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## 1 News

### 1.1 ftp-site link

Just to let you know (again), you can find the latest info about our products (manuals, pictures, catalogues, application notes, presentations, etc) on our ftp-site.

<ftp://den-eindhoven:BuPd2175@ftp2.delta-europe.com/deltronics-eindhoven/customer-service>

Name and password are included in the link.

Name: den-eindhoven

Password: BuPd2175

### 1.2 Hannover Messe: 25-29 April 2016



Also this year Delta will exhibit at Hannover Messe from April 25~29, 2016.

**Hall 11, A49**

We cordially invite you to visit us. Please mark it in your agenda!

## 2 Product update

## 2.1 PHASE OUT – VFD-VE (correction)

We will phase out VFD-VE (VFDxxxVxxX-2) and the belonging options KPV-CE01, EMV-PG01, EMV-PG02, EMV-APP01.

**You can order them still until 30-6-2016. (was mistakenly 2015)**

## 2.2 NEW – CP2000 firmware upgraded from 1.23 to 2.00

### 2.3 NEW – CP2000 control board connector changed

**These 2 changes go together!**

Function correction		
	Version 1.23 problem	Version 2.00 correction
1	To enable Smart Stall function, an error oVx/oL will happen during acc./dec. time.	Smart Stall function will not cause OVx/OL during acc./dec. time.
2	Pr12-00=1 Fixed Time Circulation mode and Mix=Disable motor#. When the MI is ON, the corresponding Relay will immediately Off. But the drive will keep running with same frequency without switching.	Pr12-00=1 Fixed Time Circulation mode and Mix=Disable motor#. When the MI is ON, the corresponding Relay will immediately Off. The drive will switch ON next relay and run again.
3	CANopen Index 6078 and 6064 do not meet the DS 402 definition.	CANopen Index 6078 and 6064 both meet the DS 402 definition.
4	Enable speed search function. Give a Stop command during speed search, only after speed search has completed, the drive will start to do deceleration stop.	During speed search, give a Stop command, the drive will free run stop.
5	IMSVc mode, there will has a vibration when give a load at around 10Hz.	IMSVc mode, drive can work normally at 10Hz.

## Function modify

1. To modify Pr07-00 Software Brake Level factory setting become: 370.0/740.0Vdc

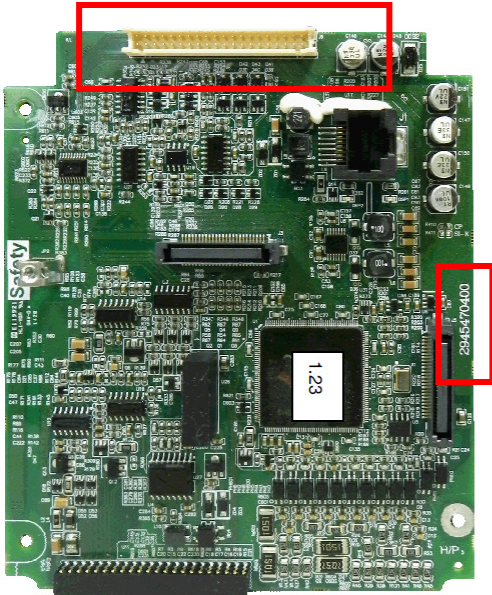
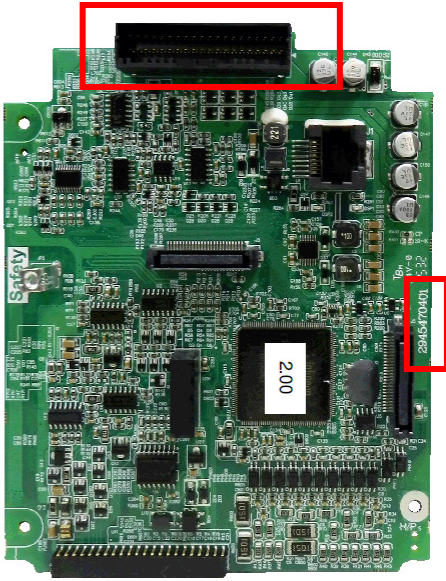
07-00	Software Brake Level					Factory Setting: 370.0/740.0
	Settings	230V series: 350.0~450.0Vdc				
		460V series: 700.0~900.0Vdc				

2. To modify the Max. frequency setting value become 599.00Hz.
3. The TMR of PLC can dynamically define value time unit.
4. After Pr00-02 set 6"Reset PLC", the PLFF error will not show out.

