Purpose:

This tech bulletin explains the steps that are needed in order to properly configure the Delta ASDA-A2 servo drives with the Centroid Acorn based control.

Requirements:

ASDA-A2 Drive Manual Windows PC with Delta A2 Software and Centroid CNC12 USB cable – may need an additional USB extension cable

Download links

Centroid CNC12

http://www.centroidcnc.com/centroid_diy/centroid_cnc_software_downloads.html

Delta Software

http://www.delta.com.tw/product/em/motion/motion_servo/download/software/ASDA_Soft_V4.08.05_Install_Edition.zip

Delta A2 Manual

http://www.delta.com.tw/product/em/motion/motion_servo/download/manual/DELTA_ASDA-A2_M_EN_20130315.pdf

Installing and Configuring of Delta Software:

1. Copy the ASDA_Soft_V4.08.05_Install.zip file to the PC which will be used to connect to the Delta drive.

2. Double-click the ASDA_Soft_V4.08.05_Install.zip file to open it and then double-click the ASDA_Soft V4.0805.msi file to install making sure to install everything to the default locations selected by the software.

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☆ Favorites	-	Name	^	Туре
Desktop		ASDA_Soft V4.0	8.05.msi	Windows Install

Once the software has completed the installation, there will be a shortcut on the desktop.

3. Double-click the ASDA shortcut to start the Delta software. The first time the software is run, you will be prompted to install USB drivers. Install the USB drivers, shut the PC off, and then power the PC back up with USB cable disconnected.

4. Plug the USB cable into the Delta drive as well as the PC. Windows may indicate that it is installing drivers when you reboot. Let it complete before starting the ASDA software.

- 5. Start ASDA software
 - a- Select a language.
 - b- Click on the "COM Port Setting" tab.
 - c- Click on the down arrow of the drop-down box.
 - d- Scroll down and select ASDA-A2.
 - e- Click OK.

ASDA_Soft - Setting	ASDA_Soft - Setting
COM Port Setting Language	COM Port Setting anguage
 ● 1. English ● 2. 繁體中交 ● 3. 简体中文 	Select Device : ASDA-A Auto Detect ASDA-A ASDA-A+ ASDA-AB ASDA-AB ASDA-B ASDA-B ASDA-A2 Star ASDA-B2 ASDA-B2L
	Baud Rate: 0 : 4600 Protocol: 6 : 8,N,2 (RTU) Write to Drive Cancel

6. Click autodetect to configure your com port settings. If it's not successful, try powering off and back up again. After it has autodetected, click OK. Notice that the drive has now come online.

ASDA_Soft - Setting
COM Port Setting Language
On-Line Off-Line
Select Device : ASDA-A2
[COM3] : Port_#0001.Hub_#0001
Silicon Labs CP210x USB to UART Bridge (COM3)
Delta ASDA-Soft
Manual Setting
OK

Configuring and Tuning Delta ASDA-A2 Drives:

1. **ALWAYS** begin by setting the drive back to the factory default configuration.

- a- Select "Parameter Function" from the menu bar at the top of the screen.
 - b- Select "Parameters Editor" from the drop-down.
 - c- When the editor screen fills, it fills with the default settings for the drive. Click the icon with the arrow pointing at the drive to send the default parameters to the drive.

Delta ASDA-Soft - ASDA-A2 Servo	🖑 D	elta ASDA	-Soft -	ASDA-A2 Serv	/0	_	_	
File Setting Tools Parameter Function Window Description Image: Setting in the set of the s		Setting . 2010 Setting Paramete	Tools	Parameter F	unction Windo	w Descript	ions 2 📲 🛛 🚺 Documents\driv	ON LINE
PR Mode Setup		0 - XX		x P 2 - XX	P 3 - XX P	3	A □ 0 -XX P6-XX Min	P 7 - XX
		2 - 00 2 - 01 2 - 02 2 - 03	/	KPP PPR PFG PFF	97 100 50 5	rad/s % % ms	0 10 0 2	2047 500 100 100
	P	2 - 04		KVP	389	rad/s	0	8191

d- Select "Write All Parameters" when prompted. There may be a few errors about being unable to write certain parameters but it's safe to ignore those errors.

Write Parameters	to Driver
Write Option : © Write Changed Parameters	T Write
Write All Parameters	× Cancel

2. Since some parameters require the drive to be rebooted before they take effect, remove power from the drive, wait 10 seconds, and then power the drive back up. If the menu bar at the top of the screen indicates "Off Line", click on it to toggle the drive to "On Line".

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File	Setting	Tools	Parameter Fun	ction Window	Descriptions	-		
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3. As in step 1, open the "Parameters Editor" from the "Parameter Function" tab and set the following parameters to configure the Delta drive for precision mode operation.

