RoboticGripperSetup
Quick Start Manual
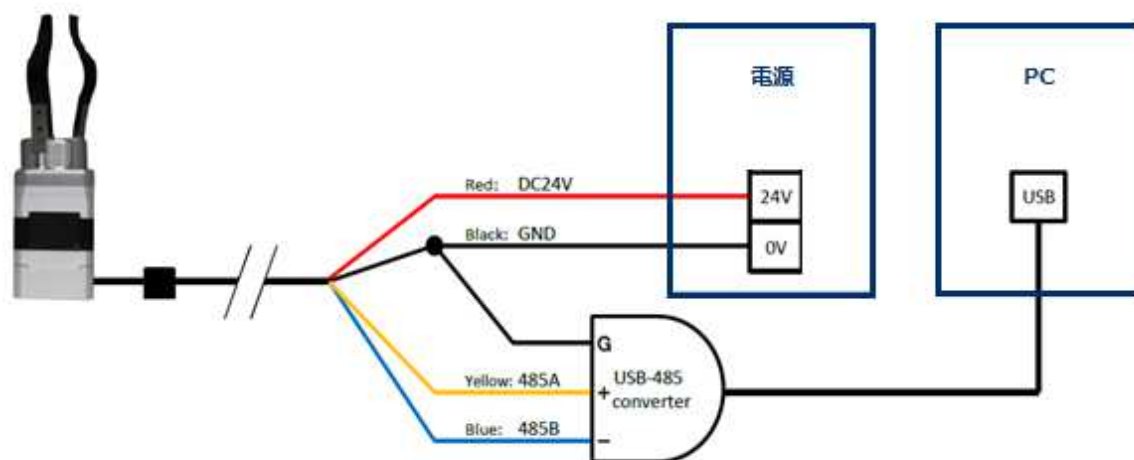
Model name: ARH305/350

Rev. **01.00**

1. Connecting to a PC

1.1. Connection for setting gripper parameters by communication


1. Prepare a PC/power supply (Voltage: 24 V, Current: 1 A or More)/USB-RS 485 converter.
2. Connect the gripper main unit cable and the standard cable.
3. Connect the red (24 V) and black (GND) wires of the standard cable to +, - of the power supply.
4. The black wire of the standard cable is branched and connected to the GND terminal of the USB-RS 485 converter.
5. Connect the yellow and blue wires of the standard cable to the + and - terminals of the USB-RS 485 converter.
6. Connect the USB-RS 485 converter to your PC.
7. Turn on the power and check that the pilot lamp is the green. The gripper starts initializing when the power is turned on. (Initialize operation: fully closed – fully open operation)
8. Use this software to perform communication after initialization is completed.

⚠ ・**Do not insert or remove the gripper main body cable while the power is on.**
It may cause fatal damage to the target.
・**Wrong wiring may cause fatal damage to the gripper.**
・**Verify that the USB -RS485 converter is detected on the PC.**
・**The fully closed and fully opened positions are determined by the initializing operation. If there is an obstacle in the motion path, the motion range may be changed to an unintended one.**

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2. Starting the software

1. Unzip RoboticGripperSetup.zip.

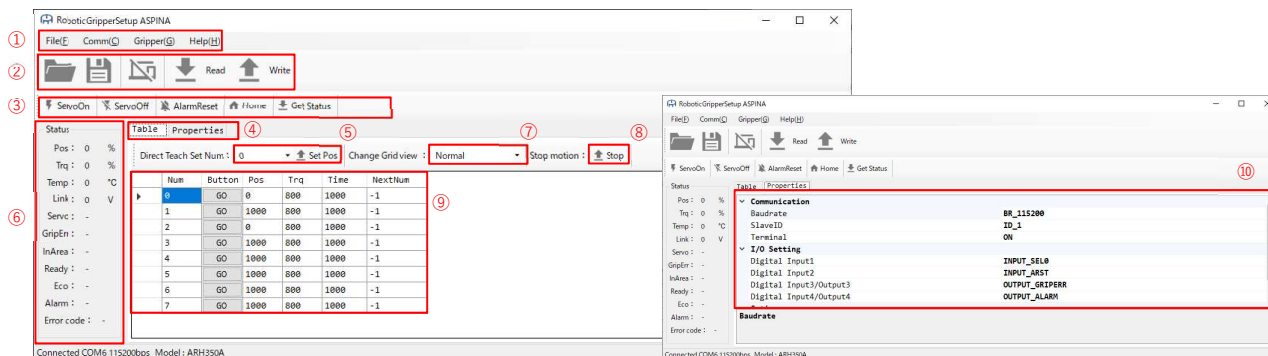2. Double-click "AspinaRoboticGripperSetup.exe" in the extracted folder.
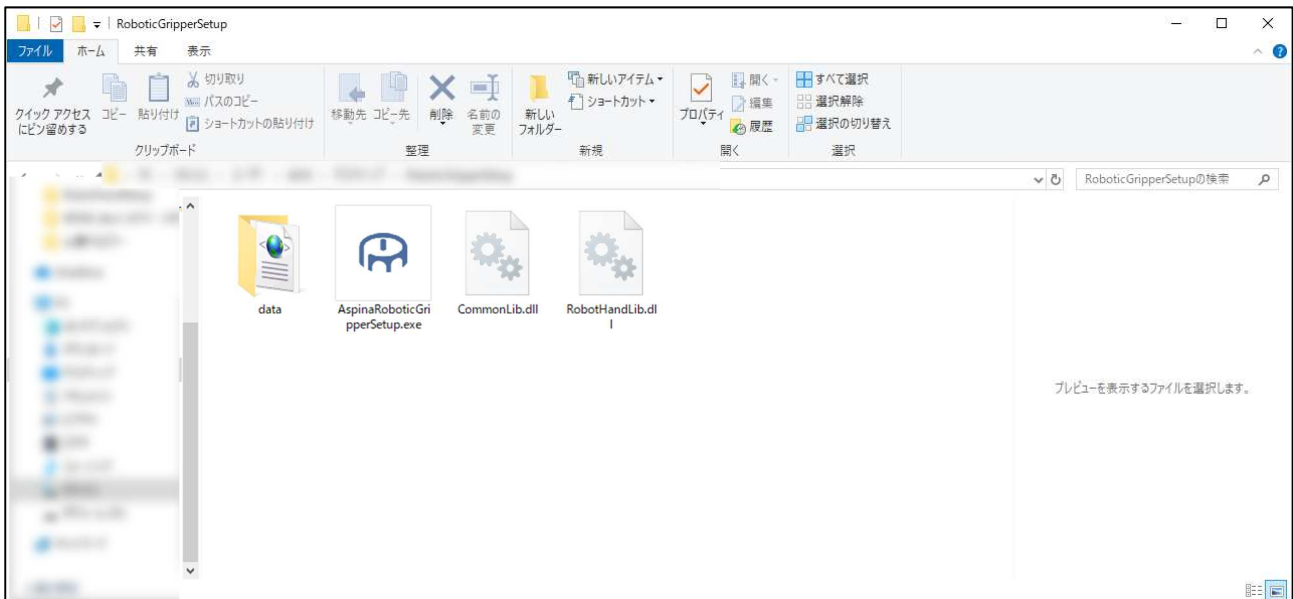
3. The device manager window appears.

