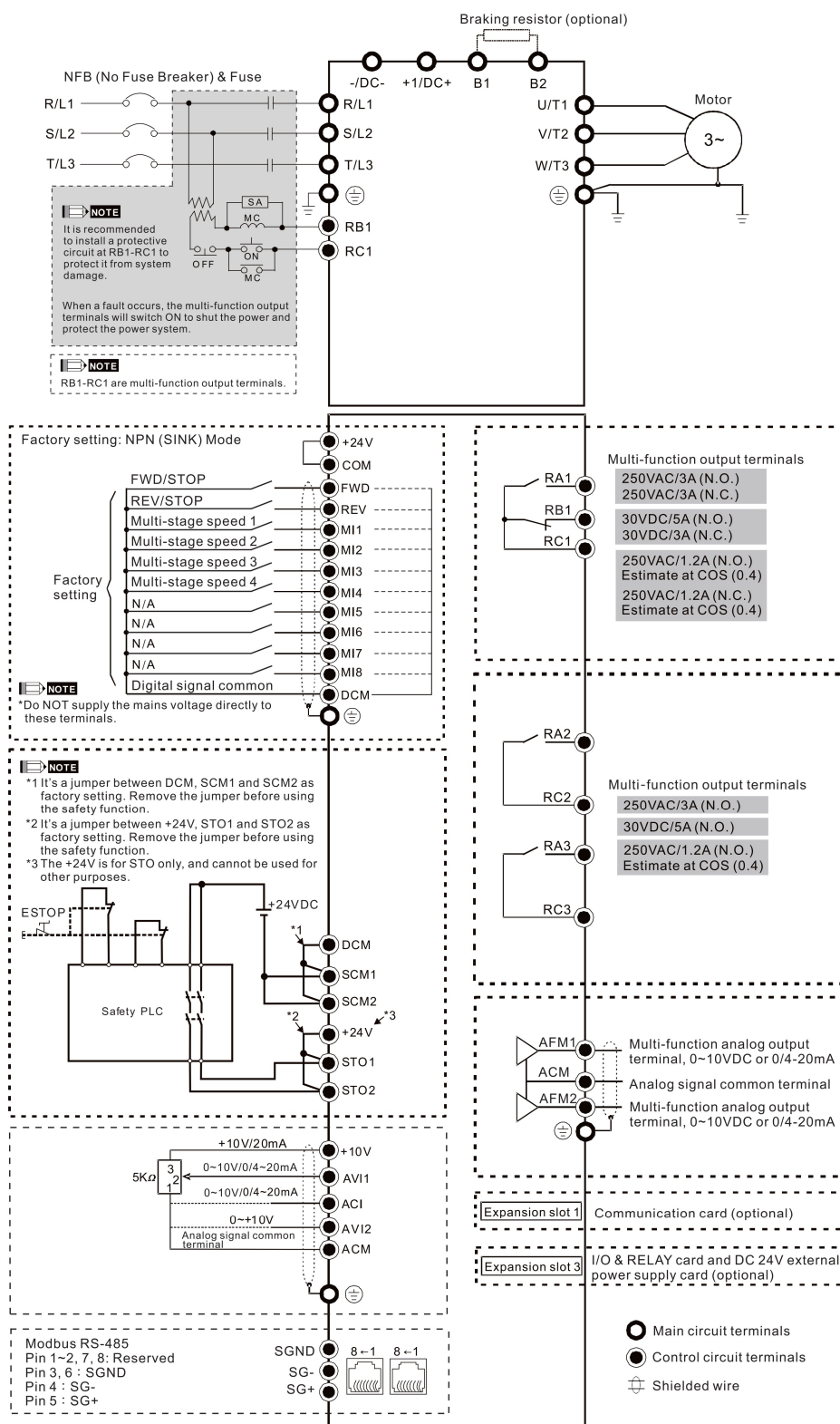
General Specifications

CONTROL CHARACTERISTICS	Control Method	Pulse Width Modulated (PWM)
	Control Mode	1: V/F (V/F control), 2: SVC (Sensorless Vector Control), 3: PMSVC
	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	5Hz
	Torque Limit	Light Duty: Max. 130% torque current; Normal Duty: Max. 160% torque current
	Torque Accuracy	±5%
	Max. Output Frequency	599.00Hz
	Frequency Output Accuracy	Digital command: ±0.01%, -10°C~+40°C; Analog command: ±0.1%, 25°C±10°C
	Output Frequency Resolution	Digital command: 0.01 Hz; Analog command: Max. output frequency×0.03/60Hz (±11-bit)
	Overload Tolerance	Normal duty: 120% of rated current can endure for1 minute during every 5 minutes 160% of rated current can endure for 3 seconds during every 30 seconds Light duty: 120% of rated current can endure for1 minute
	Frequency Setting Signal	0~+10V, 4~20mA, 0~20mA, pulse input
	Accel./decel. Time	0.00~600.00/0.0~6000.0 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, PID control (with sleep function),Energy saving control, MODBUS communication (RS-485 RJ45, max. 5.2 Kbps)
PROTECTION CHARACTERISTICS	Fan Control	VFD300FP4E and above are PWM control VFD220FP4E and below are on/off switch control
	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	Drive will stop when DC-BUS voltage exceeds 820V
	Over-Temperature Protection	Built-in temperature sensor
	Stall Prevention	Stall prevention during acceleration, deceleration and running independently
	Restart After Instantaneous Power Failure	Parameter setting up to 20 seconds
	Grounding Leakage Current Protection	Leakage current is higher than 50% of rated current of the AC motor drive
	Short-circuit Current Rating (SCCR)	Per UL508C, the drive is suitable for use on a circuit capable of delivering not more than 100kA symmetrical amperes (rms) when protected by fuses given in the fuse table
	International Certifications	CE, UL, GB/T12668-2

