DELTA Newsletter

Industrial Automation Products

Edition 2015-08

Contents

interlift 2015

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.

Note: The ftp-site can normally not be accessed via Google Chrome, only via Internet Explorer. See below

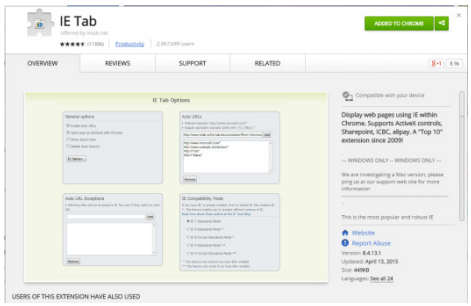
ftp://den-eindhoven:BuPd2175@ftp2.delta-europe.com/deltronics-eindhoven/customer-service

Name and password are included in the link.
Name: den-eindhoven
Password: BuPd2175

1.2 ftp-site link (access in Google Chrome)

Internet Explorer compatibility in Chrome.

Download and install IEtab in Google Chrome:
https://chrome.google.com/webstore/detail/ie-tab/hehijbfgiekmjfkfjpbkbammjbdenadd?hl=en

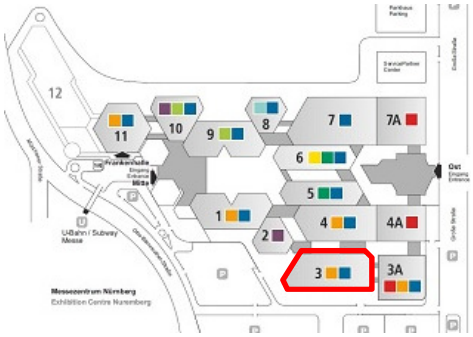


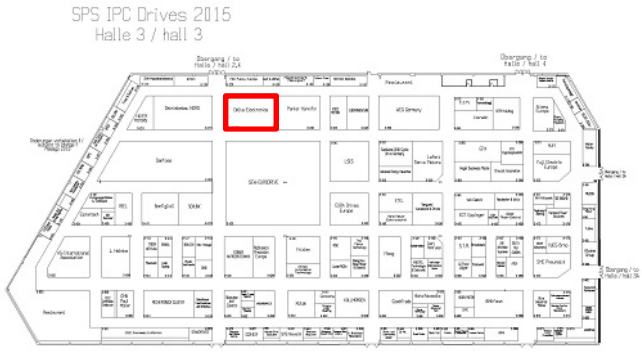
1.3 SPS/IPC/drives in Nuremberg

This year Delta will exhibit again at SPS/IPC/drives in Nuremberg from 24-26 November 2015.

We will show you our latest developments.

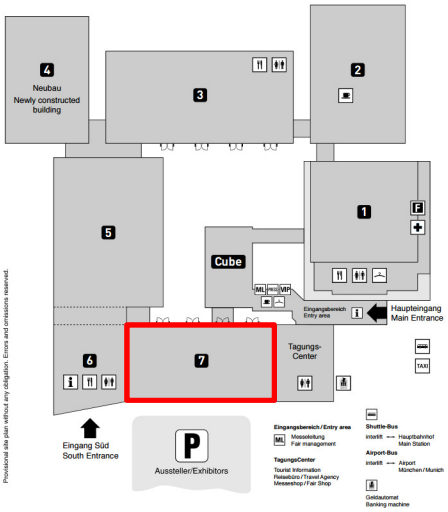
We cordially invite you to visit us. If you make an appointment with Monique Appeldoorn, tel +31 40 2592880, e-mail mappeldoorn@delta-europe.com, you'll be sure we'll be there at your most convenient time.