Note – Use the tabs at the top of the Parameters Editor screen to select the Parameter Group (01-, 02- etc.) for editing

P01-00	0x0102 Type of pulse
P01-01	0x0100 Precision mode control
P01-40	3000* Motor max commanded RPM. Depends on motor
P01-41	200 Max analog torque command
P01-44	320000 Encoder output pulses**Delta encoder line count
P01-45	1024 Centroid pulse ratio
P01-55	3000* Max allowed RPM of motor. Depends on motor
P02-10	0x0101 DIO1 - Drive Enable
P02-11	0x0000 DIO2 - not used
P02-12	0x0000 DIO2 - not used
P02-13	0x0000 DIO3 - not used
P02-14	0x0102 DIO5 - Reset Servo Drive
P02-15	0x0000 Disable + limit switch
P02-16	0x0000 Disable - limit switch
P02-17	0x0000 Disable EMGS function
P02-22	0x0007 DO5-Motor Alarm Output
P02-32	0x0000 Continuous tuning mode
P02-33	0x0000 Semi-auto mode inertia adjustment
P02-47	0x0000 Auto resonance suppression
P02-66	0x0004 Auto-reset undervolt error

After all the parameters above have been set, click the icon with the arrow pointing at the drive to send the parameters to the drive. Select "Write All Parameters". There may be a few errors about being unable to write certain parameters but it's safe to ignore those errors.

4. Unplug the power from the drive and plug it back in to reboot the drive.

5. When the drive is back up, restart the ASDA software. If the menu bar at the top of the screen indicates "OFF Line", click it to toggle the drive online.

6. To tune the Delta drives.

- a- Select "Tools" from the menu bar.
- b- Click "Auto Gain Tuning" from the drop down.
- c- Check the box for "Enable Gain Control Panel".

d- Click "Servo On".

e- Use the arrow button(s) to jog to the first position you wish to move to while tuning.

f- Click the "Position 1" button.

g- Use the arrow button(s) to jog to the second position you wish to use for tuning.

Note – It should be a couple of inches from the first position

h- Click "Position 2" button.

I- Click "Start" to begin tuning

📳 Delta ASDA-Soft - ASDA-A2 Servo	Enable Gain Control Panel
File Setting Tools Parameter Function Window Descriptions Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Status Monitor Image: Status Monitor Image: Status Monitor Image: Status Monitor Image: Missing Tool Image: System Analysis Image: Z-position Function Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning Image: Auto Gain Tuning	Servo On Alarm Reset Servo ON Alarm Reset More and Acceleration Time 200 Deceleration Time 200 Accel /Decel S-curve 20 Jog Speed 200 (1~3000) Download Jog : Motor feedback position[user unit] Position 1 0 Position 2 - 308526 Present Position -99097 Time Cycle 500 mc Start Est. JL./Jm: 4.7 Set J

7. Watch the value in Est. JI/Jm box at the bottom of the screen. When it stops changing (less than a minute) you can stop the auto tune.

- a- Click "Set J".
- b- Click "Compute".

c- Click the "===>>" button in the bottom section of the screen to send the data to the drive.

a Auto Gain Tuning	
Off - line Computation	Enable Gain Control Panel
ASDA-A2	Servo On Servo ON Alarm Reset Ro Alarm
Show current ratio of inertia	Acceleration Time 200 Deceleration Time 200
Compute Read from Device	Accel /Decel S-curve 20 Jog Speed 200 (1~3000)
P1-37 Load Inertia Ratio : 4.7 ▼ 0.1times 4.5 P2-00 Position Loop P gain : 81 ▼ 84 P2-02 Position Feedforward : 50 ▼ 50 P2-04 Speed Loop P gain : 326 ▼ 339 P2-05 seed Loop P gain : 52 ▼ 54	Jog :
P2-25 OSC. Reject filter : 32 ♥ 0.1times 30 P2-26 External Noise Reject : 52 ♥ 54	Motor feedback position[user unit]
P2-49 Speed Detection Filter and Jitter Su [IOF]: 800 V Comparison (IOF]: 800 V Sector Statement	Position 2 -308526 Present Position -99097
P2-47=0: Disable Auto Resonance Suppression Mode Image: Control (Control (Contro) (Contro) (Control (Control (Control (Control (Control (Contro	Time Cycle 500 ms Start Est. JL/Jm: 4.7 Set J

Note – You can generally use the auto-calculated values for Bandwidth (52hz) and Ratio of Inertia (4.7) without trouble. It may be necessary, particularly on bigger machines, to manually adjust the Bandwidth closer to 100Hz and the Ratio of Inertia to 1 or 2 but try using the autocalculated values first.

8. Turn off "Servo On" and close the Auto Gain Tuning window. Close the Delta software and cycle power to the drive.

9. Run Acorn Setup Wizard and set Steps/Rev to 4096.