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DELTA IA-ASD ASDA-Soft UM EN 20140710



ASDA-Soft User Guide

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Important Notice

- Different device has different features and operational ways. Technical personnel who is in charge of operating the software shall implement appropriate measures and follow the instructions of the user guide.
- Delta will not take responsibility for the results of unauthorized modifications of this product. Delta shall not be liable for any damages or troubles resulting from unauthorized modification.
- The drawings presented in this user guide are typical examples and are only used for functional description. However, there must have different demands and variations in practical operation and settings. It is not suggested to do any practical application and operation in accordance with the examples in the user guide. Delta will not take responsibility for it.
- No patent liability is assumed with respect to the use of the information contained herein.
- No part of this work may be reproduced in any form (by photocopying, microfilmor any other method) without the written permission of Delta.
- Technical changes which improve the performance of the device may be made. Delta has the right to change the definition and contents of this user guide.

Safety Precautions

[Important Messages]

Before installing the software, please read through this manual carefully in order to ensure the correct use of the product.

[Notice]

Pay special attention to the following safety precautions anytime during inspection, installation, wiring, operation and examination.

The symbol of danger, warning and stop represent:



It indicates the potential hazards. It is possible to cause severe injury or fatal harm if not follow the instructions.



It indicates the potential hazards. It is possible to cause minor injury or lead to serious damage of the product or even malfunction if not follow the instructions.



It indicates the absolute prohibited activity. It is possible to damage the product or cannot be used due to malfunction if not follow the instructions.

Inspection



Please follow the instruction when using servo drive and servo motor, or it is possible to cause fire or malfunction.

Installation



- When servo motor and servo drive are working, it is prohibited to connect the communication cable of software to the servo drive. It might danger the personnel safety.
- Conduct the software communication setting when servo motor and servo drive stops operation for avoiding the malfunction.

Wiring

Power on the servo drive first. Then, connect the communication cable to the servo drive. This is for avoiding the malfunction of the motor.



- Please use standard wires and shielded-pair wires for communication cable for avoiding signal interference.
- > The maximum length of software communication cable is 1.5 meters (= 4.92 feet). Otherwise, it might attenuate the signal.
- Please connect wiring according to the wire rod in order to prevent any danger.

Operation

Before the operation, please change the parameter setting value according to ≻ the needs. If it is not adjusted to the correct setting value, it is possible to lead to malfunction of the machine or the operation might out of control.



- Before the machine starts to operate, please be ensured the emergency stop can be activated anytime.
- When applying monitor function of "Scope" and "System Analysis", please ≻ make sure the communication cable is correctly connected. Any loose or fall off might influence the monitoring data.



When applying function of "Auto Gain Tuning", do not touch the motor shaft by hand or any hard object.



- It is strongly recommended that during operation, do not remove the communication cable. It would cause the damage of the equipments and lead to the personnel injury.
- In order to prevent any accident, please make sure all parameter, monitor ۶ and tuning function is set to the correct status before trial operation.



When adjusting or testing the servo motor and servo drive by triggering function of the software, make sure the technician has to be presence. If not, make sure all triggering function is stopped to avoid any danger it might occur.

Preface

[About this Manual]

ASDA-Soft (servo software) introduced in this manual uses version V4.08 as the examples to describe the functional settings, including:

- Interface Operation
- Scope
- System Analysis
- Motion Control
- Alarm Messages
- **NOTE** 1. Please refer to ASDA series user manual for detailed description of parameters.
 - 2. Please refer to ASDA series user manual for detailed description of system framework and motion control mode.
 - 3. Please download the user manual at Delta's website.

[Personnel]

This book is for personnel who have already purchased ASDA series servo drive or engineers and technicians who use ASDA series servo drive to configure the product. In addition, in-site maintenance and inspection personnel can refer this manual to troubleshoot the problems.

If you have any enquiry, please contact the distributors or DELTA customer service center.

[Safety Precautions]

Safety precautions and the operating procedures are included in each chapter of this manual.

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Chapter 1 Environment and Software Installation

[Summary]

ASDA-Soft (version V4.08.04) should be stalled in **Windows® system.** This software can connect to ASDA series servo drive via standard USB communication cable (or IEEE 1394 communication cable). Delta does provide standard communication cable for software (Please refer to ASDA-A2/B2 product catalogue from Delta's website for further detailed information). Please refer to the user manual of ASDA servo drive as well.

- **NOTE** 1. **Microsoft**® **Windows**® is the registered trademark of Microsoft Corporation in the United States or other countries.
 - 2. **IEEE1394 communication cable uses** RS232 interface and does not support scope function.

[Applicable Servo Drive]

This software is for Delta's ASDA series servo drive only. Other brands of servo drive will not be applicable.

The corresponding servo drives are:

ASDA-A2 / ASDA-B2 / ASDA-A / ASDA-A+ / ASDA-AB / ASDA-B



- 1. Servo drive operation mentioned in this manual mainly focuses on ASDA-A2. Software setting and operation of other series servo drive will not be described here.
- 2. ASDA-Soft can be downloaded via Delta's website: <u>ASDA-Soft</u> <u>V4.08.04</u>.
- 3. If you find any mistake or any comment you would like to share, please email: <u>Servo.Support@delta.com.tw</u>.

[Required Installation Site]

Personal Computer

OS system	Windows® Vista Sp1 (32bit version) Windows® 7 (32bit version, 64bit version) Windows® XP SP3 (32bit version) OS system that mentioned above also includes English, Simplified Chinese, Japanese and Korean version.
	* 64bit version is only suitable for Windows 7
CPU rating	Pentium Ⅲ, > 512MHz
Memory Demand	 512MB (1GB is recommended)
Hard discs	Over 100MB is required

capacity	
Function of serial	USB communication port / IEEE1394
communication	communication port (RS232)

Screen Setup

Screen resolution	Over 1024 × 768 pixel
Color quality	Over 24bit of color (TrueColor)



- 1. Windows® operating system is a must for clients.
- 2. This software does not support other operating system.
- Hard discs capacity indicates the installation required capacity of ASDA-Soft.
- 4. Please install the latest version of ASDA-Soft in **Windows**® operating system.
- 5. The window display of ASDA-Soft might be abnormal. Please setup the screen property by the following method:
 - For Windows®, please change the screen property to [「]Windows Classic」 mode.
 - ► For Windows®XP, change the themes of 「Windows XP」 to

[「]Windows Classic」 in the [「]Appearance」 tab under control panel/screen.

- For Windows®Vista or Windows®7, change the themes of 「Windows Vista」 to「Windows Classic」 in Personalization.
- 6. ASDA-Soft builds closed-loop data exchange with servo drive through continuous data transmission. If users open more than one operating procedures, ASDA-Soft might occupy a lot of memory space. It is suggested that not to open other software which also needs a huge amount of memory capacity when performing tuning or motion control testing. This is for avoiding error occurs during operation.

- 1. We cannot ensure that ASDA-Soft can operate properly in non-Windows® operating system.
- The latest version released in November, 2008 corresponds to Windows®XP and Windows®Vista. Version released in February, 2012 corresponds to Windows®7. Other Windows® operating systems might be not compatible.
- Do not activate more than one or different version of ASDA-Soft to operate ASDA servo drive. This might cause ASDA-Soft operation abnormalities.

4. If figures in this manual are different from the latest ASDA-Soft on Delta's website, please take the one from the website as the final version.

1.1 Software Installation

[Download Installer]

1. Download ASDA-Soft from Delta's website;



The software version download from Delta's website might be different from the example of this manual. If there is any question, please contact your distributors for further information.



2. When the following message pops up, click 儲存圖, and save it to the designated position;



3. When designate the saving file from the following window, click [儲存⑥];

另存新檔					? 🛛
儲存於(1): 我最近的文件 夏面 我的文件 我的文件	 <i>⊌</i> 点面 我的文件 我的電腦 我的電腦 網路上的芳 	Æ	*) 2 🕫 🛄	
網路上的芳鄰	檔名(U): 存檔類型(I):	Delta_ASDA_Soft_V4.08. 壓縮的 (zipped) 資料夾	14	*	儲存©) 取消

4. After downloading the file, please unzip it. Contents are shown below:



Files below are included in the contents:



[Install ASDA-Soft in Windows®Vista / Windows®XP]



2. InstallationShield Wizard starts to check the system.



3. Then, the main program starts to prepare the installation.

Windows Installer	
Preparing to install	
	Cancel

4. When the installation window pops up, please click



5. Enter the user name and organization; then, click

₩ ASDA_Soft ¥4.08.04 - InstallShield Wizard	
Customer Information Please enter your information.	
User Name:	
Kevin Tan	
Organization: Delta	
Install this application for:	
 Anyone who uses this computer (all users) Only for me () 	
InstallShield	
< <u>B</u> ack	ext > Cancel

6. Setup the destination folder. If users desire to change the folder, please click

🛃 ASDA_S	oft ¥4.08.04 - InstallShield Wizard
Destinati Click Ne>	on Folder kt to install to this folder, or click Change to install to a different folder.
	Install ASDA_Soft V4.08.04 to: C:\Program Files\Delta Industrial Automation\ASDA_Soft
InstallShield -	< <u>B</u> ack Next > Cancel

Users now can change the destination folder.

SDA_Soft ¥4.08.04 - InstallShield Wizard	
Change Current Destination Folder Browse to the destination folder.	
Look in:	
Eolder name: C:\Program Files\Delta Industrial Automation\ASDA_Soft V4.08.04\	
InstallShield OK	Cancel

7. When it is ready, click **Install** to install the program.

ASDA_Soft V4.08.04 - InstallShield Wizard		
Ready to Install the Program Image: Constallation installation. The wizard is ready to begin installation. Image: Constallation installation.		
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.		
Setup Type:		
Destination Folder: C:\Program Files\Delta Industrial Automation\ASDA_Soft V4.08.04\		
User Information: Name: aaa Company: bbb		
InstallShield		

8. Program is installing.

🙀 ASDA_S	oft ¥4.08.04 - InstallShield Wizard
Installing The prog	ASDA_Soft ¥4.08.04 ram features you selected are being installed.
1	Please wait while the InstallShield Wizard installs ASDA_Soft V4.08.04. This may take several minutes.
	Status:
	Validating install
InstallShield	
	< <u>B</u> ack <u>N</u> ext > Cancel

9. The InstallShield Wizard has successfully installed. Click **Einish** to exist the installer.



Uninstall





- 1. When error occurs during installation, please cancel it immediately and re-start the installation.
- 2. Do not cut off the power or activate other software installer before the installation is completed, or failure might occur.
- 3. Do not delete the file which installed in profile (C:\PRogram Files\Delta Industrial Automation\ASDA_Soft V 4.08.04). When desire to delete the program, please use Uninstall is Uninstall to delete it.

1.2 Wiring Configuration

[Hardware Requirement]

Item	Description			
Personal Computer	 Please use Windows® operating system. USB connector needs to support version above 2.0. 			
Communication	1. ASDA-A2 series of communication cable supports two kinds:			
cable for software		DOP-CAUSBAB (with IEEE1394 connector, it can connect to servo drive via RS232 interface. When using this communication cable, scope function will be unable to use.)		
		ASD-CNUS0A08 (It connects to servo drive through USB (version 2.0 or above). Since the USB connector has no tenon and cannot firmly connect to PC USB connector, please avoid the unstable location or the place where the cable is easy to be pulled during the operation.)		
	 Communication cable from ASDA-B2 and other series of servo drive also support ASD-CNUS0A08 communication rods. 			
	Do not connect to Delta's servo drive with the wrong software communication cable. It might damage the servo drive.			
WARNING	 Please use metal shielded-twisted pair cable as USB communication cable. If no metal shielded cable is included, signal might be interfered. Do not self-produce multi-connector for software communication cable. 			
	1. Please refer to Chapter 2 for specification and setup of personal			

- computer.
- 2. For Delta's servo drive installation and setting, please download the user manual from Delta's website.
- 3. The standard communication cable for Delta is 1.5 meters (4.92 feet).
- 4. The above mentioned communication connection is based on ASDA-A2 series servo drive.

[ASDA-A2 Software Connection]



1.3 Software Screen Description

[Main Page]

After clicking the icon of ASDA-Soft, a system initialization screen will pop up.



When the system has been initialized, it enters the screen of main program automatically. There are tool bar, quick launch, and status bar from top to bottom.



Icon	Description
File Setting Tools Parameter Function Window Help	Tool bar: Users can enable each application and documents from Help. Quick launch: Users can quickly open the commonly used or important tool.
ASDA_Soft - 設定 🖌 ASDA ASDA-A2 Servo	Status bar: it displays the current status of software

(This page is intentionally left blank.)

Chapter 2 Basic Operation

【Introduction】 ASDA-Soft on Delta's website provides different version of operation software. These versions are for new series of servo drive and contain various advanced function for product applications. Basic operation (non-programming function) will be introduced in this chapter. Users can learn how to setup software communication port, interface and language.

Functions that will be mentioned in this chapter are:

- 1.) 【File】
- 2.) 【Setting】
- 3.) 【Language】
- 4.) 【Status Monitor】
- 5.) 【Window】
- 6.) 【Help】

2.1 File

【 Description 】

Click [File] could open parameter file and scope data file.

File	Setting	Tools	Parameter Fund
B	Open		Ctrl+O
2	Open Parameter File (*.par)		
2	Open Sco	ope Data	a File (*.scp)

Click	🖻 開啓,	window	that	showed	below	will	рор	up:
-------	-------	--------	------	--------	-------	------	-----	-----

間臀					? 🔀
查詢(1):	🔋 我的電腦		-	+ 🖻 🔛	
我最近的交件 反して、 東面 大的文件 我的電腦 一般的電腦 網路上的芳鄰	本機磁碟 (C 本機磁碟 (D 本機磁碟 (E DVD 光碟機 FreeAgent Dr	:) ;) ; (F:) ive (H:)			
	檔名(N):	T			開啓(0)
	檔案類型(I):	All files (*.*)		<u>.</u>	取消

2.2 Setting

[Description]

Users could setup two functions below through [Setting]:

Sett	ting Tools	Pa
	Setting	
9	Language	۲

[Software connection setting] will be introduced here. [Language] will be elaborated

in later part.

【 Software connection setting 】: Click \mathbb{R} 設定, a software communication setting window will pop up;

The following descriptions detail each function.

ASDA_Soft - Setting
COM Port Language
• On-Line • Off-Line
Select Device : ASDA-A2
Auto Detect
Start Auto Detect
Manual Setting
X Cancel V OK @ Help

a.) [Communication setup] On-Line Off-Line

ASDA-Soft can quickly connect to ASDA servo drive via this function.

• On-Line : Setup communication On-Line operation

• Off-Line : Setup communication Off-Line operation



Users can also use software communication connection button on function bar.



Directly left click this button to setup software communication connection.

b.) [Select Device], through this function, users can select Delta's servo drive

that desire to connect.

Select Device :	ASDA-A2 •
Auto Detect	ASDA-A2
	ASDA-B2
1	ASDA-M
	ASDA-A2R
	ASDA-S

c.) [Auto Detect] / Manual setting:

In following figure, users can select Auto Detect or Manual Setting to connect ASDA-Soft and ASDA-A2 servo drive.



	Description
自動值測 [COM5] : CP2102 USB to UART Bridge Controller	It displays USB port number that connects ASDA-Soft and ASDA servo drive. The left figure shows that COM5 is the current USB port number.
自動偵測 [COM5] : CP2102 USB to UART Bridge Controller	Start Auto Detect This button is for detecting USB port. When software communication is successfully connected, the left icon will pop up and automatically display the USB port number in drop-down function list.
Auto Detect No devices found! Start Auto Detect	When it is failed to auto detect the software communication, it will show No device found .
Manual Setting	Click Manual Setting to complete the setting of communication position of ASDA servo drive manually. [Select Port Connector], on the right up corner, enables users to select [CN3]or[CN4] as communication port:
Station : 127 Vrite to Drive	【CN4】: USB software communication port is for connecting ASDA-Soft and ASDA servo drive. Through【Manual Setting】, users can adjust the station number and confirm the port number of PC end, see the left figure.

ASDA-Soft User Guide

• On-Line • Off-Line	is used to operate servo drive o
Select Device : ASDA-A2	PLC, HMI through MODBUS communication that combines assembly language. However, w users has no USB communicati cable to connect ASDA-Soft and ASDA servo drive, the signal cal IEEE1394 communication port of be used. See figure d. Please note that when using CN the software communication port only can be used to reading and writing parameters (because the transmission rate and instantant is not enough. It does not suppor connecting monitor function of scope. An warning message in of red will be shown in the screen. figure d.

d.) [Confirm Setting] Cancel OK @ Help

When the setting of communication connection is completed, click [OK] to close the window; If not, click [Cancel]. In addition, use the standard close button can also close the window.

button can help users to open the document file for software description and to understand the setting of software communication.

2.3 Language

【Description】 ASDA-Soft V4.08 supports three languages . Two setting methods are

provided.

1.) User [Setting] from tool bar. See figure below.

Setting Tools Paramet	er Function Window Desci	
🖳 Setting	🔁 🖾 😓 🖕 🖊 🔞 🕼	
😥 Language Setting 🔶	English	
	Traditional Chinese	
	Simplified Chinese	

2.) Directly click button from tool bar, the following window will pop up. Users select the specified language, the operation interface of ASDA-Soft will switch to the specified language automatically/

ASDA_Soft	- Setting	
COM Port Setting	Language	1
	Language Setting で1. English で2. 繁體中文 で3. 简体中文	
X C;	ancel CK	Help

2.4 Status Monitor

(Description) Through communication, ASDA-Soft could display the built-in status monitor parameters of ASDA-A2 servo drive in diagram and shows the current data.

Run ASDA-A2 Servo	🕜 Help	
tor Items Select Monitor Items		
The monitored device:ASDA-A2 Se	irvo	Decimal(DEC)
	[X]	
[0]Motor feedback pulse number (after electronic gear ratio is set) [pulse]		
 Input pulse number of pulse command (after electronic gear ratio is set) [pulse] 		
[2]Position error counts between control command pulse and feedback pulse [pulse]		
[3]Motor feedback pulse number (before electronic gear ratio is set) [pulse]		
[4]Input pulse number of pulse command (before electronic gear ratio is set) [pulse]		
[5]Position error counts [pulse]		
[6]Input frequency of pulse command [Kpps]		
[7]Motor rotation speed [r/min]		
[8]Speed input command [Volt]		
[9]Speed input command [r/min]		
[10]Torque input command [Volt]		
[11]Torque input command [%]		
[12]Average load [%]		
[13]Peak load [%]		
[14]Main circuit voltage [Volt]		
[15]Ratio of load inertia to Motor inertia [0.1times]		
[16]IGBT temperature		
[17]Resonance frequency [Hz]		
[18]Absolute pulse number relative to encoder Z phase		

Followings are the description of [Monitor Items] :

Icon	Description					
Run ASDA-A2 Servo	After pressing [Run], the light will turn to color green from color yellow. And the button display will be					
Stop ASDA-A2 Servo	switched to [Stop]. Users can simply press [Stop] when desiring to stop status monitor. Then the light will be switched back to color yellow.					
Status Monitor	【Monitor Items】 will be displayed in the table according to different series of servo drive. The above figure is the example of ASDA-A2, which has19 monitor items in total.					
Decimal(DEC) Decimal(DEC) Hexadecimal(HEX)	If the selected monitor command is displayed in hexadecimal format, users can select the format from the drop-down list which is in the right side of the window.					

When users switch the window to "Select Monitor Items", users can manually setup different monitor items according to your demand. Please refer to the detailed

description below:

[Description] Users can self-select the monitor items. Three items can be setup:

Monitor Item Setting \rightarrow Users can select the monitor items which provided by each

series of ASDA servo drive.

Mapping Parameters Setting → Users can flexibly setup the required parameters through mapping parameters provided by ASDA-A2 series servo drive. It enables users to edit a group of continuous parameter group and can access or write in parameters via communication. Apart from shortening the time of parameter reading and writing, it also can setup for various applications.
Monitor Parameters Setting → ASDA-A2 series servo drive provides 5 groups of monitor parameters for users to setup different monitor items. Users can access the status of

communication.

these 5 groups of monitor items through

[Monitor Item Setting]: This function is for the built-in monitor items. Users can

self-select the required ones.

The following table shows the monitor items:

×	Moitor Item Setting
V	.[0]Motor feedback pulse number (after electronic gear ratio is set) [pulse]
V	.[1]Input pulse number of pulse command (after electronic gear ratio is set) [pulse]
1	.[2]Position error counts between control command pulse and feedback pulse [pulse]
1	.[3]Motor feedback pulse number (before electronic gear ratio is set) [pulse]
~	.[4]Input pulse number of pulse command (before electronic gear ratio is set) [pulse]
	.[5]Position error counts [pulse]
	.[6]Input frequency of pulse command [Kpps]
V	.[7]Motor rotation speed [r/min]
	.[8]Speed input command [Volt]
V	.[9]Speed input command [r/min]
	.[10]Torque input command [Volt]
V	.[11]Torque input command [%]
~	.[12]Average load [%]
V	.[13]Peak load [%]
1	.[14]Main circuit voltage [Volt]
V	.[15]Ratio of load inertia to Motor inertia [0.1times]
1	.[16]IGBT temperature
	.[17]Resonance frequency [Hz]
1	.[18]Absolute pulse number relative to encoder Z phase

[Mapping Parameters Setting]: Monitor variables in [Mapping Parameters] group can

be displayed in the table of [Monitor Items] through this function. Users can setup the mapping parameters by its checkbox function. Please refer to the description below:

×	Mapping Parameters Setting									
	.[200]MAPPING #1: P0-25 <<-(*P0-35) [P0-0:Firmware Version]	High Word Item : P	•	-	•	Low Word Item : P	•	-	-	32bit
	.[201]MAPPING #2: P0-26 <<-(*P0-36) [P0-0:Firmware Version]	High Word Item : P	•	-	•	Low Word Item : P	-	-	-	32bit
	.[202]MAPPING #3: P0-27 <<-(*P0-37) [P0-0:Firmware Version]	High Word Item : P	•	-	•	Low Word Item : P	•	-	-	🔲 32bit
	.[203]MAPPING #4: P0-28 <<-(*P0-38) [P0-0:Firmware Version]	High Word Item : P	•	-	-	Low Word Item : P	•	-	-	32bit Change
	.[204]MAPPING #5: P0-29 <<-(*P0-39) [P0-0:Firmware Version]	High Word Item : P	•	-	-	Low Word Item : P	-	-	-	32bit
	.[205]MAPPING #6 : P0-30 <<-(*P0-40) [P0-0:Firmware Version]	High Word Item : P	-	-	-	Low Word Item : P	-	-	-	32bit
	.[206]MAPPING #6: P0-31 <<-(*P0-41) [P0-0:Firmware Version]	High Word Item : P	-	-	-	Low Word Item : P	-	-	-	32bit
	.[207]MAPPING #8 : P0-32 <<-(*P0-38) [P0-0:Firmware Version]	High Word Item : P	-	-	-	Low Word Item : P	-	-	-	32bit

Step 1: Check the preset mapping parameters

∛⊻	Mapping Parameters Setting
V	.[200]Mapping parameter #1 : P0-25 <<-(*P0-35) [P0-0:Firmware Ve
V	.[201]Mapping parameter #2 : P0-26 <<-(*P0-36) [P0-0:Firmware Ve
V	.[202]Mapping parameter #3 : P0-27 <<-(*P0-37) [P0-0:Firmware Ve
	.[203]Mapping parameter #4 : P0-28 <<-(*P0-38) [P0-0:Firmware Ve
	.[204]Mapping parameter #5 : P0-29 <<-(*P0-39) [P0-0:Firmware Ve
	.[205]Mapping parameter #6 : P0-30 <<-(*P0-40) [P0-0:Firmware Ve
	.[206]Mapping parameter #6 : P0-31 <<-(*P0-41) [P0-0:Firmware Ve
	.[207]Mapping parameter #8 : P0-32 <<-(*P0-38) [P0-0:Firmware Ve

Step 2: Setup the mapped parameter

The mapped parameters have two kinds, 16bit and 32bit. When setting up 16bit parameters, users could setup the specified parameters according to low/high-word. See the above example. When users read the value of P2-02 and P2-04 respectively, users could set them up in low-word and high-word items.

High Word Item : P 2 🔻 - 4 👻 Low Word Item : P 2 👻 - 2 👻 📝 32bit

When desire to set 32bit parameters, please directly setup the low-word item. Then click 32bit item. The system will fill in high-word items and complete the setting of 32bit mapping parameters. See the above example. If desire to access the numerator and denominator of E-gear ratio, users can refer to the setting of 32bit mapping parameters.

```
      High Word Item : P 1
      ▼
      -44
      ▼
      Low Word Item : P 1
      ▼
      -44
      ▼
      ☑ 32bit

      High Word Item : P 1
      ▼
      -45
      ▼
      Low Word Item : P 1
      ▼
      -45
      ▼
      ☑ 32bit
```

Step 3: After complete the above steps, please press [change] to finish all setting of

mapping parameters.

[Monitor Parameter Setting]: Users can select [Status Monitor Register] parameters from P0-09 to P0-13 via this function. Use the drop-down list on the right to setup the parameter displayed content from P0-17 to P0-21. See the above example of ASDA-A2:





- Please note that after complete the setting of [Mapping Parameters Setting] and [Monitor Parameters Setting], be ensure to press
 Change to write in the setting into the servo drive.
- When completing the above selected parameters, please press [Save Change] to setup the selected monitor parameters group. Users can also use [Select All] and [Cancel All] for one-time setting.

2.5 Window

[Description] When open more than one windows, the item in [window] can help

to arrange the window display.



ASDA-Soft provides various selections of window display, such as [Cascade],

[Title Horizontally], [Title Vertically] and [Minimize All]. In addition,

[Message Window] can display the warning message or fault message of the system when setting up or reading/writing parameters.

The upper right corner of [Message Window] has two buttons, means to hide the window; while 🚨 means to close the window.

		Scoge								0 0 0	
		@ Parame	ner Editor1 : (ASD	A-A2 Servo]							
	14	1 in 1	11 8	-							
		P6-XX	P1-XX P2-3	x P3-xx	P4-XX P	5-XX P6-XX					
		14.045	TITIC	Value	1. 640	liten	Max	Orfait	Description		
		¥7-00	P007	90 Gw00000	000	0x00000000	ONTETETT	0x00000000	PATH#50 Definition		
		97-01	PDAT	30 0		-2147483048	2347483647	0	PATH#50 Data		
	1.141	97-02	2069	51 Ox00000	000	0x0000000	Overstates	0x00000000	PATH#51 Definition		
	100	97-03	PDAT	51 0		2147485848	2347483647	0	PATH#51 Data		
	1.00	97-04	108	52 Ox00000	000	0x00000000	OxPETETE	0x00000000	PATH#52 Definition		
	1.064	01 07-05	PDAT	52 0	-	2147403040	2342483647	0	PATH#52 Data		
	1.14	45 97-07	POAT	51 0		2147453648	2147983647	0	Pathess Democra		
	1.00	97-08	100	54 040000	000	0x0000000	OLIVERT TYPE	0+00000000	PATHES4 Definition		
	1.00	\$7-05	PDAT	54 0		-2147483648	2147483647	10	PATH#54 Data		
	1.00	15 P7-10	P007	55 0x00000	000	0x0000000	CONTRACTOR OF T	0+00000000	PATH#55 Definition		
	1.101	97-11	PDAT	\$5 Q		-2147483648	2347483647	a.	PATH#35 Data		
		97-12	906	56 Qw00000	000	0x0000000	CASTIFICT	0+00000000	PATH#56 Definition		
scade		P7-13	PUAT	10 0	-	-2147483648	2140483047	0	PATHESE Data		
Journe	1.12	97+15	POOL	57 0		-2147453548	214745 9247	0	Pathes7 Date		
	1.181	97 - 18 -	FOEF	58 0100000	000	0x00000000	OMTETTETE	0+00000000	PATH#58 Definition		
		87-17	PDAT	58 0		2147483648	2347483647	0	PATH#58 Data		
		P7 18	IDEF	99 QH00000	000	0x00000000	OxPTTTTTT	0x00000000	PATH#59 Definition		
	- 1107	27:3	PEAT	59 0	-	2147483648	2347483647	0	PATH#59 Data		
		87-20	100	60 0400000	000	0x0000000	OMPTITUTE	0x0000000	PATH#60 Definition		
		17.0	and the second	A.2 Decodore	000	0,00000000	2141403041	0-0000000	Pathana Defense		
		#7+23	PCAT	61 0		-2147483648	2147483647	1	PATHe61 Date		
		07-24	400	62 0x00000	000	0x00000000	-	0.0000000	PATHIES2 Definition		
	1	97-25	PDAT	62 0		-2147483648	2147483647	0	PATHe62 Date	~	
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	-	-					Reathdu	Marca 201 Conc	4-0		
				_			South 1	ing -zez, cinc			
Title

ASDA-Soft User Guide

v ber

UNG #1: P0-25 <-'DNG #2: P0-26 <-'DNG #3: P0-27 <-'DNG #4: P0-28 <-

NG #3 : h. **Inter: 2 = 2 + 2 + 1** as: #2 : P2 + 10 < < (*70 - 17) as: #2 : P2 + 10 < < (*70 - 18) as: #2 : P2 + 10 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < < (*70 - 18) *4 : P0 + 12 < </ >

ASDA-A2 Servo ASDA-A2 Serv

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Title Vertically

* Read Onl

A Set While Servo OFF

2.6 Help

 $\label{eq:constraint}$ The descriptive document is provided in $\label{eq:constraint}$. Users can know how

to use ASDA-Soft in a faster way. [Servo Drive Parameters Help] and [Revision History] are also added into it. Clients can acquire the timely support on parameter setting and troubleshooting.

Hel	р	
0	Software Guide	
	Servo Drive Parameters Help	1
4	Online Help	
	Revision History About	

lcon	Description
Software Guide	It provides the function description and
Software Guide	operation procedure of the software.
Servo Drive Parameters Help	It provides parameter descriptive file of each
	series of servo drive.
\land Online Help	Any questions or comments, feel free to e-mail us: <u>Servo.Support@delta.com.tw</u>
Revision History	It provides the function description of each
	updated version.
About	It provides version information.

Chapter 3 Advanced Operation

(Introduction) Users will learn how to operate scope, auto gain tuning for different mechanisms, parameters editor for quickly setting up parameters and parameter initial wizard to complete the mode setting. Functions that will be mentioned are showed below:

- 1.) 【Scope】
- 2.) 【Auto Gain Tuning】
- 3.) [Digital IO / Jog Control]
- 4.) [System Analysis]
- 5.) 【Alarm Information】
- 6.) 【Parameters Editor】
- 7.) 【Parameter Initial Wizard】

3.1 Scope

ASDA-Soft provides built-in high-speed timely monitor tool. Users could use this tool to capture and analyze the information.

Scope adopts one main screen and supports flexible setting for multi channel. Apart from basic hardware function, its features include various functions aiming at internal motion control for ASDA-A2. Followings are the main features:

- It provides 4 channels at most and the high-speed sampling frequency provides two bandwidths, 8 kHz and 16 kHz. Data can be set as 16 bit or 32 bit. Users can setup different monitor source for analysis. This manual is based on ASDA-A2 servo drive.
- Users could circumscribe and select the area that desire to magnify. And double left click it to minimize the image.
- > Channel with individual coordinate shows the actual monitor variables.
- Users can directly setup monitor command ([IDX] Normal), enter the specific position format ([ADR] Address), monitor variable code ([VAR] Variables, parameter code ([PAR] Parameters) and CANopen Index code ([CAN] CANopen) as the command source. Engineers can have more precise analysis.
- Aiming to waveform analysis of resonance suppression, the software provides Fast Fourier Transform – FFT. Users could self-select the area that desire to analyze and suppress the resonance point.
- The event trigger function enables users to setup the condition to stop capture of each channel. It is convenient for conditional analysis.
- Users can manually adjust the setting of scale factor of scope screen and moving range, which enhance the applicability. It is the same as the rotary switch of scope.
- Three kinds of waveform storage forms are provided: SCP, TXT and BMP. SCP is special for ASDA-Soft, which can storage all kinds of data.

Scope											
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12749.00 (1414) 12749.00 (1414) 12749.00 (1414) 14940.00 (1414) 14940.00 (1414) 13106.50 (1414) 13106.50 (1414) 13106.50 (1414) 13107.50 (1414) 13107.										12387.00 32767.00 72211.50 19460.00 19460.00 13108.50 4504.00 4504.00 4554.00 4554.00 4554.00 413107.35 -13107.55 -1310	U Setting Price Tuning Properties Finable step Condition Operation Operation Channel : Operation Operation Channel : Operation Operation Channel : Operation Operation Stop Value Channel : Operation Media reschivation, last [Condition ms Might Bland Rate
9441.00 5114.50 5214.50 12746.00	2000-000 2000-000 Section Feedback Post	4000.000 4000.000 ton [PUU] ton [PUU]		8000.000 8000.000		s2000.000 12000.000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.000 caboo.000 caboo.000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.0000 caboo.000	14000 000 24000 000 14000 000 14000 000 14000 000 14000 000 14000 000	1000.000 1000.000 1000.000		-1944.400 -24224430 -24224430 -24224430 -24224430 -2424400 -2424000 -240000 -24000 -24000 -24000000 -240000 -240000 -240	r FFT Display
Peedback Positio Data Relative	ADR F 325 PUUI 855 650	et Comme	nd Position (F Déta Relative	0R = 32.64 500] <u>-</u> 6553 6553 645x	Position i	Data Relative	2 32 bit	Rel	ADR d 1 Real Time Data ative	32 bit in (//min = 86638 86638	formation : Teme 0.000 ms Interval 0.000 ms

Followings are the main screen of scope:

This chapter will be divided into three parts to introduce scope:

[Interface Introduction]: It detailed describe the function and definition of each button.

(Operation Description): It guides the users about how to create a wave file, starting from the setting of command source, screen, wave capturing and save the file. Users will learn several ways to analyze the wave, use the scale function to observe the detailed wave information, slight adjust the setting to specify the displayed range and use the stop condition to trigger the event.

(FFT Analysis): It introduces the special tool FFT and describes how to search the resonance point on mechanism by this function. Then, suppress the resonance by notch filter.

Interface Introduction

1. [Tool bar of scope]:



ASDA-Soft provides instant monitor tool. Uses could use it to monitor each data.

Icon	Description
😂 Open a SCP (scope curve) file	Open the saved SCP file.
Save as a SCP (scope curve) file	Save the captured SCP file in the computer.
Zoom in (F5) / Zoom out (F6)	Zoom in or zoom out the whole oscillograph, so that users can analysis the details.
Previous screen (F7)	When adjusting the size of oscillograph, this function can be used to turn back the graph

	to the previous adjusted page.		
Show all data in screen	After adjusting the oscillograph, this button can turn the image back to the original size.		
Show all data and adjust the max. / min. value automatically.	Aiming at the displayed data of each channel to automatically adjust the data to the max. / min. value.		
OO OO Direction key	Adjust the image position of oscillograph		
Print screen	Print the imgae of oscillograph		
Clear screen	Clear the current image of oscillograph		
Oescriptions	Quickly open the file of software manual so that user can know more about the setting of scope.		
Screen second switch (adjust the resolution)	Adjust the resolution of time axis (X axis of scope). The resolution of scope image can be enhanced. The setting range is from 1 to 6. (20,000ms ~ 120,000ms)		

Followings are the description of each item:

1.) Solution of the file of the following window will pop up when click the button. Users could open the file with "*.SCP":



2.) Save as a SCP (scope curve) file. The following window will pop up when click the button. Users could save the scope data. [Save as] provides three format for file saving:



- a.) Scope File [*.scp]; It is the file format for ASDA-Soft only.
- b.) Text File [*.txt]; The file can be opened by Microsoft® Word®.
- c.) Bmp File [*.bmp]; The file can be opened by Microsoft® Office Picture Manager.

3.) Soom in (F5) / Zoom out (F6) the screen. Users can use button of [Zoom in]

or [Zoom out] to adjust the window size of scope. Also, users also can directly press F5 to zoom in or F6 to zoom out the image.

Through [Fine Tuning], on the right of the screen, to setup "Zoom Multiple" to adjust the factor. Its percentage takes integer only. The minimum value is 1% and the maximum one is 999999999%.





For example:

4.) Previous screen (F7). When using [Zoom in] or [Zoom out] to adjust the size of oscillograph. This function can turn the graph back to the previous status. For example:



5.) Show all data in screen. This function can turn the graph back to the original captured size. However, this function cannot automatically adjust the max. / min. value of each channel.



6.) Show all data in the screen and adjust the max. / min. value automatically. When setting "When show all data in screen," as " channels use the individual coordinate" in [Properties], on the right side of the main screen, users could use this function to adjust the max. / min value of each channel individually:





- 7.) O O O O Direction key. After adjusting the size of the graph, [Direction key] can be used to move the scope window to the monitoring position. The offset amount of [Direction key] can be set through [Fine Tuning], on the right of the screen. The move offset takes integer as its unit. The minimum value is 1 and the maximum value is 999999999.
- 8.) A Print screen. This function can be used to print the captured curve. Click this button, the following window will pop up. Select the printer and click OK.

列印			? 🗙
印表機 — 名稱(M): 狀態: 類型: 位置:	FX DocuCentre 450 I PCL 6 就緒 FX DocuCentre 450 I PCL 6 IP_172.16.152.230	_	內容(2)
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列印範圍		┌份數────	
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9.) Solution Clear screen. When users have already saved, printed or desire to reset the data definition, function of [Clear screen] can clear the current curve on scope. Then, access the next one.

ОK

the

10.) Screen second switch (adjust the resolution). The standard range is between 0ms and 20,000ms. Users could use to enhance the resolution of time axis. The setting range is (1 ~ 6) and the maximum value can be set up to 120,000ms.



For example, if n = 6, then when the setting is complete and press following time frame within the red frame will become 120,000.000(sec).

- <mark>26214.50</mark> -26214.50											-26214.50 -26214.50
- <mark>32768.00</mark> -32768.00	0.000 0.000 0.000 0.000	2000.000 2000.000 2000.000 2000.000	4000.000 4000.000 4000.000 4000.000	6000.000 6000.000 6000.000 6000.000	8000.000 8000.000 8000.000 8000.000	10000,000 10000,000 10000,000 10000,000	12000.000 12000.000 12000.000 12000.000	14000.000 14000.000 14000.000 14000.000	16000.000 16000.000 16000.000 16000.000	18000.000 18000.000 18000.000 18000.000	-32768.00
											,

When the maximum value of initial time axis is 20,000.000 (sec);

-19661.00 -19661.00 -26214.50 -26214.50											-19661.00 -19661.00 -26214.50 -26214.50
-32768.00 -32768.00	0.000 0.000 0.000 0.000	12000.000 12000.000 12000.000 12000.000	24000.000 24000.000 24000.000 24000.000 24000.000	36000.000 36000.000 36000.000 36000.000	48000.000 48000.000 48000.000 48000.000	60000.000 60000.000 60000.000 60000.000	72000.000 72000.000 72000.000 72000.000	84000.000 84000.000 84000.000 84000.000	96000.000 96000.000 96000.000 96000.000	108000.000 108000.000 108000.000 108000.000	-32768,00 -32768,00 120000,000 120000,000 120000,00(sec) 120000,000

When n = 6, the maximum setting will become 120,000.000 (sec).

When n is set to 5 ~ 6, since the data amount is more (Time axis is bigger), the



moving speed of the image will become slower if users click

Soom in or zoom out / Show all data in the screen and etc, there is no need to worry.

11.) Or Description. Users can quickly open the description file and know more about the operation and setting of the scope.

2. [Scope Toolbar]:

💻 Run	3	ASDA-A2 / A2R Scope	_		
-------	---	---------------------	----------	--	--

Users could use [Scope Toolbar] to operate scope:

Icon	Description		
Run / Stop	Click [Run] to capture data. Click [Stop] to stop capturing.		
E Scope is not activated	Status indicator of the scope: when the light turns green, it means the scope		
: Scope is operating	works normally; when the light turns yellow, it means the scope stops capturing data; when the light turns red		
: Scope stops operating	it means something is wrong with the communication.		
Communication error			
	It displays the current ASDA series servo drive that connects to ASDA-Soft.		
ASDA-A2 / A2R Scope	If the oscillograph is opened with a SCP (scope curve) file, this drop down list will automatically switch to the saved model.		
	Users can write down notes in this column. The note will represent the description of each curve. When open the file next time, this column will show the notes.		

3. [Scope Screen]:

X axis of the screen represents time. Unit is second (sec).

Y axis of the screen represents data. Y axis on both sides will be allocated according to the channel users select.

Data unit displayed in Y axis is marked with the same coordinates when in initial status. It is suitable for the monitor items which have the same unit. If the monitor items have

different unit, it is suggested to use [Show all data in the screen and adjust the max. /

min. value automatically introduced by Scope Toolbar to see the actual value.

at the bottom left corner of the screen is for change the screen ground color and the ground color of the graph.

32767.00 32767.00	(value)										32767.00
26213.50 26213.50											26213.50
19660.00											19660.00
13106.50											13106.50
5553.00											6553.00
0.50											-0.50
-6554.00											-6554.00
-6554.00 -13107.50											-13107.50
-13107.50											-13107.50
-19661.00											-19661.00
-26214.50											-26214.50
32768.00	0.000 0.000	2000.000	4000.000 4000.000	6000.000 6000.000	8000.000 8000.000	10000.000 10000.000	12000.000 12000.000	14000.000 14000.000	16000,000 16000,000	18000.000 18000.000	
	0.000	2000.000 2000.000	4000.000 4000.000	6000.000 6000.000	8000.000 8000.000	10000.000	12000.000 12000.000	14000.000 14000.000	16000.000 16000.000	18000.000 18000.000	20000.000(sec) 20000.000

4. [Channel Setting]:

The flexible channel setting enables users to setup the access data according to different demand. ASDA-Soft also provides [Data] and [Relative] as well as [Time]

and【Interval】, so that users can quickly access the point.

Different ASDA series servo drive provides different monitor items. This manual only introduces the application of ASDA-A2 series servo drive. Followings are the description of the interface:



a). Check the channel



Users can select the desire channel.

The data amount and channel setting might be different because of different series of servo drive. Please refer to the descriptions below.

b). Select the command source



Users can select the command source from drop-down list:

[IDX] Normal: directly access the built-in monitor item. The current supported monitor item shall mainly base on ASDA-Soft V4.08.



[ADR] Address: Enter the specific position format can access monitor variable, parameter and CANopen Object. The unit is in hexadecimal. Followings are the descriptions of the setting format:

Monitor Variable	Specify Parameter	CANopen Object
0x100000 <u>XX</u> XX = Monitor variable code Range: 0x00h ~ 0x7Fh	0x20002<u>X</u> YY YY = Parameter number X = Parameter group number	0x20 <u>XX</u> <u>YYYY</u> YYYY = Index XX = Sub-Index
CH1 [ADR] Addr 32 bit 0x10000001 Access monitor variable 0x01h	CH1 [ADR] Addr 32 bit 0x2000212C Access parameter P1-44	CH1 [ADR] Addr S2 bit 0x200260C1 Access OB Index 60C1h, Sub 2

[VAR] Variables: It can enter the specific monitor variable code. Unit is $0 \sim 127$ in decimal.

The following example is the monitor variable which is set as [Feedback position (PUU)].



Descriptions of monitor variables in sequence of code are as the following.

Code	Name of Variables /	Descriptions
000	Attribute	The ourrest feedback position of the motor encoder
(000 (00h)	(PUU)	The unit is PUU (user unit).
001 (01h)	Position command (PUU) <mark>B</mark>	The current coordinate of position command. The unit is PUU (user unit). PT mode: it represents the pulse number the servo drive received. PR mode: the value of absolute coordinate from position command Equals to the pulse number sent by the controller.
002 (02h)	Position deviation (PUU) B	The deviation between the position command and feedback position. The unit is PUU (user unit).
003 (03h)	Feedback position (pulse) B	Current feedback position of the motor encoder. The unit is pulse (encoder unit).
004 (04h)	Position command (pulse) B	The current coordinate of the position command. The unit is pulse (encoder unit). The command that had gone through E-gear.
005 (05h)	Position deviation (pulse) B	The deviation between the position command and feedback position. The unit is pulse (encoder unit).
006 (06h)	Pulse command frequency	Frequency of pulse command received by the servo drive. The unit is Kpps. It is suitable in PT/PR mode.
007 (07h)	Speed feedback B D1 Dec	Current speed of the motor. The unit is 0.1 r/min. The value is more stable since it has been though low-pass filter.
008 (08h)	Speed command (analog) B D2 Dec	The speed command is issued by analog. The unit is 0.01 Volt.
009 (09h)	Speed command (processed)	The processed speed command. The unit is 0.1 r/min. The source might be analog, register or position loop.
010 (0Ah)	Torque command (analog) B D2 Dec	The torque command is issued by analog. The unit is 0.01 Volt.
011 (0Bh)	Torque command (processed) B	The processed torque (force) command. The unit is percentage (%). The source might be analog, register or speed loop.
012 (0Ch)	Average load B	The average load output by the servo drive. The unit is percentage (%).
013 (0Dh)	Peak load B	The maximum load output by the servo drive. The unit is percentage (%).
014 (0Eh)	DC Bus voltage	Capacitor voltage after rectification. The unit is Volt.
015 (0Fh)	Inertia ratio B D1 Dec	Ratio of load inertia and motor inertia. The unit is 0.1 times.

Code	Name of Variables / Attribute	Descriptions
016 (10h)	IGBT temperature	The temperature of IGBT. The unit is °C.
017 (11h)	Resonance frequency B Dec	 Resonance frequency of the system, including 2 groups of frequency, F1 and F2. When monitoring via panel, pressing SHF can switch the display of both: F2 shows no decimal point while F1 shows one. When reading through communication (mapping parameter): Low-16 Bit (Low WORD) returns frequency F2. High-16 Bit (High WORD) returns frequency F1.
018 (12h)	Z phase offset B Dec	The offset between the motor position and Z phase. The range is from -5000 to +5000. If the position is the same as Z phase, its value is 0. The bigger the value is, the more the offset will be.
019 (13h)	Mapping parameter # 1B	Return the value of parameter P0-25 which is mapped by P0-35
020 (14h)	Mapping parameter # 2 B	Return the value of parameter P0-26 which is mapped by P0-36
021 (15h)	Mapping parameter # 3 B	Return the value of parameter P0-27 which is mapped by P0-37
022 (16h)	Mapping parameter # 4 B	Return the value of parameter P0-28 which is mapped by P0-38
023 (17h)	Mapping monitor variable #1 B	Return the value of parameter P0-09 which is the monitor variables mapped by P0-17
024 (18h)	Mapping monitor variable #2 B	Return the value of parameter P0-20 which is the monitor variables mapped by P0-18
025 (19h)	Mapping monitor variable #3 B	Return the value of parameter P0-11 which is the monitor variables mapped by P0-19
026 (1Ah)	Mapping monitor variable #4 B	Return the value of parameter P0-12 which is the monitor variables mapped by P0-20
039 (27h)	DI status (processed) Hex	The processed DI status of the servo drive. Each bit corresponds to one DI channel. The source includes hardware channel / software P4-07 which is determined by P3-06.
040 (28h)	DO status (hardware) <mark>Hex</mark>	The real status of Digital Output hardware. Each bit corresponds to one DI channel.
041	Drive status	Return the value of P0-46. Please refer to the

Code	Name of Variables / Attribute	Descriptions
(29h)		description of the parameter.
043 (2Bh)	CAP, data capturing	The Data captured by CAP hardware from the latest time Note: CAP could continuously capture many points.
048 (30h)	Auxiliary encoder CNT	The value of pulse counter from auxiliary encoder (CN5)
049 (31h)	Pulse command CNT	The value of pulse counter from pulse command (CN1)
050 (32h)	Speed command (processed) D1 Dec	The processed speed command. The unit is 0.1 r/min. The source might be analog, register or position loop.
051 (33h)	Speed feedback (immediate) D1 Dec	Current actual speed of the motor. The unit is 0.1 r/min.
052 (34h)	Speed feedback (filter) D1 Dec	Current actual speed of the motor. The unit is 0.1 r/min.
053 (35h)	Torque command (processed) D1 Dec	The processed torque command. The unit is 0.1 percent (%). The source might be analog, register or speed loop.
054 (36h)	Torque feedback D1 Dec	Current actual torque of the motor. The unit is 0.1 percent (%).
055 (37h)	Current feedback	Current actual electric current of the motor. The unit is 0.01 ampere (Amp).
056 (38h)	DC Bus voltage D1 Dec	Capacitor voltage after rectification. The unit is 0.1 volt.
059 (3Bh)	Pulse from E-Cam master axis (accumulation)	The accumulative pulse number of E-Cam master axis. It is the same as P5-86. A2L does not support E-Cam function.
060 (3Ch)	Pulse from E-Cam master axis (increment)	The incremental pulse number from master axis. The unit is pulse number per msec. A2L does not support E-Cam function.
061 (3Dh)	Pulse from E-Cam mast axis (lead pulse)	The lead pulse of E-Cam master axis which is used to judge the engaging condition. When it is disengaged: lead pulse = P5-87 or P5-92. When it is engaged: lead pulse = P5-89. When the value is 0, it will be disengaged. A2L does not support E-Cam function.
062 (3Eh)	The position of E-Cam axis	The position of E-Cam axis. Unit: The pulse is from the master axis. When the incremental pulse from master axis is P, the axis rotates M cycle (P5-83 = M, P5-84 = P). A2L does not support E-Cam function.
063	Position of E-Cam	The position of E-Cam slave axis.

Code	Name of Variables / Attribute	Descriptions
(3Fh)	slave axis	Unit: PUU
		A2L does not support E-Cam function.
064 (40h)	Terminal register of PR command	In PR mode, the termination of position command (Cmd_E)
065 (41h)	Output register of PR command	In PR mode, the accumulative output of position command
067 (43h)	PR target speed	The target speed of path command in PR mode. The unit is PPS (Pulse Per Second)
		The input command of S-curve filter which is used to
068 (44h)	S-curve filter (input)	smooth the input command. It is effective in PR mode, E-Cam and speed command. A2L does not support E-Cam function.
		The output command of S-curve filter which is used to
069 (45h)	S-curve filter (output)	smooth the output command. It is effective in PR mode, E-Cam and speed command. A2L does not support E-Cam function.
		In PR mode, the programmed trapezoid speed curve is
	Speed command of PR	determined by the target speed, acceleration,
076 (4Ch)		deceleration and moving distance (before S-curve
(,		filter).
		The unit is PPS (Pulse Per Second).
081 (51h)	Synchronous capture axis Incremental input pulse	When synchronous capture axis is enabled, the received pulse number between two captures can be used to measure the real distance of Mark.
	Synchronous capture	The deviation between the real output pulse and the
084 (54h)	axis Deviation pulse number	target pulse when synchronous capture axis is enabled. If it reaches the synchronization, the value will close to 0.
		It includes two versions, DSP and CPLD.
		When monitoring via panel, pressing the SHF Key can
		switch the display of both:
096	Firmware version	DSP shows no decimal point while CPLD shows one.
(60h)	Dec	When reading through communication (parameter
		mapping):
		Low-16 Bit (Low WORD) returns DSP version number.
		High-16 Bit (High WORD) returns CPLD version number.
098 (62h)	PLC scan time	The update time of DI/DO. The unit is 0.5 msec.
109 (6Dh)	The amount of data arrav	Returns the amount of data array. The unit is DWORD (32 Bits)

Code	Name of Variables / Attribute	Descriptions
111 (6Fh)	Error code of the servo drive	Error code of the servo drive: only for the control loop, not including the motion controller.
112	CANopen SYNC TS	The time the servo drive receives SYNC signal
(70h)	(hasn' t been through the filter)	(TimeStamp) The unit is usec.
113 (71h)	CANopen SYNC TS (has been through the filter)	The time the servo drive receives SYNC signal and has been through the filter The unit is usec.
114 (72h)	CANopen timing synchronization	To synchronize the device timing with the controller during the operation. The unit is usec.
123 (7Bh)	The returned value when monitoring via panel	The returned value when monitoring via panel

[PAR] Parameters: Users can enter the desire accessing parameter. Parameter format can be divided into two kinds, 16-bit and 32-bit. If users desire to access 32-bit parameter, please check 32 bit. The standard setting of channel data is 16-bit. Thus, when users check 32 bit to expand the amount of one channel, ASDA-Soft will automatically close another channel to support the selected one.

Channel 1 and 3 are in one group; while channel 2 and 4 are in one. For example, if channel 2 is set as 32-bit, channel 4 will be closed so as support channel 2:

CH2: ADR	32 bit	CH3: ADR	32 bit	CH4 : 📕 T 🗾 ADF	. 🔽 32 bit T	Motor speed : Re	ADR. 🔽 32 bit T al Time fr/min 🔽
Command Position [PUU]	0	Data		Data	e (r/min →) 0.0	Data	0.0
Relative	0	Relative	0	Relative	0.0	 Relative	0.0

[CAN] CANopen: Users can enter the desire access CANopen objects data. Enter the specified accessing position, Index, then specify the flag position, Sub-Index.

For example, if Index is set to 60C1h, Sub-Index will be set to 02:

🗹 CH1 [CAN	I] CANc	- [32 bit
Inc	lex	60c1	Sub	2

c). Data

The position data when cursor stops. See example below, when the cursor stops at one position, channel 1 and 2 will show the current coordinates.



Click the cursor, the data will be fixed and the relative value will be set to 0.

d). Relative

It is the comparing value between the original data and current position data. When clicking the cursor, the relative value will be set to 0. Then, when the cursor moves around the curve, the system will automatically compare the value. Please refer to the following figures for description:



🔽 😳 🔲 [IDX] Norma 🔽 🔲 32 bit	🔽 CH2 [IDX] Norma 🔽 🗔 32 bit
回授位置 [PUU] ▼	命令位置. [PUU]
_ 資料:	資料:
相對值:	相對值:

When cursor moves, the relative will show the comparing value according to the cursor's current position.

e). Time

It is the time when cursor stops. Its operation method is similar to [Data].

f). Interval

It is the comparing value between the homing time and stop time. Its operation method is similar to [Relative].

資訊:	
時間:	12044.250 ms
時程:	5324.750 ms

Operation

[Description]: Setup software scope of ASDA-A2 series:

Software scope function is introduced here with the following oscillograph. Its control mode is set to the internal speed mode (Sz mode). The scope can be used to make sure the change of speed command and motor speed.

Command: Use DI to switch three sections of speed command so as to control the motor speed. Set channel 1 as Motor speed: Real Time (r/min), channel 2 to access parameter, P1-09 (1st Speed Setting), channel 3 to access monitor variable, 07h (Speed feedback) and channel 4 to access monitor variable, 07h (Speed feedback).



IDX] Norma 💌 🛛	🛯 32 bit 🔽 CH2 [PAR]	Parar 💌 🥅 32 bit 👖	🔽 CH3 [VAR] Varial 💌 🥅 32 bit	🔽 CH4 [ADR] Addr 🔽 🥅 32 bit
馬達速度:即時 [r/min]	▼ P1	▼ - 9 ▼	7 (0~127)	0×10000007
_ 資料:	-0.1 🗌 資料:	1000	_ 資料:	🧧 資料:
相對值:	0.0 相對值:	0	相對值:	相對值: 0

From this example, users could learn:

- 1. Setting of scope screen
- 2. How to capture the waveform
- 3. How to adjust the size of the waveform and the function of direction key
- 4. How to zoom in the special area or adjust the time range that desire to monitor
- 5. Save the captured waveform

Followings are the parameter setting method of this example (Other functions will be detailed in later chapter):

1). Open software and make sure the connection is successfully built. Then, use Parameter Initial Wizard) to setup internal speed control mode.

				Control Mode Selection(P1-01)	
a antibitz				[0x00] PT:Position control mode	If control mode is changed, please reb
		anne a	Lenarzy etc	[0x00] PT:Position control mode	A
OBRADZ OBRADZ OBRADE		<u>.</u> Эника ги	**	[0x02] S:Speed control mode	
Ethertical of the Market Ethertical Stationary (Owent) Stationary (Owent) Stationary (Owent) Stationary (Owent) Part Stationary	00 000/1009818000280-00 20 000/100982601280-00	in daa in da nin daa in da	920 920	[0x03] T:Torque control mode [0x04] Sz:Zero speed / internal speed command	E
Linearit Fr. C. Yooli Linearity Fr. C. Yooli Linearity Fr. C. Yooli Linearity J. Managem Linearity J. Managem	US [D4238304	initiana da initiana da	**	[0x05] Tz:Zero torque / internal torque command	
[040] [15,55 Hods [040] [15,0,75 Hods [040] [10,0,75 Hods [040] [10,0,75 Hods	00 [0403636942 00 [0403636942	jirana ra		[0x07] PT/T:Position control mode / Torque control mode	
		elfanna fai ∋iranna fai	88. 83.	[0x08] PR/S:Position control mode / Speed control mode [0x09] PR/T:Position control mode / Torque control mode	
	Partic Marshi, Col-4	Raman ru	er R	[0x0A] S/T:Speed control mode / Torque control mode	

Use drop-down list to setup -- [0x04] Sz: Zero speed / internal speed command

2). Setup Digital Input (DI); DI3 and DI4 are used in this example:

				[0x16]Internal torque command selection (1~4) 💿 contact a	con
	ALL STATES	<u> </u>		[0x09]Torque limit [0x0A]Gantry control function [0x0C]Latch function of analog position command [0x0D]Clear function of analog position command	^
Landard Landard Landard Landard Landard Landard		9		[0x0E]Clear the errors of linear scale and motor encoder for fullclosed	=
-#2497	III DELYERDORIOS	27.00		[0x10]Speed limit enabled	_
AllAR/we	THE REPORT OF AN				
ADDRESS CONTRACTOR	IN D-WEEKEE	281-4 at 1 1 at	1 1198	0x11PR command selection 1~64 Bit0	
Owner A training		2 × 40	1. C.M.	[0x12]PD command selection 1 - 64 Bit1	
Control of L Print		21.00	1.000	[0X12]FR command selection 1*04 bit1	
LINE TRACE	IP 0-1248250	2 mar		0x13]PR command selection 1~64 Bit2	
Complete Street	IN 200549994	e) rue	1.000	Found difference of an end of a strand set of the strand set of th	
100000000000000000000000000000000000000		#2-4U		[UX14]Internal speed command selection (1~4) Bitu	
	tos poplas	31/5.44	1 C 188	Found Fitzehannel and an annual and a Kan (4 - 4) Fitze	
	NAME OF COMMENTS	2.00	10 YOM	[UX15]Internal speed command selection (1~4) Bit1	
	Anti Source A	<u></u> ×	6, C.MB	[Out 6] Internal taxatic command calentian (1-4) RHO	-
				UX tojthemai torque command selection (1~4) Bitu	
	Parits Ref	and the second			_

Use drop-down list for setting -- [0x14] Speed command selection (1~4) Bit0 [0x15] Speed command selection (1~4) Bit1

c00] PT Mode	ontrol Mi	ode Selection(P1-01)	If control r	node is changed, please reboot the servic drive to take effect!
01] PR Mode	uxu ij sa	azero apeca y internarapeca commana		
(02] S Mode				
(04] Sz Mode	🛛 Digita	al Input(DI) Setup(P2-10~P2-17)		
Setup	DI1	[0x01]Servo On 👻	e contact a	🔘 contact b
mon Setup	010	[0.0.0]0 for data	a materia	Contract
d Mode Setup	012		Contact a	Contacto
nal Speed/Torque (05] Tz Hode	DI3	[0x14]Internal speed command selection (1 -	contact a	🔘 contact b
c06] PT/S Mode c07] PT/T Mode	DI4	[0x15]Internal speed command selection (1 💌	o contact a	O contact b
08] PR/S Mode 09] PR/T Mode	DI5	[0x02]Alarm Reset	contact a	🔘 contact b
c0A] S/T Mode c0B] CANopen Mode(Half)	DI6	[0x22]Reverse inhibit limit	🗇 contact a	contact b
cOC] CANopen Mode(Full) cOD] PT/PR Mode	DI7	[0x23]Forward inhibit limit	🔿 contact a	contact b
COE] PT/PR/5 Mode COF] PT/PR/T Mode	DI8	[0x21]Emergency stop	🔿 contact a	contact b
	× Exter	nal Digital Input(EDI) Setup(P2-36~P2-41	15	
	EDI9	[0x00]Disabled	contact a	🗇 contact b
	EDI 10	[0x00]Disabled	contact a	🔘 contact b
	EDI11	[0x00]Disabled	o contact a	🔘 contact b

3). After the setting is completed, please click 1 (write to servo drive). The following

window will pop up:

Delta ASDA-Sof	t 📃
是否寫入Servo?	
是做	否NU

4). Click **是**(2), the setting will be written into the servo drive automatically. Then, a confirmation box will pop up:

De	lta ASDA 🔀
寫	(入到伺服完成!
	(OK)
4	S

- 5). Click CK Since the control mode has been changed, please disconnect the software communication and remove the communication cable. Then, re-servo On the servo drive.
- 6). After the servo drive is re-power on, users can directly click **Corr LINE**. The communication setting is complete.

Please refer to the following description for the setting method of scope: Step 1, format setting of the screen:

Users have to firstly setup scope display form, including the setting of coordinate and coordinate status when capturing the waveform. See below for further explanations:

1.) Adjust the range of coordinate: Users can use 【Properties】, which is on the right of the window, to adjust the setting.



a. Keep current max./min. value while running

Check represents the initial value. It means every time when scope starts to capture the data, the max./min. value on Y-axis will be used as the capturing range. If users desire to return to the initial setting after capturing the waveform, please manually cancel this function.

b. Show Grid Line

Check this function to show grid line on screen; the gray button in the front can be used to setup the color. Light gray is the default setting.

c. Auto adjust the scope display

Check this function to enable the software auto adjusts scope display form.

2.) Adjust the coordinate of each channel: Users can use the function under [Properties] to adjust the displayed coordinate of each channel:



Select **(channels use the individual coordinate)**, means the value and time of each channel will be different according to different setting of monitor items.

Select **[channels use the same coordinate]**, means the value and time of each channel will be the same according to the same setting of monitor items.

This function is frequently used: When analyzing the waveform with different unit of monitor item, applying same coordinate might cause the incorrect proportion of the value. For example, when comparing the monitor item with PUU unit to the one with r/min unit, setting the same coordinate would result in incorrect proportion of the waveform.

The coordinate of each channel in this example also needs to be adjusted. The waveform will be changed as below. Data in channel 1 and 2 of Y axis on the left has been adjusted to the one for each coordinate:



The default setting of this function is **[channels use the same coordinate]**. Please note that scope function will return to the default setting every time when the scope is re-opened.

In addition, set the function as [channels use the individual coordinate] ,

please click is to adjust the screen to the proper size. Please note that if not to do so, after the setting of **[channels use the individual coordinate]** is complete, the waveform is still incorrect.