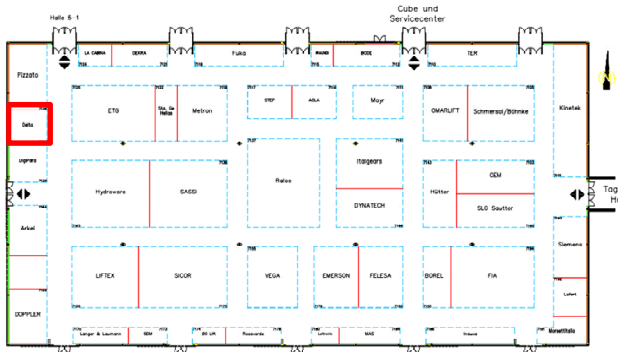




1.4 Interlift in Augsburg

This year Delta will exhibit for the first time at Interlift in Augsburg, Germany from 13-16 October 2015. You'll find us in Hall 7, 7128 with our latest elevator solutions.





2 Product update

2.1 UPDATE – Starting capacity

In the latest manuals a formula is given to calculate the starting capacity in kVA.
It is not clearly stated which units to use: MKS (gravimetric) units or SI units.

As long as consistent units are used, the result is the same.

	MKS Units (gravimetric) Starting capacity in **kVA** (t_a≤60s)	**SI Units** (Système International) Starting capacity in **kVA** (t_a≤60s)
	$\frac{k \cdot n_M}{973.4 \cdot \eta \cdot cos\varphi}\left(T_L + \frac{GD^2}{374.7} \cdot \frac{n_M}{t_a}\right)$ ↓ $\frac{k \cdot n_M}{\frac{60}{2\pi \times 9.81} \cdot 1000 \cdot \eta \cdot cos\varphi}\left(T_L + \frac{GD^2}{4 \times \frac{60}{2\pi} \times 9.81} \cdot \frac{n_M}{t_a}\right)$ because $\frac{60}{2\pi \cdot 9.81} \cdot 1000 = 973.4$ and $4 \cdot \frac{60}{2\pi} \cdot 9.81 = 374.7$	$\frac{k \cdot 2\pi \cdot n_M}{60 \cdot \eta \cdot cos\varphi}\left(T_L + (J_L + J_M) \cdot \frac{2\pi \times n_M}{60 \times t_a}\right) \cdot 10^{-3}$
n_M	Motor rated speed in rpm	Motor rated speed in rpm
k	Correction factor 1.05~1.1 depending on PWM method	Correction factor 1.05~1.1 depending on PWM method
η	Motor efficiency, normally 0.85	Motor efficiency, normally 0.85
$cos\varphi$	Motor power factor, normally 0.75	Motor power factor, normally 0.75
T_L	Load torque in kg.m	Load torque in Nm
t_a	Acceleration time to rated speed in s	Acceleration time to rated speed in s
GD^2	Total GD^2 calculated back to motor shaft in kg.m^2 ($J=^1/_4GD^2$)	
J_L		Load inertia calculated back to motor shaft in kg.m^2
J_M		Motor inertia in kg.m^2

2.2 NEW – Manuals for C2000

We are working on version of the user manuals in different languages and in European style.
The first ones are for C2000:

- Delta-EMEA_IABG_C2000_M_DE_20140826.pdf in German
- Delta-EMEA_IABG_C2000_M_EN_20140826.pdf in English

You can find them on our ftp-site.

3 Application

3.1 NEW – Application Notes

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

- Electronics Industry Notification -AH500 and 20MC Applied in CMV Auto Test Machine.pdf
- Fluid Mechanic Notification- SI Booster Pump System.pdf
- Fluid Machinery Industry Notification -reaction sedimentation tank solution.pdf
- Packaging Industry Notification--Auto-Feeding Packing Machine.pdf
- Plastic & Rubber Industry Notification-Four-roll Calender.pdf
- Elevator Industry Notification- Lift Energy Saving System
- REG2000 dimensioning and set-up.pdf

3.2 NEW – CP2000 max. motor cable length

The maximum shielded/unshielded motor cable length with/without AC output reactor has been re-established.
The info will be updated in the next user manual.