Wiring

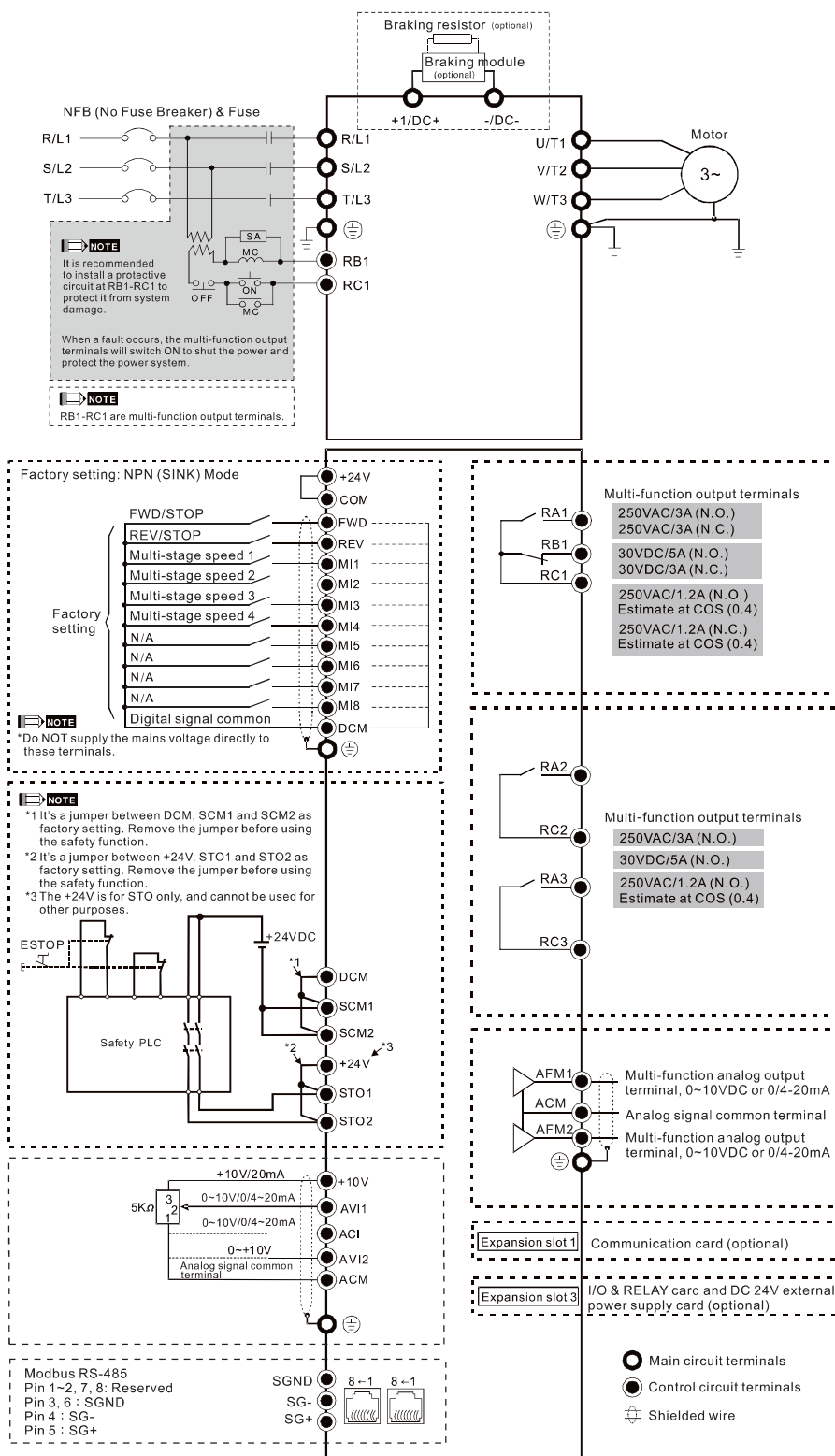
Wiring Diagram for Frame A~C

*Input: 3-phase power



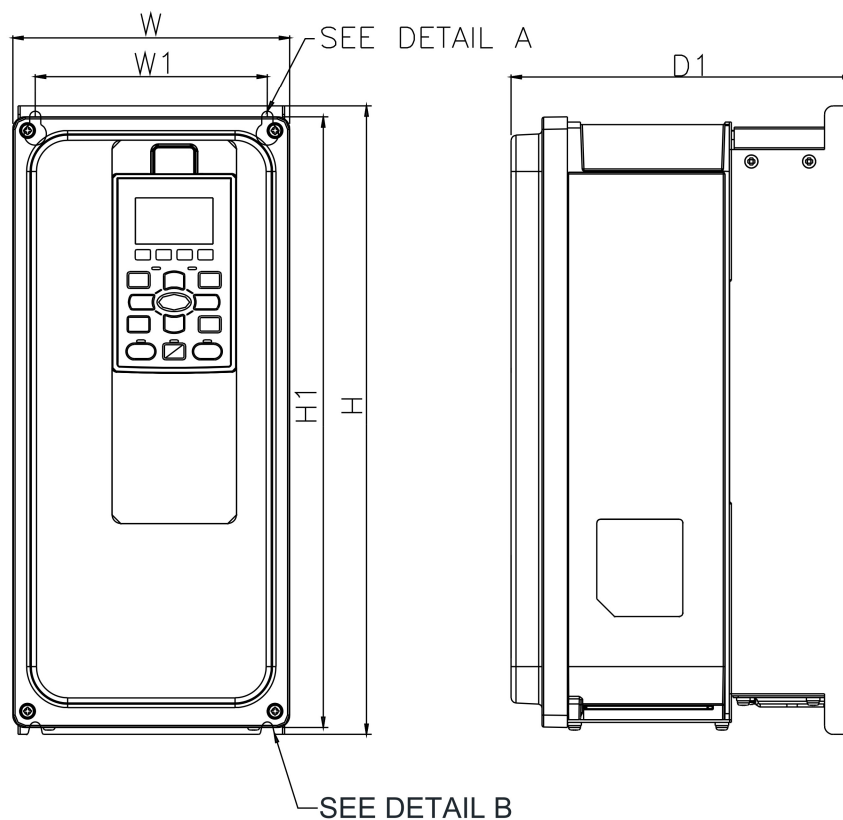
Wiring Diagram for Frame D0~D

*Input: 3-phase power



Dimensions

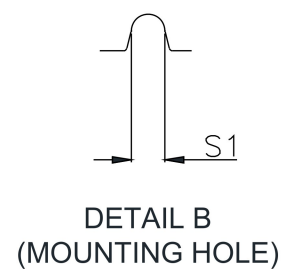
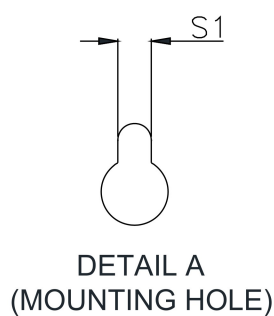
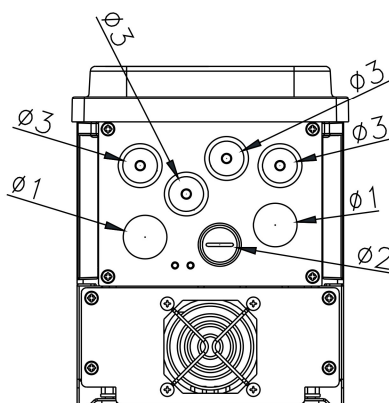
FRAME A (IP55)



MODEL

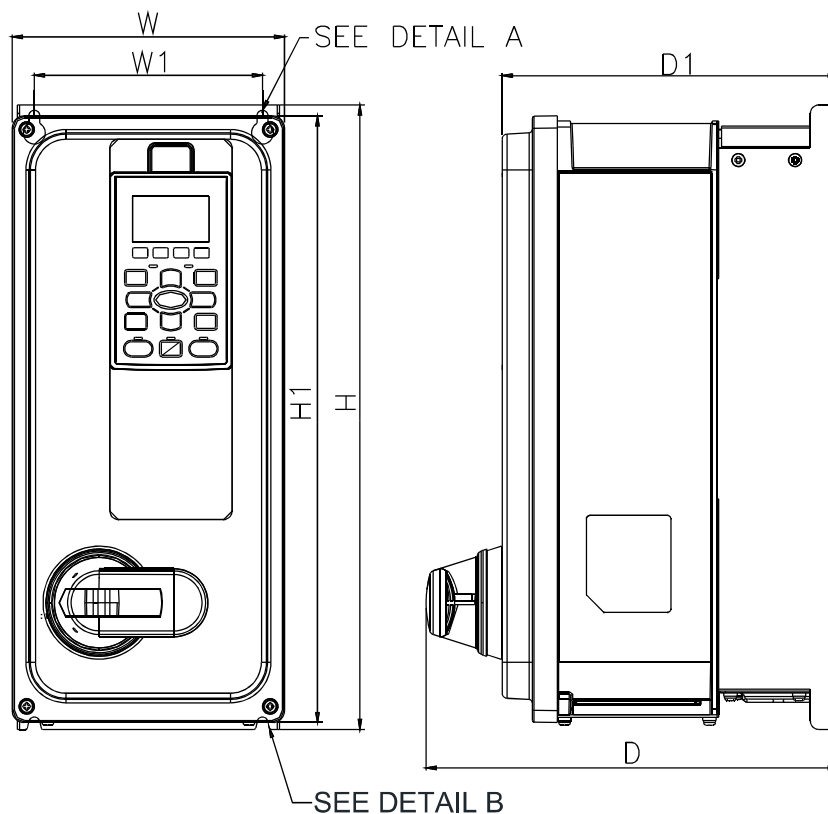
FRAME A-1

VFD007FP4EA-52
VFD015FP4EA-52
VFD022FP4EA-52
VFD037FP4EA-52
VFD040FP4EA-52
VFD055FP4EA-52
VFD075FP4EA-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

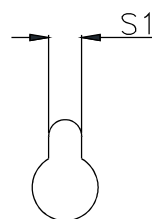
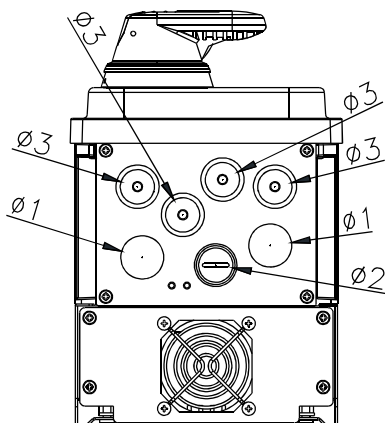
FRAME A (IP55)



