ICS3.5 / 3.6
Serial Manager
Software manual

Ver.1.4.1

ICS3.5 / 3.6 Serial Manager
Ver.1.2.1.0

KONDO KAGAKU CO.,LTD.

Introduction

Thank you for using the ICS 3.5 / 3.6 Serial Manager Ver.1.2.1.0 This software is intended to change the setting of the servo of the ICS 3.5 / 3.6 standard. Please read the following contents carefully before using.

Disclaimer

- This software is free software. Redistribution is also possible, but please be sure to distribute this software manual along with that.
- Copyrights of this software, designs other than the Primo icon below, rights of the Kondo Science Logo, etc. belong to Kondo Kagaku Co., Ltd.
- Do not sell or lease the Software.
- Please use this software at your own risk. Authors are not responsible for any obstacles when using this software.
- This software is subject to alteration and specification change without prior notice.
- Do not disassemble, decompile, reverse engineer this software.
- The icon used for this software is the Webdesigner Depot's Primo Icon Set (http://www.webdesignerdepot.com).

Operating environment

- .NET Framework 4.8 and above
- Windows 8.1, 10, 11

Corresponding servo

KRS Servo Series   ICS3.5 / ICS3.6

Setting method
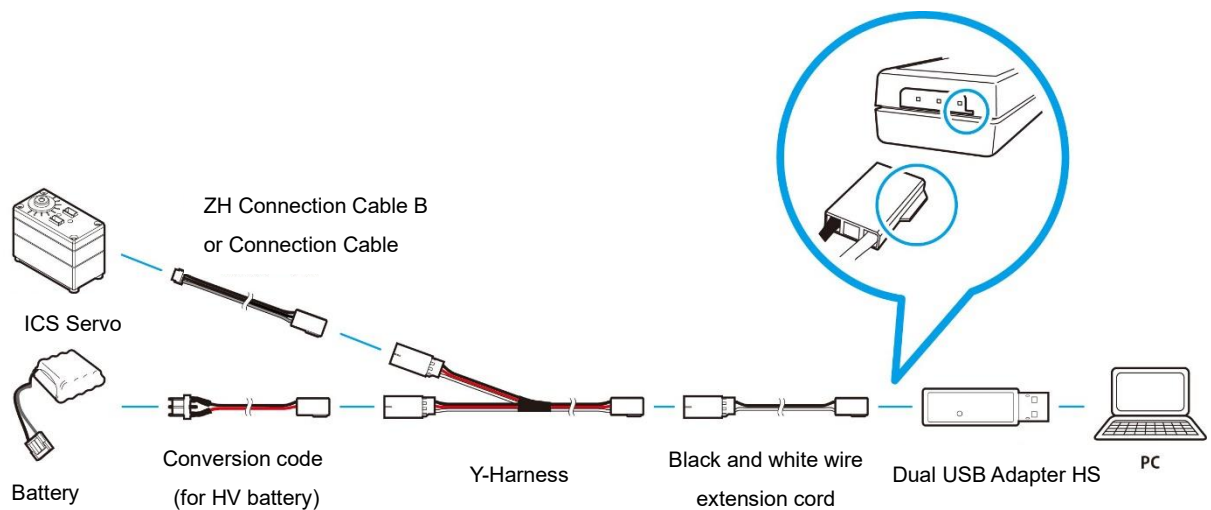
Installation / uninstallation
After unzipping the file, please confirm that the following files are in the folder.
1. ICS3.5/3.6 Manager.exe(Executable file)
2. IcsBaseClass.dll(Library file)
3. ja-JP folder
4. ICS 3.5/3.6 Manager Software Manual .pdf (Files you read now)

When uninstalling, delete all folders.

Connection of equipment
By connecting power supply to the Dual USB Adapter HS (ICS mode) (No.02116), you can check the operation of the servo and make various settings.