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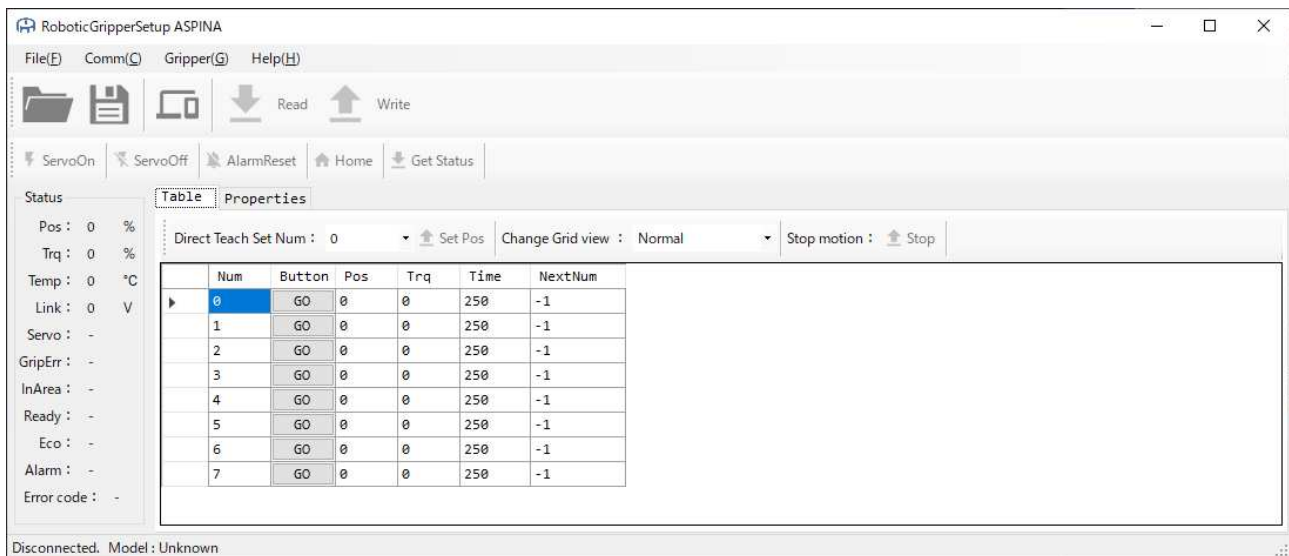
3. RobotGripperSetup screen description

3.1. Explain the bars, buttons, and tabs on the screen.

① - ⑤:

① Menu bar

File	Performs the file and form operations.
Comm	Perform the communication settings.
Gripper	Reset the gripper parameters, checks the model.
Help	Displays the version information.

② Menu button

📁	Opens the file.
💾	Saves the file.
🖥	Connects or disconnects the communication.
Read	Read the gripper parameter values.
Write	Write the parameter values to the gripper.

③ Command button

ServoOn	Servo on the gripper.
ServoOff	Servo off the gripper.
AlarmReset	Resets the alarm.
Home	Performs the home return operation.
Get Status	Updates the status of the gripper.

④ Tab

Table	Set parameters related to gripper movement. Use the GO buttons to perform single and continuous operations.
Properties	Set parameters for the communication and input/output signals.

⑤ direct teach button

Direct Teach	Sets the Pos value in the status window to the specified number.

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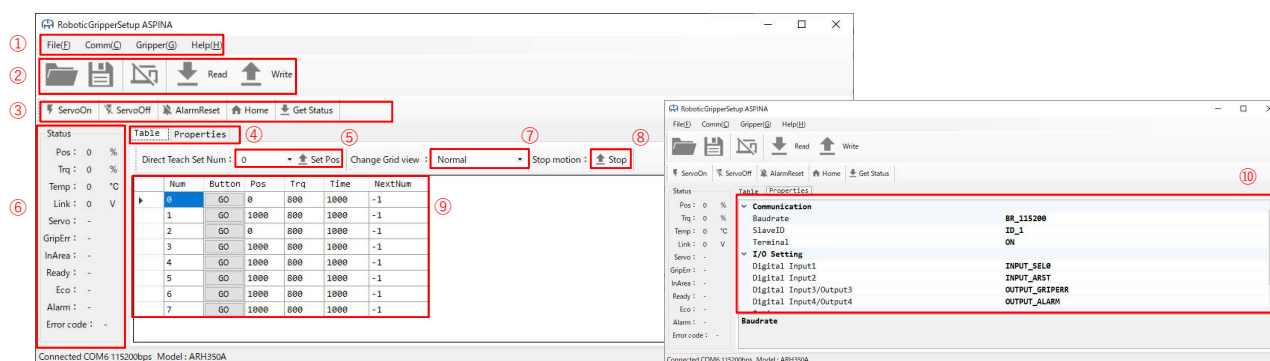
⑥ - (9):

⑥ Status window

Pos	Displays the current position.
Trq	Displays the current torque.
Temp	Displays the internal temperature.
Link	Displays the internal voltage.
Servo	Indicates whether power is supplied or not.
GripErr	Displays gripping errors.
InArea	Displays area output.
Ready	Displays the operation/standby status.
Eco	Displays whether power saving is enabled or disabled.
Alarm	Displays the alarms.
Error code	Displays the alarm number for the alarm.