3.) Function of "Stop Condition": In some specific condition, if users desire to setup auto stop capturing waveform, go to "Stop Condition", which shown as below:

Condition Fine Tu	ning Properties									
Stop Condition										
Enable Stop Condition										
Channel	Operation									
@ CH1	(i) >=									
CH2) =									
	0 <=									
0 44										
Stop Value: 0										
Condition satisfie	ed, last 20000 ms									

This function can individually setup the stop condition of each channel. See the following for the example:

Check "Enable Stop Condition", channel below can be setup.

Condition Fine Tur	ning Properties									
Stop Condition										
Enable Stop Condition										
Channel	Operation									
CH1	>=									
CH2	© =									
CH3	Õ									
0 014										
Stop Value: 0										
Condition satisfie	ed, last 20000 m	ıs								

Select the channel, e.g. channel 1 from the above example; then, setup the operation. Users can specify the status of each channel when stop capturing waveform by following methods:

Setup "Stop Value": Users can setup the value to stop capturing waveform. Setup "Operation": Users can use "Stop Value" as the condition, then see if the value is bigger / equal >=, or equal =, or smaller / equal <= to stop waveform capturing.

Finally, setup "Condition satisfied, last". With this function, the stop command will be issued after the delay time.

Step 2 Channel Setting:

Take ASDA-A2 series servo drive as the example, 4 groups of channel are supported.



Users can refer to the previous chapter <u>[Channel Setting]</u> for the setting method of channel. The setting of different command input and parameter size (16-bit or 32-bit) must be accurate. Or the captured waveform will be incorrect.

Special function: The channel width provided here is 8k Hz. Users can use the function of High Baud Rate, which is on the right of the window, for higher speed of communication (enhance the resolution to monitor the detailed movement):



Its initial setting is 8k Hz, if check 16k Hz, channel 2 and 4 will be closed automatically. This is because the system has to share the bandwidth to channel 1 and 3.



If users apply zoom in function, the zoom in area will be different from the one when in full screen.





Step 3 Start to capture the waveform:

After the setting of screen and channel is complete, click **ERM** to start to capture the waveform.



The distance and range of the captured waveform can be manually control according to different control mode and actual operation distance. Users also can use the function of "Stop Condition" to stop capture. Click stop, the screen will stop capturing and will automatically adjust to the coordinate format which is set by the user.

Step 4 Zoom in and zoom out the waveform:

The above chapter introduces the basic way to zoom in and zoom out the waveform. However, the most common way is to border select the analyzing area to monitor the curve. For example:

a.) Use left mouse button as the start point, starting from the top left, and border select the area towards the bottom right corner.

0076 7	Condens									DOM: NO				
2767 -	(iraide)									32767				-1-
521.4										26214	- i		i	
214 -										26214				
66.0 1660 -										19660				
10.7				ia	÷					13105		*		- T
106 -										13106				
iS.3										6553				
555				S.	:	i - 1				6000	1.1			
.0 -				¥	<mark>-</mark>	·		· · · · · · · · · · · · · · · · · · ·	1 	-		+		÷
55.4										-6554	·			
554 -										-6554		4		1
10.8										-13108	1	× .	 	-
										13108		/ C		
6.1										-13108	Y		 	÷
<mark>66.1</mark> -										-13108 -19661 -19661		·	 	ţ
66.1 9661 -										-13108 -19661 -19661 -26214		``````````````````````````````````````	 	
66.1 9661 - 21.5 5214 -										-13108 -19661 -19661 -26214 -26214			 	
66.1 9661 - 21.5 5214 - 76.8 2768 -										-13108 -19661 -19661 -26214 -26214 -32768 -32768			 	
66.1 9661 - 21.5 5214 - 76.8 2768 - 0. 0	000 19	99,988 3999,975 99,988 3999,975	5999.963 7 5999.963 7	99.50 99 193.50 99	99.938 11 99.938 11	999.925 1 999.925 1	3999.913 11 3999.913 11	5999.900 5999.900	17999.888	-13108 -19661 -19661 -26214 -26214 -26214 -32768 -32768 -32768 -32768 -32768 -32768			 	
21.5 214 - 76.8 768 - 0. 0.	000 19 000 19 000 19 000 19	99.988 3999.975 99.888 3999.975 99.888 3999.975 99.888 3999.975	5999.963 7 5999.963 7 5999.963 7 5999.963 7	999.950 99 999.950 99 999.950 99 999.950 99	999.938 11 999.938 11 999.938 11	999.925 1 999.925 1 999.925 1	3999.913 11 3999.913 12 3999.913 13	5999.900 5999.900 5999.900 5399.900	17999.888 17999.888 17999.888	-13108 -19651 -19651 -25214 -25214 -25214 -25258 19999,875 19999,875 19999,875 19999,875 19999,875 19999,875 19999,875 19999,875 -2525 -2555		ò	 	
56.1 - 21.5 - 21.4 - 76.8 - 76.8 - 0. 0. 0. 0.	000 19 000 19 000 19 000 19 000 19	99,988 2993,975 99,988 2993,975 99,988 2993,975 99,988 2993,975	5999.963 7 5999.963 7 5999.963 7 5999.963 7	993.950 97 993.950 99 993.950 99 993.950 97	999,938 11 999,938 11 999,938 11 999,938 11 999,938 11	999.925 I 999.925 I 999.925 I 999.925 I 999.925 I	9999,913 11 9999,913 12 9999,913 12 9999,913 13 9999,913 15	5999,900 5999,900 5999,900 5999,900 5999,900	17999.888 17999.888 17999.888 17999.888	-13108 -19661 -19661 -25214 -25214 -25214 -25258 19999.875 19999.875 19999.875		<u></u>	 	
56.1 - 11.5 - 214 - 76.8 - 76.8 - 0. 0. 0. 0.	000 19 000 19 000 19 000 19	99,488 2993,475 99,488 3993,475 94,88 3993,475 99,888 3993,475	5993,963 7 5993,963 7 5993,963 7 5993,963 7 5993,963 7	993,950 99 993,550 99 993,550 93 993,550 93	99.938 11 999.938 11 99.938 11 99.938 11	999.925 1 999.925 1 999.925 1 999.925 1	3999.913 19 3999.913 19 3999.913 11 3999.913 19 3999.913 19	5999.900 : 5999.900 : 5999.900 : 5999.900 :	17999.888 17999.888 17999.888 17999.888	- 13108 - 19661 - 19661 - 26214 - 26214 - 27789 - 2			 	
6.1 - 1.5 - 214 - 6.8 - 758 - 0. 0. 0. 0.	000 19 000 19 000 19 000 19	99,488 3993,475 99,588 3994,475 99,588 3994,475 99,588 3999,475	5993,963 7 5993,963 7 5993,963 7 5993,963 7 5999,963 7	993 950 99 993 950 99 993 950 97 993 950 97	99.938 11 99.938 11 99.338 11 99.338 11	999.925 1 999.925 1 999.925 1 999.925 1	2999.913 12 2999.913 12 2999.913 12 2999.913 13 12 2999.913 13	5999.900 5999.900 5999.900 5999.900	17999.888 17999.888 17999.888 17999.888	-13108 -19561 -19561 -25214 -35214 -35214 -35214 -35258 19393.875 19393.875 19393.875			 	

b.) After releasing the left mouse button, the screen will automatically adjust to the selected area in full screen.



c.) If desire to zoom out the screen, double click the left mouse button will do.

2842.8	(value)										28428
28428											28428
2306.2											23062
23062											23062
1769.6											17696
17636											1/636
1233.1											
12331											12331
696.5											6965
0,05											
159.9	-				-						1599
1599									X		1599
-3/6/	<u> </u>										3767
-913.3											
-9133											
.1449.8											.14498
-14498											-14498
-1986.4	_										-19864
-13004											-13004
-2523.0											
-25230	-+	· · · · i · · · · · ·									-25230
	5786,625	6889.725	7992.825	9095,925	10199.025	11302.125	12405.225	13508.325	14611.425	15714.525	16817.625
	5786,625	6889.725	7992.825	9095.925	10199.025	11302.125	12405,225	13508.325	146.11.425	15714,525	16817.625
	5786.625		7992.825	9095.925	10199.025		12405.225	13508.325	14611.425	15714.525	16817.625

It is an easy way to quickly monitor the waveform and can freely change the monitor coordinate.

When users are accessing values from more than one channels, if desire to specify the range in one or all channel, "Fine Tuning" on the right can be applied.

a. Click "Fine Tuning":

	_											
Conditi	on Fine	Tuning	Prope	erties		_						
Movi Zoo	ing Offse m Multipl	e: 120		%								
En En	able Fin	e Tunir	ig of S	ingle Ax	is							
			Z	oom Time	e-axis o							
	-11			oom Valu	ie-axis							
	-12 -13						Speci	fy Display	Rand	10		
	-14						speci	ry Display	N N N N N N	je and(ma)	Marc	Min
								start(ms)	end(ms)	Max	Min
		Align Ti	me by	this CH			CH1	0		-0.125	32767	-32768
(^{Specif}	fy Di spl ay start(ms	(Range	nd(ms)	Max	Min		CH2	0		-0.125	32767	-32768
CH1	0	1	0.125	32767	-32768	-	CH2	0		-0 125	32767	-32768
CH2	0	-	0.125	32767	-32768		CH3	<u> </u>	-	-0.125	32/0/	
CH3	0	-	0.125	32767	-32768		CH4	0		-0.125	32767	-32768
CH4	0	-	0.125	32767	-32768	1				<u> </u>		
I		- ж]— •			L			OK			

 b. Setup the range of "Start" and "End"; For instance, set the displayed range as "10000 ~ 15000" for all channels.

Specify Display Range										
start(ms) end(ms) Max Min										
CH1	10000		15000		32767	-32768				
CH2	10000		15000		32767	-32768				
CH3	10000		15000		32767	-32768				
CH4	10000		15000		32767	-32768				
ОК										

Click _____, the screen will be adjusted to the setting range automatically.



[Other Functions Application]: By the above mentioned four steps, users can easily

capture the waveform and complete the related settings. Some other special functions are introduced in later parts:

• Right click the screen, the window below will pop up:

Servo Tuning
Parameter Editor
Save as a picture(*.bmp)
Save Scope Data as a Text File(*.txt) Save Data of Current Display as a Text file(*.txt)

[Servo Tuning] : Click to enable the function of "Auto Gain Tuning".

[Parameter Editor]: Click to enable Parameter Editor.

[Save as a picture (*.bmp)] : Click to save it as a BMP file.

[Save Scope Data as Text File (*.txt)] / [Save Data of Current Display as

Text (*.txt) Click to save it as the TXT file.

• If the computer's performance runs slow, High Baud Rate might slower the whole operation. Uncheck High-speed Monitor at the moment and change the channel width to 1ms (1kHz). Then, do the preliminary analysis with fewer sampling point first.

High-speed monitor		
Low-speed monitoring time	1	ms

• If users desire to move, zoom in or zoom out the specific channel, enable Single Channel Fine, which is under Fine Tuning, will do.

Condition Fin	e Tuning Pro	operties			
Moving Offs	et: 200]			
Zoom Multip	ole: 120	%		Enable F	ine Tuning of Single Axis
	ne Tuning of v	Single Axis 2 Zoom Time-axis c 2 Zoom Value-axis	>	CH1 CH2 CH3 CH3	✓ Zoom Time-axis c ✓ Zoom Value-axis
	Align Time b	y this CH			Align Time by this CH

Enable Single Channel Fine:

- Check: It means the system only zooms and moves the selected channel.
- Uncheck: The system zooms and moves all channel.

- Only Zoom Time: If uncheck this function, range of Time (X axis) will not be changed when zooming or moving.
- Only Zoom Value: If uncheck this function, range of Value (Y axis) will not be changed when zooming or moving.
- Match Time by this CH: Click this, the time of other channels will be set to the same as the selected one.
- If users desire to acquire the mean deviation of the selected channel value through root mean square calculation, please check **Show RMS Value**, and use left mouse button to border select the range. Then, the software will pop up the calculation result:



Spectrum Analysis (FFT)

The analysis of resonance point is conducted by spectrum analysis (FFT). The so called spectrum analysis (FFT) uses the mathematic operation of **Fast Fourier Transform** to find the resonance point. The servo drive fetches (offsets) resonance point by notch filter and to smooth the curve. The unit of the vibration value is decibel (dB). Its calculation formula is $N(dB) \equiv 20 \times log_{10} \left(\frac{A}{Aref} \right)$. Please refer to the related documents for further information about Fast Fourier Transform.

In real situation, during operation, when resonance (or vibration) occurs, it is probably because the stiffness of the control system is too strong or the resonance is too fast. Eliminating these two factors might improve the situation. If both have been checked and still cannot suppress the resonance, this function of FFT display can fetch the waveform during operation so that users can analysis the resonance point. Followings are the operation description:

Step 1: When desire to fetch the waveform, please set one of the channel as "motor current". Then, operate the mechanism and activate the scope for monitoring. Stop the scope and motor once the resonance occurs.



Step 2: Check FFT Display, then use left mouse button to border select the range of resonance.



FFT : 8192 Pts. Axis Y X Q Q O O O O represents the strength of resonance gain (output); The corresponding value is the relative unit. Axis X represents 3500 [Hz] frequency. Range is between 0 and 4.000 Hz. 🗸 ок

Step 3: Release the left mouse button, a FFT window will pop up automatically.

Step 4: Users can zoom the screen via toolbar a suggested to directly border select the resonance point, then analysis it with the relative value, which is on the right. From the above example, zoom in the frequency domain, we could find the highest resonance point is at the position of 660Hz, relative value is about 10,000.



Step 5: Before the introduction of setting resonance suppression via software, here comes the parameter definition first.

If resonance frequency is acquired via step 4, users may setup notch filter to eliminate the resonance. ASDA-A2 servo drive provides 3 sets of notch filter: the first one is manual setting (P2-23), which sets the frequency between 50 and 1,000Hz; the second set (P2-43) and the third set (P2-45), which set the bandwidth from 50 to 2,000Hz. The suppression strength of three sets (P2-24, P2-44 and P2-46) is 32d.

The Following is the system brief introduction:



If the resonance frequency is over 2,000Hz, it means the response frequency and gain value have exceeded the one the mechanism can take. It is suggested to reduce both, and then re-do FFT analysis.

The following diagrams are the system of open-loop gain with resonance. Notch filter can be used to suppress the resonance.

Resonance suppression with low-pass filter



Step 6: The resonance point is at 660Hz, the relative value is 10, 000.

In frequency domain, software is unable to fetch the relative signal value (input and output) simultaneously, thus, it is suggested to regard the frequency point as the main parameter. Then, gradually adjust the value starting from 10dB.



Step 7: Follow the way from above figure to setup parameter (resonance

suppression). Then, click ==>> to download the parameter into the servo drive.

Step 8: Repeat the steps from step 1 to 7 and watch the change of frequency domain until the resonance has been suppressed. Conduct FFT analysis with the normal frequency domain. Users shall acquire the following waveform.

FFT : 16384	Pts.						X				
🔟 Q, Q, (0									
9000											
8000											
7000											
6000											
5000											
4000											
3000											
2000 7											
1000											
	500	1000	1500	2000	2500	3000	 3500 [Hz]4				
							3300 4				
		<u> </u>		Л							

Others:

- Number on title bar (FFT : 16384 PTs.) represents the data number within the selected range. Bigger number means better resolution. Please keep the number over 512 points.
- The spectrum figure can be saved as BMP file. Right click the mouse when the cursor is on FFT Display. A pop-up function list will appear. Please click 存成BMP圖檔(*.bmp)(B), then select the file name will do.

3.2 Auto Gain Tuning



Users can auto adjust the gain value of control loop via [Auto Gain Tuning] provided by ASDA-Soft. Followings are its main features:

- Fill in the data of bandwidth, inertia ratio and rigid holding to compute the gain value. Then, the value will be downloaded into the servo drive for testing.
- Through the motor speed and travelling distance (distance between two points), users can estimate the inertia during operation. Use the average inertia value to compute the relative gain value of control loop.
- Manually enter all related gain value. This is for a higher level of engineer for advanced setting.
- For the adjustment of resonance suppression, users can setup parameters after acquiring the resonance position and value from the scope.



Figure below is the main screen after enabling scope function:

This section will be divided into two parts:

[Interface Introduction]: It detailed describes the function of auto gain tuning.

[Description of Tuning]: It describes the setup tuning procedures, including the setting of motor speed, operation distance and inertia estimation.

Interface Introduction

[Screen Analysis]:

Off - line Computation				🕜 Hel	elp 👘 Enable Gain Control Panel
Bandwidth: 100 H	Rigid Holo Iz Ratio of ine	ling: 1 rtia: 4		Ð	Selecting Enable Gain Control Panel wi temporarily change the operating mode to Pr. Mode (P1-01 = 001) and alter the following parameters: P0-06 ~ 08 P1-15 ~ 18, P1-34 ~ 36 P2-10 ~ 17, P2-36 ~ 37 P3-06, P4-07
	C	mpute alculation	Kea	d Parametei In Driv	All parameter changes are temporary
P1-37 Load Inertia Ratio :	0 Itimer	esult Area			power on the amplifier will restore the
P2-00 Position Loop P gain :	U. Tumes	n	× _		original parameter values.
P2-02 Position Feedforward :		0	v ()		
P2-04 Speed Loop P gain :		0	V 4		
P2-06 Speed Loop I gain :		0	~		
P2-25 OSC. Reject filter :	0.1times	D	V	L	
P2-26 External Noise Reject :		D	V		
P2-49 Speed Detection Filter and	d Jitter Suppress	00]:25 -	V	[00]:25	51 -
Pap dwidth/Ua)			<<=		
Bandwidth(Hz):					(4)
P2-47=0: Disable Auto Resonance S	uppression Mode		M ===	>>	
P2-23 Notch filter Freq (1):	Hz(50~1000)	1000	V		
P2-24 Notch filter Gain (1):	dB(0~32)	0	~		
P2-43 Notch filter Freq (2):	Hz(50~2000)	1000	V (2		
P2-44 Notch filter Gain (2):	dB(0~32)	0	V		
P2-45 Notch filter Freq (3):	Hz(50~2000)	1000	V		
P2-46 Notch filter Gain (3):	dB(0~32)	0	V		

- 1). Setup low-frequency stiffness, response bandwidth and inertia ratio.
- 2). Setup each gain value and upload/download the gain value.
- 3). Setup three parameters of resonance suppression.
- 4). "Enable Gain Control Panel"
Followings are the description of each item:

[Window for setting motor type, low-frequency stiffness, response bandwidth and inertia ratio]

Off - line Computation		HELP
ASDA-A2	T	
Bandwidth: 100 Hz	Rigid Holding: 1 - Ratio of inertia: 4	
	🔲 Show current ratio of inertia	

lcon	Function Description		
Bandwidth: 100 Hz	Setup response bandwidth of the servo drive. Users can also manually modify the value. After tuning, value will be displayed in this column.		
Rigid Holding: 1	If the stiffness is not enough, when the position command is complete, the drive end still vibrates even when the motor almost stops. The adjustment will influence the value of P2-06 (Speed Integral Compensation) and P2-26 (Anti-interference Gain): Adjust the value of [low-frequency stiffness]. Use the value x 100 to setup P2-06 and P2-26. For example, Setup Rigid Holding: 2.5 . Click Compute, then the following two parameters will be: P2-06 Speed Loop I gain : 250		
	P2-26 External Noise Reject : 250		
Ratio of inertia: 4	Setup the inertia ratio of the servo drive. After tuning, value will be displayed in this column.		

[Window for setting each gain value]

	Compute		Read from Devi	
	Calculation	•		In Drive
P1-37 Load Inertia Ratio :	4.0	🔽 0.1ti	mes	0.0
P2-00 Position Loop P gain :	157			47
P2-02 Position Feedforward :	50			0
P2-04 Speed Loop P gain :	628			188
P2-06 Speed Loop I gain :	100			30
P2-25 OSC. Reject filter :	16	🔽 0.1ti	mes	55
P2-26 External Noise Reject :	100			30
P2-49 Speed Detection Filter and Jitter Suppres	[0F]: 800 💌	▼ <	<====	[0F]: 800 🔻
Bandwidth(Hz): (max=1023)	100			30
P2-47=0: Disable Auto Resonance Suppression Mode	-	-	==>>	

Icon	Function Description
Compute	When all parameter setting is complete, click this to compute the gain value.
Read from Device	This button can be used to read parameters from the servo drive.
ComputeP1-37 Load Inertia Ratio :4.0✓P2-00 Position Loop P gain :157✓P2-02 Position Feedforward :50✓P2-04 Speed Loop P gain :628✓P2-06 Speed Loop I gain :100✓P2-25 OSC. Reject filter :16✓P2-26 External Noise Reject :100✓P2-49 Speed Detection Filter and Jitter Suppres:[0F]: 800 ✓✓Bandwidth(Hz):100✓	Click Compute, the computing result will show in this area. In addition, users can determine if the modified parameters will be downloaded into the servo drive. The check box highlighted in red means users can select or cancel all parameter.
In Drive 0.0 47 0 188 30 55 30 [0F]: 800 ▼ 30	Click Read from Device , the gain value of the servo drive will be uploaded to this window.



[Setup three parameters of resonance suppression]

Use FFT to analysis the resonance position and value, users can setup three parameters of resonance suppression here.

P2-47=0: Disable Auto Resonance Suppression Mode	-		===>>	
P2-23 Notch filter Freq (1):	1000	V	Hz(50~1000)	1000
P2-24 Notch filter Gain (1):	0	V	dB(0~32)	0
P2-43 Notch filter Freq (2):	1000	V		1000
P2-44 Notch filter Gain (2):	0			0
P2-45 Notch filter Freq (3):	1000	V		1000
P2-46 Notch filter Gain (3):	0	~		0

	-
Icon	Function Description
	Setup resonance suppression mode from drop-down menu; P2-47 provides three methods:
	When the value of P2-47 is set to 0: Users can manually setup three parameters of resonance suppression.
P2-47=0: Disable Auto Resonance Suppression Mode P2-47=0: Disable Auto Resonance Suppression Mode P2-47=1: Auto Resonance Suppression Mode 1 [Non-continuous adjustme P2-47=1: Auto Resonance Suppression Mode 1 [Non-continuous adjustme	When the value of P2-47 is set to 1: Auto resonance suppression. When the system is stable, the value will return to 0 automatically and the system will store the resonance suppression point; if not, it will re-estimate when re-power on or when the value is 1.
	When the value of P2-47 is set to 2: Continuous

		adjustment. When the system is stable, it will store the resonance suppression point, if not, it will re-estimate when re-power on.
P2-23 Notch filter Freq (1): P2-24 Notch filter Gain (1): P2-43 Notch filter Freq (2): P2-44 Notch filter Gain (2): P2-45 Notch filter Freq (3): P2-46 Notch filter Gain (3):	1000 ▼ Hz(50~1000) 0 ▼ dB(0~32) 1000 ▼ 1000 ▼ 1000 ▼ 0 ▼	Users can setup three parameters via P2-47 that mentioned above. When P2-47 is set to 1 and 2, the 2 nd and 3 rd parameter of resonance suppression will be unable to setup. These two parameters will be set as auto estimation.

[Open the window of "Enable Gain Control Panel"]

Icon	Function Description
Icon Enable Gain Control Panel Selecting Enable Gain Control Panel will temporarily change the operating mode to Pr. Mode (P1-01 = 001) and alter the following parameters: P0-06 ~ 08 P1-15 ~ 18 , P1-34 ~ 36 P2-10 ~ 17 , P2-36 ~ 37 P3-06 , P4-07 All parameter changes are temporary. Closing the control panel and cycling power on the amplifier will restore the original parameter values.	Function Description Check Enable Gain Control Panel, the system will switch to the setting page of tuning. Please pay attention that when enabling this function, the operation mode is temporarily changed to PR mode. Some parameters will be changed temporarily. When complete tuning, please uncheck Enable Gain Control Panel

Description of Tuning

It is recommended to use tuning to setup control loop parameters. Through the actual operation, users can directly estimate the change of inertia.



In order to acquire the accurate result of estimation, the servo motor must operate a distance at forward / reverse direction. Also, the motor speed should be set up to 200rpm.

Following is the operation procedure:

Step 1: Check "Enable Gain Control Panel", screen on the right will switch to the one of tuning.

[X] 🔽 Enable Gain Control Panel				
Servo On Servo Off				
Alarm Reset Ro Alarm				
Actual Acc. time(ms): 34 < 40				
Actual Dec. time(ms): 34 < 40				
0 rpm acceleration to 3000 rpm(ms) 200				
3000rpm deceleration to 0 rpm(ms) 200				
S-curve Time(ms) 20				
Jog Speed(rpm)(200~3000) 200				
Download				
Motor feedback position[user unit]				
Position 1				
Position 2				
Present Position 0				
Time Cycle 500 ms Start				
Est. JL/Jm : 0 Set]				

Step 2: Setup the parameter of motor speed. It is suggested to set from low speed to the actual operation one:



Setup JOG speed first; The JOG speed is used when applying hand wheel or manually adjusting the positioning point. The system will regard this speed as the motor speed (at forward / reverse direction) when estimating inertia. Note: JOG speed must faster than 200rpm so as to achieve the desired result of inertia estimation.

JOG speed will be used to estimate the max. allowable time. See the following example:

Jog Speed	200
-----------	-----

Max. allowable time (ms) = Current JOG speed (rpm) \div (5000(rpm) \div 1(s))

So, max. allowable time (ms): 200rpm÷(5000rpm÷1000ms) = 40ms It means when JOG speed is 200rpm, the max. allowable time is 40ms.

Users can setup acceleration constant, deceleration constant and S-curve smooth constant according to the actual machinery situation.

Note: The acceleration/deceleration time cannot exceed the max. allowable time.

Formula of auto computing the actual acceleration/deceleration time is shown as below:

Actual acceleration/deceleration time = setting value + S-curve smooth constant

Setting value = The acceleration time from 0 to 3000 rpm x JOG speed (rpm) ÷ 3000(rpm)



Take the above figure as the example. When the acceleration time and deceleration time is 200ms; the setting value should be:

 $200(ms) \times 200(rpm) \div 3000(rpm) = 13.33(ms)$

The actual acceleration or deceleration time = 13.33(ms) + 20(ms) = 33.33(ms)

Thus, the actual acceleration and deceleration time is shorter than the max.

allowable time which eligible for inertia estimation.

When the setting is complete, click Download to download the motor speed to the servo drive temporarily.

Note: Click Download, if the input value is not an integer or the actual acceleration/deceleration time exceeds the max. allowable time, the following window will pop up and the data will not be downloaded into the servo.

Delta ASDA-Soft	
"2.00" is not a valid int	eger value

Step 3: After the setting of motor speed is complete, please start the servo.

Servo On	Servo Off	Click Serve On	Servo On Servo Off	
Alarm Reset	No Alarm	then start the servo	Alarm Reset AL003	

If an alarm occurs, please turn off the servo and troubleshoot the problem. And use **Alarm Reset** to resume the servo drive.



Some alarms cannot be cleared via reset button. Users have to re-power on the servo drive. Please refer to the user manual for detailed description about alarms.

Step 4: Setup motor operation distance. It is suggested to start from left limit to right limit. Users also can setup the specified section. The setting of positioning point is similar to the setting of hand wheel or JOG position. Users could use the direction key of JOG to adjust motor's moving direction.



Direction key could move the motor to the positioning point. Then, use "Position 1" and Position 2" to setup. Value in blue mark represents "Current Position". Users can access the actual feedback position of the motor.



"Time Interval" can be used to operate the motor after some delayed time when each section is complete.



Please note that the position control is operated by JOG control of the servo drive. Followings are the situation users should bear in mind: 1. Pease make sure the hardware switch of emergency stop or the controller's DO signal can work. Function of digital I/O can be used for testing.

- 2. Please make sure the software connection is successfully built. If the communication is breakdown, the motor might unable to run properly.
- 3. During the operation, if any alarm occurs, press the button of emergency stop immediately or issue the command to stop the motor.

Step 5: Click <u>Start</u>. The motor will operate automatically.

Motor feedback posit	tion[user unit]
Position 1 607	
Position 2 -1581	
Present Position	-1516
Time Cycle 5	ms Stop
Est. JL/Jm :	
0.1	Set <u>J</u>

Please observe the variation of inertia ratio. The system will automatically adjust the gain value of control loop. Thus, the inertia ratio will gradually become stable.

It is suggested to use the proper speed to estimate the inertia. When the change of inertia ratio is smaller, click to stop the motor.



- 1. During the process of inertia estimation, press the button of emergency stop if any abnormality occurs and cut off the power supply of software and servo drive. Then, re-start the inertia estimation after troubleshooting the problem.
- 2. The value of estimated inertia ratio (value of P1-37) should bigger or smaller than 1, which means the system is actually tuning. Incorrect inertia value would result in wrong estimation of system bandwidth and gain value.

Step 6: When the estimation of inertia ratio is complete, the new value will show in the

box below. Clie	ck <u>Set]</u> t	o the new value will	display on the left.
	Est. JL/Jm :	Set <u>]</u>	
Bandwidth: 249 Hz	Rigid Holding: 1 Ratio of inertia: 0.2	Value replac	of inertia ratio on the left will be ced by the new value

Step 7: When the above mentioned inertia ratio is altered, bandwidth and gain value will be adjusted, too.

[Compute		Read	Parameter
	Calculation Result Are			In Drive
P1-37 Load Inertia Ratio :	0.2	V		0.0
P2-00 Position Loop P gain :	390	₹		47
P2-02 Position Feedforward :	50	₹		0
P2-04 Speed Loop P gain :	1563	₹		188
P2-06 Speed Loop I gain :	249	₹		30
P2-25 OSC. Reject filter : 0.1times	6	₹		55
P2-26 External Noise Reject :	249	V		30
P2-49 Speed Detection Filter and Jitter Suppress	[04]:18 -] 🔽		[OF]: 80 -
Bandwidth(Hz): (max=1023)	249		<<===	30
P2-47=0: Disable Auto Resonance Suppression I	Mode 💌	.	===>>	

Please pay special attention to the variation of bandwidth. From the above example, the value is adjusted without load, so the bandwidth estimated by the system is 249Hz. However, for general mechanism, high response setting is unnecessary. Users can adjust the bandwidth and gain value according to the real situation.

Step 8: Click $\stackrel{==>>}{=}$ to download the new value into the servo drive.



Value of P2-49 will not be adjusted by system. It should be set by users.

P2-49 Speed Detection Filter and Jitter Suppress	[04]:1800	$\mathbf{\Box}$
Bandwidth(Hz):	[02]:2100 [03]:2000	-
	[04]:1800	Ξ
	[05]:1600 [06]:1500	
	[07]:1400	
	[08]:1300	
	[09]:1200	-

Following is the diagram of speed control: P2-49, low-pass filter, is used to process the feedback signal of encoder, which could reduce the interference and the error occurrence caused by speed control loop. Its setting value is from 100 to 2500 Hz.



3.3 Digital IO / JOG Control



Users can control digital input and output through the software interface. This function can be used to do simulation monitor of each signal. With the function of scope and E-Cam, status simulation can also be done. Moreover, it can make sure the contact works properly before the actual operation.

Simple JOG control is also provided. Users can slightly adjust the position.

V Digital Input(DI): ASDA-A2 Servo:Pt Mode	Status	Enable
DI1:[0x00]Disabled	Off	On/Of
DI2:[0x00]Disabled	Off	On/Of
DI3:[0x00]Disabled	Off	On/Of
DI4:[0x00]Disabled	Off	On/Of
DI5:[0x00]Disabled	Off	On/Of
DI6:[0x00]Disabled	Off	On/Of
DI7:[0x00]Disabled	Off	On/Of
DI8:[0x00]Disabled	Off	On/Of
DI9:[0x00]Disabled	Off	On/Of
DI10:[0x00]Disabled	Off	On/Of
DI11:[0x00]Disabled	Off	On/Of
DI12:[0x00]Disabled	Off	On/Of
DI13:[0x00]Disabled	Off	On/Of
DI14:[0x00]Disabled	Off	On/Of
♡ Digital Output(DO) ○ Enable DO Control	ol Status	Enable
DO1:[0x00]Disabled	Off	On/Of
DO2:[0x00]Disabled	Off	On/Of
DO3:[0x00]Disabled	Off	On/Of
DO4:[0x00]Disabled	Off	On/Of
DO5:[0x00]Disabled	Off	On/Of

This section is divided into two parts:

[Setting of Digital I/O]: It describes the definition of each button and item on interface.

[JOG]: It describes JOG function.

Setting of Digital Input / Output

The system can simulate digital inputs / outputs via communication. Please note:

- 1. Since the simulation control is conducted by one-way communication, if more than one screen is opened, users will be unable to read the status of DI/O.
- 2. Before disable the function of simulation control, please disable all checked and enabled functions. This is for avoiding the unnecessary danger which caused by incomplete program closure.
- 3. All operation is controlled via communication. Please make sure the software communication is fully connected during operation.

Followings are the description of each button:

Edit DI/O Item — The system will use the default value of DI/O at first. Users can directly change the setting of DI/O. Check this function, the window will switch to setting view, see as below:

Ø Digital Input(DI): ASDA-A2 Servo:Pt Mode	Status	Enable
DI1:[0x00]Disabled	Off	On/Of
DI2:[0x00]Disabled	Off	On/Of
DI3:[0x00]Disabled	Off	On/Of
DI4:[0x00]Disabled	Off	On/Of
DI5:[0x00]Disabled	Off	On/Of
DI6:[0x00]Disabled	Off	On/Of
DI7:[0x00]Disabled	Off	C On/Of
DI8:[0x00]Disabled	Off	On/Of
DI9:[0x00]Disabled	Off	On/Of
DI 10: [0x00]Disabled	Off	C On/Of
DI11:[0x00]Disabled	Off	On/Of
DI12:[0x00]Disabled	Off	On/Of
DI13:[0x00]Disabled	Off	On/Of
DI14:[0x00]Disabled	Off	On/Of
Digital Output(DO) Enable DO Control	Status	Enable
DO1:[0x00]Disabled	Off	On/Of
DO2:[0x00]Disabled	Off	On/Of
DO3:[0x00]Disabled	Off	On/Of
DO4:[0x00]Disabled	Off	On/Of
DO5:[0x00]Disabled	Off	On/Of

◊ Digital Input(DI) : ASDA-A	A2 Servo:Pt Mode			
DI: [0x00]Disabled	•	•	A () B	ОК
DI2:[0x00]Disabled				
DI3:[0x00]Disabled				
DI4:[0x00]Disabled				
DI5:[0x00]Disabled				
DI6:[0x00]Disabled				
DI7:[0x00]Disabled				
DI8:[0x00]Disabled				
DI9:[0x00]Disabled				
DI10:[0x00]Disabled				
DI11:[0x00]Disabled				
DI12:[0x00]Disabled				
DI 13:[0x00]Disabled				
DI 14:[0x00]Disabled				
V Digital Output(DO)	🔲 Enable DO Contro			
DO1:[0x00]Disabled				
DO2:[0x00]Disabled				
DO3:[0x00]Disabled				
DO4:[0x00]Disabled				
DO5:[0x00]Disabled				

[The initial view will switch to the setting view]

When switching to the setting view, users can start to setup DI/O:

Icon	Function Description
[0x00]Disabled [0x00]Disabled [0x01]Servo On [0x02]Alarm Reset [0x03]Gain switching [0x04]Pulse dear [0x05]Low speed CLAMP [0x06]Command input reverse control [0x08]Command triggered	Click any one of DI or DO and setup DI/O from the drop-down menu.
• A • B OK	Use A / B contact, which is on the right, to setup frequently open or frequently close contact. Then, click "OK" to complete the setting.

DI10:[0x00]Disa

DI11:[0x00]Dis

DI12:[0x00]Disa

DI13:[0x00]Disabled

DI14:[0x00]Disabled

DO1:[0x00]Disabled

DO2:[0x00]Disabled

DO3:[0x00]Disabled

DO4:[0x00]Disabled

DO5:[0x00]Disabled

Digital Output(DO)

是(Y)

When all DI/O setting is complete, click **Edit DI/O Item** operation view.

again to return to the

Reflash : Click this if users desire to reset all communication control setting of DI (digital input).

V Digital Input(DI) : ASDA-A2 Servo:Pt Mode	Status	Enable		
DI1:[0x00]Disabled	ON	On/Off		
DI2:[0x00]Disabled	I2:[0x00]Disabled			
DI3:[0x00]Disabled	Off	On/Off		
DI4:[0x00]Disabled	ON	ON On/Off		
DI5:[0x00]Disabled	:[0x00]Disabled Off On/Off			
DI6:[0x00]Disabled	Off	✓ On/Off		
DI7:[0x00]Disabled	Off	✓ On/Off		
DI8:[0x00]Disabled	Off	On/Off		
DI9:[0x00]Disabled	ON	✓ On/Off		
DI10:[0x00]Disabled	Off	On/Off		
DI11:[0x00]Disabled	Off	C On/Off		
DI12:[0x00]Disabled	Off	On/Off		
DI 13:[0x00]Disabled	Off	On/Off		
DI14:[0x00]Disabled	x00]Disabled Off On/Off			
> Digital Output(DO) Enable DO Contro	Status	Status Enable		
DO1:[0x00]Disabled	Off	Off On/Off		
DO2:[0x00]Disabled	Disabled Off On/Off			
DO3:[0x00]Disabled	Off On/Off			
DO4:[0x00]Disabled	Off	Off On/Off		
DO5:[0x00]Disabled	Off	On/Off		
V Digital Input(DI): ASDA-A2 Servo:Pt Mode	Status	Enable		
DI1:[0x00]Disabled	ON	✓ On/Off		
DI2:[0x00]Disabled	Off	On/Off		
DI3:[0x00]Disabled	Off	off On/Off		
DI4:[0x00]Disabled	Off	Off On/Off		
DI5:[0x00]Disab ASDA-Soft	3 Off	On/Off		
DI6:[0x00]Disab	Off	On/Off		
DI7:[0x00]Disab	Off	On/Off		
DI8:[0x00]Disab	Off	On/Off		
DI9:[0x00]Disab	Off	On/Off		

Off

Off

Off

Off

Off

Status

Off

Off Off

Off

Off

否(N)

Enable DO Control

On/Off

On/Off

On/Off

On/Off

On/Off

Enab

If users desire to close all DI status,

click **Reflash**. The prompt window will pop up starting from DI1.

> Digital Input(DI) : ASDA-A2 Servo:Pt Mode	Status	Enable
DI1:[0x00]Disabled	Off	On/Off
DI2:[0x00]Disabled	Off	On/Off
DI3:[0x00]Disabled	Off	On/Off
DI4:[0x00]Disabled	Off	✓ On/Off
DI5:[0x00]Disabled	Off	On/Off
DI6:[0x00]Disabled	Off	✓ On/Off
DI7:[0x00]Disabled	Off	✓ On/Off
DI8:[0x00]Disabled	Off	On/Off
DI9:[0x00]Disabled	Off	✓ On/Off
DI 10:[0x00]Disabled	Off	On/Off
DI11:[0x00]Disabled	Off	On/Off
DI12:[0x00]Disabled	Off	On/Off
DI13:[0x00]Disabled	Off	On/Off
DI14:[0x00]Disabled	Off	On/Off
➢ Digital Output(DO)	Status	Enable
DO 1:[0x00]Disabled	Off	On/Off
DO2:[0x00]Disabled	Off	On/Off
DO3:[0x00]Disabled	Off	On/Off
DO4:[0x00]Disabled	Off	On/Off
DO5:[0x00]Disabled	Off	On/Off

Close all DI, it will return to the original screen.

Disable: Click this to disconnect the communication if users need to pause DI/O.

➢ Digital Input(DI) : ASDA-A2 Servo:Pt Mode	Status	Enable
DI1:[0x00]Disabled	Off	On/Off
DI2:[0x00]Disabled	Off	On/Off
DI3:[0x00]Disabled	Off	On/Off
DI4:[0x00]Disabled	Off	On/Off
DI5:[0x00]Disabled	Off	On/Off
DI6:[0x00]Disabled	Off	On/Off
DI7:[0x00]Disabled	Off	On/Off
DI8:[0x00]Disabled	Off	On/Off
DI9:[0x00]Disabled	Off	On/Off
DI10:[0x00]Disabled	Off	On/Off
DI11:[0x00]Disabled	Off	On/Off
DI12:[0x00]Disabled	Off	On/Off
DI13:[0x00]Disabled	Off	On/Off
DI 14: [0x00] Disabled	Off	On/Off
➢ Digital Output(DO)	Status	Enable
DO 1:[0x00]Disabled	Off	On/Off
DO2:[0x00]Disabled	Off	On/Off
DO3:[0x00]Disabled	Off	On/Off
DO4:[0x00]Disabled	Off	On/Off
DO5:[0x00]Disabled	Off	On/Off

Click "Disable",
the status
columns will
become red.
Click "Enable"
again to
resume it.

V Digital Input(DI) : ASDA-A2 Servo:Pt Mode	Status	Enable
DI1:[0x00]Disabled		On/Off
DI2:[0x00]Disabled		On/Off
DI3:[0x00]Disabled		On/Off
DI4:[0x00]Disabled		On/Off
DI5:[0x00]Disabled		On/Off
DI6:[0x00]Disabled		On/Off
DI7:[0x00]Disabled		On/Off
DI8:[0x00]Disabled		On/Off
DI9:[0x00]Disabled		On/Off
DI 10:[0x00]Disabled		On/Off
DI11:[0x00]Disabled		On/Off
DI12:[0x00]Disabled		On/Off
DI13:[0x00]Disabled		On/Off
DI14:[0x00]Disabled		On/Off
<pre>> Digital Output(DO)</pre> Enable DO Control	Status	Enable
DO1:[0x00]Disabled		On/Off
DO2:[0x00]Disabled		On/Off
DO3:[0x00]Disabled		On/Off
DO4:[0x00]Disabled		On/Off
DO5:[0x00]Disabled		On/Off

▼ Keep DI control status when closing this form

In some situations, users would like to keep DI status after the window is closed. Click this function to keep the current DI status.



Do not click this if the controller has connected to the servo drive and used DI/O control function. If DI/O control is not properly closed, it might pose danger.

Enable DO Control

If desire to use DO contact to conduct simulation control, check this item will activate the communication control. Users could force to frequently open or close the DO contact.

ASDA-Soft User Guide

🗸 Digital Output(DO)	Enable DO Control	Status	Enable
DO1:[0x00]Disabled		Off	On/Off
DO2:[0x00]Disabled		Off	On/Off
DO3:[0x00]Disabled		Off	On/Off
DO4:[0x00]Disabled		Off	On/Off
DO5:[0x00]Disabled		Off	On/Off



Do not click this if the controller has connected to the servo drive and used DI/O control function. If DI/O control is not properly closed, it might pose danger.

JOG

If the positioning point is not within the range which specified by the encoder, then users can use simulated handwheel to adjust coordinates position through software communication:



Followings are the operation steps:

Step 1 Setup JOG speed. Users could set the motor speed as the JOG speed.

Step 2 If it needs to change the motor's moving direction, click **Direction In** will do.

Step 3 Check Forced Srv ON to control.

Step 4 Use

to control motor's moving direction.



The position control is operated by JOG control. Please follow the instructions below:

- 1. Make sure the hardware switch or the DO signal of emergency stop can work. Digital inputs and outputs can be used for testing.
- Make sure the communication is normally connected. Communication breakdown might cause abnormal operation of the motor.
- 3. During the auto operation, press the emergency stop button or issue the command to stop the motor if there is any abnormality.

3.4 System Analysis



Users learn to adjust the parameter via system analysis. The analysis tool, Bode Plot assist users know more about system's stability and the related information of resonance frequency.

System analysis is an advanced analysis tool. Basic scientific theory and principle foundation is required. Please refer to the related documentations.

It is suggested to pay attention to the actual operation from time to time. When adjusting the gain, take the machinery limit into consideration. This system detects the bandwidth only by the slightly move, which is different from the actual operation. It is better to leave some margin for the machinery to deal with the problem when facing the change of operation, such as the change of load or the loosen belt caused by the long-time operation.



This section will be divided into two parts:

[Interface Introduction]: Introduce the definition of each button and icon.

(Operation Description): Describe how to monitor time domain and the Bold Plot of frequency domain with the function of tuning.

Interface Introduction

We divide the window into five parts:

📲 系統分析					
🖻 🗖 📈	0			(
	Run	分析類型: [1]:速度開	環 💽 📘	額定電流(%) 50	
					\sim
共振頻家1 886	dB=-1	dB			
共振頻率2 0	dB=0 2	11 33			
共振頻率3 0	dB=0	20.67			
設為B-Lii	ne	0.00 0-		(4)	
		20.67		\sim	
A-Line	B-Line	41.33			
P1-37 35		52.00			
P2-00 141				100	1000 2000
P2-02 0					
P2-04 665		so oo deg			I CONTRACTOR I CONTRACTOR I
P2-06 90		20.00			
P2-23 180					
P2-24 6		50,00			
P2-25 18					
P2-26 90		50.00			
P2-43 1000		20.00			
P2-44 0		80.00	10		1000 2000
P2-45 1000			10	100	1000 2000
P2-46 0					
P2-49 15		■ 🗸 A-Line:分析結果	119 Hz	-107 Deg	
3		■ Faline:比對資料	Hz	Deg	
		A CONTRACTOR OF A CONTRACTOR OFTA CONTRACTOR O	10		
· · · · · · · · · · · · · · · · · · ·	-				

- 1.) Toolbar: Users can setup the basic function of system analysis.
- 2.) Resonance frequency: Three groups of resonance frequency (dB value) and frequency point will show in this section.
- 3.) Gain value: When the system analysis is complete, the internal gain value of the servo drive will be uploaded to this column. Column A and B is for comparing the old and updated value.
- 4.) Window of Bode Plot: Data after systemic analysis will be shown in these two sections: Purple for Gain, blue for Phase.
- 5.) Instant message: When moving the mouse around the curve in Bold Plot, the following two columns, A-Line (color pink) and B-Line (color yellow), will show the instant value.

[Toolbar]

a.) 🖆 open dit file: Open the saved file for analysis. *.dit is the filename extension:



b.) B Save as dit file: Data in A-Line or B-Line can be saved as *.dit file. Click the icon, a message window will pop up:

E ASDA_So	ft	
	儲存項目 ・ 儲存A-Line ・ 儲存B-Line Cancel OK	

Then, the following window pops up:

另存新檔					P 🛛
儲存於(]):	@ 桌面		•	←)]+
 我最近的文件 	 裁的文件 教的電腦 網路上的芳 細路 上的芳 ASD FTP Google 雪端 遭 捷徑 - ASD 遭 捷徑 - Ether 	郊 硬碟 A_Soft 手冊規劃 MET-IP, CIP			
	檔名(N):	Ī		-	儲存(2)
	存檔類型(I):	*.dit		•	取消

c.) Show all data in screen: This function can recover the Bode Plot to the initial



captured screen.

d.) **Run** Execution: It is used to execute the function of system analysis.

Users have to Servo ON the drive first so as to do system analysis. When clicking this button in Servo Off status, the following reminder will pop up:

ASDA-Soft User Guide

F System Analysis Wizard

Warning !

Press "Yes", the function will be activated immediately. If you don't want, press "Cancel" to return

Yes

Cancel

Chapter 3 Advanced Operation



When it is set to Servo ON, click up:

- • •



When you are finished using this function, do the homing otherwise it will create the risk of unexpected.

Please observe the instructions to avoid the unnecessary danger.

Click	Yes		, it star	ts to and	alysis	s, see as	s belo	ow:
		📲 Sy	ystem Analysi	is Wizard				
			Ĩ					
					En	nergent	Stop	

When analyzing, any problem occurs which requires emergency stop, users can

click [Emergency Stop] to stop analysis (apart from the hardware switch). The following window will pop up when click [Emergency Stop]. Please Servo Off the servo drive and troubleshoot the alarm immediately.

Click	Cancel	to close the exe	ecuting windo	w.
	Rec. A Live			
	System Analysis Wi	zard		
		Emergent	Stop	
When the analys	sis is compl	ete, a reminder	will pop up:	
🖉 System Analysis Wizard			Delta ASDA-Soft	×
			Surtom analyzis finisha	dı



After analysis, the value will be saved in A-Line. Scope screen of Gain and Phase will show the result:



ASDA-Soft User Guide Speed command Processing Processing Speed Control Block Diagram Resonant Suppression Block Diagram



[1] : Speed Loop	Speed control loop (in red frame) includes four control units, see as above. Analysis the Bode plot according to KP (from speed control) and KI (from integral). It will also analyze the framework, such as resonance suppression and current loop. The result can help to improve the system's stability.
[2] : System Module	System module mainly analyzes the hardware mechanism (in green frame). When users need to analyze the allowable command response or resonance features, or when abnormal vibration occurs and cannot be cleared by on-site personnel, this function can be used to analyze the hardware condition remotely.

Please note that the actual variation of some transmission mechanism, e.g. belt, cannot be observed through Bode Plot. It is suggested not to use system module to analyze the data.



Generally, the setting value is under 100%. Exceeding the range might lose the efficiency of the analysis data.

ABNING

[Resonance Frequency]

Resonance 1	-	dB=-
Resonance 2	-	dB=-
Resonance 3	-	dB=-

When the analysis is complete, Phase and Gain will show here. ASDA-A2 series servo drive provides three parameters of resonance suppression. Thus, three screens are provided as well and the top three value of resonance points will display in this section.

Users can manually enter resonance frequency and the value into parameter groups of resonance suppression, [Auto tuning].



[Gain Value]

P2-23 Notch filter Freq (1):	Hz(50~1000)	1000	\mathbf{V}
P2-24 Notch filter Gain (1):	dB(0~32)	0	
P2-43 Notch filter Freq (2):	Hz(50~2000)	1000	
2-44 Notch filter Gain (2):	dB(0~32)	0	
P2-45 Notch filter Freq (3):	Hz(50~2000)	1000	
P2-46 Notch filter Gain (3):	dB(0~32)	0	V

	Set to B-Line				
	A-Line	B-Line			
P1-37	0	0			
P2-00	47	47			
P2-02	0	0			
P2-04	188	188			
P2-06	30	30			
P2-23	1000	1000			
P2-24	0	0			
P2-25	55	55			
P2-26	30	30			
P2-43	1000	1000			
P2-44	0	0			
P2-45	1000	1000			
P2-46	0	0			
P2-49	15	15			

The gain parameter will be shown in A-Line section. Use the function of

Set to B-Line to fill in the gain value to B-Line. When re-adjusting the gain value and starts to analyze, the new gain value will be shown in A-Line. Users can analyze the value according to the curve of Bode Plot, which is on the right.

[Window of Bode Plot]

Users can observe the frequency response via Bode Plot. The Bode Plot consists of two graphs, Gain Magnitude (It represents the variation of frequency which is relative to decibel) and Phase (It represents the variation of frequency which is relative to phase)

The X axis of gain magnitude and phase is sampling frequency. Its sampling range is 1 ~ 2000Hz.



Definition of gain tuning:

Gain Margin, GM: Phase of Bode Plot corresponds to the point of decibel (dB) at -180

°. Please refer to the dotted line in red color. GM = 0-

(corresponding Gain value).

Phase Margin, PM: Gain value of Bode Plot corresponds to the degree value of phase at rightmost 0 dB point. Please refer to the dotted line in orange color.

According the definition mentioned above, followings are the tuning principles:

 PM value: The phase value that corresponded by gain value which is at rightmost 0dB point should plus 180°. It is suggested to adjust the degree between 30 ~ 40. See the graph above.

The phase degree corresponded by $0dB: -136^{\circ} + 180^{\circ} = 44^{\circ}$, which is close to the suggested range.

(2) GM value: Decibel value (dB) which corresponded by the phase degree at -180° should be smaller than 10dB. See the graph above.

0 - (-9.32)(the gain value corresponded by -180°) = 9.32, which is within the suggested range.



Spectral analysis can help to correctly setup the frequency of **Notch filter** and check if the gain is optimized and reserves enough margin for mechanism ($6 \sim 10 \text{ dB}$).

[Instant Message]

🗧 🔽 A-Line : Analysis Data	99 Hz	49 Deg	, -81 dB
🗧 🗹 B-Line : Compare Data	101 Hz	47 Deg	-92 dB

When the cursor is moving around the curve, the data that cursor clicked will be shown in the window of instant message.

Operation Description

The following example describes the using method and operation steps:

- Step 1: Use "Auto Tuning" to conduct the first inertia estimation. Please refer to the section of "Tuning" for tuning procedure.
- Step 2: After tuning, please start system analysis.



From the result, the size of resonance point at 697 Hz is 32 dB. Adjust the parameter of the first resonance point by this data.

Step 3: Gain tuning for the second time.

🍳 Auto Gain Tuning				
Off - line Computation			HELP	🗖 Enable Gain Control Panel
ASDA-A2	•			
	_			Selecting Enable Gain Control Panel will temporarily change the operating
Rigid Ho	olding: 1	-		mode to Pr. Mode (P1-01 = 001)
			and alter the following parameters:	
Bandwidth: 120 Hz Ratio of inertia: 1.5			P1-15 ~ 18 , P1-34 ~ 36	
				P2-10 ~ 17, P2-36 ~ 37
				P3-06, P4-07
	Compute	Read F	Parameter	All parameter changes are temporary.
	Calculation	7	In Drive	Closing the control panel and cycling nower on the amplifier will restore the
P1-37 Load Inertia Ratio :	1.5	-	1.5	original parameter values.
P2-00 Position Loop P gain :	188	7	188	
P2-02 Position Feedforward :	50	×	50	
P2-04 Speed Loop P gain :	753	7	753	
P2-06 Speed Loop I gain :	120	7	120	
P2-25 OSC. Reject filter :	13	×	13	
P2-26 External Noise Reject :	120	Z	120	
P2-49 Speed Detection Filter and Jitter Su	[0E]: 850 💌	< I	0E]: 850 💌	
Bandwidth(Hz): (max=1023)	120		120	
P2-47=0: Disable Auto Resonance Suppression	Mode 💌	<u> </u>	(1-2)	
P2-23 Notch filter Freq (1):	1000	Hz(50~1000)	1000	
P2-24 Notch filter Gain (1):		dB(0~32)	0	
P2-43 Notch filter Freq (2):	697	·	197	(4 4)
P2-44 Notch filter Gain (2):	32	7	32	(1-1)
P2-45 Notch filter Freq (3):	1000	7	1000	
P2-46 Notch filter Gain (3):		7	0	

Fill in the resonance frequency and decibel value (dB) to the second Notch filter (P2-43 ~ P2-44).

Then, click "Download parameter" ==>>

Step	4:	The	second	system	analy	vsis
p						,



The size of resonance point at 664 Hz is about 3 ~ 4 dB. Thus, adjust Notch filter again.

Step 5: Gain tuning for the third time.

🍳 Auto Gain Tuning				
Off - line Computation			😮 HELP	🗖 Enable Gain Control Panel
ASDA-A2	-			Selecting Enable Cain Control Bonel
				will temporarily change the operating
Rigid Ho	lding: 1	-		mode to Pr. Mode (P1-01 = 001) and alter the following parameters:
Bandwidth: 120 Hz Ratio of in	nertia: 1.5			P0-06 ~ 08
				P1-15 ~ 18 , P1-34 ~ 36 P2-10 ~ 17 , P2-36 ~ 37
				P3-06, P4-07
	Compute	Rea	d Parameter	All parameter changes are temporary.
	Calculation		In Drive	Closing the control panel and cycling nower on the amplifier will restore the
P1-37 Load Inertia Ratio :	1.5		1.5	original parameter values.
P2-00 Position Loop P gain :	188		188	
P2-02 Position Feedforward : P2-04 Speed Loop Pidain :	50		753	
P2-06 Speed Loop Ligain :	120		120	
P2-25 OSC. Reject filter :	13	7	13	
P2-26 External Noise Reject :	120		120	
P2-49 Speed Detection Filter and Jitter Su	[0E]: 850 💌	✓ <<===	[0E]: 850 🔻	
Bandwidth(Hz): (max=1023)	120		120	
P2-47=0: Disable Auto Resonance Suppression	Mode 💌	▼ ===>>	(1-2)	
P2-23 Notch filter Freq (1):	1000	Hz(50~1000)	1000	
P2-24 Notch filter Gain (1):	0	✓ dB(0~32)	0	
P2-43 Notch filter Freq (2):	697		697	
P2-44 Notch filter Gain (2):	32	~	32	(1-1)
P2-45 Notch filter Freq (3):	664		664	·· ·/
P2-46 Notch filter Gain (3):	15		15	

Fill in the resonance frequency and decibel value (dB) to the third Notch filter (P2-45 \sim P2-46).

Then, click "Download parameter"



Step 6: The third system analysis

From this graph, the size of resonance point is over 10 dB (about 17 dB). Try to adjust the gain again.

Step 7: Gain tuning for the fourth time.

Increase the bandwidth from 120 Hz to 200 Hz (until Phase Margin is between 30°~ 40°).

🌣 Auto Gain Tuning				
Off - line Computation			() HELP	🗖 Enable Gain Control Panel
ASDA-A2	-			
	_			Selecting Enable Gain Control Panel
Rigid Ho	olding: 1	•		mode to Pr. Mode (P1-01 = 001)
Bandwidth: 200 Hz Ratio of in	nertia: 1.5			P0-06 ~ 08 P1 15 ~ 18 P1 34 ~ 36
(a)				P2-10 ~ 17, P2-36 ~ 37
(ui)				P3-06, P4-07
(b.)	Comput	e	Read Parameter	All parameter changes are temporary. Closing the control panel and cycling
	Calculation	~	In Drive	power on the amplifier will restore the
P1-37 Load Inertia Ratio :	1.5	•	1.5	original parameter values.
P2-00 Position Loop P gain :	314	\checkmark	314	
P2-02 Position Feedforward :	50	~	50	
P2-04 Speed Loop P gain :	1256	\checkmark	1256	
P2-06 Speed Loop I gain :	200		200	
P2-25 OSC. Reject filter :	8	~	8	
P2-26 External Noise Reject :	200		200	
P2-49 Speed Detection Filter and Jitter Su	[07]:1400 💌	•	<<=== [07]:1400 💌	
Bandwidth(Hz): (max=1023)	200	÷	200	
P2-47=0: Disable Auto Resonance Suppression	Mode 💌	R.	===>> (C.)	
P2-23 Notch filter Freq (1):	1000		Hz(50~1000) 1000	
P2-24 Notch filter Gain (1):	0		dB(0~32) 0	
P2-43 Notch filter Freq (2):	697		697	
P2-44 Notch filter Gain (2):	32		32	
P2-45 Notch filter Freq (3):	664		664	
P2-46 Notch filter Gain (3):	15	V	15	

- a.) Adjust bandwidth
- b.) Compute the gain
- c.) Load in parameters

Step 8: The fourth system analysis



The size of resonance point at 1445 Hz is about -2 dB. Adjust Notch filter again.

Step 9: Gain tuning for the fifth time.

🖉 Auto Gain Tuning				
Off - line Computation			HELP	🗖 Enable Gain Control Panel
ASDA-A2	-			Selecting Enable Cain Control Banal
		_		will temporarily change the operating
Rigid Ho	Iding: 1	-		mode to Pr. Mode (P1-01 = 001) and alter the following parameters:
Bandwidth: 200 Hz Ratio of in	ertia: 1.5			P0.06 ~ 08
L				P1-15 ~ 18 , P1-34 ~ 36 P2-10 ~ 17 , P2-36 ~ 37
				P3-06, P4-07
	Compute	Read	Parameter	All parameter changes are temporary.
	Calculation	 7	In Drive	Closing the control panel and cycling nower on the amplifier will restore the
P1-37 Load Inertia Ratio :	1.5	·	1.5	original parameter values.
P2-00 Position Loop P gain :	314	7	314	
P2-02 Position Feedforward :	50	•	50	
P2-04 Speed Loop P gain :	1256		1256	
P2-06 Speed Loop I gain :	200		200	
P2-25 OSC. Reject filter :	8	7	8	
P2-26 External Noise Reject :	200	Z	200	
P2-49 Speed Detection Filter and Jitter Su	[07]:1400 🔻 🕅	×<====	[07]:1400 💌	
Bandwidth(Hz): (max=1023)	200		200	
P2-47=0: Disable Auto Resonance Suppression	Mode 🔻 🕓	===>>		
P2-23 Notch filter Freq (1):	697	Hz(50~1000)	697	
P2-24 Notch filter Gain (1):	32	dB(0~32)	32	
P2-43 Notch filter Freq (2):	1445	7	1445	
P2-44 Notch filter Gain (2):	9 🕟	7	9	
P2-45 Notch filter Freq (3):	664	7	664	
P2-46 Notch filter Gain (3):	15	7	15	

Since we are going to use the third Notch filter, plus the range of the first Notch filter is only 1000 Hz, the following adjustments should be done:

- a.) Set parameter P2-47 to 1, auto resonance suppression. The value will set back to 0 when the system is stable. Also, it will store the resonance suppression point automatically. If not, please re-power on or set the value to 1 and re-estimate.
- b.) Move the second Notch filter (P2-43 ~ P2-45) to the first Notch filter (P2-23 ~ P2-24).
- c.) Set the second Notch filter (P2-43 ~ P2-44) to 1445 and 9.

Step 10: The fifth system analysis. The gain value is over the range of 10 dB.



Step 11: Compare the data of A-Line and B-Line. The red curve is newly adjusted and the green one is the original one after the first gain setting. Apply the function of system analysis to suppress resonance point and adjust the system until it is stable.



A-Line: Before gain tuning; B-Line: After gain tuning.

3.5 Alarm Information



Users could know the error and basic troubleshooting via "Alarm Information" from ASDA-Soft, and then quickly clear the alarm and resume tuning.

Alarm Information : ASD	A-A2 Servo		- 8
		ALE : 0x 1 O Help	
Alarm A	larm History Encoder	Error View	
Alarm Code	0x11	Show Alarm Alarm Reset	
Alarm Name	Encoder error (Position det	ector fault)	
Alarm Content	The pulse signal generated	by the encoder is in error.	
Alarm Reason		Alarm Check	Alarm Handle
The wiring of the encoder is	s in error.	Check if all wiring connections are conducted correctly by the wiring information in the user manual.	Correctly conduct the wiring.
Encoder is loose.		Examine CN2 terminal of the servo drive and the encoder connector.	Install the motor again.
The wiring of encoder is de	fective.	Examine the wiring between CN2 terminal of the servo drive and the encoder connector of the servo motor and check if all connections are tight.	Conduct the wiring again.
Encoder is damaged.		The operation of the motor is not normal.	Repair or replace the motor.
1			

This section is divided into three parts:

[Basic operation] : Introduce some basic operations

[Current alarm]: Describe the alarm information and content

[Alarm history] : Describe the definition of alarm history

Basic Operation





Since it is Off line, the software is unable to update the current alarm information and show in the screen. Click to close the pop-up window, the main screen will show nothing as the following one:

ASDA-Soft User Guide

Alarm A	larm History Enc	oder Error View	
Alarm Code	0x00	Show Alarm Alarm F	Reset
Alarm Name	Alarm Reset		
Alarm Content			
m Reason		Alarm Check	Alarm Handle

Users can look up alarm messages by entering the alarm number in Off line status. The system will show the alarm description for users' reference.

