



Automation for a Changing World
Serving the Modern Industrial Environment for Today and Tomorrow

Global Leader in Industrial Automation Technology & Products

The Delta Advantage

Compact and cost-efficient automation products

Expertly designed portfolio enables OEMs to build smarter and greener machinery

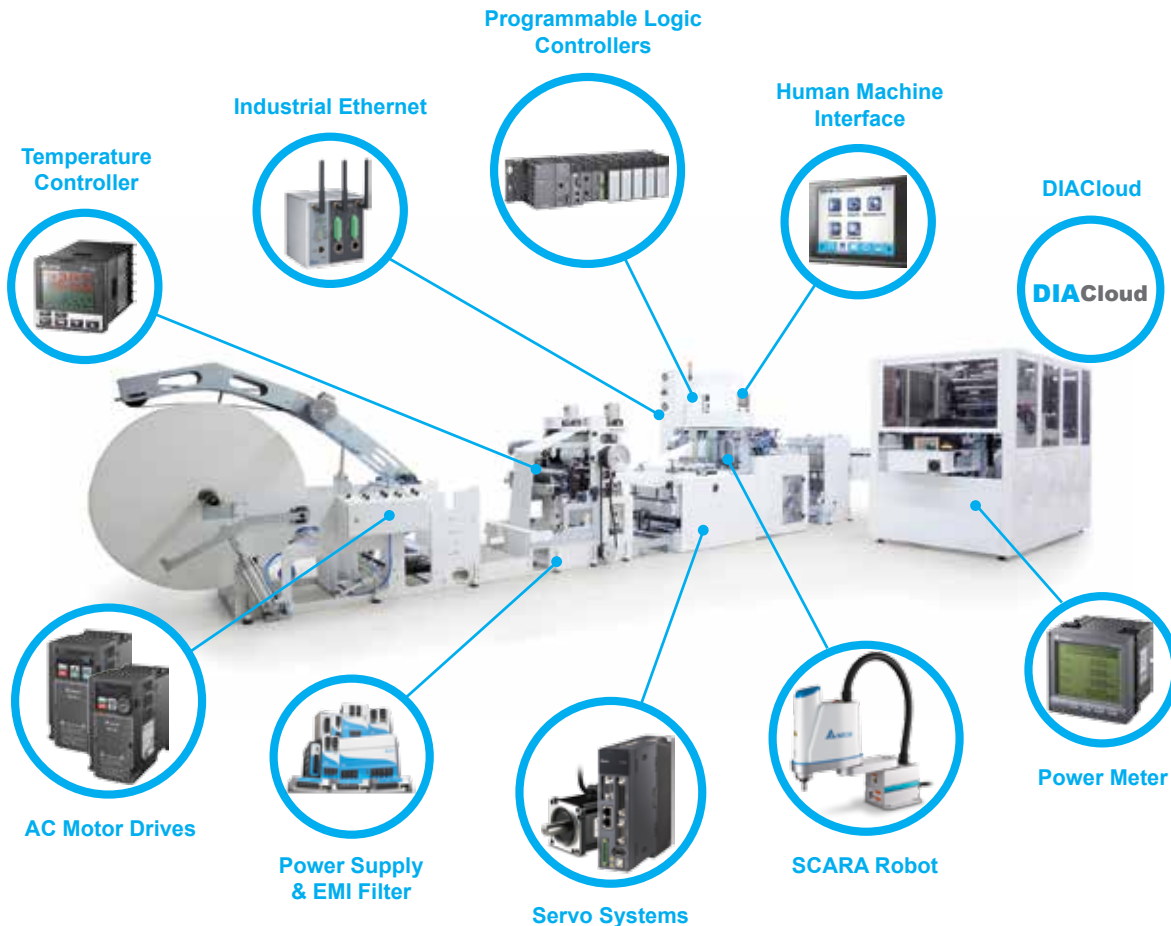
Architecture solutions for control scalability, code portability, and modular flexibility



www.delta-americas.com/ia



Integrated Technology Adds Value Without Sacrificing Performance



The Delta Portfolio of Industrial Automation Technology and Software Platforms Offers Unique Functionality

- lean architectures for compact, cost-efficient and superior engineering designs
- lower component costs
- lower total system costs



Enabling OEMs to Build Smarter, Greener Machinery with Reduced Overall Control System Footprint

