



Automation for a Changing World

Delta Fan/Pump Vector Control Drive CP2000 Series



 **DELTA**
Smarter. Greener. Together.

WHY CP2000?

Delta Industrial Automation Green Technology

Delta Industrial Automation introduces the CP2000 Series AC motor drive for energy-saving HVAC systems and for pump and fan applications. The CP2000 Series is equipped with special HVAC parameters and PID control functions for efficient operation, as well as multi-segment V/F control curve and soft start functions to assist frequent torque change and constant output applications with energy-saving performance.





CP2000

Water Circulation Pump Control

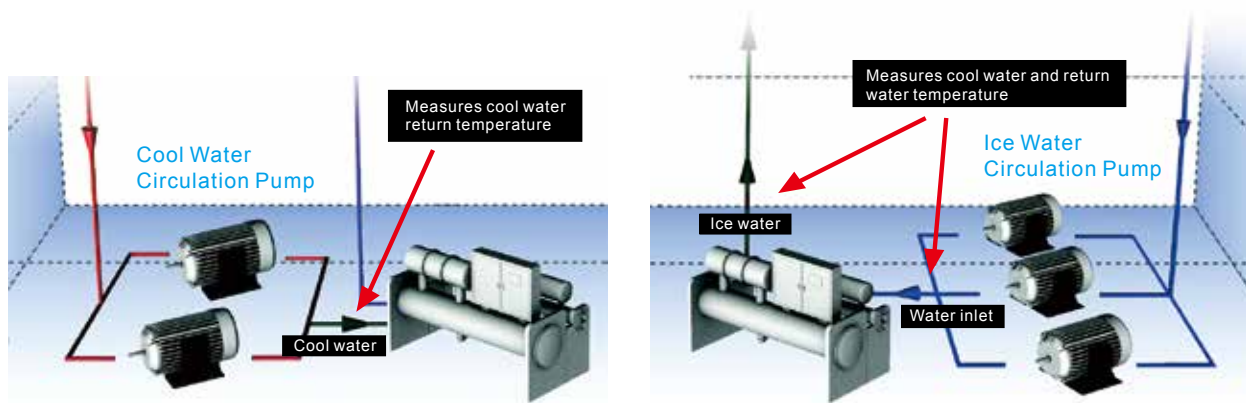


Figure1: Multi-Pump Control

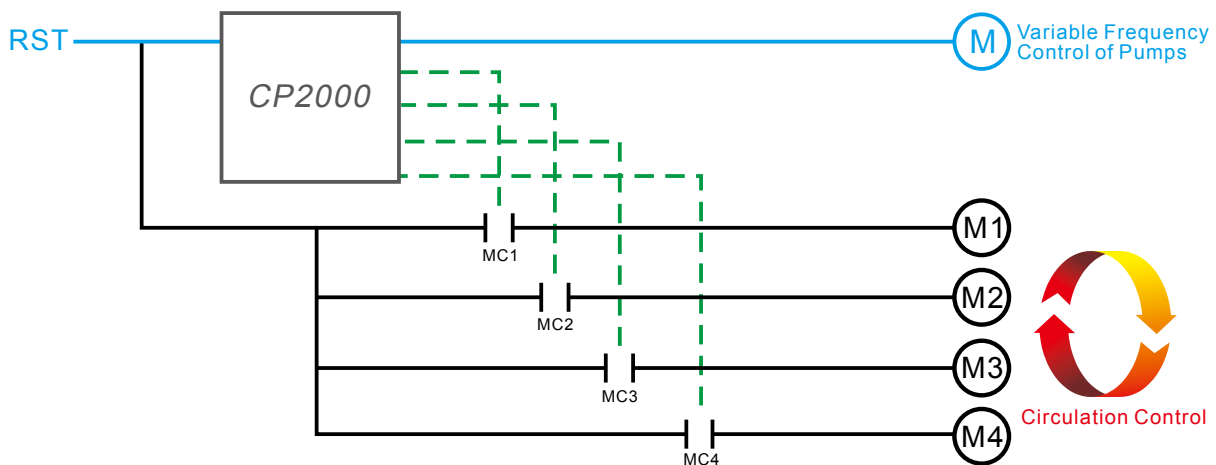


Figure 2: Fixed Amount and Circulation Control

Features

- ▶ LCD keypad - An easy-to-use text panel with TP Editor software allows users to customize the main page screen
- ▶ Quick setting functions to support self-defined parameter groups and parameter duplication for fast and easy installation
- ▶ Modular design for flexible extension and easy maintenance
- ▶ High-speed communications include BACnet and MODBUS. Optional communication cards are available upon purchase: PROFIBUS DP, DeviceNet, MODBUS TCP, EtherNet/IP and CANopen
- ▶ Extended life cycle
- ▶ Enhanced conformal coating on PCBs for superior durability in critical environments
- ▶ Fire mode and bypass functions: continuous pressure to extract smoke when emergencies occur
- ▶ Various modes for fans/pump applications including PID control, sleep/wake up functions, flying start and skip frequency
- ▶ Multi-pumps synchronous control of up to 8 motors at one time and provides fixed amount and fixed time circulation control
- ▶ Built-in 10K steps PLC programming capacity and Real Time Clock (RTC)

Advanced Drive Technology

High Performance Variable Frequency Drive Technology

1. Sensorless Vector Control (SVC)
2. Dual rating design (Light duty & Normal duty)
3. Excellent variable torque control of asynchronous motors

Versatile Drive Control

1. Built-in PLC function
2. Built-in brake unit*
3. Networking drive system
4. Auto energy saving



Modular Design

1. Hot pluggable LCD keypad
2. I/O extension card
3. Various communication cards
4. Removable fans

Environmental Adaptability

1. 50°C operation temperature
2. Built-in DC choke*
3. Coated circuit boards
4. Built-in EMC filter*
5. International safety standard CE/UL/CUL

*Note: Please refer to the Product Specification for more details.

Standard Models

Power range: 230 V 0.75~90 kW, 460 V 0.75~500 kW

230 V (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
230 V (HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125
Frame Size	A					B			C			D		E		

460 V (kW)	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30	37
460 V (HP)	1	2	3	5	5	7.5	10	15	20	25	30	40	50
Frame Size	A							B			C		

460 V (kW)	45	55	75	90	110	132	160	185	220	280	315	355	400	500
460 V (HP)	60	75	100	125	150	175	215	250	300	375	425	475	536	675
Frame Size	D0		D		E		F		G		H			

Power range: 575 V 1.5~15 kW, 690 V 18.5~630 kW

575 V (kW)	1.5	2.2	3.7	5.5	7.5	11	15
575 V (HP)	2	3	5	7.5	10	15	20
Frame Size	A			B			

690 V (kW)	18.5	22	30	37	45	55	75	90	110	132	160	200	250	315
690 V (HP)	25	30	40	50	60	75	100	125	150	175	215	270	335	425
Frame Size	C				D		E				F		G	

690 V (kW)	400	450	560	630
690 V (HP)	530	600	745	840
Frame Size	H			

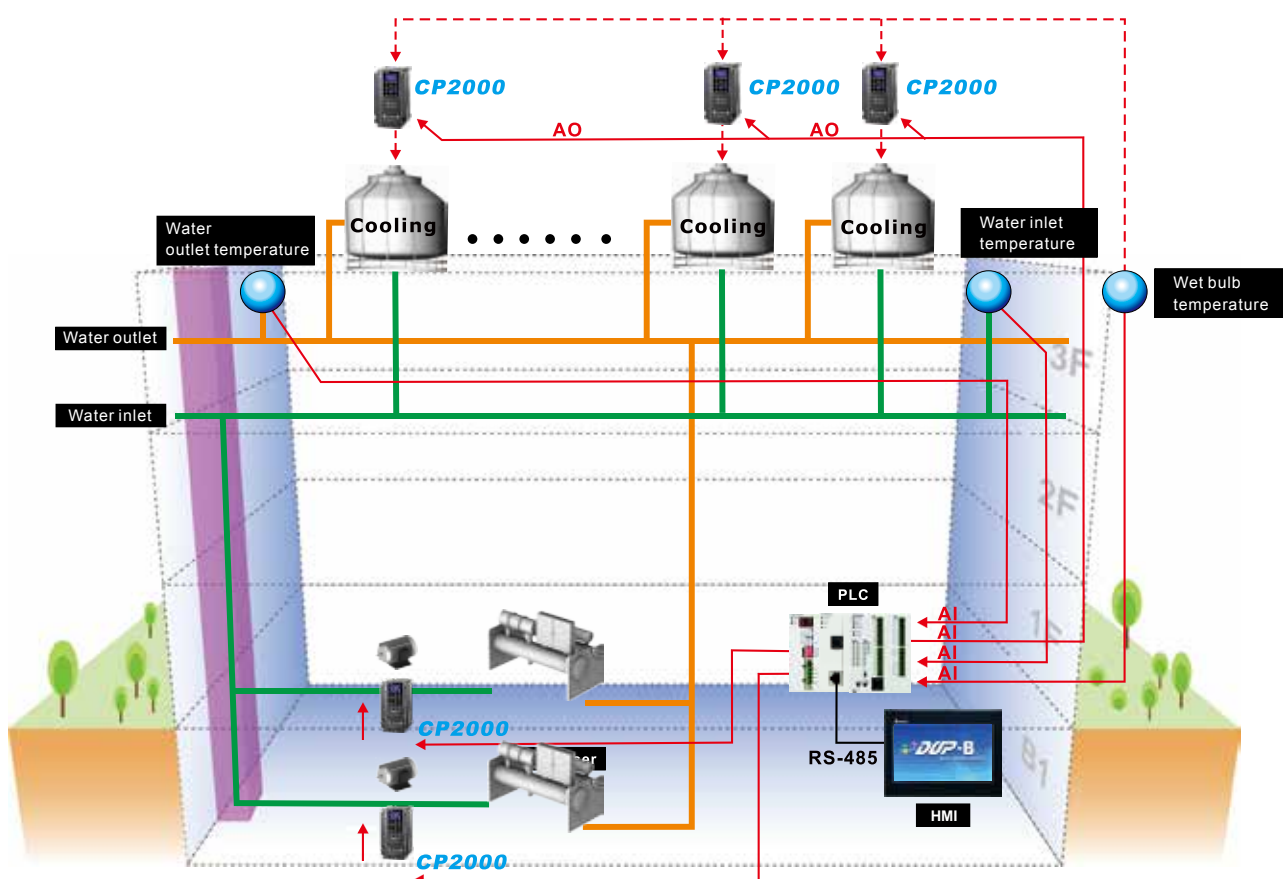
High-Speed Network

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

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

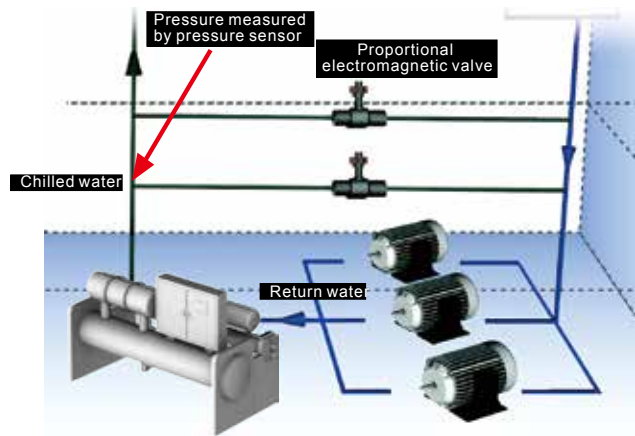
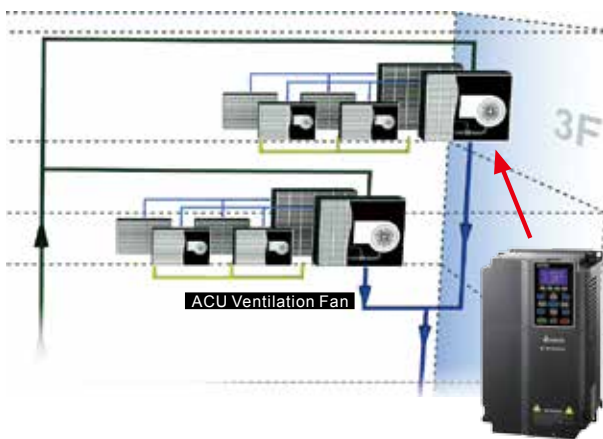
Building Automation Applications

- ▶ 4-point adjustable V/F control - Real-time adjustment of output voltage under variable torque load environments, especially for pump and fan applications.
- ▶ Flying start and auto restart after momentary power loss functions, suitable for fan application.
- ▶ Skip frequency function avoids mechanical resonance and protects the equipment.
- ▶ Low-current protection function prevents free load operation.
- ▶ Built-in BACnet communication protocol saves wiring for building automation applications.