		ALE : 0)x 1	 ALE : 0× 1
Alarm	Alarm History	Encoder Error View	1	

Current Alarm

Alarm can be used to check the alarm, causes, checking methods and corrective actions. Users can troubleshoot the problem according to the above mentioned information. Followings are the description of each item:

Alarm Alarm History	Encoder Erro	or View					
Alarm Code 0x11		Show Alarm Alarm Reset					
Alarm Name Encoder err	incoder error (Position detector fault)						
Alarm Content The pulse si	The pulse signal generated by the encoder is in error.						
Alarm Reason	A	Alarm Check	Alarm Handle	_			
A The wiring of the encoder is in error.	C t	Check if all wiring connections are conducted correctly by he wiring information in the user manual.	Correctly conduct the wiring.				
B Encoder is loose.	E	Examine CN2 terminal of the servo drive and the encoder connector.	Install the motor again.				
C The wiring of encoder is defective.	E d d	Examine the wiring between CN2 terminal of the servo drive and the encoder connector of the servo motor and theck if all connections are tight.	Conduct the wiring again. d				
D Encoder is damaged.	Т	The operation of the motor is not normal.	Repair or replace the motor.				
E							
F							
G							
1							

Chapter 3 Advanced Operation

Icon	Function Description
Alarm Code 0x11	When software and servo drive is ON LINE , it will show the current alarm number. If different alarm occurs during operation, "Alarm Number" will display the last one.
Alarm Name Encoder error (Position detector fault)	According to the "Alarm Number", here displays the alarm name.
Alarm Content The pulse signal generated by the encoder is in error.	It describes the definition of alarm.
Alarm Reason A The wiring of the encoder is in error. B Encoder is loose. C The wiring of encoder is defective. D Encoder is damaged. E F	Users can know the causes of alarm.
Alarm Check Check if all wiring connections are conducted correctly by the wiring information in the user manual. Examine CN2 terminal of the servo drive and the encoder connector. Examine the wiring between CN2 terminal of the servo drive and the encoder connector of the servo motor and check if all connections are tight. The operation of the motor is not normal.	According to different "Alarm Causes", it provides the checking methods.
Alarm Handle Correctly conduct the wiring. Install the motor again. Conduct the wiring again. Repair or replace the motor.	This column provides corrective actions for users to troubleshoot the problem.
Show Alarm	Click this button to access the most updated alarm. If the alarm number showed in servo drive's panel changes, this can help to update the alarm information of the software.

Alarm Reset If the alarm can be cleared without re-power on the servo drive, click this button when the alarm is cleared.

Alarm History

Click Alarm History, the software will access parameter P4-00 ~ P4-04 (Alarm record) and display the related information in the following columns. Users can use this function to monitor the variation of alarms.

	Alarm Code	Alarm Name	Alarm Content
1	0x11	Encoder error (Positi	The pulse signal generated by the encoder is in error.
2	0x20	Serial communication	RS232/485 communication time out.
3	0x22	Input power phase k	One phase of the input power is loss.
4	0x13	Emergency stop activ	Emergency stop is activated.
5	0x13	Emergency stop activ	Emergency stop is activated.

3.6 Parameter Editor



Parameter Editor integrates parameter setting and parameter conversion. Users usually setup parameters through the panel of the servo drive. With Parameter Editor, it is more convenient to complete the setting by the software now. Its main features are as the followings:

- a.) A complete group list enables users to switch the group setting in a very convenient way.
- b.) It provides the information of parameter definition and setting range.
- c.) It provides the parameter configuration, parameter conversion and parameter comparison. This can help to deal with the problems that brought by different firmware version.
- d.) Right click the mouse, and users can edit "Frequently Used Parameters". Setup the specified parameter in this interface. This would be a short cut to check or adjust parameters.
- e.) Double click the description, which is on the right, users can access the definition and description of each parameter.

Parameter Edito	r1 : [ASDA-A2	Servo] From D	rive					×
🖻 🖪 🛛 🗐 🗐	88	- 44	8 🖸					
P0-XX P1-XX	P2-XX	P3-XX P4-	XX P5-X	X P6-XX	P7-XX			
			*		17 200	lo c II		
V 1.046	Code	value		Min 1.04C	Max	Default	Description	- 61
P0 - 00 ×	VER			1.046	1.046	1.046	Firmware Version	
P0-01	ALE			0x0000	UXFFFF	0x0000	Drive Pault Code	-
P0 - 02	515			-300	127	1	Drive Status	-
P0 - 03	MON			0x0000	0x0077	0x0000	Analog Monitor Output	-
P0 - 04				0x00000000	0x20FFFFFF	0x00000000	Reserved	-
P0 - 05				0x00000000	0x20FFFFFF	0x00000000	Reserved	-
P0 - 06				0x00000000	0x20FFFFFF	0x00000000	Reserved	-
P0 - 07	TOON		Unio	0x0000000	0x20FFFFFF	0x00000000	Reserved	-
	CMI		nour	0	00000	0	Servo Starup Time	-
P0 - 09	CMI			-2147403040	2147403047	0	Status Monitor 1	-
P0 - 10	CM2			-2147403040	2147403047	0	Status Monitor 2	-
P0 - 11	CMS			-2147403040	214/40304/	0	Status Monitor 3	-
P0 - 12	CM4			-2147403040	214/40304/	0	Status Monitor 4	-
P0 - 13	CMS			-214/403040	214/40304/	0	Deserved	-
				-32760	32767	0	Reserved	-
P0 - 15 🗮				-32/68	32/6/	0	Reserved	-
P0 - 10	CM1A			-32700	32/07	0	Reserved Diseless Chatse Manifes 1	-
P0 - 17	CMIA			0	127	0	Display Status Monitor 1	-
P0 - 10	CM2A			0	127	0	Display Status Monitor 2	- 11
P0 - 19	CMAA			0	127	0	Display Status Monitor 5	-
P0 - 21	CMEA			0	127	0	Display Status Monitor F	-
P0 - 22	CHIJA			-32768	32767	0	Deproy Status Molillor 5	-
P0 - 23				-32768	32767	0	Deserved	-
P0 - 24				-32768	32767	0	Pererved	-
P0 - 25	MAP1			*	*	0×00000000	Paramenter Manning 1	-
	1.01 1				-	0,00000000	r aramenter napping 1	
★ Read Only		Set While Se	rvo OFF	🔴 Valid Aft	ter Reboot	Volatile	e Parameter 🔶 The parameter shared by	
				Note	: Double-click	the Value can	be call out the Parameter Setting Helper	11.

This section is divided into two parts:

[Interface Introduction]: Toolbar and screen of working area will be described here.

[Parameter Configuration] : It describes the function of parameter configuration, parameter conversion and parameter comparison.

Interface Introduction

PO-XX P1	1-XX P2-XX	P 3 - XX P 4	+-XX P5-	-XX P6-XX	PZ XX			÷
1.046	Code	Value	* Unit	Min	Max	Default	Description	
0 - 00 ★	VER			1.046	1.046	1.046	Firmware Version	
0-01	ALE			0x0000	0xFFFF	0x0000	Drive Fault Code	
0 - 02	STS			-300	127	1	Drive Status	
0 - 03	MON	4		0x0000	0x0077	0x0000	Analog Monitor Output	
0 - 04			7	0x00000000	0x20FFFFFF	0x00000000	Reserved	•
0 - 05				0x00000000	0x20FFFFFF	0x00000000	Reserved	
0 - 06				0x00000000	0x20FFFFFF	0x00000000	Reserved	
0 - 07				0x00000000	0x20FFFFFF	0x00000000	Reserved	
0 - 08 📩	TSON		Hour	0	65535	0	Servo Startup Time	
0 - 09 📩	CM1			-2147483648	2147483647	0	Status Monitor 1	
0 - 10 📩	CM2			-2147483648	2147483647	0	Status Monitor 2	
0 - 11 📩	CM3			-2147483648	2147483647	0	Status Monitor 3	
0 - 12 📩	CM4			-2147483648	2147483647	0	Status Monitor 4	
) - 13 📩	CM5			-2147483648	2147483647	0	Status Monitor 5	
0 - 14 📩				-32768	32767	0	Reserved	
0 - 15 ★				-32768	32767	0	Reserved	
) - 16 ★				-32768	32767	0	Reserved	
) - 17	CM1A			0	127	0	Display Status Monitor 1	
0 - 18	CM2A			0	127	0	Display Status Monitor 2	
0 - 19	CM3A			0	127	0	Display Status Monitor 3	-
) - 20	CM4A			0	127	0	Display Status Monitor 4	-
0 - 21	CM5A			0	127	0	Display Status Monitor 5	-
0 - 22 📩				-32768	32767	0	Reserved	
0 - 23 ★				-32768	32767	0	Reserved	
0 - 24 📩				-32768	32767	0	Reserved	-
0 - 25	MAP1			*	*	0x00000000	Paramenter Mapping 1	
			-	- 11	1			

- 1.) Toolbar: Users can access, compare, converse and print parameters.
- 2.) Parameters in working area: Users can setup parameter value, create the frequently used group of parameters and access the description of parameters.

[Toolbar]



We divide the toolbar into five sections:

🖻 📕	: Save / Access the file
1	: Upload / Download parameters
🖇 🖶 🔳	: Compare, converse and configure parameters
i	: Print parameters; Password for protecting data array.
🗛 🖨 🚷	: Other functions

Followings are the description of each button:

Open parameter file 😂: Select the file. *.par is its filename extension.



Save parameter file E: There are two storage format to save parameters from working area:

儲存參數檔	?			
儲存於①: 🔁 demo kit	- E 😁 🖬 -			
10000000000000000000000000000000000000		1		
BARCERSAT		存檔類型(<u>T</u>):	Parameter File [*.par]	•
桌面			Parameter File [*.par]	
我的交件			Text File [*.txt]	
ALA-AL-TE DIS				
9761 946,000				
網路上的芳鄉				
檔名(<u>11</u>); 左始相利(T):	✓ 儲存⑥	0		

*.par: It is the file format of ASDA-Soft. Open it by the way of opening the parameter file. *.txt: Save a parameter file as a Text file. See as below:

ASDA-A2 Servo							
[Paramter]	[代碼]	[參數値]	[單位]	[最小値]	[最大値]	[預設値]	「設 問」
P0 - 00	VER	49	(null)	3684541	2097201	3684541	· 新體版本
P0 - 01	ALE	0x 0000	(null)	0x 0000	ØxFFFF	0x 0000	驅動器錯誤狀能顯示
P0 - 02	STS	1	(null)	-300	127	-300	驅動器狀態顯示
P0 - 03	MON	0×0000	(null)	0×0000	0x0077	0x 0000	續比輸出監控
P0 - 04		0x 00000000	(null)	0x00000000	0x20FFFFFF	0x 00000000	監視變數證定 1
P0 - 05		0×00000000	(null)	0×00000000	0x20FFFFFF	0x 00000000	監視戀數設定 2
P0 - 06		0x 00000000	(null)	0x00000000	0x20FFFFFF	0x00000000	藍視鑾數設定 3
P0 - 07		0x 00000000	(null)	0x 8 8 8 8 8 8 8 8	0x20FFFFFF	0x 00000000	監視變數設定 4
P0 - 08	TSON	0	н	9	65535	9	伺服啓動時間
P0 - 09	CH1	0	(null)	-2147483648	2147483647	-2147483648	狀態監控暫存器 1
P0 - 10	CH2	8	(null)	-2147483648	2147483647	-2147483648	狀態監控暫存器 2
P0 - 11	CH3	0	(null)	-2147483648	2147483647	-2147483648	狀態監控暫存器 3
P0 - 12	CH4	0	(null)	-2147483648	2147483647	-2147483648	狀態監控暫存器 4
P0 - 13	CH5	9	(null)	-2147483648	2147483647	-2147483648	狀態監控暫存器 5
P0 - 14		0	(null)	-32768	32767	-32768	保留
P0 - 15		0	(null)	-32768	32767	-32768	保留
P0 - 16		9	(null)	-32768	32767	-32768	保留
P0 - 17	CM1A	0	(null)	0	127	8	選擇狀態監控暫存器1的顯示內容
P0 - 18	CM2A	9	(null)	8	127	8	選擇狀態監控暫存器2的顯示內容
P0 - 19	CM3A	0	(null)	0	127	0	選擇狀態監控暫存器3的顯示內容
P0 - 20	CM4A	0	(null)	0	127	8	選擇狀態監控暫存器4的顯示內容
P0 - 21	CM5A	9	(null)	8	127	8	選擇狀態監控暫存器5的顯示內容
P0 - 22		0	(null)	-32768	32767	-32768	保留
P0 - 23		9	(null)	-32768	32767	-32768	保留
P0 - 24		8	(null)	-32768	32767	-32768	保留
P0 - 25	MAP1	0x 00000000	(null)	0x00000000	0xFFFFFFFF	0x0000000	映射參數#1
P0 - 26	MAP2	0x 00000000	(null)	0x00000000	ØxFFFFFFFF	0x 00000000	映射參數#2
P0 - 27	MAP3	0×00000000	(null)	0×00000000	0xFFFFFFFF	0×0000000	映射參數#3

Access parameters 1 : When the communication is connected, this function can help to access the parameter group of the servo drive and display in parameter list. Then, a reminder will pop up:

Delta ASDA-Soft	×
Read from Parameter File	e OK !

Write-in parameters 😼: When the communication is connected, this function can help to download parameters from the working area into the servo drive. Click this function and the following window will pop up:

🖑 ASDA_Soft	- • ×
Write Parameters to	Driver
Write Option : • Write Changed Parameters • Write All Parameters • Write M-Group Parameters • Write Non M-Group Parameters	• • • Image: Cancel

lcon	Function Description
Only download the parameter that has been changed.	The system will compare the default value and the one in working area. Then download the one that is different from the default value into the servo drive.
Download all parameter	All parameter will be downloaded into the servo drive.
Parameter comparisor	When the communication is connected, compare the parameter value in working area to the one in servo drive or the saved file by this function. Please refer to the section of [Parameter Configuration] for detailed explanation.
Parameter conversion	When the communication is connected, select the firmware version and convert the default value in working area. Please refer to the section of [Parameter Configuration] for detailed explanation.
Open parameter config	guration II: When the communication is connected, use this function to change the firmware version. Please refer to
section of **[Parameter Configuration]** for detailed explanation.

Print parameters 🗁: Print all parameter group in working area.

条動					
25 36%	代碼	参數值	預設値	單位 說明	
-	VER	1.045	1.045	朝體版本	
	ALE	0x0000	Охосоо	驅動器錯誤狀態顯示	
_	STS	1	1	驅動器狀態顯示	
-	MON	0x0000	0x0000	類比輸出監控	
		0x0000	0000000	監視變數設定	
		0x0000	0x0000	<u>監視變數設定</u>	
_		0x0000	0x0000	監視變數設定	
_		0x0000	0x0000		
_	ISON	0	0	Hour 何服啟動時間	
	CMI	0	0	<u> </u>	
	CM2	0	0	小能對後期大型 ##能對後期大型	
	CMA	0	0	小总量工程行物	
-	CM4	0	0	1////////////////////////////////////	
	OND	0	0		
		0	0		
_		0	0	(保留)	
	CM1A	0	0	選擇狀態監控暫存器1的顯示內容	
	CM2A	0	0	選擇狀態監控暫存器2的顯示內容	
	CM3A	0	0	選擇狀態監控暫存器3的顯示內容	
	CM4A	0	0	選擇狀態監控暫存器4的顯示內容	
	CM5A	Ő	0	選擇狀態監控暫存器5的顯示內容	
		0	0	保留	
		0	0	保留	
	-	0	0	保留	
_	MAP1	0x0000	0x0000	映射參數相	
	MAP2	0x0000	Ох0000	映射参數約	-

all parameter. Use this function to select the page.

parameters.

Page width: Align the width to display the content.

Dos Zoon ■ 201 - ► ► Page () - w10								
43 Ma	19.05	****	A	SD.	A-A2	Servo		
30.98	1 (189)	LAIF	Deax H	4-14	Att 100 (17)-6-			
	VEK	1,043	1,045		#2/RE120.49	of human million		
	ALE	020000	0200020		制品的新行的问题	为发展新居留开下		
	STS	1	1		驅動器狀態	観示		
	MON	0x000x0	000000	_	額比輸出監	拉		
		0x0000	0z000z0		監視學業設	定		
		0x0000	0x0000		能理制数的	定		
		0x0000	0x000x0		新建制数段	定		
		0x0000	0x0000		監視実験設	and the second s		
	TSON	0	0	Hour	何限皆動時	(F)		
	CMI	0	0		50/02/09 205-005	7/34		

E: Full-page: Click this to display in full page.

📲 参数列印預覽		
Eile Page Zoom.	1 of 10 🍳 🔍 🚌 🖹 Zoom 61.0 % 📲	
ASI	A-A2 Servo	
	87 M84 T	
ALL MOTION TOTAL	Qe-H4/2+8 TT	
ARA	128H MG-028612	
000000 -000000	15.78 山北130 年	
DIDON, DRDON	5.78 warst to	
1(DOM)	发扬:41:3: 	
- dillo - ollo-	髪(み 4 年) : *	
TAN IN BA	同時當會時間	
(80)		

Zoom 61.0 % : Adjust the screen size.



Pint the parameter (only for those are different from the default value); Its operation is the same as "Print Parameter "".

⁶: Password for protection setting: Setup the password for protecting data array. This can ensure value in data array will not lose caused by wrong operation.

[Note] This function is available after firmware version V1.027.

🚏 ASDA_Soft	
Password	I Protection
Data Array Protection Level (Support fro © 0:Lock the whole array C 1:Lock array address:#100~#799 C 2:Lock array address:#200~#799 C 3:Lock array address:#300~#799	m V1.027): C 4:Lock array address:#400~#799 C 5:Lock array address:#500~#799 C 6:Lock array address:#600~#799 C 7:Don't lock the array
Password : Re-type Password :	1~16777215
Lock Password Password has not yet been enabled	Unlock Password Exit

The setting range can be divided into:

Data Array Protection Loyal (Support from V1.027)						
Data Array Protection Level (Support Iroll V1.027).						
O:Lock the whole array	C 4:Lock array address:#400~#799					
1:Lock array address:#100~#799	S:Lock array address:#500~#799					
C 2:Lock array address:#200~#799	○ 6:Lock array address:#600~#799					
O 3:Lock array address:#300~#799	7:Don't lock the array					

After the setting is complete, the following window will pop up:

ASDA_Soft				
Password	d Protection			
Data Array Protection Level (Support from V1.027): Image: Constraint of the straint of the				
Password :	1~16777215			
Lock Password Set password successfully!	Unlock Password Exit			

Enter the password to remove the protection function:

📲 ASDA_Soft					
Password	1 Protection				
Data Array Protection Level (Support from V1.027): • 0:Lock the whole array • 1:Lock array address: #100~#799 • 2:Lock array address: #200~#799 • 3:Lock array address: #300~#799 • 3:Lock array address: #300~#799 • 7:Don't lock the array • 7:Don't lock the array • 7:Don't lock the array • 1:Lock array address: #300~#799 • 3:Lock array address: #300~#799 • 7:Don't lock the array • • • • • • • • • • • • • • •					
Password : Re-type Password :	1~16777215				
Lock Password	Unlock Password Exit				

Stop Operation : When the communication is connected, if users desire to stop accessing parameters, click , a warning message will pop up and stop the operation:

Delta A	SDA-S 🔀
Read H 讀取参	ailed! 數檔完成!
[OK

[Open frequently used parameters] : This could be used to setup the list of frequently used parameter group. Its features are:

a.) Centralize the parameter from different group in one page, which is easy to find and edit.

b.) Users can add or delete parameters.



When "Frequently Used Parameter Group" is opened, right click the mouse to setup the list:

Print
Message View
Open Frequently Used Parameter Group
Close Frequently Used Parameter Group
Edit Frequently Used Parameter Group

Print (V):

Message View (<u>W</u>): Click "Message View" to open the screen on the left. It is easy for users to access the software status.

Open Frequently Used Parameter Group (X): Open the page of frequently used parameter.

Close Frequently Used Parameter Group (Y): Close the page of frequently used parameter.

Edit Frequently Used Parameter Group (\underline{Z}): Edit the page of frequently used parameter.

Click this, the following window will pop up:

	Edit Frequently U	sed Parameter Group	
Group 0 Group 1 Group 2 Group 3 Group 4 Group 5 Group 6 Group 7	P0 - 00 * P0 - 01 * P0 - 02 * P0 - 03 * P0 - 04 * P0 - 05 * P0 - 06 * P0 - 07 * P0 - 08 * P0 - 10 * P0 - 11 * P0 - 12 * P0 - 13 * P0 - 14 *	<<< >>>>	De

Its operation steps are as follows:

- a.) Select the parameter group (Group $0 \sim 7$);
- b.) Select the parameter; Click the parameter and the below section will display the parameter name. See as below:



If the user selects P1-01 from Group 1, the below section will display its name, "Input Setting of Control Mode and Control Command".

c.) Then, click >>> to download it to the frequently used parameter.

Group 0 Group 1 Group 2 Group 3 Group 4 Group 5 Group 6 Group 7	Edit Frequently Use	d Parameter Group	Down
Control Mode and	Cancel	ОК	

d.) If desire to remove the parameter, click will do. For example, if users desire to remove P1-57 (Motor Crash Protection), select P1-57 on the right, and then click

ASDA_Soft					
1	Edit Freq	uently U	sed Parameter (Group	
Group 0 Group 1 Group 2 Group 3 Group 4 Group 5 Group 5 Group 6 Group 7	$\begin{array}{c} P1-48\\ P1-49\\ P1-50\\ P1-51\\ P1-52\\ P1-53\\ P1-54\\ P1-55\\ P1-56\\ P1-57\\ P1-58\\ P1-59\\ P1-60\\ \begin{array}{c} P1-61\\ P1-62 \end{array}$	A H	<<< >>>>	P1-01 P1-04 P1-06 P1-57 P1-59 P1-59 P1-61	Up Down
Reserved					
		Cancel	ок		

P1-57 will be removed.

		ASDA_Soft					
			Edit Frequent	y Used Parameter	Group		
		Group 0 Group 1 Group 2 Group 3 Group 4 Group 5 Group 6 Group 7	P1 - 48 P1 - 49 P1 - 50 P1 - 51 P1 - 52 P1 - 53 P1 - 54 P1 - 55 P1 - 56 P1 - 57 P1 - 58 P1 - 59 P1 - 59 P1 - 59 P1 - 50		P1-01 P1-04 P1-06 P1-59 P1-61	Up Down	
		Reserved	P1-61 P1-62 -			_	
			Cano	el OK			
e.)	The	up and	Down Ke	ey can b	e used to	o change the	e order.
f.)	Select a	all desired	l paramete	er, click	ОК	to comp	plete the setting.
	Paramete P0 - XX:	er Editor1 (ASDA-A2 Servo) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		P7-XX [#]Prequent	y Used Para.		
	V 1.046 P1-01 P1-04 P1-06 P1-99	Code Value CTL 0x0001 MON1 100 SFLT 0 MELT 0.0	* Unit Min 0x0000 % 0 ms 0 ms 0.0	Max Default 0x111F 0x0000 100 100 1000 0 14.0 0.0	Description Control Mode and Output Analog Monitor Output Pr Accel / Decel Smooth Con Analon Street Linear Elite	I Direction reportion 1 (MCN1) stant of Analog Speed Command (Low-par *	a Fite
	<u>1.55</u>	994.1 <u>0.0</u> 8	-12768	400 000 32787 0	Analog speed under http: Reserved		
	Real Now in :173	d Only 🔺 Set	While Servo OFF 🔶 Valid	After Reboot	Volatile Parameter	The parameter shared by	

Description 2: This function can quickly access the operation description of parameter editor.

[Working Area]

	· · · · · · · · · · · · · · · · · · ·	P3-XX P4	I-XX P5	-xx P6-xx	P7-XX [#	Frequently Used	Para.
1.046	Code	Value	* Unit	Min	Max	Default	Description
D-00 📩	VER	1.046		1.046	1.046	1.046	Firmware Version
0-01	ALE	0x0000		0x0000	0xFFFF	0x0000	Drive Fault Code
0 - 02	STS	2		-300	127	1	Drive Status
0 - 03	MON	0x0000		0x0000	0x0077	0x0000	Analog Monitor Output
) - 04		0x00000000		0x00000000	0x20FFFFFF	0x00000000	Reserved
) - 05		0x00000000		0x00000000	0x20FFFFFF	0x00000000	Reserved
) - 06		0x00000000		0x00000000	0x20FFFFFF	0x00000000	Reserved 2
) - 07		0x00000000		0x00000000	0x20FFFFFF	0x00000000	Reserved
- 08 ★	TSON	7	Hour	0	65535	0	Servo Startup Time
- 09 📩	CM1	0		-2147483648	2147483647	0	Status Monitor 1
- 10 📩	CM2	0		-2147483648	2147483647	0	Status Monitor 2
- 11 📩	CM3	0		-2147483648	2147483647	0	Status Monitor 3
- 12 📩	CM4	5		-2147483648	2147483647	0	Status Monitor 4
- 13 📩	CM5	0		-2147483648	2147483647	0	Status Monitor 5
- 14 ★		0		-32768	32767	0	Reserved
- 15 ★		0		-32768	32767	0	Reserved
- 16 ★		0		-32768	32767	0	Reserved
- 17	CM1A	0		0	127	0	Display Status Monitor 1
- 18	CM2A	0		0	127	0	Display Status Monitor 2
- 19	CM3A	15		0	127	0	Display Status Monitor 3
- 20	CM4A	41		0	127	0	Display Status Monitor 4
- 21	CM5A	0		0	127	0	Display Status Monitor 5
- 22 ★		0		-32768	32767	0	Reserved
- 23 📩		0		-32768	32767	0	Reserved
- 24 📩		0		-32768	32767	0	Reserved
) - 25	MAP1	0x00000416		*	*	0x00000000	Paramenter Mapping 1

- 1.) Tabs: All parameter group number will be displayed here. Select the parameter group by switching the tab. When Frequently Used Parameter Group is opened, its tab will be displayed here.
- 2.) Main screen of working area: The detailed description of all parameter will be displayed here.

V 1.046			Code	Value	*	Unit	Min	Max	Default	Description
P0 - 00	\mathbf{x}		VER	1.046			1.046	1.046	1.046	Firmware Version
P0 - 01			ALE	0x0000			0x0000	0xFFFF	0x0000	Drive Fault Code
P0 - 02			STS	2			-300	127	1	Drive Status
P0 - 03			MON	0x0000			0x0000	0x0077	0x0000	Analog Monitor Output
P0 - 04				0x00000000			0x00000000	0x20FFFFFF	0x00000000	Reserved
P0 - 05				0x00000000			0x00000000	0x20FFFFFF	0x00000000	Reserved
P0 - 06				0x00000000			0x00000000	0x20FFFFFF	0x00000000	Reserved
P0 - 07				0x00000000			0x00000000	0x20FFFFFF	0x00000000	Reserved
P0 - 08	\star		TSON	7		Hour	0	65535	0	Servo Startup Time
P0 - 09	\star		CM1	0			-2147483648	2147483647	0	Status Monitor 1
P0 - 10	\star		CM2	0			-2147483648	2147483647	0	Status Monitor 2
P0 - 11	\star		CM3	0			-2147483648	2147483647	0	Status Monitor 3
P0 - 12	\star		CM4	5			-2147483648	2147483647	0	Status Monitor 4
P0 - 13	\star		CM5	0			-2147483648	2147483647	0	Status Monitor 5
P0 - 14	\star			0			-32768	32767	0	Reserved
P0 - 15	\star			0			-32768	32767	0	Reserved
P0 - 16	\star			0			-32768	32767	0	Reserved
P0 - 17			CM1A	0			0	127	0	Display Status Monitor 1
P0 - 18			CM2A	0			0	127	0	Display Status Monitor 2
P0 - 19			CM3A	15			0	127	0	Display Status Monitor 3
P0 - 20			CM4A	41			0	127	0	Display Status Monitor 4
P0 - 21			CM5A	0			0	127	0	Display Status Monitor 5
P0 - 22	\star			0			-32768	32767	0	Reserved
P0 - 23	\star			0			-32768	32767	0	Reserved
P0 - 24	\star			0			-32768	32767	0	Reserved
P0 - 25			MAP1	0x00000416			*	*	0x00000000	Paramenter Mapping 1

a.) The first section in the upper-left corner will show the current firmware version:

See the example below, the current firmware version is V1.046.

P 0 - XX	P	1 - XX	P 2 - XX
V 1.046			Code
P0 - 00	X		VER
P0-01			ALE
P0 - 02			STS

b.) The 1st row of the main screen will display parameters in sequence.



c.) The 2nd to the 6th row of the main screen represents the parameter status of the servo drive; Each row represents different definition, which is:

P0 - 22 P0 - 23 P0 - 24 P0 - 25

★: R	ead-o	only; e; 💌	▲ : : Pa	Setu arame	ip wh eter f	nen S or th	Servo Off; ree axes	Not effective until re-power on
V 1.046	Code	Value	* Unit	Min	Max	Default	Description	
P0 - 00	VER	1.046	or dt	1.046	1.046	1.046	Firmware Version	P1-XX F
P0 - 01	ALE	0x0000		0.000	OXFEEF	0x0000	Drive Fault Code	
P0 - 02	STS	2		-300	127	1	Drive Status	
P0 - 03	MON	0x0000		0x0000	0x0077	0x0000	Analog Monitor Output	
P0 - 04		0x00000000		0x00000000	0x20FFFFFF	0x00000000	Reserved	
P0 - 05		0x00000000		0x00000000	0x20FFFFFF	0x00000000	Reserved	
P0 - 06		0x00000000		0x00000000	0x20FFFFFF	0x00000000	Reserved	
P0 - 07		0x00000000		0x00000000	0x20FFFFFF	0x00000000	Reserved	
P0 - 08 ★	TSON	7	Hour	0	65535	0	Servo Startup Time	
P0 - 09 ★	CM1	0		-2147483648	2147483647	0	Status Monitor 1	
P0 - 10 ★	CM2	0		-2147483648	2147483647	0	Status Monitor 2	
P0 - 11 🗙	CM3	0		-2147483648	2147483647	0	Status Monitor 3	
P0 - 12 🗙	CM4	5		-2147483648	2147483647	0	Status Monitor 4	
P0 - 13 📩	CM5	0		-2147483648	2147483647	0	Status Monitor 5	
P0 - 14 📩		0		-32768	32767	0	Reserved	
P0 - 15 📩		0		-32768	32767	0	Reserved	
P0 - 16 📩		0		-32768	32767	0	Reserved	
P0 - 17	CM1A	0		0	127	0	Display Status Monitor 1	
P0 - 18	CM2A	0		0	127	0	Display Status Monitor 2	
P0 - 19	CM3A	15		0	127	0	Display Status Monitor 3	
P0 - 20	CM4A	41		0	127	0	Display Status Monitor 4	
P0 - 21	CM5A	0		0	127	0	Display Status Monitor 5	
P0 - 22 📩		0		-32768	32767	0	Reserved	
P0 - 23 📩		0		-32768	32767	0	Reserved	
P0 - 24 🗙		0		-32768	32767	0	Reserved	
P0 - 25	MAP1	0x00000416		•	•	0x00000000	Paramenter Mapping 1	

d.) The 7th row shows the parameter code.

1.046		Code	Value	*	Unit	Min	Max	Default	Description	
0-00 🕅	6	VER	1.046			1.046	1.046	1.045	Firmware Version	Code
0-01		ALE	0.0000			0x0000	0xFFFF	0x0000	Drive Fault Code	
0 - 02		STS	2		-	-300	127	1	Drive Status	VED
0-03		MON	0x0000			0x0000	0x0077	0x0000	Analog Monitor Output	VLR
0 - 04			0x00000000			0x00000000	0x20FFFFFF	0x00000000	Reserved	AL
0-05			0x00000000			0x00000000	0x20FFFFFF	0x00000000	Reserved	ALE
0 - 06			0x00000000			0x00000000	0x20FFFFFF	0x00000000	Reserved	
0-07			0x00000000			0x00000000	0x20FFFFFF	0x00000000	Reserved	 STS
0 - 08 📩	(TSON	7		Hour	0	65535	0	Servo Startup Time	0.0
0 - 09 📩	C	CM1	0			-2147483648	2147483647	0	Status Monitor 1	MON
0 - 10 📩	(CM2	0			-2147483648	2147483647	0	Status Monitor 2	MON
0 - 11 📩	C	CM3	0			-2147483648	2147483647	0	Status Monitor 3	
0 - 12 📩	()	CM4	5			-2147483648	2147483647	0	Status Monitor 4	
0 - 13 📩	t I	CM5	0			-2147483648	2147483647	0	Status Monitor 5	
0 - 14 📩	()		0			-32768	32767	0	Reserved	
0 - 15 📩	t 👘		0			-32768	32767	0	Reserved	
0 - 16 📩	()		0			-32768	32767	0	Reserved	
0 - 17		CM1A	0			0	127	0	Display Status Monitor 1	
0 - 18		CM2A	0			0	127	0	Display Status Monitor 2	
0 - 19		CM3A	15			0	127	0	Display Status Monitor 3	
0 - 20		CM4A	41			0	127	0	Display Status Monitor 4	
0 - 21		CM5A	0			0	127	0	Display Status Monitor 5	TSON
0 - 22 📩	C		0			-32768	32767	0	Reserved	1301
0 - 23 📩	()		0			-32768	32767	0	Reserved	
0 - 24 📩	C		0			-32768	32767	0	Reserved	
0 - 25		MAP1	0x00000416	1		*	*	0x00000000	Paramenter Mapping 1	

e.) The 8th row displays the parameter value; Users can directly acquire the parameter value in this pane.

Paran	eter Editor	1 (ASDA-A	2 Servo)						SFLT	0		ms	0	1000
🖬 📰	10	88		68 8	00				TFLT	0		ms	0	1000
PO-XX	P1-XX	P2-XX	P3-XX F	4-1X PS-	XX P 6 - XX	P7-XX 1	a)Frequently U	sed Para.		-	_		-	
V 1.046	TIL	Code	Value	* Unit	Min	Max	Default	Description	PFLT	0		10ms	0	1000
P1-00		PTT	0x1000	-	0x0000	0x1142	0x0002	External Pulse Input Type	CD1	1000		0 telmin	60000	60000
P1-01	•	CTL.	0x0001		0x000x0	OxiiiF	0x0000	Control Mode and Output Direction	3P1			0.11/min	-00000	60000
P1-02	A	PSTL	0x0000		0x0000	0x0011	0x0000	Speed and Torque Limit Setting	CDD	200		-		60
P1-03		AOUT	0x0000		0x0000	0x0013	0x0000	Pulse Output Polanty Setting	SPZ	200 Click To	o Edi	t Paramete	r	00
P1-04		MON1	100	95	0	100	100	Analog Monitor Output Presention 1 (MON1)	CDO	200 0 1		in the	. .	
P1-05		MON2	100	54	0	100	100	Analog Monitor Output Proportion 2 (MON2)	5P3	300 Or dou	ble d	lick to ope	n Parameter	Helper
P1-06		SPLT	0	ms	0	1000	_	Accel / Decel Smooth Constant of Analog Speed Command (Low-pass F	TOI	100	_	10/		
P1-07		TPLT	0	ms	0	1000	à	Smooth Constant of Analog Torque Command (Low-pass Filter)	101	100		%	-300	300
P1-08		PELT	0	10ms	0	1000	0	Smooth Constant of Position Command (Low-pass Filter)	TOO	100			000	202
P1-09		5P1	1000	0.1/min	-60000	60000	2000	1st Speed Command/Limit	1Q2	100		%	-300	300
P1 - 10		5P2	2000	0.1/min	-60000	60000	2000	2nd Speed Command/Limit		100	_			
P1-11		\$P3	3000	0.1r/min	-60000	60000	3000	3rd Speed Command/Limit	1Q3	100		%	-300	300
P1 - 12		TQ1	100	%	-300	300	100	1st Torque Command/Limit			_			
P1-13		TQ2	100	76	-300	300	100	2nd Torque Command/Limit		0x0000			0x0000	0x1F5F
P1-14		TQ3	100	%	-300	300	200	3rd Torque Command/Limit						
P1-15			0x000x0		0x0000	0x1FSF	0x0000	CAPTURE SYNC AXIS - Threshold of Correction						
P1 - 16		1	0		-32768	32767	0	CAPTURE SYNC AXIS - Offset Compensation						
P1-17			0.000	ms.	-20,000	20.000	0.000	Tradking Error Compensation – Additional Time Setting						
P1-18			0.000	me	-20.000	20.000	0.000	Electronoic Cam (E-Cam) Pulse Phase Compensation - Time Setting						
P1-19			0x000x0		0x0000	0x0101	0x0000	CAPTURE / COMPARE – Additional Function Settings						
P1 - 20			0		0	100000000	0	CAPTURE – Masking Range Setting						
P1-21			0	Kpps	.p	30000	0	Electronoic Cam (E-Cam) Pulse Phase Compensation – Min. Frequency						
P1-22			0x0000		0x0000	0x107F	0x0000	PR Special Filter Settings						
P1-23			0		-10000000	10000000	0	Compare data offset (Value of P1-23 are remain unchanged)						
P1-24			0		-32768	32767	0	COMPARE - Compare data offset(Automatically set P1-24 to 0)						
P1 - 25		VSF1	1000		10	1000	1000	Vibration Supression Prequency 1 +						
() III. (-				•						
*	lead Only		A Set Whi	le Servo OFF	🔴 Valid /	After Reboot	Vo	latile Parameter shared by						
Manufard	704				in the second	and the state of the	I do a tradicional	and a sealing the second of the second second second						

See the above figure, click at this pane, the parameter value can be edited. Double left click this pane, "Parameter Setting Helper" will pop up. It is for setting parameter as well.

Parameter Name	Unit	Minimum ~ Maximum	Default	16/32 bit
P1 - 09	0.1r/min	-60000 ~ 60000	1000	32bit
	1st 9	Speed Command/ Limit	01	
	Vali	ue 1000		

"enter", the 9th row will

f.) The 9th row of the main screen "*" means the newly modified parameter that hasn't been downloaded into the servo drive. If the user modifies a

parameter's value without pressing display "*".

P1-07	TFLT	0		ms	0	1000	0	Smooth Constant of Analog Torqu
P1-08	PFLT	٥		10ms	0	1000	0	Smooth Constant of Position Comn
P1-09	SP1	1005	*	0.1r/min	-60000	60000	1000	1st Speed Command/Limit
P1 - 10	SP2	2000		0.1r/min	-60000	60000	2000	2nd Speed Command/Limit
P1 - 11	SP3	3000		0.1r/min	-60000	60000	3000	3rd Speed Command/Limit

See the example above, if the user change the value of P1-09 from 1000 to 1005 without pressing the "Enter" Key, "*" will show next to the value.

g.) The 10th row shows the unit of parameter.

V 1.046		Π	Code	Value	1	^t Unit	Min	Max	Default	Description	
P1-00	Δ		PTT	0x1000			0x0000	0x1142	0x0002	External Pulse Input Type	
P1-01			CTL	0x0001			0x0000	0x111F	0x0000	Control Mode and Output D	Unit
P1-02	4		PSTL	0x0000			0x0000	0x0011	0x0000	Speed and Torque Limit Set	
P1-03			AOUT	0x0000			0x0000	0x0013	0x0000	Pulse Output Polarity Settin	
P1-04			MON1	100		%	· · ·	100	100	Analog Monitor Output Prop	
P1-05			MON2	100		%	0	100	100	Analog Monitor Output Prop	
P1-06			SFLT	0		ms	0	1000	0	Accel / Decel Smooth Const	
P1-07			TFLT	0		ms	0	1000	0	Smooth Constant of Analog	
P1-08			PFLT	0		10ms	0	1000	0	Smooth Constant of Positio	
P1-09			SP1	1005	1	* 0.1r/min	-60000	60000	1000	1st Speed Command/Limit	
P1 - 10			SP2	2000		0.1r/min	-60000	60000	2000	2nd Speed Command/Limit	0/
P1 - 11			SP3	3000		0.1r/min	-60000	60000	3000	3rd Speed Command/Limit	70
P1 - 12			TQ1	100		%	-300	300	100	1st Torque Command/Limit	0/
P1 - 13			TQ2	100		%	-300	300	100	2nd Torque Command/Limit	70
P1 - 14			TQ3	100		%	-300	300	100	3rd Torque Command/Limit	me
P1 - 15				0x0000			0x0000	0x1F5F	0x0000	CAPTURE SYNC AXIS - Three	ms
P1 - 16				0			-32768	32767	0	CAPTURE SYNC AXIS - Off	me
P1 - 17				0.000		ms	-20.000	20.000	0.000	Tracking Error Compensatio	ms
P1 - 18				0.000		ms	-20.000	20.000	0.000	Electronoic Cam (E-Cam) Pu	10mc
P1 - 19				0x0000			0x0000	0x0101	0x0000	CAPTURE / COMPARE - Ad	10005
P1 - 20				0			0	10000000	0	CAPTURE – Masking Range	0 1r/min
P1-21				0		Kpps	0	30000	0	Electronoic Cam (E-Cam) Pu	0.17/1001
P1 - 22				0x0000			0x0000	0x107F	0x0000	PR Special Filter Settings	0 1r/min
P1 - 23				0			-10000000	10000000	0	Compare data offset (Value	0.27
P1-24				0			-32768	32767	0	COMPARE – Compare data	0.1r/min
P1 - 25			VSF1	1000			10	1000	1000	Vibration Supression Freque	or a prime

h.) The 11th, 12th, and 13th row represents the minimum, the maximum and default value respectively. Users can confirm if the setting value is within the allowable range.

V 1.046	Code	Value	* Unit	Min	Max	Default	Description	Min	Max	Default
P1-00	PTT	0×1000		0x0000	0x1142	0x0002	External Pulse Input Type	1500.1	PIGA	Derduit
P1-01	o cri	0x0001	_	0x0000	0x111F	0x0000	Control Mode and Output D	0x0000	0x1142	0x0002
P1-02	PSTL	0x0000	_	0x0000	0x0011	0x0000	Speed and Torque Limit Set	00000	0/11/2	00002
P1-03	AOUT	0x0000		0x0000	0x0013	0x0000	Pulse Output Polarity Settin	0x0000	0x111E	0x0000
P1-04	MON1	100	%	0	100	100	Analog Monitor Output Prop	0.0000		
P1-05	MON2	100	70	0	100	100	Analog Monitor Output Pro; Accel / Decel Smooth Const	0x0000	0x0011	0x0000
P1-07	TELT	0	ms	0	1000	0	Smooth Constant of Analor			
P1-08	PFLT	0	10ms	0	1000	0	Smooth Constant of Positio	0x0000	0x0013	0x0000
P1-09	SP1	1005	* 0.1r/min	-60000	60000	1000	1st Speed Command/Limit	-		
P1 - 10	SP2	2000	0. 1r/min	-60000	60000	2000	2nd Speed Command/Line	0	100	100
P1 - 11	SP3	3000	0. 1r/min	-60000	60000	3000	3rd Speed Command/Limit		100	100
P1 - 12	TQ1	100	%	-300	300	100	1st Torque Command/Limit	1	100	100
P1 - 13	TQ2	100	%	-300	300	100	2nd Torque Command/Limi	0	1000	0
P1-14	TQ3	100	%	-300	300	100	3rd Torque Command/Limit	U	1000	U
P1 - 15		0x0000		0x0000	0X1F5F	0x0000	 CAPTURE SYNC AXIS - Thr CAPTURE SYNC AXIS - OFF 	0	1000	0
P1-10 P1-17	-	0.000	-	-32/68	32/6/	0.000	Tracking Error Companyatio	0	1000	•
P1 - 18		0.000	ms	-20.000	20.000	0.000	Electronoic Cam (E-Cam) Pi	0	1000	0
P1 - 19		0x0000		0x0000	0x0101	0x0000	CAPTURE / COMPARE - Ad	•	1000	· ·
P1-20		0		0	100000000	0	CAPTURE – Masking Range	-60000	60000	1000
P1-21		0	Kpps	0	30000	0	Electronoic Cam (E-Cam) PL			
P1 - 22		0x0000		0x0000	0x107F	0x0000	PR Special Filter Settings	-60000	60000	2000
P1-23	_	0		-10000000	10000000	0	Compare data offset (Value			
P1-24		0	_	-32768	32767	0	COMPARE – Compare data	-60000	60000	3000
P1 - 25	VSF1	1000		10	1000	1000	vibration Supression Freque	200	200	100
								-300	300	100
								200	200	100
								-300	300	100
								-300	300	100

i.) The 14th row is the parameter descriptions. Move the cursor to the 14th row, the cursor will become a question mark and shows "Double Click to Activate Help".

1st Speed Command/ Limit
2nd Speed Command/Limit
3rd Speed C Double Click To Acitivate Help
1st Torque Command/ Limit
2nd Torque Command/Limit
3rd Torque Command/ Limit

Then, the following documentation will pop up for users' reference:



3.) Description of parameter status:

Read Only	Set While Servo OFF	🔴 Valid After Reboot	Volatile Parameter	The parameter shared by
	📩 : Read-only; It c	only can access the	e status of parame	ters.
	🔺 : Unable to setu	p parameters whe	en Servo ON.	

- Parameter is not effective until re-power on the servo drive.
- : Volatile parameter.
- Parameter for three axes; It marks parameters for three axes for ASDA-M series servo drive.

Parameter Configuration

Between two different firmware versions of servo drives, "Parameter Configuration" is for switching parameter setting and downloading parameters into the servo drive. Followings are the detailed description of this function:

: Parameter Comparison

Users can compare the parameter value from working area to the one from different sources. Click it, the following screen will pop up:

🚏 ASDA_Soft	
Parameter Compare Type	Selection
Select one option to compare	
Current Values in Working Area VS. Default Values	in Drive
C Current Values in Working Area VS. Current Values	in Drive
C Current Values in Working Area VS. Default Values	in Working Area
$\ensuremath{\mathbb{C}}$ Current Values in Working Area VS. File :	
C Select compared axes	
OK Cancel	1

Current Values in Working Area VS. Default Values in Drive: It compares the current value in working area to the default ones in servo drive. Users can compare the difference when the communication is connected.

Current Values in Working Area VS. Current Values in Drive: It compares the current values in working area to the ones in servo drive. When the communication is connected, users could know which parameters in working area are modified but not downloaded into the servo drive.

Current Values in Working Area VS. Default Values in Working Area: It compares the current values in working area to the default ones. When the communication is disconnected, users could know the difference between the modified parameters and the default ones.

Current Values in Working Area VS. File: It compares the current values in working area to the ones in file. Users could know the differences between both when the communication is unconnected.

: Parameter Conversion

Users can quickly switch the original version to the new one. The following screen will pop up:

P ASDA_Soft	- • •
Convert the Version	
Target Version :	
O the Same as the Connected Driver's	Convert
O as Selected : 1005 -	X Cancel

It provides two firmware version:

Target Version :	
• the Same as the Conn	ected Driver's
O as Selected :	1005 💌

When select the Same as the Connected Driver's, regardless the opened firmware version, the system will adjust the parameter value based on the current version.

Select the target version and click , the system will judge if there is any parameter that needs to be converted. If the firmware version is the same, the following reminder will pop up:

Delta ASDA	x
版本相同!	
沒有需要轉換	2
OK	1

When select as Selected :	1005	•	users can use the built-in
firmware version for conversion			

firmware version for conversion.

For example,

Step 1: Setup the desire version. Select from the drop-down menu.

Со	nvert the Version	I
-Target Version :		
• the Same as the Conn	ected Driver's	Convert
• as Selected :	1005 -	X Cancel
	1005	
	1701	

Step 3: The system will convert the version. Then the following screen will pop up:



In addition, the message screen on the left will display the status of converted parameters.

During the conversion process, if the default value, max. and min. value in source version is different from the target version, a warning message will pop up and ask if the users would like to change the value as the one in target version. See as below. It is suggested to convert it according to the target version.

ASDA_Soft	ersion Ne	eds User I	input Pa	rameter Value
changed ! Please Input the	e Correct V	Value !		
Source : V17.05				
P0 - 49	0		-32768 ~	32767)
		S	igned	decimal
L	[1]	[2]	[3]	
	0	0	0	
	4			
New Value :	0x0000	0x0000	0x0000	✓ Enter
	4	🔁 Defa	ult 🗆	All use default value
Target : V1.005				
P0 - 49	0x0000		0x0000 ~	0x0002)
		U	nsigned	hexadecimal

E : Open Parameter Configuration

Different firmware version might result from the updated function of the servo drive. If the firmware version in ASDA-Soft cannot communicate with the one in servo drive, the communication problem will occur.

Users can download different firmware version in servo drive to ASDA-Soft by this function,

Click , the following screen will pop up:

PasDA_Soft	
Load Configure	
Configuration Source :	
C Specified Version ASDA-A2	<u> </u>
C From Servo	
OK X Cancel	

Three sources are provided:

OK

- a.) Specified Version: Users can specify the type of servo drive and firmware version. Then, users can access and read parameters via the specified version.
- b.) From Parameter File (*.par): When the parameter file is sent by the client or on-site engineer, click
 C From Parameter File(*.par)
 to select the firmware version.
- Click

, the following window will pop up:



Users can open the specified parameter file. Then, a reminder will pop up.



c.) From Servo: If the connected version is not stored in ASDA-Soft, this function can download the new version to the software.

Click click, starting from Group 1, the software will download parameters of each group to the working area. And a reminder pops up:

Í	Delta ASDA-Soft 🔣	þ
	版本組態載入完成!	þ
	OK	þ

If the firmware version has already stored in ASDA-Soft, the following reminder will pop up when click

载入版本	rês.
2	Version:1045 此版本資訊已經存在,是否重新載入?
	<u>是(1)</u> 否(11)

3.7 Parameter Initial Wizard



Parameter Initial Wizard enables users to quickly complete the setting of Delta's servo control mode. Its features are as follows:

a.) Each control mode provides the specific interface so that Users can directly complete the setting. Following is the example of PT mode.

ommon Setup	
Rotaion Direction Selection(P1-01) Forward: CCW, Reverse: CW C Forwrd: CW, Reverse: CCW	Encoder Output Pulse Number (P 1-46)
Vulse Output Polarity Setting(P1-03) Y:Output Polarity Y:Output Polarity Or Forward Output Reverse Output C 1: MON1(-), MON2(-) C 2: MON1(-), MON2(-) C 3: MON1(-), MON2(-)	Regenerative Resistor Setting(P1-52,P1-53) 750 Ω (5~750) 6000 W (0~6000)
Delay of Brake Selection(P1-42,P1-43) MBT1 0 (0~1000)(ms) MBT2 0 (-1000~1000)(ms)	Max Motor Speed(P1-55) 6000 RPM Analog Torque Command Filter(P1-07)
ON OFF SON OFF	
Motor apend Motor Mo	Max Analog Torque Command (P1-41)

b.) Intuitive design: No need to memorize parameter codes or look up user manual for parameter description. Users can complete the setting by its user-friendly interface. Following is the example of Sz mode.

eed Mode Parameter Setup	
Analog Speed Command Filter (P1-06)	S Curve Time of Speed Filter(P1-34,P1-35,P1-36)
(0~1000) © Disabled	TACC 200 ms (1~65500) TDEC 200 ms (1~65500)
Target Speed Threshold(P1-39) Target Speed Over 3000 RPM (0~5000)	TSL 0 ms(0~65500)
Max Analog Speed Command(P1-40)	
	TACC
Overspeed Warning(P2-34)	

c.) Easier Digital Input / Output (DI/DO) setting. In the past, users have to look up user manual for the diversified DI and DO setting. With this function, users could setup and modify the setting by simply selecting the drop-down menu of Parameter Initial Wizard. Following is the example of Tz mode.

[0x05] Tz	:Zero torque / internal torque command		•	If Control M	ode is changed,	Must Reboot Drive
∀ Digita	l Input(DI) Setup(P2-10~P2-17)	_	_			
DI1	[0x01]Servo On	•	۲	contact a	C contact b	
DI2	[0x04]Pulse dear	•	œ	contact a	C contact b	
DI3	[0x16]Torque command selection 1~4 Bit0	•	œ	contact a	C contact b	
DI4	[0x17]Torque command selection 1~4Bit1	•	¢	contact a	C contact b	
DI5	[0x02]Alarm Reset	•	œ	contact a	C contact b	
DI6	[0x22]Reverse inhibit limit	•	C	contact a	Contact b	
DI7	[0x23]Forward inhibit limit	•	C	contact a	Contact b	
DI8	[0x21]Emergency stop	•	C	contact a	Contact b	
	nal Digital Input(EDI) Setup(P2-36~P2	-41)				
EDI9	[0x00]Disabled	•	œ	contact a	C contact b	
EDI 10	[0x00]Disabled	•	œ	contact a	C contact b	
EDI11	[0x00]Disabled	•	¢	contact a	C contact b	
EDI12	[0x00]Disabled	•	œ	contact a	○ contact b	

It is very suitable for electrical engineer to setup initial control mode and tuning. With intuitive design and convenient drop-down menu, it save users loads of time. Following is the main screen of Parameter Initial Wizard.

💽 Parameter Initial Wizard		8
📑 🚅 🏡 📆 🔞 🚱		
[× [0x00] PT Mode	Control Mode Selection(P1-01)	
DI/O Setup	[0x00] PT:Position control mode If Control Mode is changed, Must Reboot Drive to Enable Setting!	
Common Setup		
Position Mode Setup	☆ Digital Input(DI) Setup(P2-10~P2-17)	
Internal Speed/Torque	Dia Granta Constanta Constanta	
>> [0x01] PR Mode		
>> [0x02] 5 Mode	DI2 [0x04]Pulse clear C contact a C contact b	
🔊 [0x03] T Mode		
∑ [0x04] Sz Mode	DI3 [0x16]Torque command selection 1~4Bit0 💌 📀 contact a 🔿 contact b	
> [0x05] 12 Hode		E
>> [0x07] PT/T Mode	DI4 [[0x17]Torque command selection 1~4 Bit1] C contact a C contact b	
>> [0x08] PR/5 Mode	DI5 [0x02]Alarm Reset	
>> [0x09] PR/T Mode		
[0x0A] S/T Mode	DI6 [0x22]Reverse inhibit limit C contact a C contact b	
>> [0x0C] CANopen Mode(Full)		; U
>> [0x0D] PT/PR Mode	DI7 [0x23]Forward inhibit limit C contact a C contact b	
[0x0E] PT/PR/S Mode \$\sim [0x0E] PT/PR/S Mode	DI8 [0x21]Emergency stop C contact a C contact b	
	External Dinital Input/EDI) Setup(P2-36~P2-41)	
	EDI9 [0x00]Disabled	
	EDI10 [[0x00]Disabled C contact a C contact b	
	EDI11 [[0x00]Disabled C contact a C contact b	
	ParaThd Msg=201, Cmd=0	//.

This section is divided into two parts:

[Interface Introduction]: It introduces Parameter Initial Wizard by three main parts: Working Area, Mode Setting and Function Setting.

[Mode Setting] : It describes how to complete the setting of control mode.

Interface Introduction

Parameter Initial Wizard integrates each control mode and gathers the commonly used parameter in one interface, which shortens the tuning time.

🛃 参數初始化精靈		
[2 [0x00] Pt Mode		
DI/O設定		
一般參數設定	\sim	
位置模式設定	※數位輸入(DI)設定(P2-10~P2-17)	
内部速度/扭矩	DI1 [0×01]伺服啓動(Servo On)	
🕞 [0x01] Pr Mode 🔤		-
[0x02] 5 Mode	DI2 [[0x04]脈波谱除	
[0x03] 1 Plote		ī I
0x05] Tz Mode		
[0x06] Pt/S Mode	DI4 [0×17]內部暫存器扭矩命令選擇(1~4) Bit	
[UxU7] Pt/T Mode [0x08] Pr/S Mode		-
© [0x09]Pr/T Mode	DI5 [[0x02]異常清除 · i接點 · b接點	
0x0A] 5/T Mode	DI6 [[0x22]反辣禁止攝限	
[0x0B] CANopen		
[0x00] Pt/Pr Mode	DI7 [0x23]正轉禁止極限 🔽 🖸 a接點 📀 b接點	
[0x0E] Pt/Pr/S Mode		
[0x0F] Pt/Pr/T Mode	D18 [[Ux21]馬定紫志停止 (a)按點 (● D/安點	
•••••	◆ 蓋充數位輸入(EDI)設定(P2-36~P2-41)	
	EDI9 [0x00]不作用 🗨 🕫 a接點 C b接點	
(3)		-
	EDI11 [0x00]不作用 🗨 🕞 a接點 🔿 b接點	
		-
	A WATTH MORE DOIN ON THE OWNER OF THE OWNER	

- 1.) [Working Area] : Users operate the basic function, e.g. upload / download parameter file, in this area.
- 2.) [Control Mode Selection] : Use drop-down menu to select the control mode.
- 3.) [Mode Setting]: In the selected control mode, it lists the setting area of all parameter.
- 4.) [Function Setting] : Users can setup related parameter functions.

[Working Area]: When complete the setting of control mode, buttons in working area can be used to conduct basic operations, such as upload or download parameters.



Save file 🔳 : Users can backup the parameter file of control mode. Click 📕, the following screen will pop up:



Open file 😂 : Open the saved parameter file and modify the control mode or parameter setting via Parameter Initial Wizard. Click 😂, the following screen will pop up:

1客					?
查詢①	● 桌面		+	+ 🖻 💣 🔳	
表最近的交件 反 点面 数的文件 数的文件 数的で件	 ● 我的变件 ● 我的電腦 ● 網路上的芳 	\$F			
網路上的芳鄰	檔名(N):	I		Ŧ	開啓(0)
		-			

New edit
During the editing, if desire to resume the initial status, click this button will do. The software will clear the current setting and return to the original status.

Load from servo 🛍 : If users desire to change the control mode of the connected servo

drive, use this function "Load from servo ¹ to access the current setting value and change the setting.

Download to servo 🛍 : When complete the new setting of control mode, use "Download to servo to servo it o download the related parameter into the servo drive. Please re-power on the servo drive after downloading

parameters into the servo to activate the new control mode.

Description 2 : Click 2 to open the operation description.

Stop operation 💁 : If desire to stop operation, click 💁 will do.

[Control Mode Selection] : Setup the control mode from drop-down menu. P1-01 represents "Control Mode Selection", thus, the drop-down menu will list all mode that can be set in P1-01.

Control Mode Selection(P1-01)	
[0x06] PT/S:Position control mode / Speed control mode	If Control Mode is changed, Must Rebo
[0x00] PT:Position control mode [0x01] PR:Position control mode [0x02] S:Speed control mode [0x03] T:Torque control mode [0x04] Sz:Zero speed / internal speed command [0x06] T:Zero torque (internal torque command	
[0x06] PT/S:Position control mode / Speed control mode	
[0x07] PT/T:Position control mode / Torque control mode [0x08] PR/S:Position control mode / Speed control mode [0x09] PR/T:Position control mode / Torque control mode [0x0A] S/T:Speed control mode / Torque control mode	-



Re-power on the servo drive to complete the setting when change the control mode.

[Mode Setting] : Select the control mode via drop-down menu, this area will display the setting of this mode. See the example below. If it is in position (PT) mode, it will display four setting blocks. Users will be able to select the parameter through these four blocks.

[≥ [0x00] PT Mode
DI/O Setup
Common Setup
Position Mode Setup
Internal Speed/Torque
>> [0x01] PR Mode
>> [0x02] 5 Mode
>> [0x03] T Mode
>> [0x04] Sz Mode
🕥 [0x05] Tz Mode
>> [0x06] PT/5 Mode
[0x07] PT/T Mode
> [0x08] PR/S Mode
[0x09] PR/T Mode
>> [0x0A] S/T Mode
[0x0B] CANopen Mode(Half)
[0x0C] CANopen Mode(Full)
>> [0x0D] PT/PR Mode
[0x0E] PT/PR/S Mode
[0x0F] PT/PR/T Mode

[Function Setting] : Users can setup parameters and functions of each control mode in this page.

ö Digita	al Input(DI) Setup(P2-10~P2-17)
DI1	[0x01]Servo On 💽 🕫 contact a 🔿 contact b
DI2	[0x04]Pulse dear 💽 🕫 contact a 🔿 contact b
DI3	[0x16]Torque command selection 1~4 Bit0 💌 🙃 contact a 🛛 C contact b
DI4	[0x17]Torque command selection 1~4 Bit1 💌 🙃 contact a 🛛 C contact b
DI5	[0x02]Alarm Reset
DI6	[0x22]Reverse inhibit limit C contact a C contact b
DI7	[0x23]Forward inhibit limit C contact a C contact b
DI8	[0x21]Emergency stop C contact a C contact b
	rnal Digital Input(EDI) Setup(P2-36~P2-41)
EDI9	[0x00]Disabled 💽 🕫 contact a C contact b
EDI 10	[0x00]Disabled C contact a C contact b
EDI11	[0x00]Disabled C contact a C contact b

Mode Setting

This section describes the screen of parameters setting of each mode, which are 15 in total. Setup the mode first, then setup parameters:

[0x00] PT:位置控制模式	
[0×01]PR:位置控制模式	
[0×02] S:速度控制模式	
[0x03] T:扭矩控制模式	
[0x04] Sz:零速度/內部速度暫存器命令	
[0x05] Tz:零扭矩/内部扭矩暫存器命令	
[0x06] PT/S:位置控制模式 / 速度控制模式	
[0x07] PT/T:位置控制模式 / 扭矩控制模式	
[0x08] PR/S:位置控制模式 / 速度控制模式	
[0x09] PR/T:位置控制模式 / 扭矩控制模式	
[0×0A] S/T:速度控制模式 / 扭矩控制模式	
[0x0B] CANopen Mode	
[0x0C] 保留	
[0x0D] PT/PR	
[OXOE] PT/PR/S	
[0×0F] PT/PR/T	

[0x00] PT : Position Control Mode

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x00] PT:Position control mode
[0:00] DT:Desition control mode
TOXOOT PT POSITION CONTROLLED
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T: Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode
I construction of the second o

Step 2: Select Position control mode (PT), the setting block on the left will show as below:



Step 3: Setup Digital Input (DI) command.