Delta Demonstrates Strength in Design of Architecture Solutions

CONTROL SCALABILITY	CODE PORTABILITY	MODULAR FLEXIBILITY
- Scalability of controls from distributed stand-alone components centralize architecture systems - Single-source supplier for: - simple sequential stand-alone modules to complex machine systems - line control with stringent motion and visualization requirements	- Program Code can be ported from the smallest Slim-style SS2 PLC CPU to the most flexible AH500 Rack-based Advanced PLC - The same code used in these PLCs is portable to intelligent devices in the Delta portfolio that have PLCs built-in, such as C2000 and MH300/MS300 VFD or TP70P series HMI	- Centralized control flexibility leverages wide-range of plug-in modules for I/O, network communications, visualization, and remote connectivity - Distributed control flexibility takes advantage of the built-in control capability of each intelligent device to offload processing power to the localized process allowing a low-end PLC to connect to other intelligent devices including A2 Servo, MH300 or C2000 VFD, or TP series integrated PLC/HMI



Delta

#1 Global
Power Supply
Manufacturer
Offering
Competency
in Innovative
Design & Quality
Manufacturing

7,850 patent
certifications awarded

16m square feet of in-service manufacturing space
across 8 countries and 3 continents

1982 – Established in USA and Americas

- 8 Americas based research and development centers
- 16 regional offices in the Americas, regional application engineering support and multiple stocking locations

70K+ employees worldwide

2018 – \$9.1 billion revenue

Manufacturing plants comply with environmental, safety and quality requirements
ISO 9001, 14001, 14064, 50001; OSHA 18001; TS 16949

Global Install Base

- VFD – 16.1m
- Servo – 5.6m
- Control – 4.7m

1971 – Established
in Taiwan

Product Technology

AC Motor Drives

General & Special Purpose VFD

C2000: IP20 & NEMA1 | Heavy Duty CT Ratings standard. VT Ratings available | V/F, SVC & FOC Ctrl | IM/PM Motors | Built-in MODBUS and CANopen | up to 600Hz | Fully integrated 10K step PLC | STO Safety (SIL2) | Intelligent & Programmable LCD Keypad | 2 option slots for communications, I/O expansion & feedback option cards, 230, 480, 600 & 690 VAC | 1-840 HP



CP2000: IP20 & NEMA1 | Special Purpose Fan & Pump VT applications | IM/PM Motors / Built-in MODBUS and BACnet | Cascade & Circulatory pump control | Sleep/Wake modes | Flying Start & Skip Frequencies | Fully integrated 10K step PLC | STO Safety (SIL2) | 2 options slots for communications & I/O expansion | 230, 480, 600 & 690 VAC | 1-675 HP

Power Quality

Active Front End

AFE2000: Active Front End | 100% Regen duty cycle | Unity Power Factor (@ 100% load) | Improves to <5% Harmonic Distortion to meet IEEE 519 standard | Can be applied to any VFD from any manufacturer | 230 & 480 VAC | 7.5 – 75 kW



Power Regeneration

REG2000: Power Regen Unit | Replaces traditional Regenerative Resistor design by connecting DC bus of VFD or Servo Drive to regen back to the AC line | Can be applied to any VFD from any manufacturer | 230 & 480 VAC | 7.5 - 55 kW



Compact / Micro Drive

MH300: IP20 Compact (Optional NEMA1) | Heavy Duty CT Ratings standard | V/F, SVC & FOC Ctrl | IM/PM Motor | Built-in MODBUS and CANopen | Up to 2000Hz | LCD Keypad with shuttle dial | 2 option slots for communications, I/O expansion & feedback | Fully integrated 5K step PLC | STO Safety (SIL2) | 115 & 230 VAC 1 phase, 230 & 480VAC 3 phase | 0.25 to 30 HP



MS300: IP20 Compact (Optional NEMA1) | Heavy Duty CT Ratings standard | V/F & SVC Control | IM/PM Motor | Built-in MODBUS and CANopen | Up to 1500Hz | 1 option slot for communication | Fully integrated 2K step PLC | STO Safety (SIL2) | 115 & 230 VAC 1 phase, 230 & 480 VAC 3 phase | 0.25 – 30 HP

VFD-EL: IP20 Micro V/F | IM motor | Built-in RS-485 MODBUS, EMI filter & LED Keypad | 115, 230 & 480 VAC | 0-25 – 5 HP



Servo Motion

Servo Systems

A2-M, A2-E: Intelligent servo drive | Built-in Motion Macros for stand-alone motion including advanced eCAM | 2nd Closed loop input | 20-Bit Positioning | Auto-ID motor | INC or ABS motor | Anti-vibration | On-board I/O | EtherCAT & CANopen | 230 & 480VAC | 50W-15kW



B2: Value-Line analog & Pulse control servo drive | 60W regen resistor built-in | 160kppr INC resolution | Multi-drop RS-485 | 230VAC | 100W-3kW

ECMA: 1.28Mppr INC & 160kppr ABS encoder | 10 pole rotor | spring-bound shaft seal | IP65 & optional IP67 Intercontec connectors | 50W-15kW



Product Technology

Control

HMI

DOP-W: Large size TFT touch screen | 10.1"-15" | Aluminum hardened bezel | 1GHz processor | 256M ROM memory | Video playback | 2 built-in Ethernet Ports