## New function

1. Add new D1560 for display the current drive display of warning codes.

The 40p connector (control board to power board) has been changed to improve quality.

Difference between control board and case				
Old: 2945470400		New: 2945470401		
				
	v1.23CB	Old PCB number	v2.00 CB	New PCB number
CP2000 CTL	5503005500	2945470400	5503005501	2945470401

### Manufacturing

Version	Series number	
v2.00	WJ	1604

Version	Series number	
v2.00	Taiwan	1606

### 2.4 UPDATE – C2000 firmware 1.21

In addition to paragraph 2.2 in Newsletter 2015-12:

New function: **7. Add new error code 87:OL3 Over load at low frequency**

### 2.5 NEW – C2000 firmware upgraded from 1.21 to 2.00

### 2.6 NEW – C2000 control board connector changed

**These 2 changes go together!**

#### Function correction

	Version 1.21 problem	Version 2.00 correction
1	To enable Smart Stall function will cause oVx/oL	Smart Stall function will not cause OVx/OL
2	To switch over between Pulse train position mode and speed mode will cause motor vibrated.	The motor will not vibrated during switch over between position mode and speed mode.
3	PMFOC torque % display is incorrect.	PMFOC torque % display is correct.

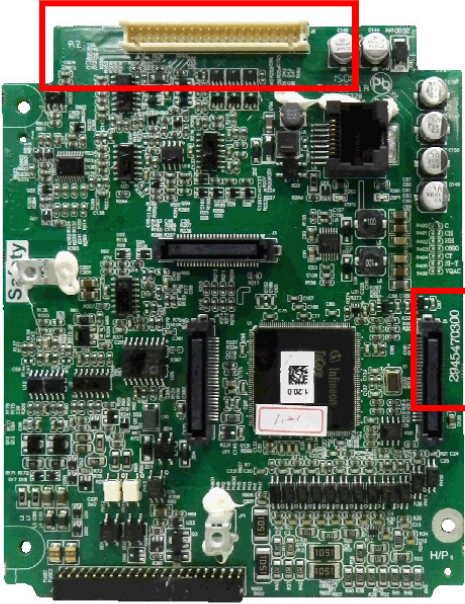
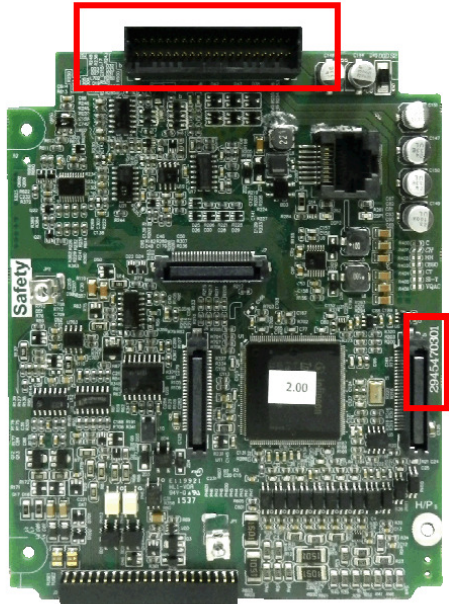
#### Function modify

1. To modify Pr07-00 Software Brake Level factory setting become: 370.0/740.0Vdc

✓	<b>07-00</b>	Software Brake Level
		Factory Setting: <b>370.0/740.0</b>
	Settings	230V series: 350.0~450.0Vdc
		460V series: 700.0~900.0Vdc

The 40p connector (control board to power board) has been changed to improve quality.



