



Digitized Automation for a Changing World

# Delta Open-Loop Variable-Torque Standard Drive VP3000 Series

# High Efficiency, Stability, and Lower Harmonics Define this Next-Generation Standard Drive for the Fluid Industry

## Open-Loop Variable-Torque Standard Drive VP3000 Series

The Delta VP3000 Series features excellent drive capabilities and stability. The VP3000 Series also provides a predictive maintenance (PdM) function for key components and offers an upgrade for lower harmonic improvement. Delta has introduced a new generation of drive for the fluid industry.

Power ranges from 0.75 to 630kW for various applications. High-power models are in a chassis design to fulfill effective space utilization and simple maintenance. The VP3000 is ideal for variable-torque equipment such as blowers, pumps, HVAC, water treatment and supply systems, compressors, and more.







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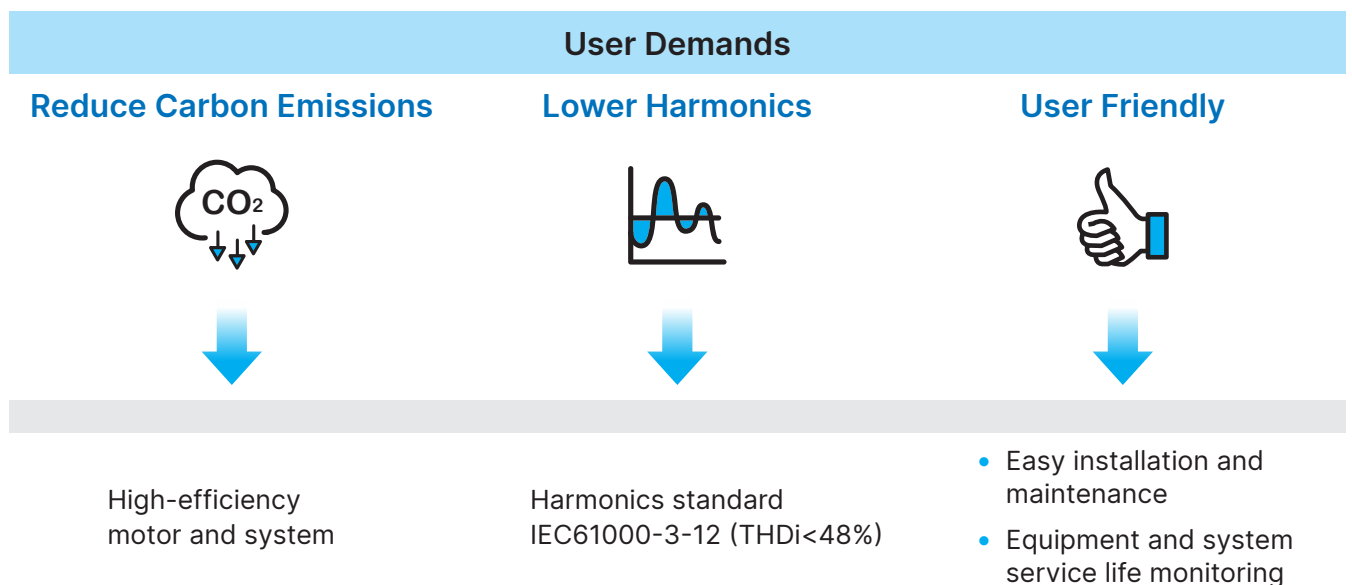
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# Fluid Automation Control Achieves a Total Win-Win for Production, Economy, and Environmental Sustainability

As global warming worsens and electricity costs rise sharply, enterprises around the world have started launching carbon reduction initiatives. Energy conservation and carbon emission reduction are vital issues for manufacturers to cope with and they are also part of corporate social responsibility.

Considering economic development and environmental protection, Delta has developed the Open-Loop Variable-Torque Standard Drive VP3000 Series for the fluid industry. The VP3000 Series can be widely applied in various fields such as water supply, wastewater treatment, HVAC, industrial water/electricity/gas supply, constant temperature control, and other applications to substantially enhance energy efficiency and reduce carbon emissions.







Air Compressors

Tunnel Ventilation

## An Optimal Choice for the Fluid Industry



High  
Energy Efficiency



Lower  
Harmonics



Simple  
Maintenance



Optimal  
Panel Space



Long Equipment  
Lifespan



Stable Operation  
Without Downtime



Safety & Regulation  
Compliance



Functional  
Application

## Features

### Energy Efficiency

IM, PM, and high-efficiency SynRM motor control mode

### Lower Harmonics

Better than EN 61000-3-12 standard, harmonics reaches min. 35%

### PdM

Monitors the key components' service life for stable equipment operation

### Enhanced PCB Coating

In compliance with the IEC 60721-3-3 class 3C3 standard

### Compact Size

Slim type appearance design optimizes the panel front space





### Functional Safety

Safe Torque Off (STO) SIL3

### Custom Development Platform

Built-in PLC 20k steps, with drive and control integrated

### High-Speed Network

Supports various industrial communication protocols

### Interference Reduction

Built-in EMC filter, in compliance with EN61800-3 C2, C3

### Keypad Option

- LED Keypad: Basic digital display
- LCD Keypad: Graphic display
- LCD Keypad: Graphic display with built-in Bluetooth (Optional)

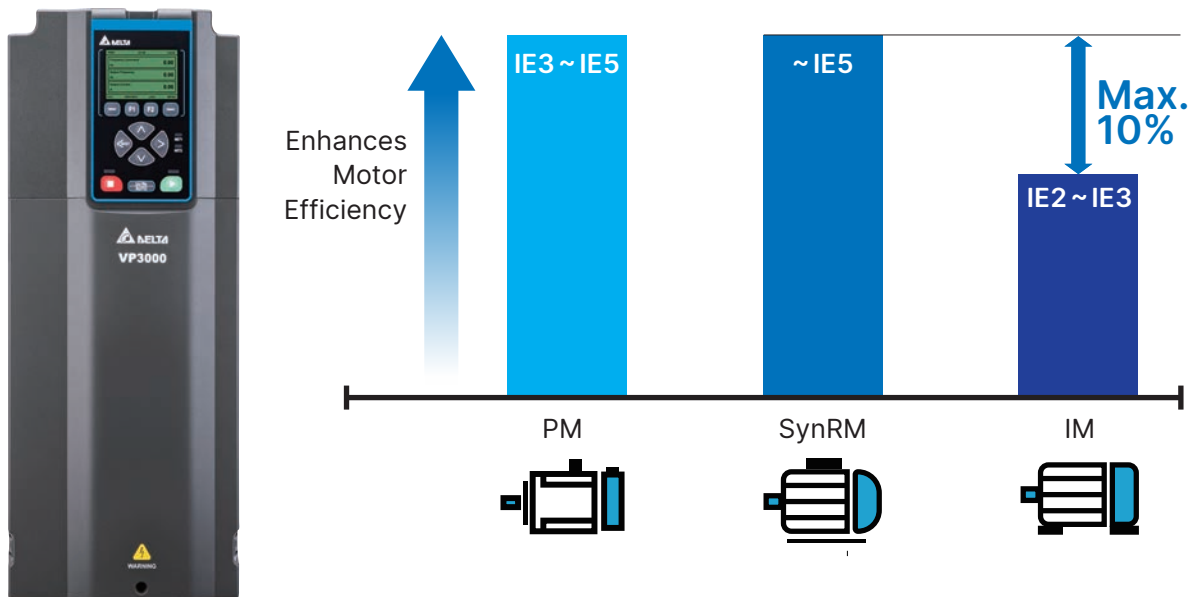


## Features

### Energy Efficiency

#### Controls Various High-Efficiency Motors

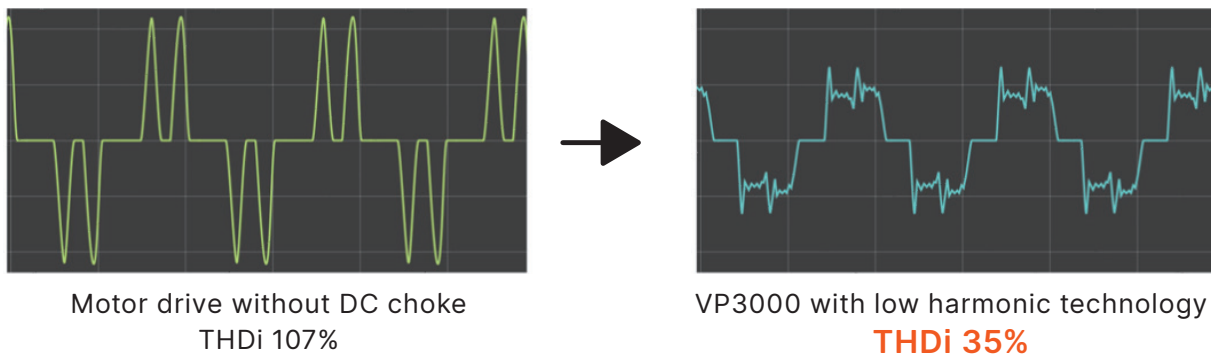
- Supports permanent magnet motors (PM), synchronous reluctance motors (SynRM), and induction motors (IM)
- High system integration adopts Delta's IE5 MSI SynRM for better efficiency, stability, and energy savings



### Lower Harmonics

#### Effective Harmonic Suppression

- Adopts lower harmonic technology to effectively suppress harmonics without an extra reactor\*
- The lowest harmonics can reach THDi Min. 35%, much better than EN 61000-3-12 standard (THDi < 48%)

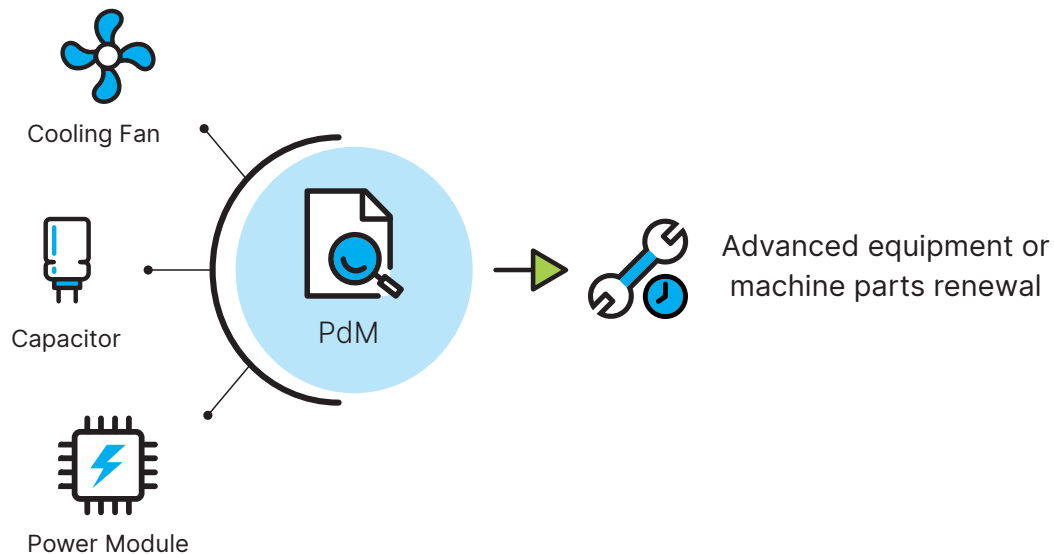


\*Available in lower harmonic models. For details, please refer to Model Name Explanation.

## PdM

### Predictive Maintenance (PdM)

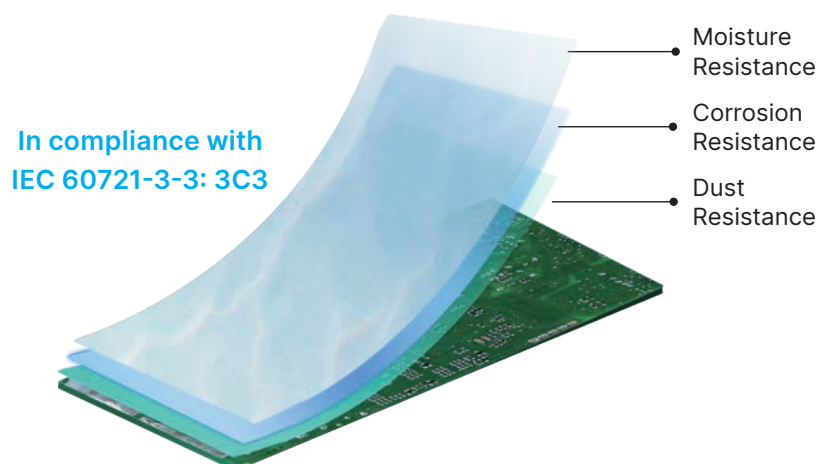
Early maintenance notification for power module, capacitor, and cooling fan to allow replacement before end of service life and prevent sudden downtime