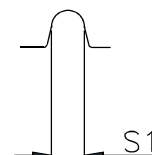
MODEL

FRAME A-2

VFD007FP4EA-52S
VFD015FP4EA-52S
VFD022FP4EA-52S
VFD037FP4EA-52S
VFD040FP4EA-52S
VFD055FP4EA-52S
VFD075FP4EA-52S



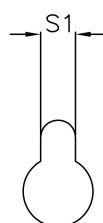
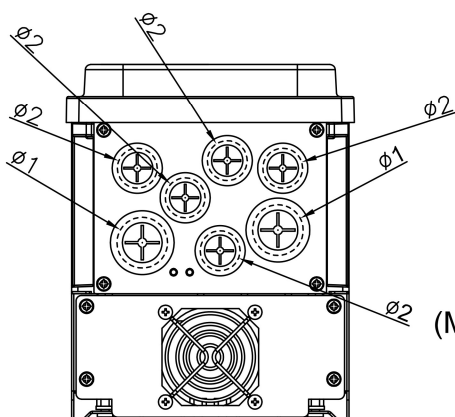
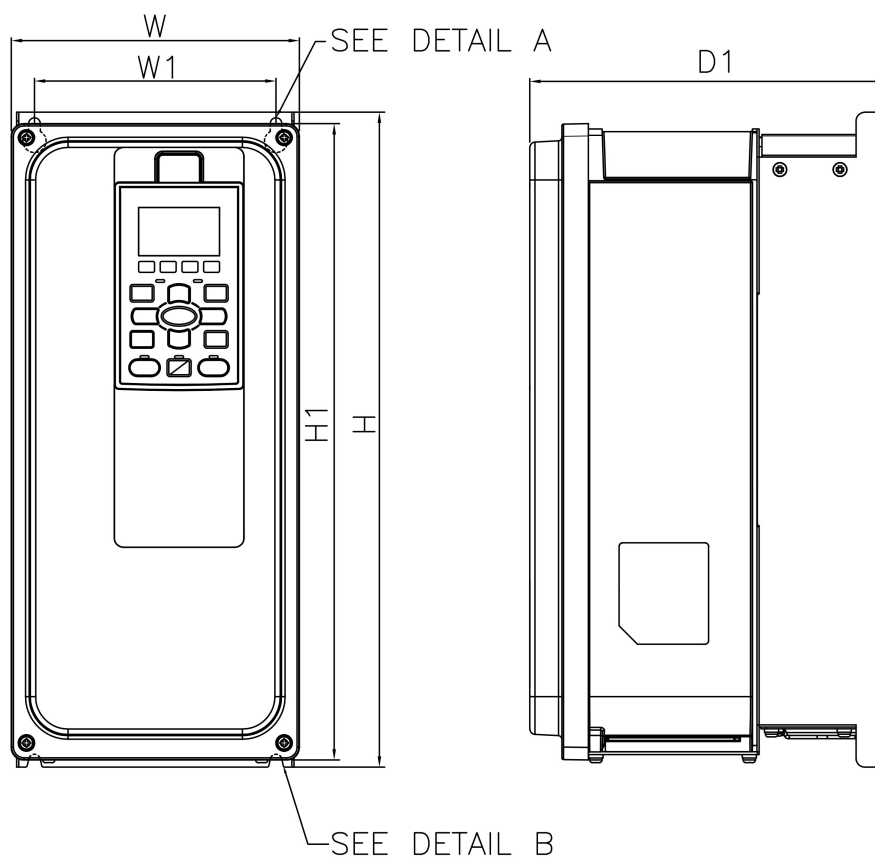
**DETAIL A
(MOUNTING HOLE)**



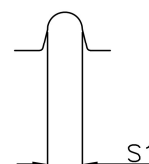
**DETAIL B
(MOUNTING HOLE)**

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

FRAME A (IP41)



DETAIL A
(MOUNTING HOLE)



DETAIL B
(MOUNTING HOLE)

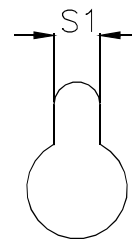
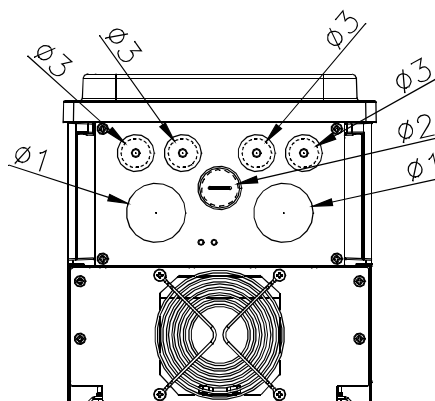
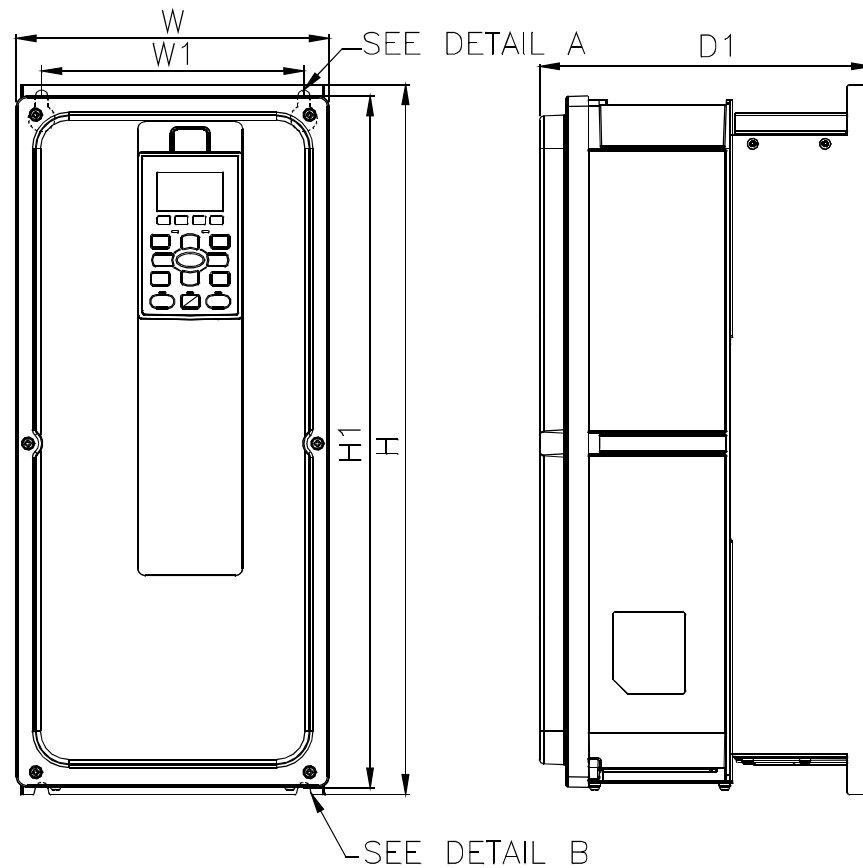
MODEL

FRAME A-3

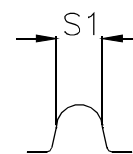
VFD007FP4EA-41
VFD015FP4EA-41
VFD022FP4EA-41
VFD037FP4EA-41
VFD040FP4EA-41
VFD055FP4EA-41
VFD075FP4EA-41

FRAME		W	H	D	W1	H1	D1	S1	Ø1	Ø2
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)



DETAIL A
(MOUNTING HOLE)



DETAIL B
(MOUNTING HOLE)

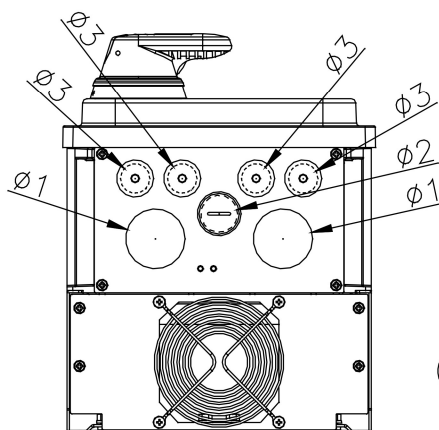
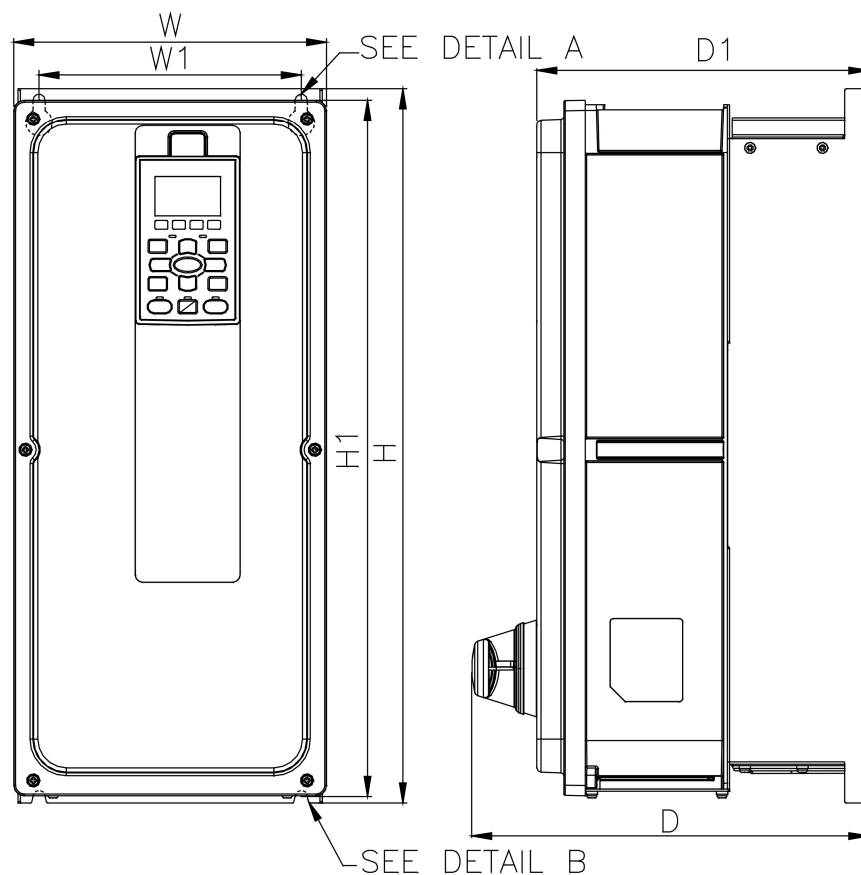
MODEL

FRAME B-1

VFD110FP4EA-52
VFD150FP4EA-52
VFD185FP4EA-52
VFD220FP4EA-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

