Automation for a Changing World

Delta IP55 Fan and Pump Drive CFP2000 Series

www.deltaww.com

DELTA

Smarter. Greener. Together.

CFP2000

Delta's CFP2000 series is an AC motor drive specially designed for HVAC, fans & pumps, a IP55 enclosure to provide effective protection from dust and other particles and to offer a many outstanding features and built-in functions that reduce setup and tuning time in ope

The CFP2000 is equipped with a built-in EMC filter and a DC choke. This design replaces t space for other devices, while providing the benefits of harmonic suppression and better are also included, which allow you to simply select the needed application in the paramete safety standard is required, an optional main switch function is also available upon select IM/PM motors, real time clock, built-in 10k steps PLC capacity and various optional extens needs into one drive, it is your friendliest and smartest choice available in the industry.

and water treatment applications. It is designed with an
good level of protection to water. In addition, it includes
eration and provide higher efficiency.

he need for an electrical distribution cabinet and saves
power quality to the system. Various parameter groups
er group setting and the system setup is ready. If a higher
ion. Other outstanding features include support for both
sion cards. The CFP2000 series integrates all of your

Index

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

IM motor

PM motor

▶ Overload ability

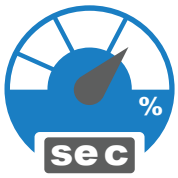
Light duty:

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

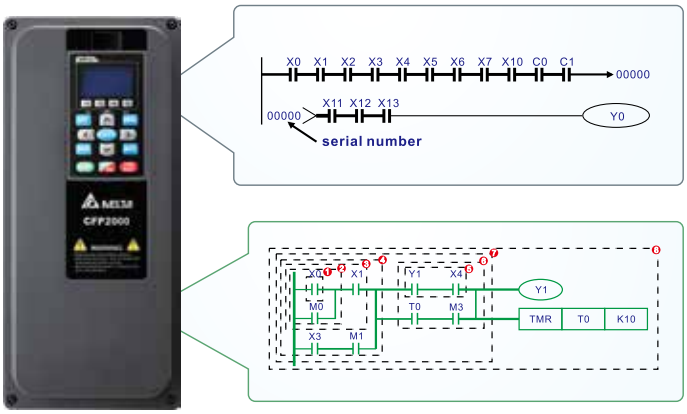
- Quick setting for frequent use modes and facilitates the installation process
- Multi-row display, Intuitive operation, user friendly operation interface
- Parameter management and copy
- Real time clock
- Multi-language: English, Spanish, Portuguese, French, Russian, Turkish, Polish
- TP Editor for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

Create homepage logo

Editable message display

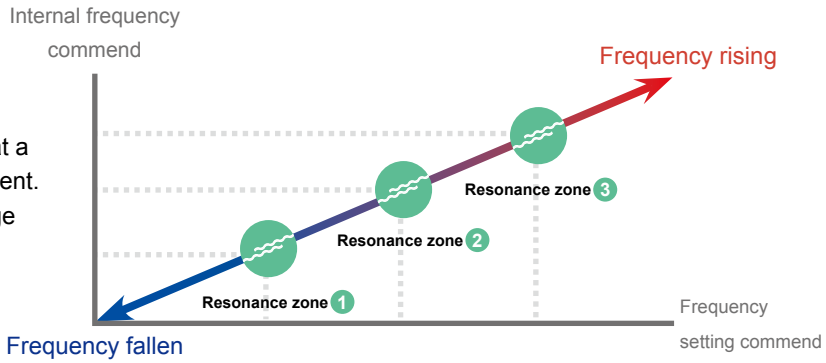
Built-in PLC Function

- Built-in 10 k 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

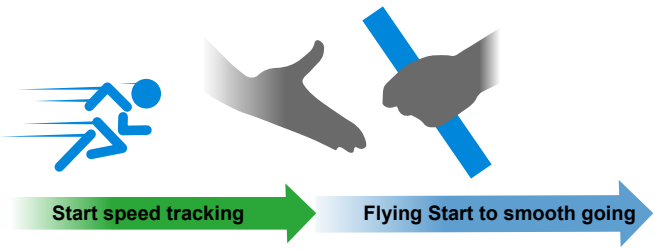


Fire Mode

- 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

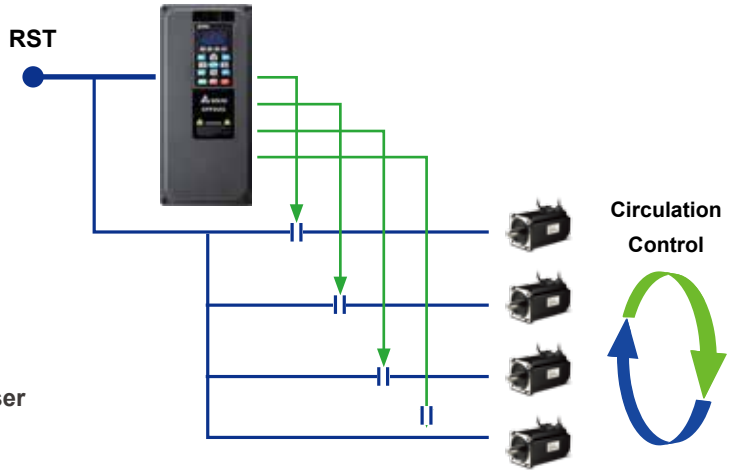


▶ Multi-pumps control

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 network functions

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

EtherNet/IP, DeviceNet, MODBUS TCP, CANopen (DS402)

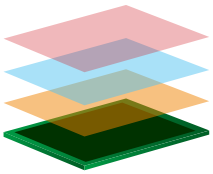
Operating Environment

Enhanced PCB coating

Standard:

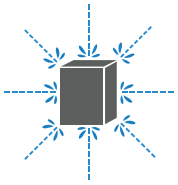
IEC 60721-3-3 class 3C3

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

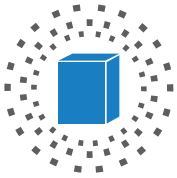


Protection class

IP55 NEMA12, IP41 NEMA1



Water Resistant

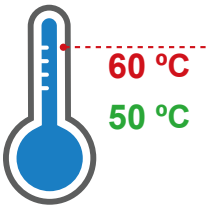


Dust Resistant

Operation temperature

Up to **50 ºC** without derating

Up to **60 ºC** with derating

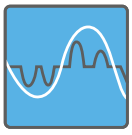


Built-in DC choke

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**

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/cm^2 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 ~ 1,000 m, follow normal operation restrictions. For every 100 m 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 2,000 m, 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; 11 ms; Frame D: Max 15G; 11 ms	
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	OperationTemperature
VFDxxxFPxxx-52	Frame A ~ D: 0.75 ~ 90 kW	IP55/NEMA12	-10 °C ~ 50 °C*
VFDxxxFPxxx-41	Frame A ~ D: 0.75 ~ 90 kW	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 4)	
	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 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	3.0	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 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 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.**