## Enhanced PCB Coating

### Enhances PCB Coating and Corrosion Resistance Capacity

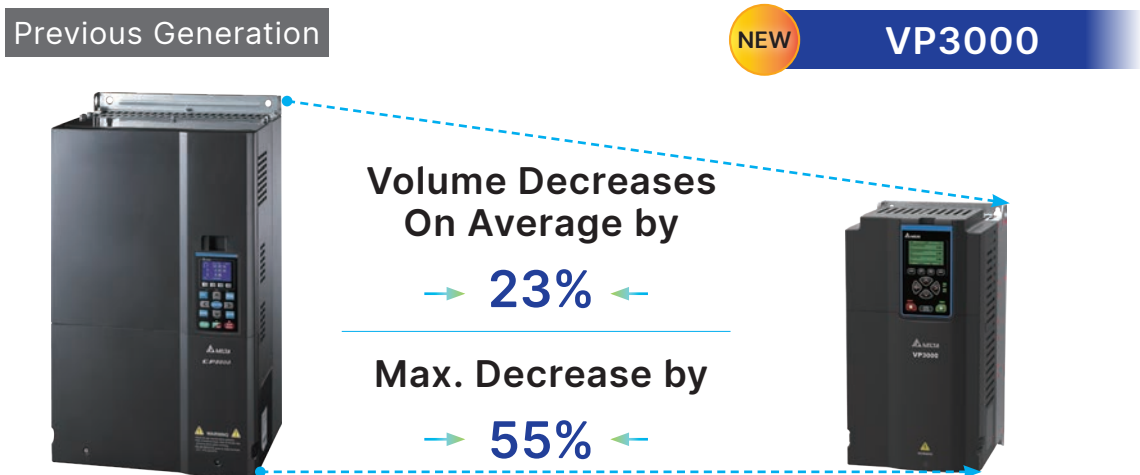
- In workshops, materials such as oil, gas, dust or corrosive chemicals might spread over on the PCB through the heat-dissipating hole of the drive. With long-term changes in the temperature and humidity, the effects may corrode the PCB and further deteriorate components
- VP3000 helps strengthen the PCB coating and is compliant with the IEC 60721-3-3: 3C3 standard, which extends the lifespan of the drive operating in harsh environments or under corrosive gas exposure (e.g., salt mist, SO<sub>2</sub>, O<sub>3</sub>, H<sub>2</sub>S, and more)



## Features

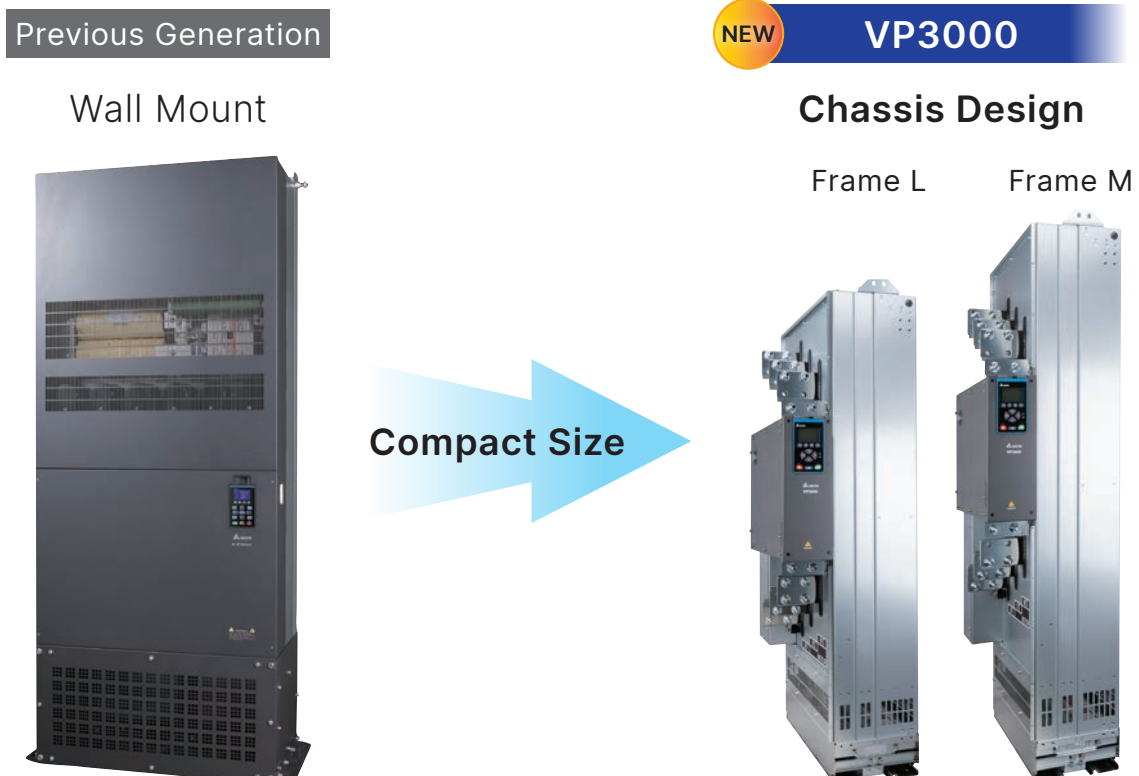
### Compact Size

#### Component Optimization Technology



#### High Power Chassis Design

- High power models from 280 to 630 kW are in a chassis design, which substantially reduces the volume and cable configuration and optimizes the panel space
- The chassis design simplifies the operating process, so it can be easily disassembled and moved during maintenance

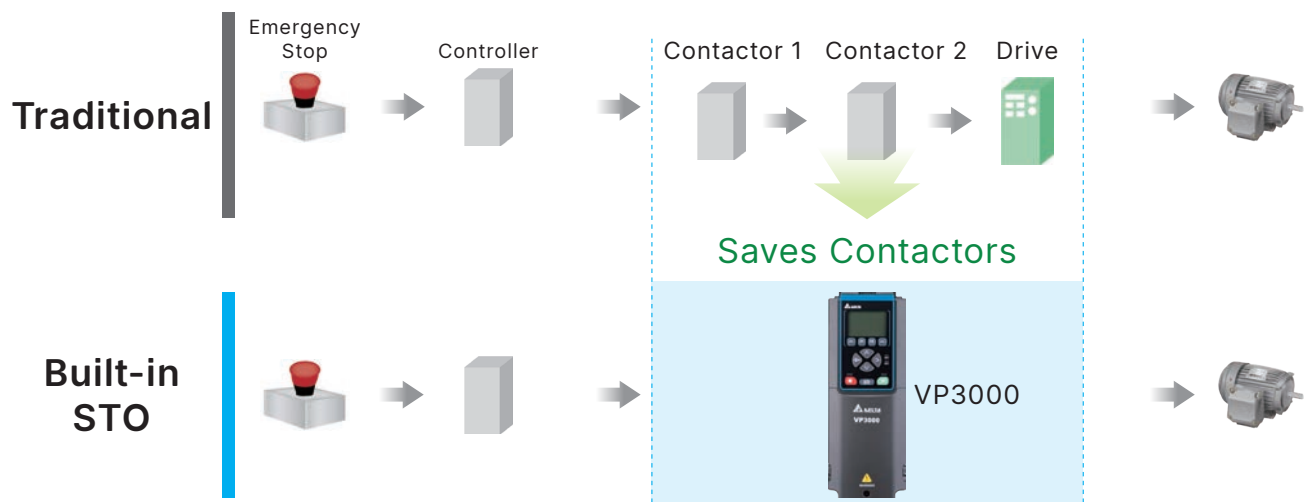




## Functional Safety

### Built-in Safe Torque Off (STO) Complies with International Standards

- Built-in STO SIL3
- Standards:  
ISO 13849-1:2015 Category 3 PL e  
EN 60204-1 Category 0  
EN 61508 SIL3  
EN 62061 SIL CL 3



## Custom Development Platform

### Built-in Secondary Development Platform to Enhance Air Compressor Applications

- Built-in PLC 20k steps, with drive and control integrated



## High-Speed Network

### Supports Various Industrial Communication Protocols

- Built-in Modbus and BACnet MS/TP
- Communication Cards:

Modbus TCP

BACnet IP

EtherNet/IP™

DeviceNet™

PROFINET®

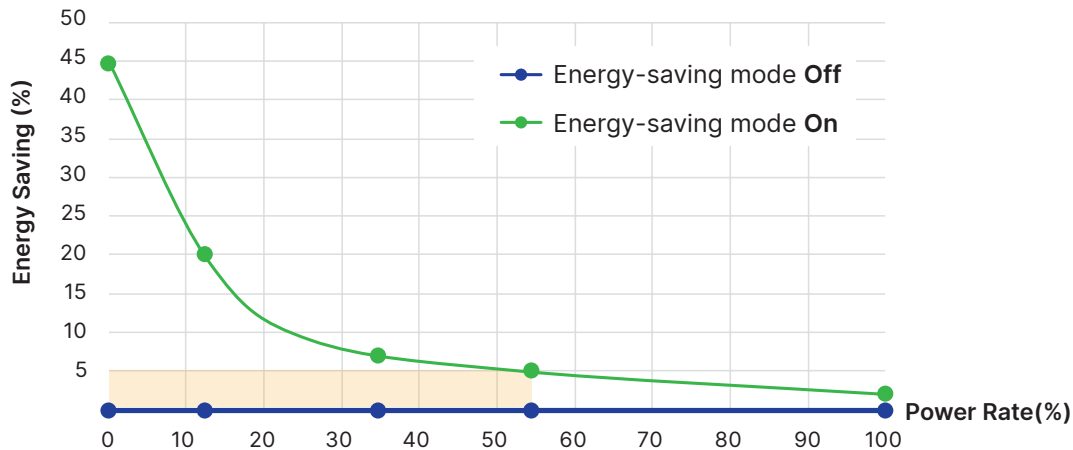
PROFINET®

CANopen

## Functions

### Automatic Energy Saving (AES) Mode Dedicated to IM Motors

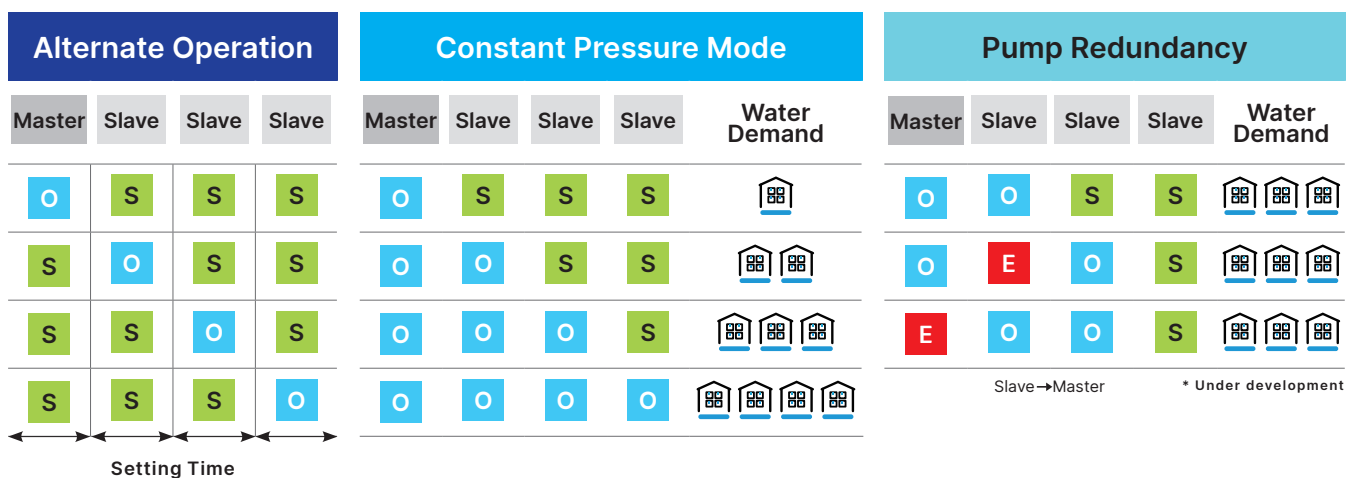
As the VP3000 Series runs to a steady state, it automatically enters energy-saving mode and achieves optimal energy-saving benefits through self-learning motor parameters



\* The actual energy saving status depends on the operating platform

### Multi-Pump Function

- Alternate operation: Multiple pumps operate alternately at regular intervals to facilitate maintenance and extend equipment life. The time period can be set in hours / days / weeks
- Constant pressure mode: Provides consistent energy-efficient water supply by staging or destaging operating pump quantities based on real-time demands
- Pump redundancy: In case of sudden failure of the operating drive, the backup drive will automatically take over the operation to maintain water supply