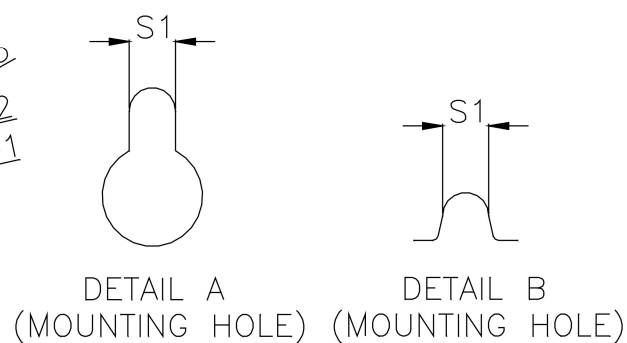
FRAME B (IP55)



MODEL

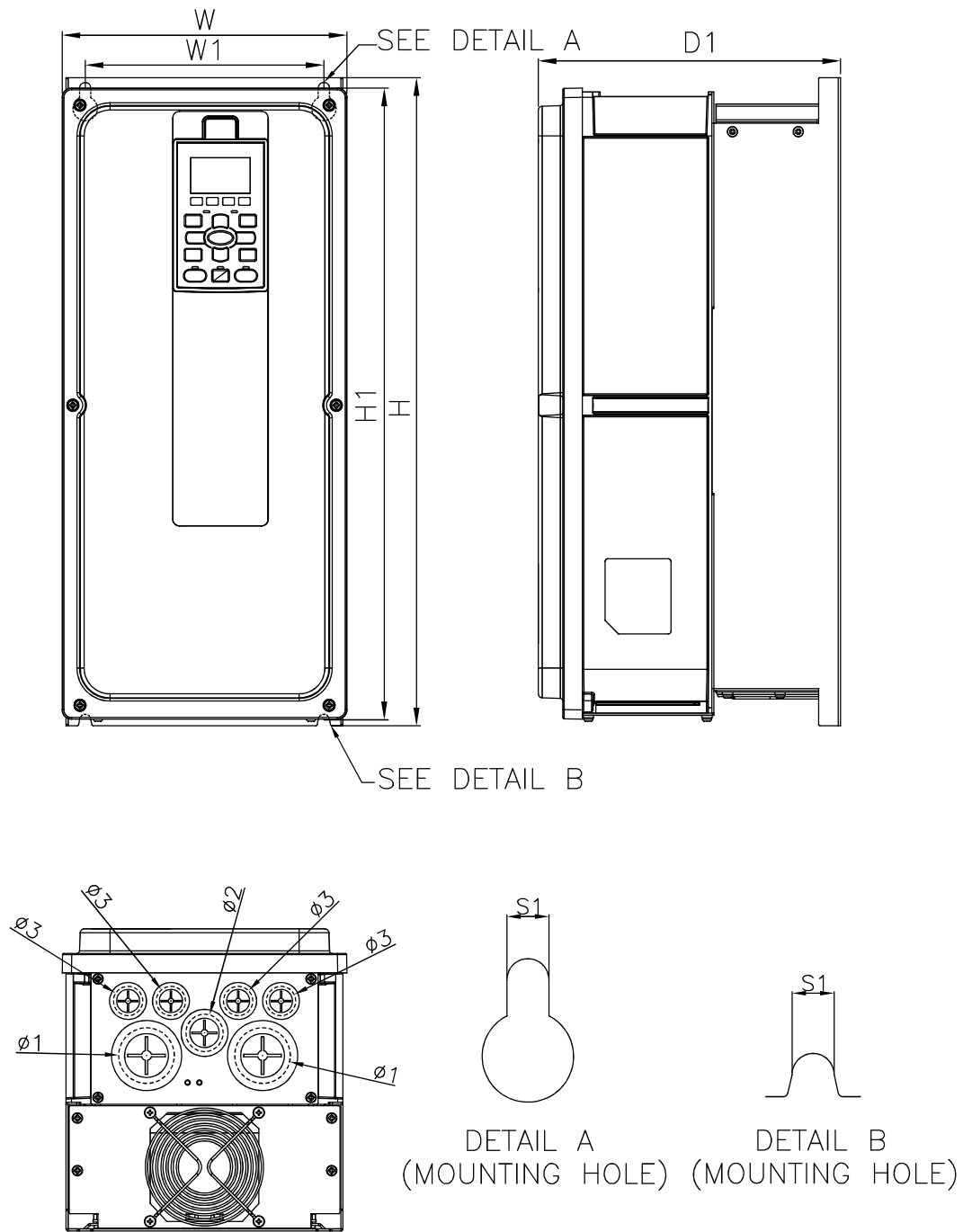
FRAME B-2

VFD110FP4EA-52S
VFD150FP4EA-52S
VFD185FP4EA-52S
VFD220FP4EA-52S



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)



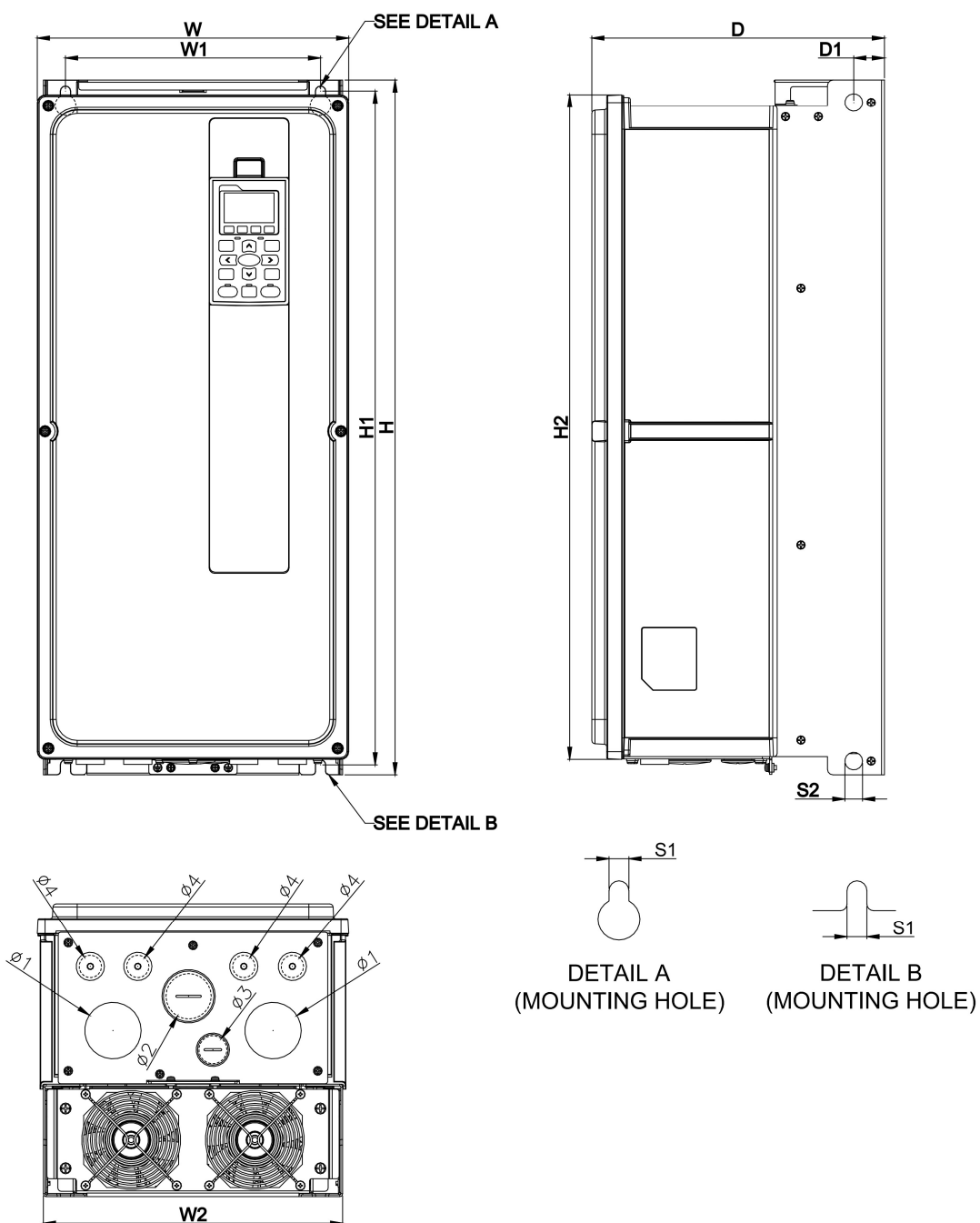
MODEL

FRAME B-3

VFD110FP4EA-41
VFD150FP4EA-41
VFD185FP4EA-41
VFD220FP4EA-41

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

FRAME C (IP55)