⑦ Toggle Grid Display

Normal	Displays only Pos, Trq, Time items.
Advance	Display all items.

⑧ continuous operation stop

Stop button	Stops the continuous operation.

⑨ Table Parameters

various parameters	Change the values such as Pos, Trq, and Time.
GO buttons	Performs the operation of the specified number.

⑩ Property Parameters

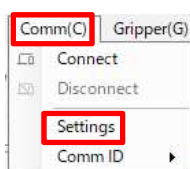| Communication	Set the baud rate, slave ID, and termination.
I/O Setting	Set Inputs 1 and 2, Inputs 3 and Inputs 4.
Option	Sets the power saving grip.

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4. Communication connection/disconnection with the gripper
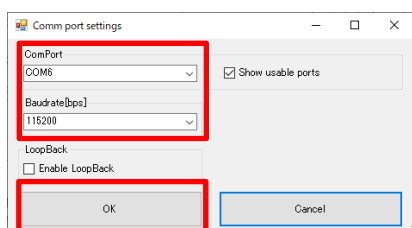
4.1. Communication connection

1. Run this software and open the window.
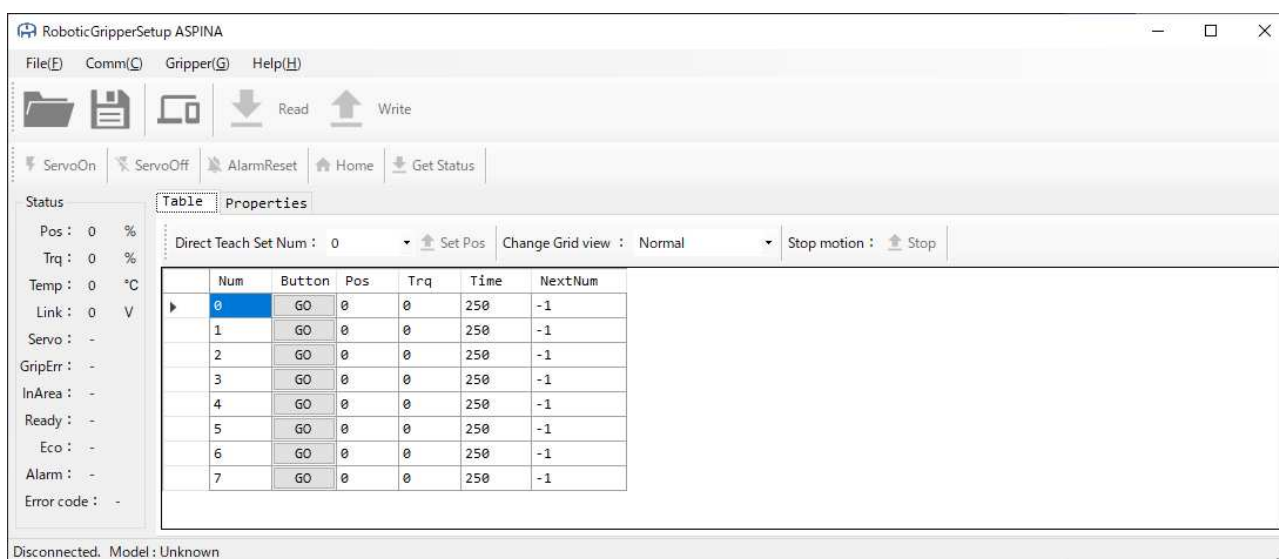
2. Click Comm in the menu bar and select Settings.

3. The Comm port settings window appears. Select the connected device on the Com Port. (Attached devices can be seen in the device manager), change baudrate to gripper settings. Press OK to close the window. (Factory default: Baudrate 115200 [bps])


4. Click Comm on the menu bar, and then click Comm ID. Select the slave ID of the gripper that communicates with the PC. (Gripperslave ID Factory default: ID1)

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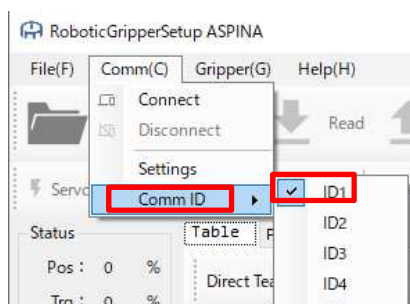
5.   Click Comm's Connect or the Connect button in the icon menu to connect.