VFD-C control board and case change				
Old: 2945470300		New: 2945470301		
				
	v1.21CB	Old PCB number	v2.00 CB	New PCB number
C2000	5503005400	2945470300	5503005401	2945470301

### Manufacturing

Version	Series number	
v2.00	WJ	1603

Version	Series number	
v2.00	Taiwan	1606

## 2.7 NEW – C/CP2000 housing changes

Because of the control board connector changes, also some plastic parts (identical for C/CP20000) had to be changed.

- Control board cover



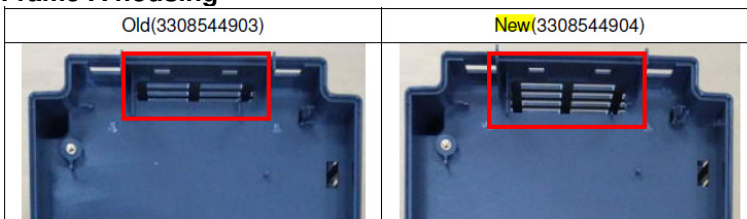
New part number 3308546705

- Cable at power board**

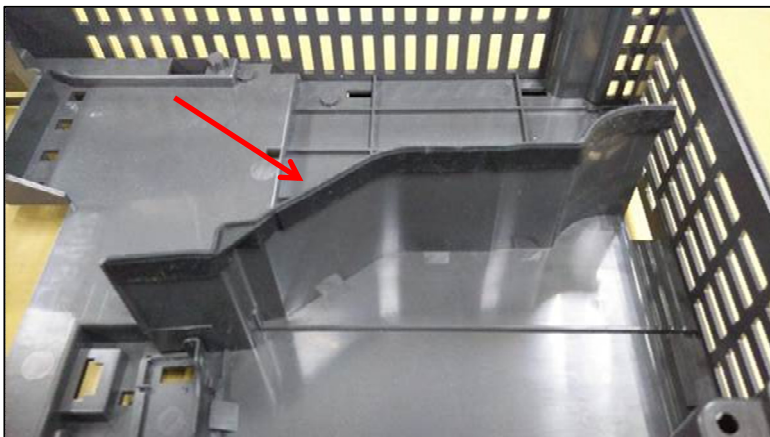
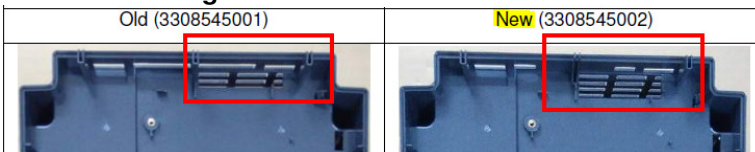
Old terminal(white)    **New** terminal(black)