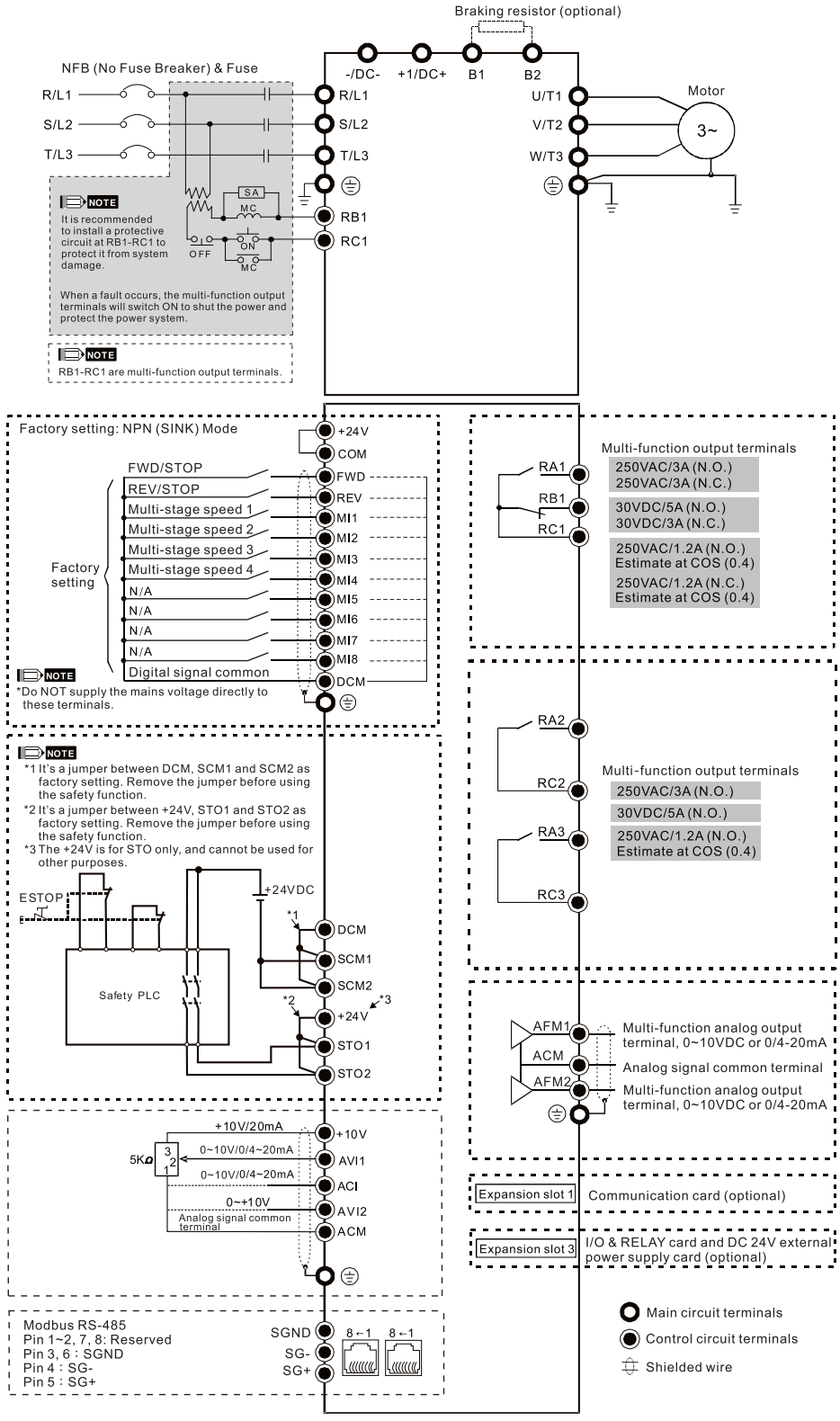
General Specifications

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	5 Hz
	Torque Limit	Light Duty: Max. 130% torque current; Normal Duty: Max. 160% torque current
	Torque Accuracy	±5%
	Max. Output Frequency	599.00 Hz
	Frequency Output Accuracy	Digital command: ±0.01%, -10ºC ~ +40ºC; Analog command: ±0.1%, 25ºC±10ºC
	Output Frequency Resolution	Digital command: 0.01 Hz; Analog command: Max. output frequency x 0.03 / 60 Hz (±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 ~ +10 V, 4 ~ 20 mA, 0 ~ 20 mA, 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, MODOBUS communication (RS-485 RJ45, max. 5.2 Kbps)
	Fan Control	VFD300FP4E and above are PWM control VFD220FP4E and below are on / off switch 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	Drive will stop when DC-BUS voltage exceeds 820 V
	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

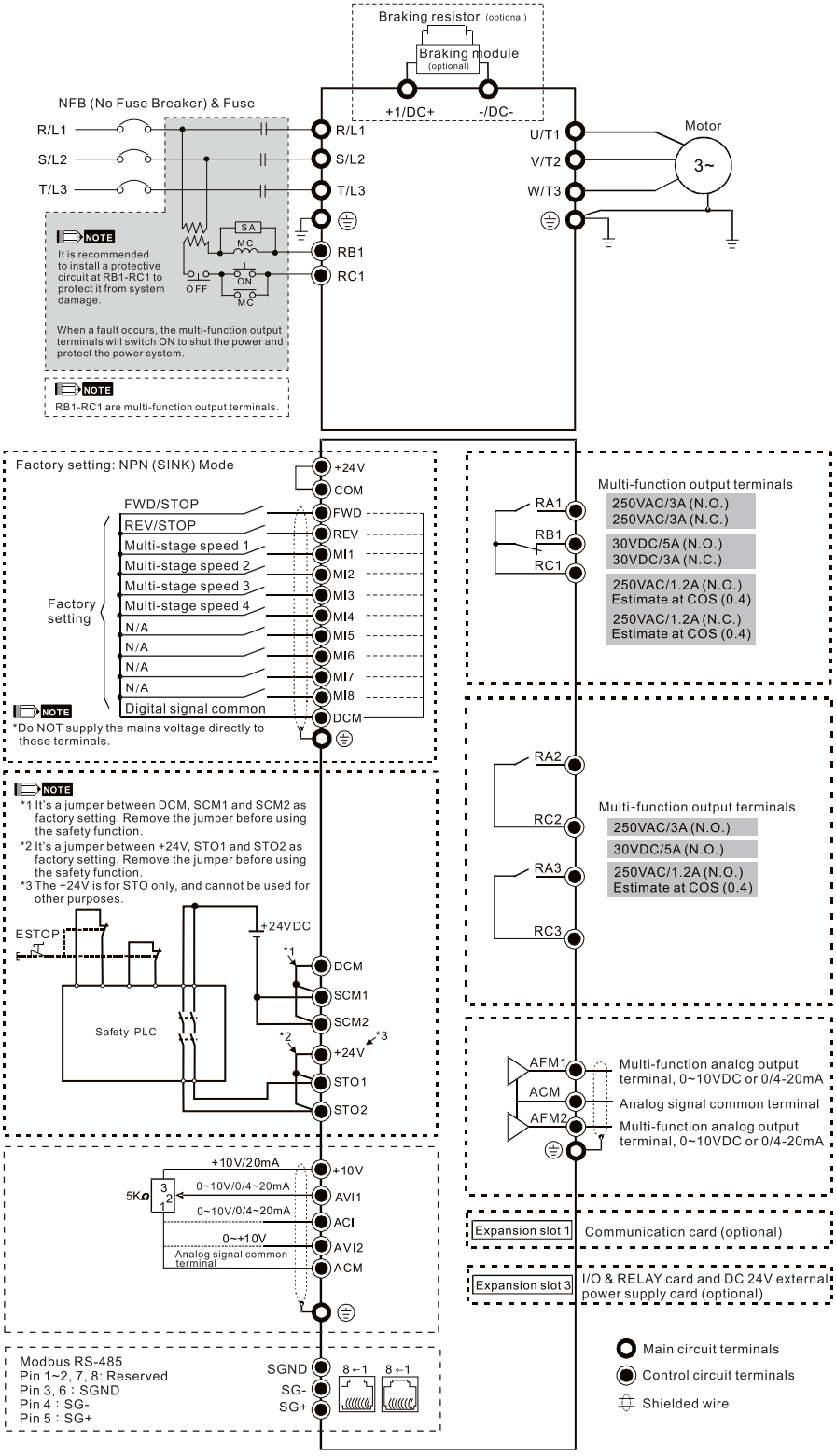
Wiring Diagram for Frame A ~ C

*Input: 3-phase power



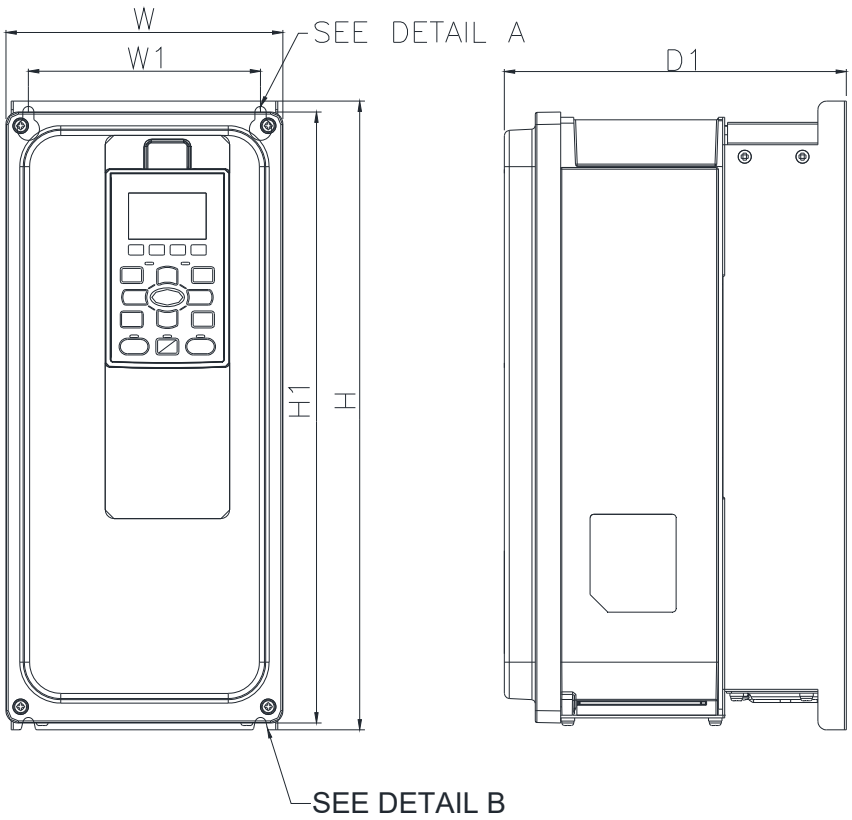
Wiring Diagram for Frame D0 ~ D

*Input: 3-phase power



Dimensions

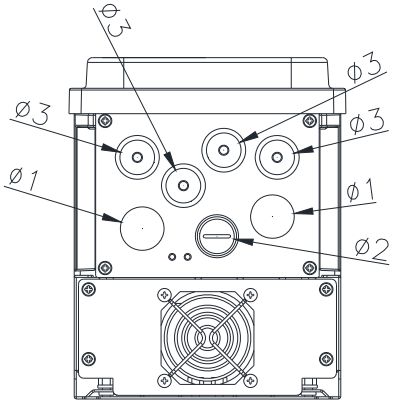
FRAME A (IP55)

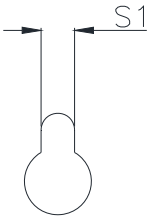


MODEL

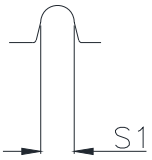
FRAME A-1

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





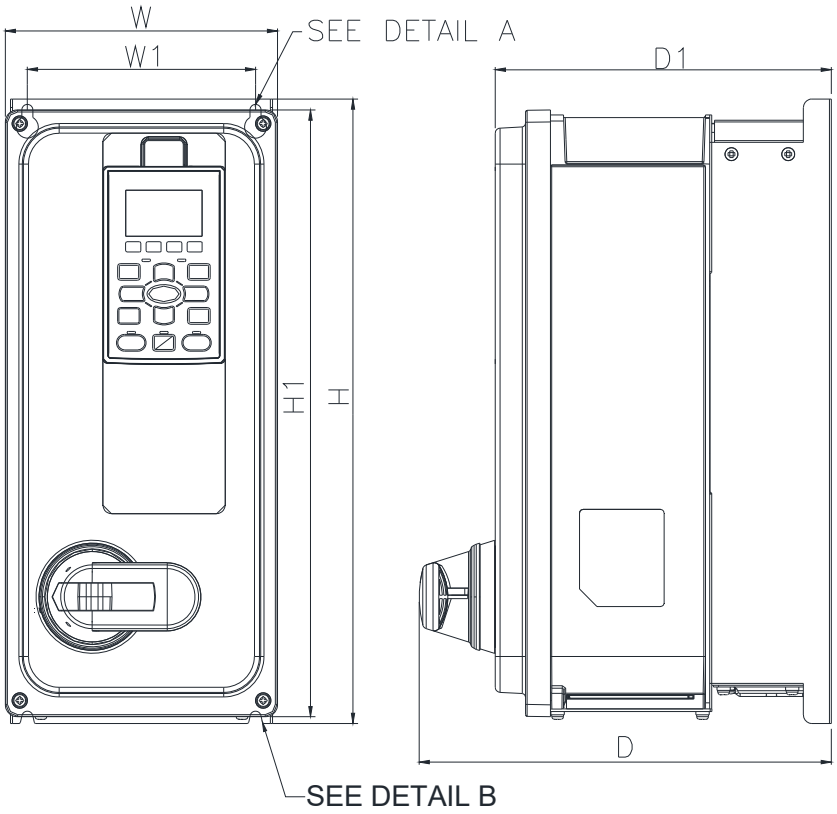
DETAIL A
(MOUNTING HOLE)