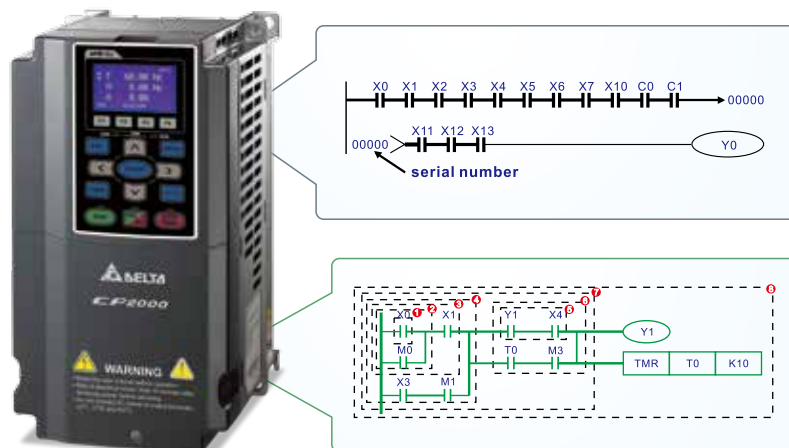
Improves Motor Performance

- ▶ Sensorless Vector Control (SVC) and auto-tuning functions to improve motor performance for variable torque load applications.
- ▶ Deceleration Energy Backup (DEB) function decelerates motor to a stop when sudden power failure occurs to protect the equipment from damage.
- ▶ Auto adjusting acceleration/deceleration speed, reduces mechanical vibration when activating and stopping the equipment and provides smooth operation.
- ▶ Energy saving control functions include PID control, sleep/wakeup mode and auto-energy saving mode.



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 saving operation and many other settings.



Standards

■ CE Low Voltage: EN61800-5-1	EMC: EN61000-3-12, EN61800-3, IEC61000-6-2, IEC61000-6-4, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8
■ UL, cUL	
■ C-Tick	
■ ROHS	

Modular Design

Powerful motor drive control functions. The modular design satisfies various system applications with higher flexibility and is easy to maintain. Accessories include input/output extension cards, communication cards, hot pluggable LCD keypad, removable terminal blocks and removable fans.

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



- RFI Jumper



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



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



- Modular fan design, easy to replace and clean, extending product life.



High Adaptability to Environment

- ▶ Built-in DC choke to suppress harmonics*
- ▶ Built-in EMC filter for noise suppression*
- ▶ Enhanced conformal coating on PCBs for superior durability in critical environments.
- ▶ The electronic components of the drive are isolated from the cooling system to reduce heat interference. Dissipated heat can be discharged by flange-mounting installation, and forced fan cooling can import cold air into the heat sink. The heat dissipation performance is optimized by these two cooling methods.

Note: Please refer to the Product Specification for more detail



Environment for Operation, Storage and Transportation

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

Environment	Installation Location	IEC60364-1/IEC60664-1 Pollution degree 2, indoor use only	
	Surrounding Temperature	Storage/Transportation	-25°C ~ +70°C
		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	Operation/Storage	86 to 106 kPa
		Transportation	70 to 106 kPa
	Pollution Level	IEC60721-3-3	
		Operation	Class 3C2; Class 3S2
		Storage	Class 1C2; Class 1S2
		Transportation	Class 2C2; Class 2S2
Altitude	Only allowed at non-condensation, non-frost, non-conductive environment.		
	Operation	If the AC motor drive is installed at an altitude of 0 to 1000m, follow normal operation restrictions. If it is installed at altitude 1000~3000m, decrease 1% of rated current or lower 0.5°C of temperature for every 100m increase in altitude. Maximum altitude for Corner Grounded TN system is 2000m; for application over 2000m, please contact Delta for more details.	
Package Drop	Storage/Transportation	ISTA procedure 1A (according to weight) IEC60068-2-31	
Vibration	1.0mm, peak to peak value range from 2Hz to 13.2Hz; 0.7G~1.0G range from 13.2Hz to 55Hz; 1.0G range from 55Hz to 512Hz. Comply with IEC 60068-2-6.		
Impact	IEC/EN 60068-2-27		
Operation Position	Max. allowed offset angle ±10° (under normal installation position)		

Specification for Operation Temperature and Protection Level

Model	Frame	Top Cover	Conduit Box	Protection Level	Operation Temperature
VFDxxxxCPxxx-21	Frame A ~ C 230 V: 0.75 ~ 30 kW 460 V: 0.75 ~ 37 kW 575 V: 1.5 ~ 15 kW 690 V: 18.5 ~ 37 kW	Remove top cover	Standard conduit plate	IP20/UL Open Type	230 V & 460 V: ND: -10 °C ~ 50 °C LD: -10 °C ~ 40 °C 575 V & 690 V: -10 °C ~ 50 °C
		Standard with top cover		IP20/UL Type1/NEMA1	-10 °C ~ 40 °C
	Frame D ~ H 230 V: > 37 kW 460 V: > 45 kW 690 V: > 45 kW	N/A	Conduit box	IP20/UL Type1/NEMA1	-10 °C ~ 40 °C
VFDxxxxCPxxx-00	Frame D ~ H 230 V: > 37 kW 460 V: > 45 kW 690 V: > 45 kW	N/A	No conduit box	IP00 IP20/UL Open Type 	230 V & 460 V: ND: -10 °C ~ 50 °C LD: -10 °C ~ 40 °C 690 V: -10 °C ~ 50 °C (ND = Normal Duty LD = Light Duty)

Specifications

230 V																			
Frame Size			A					B			C			D		E			
Model VFD-□□□□CP23□-□□			007	015	022	037	055	075	110	150	185	220	300	370	450	550	750	900	
Output Rating	LIGHT DUTY	Rated Output Capacity (kVA)	2.0	3.0	4.0	6.0	8.4	12	18	24	30	36	42	58	72	86	110	128	
		Rated Output Current (A)	5	7.5	10	15	21	31	46	61	75	90	105	146	180	215	276	322	
		Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	
		Applicable Motor Output (HP)	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	
		Overload Tolerance	120% of rated current for 1 minute during every 5 minutes																
	NORMAL DUTY	Rated Output Capacity (kVA)	1.2	2.0	3.2	4.4	6.8	10	13	20	26	30	36	48	58	72	86	102	
		Rated Output Current (A)	3	5	8	11	17	25	33	49	65	75	90	120	146	180	215	255	
		Applicable Motor Output (kW)	0.4	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)	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	
		Overload Tolerance	120% of rated current for 1 minute during every 5 minutes; 160% of rated current for 3 seconds during every 25 seconds																
Efficiency (%)			96					96.5					97						
Power Factor			>0.98																
Carrier Frequency (kHz)			2 ~ 15kHz (default setting 8kHz)								2 ~ 10kHz (default setting 6kHz)					2 ~ 9kHz (default setting 4kHz)			
Input Rating	Max. Output Frequency (Hz)			599.00 Hz													400.00 Hz		
	Input Current (A) Light Duty			6.4	9.6	15	22	25	35	50	65	83	100	116	146	180	215	276	322
	Input Current (A) Normal Duty			3.9	6.4	12	16	20	28	36	52	72	83	99	124	143	171	206	245
	Rated Voltage/Frequency			3-phase AC 200 V ~ 240 V (-15% ~ +10%) · 50/60 Hz															
	Operating Voltage Range			170 ~ 265 V _{AC}															
Frequency Tolerance			47 ~ 63 Hz																
Cooling Method			Natural cooling		Fan Cooling														
Braking Chopper			Frame A, B, C, Built-in												Frame D and above: Optional				
DC Choke			Frame A, B, C, Optional												Frame D and above: Built-in 3%				
EMC Filter			Optional																

460V															
Frame Size			A						B			C			
Models VFD-□□□□CP43□-□□ VFD-□□□□CP4E□-□□			007	015	022	037	040	055	075	110	150	185	220	300	370
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
		Rated Output Current (A)	3	4.2*	5.5*	8.5*	10.5	13*	18*	24*	32*	38*	45	60*	73*
		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
		Applicable Motor Output (HP)	1	2	3	5	5	7.5	10	15	20	25	30	40	50
		Overload Tolerance	120% of rated current for 1 minute during every 5 minutes												
	NORMAL DUTY	Rated Output Capacity (kVA)	2.2	2.4	3.2	4.8	7.2	8.4	10	14	19	25	30	36	48
		Rated Output Current (A)	1.7	3.0	4.0	6.0	9.0	10.5	12	18	24	32	38	45	60
		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
		Applicable Motor Output (HP)	0.5	1	2	3	5	5	7.5	10	15	20	25	30	40
		Overload Tolerance	120% of rated current for 1 minute during every 5 minutes; 160% of rated current for 3 seconds during every 25 seconds												
	Efficiency (%)		96							96.5					
	Power Factor		>0.98												
Carrier Frequency (kHz)		2 ~ 15 kHz (default 8 kHz)										2 ~ 10 kHz (default 6 kHz)			
Input Rating	Max. Output Frequency (Hz)		599.00 Hz												
	Input Current (A) Light Duty		4.3	6.0	8.1	12.4	16	20	22	26	35	42	50	66	80
	Input Current (A) Normal Duty		3.5	4.3	5.9	8.7	14	15.5	17	20	26	35	40	47	63
	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												
Cooling Method			Natural cooling			Fan cooling									
Braking Chopper			Frame A, B, C, Built-in												
DC Choke			Frame A, B, C, Optional												
EMC Filter			Frame A, B, C of VFD ____CP4E____; EMC filter Built-in Frame A, B, C of VFD ____CP43 ____; N/A												

*Rated current for B type model (e.g. VFD015CP43B-21)

460 V																
Frame Size			D0		D		E		F		G		H			
Model VFD-□□□□CP43□-□□			450	550	750	900	1100	1320	1600	1850	2200	2800	3150	3550	4000	5000
Output Rating	LIGHT DUTY	Rated Output Capacity (kVA)	73	88	120	143	175	207	247	295	367	422	491	544	613	773
		Rated Output Current (A)	91	110	150*	180	220	260*	310	370*	460	530	616	683	770	930
		Applicable Motor Output (kW)	45	55	75	90	110	132	160	185	220	280	315	355	400	500
		Applicable Motor Output (HP)	60	75	100	125	150	175	215	250	300	375	425	475	536	675
		Overload Tolerance	120% of rated current for 1 minute during every 5 minutes													
	NORMAL DUTY	Rated Output Capacity (kVA)	58	73	88	120	143	175	207	247	295	367	438	491	544	720
		Rated Output Current (A)	73	91	110	150	180	220	260	310	370	460	550	616	683	866
		Applicable Motor Output (kW)	37	45	55	75	90	110	132	160	185	220	280	315	355	450
		Applicable Motor Output (HP)	53	60	75	100	125	150	175	215	250	300	375	425	475	600
		Overload Tolerance	120% of rated current for 1 minute during every 5 minutes; 160% of rated current for 3 seconds during every 25 seconds													
Efficiency (%)		97									97.5					
Power Factor		>0.98														
Carrier Frequency (kHz)		2 ~ 10kHz (default setting 6kHz)				2 ~ 9kHz (default setting 4kHz)										
Input Rating	Max. Output Frequency (Hz)		599.00Hz				400.00Hz									
	Input Current (A) Light Duty		91	110	150	180	220	260	310	370	460	530	616	683	770	930
	Input Current (A) Normal Duty		74	101	114	157	167	207	240	300	380	400	494	555	625	866
	Rated Voltage/Frequency		3-phase AC 380V ~ 480V (-15% ~ +10%), 50/60Hz													
	Operating Voltage Range		323 ~ 528V _{AC}													
	Frequency Tolerance		47 ~ 63Hz													
	Cooling Method		Fan cooling													
Braking Chopper		Frame D and above: Optional														
DC Choke		Frame D and above: Built-in 3%														
EMC Filter		Frame D and above: Optional														