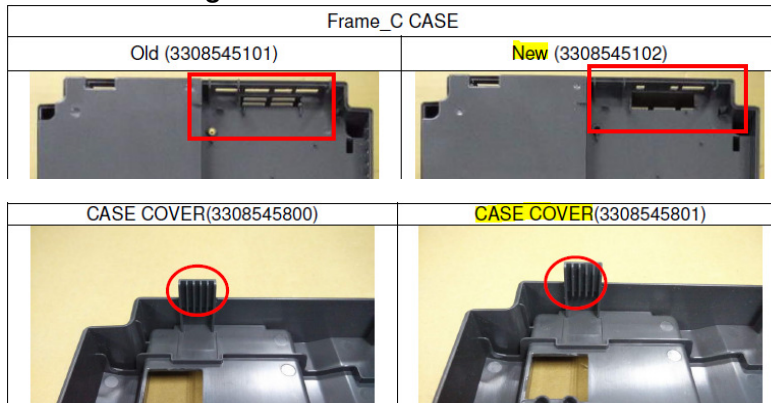
- Frame A housing**



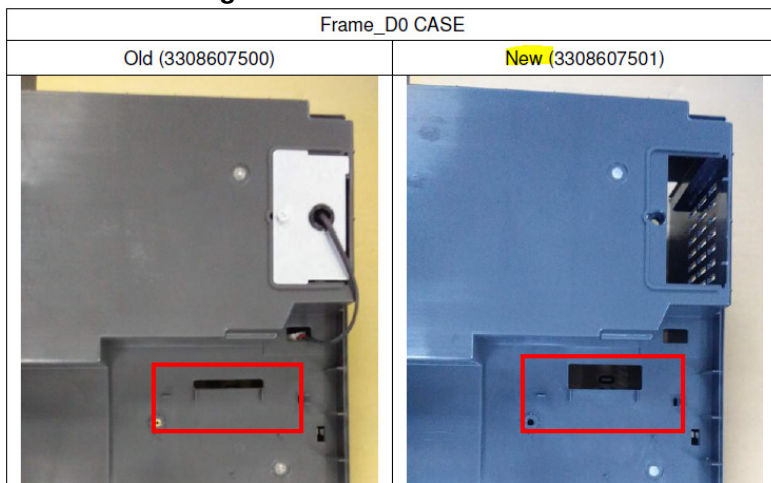
- Frame B housing**



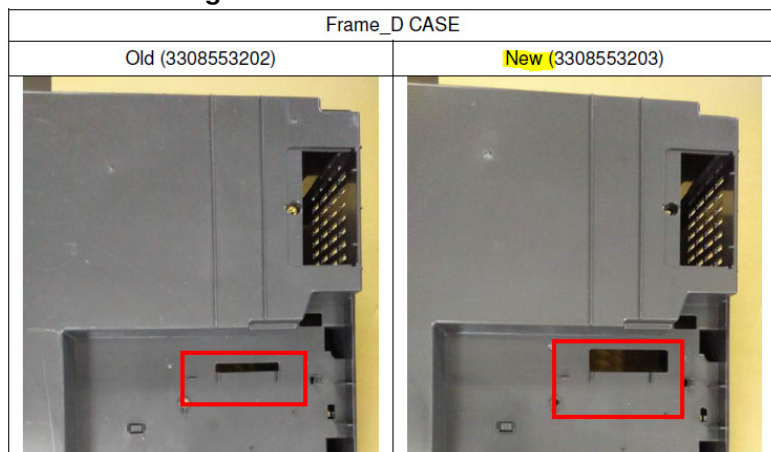
- **Frame C housing**



- **Frame D0 housing**



- **Frame D housing**



- **Frame E and up:** Nothing changes, except the control board cover.

## 2.8 NEW – C/CP2000 firmware old and new

In 2016 firmware will be released at the same time for new and old hardware:

- Firmware V2.xx for C/CP2000 with new control board with new connector.
- Firmware V1.3x for C/CP2000 with old control board with old connector.

Contact us in case of questions or special need for firmware.



### 2.9 NEW – C/CP2000 KPC-CC01 compatibility

See

116A-FE-xxC-15C31-G-01-01\_Explanation the compatibility between KPC-CC01 version and C2000 version and Parameter Copy.pdf

on the ftp-site (Folder: Customer-Service\Industrial Automation Products\AMD-Options\AMD Keypads & Cables\KPC-CC01. It shows the history of and compatibility between KPC-CC01 and C/CP2000.

### 2.10 UPDATE – VFD-E User Manual 11EE

In this manual DELTA\_IA-MDS\_VFD-E\_UM\_EN\_20151130.pdf the chapters 5&6 are missing. They have been put separately on our ftp site (CH5 & CH6).

### 2.11 NEW – AFE2000 control board connector changed

For the same reason as for C/CP2000 the 40p connector on the control board has been changed.