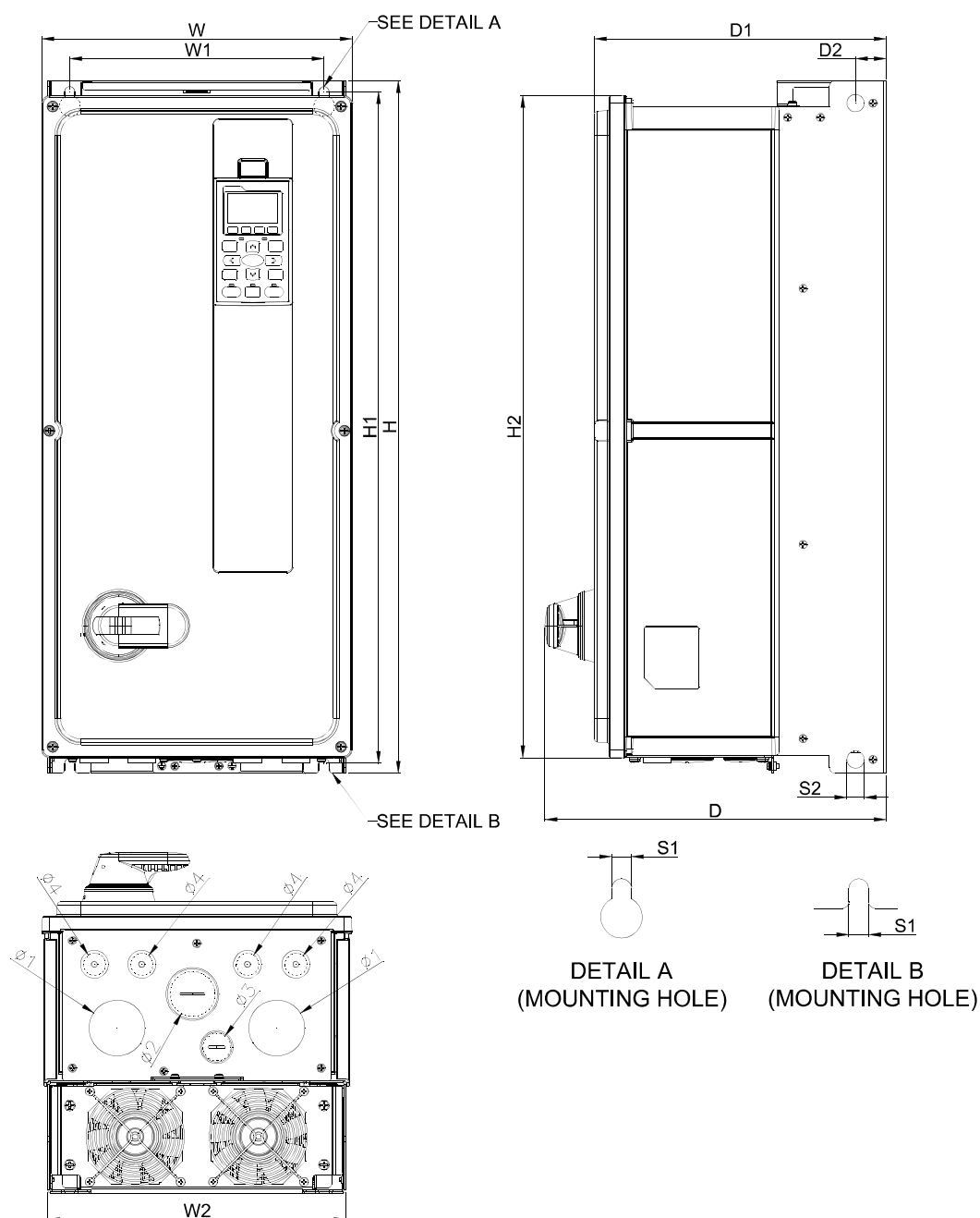
MODEL

FRAME C-1

VFD300FP4EA-52
VFD370FP4EA-52

FRAME		W	H	D	W1	H1	D1	S1	W2	H2	D2	S2	Ø1	Ø2	Ø3	Ø4
C-1	mm	282.0	630.0	-	231.0	611.0	265.0	9.0	271.0	602.5	27.8	16.0	51.0	41.0	25.4	20.3
	inch	11.10	24.80	-	9.09	24.06	10.43	0.35	10.67	23.72	1.09	0.63	2.01	1.61	1.00	0.80

FRAME C (IP55)

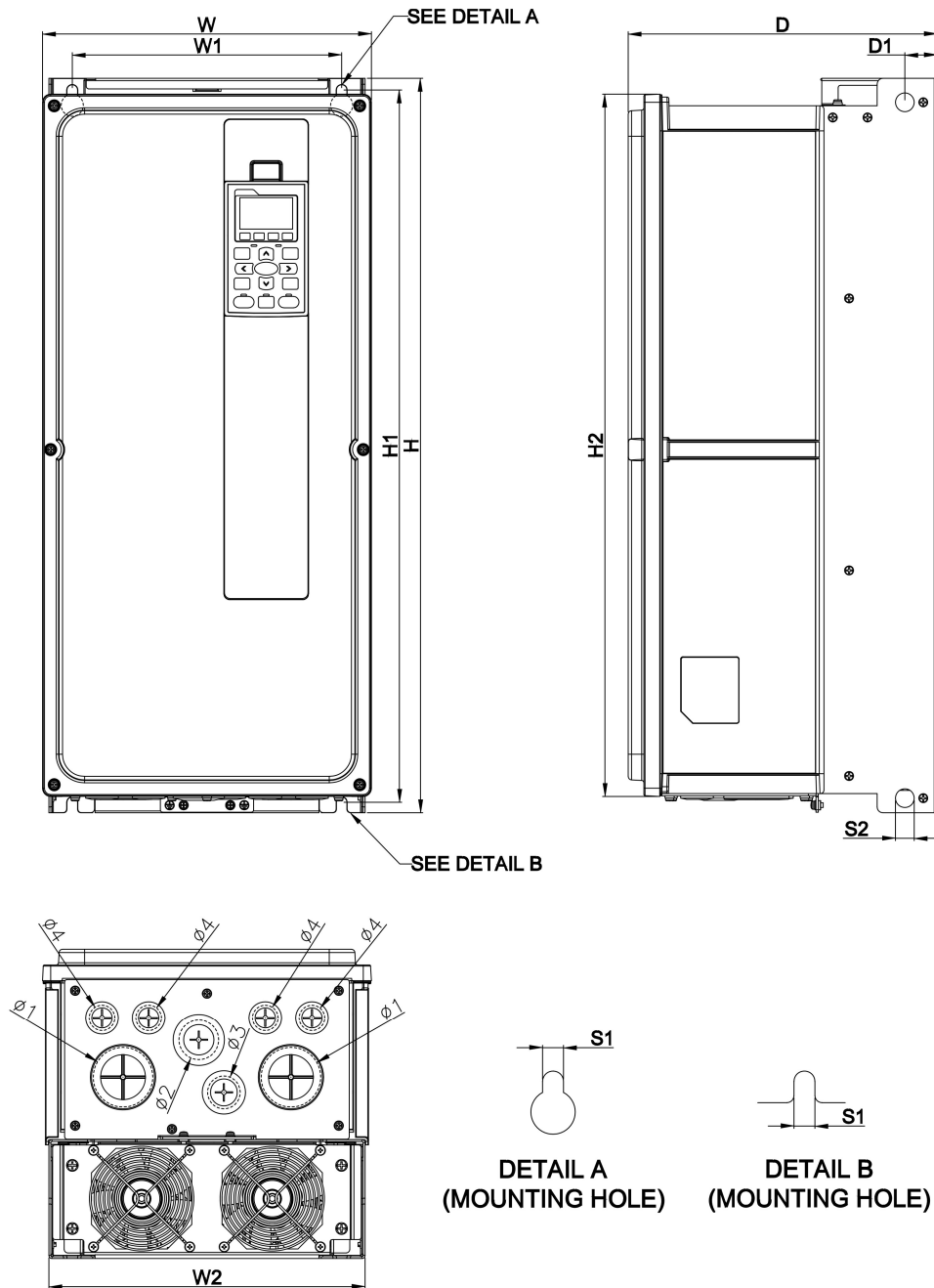


MODEL

FRAME C-2
VFD300FP4EA-52S
VFD370FP4EA-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

FRAME C (IP41)