6.   The display switches, and the connection is completed by checking the retrieval of the parameter values in the Table. (Retrieving parameter values at connection time. Click the Read button to read parameters when not connected)
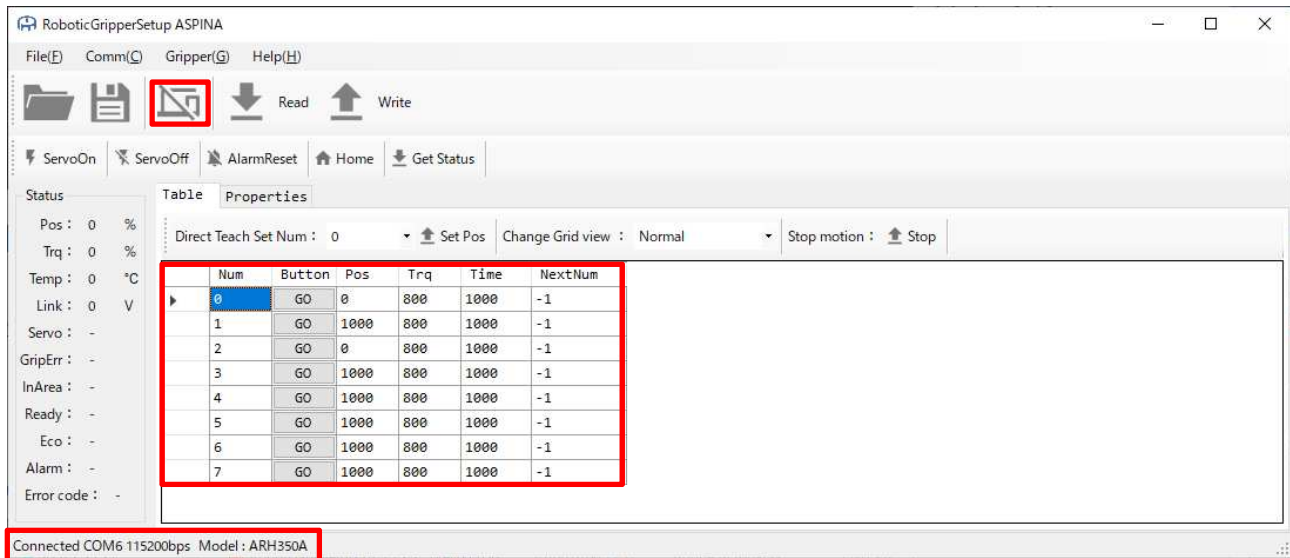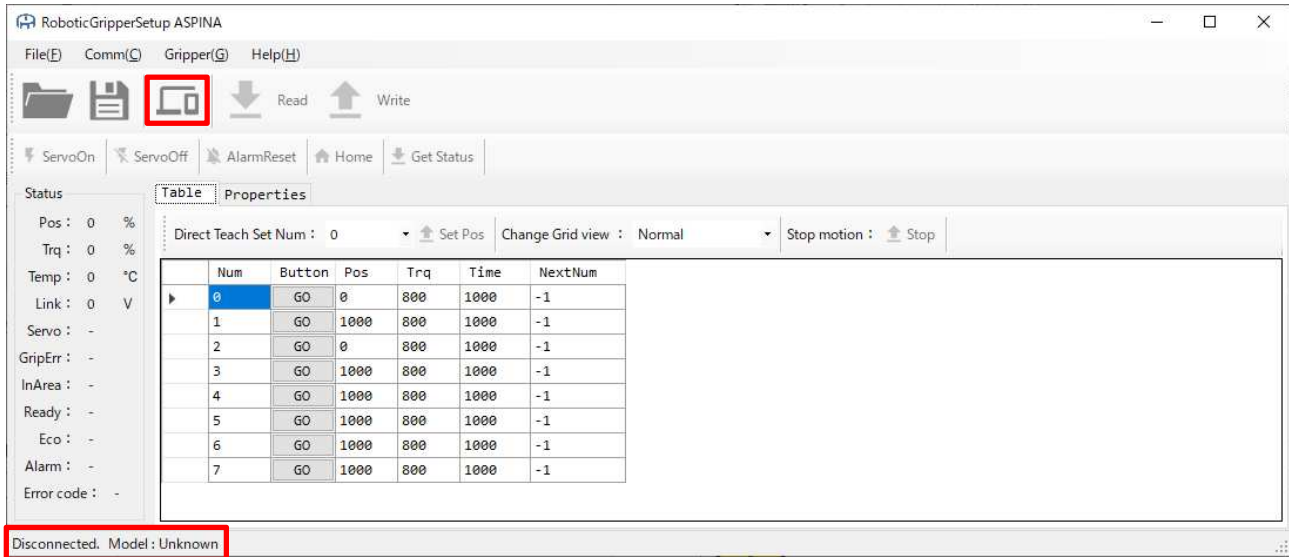

  · **If communication fails, check the connection or communication settings.**
· **Do not connect or disconnect the USB during communication.**

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4.2. Communication disconnection

1. Click Comm's disconnect or the Connect button in the icon menu to disconnect.
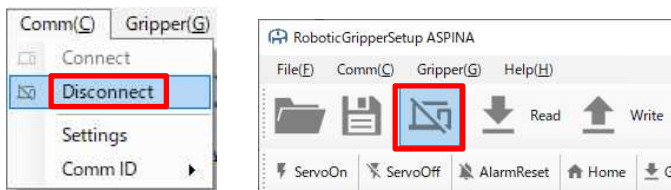
2. Confirm that the communication is disconnected and the display is switched.

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5. Basic movement of the gripper

1. Click the GO button with Num = 1.
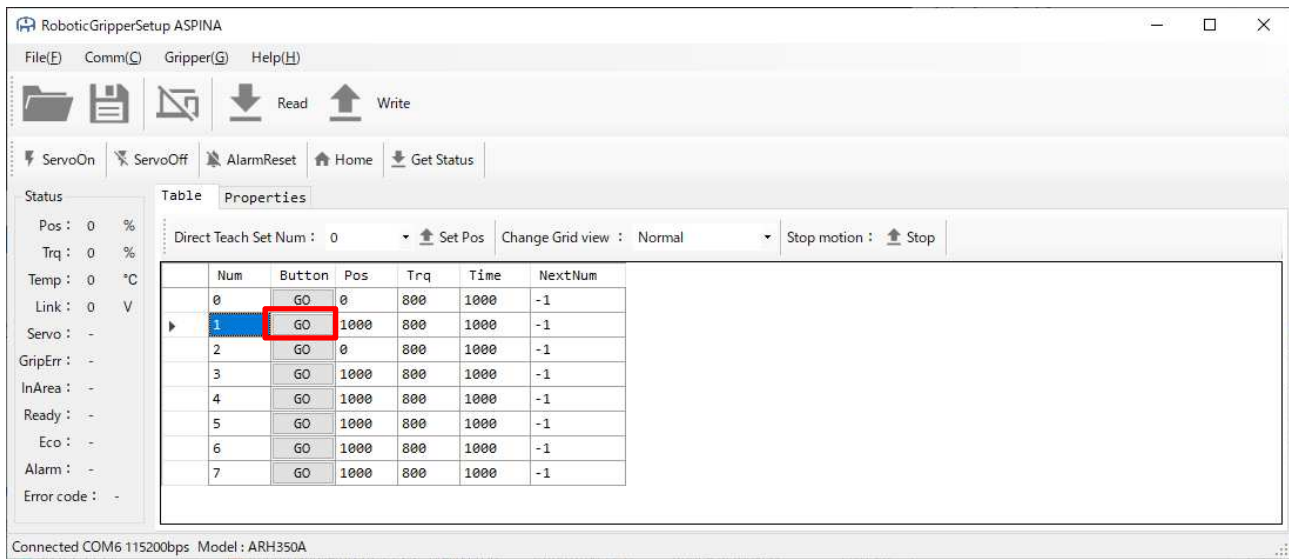
2. The gripper moves from fully open (Pos = 0%) to fully closed (Pos = 100.0%).