DOP-100: 4.3"-10.4" IP65 TFT touch screen | 256 MB ROM | SD card or USB Program load | 800 MHz Processor | Up to 512 MB RAM | Ethernet Capability | Remote Monitoring | Email | Alarms | History | Recipes | FTP | VNC



TP04P/TP70P: Economy level HMI with built-in PLC & I/O | 4 line text panel | 7" touch screen models



PLC & Motion



EtherCAT 

AH500: Scalable Hot Swappable Mid-range PLC | Rack-based | Expandable local & remote I/O up to 133k | EtherNet/IP Scanner | Modbus | Expandable Networks | Dual Core Processor | Integrated Motion control with Built-in PLC | 32+ Synchronized Motion Axis over EtherCAT | 6+ axis Pulse output | PLCopen Function blocks and G-Code | eCAM

AS Series: Compact Modular Mid-range PLC | 6 Axis Pulse Control @ 200 kHz | 2 Axis Differential Pulse Control @ 4 MHz | 6 Channels 200 kHz High-speed counter | EtherNet/IP Scanner | Ethernet Standard | Modbus | CANopen up to 8-axis Point-to-Point Positioning Control with Delta A2 Servo | Expandable to 1024 I/O | External Terminal Block Support | => High speed execution up to 40k steps/ms | Micro SD card | Patented DIN Rail Mounting



DVP-ES2/EX2: Industry Standard Micro Brick PLC | Expandable to 262 I/O | 85-260VAC Powered | Removeable Screw Terminals | Modbus | EtherNet/IP Adapter | Built-in Modbus RS232, 2 RS485



DVP-SS2/SA2/SX2/SE/SV2: Slim Style Modular rack-less PLC | 24VDC powered | Expandable to 512 I/O and networks | Removable terminal blocks | Modbus | EtherNet/IP support | BACnet MS/TP Slave



LC: Load Cell technology module | Designed for on-the-fly weighing belt weighing belt-conveyor application | Stand-alone and PLC module for DVP & AS300 | 18-bit resolution | 2.5msec response time | RS-485/232 Modbus

R1-EC: EtherCAT Remote I/O modules IP20 | DIN mount | 24VDC powered EBUS up to 2A per stack | Removeable wiring terminals | 16 point DI down to 0.1msec | 16 point DO at 0.5A ea, sink/source | 4 channel AI/AO 16-bit resolution | Single-axis pulse output for stepper control with integrated encoder feedback



EtherCAT 

Platforms

DIACloud Service

Delta's IIoT Platform | VPN level security | End-to-End device protection | API Calls | Real-time Device Monitoring | Remote Updates | Device Status | Visualization Platform | Email Alarms | Text Alarms | Data Storage & Logging



DIACloud



ISPSOFT Software

IEC 61131-3 Software with Support for All 5 Languages | Built-in motion control capability | Function Blocks with Support for up to 32 Level Depth | User Libraries | Simplified Network Configuration | Visual Hardware Configuration | Cyclic Task Control | I/O, External, and Timer Interrupts (and more) | 3D Tracing | Motion Position Planning | Data Tracing | Data Logging | Support for Windows XP, Vista, 7, 8, and 10

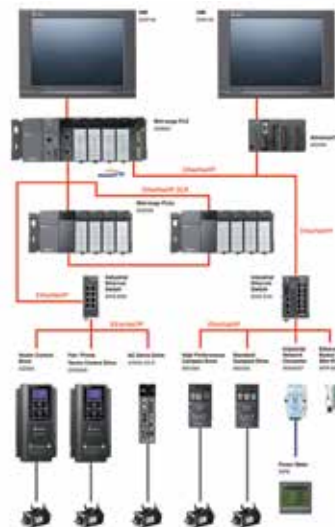
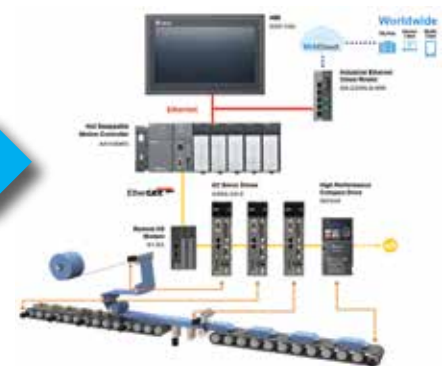
One software used to program & configure all series PLC DVP/AS300/AH500. Portability to products with built-in PLCs including TP series HMI, C2000 & MH300/MS300 VFD

Network Platform Solutions

Delta supports a wide-range of industrial network protocols including legacy to provide connectivity and architecture solutions for digitizing the factory: EtherCAT, EtherNet/IP, DeviceNet, CANopen, PROFIBUS, Modbus TCP, Modbus Serial, BACnet