Compatibility

	Frame B~D		New/old CTL BD compatibility	Old CTL BD + Old PWR BD	Old CTL BD + New PWR BD	New CTL BD + Old PWR BD	New CTL BD + New PWR BD
	Old	New					
CTL BD part number	2945438501	2945438502	Result	OK (Refer to notice for maintenance)	NG	NG	OK
CTL BD assembly part number	5502604601	5502604602					

When installing new control board, the following items should be changed too:

FRAME	MODEL NAME	CTL BD	PWR BD		Supporting plastic object for CTL BD	Protection cover for CTL BD	Insulation paper for control BD
		Assembly part number after change	Part number after change	Assembly part number after change	Part number after change	Part number after change	New part number
FRAME B	AFE075A23A	5502604602	2945438803	5502605203	3308545002	3308546705	3242805200
	AFE075A43A		2945442003	5502605303			
	AFE150A43A		2945438903	5502605403			
FRAME C	AFE150A23A		2945438702	5502606102	3308545102		
	AFE220A23A			5502606802			
	AFE220A43A			5502606302			
FRAME D	AFE370A23A		2945439103	5502604703	3308553203		
	AFE370A43A			5502604803			
	AFE450A43A			5502604903			
	AFE750A43A			5502605003			

When maintaining Frame B~C, an insulation paper is required to be pasted underneath the control board.

#### Manufacturing

AF2000	Taoyuan Factory	Wujiang Factory
Frame B~D	T1601	W1601

### 2.12 NEW – CP2000 with filter on stock

The following CP2000 models with built-in filter will be standard instead of BTO and will be on stock, beginning end of March 2016. The stock level will be adjusted acc. to sales.

Frame size	Part Number	Frame size	Part Number
Frame A	VFD007CP4EA-21	Frame B	VFD110CP4EB-21
Frame A	VFD015CP4EB-21	Frame B	VFD150CP4EB-21
Frame A	VFD022CP4EB-21	Frame B	VFD185CP4EB-21
Frame A	VFD037CP4EB-21	Frame C	VFD220CP4EA-21
Frame A	VFD040CP4EA-21	Frame C	VFD300CP4EB-21
Frame A	VFD055CP4EB-21	Frame C	VFD370CP4EB-21
Frame A	VFD075CP4EB-21		



### 2.13 UPDATE – VFD-EL user manual

In manual DELTA\_IA-MDS\_VFD-EL\_UM\_EN\_20150911.pdf on page B-1:

3	2.2	VFD022EL43A	1.262	300W 250Q	PVC-40037	1	BR300W250	1	150	84.4Q
5	3.7	VFD037EL43A	2.080	600W 140Q	BUE-40037	2*	BR300W070	2*	150	84.4Q

\*Connect these two brake resistors in series.

This 2\* is wrong and should be 1 (only 1 brake unit).

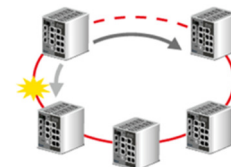
### 2.14 NEW – DVS Managed series: DVS-109W02-1GE

We are happy to announce the release of the new Industrial Ethernet Switch (IES ) – DVS Managed series: DVS-109W02-1GE.

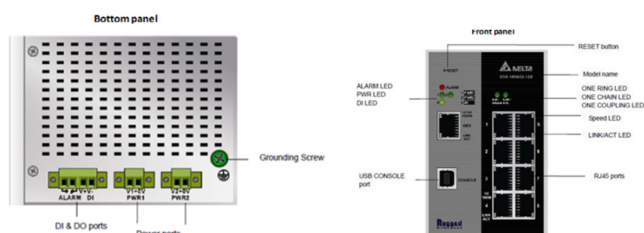
DVS Series are Layer 2 Industrial Ethernet Switches that provide high-density performance in harsh and hazardous industrial environments. DVS Ethernet Switches can work with original IPv4 and IPv6 network structure. For efficient management, DVS Ethernet Switches are equipped with SNMP, MODBUS TCP, PROFINET and EtherNet/IP management protocols. With their built-in WEB-based management interface, offer an easy-to-use, platform-independent management and configuration facility.