575V									
Frame Size		A			B				
Model VFD-□□□C53A-21		015	022	037	055	075	110	150	
Applicable Motor Output (HP)		2	3	5	7.5	10	15	20	
Output*	LIGHT DUTY	Rated Output Capacity (kVA)	3	4.3	6.7	9.9	12.1	18.7	24.2
		Rated Output Current (A)	3	4.3	6.7	9.9	12.1	18.7	24.2
		Applicable Motor Output (kW)	1.5	2.2	3.7	5.5	7.5	11	15
		Applicable Motor Output (HP)	2	3	5	7.5	10	15	20
	NORMAL DUTY	Rated Output Capacity (kVA)	2.5	3.6	5.5	8.2	10	15.4	19.9
		Rated Output Current (A)	2.5	3.6	5.5	8.2	10	15.5	20
		Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	5.5	7.5	11
		Applicable Motor Output (HP)	1	2	3	5	7.5	10	15
	Efficiency (%)		97			98			
	Power Factor		> 0.98						
Carrier Frequency (kHz)		2~15kHz (default setting 4kHz)							
Input	Input Current (A) Light Duty	3.8	5.4	10.4	14.9	16.9	21.3	26.3	
	Input Current (A) Normal Duty	3.1	4.5	7.2	12.3	15	18	22.8	
	Rated Voltage/Frequency	3-Phase 525 V _{AC} ~600 V _{AC} (-15%~+10%), 50/60 Hz							
	Operating Voltage Range	446~660 V _{AC}							
	Frequency Tolerance	47~63 Hz							
AC Drive Weight		3±0.3Kg			4.8±1 Kg				
Cooling Method		Natural cooling		Fan cooling					
Braking Chopper		Built-in							
DC Choke		Optional							

* Parameter 00-16; available load modes: Light Duty (LD) and Normal Duty (ND); default setting is LD mode

Specifications

690 V												
Frame Size		C				D		E				
Model VFD-□□□CP63A-□□		185	220	300	370	450	550	750	900	1100	1320	
Output*	LIGHT DUTY	Rated Output Capacity (kVA)	29	36	43	54	65	80	103	124	149	179
		Applicable Motor Output (690V, kW)	18.5	22	30	37	45	55	75	90	110	132
		Applicable Motor Output (690V, HP)	25	30	40	50	60	75	100	125	150	175
		Applicable Motor Output (575V, HP)	20	25	30	40	50	60	75	100	125	150
	NORMAL DUTY	Rated Output Current (A)	24	30	36	45	54	67	86	104	125	150
		Rated Output Capacity (kVA)	24	29	36	43	54	65	80	103	124	149
		Applicable Motor Output (690V, kW)	15	18.5	22	30	37	45	55	75	90	110
		Applicable Motor Output (690V, HP)	20	25	30	40	50	60	75	100	125	150
		Applicable Motor Output (575V, HP)	15	20	25	30	40	50	60	75	100	125
		Rated Output Current (A)	20	24	30	36	45	54	67	86	104	125
		Efficiency (%)	97									
		Power Factor	>0.98									
		Carrier Frequency (kHz)	2~9 kHz (default setting 4 kHz)									
Input	Input Current (A) Light Duty	29	36	43	54	65	81	84	102	122	147	
	Input Current (A) Normal Duty	24	29	36	43	54	65	66	84	102	122	
	Rated Voltage/Frequency	3-Phase 525V _{AC} ~690V _{AC} (-15% ~ +10%), 50/60 Hz										
	Operating Voltage Range	446~759V _{AC}										
	Frequency Tolerance	47~63 Hz										
AC Drive Weight		10±1.5Kg				39±1.5Kg			61±1.5Kg			
Cooling Method		Fan cooling										
Braking Chopper		Frame C (built-in)				Frame D and above (optional)						
DC Choke		Frame C (optional)				Frame D and above (built-in)						

690 V											
Frame Size			F		G		H				
Model VFD-□□□CP63A-□□			1600	2000	2500	3150	4000	4500	5600	6300	
Output*	LIGHT DUTY	Rated Output Capacity (kVA)	215	263	347	418	494.5	534.7	678.5	776	
		Applicable Motor Output (690V, kW)	160	200	250	315	400	450	560	630	
		Applicable Motor Output (690V, HP)	215	270	335	425	530	600	745	850	
		Applicable Motor Output (575V, HP)	150	200	250	350	400	450	500	675	
	NORMAL DUTY	Rated Output Current (A)	180	220	290	350	430	465	590	675	
		Rated Output Capacity (kVA)	179	215	239	347	402.5	442.7	534.7	776	
		Applicable Motor Output (690V, kW)	132	160	200	250	315	355	450	630	
		Applicable Motor Output (690V, HP)	175	215	270	335	425	475	600	850	
		Applicable Motor Output (575V, HP)	150	150	200	250	350	400	450	500	
		Rated Output Current (A)	150	180	220	290	350	385	465	675	
		Efficiency (%)	97		98						
		Power Factor	> 0.98								
		Carrier Frequency (kHz)	2~9 kHz (default setting 4 kHz)								
Input	Input Current (A) Light Duty	178	217	292	353	454	469	595	681		
	Input Current (A) Normal Duty	148	178	222	292	353	388	504	681		
	Rated Voltage/Frequency	3-Phase 525 V _{AC} ~690 V _{AC} (-15% ~+10%), 50/60 Hz									
	Operating Voltage Range	446~759 V _{AC}									
	Frequency Tolerance	47~63Hz									
AC Drive Weight			88 ± 1.5Kg		135 ± 4Kg		243 ± 5Kg				
Cooling Method			Fan cooling								
Braking Chopper			Frame D and above (optional)								
DC Choke			Frame D and above (built-in)								

* Parameter 00-16; available load modes: Light Duty (LD) and Normal Duty (ND) ; default setting is LD mode

General Specifications

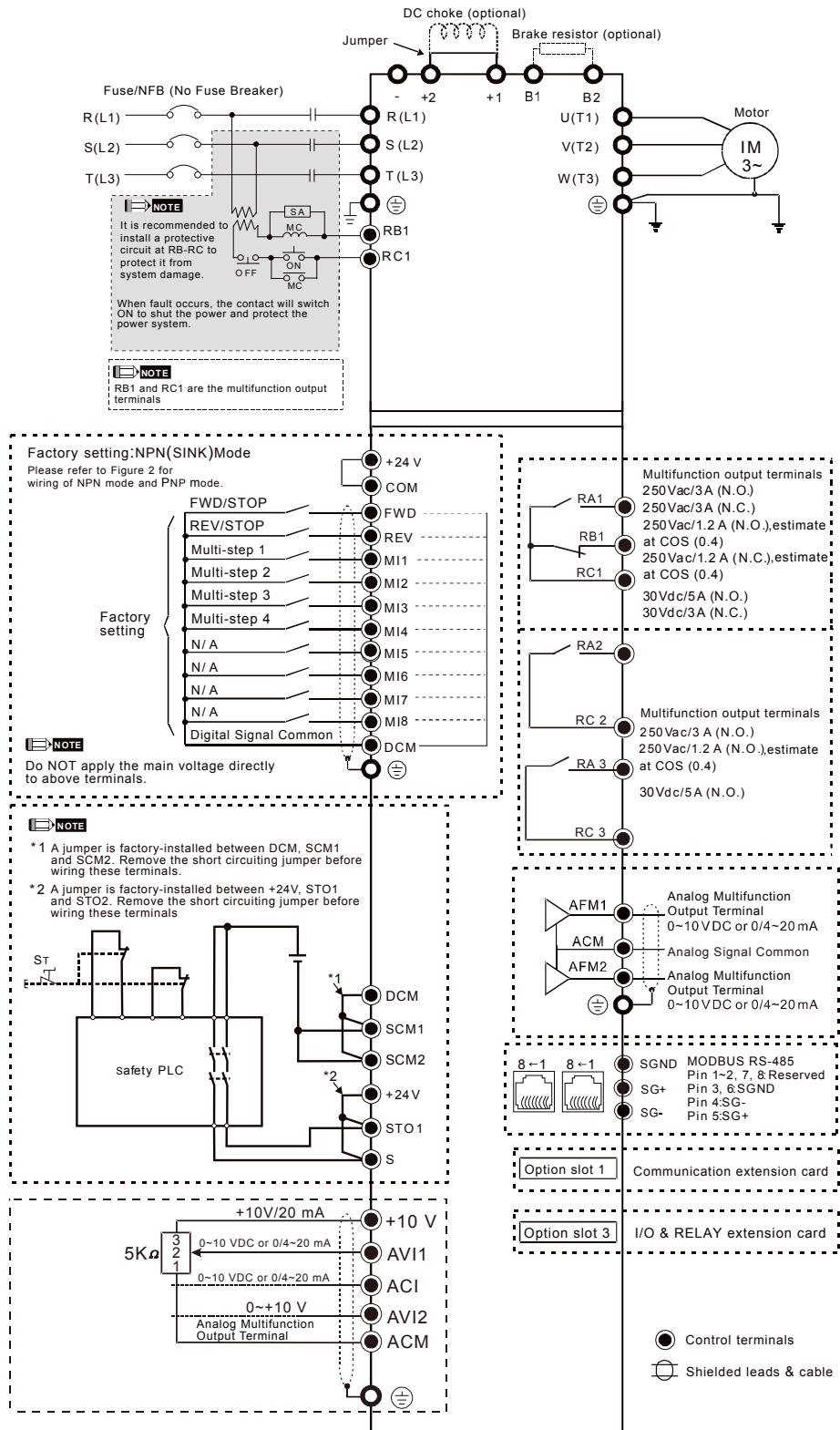
Control Characteristics	Control Method	Pulse Width Modulated (PWM)				
	Control Mode	230V / 460V model: 1: V/F (V/F control), 2: SVC (Sensorless Vector Control), 3: PM (Permanent Magnet Motor) 575V / 690V model: 1: V/F · 2: SVC				
	Starting Torque	Reach up to 150% or above at 0.5Hz				
	V/F Curve	4 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				
	Max. Output Frequency (Hz)	230V model: 599.00Hz (55kW and above: 400.00Hz) 460V model: 599.00Hz (90kW and above: 400.00Hz) 575V / 690V model: 599.00Hz				
	Frequency Output Accuracy	Digital command: ±0.01%, -10 °C ~ +40 °C, Analog command: ±0.1%, 25 ±10 °C				
	Output Frequency Resolution	Digital command: 0.01 Hz; Analog command: Max. output frequencyx0.03/60 Hz (±11 bit)				
	Overload Tolerance	Light duty: 120% of rated current for 1 minute Normal duty: 120% of rated current for 1 minute;160% of rated current for 3 seconds				
	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	Fault restart	Torque limit	Smart stall	Dwell	3-wire sequence
	Protection Characteristics	Fan Control	Speed search	Parameter copy	JOG frequency	Slip compensation
S-curve accel/decel			Energy saving control	Accel/Decel. Time switch	Frequency/lower limit settings	Momentary power loss ride thru
PID control (with sleep function)			Auto-Tuning (rotational, stationary)	DC injection braking at start/stop	BACnet Communication	16-step speed (max.)
Over-torque detection			MODBUS communication (RS-485 RJ45, Max. 115.2 kbps)			
230V model: Model with spec higher than VFD185CP23 (included) are PWM control; Model with spec lower than VFD150CP23 (not included) are on/off switch control. 460V model: Model with spec higher than VFD220CP43 (included) are PWM control; Model with spec lower than VFD185CP43 (not included) are on/off switch control. 575V / 690V model: PWM control						
Motor Protection		Electronic thermal relay protection				
Over-Current Protection		230V / 460V model: 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%) 575V / 690V model: Over-current protection for 225% rated current Current clamp (Light duty: around 128~141%) ; (Normal duty: around 170~175%)				
Over-Voltage Protection		230V model: drive will stop when DC-BUS voltage exceeds 410 V 460V model: drive will stop when DC-BUS voltage exceeds 820 V 575V / 690V model: drive will stop when DC-BUS voltage exceeds 1189V				
Over-Temperature Protection		built-in temperature sensor				
Stall Prevention		Stall prevention during acceleration, deceleration and running indepenently				
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				
International Certifications		  GB 12668.3 				