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6. Changing gripper table parameters

1. Rewrite the following values for Pos (target position), Trq (torque), and Time (time) with Num = 1. (Target position in 0.1% increments (e.g. 100% → 1000), torque in 0.5% increments (e.g. 99.5% → 995), time in ms (1000 ms → 1 sec))
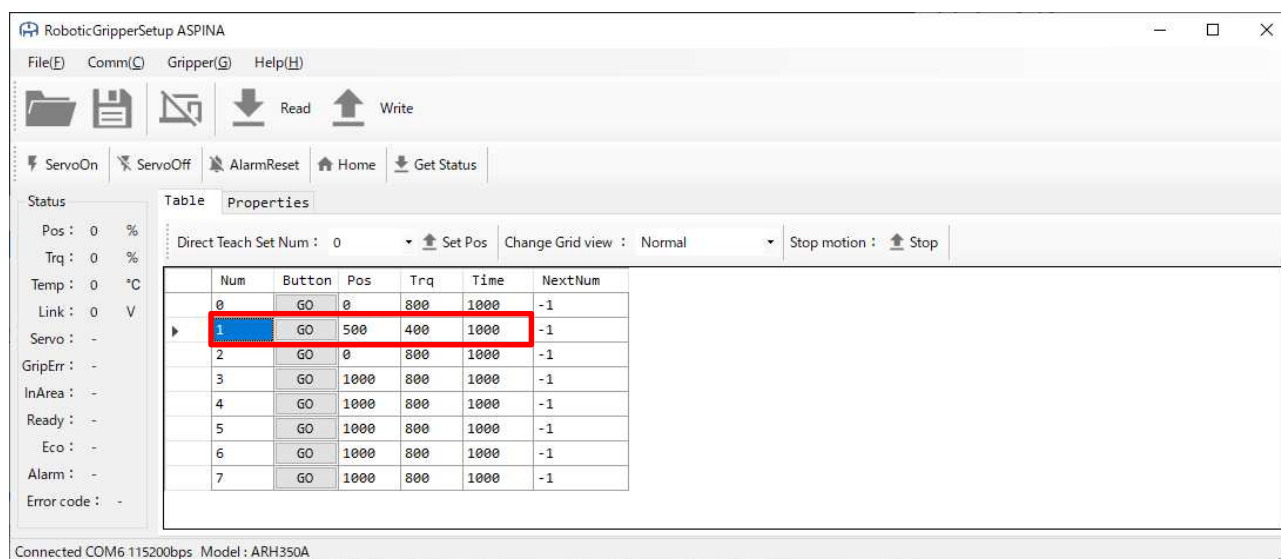
   Pos = 500 (50%), Trq = 400 (40%), Time = 1000 ms
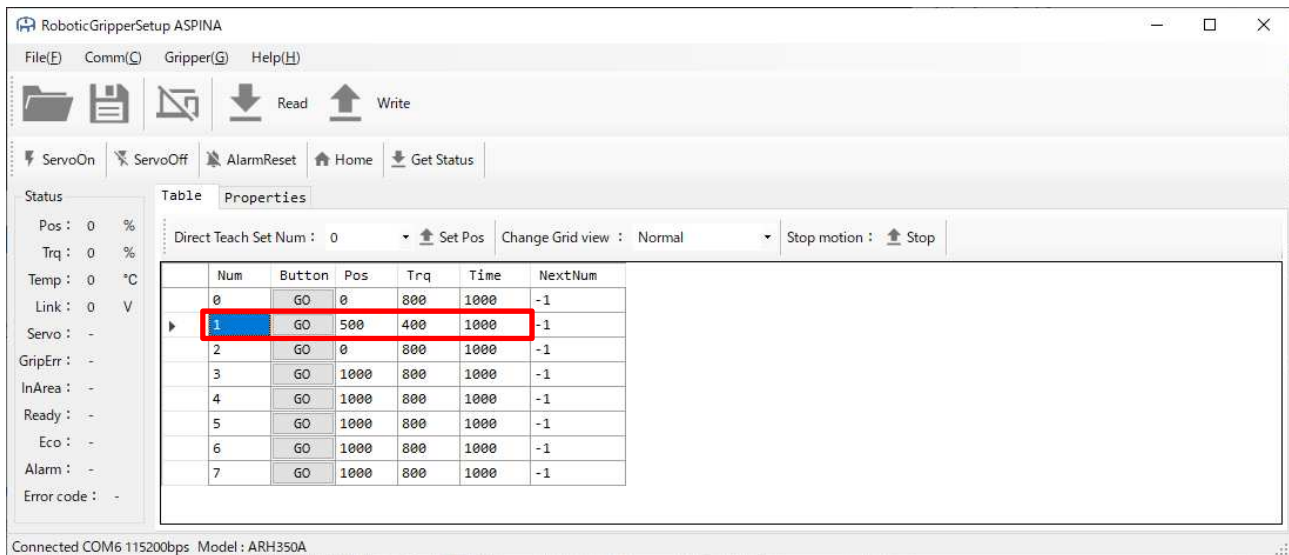
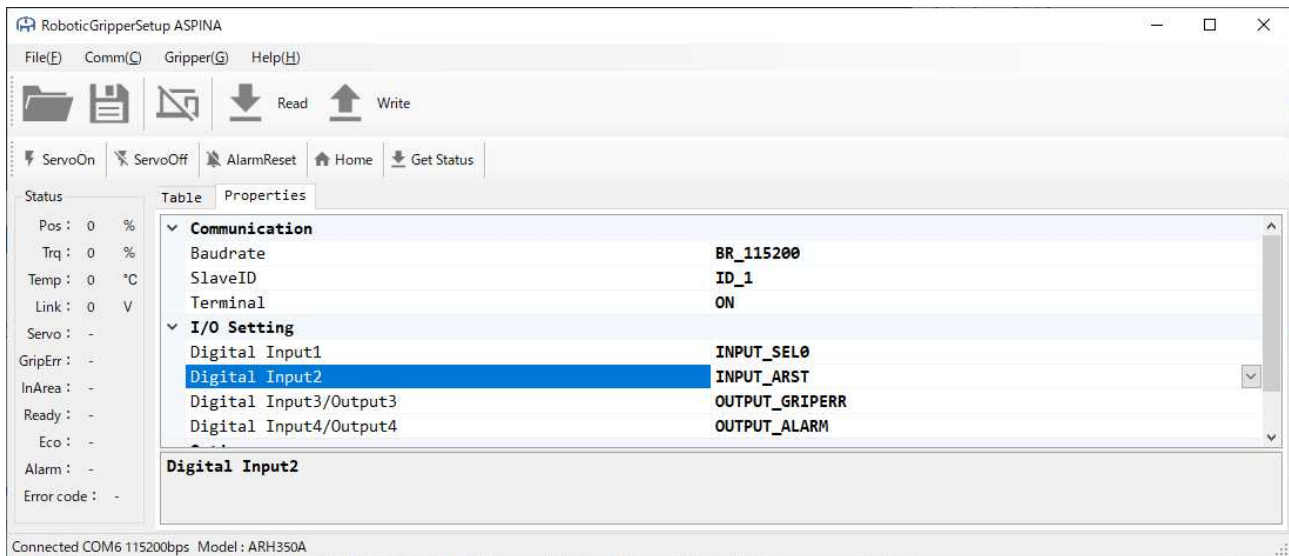2. Click the Write button to write parameters to the gripper.