#### DVS-109W02-1GE

8 10/100Base-T(X) Ports + 1 10/100/1000Base-T Port Managed Ethernet Switch



#### Electrical and hardware specifications:



#### Features:

- DELTA proprietary ONE RING and ONE CHAIN redundancy protocols, fast link fault recovery **under 20ms**
- Supports Star, Tree and Ring topologies
- RSTP/MSTP Network Redundancy
- Complete Layer 2 Management Functions
- Powerful Network Security
- Optimized Traffic and Bandwidth
- WEB-based Configuration Interface
- Compatible with MODBUS TCP, EtherNet/IP, PROFINET, DNP 3.0 TCP and EtherCAT

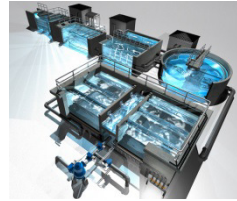
Product		Port Combination			Interface		
Model Name	Operating Temperature	Combo Port					
		10/100/1000Base-T and 100/1000Base-SFP	10/100/1000Base-T	10/100Base-T(X)	DI	DO (Relay)	Power Input
DVS-109W02-1GE	-40°C to 75°C	---	1	8	1	1	2

### Typical Applications:

#### Wind Power



#### Water treatment



DVS-109W02-1GE is on stock and ready to be ordered. Please contact your Sales Manager for the price.

### 2.15 **NEW** – DOP-H Handheld HMI

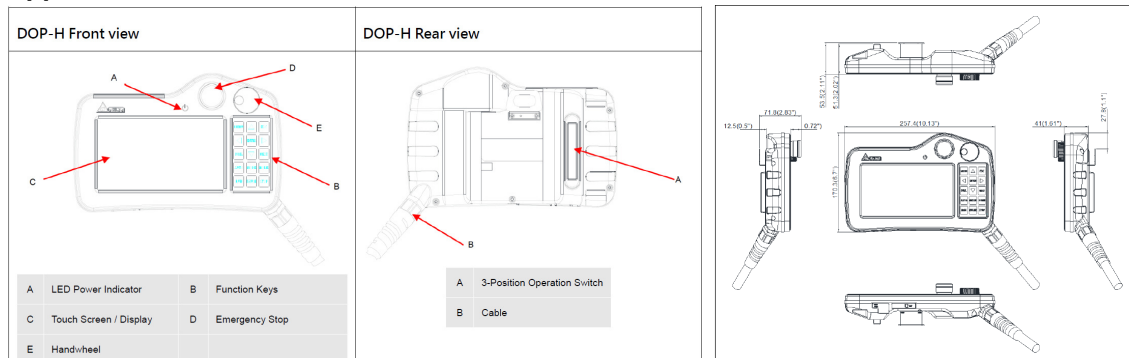
DOP-H is a handheld HMI with 5 or 10 meters cable, with Emergency stop and MPG generator.

#### Features


- 65536 colors display
- Built-in Emergency Stop Switch
- Built-in Enable Switch (rear side)
- Serial communication type support RS485 / RS422
- Ethernet communication type supports one Ethernet port
- Handwheel(Optional)
- Light weight design, only 750g
- Integrated style cable (5m/10m)



#### Appearance & Dimensions



### Specifications

	Model	DOP-H07S425 DOP-H07S42A	DOP-H07S465 DOP-H07S46A	DOP-H07E425 DOP-H07E42A	DOP-H07E465 DOP-H07E46A
D	Display Size	7" Wide TFT LCD			
I	Colors	65536 			
S	Resolution	800 x 480			
P	Backlight	LED Back Light			
L	Brightness	450 cd/m <sup>2</sup>			
A	Backlight Life <sup>(Note 1)</sup>	20,000			
Y	MCU	400 MHz			
	Flash ROM(Bytes)	128MB			
	RAM(Bytes)	64MB			
	Backup Memory (Bytes)	16MB			
	Buzzer	Multi-Tone Frequency ( 2K ~ 4K Hz ) / 80dB			
	Audio Output	N/A			
	USB	1 USB Client Ver 2.0			
	SD	SD (Support SDHC)			
	Serial COM	RS-422 / RS-485 <sup>(Note 2)</sup>		N/A	
	Ethernet	N/A		1 Ports <sup>(Note 2)</sup>	
	Function Keys	15			
	Cable Length	Last code of Model name is 5 : 5 meters Last code of Model name is A : 10 meters			
	Emergency Stop	A-contact: 1 / B-contact: 1 Rated voltage: DC 30V Maximum rated current: 1A Minimum allowable load: DC 5V/1 mA  Complies with IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL 508, and CSA C22.2 No.14, GB 14085.5			