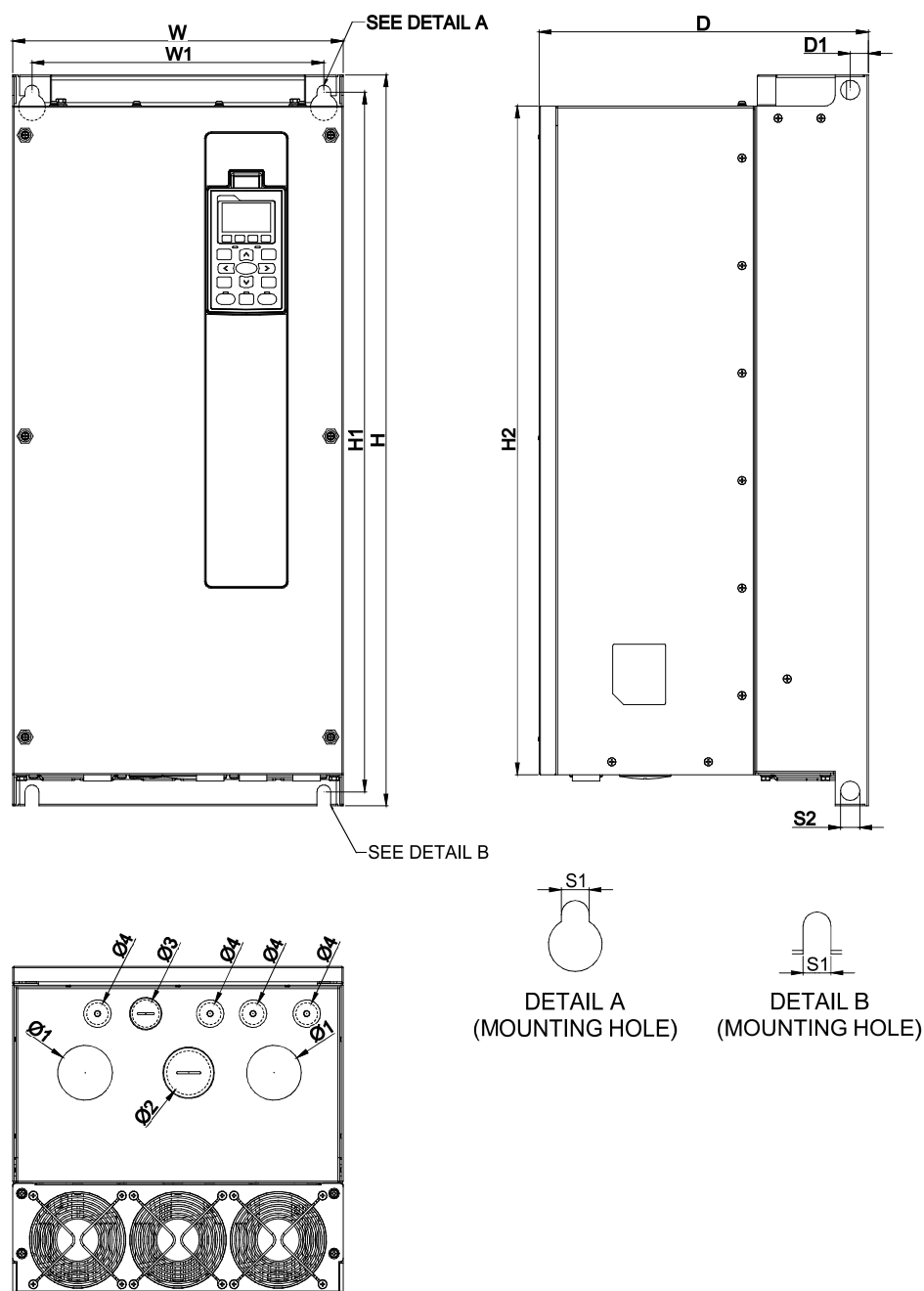
MODEL

FRAME C-3

VFD300FP4EA-41
VFD370FP4EA-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)

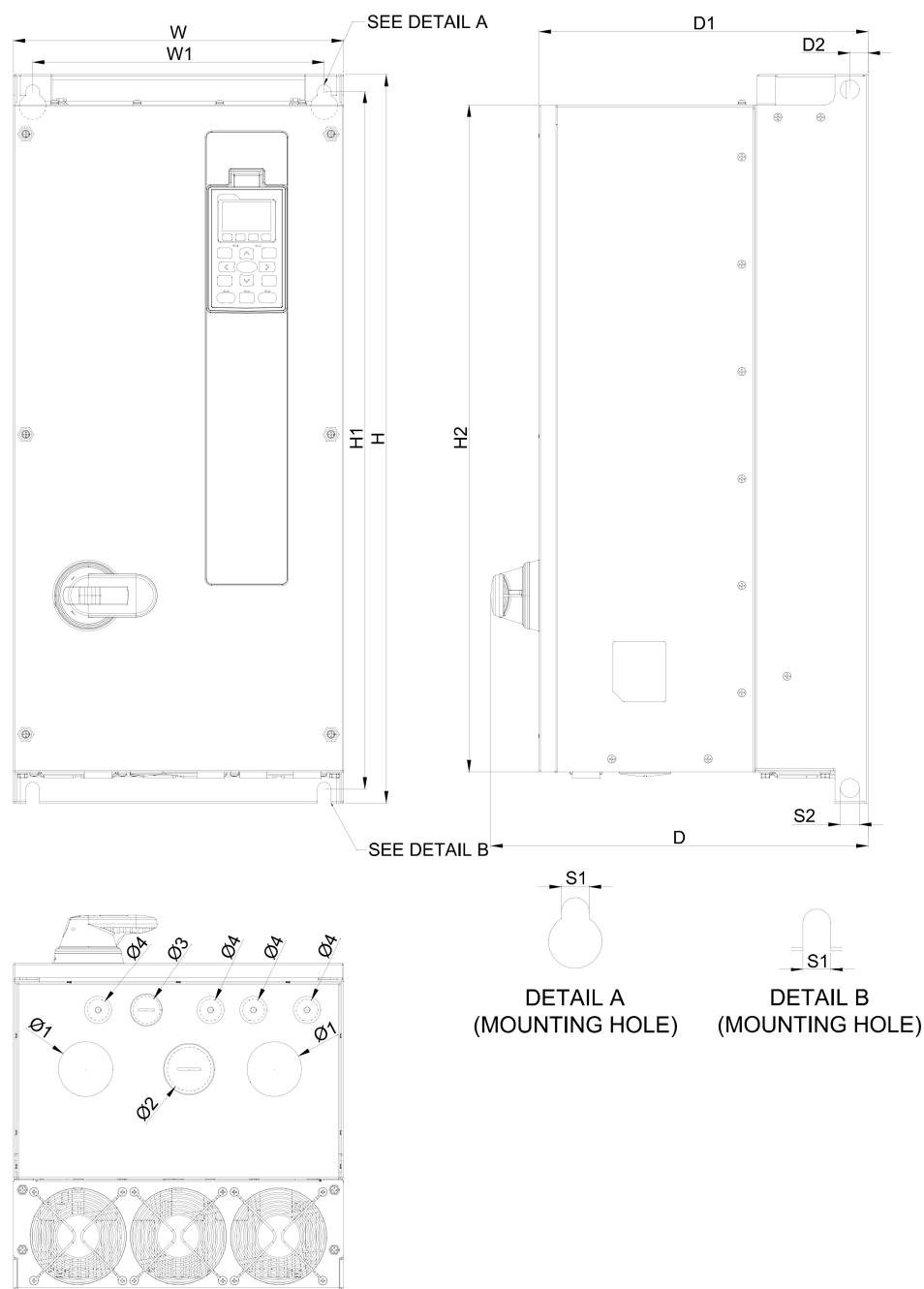


MODEL

FRAME D0-1
VFD450FP4EA-52
VFD550FP4EA-52

FRAME		W	H	D	W1	H1	D1	S1	H2	D2	S2	Ø1	Ø2	Ø3	Ø4
D0-1	mm	308.0	680.0	-	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	-	10.71	25.63	12.09	0.51	24.49	0.67	0.71	2.01	1.61	1.00	0.80

FRAME D0 (IP55)