Note: EAC Certification is for 230V and 460V models only

Wiring

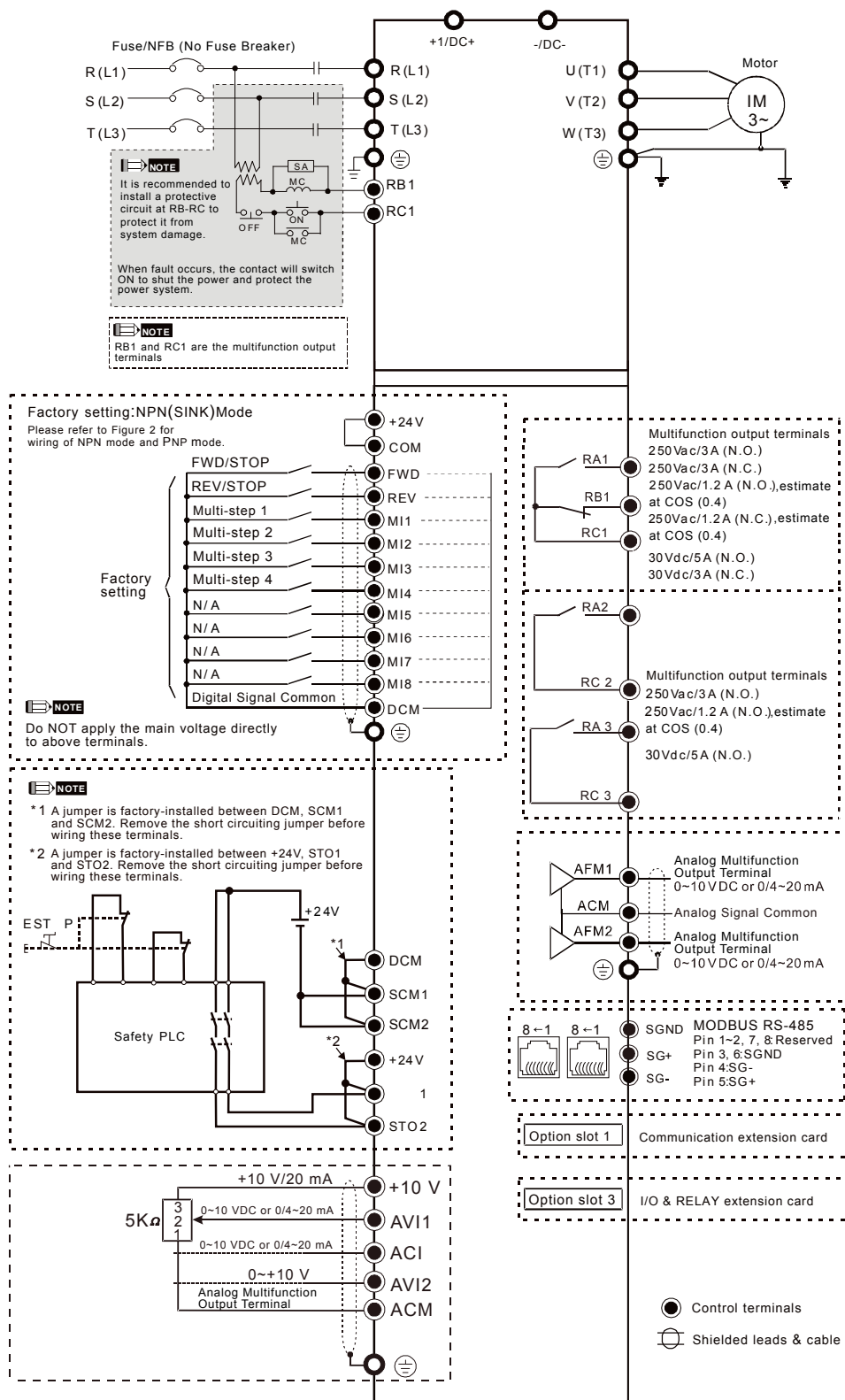
Wiring Diagram for Frame A ~ C

*Input: 3-phase power



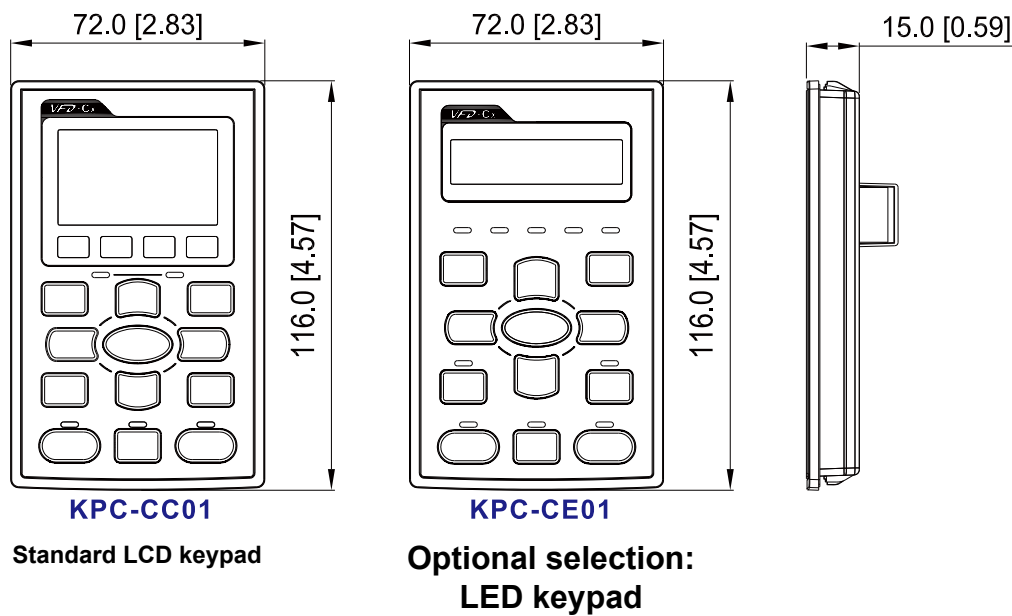
Wiring Diagram for Frame D0 and above

*Input: 3-phase power



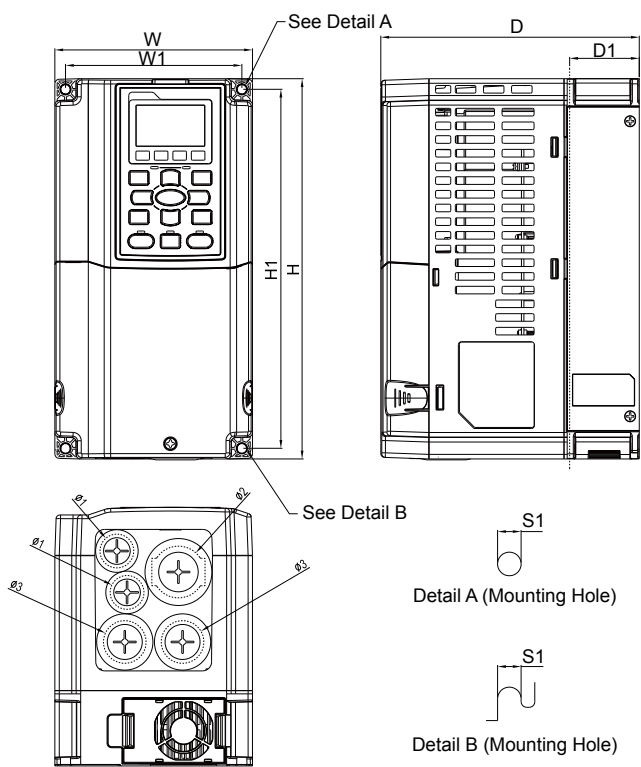
Dimensions

Digital Keypad



Frame A

MODEL	
VFD007CP23A-21	VFD007CP4EA-21
VFD015CP23A-21	VFD015CP4EB-21
VFD022CP23A-21	VFD022CP4EB-21
VFD037CP23A-21	VFD037CP4EB-21
VFD055CP23A-21	VFD040CP4EA-21
VFD007CP43A-21	VFD055CP4EB-21
VFD015CP43B-21	VFD075CP4EB-21
VFD022CP43B-21	VFD015CP53A-21
VFD037CP43B-21	VFD022CP53A-21
VFD040CP43A-21	VFD037CP53A-21
VFD055CP43B-21	
VFD075CP43B-21	



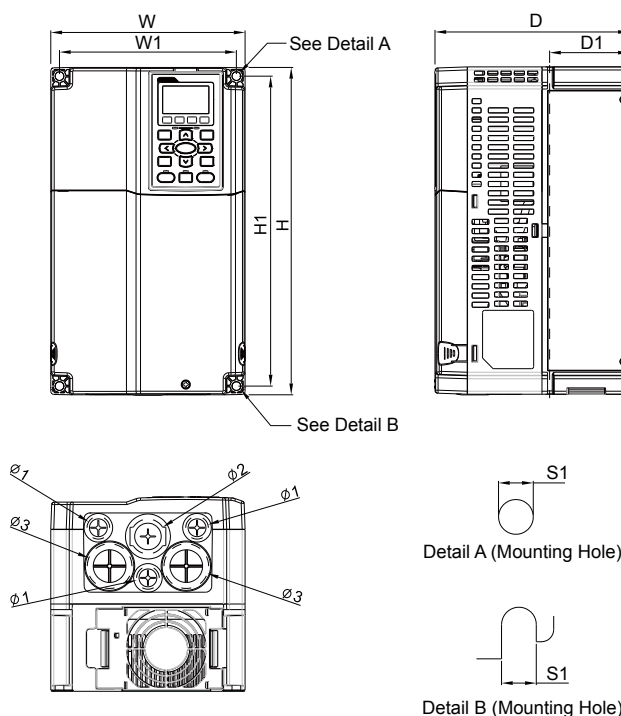
Frame		W	H	D	W1	H1	D1*	Ø	Ø1	Ø2	Ø3
A	mm	130.0	250.0	170.0	116.0	236.0	45.8	6.2	22.2	34.0	28.0
	inch	5.12	9.84	6.69	4.57	9.29	1.80	0.24	0.87	1.34	1.10

*D1: Flange mount.

Frame B

MODEL

VFD075CP23A-21
VFD110CP23A-21
VFD150CP23A-21
VFD110CP43B-21
VFD150CP43B-21
VFD185CP43B-21
VFD110CP4EB-21
VFD150CP4EB-21
VFD185CP4EB-21
VFD055CP53A-21
VFD075CP53A-21
VFD110CP53A-21
VFD150CP53A-21



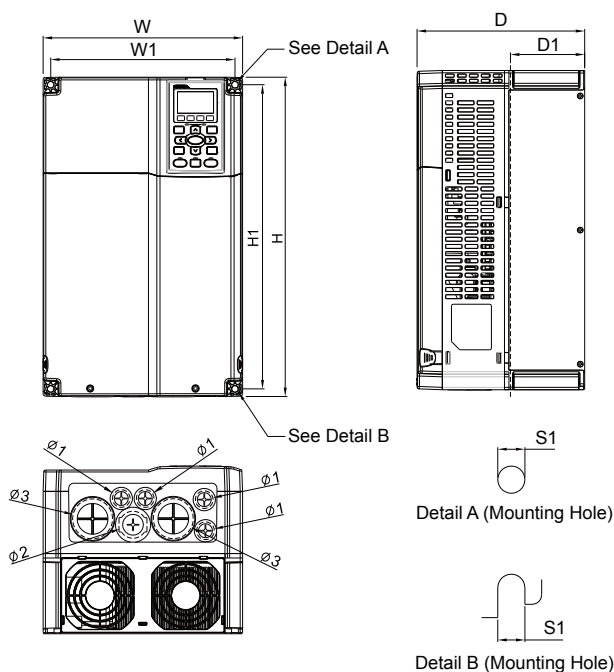
Frame		W	H	D	W1	H1	D1*	S1	Ø1	Ø2	Ø3
B1	mm	190.0	320.0	190.0	173.0	303.0	77.9	8.5	22.2	34.0	43.8
	inch	7.48	12.60	7.48	6.81	11.93	3.07	0.33	0.87	1.34	1.72

*D1: Flange mount.