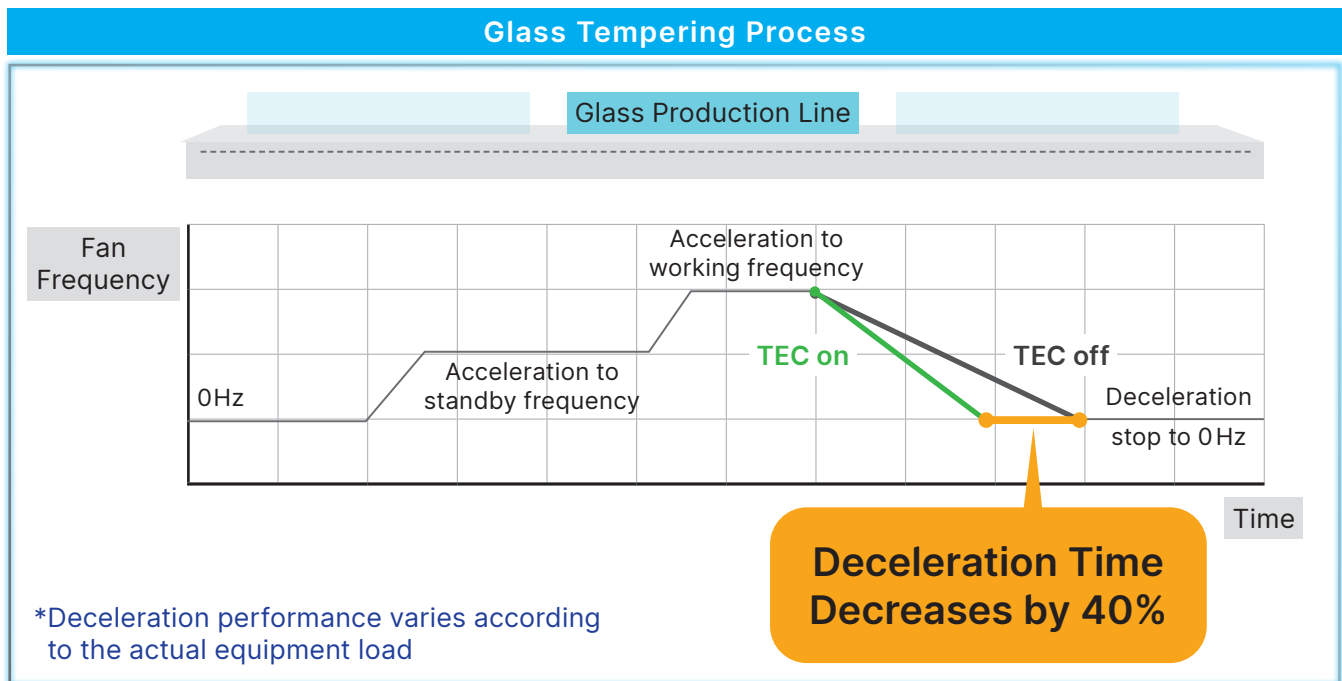


Drive Status    O Operating    S Standby    E Error

## Fan Traction Energy Control (TEC)

Large industrial fans can effectively enhance the deceleration performance without a braking resistor, shorten the deceleration time by up to 40%, protect the drive from overvoltage, increase productivity, and stabilize equipment operation

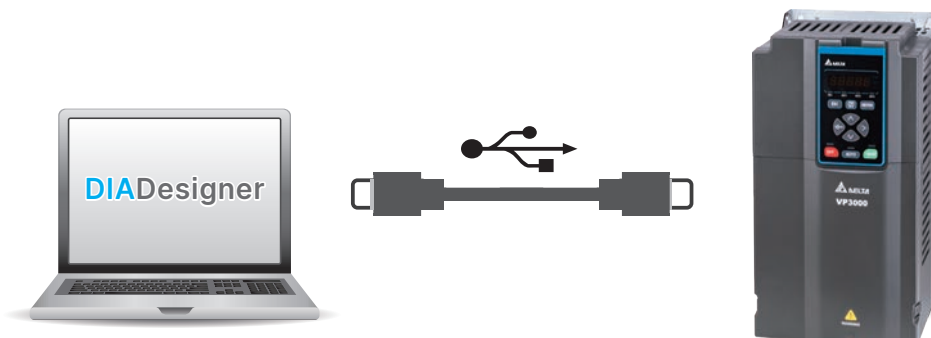
Applications: Glass tempering furnace, large fan parking, and others



## Built-in USB Port

Built-in USB port facilitates the drive setting, updating, real-time monitoring, and system tuning process

- No need of USB or RS-485 connectors
- Supports offline (drive power off) parameter setting/copying and system update





# Functions

## USB Type-C

- Connects to PC software DIAStudio
- Firmware update

## Real-Time Clock Battery

- Please install the battery CR2032

## Micro SD

- Signal logging function
- Multi-language package
- Parameter backup
- PLC program backup
- Firmware update

## Control Circuit Terminals

- Analog signal terminal
- Relay output terminal

## Communication Port

Built-in Modbus, BACnet MS/TP



**Keypad Slot**  
RJ45 connector



**I/O Expansion Card Slot**

- AI/AO
- DI/DO
- Relay



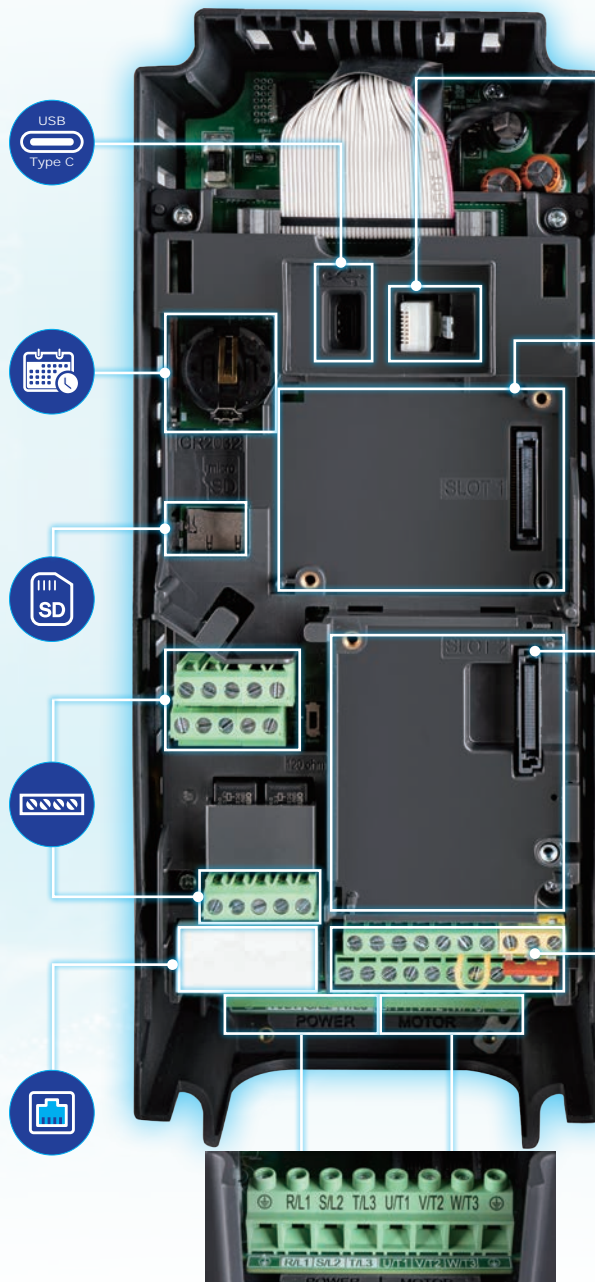
**Communication Card Slot**

- EtherNet IP
- Profibus DP
- Profinet
- CANopen
- Modbus TCP
- DeviceNet



**Control Circuit Terminals**

- AI/AO, DI/DO terminal
- STO terminal



Main Power Input Terminal

Motor Output Terminal



## Keypad

UL open type with built-in LED basic keypad  
(KPV-CE02)



UL type 1 with built-in LCD graphic keypad  
(KPV-CC01)



Optional: LCD graphic keypad with Bluetooth & USB  
(KPV-CC02)

\*Under development

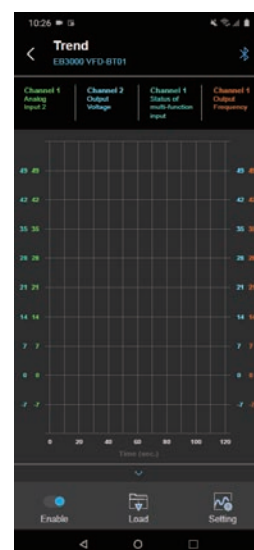
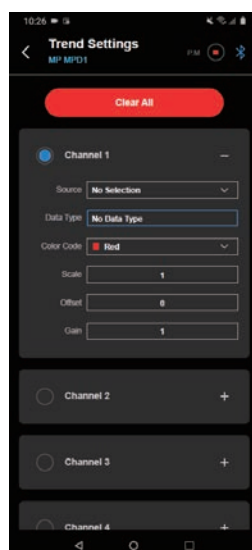
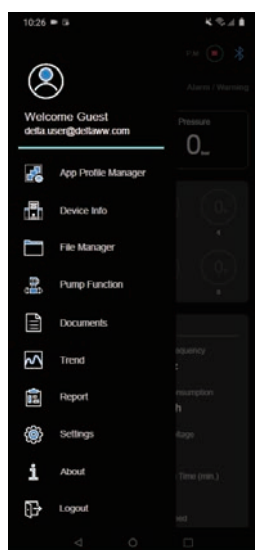


Industry-Specific Parameters	Multi-Language		Start Wizard	Communication
01: User-defined 02: AHU 03: Fan 04: Pump 05: Compressor	<ul style="list-style-type: none"> <li>English</li> <li>French</li> <li>Spanish</li> <li>Portuguese</li> <li>German</li> <li>Italian</li> </ul>	<ul style="list-style-type: none"> <li>Polish</li> <li>Russian</li> <li>Turkish</li> <li>Traditional Chinese</li> <li>Simplified Chinese</li> </ul>	<ul style="list-style-type: none"> <li>Language</li> <li>Time</li> <li>Motor nameplate</li> <li>Acceleration and deceleration time</li> <li>I/O settings</li> </ul>	<ul style="list-style-type: none"> <li>Bluetooth</li> <li>USB (Only KPV-CC02 has built-in USB)</li> </ul>

## Mobile APP\*

- Remote control
- Setup wizard
- Dashboard
- Parameter setting
- Parameter backup
- Warning/Error logging
- I/O status
- Waveform monitoring
- Reports

\*Under development



# Specifications

## 460 V Models

Frame Size	Model	Frame			Output				Input	Power	
	VFD_---VP43	IP20 UL Open Type <sup>1</sup>	IP20 UL Type 1 with C3 Filter	IP20 UL Type 1 with C2 Filter	Applicable Motor Output		Continuous Rated Output Current	Light Load Output Current	Max. Output Current	Rated Input Current	Power Supply Capacity
					(kW)	(HP)	I <sub>CON</sub>	I <sub>ld</sub>	I <sub>max</sub>	(A) <sup>*2</sup>	(kVA) <sup>*3</sup>
A	3A0	A1	A2	B3	0.75	1	3	2.9	3.7	4.2	2.4
	4A2	A1	A2	B3	1.5	2	4.2	4	5.9	5.9	3.3
	5A6	A1	A2	B3	2.2	3	5.6	5.3	7.2	7.8	4.5
	7A2	A1	A2	B3	3	4	7.2	6.9	10.1	10.1	5.7
	011	A1	A2	B3	4	5	11	10	13	15.4	8.8
B	013	B1	B2	B3	5.5	7.5	13	12	16	18.2	10.4
	018	B1	B2	B3	7.5	10	18	17	22.7	25	14
C	025	C1	C2	C2	11	15	25	24	30.8	35	20
	032	C1	C2	C2	15	20	32	30.4	44.3	45	25
	038	C1	C2	C2	18.5	25	38	36.1	56.9	53	30
D	045	D1	D2	D2	22	30	45	43	67.9	45	36
	062	D1	D2	D2	30	40	62	59	76.3	62	49
E	073	E1	E2	E2	37	50	73	70	104	73	58
	090	E1	E2	E2	45	60	90	87	122	90	72
F	110	F1	F2	F2	55	75	110	105	148	110	88
G	150	G1	G2	G2	75	100	150	143	185	150	120
H	180	H1	H2	H2	90	125	180	171	247	180	143
	220	H1	H2	H2	110	150	220	210	287	220	175
I	260	I1	I2	I2	132	175	260	248	350	260	207
	310	I1	I2	I2	160	215	310	295	418	310	247
J	370	J1	J2	J2	185	250	370	352	455	370	295
	395	J1	J2	J2	200	270	395	376	498	395	315
K	460	K1	K2	K2	220	300	460	438	566	460	366
	485	K1	K2	K2	250	340	485	461	597	485	386
L	530	-	L	-	280	375	530	505	652	530	422
	616	-	L	-	315	425	616	587	757	616	491
	683	-	L	-	355	475	683	650	840	683	544
	770	-	L	-	400	530	770	733	1020	770	613
M	866	-	M	-	450	600	866	825	1065	866	690
	930	-	M	-	500	665	930	886	1143	930	741
	1K1	-	M	-	560	745	1100	1042	1345	1100	876
	1K2	-	M	-	630	840	1212	1154	1490	1212	966

I <sub>CON</sub>	Continuous output current without overload
I <sub>ld</sub>	110% of rated output current in light load: 1 minute for every 5 minutes
I <sub>max</sub>	Maximum output current: 2 sec. at start-up
Rated Input Voltage	Three-phase, 380 ~ 480 V <sub>AC</sub> (-15±10%)
Rated Input Frequency	50/60Hz
Frequency Tolerance	+15% (47~63Hz)
Displacement Power Factor (cosθ)	0.98
Efficiency (%)	Frame A~C: 97; Frame D~M: 98
Braking Chopper	Not apply
DC Choke	The suffix CA is built-in <sup>4</sup>

\* NOTE:

1. Frame L and M models are IP00 Chassis models.
2. The rated input current may fluctuate with the power supply impedance, power transformer, input reactors, DC chokes, and load.
3. The power supply capacity is calculated based on the rated input power and 480 VAC, which is used as a reference for selecting the power transformer capacity.
4. Refer to Model Name Explanation..
5. For high altitude, high ambient temperature, high carrier frequency, and advanced motor vector control, refer to the Derating in the user manual.
6. Refer to the user manual for the default value of carrier frequency, adjustable range and derating curve.