EtherCAT 

EtherCAT Solution for Complete Machine Control



EtherNet/IP Solution for Information Connectivity

Product Technology

IloT & Fieldbus

Industrial Network

IFD: Network converter module | Modbus serial | DeviceNet | CANopen | Modbus TCP | EtherNet/IP | USB Converters



RTU: Network coupler modules for remote I/O | Ethernet Modbus TCP | PROFIBUS | DeviceNet | RS485 Modbus | EtherCAT

Industrial Ethernet Switch

DVS: Managed and Unmanaged | 5, 8 & 16 port | Units compatible with EtherNet/IP | PROFINET | EtherCAT (not junction) | CClink IE and DNP 3.0



DVW: Wireless AP/WDS/Client/Gateway | 802.11n up to 450Mbps | Multiple wireless modes: AP, Client CPE, WDS P-T-P & P-T-MP, Repeater | Supports 2-port RS



VPN & Cloud Routers



All provide: Secure Networking Environment | SPI | DOS Prevention | NAT | Port Triggering | Custom Alarm Emails

DX-2100: 3G Cloud IloT Router | RS-485 | RS-232 | Ethernet Port | Modbus Gateway/Server/Client | Cloud Data Storage with Mobile Interface



DX-2300: Ethernet Cloud IloT Router | RS-485 | RS-232 | 4 Ethernet LAN Ports | WAN Port | Modbus Gateway/Server/Client | Cloud Data Storage with Mobile Interface

DX-3001: 3G VPN IloT Router | IPSec | OpenVPN | PPTP | L2TP | GRE | RS-485 | RS-232 | 4 Ethernet LAN Ports | WAN Port | Modbus Gateway/Server/Client



Award Winning



Commonwealth Magazine CSR Award



Global Views Magazine CSR Award

MEMBER OF

Dow Jones Sustainability Indices

In Collaboration with RobecoSAM



Field Devices

Temperature Controllers

DTB: 1/32-1/4DIN frame | Thermocouple, RTD & Analog input | Relay, Voltage, Current & Analog output | Dual Loop control | Programmable Ramp and Soak | 4 PID's | RS485 standard | 100-240VAC or 24VDC input



DTC: DIN rail mount | Stackable up to 8 inputs | Thermocouple, RTD & Analog input | Relay, Voltage, Current & Analog output | Dual Loop control | Programmable Ramp and Soak | 4 PID's | RS485 standard | 24VDC input

Counter / Timer / Tachometer

CTA: 3 in 1 device | 1/16DIN | 10Kcps counter | 1&2 stage, batch, total counting | 2 outputs | PNP, NPN | Two line LCD display | 100-240VAC or 24VDC input



Sensors



DPA: Pressure sensor with 3 color dual line display | M5 or NPT input | Analog & NPN or PNP output | Copy Function | Face or Bracket Mount | 24VDC input

PS: Slim sensor design | Inductive Prox 2-25mm sensing distance, Isolation & non-isolation type in M8/12/18/30 sizes | Photo electric 30mm-12m sensing distance, Diffuse / Retro-Reflect / Through-beam type | IP67 rated | 12-24VDC input



Power Meter



DPM: C520 model multi-function 3-phase applications | Power quality and energy management | 96x96 mount with Large 7 segment display | 1/16DIN | WiFi wireless version | Current/ Voltage unbalance & THD | Industrial grad door mount IP52 | RS-485 Modbus RTU with param grouping | Class 0.5S accuracy of IEC62053 & CNS14607 standards for active energy | Display 10 time stamped alarm types | -20 to +70C operating temp | 80-265VAC input

Power Supply

DVP: DIN Rail mount for DVP PLC | 24VDC 24W/48W/120W | 1ph 110-230VAC input



DRP: CLIQ series DIN Rail Mount | 12V-48VDC output | 15W-960W | Models available with: Class 2, ATEX, Class 1 Div 2, Power Boost, Cold Start -40C | 1ph & 3ph 85-264VAC & 320-600VAC input

PMC: Panel Mount | IP20 & front face connectors | 5V-48VDC output | 15W-600W | Available with: Active PFC | 1ph 85-264VAC & 125-375VDC input

Custom Panel & Control Solutions

Industrial Automation Product Technology

Delta and its authorized network of systems integrators and panel builder partners collaborate with OEM and customer engineering staff to conceptualize, design, develop and manufacture cost-efficient automation solutions.

Software integration, panel fabrication, layout and electrical designs meet UL508A standards and range in functional use as localized stand-alone control to remote monitoring via the cloud.

These solutions are offered as standardized or OEM custom control panels for industry specific applications such as C2000 Pump Package for Oil & Gas and CP2000 Bypass package for HVAC.