Frame C

MODEL

VFD185CP23A-21
VFD220CP23A-21
VFD300CP23A-21
VFD220CP43A-21
VFD300CP43B-21
VFD370CP43B-21
VFD220CP4EA-21
VFD300CP4EB-21
VFD370CP4EB-21
VFD185CP63A-21
VFD220CP63A-21
VFD300CP63A-21
VFD370CP63A-21



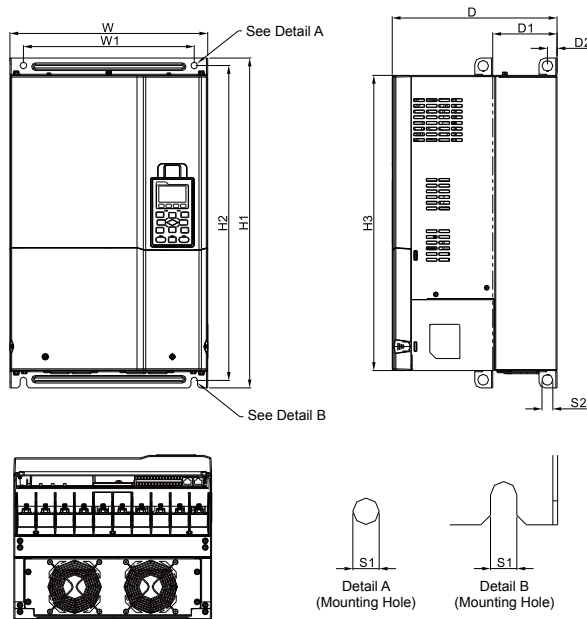
Frame		W	H	D	W1	H1	D1*	S1	Ø1	Ø2	Ø3
C1	mm	250.0	400.0	210.0	231.0	381.0	92.9	8.5	22.2	34.0	50.0
	inch	9.84	15.75	8.27	9.09	15.00	3.66	0.33	0.87	1.34	1.97

*D1: Flange mount.

Dimensions

Frame D1/D0-1

MODEL	FRAME_D1	FRAME_D0-1
VFD370CP23A-00		VFD450CP43S-00
VFD450CP23A-00		VFD550CP43S-00
VFD750CP43B-00		
VFD900CP43A-00		
VFD450CP63A-00		
VFD550CP63A-00		

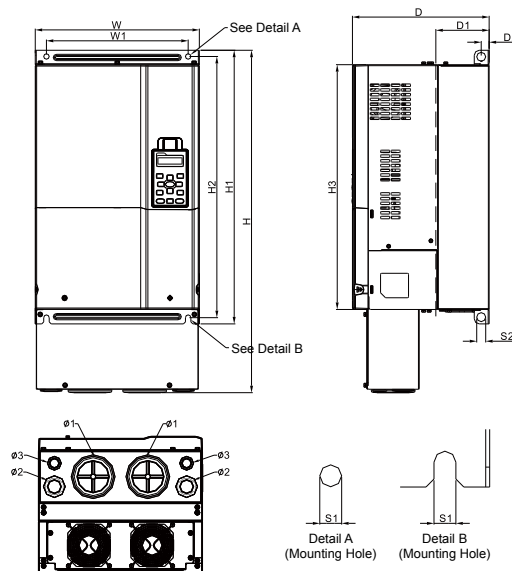


Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3
D1	mm	330.0	-	275.0	285.0	550.0	525.0	492.0	107.2	16.0	11.0	18.0	-	-	-
	inch	12.99	-	10.83	11.22	21.65	20.67	19.37	4.22	0.63	0.43	0.71	-	-	-
Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3
D0-1	mm	280.0	-	255.0	235.0	500.0	475.0	442.0	94.2	16.0	11.0	18.0	-	-	-
	inch	11.02	-	10.04	9.25	19.69	18.70	17.40	3.71	0.63	0.43	0.71	-	-	-

*D1: Flange mount.

Frame D2/D0-2

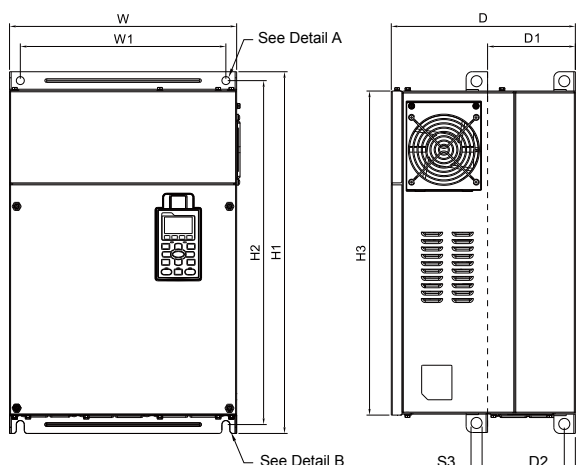
MODEL	FRAME_D2	FRAME_D0-2
VFD370CP23A-21		VFD450CP43S-21
VFD450CP23A-21		VFD550CP43S-21
VFD750CP43B-21		
VFD900CP43A-21		
VFD450CP63A-21		
VFD550CP63A-21		



Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3
D2	mm	330.0	688.3	275.0	285.0	550.0	525.0	492.0	107.2	16.0	11.0	18.0	76.2	34.0	22.0
	inch	12.99	27.10	10.83	11.22	21.65	20.67	19.37	4.22	0.63	0.43	0.71	3.00	1.34	0.87
Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	Ø1	Ø2	Ø3
D0-2	mm	280.0	614.4	255.0	235.0	500.0	475.0	442.0	94.2	16.0	11.0	18.0	62.7	34.0	22.0
	inch	11.02	21.19	10.04	9.25	19.69	18.70	17.40	3.71	0.63	0.43	0.71	2.47	1.34	0.87

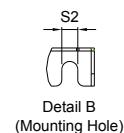
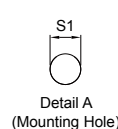
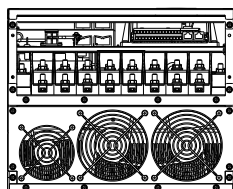
*D1: Flange mount.

Frame E1



MODEL

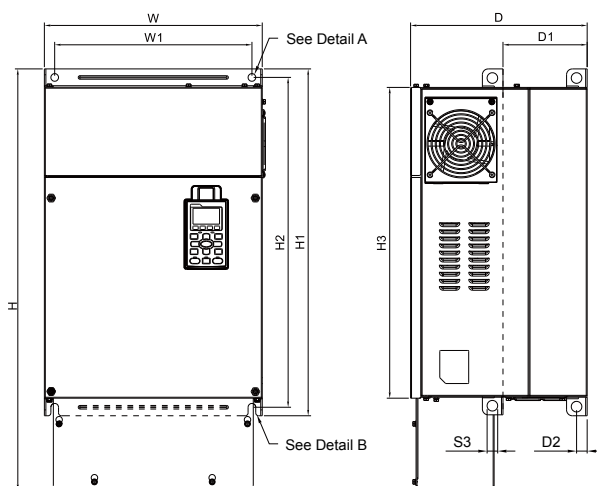
VFD550CP23A-00	VFD750CP63A-00
VFD750CP23A-00	VFD900CP63A-00
VFD900CP23A-00	VFD1100CP63A-00
VFD1100CP43A-00	VFD1320CP63A-00
VFD1320CP43B-00	



Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
E1	mm	370.0	-	300.0	335.0	589.0	560.0	528.0	143.0	18.0	13.0	13.0	18.0	-	-	-
	inch	14.57	-	11.81	13.19	23.19	22.05	20.80	5.63	0.71	0.51	0.51	0.71	-	-	-

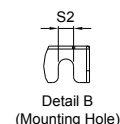
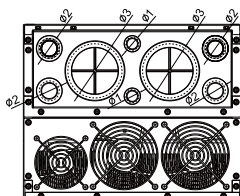
*D1: Flange mount.

Frame E2



MODEL

VFD550CP23A-21	VFD750CP63A-21
VFD750CP23A-21	VFD900CP63A-21
VFD900CP23A-21	VFD1100CP63A-21
VFD1100CP43A-21	VFD1320CP63A-21
VFD1320CP43B-21	

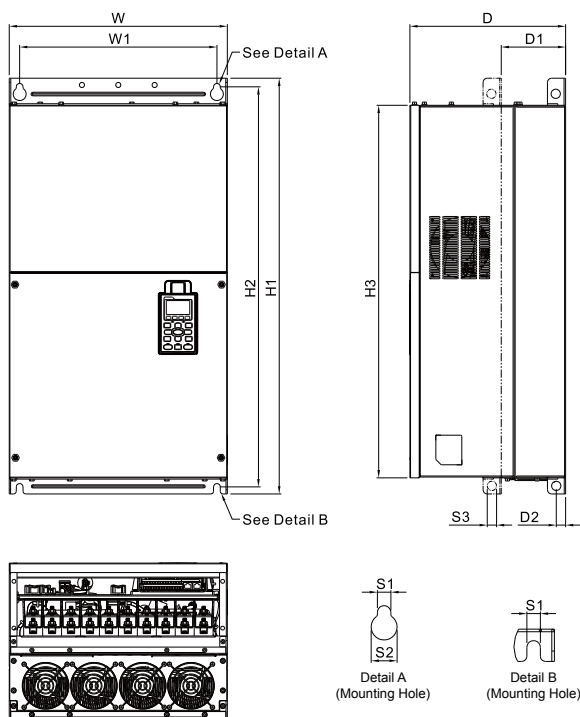


Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
E2	mm	370.0	715.8	300.0	335.0	589.0	560.0	528.0	143.0	18.0	13.0	13.0	18.0	22.0	34.0	92.0
	inch	14.57	28.18	11.81	13.19	23.19	22.05	20.80	5.63	0.71	0.51	0.51	0.71	0.87	1.34	3.62

*D1: Flange mount.

Dimensions

Frame F1

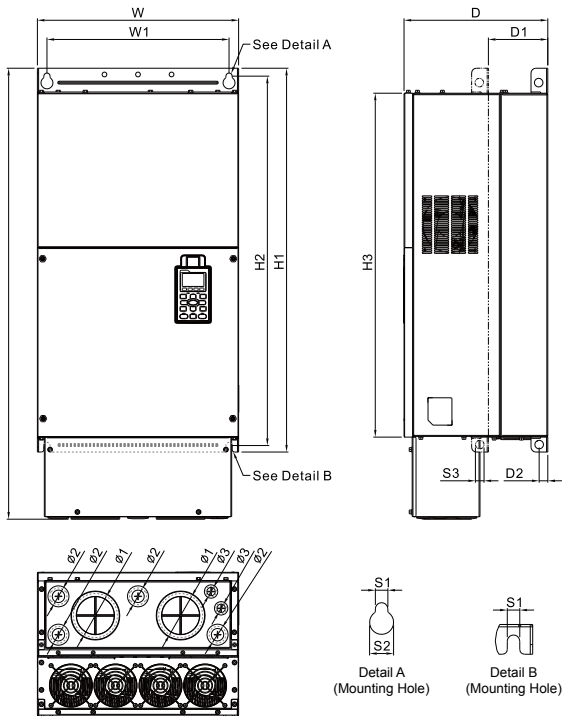


MODEL	
VFD1600CP43A-00	
VFD1850CP43B-00	
VFD1600CP63A-00	
VFD2000CP63A-00	

Frame		W	H	D	W1	H1	H2	H3	D1*	D2	S1	S2	S3	Ø1	Ø2	Ø3
F1	mm	420.0	-	300.0	380.0	800.0	770.0	717.0	124.0	18.0	13.0	25.0	18.0	-	-	-
	inch	16.54	-	11.81	14.96	31.50	30.32	28.23	4.88	0.71	0.51	0.98	0.71	-	-	-

*D1: Flange mount.

Frame F2

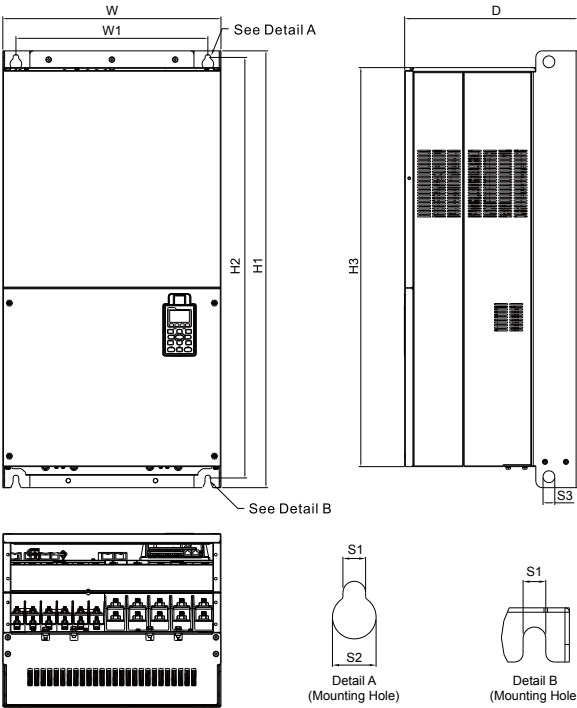


MODEL	
VFD1600CP43A-21	
VFD1850CP43B-21	
VFD1600CP63A-21	
VFD2000CP63A-21	

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

*D1: Flange mount.