# General Specifications


Item		Specifications
Control Characteristics	Control Mode	PWM control
	Control Method	1: V/F, 2: SVC, 3: PM sensorless, 4: SynRM sensorless
	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	IMVF, IMSVC: 1:50 IMFOC sensorless: 1:100 PMSVC: 1:20 PMFOC sensorless: 1:50
	Torque Limit	In FOC mode, torque quadrants can be set separately via parameters
	Torque Accuracy	±5%
	Max. Output Frequency (Hz)	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: 0.01Hz Analog command: 0.03x max. output frequency / 60Hz (±11-bit)
	Overload Tolerance	Rated output current is 110%: 1 minute for every 5 minutes
	Frequency Setting Signal	0~+10V, 4~20mA, 0~20mA
	Accel./Decel. Time	0.00~600.00/0.0~6,000.0seconds
Protection Characteristics	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., Three-wire sequence, Auto-Tuning, Slip compensation, Torque compensation, JOG frequency, Frequency upper/lower limit settings, DC injection braking at start/stop, High slip braking, Energy saving control, Modbus communication
	Fan Control	Frame A~F: ON / OFF switch control Frame G and above: PWM control
	Motor Protection	Electronic thermal relay protection
	Over-Current Protection	Over-current protection for 190% rated current
	Over-Voltage Protection	460V models: drive stops running when DC bus voltage exceeds 820V
	Over-Temperature Protection	Built-in temperature sensor
	Stall Prevention	Stall prevention during acceleration, deceleration, and running independently
Certifications	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
Safety Functions		Safe Torque Off (STO per EN/61800-5-2) TUV Rheinland certification EN IEC 62061/EN 61508, Maximum SIL 3 EN ISO13849-1, Cat.3/PLd

\*NOTE:

1. Max. output current setting changes with the carrier wave and control mode.
2. According to motor protection requirements, adjust the protection level through drive internal parameters.

## Operating Environment

**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/cm<sup>2</sup> per year.

Environment	Installation Location	IEC60364-1/IEC60664-1 Pollution degree 2, indoor use only	
	Surrounding Temperature (°C)	Storage / Transportation	-25 ~ +70
	Rated Humidity (%)	Max. 95. Only allowed in non-condensation, non-frost, non-conductive environment	
	Air Pressure (kPa)	Operation / Storage	86 ~ 106
		Transportation	70 ~ 106
	Pollution Level	IEC60721-3-3	
		Operation	Class 3C3; Class 3S2
		Storage	Class 1C2; Class 1S2
		Transportation	Class 2C2; Class 2S2
		If the AC motor drive is to be used in a harsh environment with a high level of contamination (e.g., dew, water, dust), make sure it is installed in an environment qualified for IP54 such as in a cabinet.	
	Altitude	Operation	If the AC motor drive is installed at an altitude 0 ~ 1,000 m, follow normal operation restriction. If it is installed at altitude over 1,000 m, decrease 1% of rated current or lower 0.5°C of temperature for every 100 m increase in altitude. Maximum altitude for Corner Grounded TN system is 2,000 m. Maximum altitude for 480 V <sub>AC</sub> input voltage is 2,000 m. Maximum altitude for 380 V <sub>AC</sub> input voltage is 4,000 m.
Package Drop		Storage / Transportation	ISTA procedure 1A (according to weight) IEC60068-2-31
Vibration		1.0 mm, peak to peak value range from 2 Hz to 13.2 Hz; 0.7 G ~ 1.0 G range from 13.2 Hz to 55 Hz; 1.0 G range from 55 Hz to 512 Hz. Comply with IEC 60068-2-6.	
Impact		IEC/EN 60068-2-27	
Operation Position		Max. allowed offset angle $\pm 10^\circ$ (under normal installation position)	

## Operation Temperature and Protection Level

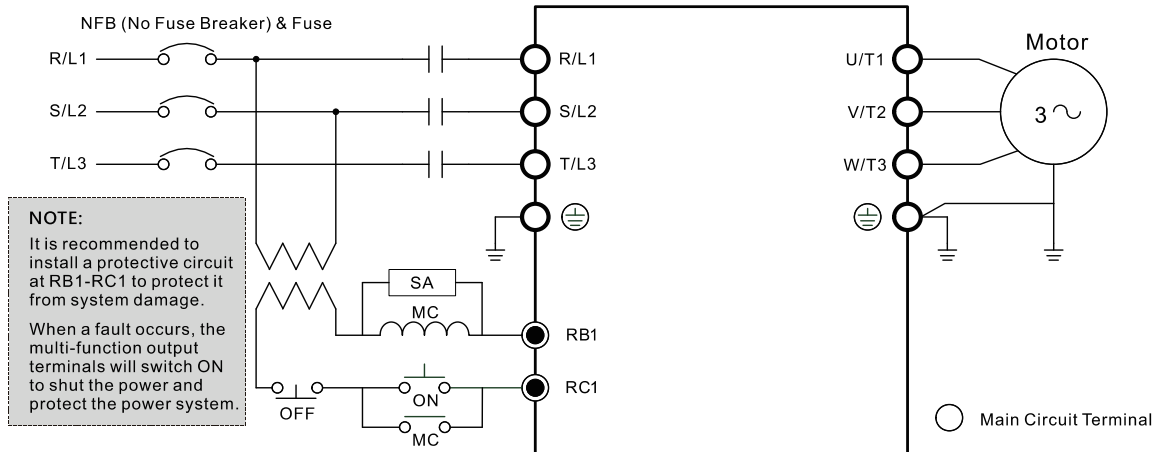
Frame	Top Cover	Conduit Box	Protection Level	Operation Temperature
A1 ~ K1	Yes	N/A	IP20/UL Open Type	-20°C ~ 50°C
A2 ~ K2	Yes	Yes	IP20/UL Type1	-20°C ~ 45°C
L, M	N/A	N/A	IP00 Chassis	-20°C ~ 50°C

# Wiring

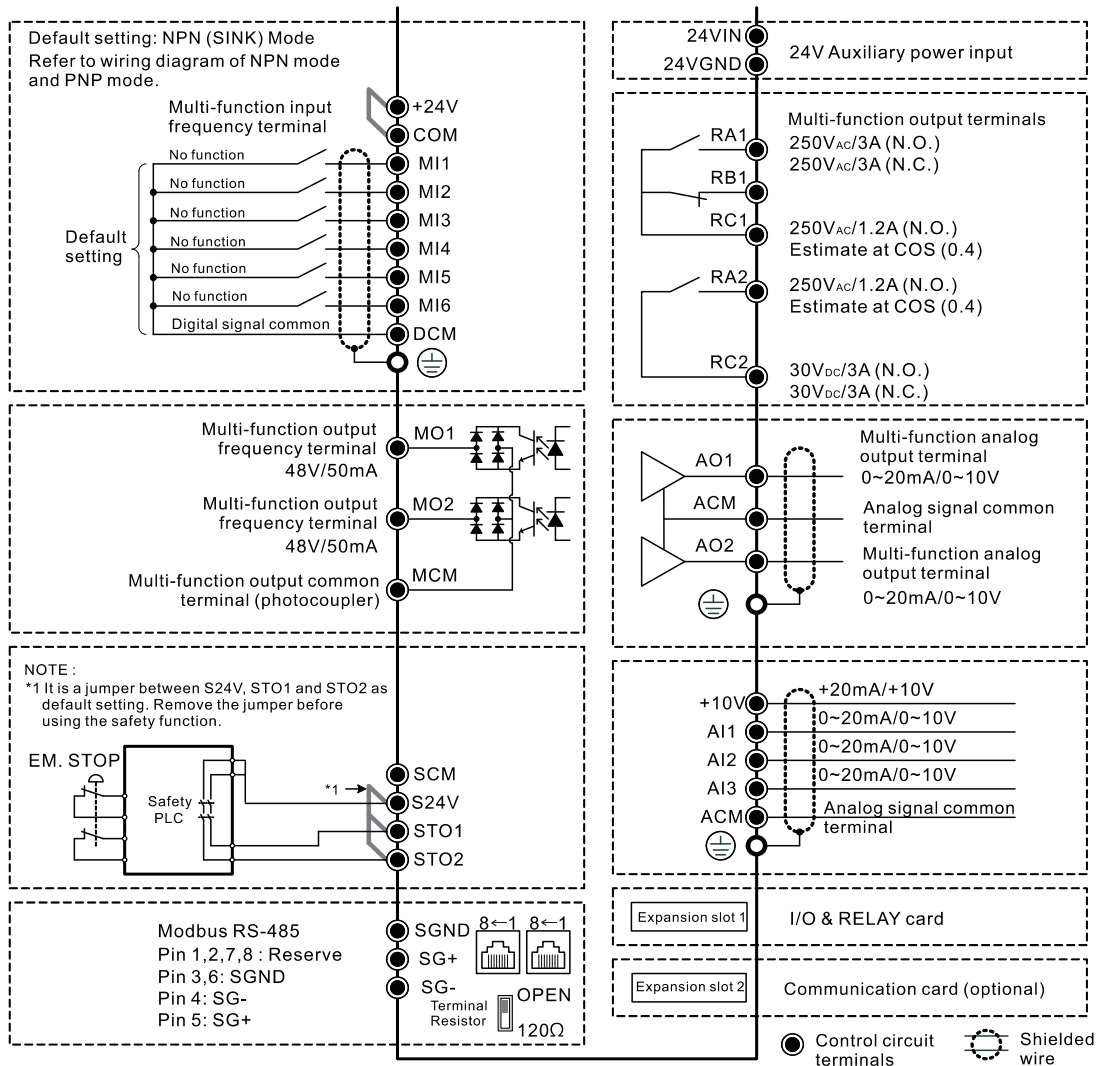
## Wiring Diagram for Main Circuit Terminals

Applicable for all frame sizes

Input: 3-phase power



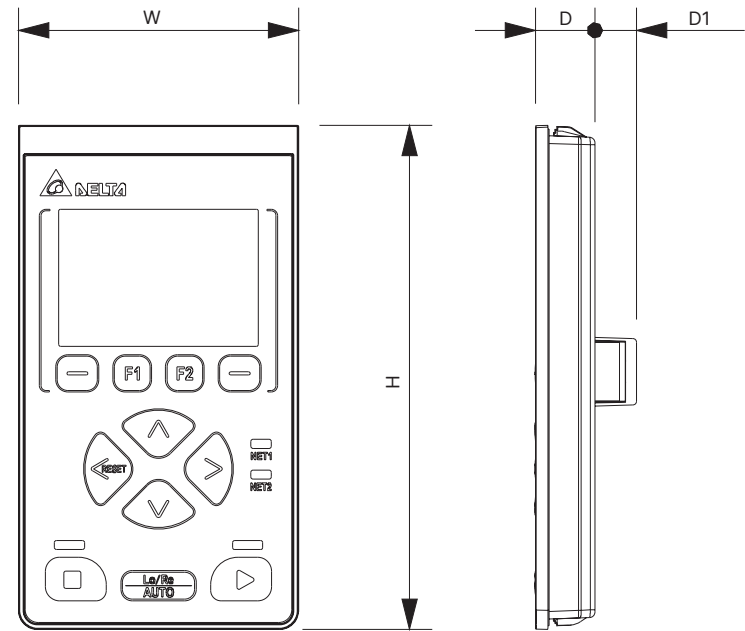
## Wiring for Control Terminals



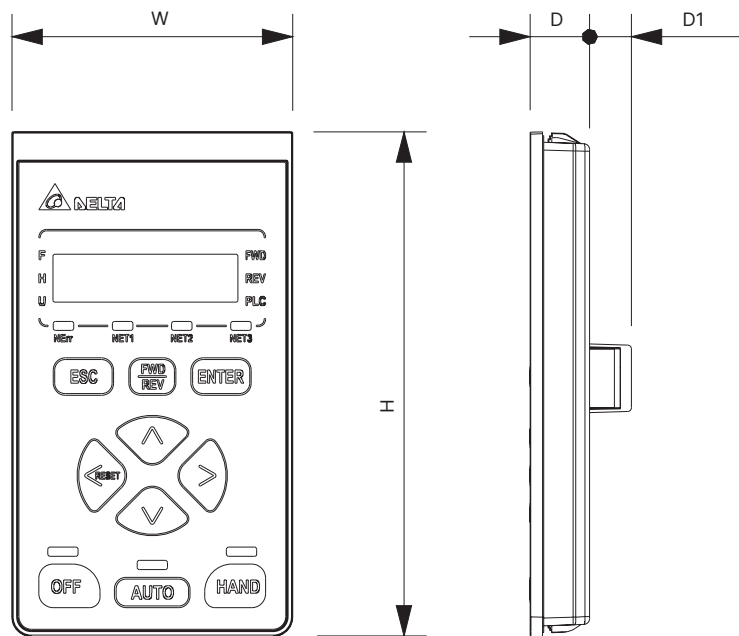
# Dimensions

## Digital Keypad

LCD graphic keypad  
(KPV-CC01)

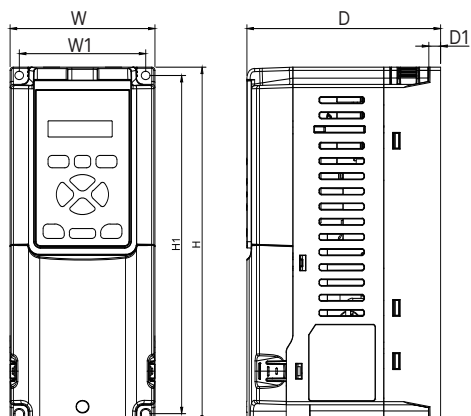


LED basic keypad  
(KPV-CE02)