Delta offers a wide-range of products, robust systems, and staff expertise. Delta and its partner network make it possible to configure many applications in unique ways to maximize value and keep machinery applications on the cutting-edge of technology.

Committed to the advancement of smart, green manufacturing automation initiatives.

Oil & Gas

C2000 Pump Package

NEMA3R UL508A

C2000 installed in outdoor rated panel with control and power components | door mounted keypad | 460V up to 375 HP | 230V up to 125 HP | fused disconnect | UL rated



HVAC

CP2000 Bypass Package

UL508A

Frames A-D 100k AIC & 5k AIC

230V: CP2000 1-60hp

460V: CP2000 1-125hp

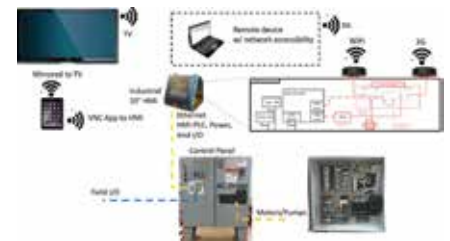
600V: C2000 2-100hp (max 65k AIC)

Frames A-D NEMA1 enclosure

Custom OEM Solutions

Concept to Product

Using Delta Industrial Automation product technology as a core foundation, Delta collaborates to transform concepts to product solutions by leveraging its value-added innovation & engineering expertise. The result is a custom integrated control solution for OEM specific applications.



Elite System
Integrator



Elite
Panel Builder



System Integrator and Panel Builder Program

Tiered membership benefits.
Partner web portal with 24/7 content.
Software & demo unit offering.
Factory level support.
Industry specialty focus.

Demonstrated Industry Competency

Crane and Hoist	Industrial Robot	Packaging
Elevator	Machine Tool	Water/Wastewater
Food and Beverage	Material Handling	Woodworking
HVAC Fluid	Oil and Gas	

Product Selection Tool

Create a complete BOM using the
On-Line Product Selection Tool

www.deltaPST.com



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Delta Electronics VFD CP2000 Bypass Control Packages

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Delta Electronics VFD CP2000 Bypass Control Packages

The Delta Electronics VFD CP2000 Bypass Control Packages are designed for the Delta Electronics CP2000 Series Variable Frequency Drive (VFD) to support all commercial HVAC fan and pump applications. The bypass' integrated BACnet and Modbus protocols allow for easy communication with any building management system.

The control system provides smart bypass control and features a lighter, more compact design with a standard NEMA 1 enclosure.

Every package BACnet communication support, I/O controls and remote configuration of parameters with manual bypass control. A variety of other communication protocols are available as options.

Package Features

- 1-60 HP (208/230V), 1-125 HP (460V), 2-75 HP (600V)
- Front-mounted VFD keypad for easy system programming and monitoring
- Short Circuit Current Rating (SCCR) up to 100 kAIC
- Standard BACnet MS/TP and RS-485 Modbus support
- UL 508A and cUL approved
- NEMA 1 rated enclosures standard. NEMA 12, 3R, 4X available as options.
- Manual bypass control for simple operation



Options (all filters mounted externally)

- Disconnect switch with VFD fusing or circuit breaker disconnect
- Input filtering to support harmonic mitigation
- Output filter to support lead length, multi-motor applications
- EMI/RFI input filter
- 2 or 3 contactor bypass

Package Types

Delta Electronics VFD CP2000 Bypass

- Includes input disconnecting and bypass options

Delta Electronics VFD CP2000 Disconnect Only

- Includes input disconnecting and VFD fusing

The packages are configurable to allow the bypass control to meet all specified project requirements. Custom designs are available by consulting the factory.



Part Number Configuration

Each part number has 15 options. See footnote for more details.

Options	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Part Number Example	D	B	P	2	0	0	7	1	1	2	0	0	0	0	0

Option 1	Delta
D	Delta

Option 2	Bypass
B	Bypass

Option 3	VFD Selection
P	CP2000

Option 4	Voltage Rating
2	208/230V
4	460V
6	600V

Option 5-7	HP Rating ¹
1	1HP
to	
125	125HP

Option 8	Enclosure Style
1	NEMA 1 — Enclosed
2	NEMA 12
3	NEMA 3R
4	NEMA 4x
5	NEMA 1 — Open Stacked ⁴

Option 9	Input Disconnecting Options
1	Disconnect switch with VFD fusing (5 kAIC SCCR)
2	Circuit breaker (5 kAIC SCCR)
3	Circuit breaker with VFD fusing (50 kAIC SCCR @ 600V)
4	Circuit breaker with VFD fusing (100 kAIC SCCR @ 208/230V, 460V)