Model	DOP-H07S425 DOP-H07S42A	DOP-H07S465 DOP-H07S46A	DOP-H07E425 DOP-H07E42A	DOP-H07E465 DOP-H07E46A
3-Position Operation Switch	A-contact: 1 Rated voltage: DC 30V Maximum rated current: 700 mA Minimum allowable load : DC 3 V/5mA Complies with EN/IEC60947-5-1, IEC60947-5-1, IEC60947-5-5, IEC60947-5-5, UL 508, and CSA C22.2 No. 14 Applicable standards for use with ISO12100-1, -2, EN12100-1, -2, IEC60204-1, EN60204-1, ISO11181/prEN11181, ISO10218/EN775, ANSI/RIA R15.06, ANSI B11.19			
Handwheel	N/A	Rated Voltage: -DC 24V in Resolution: 50(P/R) Output Pulse: Square Output Phase: A, B Phase difference of A and B: 90° ± 45° Max. Frequency response: 200 Hz	N/A	Rated Voltage: -DC 24V in Resolution: 50(P/R) Output Pulse: Square Output Phase: A, B Phase difference of A and B: 90° ± 45° Max. Frequency response: 200 Hz
Perpetual Calendar	Built-in			
Cooling Method	Natural cooling			
Safety Approval	CE			
Waterproof Level of Panel Display	IP55			
Operation Voltage	DC +24V ( -10% ~ +15% ) <sup>(Note 3)</sup>			
Voltage Endurance	AC500V for 1 minute (between charging (DC24V terminal) and FG terminals)			
Power Consumption	5.6 W <sup>(Note 4)</sup>			
Backup Battery	3V lithium battery CR2450 × 1			
Backup Battery Life	About 5 years or more at 25°C but subjects to the temperature and the conditions during usage.			
Operation Temperature	0°C ~ 40°C			
Storage Temperature	-10°C ~ +60°C			
Operating Environment	10% ~ 90% RH [ 0 ~ 40°C ] ; 10% ~ 55% RH [ 41 ~ 50°C ] ; Pollution Degree 2			
Vibration	Conforms to IEC61131-2; Continuous: 5Hz ~ 8.3Hz 3.5 mm, 8.3Hz ~ 150Hz 1G Conforms to IEC60068-2-27;			
Shock	11ms, 15G Peak, X, Y, Z direction for 6 times			
Dimension ( W ) × ( H ) × ( D ) mm	257.4 × 170.3 × 71.8 (Emergency stop switch and hook are included.)			
Weight	750 g (cable excluded)			

### Ordering information

DOP-H ☐ ☐ S 4 6 5  
① ② ③ ④ ⑤ ⑥

① Series	DOP-H: Delta H Series HMI
② Display Size	07 : 7 inches LCD Display
③ Type	S: Standard E: Ethernet
④ Resolution	4: WVGA
⑤ Optional	2 : Without Handwheel 6 : With Handwheel
⑥ Cable Length	5 : 5 meters A : 10 meters

Model	Communication	Handwheel	Cable Length
DOP-H07S425	Serial	N/A	5 meters
DOP-H07S42A	Serial	N/A	10 meters
DOP-H07E425	Ethernet	N/A	5 meters
DOP-H07E42A	Ethernet	N/A	10 meters
DOP-H07S465	Serial	YES	5 meters
DOP-H07S46A	Serial	YES	10 meters
DOP-H07E465	Ethernet	YES	5 meters
DOP-H07E46A	Ethernet	YES	10 meters

## 2.16 NEW – DRS-30W series power supplies

Delta Electronics is introducing the new DRS-30W series to the ultra-compact Sync DIN rail power supply series. The new models of 24V/1.25A output (DRS-24V30W1NZ) and 5V/3A output (DRS-5V30W1NZ) are competitively priced and have improved performance at low temperatures ( 20°C @ 80% load). The Sync series are able to start at the extreme low temperature of -40°C. It has a wide operating temperature range from -20°C to +70°C and a low earth leakage current < 0.5mA @ 264Vac.