	W	H	D	D1
mm	74	132.5	15.7	11
inch	2.91	5.22	0.62	0.43

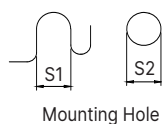
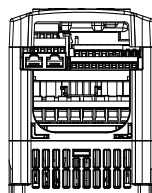
## Frame A1



### Model

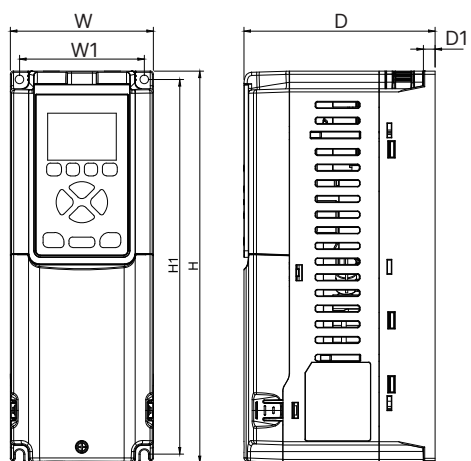
VFD3A0VP43ANTAA  
VFD4A2VP43ANTAA  
VFD5A6VP43ANTAA  
VF7A2VP43ANTAA  
VFD011VP43ANTAA

Weight: 1.71 kg



Frame		W	W1	H	H1	D	D1	S1	S2
A1	mm	110	96	280	267	147	9	6.5	6.5
	inch	4.33	3.78	11.02	10.51	5.79	0.35	0.26	0.26

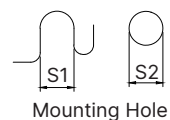
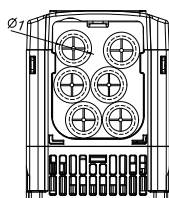
## Frame A2



### Model

VFD3A0VP43BFTAA  
VFD4A2VP43BFTAA  
VFD5A6VP43BFTAA  
VFD7A2VP43BFTAA  
VFD011VP43BFTAA

Weight: 1.95 kg

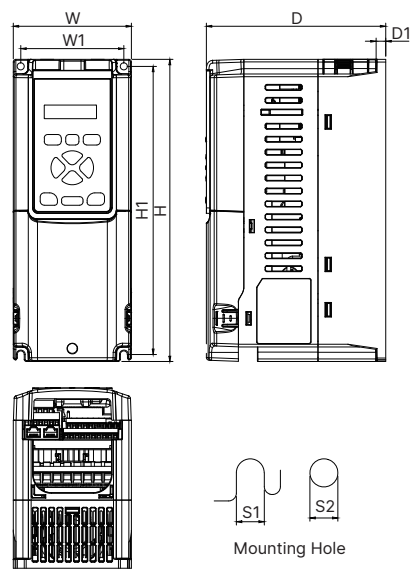


Frame		W	W1	H	H1	D	D1	S1	S2	Ø1
A2	mm	110	96	300	287	147	9	6.5	6.5	22.2
	inch	4.33	3.78	11.81	11.3	5.79	0.35	0.26	0.26	0.87



# Dimensions

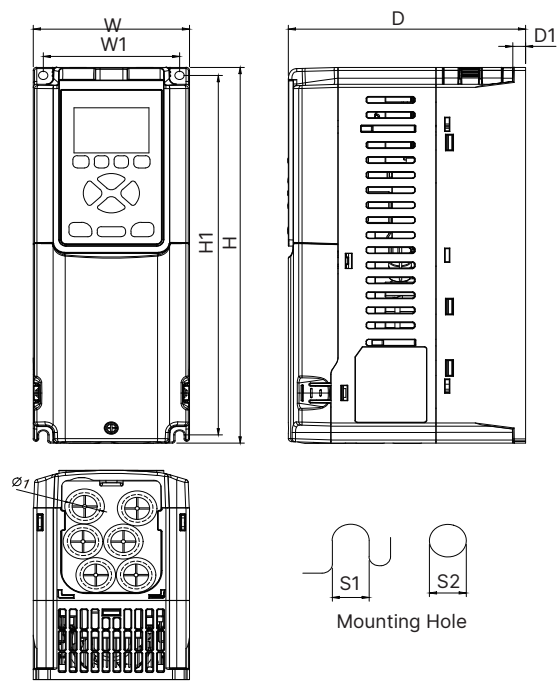
## Frame B1



Model  
VFD013VP43ANTAA  
VFD018VP43ANTAA  
Weight: 1.97 kg

Frame		W	W1	H	H1	D	D1	S1	S2
B1	mm	110	96	280	267	167	9	6.5	6.5
	inch	4.33	3.78	11.02	10.51	6.57	0.35	0.26	0.26

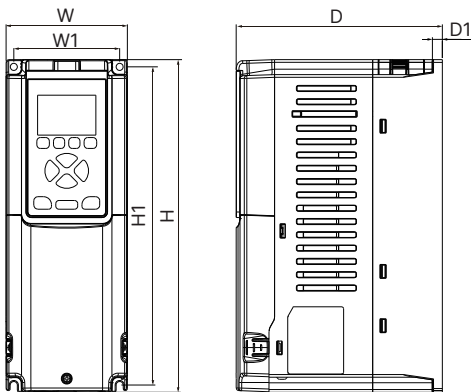
## Frame B2



Model  
VFD013VP43BFTAA  
VFD018VP43BFTAA  
Weight: 2.47 kg

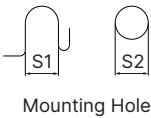
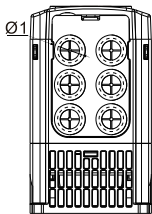
Frame		W	W1	H	H1	D	D1	S1	S2	Ø1
B2	mm	110	96 .0	300.0	287	167	9	6.5	6.5	22.2
	inch	4.33	3.78	11.81	11.3	6.57	0.35	0.26	0.26	0.87

Frame B3



- Model**
- VFD3A0VP43BSTCA
  - VFD4A2VP43BSTCA
  - VFD5A6VP43BSTCA
  - VFD7A2VP43BSTCA
  - VFD011VP43BSTCA
  - VFD013VP43BSTCA
  - VFD018VP43BSTCA

Weight: 3.3 kg



Frame		W	W1	H	H1	D	D1	S1	S2	S3
B3	mm	110	96	300	287	187	9	6.5	6.5	22.2
	inch	4.33	3.78	11.81	11.3	7.36	0.35	0.26	0.26	0.87

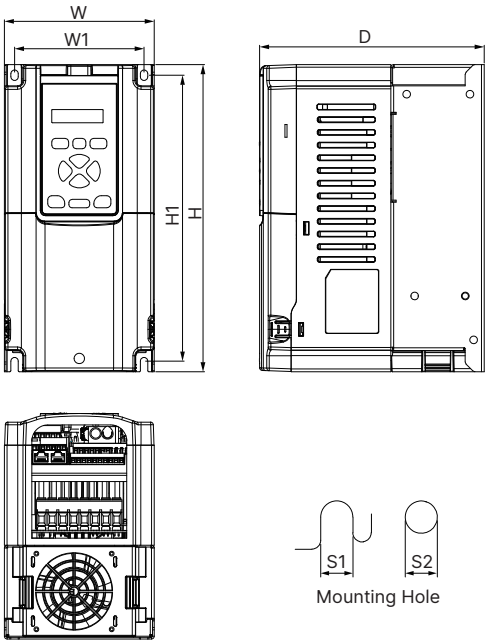


# Dimensions

## Frame C1

**Model**  
VFD025VP43ANTAA  
VFD032VP43ANTAA  
VFD038VP43ANTAA

**Weight:** 5.6 kg



Frame		W	W1	H	H1	D	S1	S2
C1	mm	142	122.9	290	270	213	7	7
	inch	5.59	4.84	11.42	10.63	8.39	0.28	0.28

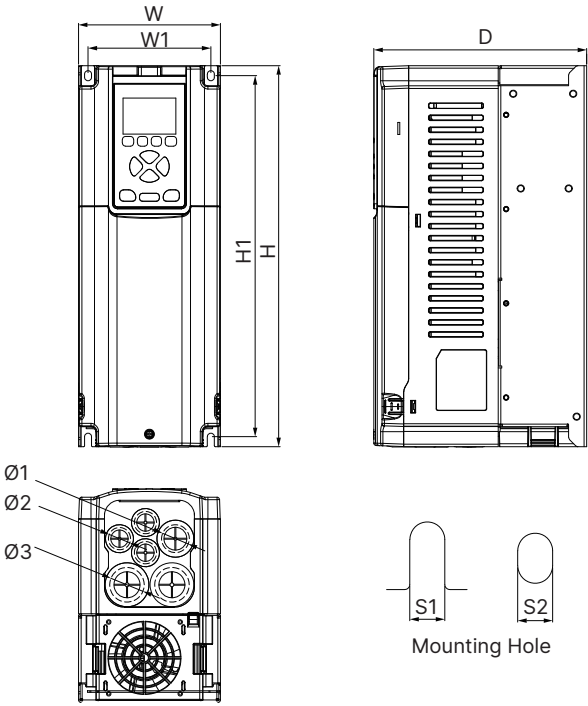
## Frame C2

**Model**  
VFD025VP43BFTAA  
VFD032VP43BFTAA  
VFD038VP43BFTAA

**Weight:** 6 kg

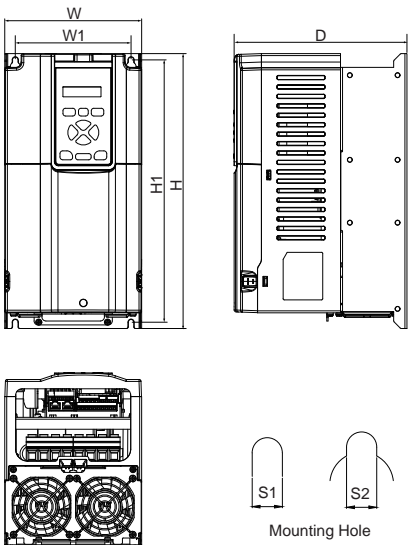
**Model**  
VFD025VP43BSTCA  
VFD032VP43BSTCA  
VFD038VP43BSTCA

**Weight:** 7 kg



Frame		W	W1	H	H1	D	S1	S2	Ø1	Ø2	Ø3
C2	mm	142	122.9	380	360	213	7	7	27.8	22.2	34.5
	inch	5.59	4.84	14.96	14.17	8.39	0.28	0.28	1.09	0.87	1.36

Frame D1

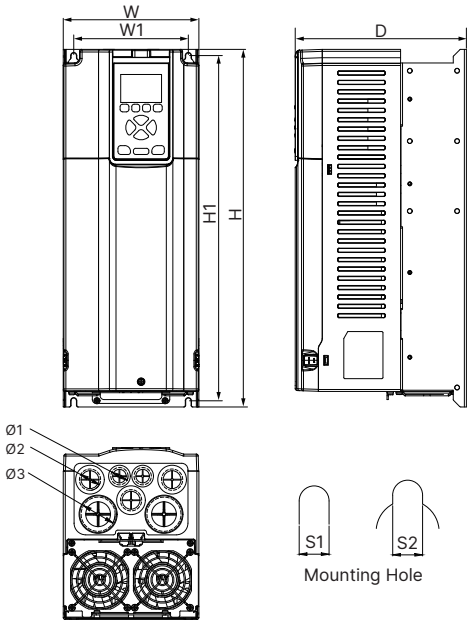


**Model**  
VFD045VP43ANTCA  
VFD062VP43ANTCA

Weight: 8.5 kg

Frame		W	W1	H	H1	D	S1	S2
D1	mm	175	148	350	334	221	7	7
	inch	6.89	5.83	13.78	13.15	8.7	0.28	0.28

Frame D2



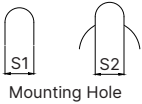
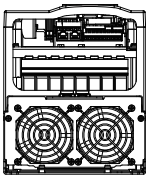
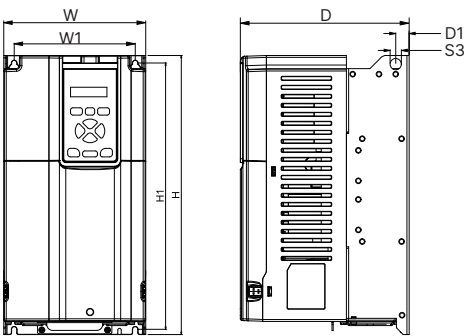
**Model**  
VFD045VP43BFTCA  
VFD062VP43BFTCA  
VFD045VP43BSTCA  
VFD062VP43BSTCA

Weight: 11kg

Frame		W	W1	H	H1	D	S1	S2	Ø1	Ø2	Ø3
D2	mm	175	148	460	444	221	7	7	22.3	27.4	44
	inch	6.89	5.83	18.11	17.48	8.7	0.28	0.28	0.88	1.08	1.73