ICS Servo — ZH Connection Cable B or Connection Cable

Battery — Conversion code (for HV battery) — Y-Harness — Black and white wire extension cord — Dual USB Adapter HS — PC

1. Connect to the Y-Harness with the connection cable included with the servo. <u>Please connect only one servo.</u>
2. Please use the power supply suitable for the servo. Operation outside this range may damage components inside the servo.
   HV = 9 - 12 V / LV = 6 - 7.4 V
3. When changing only the setting of the main unit, you can directly connect the USB adapter and the servo (Real time operation is not possible).
4. When using the old product's ICS USB adapter, please do not set it to the Baudrate (communication speed) faster than 115200 bps. Basically, except for communication speed, Dual USB adapter, ICS USB adapter HS and usage method do not change.
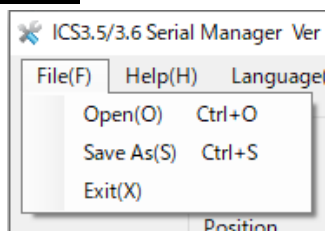
About setting items

Details of each setting item are explained in "ICS 3.5 / 3.6 Software Manual". You can download it from our website, so please refer to it.

Start up the software

When the "ICS 3.5 / 3.6 Manager.exe" is started, the screen below appears.
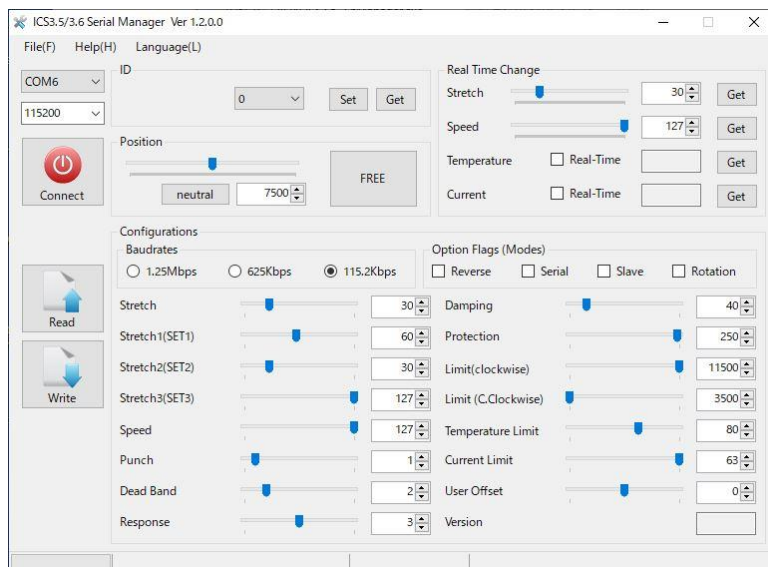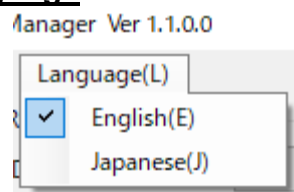
File / Help

File: Save current setting, load saved data, quit this software
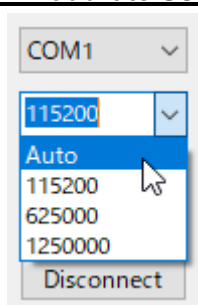Help: Display version information of this software.

Language

The language switching function has been added from Ver.1.1.0.0. Select the language and restart the software to switch languages. There is no change of the each function by switching language.

COM / Baudrate setting

Configure and connect the COM port. Select the COM number allocated to the USB adapter and Baudrate (communication speed) of the servo and open the port with the Connection button.
* The COM number can be checked by Windows device manager. For details, refer to the manual attached to the USB adapter.
The Baudrate can be changed while connecting the COM port.
Baudrate's menu has "Auto" in addition to communication speed. This is the function to automatically acquire the communication speed and ID of the connected servo. If you select this item from disconnected state / connected state, it reconnects automatically.
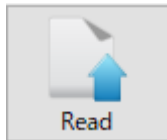From Ver.1.1.0.0, all the EEPROM data of the servo is now automatically read when communication with the servo is started with "Auto".
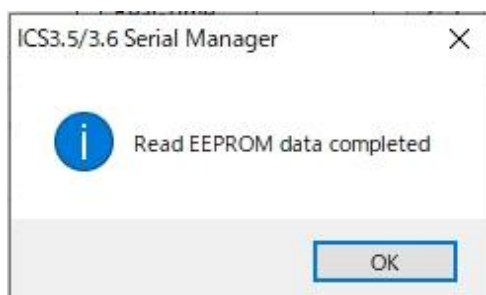
When the EEPROM data is successfully read, the dialog box shown on the left will be displayed.
Please close it with the OK button.
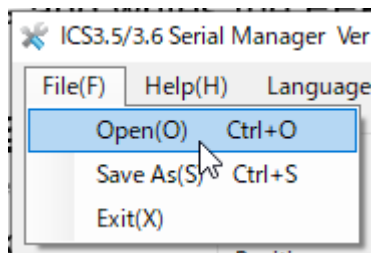
Read / Write