Safety approvals include IEC/EN/UL 60950-1 (ITE) and UL 508 (Industrial). The output circuit also complies with NEC Class 2 (UL 60950-1) and Limited Power Source (IEC/EN 60950-1). All Delta industrial power supplies are fully compliant with RoHS Directive 2011/65/EU for environmental protection and major international safety standards.

### Highlights & Features

- Ultra-compact body measuring only 75mm tall
- Universal AC input voltage and full power from -10°C to +55°C operation



- Low earth leakage current < 0.5mA @ 264Vac
- Galvanic isolation up to 3.0kVAC between input to output and input to ground
- NEC Class 2/ Limited Power Source (LPS) certified
- Overvoltage/ overcurrent/ over temperature protections

### 3 Application

#### 3.1 NEW – Application Notes

New application notes have been published recently on our ftp-site:

- Building materials Mechanical Industry-Intelligent Solution of Fan Performance Testing Equipment.pdf
- CNC Industry Notification--CNC Boring Machine.pdf
- Electronic Industry Notification - Automated IC Burning Machine.pdf
- Fluid Industry Notification - Direct-drive Screw Pump Unit Control Solution.pdf
- Machine Tool Industry Notification - CNC Integration with DMV system.pdf
- Packaging Industry Notification--Labeling Machine.pdf
- Packaging Industry Notification--Lollipop Twist Packing Machine.pdf
- Industry Notification - Servo motor stator winding machine.pdf

#### 3.2 Pulse train input for C200


It is not mentioned in the C200 manual but it is mentioned in the C2000 manual on page 16-145.

16-11-2 Frequency calculation function

Apart from high-speed counting, the C2000's M18 can also convert a received pulse to frequency. The following figure shows that there is no conflict between frequency conversion and count calculations, which can be performed simultaneously.

PLC speed calculation formula  
D1057 Speed  
D1058 Interval between calculations  
D1059 Decimal places

Assuming that there are 5 input pulses each second, (see figure below) we set D1058=1000ms=1.0 sec. as the calculation interval. This enables five pulses to be sent to the converter each second.



Time Interval between calculations

Assuming that each 5 pulses correspond to 1Hz, we set D1057=5.

Assuming that we wish to display numbers to two decimal places, we set D1059=2, which is also 1.00Hz. The numerical value displayed at D1056 is 100. For simplicity, the D1059 conversion formula can be expressed as in the following table:

$D1058 = \frac{\text{Pulses per second}}{D1057} \times \frac{1000}{D1057} \times 10^{D1059}$
--

- You need to use the built-in PLC to convert the pulses into frequency command and also set Pr10-02 accordingly.  
A sample program is available upon request.
- Please note that the maximum frequency is 33kHz
- If you use single-ended signals you can only use the MI7 port and will need to set 10-02=5.



## 4 FAQ

### 4.1 VFD-series AC Motor drives

#### C/CP2000

**Q** How to read HAND/AUTO and Local/Remote status via serial comm or in PLC?

**A** Bits 13 to 15 from register 2119H can be used to identify if HAND/AUTO or Local/Remote are active. Please see the definition:

2119H	Bit15~13	Meaning
	000	OFF
	001	Hand
	010	Auto
	011	Local
	100	Remote

#### VFD-S

**Q** What is “analog overlap plus” (see Pr2-00) ?

**A** When Pr2-00≠1or2 (so not AVI or ACI selected) you can set Pr02-06=1 or 2.

When Pr02-06=1, it will add frequency command source from Pr02-00 and AVI

When Pr02-06=2, it will add frequency command source from Pr02-00 and ACI

In both cases still up to  $F_{max}$  acc. to Pr1-00 only.