# Dimensions

## Frame E1



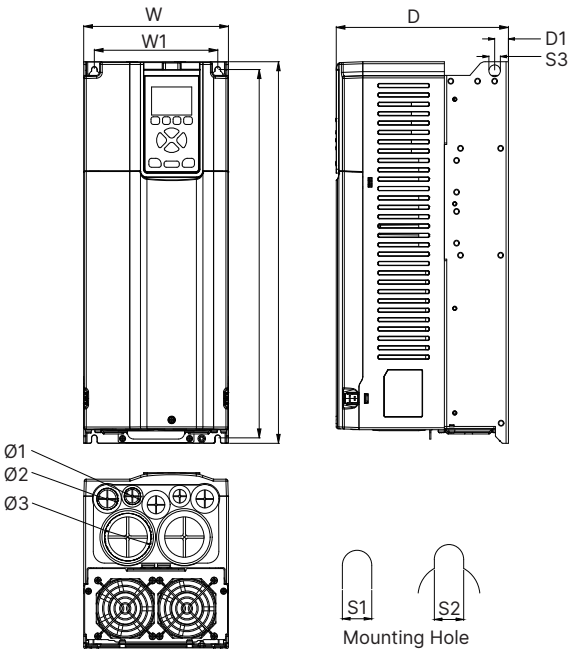
### Model

VFD073VP43ANTCA  
VFD090VP43ANTCA

Weight: 10.5 kg

Frame		W	W1	H	H1	D	D1	S1	S2	S3
E1	mm	190	162	372	355	226	18	7	7	15
	inch	7.48	6.38	14.65	13.98	8.9	0.71	0.28	0.28	0.59

## Frame E2



### Model

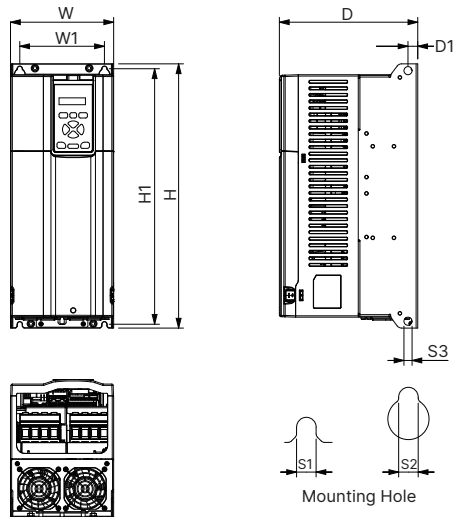
VFD073VP43BFTCA  
VFD090VP43BFTCA  
VFD073VP43BSTCA  
VFD090VP43BSTCA

Weight: 13 kg

Frame		W	W1	H	H1	D	D1	S1	S2	S3	Ø1	Ø2	Ø3
E2	mm	190	162	489	472	226	18	7	7	15	21.5	27.5	61
	inch	7.48	6.38	19.25	18.58	8.9	0.71	0.28	0.28	0.59	0.85	1.08	2.4



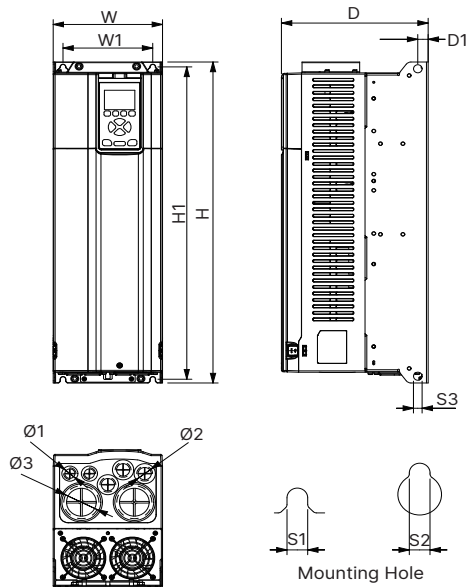
Frame F1



Model  
VFD110VP43AFTCA  
Weight: 14.4 kg

Frame		W	W1	H	H1	D	D1	S1	S2	S3
F1	mm	190	156	485	469	255	18	9	9	15
	inch	7.48	6.14	19.09	18.46	10.04	0.71	0.35	0.35	0.59

Frame F2



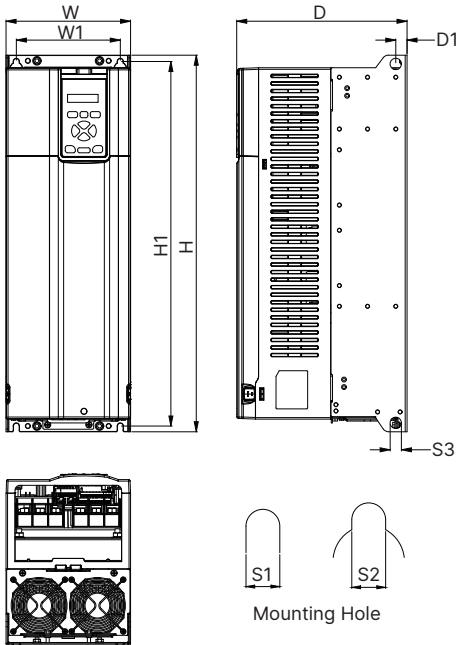
Model  
VFD110VP43BFTCA  
VFD110VP43BSTCA  
Weight: 17.6 kg

Frame		W	W1	H	H1	D	D1	S1	S2	S3	Ø1	Ø2	Ø3
F2	mm	190	156	595	579	255	18	9	9	15	21.5	27.5	61
	inch	7.48	6.14	23.43	22.8	10.04	0.71	0.35	0.35	0.59	0.85	1.08	2.4

Dimensions

Frame G1

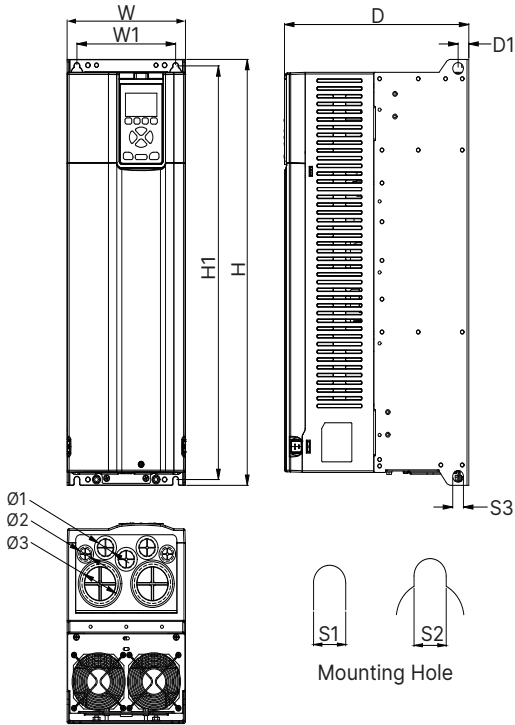
Model  
VFD150VP43AFTCA  
Weight: 23.8 kg



Frame		W	W1	H	H1	D	D1	S1	S2	S3
G1	mm	199	166	599	580	272	18	9	9	18
	inch	7.83	6.54	23.58	22.83	10.71	0.71	0.35	0.35	0.71

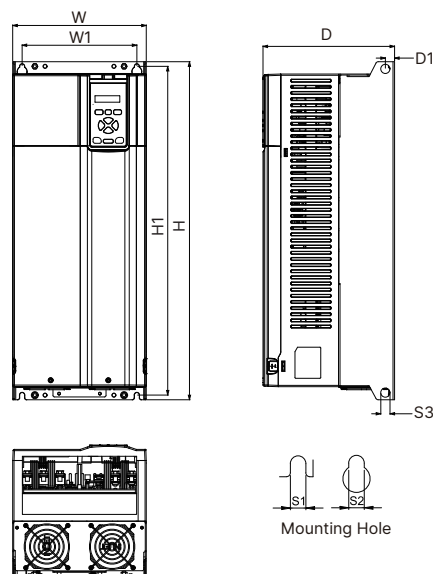
Frame G2

Model  
VFD150VP43BFTCA  
VFD150VP43BSTCA  
Weight: 28.7 kg



Frame		W	W1	H	H1	D	D1	S1	S2	Ø1	Ø2	Ø3
G2	mm	199	166	660	641	310	18	9	9	28	22	61
	inch	7.83	6.54	25.98	25.24	12.2	0.71	0.35	0.35	1.1	0.87	2.4

Frame H1



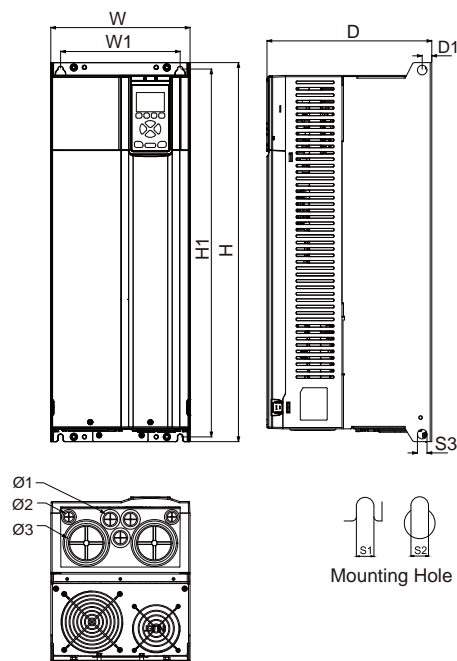
Model

VFD180VP43AFTCA  
VFD220VP43AFTCA

Weight: 34.2 kg

Frame		W	W1	H	H1	D	D1	S1	S2	S3
H1	mm	262	225	660	641.8	258	18	9.5	9.5	18
	inch	10.31	8.89	25.98	25.27	10.16	0.71	0.37	0.37	0.71

Frame H2



Model

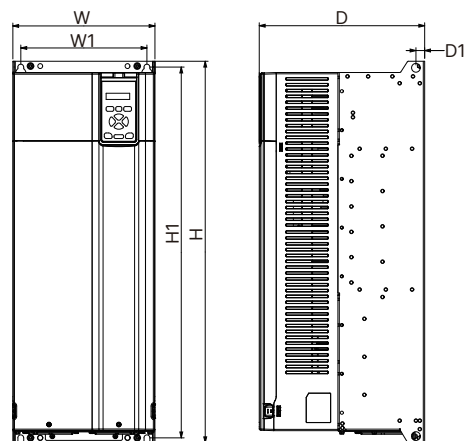
VFD180VP43BFTCA  
VFD220VP43BFTCA  
VFD180VP43BSTCA  
VFD220VP43BSTCA

Weight: 40.1 kg

Frame		W	W1	H	H1	D	D1	S1	S2	S3	Ø1	Ø2	Ø3
H2	mm	262	225	710	689	310	18	9.5	9.5	18	27.5	22.3	74.0
	inch	10.31	8.89	27.95	27.13	12.2	0.71	0.37	0.37	0.71	1.08	0.87	2.91

# Dimensions

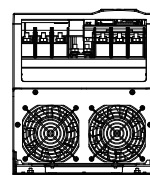
## Frame I1



**Model**

VFD260VP43AFTCA  
VFD310VP43AFTCA

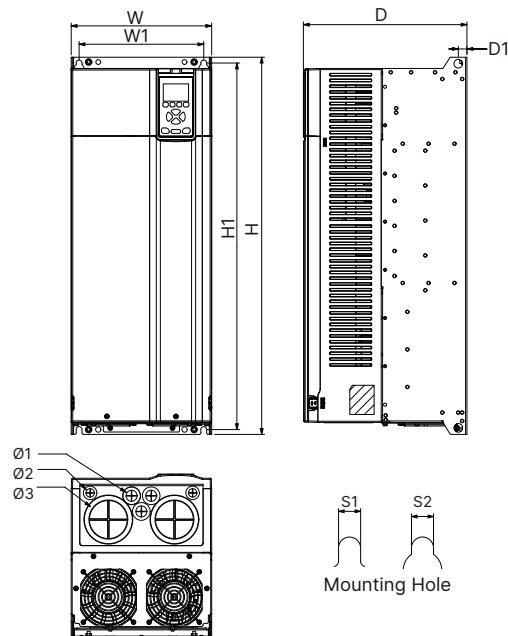
Weight: 46.1kg



Mounting Hole

Frame		W	W1	H	H1	D	D1	S1	S2
I1	mm	293	260	783	761	341	18	12	12
	inch	11.54	10.24	30.83	29.96	13.43	0.71	0.47	0.47

## Frame I2



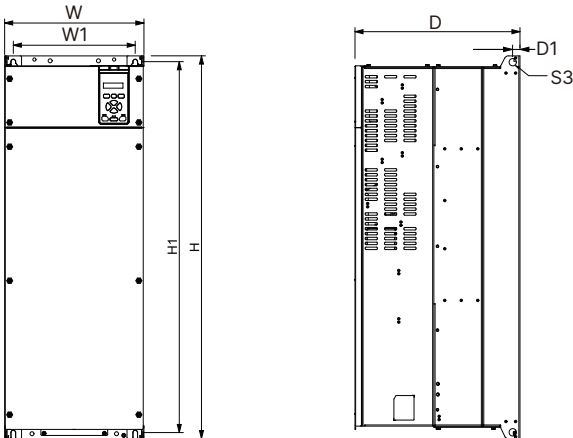
**Model**

VFD260VP43BFTCA  
VFD310VP43BFTCA  
VFD260VP43BSTCA  
VFD310VP43BSTCA

Weight: 48.6kg

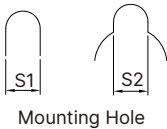
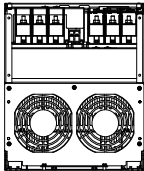
Frame		W	W1	H	H1	D	D1	S1	S2	Ø1	Ø2	Ø3
I2	mm	293	260	783	761	341	18	12	12	27.5	21.5	91
	inch	11.54	10.24	30.83	29.96	13.43	0.71	0.47	0.47	1.08	0.85	3.58