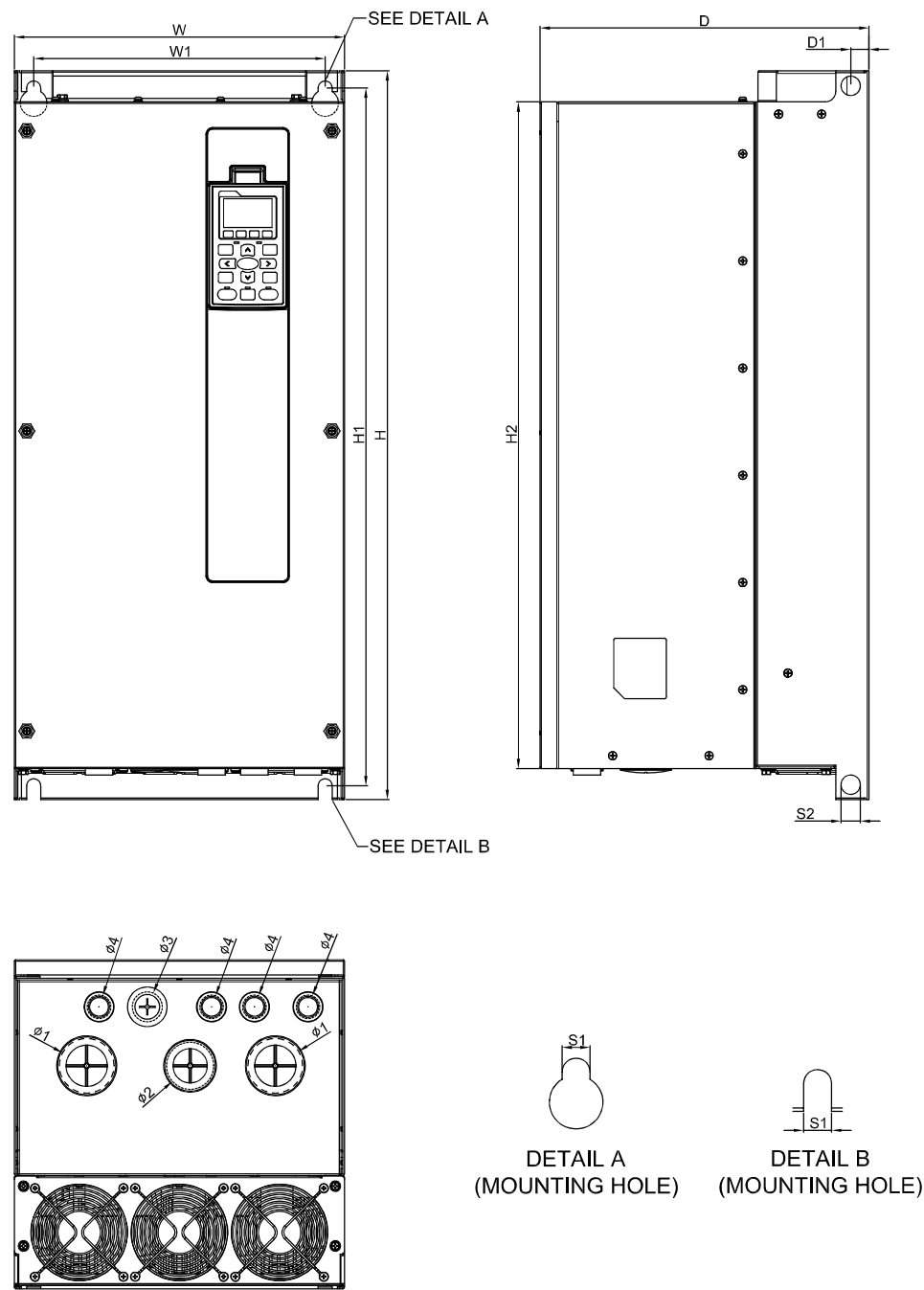


MODEL

FRAME D0-2
VFD450FP4EA-52S
VFD550FP4EA-52S

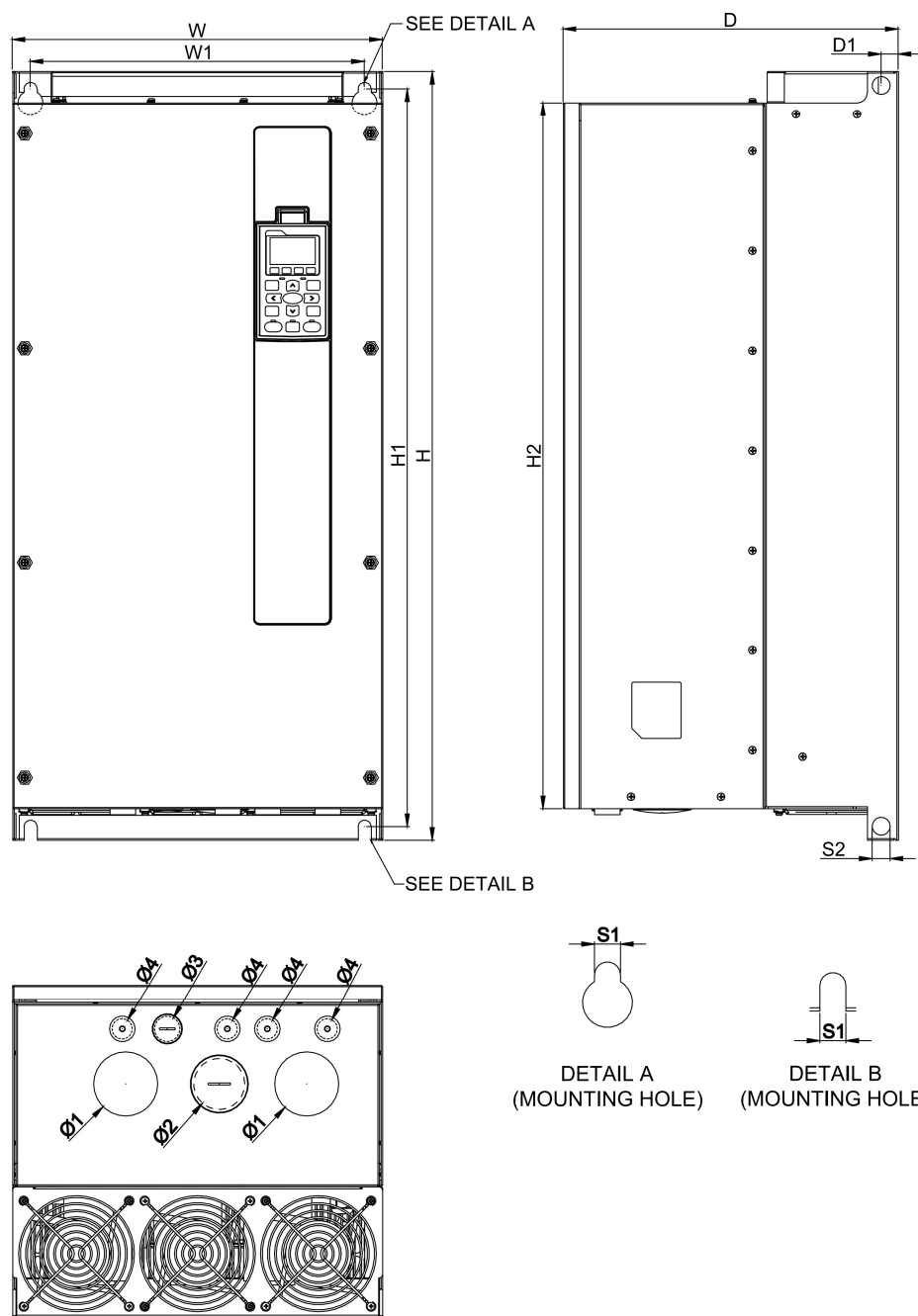
FRAME		W	H	D	W1	H1	D1	S1	H2	D2	S2	Ø1	Ø2	Ø3	Ø4
D0-2	mm	308.0	680.0	352.0	272.0	651.0	307.0	13.0	622.0	17.0	18.0	51.0	41.0	25.4	20.3
	inch	12.13	26.77	13.86	10.71	25.63	12.09	0.51	24.49	0.67	0.71	2.01	1.61	1.00	0.80

FRAME D0 (IP41)



FRAME		W	H	D	W1	H1	D1	S1	H2	D2	S2	Ø1	Ø2	Ø3	Ø4
D0-3	mm	308.0	680.0	307.0	272.0	651.0	17.0	13.0	622.0	17.0	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	0.67	0.71	2.01	1.73	1.10	0.87

FRAME D (IP55)



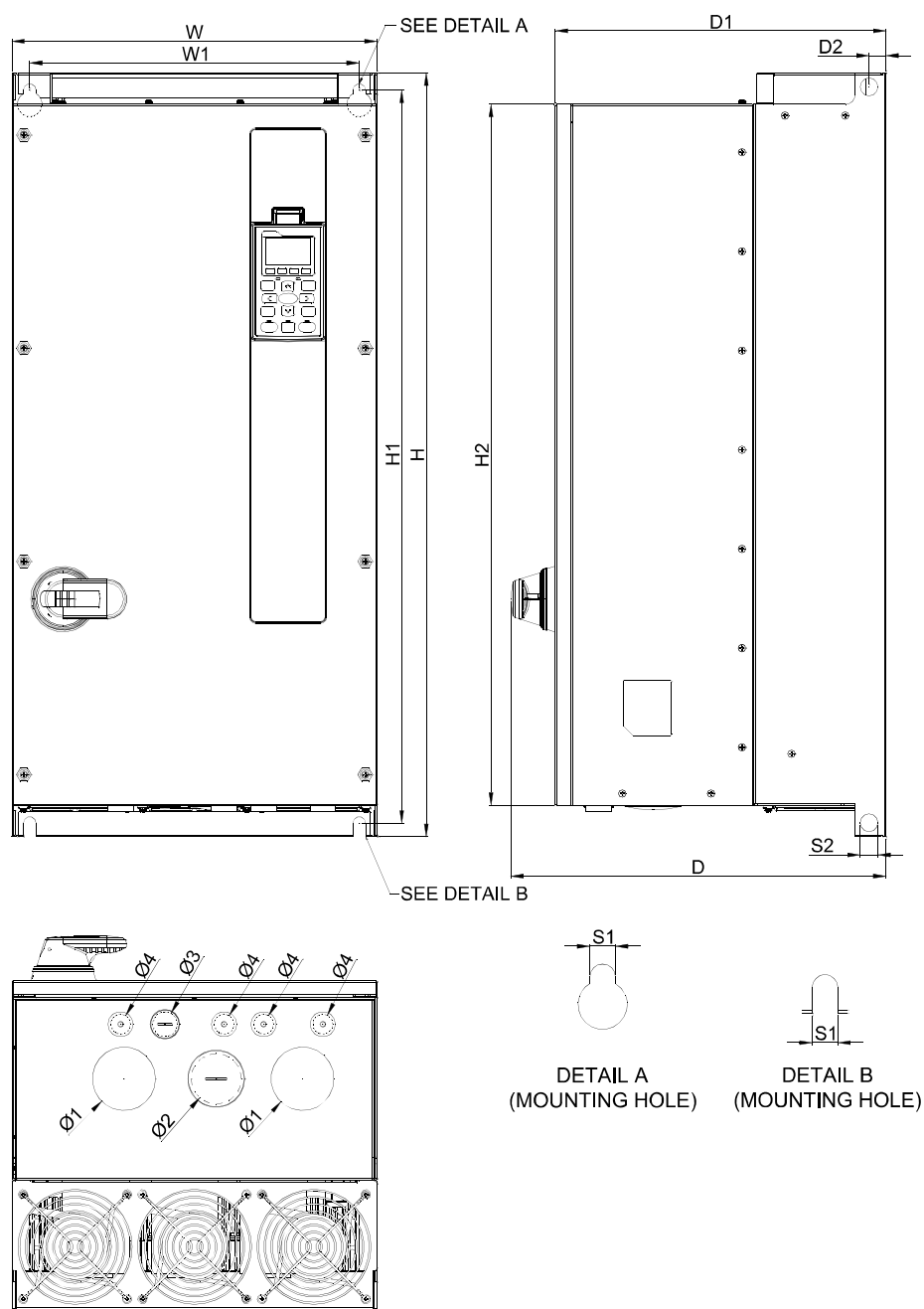
MODEL

FRAME D-1

VFD750FP4EA-52
VFD900FP4EA-52

FRAME		W	H	D	W1	H1	D1	S1	H2	D2	S2	Ø1	Ø2	Ø3	Ø4
D-1	mm	370.0	770.0	-	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	-	13.15	29.09	13.19	0.51	27.83	0.67	0.71	2.52	2.01	1.00	0.80