Read   Write

It reads and writes the EEPROM setting of the connected servo.

Initialization of servo

Set the servo to the initial value.

1. Click the "file" menu

2. Open the dialog by pressing "Open", so specify the folder of initial value data.

3. From the initial value file (extension: sdt) in the folder, specify the file with the same name as the servo you are using and click the "Open" button or double-click the file.

4. When the work so far is completed, the initial value data of the servo specified on the ICS 3.5 / 3.6 Manager will be expanded.

5. Pressing the "Write" button writes the setting data to the servo.

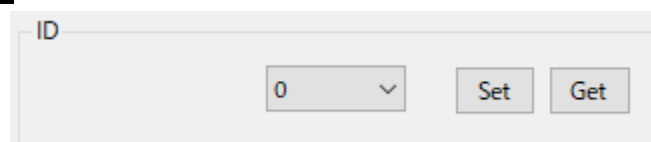6. When the "write successful" dialog is displayed, writing is completed.

Status display

COM1 is connected.   Command: A4 0   Read temperature vaule
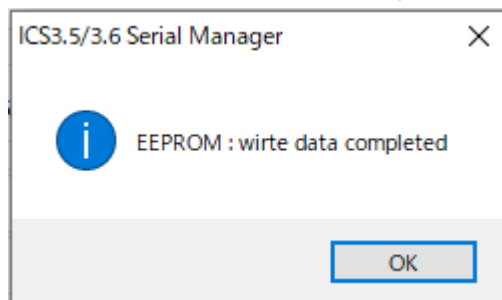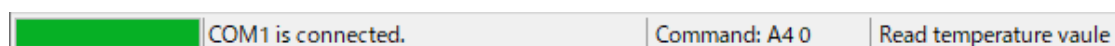
The description of the button and the current status are displayed.

ID

Change the setting of the ID number of the servo by the operation from the manager.
Select the number you want to rewrite from the menu and press the "Set" button to rewrite the ID (there is no need to press the "Write" button again).
When you press the "Get" button, the ID number of the current servo is displayed in the menu.

Position

The servo is operated in real time by operation from the manager. Move the slide bar to the left or right to move the servo. Press the "neutral" button to move the servo to the neutral position (center position). Pressing the "FREE" button loads the current angle of the servo.
* Be sure to connect a different power supply when operating the servo in real time.

Parameter range	Step
(Counter-clockwise) 3500 - 11500 (Clockwise)	10

	Parameter	Servo operation angle
Relationship between parameters and servo operation angle	3500	-135deg. (Counter-clockwise)
	7500	0 deg. (Neutral)
	11500	+135 deg. (Clockwise)
	Per step (10)	About 0.34 deg.

Real Time Change
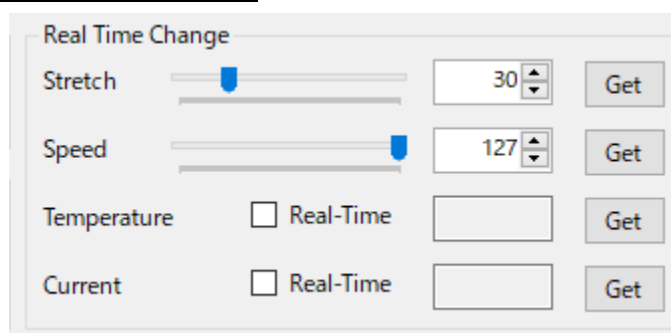
[Stretch] [Speed] Real time setting change of the servo
The servo setting is changed in real time by the operation from the manager.
※ This function is for operation confirmation. The parameters set here are not written to the servo. If press

"Load" after setting these parameters, the parameter of Real Time Change will be loaded, but if turn off the servo power, the servo returns to ROM data.