Frame J1



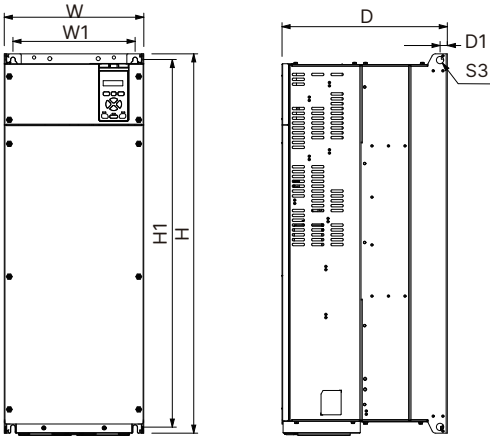
Model  
VFD370VP43AFTCA  
VFD395VP43AFTCA

Weight: 74.2 kg



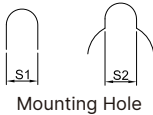
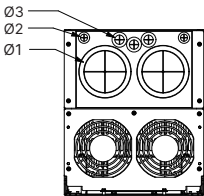
Frame		W	W1	H	H1	D	D1	S1	S2	S3
J1	mm	346	303	937	908	410	18	11	11	18
	inch	13.62	11.93	36.89	35.75	16.14	0.71	0.43	0.43	0.71

Frame J2



Model  
VFD370VP43BFTCA  
VFD395VP43BFTCA  
VFD370VP43BSTCA  
VFD395VP43BSTCA

Weight: 82.5 kg



Frame		W	W1	H	H1	D	D1	S1	S2	S3	Ø1	Ø2	Ø3
J2	mm	346	303	937	908	410	18.0	11	11	18	117.3	21.5	27.5
	inch	13.62	11.93	36.89	35.75	16.14	0.71	0.43	0.43	0.71	4.62	0.85	1.08



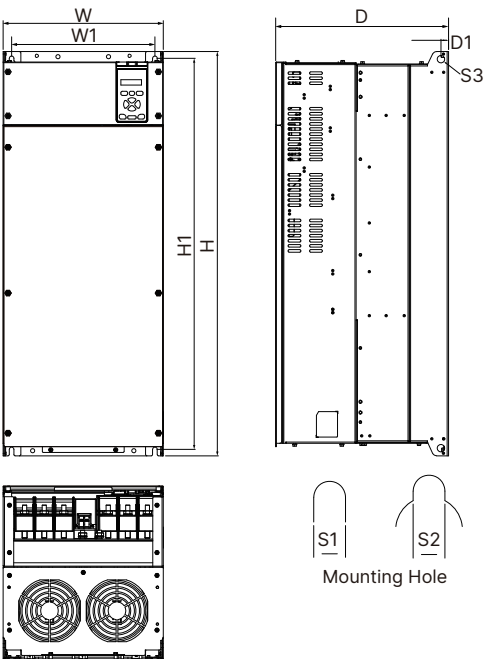
# Dimensions

## Frame K1

**Model**

VFD460VP43AFTCA  
VFD485VP43AFTCA

Weight: 90 kg



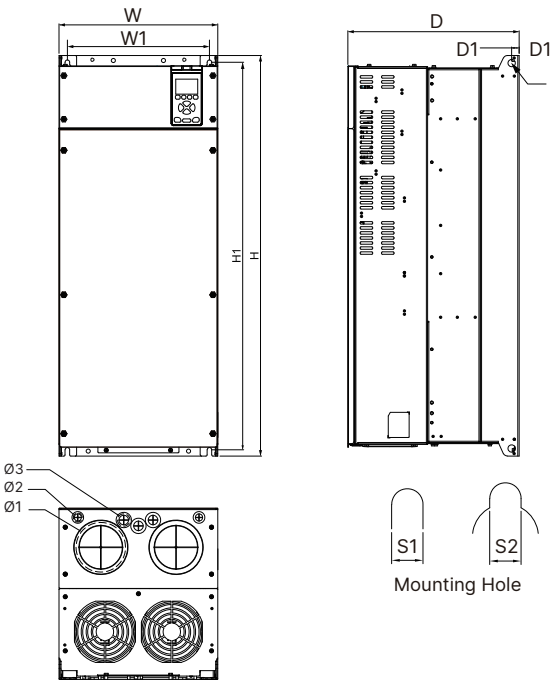
Frame		W	W1	H	H1	D	D1	S1	S2	S3
K1	mm	380	340	955	924	410	18	11	11	18
	inch	14.96	13.39	37.6	36.38	16.14	0.71	0.43	0.43	0.71

## Frame K2

**Model**

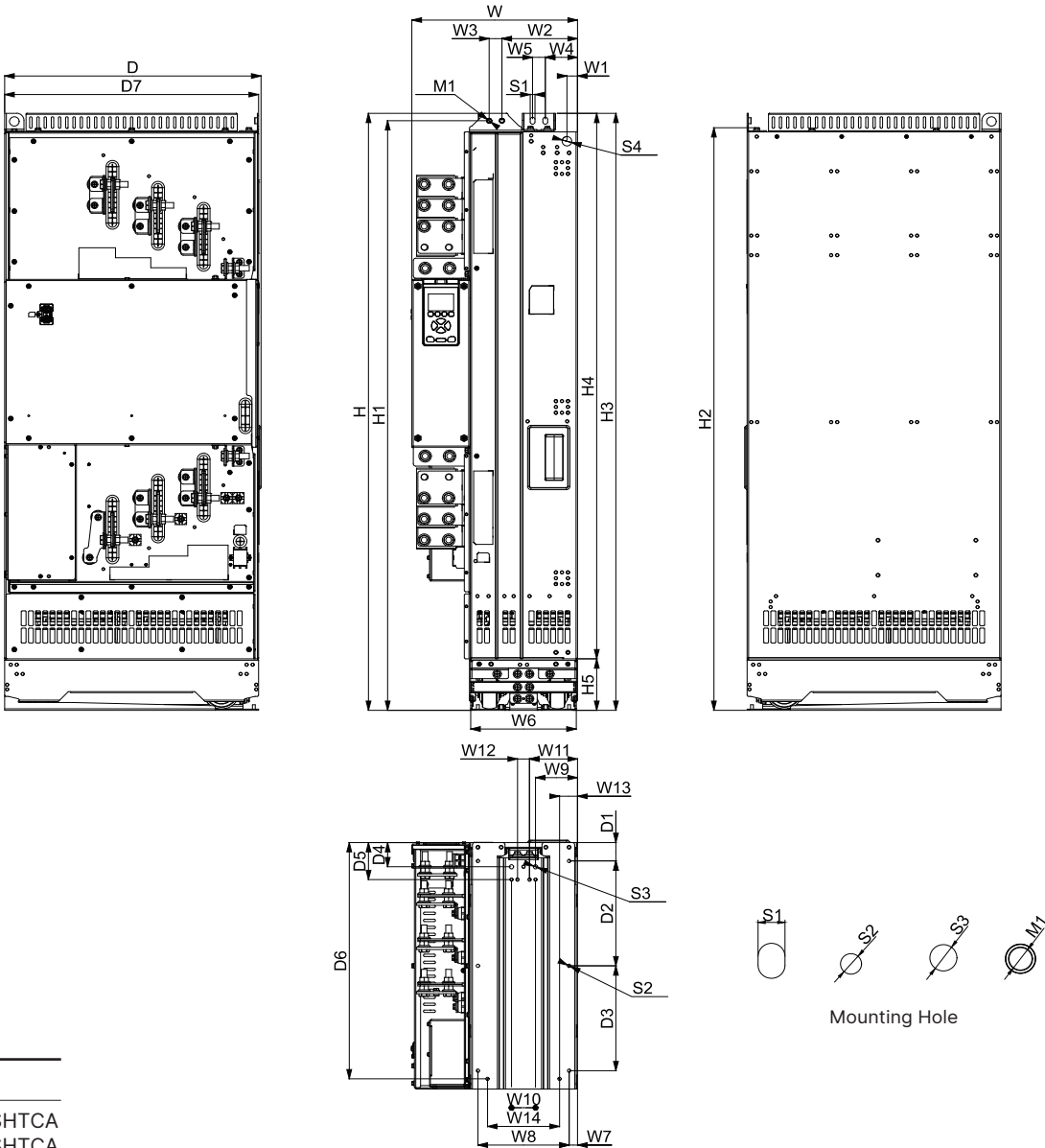
VFD460VP43BFTCA  
VFD485VP43BFTCA  
VFD460VP43BSTCA  
VFD485VP43BSTCA

Weight: 97 kg



Frame		W	W1	H	H1	D	D1	S1	S2	S3	Ø1	Ø2	Ø3
K2	mm	380	340	955	924	410	18	11	11	18	117.3	21.5	27.5
	inch	14.96	13.39	37.6	36.38	16.14	0.71	0.43	0.43	0.71	4.62	0.85	1.08

Frame L



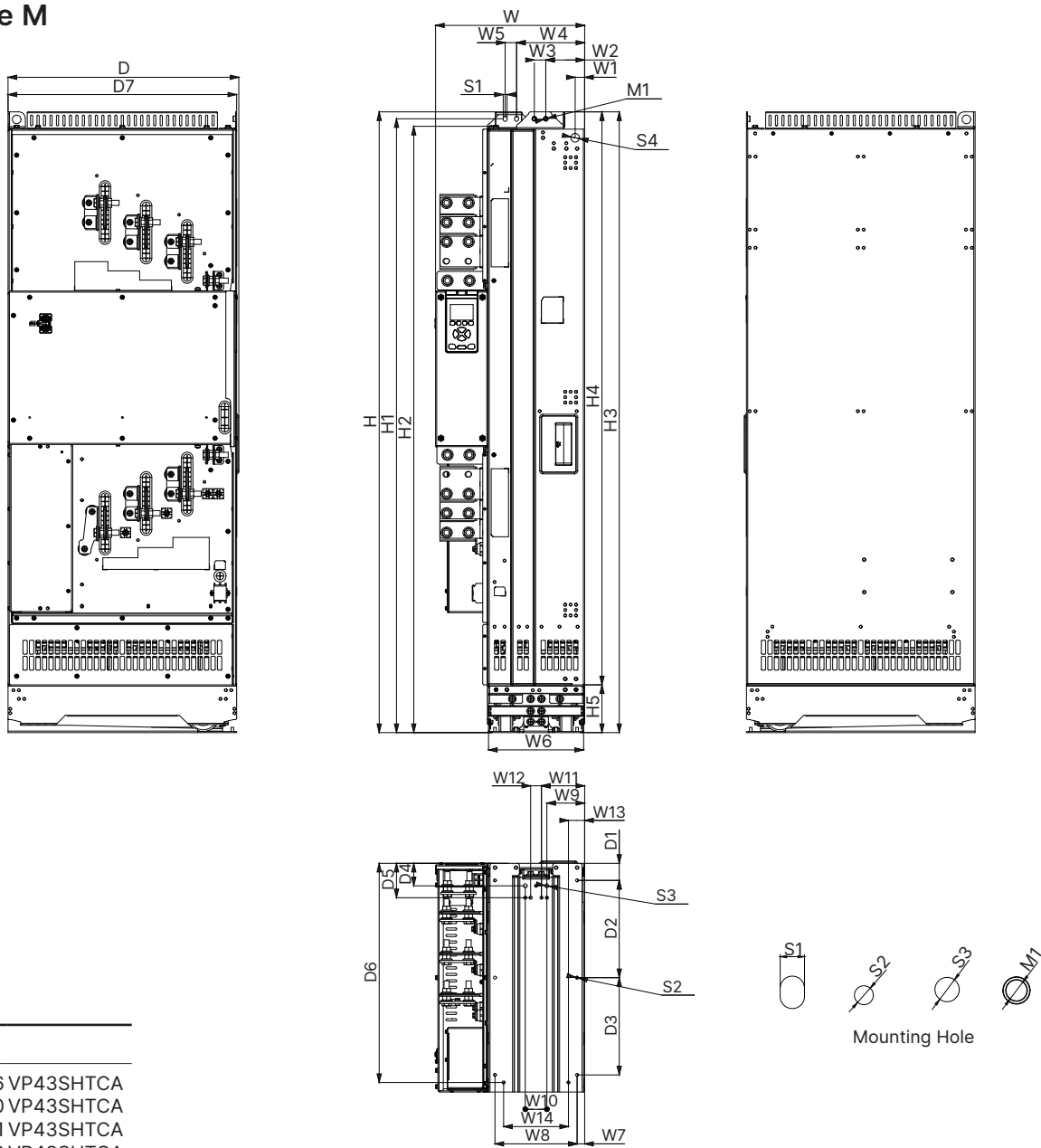
Model  
VFD530VP43SHTCA  
VFD616VP43SHTCA  
VFD683VP43SHTCA  
VFD770VP43SHTCA

Weight: 128.4 kg

Frame	W	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14		
L	mm	345	22	157.5	26.5	67.1	26.5	225	17.5	190	87.5	50	100	25	37.5	150	
	inch	13.58	0.87	6.2	1.04	2.6	1.04	8.86	0.69	7.48	3.44	1.97	3.94	0.98	1.48	5.91	
Frame	H	H1	H2	H3	H4	H5	D	D1	D2	D3	D4	D5	D6	D7			
L	mm	1281	1265	1250	1278.5	1170.5	110.5	534	39.5	225	225	52	79.5	507	529		
	inch	50.43	49.8	49.21	50.33	46.08	4.35	21.03	1.56	8.86	8.86	2.05	3.13	19.96	20.83		
Frame	S1	S2	S3	S4	M1												
L	mm	9	7	9	20	M8 P1.25											
	inch	0.35	0.28	0.35	0.79												