ö Digit	tal Input(DI) Setup(P2-10~P2-17)	
DI1	[0x01]Servo On Contact a	○ contact b
DI2	0x04]Pulse clear 💌 ና contact a	○ contact b
DI3	[0x16]Torque command selection 1~4 Bit0 💌 📀 contact a	C contact b
DI4	[0x17]Torque command selection 1~4 Bit1 💌 📀 contact a	C contact b
DI5	[0x02]Alarm Reset Contact a	C contact b
DI6	[0x22]Reverse inhibit limit C contact a	Contact b
DI7	[0x23]Forward inhibit limit C contact a	 contact b
DI8	[0x21]Emergency stop C contact a	Contact b

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	Н
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse dear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	_
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1 [0x01]Servo On	•	Contact a	C contact b	
--------------------	---	-----------	-------------	--

Step 4: Setup External Digital Input (EDI) command.

× Exter	External Digital Input(EDI) Setup(P2-36~P2-41)						
EDI9	[0x00]Disabled	 contact a 	C contact b				
EDI 10	[0x00]Disabled	 contact a 	○ contact b				
EDI11	[0x00]Disabled	▼ ⊙ contact a	○ contact b				
EDI12	[0x00]Disabled	▼ ⓒ contact a	○ contact b				
EDI13	[0x00]Disabled	▼ ⓒ contact a	○ contact b				
EDI14	[0x00]Disabled	▼ ⊙ contact a	C contact b				

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup Digital Output (DO) command.

ö Digit	al Output(DO) Setup(P2-18~P2-22)		
DO1	[0x01]Servo ready	contact a	C contact b
DO2	[0x03]At Zero speed	 contact a 	C contact b
DO3	[0x09]Homing completed	contact a	C contact b
DO4	0x05]At Positioning completed	 contact a 	C contact b
DO5	[0x07]Servo alarm (Servo fault) activated	d 💌 🔿 contact a	contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	*
[0x02]Servo On	-
[0x03]At Zero speed	-
[0x04]At Speed reached	=
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	$\overline{\mathbf{v}}$

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1 [0x01]Servo ready	Contact a	C contact b
-----------------------	-----------	-------------

Step 6: "Common Setup"

∑ [0x00] PT Mode
DI/O Setup
Common Setup
Position Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

[0x00] PT Mode I/O Setup	Control Mode Selection(P1-01) [0x00] PT:Position control mode	✓ If Contr	ol Mode is changed, Must Reboot Drive to Enable Setting!	
osition Mode Setup	V Common Setup	***********	******	•••••
nternal Speed/Torque [0x01] PR Mode [0x02] S Mode	Rotaion Direction Selection(P1	1-01) 	Encoder Output Pulse Number (P1-46)	
(0x03) T Mode (0x04) Sz Mode (0x05) Tz Mode (0x06) PT/S Mode (0x06) PT/S Mode (0x08) PR/T Mode (0x08) PR/T Mode (0x08) S/T Mode (0x08) CANopen (0x00) CANopen (0x00) PT/PR Mode (0x00) PT/PR Mode (0x00) PT/PR/S Mode	Pulse Output Polarity Setting(Y:Output Polarity Forward Output Reverse Output Delay of Brake Selection(P1-4 MBT1 0 MBT2 0 DOn must S SON 0FF 	P1-03) X:Monitor analog output polarity © 0: MON1(+), MON2(+) © 1: MON1(+), MON2(-) © 2: MON1(-), MON2(-) © 3: MON1(-), MON2(-) I2,P1-43) (0~1000/(ms) elect BRKR OFF 	Regenerative Resistor Setting(P1-52,P1-53) 751 Ω (5~751) 3001 W (0~3001) Max Motor Speed(P1-55) 5001 RPM (10~6001) Analog Torque Command Filter(P1-07) C YES 0 (0~1000) © NO	

Step 7: When the setting of "Common Setup" is complete, the next step is "Position Mode Setup".



The screen on the right will be switched to the one as below:

DI/O Setup If Control Mode is changed, Must Netwoor Drive to Enable Setting! Common Setup Position Mode Parameter Setup Internal Speed/Torque Type of Pulse Command Input(P1-100: X 2) Log: Type(P1-00: 2) Positive Logic Dox011 PR Hode Fype(P1-00: 2) Positive Logic Dox012 S Hode Fype(P1-00: 2) Positive Logic Dox013 T Hode Fype(P1-00: 2) Positive Logic Dox013 T Mode Fype(P1-00: 2) Pictore Color Dox014 Pictore Color Fype(P1-00: 2) Pictore Color Dox010 C Reserveed Fype (P1-00: 2) Pictore Color	[0x00] PT Mode	The selection (P1-01)		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	[0x00] PT Mode Common Setup DI/O Setup. Common Setup Pasition Mode Setup. Internal Speed/Forque [0x01] PR Mode (0x02] S Mode [0x03] T Mode (0x03] T Mode [0x03] T Mode (0x03] T Mode [0x04] PX Mode (0x05] PT/S Mode [0x09] PR/T Mode (0x06] PT/S Mode [0x00] PT/T Mode (0x06] PT/S Mode [0x00] PC/T Mode (0x06] PT/S Mode [0x00] CANAper Mode (0x06] PT/S Mode [0x00] CANAper Mode (0x06] PT/PR Mode [0x00] PT/PR/Mode (0x06] PT/PR/Mode	Ito in Mode Selection (P141) Store Selection	Control Mode is changed, Must Reboot Drive to Enable Setting! Target Position Error Range(P1-54) [12800 Pulse (0~1280000) Over Position error Threshold(P2-35) [3840000 10 Pulse (1~12800000) Electric Gear Numerator Setting(P1-44, P1-45) Gear1 [128 (1~536870911) Gear2 [128 (1~536870911) Gear2 [128 (1~536870911) 10 = 12.80	
DIn must Select GNUM0/1	(0x0F) PT/PR/T Mode	Pulse Command Filter(P1-08) C Yes 0 Unit:10ms (0~1000) C NO	$Gear3 \frac{128}{10} (1 \times 536870911) = 12.80$ $Gear4 \frac{128}{10} = 12.80$ Din must Select GNUM0/1	

Step 8: If users desire to setup speed or torque limit, please click the fourth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:

	Control Mode Selection(P	1-01)					
[0x00] PT Hode	[0x00] PT:Position contro	ol mode		If Control Mode	is changed, Must Reboo	Drive to Enable Setting!	
I/O Setup							
ommon Setup							
sition Mode Setup	Speed / Torque Lir	nit Setup				-	
ernal Speed/Torque:	P1-02 X:speed limit						
0x01] PR Mode	0: Disable speed	l limit function					
0x02] S Mode	1: Enable speed	limit function(only	for T mode)			•	
0x03] T Mode	Speed Command Lin	hit Source(P1-09~	P1-11)				
0x04] 5z Mode		DIn mu	ist Select SPD0	or SPD1			
0x05] Tz Mode	SPD1/0	0/0	0/1	1/0	1/1		
0x06] PT/5 Mode		Speed	Internal Register 1	Internal Register 2	Internal Register3		
DX07] F1/1 Flode	Command	Command is 0	1000 RPM	2000 RPM	3000 RPM		
0x08] PR/Shode	Source		(-60000~60000)	(-60000~60000)	(-60000~60000)		
0x0A1S/T Mode							
0x0B] CANopen							
0x0C] Reserved	P1-02 Y:torque limit						
0x0D] PT/PR Mode	0: Disable torqu	e limit function					
Dx0E] PT/PR/5 Mode	s 1: Enable torque	e innic runcuori(orii	y for P/S mode)				
Dx0F] PT/PR/T Mode	Torque Limit Setting	(P1-12~P1-14)					
		DIn mu	ist Select TCM0	or TCM1		•	
	TCM1/0	0/0	0/1	1/0	1/1		
	Command	Torque	Internal Register 1	Internal Register 2	Internal Register 3		
	Source	Command is 0	100 %	100 %	100 %		
	and the second se	-	(-300~300)	(-300~300)	(-300~300)	•	
	•						

[0x01] PR : Position Control Mode

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x01] PR:Position control mode
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T:Position control mode / Torque control mode
[[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Position control mode (PR), the main screen will show as below:

Parameter Initial Wizard		- • •
🗧 🗃 🏚 📲 🔞		
[0x00] PT Mode	trol Mode Selection(P1-01)	
[0x01] PR Mode	01) PR:Position control mode	
DI/O Setup		
Common Setup		
Position Mode Setup		
PR Mode Setup	Please setup the PR Mode Parameters in "PR Mode Setup" form!	
Internal Speed/Torque		
[0x02] 5 Mode		
[0x03] T Mode		
[0x04] Sz Mode		
[0x05] Tz Node		
[0x06] PT/S Mode		
[0x07] PT/T Mode		
[0x08] PR/S Mode		
[0x09] PR/T Mode		
[0x0A] 5/1 Hode		
[0x06] CAnopen		
[0x0D] RT/RP_Mode		
[0x0F] PT/PR/S Mode		
[0x0F] FT/PR/T Mode		
	ParaThd Msg=201, Cmd=0	

Since PR mode setting is a specific item in ASDA-Soft, please select "DI/O Setup" on the left first.



Step 3: Click "DI/O Setup", the following screen pops up:

⊗ Digit	> Digital Input(DI) Setup(P2-10~P2-17)						
DI1	[0x01]Servo On Contact a 	C contact b					
DI2	[0x04]Pulse dear Contact a	C contact b					
DI3	[0x16]Torque command selection 1~4 Bit0 💌 📀 contact a	C contact b					
DI4	[0x17]Torque command selection 1~4 Bit1 💌 📀 contact a	C contact b					
DI5	[0x02]Alarm Reset Contact a	C contact b					
DI6	[0x22]Reverse inhibit limit C contact a						
DI7	[0x23]Forward inhibit limit C contact a	contact b					
DI8	[0x21]Emergency stop C contact a	• contact b					

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x01]Servo On	•	contact a	C contact b	
-----	----------------	---	-----------	-------------	--

Step 4: Setup External Digital Input (EDI) command.

	nal Digital Input(EDI) Setup(P2-36~	P2-41)	
EDI9	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI 10	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI11	[0x00]Disabled	▼ ⊙ contact a	C contact b
EDI12	[0x00]Disabled	▼ ⊙ contact a	C contact b
EDI13	[0x00]Disabled	contact a	C contact b
EDI14	[0x00]Disabled	▼ ⓒ contact a	○ contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

ö Digit	al Output(DO) Setup(P2-18~P2-22)		
DO1	[0x01]Servo ready	 contact a 	C contact b
DO2	[0x03]At Zero speed	Contact a	○ contact b
DO3	[0x09]Homing completed	💌 🖲 contact a	C contact b
DO4	[0x05]At Positioning completed	💌 🕫 contact a	C contact b
DO5	[0x07]Servo alarm (Servo fault) activated	💌 🔿 contact a	• contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x01]Servo ready	
[0x02]Servo On	
[0x03]At Zero speed	-
[0x04]At Speed reached	=
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	$\overline{\mathbf{v}}$

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	•	•	contact a	C contact b	
-----	-------------------	---	---	-----------	-------------	--

Step 6: "Common Setup"

[0x01] PR Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

[0x00] PT Hode	[0x01] PR:Position control mode	ntrol Mode is changed, Must Reboot Drive to Enable Setting!	
I/O Setun	-		
iommon Setup	× Common Setup		
osition Mode Setup	-Potaing Direction Colection/01-01)	Encoder Output Duise Number/01-46	
R Mode Setun	Forward: CCW, Reverse: CW	Encoder Output Palse Namber (F1-10)	
	C Forwrd: CW, Reverse: CCW	[2500 Putro from (20., 220000)	
hternal Speed/Torque		2500 Puse/rev (20~520000)	
[0x02] 5 Mode	Pulse Output Polarity Setting(P1-03) X:Monitor analog output polarity		
[UXU3] I MODE	Y:Output Polarity O: MON1(+), MON2(+)	Regenerative Resistor Setting(P1-52,P1-53)	j
[0x05] Tz Mode	(• Forward Output C 1: MON1(+), MON2(-)	[751 Ω (5~751)	
[0x06] PT/S Mode	C Reverse Output C 2: MON1(-), MON2(+)	3001 W (0~3001)	
[0x07] PT/T Mode	C 3: MON1(-), MON2(-)		
[0x08] PR/S Mode	Delay of Brake Selection(P1-42.P1-43)	Max Motor Speed(P1-55)	
[0x09] PR/T Mode	MBT1 0 (0~1000)(ms)	6001 RPM (10~6001)	1
[0x0A] 5/T Mode	MBT2 0 (-1000~1000)(ms)		
[0x0B] CANopen		Analog Torque Command Filter(P1-07)	
[0x0C] Reserved	DON MUST Select BRKK	C YES 0 ms	
[0x0D] PT/PR_Mode		(0~1000)	
[0x0E] PT/PK/S Hode	SON ON ON	© NO +++	
Lower Lowe	BRXR_OFF		
		Max Analog Torque Command (P1-41)	j –
	MBTI (P1-42.) MBT2 (P1-43)		
	Motor years (P1.38)	100 %/10V EPM	
	speed	(0~1000)	1

Step 7: When the setting of "Common Setup" is complete, the next step is "Position Mode Setup".



The screen on the right will be switched to the one as below:

Mode [0v01] PR-Position control mode	If Control Mode is changed, Must Reboot Drive to Enable Setting	
Mode		
P Solution Mode Parameter Setup		
Setup Type of Pulse Command Input(P1-00: X Z)	Target Position Error Range(P1-54)	
p	12800 Pulse (0~1280000)	
d/Torque	Over Pecitien error Threshold/02.25	
	2040000 10 p. (1, 12000000)	
lode	[3840000 10 Puise (1~128000000)	
lode	Electric Gear Numerator Setting(P1-44, P1-45)	
Input pulse filter (P1-00: Y)	-	
de U: 1.66Mpps(Low Speed), 6.66Mpps(High Speed)	128 (1~536870911)	
C 2 2000 (mgh Speed) 2000 (mgh Speed)	10 (12147492647)	
2:208kpps(Low Speed), 208kpps(High Speed)		
3:104kpps(Low Speed), 104kpps(High Speed)	179 (1 50007004)	
Source of pulse command	Gear2 = 12.80	
• 0:Open collector for low-speed pulse	10	
ode C 1:Line driver for high-speed pulse		
Mode	128 (1~536870911)	
Mode	10 = 12.80	
Pulse Command Filter (P1-08)		
C Yes 0 Unit: 10ms	128 (1~536870911)	
(0~1000)	Gear4 = 12.80	
	10	

Step 8: If users desire to setup PR mode, click the fourth block and the main screen will be as below:

[0x01] PR Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Internal Speed/Torque



Step 9: If users desire to setup speed or torque limit, click the fifth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:

💽 Parameter Initial Wizard							- • •
🔄 📑 🏠 🐔 📲 🕗	<u>G</u>						
[Ov00] RT Mode	Control Mode Selection(P	1-01)					
T0x011 PP Mode	[0x01] PR:Position contr	ol mode		If Control Mode	is changed, Must Rebo	oot Drive to Enable Setting!	
Town							
DI/O Setup	********						
Common Setup	Speed / Torque Li	nit Setup				-	*
Position Mode Setup	- P1-02 Vienaed limit						
PR Mode Setup	0: Disable speer	limit function				1 -	
	C 1: Enable speed	limit function(only	for T mode)				
Internal Speed/Torque	-Second Command Lin	nit Course/D1 00-	01 11)				
[0x02] 5 Mode	speed Command Lin	Dir source(P1-04%	et Coloct CDDO	or CDD1			
[0x03] T Mode	0001/0	Din mu	IST Select SPDU	or SPD1	1 4/4		E
[0x04] Sz Mode	SPD1/0	0/0	0/1	1/0	1/1		
[0x05] Tz Mode	and the second se	Speed	Internal Register 1	Internal Register 2	Internal Register 3		
[0x06] PT/5 Mode	Command	Command is 0	1000 RPM	2000 RPM	3000 RPM	•	
[0x07] PT/T Mode	Source		(-60000~60000)	(-60000~60000)	(-60000~60000)		
[0x08] PR/S Mode			1				
[0x09] PR/T Mode						•	
[0x0A] S/T Mode	P1-02 Y:torque limit						
[0x0B] CANopen	O: Disable torqu	e limit function					
[0x0C] Reserved	😳 1: Enable torqu	e limit function(onl	y for P/S mode)				
[0x0D] PT/PR. Mode	Torque Limit Setting	(P1-12-P1-14)					
[0x0E] PT/PR/S Mode	Torque clinic Securi	DIn mi	ist Select TCM0	or TCM1		-	
LuxuFJPT/PR/TPiode	TCM1/D	0/0	0/1	1/0	1/1		
		Tanana	Internal Register 1	Internal Register?	Internal Register3		
	Command	Command is 0	100 %	100 %	100 %		
	Source		(-300~300)	(-300~300)	(-300~300)		
			(303/0300)	(000/0000)	(500.500)		
						1	
						• •	-
							10 M
		Para I hd Msg	=201, Cmd=0				1

[0x02] S : Speed Control Mode

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x02] S:Speed control mode
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T:Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Speed control mode (S), the setting block on the left will show as below:



Step 3: Click "DI/O Setup", the following screen pops up.

⊗ Digit	al Input(DI) Setup(P2-10~P2-17)	
DI1	[0x01]Servo On 💽 🤄 contact a	C contact b
DI2	0x04]Pulse dear 🗨 💿 contact a	C contact b
DI3	[0x16]Torque command selection 1~4Bit0 💌 📀 contact a	○ contact b
DI4	[0x17]Torque command selection 1~4 Bit1 V C contact a	C contact b
DI5	0x02]Alarm Reset Contact a	C contact b
DI6	0x22]Reverse inhibit limit C contact a	 contact b
DI7	[0x23]Forward inhibit limit C contact a	 contact b
DI8	0 contact a	

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	Н
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x01]Servo On	-	Œ	contact a	0	contact b	
		_					

Step 4: Setup External Digital Input (EDI) command.

	nal Digital Input(EDI) Setup(P2-36~	P2-41)	
EDI9	[0x00]Disabled	💌 🖲 contact a	C contact b
EDI 10	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI11	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI12	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI13	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI14	[0x00]Disabled	💌 📀 contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

⊗ Digit	al Output(DO) Setup(P2-18~P2-22)		
DO1	[0x01]Servo ready	 contact a 	○ contact b
DO2	[0x03]At Zero speed	contact a	C contact b
DO3	0x09]Homing completed	▼ ⊙ contact a	○ contact b
DO4	[0x05]At Positioning completed	💌 🖲 contact a	C contact b
DO5	[0x07]Servo alarm (Servo fault) activated	💌 🔿 contact a	• contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	
[0x03]At Zero speed	-
[0x04]At Speed reached	=
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	0x01]Servo ready	C contact b

Step 6: "Common Setup"



The screen on the right will be switched to the one as below:

0x00] PT Mode	Control Mode Selection(P1-01) [0x02] S:Speed control mode	👻 If Contr	ol Mode is changed, Must Reboot Drive to Enable Setting!	
0x02] S Mode O Setup	☆ Common Setup			
nmon Setup eed Mode Setup ernal Soeed/Torque	Rotaion Direction Selection(Forward: CCW, Rever C Forwrd: CW, Reverses	91-01) se: CW CCW	Encoder Output Pulse Number (P1-46)	
1x03] T Mode 1x04] Sz Mode 1x05] Tz Mode 1x06] PT/S Mode 1x06] PT/S Mode 1x07] PT/T Mode 1x08] PR/S Mode	Pulse Output Polarity Settin Y:Output Polarity Forward Output Reverse Output	(P1-03) X:Monitor analog output polarity © 0: MON1(+), MON2(+) © 1: MON1(+), MON2(-) © 2: MON1(-), MON2(+) © 3: MON1(-), MON2(-)	Regenerative Resistor Setting(P1-52,P1-53) 751 Ω 3001 W 0~3001)	
Dx09] PR/T Mode Dx08] S/T Mode Dx08] CANopen Dx08] CANopen Dx00] PT/PR. Mode Dx00] PT/PR. Mode Dx08] PT/PR/S Mode Dx08] PT/PR/T Mode	Delay of Brake Selection(P1 MBT1 0 MBT2 0 DOn must SON OFF	42,P1-43) (0~1000)(ms) (-1000~1000)(ms) Select BRKR	Max Motor Speed(P1-55) 6001 RPM (10~6001) Analog Torque Command Filter(P1-07) C YES 0 ms (0~1000) C NO	
	MBT1 (P1-42.) Motor speed	MBT2 (P1-43)	Max Analog Torque Command (P1-41)	

Step 7: When the setting of "Common Setup" is complete, the next step is "Position Mode Setup".

∑ [0x02] 5 Mode
DI/O Setup
Common Setup
Speed Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

[0x01] PR Mode	[0x02] S:Speed control mode	If Control Mode is changed, Must Reboot Drive to Enable Setting!	
I/O Setup	↓ ⊗ Speed Mode Parameter Setup		
ommon Setup	Analog Speed Command Filter (P1-06)		
peed Mode Setup		S Curve Time of Speed Filter (P1-34, P1-35, P1-36)	
iternal Speed/Torque			
[0x03] T Mode	(0~1000)	TACC 200 ms(1~65500)	
[0x04] Sz Mode			
[0x05] Tz Mode		TDEC 200 ms (1~65500)	
(0x06] PT/S Mode	Target Speed Threshold(P1-39)	TSL 0 ms(0~65500)	
0x07JPT/TMode	Target Speed Over 3000 RPM (0~5000)		
0x09] PR/T Mode			
[0x0A] S/T Mode	Max Analog Speed Command(P1-40)		
[0x0B] CANopen			
[0x0C] Reserved	50001 RPM/10V		
[0x0D] PT/PR. Mode			
0x0E] PT/PR/S Mode		TACC TDEC	
uxuP] P1/Pk/1 Houe	•		
	Overeneed Warming(P3 24)		
	overspeed warning(P2-54)		
	Speed Inreshold Over 5000 RPM (1~5000)		
	I Contraction of the second se		
	*		

Step 8: If users desire to setup speed or torque limit, click the fourth block "Internal Speed/Torque".

∑ [0x02] 5 Mode
DI/O Setup
Common Setup
Speed Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

🛃 Parameter Initial Wizard						×
📕 🖨 🕰 📲 😨 🖉 🚭						
[0x00] PT Mode [0x01] PR Mode [0x02] S Mode [0x02] S Mode	ection(P1-01) control mode	•	If Control Mode is	s changed, Must Re	boot Drive to Enable Setting!	
DI/O Setup						
Common Setup	rque Limit Setup					n Â
Speed Mode Setup	eed limit ble speed limit function ble speed limit function(oply f	inr T mode)				
Internal Speed/Torque	le speed inner fan don forny f				-	
[0x03] I Mode Speed Com	mand Limit Source(P1-09~P)	1-11) t Coloct SDD0 (EDD1			
[0x05] Tz Mode	1/0 0/0	0/1	1/0	1/1		Ε
0x06] PT/5 Mode	2/0 0/0	Internal Register 1 I	nternal Perister?	Internal Register3		
Com	nand Command is 0	1000 RPM	2000 RPM	3000 RPM		
Sou	irce	(-60000~60000)	-60000~60000)	(-60000~60000)		
[0x0A] S/T Mode						
[0x0B] CANopen					_	
[0x0C] Reserved P1-02 Y:tor	rque limit ble torque limit function					
[0x0D] PT/PR Mode O 1: Enab	le torque limit function(only	for P/S mode)				
[0x0F] PT/PR/T Mode Torque Limi	it Setting(P1-12~P1-14)					
	DIn mus	t Select TCM0 (or TCM1			
ТСМ	1/0 0/0	0/1	1/0	1/1		
Comm	and Torque	Internal Register 1 I	nternal Register 2	Internal Register3		
Sou	rce Command is 0	100 %	100 %	100 %		
		(-300~300)	(-300~300)	(-300~300)		
3					r * *	
						-
	ParaThd Msg=	201, Cmd=0				

[0x03] T : Torque Control Mode

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x03] T:Torque control mode
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[[0x09] PR/T:Position control mode / Torque control mode
[[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Torque control mode (T), the setting block on the left will show as below:

∑ [0x03] T Mode
DI/O Setup
Common Setup
Torque Mode Setup
Internal Speed/Torque

Step 3: Click "DI/O Setup", the following screen pops up.

ö Digital Input(DI) Setup(P2-10∼P2-17)				
DI1	[0x01]Servo On Contact a	C contact b		
DI2	[0x04]Pulse clear Contact a	C contact b		
DI3	[0x16]Torque command selection 1~4Bit0 💌 🌾 contact a	C contact b		
DI4	[0x17]Torque command selection 1~4Bit1 💌 🌾 contact a	C contact b		
DI5	0x02]Alarm Reset Contact a	C contact b		
DI6	[0x22]Reverse inhibit limit C contact a	€ contact b		
DI7	[0x23]Forward inhibit limit C contact a	Contact b		
DI8	[0x21]Emergency stop C contact a	Contact b		
There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	-
[0x01]Servo On	-
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	_
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1 0x01]Servo On Contact a Contact b	
---------------------------------------	--

Step 4: Setup External Digital Input (EDI) command.

	nal Digital Input(EDI) Setup(P2-36~	P2-41)	
EDI9	[0x00]Disabled	contact a	C contact b
EDI 10	[0x00]Disabled	▼ ⊙ contact a	C contact b
EDI11	[0x00]Disabled	contact a	C contact b
EDI 12	[0x00]Disabled	contact a	C contact b
EDI13	[0x00]Disabled	contact a	C contact b
EDI14	[0x00]Disabled	▼ ⓒ contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

ö Digit	al Output(DO) Setup(P2-18~P2-22)	
DO1	[0x01]Servo ready • contact a	a C contact b
DO2	[0x03]At Zero speed • contact a	a C contact b
DO3	[0x09]Homing completed Contact a	a C contact b
DO4	[0x05]At Positioning completed Contact a	a C contact b
DO5	[0x07]Servo alarm (Servo fault) activated 💌 🔿 contact a	a 📀 contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	-
[0x03]At Zero speed	-
[0x04]At Speed reached	-
[0x05]At Positioning completed	-
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	• contact a	C contact b	

Step 6: "Common Setup"

∑ [0x03] T Mode
DI/O Setup
Common Setup
Torque Mode Setup
Internal Speed/Torque

(0x00) PT Mode (0x01) PR Mode (0x02) 5 Mode	Control Mode Selection(P1-01) [0x03] T:Torque control mode	If Control Mode is changed, Must Reboot Drive to Enable Setting!
01/0 Setup	🔆 Common Setup	
Common Setus forque Mode Setup Internal Speed/Torque (0x04) Sz Mode (0x05) Tz Mode (0x05) Tz Mode (0x06) PT/S Mode (0x08) PR/5 Mode (0x08) PR/5 Mode (0x08) S/T Mode (0x08) S/T Mode (0x08) Chopen (0x00) PT/PR/5 Mode (0x06) PT/PR/5 Mode (0x06) PT/PR/T Mode	Rotaion Direction Selection(P1-01) Forward: CCW, Reverse: CW Pulse Output Polarity Forward: CW, Reverse: CW Pulse Output Polarity X:Monitor analog output planity Forward Output Reverse Output Imonitor analog output planity S:MON1(+), MON2(+) X:Monitor, MON2(+) X:MON1(-), MON2(-) Z: MON1(-), MON2(-) Delay of Brake Selection(P1-42,P1-43) MBT1 0 (0~1000)(ms) MBT2 (-1000~1000)(ms) DOn must Select BRKR 0N 0FF 0N 0FF MBT1 (P1-42) MBT2 (P1-43) MBT2 (P1-42) 0FF 0N 0FF 0FF 0N 0FF 0FF 0FF 0FF 0FF 0FF 0FF	Encoder Output Pulse Number (P1-46) 2500 Pulse/rev (20~320000) olarity Regenerative Resistor Setting(P1-52,P1-53) 751 Ω (5~751) 3001 W (0~3001) Max Motor Speed(P1-55) §001 RPM (10~600.1)
	ParaThd Msg=201, Cmd=0	

Step 7: When the setting of "Common Setup" is complete, the next step is "Torque Mode Setup".



The screen on the right will be switched to the one as below:

Toronal is i stores	[0x03] T-Torque control mode	
[0x01] PR Mode	Terrardia serie a linear	
[0x02] 5 Plode		
DI/O Setup	and a second	
Common Setup		
Torous Mode Satur	Analog Torque Command Filter(P1-07)	
orque mode setup	CYES D ms	
nternal Speed/Torque	(0~1000)	
[0x04] Sz Mode	• © NO +	
[0x05] 12 Mode		
[0x07] PT/T Mode	Mar Andre Territo Commend (01.41)	
[0x08] PR/5 Mode	Max Analog Torque Committano (*1441)	
[0x09] PR/T Mode	100 %/10V 25%	
[0x0A] S/T Mode	(0~1000)	
[0x0B] CANopen		
[0x0C] Reserved		
[0x0D] PT/PR. Mode		
[0x0E] PT/PR/S Mode		
[UXUF] PT/PK/T Mode		

Step 8: If users desire to setup speed or torque limit, click the fourth block "Internal Speed/Torque".

∑ [0x03] T Mode
DI/O Setup
Common Setup
Torque Mode Setup
Internal Speed/Torque

🔊 Parameter Initial Wizard	
[[0x00] PT Mode Control Mode Selection(P1-01)	
[0x01] PR Mode [[0x03] T:Torque control mode [] [[0x03] T:Torque c	
[0x02] 5 Mode	
[xx03] T Mode	A
DI/O Setup	
Common Setup P1-02 X speed limit (*) 02 Isbale speed limit function	
Torque Mode Setup C 1: Enable speed limit function(only for T mode)	
Internal Speed/Torque	
[0x04] 5z Mode DIn must Select SPD0 or SPD1	
[0x05] Tz Mode SPD1/0 0/0 0/1 1/0 1/1	E
[0x06] P1/5 Mode Speed Internal Register 2 Internal Register 2 Internal Register 3	
Command Command is 0 1000 RPM 2000 RPM [0x08] PR/5 Mode Source Command is 0 1000 RPM 3000 RPM	
[0x09] PR/T Mode [-60000~60000] [-60000~60000] [-60000~60000]	
[0x0A] S/T Mode	
[0x0B] CANopen	
[0x0c] RESERVED	
C 1: Enable torque limit function(only for P/S mode)	
Torque Limit Setting(P1-12~P1-14)	
DIn must Select TCM0 or TCM1	
TCM1/0 0/0 0/1 1/0 1/1	
Command Torque Internal Register 2 Internal Register 3	
Source Command is 0 100 % 100 % 100 %	
	-
ParaThd Msg=201, Cmd=0	11.

[0x04] Sz : Zero Speed / Internal Speed Command

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x04] Sz:Zero speed / internal speed command
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T:Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Zero speed control mode (Sz), the setting block on the left will show as below:

∑ [0x04] Sz Mode
DI/O Setup
Common Setup
Speed Mode Setup
Internal Speed/Torque

Step 3: Click "DI/O Setup", the following screen pops up.

ö Digit	al Input(DI) Setup(P2-10~P2-17)	
DI1	[0x01]Servo On 🔹 🕫 contact a	○ contact b
DI2	[0x04]Pulse clear 💽 🕫 contact a	○ contact b
DI3	[0x16]Torque command selection 1~4 Bit0 💌 🙃 contact a	C contact b
DI4	[0x17]Torque command selection 1~4 Bit1 💌 📀 contact a	C contact b
DI5	[0x02]Alarm Reset Contact a	C contact b
DI6	[0x22]Reverse inhibit limit C contact a	Contact b
DI7	0 contact a	 contact b
DI8	[0x21]Emergency stop C contact a	Contact b

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	
[0x12]Position command selection 1~64 Bit1	-

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x01]Servo On	 Contact a C contact b 	
-----	----------------	---	--

Step 4: Setup External Digital Input (EDI) command.

External Digital Input(EDI) Setup(P2-36~P2-41)			
EDI9	[0x00]Disabled	contact a	C contact b
EDI 10	[0x00]Disabled	Contact a	C contact b
EDI11	[0x00]Disabled	contact a	C contact b
EDI12	[0x00]Disabled	Contact a	C contact b
EDI13	[0x00]Disabled	contact a	C contact b
EDI14	[0x00]Disabled	💌 💿 contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

	al Output(DO) Setup(P2-18~P2-22)			
DO1	[0x01]Servo ready	•	• contact a	🔘 contact b
DO2	[0x03]At Zero speed	•	Contact a	C contact b
DO3	[0x09]Homing completed	•	Contact a	C contact b
DO4	[0x05]At Positioning completed	•	Contact a	C contact b
DO5	[0x07]Servo alarm (Servo fault) activated	t 🔻	C contact a	Contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	-
[0x03]At Zero speed	-
[0x04]At Speed reached	=
[0x05]At Positioning completed	_
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".



Step 6: "Common Setup"

∑ [0x04] Sz Mode
DI/O Setup
Common Setup
Speed Mode Setup
Internal Speed/Torque

[0x00] PT Mode] [0x01] PR Mode] [0x02] 5 Mode]	Control Mode Selection(P1-01) [0x04] Sz:Zero speed / internal speed command	trol Mode is changed, Must Reboot Drive to Enable Setting!
[0x03] T Mode [0x04] Sz Mode	🛿 Common Setup	
DI/O Setup Common Setup Speed Mode Setup Internal Speed/Torque (0xd5) Tz Node (0xd5) Tz Node (0xd5) PT/5 Node (0xd7) PT/T Node	Rotaion Direction Selection(P1-01) Forward: CCW, Reverse: CW Pulse Output Polarity "Soutput Polarity "Soutput Polarity Go: MON1(+), MON2(+) Reverse Output C: I: MON1(-), MON2(-) C: Sunoic), MON2(-)	Encoder Output Pulse Number(P1-46) 2500 Pulse/rev (20~320000) Regenerative Resistor Setting(P1-52,P1-53) [751 Ω (5~751) 3001 Wr (0~3001) [751 [751 [751
[0x09] PR/T Hode [0x08] S/T Mode [0x08] CANopen [0x00] Reserved [0x00] PT/PR Mode [0x06] PT/PR/S Mode [0x06] PT/PR/T Mode	Delay of Brake Selection(P1-42,P1-43) MBT1 0 (0-1000)(ms) MBT2 0 (-1000~1000)(ms) DOn must Select BRKR 0N 0PF S0N 0FF 0N BNX8 0FF 0FF	Max Motor Speed(P1-55) 6001 RPM (10~6001) Analog Torque Command Filter (P1-07) C YES 0 ms (0~1000) C NO
	-1- M611(P1-42) M612(P1-43) Motor spend	Max Analog Torque Command (P1-41)

Step 7: When the setting of "Common Setup" is complete, the next step is "Speed Mode Setup".



[0x00] PT Mode [0x01] PR Mode	[Dx04] Sz:Zero speed / internal speed command If Control Mode is changed, Must Re	eboot Drive to Enable Setting!
[0x02] S Mode [0x03] T Mode		
[0x04] Sz Mode	Speed Mode Parameter Setup	-
11/D Setup Common Setup peed Mede Setun Internal Speed/Torque [0xt05] 1z Node [0xt05] PT/5 Node [0xt07] PT/1 Node [0xt07] PT/1 Node [0xt08] PR/5 Node	Analog Speed Command Filter (P1-06) C Enabled 0 ms (0~1000) C Disabled Target Speed Threshold(P1-39) Target Speed Over 3000 RPM (0~5000)	P1-34,P1-35,P1-36) ms(1~65500) ms(0~65500)
[0x09] PR/T Mode [0x003] S/T Mode [0x08] CANopen [0x00] CANopen [0x00] PT/PR Mode [0x00] PT/PR Mode [0x06] PT/PR/T Mode	Max Analog Speed Comminand(P1-40) 50001 RPM/10V (0-50001) TACC	трес
	Overspeed Warning(P2-34) Speed Threshold Over 5000 RPM (1~5000)	

Step 8: If users desire to setup speed or torque limit, click the fourth block "Internal Speed/Torque".

∑ [0x04] Sz Mode
DI/O Setup
Common Setup
Speed Mode Setup
Internal Speed/Torque

🔄 Parameter Initial Wizard				
📃 🖃 🖙 🕰 📆 📲 🚱 👘 🚳				
[0x00] PT Mode [0x01] PR Mode [0x04] Sz:Zeo	Selection(P1-01) ro speed / internal speed comm	nand 🗾 If Control N	1ode is changed, Must Reboot Drive to	Enable Setting!
[0x02] 5 Mode				
[0x03] T Mode	Torque Limit Setup			
	rorque ennie Secup			
DI/O Setup	speed limit			
Common Setup C 1: Er	nable speed limit function(only	for T mode)		
Speed Mode Setup	ommand Limit Source(P1-09~P	91-11)		
Internal Speed/Torque	DIn mu	st Select SPD0 or SPD1		
SI [0x05] Tz Mode	PD1/0 0/0	0/1 1/0	1/1	E
[0x06] PT/S Mode	Speed	Internal Register 1 Internal Regi	ster2 Internal Register3	
[0x08] PR/5 Mode	mmand Command is 0	1000 RPM 2000 R	PM 3000 RPM	
0x09] PR/T Mode	ource	(-60000~60000) (-60000~600	000) [-60000~60000]	
[0x0A] S/T Mode			_	
[0x0B] CANopen	torque limit			
[0x0D] PT/PR Mode	isable torque limit function			
Ox0E] PT/PR/S Mode	nable torque limit function(only	r for P/S mode)		
0x0F] PT/PR/T Mode	.imit Setting(P1-12~P1-14)			
	DIn mu	st Select TCM0 or TCM1		
	м1/0 0/0	0/1 1/0	1/1	
Cor	nmand Torque	Internal Register 1 Internal Regi	ster2 Internal Register3	
S	ource Command is 0	(-300~300) (-300~30	6 100 % 0) (-300∝300)	
		(300-300) (300-30	, (300-300)	
				· · · · · · · · · · · · · · · · · · ·
	ParaThd Msg=	=201, Cmd=0		

[0x05] Tz : Zero Torque / Internal Torque Command

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x05] Tz:Zero torque / internal torque command
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torgue / internal torgue command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x00] PD /T Position control mode / Torque control mode
[[[uxua] PK/1:Position control mode / Torque control mode
[[[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Zero torque control mode (Tz), the setting block on the left will show as below:

∦ [0x05] Tz Mode
DI/O Setup
Common Setup
Torque Mode Setup
Internal Speed/Torque

Step 3: Click "DI/O Setup", the following screen pops up.

⊗ Digit	al Input(DI) Setup(P2-10~P2-17)	
DI1	[0x00]Disabled Contact a	C contact b
DI2	0x04]Pulse clear 💽 🕥 contact a	○ contact b
DI3	[0x16]Torque command selection 1~4 Bit0 💌 🙃 contact a	○ contact b
DI4	[0x17]Torque command selection 1~4 Bit1 💌 🙃 contact a	○ contact b
DI5	0x02]Alarm Reset	C contact b
DI6	[0x22]Reverse inhibit limit C contact a	 contact b
DI7	0x23]Forward inhibit limit C contact a	 contact b
DI8	[0x21]Emergency stop C contact a	Contact b

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x00]Disabled	
[0x00]Disabled	-
[0x01]Servo On	-
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x00]Disabled Contact a	🔿 contact b	
-----	---------------------------	-------------	--

Step 4: Setup External Digital Input (EDI) command.

	nal Digital Input(EDI) Setup(P2-36~	P2-41)	
EDI9	[0x00]Disabled	 contact a 	C contact b
EDI 10	[0x00]Disabled	▼ ⓒ contact a	🔿 contact b
EDI11	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI12	[0x00]Disabled	▼ ⊙ contact a	🔿 contact b
EDI13	[0x00]Disabled	Contact a	C contact b
EDI14	[0x00]Disabled	▼ ○ contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

	al Output(DO) Setup(P2-18~P2-22)		
DO1	[0x01]Servo ready	Contact a	C contact b
DO2	[0x03]At Zero speed	▼ • contact a	C contact b
DO3	0x09]Homing completed	▼ • contact a	C contact b
DO4	[0x05]At Positioning completed	contact a	C contact b
DO5	[0x07]Servo alarm (Servo fault) activated	C contact a	• contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	_
[0x03]At Zero speed	-
[0x04]At Speed reached	=
[0x05]At Positioning completed	-
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	• contact a	🔿 contact b	
				_

Step 6: "Common Setup"



[0x00] PT Mode [0x01] PR Mode [0x02] S Mode	Control Mode Selection(P.1-0.1) [0x05] Tz:Zero torque / internal torque command If Control	ol Mode is changed, Must Reboot Drive to Enable Setting!	
[0x03] T Mode	⊗ Common Setup		
(0x05) 1z Node D/O Setup Common Setup orque Mode Setup nternal Speed/Torque (0x06) PT/S Mode (0x07) PT/T Mode (0x08) PR/S Mode (0x08) S/T Mode (0x08) S/T Mode (0x08) S/T Mode (0x08) S/T Mode (0x08) PT/PR/S Mode (0x08) PT/PR/S Mode (0x08) PT/PR/T Mode	Rotaion Direction Selection(P1-01) © Forward: CCW, Reverse: CCW C Forward: CW, Reverse: CCW Pulse Output Polarity "F:Output Polarity "Or Forward Output "Forward Output "Reverse: Output "Serverse Output "BET [Serverse Output	Encoder Output Pulse Number (P1-46) 2500 Pulse/rev (20~320000) Regenerative Resistor Setting(P1-52,P1-53) 751 Ω (5~751) 3001 W (0~3001) Max Motor Speed(P1-55) 5001 RPM (10~6001)	
			-

Step 7: When the setting of "Common Setup" is complete, the next step is "Torque Mode Setup".



The screen on the right will be switched to the one as below:

[0x01] PR Mode	[0x05] Tz:Zero torque / internal torque command If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[0x02] S Mode		
[0x03] I Mode [0x04] Sz Mode	S Torque Mode Parameter Setup	_
[0x05] Tz Mode		
I/O Setup	Analog Torque Command Filter(P1-07)	
ommon Setup		
arque Mode Setup	(0~1000)	
have hour setup		
ternal Speed/Torque		
[0x06] PT/S Plode [0x07] PT/T Mode		
[0x0B] PR/S Mode	Max Analog Torque Comminano (P1-41)	
[0x09] PR/T Mode	100 %/10V 12H	
[0x0A] S/T Mode	(0~1000)	
[0x0B] CANopen		
[0x0C] Reserved [0x0D] PT/PR_Mode		
[0x0E] PT/PR/5 Mode		
[0x0F] PT/PR/T Mode		

Step 8: If users desire to setup speed or torque limit, click the fourth block "Internal Speed/Torque".

∑ [0x05] Tz Mode
DI/O Setup
Common Setup
Torque Mode Setup
Internal Speed/Torque

🖾 Parameter Initial Wizard	
[0x00] PT Mode Control Mode Selection(P1-01) [0x01] PR Mode [0x05] Tz:Zero torque / internal torque command If Control Mode is changed, Must Reboot Drive to Enable Setting! [0x02] S Mode [0x02] S Mode If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[0.003] T Mode	
Doublisz Mode v Speed / Torque Linit Setup	î
P1-02 X:speed limit	
DJO Setup C 15 basile speed imit function(only for T mode)	
Common Setup	
Torque Mode Setup DIn must Select SPD0 or SPD1	
Internal Speed/Torque SPD1/0 0/0 0/1 1/0 1/1	E
0x06] PT/S Mode Internal Register 1 Internal Register 2 Internal Register 3	
Osk02 PT/T Mode Command is 0 1000 RPM 2000 RPM 3000 RPM	
Downoj Pkp S indoz Source (-60000~60000) (-60000~60000) (-60000~60000)	
[0x0B] CAllopen	
Ox0C] Reserved P1-02 Y torque limit Ox0C P Disable torque limit Ox0C P Disable torque limit	
DoxDD PT/PR Mode Unit Guide Control (Inction(only for P/S mode)	
Doxel PT/PR/T Mode Torque Limit Setting(P1-12~P1-14)	
DIn must Select TCM0 or TCM1	
TCM1/0 0/0 0/1 1/0 1/1	
Command Torque Internal Register 1 Internal Register 2 Internal Register 3	
Source Command is 0 100 % 100 % 100 %	
(-300~300) (-300~300)	
	-
ParaThd Msg=201, Cmd=0	

[0x06] PT/S : Position Control Mode / Speed Control Mode (Dual Mode)

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x06] PT/S:Position control mode / Speed control mode
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T:Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Position control mode / Speed control mode, the setting block on the left will show as below:

∑ [0x06] PT/5 Mode
DI/O Setup
Common Setup
Position Mode Setup
Speed Mode Setup
Internal Speed/Torque

Step 3: Click "DI/O Setup", the following screen pops up.

⊗ Digit	al Input(DI) Setup(P2-10~P2-17)	
DI1	[0x00]Disabled Contact a	C contact b
DI2	[0x04]Pulse dear Contact a	○ contact b
DI3	[0x16]Torque command selection 1~4 Bit0 💌 📀 contact a	C contact b
DI4	[0x17]Torque command selection 1~4Bit1 💌 📀 contact a	C contact b
DI5	[0x02]Alarm Reset Contact a	C contact b
DI6	[0x22]Reverse inhibit limit C contact a	contact b
DI7	[0x23]Forward inhibit limit C contact a	 contact b
DI8	[0x21]Emergency stop C contact a	• contact b

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	_
[0x12]Position command selection 1~64 Bit1	-

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x01]Servo On		contact a	C contact b	
-----	----------------	--	-----------	-------------	--

Step 4: Setup External Digital Input (EDI) command.

External Digital Input(EDI) Setup(P2-36~P2-41)

EDI9	[0x00]Disabled	 contact a 	C contact b
EDI 10	[0x00]Disabled	▼ ⊙ contact a	C contact b
EDI11	[0x00]Disabled	 contact a 	C contact b
EDI12	[0x00]Disabled	▼ ⊙ contact a	C contact b
EDI13	[0x00]Disabled	contact a	C contact b
EDI14	[0x00]Disabled	contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

ö Digit	al Output(DO) Setup(P2-18~P2-22)
DO1	[0x01]Servo ready C contact a C contact b
DO2	[0x03]At Zero speed • contact a C contact b
DO3	[0x09]Homing completed Contact a Contact b
DO4	[0x05]At Positioning completed Contact a Contact b
DO5	[0x07]Servo alarm (Servo fault) activated 💌 🔿 contact a 📀 contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

	_	
[0x01]Servo ready		
[0x02]Servo On	-	ļ
[0x03]At Zero speed	-	
[0x04]At Speed reached	=	
[0x05]At Positioning completed	_	
[0x06]At Torques limit		
[0x07]Servo alarm (Servo fault) activated		
[0x08]Electromagnetic brake control		
[0x09]Homing completed		
[0x10]Output overload warning		
[0x11]Servo warning activated		
[0x12]Position command overflow	÷	
[0x12]F03ld0H command over now		

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	• contact a	🔿 contact b	

Step 6: "Common Setup"



[0x00] PT Mode	Control Mode Selection(P1-01) [0x06] PT/S:Position control mode / Speed control mode	If Control Mode is changed, Must Reboot Drive to Enable Setting!
[0x02] 5 Hode [0x03] T Mode [0x04] 5z Mode	∀ Common Setup	
[0x05] Tz Mode [0x06] PT/S Mode DI/O Setup	Rotaion Direction Selection(P1-01) © Forward: CCW, Reverse: CW © Forwrd: CW, Reverse: CCW	Encoder Output Pulse Number (P1-46)
Common Setup Position Mode Setup Speed Mode Setup Internal Speed/Torque	Pulse Output Polarity Setting(P1-03) Y:Output Polarity X:Monitor analog output If: Forward Output If: MON1(+), MON2 If: Reverse Output If: MON1(+), MON2 If: NON1(+), MON2 If: MON1(+), MON2 If: NON1(+), MON2 If: MON1(+), MON2 If: NON1(-), MON2 If: MON1(-), MON2	t polarity (+) (-) (-) (-) (-) (-) (-)
[0x09] F1/F1000 [0x08] PR/5 Node [0x09] PR/T Node [0x08] CANopen [0x08] CANopen [0x02] Reserved [0x02] PT/PR Mode [0x08] PT/PR/5 Mode [0x08] PT/PR/5 Mode	Delay of Brake Selection(P1-42,P1-43) MBT1 0 (0~1000)(ms) MBT2 0 (-1000~1000)(ms) DOn must Select BRKR 0N 20N 0FF 0PF	Max Motor Speed(P1-55) 6001 RPM (10~6001) Analog Torque Command Filter(P1-07) C YES 0 ms (0~1000) C NO
	BROR OFF MBT1(P1-42) MBT2(P1-43) Motor speed	Max Analog Torque Command (P1-41) 100 %/10V (0~1000)

Step 7: Since it is in dual mode, the system provides setting blocks of position (PT) and speed mode. Setup "Position (PT) Mode" first.

∑ [0x06] PT/S Mode
DI/O Setup
Common Setup
Position Mode Setup
Speed Mode Setup
Internal Speed/Torque

💽 Parameter Initial Wizard	
[0x00] PT Mode Control Mode Selection(P1-01) [0x01] PR Mode [0x02] S Mode [0x02] S Mode File	rol Mode is changed, Must Reboot Drive to Enable Setting!
[0x04] 5z Mode Solution Mode Parameter Setup	A
[0x05] Tz Mode [0x06] PT/S Hode DI/O Setup Common Setup Position Mode Setup Speed Mode Setup Input pulse filter (P1-00: X) Pulse Horection [0x07] PT/T Mode [0x08] PT/PR Mode [0x08] PT/PR/S Mode [0x08] PT/PR Mode [0x08] PT/PR Mode [0x08] PT/PR/T Mode [0x0	Target Position Error Range(P1-54) 12800 Pulse (0~1280000) Over Position error Threshold(P2-35) 3840000 10 Pulse (1~12800000) Electric Gear Numerator Setting(P1-44, P1-45) Gear1 128 (1~536870911) Gear2 128 (1~536870911) Gear3 128 (1~536870911) 10 = 12.80 Gear3 128 (1~536870911) 10 = 12.80 Gear4 10 10 = 12.80
	DIn must Select GNUM0/1
ParaThd Msg=201, Cmd=0	

Step 8: Then, setup Speed Mode.

% [0x06] PT/S Mode
DI/O Setup
Common Setup
Position Mode Setup
Speed Mode Setup
Internal Speed/Torque

[0x01] PR Mode [0x02] 5 Mode	[IOxO6] PT/S:Position control mode / Speed control mode 🔄 🖬 control Mode is changed, Must Reboot Drive to Enable Setting!	
[0x03] T Mode [0x04] Sz Mode	Speed Mode Parameter Setup	
[0x05] Tz Mode [0x06] PT/5 Mode DI/O Setup Common Setup Position Mode Setup	Analog Speed Command Filter (P1-06) C Enabled 0 ms (0~1000) C Disabled C D	
Speed Mode Setue Internal Speed/Torque [0x07] PT/1 Mode [0x08] PR/5 Mode [0x08] PR/T Mode [0x08] CANopen [0x00] Reserved [0x00] PT/PR Mode	Target Speed Threshold(P1-39) TSL 0 ms(0~65500) Target Speed Over 3000 RPM (0~5000) TSL 0 ms(0~65500) Max Analog Speed Command(P1-40) TSL 0 ms(0~65500) 50001 RPM/10V (0~50001) TSL 0 ms(0~65500)	
[0x0E] PT/PR/S Mode [0x0F] PT/PR/T Mode	Overspeed Warning(P2-34) Speed Threshold Over 5000 RPM (1~5000)	

Step 9: If users desire to setup speed or torque limit, click the fifth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:

0x00] PT Mode	Control Mode Selection(P [0x06] PT/S:Position cor	1-01) htrol mode / Speed	control mode 👱	If Control Mode	is changed, Must Reboo	t Drive to Enable Setting!	
02] 5 Mode	× Speed / Torque Li	mit Setup					
0004] Sz Mode 0x05] Tz Mode 0x06] PT/S Mode 0 Setup	P1-02 X:speed limit © 0: Disable spee © 1: Enable speed	d limit function 1 limit function(only	for T mode)				
nmon Setup	Speed Command Li	mit Source(P1-09~	P1-11)	or SPD1			
ition Mode Setup	SPD1/0	0/0	0/1	1/0	1/1		
ernal Speed/Torque [xx07] PT/T Mode [xx08] PR/S Mode	Command Source	Speed Command is 0	Internal Register 1 1000 RPM (-60000~60000)	Internal Register 2 2000 RPM (-60000~60000)	Internal Register 3 3000 RPM (-60000~60000)		
x09] PR/T Mode x0A] S/T Mode x0B] CANopen x0C] Reserved	P1-02 Y:torque limi © 0: Disable torqu © 1: Enable torqu	t ue limit function e limit function(only	y for P/S mode)				
ixOD] PT/PR_Mode ixOE] PT/PR/S Mode	Torque Limit Setting	(P1-12~P1-14)	ist Select TCM0	or TCM1			
worf PT/PR/T Mode	TCM1/0	0/0	0/1	1/0	1/1		
	Command Source	Torque Command is 0	Internal Register 1 100 % (-300~300)	Internal Register 2 100 % (-300~300)	Internal Register 3 100 % (-300~300)		

[0x07] PT/T : Position Control Mode / Torque Control Mode (Dual Mode)

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x07] PT/T:Position control mode / Torque control mode
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T:Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Position control mode / Torque control mode, the setting block on the left will show as below:



Step 3: Click "DI/O Setup", the following screen pops up.

⊗ Digit	tal Input(DI) Setup(P2-10~P2-17)	
DI1	0x01]Servo On 💌 🕫 contact a	C contact b
DI2	[0x04]Pulse dear	C contact b
DI3	[0x16]Torque command selection 1~4 Bit0 💌 🕫 contact a	○ contact b
DI4	[0x17]Torque command selection 1~4 Bit1 💌 🙃 contact a	C contact b
DI5	[0x02]Alarm Reset Contact a	C contact b
DI6	[0x22]Reverse inhibit limit C contact a	• contact b
DI7	[0x23]Forward inhibit limit C contact a	 contact b
DI8	[0x21]Emergency stop C contact a	Contact b

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	
[0x12]Position command selection 1~64 Bit1	$\overline{\mathbf{x}}$

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x01]Servo On	Contact a	🔿 contact b	

Step 4: Setup External Digital Input (EDI) command.

	nal Digital Input(EDI) Setup(P2-36~	P2-41)	
EDI9	[0x00]Disabled	💌 📀 contact a	○ contact b
EDI 10	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI11	[0x00]Disabled	▼ ⓒ contact a	○ contact b
EDI12	[0x00]Disabled	▼ ⊙ contact a	C contact b
EDI13	[0x00]Disabled	▼ ⊙ contact a	C contact b
EDI14	[0x00]Disabled	▼ ⓒ contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

ö Digit	al Output(DO) Setup(P2-18~P2-22)		
DO1	[0x01]Servo ready	 contact a 	C contact b
DO2	[0x03]At Zero speed	 contact a 	○ contact b
DO3	[0x09]Homing completed	 contact a 	○ contact b
DO4	[0x05]At Positioning completed	 contact a 	○ contact b
DO5	[0x07]Servo alarm (Servo fault) activated	▼ C contact a	contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	-
[0x03]At Zero speed	-
[0x04]At Speed reached	=
[0x05]At Positioning completed	_
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	contact a	○ contact b	

Step 6: "Common Setup"

∑ [0x07] PT/T Mode
DI/O Setup
Common Setup
Position Mode Setup
Torque Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

[0x00] PT Mode [0x01] PR Mode [0x02] 5 Mode	ode Selection(P1-01) /T:Position control mode / Torque control mode If Control	rol Mode is changed, Must Reboot Drive to Enable Setting!	
[0x03] T Mode	non Setup		•
[0x05] Tz Mode Rotai [0x06] PT/5 Mode C [0x07] PT/T Mode C DI/O Setup Pulse Common Setup Y:00 Position Mode Setup C	an Direction Selection (P1-01) Forward: CCW, Reverse: CCW Forward: CW, Reverse: CCW Output Polarity Setting (P1-03) utput Polarity Forward Country C 0: MON1(+), MON2(+)	Encoder Output Pulse Number (P1-46) 2500 Pulse/rev (20~320000) Regenerative Resistor Setting (P1-52, P1-53) 751 Q. (5~751)	
Torque Mode Setup Internal Speed/Torque [0x08] PR/S Mode [0x08] PR/T Mode	C 1: MONI(+), MON2(-) Reverse Output C C 2: MON1(-), MON2(+) C 3: MON1(-), MON2(-) of Brake Selection(P1-42,P1-43) MBT1 MBT1 0	3001 W (0~3001) Max Motor Speed(P1-55) 6001 6001 RPM (10~6001)	
[0x0A] S/T Node [0x0B] CAllopen [0x0C] Reserved [0x0D] PT/PR Node [0x0F] PT/PR/S Mode [0x0F] PT/PR/T Mode [0x0F] PT/PR/T Mode	MBT2 0 (-1000~1000)(ms) DOn must Select BRKR ON OFF ON OFF ON OFF OF MBT1 (P1-42) MBT2 (P1-43) MOX 257D(P1-38)		

Step 7: Since it is in dual mode, the system provides setting blocks of position (PT) and torque mode. Setup "Position (PT) Mode" first.



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The screen on the right will be switched to the one as below:

🖪 Parameter Initial Wizard			
📕 🖙 🦚 📆 😮	Q		
[0x00] PT Mode [0x01] PR Mode [0x02] S Mode	lode Selection(P1-01) T/T:Position control mode / Torque control mode 💽 If Control I	Mode is changed, Must Reboot Drive to Enable Setting!	
[0x03] T Mode	tion Mode Parameter Setun		
0x04] 52 Mode	e of Pulse Command Input/P1-00: V 7	-Target Desition Error Dange/01 E4	
[0x06] PT/5 Mode	Logic Type (P1-00: Z) Positive Logic	Target Position Error Range(*1-34) 12800 Pulse (0~1280000)	
DI/O Setup		Over Position error Threshold(P2-35)	
Common Setup		10 Pulse (1~128000000)	-
Position Mode Setup	nput pulse filter(P1-00; Y)	Electric Gear Numerator Setting(P1-44, P1-45)	F
Torque Mode Setup	0:1.66Mpps(Low Speed), 6.66Mpps(High Speed)	128 (1~536870911)	
Internal Speed/Torque	1:416Kpps(Low Speed), 416Kpps(High Speed)	Gear1 = 12.80	
[0x08] PR/5 Mode	2:208Kpps(Low Speed), 208Kpps(High Speed)	(1~214/465647)	
[0x0A] S/T Mode	s: 10-#cpbs(cow speed), 10-#cpbs(nigh speed)	128 (1~536870911)	
[0x0B] CANopen	0:Open collector for low-speed pulse	Gear2 = 12.80	
[0x0C] Reserved	1:Line driver for high-speed pulse		
[0x0E] PT/PR/S Mode	2	128 (1~536870911)	
◎ [0x0F] PT/PR/T Mode		Gear3 = 12.80	
I Puis	se command Hiter(P1-U8)		
I	Yes 0 Unit: 10ms (0x1000)	128 (1~536870911)	
•	NO	10 = 12.80	
		DIn must Select GNUM0/1	
* •••		***************************************	-
	ParaThd Msg=201, Cmd=0		

Step 8: Then, setup torque mode.



[0x00] PT Mode	Control Mode Selection(P1-01) [Dx07] PT/T:Position control mode / Torque control mode If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[0x02] 5 Mode [0x03] T Mode [0x03] T Mode [0x04] 5z Mode [0x05] Tz Mode	∀ Torque Mode Parameter Setup	A
[0x06] PT/S Mode [0x07] PT/T Mode DI/O Setup Common Setup Position Mode Setup Torque Mode Setup Internal Speed/Torque [0x08] PR/S Mode [0x08] PR/S Mode [0x08] S/T Mode [0x08] S/T Mode [0x08] S/T Mode [0x08] PT/PR Mode [0x08] PT/PR/S Mode [0x06] PT/PR/T Mod	Analog Torque Command Filter(P1-07) C YES (0~1000) Image: No	E E
	ParaThd Msg=201, Cmd=0	+

Step 9: If users desire to setup speed or torque limit, click the fifth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:

🔄 Parameter Initial Wizard		
🔄 📑 🏠 🐔 📲 🕗		
0x00] PT Mode	trol Mode Selection (P1-01) 07] PT/T:Position control mode / Torque control mode If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[∑[0x02] 5 Mode		
∑ [0x03] T Mode	Encod / Townuc Limit Schup	
[0x04] Sz Mode	Speed / Torque Linnic Secup	î
S [0x05] 12 Mode	P1-02 X:speed limit	
<pre>////////////////////////////////////</pre>	C 1: Enable speed limit function	
DI/O Setup		
Common Solt in	DIn must Select SPD0 or SPD1	
	SPD1/0 0/0 0/1 1/0 1/1	=
Position Mode Setup	Internal Register 1 Internal Register 2 Internal Register 3	
Torque Mode Setup	Command Command is 0 1000 PDM 2000 PDM	
Internal Speed/Torque	Source (-60000~60000) (-60000~60000) (-60000~60000)	
[0x08] PR/S Mode		
© (0x09) PR/T Mode		
[UXUA] S/T Mode	P1-02 Y:torque limit	
[0x0C] Reserved	0: Disable torque limit function	
[0x0D] PT/PR Mode	· · · ·	
[0x0E] PT/PR/5 Mode	Torque Limit Setting(P1-12~P1-14)	
Section 2000 [0x0F] PT/PR/T Mode	Din must select ICMU or ICM1	
•		
1	Command Torque Internal Register 1 Internal Register 2 Internal Register 3	
I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Source Command IS 0 100 % 100 % 100 % 100 %	
1	(-300×300) (-300×300)	
		τ.
	ParaThd Msg=201, Cmd=0	

[0x08] PR/S : Position Control Mode / Speed Control Mode (Dual Mode)

[0x08] is a dual control mode of position and speed, which is the same as [0x06]. The difference between both is the command source of position control. The command source of [0x06] is external pulse signal while [0x08] is internal position command (PR). Users can select the position command according to different applications.

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x08] PR/S:Position control mode / Speed control mode
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T:Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select position control mode / speed control mode, the setting block on the left will show as below:



Step 3: Click "DI/O Setup", the following screen pops up.