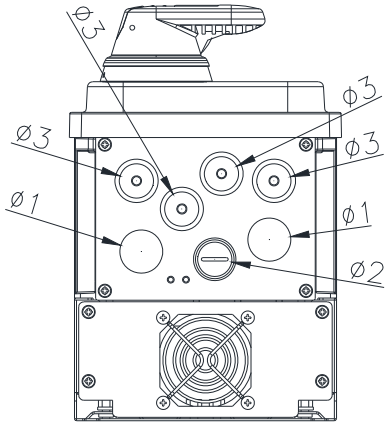


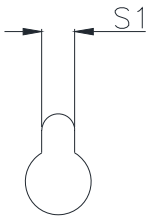
DETAIL B
(MOUNTING HOLE)

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

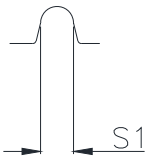
FRAME A (IP55)







DETAIL A
(MOUNTING HOLE)



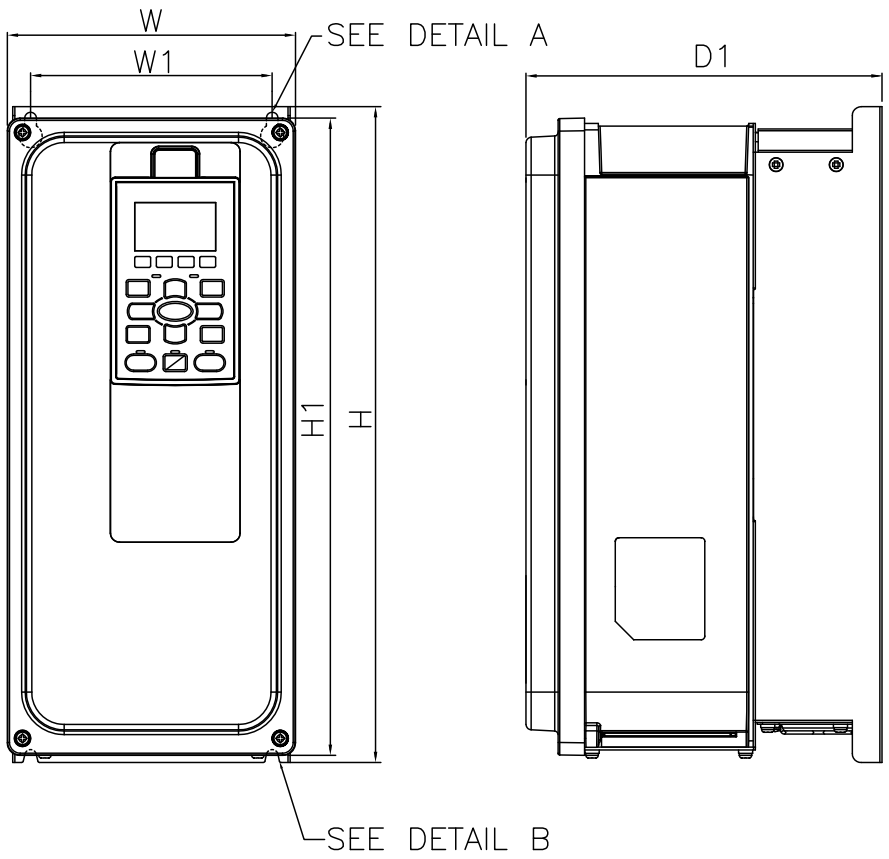
DETAIL B
(MOUNTING HOLE)

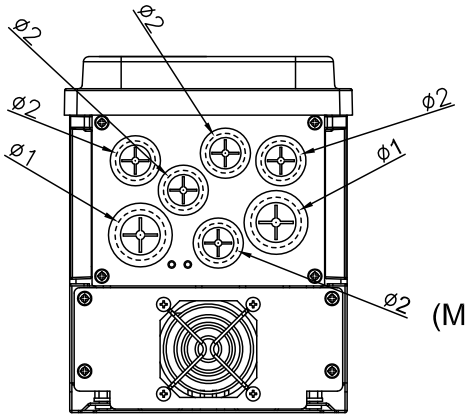
MODEL

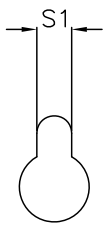
FRAME A-2
VFD007FP4EA-52S
VFD015FP4EA-52S
VFD022FP4EA-52S
VFD037FP4EA-52S
VFD040FP4EA-52S
VFD055FP4EA-52S
VFD075FP4EA-52S

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

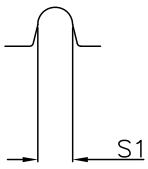
FRAME A (IP41)







DETAIL A
(MOUNTING HOLE)



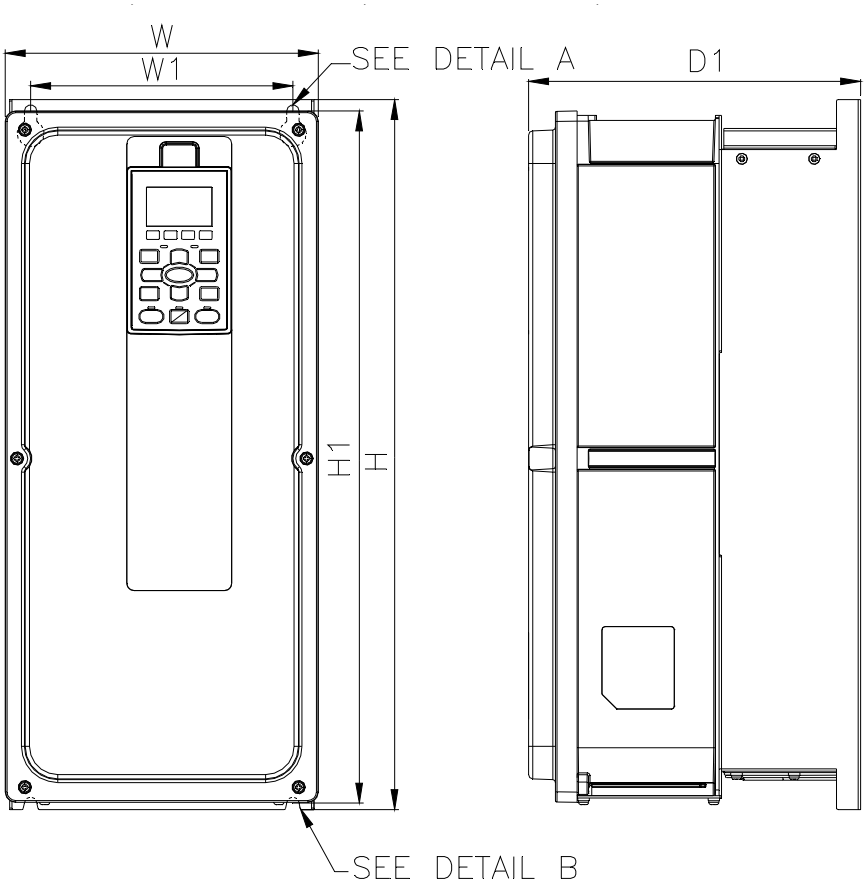
DETAIL B
(MOUNTING HOLE)

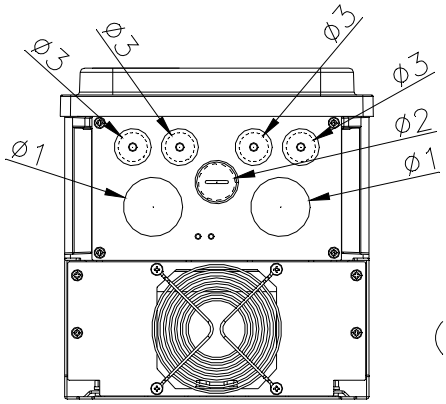
MODEL

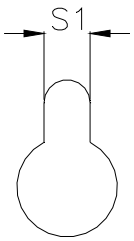
FRAME A-3
VFD007FP4EA-41
VFD015FP4EA-41
VFD022FP4EA-41
VFD037FP4EA-41
VFD040FP4EA-41
VFD055FP4EA-41
VFD075FP4EA-41

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

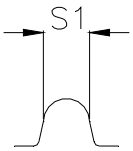
FRAME B (IP55)







DETAIL A
(MOUNTING HOLE)