Accessories

Frame M



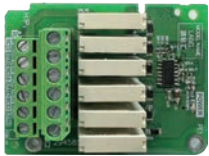
Model	
VFD 866 VP43SHTCA	
VFD 930 VP43SHTCA	
VFD 1K1 VP43SHTCA	
VFD 1K2 VP43SHTCA	

Weight: 173.0 kg

Frame		W	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
M	mm	345	22	157.5	26.5	67.1	26.5	225	17.5	190	87.5	50	100	25	37.5	150
	inch	13.58	0.87	6.2	1.04	2.6	1.04	8.86	0.69	7.48	3.44	1.97	3.94	0.98	1.48	5.91
Frame		H	H1	H2	H3	H4	H5	D	D1	D2	D3	D4	D5	D6	D7	
M	mm	1436	1420	1405	1433.5	1325.5	110.5	534	39.5	225	225	52	79.5	507	529	
	inch	56.54	55.91	55.31	56.44	52.19	4.35	21.03	1.56	8.86	8.86	2.05	3.13	19.96	20.83	
Frame		S1	S2	S3	S4	M1										
M	mm	9	7	9	20	M8 P1.25										
	inch	0.35	0.28	0.35	0.79											

## Relay Extension Card

### ▪ EMV-R6AA



Terminals	Descriptions
RA10 ~ RA15 RC10 ~ RC15	<p>Refer to Pr. 02-36 ~ Pr. 02-41 for multi-function output selection</p> <p>Resistive load:            3 A (N.O.) / 250 V<sub>AC</sub>            5 A (N.O.) / 30 V<sub>DC</sub></p> <p>Inductive load (COS 0.4)            1.2 A (N.O.) / 250 V<sub>AC</sub>            2.0 A (N.O.) / 30 V<sub>DC</sub></p> <p>It is used to output each monitor signal, such as for drive in operation, frequency attained or overload indication</p>

## Analog I/O Extension Card

### ▪ EMV-A22A



Terminals	Descriptions
AVI10 AVI11	<p>Refer to Pr. 14-00 ~ Pr. 14-01 for function selection (input), and Pr. 14-18 ~ Pr. 14-19 for mode selection</p> <p>Two sets of AVI port for AVI or ACI switch: SSW3 (AVI10) and SSW4 (AVI11)</p> <p>AVI: Input 0 ~ 10 V            ACI: Input 0 ~ 20 mA / 4 ~ 20 mA</p>
AFM10 AFM11	<p>Refer to Pr. 14-12 ~ Pr. 14-13 for function selection (output), and Pr. 14-36 ~ Pr. 14-37 for mode selection</p> <p>Two sets of AFM port for AVO or ACO switch: SSW1 (AFM10) and SSW2 (AFM11)</p> <p>AVO: Output 0 ~ 10 V            ACO: Output 0 ~ 20.0 mA / 4.0 ~ 20.0 mA</p>
ACM	Analog signal common terminal

## I/O Extension Card

### ▪ EMV-D42A

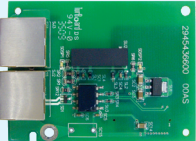




Terminals	Descriptions
COM	<p>Common for multi-function input terminals</p> <p>Select SINK (NPN) / SOURCE (PNP) in J1 jumper / external power supply</p>
MI10 ~ MI13	<p>Refer to Pr. 02-26 ~ Pr. 02-29 to program the multi-function inputs MI10 ~ MI13</p> <p>Internal power is applied from terminal E24: +24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

## Accessories



### CANopen Communication Card

#### ■ EMC-COP01

	 8~1 Male	 8~1 Female	RJ45 Pin	Pin Name	Definition
			1	CAN_H	CAN_H bus line (dominant high)
			2	CAN_L	CAN_L bus line (dominant low)
			3	CAN_GND	Ground / 0V / V-
			6	CAN_GND	Ground / 0V / V-

### EtherNet/IP, Modbus TCP Communication Card

#### ■ CMC-EIP01/CMC-EIP02


		Features	
		<ul style="list-style-type: none"> <li>Supports max. 32 words input and 32 words output of I/O connection</li> <li>User-defined parameter mapping</li> <li>IP Filter, basic firewall function</li> <li>Supports DLR ring nodes *Applicable to CMC-EIP02</li> </ul>	

#### Network Interface

Network Protocol	EtherNet/IP, Modbus TCP	Interface	RJ45
Transmission Speed	10/100Mbps	Number of Ports	1 (CMC-EIP01) / 2 (CMC-EIP02)
Transmission Method	IO Connection/Explicit message	Transmission Cable	Category 5e shielding
Transmission Distance	100m, extension is allowed via switch		

### PROFINET Communication Card

#### ■ CMC-PN01

	Features	
	<ul style="list-style-type: none"> <li>Supports PROFINET IO device</li> <li>Supports synchronous data transmission and non-synchronous parameter access</li> <li>Provides GSDML file for PROFINET communication</li> </ul>	

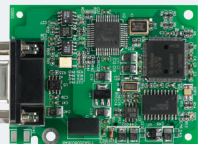
#### Network Interface

Interface	RJ45	Transmission Cable	Category 5e shielding 100M
Number of Ports	2 Ports	Transmission Speed	10/100Mbps Auto-detect
Transmission Method	IEEE 802.3	Network Protocol	PROFINET



## PROFIBUS DP Card

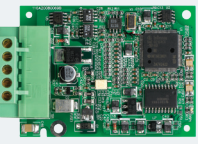
### ■ CMC-PD01

	Features
	<ul style="list-style-type: none"> <li>• Supports PZD control data exchange</li> <li>• Supports PKW polling AC motor drive parameters</li> <li>• Supports user diagnosis function</li> <li>• Supports Remote I/O</li> <li>• Auto-detects baud rates; supports Max. 12 Mbps</li> </ul>

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

## DeviceNet Communication Card

### ■ CMC-DN01

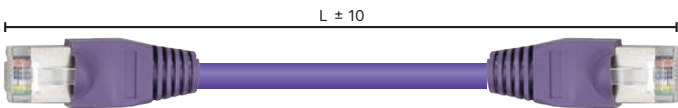
	Features
	<ul style="list-style-type: none"> <li>• Based on the high-speed communication interface of Delta HSSP protocol, able to conduct immediate control of an AC motor drive</li> <li>• Supports Group 2 only connection and polling I/O data exchange</li> <li>• For I/O mapping, supports Max. 32 words of input, 32 words of output, and Remote I/O</li> <li>• Node address and serial transmission speed can be set up on AC motor drive</li> <li>• Power supplied from AC motor drive</li> </ul>

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

# Accessories

## Delta Standard Fieldbus Cables

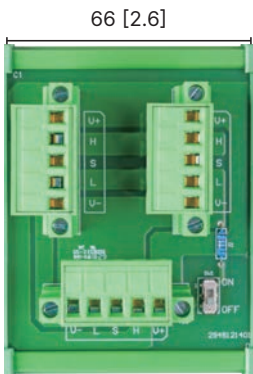
Delta Cables	Part Number	Description	Length
CANopen Cable / Digital Keypad RJ45 Extension Cable	UC-CMC003-01A	CANopen cable, RJ45 connector	0.3m
	UC-CMC005-01A	CANopen cable, RJ45 connector	0.5m
	UC-CMC010-01A	CANopen cable, RJ45 connector	1m
	UC-CMC015-01A	CANopen cable, RJ45 connector	1.5m
	UC-CMC020-01A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



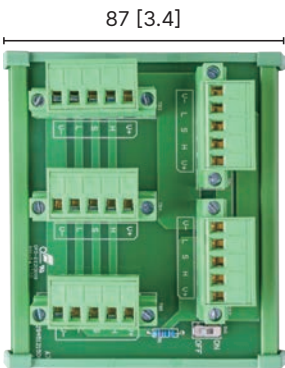
## CANopen / DeviceNet TAP Breakout Boxes

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

Unit: mm [inch]



TAP-CN01



TAP-CN02



TAP-CN03

## Ordering Information

Power Range	Models			
	UL open type, LED keypad		UL type 1, LCD keypad	
	Without EMC	With EMC C3	With EMC C3	With EMC C2
<b>460 V:</b> 0.75 ~ 4 kW	<b>Frame A1</b> VFD3A0VP43ANTAA VFD4A2VP43ANTAA VFD5A6VP43ANTAA VFD7A2VP43ANTAA VFD011VP43ANTAA		<b>Frame A2</b> VFD3A0VP43BFTAA VFD4A2VP43BFTAA VFD5A6VP43BFTAA VFD7A2VP43BFTAA VFD011VP43BFTAA	<b>Frame B3</b> VFD3A0VP43BSTCA VFD4A2VP43BSTCA VFD5A6VP43BSTCA VFD7A2VP43BSTCA VFD011VP43BSTCA VFD013VP43BSTCA VFD018VP43BSTCA
<b>460 V:</b> 5.5 ~ 7.5 kW	<b>Frame B1</b> VFD013VP43ANTAA VFD018VP43ANTAA		<b>Frame B2</b> VFD013VP43BFTAA VFD018VP43BFTAA	
<b>460 V:</b> 11 ~ 18.5 kW	<b>Frame C1</b> VFD025VP43ANTAA VFD032VP43ANTAA VFD038VP43ANTAA		<b>Frame C2</b> VFD025VP43BFTAA VFD032VP43BFTAA VFD038VP43BFTAA	<b>Frame C2</b> VFD025VP43BSTCA VFD032VP43BSTCA VFD038VP43BSTCA
<b>460 V:</b> 22 ~ 30 kW	<b>Frame D1</b> VFD045VP43ANTCA VFD062VP43ANTCA		<b>Frame D2</b> VFD045VP43BFTCA VFD062VP43BFTCA	<b>Frame D2</b> VFD045VP43BSTCA VFD062VP43BSTCA
<b>460 V:</b> 37 ~ 45 kW	<b>Frame E1</b> VFD073VP43ANTCA VFD090VP43ANTCA		<b>Frame E2</b> VFD073VP43BFTCA VFD090VP43BFTCA	<b>Frame E2</b> VFD073VP43BSTCA VFD090VP43BSTCA
<b>460 V:</b> 55 kW		<b>Frame F1</b> VFD110VP43AFTCA	<b>Frame F2</b> VFD110VP43BFTCA	<b>Frame F2</b> VFD110VP43BSTCA
<b>460 V:</b> 75 kW		<b>Frame G1</b> VFD150VP43AFTCA	<b>Frame G2</b> VFD150VP43BFTCA	<b>Frame G2</b> VFD150VP43BSTCA
<b>460 V:</b> 90 ~ 110 kW		<b>Frame H1</b> VFD180VP43AFTCA VFD220VP43AFTCA	<b>Frame H2</b> VFD180VP43BFTCA VFD220VP43BFTCA	<b>Frame H2</b> VFD180VP43BSTCA VFD220VP43BSTCA
<b>460 V:</b> 132 ~ 160 kW		<b>Frame I1</b> VFD260VP43AFTCA VFD310VP43AFTCA	<b>Frame I2</b> VFD260VP43BFTCA VFD310VP43BFTCA	<b>Frame I2</b> VFD260VP43BSTCA VFD310VP43BSTCA
<b>460 V:</b> 185 ~ 200 kW		<b>Frame J1</b> VFD370VP43AFTCA VFD395VP43AFTCA	<b>Frame J2</b> VFD370VP43BFTCA VFD395VP43BFTCA	<b>Frame J2</b> VFD370VP43BSTCA VFD395VP43BSTCA
<b>460 V:</b> 220 ~ 250 kW		<b>Frame K1</b> VFD460VP43AFTCA VFD485VP43AFTCA	<b>Frame K2</b> VFD460VP43BFTCA VFD485VP43BFTCA	<b>Frame K2</b> VFD460VP43BSTCA VFD485VP43BSTCA
<b>460 V:</b> 280 ~ 400 kW			<b>Frame L</b> (Chassis IP00 model) VFD530VP43SHTCA VFD616VP43SHTCA VFD683VP43SHTCA VFD770VP43SHTCA	
<b>460 V:</b> 450 ~ 630 kW			<b>Frame M</b> (Chassis IP00 model) VFD866VP43SHTCA VFD930VP43SHTCA VFD1K1VP43SHTCA VFD1K2VP43SHTCA	

## Model Name Explanation

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Example	VFD	3A0	VP	43	A	N	T	A	A
Definition			Description						
[1]	Product name	AC Motor Drive							
[2]	Current specification	Continuous current (I <sub>CON</sub> ) Note: Refer to Specifications in the user manual for detailed current spec.							
[3]	Series	VP3000							
[4]	Input voltage	43 = 460 V three-phase							
[5]	IP protection ratings	A = IP20 / UL Open type / Wall-mount B = IP20 / Type 1 / Wall-mount S = IP00 / UL Open type / Chassis							
[6]	EMC filter	N = No built-in EMC Filter F = EMC C3 category S = EMC C2 category H = EMC C3 category of chassis							
[7]	Safety function	T = Built-in STO (SIL3)							
[8]	Special specification	A = No built-in DC choke C = Lower harmonic (THDi min. 35%)							
[9]	Version number	A = Version A Note: 1. For IP20 / UL Open Type models, accompanied with a LED digital keypad KPV-CE02 2. For IP20 / Type 1 models, accompanied with a LCD digital keypad KPV-CC01							







Smarter. Greener. Together.

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