ö Digit	al Input(DI) Setup(P2-10~P2-17)	
DI1	[0x01]Servo On Contact a	C contact b
DI2	[0x04]Pulse dear Contact a	C contact b
DI3	[0x16]Torque command selection 1~4 Bit0 💌 📀 contact a	C contact b
DI4	[0x17]Torque command selection 1~4 Bit1 💌 🙃 contact a	C contact b
DI5	[0x02]Alarm Reset Contact a	C contact b
DI6	[0x22]Reverse inhibit limit C contact a	Contact b
DI7	[0x23]Forward inhibit limit C contact a	Contact b
DI8	[0x21]Emergency stop C contact a	Contact b

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x01]Servo On	Contact a	C contact b	

Step 4: Setup External Digital Input (EDI) command.

	nal Digital Input(ED	I) Setup(P2-36~P2-4	1)		
EDI9	[0x00]Disabled	•	🔹 📀 contact a	C contact b	
EDI 10	[0x00]Disabled		💿 💿 contact a	C contact b	
EDI11	[0x00]Disabled	•	🕞 📀 contact a	C contact b	
EDI12	[0x00]Disabled	•	🕞 📀 contact a	C contact b	
EDI13	[0x00]Disabled	•	🕞 ⓒ contact a	C contact b	
EDI14	[0x00]Disabled	•	• contact a	C contact b	

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

☆ Digital Output(DO) Setup(P2-18~P2-22)				
DO1	[0x01]Servo ready • contact a C contact b)		
DO2	[0x03]At Zero speed C contact a C contact b)		
DO3	[0x09]Homing completed C contact a C contact b)		
DO4	[0x05]At Positioning completed)		
DO5	[0x07]Servo alarm (Servo fault) activated 💌 🔿 contact a 📀 contact b)		

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	
[0x03]At Zero speed	_
[0x04]At Speed reached	=
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	_
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	contact a	C contact b	

Step 6: "Common Setup" V [0x08] PR/S Mode DI/O Setup Common Setup Position Mode Setup PR Mode Setup Speed Mode Setup Internal Speed/Torque

Parameter Initial Wizard	Control Mode Selection(P1-01) [0x08] PR/S:Position control mode / Speed control mode	trol Mode is changed, Must Reboot Drive to Enable Setting	
[0x02] S Node [0x03] T Node			
[0x04] Sz Mode	Setup		<u>^</u>
[0x05] Tz Node [0x06] PT/S Node [0x07] PT/T Node [0x08] PR/S Mode	-Rotaion Direction Selection(P1-01)	Encoder Output Pulse Number(P1-46) 2500 Pulse/rev (20~320000)	
DI/O Setup Common Setup Position Mode Setup PR Mode Setup	Y:Output Polarity • Forward Output • Reverse Output • Reverse Output • Stronard Output • Reverse Output • Stronard Output	Regenerative Resistor Setting(P1-52,P1-53) [751<Ω (5~751)	E.
Speed Mode Setup Internal Speed/Torque	Delay of Brake Selection(P1-42,P1-43) MBT1 0 (0~1000)(ms)	Max Motor Speed(P1-55) 6001 RPM (10~6001)	
[UX09] PK/1 Mode [UX08] S/T Mode [UX08] CANopen [UX0C] Reserved [UX0D] PT/PR. Mode [UX0E] PT/PR/S Mode	MBT2 0 (-1000~1000)(ms) DOn must Select BRKR ON SON OFF ON ON OFF OF	Analog Torque Command Filter (P1-07) (° YES 0 ms (0~1000) (° NO	
[0x0F] PT/PR/T Mode	BOUC OF 1 1 MBT1 (P1-42) MBT2 (P1-43) Motor speed 2550 (P1-38)	Max Analog Torque Command (P1-41)	
	ParaThd Msg=201, Cmd=0		*

Step 7: Since it is in dual mode, the system provides setting blocks of position (PR) mode, PR mode and speed mode. Setup "Position (PR) Mode" first.

∑ [0x08] PR/S Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Speed Mode Setup
Internal Speed/Torque

Parameter Initial Wizard		
[0x00] PT Mode Control Mode Selection(P1-01) [0x01] PR Mode [[0x08] PR/S:Position control mode / Speed control mode [0x03] T Mode [[0x03] T Mode		
0x04] Sz Mode Vosition Mode Parameter Setup	^	
Type of Pulse Command Input(P1-00: X 2) Logic Type(P1-00: Z) Positive Logic Pulse Type(P1-00: Z) Positive Logic Pulse Type(P1-00: X) Pulse HorectionTarget Position Error Range(P1-54)D//O Setup 0.0000 PR/S Mode 0.0000 Pl/Se Pulse (0~1280000)D//O Setup 0.0000 PR/S Mode 0.0000 Pl/Se Pulse (0~12800000)D//O Setup 0.0000 PR/S Mode 0.0000 Pl/Se 0.0000 Pl/Se Prouto Mode Setup 0.0000 PR/S Mode 0.0000 Pl/Se 0.0000 Pl/Se PR Mode Setup 0.0000 Speed , 6.66Mpps(High Speed) 0.0000 Pl/Se 0.0000 Pl/Se Speed Mode Setup 0.0000 Speed , 0.0000 pseed), 104%pps(High Speed) $0.0000 \text{ Pl/PR/Mode}$ 0.0000 PR/T Mode $0.0000 \text{ Pl/PR/Mode}$ $0.0000 \text{ Pl/PR/Mode}$ $0.0000 \text{ Pr/PR/S Mode}$ $0.0000 \text{ Pl/PR/Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pr/PR/S Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pr/PR/F Mode}$ $0.0000 \text{ Pl/PR/F Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pr/PR/F Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pl/PR/F Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pl/PR/F Mode}$ $0.0000 \text{ Pl/PR/F Mode}$ $0.0000 \text{ Pl/PR/S Mode}$ $0.0000 \text{ Pl/PR/F Mode}$ 0.00	ш	
DIn must Select GNUMO/1	-	
ParaThd Msg=201. Cmd=0		

Step 8: Since SPR mode setting is a specific function in ASDA-Soft, click the function block below, a reminder will pop up and ask users to click for PR mode setting.





Step 9: Then, setup speed mode.

∑ [0x08] PR/5 Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Speed Mode Setup
Internal Speed/Torque

Parameter Initial Wizard			
📄 🗃 🕰 📲 📲 🥝			
[0x00] PT Node [0x01] PR Mode [0x02] 5 Mode	Control Mode Selection(P1-01) [[0x08] PR/S:Position control mode / Speed control mode	If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[0x03] T Mode			
[0x04] 5z Mode	Speed Mode Parameter Setup		
[0x05] Tz Mode [0x06] PT/5 Mode [0x07] PT/T Mode [0x08] PR/5 Mode DI/0 Setup	Analog Speed Command Filter(P1-06) C Enabled 0 ms (0~1000) C Disabled	-5 Curve Time of Speed Filter(P1-34,P1-35,P1-36) TACC 200 ms(1~65500) TDEC 200 ms (1~65500)	8
Common Setup Position Mode Setup PR Mode Setup Speed Mode Setup Internal Speed/Torque [0x09] PR/T Mode [0x08] CANopen [0x00] PT/PR Mode	Target Speed Tirreshold(P 1-39) Target Speed Over 3000 RPM (0~5000) Max Analog Speed Command(P1-40) 50001 RPM/10V (0~50001) 1281		
[0x0E] PT/PR/S Mode [0x0F] PT/PR/T Mode	Overspeed Warning(P2-34) Speed Threshold Over 5000 RPM (1~5000)		
	ParaThd Msg=201, Cmd=0		Į.

Step 10: If users desire to setup speed or torque limit, click the sixth block "Internal Speed/Torque".



💽 Parameter Initial Wizard				
📕 🖨 🖈 📲 📲 🕗 🛛 🗛				
[0x00] PT Mode Control Mode Selection(P1				
[0x01] PR Mode [0x08] PR/S:Position cont	rol mode / Speed control mode 🔄 Tr Control Mode is changed, Must Reboot Drive to Enable Setting!			
[≥ [0x02] 5 Mode				
0x03] T Mode				
Speed / Torque Lim	it Setup			
0x05] Tz Mode P1-02 X:speed limit	•			
[0x06] P1/S Mode O: Disable speed	• 0: Disable speed limit function			
[0x08] PR/S Mode				
DI/O Setup	t Source(P1-09~P1-11)			
	DIn must Select SPD0 or SPD1			
Common Setup SPD1/0	0/0 0/1 1/0 1/1			
Position Mode Setup	Speed Internal Register 1 Internal Register 2 Internal Register 3			
PR Mode Setup	Command is 0 1000 RPM 2000 RPM 3000 RPM			
Speed Mode Setup				
Internal Speed/Torque				
[0x09] PR/T Mode P1-02 Y:torque limit-				
[0x0A] 5/T Mode O: Disable torque	limit function			
[0x0B] CANopen 1: Enable torque	limit function(only for P/S mode)			
[0x0C] Reserved Torque Limit Setting(P1-12~P1-14)			
[0x0D] PT/PR Mode DIn must Select TCM0 or TCM1				
[0x0F] PT/PR/T Mode TCM1/0	0/0 0/1 1/0 1/1			
Command	Torque Internal Register 1 Internal Register 2 Internal Register 3			
Source	Command is 0 100 % 100 % 100 %			
	(-300~300) (-300~300)			
	ParaThd Msg=201, Cmd=0			

[0x09] PR/T : Position Control Mode / Torque Control Mode (Dual Mode)

[0x09] is a dual control mode of position and torque, which is the same as [0x07]. The difference between both is the command source of position control. The command source of [0x07] is external pulse signal while [0x09] is internal position command (PR). Users can select the position command according to different applications.

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x09] PR/T:Position control mode / Torque control mode
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T:Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Position control mode / Torque control mode, the setting block on the left will show as below:

∑ [0x09] PR/T Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Torque Mode Setup
Internal Speed/Torque

Step 3: Click "DI/O Setup", the following screen pops up.

ö Digital Input(DI) Setup(P2-10~P2-17)			
DI1	[0x01]Servo On Contact a	C contact b	
DI2	[0x04]Pulse dear	○ contact b	
DI3	[0x16]Torque command selection 1~4 Bit0 💌 📀 contact a	○ contact b	
DI4	[0x17]Torque command selection 1~4 Bit1 💌 📀 contact a	○ contact b	
DI5	[0x02]Alarm Reset Contact a	○ contact b	
DI6	[0x22]Reverse inhibit limit C contact a	contact b	
DI7	[0x23]Forward inhibit limit C contact a	• contact b	
DI8	[0x21]Emergency stop C contact a	contact b	

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	-
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1 [0x01]Servo On	contact a 💦 C contact b	
--------------------	-------------------------	--

Step 4: Setup External Digital Input (EDI) command.

External Digital Input(EDI) Setup(P2-36~P2-41)			
EDI9	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI 10	[0x00]Disabled	💌 📀 contact a	C contact b
EDI11	[0x00]Disabled	💌 💿 contact a	C contact b
EDI12	[0x00]Disabled	💌 💿 contact a	C contact b
EDI13	[0x00]Disabled	💌 💿 contact a	C contact b
EDI14	[0x00]Disabled	💌 📀 contact a	○ contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

ö Digit	al Output(DO) Setup(P2-18~P2-22)		
DO1	[0x01]Servo ready	💌 🖲 contact a	C contact b
DO2	[0x03]At Zero speed	▼ ⊙ contact a	C contact b
DO3	[0x09]Homing completed	💌 📀 contact a	C contact b
DO4	[0x05]At Positioning completed	💌 🙃 contact a	C contact b
DO5	[0x07]Servo alarm (Servo fault) activated	▼ C contact a	Contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	
[0x03]At Zero speed	_
[0x04]At Speed reached	
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1 [0x01]Servo ready Contact a Contact b

Step 6: "Common Setup"

V [0v09] PR /T Mode
[0x03] PK/THoue
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Torque Mode Setup
Internal Speed/Torque

Parameter Initial Wizard			
🔄 📑 🕰 📆 📆			
[0x00] PT Mode [0x01] PR Mode [0x02] 5 Mode	Control Mode Selection(P1-01) [(0x09] PR/T:Position control mode / Torque control mode _	ol Mode is changed, Must Reboot Drive to Enable Setting!	
[0x03] T Mode			
[0x04] Sz Mode	I ⊗ Common Setup		
[0x05] Tz Mode	Rotaion Direction Selection (P1-01)	Encoder Output Pulse Number(P1-46)	
[0x06] PT/S Mode	Forward: CCW, Reverse: CW		
[0x07] PT/T Mode	Forwrd: CW, Reverse: CCW		
[0x08] PR/S Mode		2500 Pulse/rev (20~320000)	
[0x09] PR/T Mode	Pulse Output Polarity Setting(P1-03)		
DI/O Setup	Y:Output Polarity	Regenerative Resistor Setting(P1-52,P1-53)	
Difo ocup	Forward Output C 1: MON1(+), MON2(+)	751 Ω (5~751)	-
Common Setup	I C Reverse Output C 2: MON1(1) MON2(1)	3001 W (0~3001)	
Position Mode Setup	C 3: MON1(-), MON2(-)		
PR Mode Setup		Max Motor Speed(P1-55)	
Torque Mode Setup	Delay of Brake Selection(P1-42,P1-43)	5001 PPM (10x5001)	
Internal Speed/Torque			
[OrOA] 5/T Made	MBT2 0 (-1000~1000)(ms)	· · · · · · · · · · · · · · · · · · ·	
[OvOR] CANager	DOn must Select BRKR	•	
[0x06] Canopen	ON		
[0x00] IT/ID Mode	SON OFF OFF		
[0x05] PT/PD/5 Mode	ON		
[0x0E] PT/PR/T Mode	BRXR OFF I OFF	•	
[Toxot] FI/FIX/T House			
	MBT1(P1-42) MBT2(P1-43)		
	Motor Annual Incon (RI 18)		
	speed ZSPD(11-50)	•	
		•	
	ParaThd Msg=201. Cmd=0		
P	1. The second se		110

Step 7: Since it is in dual mode, the system provides setting blocks of position (PR) mode, PR mode and torque mode. Setup "Position (PR) Mode" first.



The screen on the right will be switched to the one as below:

[0x00] PT Mode	Control Mode Selection(P1-01)	Control Made in descend, Must Delaist Dates to Deable (~1945)	
[0x01] PR Mode	[0x09] PR/T:Position control mode / Torque control mode	Control Mode is changed, Must Reboot Drive to Enable Setting!	
(0x02] 5 Mode			
(0x03] T Mode			
[0x04] Sz Mode	Position Mode Parameter Setup		-
[0x05] Tz Mode	Type of Pulse Command Input(P1-00: X Z)	Target Position Error Range(P1-54)	
[0x06] PT/S Mode	Logic Type(P1-00: Z) Positive Logic	12800 Pulse (0~1280000)	
[0x07] PT/T Mode	Pulse Type(P1-00: X) Pulse +Direction		
[0x08] PR/S Mode		Over Position error Threshold(P2-35)	
[0x09] PR/T Mode		3840000 10 Pulse (1~128000000)	
I/O Setup			
ommon Setun	Input pulse filter(P1-00: Y)	 Electric Gear Numerator Setting(P1-44, P1-45) 	
	• 0:1.66Mpps(Low Speed), 6.66Mpps(High Speed)		•
osition Mode Setup	C 1:416Kpps(Low Speed), 416Kpps(High Speed)	Gear1 = 12.80	
R Mode Setup	C 2:208Knps() ow Speed) 208Knps(High Speed)	10 (1~2147483647)	
orque Mode Setup	(2:104/ops(low Speed) 104/ops(ligh Speed)		•
ternal Speed/Torque	s size important apecal, zo importingnapecal	128 (1-526970011)	
incental opecation que	Source of pulse command	Gear2 = 12.80	
UXUA) S/T Piode	0:Open collector for low-speed pulse	10	
Ov0Cl December	1:Line driver for high-speed pulse		
[0x0C] Reserved	• [128 (1~536870911)	-
0x00 PT/PR Plote		Gear3 = 12.80	<u>-</u>
OvOF1 PT/PD/T Mode	Pulse Command Filter(P1-08)	10	
	C Yes Unit: 10ms		•
	(0~1000)	128 (1~536870911) Geard 12.80	
	G NO	10 = 12.80	
		DIn must Select GNUM0/1	-

Step 8: Since **b** PR mode setting is a specific function in ASDA-Soft, click the function block below, a reminder will pop up and ask users to click **b** for PR mode setting.

[0x09] PR/T Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Torque Mode Setup
Internal Speed/Torque



Step 9: Then, setup torque mode.

[0x09] PR/T Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Torque Mode Setup
Internal Speed/Torque

Parameter Initial Wizard		×
[0x00] PT Mode [0x01] PR Mode	Control Mode Selection(P1-01) [0x09] PR/T:Position control mode / Torque control mode Tr Control Mode is changed, Must Reboot Drive to Enable Setting!	
[0x02] 5 Mode [0x03] T Mode [0x04] 5z Mode [0x05] Tz Mode	S Torque Mode Parameter Setup	ŕ
[0x06] PT/S Mode [0x07] PT/T Mode [0x08] PR/S Mode [0x09] PR/T Mode DI/O Setup	Analog Torque Command Filter(P1-07) C YES 0 ms (0~1000) C NO	E
Common Setup Position Mode Setup PR Mode Setup Torque Mode Setup	Max Analog Torque Command (P1-41)	
Internal Speed/Torque [0x0A] S/T Mode [0x0B] CANopen [0x0C] Reserved [0x0D] PT/PR_Mode [0x0E] PT/PR/S Mode		
UNUT TTPRT FILLE		
	ParaThd Msg=201, Cmd=0	

Step 10: If users desire to setup speed or torque limit, click the sixth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:



[0x0A] S/T : Speed Control Mode / Torque Control Mode (Dual Mode)

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x0A] S/T:Speed control mode / Torque control mode
[0x00] PT:Position control mode
[0x01] PR:Position control mode
[0x02] S:Speed control mode
[0x03] T:Torque control mode
[0x04] Sz:Zero speed / internal speed command
[0x05] Tz:Zero torque / internal torque command
[0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode
[0x09] PR/T:Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode

Step 2: Select Speed control mode / Torque control mode, the setting block on the left will show as below:



Step 3: Click "DI/O Setup", the following screen pops up.

ö Digital Input(DI) Setup(P2-10∼P2-17)				
DI1	[0x01]Servo On Contact a 	C contact b		
DI2	[0x04]Pulse dear Contact a	○ contact b		
DI3	[0x16]Torque command selection 1~4 Bit0 💌 📀 contact a	C contact b		
DI4	[0x17]Torque command selection 1~4 Bit1 💌 💿 contact a	C contact b		
DI5	[0x02]Alarm Reset Contact a	C contact b		
DI6	[0x22]Reverse inhibit limit C contact a	Contact b		
DI7	[0x23]Forward inhibit limit C contact a	Contact b		
DI8	[0x21]Emergency stop C contact a	• contact b		

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	-
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	-
[0x12]Position command selection 1~64 Bit1	-

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x01]Servo On	•		contact a	C contact b	
-----	----------------	---	--	-----------	-------------	--

Step 4: Setup External Digital Input (EDI) command.

External Digital Input(EDI) Setup(P2-36~P2-41)			
EDI9	[0x00]Disabled	 contact a 	C contact b
EDI 10	[0x00]Disabled	contact a	○ contact b
EDI11	[0x00]Disabled	contact a	○ contact b
EDI12	[0x00]Disabled	contact a	○ contact b
EDI13	[0x00]Disabled	contact a	C contact b
EDI14	[0x00]Disabled	▼ ⊙ contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

⊗ Digit	al Output(DO) Setup(P2-18~P2-22)		
DO1	[0x01]Servo ready	contact a	C contact b
DO2	[0x03]At Zero speed	contact a	C contact b
DO3	[0x09]Homing completed	contact a	○ contact b
DO4	[0x05]At Positioning completed	contact a	○ contact b
DO5	[0x07]Servo alarm (Servo fault) activated 💌 🤇	contact a	contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	
[0x03]At Zero speed	_
[0x04]At Speed reached	=
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	_
[0x12]Position command overflow	-

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	Contact a	○ contact b	
Step 6: "Common Setup"

∑ [0x0A] S/T Mode
DI/O Setup
Common Setup
Speed Mode Setup
Torque Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

[0x00] PT Mode [0x01] PR Mode [0x02] 5 Mode	Control Mode Selection(P1-01) [0x0A] S/T:Speed control mode / Torque control mode If Control If Control	ol Mode is changed, Must Reboot Drive to Enable Setting!	
[0x03] T Mode [0x04] Sz Mode	Common Setup		
[0x05] Tz Mode [0x06] PT/5 Mode [0x07] PT/5 Mode [0x08] PR/5 Mode [0x08] PR/T Mode [0x0A] S/T Mode DI/0 Setup Common Setup Speed Mode Setup	Rotaion Direction Selection (P1-01) [©] Forward: CCW, Reverse: CCW [©] Forward: CW, Reverse: CCW Pulse Output Polarity Setting(P1-03) ^Y :Output Polarity [®] O: MON1(+), MON2(+) [®] Reverse Output [®] 3: MON1(-), MON2(-)	Encoder Output Pulse Number(P1-46) 2500 Pulse/rev (20~320000) Regenerative Resistor Setting(P1-52,P1-53) 751 Ω 751 Ω (5~751) 3001 W (0~3001)	
Torque Mode Setup Internal Speed/Torque [0x00] CAltopen [0x00] Reserved [0x00] PT/PR. Mode [0x00] PT/PR/5 Mode [0x00F] PT/PR/T Mode	Delay of Brake Selection(P1-42,P1-43) MBT1 0 (0~1000)(ms) MBT2 0 (-1000~1000)(ms) DOn must Select BRKR 001 0FF 001 0FF MBT2 0FF MBT2 0FF MBT2 (P1-42) MBT2 (P1-43) Moloc 3pend 22720 (P1-38)	Foot RPM (10~6001)	

Step 7: Since it is in dual mode, the system provides setting blocks of speed and torque mode. Setup "Speed Mode" first.



The screen on the right will be switched to the one as below:

Parameter Initial Wizard	Control Mode Selection(P1-01) [[0x0A] S/T:Speed control mode / Torque control mode _	If Control Mode is changed, Must Reboot Drive to Enable Setting	
(axd3) T flode [0x03] T flode [0x05] Tz flode [0x05] Tz flode [0x06] PT/S flode [0x08] PT/S flode [0x08] PT/T flode [0x08] PT/T flode [0x08] PT/T flode DI/O Setup Common Setup Speed Mode Setup Internal Speed/Torque [0x08] CAMopen [0x08] CAMopen [0x08] CAMopen	Speed Mode Parameter Setup Analog Speed Command Filter (P1-06) Enabled	S Curve Time of Speed Filter (P1-34,P1-35,P1-36) TACC 200 ms (1~65500) TDEC 200 ms (1~65500) TSL 0 ms (0~65500) TSL 0 ms (0~65500) TSL 0 TDEC	E
[0x0F] PT/PR/T Hode [0x0F] PT/PR/T Hode	Overspeed Warning(P2-34) Speed Threshold Over 5000 RPM (1~5000)		+

Step 8: Then, setup torque mode.

∑ [0x0A] S/T Mode
DI/O Setup
Common Setup
Speed Mode Setup
Torque Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

Parameter Initial Wizard		- 0 💌
[0x00] PT Mode [0x01] PR Node	Control Mode Selection(P1-01) [Dx0A] S/T:Speed control mode / Torque control mode If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[0x02] S Hode [0x03] T Node [0x04] Sz Mode	V Torque Mode Parameter Setup	
[0x05]1210de [0x06] PT/S Mode [0x08] PK/S Mode [0x08] PK/S Mode [0x09] PR/T Mode [0x0A] S/T Mode	Analog Torque Command Filter(P1-07) YES 0 ms (0~1000) G NO	E
DI/O Setup Common Setup Speed Mode Setup Torque Mode Setup	Max Analog Torque Command (P1-41)	
Internal Speed/Torque [0x0B] CANopen [0x0C] Reserved [0x0D] PT/PR. Mode [0x0E] PT/PR/5 Mode [0x0F] PT/PR/T Mode		
	ParaThd Msg=201, Cmd=0	

Step 9: If users desire to setup speed or torque limit, click the fifth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:

🔄 Parameter Initial Wizard	
[0x00] PT Mode Control Mode Selection(P1-01)	
[0x01] PR Mode	2 / Torque control mode II Control Mode Is changed, Must Reboot Drive to Enable Setting!
[0x02] 5 Mode	
[0x03] T Mode	
[0x04] 5z Mode	
[0x05] 12 Plode P1-02 X:speed limit	
[0x07] PT/T Mode 0: Disable speed limit fu	
[0x08] PR/S Mode	
[0x09] PR/T Mode	Din must Select SDD0 or SDD1
[0x0A] 5/T Mode	
DI/O Setup	Televeral Decisional Decisional Decisional
Common Setup	Speed internal Register 2 Internal Register 5
Speed Mode Setup	(-50000~60000) (-50000~60000) (-50000~60000)
Torque Mode Setup	
P1-02 Y:torque limit	
[0x0B] CANopen O: Disable torque limit f	function
[0x00] PT/PR Mode	function(only for P/S mode)
Torque Limit Setting(P1-12	2~P1-14)
[0x0F] PT/PR/T Mode	DIn must Select TCM0 or TCM1
тсм1/0	0/0 0/1 1/0 1/1
Command T	Torque Internal Register 1 Internal Register 2 Internal Register 3
Source Com	mand is 0 100 % 100 % 100 %
	(-300~300) (-300~300)
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
Para	aThd Msg=201, Cmd=0

[0x0B] CANopen : CANopen Control Mode (Motion control on CAN bus)

Users could activate CANopen mode via Parameter Initial Wizard. If the user applies position (PR) control mode of ASDA-A2 with CiA DS 301, b PR mode setup can help as well.

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x0B] CANopen Mode
[0x05] Tz:Zero torque / internal torque command [0x06] PT/S:Position control mode / Speed control mode [0x07] PT/T:Position control mode / Torque control mode [0x08] PR/S:Position control mode / Speed control mode [0x09] PR/T:Position control mode / Torque control mode [0x0A] S/T:Speed control mode / Torque control mode [0x0B] CANopen Mode
[0x0C] Reserved [0x0D] PT/PR:Position control mode [0x0E] PT/PR/S [0x0F] PT/PR/T

The main screen will be switched to the one as below:



[0x0D] PT/PR : Dual Position Control Mode

This control mode is used for multi control mode (PT/PR/S and PT/PR/T). When applying multi mode, users can switch external pulse command (PT position control) and internal position command (PR position control) via DI signal.

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x0D] PT/PR:Position control mode
[0x05] Tz:Zero torque / internal torque command [0x06] PT/S:Position control mode / Speed control mode
[0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode [0x09] PR/T:Position control mode / Torque control mode
[0x0A] S/T:Speed control mode / Torque control mode
[0x0B] CANopen Mode [0x0C] Reserved
[0x0D] PT/PR:Position control mode
[0x0E] PT/PR/S [0x0E] PT/PR/T

Step 2: Select dual position control mode. The setting block on the left will show as below:

[0x0D] PT/PR Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Internal Speed/Torque

Step 3: Click "DI/O Setup", the following screen pops up.

ö Digit	al Input(DI) Setup(P2-10~P2-17)	
DI1	[0x01]Servo On Contact a	C contact b
DI2	[0x04]Pulse dear Contact a	○ contact b
DI3	[0x16]Torque command selection 1~4Bit0 💌 📀 contact a	○ contact b
DI4	[0x17]Torque command selection 1~4Bit1 💌 📀 contact a	C contact b
DI5	[0x02]Alarm Reset Contact a	C contact b
DI6	[0x22]Reverse inhibit limit C contact a	Contact b
DI7	[0x23]Forward inhibit limit C contact a	• contact b
DI8	[0x21]Emergency stop 💌 🔿 contact a	Contact b

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x01]Servo On	
[0x00]Disabled	
[0x01]Servo On	-
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	_
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

Step 4: Setup External Digital Input (EDI) command.

|--|

		,	
EDI9	[0x00]Disabled	 contact a 	C contact b
EDI 10	[0x00]Disabled	▼ ⊙ contact a	○ contact b
EDI11	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI12	[0x00]Disabled	▼ ⊙ contact a	C contact b
EDI13	[0x00]Disabled	▼ ⊙ contact a	○ contact b
EDI14	[0x00]Disabled	💌 📀 contact a	○ contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

> Digital Output(DO) Setup(P2-18~P2-22)			
DO1	[0x01]Servo ready • Contact a Contact b		
DO2	[0x03]At Zero speed • contact a C contact b		
DO3	[0x09]Homing completed C contact a C contact b		
DO4	[0x05]At Positioning completed		
DO5	[0x07]Servo alarm (Servo fault) activated 💌 🔿 contact a 💿 contact b		

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	
[0x03]At Zero speed	-
[0x04]At Speed reached	=
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	-

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1 0x01]Servo ready	• contact a C contact b	
----------------------	-------------------------	--

Step 6: "Common Setup" V [0x0D] PT/PR Mode DI/O Setup Common Setup Position Mode Setup PR Mode Setup Internal Speed/Torque

The screen on the right will be switched to the one as below:

[0x00] PT Mode [0x01] PR Mode [0x02] S Mode	[0x0D] PT/PR:Position control mode	If Control Mode is changed, Must Reboot Drive to Enable Setting
[0x03] T Node	Common Setup	
[0x05] Tz Mode [0x06] PT/S Mode [0x07] PT/T Mode	Rotaion Direction Selection(P1-01) Forward: CCW, Reverse: CW Forward: CW, Reverse: CCW	Encoder Output Pulse Number (P1-46)
(0x08) PR/5 Mode (0x09) PR/T Mode (0x08) S/T Mode (0x08) CANopen (0x0C) Reserved (0x00) PT/PR. Mode	Pulse Output Polarity Setting(P1-03) Y:Output Polarity © Forward Output © Reverse Output C 3: MON1(+), MON2(- C 2: MON1(-), MON2(- C 3: MON1(-), MON2(-	polarity -) -) -) -) -) -) -) -) -) -)
I/O Setup	Delay of Brake Selection(P1-42,P1-43) MBT1 0 (0~1000)(ms)	Max Motor Speed(P1-55) 6001 RPM (10~6001)
A Mode Setup R Mode Setup nternal Speed/Torque (0x0F) PT/PR/S Mode (0x0F) PT/PR/T Mode	MBT2 0 (-1000~1000)(ms) DOn must Select BRKR ON OFF ON OFF ON OFF	Analog Torque Command Filter(P1-07)
	BRUE OFF 1	Max Analog Torque Command (P1-41)

Step 7: Since it is in dual mode, the system provides setting blocks of position (PT) and PR mode. Setup "Position (PT) Mode" first.



The screen on the right will be switched to the one as below:

Parameter Initial Wizard		
📄 📑 😂 🕰 📆 🔞	2 🛛 🔍 🔍	
© [0x00] PT Mode 0x01] PR Mode 0x02] S Mode	Control Mode Selection(P1-01) [DxOD] PT/PR:Position control mode If Control Mode is changed, Must Reboot Drive to Enable Setting!	
>> [0x03] T Mode		
>>> [0x04] Sz Mode	Verition Mode Parameter Setup	<u>^</u>
≥> [0x05] Tz Mode	Type of Pulse Command Input(P1-00: X Z) Target Position Error Range(P1-54)	
[0x06] PT/S Mode	Logic Type(P1-00: Z) Positive Logic 12800 Pulse (0~1280000)	
∑[0x07] PT/T Mode		
[0x08] PR/S Hode		
> [0x0A] S/T Mode		
>> [0x0B] CANopen	Electric Gear Numerator Setting(P1-44, P1-45)	=
>> [0x0C] Reserved	Input pulse filter(P1-00: Y)	
[0x0D] PT/PR Mode	128 (1~536870911)	
DI/O Setup	C 2:200/csr-0 cm (Scard) 200/csr-0 (cm (Scard) 10 (10/2147493647)	
Common Setup	C 2:104/cps(Low Speed), 204/cps(Ling) Speed)	
Position Mode Setup	128 (1536870911)	
DD Made Cable	Gear2 Gear2 II = 12.80	
PR Mode Setup	O:Open collector for low-speed pulse	
Internal Speed/Torque	C 1:Line driver for high-speed pulse	
[0x0E] PT/PR/S Mode	[128 (1~536870911) Gear3 12 80	
[0x0F] PT/PR/T Mode	10	
	(Yes 0 Unit: 10ms 128 (1~536870911)	
	• NO = 12.80	
	DIn must Select GNUMO/1	
	<u>Nananananananananananananananananananan</u>	-
	ParaThd Msg=201, Cmd=0	

Step 8: Since Since R mode setting is a specific function in ASDA-Soft has specific function, click the function block below, a reminder will pop up and ask users to click for PR mode setting.

% [0x0D] PT/PR Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Internal Speed/Torque



The prompting message in main screen: Setup the PR Mode in "PR Mode Setup **b**".



Step 9: If users desire to setup speed or torque limit, click the fifth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:

Reameter Initial Wizard	
Control Mode Selection(P1-01)	
[0x01] PR Mode [0x00] PT/PR:Position control mode I Control Mode is changed, Must Reboot Drive to Enable Setting!	
0x02] 5 Mode	
0x03] T Mode	
Speed / Torque Limit Setup	^ ^ [
[0x05] 12 Hode P1-02 X:speed limit	
(inclusion) P/T Mode (inclusio	
Story PP/S Mode	
Toxo91 PR/T Mode Speed Command Limit Source(P1-09~P1-11)	
DIn must Select SPD0 or SPD1	-
[0x08] CANopen SPD1/0 0/0 0/1 1/0 1/1	-
Command is 0 1000 RPM 2000 RPM 3000 RPM	
DI/O Setup	
Common Setup	
Position Mode Setur	
P1-02 Y: torque limit	
PR Mode Setup 0 Usable torque limit function(only for P/S mode)	
Internal Speed/Torque	
[0x0E] PT/PR/S Mode Introduction Statistics PT-PT/	
10x0Fj PT/PR/T Mode TCM1/0 0/0 0/1 1/0 1/1	
Command Command is 0	
Source commences // / 100 // (-300/300) (-300/300)	
ParaThd Msg=201, Cmd=0	

[0x0E] PT/PR/S : Multi Control Mode (Position and Speed Mode)

Users can switch two Di signal to setup PT, PR and S mode via this function. With Parameter Initial Wizard, users can quickly setup DI and these 3 modes.

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x0D] PT/PR:Position control mode
[0x05] Tz:Zero torque / internal torque command [0x06] PT/S:Position control mode / Speed control mode [0x07] PT/T:Position control mode / Torque control mode [0x08] PR/S:Position control mode / Speed control mode [0x09] PR/T:Position control mode / Torque control mode [0x08] CANopen Mode [0x00] CANopen Mode [0x00] PT/PR:Position control mode
[0x0E] PT/PR/S
[[0x0F] PT/PR/T

Step 2: Select multi control mode. The setting block on the left will show as below:

[0x0E] PT/PR/S Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Speed Mode Setup
Internal Speed/Torque

Step 3: Click "DI/O Setup", the following screen pops up.

ö Digital Input(DI) Setup(P2-10~P2-17)			
DI1	[0x01]Servo On Contact a	C contact b	
DI2	[0x04]Pulse dear 💽 🕥 contact a	○ contact b	
DI3	[0x16]Torque command selection 1~4Bit0 💌 📀 contact a	○ contact b	
DI4	[0x17]Torque command selection 1~4Bit1 💌 🌀 contact a	C contact b	
DI5	[0x02]Alarm Reset Contact a	C contact b	
DI6	[0x22]Reverse inhibit limit C contact a	• contact b	
DI7	[0x23]Forward inhibit limit C contact a	Contact b	
DI8	[0x21]Emergency stop C contact a		

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x00]Disabled	
[0x01]Servo On	
[0x02]Alarm Reset	Ξ
0x03]Gain switching	
[0x04]Pulse clear	
[0x05]Low speed CLAMP	
[0x06]Command input reverse control	
[0x08]Command triggered	
[0x09]Torque limit enabled	
[0x10]Speed limit enabled	
[0x11]Position command selection 1~64 Bit0	_
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1 [0x01]Servo On Contact a C contact b	 contact a C contact b 	[0x01]Servo On
--	---	----------------

Step 4: Setup External Digital Input (EDI) command.

	nal Digital Input(EDI) Setup(P2-36~	P2-41)	
EDI9	[0x00]Disabled	💌 📀 contact a	C contact b
EDI 10	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI11	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI12	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI13	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI14	[0x00]Disabled	▼ ⓒ contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

ö Digit	al Output(DO) Setup(P2-18~P2-22)		
DO1	[0x01]Servo ready	💌 🖲 contact a 👘 🤇	contact b
DO2	[0x03]At Zero speed	▼ ⊙ contact a	Contact b
DO3	0x09]Homing completed	▼ ⊙ contact a	Contact b
DO4	0x05]At Positioning completed	▼ ⊙ contact a	Contact b
DO5	[0x07]Servo alarm (Servo fault) activated	C contact a	contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	
[0x03]At Zero speed	_
[0x04]At Speed reached	=
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	• contact a	○ contact b	

The screen on the right will be switched to the one as below:

[0x01] PR Mode	[[0x0E] PT/PR/S	ntrol Mode is changed, Must Reboot Drive to Enable Setting!
[0x03] T Mode [0x04] Sz Mode	≪ Common Setup	
[0x05] Tz Mode [0x06] PT/S Mode [0x07] PT/T Mode	Rotaion Direction Selection(P1-01) Forward: CCW, Reverse: CW Forward: CW, Reverse: CCW	Encoder Output Pulse Number (P1-46)
[0x08] PR/S Mode [0x09] PR/T Mode [0x08] S/T Mode [0x08] CANopen [0x0C] Reserved [0x00] PT/PR Mode	Pulse Output Polarity Setting(P1-03) Y:Output Polarity © Forward Output © Reverse Output C 2: MON1(+), MON2(+) © 3: MON1(-), MON2(+)	Regenerative Resistor Setting(P1-52,P1-53) 751 Ω 3001 W (0~3001)
DI/O Setup Common Setup	Delay of Brake Selection(P1-42,P1-43) MBT1 0 (0~1000)(ms) MBT2 0 (-1000~1000)(ms)	Max Motor Speed(P1-55) 6001 RPM (10~6001)
Position Mode Setup PR. Mode Setup Speed Mode Setup Internal Speed/Torque	DOn must Select BRKR	Analog lorque Command Hiter(P1-0/) C YES 0 (0~1000) C NO
[0x0F] PT/PR/T Mode	BB00. OFF HETI(P1-42) MET2(P1-43) Motor weed Z2520(P1-38)	Max Analog Torque Command (P1-41)

Step 7: Since it is in multi mode, the system provides setting blocks of position (PT) mode, PR mode and speed mode. Setup "Position (PT) Mode" first.

[0x0E] PT/PR/S Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Speed Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

💽 Parameter Initial Wizard		
© [0x00] PT Mode 0x01] PR Mode 0x02] S Mode	ontrol Mode Selection(P1-01) 0x0E] PT/PR/S	
🔊 [0x03] T Mode		
🗅 [0x04] Sz Mode	Position Mode Parameter Setup	
[0x05] Tz Mode [0x06] PT/5 Mode [0x07] PT/T Mode [0x08] PR/5 Mode [0x08] PR/5 Mode [0x08] CANopen [0x0C] Reserved [0x0C] PT/PR Mode [0x0C] PT/PR/5 Mode	Type of Pulse Command Input(P1-00: X 2) Logic Type(P1-00: X) Pulse Type(P1-00: Y) Input pulse filter(P1-00: Y) Interference Inte	E
DI/O Setup Common Setup Position Mode Setup PR Mode Setup Speed Mode Setup	C 2:20skpps(Low speed), 20skpps(light speed) C 3:104kpps(Low speed), 104kpps(light speed) Source of pulse command 0:0pen collector for low-speed pulse C 1:Line driver for high-speed pulse	
Internal Speed/Torque [0x0F] PT/PR/T Mode	Pulse Command Filter (P1-08) \bigcirc Yes \bigcirc Unit: 10ms $(0 \sim 1000)$ \bigcirc NO \bigcirc NO \bigcirc \bigcirc NO \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc	
	DIn must Select GNUM0/1	-
	ParaThd Msg=201, Cmd=0	

Step 8: Since Step 8: Since R mode setting is a specific function in ASDA-Soft, click the function block below, a reminder will pop up and ask users to click for PR mode setting.





Step 9: Then, setup speed mode.

[0x0E] PT/PR/S Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Speed Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

[oxed] / f ridac	[0x0E] PT/PR/S	If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[0x01] PR Mode	1		
[0x02] S Mode			
[0x03] 1 Piode [0x04] 57 Mode	Speed Mode Parameter Setup		
[0x05] Tz Mode	Analog Speed Command Filter (P1-06)		
[0x06] PT/S Mode	Analog speed command inter (P1-00)	S Curve Time of Speed Filter (P1-34, P1-35, P1-36)	
[0x07] PT/T Mode	C Enabled 0 ms		
[0x08] PR/S Mode	(0~1000)		
[0x09] PR/T Mode	Oisabled	TACC 200 ms(1~65500)	
[0x0A] S/T Mode		TDEC 200 ms (1~65500)	
[0x0B] CANopen			
[0x0C] Reserved	Target Speed Threshold(P1-39)	TSL 0 ms(0~65500)	
[0x0D] PT/PR_Mode	Target Speed Over 3000 RPM (0~5000)	TOI	
[0x0E] PT/PR/S Mode	•		
I/O Setup	Max Analog Speed Command(P1-40)		
ommon Setup			
acition Made Catur	50001 RPM/10V		
usidon mode Setup	(0~50001)		
R Mode Setup		TACC TDEC =	
peed Mode Setup			
nternal Speed/Torque			
T0x0F1 PT/PR/T Mode	Overspeed Warning(P2-34)		
	Speed Threshold Over 5000 RPM (1~5000)		
	•		
	Fi i i i i i i i i i		

Step 10: If users desire to setup speed or torque limit, click the sixth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:

📑 Parameter Initial Wizard		x
📕 🖻 🏠 📆 📆 🤮) 🛛 💁 👘	
© [0x00] PT Mode 0 [0x01] PR Mode 0 [0x02] 5 Mode	Control Mode Selection(P1-01) [0x0E] PT/PR/S If Control Mode is changed, Must Reboot Drive to Enable Setting!	
>> [0x03] T Mode		
>> [0x04] Sz Mode	Speed / Torque Limit Setup	
[0x05] Tz Mode [0x06] PT/S Mode	P1-02 X:speed limit O 0: Disable speed limit function	
[0x07] PT/T Plode	1: Enable speed limit runction(only for 1 mode)	
© [0x09] PR/T Mode	Speed Command Limit Source(P1-09~P1-11) DIn must Select SPD0 or SPD1	
[UXUA] 5/1 Mode	SPD1/0 0/0 0/1 1/0 1/1	E
© [0x00] CARopen © [0x0C] Reserved © [0x0D] PT/PR Mode © [0x0E] PT/PR/S Mode DI/O Seturn	Command Source Speed Command is 0 Internal Register 1 Internal Register 2 Internal Register 3 1000 RPM 2000 RPM 3000 RPM (-60000~60000) (-60000~60000) (-60000~60000) (-60000~60000) (-60000~60000)	
Common Setup Position Mode Setup PR Mode Setup	P1-02 Y:torque limit O 1: Disable torque limit function 1: Enable torque limit function(only for P/S mode)	
Speed Mode Setup	Torque Limit Setting(P1-12~P1-14)	
Internal Speed/Torque	DIn must Select TCM0 or TCM1	
Solution [0x0F] PT/PR/T Mode	TCM1/0 0/0 0/1 1/0 1/1	
	Command Source Torque Command is 0 Internal Register 1 100 % (-300~300) Internal Register 2 100 % (-300~300) Internal Register 3 100 % (-300~300)	
		-
	ParaThd Msg=201, Cmd=0	11.

[0x0F] PT/PR/T : Multi Control Mode (Position and Torque Mode)

Users can switch two Di signal to setup PT, PR and T mode via this function. With Parameter Initial Wizard, users can quickly setup DI and these 3 modes.

Step 1: Select the control mode from drop-down menu.

Control Mode Selection(P1-01)
[0x0F] PT/PR/T
[0x05] Tz:Zero torque / internal torque command [0x06] PT/S:Position control mode / Speed control mode [0x07] PT/T:Position control mode / Torque control mode
[0x08] PR/S:Position control mode / Speed control mode [0x09] PR/T:Position control mode / Torque control mode [0x0A] S/T:Speed control mode / Torque control mode
[UXUB] CANopen Mode [0x0C] Reserved [0x0D] PT/PR Position control mode
[0x0E] PT/PR/S [0x0F] PT/PR/T

Step 2: Select multi control mode. The setting block on the left will show as below:

[0x0F] PT/PR/T Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Torque Mode Setup
Internal Speed/Torque

Step 3: Click "DI/O Setup", the following screen pops up.

⊗ Digit	al Input(DI) Setup(P2-10~P2-17)	
DI1	[0x01]Servo On Contact a	C contact b
DI2	[0x04]Pulse dear Contact a	○ contact b
DI3	[0x16]Torque command selection 1~4Bit0 💌 📀 contact a	C contact b
DI4	[0x17]Torque command selection 1~4Bit1 💌 📀 contact a	C contact b
DI5	[0x02]Alarm Reset Contact a	C contact b
DI6	[0x22]Reverse inhibit limit C contact a	• contact b
DI7	[0x23]Forward inhibit limit C contact a	€ contact b
DI8	[0x21]Emergency stop C contact a	Contact b

There are 43 command selections of digital input. Users could directly set it up via the drop-down menu.

[0x00]Disabled	
[0x01]Servo On	
[0x02]Alarm Reset	Ξ
[0x03]Gain switching	
[0x04]Pulse dear	
0x05Low speed CLAMP	
0x06 Command input reverse control	
0x08]Command triggered	
0x09]Torque limit enabled	
0x10]Speed limit enabled	
0x11Position command selection 1~64 Bit0	
[0x12]Position command selection 1~64 Bit1	Ŧ

Users can set the digital input (DI) status as "a contact (frequently open)" or "b contact (frequently close)".

DI1	[0x01]Servo On	-	G	contact a	C contact b	
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Step 4: Setup External Digital Input (EDI) command.

× External	Digital In	out/EDT)	Cotup/	D2-26D2-41)
V External	Digital III	ραι(ενι)	Secup(rz-30~rz-41)

VLAC	nai bigitai inpat(Ebi) Secap(i 2 So	12 41)	
EDI9	[0x00]Disabled	 contact a 	○ contact b
EDI 10	[0x00]Disabled	contact a	C contact b
EDI11	[0x00]Disabled	contact a	C contact b
EDI 12	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI13	[0x00]Disabled	▼ ⓒ contact a	C contact b
EDI14	[0x00]Disabled	▼ ⓒ contact a	C contact b

EDI setting (for ASDA-A2-U model) can be done here. Its setting method is the same as DI.

Step 5: Setup digital output (DO) command.

ö Digit	al Output(DO) Setup(P2-18~P2-22)	
DO1	[0x01]Servo ready • contact a	C contact b
DO2	[0x03]At Zero speed • contact a	C contact b
DO3	[0x09]Homing completed	C contact b
DO4	[0x05]At Positioning completed	C contact b
DO5	[0x07]Servo alarm (Servo fault) activated 💌 🔿 contact a	Contact b

There are 35 command selections of digital output. Users could directly set it up via the drop-down menu.

[0x01]Servo ready	
[0x02]Servo On	-
[0x03]At Zero speed	_
[0x04]At Speed reached	-
[0x05]At Positioning completed	
[0x06]At Torques limit	
[0x07]Servo alarm (Servo fault) activated	
[0x08]Electromagnetic brake control	
[0x09]Homing completed	
[0x10]Output overload warning	
[0x11]Servo warning activated	_
[0x12]Position command overflow	Ŧ

Users can set the digital output (DO) status as "a contact (frequently open)" or "b contact (frequently close)".

DO1	[0x01]Servo ready	contact a	○ contact b	
-----	-------------------	-----------	-------------	--

Step 6: "Common Setup" V [0x0F] PT/PR/T Mode DI/O Setup Common Setup Position Mode Setup PR Mode Setup Torque Mode Setup Internal Speed/Torque

The screen on the right will be switched to the one as below:

[0x00] PT Mode [0x01] PR Mode	Control Mode Selection(P1-01) [DxOF] PT/PR/T	ol Mode is changed, Must Reboot Drive to Enable Setting!	
[0x02] 5 Mode			
[0x04] Sz Mode	i ⊗ Common Setup		
[0x05] Tz Node [0x06] PT/5 Node [0x07] PT/T Node	Rotaion Direction Selection (P1-01) • Forward: CCW, Reverse: CW C Forwrd: CW, Reverse: CCW	Encoder Output Pulse Number (P1-46)	
[0x09] PR/T Mode [0x08] S/T Mode [0x08] CANopen [0x00] Reserved [0x00] PT/PR Mode [0x00] PT/PR/S Mode [0x0F] PT/PR/S Mode [0x0F] PT/PR/T Mode DI/O Setup Common Setup Position Mode Setup R Mode Setup	Pulse Output Polarity Setting(P1-03) Y:Output Polarity © Forward Output © Reverse Output © Brake Selection(P1-42,P1-43) MBT1 0 MBT2 0 ON 000(ms) MBT2 0 ON 00F	Regenerative Resistor Setting(P1-52,P1-53) 751 Ω (5~751) 3001 W (0~3001) Max Motor Speed(P1-55) 6001 6001 RPM (10~6001)	
internal Speed/Torque	BRUR. OFF 		

Step 7: Since it is in multi mode, the system provides setting blocks of position (PT) mode, PR mode and torque mode. Setup "Position (PT) Mode" first.

[0x0F] PT/PR/T Mode
DI/O Setup
Common Setup
Position Mode Setup
PR Mode Setup
Torque Mode Setup
Internal Speed/Torque

The screen on the right will be switched to the one as below:

🔄 Parameter Initial Wizard	
© [0x00] PT Mode © [0x01] PR Mode © [0x02] 5 Mode © [0x03] T Mode	Control Mode Selection(P1-01) [DxOF] PT/PR/T If Control Mode is changed, Must Reboot Drive to Enable Setting!
>> [0x04] Sz Mode	≥ Position Mode Parameter Setup
[0x05] Tz Mode [0x06] PT/S Mode [0x07] PT/T Mode [0x08] PR/S Mode [0x09] PR/T Mode [0x08] PK/S Mode [0x08] CANopen [0x00] CANopen [0x00] PT/PR Mode [0x00] PT/PR Mode [0x00] PT/PR/S Mode <	Type of Pulse Command Input(P1-00: X Z) Logic Type(P1-00: 2) Positive Logic Pulse Type(P1-00: X) Pulse + Direction Imput pulse filter (P1-00: Y) • 0:1.66Mps(Low Speed), 6.66Mpps(High Speed) • 1:146Kpps(Low Speed), 416Kpps(High Speed) • 2:208Kpps(Low Speed), 208Kpps(High Speed) • 2:208Kpps(Low Speed), 104Kpps(High Speed) • 0:Open collector for low-speed pulse • 1:Line driver for high-speed pulse • NO
	DIn must Select GNUM0/1
	ParaThd Msg=201, Cmd=0

Step 8: Since Step 8: Since R mode setting is a specific function in ASDA-Soft, click the function block below, a reminder will pop up and ask users to click for PR mode setting.





The prompting message in main screen: Setup the PR Mode in "PR Mode Setup **b**".

Control Mode Select [0x0F] PT/PR/T	1-01) If Control Mode is changed, Must Reboot Drive to Enable Setting!
L	
Р	ase setup the PR Mode Parameters in "PR Mode Setup" form!

Step 9: Then, setup torque mode.



The screen on the right will be switched to the one as below:

	Control Mode Selection(P1-01)		
[0x01] PR Node [0x02] S Node	[0x0F] PT/PR/T	If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[DX03] I PROB [DX04] Sz Node [Dx06] PT/S Node [Dx06] PT/S Node [Dx06] PR/5 Node [Dx08] PR/5 Node [Dx08] PR/T Node [Dx08] S/T Node	Yorque Mode Parameter Setup Analog Torque Command Filter(P1-07) YES 0 ms (0~1000) G NO		E
[Dx0C] Reserved [Dx0D] PT/PR. Node [Dx0D] PT/PR. Node [Dx0E] PT/PR/S Mode D/O Setup D/O Setup Common Setup Position Mode Setup PR. Mode Setup	Max Analog Torque Command (P1-41) 100 %/10V (0~1000) 100 %/10V 100 %/10V 100 %/10V 100 %/10V 100 %/10V		
Torque Mode Setup Internal Speed/Torque			

Step 10: If users desire to setup speed or torque limit, click the sixth block "Internal Speed/Torque".



The screen on the right will be switched to the one as below:

🛃 Parameter Initial Wizard		
) 🛛 🗛	
0x00] PT Mode 0x01] PR Mode 0x02] 5 Mode	Control Mode Selection(P1-01) [[0x0F] PT/PR/T If Control Mode is changed, Must Reboot Drive to Enable Setting!	
[0x03] T Mode	Speed / Torque Limit Setup	
0x05] Tz Mode 0x06] PT/S Mode 0x07] PT/T Mode	P1-02 X:speed limit 0 0: Disable speed limit function 1: Enable speed limit function(only for T mode)	
© [0x08] PR/S Mode © [0x09] PR/T Mode	Speed Command Limit Source(P1-09~P1-11) Din must Select SPD0 or SPD1	
© [0x0A] S/T Mode	SPD1/0 0/0 0/1 1/0 1/1	E
[0x0C] Reserved [0x0D] PT/PR Mode [0x0E] PT/PR/5 Mode [0x0F] PT/PR/T Mode	Command Source Speed Command is 0 Internal Register 1 1000 Internal Register 2 2000 Internal Register 3 1000 RPM (-60000~60000) 2000 RPM (-60000~60000) 3000 RPM (-60000~60000)	
DI/O Setup Common Setup Position Mode Setup	P1-02 Y:torque limit • 0: Disable torque limit function (1: 1: Fable torque limit function(only for P/S mode)	
PR Mode Setup	Torque Limit Settino(P1-12xP1-14)	
Torque Mode Setup	DIn must Select TCM0 or TCM1	
Internal Speed/Torque	TCM1/0 0/0 0/1 1/0 1/1	
	Command Source Torque Command is 0 Internal Register 1 100 % Internal Register 2 100 % Internal Register 3 (-300~300) (-300~300) (-300~300) (-300~300) (-300~300)	
		-
	ParaThd Msg=201, Cmd=0	1.

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Chapter 4 Motion Control

[Introduction] Users learn how to use E-Cam, PR mode and data array for different applications in this chapter.

- 1.) 【E-CAM】
- 2.) 【PR Mode Setting】
- 3.) 【Capture / Compare】

4.1 E-CAM

E-Cam is the built-in function in ASDA-A2 series servo drive. Its advantages are:

- 1. Increase the power efficiency: Without the friction among machinery parts, it reduces the power consumption.
- 2. E-Cam shape is easy to change: E-Cam shape can be changed simply by modifying the E-Cam curve.
- 3. Machinery maintenance: It is simulated by software.
- 4. Wide range of application: E-Cam software is applicable to any application which is required to use E-Cam curve.
- 5. Flexibility: One master axis can command several slave axes. It would be more difficult when doing it by machine cam.

With built-in E-Cam function, ASDA-Soft stabilizes the control system and enables the servo drive to complete motion control command, such as synchronous conveyor, flying shear and rotary cut. Followings are the main features of E-cam:

- It provides diversified Table Creating Wizard. Users could easily complete each kind of E-Cam application.
- > 720 points of E-Cam contour can be done by manual setting.
- Parameter grouping. Complete E-Cam setting without memorizing parameter number.
- > It provides E-Cam simulation so that users could simulate the E-Cam path.



This section will be divided into two parts:

[Interface Introduction]: It introduces the function and feature of the interface.

[E-Cam Table Creation]: It describes the operation and setting steps of each method to create E-Cam.

Interface Introduction



1. Toolbar: Open the E-Cam file or save the programmed E-Cam application.



Icons from left to right: Open files, Save as files, New edit, Load from servo, Description and Password setting.

General function of the toolbar is the same as the others that described before.

2. E-Cam table setting: With the variety method of table creation, users can complete the E-Cam setting step by step.



3. E-Cam sketch: According to the input pulse number of master and slave axis, the software will simulate the E-Cam curve.



It introduces the operation and setting steps of each method in section of E-Cam Table Creation below.

E-Cam Table Creation

When start to setup E-Cam curve via "E-Cam" function, please select from the following methods:

Please select one way to create E-CAM Table.

Manually create a table	
Manually create a table	
Speed Fitting Creation	
Rotary Shear - W/O Sealing Zone	
Rotary Shear - W/T Sealing Zone	
Rotary Shear - Adjustable Sealing Zone	e
Cubic Curve Creation	
Rotary Shear - Printer Machine	
Cubic Curve Creation (*.ecm)	

- Manually create a table
- Speed fitting creation
- Rotary shear-W/O sealing zone
- Rotary shear-W/T sealing zone
- Rotary shear-Adjustable sealing zone
- Cubic curve creation
- Rotary shear Printer Machine

Before starting the setting of E-Cam, here are some reminders: Functions mentioned below are merely for setting up and operating E-Cam table. A complete motion framework shall be programmed in accordance with PR mode. Please refer to ASDA-A2 User Manual for further information of E-Cam. It has detailed description of each application and setting method of E-Cam with PR mode.

[Manually create a table]

It could be applied to the application like machine cam that requires a complete cam contour. Use the center of the circle of E-Cam as the reference point and divide it into equal parts. Measure the length from the center of the circle to the periphery. Then, input the data to the table. And E-Cam curve will be acquired.

Chapter 4 Description of Motion Control

210

1501

180

(PUU/s)

360° -12537.9



60° 90°

30°

From the above figure, you may find that the E-Cam curve simulated by software is slightly different from the actual one which is marked on the right. It is because the above E-Cam curve is drew by 16 sampling points.

120° 150° 180° 210°

Curve

240° 270° 300° 330°



Actually, the built-in E-Cam in ASDA-A2 can be divided into 720 parts (721 points). The minimum degree of each part in one cycle (360°) is 0.5°.



Thus, to create more the sampling points, the E-Cam curve is closer to the actual one. On the contrary, less points brings rougher E-Cam curve. The following steps guide the user to create the E-Cam table.



Step 1: Select "Manually create a table" and click



Step 2: Users will see the window which shown as below.

PS	5-81 : Start po P5-82:	osition of Da E-CAM Area	ita Array 1 Number 2	.00	Lao	od From Da Doad Dat	ita Array ta From CAP Arra Array Address:	y to Table Star	Address:	20	Area Size	e: 20	Point S	Size: 21	Manually crea table Step 2
			6	Create Tabl	e				, OK						Manually crea table
	0	1	2	3	4	5									
n Y	1	2	3	216	288	360									
-		-	_	-	-	-	_								
															 Previous
					Draw								Downlop	oad Table	Burn Table Data
Ir	nformation	Simulation Unit: n lave Pulse 1	nm 100000		PUU								Downle	ad Table	Burn Table Data
Ir	nformation S Ma Master Si	Simulation Unit: n lave Pulse 1 ster Pulse [mulated Spe	nm 100000 2 100000 :ed 100 3lave Inform	pulse/s	PUU pulse 0.001 m	nm/s							Downle	and Table	Burn Table Data
Ir	nformation S Ma Master Si	Simulation Unit: n lave Pulse 1 ster Pulse [mulated Spe X :	nm 100000 2 100000 sed 100 Slave Inform	pulse/s nation	PUU pulse 0.001 m	nm/s							Downle	and Table	Burn Table Data
Ir	nformation S Ma Master Si	Simulation Unit: n lave Pulse 1 ster Pulse 1 mulated Spe X : X : Y	nm 100000 I 100000 sed 100 Slave Inform	pulse/s nation PUU, PUU/s,	PUU pulse 0.001 m mm/s	nm/s	*****		*****				Downle	and Table	Burn Table Data

Please note that any type of E-Cam curve can be divided into 720 parts (721 points) at most. The minimum degree of each part in one cycle (360°) is 0.5°.

To set it up by parameters, P5-82, E-Cam: Area Number N, which means the parts the cam can be divided into. Its setting range is between 5 and 720. Thus, users have to setup E-Cam area number (P5-82) first. For instance, when users desire to setup 16 points:

P5-81 : Start position of Data Array	100
P5-82: E-CAM Area Number	16

	Clic	k 🖸	Oreate 1	Table	, the	E-Ca	m tab	ole wi	ll be	adjus	ted to	o 17 p	points	5.			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
θ[°]	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
Postion Y		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Then, input the length from the center of the circle to periphery into the table:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
θ[°]	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
Postion Y		45564	40074	44577	79722	99297	96692	84584	64623	46510	42344	47705	63713	83046	95296	88287	64532



Here provides a tool for quick setting: Right click on the table a quick setting window will pop up:



This enables users to edit E-Cam table in a very quick and easy way. For example, users can copy one same section of E-Cam curve or insert / delete one point in E-Cam curve that just created.

[Quick Input Edit] : The following window pops up when click Quick Input Edit.

Quick Input Ed	itor			
Fr	om 0		Т	p 10
Start Value	5		Ascend Descend + - - Copy Exchange	1
	Interval p	ooints	1	
		Don't do	se, contin	ue the next operat

Operating method:

a.) Select the range that desire to modify. Please note that the max. value has to be set within the allowable range.

From 0 To 10

b.) Select one way to adjust E-Cam data:

Ascend	
Descend	
+	
-	
*	
01	
Copy	
Exchange	

Ascend & Descend: modify the "start value" first then setup the desired ascending or descending value.



If the setting requires striding the E-Cam points, "Interval Points" can be used to change the position. For example:

Set start value and ascending value first. Then, set "Interval Points" to 1.

Quick Input Edit		
Quick Input Editor		
From 0	-	Го 10
Start Value 5	 Ascend Descend + - * / Copy Exchange 	2
Interval p	oints 1	1
D	ion't close, conti	nue the next operation
OK	Cance	el 🛛

The setting of E-Cam table will show as below:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
θ[°]	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
Postion Y	1	2	3	4	5	5	7	9	11	13	15	12	13	14	15	16	17

If change the ascending value to 1, set Interval Value to 2.



The setting will be:



Its calculating method is:

Start point = 5; Start value = 5; Interval value = 2.

The next point after 5 is 7, then the value = 5 + 1 + 1 = 7 (point 7)

Similarly, position 9 = 7 + 1 + 1 = 9

General calculation $(+ - \times \div)$

When desire to combine forward and reverse curve, function of $(+ - \times \div)$ can help. For example:

Quick Input Editor			
From	5	То	10
	C	Ascend	
		Descend	F
	0) +) -	5
	0)*	
	0) Copy	
	C	Exchange	
In	terval points	1	

Setup the position of E-Cam point, 5 to 10. Each point plus 5 and the interval value is 1:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
θ[°]	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
Postion Y	1	2	3	4	5	11	12	13	14	15	16	12	13	14	15	16	17

Copy: Users can copy the position point from one E-Cam curve to another E-Cam curve. For example:

From 5	To 10
	Ascend
	Descend
	+
	-
	•
	01
	Copy
	Exchange

Copy the value from 5 to 10 to the target position starting from 1.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
θ[°]	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
Postion Y	1	6	7	8	9	10	11	8	9	10	11	12	13	14	15	16	17

Exchange: Users can swap one position from an E-Cam curve to with another one. For example:

Quick Input Editor					
From 1	10		1	б	15
		_			
			Ascend		
			Descend		
			+		
		0	*		
		\sim	/		
		õ	CODV		
		۲	Exchange		
			-		
The Start Point of	Destinatio	n	1		

Swap the value from position 10 to 15 with the one from 1 to 6 by the above setting.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
θ[°]	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
Postion Y	1	11	12	13	14	15	16	8	9	10	2	3	4	5	6	7	17

← - - - - - →

Exchange the value of E-Cam curve

It is suggested to click	e, continue the	^{next operation} w	hen using th	ie
function of "Quick Input Edit". So		ndow of "Quick I	nput Edit" wi	ill not
be closed every time when click close the window.	ОК	. Users can click	Cancel	to

[Insert one] / [Delete one]: If the user desires to insert or delete one E-Cam point, use [Insert one] or [Delete one] to adjust the table. See the example below:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
θ[°]	0	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360
Postion V	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Use the left-mouse button to select the insert or delete E-Cam point. Right click to select "Insert one".