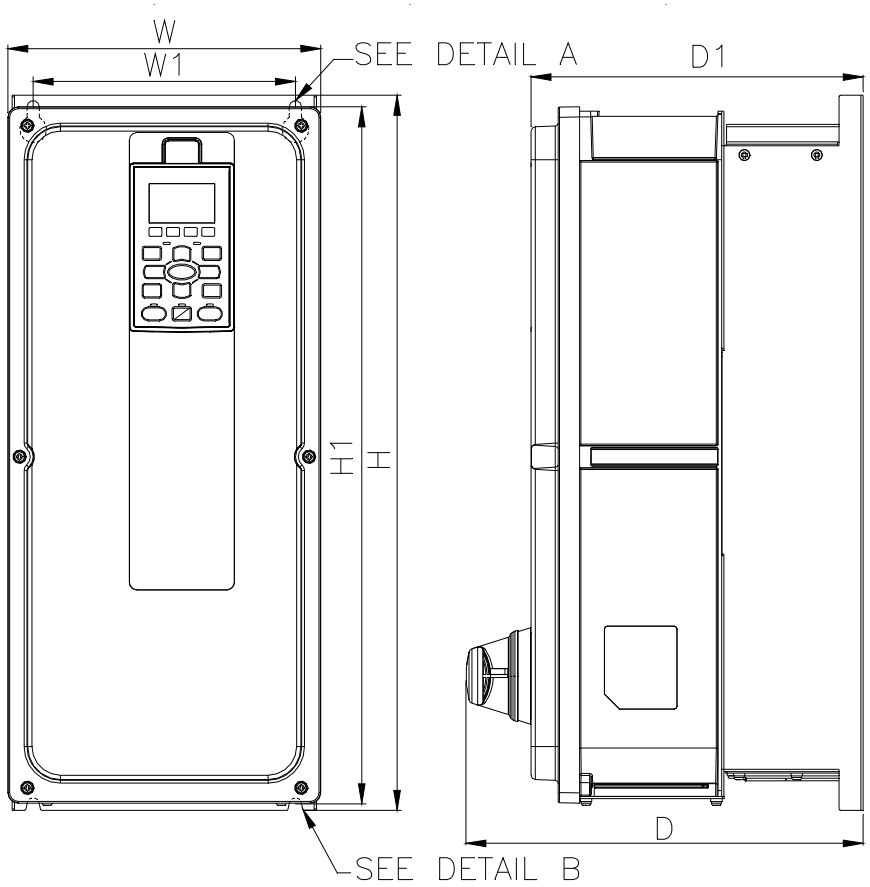
DETAIL B
(MOUNTING HOLE)

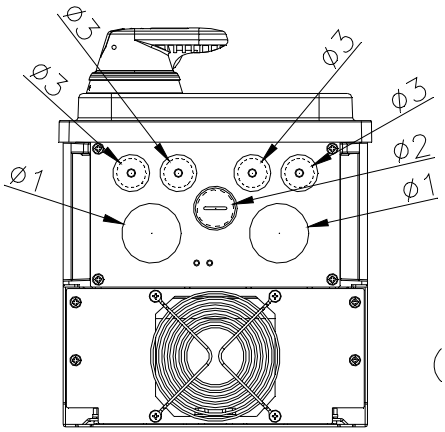
MODEL

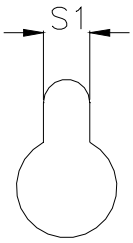
FRAME B-1
VFD110FP4EA-52
VFD150FP4EA-52
VFD185FP4EA-52
VFD220FP4EA-52

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

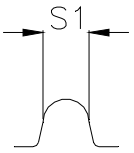
FRAME B (IP55)







DETAIL A
(MOUNTING HOLE)



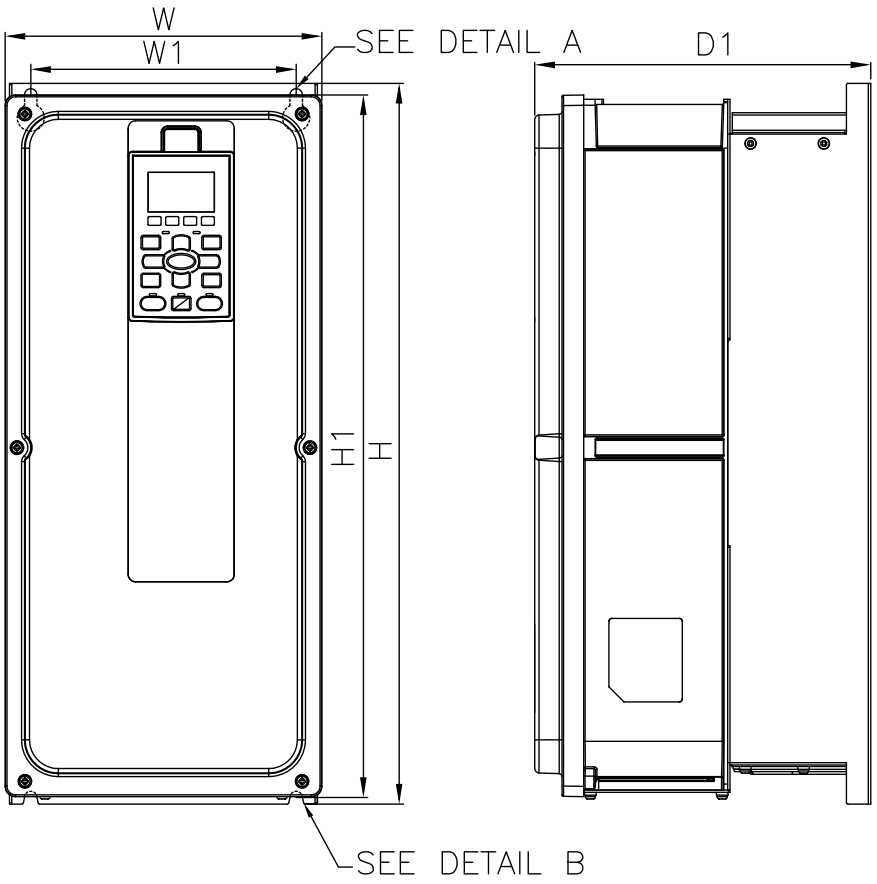
DETAIL B
(MOUNTING HOLE)

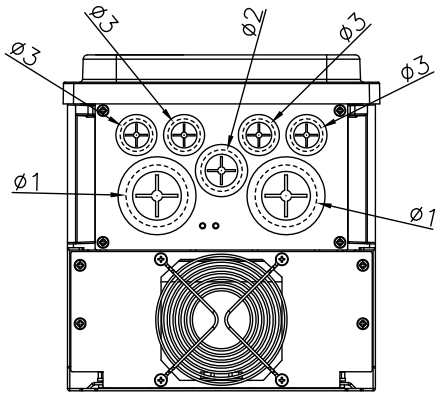
MODEL

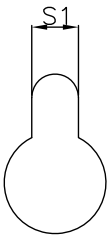
FRAME B-2
VFD110FP4EA-52S
VFD150FP4EA-52S
VFD185FP4EA-52S
VFD220FP4EA-52S

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

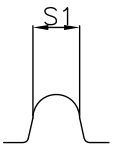
FRAME B (IP41)







DETAIL A
(MOUNTING HOLE)



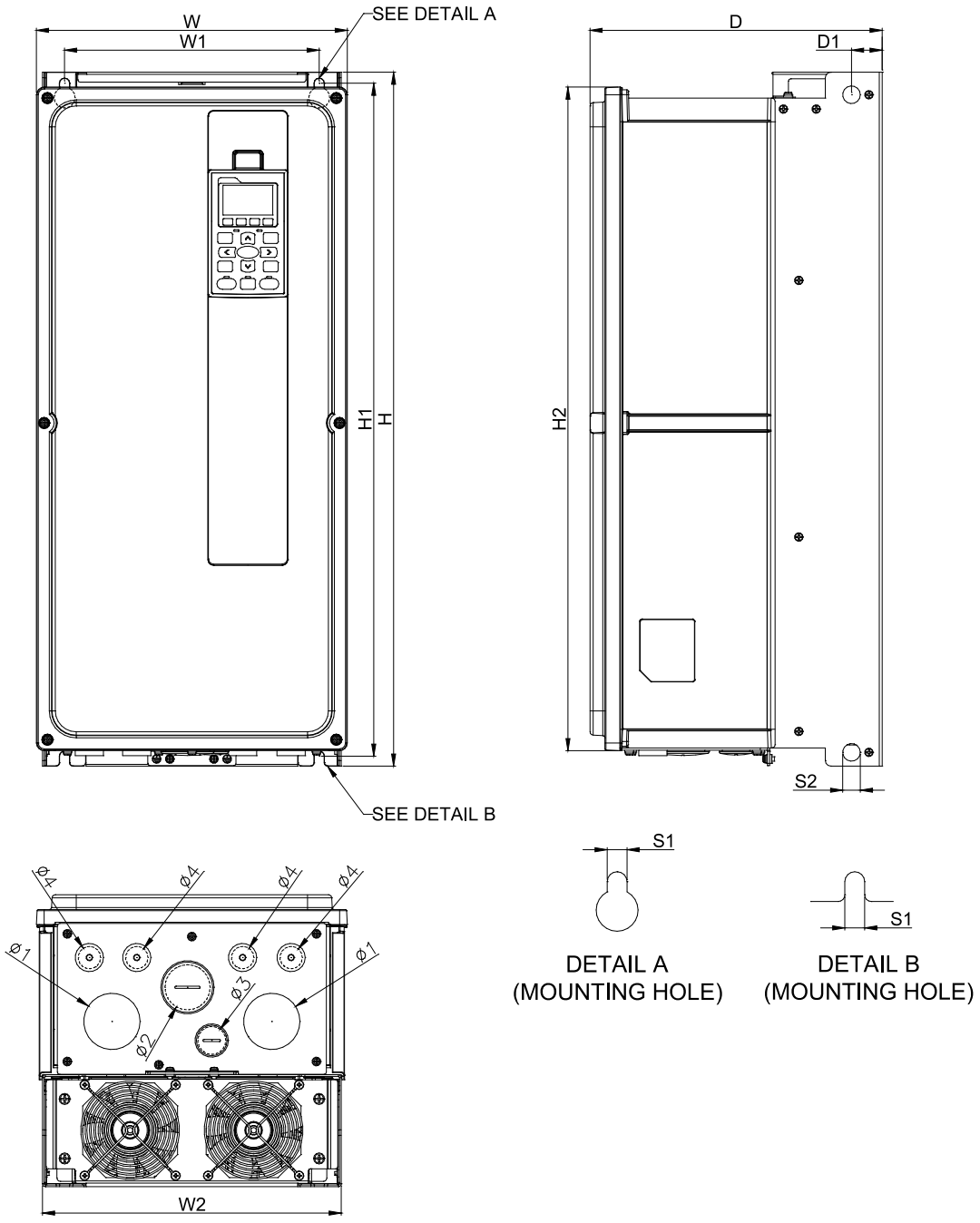
DETAIL B
(MOUNTING HOLE)