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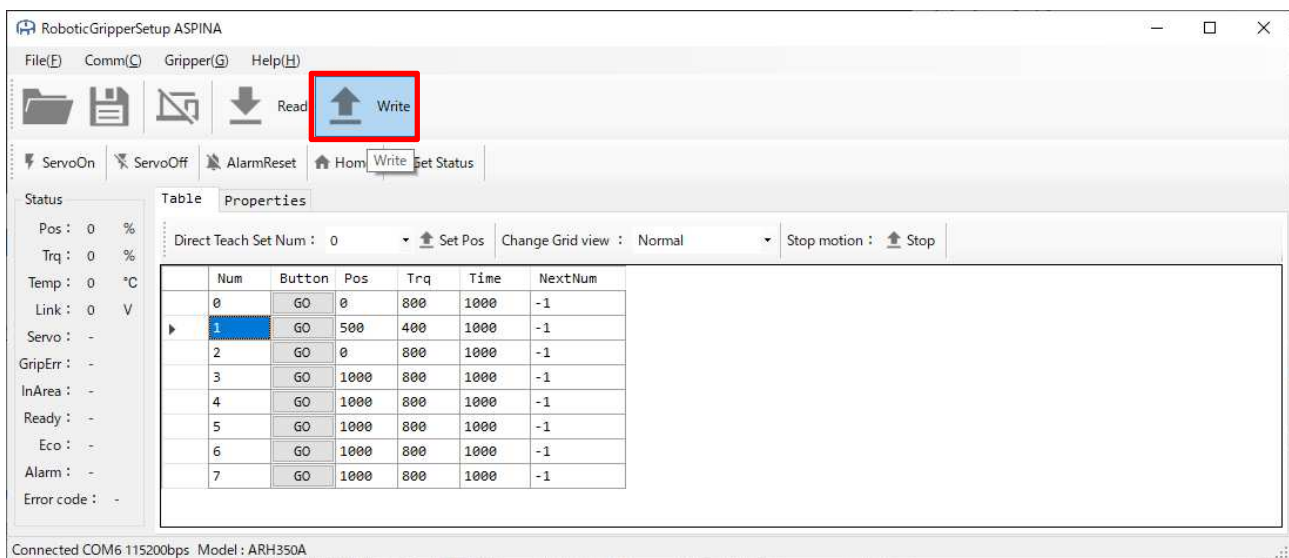
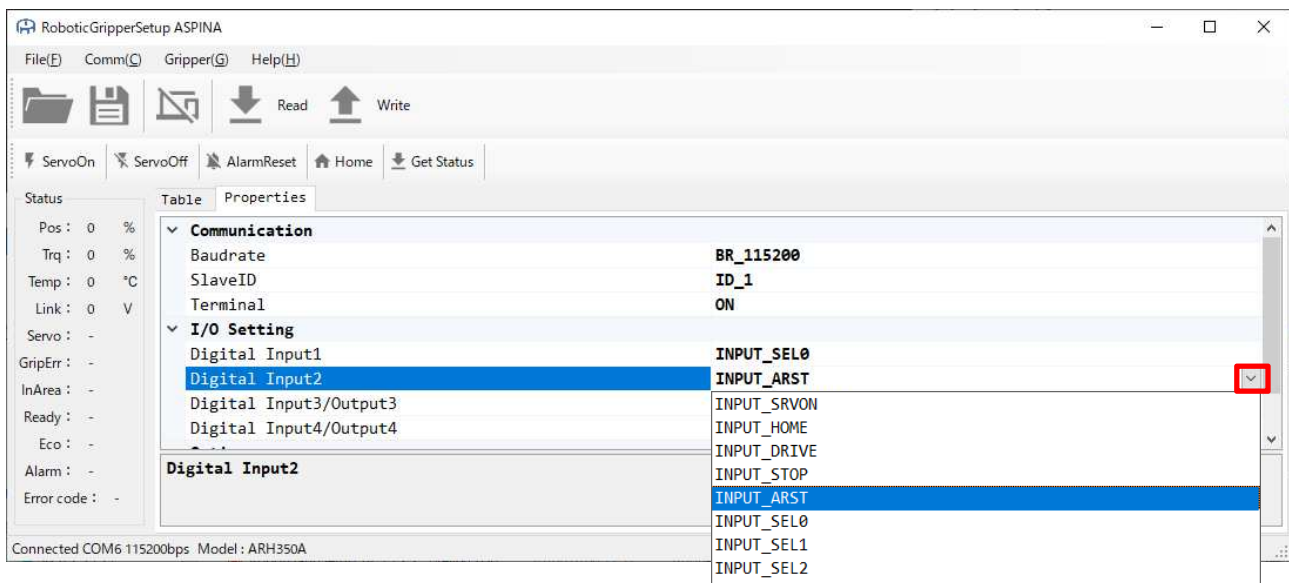3. Turn on the power of the gripper again to reflect the setting.