Then, the new E-Cam point is added.

4	5	6	7	8	9	10	
90	112.5	135	157.5	180	202.5	225	
5	6		7	8	9	10	

[Import points] / [Export points]:

Function of creating forward and reverse curve in one speed area is not supported at the moment. However, users can create the curve individually then combine one with another. Its method is to divide the curve which has the same rotating direction into the same section. If the stop area is between the forward and reverse area, it can be regarded as the one for previous curve or the waiting area for the next curve.

See the figure below. The stop area is planned as the one for previous curve. If the whole section is divided into 400 parts, the forward curve plus the stop area will take 200 parts and the reverse one will take another 200.



This method is to create the curve by dividing the same rotating direction of curves into different sections. The setting method will be elaborated in "Speed Fitting Creation".

Step 3: Press **Contract** to draw the simulated E-Cam curve (see the left figure): Select "Simulation" which marked in red.



Step 4: Make sure the E-Cam curve is correct. Users can also use "Information" to simulate the master axis.

Information	Simulation	ı					
	Unit	: mm					
	Slave Puls	e 1000	000		P	UU	
M	laster Puls	e 🗸	100000		p	ulse	
Master 9	Simulated S	Speed	100	pulse	s/s	0.001	mm/s
		Slav	e Informa	tion			
	Х:	165.5	5°				
📕 🔽 Positio	on Y	15618	.753	PUU,	0.150	5	mm
📕 V Speed	l v(Y')	2551.(020	PUU/s,	0.02	55	mm/s
Accele	eration A(Y	1					

Step 5: Setup the start address of data array when it is saved into the servo drive. The default value of P5-81 is 100. The setting range is between 0 and 1999. Data array is a memory block which can store position data. It is used to store E-Cam point here.

If users had already created the E-Cam in servo drive, users can use the function below to download the data array from the drive and manually modify it.

	Laod From Data Array O Load Data From CAP Array to Table
	Specify Array Address: Start Address: 20 Area Size: 20
	С. ОК
)	Load Data From CAP Array to Table
	Use the data from "CAP Data Array" as the one for E-Cam curve. For example, setup the start address in data array (P5-36) and the capturing amount (P5-38). The start address of E-Cam curve is the address specified by P5-36. The setting of P5-38 refers to the area size. Click to directly download the data into the table.
)	Specify Array Address: Start Address: 20 Area Size: 20
	Users also can specify the start address of data array and area size. Click

Step 6: If users need the data as non-volatile data when the power is off, click "Download Table / Burn Table data" will do.

	📃 🌛 Download T	able	🌛 Burn Table (Data	
Downlo	^{ad Table} : Downle	oad table	data into EEPR	OM. Wher	n the power is off, the
	data w	ill be vola	tile.		
Step 7 [.] Cl	ick lest to ent	er the sci	reen of "Parame	ter setup".	
	ameter Setun				Manually create a
P5-8	5 : Engage(Entry Offset)	0			table
P5-8	5 : Postion of Master Axis	0			Step 3
P5-8	7 : Engage(Lead Pulse)	0			Parameter Setting
P5-9) : Area No+ (Polarity is Positive)	0			
P5-9	1 : Area No- (Polarity is Negative)	1			
P5-1	9 : E-CAM Curve Scaling	1.000			
P5-8	3: E-CAM Cycle Number: M	1			
P5-8	4: Pulse number of master axis: P	3600			
	(Pulse number of master axis P corres	sponds to E-CAM table N	1 cycle) Download		Previous Next

In this step, users can setup the following parameters according to the actual situation.

P5-85 : Engage(Entry Offset)						
P5-86 : Postion of Master Axis						
P5-87 : Engage(Lead Pulse)						
P5-90 : Area No+ (Polarity is Positive)						
P5-91 : Area No- (Polarity is Negative)						
P5-19 : E-CAM Curve Scaling						
P5-83: E-CAM Cycle Number: M		1				
P5-84: Pulse number of master axis: P		3600				
. (Pulse number of master axis P corresponds to E-CAM table M cycle)						

Let's describe the parameter setting via the functional blocks below:



1. Master axis:

In this area, users can setup monitored via P5-86 and can be written in before E-Cam engaging. Since the moving distance of master axis remains, change the value of P5-86 will not change the position of slave axis.

2. Clutch:

Users can setup ^{P5-87 : Engage(Lead Pulse)} here. Followings describe the setting method:



When the engaged condition is established, the E-Cam status will change from stop to pre-engaged, $S0 \rightarrow S2$, and start to count the pulse number. When it reaches the pre-engaged amount, the status will change to engaged, $S2 \rightarrow S1$.
P5-87 is working only when the status changes from S0 to S2. The so-called lead pulse is the delayed pulse number when engaged condition is established. P5-87 is the lead pulse at the beginning which is required in first engaged.

3. Gear box#1(master axis):

In gear box#1, users can setup P5-83: E-CAM Cyde Number: M and P5-84: Pulse number of master axis: P : Following describes the E-gear ratio setting method of master axis.



E-gear ratio of master axis changes the resolution of pulse command. P5-83 can be used for adjustment when it is engaged.

When slave axis receives pulse number P from master axis which is defined by P5-84, the E-Cam axis will rotate M cycle defined by P5-83, which is M cycle in E-Cam table. These two parameters are mainly used to define the resolution of pulse command from master axis.

Example 1, P5-84 = 10000 & P5-83=1: When slave axis receives 10000 pulses from master axis, the E-Cam moves from 0 to 360 degrees, which is one cycle in E-Cam table.

P5-83 can be used to adjust the resolution even when E-Cam is engaged. The change takes effect immediately.

Example 2, value of P5-83 and P5-84 multiply 100 individually. If P5-84 = 1000000 remains, change the value of P5-83 from 100 to 80, the command resolution is higher. That is to say the pulse command width is 80% of the original one and it needs 12500 pulses from master axis to operate one cycle. If P5-83 is changed to 125, the resolution is lower. The pulse command width is 125% of the original one. It only needs 8000 pulses to complete one cycle.

4. E-Cam:

Users can setup P5-19 : E-CAM Curve Scaling and P5-85 : Engage(Entry Offset) here. Following is the setting method of P5-19.



Effect brought by P5-19 is the same as E-gear of slave axis, but only influences E-Cam system. See as above. If P5-19 is set to 0.5, E-Cam axis will only output half of the PUU number, which is the same when adjusting P1-44 and P1-45, but it will not affect the E-gear ratio.

If P5-19 is set to the negative value, the output result will be upside down:



The value of P5-19 can be changed anytime. However, the change takes effect only when E-Cam is re-engaged (= leaves S1 status and back again). The change takes effect immediately in firmware version V1.038 sub48 (or later version).





E-Cam command will be outputted after the setting of P5-19, P1-44 and P1-45 is complete.



In E-Cam area, users can setup the start address after E-Cam is engaged: P5-85.



5. Gear box #2 (Slave axis):

Followings are the brief introduction of gear box #2. Please note that in parameter setup window, no E-Cam related parameter is showed.

E-gear ratio of E-Cam axis is the same as the one which defined by P1-44/P1-45. The change of it will change E-gear ratio of the system and the change of the system's E-gear ratio will not recover even when E-Cam is disengaged.

Since the influence covers the whole system's E-gear ratio, it is not suggested to change E-Cam curve scaling by P1-44/P1-45. When E-Cam is disabled, the PR command will also refer to E-gear ratio.



6. Digital output of E-Cam

When E-Cam is engaged, users can use P5-90 : Area No+ (Polarity is Positive) and P5-91 : Area No- (Polarity is Negative) to setup the start/end degree of digital output of E-Cam (DO.CAM_AREA).

DO name and	DO.CAM_AREA (DO no.=	0x18)
number		
Function	If DO.CAM_AREA is ON, i axis is in the setting range	it means the position of E-cam
When the E-Cam	Set the angle range of DO	ON by P5-90 and P5-91.
is engaging	Please refer to table 1 and	2 below.
When the E-Cam	DO.CAM_AREA is OFF.	
is disengaging		
lf P5-90 <=	91:	

E-Cam degree	0°	~	P5-90	~	P5-91	~	360°
DO.CAM_AREA	OFF	OFF	ON	ON	ON	OFF	OFF

If P5-90 > P5-91:

E-Cam degree	0°	~	P5-91	~	P5-90	~	360°
DO.CAM_AREA	ON	ON	OFF	OFF	OFF	ON	ON

Step 8: When parameter setting is complete, click Download to download parameters into the servo drive.

◇ Parameter Setup					
P5-85 : Engage(Entry Offset)	0				
P5-86 : Postion of Master Axis	0				
P5-87 : Engage(Lead Pulse)	0				
P5-90 : Area No+ (Polarity is Positive)	0				
P5-91 : Area No- (Polarity is Negative)	1				
P5-19 : E-CAM Curve Scaling	1.000				
P5-83: E-CAM Cycle Number: M		1			
P5-84: Pulse number of master axis: P		3600			
. (Pulse number of master axis P corresponds to E-CAM table M cycle) Download					

Step 9 : Click to enter the setup page of "Engaged Condition":							
Sengaged Condition(P5-88, PS	5-89)						Manually create a table
Y:Command Source	O : CAP Axis	○ 1: AUX ENC	2 : Pulse Cmd	🔿 3 : PR Cmd	Ø 4 : Time axis(1ms)	🔘 5 : Synchronous axis	
Z:Engaged Time	0 : Engage Immedia	tely	① 1 : DI -CAM enabled		② 2 : Any action of Cap	ture axis	Step 4 Engaged Condition
U:Disengaged Time 0 : Do not disengage 1 : DI-CAM disabled 1 : DI-CAM disabled 2: Disengage and return to stop state. Stop position is precise! 4: Disengage and return to stop state. Lead Pulse0 . Repeat Cyclically. 6: Disengage and return to stop state, and maintain the speed. Repeat Cyclically.							
8 : Disable E-Cam function after disengaging							
BA : Disengaged Type. While r	reacning disengaging size,	Call PK.	U:N/A Download	Enable E-C	AM		Previous Next

After the E-Cam curve is established and the related setting is complete, users could setup engaged condition of E-Cam and simulate its operation.

In this window, the main adjusted function is divided into three parts:

Command source: The command source of master axis:

Y:Command Source	0 : CAP Axis	① 1:AUX ENC	② 2 : Pulse Cmd	③ 3 : PR Cmd	4 : Time axis(1ms)	S : Synchronous axis
	0 : CAP ax	is: The comm same as P	and is define 4-39.B).	d by synchro	nous axis (The	setting is the
	1 : AUX EN	IC: Use auxil	iary encoder a	as the comm	and of master	axis.
	2 : Pulse C	md: Use exte	ernal pulse co	mmand as th	ne command of	master axis.
	3 : PR com	imand: Comn comm	nand triggered and of maste	d by PR moc r axis.	le is regarded a	as the
	4 : Time axis (1ms): Use time pulse (1ms) as the command of master axis. When it is not connected to master axis, users can selectime axis (1ms) as the master axis to drive E-Cam so as to simulate E-Cam operation.					
	5 : Synchro	nous axis: Us Pl th	se synchrono ease complet is function.	us axis as th e the setting	e command of of macro 1 bef	master axis. ore selecting

ASDA-Soft User (Guide	Chap	oter 4 Description of Motion Control			
•	Engaged time: The com	mand source of master ax	is and engaged E-Cam.			
Z:Engaged Time	0 : Engage Immediately	🔘 1 : DI -CAM enabled	2 : Any action of Capture axis			
	0 : Engaged Immediate: E-Cam is engaged right after it is enabled (P5-88.X=1).					
	1 : DI-CAM enabled: DI Off. Control the engaged time (DI=0x36, DI-CAM On)					
	2 : Any action of CAP axis: Use CAP function. When capturing the first point, E-Cam is engaged.					
•	Disengaged time: Disen	gaged command of maste	er axis and E-Cam axis.			
U:Disengaged Time	 ✓ 0 : Do not disengage 1 : DI-CAM disabled U : Master axis exceed 2: Disengage a 4: Disengage a 6: Disengage a 	ds ECRD(incremental)[symbol = DIR], then and return to stop state. Stop position is p and return to pre-engage state. Le and return to stop state, and maintain the	n 0 precise! ad Pulse0 . Repeat Cyclically. e speed.			
	8 : Disable E-Cam function	tion after disengaging				

- 0 : Do not disengage unless E-Cam is disabled.
- 1 : DI-CAM disable: Trigger DI when it is disengaged (DI=0x36, DI-CAM Off)



U : Set the disengaged time via Bit-OR.

Please note that E-Cam disengages and E-Cam is disabled are not the same. E-Cam disengages: It encounters disengaged problem only when it is in operation (P5-88.X=1).

Disable E-Cam function: Only when E-Cam function is disabled, the disengaged condition can be changed (P5-88.X=0).



- a. Disengaged condition 2, 4 and 6 cannot be setup simultaneously.
- b. When the disengaged condition is 1, 2 or 6, users can disable E-Cam function after disengaged (Bit 3 of P5-88.U, P5-88.U=8). For example, if P5-88.U=6, and E-Cam function is disabled after E-Cam is disengaged, then:
- P5-88.U=8+6=14 \rightarrow P5-88.U=E (hexadecimal value) c. When the disengaged condition is 2, 4, or 6, it can call PR after

disengaging. PR can be specified from P5-88.BA.

Disengaged type: See as above, when it reaches disengaged time (P5-88, U = 2, 4, 6), it automatically executes PR (hexadecimal): 00~3F (00 means no action).

BA : Disengaged Type. While reaching disengaging size, call PR.	0:N/A	
	0:N/A	
	PR01	
	PR02	
	PR04	
	PR05	
	PR06	-
	PR07	17.

- NOTE Setting v
- a. When the pulse number received by E-Cam axis is the same as the setting value of p5-89, E-Cam disengages. If U = 2, the position will be controlled precisely. Set U to 6 can ensure the smooth speed. If E-Cam stops when disengaging, then the disengaged command of 2 and 6 will be the same.



When U = 6,

b. When the pulse number sent by master axis is the same as the setting value of P5-89, E-Cam disengages. If U = 4, it starts counting after E-Cam disengaged. When the pulse number sent by master axis is the same as the setting value of P5-92, E-Cam will engage again and so on so forth.



When the setting is complete, click **Download** to download the "Engaged condition" into the servo drive. As the previous description, if it is not connected to the master axis, users can select the time axis (1ms) as master axis to drive slave axis so as to simulate E-Cam operation.

Click Enable E-CAM. Then, make sure the drive is Servo On so as to trail run the E-Cam.

[Speed Fitting Creation]

Although this method is called Speed Fitting Creation, the actual data in E-Cam table is the one of position curve. As long as the moving distance is the same during the same unit of time, both axes have the same speed. When speed application is a vital issue to consider, Speed Fitting Creation can be use to create E-Cam curve.

- To arrange the proportion of waiting area, acceleration area, constant speed area, deceleration area and stop area in one cycle of E-Cam curve.
- Destination is the distance the slave axis travels.
- The point number of S-curve is the same as the point number in stop area. The larger amount of S-curve number, the more smooth variation during acceleration and deceleration of the motor.
- The system can calculate the traveling distance of master axis base on slave axis so as to make the same operation speed; Or calculate the traveling distance of slave axis base on master axis; Or users can directly calculate the traveling distance of master axis and the destination of slave axis separately without aligning the slave speed with the master speed.
- Take the filling machine as the example for further explanation. Please see as below.



[Example – Filling Machine]

Design of E-Cam curve:



This system has two E-Cam curves. One is for controlling the platform in horizontal direction and another one is for controlling the filling axis in vertical direction. A complete cycle starts when the bottle is in accurate position and activate the signal, then ends when the platform returning to the start position controlled by PR command.

The master axis operates at constant speed on E-Cam curve. The slave axis is composed of acceleration area, constant speed area and deceleration area. It is because the integral of speed curve is the traveling distance. The max. speed of slave axis is the operation speed of master axis. Thus, master axis travels longer distance than slave axis in one cycle.



The following three figures illustrate the moving distance of master axis and slave axis as well as the constant speed area: **master axis travels longer distance than slave axis in one cycle**.



System setup:

Figure below is the specification of material feeding axis. Introduction of creating E-Cam curve via software will be illustrated here.



Step 1: Enable "E-CAM" and select "Speed Fitting Creation".

📽 📰 🗋 📲 🛛 🕹			-			
		Please select one w	ray to create E-CAM	Table.	Speed Fitt Creation	n
	-	Speed Fitting Creation		Speed Fitting Creation	-	
	SEC IDLL		COHST DEC	Manually create a table Speed Fitting Creation Rotary Shear - W/O Sealing Zone Rotary Shear - W/T Sealing Zone Rotary Shear - Adjustable Sealing Zone		ray to 1 Table
	POS			Cubic Curve Creation Rotary Shear - Printer Machine Cubic Curve Creation (*,ecm)		



Step 2: Click

to enter the page of Speed Fitting Creation.



Step 3: To create E-Cam curve base on the traveling distance of slave axis. See the following 5 steps.



Step 1: Setup E-gear ratio. P1-44=128 and P1-45=10.

Step 2: Setup the required pulse number when master axis and slave axis operate one mm. The unit of master axis is pulse; PUU is for slave axis.

Unit:	mm	
Slave Pulse	100000	PUU
Master Pulse	52	pulse

Step 3: Speed section. Setup waiting area, acceleration area, deceleration area, constant speed area and stop area.

♦ Speed Section						
P5-81 : Start pos	tion of Data	Array	10	D		
P5-82: E-CAM Are	ea Number		20(D		
IDL1 : Waiting Ar	ea			0	% =>	0
ACC : Acceleration Area				5	% =>	10
CONST : Constant Area			85	% =>	170	
DEC : Deceleration Area				5	% =>	10
IDLE2 : Stop Area				5	% =>	10
Destination(L) 100000 PUU						
S Curve No. 10						

Step 4: According to destination (L), it automatically calculate the pulse number of master axis (P5-84). When select this option, if the destination is

unchangeable (the traveling distance for slave axis is fixed), the system will automatically calculate the value that P5-84 needs according to the destination.

Based on lead pulse, calculate P5-84 pulse num

Step 5: Click Create Table to complete the table on the right.

Then, click Craw to confirm the E-Cam simulation. In addition, the E-Cam curve can be created according to the traveling distance of master axis in some applications.



The table filling steps in this example is almost the same as the above description. The difference is on Step 4 when selecting Based on P5-84 pulse number, calculate lead pt •.

There is no need to fill in Destination (L) in Step 3 when selecting this option. However, users have to self calculate the value of P5-83/P5-84 and fill in the value in Step 5.

P5-83: E-CAM Cycle Number: M	1	
P5-84: Pulse number of master axis: P	10400	(Pulse number of master axis P corresponds to E-CAM table M cycle)

In Step 6, the system will calculate the destination of slave axis according to the value in Step 5. This function is selected when the traveling distance of slave axis is the same as master axis.

Next, the description is about the E-Cam setting of filling axis. "Speed Fitting Creation" and "Manually create a table" are required here to combine two sections of curves (forward and reverse):

Step 1: See as below. Curve for filling axis needs to go with P1-01.Z (Motor operates at forward direction).



Before setting up forward and reverse curve, it is important to know that P5-18: Axis Position-Pulse Command (CN1); P5-86: E-CAM: Master Axis Position. When both pulse counts and feedback pulse counts increase at forward direction, the motor is defined to run at forward direction.



Step 2: Users need to create E-Cam curve here. The function of simultaneously creating forward and reverse curve is not supported. However, users can create the curve individually and then combine them afterwards.

Segment the curve which runs at the same direction into one section. For instance, the Stop area between forward and reverse curve can be regarded as the one for previous curve or the Waiting area for the next one. See the example in this page. The Stop area is programmed as the one for previous curve. If the whole curve is divided into 400 parts, forward curve pulse Stop area takes 200 parts. Another 200 is for reverse curve.



Another segment method is to program the curve in Stop area and Waiting area as any running direction since motor stops in both areas. To compare it with the above figure, curve in Stop area is programmed as the one for forward curve and the rest is for the reverse one in this example. Thus, 400 parts are in one curve, while the forward one takes 150, the reverse one takes 250.



The following describes forward and reverse commands issued by the software:

First section: Before creating the curve, please setup e-gear ratio (P1-44/P1-45) in advance. The Stop area is programmed as the one for previous curve in this example. Thus, the first section of curve takes 200 parts. Set P5-82 to 200 first. Then, fill in the proportion of Acceleration area, Constant speed area, Deceleration area and Stop area as well as the traveling distance of slave axis into the table.





Export the first section: Right click the mouse at any column of the E-Cam table. Then, select "Export points". Since there are 200 parts in this section, users should fill in values between 0 and 200. Save the data when complete.

Quick Input Edit
Insert one Delete one
Import points
Export points

Right click the mouse on the table, select "Export points". The following window will pop up.

Export points	
From 0	To 200 All points
Seperal	te symbole : Tab 👻
OK	Cancel

Then, setup the range. Cancel this option "All points" in this window. Manually enter the range from 0 to 200.

From	0	То	200
			All points

Click _____ to open the screen for exporting files to export the first section of curve.

層					?
查詢(I):	🕑 桌面		¥		
我最近的文件 美面 我的文件	 □ 我的文件 ● 我的電腦 ● 網路上的芳約 	a :			
我的電腦 後的電腦 一般 網路上的芳鄰	檔名(M) ;			•	開啓(0)
	*******	Testa			Derick

Seperate symbole : Tab
can be used to divide the exporting data. Several ways are provided, see as below.



Second section: The second section is reverse operation. Create the position curve in opposite direction. Then, acquire the required curve by editing the value.



First, create the curve in opposite direction. 200 parts are in total. Then, enter the value according to the proportion of each area to acquire the curve in forward direction.

Chapter 4 Description of Motion Control

	1	Speed Section					
200 parts (E-Cam area number)	İ	P5-81 : Start posi	100				
'	•	P5-82: E-CAM Are	ea Number		200		
	i	IDL1 : Waiting Ar	IDL1 : Waiting Area				0
Allocate 85% for constant speed area		ACC : Acceleratio	n Area		5	% =>	10
and equal division for the rest.	1	CONST : Constan	it Area		85	% =>	170
, = = = = = = = = = = = = = = = = = = =		DEC : Deceleratio	n Area		5	% =>	10
According to the figure below, allocate		IDLE2 : Stop Area	3		5	% =>	10
55% for Stop area and 45% for the	*	Destination(L)	100000	PUU			
others.	!	S Curve No.	10				
	- (Based on P5-84 pu	lse number,	calculate lead p		Create	Table



Then, use "Quick Input Edit" to edit the curve in reverse direction. Right click to enable the function:

Quick Input Editor			
From	1	Т	o 5
		 Ascend Descend + - * / Copy Exchange 	1
Ir	nterval po	nts 1	
	Do	n't dose, contin	ue the next operat

Setup the curve range from 0 to 200.



The edit method is **All Value in the Table *(-1)**. Reverse the position curve for 180 degrees first.



Click Click to simulate E-Cam, which shown as below. The coordinate is inverted at the moment and needs to be amended.







Export the second section: Right click the mouse at any column of the E-Cam table. Select "Export points". Since there are 200 parts in this section, users should fill in values between 0 and 200. Then, save the data of the table.

Quick Input Edit
Insert one Delete one
Import points
Export points

Right click the mouse on the table, select "Export points". The following window will pop up.

Export points	
From 0	To 200
Save integer only	
Sepera	te symbole : Tab 🗸
OK	Cancel

Then, setup the range. Cancel the option of All points in this window. Manually enter the range from 0 to 200.

From	0	То	200
			All points

Click _____ to open the screen for exporting files and to export the first section of curve.

目啓				?
查詢(]):	□ 桌面			÷
 我最近的交件 美面 我的文件 	 一 我的文件 我的電腦 一 網路上的芳: 	鄰		
我的電腦	檔名(11):	T	Ť	開啓(0)
	In HI WITT	1	and a	1004141020

Step 3: When the setting of E-Cam table for two sections is complete, combine them with one another.

First, open the page of "Manually create a table".

	P5-81:	Start position of	Data Array 1	00	ſ	Laod From D O Load Da	ata Array ata From C	CAP Array to	Table								
	I	25-82: E-CAM Ar	ea Number 5			Specify	Array Add	dress:	Start	Address:	20	Area Size:	20	Point Siz	e: 21		
								ſ	_	OK	1						
				Create Tab	ole			l	- 4	OR	J						
	0	1	2	3	4	5											
θ	[°] 0	72	144	216	288	360											
P	ostion Y 1	2	3	4	5	6											
_																	
												- T -LI					
	S	ot the	E-Can	n are	a nur	mher	as d	100 a	nd c	lick	Crea	e radi	2				
	S	et the	E-Can	n are	a nur	mber	as 4	100 a	nd c	lick	Crea	e radi	e .				
	S	et the	E-Can	n are	a nur	mber	as 4	100 a	nd c	lick	Crea	e Tabi	e .				
	S	et the	E-Can	n are a Numb	a nur er 400	mber	as 4	100 a	nd c	lick	Crea						
	S	et the P5-82: E-	E-Can C <mark>AM A</mark> re	n are ^{a Numb}	a nur er 400	mber D	as 4	100 a	nd c	lick	Crea		e .				
	S	et the ₽5-82: E-	E-Can CAM Are	n are ^{a Numb}	a nur er 400	mber D	as 4	100 a	nd c	lick	Crea		e .				
	S	et the P5-82: E-	E-Can	n are a Numb	a nur er 400	mber D	as 4	100 a	nd c	lick	Crea		<u> </u>				
	P5-81: Start posi	et the	E-Can	n are a Numb	a nur er 400 aod From Dat	mber D	as 4	100 a	nd c	lick	Urea		<u> </u>				
	P5-81 : Start posi P5-82: E-4	et the P5-82: E-	E-Can CAM Are	n are a Numb	a nur er 400 aod From Dat © Load Data	mber D a Array a From CAP A rray Address	as 4	loo a	nd c	liCk Area S	ze: 20	Point S	ze: 21				
	P5-81 : Start posi P5-82: E4	et the P5-82: E- tion of Data Array	E-Can CAM Are	n are a Numb	a nur er 400 aod From Dat © Load Data	mber D a Array a From CAP A rray Address	as 4	loo a	nd c	liCk Area S	ze: 20	Point S	ze: 21				
	P5-81 : Start posi P5-82: E4	et the P5-82: E- tion of Data Array	E-Can CAM Are	n are a Numb	a nur er 400 aod From Dat © Load Data	a Array a From CAP A rray Address	as 4	loo a	nd c	liCk Area S	ze: 20	Point S	ze: 21				
	P5-81 : Start posi P5-82: E4	et the P5-82: E-4 tion of Data Array CAM Area Number	E-Can CAM Are	n are	a nur eer 400 aod From Dat © Load Data © Specify A	a Array From CAP A rray Address	as 4 may to Tab	le Start Addres	nd c	lick Area S	ze: 20	Point S	ze: 21				
	P5-81 : Start posi P5-82 : E4	et the P5-82: E-4 tion of Data Array	E-Can CAM Are	n are a Numb	a nur her 400 aod From Dat © Load Data © Specify A	mber D a Array a From CAP A rray Address	as 4	hoo a Ne Start Addres Ft, OK	nd c	lick Area S	ze: 20	Point S	ze: 21				
	P5-81 : Start posi P5-82: E4	et the P5-82: E-1	E-Can CAM Are	n are a Numb	a nur per 400 sod From Dat © Load Data © Specify A	mber D a Array a From CAP A rray Address	as 4	HOO a	nd c	Area S	ze: 20	Point S	ze: 21	14	15	16	17
<u>θ["]</u>	P5-81 : Start posi P5-82: E-4	et the P5-82: E-1 tion of Data Array AM Area Number 1 2 0.9 1.8	E-Can CAM Are	n are a Numb	A NUI eer 400 sod From Dat © Load Datz © Specify A	nber D a Array a From CAP A rray Address	as 4	HOO a	nd c	Area S	ze: 20	Point S	ze: 21	14	15 13.5	16 14.4	17 15.3
θ[°] Postion Y	P5-81 : Start posi P5-82: E4	et the P5-82: E-4 tion of Data Array CAM Area Number 1 2 0.9 1.8 2 3	E-Can CAM Are 100 400 Create Tab 3 2.7 4	n are a Numb	a nur er 400 aod From Dat © Load Datz © Specify A	mber D a Array a From CAP A rray Address	as 4	HOO a	nd c	Lick Area S 10 9 11	ze: 20	Point S	ze: 21	14 12.6 15	15 13.5 16	16 14.4 17	17 15.3 18
θ[*] Postion Y	0 0 1	et the P5-82: E-1 tion of Data Array CAM Area Number 1 2 0.9 1.8 2 3	E-Can CAM Are 100 400 Create Tab 2.7 4	n are a Numb	A NUI er 400 aod From Dat © Specify A 5 4.5 6	https://www.abs/abs/abs/abs/abs/abs/abs/abs/abs/abs/	as 4	loo a	nd c	Area S	ze: 20	Point S	ze: 21	14 12.6 15	15 13.5 16	16 14.4 17	17 15.3 18
θ[°] Postion Y	P5-81 : Start posi P5-82: E4	et the P5-82: E-1 tion of Data Array CAM Area Number 1 2 0.9 1.8 2 3	E-Can CAM Are	n are a Numb	A NUI eer 400 sod From Dat © Load Data © Specify A 5 4.5 6	b From CAP A rray Address	as 4	HOO a	nd c	10 9 11	ze: 20	Point S	ze: 21	14 12.6 15	15 13.5 16	16 14.4 17	17 15.3 18
θ[°] Postion Y	P5-81 : Start posi P5-82: E-4	et the P5-82: E-4 tion of Data Array AM Area Number 1 2 0.9 1.8 2 3	E-Can CAM Are	n are a Numb	A NUI oper 400 and From Data Coad Data Specify A 5 4.5 6	nber D a Array a From CAP A rray Address 6 5.4 7	as 4	Ne Start Addres R, OK 8 7.2 9	nd c	10 9 11	11 9.9 12	Point S	ze: 21	14 12.6 15	15 13.5 16	16 14.4 17	17 15.3 18

Right click the mouse to enable Import points.

Timport points	
From 0	To 200
Sepe	erate symbole : Tab 👻
ОК	Cancel

[Import points] Load in the first section, which has 200 parts. Its range is between 0 and 200. Then, load in the second one, which is from 200 to 400. The end position of the first section, 200 should be overlapped with the start position of the second section, 200. Load in the first section first. The range is from 0 to 200.

From	0	То	200
			All points

Select the file with forward curve:



Click **OK** to load in the first section.

Then, load in the second section, whose range is between 200 and 400. Please note that the end position of the first section, 200 should be overlapped with the start position of the second section, 200.

		從 200		到 40	00 166有聖				
Select th	e file with	n reverse o	curve:	,	// F3mH				
	C:\Docur	僅保存整數 ments and SetI	tings\kevi	n.kc.ta	n\桌面\)	〔 反 轉 .txt			
Click OK diagram	to load ii s done.	n the seco	ond cu	rve. 7	Then,	click	🧷 Draw	. The	e combined
0° 30°	60° 90		150° 1	80°	210° 2	40° 270°	> 300°	330°	400002.344 (PUU) 2202.500 (PUU)s) 360001.909 (PUU) 1884.385 (PUU)s) 320001.475 (PUU) 1566.270 (PUU)s) 280001.041 (PUU) 1248.155 (PUU)s) 240000.606 (PUU) 930.040 (PUU)s) 200000.172 (PUU) 611.925 (PUU)s) 19999.738 (PUU) 293.810 (PUU)s) 19999.303 (PUU) -342.420 (PUU)s) 39998.434 (PUU) -660.535 (PUU)s) -2.000 (PUU)s) -360°

After the setting of material feeding axis and filling axis is complete, users now can setup "Parameter setting" and "Engaged condition" in Step 3 and 4 in section of Manually Crate a Table aiming at these two axes.

[Cubic Curve Creation]

As long as users know the relation between E-Cam position and degree, this

function is rather practical. By simply filling in the position ($0 \sim 360^{\circ}$) of master axis

and slave axis, this function can create and smooth the curve.

In some applications, users might need linear line or curve to complete the motion of point to point when applying the method of Manually Create a Table. Cubic curve creation can help to amend the curve on the diagram.

Step 1: Enable the function of "Cubic Curve Creation".



Step 2: Enter into the page of functional setting.

Cubi	c Data	1				Cubic Curve Sketch E-CAM Table	Cubic Curve Creation
0	Theta 0 72 144	Position 0 0 0 0	Curve Type N1(Th [3]:Cubic Cu 90 [3]:Cubic Cu 90 [3]:Cubic Cu 90	eta (N2(Theta I 270 270 270	Create Cubic Curve	×100000	Step 2 Cubic Curve Creation
3 4<= 5	216 = 288 360	0	[3]:Cubic Cu 90 [3]:Cubic Cu 90 NA NA	270 270 NA			
					Convert to E-CAM table Sample deg.: 1	0 <u>86 0</u> 0	Previous Next
				Dr	aw	Download Table	🥖 Burn Table Data

Its setting function is similar to "Manually create a table". Users can self enter the degree and position of each point.

C	Cubic	Data				
		Theta	Position	Curve Type	N1(Theta (N2(Theta I
0)	0	0	[3]:Cubic Cu	90	270
1	-==	72	0	[3]:Cubic Cu	90	270
2	2	144	0	[3]:Cubic Cu	90	270
3	3	216	0	[3]:Cubic Cu	90	270
4	ł	288	0	[3]:Cubic Cu	90	270
5	5	360	0	NA	NA	NA

Adjusting the connecting line and degree can change the speed between two points. Improper selection and connection will result in dramatically change of the speed. Three types of curve between two points are provided for users:



E-Cam curve is quite smooth in general. Users only need to setup E-Cam whose speed changes dramatically in some specific applications.

Take the Bode plot as the example below: To create E-Cam curve by S-curve, two points inside the red frame are all smoothly connected.



Adjust the curve from the second to third point as "linear". Users can see the speed curve between two points becomes linear, which causes dramatic change.



Assume the user needs to insert or delete points, users can directly edit on simulated curve by right clicking the mouse.



Select "Insert" and the software will add one point around the curve. Since both position and degree of this new point are 0, users have to manually enter these two values and re-program the curve type to create new points.



In addition, the departure (theta out) and arrival (theta in) angle can be defined. Aiming to different type of curve, there are different settings: For constant line, the departure and arrival angle are non-applicable.

Curve Type	N1(Theta C	N2(Theta I		
ant Line 🔻	NA	NA		

For constant acceleration, only the departure angle can be specified.

Curve T	ype	N1(Theta C	N2(Theta I		
t Accel.	-	90	NA		

For cubic curve, both departure and arrival angle can be set.

Curve Type	N1(Theta C	N2(Theta I		
c Curve 👻	90	270		

For the smooth operation, both departure and arrival angle are necessary to create an E-Cam curve.



Step 3: Create E-Cam table

The next step is to create the actual E-Cam table.

The initial value of the sampling angle is 5°. When drawing the curve, the whole distance is 360°. The system divides the E-Cam points according to the value of cubic curve and sampling angle.



For creating a more precise curve, if the sampling degree is set to 1, it brings the trembling speed command which is derivative of the position curve. Users can choose the value with more decimal digits. Then, recover the command scaling by P5-19 so as to deal with this problem.

	Cubic Curve Ske	tch E-CAM	I Table					
Create Cubic Curve	P5-81 : Start position of Data Array 0 P5-82: E-CAM Area Number 360							
		P5-19	: E-CAM Cu	rve Scaling	0.000001 -			
		0	1	2	0.1			
	θ[°]	0	1	2	0.01			
	Postion Y	0	0	0	0.001 0.0001 0.00001			
Convert to E-CAM table Sample deg.: 1	•				0.000001			



Step 4: Create simulated E-Cam curve

Complete the setting of Step 3 and 4. Click "**Convert to E-Cam Table**" to complete E-Cam table. The system will automatically create the simulated E-Cam curve. Users can download the table into the servo drive.



Then, users can complete the setting of E-Cam by following the setting of Step 3 and 4.

[Rotary Shear-W/O Sealing Zone]

ASDA-A2 provides different type of rotary shear curves, which all can be generated by PC software.

Curve of Rotary Shear	Servo Drive	PC Software
W/O sealing zone	Not supported	Supported
W/T sealing zone	Supported	Supported
Adjustable sealing zone	Supported	Supported

Following describes the definition of rotary shear with and without sealing zone by four Bold plots: When the cutter reaches the cutting materials, the speed of master axis and slave axis should be the same.



In addition, users have to know the proportion of cutter circumference and cutting length since it determines the rotation speed of slave axis.

- Cutter circumference > Cutting length: During cutting, two axes run at the same speed. Other than that, the speed of slave axis is faster than master axis. The faster the slave axis operates, the shorter the cutting length will be.
- Cutter circumference = Cutting length: As long as two axes run at the same speed, it will be good.
- Cutter circumference < Cutting length: During cutting, two axes run at the same speed. Other than that, the speed of slave axis is slower than master axis.



Difference of the speed of slave axis: The operation speed of slave axis can adjust the cutting length. The more constant speed area, the fewer users can do to adjust the cutting length.



In addition, the definition of constant speed area is determined by the proportion of required constant speed during material feeding, not the constant speed area generated when cutter is operating. Different material needs different constant speed area. Thus, to generate different E-Cam curve is required. That is to say, the constant speed area is determined by the material.

?° (Constant speed area)



360° (One cycle of curve)



From the above figure, constant speed area is determined by material. E-Cam curve shall be set according to the material.

Here are the setting method and steps of creating rotary shear curves by ASDA-Soft:

Please select one	way to create E-CAM Table	
Rotary Shear - W/O Sealing 2	Zone 🔻	
A:B Slave	d1 Encoder Master d2 d2	

According to the above mentioned rotary shear curves, it provides three options for users:

Rotary Shear - W/O Sealing Zone	-
Manually create a table	
Speed Fitting Creation	
Rotary Shear - W/O Sealing Zone	
Rotary Shear - W/T Sealing Zone	
Rotary Shear - Adjustable Sealing Zone	
Cubic Curve Creation	
Rotary Shear - Printer Machine	
Cubic Curve Creation (*.ecm)	

- Use "Rotary shear-W/O sealing zone" to create the curve.
- Use "Rotary shear-W/T sealing zone" to create the curve with fixed 51° in sealing zone.
- Use "Rotary shear-Adjustable sealing zone" to create the curve. Users can setup the width of constant speed area via the software.

Take an actual application as the example: In packing machine, cutter and chain conveyor should follow the speed of film feeding axis. Please see as below.



Synchronous axis has the function of mark tracking in packing machine. When the cutting is inaccurate, the system will correct the cutting timing so as to adjust the cutting length and position.

In this application, packing film is the master axis. The cutter and chain conveyor are the slave axes, which operate by following the speed of master axis. When the mark sensor detects the deviation between marks and the setting distance, the cutter and chain conveyor will adjust the speed.

This manual only provides detailed description of creating the table of rotary shear. Please refer to the user manual of ASDA-A2 for further information about the whole application.



next to open the page of mechanism parameter setting.



Users need to know the mechanical specifications when creating rotary shear curve. Users have to fill out the mechanical specifications into software then the E-Cam curve can be created.

Set it up according to the actual



Step 2: Enter the mechanism value.

Create Rotary Shear Table							
Unit	mm						
Gear Ratio: A=	1	:	B=	1			
Knife No.:	1						
Knife Diameter(d1):	599.995	n	nm, c	ircum.	: 1884	.939	mm
Encoder Diameter(d2):	250	m	nm, c	ircum.	: 785.	398	mm
Encoder Pulse	10000		pulse	e/rev	P5-	84 ma	anually Input
Motor PUU NO. per rev	100000		PUU/rev Setting			ng]
Cutting length (L)	500	mm (565.482~5654.817)					
Speed Compensation	0	% (-20%~20%)					
		C	reate	e Tab	e]	

Gear ratio: Gear Ratio:

mechanical proportion.



A= 1

: B= 1

Cutter number and diameter: The cutter number can be changed according to the application and should be equally allocated on the cutter axis. "Cutter diameter" is the rotating distance of cutter tip. Regardless the cutter number, "cutter diameter" is always the same.

Knife No.:	1				
Knife Diameter(d1):	599.995	mm,	circum.:	1884.939	mm

Cutter radius is the distance from the center point of the slave axis to the cutter tip. Thus, two times of the cutter radius is cutter diameter (d1).

Knife Diameter(d1):	599.995	mm,	=	circum.:	1884.939	mm	x TT (pi)



Pulse number and encoder diameter: Encoder diameter is mechanism that rotates along with the material feeding. Its resolution should be a known parameter.



Use the encoder diameter and pulse number per revolution to calculate the command resolution of master axis (= P5-84: Pulse number of master axis).



If the pulse number of master axis is already known, then there is no need to enter encoder diameter and resolution of master axis. Check "P5-84 Manually Input" and directly fill in the pulse number in the blank.

Create Rotary Shear 1	Table							
Unit	mm							
Gear Ratio: A=	1	:	B= 1	L				
Knife No.:	1							
Knife Diameter(d1):	599.995	5 mr	m, ciro	cum.:	1884.939	mm		
Encoder Diameter(d2):	250	mr	m, cira	cum.:	785.398	mm		After P5-84 is select
Encoder Pulse	10000	F	pulse/i	rev 🛛	7 P5-84 ma	anually Input		these two cannot be
Motor PUU NO. per rev	100000	F	PUU/re	ev (Setting]		setup.
Cutting length (L)	500	r	mm (5	565.48	32~5654.8	17)		
Speed Compensation	0		% (-20	0%~2	20%)		1	

Users can manually modify the value of P5-84 at the moment. When P5-83 is set to 1, value of P5-84 represents the pulse number received by slave axis when it operates one cycle. When the value of P5-84 is known, users can manually enter the value.

	P5-81	: Start posit	osition of Data Array		100						
		P5-82: E-CAM Area Number		6							
	P:	P5-83: E-CAM Cycle Number: M		1							
[P5-84: P	ulse number	of master a	xis: P	3600		(Pulse n	umber of	master axis	P corresponds	to E-CAM table M cycle
		0	1	2		3		4	5]
θ[°]		0	72	144		216	5	288	360]
Postion	٦Y	1	2	3		4		5	6		

E-gear ratio of slave axis: It is the required PUU when motor operates one cycle. It the value is known, directly enter it. Users also can calculate the value via E-gear ratio.

Motor PUU NO. per rev	100000	PUU/rev	Setting					
			· · · ·					
			×.	E-CAM				
			Ň					
					1	Motor PU	U per re	ev(Pu)
					1		P1-45=	10
					Pu=	1280000 *	P1-44=	128
					=	100000		_
								Write to Carrie
								White to serve
						ОК	Car	icel

Cutting length (L): Cutting length of the material. Please enter the desired value.



The software will limit the cutting range according to knife number and knife diameter.



If exceeding the limit, a warning message will pop up:

Cutting length (L)	60000	mm (565.482~5654.817)	Delta ASDA-Soft(V5)	EX
Speed Compensation	0	% (-20%~20%)	CCUITTER-CalcusteCutterTable IO Failed	
	E Create Table		:Cut length is out of range!565.4817~5654.817	
		🔍 Dr		OK
Information	Simulation			

Please pay special attention to the **curve limit** set by the software. It is for avoiding the unreasonable rotary shear curve. For instance, if cutting length A is much shorter than the moving distance **a** of slave axis when cutting, it will be unable to increase the speed of slave axis to satisfy the demand of short cutting length. If the value of R is too small, it might need to modify the mechanism to conquer the problem.



	(1011)g(111)a(10) = r	η <i>ι</i> μ
W/O sealing zone	\geq	R: 0.3 ~ 3
W/T sealing zone (macro 6)	\sim	R: 0.07 ~ 2.5
Adjustable sealing zone (macro 7)	\searrow	1.88 > R x speed compensation

Speed compensation: In some applications, if the speed of master axis and slave axis cannot be the same when cutting, users can change the relative speed between master and slave axis via speed compensation parameter. When the compensation value is positive, the speed of slave axis will be faster than master axis in waiting area. If the value is negative, than the speed of slave axis will be slower than the master.

and the second	Table			∇		~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~	$\overline{\nabla}$	
Unit	mm										
Gear Ratio: A=	1 :	B= 1									
Knife No.:	2										
Knife Diameter(d1):	599.995 mm	m, circum.:	1884.940 mm		ΠX					\mathbb{Z}^{+}	
Encoder Diameter(d2):	250 mr	m, circum.:	785.398 mm						/		
Encoder Pulse	10000 p	pulse/rev	P5-84 manually Input	t							
Motor PUU NO. per rev	100000 F	PUU/rev [Setting								
Cutting length (L)	500 r	mm (282.74	41~2827.410)								
Speed Compensation	20	% (-20%~2	20%)	0° 30°	60° 9	0° 120°	150° 0°	210°	240° 271	0° 300°	3309
	Er Cre	eate Table	2								
Unit	mm			7		.					
Gear Ratio: A=	1 :								- Y		
		B= 1									
Knife No.:	2	B= 1									
Knife No.: Knife Diameter(d1):	2 599.995 mr	B= 1 m, circum.:	1884.940 mm								
Knife No.: Knife Diameter(d1): Encoder Diameter(d2):	2 599.995 mr 250 mr	B= 1 m, circum.: m, circum.:	1884.940 mm 785.398 mm			X				/	
Knife No.: Knife Diameter(d1): Encoder Diameter(d2): Encoder Pulse	2 599.995 m 250 m 10000 p	B= 1 m, circum.: m, circum.: pulse/rev	1884.940 mm 785.398 mm P5-84 manually Input	t							
Knife No.: Knife Diameter(d1): Encoder Diameter(d2): Encoder Pulse Motor PUU NO. per rev	2 599.995 m 250 m 10000 r 100000 r	B= 1 m, circum.: m, circum.: pulse/rev [PUU/rev [1884.940 mm 785.398 mm P5-84 manually Input Setting	t		X					
Knife No.: Knife Diameter(d1): Encoder Diameter(d2): Encoder Pulse Motor PUU NO. per rev Cutting length (L)	2 599.995 m 250 m 10000 p 500 r	B= 1 m, circum.: m, circum.: pulse/rev [PUU/rev [mm (282.74	1884.940 mm 785.398 mm P5-84 manually Input Setting 41~2827.410)	t							
Knife No.: Knife Diameter(d1): Encoder Diameter(d2): Encoder Pulse Motor PUU NO. per rev Cutting length (L) Speed Compensation	2 599,995 m 250 m 10000 r 100000 r 500 r	B= 1 m, circum.: n, circum.: pulse/rev [PUU/rev [mm (282.74 % (-20%~2	1884.940 mm 785.398 mm P5-84 manually Input Setting 41~2827.410) 20%)	t	60°			2109	2400 277	16 2000	3300

Step 3: When entering all mechanical value, users have to proceed the setting according to the related parameters of E-Cam curve.

P5-81 P5	: Start positio P5-82: E-C/ -83: E-CAM (on of Data A AM Area Nur Cycle Numbe	nber	100 6				
P5	P5-82: E-C/	AM Area Nur Cycle Numbe	mber	6	7			
P5	-83: E-CAM (Cycle Numbe						
			21 G 141	1				
P5-84: Pu	ulse number o	of master ax	dis: P	63661	(Pulse	number of	master axis f	o corresponds
	0	1	2	3	}	4	5	6
θ[°]	0	60	120	1	80	240	300	360
Postion Y	0	11557	20401	L 2	5000	29598	38442	50000

Users can setup the start address of data array. However, E-Cam area number is unchangeable since it is set by the system.

P5-81	: Start position of Data Array	100
	P5-82: E-CAM Area Number	6
		_

If "P5-84 Manually Input" is checked, users can setup the pulse number of master axis.

P5-83: E-CAM Cycle Number: M	1														
P5-84: Pulse number of master axis: P	63661	(Pulse number of master axis P corresponds to E-CAM table M cycle)													
Click Create Table					to co	omp	olete	the se	etti	ng c	of E-	Cam	curv	e.	
-----------------------	--------------------	-------------	------------	---------------	----------------------------	----------	---------------	-------------------	--------	-------	----------	-------------	---------------	-------------	---------------------
Create Rotary Shear	Table				Sketch	Table									
Unit	mm					P5-81	: Start posit	tion of Data	Array	100					
Gear Ratio: A=	1 :	B= 1			P5-82: E-(CAM Area Number 6		-					
Knife No.:	1				P5-83: E-CAM Cycle Number:			er: M	1	1					
Knife Diameter(d1):	599.995 r	mm, circum.	: 1884.940	mm	P	5-84: Pu	ulse number	of master a	xis: P	12732	(Pulse r	number of r	naster axis F	corresponds	to E-CAM table M cy
Encoder Diameter(d2):	250 r	mm, circum.	: 785.398	mm			0	1	2	3		4	5	6	
Encoder Pulse	10000	pulse/rev	P5-84 m	anually Input	<u>θ[°]</u>		0	60	120	1	80	240	300	360	
Motor PUU NO. per rev	100000	PUU/rev	Setting		Postion Y		0	22377	39501	1 5	0000	60498	77622	100000	
Cutting length (L)	1000	mm (565.4	482~5654.8	320)											
Speed Compensation	0	% (-20%~	-20%)												
	ि म _ि с	reate Tab	le												

Step 4: Click Create Table and the system will automatically drive the curve.



The system will automatically calculate the pulse number of master and slave axis.



In addition, function of table creation in Rotary shear provides the function of "Curve Adjust. Factor".



Confirm the diagram is correct. Then, users can download the table into the servo drive. If desire to keep the curve inside the servo drive when power off, click

to burn the table data into ROM.

🗕 Burn Table Data

When the setting of material feeding axis and filling axis is complete, please proceed to Step 3 and 4 (Please refer to the description of "Manually create a table" in previous section.).

Followings introduce features of "Rotary shear-W/T sealing zone" and "Rotary shear-Adjustable sealing zone".

- When applying "Rotary shear-W/O sealing zone", the curve it created is the one without synchronous area.
- When applying "Rotary shear-W/T sealing zone", it could create the curve which fixed at 51°.
- When applying "Rotary shear-Adjustable sealing zone", it could setup the width of constant speed area via the software.

Please select one way to create E-CAM Table. Rotary Shear - W/T Sealing Zone Rotary Shear - W/T Sealing Zone Manually create a table Speed Fitting Creation Slave Rotary Shear - W/O Sealing Zone Encode Rotary Shear - Adjustable Sealing Zone Master Cubic Curve Creation d2 Rotary Shear - Printer Machine Cubic Curve Creation (*.ecm)

Create the curve by "Rotary shear-W/T sealing zone".

If the material is changed, setup the cutting length again and check if speed compensation is needed will do.

The setting in this page is the same as "Rotary shear-W/O sealing zone".

	Sketch Table							Rotary Shear - W/ Sealing Zone
nt mm ar Ratio: A= 1 : B= 1 fe No.: 1	P5-81 : St P5 P5-83	art position of (i-82: E-CAM An : E-CAM Cycle I	Data Array 100 ea Number 7 Number: M 1					Step 2 Rotary Shear - W/ Sealing Zone
fe Diameter(d1): 599.995 mm, circum: 1884.939 mm	P5-84: Pulse	number of mas	ter axis: P 3600	(Pulse number o	f master axis P	corresponds to E-CA	4 table M cycle)	
coder Pulse 10000 pulse/rev PS-84 manually input tor PUU NO, per rev 100000 PUU/rev Setting	B[*] 0 Postion Y 1	1 72 2	144 3	3 19 216 288 4 5	360 6			
tting length (l.) 2000 mm (131.946~4712.347) eed Compensation % (-20%~20%) b Create Table								
Drawn	Curve adjust. factor		0		-	Download Table	Burn Table Data	Previous
Unit: mm Slave Pulse 100000 PUU Moster Pulse ⊠ 100000 pulse Moster Simulated Speed 100 pulse/s 0.001	`mm/s							

Its interface of setting value is different from "Rotary shear-W/O sealing zone":

- The setting range of cutting length (L)
- Value of P5-82 (E-Cam: Area No.) has to be 7. It is because when using this macro, the value of P5-82 is fixed at 7, which means E-Cam only has 7+1 parts and is unchangeable.

P5-82: E-CAM Area Number 7

Since **"Rotary shear-W/T sealing zone"** would create the curve which fixed at 51°, the synchronous area is therefore generated.



Create the curve with "Rotary shear-Adjustable sealing zone":

Please select one way to create E-CAM Table.



Normally the width of the cutter remains the same. However, different material needs different cutting length and the angle of synchronous zone. Setup the cutting length and make sure if speed compensation is necessary when the material is changed. The setting method is the same as "Rotary shear-W/O sealing zone", to complete the mechanical value.

When applying "**Rotary shear-Adjustable sealing zone**" to create the curve, please pay special attention that the first step is to setup related parameters for storing E-Cam curve in data array, including P5-81 (E-Cam: Start address of data array) and P5-85 (Engaged time). When using macro 7, P5-82 is the only parameter that can be adjusted, whose range is between 30 and 72. It means users can divide the E-Cam curve into 30 ~ 72 parts. 72 can bring the best curve resolution.

The second step is for setting up the scaling of E-Cam curve, including E-gear ratio, P1-44/P1-45(E-Cam is a part of the system and would be influenced by E-gear ratio) and P5-19 (E-Cam curve scaling).



Please proceed the setting of the first and second step.



Step 1: Setup E-Cam area number. It is suggested to set the value to 72 to can bring the best curve resolution.



Step 2: Setup E-gear ratio P1-44/P1-45 (If it's necessary).



Step 3: Setup the speed allocation of E-Cam curve. The size of constant speed area in E-Cam curve is adjustable, thus other areas including Acceleration/deceleration area, S-Curve and Stop area should be manually setup. For a smooth operation, each part of the curve should be equally arranged. The aim of S-curve is to smooth the operation during speed variation. The S-curve is set by scale and it's setting range is from 1 to 4, while the others are set up by angle.



Users have to setup three parameters when using software to setup speed allocation of E-Cam curve: Acc (Acceleration area), Y (Synchronous area) and S° (S-Curve).



See the above graph as example, $2 \times 55^{\circ}$ (waiting area) + $2 \times 60^{\circ}$ (Acceleration area)

+ 30° (Synchronous area) + 100° (S-curve) = 360° .

Please note that P5-82 (E-Cam: area number), S-curve and waiting area are all related.

S°(S-curve) = (2^S) × 360° / (P5-82) S1 waiting area = 180° + 360°/ (P5-82) - 360°/ **R** + (P5-94) / 2

	P5-93.H (Hex.)	P5-93.L (Hex.)
P5-93	16 bits (S level, 1~4)	16 bits (W ,0~170º)
P5-94	32 bits (Y, Synchronous	s Area, 0~330º, Decimal)

Pay attention to the limit of curve creation. This is for avoiding the unreasonable rotary shear curve created by software. For example, when cutting length A is much shorter than the required moving distance a, it is unable to increase E-Cam speed to meet the requirement of short cutting length. If value of R is too small, it usually needs to conquer the problem by modifying the mechanism.



Users shall complete the mechanical value, which is the same as Rotary shear-W/O sealing zone.

Then, proceed setting of Step 3 and 4. Please refer to the detailed description of "Manually create a table" in previous section.

[Rotary shear – Printer machine]

Here comes the operational principles:

The relation between printing axis and material feeding axis is shown as below. Each printing axis does not connect to ball-screw but operates individually. Due to the printing length limit, it cannot do full printing. The printing axis operates at constant speed and same direction. When the printing plate reaches the paper (graph A), the speed of paper and printing plate is the same and both are in the same direction (graph B). When printing is complete, paper and printing plate separate (graph C). Then, paper decelerates to stop and operate towards the opposite direction for a short distance (graph D). When it starts printing again, paper operates at the same speed and same direction as the printing cylinder. So that the printing plate always synchronizes with the paper when printing. If the printing axis and paper separate, paper is retrieved. Both axes still synchronize with one another. With this pattern, the adjacent printing pattern is closely arranged with one another and it therefore saves the use of paper. This application is very common in intermittent printing machine.



ASDA-Soft provides servo setting wizard for intermittent motion control. Users could plan it according to the required print area and blank area and manually adjust the angle in synchronous area and waiting area. Complete the setting of material feeding axis by following the steps below.

Step 1: Select "Rotary shear-Printer Machine" to enter the main page.



Please select one way to create E-CAM Table.

Step 2: Enter the main page.



Parameter setting of mechanism is provided in "Setting".

Setting Advanced Setting		
unit	mm	
PL:Printing Range	200	mm
BL:Blank Range	20	mm
Gear Ratio A:	1	_
Gear Ratio B:	1	_
Motor PUU NO.per rev	100000	PUU/rev
d1: Roller Diameter	30	mm
Encoder Pulse Number	10000	pulse/rev
d2:Roller Diam. of Master	100	mm
		Create

Followings are the theorem of software function and its setting method:



Users have to learn the relation of each unit of length in advance.

L (Circumference of printing cylinder) = $\pi \times d2$

 ℓ (Pitch of materials) = PL + BL

 $R = L / \ell$ (equals to the "cutting length" in Rotary shear. In printing application, most cases are R > 1.)

Take the initial parameter in software as the example:

L (Circumference of printing cylinder) = $\pi \times 100 = 314.15$ mm

 ℓ (Pitch of materials) = PL + BL = 200 + 20 = 220 mm

 $R = L / \ell = 314.15 / 220 = 1.428 (R > 1, reasonable range)$

In addition, L (Circumference of printing cylinder) has to be larger than ℓ (Pitch of materials). The purpose of intermittent motion is to save the use of space and reduce the cost. Idling wastes the materials.

How we determine the width of synchronous area:



deg_sync (Degree of synchronous area) = $PL / L \times 360^{\circ}$. This formula can help to calculate the degree of synchronous area.

Take the initial parameter in software as the example:

deg_sync (Degree of synchronous area) = $PL/L \times 360^\circ = 200/314.15 \times 360 = 229.190^\circ$

Please note that the setting of Degree in waiting area and S-curve cannot exceed 360°.

In addition, if desire to stabilize the printing quality, increase the range of

synchronous area will do, deg_sync (Angle of synchronous area) = $PL / L \times 360^{\circ}$ + SyncAdd (increase the degree of synchronous area).

SyncAdd(increase the degree of synchronous area) can be setup via DegA in "Advanced setting".

Setting Advanced Setting		
Deg1:Waiting Angle	0	0
DegS:S-Curve Angle	20	0
DegA:Syn.Extra Angle	5	0

Complete the setting of printing range and setup mechanical parameters. Users only have to fill in the value of the setting mechanical parameters. Please note that pulse number of the encoder: Printing axis is the master axis of printing machine. Pulse number from the encoder represents the one sent by printing roller per cycle. If master axis connects to the printing roller, its setting value is (P1-46)*4. If the printing roller is equipped with decelerator, then the factor needs to be taken into consideration. For instance, if the decelerator is 1:5, then the setting value should be (P1-46)*4*5.

d2: Diameter of printing cylinder includes the length of printing plate.



When "Setting" is complete, users can click "Advanced setting" to slightly adjust the curve.

We also use rotary shear to program the E-Cam curve. Thus, the setting method is still the same. The synchronous area is set according to the mechanical condition. Users can slightly adjust the degree of waiting area and S-curve.



The setting method of waiting area: The initial value in waiting area is 0. It is because the acceleration/deceleration curve is smoother than no one in this status. The bigger value in waiting area, the shorter distance motor can run in reverse direction and the speed change is severer. It is easier to cause current overload.



See the example below. The waiting area is set to 0°.

A special example: If the motor is still overload when the waiting area is set to 0, then, it is suggest to:

(1) Reduce the speed of master axis (printing cylinder)

(2) Replace by a motor with bigger horsepower.

After the above setting is all complete, users have already created the E-Cam curve for intermittent motion. The next step is to continue the parameter setting of Step 3, Step 4 and PR mode.

4.2 PR Mode Setting

PR (Position Register) is a brand new built-in motion control mode in ASDA-A2 series servo drive. It is no longer the traditional point-to-point control, but enables the servo drive to change the motion command anytime. ASDA-A2 has 64 PR in total. Followings describe the difference between traditional and new PR of ASDA-A2.

Traditional method: Motor runs when DI triggers one PR. Its command is non-continuous. One command has to be executed completely in order to run the next one. For point-to-point control, the command only can be interrupted but not changed in half way.



Innovative Method of ASDA-A2: The command can be changed by external trigger or internal interruption. Various external triggering methods are offered in ASDA-A2, which differs from the traditional one. Users can operate with different kind of functions, such as homing control, position control, speed control, procedure jump, parameters written-in and ect.



Before introducing PR mode, here comes the description of PUU, a newly defined unit. It is a value which is scaled by E-gear ratio, "feedback value equals to the command". For example, when the servo drive issue the command with 10000 PUU, users can acquire the feedback value of 10000 PUU after the position is complete. When the setting of e-gear ratio is done, values of command, feedback and error

will remain, which is easy for users to monitor.



Features of "PR Mode Setting" of ASDA-A2 are described as below:

- 9 main homing modes and more than 30 combinations as sub-items are included.
- Users can do constant speed control in speed mode, including acceleration/deceleration curve program.
- Excellent position control, such as position command (absolute command, relative command, incremental command, CAP command and etc).
- Newly added jump function: It can change the sequence of procedure, increase the repetition and flexibility of the system.