Frame G1

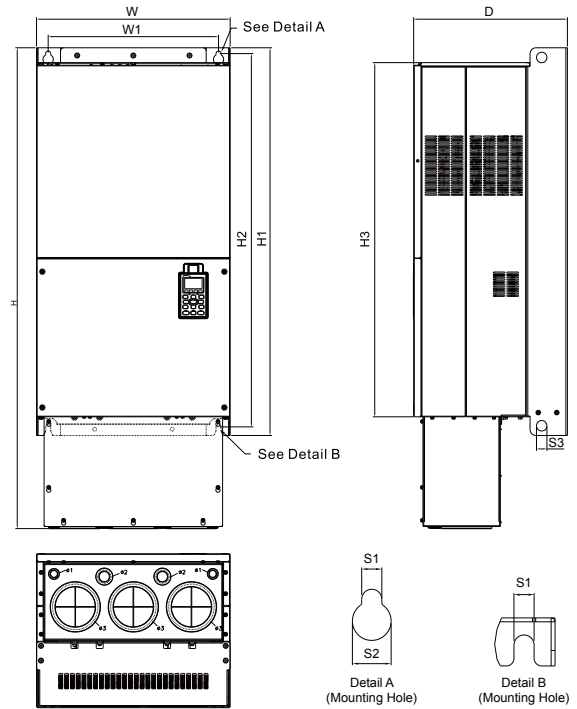


MODEL

VFD2200CP43A-00
VFD2800CP43A-00
VFD2500CP63A-00
VFD3150CP63A-00

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

Frame G2



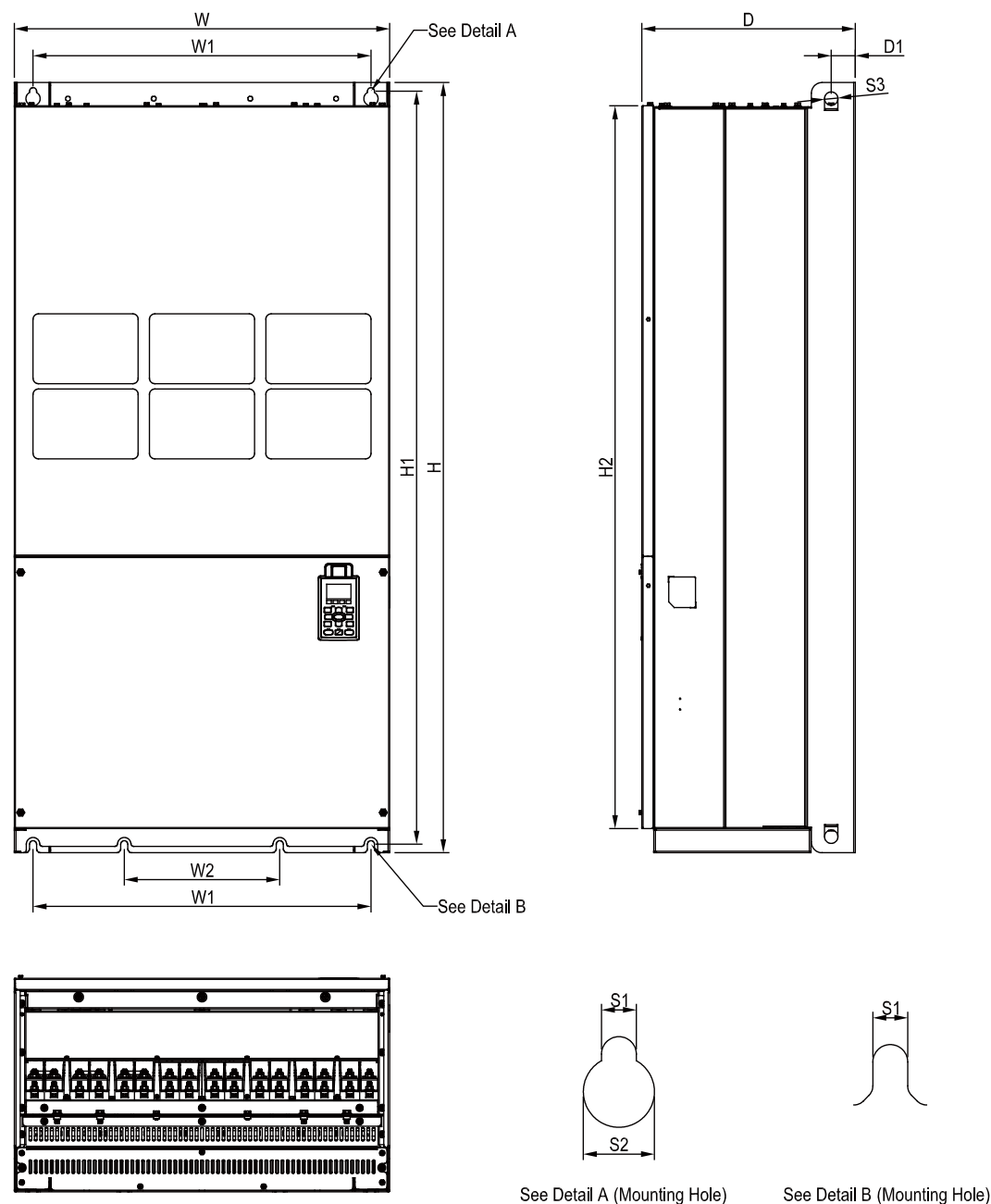
MODEL

VFD2200CP43A-21
VFD2800CP43A-21
VFD2500CP63A-21
VFD3150CP63A-21

Frame		W	H	D	W1	H1	H2	H3	S1	S2	S3	Ø1	Ø2	Ø3
G2	mm	500.0	1240.2	397.0	440.0	1000.0	963.0	913.6	13.0	26.5	27.0	22.0	34.0	117.5
	inch	19.69	48.83	15.63	217.32	39.37	37.91	35.97	0.51	1.04	1.06	0.87	1.34	4.63

Dimensions

Frame H1

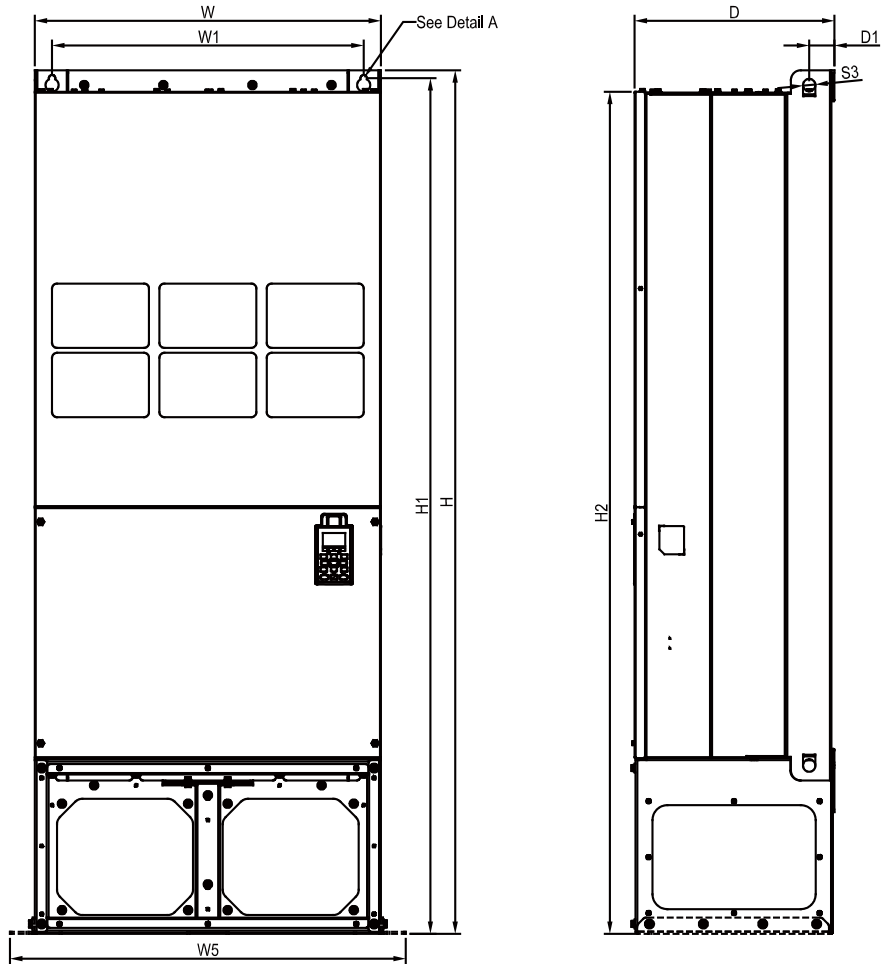


MODEL

VFD3150CP43A-00
VFD3550CP43A-00
VFD4000CP43A-00
VFD5000CP43A-00

Frame		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H1	mm	700.0	1435.0	398.0	630.0	290.0	-	-	-	-	1403.0	1346.6	-	-
	inch	27.56	56.5	15.67	24.80	11.42	-	-	-	-	55.24	53.02	-	-
Frame		H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H1	mm	-	45.0	-	-	-	-	-	13.0	26.5	25.0	-	-	-
	inch	-	1.77	-	-	-	-	-	0.51	1.04	0.98	-	-	-

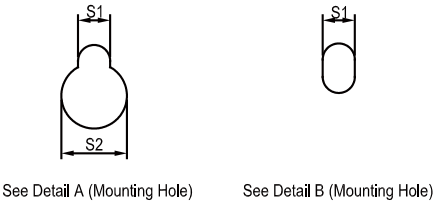
Frame H2



MODEL

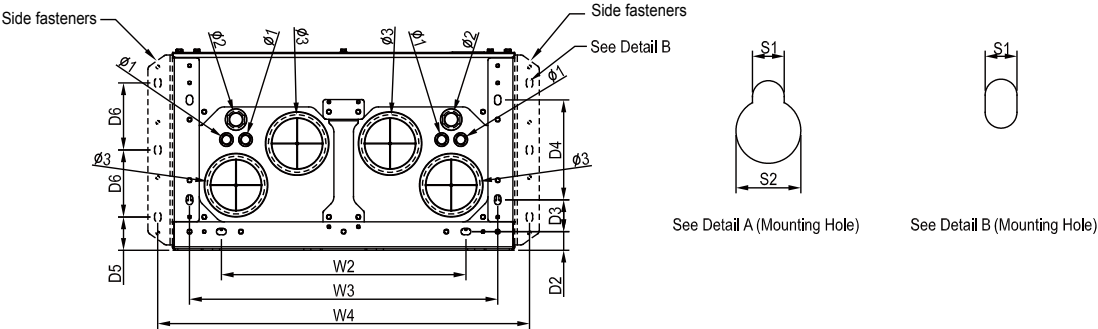
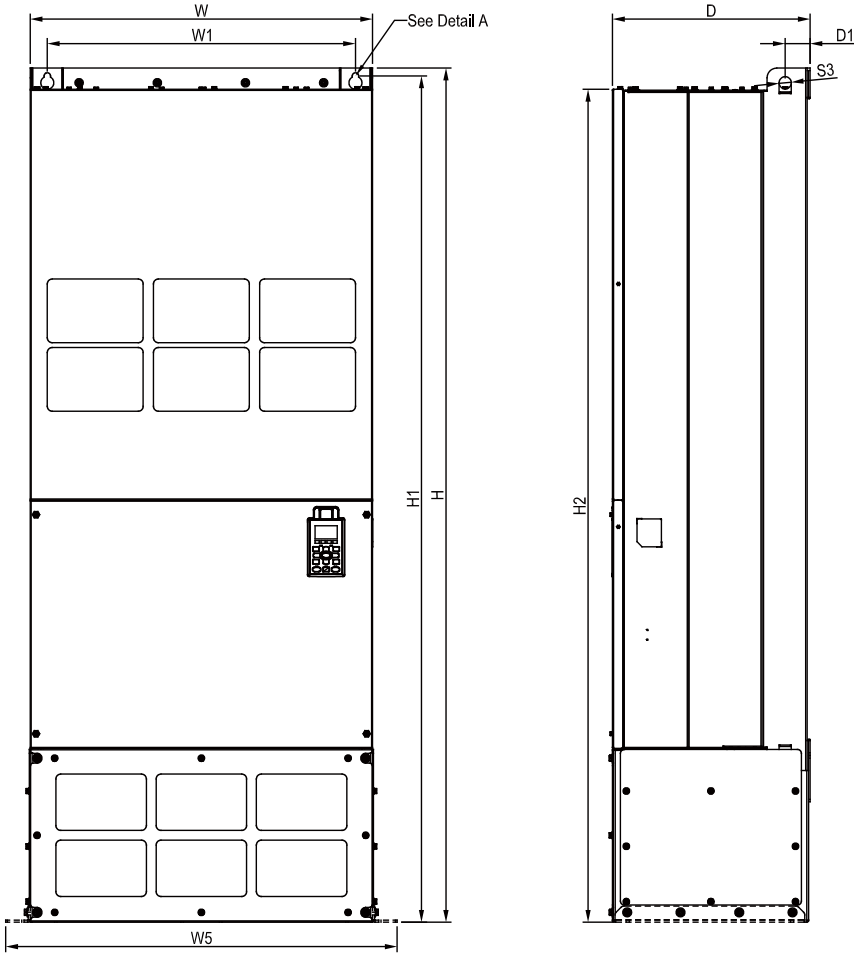
VFD3150CP43C-00
VFD3550CP43C-00
VFD4000CP43C-00
VFD5000CP43C-00