- ・ Turn on the power of the gripper again to reflect the setting.
- ・When rewriting a parameter, the user must click Enter or another cell to complete the value change.
- ・If the user enter a value that exceeds the upper or lower limit of the parameter, it will be rewritten to the upper or lower limit.
- ・The step size and upper and lower limit values vary depending on the parameter. Ckeck the parameters for details.

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7. Changing the gripper properties

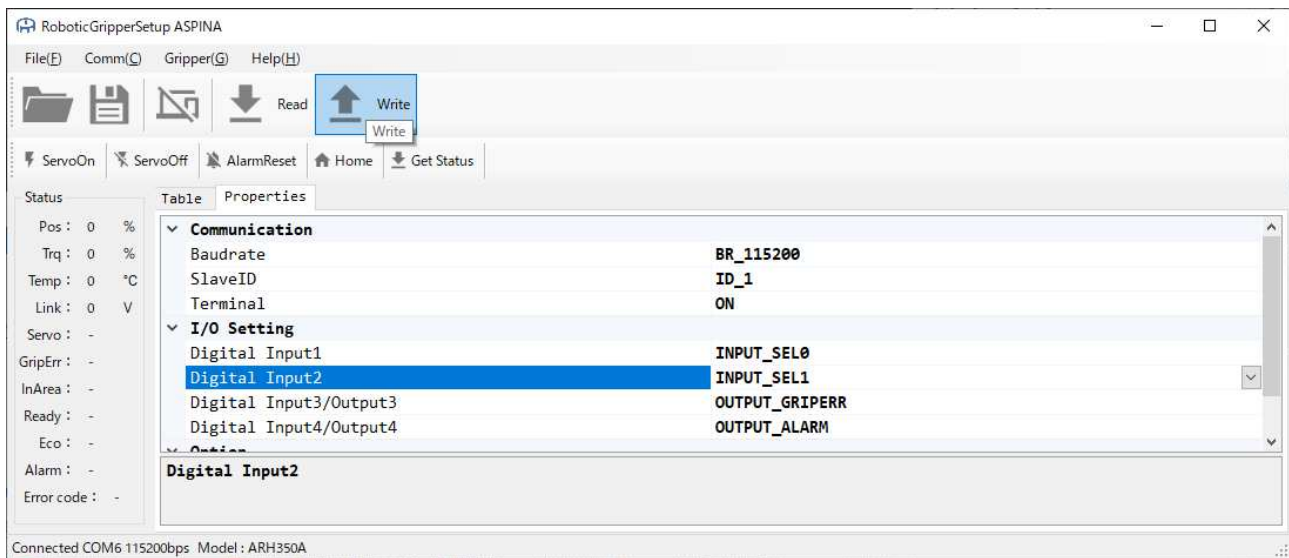1. Switch the tab from Table to Properties.

2. Click the arrow for Digital Input 2 : INPUT_ARST in the I/O Setting to display the drop-down list.
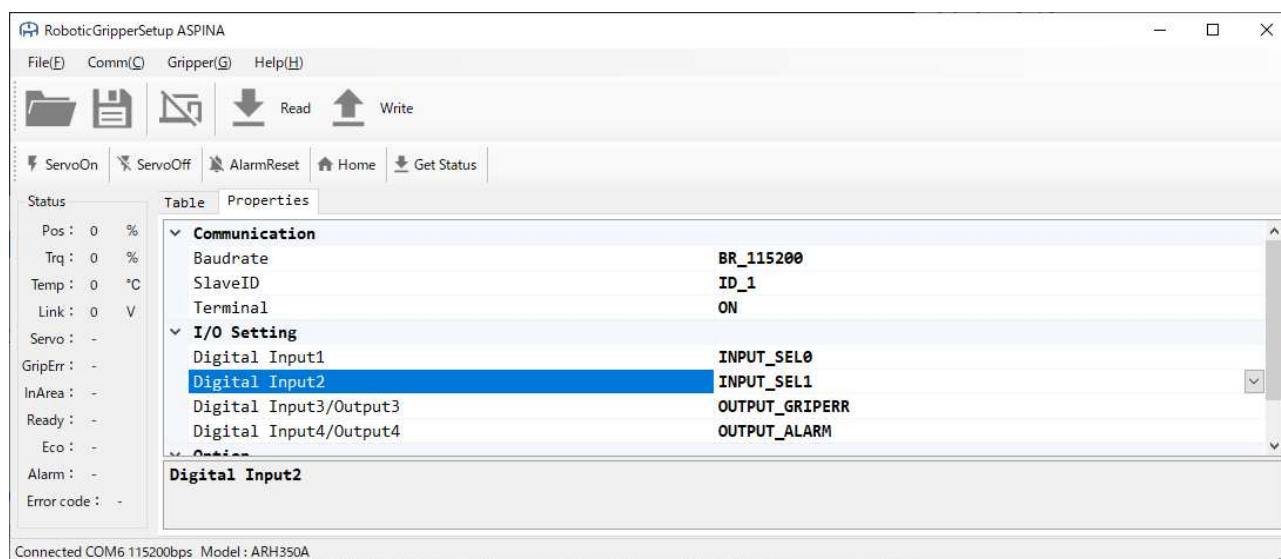
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3. Click INPUT_SEL1 from the drop-down list. Click to switch to INPUT_ARST → INPUT_SEL1 and display a warning about the change. Click OK.