Option 10	Bypass Options
0	None
2	2 contactor bypass
3	3 contactor bypass

Option 11	Input Filter Options
0	None
1	3% Input Reactor
2	5% Input Reactor
3	DC Link Choke
4	EMI Filter
5	3% Input Reactor & EMI Filter
6	5% Input Reactor & EMI Filter
7	DC Link Choke & EMI Filter

Option 12	Communication Options
0	None
1	CANopen
2	DeviceNet
3	Ethernet IP
4	Modbus TCP
5	Profibus DP

Option 13	Other Options
0	None
1	External 24V power supply
2	Digital I/O extension
3	Analog I/O extension
4	Relay extension

Option 14	Output Filter
0	None
1	1.5% Output Reactor
2	3% Output Reactor
3	dv/dt Filter
4	Passive Filter

Option 15	Multiple Motors
0	1 Motor
2	2 Motors
3	3 Motors
4	4 Motors
5	5 Motors

1. If you are ordering a 7.5HP, use the option number 007.

2. Options highlighted in green have standard lead times.

3. Options highlighted in orange must be ordered in an enclosed enclosure style.

4. If selected, all filter options (Options 11 and Options 14) will be mounted externally in a separate NEMA 1 housing.

5. For all other options, consult Inside Sales at customerservice.ia@deltaww.com for pricing and lead times.

Bypass Package Specifications

This bypass control package includes input disconnecting, bypass and filtering options.

Options for input disconnect:

- Disconnect switch with VFD fusing (5 kAIC SCCR)
- Circuit breaker (5 kAIC SCCR)
- Circuit breaker with VFD fusing (50 kAIC SCCR @ 600V)
- Circuit breaker with VFD fusing (100 kAIC SCCR @ 230V, 460V)

Options for bypass:

- 2 or 3 contactor bypass

Options for input and output filtering (mounted externally):

- 3% and 5% input/output reactor
- DC link choke
- EMI/RFI filter

HP	208/230V			
	Current (Amps Light Duty)	Drive Frame	Dimensions H x W x D (Inches)	Weight (lb)
1	5	A	39 x 8.2 x 7.4	38
2	7.5	A	39 x 8.2 x 7.4	38
3	10	A	39 x 8.2 x 7.4	38
5	15	A	39 x 8.2 x 7.4	38
7.5	21	A	39 x 8.2 x 7.4	38
10	31	B	41.4 x 9.3 x 8.3	48
15	46	B	41.4 x 9.3 x 8.3	48
20	61	B	41.4 x 9.3 x 8.3	48
25	75	C	50 x 10.4 x 8.3	72
30	90	C	50 x 10.4 x 8.3	72
40	105	C	50 x 10.4 x 8.3	72
50	146	D	Consult factory	Consult factory
60	180	D	Consult factory	Consult factory

HP	460V				600V			
	Current (Amps Light Duty)	Drive Frame	Dimensions H x W x D (Inches)	Weight (lb)	Current (Amps Light Duty)	Drive Frame	Dimensions H x W x D (Inches)	Weight (lb)
1	3	A	39 x 8.2 x 7.4	38	--	--	--	--
2	4.2	A	39 x 8.2 x 7.4	38	3	A	39 x 8.2 x 7.4	38
3	5.5	A	39 x 8.2 x 7.4	38	4.3	A	39 x 8.2 x 7.4	38
5	8.5	A	39 x 8.2 x 7.4	38	6.7	A	39 x 8.2 x 7.4	38
7.5	13	A	39 x 8.2 x 7.4	38	9.9	B	41.4 x 9.3 x 8.3	48
10	18	A	39 x 8.2 x 7.4	38	12.1	B	41.4 x 9.3 x 8.3	48
15	24	B	41.4 x 9.3 x 8.3	48	18.7	B	41.4 x 9.3 x 8.3	48
20	32	B	41.4 x 9.3 x 8.3	48	24.2	B	41.4 x 9.3 x 8.3	48
25	38	B	41.4 x 9.3 x 8.3	48	30	C	50 x 10.4 x 8.3	72
30	45	C	50 x 10.4 x 8.3	72	36	C	50 x 10.4 x 8.3	72
40	60	C	50 x 10.4 x 8.3	72	45	C	50 x 10.4 x 8.3	72
50	73	C	50 x 10.4 x 8.3	72	54	C	50 x 10.4 x 8.3	72
60	91	D	Consult factory	Consult factory	67	D	Consult factory	Consult factory
75	110	D	Consult factory	Consult factory	86	D	Consult factory	Consult factory
100	150	D	Consult factory	Consult factory	--	--	--	--
125	180	D	Consult factory	Consult factory	--	--	--	--

Higher HP Bypass and Control Packages are available. Consult factory for qualifications.

Disconnect Only Package Specifications

This bypass control package includes the input disconnecting options.