MODEL

FRAME B-3
VFD110FP4EA-41
VFD150FP4EA-41
VFD185FP4EA-41
VFD220FP4EA-41

FRAME		W	H	D	W1	H1	D1	S1	Ø1	Ø2	Ø3
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)

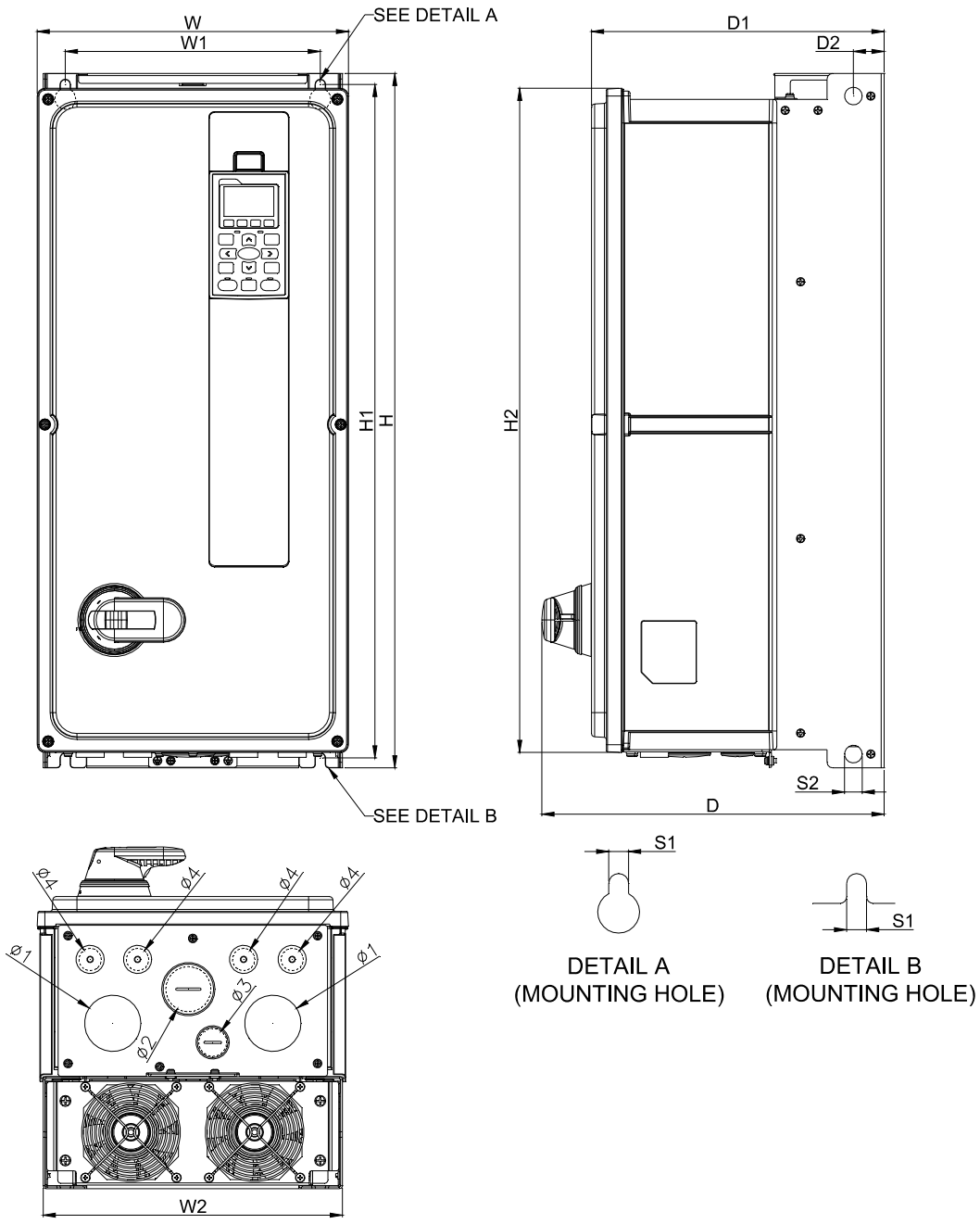


MODEL

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)

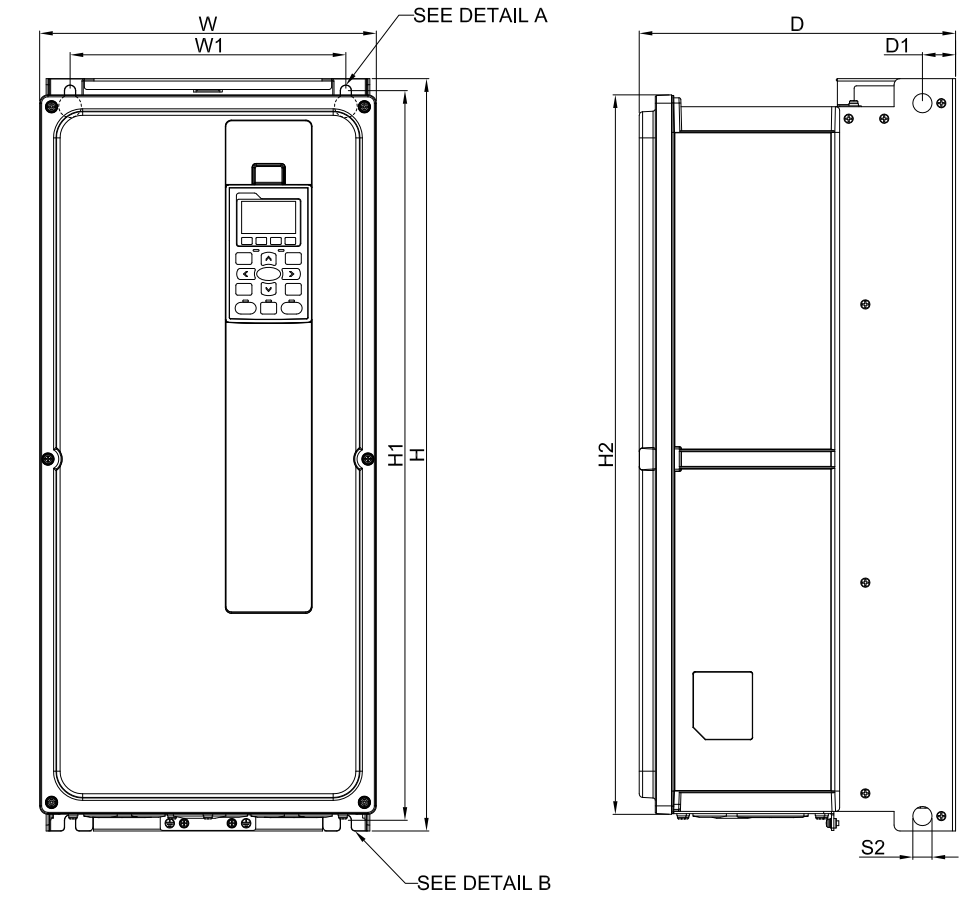


MODEL

FRAME C-2
VFD300FP4EA-52S
VFD370FP4EA-52S

FRAME		W	H	D	W1	H1	D1	S1	W2	H2	D2	S2	Ø1	Ø2	Ø3	Ø4
C-2	mm	282.0	630.0	310.0	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	12.20	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 (IP41)

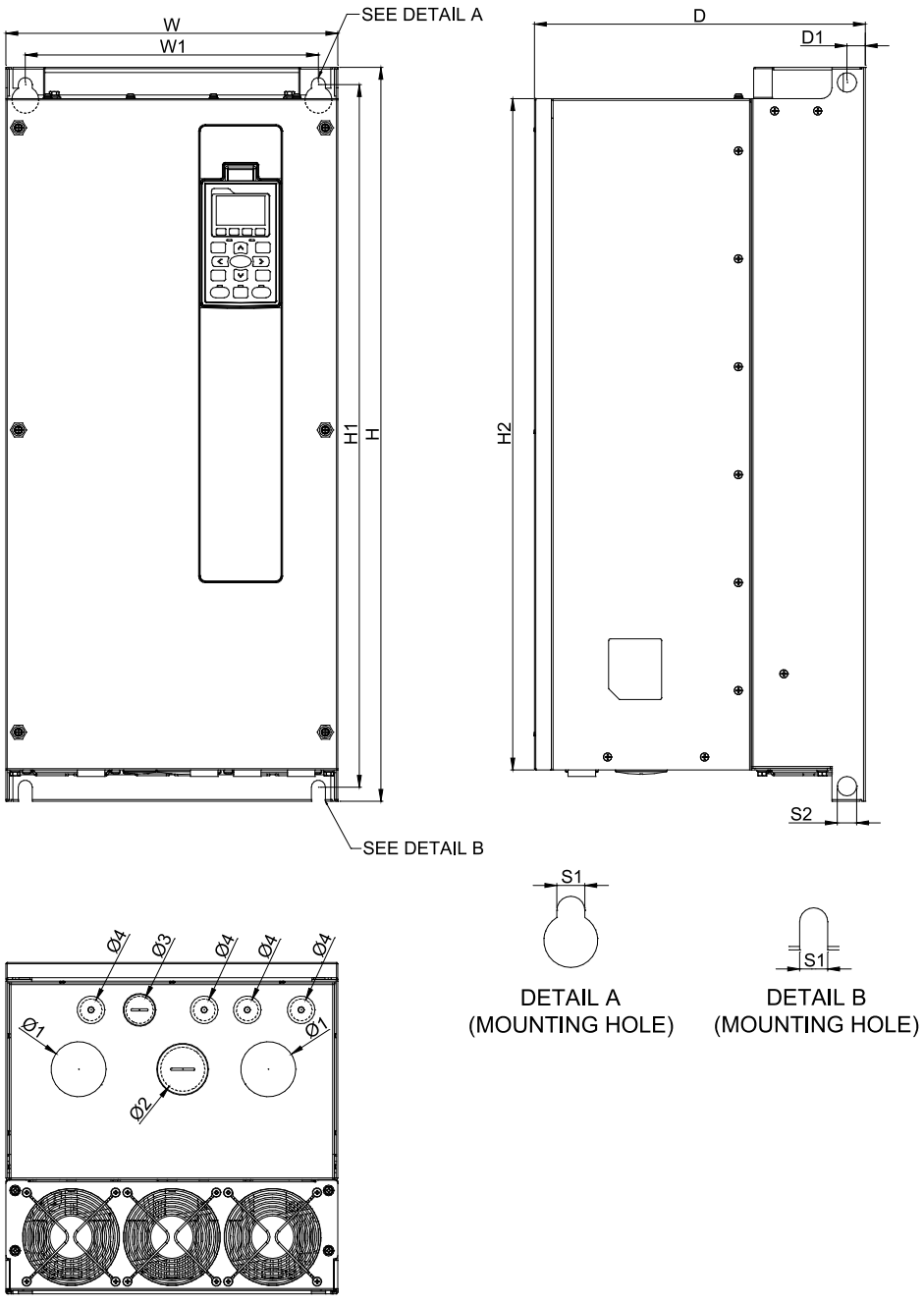


MODEL

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)