400V types	kW	hp	Rated current (A_{RMS})	Max. motor cable length without AC output reactor		Max. motor cable length with 3% AC output reactor	
			LD/ND	Shielded (m)	Unshielded (m)	Shielded (m)	Unshielded (m)
VFD007CP43A	0.75	1	3/2.8	50	75	75	115
VFD015CP43B	1.5	2	4.2/3				
VFD022CP43B	2.2	3	5.5/4				
VFD037CP43B	3.7	5	8.5/6				
VFD040CP43A	4	5	10.5/9				
VFD055CP43B	5.5	7.5	13/10.5				
VFD075CP43B	7.5	10	18/12	100	150	150	225
VFD110CP43B	11	15	24/18				
VFD150CP43B	15	20	32/24				
VFD185CP43B	18.5	25	38/32				
VFD220CP43A	22	30	45/38				
VFD300CP43B	30	40	60/45				
VFD370CP43B	37	50	73/60				
VFD450CP43S	45	60	91/73	150	225	225	325
VFD550CP43S	55	75	110/91				
VFD750CP43B	75	100	150/110				
VFD900CP43A	90	125	180/150				
VFD1100CP43A	110	150	220/180				
VFD1320CP43B	132	175	260/220				
VFD1600CP43A	160	215	310/260				
VFD1850CP43B	185	250	370/310				
VFD2200CP43A	220	300	460/370				
VFD2800CP43A	280	375	530/460				
VFD3150CP43A	315	420	616/550				
VFD3550CP43A	355	475	683/616				
VFD4000CP43A	355	475	770/683				
VFD5000CP43A	450	600	912/866				

3.3 Set-up PID in C/CP2000

A customer wanted following spec:

- Setpoint via keypad. 10bar
- Feedback via ACI 4-20mA = 0-16bar
- Start/stop via keypad (but this is not important)

Connect the sensor to ACI. It depends on the sensor how it is connected. It can be a 2-point or 3-point sensor.

Parameter settings

- Do reset to 50Hz defaults Pr00-02=9
- Do autotuning etc if needed.
- Pr00-20=0 for frequency command via keypad (therefore also for setpoint)
- Pr00-21=0 for Start/Stop via keypad. Can be changed.
- Pr03-00=0 for AVI no function (not really required now, but just to be sure)
  Similar for Pr03-02.
- Pr03-01=5 for PID Feedback on ACI
  (check switch SW4 on terminal board to be in position 0-20mA/4-20mA)
- Pr00-04=10 to show PID feedback on display (not needed but convenient)
- Pr08-00=1 for PID enable with negative feedback on analogue input (acc. to Pr03-00 to 03-02 setting 5, so in this case ACI)

Now your basic PID is ready.

- Setpoint 0-50Hz = 0-16bar --> 10bar=31.25Hz
- Feedback in % (0-10% = 0-16bar) --> 10bar=62,50%

You can press RUN to start the drive to check PID.

Setting and feedback display in bar

- Pr00-25=0162hex (to have bar in 2 decimals). Please refer also to the manual. Assume d that 2 decimals are enough.
- Pr00-26=16.00 (to scale setpoint and feedback to 0-16bar)

Press RUN and watch the display.
The setpoint can be set to 10.00bar. Feedback will go to 10.00bar.
The actual output frequency can be read on the display.