Parameter range (Stretch)
(Soft) 1 - 127 (Hard)

Parameter range (Speed)
(Slow) 1 - 127 (Fast)

[Temperature] [Current]

The temperature and current value of the servo are acquired in real time by operation from the manager. Check the "Real time" and press the "Get" button to acquire data continuously.

Parameter range (Temperature)
(High) 1 - 127 (Low)

Value	Temperature (Celsius)
30	100 deg.
47	90 deg.
60	80 deg.
75	70 deg.
87	60 deg.
95	50 deg.
116	25 deg.

Parameter range (Current)
Clockwise: (Low) 64 - 127 (High)
Counter-clockwise: (Low) 0 - 63 (High)

Clockwise		Counter-clockwise	
Value	Current	Value	Current

64	0A	0	0A
64	0.1A	1	0.1A
69	0.5A	5	0.5A
74	1.0A	10	1.0A
79	1.5A	15	1.5A
84	2.0A	20	2.0A

Configurations

Change the servo internal setting (EEPROM).

Baudrate (Communication speed): Sets the Baudrate between the servo and the board. (Initial value: 115200 bps)

Option Flags (Modes): Select to use "Reverse", "Serial", "Slave", "Rotation".

Stretch: Change retention characteristics of the servo.

Speed: Sets the maximum rotation speed of the servo. (If lower the speed, the servo's power also goes down)

Punch: Set the torque offset during servo operation**.**

Dead Band: Set the servo neutral band (dead zone).

Response: Sets the startup characteristic when the servo operates.

Damping: Set the stop characteristics of the servo.

Protection: Set the protection start time when the output shaft locks.

Limiter: Specify the maximum operating angle of the servomotor.

Temperature limit: Set the operating point of protection function due to temperature rise.

Current limit: Set the operating point of protection function due to overcurrent.

User offset: Set the user's arbitrary position offset.

Version: The version of the firmware is displayed.

The initial values of the following parameters depend on the servo. For details, refer to the servo's instruction manual.

Reading and Writing parameters

The data of EEPROM is operated by pushing "read" "write" button. These data can not be read and written individually. Be sure to read and write the servo data in software before writing.

To change the ID, change the setting from the "ID" column. If the ID of the servo and the ID of the software are different, communication will be an error.

From Ver.1.1.0.0, all the EEPROM data of the servo is now automatically read when communication with the servo is started with "Auto".

[Baudrate (Communication speed)]
Change the Baudrate of the servo. To change other settings after changing the Baudrate, change the software Baudrate according to the servo.

Parameter range (Baudrate)
1.25M / 625k / 115k bps

[Stretch]
Change retention characteristics of the servo.

Parameter range (Stretch)
(Soft) 1 - 127 (Hard)

Stretch (SET 1) (SET 2) (SET 3) is the value used in "Characteristic Change" of HeartToHeart3. This parameter range is the same as above.

[Speed]
Sets the maximum rotation speed of the servo. (If lower the speed, the servo's power also goes down)

Parameter range (Speed)
(Slow) 1 - 127 (Fast)

[Punch]
Set the torque offset during servo operation

Parameter range (Punch)
(Low) 0 – 10 (High)

[Dead Band]
Set the servo neutral band (dead zone).

Parameter range (Dead Band)
(Min) 0 – 10 (Max)

[Response]
Sets the startup characteristic when the servo operates.
The smaller the value, the smoother the initial motion.

Parameter range (Response)
(Slow) 1 - 5 (Fast)

[Damping]
Set the stop characteristics of the servo.
The smaller the value, the smoother the movement to stop.

Parameter range (Damping)
(Slow) 1 - 255 (Fast)

[Protection]
 Set the protection start time when the output shaft locks.
The "protection" is a protection function when the servo is locked. After startup, the servo's power is automatically reduced by 50%. Recovery is done automatically when the lock etc. is resolved. Protection is effective only when the servo speed parameter is set to 127.