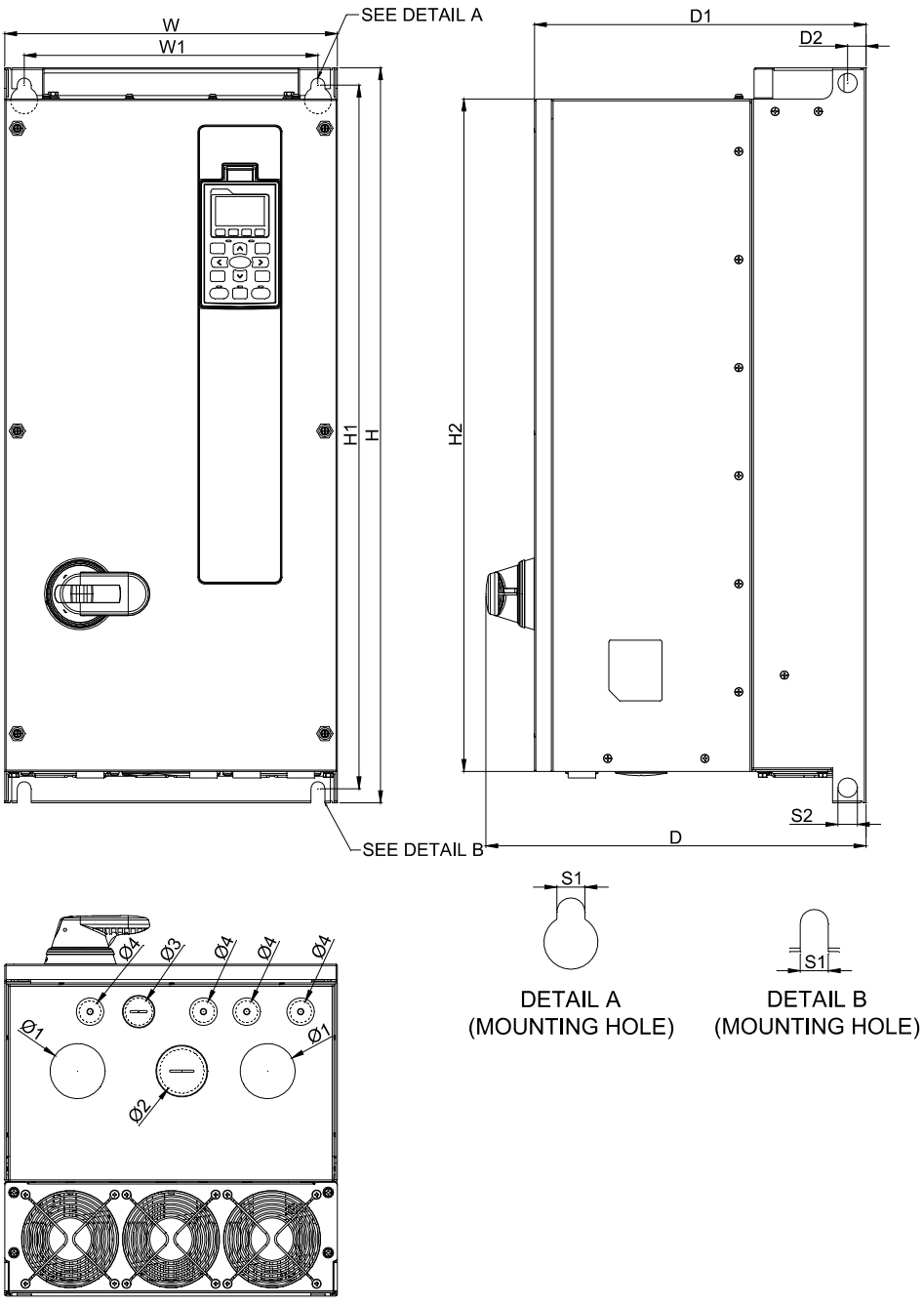


MODEL

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)

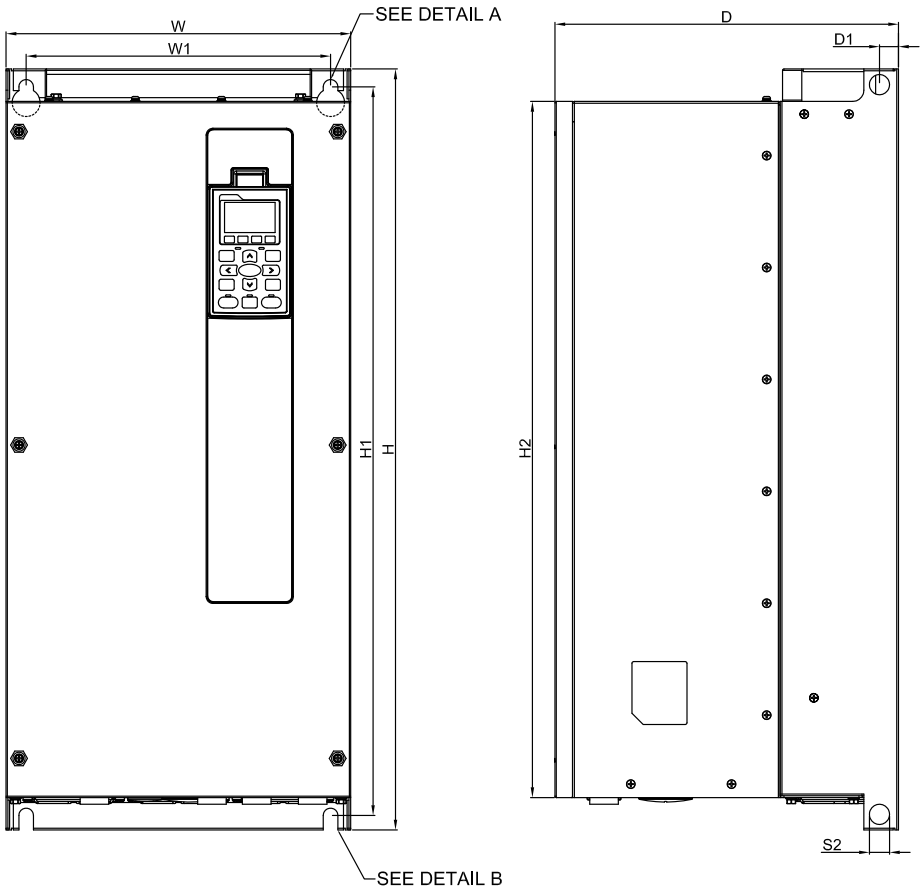


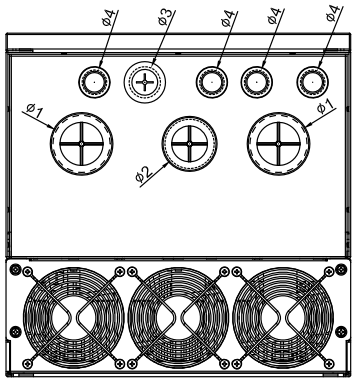
MODEL

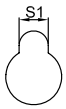
FRAME D0-2
VFD450FP4EA-52S
VFD550FP4EA-52S

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)







DETAIL A
(MOUNTING HOLE)

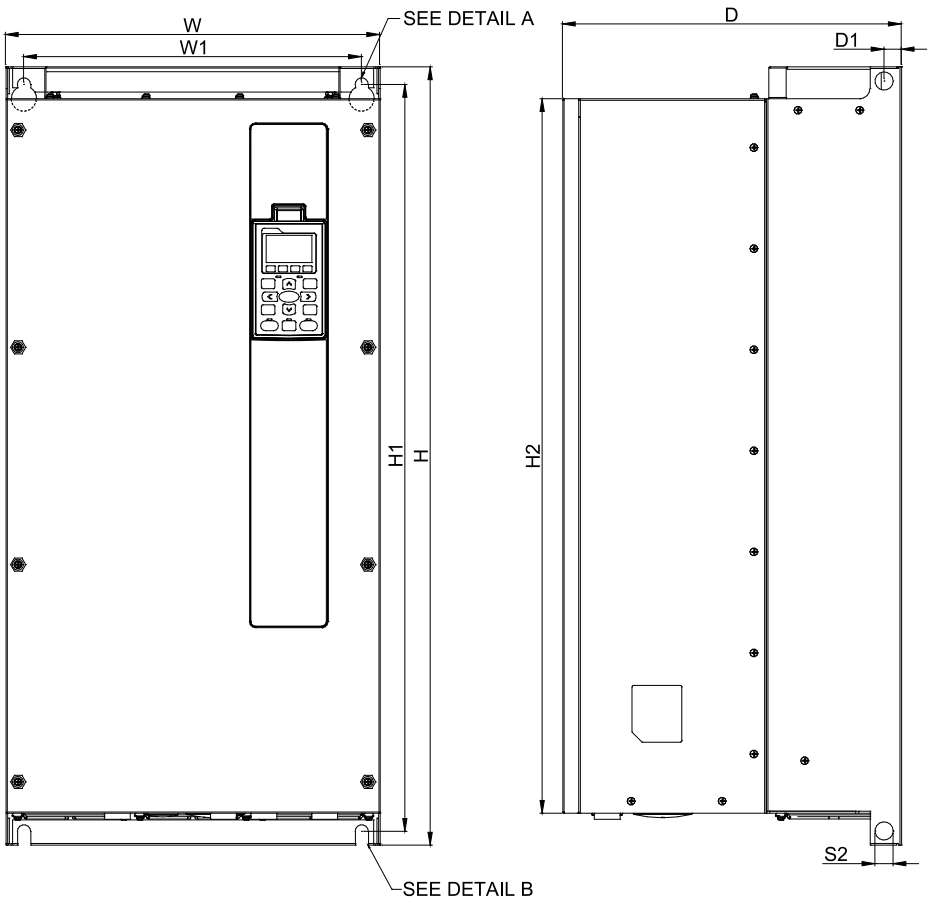
DETAIL B
(MOUNTING HOLE)