FRAME D (IP55)

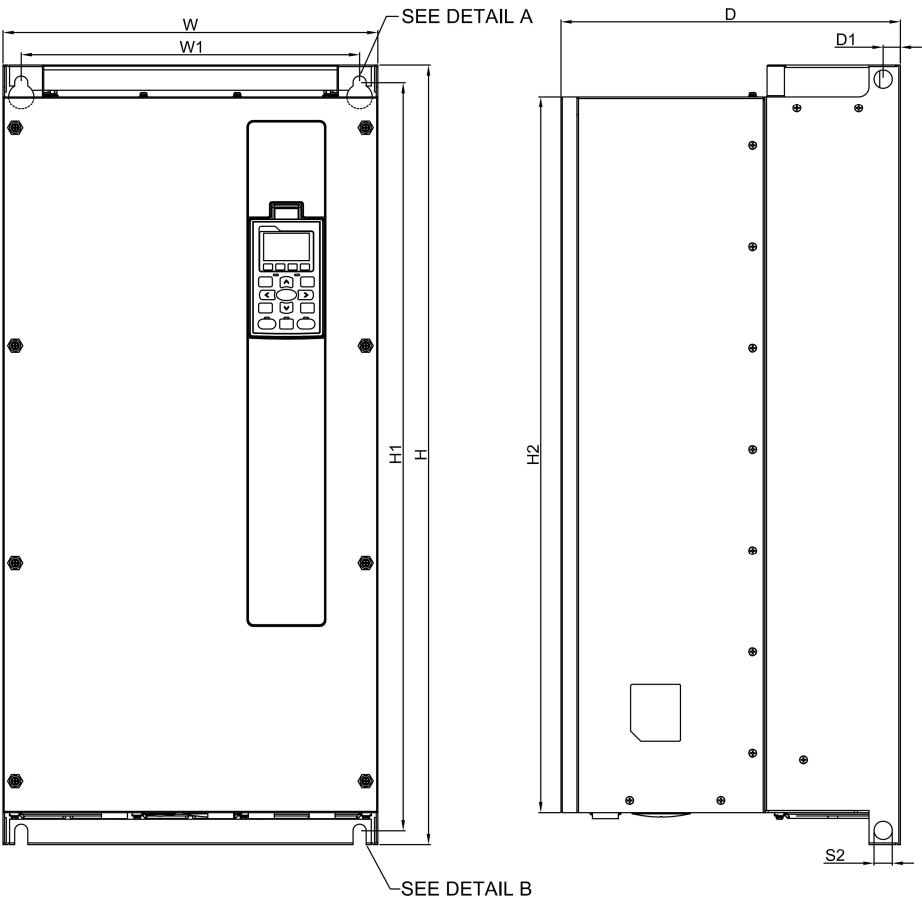


MODEL

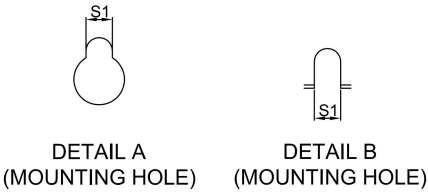
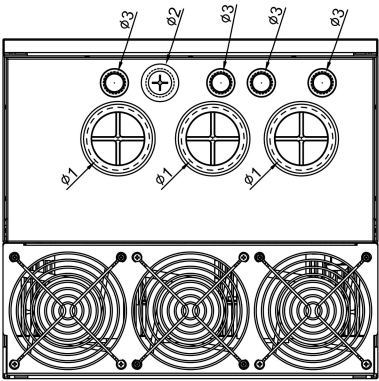
FRAME D-2
VFD750FP4EA-52S
VFD900FP4EA-52S

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

FRAME D (IP41)



MODEL	
FRAME D-3	VFD750FP4EA-41
	VFD900FP4EA-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: 3A (N.O.)/250 V _{AC} 5A (N.O.)/30 V _{DC} Inductive load (COS 0.4) 2.0A (N.O.)/250 V _{AC} 2.0A (N.O.)/30 V _{DC} It is used to output each monitor signal, such as for drive in operation, frequency attained or overload indication.

Analog I/O Extension Card

■ EMC-A22A

	Terminals	Description
	 AVI10 AVI11	Refer to Pr. 14-00~Pr. 14-01 for function selection (input), and Pr. 14-18~Pr. 14-19 for mode selection Two sets of AVI port for AVI or ACI switch: SSW3 (AVI10) and SSW4 (AVI11) AVI: Input 0~10V ACI: Input 0~20mA/4~20mA
	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 0~10.00V ACO: Output 0~20.0mA/4.0~20.0mA
	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: 10ms; OFF: 20ms

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% 200mA, 5W External power +24 V _{DC} : max. voltage 30 V _{DC} , min. voltage 19 V _{DC} , 30W ON: the activation current is 6.5mA; 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: 50mA; Max. voltage: 48 V _{DC}
	MXM	Common for multi-function output terminals MO10, MO11 (photocoupler) Max. 48 V _{DC} 50mA

Accessories

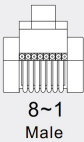
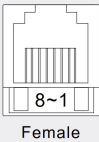
24 V Power Shift Card

■ EMC-BPS01

	Terminals	Descriptions
	24V 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: 0.5A Note: Do not connect the control terminal +24 V (Digital control signal common: SOURCE) directly to the EMC-BPS01 input terminal 24V. Do not connect control terminal GND directly to the EMC-BPS01 input terminal GND.

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 100 M
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

PROFINET Card

■ CMC-PN01 NEW



Features

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

Network Interface

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

PROFIBUS DP Card

CMC-PD01



Features

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

PROFIBUS DP Connector

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

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

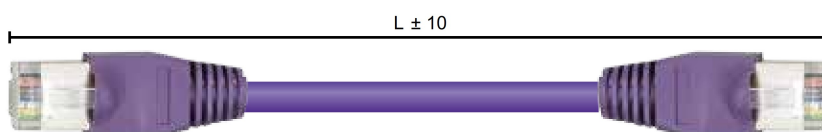
DeviceNet Connector

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



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

FRAME	Power Range	IP55 NEMA12 w/o Mains Switch	IP55 NEMA12 with Mains Switch	IP41 NEMA1
A	0.75	VFD007FP4EA-52	VFD007FP4EA-52S	VFD007FP4EA-41
	1.5	VFD015FP4EA-52	VFD015FP4EA-52S	VFD015FP4EA-41
	2.2	VFD022FP4EA-52	VFD022FP4EA-52S	VFD022FP4EA-41
	3.7	VFD037FP4EA-52	VFD037FP4EA-52S	VFD037FP4EA-41
	4	VFD040FP4EA-52	VFD040FP4EA-52S	VFD040FP4EA-41
	5.5	VFD055FP4EA-52	VFD055FP4EA-52S	VFD055FP4EA-41
	7.5	VFD075FP4EA-52	VFD075FP4EA-52S	VFD075FP4EA-41
B	11	VFD110FP4EA-52	VFD110FP4EA-52S	VFD110FP4EA-41
	15	VFD150FP4EA-52	VFD150FP4EA-52S	VFD150FP4EA-41
	18.5	VFD185FP4EA-52	VFD185FP4EA-52S	VFD185FP4EA-41
	22	VFD220FP4EA-52	VFD220FP4EA-52S	VFD220FP4EA-41
C	30	VFD300FP4EA-52	VFD300FP4EA-52S	VFD300FP4EA-41
	37	VFD370FP4EA-52	VFD370FP4EA-52S	VFD370FP4EA-41
D0	45	VFD450FP4EA-52	VFD450FP4EA-52S	VFD450FP4EA-41
	55	VFD550FP4EA-52	VFD550FP4EA-52S	VFD550FP4EA-41
D	75	VFD750FP4EA-52	VFD750FP4EA-52S	VFD750FP4EA-41
	90	VFD900FP4EA-52	VFD900FP4EA-52S	VFD900FP4EA-41

Model Name