	Ø	ASDA-A2 S	ervo Ver: 1045 Sub:	24 []]	
Speed, Time Setting	^	× P5-20-P5	5-35: Accel / Deco	Time	ų
Accel / Decel Time		AC00	200	(ms) (P5-20) (1~65500)	
Delay Time		AC01	300	(ms) (P5-21) (1~65500)	
internal Target Speed		AC02	500	(ms) (P5-22) (1~65500)	
General Parameter S		AC03	600	(ms) (P5-23) (1~65500)	
lectronic Gear Ratio		AC04	800	(ms) (P5-24) (1~65500)	
ioftware Limit	E	ACOS	900	(ms) (P5-25) (1~65500)	Show current PR. Path
becel time of protection		AC06	1000	(ms) (P5-26) (1~65500)	Run PR. Path 0
vent ON/OFF Setting		AC07	1200	(ms) (P5-27) (1~65500)	Stop PR. Path
Homing Setting		AC08	1500	(ms) (P5-28) (1~65500)	
oming Mode		AC09	2000	(ms) (P5-29) (1~65500)	
loming Speed Setting	-	AC10	2500	(ms) (P5-30) (1-65500)	Carrier and Carrier
ioning Definition		AC11	3000	(mt) (05.31) (1.65500)	Indexing Coordinates Wizar
PR Hode Setting		AC12	5000	(me) (P5-32) (1-65500)	
PRINTI THE		ACTS	8000	(me) (PS-33) (1-45500)	
PR#02] 1;0		AC14	50	(ms) (05-34) (1-65500) (ms) (05-34) (1-65500)	
PR#03] 730		ACIE	30	(ma) (05.35) (1.46500)	
98.#04j T:0		P5-40-P5	5.55: Delay Time	(m) (10-00) (1000000)	
9R#05] T:0		» PS-60PS	-75: Internal Tar	get Speed	
9R#06] T:0					
R #07] T:0					
PR #08] T:0					
PR#09] T:0					
R#10] T:0					
R#11] T:0					
PR#12] T:0					
9R#13] T:0					
4R#14] T:0			_		
PR#15] T:0					
PR#16] T:0				J Download	

This section is divided into three parts:

[Interface Introduction]: It describes the functions and features of the interface.

[Mode Setting] : It describes operation steps of homing mode, position mode and event setting.

[Example]: Users can practice how to setup the software.

Interface Introduction

The following main screen is divided into 5 parts:

📕 🚅 🗎 🖬 🔞 🙆 🧕	ASDA-A2 Seri	es Type Servo Ver:19	[∞] (_a_)		
※速度、時間設定	× P5-20~P5	-35:加,減速時間	\smile	<u> Ψ </u>	
加、減速時間	AC00	200	(ms) (P5-20) (1~65500)		
Delay時間	AC01	300	(ms) (P5-21) (1~65500)		
內部目標速度設定	AC02	500	(ms) (P5-22) (1~65500)		
	AC03	600	(ms) (P5-23) (1~65500)		
	AC04	800	(ms) (P5-24) (1~65500)		
軟體極限	AC05	900	(ms) (P5-25) (1~65500)		:n
事件減速時間	AC06	1000	(ms) (P5-26) (1~65500)	執行PR.Path 0	
事件ON/OFF設定	AC07	1200	(ms) (P5-27) (1~65500)	停止PR. Path	
	AC08	1500	(ms) (P5-28) (1~65500)	(u)
原新復輝保利	AC09	2000	(ms) (P5-29) (1~65500)		
原點很篩速度設定	AC10	2500	(ms) (P5-30) (1~65500)	→ → → 一 → 市 応 毎 中 遠 近 着 中 遠 近 着 中 遠 近 着 中 道 近 着 二 二 一 一 一 一 一 一 二 一 一 二 一 二 一 一 二 一 二 一 二 二 二 二 二 二 二 二 二 二 二 二 二	
□ 「 R IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	AC11	3000	(ms) (P5-31) (1~65500)		
[PR#01] T:0	AC12	5000	(ms) (P5-32) (1~65500)		POO):
[PR#02] T:0	AC13	8000	(ms) (P5-33) (1~65500)		2-52
[PR#03] T:0 b	AC14	50	(ms) (P5-34) (1~65500)		
	AC15	30	(ms) (P5-35) (1~65500)		J
[PR#05] T:0	»P5-40~P5	i-55:Delay時間			
[PR#05] 1.0	≫P5-60~P5	-75:內部目標速度	設定		
[PR#00] 1.0					
[PD #09] T(0					
[PR#00] 1.0					
[FK#09] 1:0					
[PR#10] 1:0			✓下載		
	i				
	H	?R Mode編輯	[PrMod]ParaThrd Suspended! From 0	ASDA-A2 Servo ASDA-A2 Servo	

a.) Firstly introduces [Toolbar]:



E: Save as a file Save the PR mode as a parameter file.

另在新校				2		
様行於① 一 表示 の 一 一 一 一 一 一 一 一 一 一 一 一 一	● 美面 一般的文件 如如"着量 号站上的方率	2	<u></u> ≥ # व		Parameter Files(*.pa	r) –
朝始上的清朝	核名(3) □ 存储频型(1): □	oranasilas falor(* yez)		18月1日) 18月1日)		

産: Open files

開啓				7			
 ・ /ul>	 ● 桌面 ● 我的文件 ● 我的文件 ● 我的文唱話 ● 親路上的芳烯 	Y	► ■ ▲ ■.		*.par		•
	檔名(N): 檔案類型(I): *.par			<u>影略(0)</u> 取消			

🖹: New edit

A confirmation window will pop up. Please make sure if desire to close the current setup status.

elta ASDA-So	n 📔
修改尚未儲存	,是否離開?
(B70)	25/00

1 : Load from servo

Load the related parameters of PR mode from servo drive to the software for editing.

1 : Write all into the servo

Write the related parameters of PR mode from servo drive to the software for editing. In addition, users can download the parameter of each mode.

Select the r	range to download
Select All	
Speed, Time Setting F	Paramters
General Setting Para	meters
Homing Setting Para	meters
All PR Path Paramete	ers

2: Operation Description

A description window will pop up when click this. Users can read through the operation of PR mode.

Password Setting

This function can be used to setup password to protect data array. This function can make sure users will not lose data in data array caused by improper operation.

Please note that this function is available from firmware version V1.027.



The setting range can be divided into:

Data Array Protection Level (Motion parameters are protected) (Support from V1.027)

4:Lock array address:#400~#799
5:Lock array address:#500~#799
6:Lock array address:#600~#799
7:Don't lock the array

When password setting is complete, the following window will pop up.

📲 ASDA_Soft	
Passwo	rd Protection
	Reset Parameters
Data Array Protection Level(Motion para © 0:Lock the whole array 1:Lock array address: #100~#799	ameters are protected) (Support from V1.027) 4:Lock array address: #400~#799 5:Lock array address: #500~#799 6:Lock array address: #500~#799
 3:Lock array address: #200~#799 3:Lock array address: #300~#799 	 7:Don't lock the array
Password :	1~16777215
Password Setting	Remove Password Exit

Enter the password to remove this function.

📲 ASDA_Soft	
Password	Protection
	Reset Parameters
Data Array Protection Level(Motion para © 0:Lock the whole array 1:Lock array address: #100~#799 2:Lock array address: #200~#799 3:Lock array address: #300~#799	meters are protected)(Support from V1.027 4:Lock array address:#400~#799 5:Lock array address:#500~#799 6:Lock array address:#600~#799 7:Don't lock the array
Password : Enter the password	1~16777215
Password Setting	Remove Password Exit

👝 : Stop Operation

When users is editing parameters in online status, if desire to stop accessing parameters via communication, click and the following warning message will pop up and stop parameters accessing.

Delta ASDA-S 🔀	3
Read Failed! 讀取參數檔完成!	
(OK	

The firmware version of the connected servo drive is showed in the most right of the toolbar. (ASDA-A2 Series Type Servo Ver:1939)

b.) [Mode Setting]:

Speed,Time Setting	
Accel / Decel Time	PR Mode Setting
Delay Time	[PR#01] T:0
Internal Target Speed	[PR#02] T:0
General Parameter S	[PR#03] T:0
Electronic Gear Ratio	[PR#04] T:0
Software Limit	[PR#05] T:0
Decel.time of protection	[PR#06] T:0
Event ON/OFF Setting	[PR#07] T:0
Homing Setting	[PR#08] T:0
Homing Mode	[PR#09] T:0
Homing Speed Setting	[PR#10] T:0
Homing Definition	[PR#11] T:0

Four modes setting are showed in the left side of the main screen. Followings are the descriptions:

Speed, Time Setting: 16 sets of acceleration and deceleration can be defined in parameter P5-20 ~ P5-35. 16 sets of delay time can be defined in parameter P5-40 ~ P5-55. 16 sets of target speed can be defined in parameter P5-60 ~ P5-75. The above mentioned data are shared by all PR.



General Parameters Setting: Some basic parameters which are commonly used in PR mode can be setup here, such as electronic gear ratio, software limit (forward/reverse), deceleration time of protection and event on/off setting.



Homing Setting: Users can setup homing function in this mode. Next section will have detailed description.

🛛 Homing Setting
Homing Mode
Homing Speed Setting
Homing Definition

PR Mode Setting: Users can use different specifiable ways to setup PR path in this function, such as PR jump and PR overlap. Total 63 PR are provided, from PR#1 to PR#63.

👋 PR Mod	le Set	ting
[PR#01]	T:0	
[PR#02]	T:0	
[PR#03]	T:0	
[PR#04]	T:0	
[PR#05]	T:0	
[PR#06]	T:0	
[PR#07]	T:0	
[PR#08]	T:0	
[PR#09]	T:0	
[PR#10]	т:0	
[PR#11]	T:0	

In addition, when users did modify the setting but not download the changed one into the servo drive, the modified area will show the symbol of "*"



c.) [Main Setting Window]:

🛛 Electronic Gear Ratio						
P1-44: Electronic Gear Ratio (Nu	nerato	r) (N1) 128	(1 ~	536870911)		
P1-45: Electronic Gear Ratio (De	nomina	tor) (M) 10	(1 ~	2147483647)		
🛛 Software Limit						
P5-08: Forward Software Limit		2147483647	Enable	(-2147483648 ~ 2147483647)		
P5-09: Reverse Software Limit		-2147483648	Enable	(-2147483648 ~ 2147483647)		
P5-03: Decel. time of prote	ctin					
PL(CCWL):	AC15	: 30 (P5-35)		•		
NL(CWL):	AC15	: 30 (P5-35)		•		
SPL:	AC14	: 50 (P5-34)		•		
SNL:	AC14	: 50 (P5-34)		•		
OVF:	AC15	: 30 (P5-35)		•		
STP:	AC14	: 50 (P5-34)		•	_ ◀ ┿ –	 Function Setting
🛛 P5-98,P5-99: External Ever	t ON/	OFF Setting				5
EV1 Event : ON	Do not	thing		•		
EV2 Event : ON	Do not	thing		•		
EV3 Event : ON	Do not	thing		•		
EV4 Event : ON	Do not	thing		•		
EV1 Event : OFF	Do not	thing		•		
EV2 Event : OFF	Do not	thing		•		
EV3 Event : OFF	Do not	thing		•		
EV4 Event : OFF	Do not	thing		•		
	_					Download into
						Download Into
			V Do	wnload		the conve

[Function Setting] : Users can setup and modify the relevant parameters.

[Download into the Servo] : When the setting of PR parameters is complete,

users can download them into the servo drive in online status. Please click **Download** to download the parameters.

If click "Download" in offline status, the following warning message will pop up.



d.) [PR Simulation]:

0 📄 Show cu	rrrent PR. Path
Run PR. Path	0
Stop PR. Path]

Status light. Numbers in this column represents the status of P5-07. The software accesses the value of P5-07 every 300 ms

The light has two kinds:

⁶³ : If it is offline, the light shows dark green.

: If it is online and Show currrent PR. Path is checked, the light shows light green. 0 means P5-07 is not triggered and PR command has not been executed yet.

When proceeding PR Path simulation, the displayed value is showed according to the change of P5-07.

When the command is incomplete, the displayed value will be the one of P5-07. When the command is complete, the displayed value will be the value of P5-07 + 10000.

When the command is complete and DO.TPOS is ON (motor position reached), the displayed value will be the value of P5-07 + 20000.

Show currrent PR. Path : Users can simulate PR path via this function.

This function is enabled only when it is online. If not connects to the servo drive or communication fails, the warning message will pop up.

0 Show currrent PR. Path
Run PR. Path 0
Stop PR. Path
It's Off-Line now! Please Set it On-Line!

Check Show currrent PR. Path when communication is OK, the status light will turn light green. Then, click "Run PR. Path".

0	Show curri	rent PR. Path		
R	un PR. Path	0		
St	op PR. Path			
Run PR. Path 0	: Activate F	PR command	. Users have to fill in the number	
of PR Path. Then click	Run PR. Pa	to activa	ate PR command.	

Please fill in the field:

- Fill in 0 to start homing.
- Fill in 1 ~ 63 to execute the specified PR, which means DI.CTRG + DI.POSn is triggered.

Stop PR. Path : Stop PR command, which means to set P5-07 to 1000 and

DI.STOP is on.

e.) [Indexing Coordinates Setting Wizard]:



*this is for V4 version only.

Indexing Coordinates Wizard • This fun

I This function enables users to complete the

programming of PR path and the relevant parameters setting. Users can also easily download the setting into the servo drive after the setting is complete. For those who need to create indexing table, this function helps to shorten the setting time.



: Users can adjust the setting of indexing range.

supported from firmware version 1.040!

	Index Coordinate	es Setting Wi	zard
Kni	Start of PR Path : 1 fe numbers (Path Size) : 10	0 se	t the interval between two path
P2-52 Indexing Co	oordinates Scale (PUU) : 100000		
	Knif	fe numbers (Path Size)	-
INS : Interrupt the p	revious path		
0 : NO	① 1 : YES		
OVLP : It is allowed t 0 : NO	o overlap the next PR. When overlapping ① 1:YES	, please set DLY to 0:	
DIR : Moving Directio	pn		
0:Always move f	orward (forward rotation)		P2-52 Indexing
1:Always move r	everse (reverse rotation)		Coordinates Scale (PUU)
© 2:The shortest d	istance		
S LOW : speed unit			
0:0.1r/min	🔘 1:0.01 r/min		
ACC : Time Index	of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20)	•
DEC : Time Index of	decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20)	•
	SPD : Target speed index	POV00 : 20.0 (P5-60	•
	DLY : Delay time index	DLY00 : 0 (P5-40)	•
	Calculate Electronic Gear Ratio		
	Gear A 1	P1-44=	
	===>	01.45-	
	Gear B 1	1 1.40-	
Click OK to downlo	ad all index parameters and P2-52		
_ Calco Co Coverio	as an mack parameters and 1 2 52		

Mode Setting

Followings are the introduction and setting method of four setting modes.

1. **[Speed, Time Setting]** : Acceleration / deceleration time, delay time and target speed are the basic setting when setting up PR path. ASDA-A2 series provides 16 sets of acceleration/deceleration time, 16 sets of delay time and 16 sets of target speed. Those are shared for each kind of PR mode.

Speed, Time Setting
Accel / Decel Time
Delay Time
Internal Target Speed

The unit of 16 sets of acceleration/deceleration time is ms. Its setting range is from 1 to 65,500ms.

AC00	200	(ms) (P5-20) (1~65500)			
AC01	300	(ms) (P5-21) (1~65500)			
AC02	500	(ms) (P5-22) (1~65500)			
AC03	600	(ms) (P5-23) (1~65500)			
AC04	800	(ms) (P5-24) (1~65500)			
AC05	900	(ms) (P5-25) (1~65500)			
AC06	1000	(ms) (P5-26) (1~65500)			
AC07	1200	(ms) (P5-27) (1~65500)			
AC08	1500	(ms) (P5-28) (1~65500)			
AC09	2000	(ms) (P5-29) (1~65500)			
AC10	2500	(ms) (P5-30) (1~65500)			
AC11	3000	(ms) (P5-31) (1~65500)			
AC12	5000	(ms) (P5-32) (1~65500)			
AC13	8000	(ms) (P5-33) (1~65500)			
AC14	50	(ms) (P5-34) (1~65500)			
AC15	30	(ms) (P5-35) (1~65500)			

Speed, Time Setting
Accel / Decel Time
Delay Time 🗕 🗕
Internal Target Speed

The unit of 16 sets of delay time is ms. Its setting range is from 0 to 32,767 ms.

⊗ P5-40~P5- 5	55: Delay Time	
DLY00	0	(ms) (P5-40) (0~32767)
DLY01	100	(ms) (P5-41) (0~32767)
DLY02	200	(ms) (P5-42) (0~32767)
DLY03	400	(ms) (P5-43) (0~32767)
DLY04	500	(ms) (P5-44) (0~32767)
DLY05	800	(ms) (P5-45) (0~32767)
DLY06	1000	(ms) (P5-46) (0~32767)
DLY07	1500	(ms) (P5-47) (0~32767)
DLY08	2000	(ms) (P5-48) (0~32767)
DLY09	2500	(ms) (P5-49) (0~32767)
DLY10	3000	(ms) (P5-50) (0~32767)
DLY11	3500	(ms) (P5-51) (0~32767)
DLY12	4000	(ms) (P5-52) (0~32767)
DLY13	4500	(ms) (P5-53) (0~32767)
DLY14	5000	(ms) (P5-54) (0~32767)
DLY15	5500	(ms) (P5-55) (0~32767)

✓ Speed.Time Setting					
	POV00	20.0	(r/min) (P5-60) (0.1~6000.0)		
Accel / Decel Time	POV01	50.0	(r/min) (P5-61) (0.1~6000.0)		
Delay Time +	POV02	100.0	(r/min) (P5-62) (0.1~6000.0)		
Delay fille	POV03	200.0	(r/min) (P5-63) (0.1~6000.0)		
Internal Target Speed	POV04	300.0	(r/min) (P5-64) (0.1~6000.0)		
	POV05	500.0	(r/min) (P5-65) (0.1~6000.0)		
	POV06	600.0	(r/min) (P5-66) (0.1~6000.0)		
The unit of 16 sets of	POV07	800.0	(r/min) (P5-67) (0.1~6000.0)		
	POV08	1000.0	(r/min) (P5-68) (0.1~6000.0)		
internal target speed	POV09	1300.0	(r/min) (P5-69) (0.1~6000.0)		
is r/min. Its sotting	POV10	1500.0	(r/min) (P5-70) (0.1~6000.0)		
is min. Its setting	POV11	1800.0	(r/min) (P5-71) (0.1~6000.0)		
range is from 0.1 to	POV12	2000.0	(r/min) (P5-72) (0.1~6000.0)		
	POV13	2300.0	(r/min) (P5-73) (0.1~6000.0)		
6000.0 r/min.	POV14	2500.0	(r/min) (P5-74) (0.1~6000.0)		
	POV15	3000.0	(r/min) (P5-75) (0.1~6000.0)		

When the setting is complete, click **Download** to write parameters into the servo drive or use 🔟 (write all into the servo) to download parameters. Click it and the following window will pop up. Please select "Speed, Time Setting Parameters" first, OK

and click

to complete the setting.

📲 ASDA_Soft 📃 🖃 💌						
Select the range to download						
Select All						
Speed, Time Setting Paramters						
General Setting Parameters						
Homing Setting Parameters						
All PR Path Parameters						
Cancel OK						

2. [General Parameter Setting] : Electronic gear ratio, software limit, deceleration time of protection and event On/Off setting are parameters that are commonly used when programming PR path. The software programs these parameters in this area so that users can select it from the drop-down list.

Electronic Gear Ratio : Electronic gear ratio is the E-gear ratio of the servo drive. P1-44 is Gear Ratio (Numerator) (N1) and P1-45 is Gear Ratio (Denominator) (M).

℅ Electronic Gear Ratio		
P1-44: Electronic Gear Ratio (Numerator) (N1)	128	(1 ~ 536870911)
P1-45: Electronic Gear Ratio (Denominator) (M)	10	(1 ~ 2147483647)

Software Limit : When designing the mechanism, apart from the installation of hardware limit switch, function of software limit will be added for the safety. It is for avoiding the motor exceeding the traveling distance or free to use hardware limit. The motor stops when reaching software limit. Users can enable or disable the function and setup the

limit position here.

If set one side of the software limit to the max. value and another side as the min. value, this function will be disabled.

🛛 Software Limit			
P5-08: Forward Software Limit	2147483647	Enable	(-2147483648 ~ 2147483647)
P5-09: Reverse Software Limit	-2147483648	Enable	(-2147483648 ~ 2147483647)

Decel.time of protection : If desire to slowly stop the motor by activating the limit switch or triggering DI.STOP in auto protection, according to the definition of P5-03, users can setup PL(CCWL) Positive Limit, NL(CWL) Negative Limit, SPL (SCCWL) Software Positive Limit, SNL(SCWL) Software Negative Limit, OVF Position Command Overflows , CTO (Communication timeout AL020) and STP Stop Command.

To use the setting of P5-03, users have to know the meaning of each byte stands for. Then, users can use the drop-down list to complete the setting from via software.

		AC15 : 30 (P5-35)
ℽ P5-03: Decel. time of prote	ectin	AC00 : 200 (P5-20) AC01 : 300 (P5-21)
PL(CCWL):	AC15 : 30 (P5-35)	 AC02 : 500 (P5-22) AC03 : 600 (P5-23)
NL(CWL):	AC15 : 30 (P5-35)	AC04 : 800 (P5-24) AC05 : 900 (P5-25) AC06 : 1000 (P5-26)
SPL:	AC14: 50 (P5-34)	AC07 : 1200 (P5-27) AC08 : 1500 (P5-28)
SNL:	AC14: 50 (P5-34)	AC09 : 2000 (P5-29) AC10 : 2500 (P5-30) AC11 : 2000 (P5-31)
OVF:	AC15 : 30 (P5-35)	AC12 : 5000 (P5-32) AC12 : 5000 (P5-32) AC13 : 8000 (P5-33)
STP:	AC14 : 50 (P5-34)	AC14 : 50 (P5-34) AC15 : 30 (P5-35)

Users can select the acceleration/ deceleration time from the drop-down list and can setup the deceleration time from "Speed, Time Setting" that mentioned above.

Event ON/OFF Setting : For setting the function of event trigger, a drop-down list is provided for users to setup rising- or falling edge. For example, definitions of P5-98 and P5-99 are must-know when using parameters to set it up.



	Setting value	1	2	3	4	5	6	7	8	9	А	В	С	D
	Corresponding PR	51	52	53	54	55	56	57	58	59	60	67	62	63
L														

Assume that we use parameter to setup event trigger, see as below, when the rising edge signal of EV1 is triggered, PR#52 will be triggered as well since the first digit of P5-98 is set to 2. If the falling edge signal of EV1 is triggered, PR#53 will be triggered because the first digit of P5-99 is set to 3.

When the rising edge signal of EV3 is triggered, PR#56 will be triggered because the third digit of P5-98 is set to 6. And when the falling edge signal of EV3 is triggered, since the third digit of P5-99 is set to 9, PR#59 will be triggered, too.



However, if we use drop-down menu of the software to setup, users only need to specify the PR of EV1 and EV3 and to complete the setting of DI (digital input) in **Parameter Initial Wizard**.

> P5-98,P5-99: External Event ON/OFF Setting				
EV1 Event : ON	PR #52			
EV2 Event : ON	Do nothing 🔹			
EV3 Event : ON	PR #56			
EV4 Event : ON	Do nothing 🔹			
EV1 Event : OFF	PR #53 -			
EV2 Event : OFF	Do nothing 🔹			
EV3 Event : OFF	PR #59			
EV4 Event : OFF	Do nothing			

Then, click **Download** or use 🛍 to write parameters into the servo drive.

3. **[Homing Setting]** : Here we are going to talk about reference coordinates before introducing homing. In general mechanism design, such as CNC (computer numerical control), it usually needs to select one reference point to calculate the coordinates value of each point. The reference point is the so called Zero Points. If it is in CNC machining application, the commonly used reference points are machine reference point, homing point, work reference point and program reference point. That is to say, the setting of reference point is the coordinates point that users defined.

The origin of coordinate in servo system is the initial coordinate setting when the machine is start-up. Usually, each axis of the machine shall return to the origin point before executing commands when CNC system is power on. Users can either use manual mode or program control mode to return each axis back to its machine origin point. Activate the homing button on control panel when using manual mode and the machine tool base will return to the origin point of each axis. In addition, it could be regarded as the point for tools exchanging. For safety concerns, before tools exchanging, axis Z returns to machine origin point first. This is for avoiding the collision between tool and materials.

Method of connecting the hardware is to connect Z pulse to internal coordinate of the servo through encoder cable. And the coordinates value corresponded by Z pulse can also be specified.

When the homing is complete, the position motor will not exactly stop on Z pulse. It is because when Z pulse is found, motor has to decelerate to stop. And it might exceed a short distance according to the deceleration curve. However, if the position of Z pulse is correctly setup, it will not influence the accuracy of positioning.

For example, specify the coordinate value which corresponded by Z pulse is 100, then $Cmd_O = 300$ after homing is complete. It means the deceleration distance is 300-100=200 (PUU). Since $Cmd_E = 100$ (the absolute coordinate of Z), if desire to return to Z, issue the positioning command will do, either absolute command 100 or incremental command 0.

Users can execute the specified procedure after homing. After homing, it will move for a distance of offset. When executing homing, function of software limit is disabled.

With the excellent function of PR mode, ASDA-A2 series servo drive provides 9 main homing modes:

- Homing in forward direction and regard PL as homing origin
- Homing in reverse direction and regard NL as homing origin
- Homing in forward direction: DI.ORG: OFF→ON, as homing origin
- Homing in reverse direction: DI.ORG: OFF→ON, as homing origin
- Look for Z in forward direction and regard it as homing origin
- Look for Z in reverse direction and regard it as homing origin
- Homing in forward direction: DI.ORG: ON→OFF, as homing origin
- Homing in reverse direction: DI.ORG: ON→OFF, as homing origin
- Directly define the current position as the origin



Before preceding software operation, let's have the basic description of the 9 modes that mentioned above.

- Homing in forward direction and regard PL as homing origin
- Homing in reverse direction and regard NL as homing origin

These two modes regard positive limit or negative limit as reference point. When the limit is detected, users can set if Z pulse will be used as origin point. Please note that the "origin point" will not have to be the absolute position 0. ASDA-A2 is allowed to setup coordinates offset, which means users can specify any coordinate value as the "homing origin".

P5-04.X = 0: Homing in forward direction and regard PL as homing origin P5-04.X = 1: Homing in reverse direction and regard NL as homing origin P5-04.Y: signal setup. 0 = return to Z; 1 = forward to Z; 2 = never find Z.



- Homing in forward direction: DI.ORG: OFF→ON, as homing origin
- Homing in reverse direction: DI.ORG: OFF→ON, as homing origin

These two modes regard ORG sensor as reference point. Use its rising edge signal as the origin point. When the signal is detected, users can set if Z pulse will be used as origin point.

P5-04.X = 2: Homing in forward direction: DI.ORG: OFF \rightarrow ON, as homing origin

P5-04.X = 3: Homing in reverse direction: DI.ORG: OFF \rightarrow ON, as homing origin P5-04.Y: signal setup. 0 = return to Z; 1 = forward to Z; 2 = never find Z. P5-04.Z: limit setup. 0 = shows error; 1 = reverse direction



- Look for Z in forward direction and regard it as homing origin
- Look for Z in reverse direction and regard it as homing origin

This mode directly regards Z pulse as reference point. There is one Z pulse when motor runs a cycle. This method is applicable when the moving distance is within one motor run.

P5-04.X = 4: Look for Z in forward direction and regard it as homing origin P5-04.X = 5: Look for Z in reverse direction and regard it as homing origin P5-04.Z: limit setup. 0 = shows error; 1 = reverse direction





- Homing in forward direction: DI.ORG: ON→OFF, as homing origin
- Homing in reverse direction: DI.ORG: ON→OFF, as homing origin

These two modes regard the ORG sensor as reference point. Use its falling edge signal as origin point. When the signal is detected, users can set if Z pulse will be used as origin point.

P5-04.X = 6: Homing in forward direction: DI.ORG: $ON \rightarrow OFF$, as homing origin

P5-04.X = 7: Homing in reverse direction: DI.ORG: ON→OFF, as homing origin





Define the current position as origin point

Take the current motor position as reference point. Positioning is complete when motor does not move.



Next, we are going to talk about the operation setting of the software.

Homing Setting : Through the drop-down menu, 9 kinds of homing modes which mentioned above can be done in a very easy way.

V P5-04:Homing Mode	
X=> Homing Method:	X:0: Homing in forward direction and regard PL as homing origin 🔹
Y=> Signal Setting:	Y:0 :Return to Z pulse
Z=> Limit Setting:	Z:0 :Shows error

X:0: Homing in forward direction and regard PL as homing origin X:1: Homing in reverse direction and regard NL as homing origin	X=> Homing Method:	X:0: Homing in forward direction and regard PL as homing origin 🔷
X:2: Homing in reverse direction: ORGP:OFF -> ON, as homing origin X:3: Homing in reverse direction: ORGP:OFF -> ON, as homing origin X:4: Look for Z in forward direction: ORGP:OFF -> ON, as homing origin X:5: Look for Z in reverse direction and regard it as homing origin X:6: Homing in forward direction: ORGP:ON -> OFF, as homing origin X:7: Homing in reverse direction: ORGP:ON -> OFF, as homing origin X:8: Directly define the current position as the origin		 X:0: Homing in forward direction and regard PL as homing origin X:1: Homing in reverse direction and regard NL as homing origin X:2: Homing in forward direction: ORGP:OFF -> ON, as homing origin X:3: Homing in reverse direction: ORGP:OFF -> ON, as homing origin X:4: Look for Z in forward direction and regard it as homing origin X:5: Look for Z in reverse direction: ORGP:ON -> OFF, as homing origin X:6: Homing in reverse direction: ORGP:ON -> OFF, as homing origin X:7: Homing in reverse direction: ORGP:ON -> OFF, as homing origin X:8: Directly define the current position as the origin

Step 2: Setup the command when ORG signal is detected.

Y=> Signal Se	tting:	Y:0 :Return to Z pulse	Ŧ
		Y:0 :Return to Z pulse Y:1 :Go forward to Z pulse Y:2 :Do not look for Z pulse	

Step 3: Setup the command when the limit is reached.

Z=> Limit Setting:	Z:0 :Shows error 🗸
	Z:0 :Shows error
	Z:1 :Rotates backwards

For example, if **Homing in forward direction:** DI.ORG: OFF \rightarrow ON, as homing origin is set as the homing mode, then set P5-04. X to 2 (homing in forward direction, DI.ORG: OFF \rightarrow ON); Y: Signal setting - 0: return to Z; Z: Limit setting – 0 shows error.



Users can complete the setting by following the parameter setting which mentioned above.

X=> Homing Method:	X:2: Homing in forward direction: ORGP:OFF -> ON, as homing or 💌			
Y=> Signal Setting:	Y:0 :Return to Z pulse			
Z=> Limit Setting:	Z:0 :Shows error			

Homing Speed Setting : When executing homing, the ORG signal will be regarded as the

divide of speed setting. After the servo drive is power on or the homing command is triggered, the motor runs at the 1st speed and looks for Z first. When the signal is detected, the motor runs at the 2nd speed and decelerates to stop or returns to Z. In general, the 1st speed is faster than the 2nd one. It is because when motor runs at the 2nd speed, it will stop at the end. Users can adjust the setting according to the demand. To setup the 1st and 2nd speed of homing via the software, users can simply fill in the speed value in the window that showed below.

∀ Homing Speed Setting			
P5-05 : 1st Speed Setting of High Speed Homing	100.0	(0.1 ~ 2000.0)	
P5-06 : 2nd Speed Setting of Low Speed Homing	20.0	(0.1 ~ 500.0)	

Please note that the speed value shall not exceed the setting range. If so, a warning message will pop up when click **Download**.

Delta ASI	DA-Soft(V5)	— ×	
Write to Write_N error! : [0x03]: \ range.	Servo Failed!Homing Setting : P5-06.0 : CERR#2.314.009:I /alue Error: Setting value is no	Parameters Modbus response ot within the setting	
		ОК	

Homing Definition : This selection provides 5 advanced function setting.

Advanced setting after homing:

When the origin point is found, the motor will stop at the position near the origin point. This is because motor has to decelerate to stop. ASDA-A2 servo drive will not automatically command the motor to move back to the exact origin point. The initial setting is the stop status. (0 (Stop) means it will not execute the next PR after homing.)

Users can use another PR (absolute position command) to command the motor to move to the specify position or any position of coordinate. The coordinate system is built up after homing is complete.

Please see below. If we set the homing mode as **Homing in forward direction and regard PL as homing origin**:

X=> Homing Method:	X:0: Homing in forward direction and regard PL as homing origin \bullet			
Y=> Signal Setting:	Y:0 :Return to Z pulse			
Z=> Limit Setting:	· · · · · · · · · · · · · · · · · · ·			

The actual position motor stops is "-523" in coordinate of absolute position.



Through the software setting, users can command the motor returning to the origin point (absolute position 0). The first step is to specify one PR path.

P6-00, P6-01: Homing Definition	
PATH : Path Selection	PR#01 -

Setup the path of PR#01. Since we simply need the motor to return to the origin point, please select Type.

[2] :Single positioning control. Motor stops when positioning is complete.	•

Setup the end of position command and position command since we assume the motor is going back to the 0 point. The command has to be ABS (absolute command) and the command point should be 0.

CMD:End of position command		00 · ABS Absolute Position CMD=DATA			
		O TO TADS ADSolute Position, CHD-DATA			
-		01 : REL Relative Position, CMD=Current Position+DATA			
-		○ 10 : INC Incremental Position, CMD=Previous CMD+DATA			
-	11 : CAP Capture in high speed, CMD=Capture		tured+DATA		
	⊗ Data				
	Position CMD DATA(PUU)	0		(0x0000 ~ 0xFFFF)	

■ Setup acceleration/deceleration time of the 1st and 2nd speed of homing: When mechanical stiffness is softer, in the setting of the 1st high-speed and 2nd low-speed command, users might need to setup one acceleration/deceleration time to enable the motor gradually runs to the setting speed. This can be done by the software setting.

ACC : Acceleration Time	AC00 : 200 (P5-20)	
DEC1 : 1st Deceleration Time	AC00 : 200 (P5-20)	
DEC2 : 2nd Deceleration Time	Use the same deceleration time as \ensuremath{STP} command. \ensuremath{STP}	command in "General Parameter Setting".

ACC: Acceleration Time: When the function of searching origin point is triggered, motor accelerates from 0 to the one that users need.

P5-05 : 1st Speed Setting of High Speed Homing	100.0	$(0.1 \sim 2000.0)$
--	-------	---------------------

Use the drop-down list to setup the 16 sets of acceleration/deceleration time:

Speed,Time Setting
Accel / Decel Time

DEC1: The first deceleration time: When the signal is triggered, setup the first deceleration time of returning to the origin point.

DEC1 : 1st Deceleration Time AC00 : 200 (P5-20)

Use the drop-down list to setup the 16 sets of acceleration/deceleration time:

Speed,Time Setting Accel / Decel Time

DEC2: The second deceleration time: After the function of searching origin point is triggered,

DEC2 : 2nd Deceleration Time Use the same deceleration time as STP command. STP command in "General Parameter Setting".

use STP: from Deceleration Time of Protection under "General Parameter Setting" for this setting.

Delay Time after Homing is Complete:

For some applications, after homing is complete (command reached, not feedback signal), users need to setup the delay time before proceeding to the next command. Then, the following function can be used:

DLY : Delay Time	DLY00 : 0 (P5-40) 🔻	
------------------	---------------------	--

With the value of 16 sets of delay time in "Speed, Time Setting", users can extend the time length.

Set if homing is executed right after the servo drive is power on:

Homing must be executed when the servo drive is just power on in some applications, such as the stand of metal working machine.

BOOT : Activation mode, when power on:	O :Disable homing function
	1 :Enable homing function

0 : Homing will not be executed right after power on. It has to be triggered by DI

(0x27).SHOM.

- 1 : Auto Homing (When the servo drive is supplied to the power and first Servo On)
- Coordinate Offset: Any reference point can be homing reference point Any reference point can be defined as homing reference point by ASDA-A2. The reference point is not necessary to be position 0. As long as the homing reference point is confirmed, the coordinates system can be built up.

Take the diagram below as the example. The coordinate of homing reference point is set to position 2000 and the motor stops at position 1477. The coordinate system is built up after homing so that the system knows where the position 0 is in this coordinate system. Users can confirm the position after coordinate offset via "Status Monitor" or "Scope".



4. **[PR Mode Setting]** : As mentioned before in "Parameter Initial Wizard", PR mode has to be programmed and designed in this function. ASDA-A2 servo drive provides a new built-in internal control mode (PR mode). It not merely provides PR for users to execute single-axis motion, ASDA-A2 even adopts the theory of distributed motion control framework to issue commands based on speed control, position control, PR jump and

DI. Diversified combination allows flexible operation and enables ASDA-A2 to stand in the leading position.

PR mode supports 63 paths in total. Each one can individually program 5 different programming methods. In addition, Indexing Coordinate Wizard can be used to program PR as well.

[0] :N/A
[1] :Constant speed control
[2] :Single positioning control. Motor stops when positioning is complete.
[3] :Auto positioning control. Motor goes to the next path when positioning is complete.
[7] :Jump to the specified path
[8] :Write the specified parameter to the specified path
[0xA] : Index Position control

Please see the description of each method below:

Constant Speed Control: When this command is executing, the motor accelerates (or decelerates) from current speed (not always 0). Once it reaches the target speed, the command is complete. Then, the motor does not stop and keeps operating at the same speed.

Users can program acceleration / deceleration time, delay time and target speed. The delay time is defined by command end. It is calculated after the target speed is reached. Since the settling time of feedback varies from system to system, the delay time is not defined by feedback signal. See the main setting page that shown below:

∀ TYPE settings				
[1] :Constant speed control			•	.]
◊ OPT options				
INS : When this PR is executing, it interrupts the previous o	ne:	0:NO	© 1:YES	
AUTO : Auto move to next PR when completed		0:NO	© 1:YES	
UNIT : Unit :	0.1 rpm	© 1:P	PS (PUU per sec)	
-				
•				
-				
℅ Speed,Time Setting				
ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20)	•	Time=0.000 ms	
DEC : Time Index of decelerating from rated speed(3000rpm	n) AC00 : 200 (P5-20)	•	Time=0.000 ms	
-				
DLY : Delay time index	DLY00 : 0 (P5-40)	•		
-				
-				
∀ Data				
Target Speed 0	(-60000 ~ 60000)			
-				
-				

VOPT options : In constant speed control, 3 parameters can be used to interrupt PR

INS : When this PR is executing, it interrupts the previous PR. Use the internal or external interruption (via DI.POS* to specify the path or P5-07 to trigger position register). Please refer to "Single Position Control. Motor Stops when Positioning is Complete" for further description.

INS : When this PR is executing, it interrupts the previous one:	0:NO	© 1:YES

AUTO : Auto move to next PR when it reaches constant speed area.

AUTO : Auto move to next PR when completed	0:NO	© 1:YES

If the function of auto call next PR is set, the motor keeps the current status (It keeps constant speed if the command is issued, and remains stop if zero speed command is issued) after the target speed is reached until servo off or interrupted by another PR. If next PR is called automatically, it will move to next PR after the delay time.



It stops as soon as the current PR is complete.



When current PR is complete, the next PR is called after the delay time.



UNIT: 0: unit is 0.1r/min; 1: unit is PPS (Pulse Per Second)

In general constant speed control, users can specify the speed via the setting of target speed. The unit can be set as 0: unit is 0.1r/min. Its setting range is from -60, 000 to 60, 000 r/min.

If users desire to control the speed in specific time and distance, select the unit as PPS: 1 (PUU Per Second). Assume PUU is 10,000 per cycle, and it has to reach the target speed within 3 minutes. The cycle motor needs to operate should be: target speed = (traveling distance) / (time). If the target speed is set to 200 PPS, then:
$\frac{motor rotation number (PUU)}{3 \times 60 (sec)} = 200 (target speed PPS)$

Thus, motor rotating number = 36,000 PUU. Since PUU of the motor is 10,000 per cycle, the target speed shall be 200 r/min in 3 minutes. The motor rotating number will be $\frac{36,000}{10,000} \equiv 3.6 \text{ cycles}$

Speed,Time Setting : In constant speed control, users can setup the acceleration / deceleration time and accelerates (or decelerates) from current speed (not always 0) to target speed. The time index is selected via acceleration/deceleration time in "Speed, Time Setting".

ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20) -	Time=0.000 ms
DEC : Time Index of decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20)	Time=0.000 ms

In addition, users can also setup delay time via this function. Please note that the delay setting in constant speed control shall wait until the target speed is reached and is selected via delay time register in "Speed, Time Setting".

DLY : Delay time index	DI Y00 : 0 (P5-4	0) 🗸
ber i belay and index		

Data : This is used to setup target speed, which is the speed motor accelerates (or decelerates) from current speed (not always 0). Users can manually enter the value.

Target Speed	0	(-60000 ~ 60000)
--------------	---	------------------

Single positioning control. Motor stops when positioning is complete.

Auto positioning control. Motor goes to the next path when positioning is complete.

Two modes that mentioned above are position control mode. The difference is that the motor stops after PR is complete in "Single positioning control" until the next PR command is triggered. In "Auto positioning control" mode, it automatically moves to next PR when current PR command is complete. See the main setting page that shown below:

◊ OPT options				
INS : When this PR is executing, it interrupts the previous one:		0:NO	© 1:YES	
OVLP : Overlap the next PR.When opverlaped, disable DLY		© 0:NO	1:YES	
CMD:End of position command		ADC Abashuta Dasiki	(MD D	474
	000	. ADS ADSOIUTE POSIU	on, CMD=D	ATA
	01	: REL Relative Positio	n, CMD=Cu	rrent Position +DATA
-	10	\bigcirc 10 : INC Incremental Position, CMD=Previous CMD+DATA		
-	© 11	: CAP Capture in high	n speed, CM	D=Captured+DATA
℅ Speed,Time Setting				
ACC : Time Index of accelerating to rated speed(3000)rpm)	AC00 : 200 (P5-20)	•	Time=1.333 ms
DEC : Time Index of decelerating from rated speed(30)00rpm)	AC00 : 200 (P5-20)	•	Time=1.333 ms
SPD : Target speed index		POV00 : 20.0 (P5-60) 🔻) 📖 x 0.1
DLY : Delay time index		DLY00 : 0 (P5-40)	•]
-				
•				
⊗ Data				
Position CMD DATA(PUU) 0		(-2147483648 ~ 2	14748364	7)
-				
-				

VOPT options : In position control, 3 parameters are available for selection.

INS : When this PR is executing, it interrupts the previous PR. Use the internal or external interruption (via DI.POS* to specify the path or P5-07 to trigger position register).

Followings are the descriptions of position interrupt function and its using method. Interrupt command is the setting of later commands. The internal interrupt is executed when the previous command is complete, and the next command which is set with interrupt command (INS) is called automatically. No trigger in between. In addition, the delay time is effective to internal interrupt. For internal interrupt, regardless the later command (absolute or relative command), the command result is the same.

Take two diagrams below as the example. When position command 2 is set with interrupt command, the delay time of position command 1 starts from the beginning of command 1. If the delay time is 0 and position command 2 is set with interrupt command, then position command 1 will be ignored and position command 2 will be executed directly.



In this diagram, the previous PR is speed control. If the speed command 1 is set with delay time and will auto move to the next PR (speed control is set to AUTO), the position command will be executed when the delay time is reached. Speed command 1 and position command 2 will be executed in sequence smoothly.



Moreover, the interrupt command also supports external trigger, such as event trigger, DI.POS* trigger and P5-07 (Trigger PR position command). When PR is set with interrupt command (INS), the command will be executed immediately. Different type of interrupt command brings different result. ASDA-A2 can combine a new command within 1ms when it receives the interrupt command.



Users can determine to use interrupt command or not.

OVLP: Overlap the next PR. When overlapped, disable DLY.

OVLP : Overlap the next PR.When opverlaped, disable DLY	@ 0:NO	① 1:YES
		V 1. LO

Apart from internal/external interrupt command setting, ASDA-A2 also provides function of PR overlap in position control mode.

PR overlap is set at the front command. It allows the later command overlaps the front command when the front command is in deceleration area. When the setting is overlapped, delay time of the front command starts from the beginning of the command.

Since the delay time influences the sequence of overlap, it is suggested to set the delay time to 0.



Cannot satisfy the function of overlap

Correct Overlap Sequence

The left diagram is set with delay time. The position command 2 is executed when the delay time is reached. However, it cannot satisfy the function of overlap. Therefore, it is suggested to set the delay time to 0. Diagram on the right has no delay time. It therefore brings the correct overlap sequence.

If the ratio of deceleration for the front command equals to the ratio for acceleration in the later command, the overlap portion of these two commands will have a good shape. This will reduce velocity trembling.



CMD : End of position command (Cmd_E):



4 position commands are provided by ASDA-A2 PR position control mode:

1. Absolute command: Value of position command is the coordinate position. No matter where the motor stops, it must stop at the position of position command at the end.

- 2. Relative command: Value of motor's current position plus position command is the target position, which is the position the motor might be referred to.
- 3. Incremental command: End position of current position command plus the value of new position command will be the new target position. The position command takes the target position of current command as the reference position.
- 4. Capture in high speed: The new target position is the value of Capture plus the value of position command. The position command takes the last captured value in data array as the reference position.

The following 4 graphs show the operating status when PR position command is triggered:



Setup motion control first and then determine the PR command. It means to define the acceleration, deceleration and target speed of the motor. Without the setting of interrupt (INS) and overlap command (OVLP), the delay time starts when target position is reached.

Speed,Time Setting : In position control, motor's acceleration/deceleration time, target speed and delay can be set here.

Speed,Time Setting				
ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20) -	Time=1.333 ms		
DEC : Time Index of decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20) -	Time=1.333 ms		
SPD : Target speed index	POV00 : 20.0 (P5-60) -	🔲 x 0.1		
DLY : Delay time index	DLY00 : 0 (P5-40) 👻			

The setting of acceleration/deceleration time uses "Acce. /Dece. Time" from Speed, Time Setting as the index:

Please note that the calculation method of ^{Time=1.333 ms} is the same as "PR Overlap" that mentioned above.

ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20) -	Time=1.333 ms
DEC : Time Index of decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20) 👻	Time=1.333 ms

The setting of target speed uses "Internal Target Speed" from Speed, Time Setting as the index:

Please note that $rac{1}{2} \times 0.1$ indicates the value of minimized speed. Setting of low-speed value can be more precise and more stable in low frequency. If desire to

increase the speed unit from 0.1 r/min to 0.01 r/min, check $\Box \times 0.1$ can improve the precision.

The setting of delay time uses "Delay time" from Speed, Time Setting as the index: Please note that without interrupt (INS) and overlap (OVLP) command, the delay time will start from the moment the target position is reached. If external interrupt is set, the setting of delay time will be invalid.

DLY : Delay time index	DLY00 : 0 (P5-40) 🔻
· · · · · · · · · · · · · · · · · · ·	

^{▶ Data} : In position control, DATA is the command of target position, which is the moving distance of PR. The moving distance can be planned by users.

Please note that the parameter format of position command is 32-bit (e.g. P6-03). Thus, the allowable setting range of DATA is between -2^{31} (-2147483648) and 2^{31} (2147483647).

Position CMD DATA(PUU) 0 (-2147483648 ~ 21474836	Position CMD DATA(PUU)
--	------------------------

■ Jump to the specified PR

Jump mode is designed for special application, which can be used to call any PR.

- a. Switch PR procedures so the PR can be executed without order
- b. The function is similar to sub-program
- c. Form a loop of PR procedures



The following is the main setting window:

/] :Jump to the specified path			•	
OPT options				
INS : When this PR is executing, it interrupts the pro	evious one:	0:NO	© 1:YES	
-				
-				
•				
-				
Canad Time Catting				
speed, time second				
•				
	[
DLY : Delay time index	DLY00 : 0	(P5-40) 🔻		

VOPT options : Users can select "PR Interrupt" from OPT options.

INS : When this PR is executing, it interrupts the previous one:	0:NO	1:YES	
--	------	-------	--

Speed,Time Setting : In jump command, to setup delay time means users need to proceed PR jump after a period of time. The command will jump to the next specified PR after delay time.

DLY : Delay time index DLY00 : 0 (5-40) 🔹
------------------------------------	---------

Data : In jump command, this represents the PR that users specify to jump to.

PR : Jump to the specified PR Number	PR#00	-
	PR#00	
	PR#01	
	PR#02	
	PR#03	
	PR#04	
	PR#05	
	PR#06	
	PR#07	-

Write specify parameters into specified PR

This function can be used to change any parameter that written into the servo drive. As long as the parameter is changeable, it can be changed by PR. Base on this, more methods are provided to change parameters, such as call PR via DI.



The following is the main setting window:

∀ TYPE settings								
[8] :Write the specified parameter to the specified path								
ö OPT options	5		_					
INS : When this	s PR is executing, it interrupts the previous	one:	0:NO	1:YES				
AUTO : Auto m	ove to next PR when completed		0:NO	© 1:YES				
ROM : write int	to EEPROM when writing a parameter	0:NO	1:YES					
-								
-								
-								
℅ PAR, DLY Se	etup							
Target	0: Parameter • P 0 • - 0	 Firmware Versio 	n (Read-only Para	meter!)				
-								
-								
DLY : Delay tim	e index	DLY00 : 0 (P5-40)	•					
-								
-								
ö Data								
Data	0: Constant 🔹 0	? (1.744	- 1.744)					

VOPT options : 3 parameters are provided for users here.

INS: When this PR is executing, it interrupts the previous PR, which is the same as jump command.

INS : When this PR is executing, it interrupts the previous one:	0:NO	1:YES	
--	------	-------	--

AUTO : Automatically move to next PR when this PR is complete.

AUTO : Auto move to next PR when completed	0:NO	1:YES	
--	------	-------	--

ROM: 0 means not to write into EEPROM; 1 means to write into EEPROM when writing a parameter. (The written target is parameter. If select Data Array as the target, then the data will not be written into EEPROM.)

ROM : write into EEPROM when writing a parameter	0:NO	1:YES	
--	------	-------	--

PAR, DLY Setup : Users can setup the written target and delay time (parameter or data array).



Select the specify parameter and setup parameter groups and parameter number.

Target	0: Parameter 🔹 🔻	P	1	-	-	46 🔻	Pulse Number of Encoder Output
--------	------------------	---	---	---	---	------	--------------------------------

Select data array to specify the position of data array.

Target	1: Data Array	▼ 100	0 (Position of Dara Array)
--------	---------------	-------	----------------------------

Please note that function of write into EEPROM when writing a parameter is invalid when the written target is data array.

In addition, delay time after writing parameters can be set here. If delay time is set, parameters will be written into when delay time is reached. Setting of delay time uses Delay Time from "Speed, Time Setting" as index:

DLY : Delay time index	DLY00 : 0 (P5-40)
------------------------	-------------------

^{VData}: 4 formats of data source are provided:

Ŧ

0: Constant

Constant is the value in decimal. Users can directly enter the constant into the specify parameters.

Data	0: Constant	•	0	?	(1.744 ~ 1.744)

1: Parameter 🔹

Users can write a value from one parameter into another parameter by setting up parameter group and parameter number. Please note that the data format and data size of two parameters should be the same. Make sure the correctness of the position before the parameter is written in.

Data	1: Parameter	▼ P 2	▼ - 16	•	Digital Input Terminal 7 (DI7)
------	--------------	-------	---------------	---	--------------------------------

2: Data Array 💌 🔻

Users can write a value from one data array into another parameter by setting up the position of data array. Please note that the data format and data size of two parameters should be the same. Make sure the correctness of the position before the parameter is written in.

Data	2: Data Array 🔹	50	(Position of Dara Array)

3: Monitor Variable 🔹

Users can write the current status of one variable into another parameter by setting up the monitoring item.

In general application, it might need to monitor motor speed or position error. Users can write the status into the specify parameter group for monitoring or alteration via this function.

 [5]Error pulse number (after the scaling of e-gear ratio)[pulse] Data 3: Monitor Variable Ŧ Writing parameters via PR usually enables/disables or adjusts one NOTE function (e.g. adjust P2-00, Position Loop Gain according to different positioning command). This procedure will go over and over again during operation. If all parameter is written into EEPROM, it might shorten the life of EEPROM. Thus, it is suggested to setup parameters that do not need to be written in continuously. Then, set P2-30 to 5. The alternation of parameters from panel or communication will not be stored. And this will help.

If it is failed to write in parameters, AL.213 ~ AL.219 will occur (Please see Chapter 11). The next PR will not be executed automatically.

Index Position Control

Two kinds of interface for setting index points are provided. If the design of programming the index points is complete, it is suggested to use the following interface to complete other settings.

V TYPE settings				
[0xA] : Index Position control			•	
♦ OPT options				
INS : When this PR is executing, it interrupts the previous one	e:	0:NO	© 1:YES	
OVLP : Overlap the next PR.When opverlaped, disable DLY		0:NO	© 1:YES	
DIR : Moving Direction		DIR O:Forward (A	lways move forward)	
-		2:The shortes	st distance	
S_LOW : speed unit		@ 0:0.1r/min	© 1:0.01r/min	
AUTO : When this PR is complete, it will execute the next PR a	automatically	@ 0:NO	© 1:YES	
℅ Speed,Time Setting				
ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20)	•		
DEC : Time Index of decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20)	•		
SPD : Target speed index	POV00 : 20.0 (P5-6) 🔻		
DLY : Delay time index	DLY00 : 0 (P5-40)	•		
-				
-				
🛿 Data				
Data 0	0~(P2-52-1)			

VOPT options : 3 parameters are provided here.

INS: When this PR is executing, it interrupts the previous PR. (Please refer to Constant Speed Control for further information.)

INS : When this PR is executing, it interrupts the previous one:	0:NO	1:YES	
--	------	-------	--

OVLP : Overlap the next PR. When overlapped, disable DLY. (Please refer to Single Positioning Control for further information.)

OVLP : Overlap the next PR. When opverlaped, disable DLY	:NO 💿 :	1:YES
--	---------	-------

DIR : Moving direction. When setting up the moving direction of index point, different application requires different path, forward, reverse or shortest distance. For example, for tool magazine in machining application, users need to setup the shortest distance so as to rapidly change tools in different situation. Please note that the shortest distance is determined by the current and target position. There is nothing to do with moving in forward or reverse direction.

(Always move forward)
(Always move reverse)
tes



S_LOW : Select the unit of low speed. 0 means the speed unit is 0.1r/min; 1 means the speed unit is 0.01r/min. In index position control, low-speed operation is needed. For stable the operation, this function enables users to set the unit to the second decimal place so as to control the variation of motor speed in hundredth unit and maintain the accuracy of low speed.

0:0.1r/min	© 1:0.01 r/min
	0:0.1r/min

AUTO : When this PR is complete, it will execute the next PR.

```
AUTO : When this PR is complete, it will execute the next PR automatically 

0:NO

1:YES
```

Speed,Time Setting : In index position control, acceleration/deceleration time, target speed and delay time of the motor all can be set here.

ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20)
DEC : Time Index of decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20)
SPD : Target speed index	POV00 : 20.0 (P5-60)
DLY : Delay time index	DLY00 : 0 (P5-40)

The setting of acceleration/deceleration time uses "Acceleration, Deceleration Time" in Speed, Time Setting as index:

ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20)	•
DEC : Time Index of decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20)	•

The setting of target speed uses "Internal Target Speed" in Speed, Time Setting as index:

SPD : Target speed index	POV00 : 20.0 (P5-60)	•
SPD : Target speed index	POV00 : 20.0 (PS-60)	

The setting of delay time uses "Delay Time" in Speed, Time Setting as index:

DLY : Delay time index DLY00 : 0 (P5-40)

Please note that without interrupt (INS) and overlap (OVLP) command, delay time starts when target position is reached. If external interrupt is set, the setting of delay time is invalid.

Ŧ

Data : In index position control, data setting represents "Total Indexing Distance (PUU)", which is the total PUU value of indexing. Each part of the indexing is equally divided by the total one.

If the value is set too small, it might cause indexing coordinate error. The range of parameter value should be:

 $P2-52 > 1.05 \times \max.speed(r/min) \times \frac{1280000}{60000} \times \frac{P1-45}{P1-44}$ $P2-52 > 22.4 \times \max.speed(r/min) \times \frac{P1-45}{P1-44}$

The above mentioned indexing function is for users who already knew the indexing coordinate and indexing setting. Users can manually setup the indexing path. For those who desire to complete the indexing program via software. Indexing Coordinates Wizard provided by ASDA-Soft will be a great tool.

This Indexing Coordinates Wizard is for users who would like to arrange a new set of indexing procedure. Users can arrange and setup the indexing point with simple specific requirements. The following is the main page of this function:

	Index Coordinate	es Setting Wi	zard
	Start of PR Path : 1	0 mse	t the interval between two patt
Knii	fe numbers (Path Size) : 10		
P2-52 Indexing C	nordinates Scale (PLILI) + 100000		
T 2 52 Hocking C			\cap
	Knif	e numbers (Path Size)	Anon
INS : Interrupt the p	revious path		
0 : NO	① 1:YES		
OVLP : It is allowed to	o overlap the next PR. When overlapping	, please set DLY to 0:	1000/
0 : NO	① 1 : YES		
DIR : Moving Directio	n		
DIR : Moving Direction	on orward (forward rotation)		P2-52 Indexing
DIR : Moving Direction O:Always move fr 1:Always move re	on orward (forward rotation) everse (reverse rotation)		P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Direction O:Always move fr 1:Always move fr 2:The shortest di	on orward (forward rotation) everse (reverse rotation) istance		P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Directi O :Always move fi 1:Always move n 2:The shortest di 5_LOW : speed unit	on orward (forward rotation) everse (reverse rotation) stance		P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Direction 0:Always move from 1:Always move ro 2:The shortest di S_LOW : speed unit 0 0 : 0.1 r/min	on orward (forward rotation) everse (reverse rotation) stance © 1:0.01r/min		P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Directia © 1:Always move fi 1:Always move r 2:The shortest di 5_LOW : speed unit © 0 : 0.1 r/min ACC : Time Index	on orward (forward rotation) everse (reverse rotation) istance © 1:0.01r/min of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20)	P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Directia © 0:Always move fi 0:Always move n 1:Always move n 0:2:The shortest di 5_LOW : speed unit © 0:0.1r/min ACC : Time Index of DEC : Time Index of	on orward (forward rotation) everse (reverse rotation) istance © 1:0.01r/min of accelerating to rated speed(3000rpm) decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20) AC00 : 200 (P5-20)	P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Directi © 0:Always move fi DIAlways move fi 2:The shortest di S_LOW : speed unit © 0: 0.1r/min ACC : Time Index of the short of t	on orward (forward rotation) everse (reverse rotation) istance © 1:0.01r/min of accelerating to rated speed(3000rpm) decelerating from rated speed(3000rpm) SPD : Target speed index	AC00 : 200 (P5-20) AC00 : 200 (P5-20) POV00 : 20.0 (P5-60	P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Directi © 0:Always move fi © 1:Always move ri © 2:The shortest di S_LOW : speed unit © 0: 0.1r/min ACC : Time Index of i	on ornward (forward rotation) ornward (forward rotation) stance © 1 : 0.01r/min of accelerating to rated speed(3000rpm) decelerating from rated speed(3000rpm) SPD : Target speed index DLY : Delay time index	AC00 : 200 (P5-20) AC00 : 200 (P5-20) POV00 : 20.0 (P5-60) DLY00 : 0 (P5-40)	P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Directi © 0:Always move fi 0:Always move fi 2:The shortest di 2:The shortest di 2:DW: speed uit 0:0:0.1r/min ACC : Time Index of	on onward (forward rotation) everse (reverse rotation) istance © 1 : 0.01r/min of accelerating to rated speed(3000rpm) decelerating from rated speed(3000rpm) SPD : Target speed index DLY : Delay time index DLY : Delay time index	AC00 : 200 (P5-20) AC00 : 200 (P5-20) POV00 : 20.0 (P5-60) DLY00 : 0 (P5-40)	P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Directi © 0:Always move fr © 1:Always move rr © 2:The shortest at \$.LOW : speed the © 0: 0.1r/min ACC : Time Index of ri DEC : Time Index of ri	on onward (forward rotation) everse (reverse rotation) istance 0 1 : 0.01 r/min of accelerating to rated speed(3000rpm) decelerating from rated speed(3000rpm) SPD : Target speed index DLY : Delay time index Calculate Electronic Gear Rato Gear A 1	AC00 : 200 (P5-20) AC00 : 200 (P5-20) POV00 : 20.0 (P5-60 DL/00 : 0 (P5-60) DL/00 : 0 (P5-40)	P2-52 Indexing Coordinates Scale (PUU)
DIR : Moving Directi © 0:Always move f 1:Always move f 2:The shortest d S_LOW : speed unit © 0: 0.1r/min ACC : Time Index of (on onward (forward rotation) everse (reverse rotation) istance © 1 : 0.01 r/min of accelerating to rated speed(3000rpm) decelerating from rated speed(3000rpm) SPD : Target speed index DLY : Delay time index Calculate Electronic Gear Ratio Gear A L Can D	AC00 : 200 (P5-20) AC00 : 200 (P5-20) POV00 : 20.0 (P5-60) DLY00 : 0 (P5-40) P1-44= p1-45=	P2-52 Indexing Coordinates Scale (PUU)

Here are the setting procedures:

Step 1: Setup indexing coordinates scale and total points.





In first step, specify knife number and indexing coordinates scale (PUU). These two values relate to the coordinates (motor's rotating angle) of each index point. For example, if indexing coordinates scale is set to 100,000PUU and knife number (path

size) is 10, path of each index will be: $\frac{100,000}{10} \equiv 10,000 \text{ PUU}$

In addition, users can also specify the start of PR path Start of PR Path : 1 to program the system with other PR.

If desire to interrupt other PR between two indexing points, e.g. write the parameter of current feedback position (monitor parameter) into the specify parameter. Check this

function set the interval between two paths, and users can select where to insert the PR. Please note that the inserting path number will be set according to the interval set by the user at every section.

Assume the interval between two paths is 2,

Start of PR Path :	40	2	v set the interval between two paths
Knife numbers (Path Size) :	5]	
P2-52 Indexing Coordinates Scale (PUU) :	100000]	

PR path programming on the left, starting from PR#40, will be programmed one index point every two paths.

[PR#40]	T:10	≟ *
[PR#41]	T:0	
[PR#42]	T:0	
[PR#43]	T:10	⊥ *
[PR#44]	T:0	
[PR#45]	T:0	
[PR#46]	T:10	⊥ *
[PR#47]	T:0	
[PR#48]	T:0	
[PR#49]	T:10	⊥ *
[PR#50]	T:0	
[PR#51]	T:0	
[PR#52]	T:10	⊥ *

Step 2: Setup related parameters, such as indexing scale, rotating direction, acceleration/deceleration time and target speed.

INS : Interrupt the previous path		
OVLP : It is allowed to overlap the next PR. When overlapping, please set DLY to 0:		
0:NO ① 1:YES		
DIR : Moving Direction		
O:Always move forward (forward rotation)		
1:Always move reverse (reverse rotation)	ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (PS
2:The shortest distance	DEC : Time Index of decelerating from rated speed(3000rpm)	AC00 : 200 (P5
S_LOW : speed unit	SPD : Target speed index	POV00 : 20.0 (
◎ 0:0.1r/min	DLY : Delay time index	DLY00 : 0 (P5-

INS : When this PR is executing, it interrupts the previous PR. (Please refer to constant speed control for further information.)