MODEL

FRAME D0-3
VFD750FP4EA-41
VFD900FP4EA-41

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)

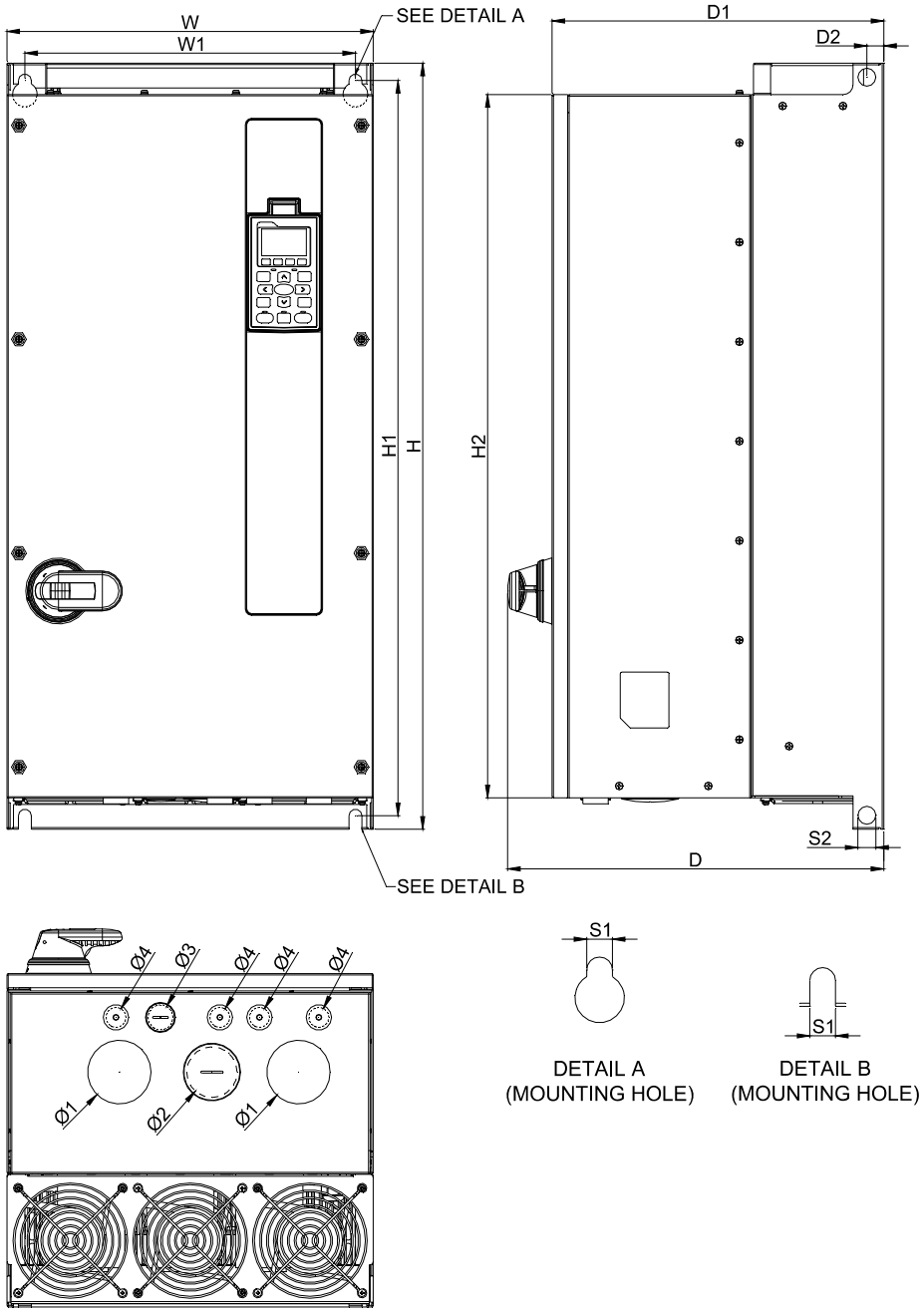


MODEL

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)

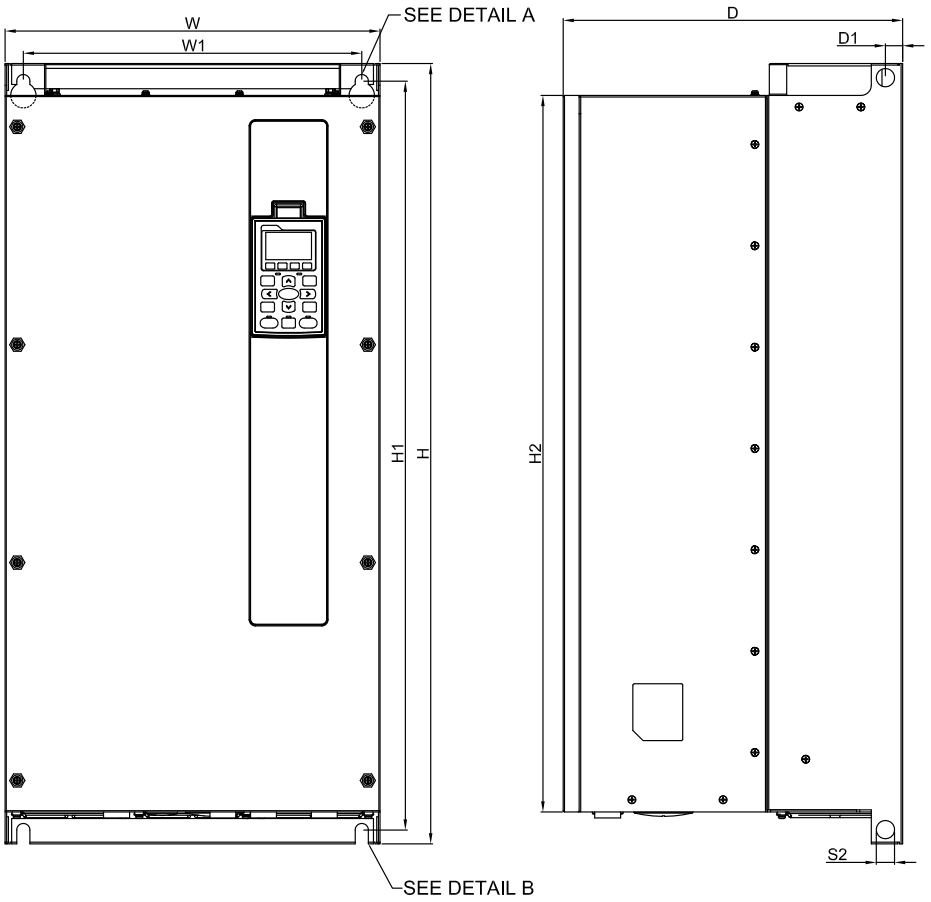


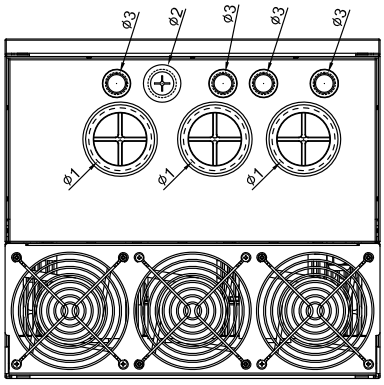
MODEL

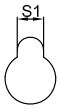
FRAME D-2
VFD750FP4EA-52S
VFD900FP4EA-52S

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)







DETAIL A
(MOUNTING HOLE)

DETAIL B
(MOUNTING HOLE)

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

▪ EMC-R6AA

Relay
Extension Card

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.

▪ EMC-A22A

Analog I/O
extension card

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 ~ 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. There are two sets of AFM port, SSW1(AFM10) and SSW2(AFM11), which can be switched to AVO or ACO. AVO: Output 0 ~ 10.00V ACO: Output 0 ~ 20.0mA / 4.0 ~ 20.0mA
ACM	Analog signal common terminal

▪ EMC-BPS01

24V Power
Shift Card

Terminals	Descriptions
24V GND	When the AC motor drive power is off, the external power supply card provides external power to the network system, PLC function, and other functions to allow continued operations. Input power: 24 V_{DC} ± 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 24 V. Do not connect control terminal GND directly to the EMC-BPS01 input terminal GND.