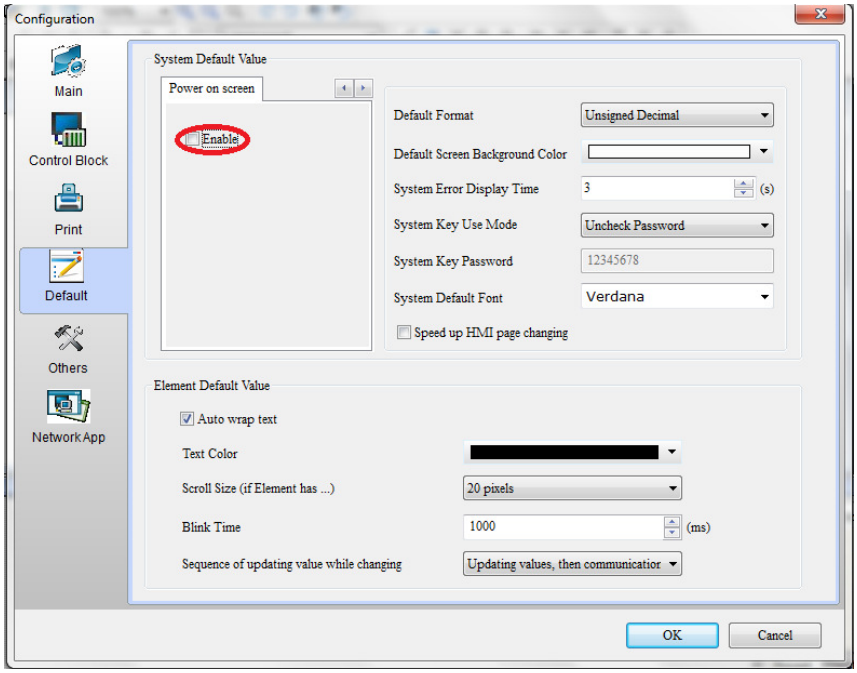
Remarks

- P,I,D settings can be changed in Pr08-01 to 08-03. This is really application dependent so we cannot give values. Try first with the default settings.
- In general set Pr01-12/01-13 (Acc/Dec Time) as low as possible without having OC or OV. These times are in the PID loop and cause delays (which can be unwanted). It is not mandatory. Just from experience.

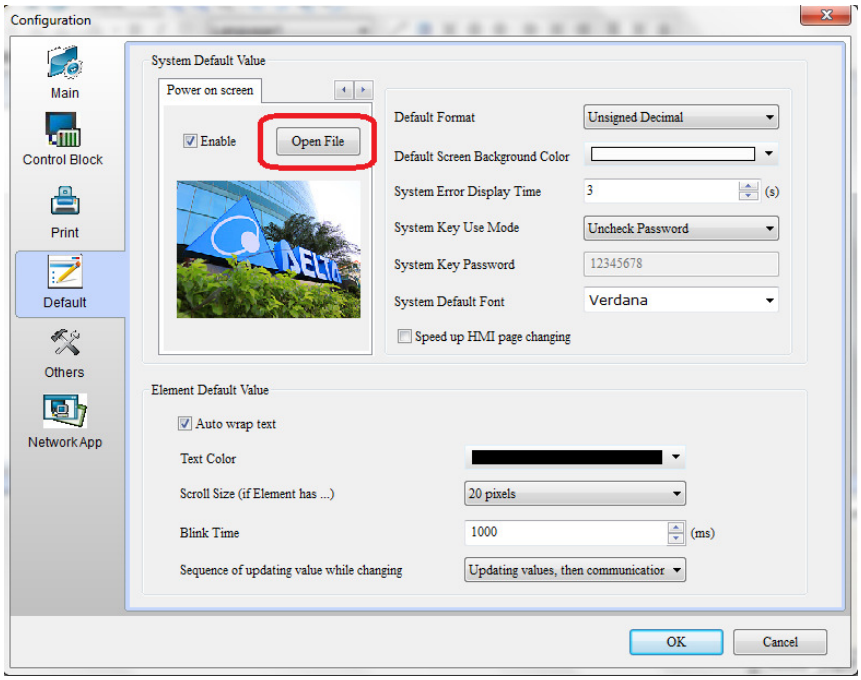
3.4 Customize power-on screen in HMI

With DOPSoft 2.00.04.09 now it is possible to change the default screen that is shown at HMI at power ON. If users want to show a custom image, logo, etc. just by following few and simple steps this is now possible through “Power on screen” settings:

1. On the menu go to: Options> Configuration>Default , select “Power on screen” tab and click “Enable”

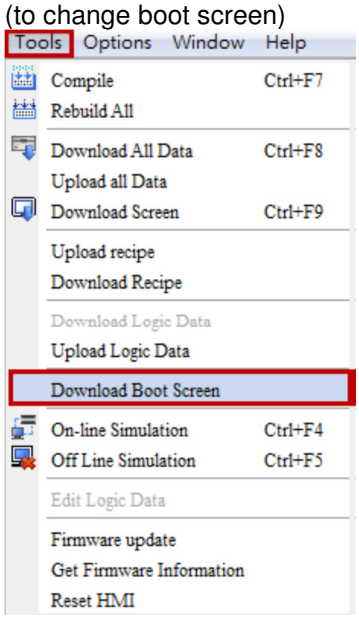


2. Click “Open File” and select the desired image file (bmp ; jpg ; gif ; ico ; png)

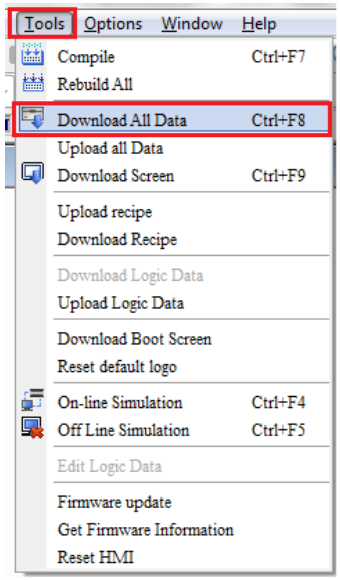


3. After enabling the power on screen option and selecting the desired file, users can use two possible options to activate the power on screen:

Tools> Download Boot Screen
(to change boot screen)

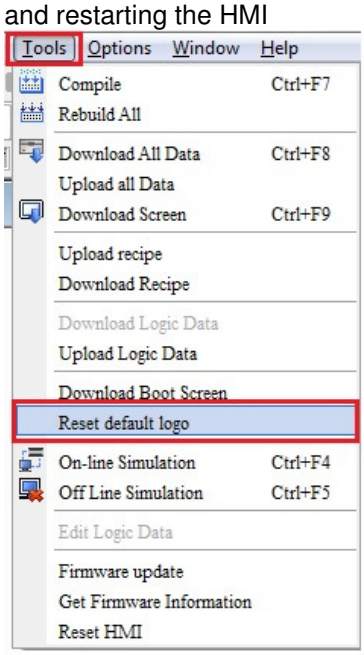


Tools> Download All Data
(to download boot screen directly)



4. After downloading the boot screen, the HMI has to be restarted.

5. If users want to restore the default logo, this is possible by selecting Tools> Reset default logo and restarting the HMI



Important :
Power on Screen function is not supported on the following model types: B04S211, B05S100, B05S101, B07S201, B07S211.

4 FAQ

4.1 VFD-series AC Motor drives

C/CP2000

Q **How can we read that the drive is in a fault condition in the PLC of a C/CP2000?**

A *In address 2100hex a warning or fault code is saved.*

2100H	High byte: Warn Code Low Byte: Error Code

So if 2100hex=0, then no fault or warning is saved.
Only the latest warning and fault is saved in 2100hex.

Q **What is the bandwidth for the master speed attained function?**

A *For the master speed attained function*
CP2000: Pr02-13, 02-14, 02-15=2
C2000: Pr02-13, 02-14, 02-16, 02-17=2)
the bandwidth is ±2Hz. It is fixed and cannot be changed.

VFD-E

Q **In PLC Mode the drive always starts with [PLC1] or [PLC2] display, despite Pr00-03 setting. Why?**

A *When PLC1 or PLC2 mode is activated, the setting of Pr00-03 is changed to 5, so thestart-up display is always PLC1 or 2.*