Options for input disconnect:

- Disconnect switch with VFD fusing (5 kAIC SCCR)
- Circuit breaker (5 kAIC SCCR)
- Circuit breaker with VFD fusing (50 kAIC SCCR @ 600V)
- Circuit breaker with VFD fusing (100 kAIC SCCR @ 230V, 460V)

HP	208/230V			
	Current (Amps Light Duty)	Drive Frame	Dimensions H x W x D (Inches)	Weight (lb)
1	5	A	27 x 6 x 7	20
2	7.5	A	27 x 6 x 7	20
3	10	A	27 x 6 x 7	20
5	15	A	27 x 6 x 7	20
7.5	21	A	27 x 6 x 7	20
10	31	B	30 x 8 x 8.5	28
15	46	B	30 x 8 x 8.5	28
20	61	B	30 x 8 x 8.5	28
25	75	C	39 x 10.5 x 9	40
30	90	C	39 x 10.5 x 9	40
40	105	C	39 x 10.5 x 9	40
50	146	D	Consult factory	Consult factory
60	180	D	Consult factory	Consult factory

HP	460V				600V			
	Current (Amps Light Duty)	Drive Frame	Dimensions H x W x D (Inches)	Weight (lb)	Current (Amps Light Duty)	Drive Frame	Dimensions H x W x D (Inches)	Weight (lb)
1	3	A	27 x 6 x 7	20	--	--	--	--
2	4.2	A	27 x 6 x 7	20	3	A	27 x 6 x 7	20
3	5.5	A	27 x 6 x 7	20	4.3	A	27 x 6 x 7	20
5	8.5	A	27 x 6 x 7	20	6.7	A	27 x 6 x 7	20
7.5	13	A	27 x 6 x 7	20	9.9	B	30 x 8 x 8.5	28
10	18	A	27 x 6 x 7	20	12.1	B	30 x 8 x 8.5	28
15	24	B	30 x 8 x 8.5	28	18.7	B	30 x 8 x 8.5	28
20	32	B	30 x 8 x 8.5	28	24.2	B	30 x 8 x 8.5	28
25	38	B	30 x 8 x 8.5	28	30	C	39 x 10.5 x 9	40
30	45	C	39 x 10.5 x 9	40	36	C	39 x 10.5 x 9	40
40	60	C	39 x 10.5 x 9	40	45	C	39 x 10.5 x 9	40
50	73	C	39 x 10.5 x 9	40	54	C	39 x 10.5 x 9	40
60	91	D	Consult factory	Consult factory	67	D	Consult factory	Consult factory
75	110	D	Consult factory	Consult factory	86	D	Consult factory	Consult factory
100	150	D	Consult factory	Consult factory	--	--	--	--
125	180	D	Consult factory	Consult factory	--	--	--	--

Higher HP Bypass and Control Packages are available. Consult factory for qualifications.

CP2000 Series VFD Specifications

Environment for Operation, Storage and Transportation

Installation Location	IEC60364-1/ IEC60664-1 Pollution degree 2, indoor use only
Surrounding Temperature	Store and transport at -25°C to 70°C Only allowed at non-condensation, non-frost, non-conductive environment
Rated Humidity	Operate at max. 95% Store and transport at max. 95% Only allowed at non-condensation, non-frost, non-conductive environment
Air Pressure	Operate and store at 86 to 106 kPa Transport at 70 to 106 kPa
Altitude	- If the AC motor drive is installed at an altitude of 0 to 1000m, follow normal operation restrictions. - If it is installed at 1000 to 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 applications over 2000m, contact Delta Electronics for more details.
Pollution Level	IEC60721-3-3 Operate at Class 3C2; Class 3S2 Storage: Class 1C2; Class 1S2 Transportation: Class 2C2; Class 2S2 Only allowed at non-condensation, non-frost, non-conductive environment
Package Drop	ISTA procedure 1A (according to weight) IEC60068-2-31
Vibration	1.0mm, peak to peak value range from 2 Hz to 13.2 Hz; 0.7 G to 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