Frame		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H2	mm	700.0	1745.0	404.0	630.0	500.0	630.0	760.0	800.0	-	1729.0	1701.6	-	-
	inch	27.56	68.70	15.9	24.80	19.69	24.80	29.92	31.50	-	68.07	66.99	-	-
Frame		H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H2	mm	-	51.0	38.0	65.0	204.0	68.0	137.0	13.0	26.5	25.0	-	-	-
	inch	-	2.0	1.50	2.56	8.03	2.68	5.4	0.51	1.04	0.98	-	-	-



Dimensions

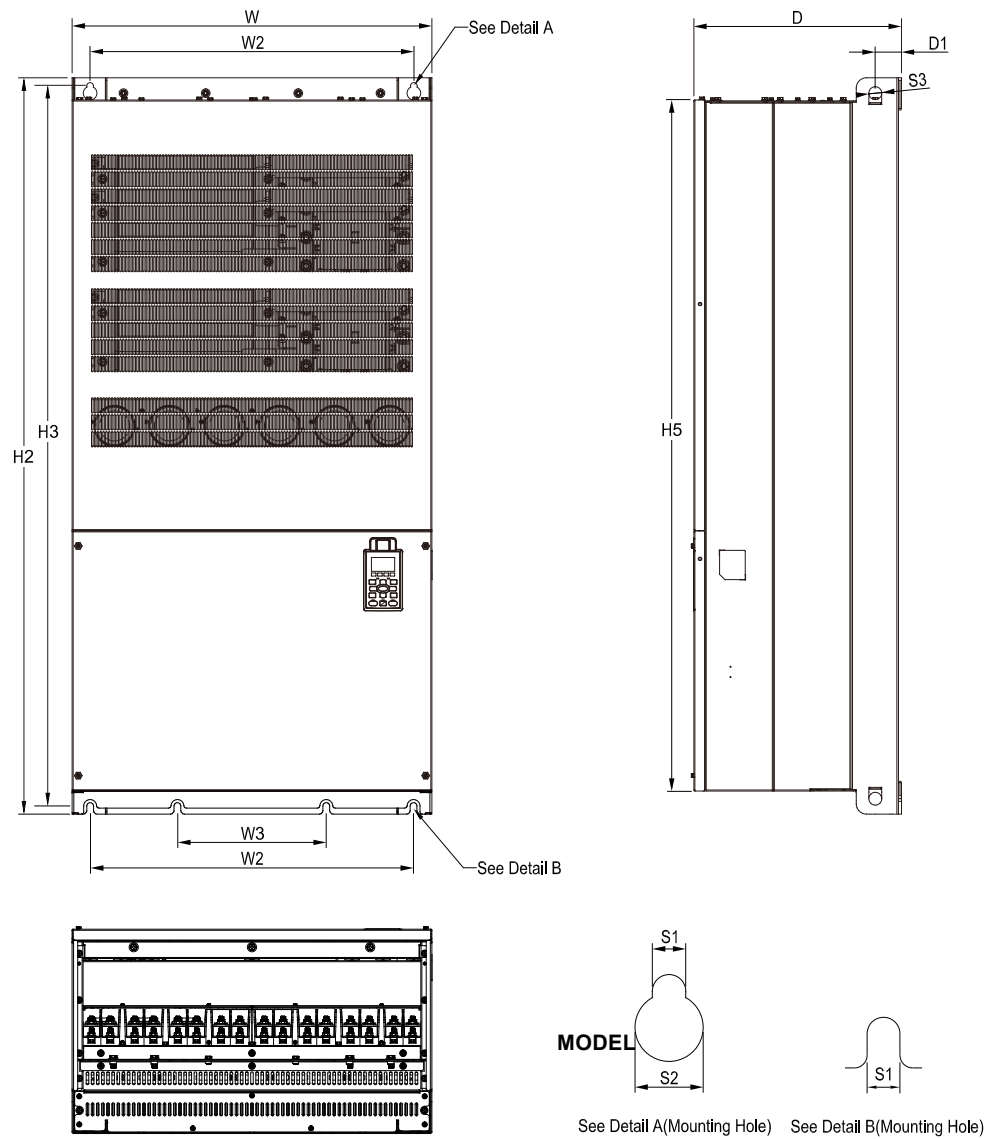
Frame H3



MODEL	
VFD3150CP43C-21	
VFD3550CP43C-21	
VFD4000CP43C-21	
VFD5000CP43C-21	

Frame		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H3	mm	700.0	1745.0	404.0	630.0	500.0	630.0	760.0	800.0	-	1729.0	1701.6	-	-
	inch	27.56	68.70	15.9	24.80	19.69	24.80	29.92	31.50	-	68.07	66.99	-	-
Frame		H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H3	mm	-	51.0	38.0	65.0	204.0	68.0	137.0	13.0	26.5	25.0	22.0	34.0	117.5
	inch	-	2.0	1.50	2.56	8.03	2.68	5.4	0.51	1.04	0.98	0.87	1.34	4.63

690 V Frame H1

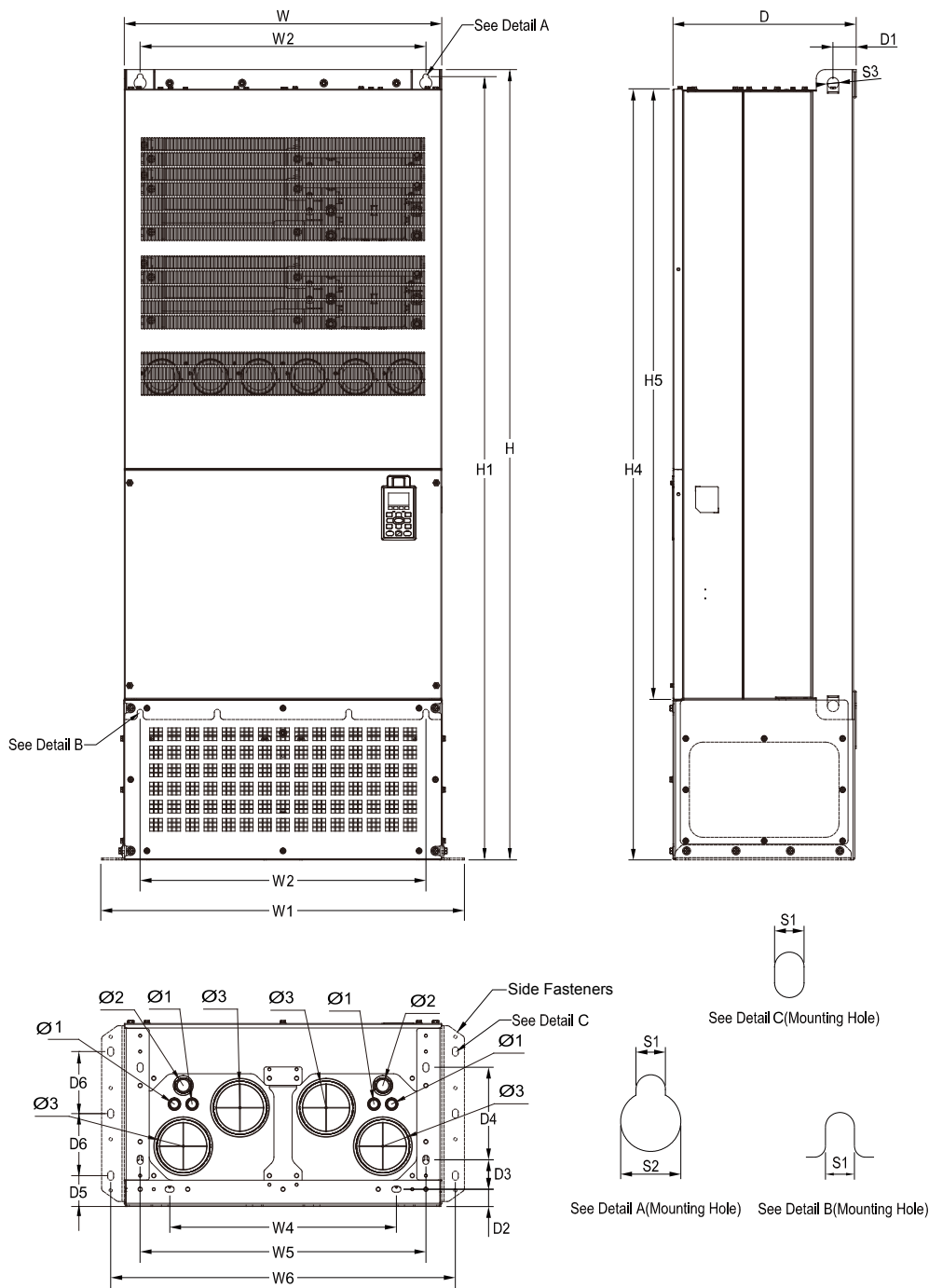


MODEL	
690V FRAME_H1	
VFD4000CP63A-00	
VFD4500CP63A-00	
VFD5600CP63A-00	
VFD6300CP63A-00	

框號		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H1	mm	700.0	-	398.0	-	630.0	290.0	-	-	-	-	1435.0	1403.0	-
	inch	27.56	-	15.67	-	24.80	11.42	-	-	-	-	56.50	55.24	-
框號		H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H1	mm	1346.6	45.0	-	-	-	-	-	13.0	26.5	25.0	-	-	-
	inch	53.02	1.77	-	-	-	-	-	0.51	1.04	0.98	-	-	-

Dimensions

690V Frame H2



MODEL 690V FRAME_H2

VFD4000CP63A-21
VFD4500CP63A-21
VFD5600CP63A-21
VFD6300CP63A-21

框號		W	H	D	W1	W2	W3	W4	W5	W6	H1	H2	H3	H4
H3	mm	700.0	1745.0	404.0	800.0	630.0	-	500.0	630.0	760.0	1729.0	-	-	1701.6
	inch	27.56	68.70	15.91	31.50	24.80	-	19.69	24.80	29.92	68.07	-	-	66.99
框號		H5	D1	D2	D3	D4	D5	D6	S1	S2	S3	Ø1	Ø2	Ø3
H3	mm	1346.6	51.0	38.0	65.0	204.0	68.0	137.0	13.0	26.5	25.0	22.0	34.0	117.5
	inch	53.02	2.01	1.50	2.56	8.03	2.68	5.39	0.51	1.04	0.98	0.87	1.34	4.63

Accessories

■ EMC-D42A

 I/O Extension Card	Terminals	Description
	COM	Common for multi-function input terminals Select SINK (NPN)/SOURCE (PNP) in J1 jumper/external power supply
	MI10 ~ MI13	Refer to parameters 02-26 ~ 02-29 to program the multi-function inputs MI10 ~ MI13. Internal power is applied from terminal E24: +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	Description
	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 Kohm Terminal response time: ON: 10 ms; OFF: 20 ms

■ EMC-R6AA

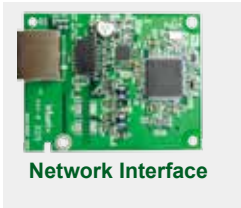
 Relay Extension Card	Terminals	Description
	RA10 ~ RA15 RC10 ~ RC15	Refer to Pr. 02.36 ~ Pr. 02.41 for multi-function input selection Resistive load: 3 A (N.O.) / 250 V _{AC} 5 A (N.O.) / 30 V _{DC} Inductive load (COS 0.4) 2.0 A (N.O.) / 250 V _{AC} 2.0 A (N.O.) / 30 V _{DC} It is used to output each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

■ EMC-BPS01

 24V Power Shift Card	Terminals	Description
	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: 0.5 A 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.