-INS : Interrupt the previous path-	
◎ 0 : NO	1:YES

OVLP : Overlap the next PR. When overlapped, disable DLY. (Please refer to single positioning control for further information.)

OVLP : It is allowed to overlap the ne	xt PR. When overlapping, please set DLY to 0:
0 : NO	1:YES

DIR : Moving direction. When setting up the moving direction of index point, different application requires different path, forward, reverse or shortest distance. For example, for tool magazine in machining application, users need to setup the shortest distance so as to rapidly change tools in different situation. Please note that the shortest distance is determined by the current and target position. There is nothing to do with moving in forward or reverse direction.



S_LOW : Select the unit of low speed. 0 means the speed unit is 0.1r/min; 1 means the speed unit is 0.01r/min. In index position control, low-speed operation is needed. For stable the operation, this function enables users to set the unit to the second decimal place so as to control the variation of motor speed in hundredth unit and maintain the accuracy of low speed.

S LOW : speed unit	
b_con r spece and	
0:0.1r/min	🔘 1 : 0.01 r/min

The setting of acceleration/deceleration time uses "Acceleration, Deceleration Time" in Speed, Time Setting as index:

ACC : Time Index of accelerating to rated speed(3000rpm)	AC00 : 200 (P5-20) 🔻
DEC : Time Index of decelerating from rated speed(3000rpm)	AC00 : 200 (P5-20) 🔻

The setting of target speed uses "Internal Target Speed" in Speed, Time Setting as index:

```
SPD : Target speed index POV00 : 20.0 (P5-6( 💌
```

The setting of delay time uses "Delay Time" in Speed, Time Setting as index:

DLY : Delay time index DLY00 : 0 (P5-40) -

Please note that without interrupt (INS) and overlap (OVLP) command, delay time starts when target position is reached. If external interrupt is set, the setting of delay time is invalid.

Step 3: Setup E-Gear Ratio

If users need to estimate the actual operating distance aiming at different mechanism, such as the roller with smaller diameter or different pitch of ball screw, it is suggested to modify the moving distance via e-gear ratio so as to satisfy the demand. Limit of e-gear ratio set by ASDA-A2 servo drive is:

E-gear ratio: $\frac{\text{Gear A}(N)}{\text{Gear B}(M)} = \frac{P1-44}{P1-45}, \text{ the limit is } \frac{1}{50} \le \frac{\text{Gear A}(N)}{\text{Gear B}(M)} \le 5000$

E-gear ratio enables users to easily modify the proportion of moving distance. A big e-gear ratio usually causes stepping of position command. The situation can be improved via S-Curve or low-pass filter. When e-gear ratio is 1, the pulse number from encoder is 10000 PPR per cycle. Every two pulses from command end will correspond to one pulse from motor if e-gear ratio turns to 0.5. Users can check this function to setup e-gear ratio.

Calculate Electronic Gear Ratio							
Gear A 1		P1-44=					
Gear B 1	===>	P1-45=					

Step 4: Users now can decide whether to write the related parameters into servo drive.



Example

Tips of accessing a series of different types of PR:

- 1. Since the servo drive updates the command every 1 ms, the first step is to find the command section, which is the PR that can stays in PR Executor for more than 1 ms.
- 2. Write command and jump command will be finished right after they are read, and will only occupy "PR Executor". Motion commands, such as speed and position command, will occupy both "PR Executor" and "Motion Command Generator". As long as the motion command is issued to "Motion Command Generator", it will continue to execute even when "PR Executor" is occupied by anther PR.
- 3. Regarding a group of PRs that are read in the same 1ms, the later command will replace the front command for motion command; for write command and

jump command, the mission is complete once they have been accessed.

- 4. The best way is to get an ASDA-A2 servo drive and entering these PR. Then, use PC scope to monitor the two different combinations:
 - a. Feedback position (PUU) (32 bit) + Motor speed: Real time r/min + Parameter P5-55 (use mapping parameter or directly enter the address 0 x 20002537.).
 - b. Motor speed: Real time r/min + Parameter P5-55 (use mapping parameter or directly enter the address 0 x 20002537) + Parameter P5-07 (uses mapping parameter or directly enters the address 0 x 20002507)
- 5. P5-07 displays the next PR that is going to be executed.

Setting tips: Find out the stop point of 1ms, and then read back from behind. This way can quickly check the execution result of PR group.

Please refer to Chapter 1.6 in ASDA-A2 Application Note for further information.





(PR#1(PR#2(PR#10) (1ms group) **((**PR#11(PR#12) (1ms group) PR#10 to PR#11are sequent command, since PR#11 has no insertion setting. PR#11 can be executed not until all PR group is done and releases the resource. In this case, when the motor operates 200000PUU by 20rpm, P5-55 = 10. When the motor operates 300000PUU by 100rpm, P5-55 = 12.





(PR#1(PR#2(PR#10(PR#11(PR#12))) (1ms group))

PR#1 to PR#12, total 5 PRs (less than 8 PRs), will be read in at one time. This is because they all have insertion setting. PR#1 has no chance to stay in Motion Command Generator for more than 1 ms and it will be kicked out by PR#11. PR#2, PR#10 and PR#12 will be executed. However, the final result will be P5-55 = 12, since the result of PR#10 will be covered by PR#12. The motor will operate 300000PUU by 100rpm and P5-55 = 12.

Case 3:



(PR#1)(1ms group) ((PR#2(PR#10(PR#11(PR#12) (1ms group) PR#1 to PR#2 are sequent command, since PR#2 has no insertion setting. It will be executed no until all PR group is done and releases the resource. After PR#1 is complete, the next PR group will start from PR#2 to PR#12. The result of the second group is that PR#11 occupies Motion Command Generator and PR#12 occupies PR Executor until the command is complete.

Case 4:



(PR#1)(1ms group) ((PR#2(PR#10(PR#11(PR#12) (1ms group) PR#1 will occupy PR Executor and Motion Command Generator for 10 ms since the delay is set in PR#1. After 10ms, PR#2 and PR#12 will be read in at one time. This is because command of PR#1 is already accepted by the system. The later command can only be combined not replaced. Thus, PR#11 will combine with PR#1. The combined rules will follow the rules that introduced before.

Case 5:



(PR#1(PR# 2(PR#10) (1ms group) ((PR#11(PR#12) (1ms group) Since PR#10 has delay command, PR#1 to PR#10 will be read in at one time. PR#2 and PR#10 are non-motion control command. When using PR Executor, PR#1 occupies motion command generator all the time during this period. When the delay time, 5000 ms is reached, PR#11 and PR#12 will be read in at one time. If the execution of PR#1 is complete, PR#11 will be executed alone. If PR#11 is not finished yet, PR#11 will combine with PR#1.

To monitor PR procedure via P5-07 from PC scope:

Mapping parameter can be used to read the content of P5-07. A scope channel can be assigned to monitor the variation of P5-07, which can display the next PR that is going to be executed. P5-07. For example, PR#3 to PR#4 and so on, when PR#3 is executed in PR Executor, PR#4 will be shown in P5-07.

To read P5-07, if

- 1. The accessing value is the input PR#: This PR is waiting for the authorization of PR Executor, or the last executed PR is complete.
- 2. The accessing value is the input PR# + 10000: PR command is complete, but the motor is not in position yet.
- 3. The accessing value is the input PR# + 20000: PR is complete.



4.3 Capture (CAP) / Compare (CMP)

For the applications that require the instant position record and compare positions, such as dynamic mark tracking or visual inspection which needs continuous trigger. Usually, using software communication to read/write cannot satisfy the demand of immediacy applications. They all trigger and capture data by hardware directly. Digital input (DI7) and digital output (DO4) are provided for specific specifications in ASDA-A2. 5µs of high-speed analog signal is used to capture

and compare data.

The concept of CAPTURE is to capture the position of motion axis instantaneously by using the external trigger signal DI7. Then save it in data array so as to be used for motion control afterwards. Since CAPTURE is finished by hardware, there is no problem of software delay. It also can accurately capture the high-speed motion axis. The CAPTURE features provided by ASDA-A2 servo drive is as follows.

CAPTURE Features							
Pulse Source	 Main encoder of the motor Auxiliary encoder (linear scale) Pulse command The selected axis will be displayed in P5-37, the default value can be written in before capture. Note: When the source of COMPARE is CAP axis, the CAP source cannot be changed 						
Trigger Signal	 Triggered by DI7, the response time is 5 µsec. Note: DI7 directly connects to CAPTURE hardware. Thus, regardless the setting value of P2-16 (DI Code), CAPTURE can work. When using CAPTURE, in order to avoid DI error, system will force to disable DI function, which means the setting will be P2-16 = 0x0100 automatically. Since the value is not written into EEPROM, P2-16 will return to the default value after re-power on. 						

Trigger method	• Edge trigger can select contact A/B						
	 It is capable to continuously capture more than one point. 						
	 It can set the trigger interval. 						
	(The interval between this trigger and the next one.)						
Data storage position	 Data array. The start address is set by P5-36. 						
Capture number	 It is set via P5-38 and will not exceed the limit of data array. 						
Capture format	 32-bit (It has positive and negative.) 						
Auxiliary selection	 After capturing the first data, the CAP axis coordinate system will be set to the value the same as P5-76. 						
	 After capturing the first data, the COMPARE function is enabled automatically. 						
	 After capturing all points, PR procedure # 50 is triggered automatically. 						
DO.CAP_OK	The default value is OFF.						
	 After capturing the last point, this DO is ON. 						
	 Set P5-39.X0 to 1 so as to activate CAPTURE function and this DO is OFF. 						
Note	 If P5-38=0, set the value of P5-39 X, Bit0 to 1 will disable the CAPTURE function. Clear the setting value of P5-39 X, Bit0 to 0 and set DO.CAP_OK to OFF. 						
	 Since the capture axis is 32-bit wide, the accumulation will cause overflow. Please avoid this. 						

Diagram of CAP:



The concept of COMPARE is to compare the instant position of motion axis with the value which is saved in data array. Then output DO4 after the COMPARE condition is established for motion control. Since COMPARE is finished by hardware, there is no problem of software delay. It also can accurately compare the high-speed motion axis. The COMPARE features provided by ASDA-A2 servo drive is as follows.

COMPARE Features							
Pulse Source	 Main Encoder of the Motor Auxiliary Encoder (linear scale) Pulse Command CAP Axis (set by CAPTURE). When selecting this axis, CAP source cannot be changed. 						
	default value can be written in.						
Output Signal	 Output by DO4 and the response time is 5 usec. Note: DO4 directly connects to COMPARE hardware, thus, regardless the setting value of P2-21 (DO Code), the function can work. When using COMPARE, in order to avoid DO error, the system will force to disable DO function, which means the setting will be P2-21 = 0x0100 automatically. Since the value is not written into EEPROM, P2-21 will return 						

	to the default value after re-power on.
Output Method	 Pulse output can select contact A/B. It is capable to continuously output more than one point. It can set the pulse output time.
Data Storage Position	 Data array. The start address is set by P5-56.
Compare Number	 It is set via P5-58 and will not exceed the limit of data array.
Compare Format	 32-bit (It has positive and negative.)
Compare Condition	 It will be triggered when the source of compare axis pass through the compare value.
Auxiliary Selection	• Cycle mode: When comparing to the last point, it automatically returns to the first point and starts to compare.
	• When the last compare is completed, the CAPTURE function is activated automatically.
Note	• If P5-58 is set to 0, set the value of P5-59 X, Bit0 to1 will be unable to compare. Set the value of P5-59 X, Bit0 to 0.
	• Since the capture axis is 32-bit wide, the accumulation will cause overflow. Please avoid this.

Diagram of COMPARE:



Next, we are going to introduce the main setting screen of software: Window of Capture / Compare

CAP Data Array Edito	ContractCAD) Descent							1
Update	Capital (Cour) Farming C		-					
000] 000 00000000	PS-36 : Capture Arrary star	t address	0	(0~7	99)			
	P5-37 : Capture axle posito	n	0	_				
	P5-38 : Capture Amount		1	1				
	P5-39 : Capture Enable Con	trol	P5-39 X : Capture Opt	tions				
			2:while capturing th	e 1st point, : e 1st point, :	set CAP axis as P5- enable CMP function	76 o	_	
			3:while capturing is	complete, tr	igger PR#50			
			P5-39 Y : axis source		204	(MD		
			@ 1:Auxiliary Encoder		C 3:Main	Encoder		
			P5-39 Z : Trigger logic © 0 : NO		0 1/NC			
			P5-39 U : Trigger	time interva	2	(0	~15ms)	
	Enable ON-LINE Operatio	m	Read CAP Parameters	Write	CAP Parameters	1	Disabled	
CMP Data Array					-			-
Update	Compare(Crw) Parame	uro .						
050] 000 000000000	P5-56 : Compare Arrary star	t address	50	(0~7	99)			
	P5-57 : Compare axle position	m	0					
	PS-58 : Compare Amount		1	1	freate data arra	6		
	PS-59 : Compare Enable Cor	Iostr	PS-59.X : Compare Op 1:after comparing t	tions he last point	, restart from the 1	stpoint		
	1		2:after comparing t	he last point	, enable CAP functi	no		
	P5-59 C8A : Output pulse		3:after comparing t	he last point	, set P5-57+0			
	100 (1~4095)	P5-59 Y : axis source					
			C 0:Capture axis		O 2:Puls	e Comman	d	
			 1:Auxiliary encoder 		C 3:Mein	encoder		
			♥ 0 : NO ₱ 5-59 U : Trigger logic	ommand	© 1:NC			
			12sit will trigger PR	command #	45 after after the la	st position	is compared	
	Enable ON-LINE Operation	m	Read CMP Parameters	Write	CMP Parameters		Disabilari	

Data Array Editor

📕 🚅 📲 🕜 🕹							
apture/Compare Data Array Editor							
Parameters of Data Array				Load From Servo	Write into Servo		
P5-10:Data Array-Size				(
P5-11:Data Array-Address of Reading	800		[000]	-		-	Action
P5-12:Data Array-Window#1 for Reading	0		[000]	000000000			Copy
	0		[002]	0000000000			Swap
P5-13:Data Array-Window#2 for Reading			[003]	0000000000			Source
	0		[004]	000000000			Start 3
P5-36 CAPTURE-Start Address of Data Arr	av		[005]	000000000			End 8
To solary force our choires of Data All	0		[006]	000000000			Enu 9
P5-38:CAPTURE-Size of Data Array	U	GO	[007]	000000000			
	1		[008]	000000000			
DE EGICOMPADE Start Address of Data Ar			[009]	000000000			
P 3-30, COMPARE-Start Address of Data An	50		[010]	000000000			
P5-58:COMPARE-Size of Data Array	50	GO	[011]	000000000			
	1		[012]	000000000			
			[013]	000000000			1
P5-81:E-CAM Start Address of Data Array			[014]	000000000			
P5-82:E-CAM Peak Number(N)	100	GO J	[015]	000000000			
	5		[016]	000000000			HAN.
			[017]	000000000			
			[018]	000000000			
			[019]	000000000			
			[020]	000000000			
	_		[021]	000000000			
	1 Update Array	Address	[022]	000000000			
	-		[023]	000000000			
	Burn to EEPP	LOM	[024]	000000000			
			[025]	000000000			
			[026]	000000000			
			[027]	000000000			
			[028]	0000000000			

This section is divided into four parts:

[Interface Introduction]: It describes the basic function of toolbar.

[Functions] : Functions of Capture and Compare are described here.

[Data Array]: It describes the operation method of data array editor.

[Example] : Examples are provided for users to know how to operate the function via software.

Interface Introduction

Before the introduction of Capture, Compare and Data array, let's talk about the basic operation of toolbar first:



Save as files. It saves CAP and CMP parameter files as the special format (CAC)

for users to confirm and modify. Click 📕, the following window will pop up.

另存新检					2 🛛	
儲存於①:	@ 桌面		-	+ 🗈 💣 🎟 •		
我最近的文件	 → 我的文件 → 我的電腦 → 網路上的芳 	¥۲				
						CAP/CMP Files(*.cac)
₩905112372349	檔名(<u>N</u>):	Ī		2-1	儲存③	
	存檔類型(I):	CAP/CMP Files(*.cac)		*	取消	

Click this to open the *.cac files.

眉臀				? 🔀
 ・ /ul>	 一	¥7		
	檔名(N): 檔案類型(T):	CAP/CMP Files(*.cac)	•	開啓(<u>(</u>) 取消

Mathematical Servo. If the parameter file inside the servo drive already has the setting of CAP and CMP and users desire to modify or test via software or to make sure if the changed parameter is downloaded into the servo drive, this function can help to upload parameters from servo drive to the software. When the uploading is complete, message below will show:



W b : **Help** / **Password Setting**. These functions were described before. "Help" provides the description of software operation; while "Password Setting" can setup the password to protect data array.

Functions

This section is divided into two parts for descriptions: 1. Capture (CAP). 2. Compare (CMP).

Function of Capture

Hardware introduction (digital input) - DI7

DI7 is the only high-speed digital input of ASDA-A2. The servo drive only needs 5 μ s to know the change of signal. The general digital input takes 0.5 ms. Function of Capture must set on DI7.

Please note that DI7 is a high-speed DI and currently only Capture is applying its characteristic. The signal is processed by hardware directly. Thus, the current position can be captured very quickly.



Brief introduction

The main function of Capture is to record the position into "Data Array" and the record can up to 800. The recording resource is pulse command, auxiliary encoder or main encoder from servo drive. The so-called position is "Motor Feedback PUU" and the start point can start from any location of data array.



Parameter setting and operating testing procedure

Please note that function in software is only applicable to quick testing. In real application, it usually applies PR writing function or controller to initialize and proceed capture function. Followings are the operating procedure and parameter setting methods:



- 1. Set the source of capturing reference signal by **P5-39.Y**.
 - Auxiliary encoder (CN5): The source could be linear scale.
 - > Pulse command (CN1): The source could be the controller.
 - Main encoder (CN2): The source could be motor encoder.
- 2. Switch of CAP function: It is set by **P5-39.X bit 0**. This function can be enabled only when all necessary setting is set.
- 3. CAP active signal: When DI7 is triggered, it captures the axis position (shown in P5-37) of source axis and store the data in data array. **P5-39.Z** can set whether the CAP function is triggered by rising edge of falling edge of DI7 signal.
- 4. **P5-37** : It displays the position of CAP axis.
- 5. **P5-36** : The CAP data stores in the start address of data array.
- 6. **P5-38** : It sets the total CAP amount.

After settings of P5-36 (start address of data array), P5-37 (axis position of CAP axis) and P5-38 (CAP amount) are complete, next step is to setup Capture actions.

7. Capture actions: While the position of source axis is changing, P5-37 will also vary according to the source axis. Once DI7 is triggered, if P5-38 is not 0, the value displayed by P5-37 will be written into data array.

Several ways are provided to setup high-speed CAP:

8. When it captures the first item, if Bit1 of P5-39.X is set, value set in P5-76 will be written into P5-37 and data array as the captured first value. The value of P5-37 will increase or decrease based on it. This is the concept of increment counting.

- 9. When it captures the first item, if Bit2 of P5-39.X is set, CMP function is enabled.
- 10. The value of P5-38 will automatically subtract 1 after each item is captured. When P5-38 is 0, the CAP function is disabled, which means the CAP amount is met.
- 11. When CAP is complete, if Bit3 of P5-39.X is set, the servo will call PR#50.

Software Operation

The software provides setting interface and the function to test actions. A complete CAP setting has to be with PR setting, host controller and triggering switch. Following is the setting window of Capture:

CAP Data Array	Capture(CAP) Parameters		
Update [000] 000 000000000	P5-36 : Capture Arrary start address	0	(0~799)
	P5-37 : Capture axle position	0	
	P5-38 : Capture Amount	1	1
	P5-39 : Capture Enable Control	P5-39 X : Capture Options	
		1:while capturing the 1st	point, set CAP axis as P5-76
		2:while capturing the 1st	point, enable CMP function
		3:while capturing is complexible	ete, trigger PR#50
		P5-39 Y : axis source	
		O:Capture Disable	2:Pulse CMD
		I:Auxiliary Encoder	③ 3:Main Encoder
		P5-39 Z : Trigger logic O : NO	© 1:NC
		P5-39 U : Trigger time	interval 2 (0~15ms)
	Enable ON-LINE Operation	Read CAP Parameters	Write CAP Parameters Disabled

The left window displays the current list and value of each data array. Here is the brief introduction:

	Capture/	Com	pare Data Array E	ditor	
		CAF	P Data Array	•	Title Bar
Upload the latest data of		-	Update]
data array from servo drive	[000] 0	00	000000000		1
	[001] 0	01 0	0000000000		
Position number of	[093] O	03 0	0000000000	+	Value in data array
data array	[004] 0	04 0	000000000		,
	[005] 0	05 0	000000000		
CAP amount number	[006] 0	06 0	000000000		
	[007] 00	07 0	0000000000		
	[000] [0	00 10	00000000		
During the test process, u	sers ca	in c	lick	Upd	ate to update the value
in data array if needed.					

The right window shows the rel	ated parameters	of CAP.		
Capture(CAP) Parameters				
P5-36 : Start address of CAP data array	0	(0~799)		
P5-37 : Capture axle position	0			
P5-38 : Capture Amount	1	1		
P5-39 : Capture Enable Control P	5-39 X : Capture Options			
	1:while capturing the 1st point, set CAP axis as P5-76			
	2:while capturing the 1st point, enable CMP function			
	3:while capturing is compl	ete, trigger PR#50		
-P.	5-39 Y : axis source			
C) 0:Capture Disable	② 2:Pulse CMD		
	I:Auxiliary Encoder		der	
P	5-39 Z : Trigger logic			
۹	0 : NO	© 1:NC		
	P5-39 U : Trigger time	interval ²	(0~15ms)	
Enable ON-LINE Operation	ad CAP Parameters	Write CAP Parameters	Disabled	

Users can quickly setup the start position of CAP data array here, which is the same as the setting method of "Parameter setting and operation procedure".

Start position of CAP data array:

P5-36 : Start address of CAP data array 0 (0~799)

Setup the start position of writing the CAP data.

Please note that if the start position of E-Cam data is also 100, and the area number of E-Cam is 4, if the setting value of P5-36 (Start address of CAP data array) and P5-38 (CAP amount) is the same as E-Cam, an error (data in data array is overlapped) will occur.

If the start address of data array is set to the same, a warning message will pop up when click Write CAP Parameters :

Warning : The start address of data array for Capture and Compare are the same! The range of data array for Capture and Compare are overlapped!

Position of Capture axis: It displays the position of CAP source, which can be auxiliary encoder (linear scale), pulse command and main encoder (motor encoder).

P5-37 : Capture axle position -1

Value in this part is related to the setting of ^{P5-39 Y}: axis source . Different axis source brings different value.

Please note that this setting is enabled when function of CAPTURE is disabled (Please refer to P5-39). If the axis source is main encoder, this parameter is prohibited to write in and its content will be motor feedback position (monitor variable 00h).

Chapter 4 Description of Motion Control

Capture amount: It is used to set the captured amount. When the setting is done, window in the left will display all data array according to the setting. For example, if it is set to 10,

P5-38 : Capture Amount 10

window in the left will be:

[100]	000	000000000
[101]	001	000000000
[102]	002	000000000
[103]	003	000000000
[104]	004	000000000
[105]	005	000000000
[106]	006	000000000
[107]	007	000000000
[108]	800	000000000
[109]	009	0000000000

Capture control setting: Please refer to section of "Parameter setting and operation testing procedure" that mentioned above for this part. Some other reminders are as follows:

P5-39 : Capture Enable Control	P5-39 X : Capture Options				
	1:while capturing the 1st point, set	0			
	2:while capturing the 1st point, enable CMP function				
	3:while capturing is complete, trigger PR#50				
	P5-39 Y : axis source				
	O:Capture Disable	2:Pulse CMD			
	① 1:Auxiliary Encoder	3:Main Encod	er		
	P5-39 Z : Trigger logic				
	0 : NO	① 1:NC			
	P5-39 U : Trigger time interval 2		(0~15ms)		

Capture options: If you choose 1:while capturing the 1st point, set CAP axis as P5-76, the blank can be used to set the value of P5-76. There is no need to set it up in Parameter Editor.

P5-39 X : Capture Options	
1:while capturing the 1st point, set CAP axis as P5-76	0
\fbox 2:while capturing the 1st point, enable CMP function	
3:while capturing is complete, trigger PR#50	

Axis source: If it is set to main encoder, then the position of CAP axis will be the current feedback position of motor encoder.

der

Trigger logic:

P5-39 7 : Trigger logic	
	© 1:NC

■ Trigger time interval: The range should be between 0 and 15 ms.

ro-oo (0~ions)

When the above setting is all complete, click Write CAP Parameters to download new parameters into the servo drive.

P5-37, P5-38 and P5-39 are volatile parameters, which will return to the initial value after re-servo on.

Use the function of "ON-LINE operation" to simulate the action and to make sure if the setting can satisfy the demand.

Enable ON-LINE Operation	LINE Operation
--------------------------	----------------

Before enabling ON-LINE operation, it is suggested to use check if the servo drive is still in initial setting or has completed the setting of CAP after re-servo on if the captured parameter is not set from the beginning.

In CAP function, DI7 accepts the physical signal only and cannot simulate by software. Thus, neither digital input/output signal of ASDA-soft nor DI control of communication can simulate the input of CAP function. Please make sure the wiring of command signal from the controller is correct before operation.

When ON-LINE operation is enabled, the setting page will be locked by software so as to avoid any occurrence of error during testing procedure.

Capture(CAP) Parameters		
P5-36 : Capture Arrary start address	0	(0~799)
P5-37 : Capture axle position	0	
P5-38 : Capture Amount	1	1
P5-39 : Capture Enable Control	P5-39 X : Capture Option	s point, auto set CAP axle as P5-76 0
	2:while capturing first (point, enable CMP function
	3;while finishing captur	ing, auto triggle process PR#50
	P5-39 Y : axle source	
	O:Capture Disable	C 2:Pulse Command
	1:Auxiliary encoder	C 3;Main encoder
	P5-39 Z : Trigger logic © 0 : NO	C 1:NC
	P5-39 U : Trigger	time interval 2 (0~15ms)
✓ Enable ON-LINE Operation	Read CAP Parameters	Write CAP Parameters CAP Disabled

Click	CAPI	Disabled mea	ans to trigger	bit 0 of P5-3	9.X (Start to	o CAP). And
the stat	tus will beco	me	CAP Enabled			
	CAP Disabled	: P5-39.X k	oit0 = 0			
R	CAP Enabled	: P5-39.X	(bit0 = 1			

When the value of P5-38 (Capture amount) is more than 0,

will start capturing and DO.CAP_OK is OFF. When it captures one item, value of P5-38 descends one. When P5-38 is 0, the CAP is complete and DO.CAP_OK is ON. Bit 0 will reset to 0 automatically.

If P5-38 is 0, click CAP Disabled will not do capturing, DO.CAP_OK will be OFF and bit 0 will reset to 0 automatically. If bit 0 is 1, users can only set the value to 0 and disable CAP.

Function of Compare

■ Hardware introduction (Digital output) - DO4

The Compare function is a reverse process of Capture function. Items stored in data array will be compared to the signal of a physical axis, such as main encoder (motor encoder), auxiliary encoder (linear scale) or pulse command. DO4 is the only digital output that is used by Compare function, which only takes 5µs. When the position of source axis is the same as the one stored in data array, DO4 is on.



Parameter setting and operation testing procedure

Same as Capture, function in software is only applicable to quick test. In real application, PR writing function or controller is usually applied to initialize and proceed capture function. Followings are the operating procedure and parameter



- 1. Source of CMP function is set by **P5-59.Y**:
 - Same as CAP function: When CMP and CAP function used together, this setting can make sure the signal source is the same.
 - Auxiliary encoder (CN5): Its source can be linear scale.
 - Pulse command (CN1): Its source can be controller.
 - Main encoder (CN2): Its source can be motor encoder.
- 2. Switch of CMP function: It is set by **P5-59.X bit 0.** To enable the setting only when all necessary setting is complete.
- 3. **P5-57** : It displays the position of CMP axis.
- 4. **P5-56** : It specifies the address that stored the first compared data.
- 5. **P5-58** : It sets the total compared amount.

When settings of P5-56 (start address of data array), P5-57 (position of CMP axis) and P5-58 (compared amount) are complete, next step is the setting of compare actions:

- 6. Compare actions: When the position of source axis is changing, P5-57 is varied according to it. When the value of P5-57 is the same as the specified value in data array, DO4 is on.
- 7. The output signal type of DO4 is set by rising edge or falling edge signal of P5-59.Z.
- 8. The pulse width of output signal can be set in P5-59.CBA. Its setting should consider the time interval between two compared data. Otherwise the next DO4 cannot be recognized.
- 9. Value of P5-58 will automatically subtract one after each item is compared. When P5-58 = 0, the CMP action is complete and the function is disabled.

For the control setting of CMP, it can be set through P5-59.X / U:

- 10. When CMP is complete, if Bit 1 of P5-59.X is set, P5-58 returns to its initial value and all compared item will be reset.
- 11. When CMP is complete, if Bit 2 of P5-59.X is set, it enables CAP function.
- 12. When CMP is complete, if Bit 3 of P5-59.X is set, P5-57 = 0.

In addition, two advanced setting functions are provided by P5-59.U. Users can have customized setting for application:

- 13. From (and including) firmware version V1.038 sub09, If Bit 12 of P5-59.U is set, when the last point is compared, PR#45 will be triggered.
- 14. From (and including) firmware version V1.038 sub19, If Bit 13 of P5-59.U is set, the setting of Compare will follow the setting of Capture.
- Software Operation

The software merely provides the function of parameter setting interface and action testing. A complete CMP setting should be with PR setting, host controller and trigger switch. Following is the main setting page of CMP:

CMP Data Array	Compare(CMP) Param	neters			
Update [050] 000 000000000	P5-56 : Start address of (CMP data array	50	(0~799)	
	P5-57 : Compare axle pos	sition	-2		
	P5-58 : Compare Amount		1	1 Create data array	
	P5-59 : Compare Enable Control		P5-59.X : Compare Options		
			1:after comparing the last point, restart from the 1st point		
	P5-59 CBA : Output pulse		2:after comparing the last point, enable CAP function		
			3:after comparing the last point, set P5-57=0		
	100	(1~4095)	P5-59 Y : axis source		
			O:Capture axis	2:Pulse Command	
			1:Auxiliary encoder	3:Main encoder	
			P5-59 Z : Trigger logic 0 : NO	© 1:NC	
	P5-59 U : Trigger PR command 12:it will trigger PR command #45 after after the last position is compared				
	Enable ON-LINE Opera	ation 🙀	Read CMP Parameters Write CMP Parameters CMP Disabled		
Write CMP Data to Servo					

The left window displays the current list and value of each data array. See as below:



During the test process, users can click **Update** to update the value in data array if needed.

In addition, users can modify the compared value in data array through manual setting. Left click the mouse on any field of the table and select the data that you are going to modify.

CMP Data Array		P Data Array	
Update			
[050]	000	0000132272	
[051]	001	000000034	Use left mouse button to
[052]	002	0007536737	
[053]	003	0003145793	select position "001", the field
[054]	004	0007209058	will show the bracket with
[055]	005	0006357101	
[056]	006	0004259907	dotted-line.
[057]	007	0007667778	
[058]	800	0006357096	
[059]	009	0006357111	
	Write CMP Data to Servo		

Left click the mouse to edit.



Users can enter the compared value at the moment. When finish, left click on the other fields to complete editing.



When all manual setting is complete, use Write CMP Data to Servo to download the modified data array into the servo drive.

Please note that <u>Write CMP Data to Servo</u> here can only download the value in data array into the servo drive. If desire to burn data array into EEPROM, please switch to "Data Array Editor". Then, click <u>Burn to EEPROM</u>.

In addition, Write CMP Data to Servo and the related parameters of Compare are not relevant. Please use Write CMP Parameters to modify parameters.

Window in the right displays the related parameters of Compare.

Compare(CMP) Parameters				
P5-56 : Start address of CMP data array	50	(0~799)		
P5-57 : Compare axle position	-2			
P5-58 : Compare Amount	10	10 Create data array		
P5-59 : Compare Enable Control	P5-59.X : Compare Options			
	1:after comparing the last point, restart from the 1st point			
	2:after comparing the last point, enable CAP function			
P5-59 CBA : Output pulse	3:after comparing the last point, set P5-57=0			
100 (1~4095)	P5-59 Y : axis source			
	O:Capture axis	2:Pulse Command		
	1:Auxiliary encoder	③ 3:Main encoder		
	P5-59 Z : Trigger logic			
	0 : NO	© 1:NC		
	P5-59 U : Trigger PR command 12:it will trigger PR command #45 after after the last position is compared			
Enable ON-LINE Operation				

Users can quickly setup the start position of CAP data array here, which is the same as the setting method of "Parameter setting and operation procedure".

Start address of Compare data array: Set up the start address of Compare data array.

P5-56 : Start address of CMP data array ⁵⁰ (0~799)

Please note that if the start position of E-Cam data is also 100, and the area number of E-Cam is 4, if the setting value of P5-56 (Start address of CMP data array) and P5-58 (CMP amount) is the same as E-Cam, an error (data in data array is overlapped) will occur.

If the start address of data array is set to the same, a warning message will pop up when click Write CMP Parameters:



Position of Compare axis: It displays the axis position of COMPARE pulse source, which can be set as CAP axis, auxiliary encoder (linear scale), pulse command and main encoder (motor encoder).

P	5-57 : Compare axle position	0	
---	------------------------------	---	--

This value is related to the setting of P5-59 Y : axis source . Different source brings different value.

Compare amount: It is used to set the compared amount.

P5-58 : Compare Amount	10	10	Create data array
------------------------	----	----	-------------------
Before COMPARE is enabled: estimate the compared amount (readable and writable)

When COMPARE is working: the amount that hasn't been compared; 0 means it is complete (read-only)

Value of this parameter descends one when one point is compared. When the value is 0, it means the compare is complete.

After setting up the CMP amount, window on the left will display all data array according to the setting. For example, if the amount is set to 20, fill in 20 in the blank and click Create data array. You will see the left window is changed to 20 data array and the value beside the bracket becomes 20 instead

20

. It means data array has been modified.

[108]	008	0000000000
[109]	009	0000000000
[110]	010	0000000000
[111]	011	0000000000
[112]	012	0000000000
[113]	013	0000065536
[114]	014	0000000000
[115]	015	0000000000
[116]	016	-000000001
[117]	017	0000000000
[118]	018	0000000000
[119]	019	0000000000

Please click Write CMP Data to Servo to write r drive.

to write new data value into the servo

Compare control setting: It is used to setup CMP control. Please refer to the previous section "Parameter setting and operation testing procedure" for other related settings.

Compare(CMP) Parameters				
P5-56 : Start address of CMP data array		100	(0~799)	
P5-57 : Compare axle position		0		
P5-58 : Compare Amount	t	20	20 Create data array	
P5-59 : Compare Enable Control		P5-59.X : Compare Options 1:after comparing the last point, restart from the 1st point 2:after comparing the last point, enable CAP function		
P5-59 CBA : Output pulse		3:after comparing the last point, set P5-57=0		
100	(1~4095) P	5-59 Y : axis source		
	(问 0:Capture axis	2:Pulse Command	
		1:Auxiliary encoder	3:Main encoder	
		95-59 Z : Trigger logic 0 : NO	© 1:NC	
		P5-59 U : Trigger PR command 12:it will trigger PR command #45 after after the last position is compared		
Enable ON-LINE Operation		ad CMP Parameters	Write CMP Parameters CMP Disabled	

Compare options: When select ^{2:after comparing the last point, enable CAP function}, if CAP has already enabled, this function will be invalid.

P5-59.X : Compare Options	
1:after comparing the last point, re	start from the 1st point
2:after comparing the last point, er	able CAP function
3:after comparing the last point, se	t P5-57=0

Axis source: If it is set to main encoder, CMP position will be the current feedback position of motor encoder.

2:Pulse Command
③ 3:Main encoder

Trigger logic:

P5-59 Z : Trigger logic	
0 : NO 1	① 1:NC

Output pulse of DO4: The range shall between 1 and 4095 ms. It is because data format in P5-59 is in hexadecimal. Thus, the max. setting range can up to FFF.

P5-59 CBA : Output pulse		
100	(1~4095)	

After all setting is complete, click Write CMP Parameters to download the newly setup parameters into the servo drive.

Please note that both P5-57 and P5-58 are volatile parameters. When the servo drive is re-powered on, value will return to the initial value.

Use the function of "ON-LINE operation" to simulate the action and to make sure if the setting can satisfy the demand.

Enable ON-LINE Operation	Read CMP Parameters	Write CMP Parameters	CMP Disabled

Before enabling ON-LINE operation, it is suggested to use to check if the servo drive is still in initial setting or has completed the setting of CMP after re-servo on if the compared parameter is not set from the beginning.

There are four methods to see the output status of CMP DO4:

1. Monitor parameters: From monitor variable 40, users can know the real hardware output status of DO. Each Bit corresponds to one DO channel.



2. Mapping parameters: From system parameter P4-09, users can monitor the contact status of digital output.



Physical wiring: Access DO4 via physical wiring. There is no need to specify the function of digital output. When CMP function is enabled, DO4 will be the output of CMP function regardless the setting of it.



4. Software: Read the output signal from digital IO panel do ASDA-Soft. There is no need to specify the function of digital output. The CMP function will occupy DO4.

☆ Digital Output(DO)	Status	Enable
DO1:[0x01]Servo ready	ON	On / Off
DO2:[0x03]At Zero speed	ON	On / Off
DO3:[0x09]Homing completed	Off	On / Off
DO4:[0x00]Disabled		On / Off
DO5:[0x07]Servo alarm (Servo fault) activated (B)	ON	On / Off

Users can choose one of the methods to monitor CMP DO4.

When ON-LINE operation is enabled, the setting page will be locked by software so as to avoid any occurrence of error during testing procedure.

Compare(CMP) Parameters				
P5-56 : Compare Arrary start addres	ss 50	(0~799)		
P5-57 : Compare axle position	0			
P5-58 : Compare Amount	1	1 Create]	
P5-59 : Compare Enable Control	P5-59 X : Compare Option 1; after comparing the la	is ast point, restart from the f	irst	
	2;after comparing the la	ast point, enable CAP funct	ion	
	3;after comparing the la	ast point, set P5-57=0		
	P5-59 Y : axle source		C. 2004co Command	
	O:Capture axie O:Capture axie O:Capture axie O:Capture axie		C 3:Main encoder	
	P5-59 Z : Trigger logic		C 1 : NC	
	P5-59 U : Trigger PR comm 12;it will trigger PR com	nand mand #45 after after the la	ast position is compared	
	P5-59 CBA :	Output pulse 100	(1~4095)	
✓ Enable ON-LINE Operation	Read CMP Parameters	Write CMP Parame	eters CMP Disabled	
	abled means to t	rigger bit 0 of F =d	P5-59.X (Start to CMP)	. And the
status will become	(
CMP Disabled	: P5-59.X bit0 =	= 0		
CMP Enabled	: P5-59.X bit0	= 1		

When value of P5-58 (Compare amount) is bigger than 0, starts to compare when CMP is enabled.

CMP Enabled... it

Value of P5-58 descends one when it compared one point. When the value is 0, CMP is complete and bit0 will return to 0 automatically.

If P5-58 = 0, it will not do compare when click return to 0 automatically.

If bit 0 is 1, users can only set the value to 0 and disable CMP.

Data Array Editor

Data array is a newly added memory group in ASDA- A2 servo drive. Many functions of motion control, such as CAPTURE, COMPARE and E-Cam are the data that needs to be stored in a large amount of memory space. It can store up to 800 data in total. Users have to program the address for different data.

Features of Data Array			
Usage	Save the captured data of CAPTURE		
	 Save the compared value of COMPARE 		
	 Save the contour table of E-Cam 		
	 Note: 1. The system does not partition off the data array into the individual space of CAP, CMP and E-Cam. The user could program it according to the demand. Therefore, the space might be overlapped. Please pay close attention to it when using. 2. A2L does not support E-Cam function. 		
Size of Data Array	 32-bit integer x 800 (refer to P5-10) 		
	 Each data has its corresponding address. Specify the address is a must when reading or writing the data. 		
	• The 800 data is from 0 to 799.		
Non-volatile	 Manually set up the saving (P2-08 = 30, 35) is a must and the data should be saved in EEPROM of the servo drive. Save the data when it is Servo Off. 		
	 The data will be loaded into data array automatically when it is Servo On. 		
Accessing Window	 Should be access via parameter P5-10 ~ P5-13. 		

Here are the descriptions of data array editor:

[1] To access the value and setting of data array by parameters:

Through the interface, we can access the value of P5-10, P5-11, P5-12 and P5-13:

P5-10:Data Array-Size	
P5-11:Data Array-Address of Reading	800
P5-12:Data Array-Window#1 for Reading	0
P5-13:Data Array-Window#2 for Reading	0
	0

These four parameters cannot be modified in software. Users can only access their

status via 🛍. If desire to read the value of data array so as to make sure the previous written content is correct, specify the start address to P5-11 through MODBUS communication command 0x06 (write one data). The issued command is showed as below:

Content of communication command: Set the Reading Address of Data Array				
Number	Command	Start Add.	Written Data	
4	0x06	P5-11	11	

Then, read the content of specified address by communication command 0x03 (continuous reading). The issuing communication command is as follows:

Content of Communication		Return Data							
Command: Read Data Array									
		Stort	Accessing	P5-11		P5-12		P5-13	
No.	Command		Accessing	Low	High	Low	High	Low	High
		Auu.	Amount	Word	Word	Word	Word	Word	Word
				11	0	100	0	200	0
5 0x03	P5-11	6 (Word)	Dood Addroop		Data of address		Data of address		
				Reau Audress		11		12	
			13	0	300	0	400	0	
6	6 0x03	P5-11	6 (Word)	Read Address		Data of address		Data of address	
						1	3	1	4
7 0x03	P5-11	6 (Word)	15	0	500	0	600	0	
			Read Address		Data of	address	Data of	address	
						1	5	1	6

The return data on above table represents parameters (P5-11, P-12 and P5-13) that had been read back, which is the data content in address 11 ~ 16 of data array. Value will also be displayed in this window.

[2] Easily setup data array of Capture, Compare and E-Cam:

Users can setup the start address and amount of data array, including Capture, Compare and E-Cam.

P5-36:CAPTURE-Start Address of Data Array		
P5-38:CAPTURE-Size of Data Array	0	GO 📌
	1	
P5-56:COMPARE-Start Address of Data Array		
P5-58:COMPARE-Size of Data Array	50	GO 📌
	1	
P5-81:E-CAM Start Address of Data Array		
P5-82:E-CAM Peak Number(N)	100	GO 📌
	5	
- 1	Jpdate Array Address	
	Burn to EEPROM	

When the setting is complete, click <u>GO</u>, on the right of these three items. Data array will directly jump to the start position. For example, if click <u>GO</u> on the right of Compare, table of data array will jump to field 100 as the beginning.

[100]	0000000000	
[101]	0000000000	
[102]	0000000000	
[103]	0000000000	
[104]	0000000000	
[105]	000000000	

If the data array is overlapped, a warning will show. Please see the example below. Data array of Compare and E-Cam is overlapped.

[100]	000000000	Overlap!
[101]	000000000	Overlap!
[102]	000000000	
[103]	000000000	
[104]	000000000	
[105]	000000000	

In addition, click Update Array Address can write the status into the servo drive. If users desire to keep the setting of data array in servo drive after power off, please click Burn to EEPROM to burn data array into EEPROM. This function is similar to Burn Table Data which mentioned before.

[3] Editor that can modify the content of data array

Three ways are provided for users to quickly edit the value of data array:

Action		
Move		
Copy		
Swap		

> Move

Assume that setting value in position [000] to [005] of data array is as the following:

[000]*	0000000001
[001]*	000000002
[002]*	000000003
[003]*	0000000004
[004]*	0000000005
[005]*	000000006

If users want to move down the block of data array for one field, please select "Move".



Then, set up the start position 0[000] and end position 5[005].

Source		
	Start	0
	End	5

And set 1 as offset amount.



To move down one field, please click when the setting is complete. Then, position 0 to 5 is moved down for a field in the data array table. And the original position [000] is replaced by a new value, 000000000.

[000]*	000000000 🔶 — -	New value
[001]*	0000000001	
[002]*	0000000002	
[003]*	0000000003	May a day up the array of
[004]*	0000000004 🔸 🗕 -	move down the group
[005]*	0000000005	
L3		

Copy

Assume the setting value of position [000] to position [005] in data array is as below:

[000]*	0000000001
[001]*	0000000002
[002]*	000000003
[003]*	0000000004
[004]*	0000000005
[005]*	0000000006

If users desire to copy position [010] ~ [015], please select "Copy" first.

Action		
Move		
Copy		
Swap		

Setup the copy source: from position 0[000] ~ 5[005].

Source		
	Start	0
	End	5

Then, setup the target position, 10[010] ~ 15[015].

Destination					
Start	10				
End	15				

Click to complete the setting. You can see position 0 to 5 has been copied to position 10 to 15.

[000]*	000000001	
[001]*	000000002	
[002]*	000000003	Position 0 to 5
[003]*	000000004 🔸 🗕 🗕	
[004]*	000000005	
[005]*	000000006	
[006]	000000000	
[007]	000000000	
[008]	000000000	
[009]	000000000	
[010]	0000000001	
[011]	000000002	Copy to position
[012]	000000003	Copy to position
[013]	0000000004 🔦 🗖 🗖	 10 to 15.
[014]	000000005	
[015]	000000006	
C		

> Swap

In data array, the setting value of position [000] to [005] and position [010] to [015] are showed as below:

[000]*	0000000001
[001]*	000000002
[002]*	000000003
[003]*	0000000004
[004]*	0000000005
[005]*	000000006
[006]	0000000000
[007]	000000000
[008]	000000000
[009]	000000000
[010]*	000000006
[011]*	0000000005
[012]*	0000000004
[013]*	000000003
[014]*	000000002
[015]*	0000000001

If users desire to swap these two blocks of data array, please select "Swap" first.



Set up the swap source, position 0[000] ~ 5[005].



Then, set up the target position of swap, position 10[010] ~ 15[015].



Value in position 0 to 5 is swapped to position 10 and 15.

Click	Write into Servo	to download	the	e modified	d data	array	into	the	servo	drive.
Users	can also click	Burn to EEPRO	M	to burn	data in	to EEF	PROM	И. То	o acce	ss the
data a	rray from serve	o drive, click	Load	From Servo	to uple	oad it t	o the	soft	ware.	

Example

From the example below, users can try to setup CMP function via the software and aim at the application of masking and mark reading to complete the setting of mark alignment. Please refer to ASDA-A2 application note for further information.

Example of CMP function: It sends one signal every half turns.



Description:

- 1. When the compare axis is the main encoder, the Compare function will refer to the pulse resolution set by P1-46, but not P1-44 and P1-45. It must set P1-46 = 25000 pulses in this example, which means when motor runs a cycle, P5-57 can read 25000x4 = 100000 pulses.
- 2. Fill in 50000 and 100000 into the data array starting from position **50.** The Compare function outputs DO4 every time when motor runs half cycle (when the counting pulse is 50000) and one cycle (when the counting pulse is 100000).
- 3. Enable **Bit1** of **P5-59.X**. When CMP is complete, P5-58 returns to the initial value. The system will repeat the CMP function.
- 4. Enable **Bit3** of **P5-59.X.** When CMP is complete, P5-57 = 0. The system will start another CMP cycle.
- 5. P5-59.X = 0x000A \rightarrow 0x003B, the second digit is from 0 \rightarrow 3. The system will copy the current position of the main encoder to P5-57 and enable CMP function. Therefore, the system has to do the homing before enabling CMP function. If the position of main encoder is larger than the value in data array, which means P5-57 > 100000, then there will has no output for CMP function.

Setting steps:

Step 1: Make sure the control mode must set to PR mode. Use A Parameter Initial Wizard to select.



Then, setup digital input (DI) DI/O Setup. Select homing, PR command trigger and internal PR command (since servo drive needs to specify the start PR): Please refer to

the setting below:

⊗ Digita	al Input(DI) Setup(P2-10~P2-17)			
DI1	[0x01]Servo On	•	Ontact a	◯ contact b
DI2	[0x27]Return to homing origin	•	ontact a	🔘 contact b
DI3	[0x08]Command triggered	•	Ocontact a	◯ contact b
DI4	[0x12]PR command selection 1~64 Bit1	•	🔘 contact a	ontact b
DI5	[0x13]PR command selection 1~64 Bit2	•	🔘 contact a	ontact b
DI6	[0x1A]Position command selection 1~64 Bit	•	🔘 contact a	ontact b
DI7	[0x1B]Position command selection 1~64 Bit	•	🔘 contact a	ontact b
DI8	[0x21]Emergency stop	•	🔘 contact a	ontact b

The next step is to adjust the pulse number of motor encoder.

Step 2: In Common Setup, please set the P1-46 (pulse number of motor encoder) to 25,000.

℅ Common Setup						
Rotation Direction Selection(P	1-01) : CW CW	Pulse Number of Encoder Output (P1-46) 25000 Pulse/rev (20~320000)				
Polarity Setting of Encoder Pu Y:Direction Polarity Forward Output Reverse Output	Ise Output(P1-03) X:Monitor analog output polarity © 0: MON1(+), MON2(+) O 1: MON1(+), MON2(-) O 2: MON1(-), MON2(+)	Regenerative Resistor Setting(P1-52,P1-53) 40 Ω (5~750) 3001 W (0~6000)				
	③ 3: MON1(-), MON2(-)					

Step 3: Write the setting value into the servo drive ¹. A message window will pop. Please click **正**应.

Delta ASDA-Sof	E 📃
是否寫入Servo?	
是创	否N

Step 4: Re-power on the servo drive and complete the setting of mode and parameters.

Step 5: Click **b** for PR mode setting so as to setup 4 sets of PR path. Please select position PR#30 in the left.



Step 6: Setup PR#30, 31, 32 and 33 in sequence.

PR#30: Set P5-59 to 0x00 64 00 0 A

- 64: Length of output pulse: 100ms. (Convert the format to hexadecimal, so the value is 64I.)
- **0**: Set the source axis as CAP axis.
- A: Set Bit1 and Bit 3 of P5-59.X to 1. The CMP function will repeat. Every time when it compares to the last point, the counter will clear to 0.

∀ TYPE settings							
[8] :Write the specified parameter to	the specified path					-	
♦ OPT options							
INS : When this PR is executing, it interrupts the previous one: O :NO O 1:YES							
AUTO : Auto move to next PR when	n completed				0:NO	0	1:YES
ROM : write into EEPROM when write	ting a parameter			0:NO		© 1:YES	
-							
-							
-							
× PAR DIV Setun							
larget 0: Parameter	▼ P 5 ▼ - 59	→ COI	MPARE Enable Contr	01			
-							
-							
DLY : Delay time index		DLYO	1 : 100 (P5-41)	•			
-							
•							
⊗ Data							
Data 0: Constant	→ 0	?	(0x00010000 /	~ OxOFFF3	813F)		

PR#31: Set P5-58 to 2 and to setup the compared amount of data array.

∀ TYPE settings								
[8] :Write the specified parameter to the specified path								
♦ OPT options								
INS : When this PR is executing, it interrupts the previous one:								
AUTO : Auto move to next PR when completed		0:NO	© 1:YES					
ROM : write into EEPROM when writing a parameter	0:NO		© 1:YES					
•								
•								
-								
∀ PAR, DLY Setup								
Target 0: Parameter ▼ P 5 ▼ - 58 ▼ COMPARE Amount								
-								
DLY : Delay time index DLY00 : 0 (P5-40)	-							
-								
•								
∀ Data								
Data 0: Constant • 2 ? (1 ~ 1999)								

PR#32: Set P5-59 to 0x00 64 00 3 B

- 64: Length of output pulse: 100ms. (Convert the format to hexadecimal, so the value is 64.)
- 3: Set the source axis as main encoder (motor encoder).
- **B**: Set Bit0, Bit1 and Bit 3 of P5-59.X to 1. Enable and repeat CMP function. Every time when it compares to the last point, the count will clear to 0.

∀ TYPE settings							
[8] :Write the specified parameter to the specified path			•				
✓ OPT options							
INS : When this PR is executing, it interrupts the previous one: O:NO 1:YES							
AUTO : Auto move to next PR when completed		@ 0:NO	© 1:YES				
ROM : write into EEPROM when writing a parameter	0:NO		© 1:YES				
-							
•							
-							
∀ PAR, DLY Setup							
Target 0: Parameter ▼ P 5 ▼ - 59 ▼ COMPARE Enable Contr	ol						
•							
-							
DLY : Delay time index DLY00 : 0 (P5-40)	•						
-							
-							
∀ Data							
Data 0: Constant • 0 ? (0x00010000	~ 0x0FFF3	13F)					

PR#33: Setup "Constant Speed Control". The target speed is 200 r/min.

∀ TYPE settings							
[1] :Constant speed control							
V OPT options							
INS : When this PR is executing, it interrupts the previous one:							
AUTO : Auto move to next PR when comple	ted			0:NO	© 1:YES		
UNIT : Unit :				m	1: PPS (PUU per sec)		
-							
-							
-							
℅ Speed,Time Setting							
ACC : Time Index of accelerating to rated s	peed(3000rpm)	AC00 : 200 (P5-20)	→ Tin	ne=13.333 ms			
DEC : Time Index of decelerating from rated	d speed(3000rpm)	AC00 : 200 (P5-20)	▼ Tin	ne=13.333 ms			
-							
DLY : Delay time index		DLY00 : 0 (P5-40)	•				
-							
-							
∀ Data							
Target Speed	2000	(-60000 ~ 60000)					

For the setting of PR#31 and PR#32 that mentioned before, P5-59.X = $0x000A \rightarrow 0x003B$. The second digit is $0 \rightarrow 3$. At the moment, the system will copy the current position of the main encoder into P5-57 and enable CMP function. The system needs to do homing before enabling CMP function. Therefore, the system has to do the homing before enabling CMP function. If the position of main encoder is larger than the value in data array, which means P5-57 > 100000, then there will has no output for CMP function.

Step 7: Refer to the diagram below to setup homing mode.

× P5-04:Homing Mode							
X=> Homing Method:	X:4: Look f	:4: Look for Z in forwad direction and regard it as homing origin 💌					
Y=> Signal Setting:		v					
Z=> Limit Setting:	Z:0 :Show	Z:0 :Shows error					
Homing Speed Setting							
P5-05 : 1st Speed Setting of High Speed Ho	5-05 : 1st Speed Setting of High Speed Homing 100.0 (0.1 ~ 2000.0)						
P5-06 : 2nd Speed Setting of Low Speed Homing 20.0 (0.1 ~ 500.0)							
8 P6-00, P6-01: Homing Definition							
PATH : Path Selection	0:STOP		-				
ACC : Acceleration Time	AC00 : 200	0 (P5-20)	•				
DEC1 : 1st Deceleration Time	AC00 : 200	0 (P5-20)	-				
DEC2 : 2nd Deceleration Time	Use the san	ne deceleration time as STP	command. STP commar	nd in "General Parameter Setting".			
DLY : Delay Time	DLY00:0((P5-40)	-				
BOOT : Activation mode, when power on:	O :Disable homing function						
	1 :Enable homing function						
P6-01 : Homing Definition Value	0		(-2147483648 ~ 21474	183647)			

Step 8: Click 11 to write all into the servo drive and complete the setting of PR mode.

ASDA_Soft	to download
Select the range	
Select All	
Speed, Time Setting Paramter	rs
General Setting Parameters	
V Homing Setting Parameters	
All PR Path Parameters	

Step 9: Set up the compared value of data array.

Enable CAP/CMP function **I**. Click **i** to read parameters from servo drive. Since we haven't executed PR, to setup the value of P5-58 (Compared amount) first so can fill in the value into compared data array.



Change ^{P5-58 : Compare Amount} to 2. Click Create data array, Data array will be changed into 2 fields:

CMP Data Array		
Update		
[050]	000	0000132272
[051]	001	000000001

Left click the mouse on [050] and [051] and change the value to 50,000 and 100,000, respectively.

	CMP Data Array	
	Update]
	[050] 000 0000050000	
	[051] 001 0000100000	
When the setting is complete	, click Write CMP Data to	servo to write new value into
data array. Then, the window	will display	pelow.
Step 10: Use 👗 (Digital IO)) and 🔯 (Software Scop	be) to monitor the output of DO4.

Click 📥:

Ī	> Digital Input(DI) : ASDA-A2 Servo:Pr Mode	Status	Enable	
	DI1:[0x01]Servo On	Off	On/Off	
	DI2:[0x27]Return to homing origin	Off	On/Off	
	DI3:[0x08]Command triggered	Off	On/Off	
	DI4:[0x12]PR command selection 1~64 Bit1	ON	✓ On/Off	DI setting
	DI5:[0x13]PR command selection 1~64 Bit2	ON	✓ On/Off	
	DI6:[0x1A]Position command selection 1~64Bit3	ON	✓ On/Off	and control
	DI7:[0x00]Disabled	Off	On/Off	
	DI8:[0x21]Emergency stop	Off	On/Off	
	DI9:[0x00]Disabled	Off	On/Off	
	DI 10:[0x00]Disabled	Off	On/Off	
	DI11:[0x00]Disabled	Off	On/Off	
	DI12:[0x00]Disabled	Off	On/Off	
	DI13:[0x00]Disabled	Off	On/Off	
Į	DI14:[0x00]Disabled	Off	On/Off	
ĺ	> Digital Output(DO) Enable DO Control	Status	Enable	DO4 becomes the
	DO1:[0x01]Servo ready	Off	On/Off	output for high-speed
	DO2:[0x03]Motor is at zero speed	ON	On/Off	compare and no longer
	DO3:[0x09]Homing completed	Off	On/Off	
	DO4:[0x00]Disabled	Off	On/Off	display the current
	DO5:[0x07]Servo warning (B)	ON	On/Off	output command.

Step 11: Use DI to control the operation steps. Select DI1 ~ DI3 to control SON (servo on), SHOM (search homing) and CTRG (PR command trigger) first.

Step 12: Select DI1 <u>On/Off</u> to enable DI1 as NC (frequently close contact) and servo on.

DI1:[0x01]Servo On

ON On/Off

Step 13: Select DI2 <u>on/off</u> to enable DI2 as NC (frequently close contact) and start to search homing origin. Then, click <u>on/off</u> again to change DI2 to NO (frequently open contact), since we only need to trigger it once.

DI2:[0x27]Return to homing origin ON ON ON/Off.

Step 14: When homing is complete, select DI3 <u>on/off</u> to enable DI3 as NC (frequently close contact) and trigger PR#30. Then, click <u>on/off</u> to change DI3 to NO (frequently open contact), since we only need to trigger it once.

DI3:[0x08]Command triggered ON On/Off

Step 15: Check if DO4 is glittering. If the answer is yes, it means it is working and CMP function is executing. Function of DO4 has been changed.



Step 16: Make sure DO4 does output. Then, use scope to confirm that DO4 outputs every half turns. The setting of scope is shown as below: select Channel 1 and 2 to monitor.



Channel 1: Set as accessing feedback position (PUU). Since the unit of PUU is 32-bit, please check **32** bit.



Channel 2: Set as accessing DO status.



In addition, since the unit of feedback position and DO status is different, please use individual coordinate.

Condition Fine Tuning Properties			
Keep current max/min value while running			
 ☑ I Show Grid Line ☑ Auto adjust the scope display 			
When display all data in screen,			
Channels use the same coordinate			

Step 17: It is suggested to enable $\stackrel{>}{=}$ (digital IO) and $\stackrel{[]}{=}$ (software scope) to operate. Use DI to execute homing and trigger PR command. Then, use scope to monitor the curve simultaneously.

🚰 Della ASDA-Soft - ASDA-A2 Servo			
植素 設定 工具 參數功能 供留 說明			
🗄 🖾 🖉 🛦 🥥 🛍 📽 🖕 🕂 😡 🖓 🖢 🕬 💷 👘			
9 ANS		A MINISTER STAL ASTA-AZ Serve	408
		「 論解DUO功證項目 _ Reflash _ 例	О ныр М
500	将件說定 解開說定	The second se	
2540	S BATTIN, MAN BAT	数位偏入(01): ASDA A2 Served'r Mede Dit (0x01)/20日数(Serve On)	Arman Salitation
	and the second se	012(0.27)回时序队结批	Intel Property
1100	₩ 副示格線	D03[0x08]编·6 编辑	
(5)	12 日勤課盤示波器会	C64-[0x12]內部暫存器位置命令運擇1~64 081 (0)	Last Court of
	書職示所有資料在1	C05:(0x13)内部署存器位置命令遵撑1~(4 0k2 (0)	
	· 所有通道使用名	D06-[0x1A]內部署存職位置前帝國[第1~64 BK3 (B)	Land Constant
4894	广州有油语说用书	007(0x10)内部署符書位置命令選擇1-64 (84 (8)	and a second second
-13100		CONTRACTOR AND CONTRACTOR	
		ctinfo.co开作用	
		0011-(0-00)-F-ft/#	
82H 82H		0812(0+00)千作用	The second se
12764		D013(0x00)干作用	And
tion - zona societo i natorico natorico natipazo al tizzon se jiano se jeste patison precision pre-		0414 (0x00) F(\$M)	and the second second
0.000 2000.000-000.000000.000000.0001000.00112000.0014000.0016600.0010000.0020000.000		(100)は最近(00)	ACME MAISTRAN
OC:DOMB		DOI (0-01)和股厚推完单	
		002(0:03)馬達等速度	
		bco.(0.09)导致连续无限	
9 CH (EDG) Norms - 9 32 bit 19 11 (EDG) Norms - 32 bit 1 Chan (EDG) Norms - 1	DI DI TRANSCE	DOM (DUDD) T-TTAIL	
(新時位置(PUL) ・ (CO.状態) ・ (CO.状態)	- 馬達道度 -	DOG/(2015/bitles@c010)	
Mitta Mitta Mitta	Aliaita (「 當關閉010功能畫面時 · 仍然保持目前01控	\$1秋·85
UPEDCGA93735 51 10		寸動:	
		寸動速度:100 rpm	
0		T THERE T SHELLE IN	
金倉 Pan Head Pan Data 2	Intended! From I	Am	ATTALLS Sena

Step 18: Take one part of Bold Plot to observe. We can see the triggered cycle of DO4 is 50,131PUU, which is close to 50,000PUU set by us. The length of input length is also close to 100ms of P5-59 CBA.







資訊:	
時間:	3696.750 ms
時程:	100.000 ms

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