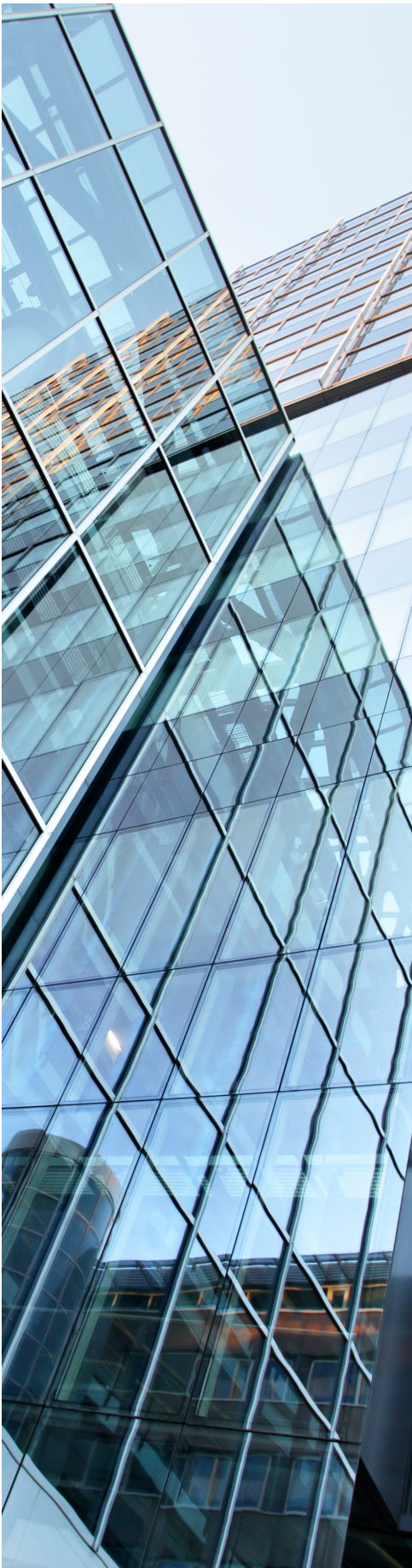
Drive Model	Frame	Top Cover	Conduit Box	Protection Level	Operation Temp
VFDxxxxCPxxx-21	Frame A-C 208/230V: 0.75 to 30 kW 460V: 0.75 to 37 kW 575V: 1.5 to 15 kW 690V: 18.5 to 37 kW	Remove top cover	Standard conduit plate	IP20/UL Open Type	208/230V and 460V: ND: -10°C to 50°C LD: -10°C to 40°C 575V and 690V: -10°C to 50°C (ND = Normal duty, LD = Light duty)
	Same as above	With top cover	Same as above	IP20/UL Type 1/ NEMA1	-10°C to 40°C
	Frame D-H 208/230V: > 37 kW 460V: > 45 kW 690V: > 45 kW	N/A	Conduit box	IP20/UL Type1/ NEMA1	-10°C to 40°C
VFDxxxxCPxxx-00	Frame D-H 208/230V: > 37 kW 460V: > 45 kW 690V: > 45 kW	N/A	No conduit box	IP00 IP20/UL Open Type	208/230V and 460V: ND: -10°C to 50°C LD: -10°C to 40°C 690V: -10°C to 50°C

CP2000 Series VFD General Specifications

Control Characteristics	
Control Method	Pulse Width Modulation (PWM)
Control Mode	208/230V / 460V models 1: V/F (V/F control), 2: SVC (Sensorless Vector Control), 3: PM (Permanent Magnet Motor) 575V / 690V models 1: V/F, 2: SVC
Starting Torque	Reach up to 150% or above at 0.5 Hz
V/F Curve	4 point adjustable V/F curve and square curve
Speed Response Ability	5 Hz
Torque Limit	Light Duty: Max. 130% torque current Normal Duty: Max. 160% torque current
Max. Output Frequency (Hz)	208/230V models: 599.00 Hz (55 kW and above: 400.00 Hz) 460V models: 599.00 Hz (90 kW and above: 400.00 Hz) 575V / 690V models: 599.00 Hz
Frequency Output Accuracy	Digital command: $\pm 0.01\%$, $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ Analog command: $\pm 0.1\%$, $25 \pm 10^{\circ}\text{C}$
Output Frequency Resolution	Digital command: 0.01 Hz Analog command: Max. output frequency $\times 0.03 / 60$ 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	0-10V, 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, Speed search, Parameter copy, JOG frequency, Slip compensation, Torque 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)
Fan Control	208/230V models: - Models with spec higher than VFD185CP23 (included) are PWM control; - Models with spec lower than VFD150CP23 (not included) are on / off switch control. 460V models: - Models with spec higher than VFD220CP43 (included) are PWM control; - Models with spec lower than VFD185CP43 (not included) are on / off switch control. 575V / 690V models: - PWM control

CP2000 Series VFD General Specifications (continued)

Protection Characteristics	
Motor Protection	Electronic thermal relay protection
Over-Current Protection	208/230V / 460V models: • 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 models: • Over-current protection for 225% rated current • Current clamp (Light duty: around 128 ~ 141%); (Normal duty: around 170 ~ 175%)
Over-Voltage Protection	208/230V models: drive will stop when DC-BUS voltage exceeds 410V 460V models: drive will stop when DC-BUS voltage exceeds 820V 575V / 690V models: 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 independently
Restart After Instantaneous Power Failure	Parameter setting up to 20 seconds
Grounding Leakage Current Protection	Leakage current is higher than 50% of rated current of the AC motor drive
International Certifications	CE, UL, GB 12668.3, EAC (for 208/230V and 460V models only)



Ordering

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