Accessories

■ CMC-MOD01



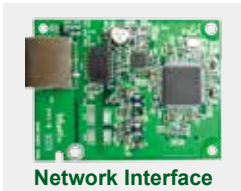
Features

- ▶ 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 100M		

■ CMC-EIP01



Features

- ▶ MDI/MDI-X auto-detect
- ▶ Supports MODBUS TCP and Ethernet/IP protocol
- ▶ AC motor drive keypad/Ethernet configuration
- ▶ 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 100M		

■ CMC-PD01



Features

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

PROFIBUS DP Connector

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

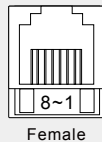
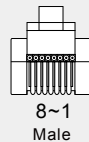
Interface	5-Pin 5.08mm pluggable connector
Transmission method	CAN
Transmission cable	Shielded twisted pair cable (with 2 power cables)
Transmission speed	125 kbps, 250 kbps, 500 kbps and extendable serial transmission speed mode
Network protocol	DeviceNet protocol

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

■ 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-

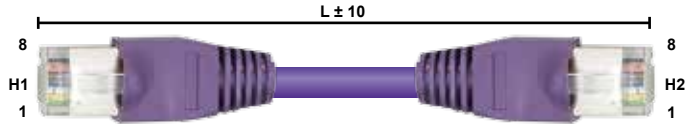
Network Interface

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

Accessories

■ CANopen Communication Cable

Model: TAP-CB05, TAP-CB10



Title	Part No.	L	
		mm	inch
1	UC-CMC003-01A	300	11.8
2	UC-CMC005-01A	500	19.6
3	UC-CMC010-01A	1000	39
4	UC-CMC015-01A	1500	59
5	UC-CMC020-01A	2000	78.7
6	UC-CMC030-01A	3000	118.1
7	UC-CMC050-01A	5000	196.8
8	UC-CMC100-01A	10000	393.7
9	UC-CMC200-01A	20000	787.4

■ CANopen Breakout Box

Model: TAP-CN03



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

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

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



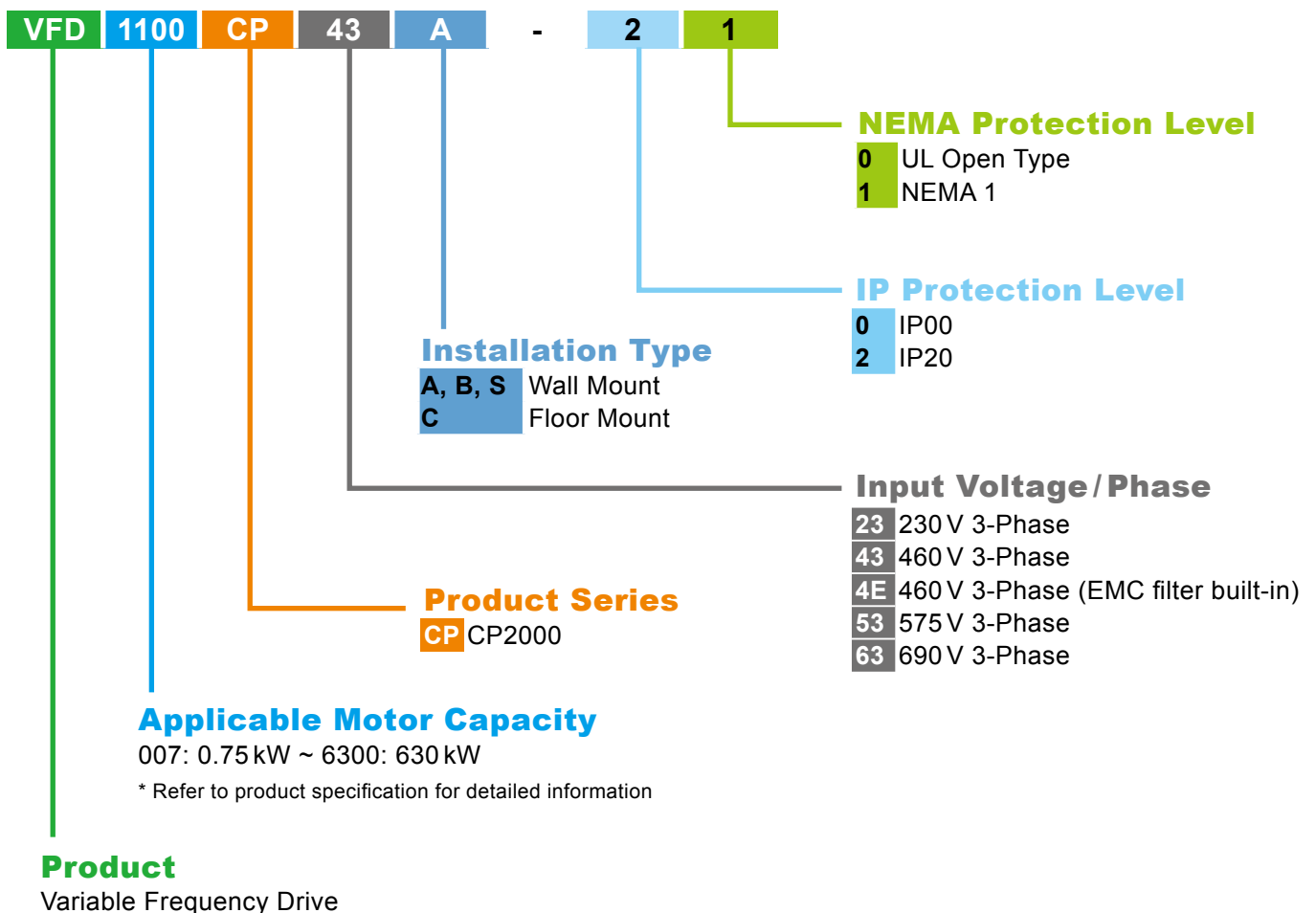
Ordering Information

Frame Size		Power Range	Models			
Frame A		230 V: 0.75 ~ 5.5 kW	VFD007CP 23A-21 VFD015CP 23A-21 VFD022CP 23A-21 VFD037CP 23A-21 VFD055CP 23A-21	VFD007CP 43A-21 VFD015CP 43B-21 VFD022CP 43B-21 VFD037CP 43B-21 VFD040CP 43A-21 VFD055CP 43B-21 VFD075CP 43B-21	VFD007CP 4EA-21 VFD015CP 4EB-21 VFD022CP 4EB-21 VFD037CP 4EB-21 VFD040CP 4EA-21 VFD055CP 4EB-21 VFD075CP 4EB-21	VFD015CP 53A-21 VFD022CP 53A-21 VFD037CP 53A-21
		460 V: 0.75 ~ 7.5 kW				
Frame B		230 V: 7.5 ~ 15 kW	VFD075CP 23A-21 VFD110CP 23A-21 VFD150CP 23A-21	VFD110CP 43B-21 VFD150CP 43B-21 VFD185CP 43B-21	VFD110CP 4EB-21 VFD150CP 4EB-21 VFD185CP 4EB-21	VFD055CP 53A-21 VFD075CP 53A-21 VFD110CP 53A-21 VFD150CP 53A-21
		460 V: 11 ~ 18.5 kW				
Frame C		230 V: 18.5 ~ 30 kW	VFD185CP 23A-21 VFD220CP 23A-21 VFD300CP 23A-21	VFD220CP 43A-21 VFD300CP 43B-21 VFD370CP 43B-21	VFD220CP 4EA-21 VFD300CP 4EB-21 VFD370CP 4EB-21	VFD185CP 63A-21 VFD220CP 63A-21 VFD300CP 63A-21 VFD370CP 63A-21
		460 V: 22 ~ 37 kW				
Frame D		230 V: 37 ~ 45 kW	Frame D1: VFD370CP 23A-00 VFD450CP 23A-00 VFD750CP 43B-00 VFD900CP 43A-00	Frame D2: VFD370CP 23A-21 VFD450CP 23A-21 VFD750CP 43B-21 VFD900CP 43A-21		Frame D1: VFD450CP 63A-00 VFD550CP 63A-00
		460 V: 45 ~ 90 kW	Frame D0-1: VFD450CP 43S-00 VFD550CP 43S-00	Frame D0-2: VFD450CP 43S-21 VFD550CP 43S-21		Frame D2: VFD450CP 63A-21 VFD550CP 63A-21
Frame E		230 V: 55 ~ 90 kW	Frame E1: VFD550CP 23A-00 VFD750CP 23A-00 VFD900CP 23A-00 VFD1100CP 43A-00 VFD1320CP 43B-00	Frame E2: VFD550CP 23A-21 VFD750CP 23A-21 VFD900CP 23A-21 VFD1100CP 43A-21 VFD1320CP 43B-21		Frame E1: VFD750CP 63A-00 VFD900CP 63A-00 VFD1100CP 63A-00 VFD1320CP 63A-00
		460 V: 110 ~ 132 kW				Frame E2: VFD750CP 63A-21 VFD900CP 63A-21 VFD1100CP 63A-21 VFD1320CP 63A-21
Frame F		460 V: 160 ~ 185 kW	Frame F1: VFD1600CP 43A-00 VFD1850CP 43B-00	Frame F2: VFD1600CP 43A-21 VFD1850CP 43B-21		Frame F1: VFD1600CP 63A-00 VFD2000CP 63A-00
		690 V: 160 ~ 200 kW				Frame F2: VFD1600CP 63A-21 VFD2000CP 63A-21
Frame G		460 V: 220 ~ 280 kW	Frame G1: VFD2200CP 43A-00 VFD2800CP 43A-00	Frame G2: VFD2200CP 43A-21 VFD2800CP 43A-21		Frame G1: VFD2500CP 63A-00 VFD3150CP 63A-00
		690 V: 250 ~ 315 kW				Frame G2: VFD2500CP 63A-21 VFD3150CP 63A-21

Ordering Information

Frame Size		Power Range	Models			
Frame H		460 V: 315 ~ 500 kW	Frame H1: VFD3150CP 43A-00 VFD3550CP 43A-00 VFD4000CP 43A-00 VFD5000CP 43A-00	Frame H2: VFD3150CP 43C-00 VFD3550CP 43C-00 VFD4000CP 43C-00 VFD5000CP 43C-00	Frame H3: VFD3150CP 43C-21 VFD3550CP 43C-21 VFD4000CP 43C-21 VFD5000CP 43C-21	
Frame H (690 V Model)		690 V: 400 ~ 630 kW				Frame H1: VFD4000CP 63A-00 VFD4500CP 63A-00 VFD5600CP 63A-00 VFD6300CP 63A-00 Frame H2: VFD4000CP 63A-21 VFD4500CP 63A-21 VFD5600CP 63A-21 VFD6300CP 63A-21

Model Name





Attention

Standard Motors

Output reactor

Please refer to manual to use the output AC reactor when the output cable is long.

Torque Characteristics and Temperature Rise

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

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

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

Vibration

When the motor drives the machine, resonances may occur, including machine resonances.

Abnormal vibration may occur when operating a 2-pole motor at 60Hz or higher.

Noise

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

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

Special Motors

High-speed Motor

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

Explosion-proof Motor

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

Submersible Motor & Pump

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

Please check before operation and select the capacity of the AC motor drive carefully.

The motor temperature characteristics differ from a standard motor, please set the motor thermal time constant to a lower value.

Brake Motor

When the motor is equipped with a mechanical brake, the brake should be powered by the mains supply.

Damage may occur when the brake is powered by the drive output. Please DO NOT drive the motor with the brake engaged.

Gear Motor

In gearboxes or reduction gears, lubrication may be reduced if the motor is continuously operated at low speeds.

Please DO NOT operate in this way.

Synchronous Motor

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

Single-phase Motor

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

Environmental Conditions

Installation Position

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

Wiring

Limit of Wiring Distance

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

Maximum Motor Cable Length

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

Choose the Right Cable

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

Grounding

Please ground the drive completely by using the grounding terminal.

How to Choose the Drive Capacity

Standard Motor

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

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

Special Motor

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

Transportation and Storage

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

Peripheral Equipment

Molded-Case Circuit Breakers (MCCB)

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

Add a Magnetic Contactor(MC) in the Output Circuit

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

Add a Magnetic Contactor (MC) in the Input Circuit

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

Motor Protection

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

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

DO NOT Use Capacitors to Improve the Power Factor

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

Do NOT Use Surge Absorber

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

Lower the Noise

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

Method Used to Reduce the Surge Current

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

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