	Servo locked →		Unlock →	
	Design time has passed	Power down		Power return
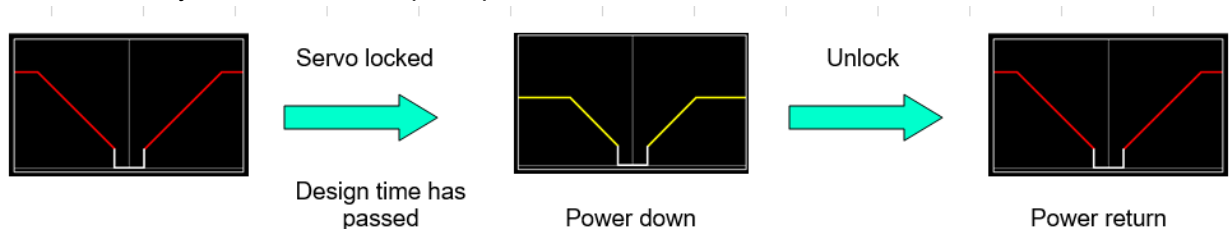
Parameter range (Offset)	Time per parameter 1
(Short) 10 - 255 (Long)	About 0.1 sec.

[Lomiter]
Specify the maximum operating angle of the servomotor.

	Parameter range (Limiter)	Initial value
Limiter (Clockwise)	(Min) 8000 - 11500 (Max)	11500 (Max)
Limiter (Counter-clockwise)	(Min) 3500 - 7500 (Max)	3500 (Min)

[Temperature limit]
Set the operating point of protection function due to temperature rise
If a sensor mounted on the board of the servo outputs a value higher than the set temperature, the servo torque become free. If it exceeds the threshold value it returns.

Parameter range (Temperature)
(High) 1- 127 (Low)

Temperature (Celsius)	Setting value
100 deg.	30
90 deg.	47
80 deg.	60
70 deg.	75
60 deg.	87

[Current limit]

Set the operating point of protection function due to overcurrent.
When the sensor mounted on the board of the servo detects a current higher than the set value, the servo torque become free. If it goes below the threshold it will restore.

Parameter range (Current)
(Low) 0 - 63 (High)

Current	Setting value
0A	0
0.1A	1
0.5A	5
1.0A	10
1.5A	15
2.0A	20

[User offset]

Set the user's arbitrary position offset.

Parameter range (User offset)
(Counter-clockwise) -127 - 127 (Clockwise)

[Option Flags (Modes)]

Reverse

Reverses the direction of servo rotation relative to the signal.

Serial

When checked, it becomes serial control, and when it is removed, serial control and PWM control are switched by signal H / L at power-on.

Slave

Set this when the servo does not let the board reply. This setting prevents communication interference when the 2 joint servo is used for robot with same ID.

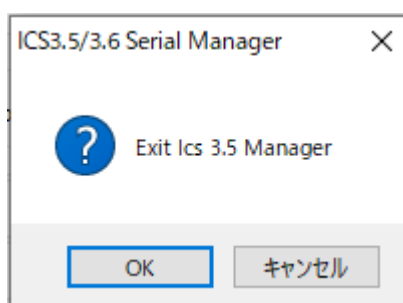**Rotation**

Set the axis of the servo to rotate like a wheel.

About Prohibited Operation

If the following message is displayed, please check whether multiple devices are connected or not compatible devices are connected.
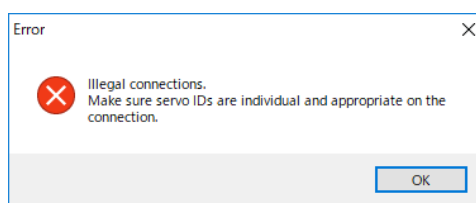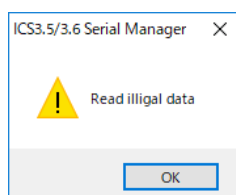
Quit the software

When you select File> Exit, the message below will be displayed. Please press "OK" to exit, or "Cancel" to cancel.