▪ EMC-D42A

I/O Extension Card

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} ± 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 μA
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

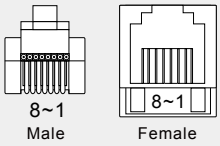
▪ EMC-D611A

I/O Extension Card

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 KΩ Terminal response time: ON: 10 ms; OFF: 20 ms

▪ EMC-COP01

RJ-45 Pin definition



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

▪ 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
- For I/O mapping, supports Max. 32 words of input and 32 words of output
- Supports EDS file configuration in DeviceNet configuration software
- Supports all baud rates on DeviceNet bus: 125 kbps, 250 kbps, 500 kbps and extendable serial transmission speed mode
- Node address and serial transmission speed can be set up on AC motor drive
- Power supplied from AC motor drive

DeviceNet Connector

Interface	5-Pin 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

▪ CMC-EIP01

Network Interface

Features

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

Network Interface

Interface	RJ-45 with Auto MDI / MDIX	**Transmission speed**	10 / 100 Mbps Auto-Detect
Number of ports	1 Port	**Network protocol**	ICMP, IP, TCP, UDP, DHCP, SMTP, MODBUS over TCP / IP, Delta Configuration
Transmission method	IEEE 802.3, IEEE 802.3u		
Transmission cable	Category 5e shielding 100 M		

▪ CMC-PD01

Features

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

▪ CMC-MOD01

Network Interface

Features

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

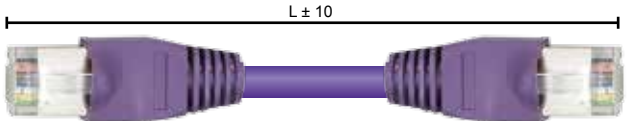
Network Interface

Interface	RJ-45 with Auto MDI / MDIX	**Transmission speed**	10 / 100 Mbps Auto-Detect
Number of ports	1 Port	**Network protocol**	ICMP, IP, TCP, UDP, DHCP, SMTP, MODBUS over TCP / IP, Delta Configuration
Transmission method	IEEE 802.3, IEEE 802.3u		
Transmission cable	Category 5e shielding 100 M		

▪ 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
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
	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



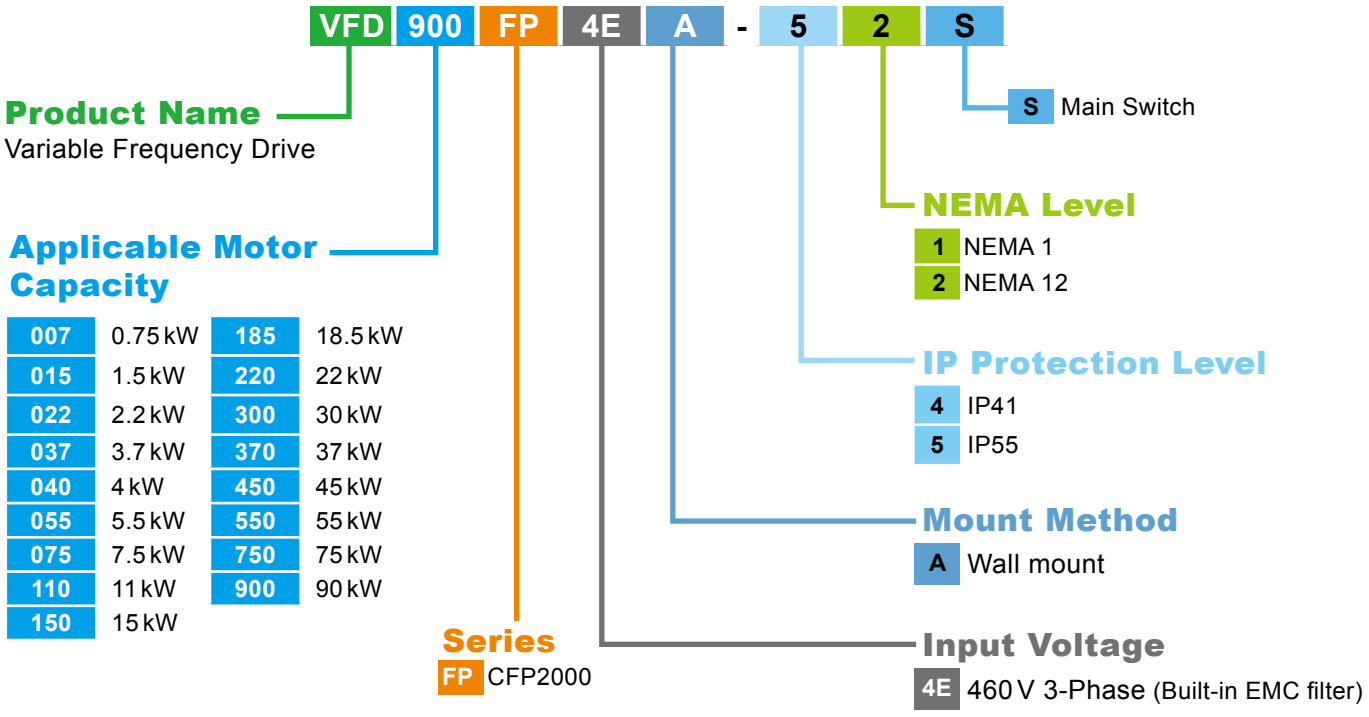
▪ CANopen Breakout Box

Model: TAP-CN03
Unit: mm [inch]

Ordering Information

FRAME	Power Range	IP55 NEMA12 W/O Main Switch	IP55 NEMA12 with Main 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



Global Operations

ASIA (Taiwan)

Taoyuan
Technology Center
(Green Building)

Taoyuan Plant 1

Taoyuan Plant
(Diamond-rated Green Building)

ASIA (China)

Wujiang Plant 3

Delta Electronics

Tokyo Office

ASIA (India)

Rudrapur Plant
(Green Building)

EUROPE

Amsterdam, Netherlands

AMERICA

Research Triangle Park

▲ Factories 4 ■ Branch Offices 122 ◉ R&D Centers 5 ■ Distributors 733

Smarter. Greener. Together.

Industrial Automation Headquarters

Delta Electronics, Inc.
Taoyuan Technology Center
No.18, Xinglong Rd., Taoyuan District,
Taoyuan City 33068, Taiwan
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

Asia

Delta Electronics (Shanghai) Co., Ltd.
No.182 Minyu Rd., Pudong Shanghai, P.R.C.
Post code : 201209
TEL: 86-21-6872-3988 / FAX: 86-21-6872-3996
Customer Service: 400-820-9595

Delta Electronics (Japan), Inc.
Tokyo Office
Industrial Automation Sales Department
2-1-14 Shibadaimon, Minato-ku
Tokyo, Japan 105-0012
TEL: 81-3-5733-1155 / FAX: 81-3-5733-1255

Delta Electronics (Korea), Inc.
Seoul Office
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,
Seoul, 08501 South Korea
TEL: 82-2-515-5305 / FAX: 82-2-515-5302

Delta Energy Systems (Singapore) Pte Ltd.
4 Kaki Bukit Avenue 1, #05-04, Singapore 417939
TEL: 65-6747-5155 / FAX: 65-6744-9228

Delta Electronics (India) Pvt. Ltd.
Plot No.43, Sector 35, HSIIDC Gurgaon,
PIN 122001, Haryana, India
TEL: 91-124-4874900 / FAX : 91-124-4874945

Delta Electronics (Thailand) PCL.
909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),
Pattana 1 Rd., T.Phraksa, A.Muang,
Samutprakarn 10280, Thailand
TEL: 66-2709-2800 / FAX : 662-709-2827

Delta Energy Systems (Australia) Pty Ltd.
Unit 20-21/45 Normanby Rd., Notting Hill Vic 3168, Australia
TEL: 61-3-9543-3720

Americas

Delta Products Corporation (USA)
Raleigh Office
P.O. Box 12173, 5101 Davis Drive,
Research Triangle Park, NC 27709, U.S.A.
TEL: 1-919-767-3813 / FAX: 1-919-767-3969

Delta Greentech (Brasil) S/A
São Paulo Office
Rua Itapeva, 26 – 3˚ Andar - Bela Vista
CEP: 01332-000 – São Paulo – SP - Brasil
TEL: 55-11-3530-8642 / FAX: 55-11-3530-8640

Delta Electronics International Mexico S.A. de C.V.
Mexico Office
Vía Dr. Gustavo Baz No. 2160, Colonia La Loma,
54060 Tlalnepantla Estado de Mexico
TEL: 52-55-2628-3015 #3050/3052

EMEA

Delta Electronics (Netherlands) BV
Eindhoven Office
De Witbogt 20, 5652 AG Eindhoven, The Netherlands
MAIL: Sales.IA.EMEA@deltaww.com
MAIL: Sales.IA.Benelux@deltaww.com

Delta Electronics (France) S.A.
ZI du bois Chaland 2 15 rue des Pyrénées,
Lisses 91056 Evry Cedex, France
MAIL: Sales.IA.FR@deltaww.com

Delta Electronics Solutions (Spain) S.L.U
Ctra. De Villaverde a Vallecas, 265 1˚ Dcha Ed.
Hormigueras – P.I. de Vallecas 28031 Madrid
C/Llull, 321-329 (Edifici CINC) | 22@Barcrelona, 08019 Barcelona
MAIL: Sales.IA.Iberia@deltaww.com

Delta Electronics (Italy) Srl
Ufficio di Milano Via Senigallia 18/2 20161 Milano (MI)
Piazza Grazioli 18 00186 Roma, Italy
MAIL: Sales.IA.Italy@deltaww.com

Delta Electronics (Netherlands) BV
Coesterweg 45, D-59494 Soest, Germany
MAIL: Sales.IA.DACH@deltaww.com

Delta Energy Systems LLC (CIS)
Vereyskaya Plaza II, office 112 Vereyskaya str.
17 121357 Moscow, Russia
MAIL: Sales.IA.RU@deltaww.com

Delta Greentech Ltd. (Turkiye)
Serifali Mevkii Barboros Bulvari Soylesi Sok
No 19 34775, Y.Dudullu-Umraniye/Istanbul
MAIL: Sales.IA.Turkey@delta-emea.com

Delta Energy Systems AG (Dubai BR)
P.O. Box 185668, Gate 7, 3rd Floor, Hamarain Centre,
Dubai, United Arab Emirates
MAIL: Sales.IA.MEA@deltaww.com

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