4. Click the Write button to write parameters to the gripper.

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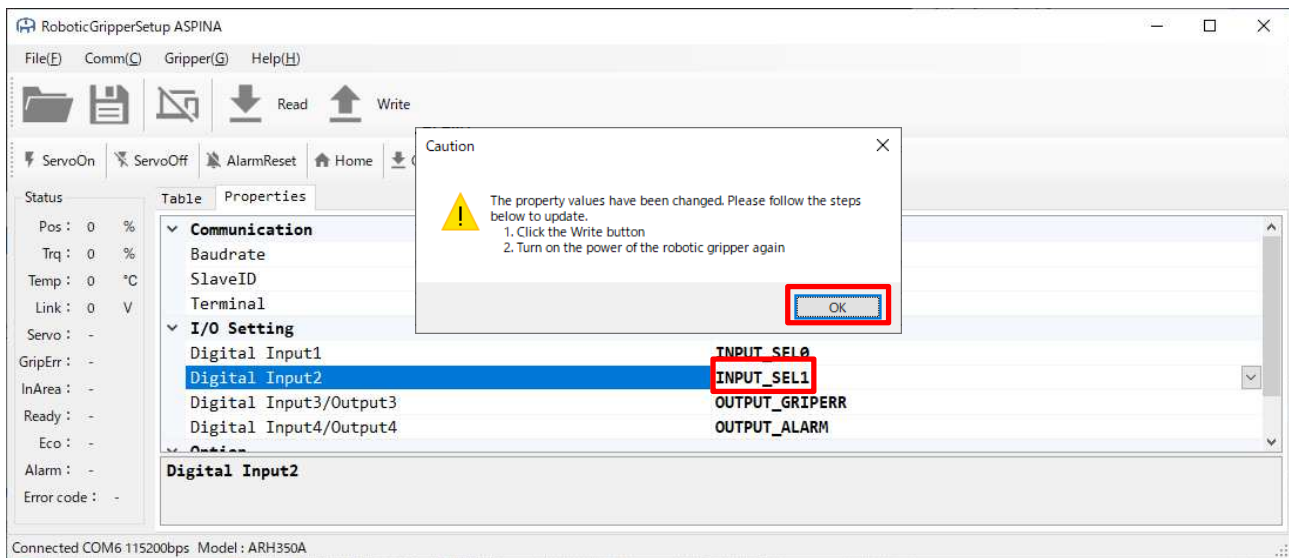
5. Turn on the power of the gripper again to reflect the setting. Check that the values are reflected.

・Duplicate I/O signals are not allowed in the I/O setting. In case of duplication, the Write button is disabled.

・When changing the Baudrate/Slave ID of the gripper in Communication, also change the Slave ID setting of the host PC. The communication will fails.

・When I/O port is switched, input is converted to output and 24 V is output. C Be careful when switching.

・For details on the properties, refer to the ARH Series Instruction Manual.

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8.   Get gripper status

1.   Click the command button Get Status.
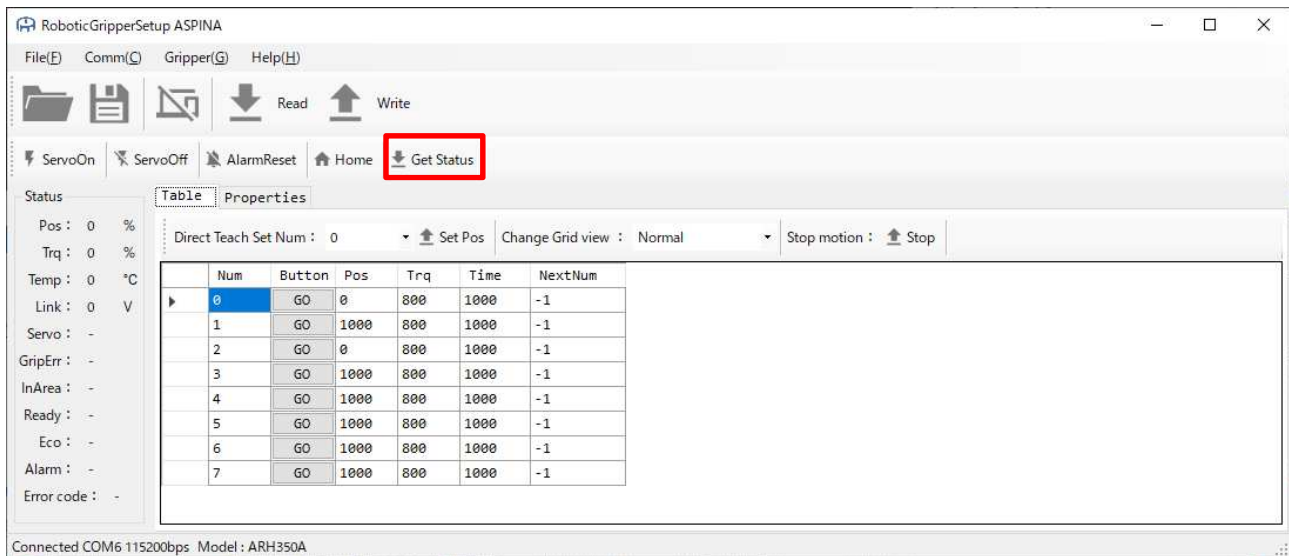
2.   The status is updated to show the gripper status.
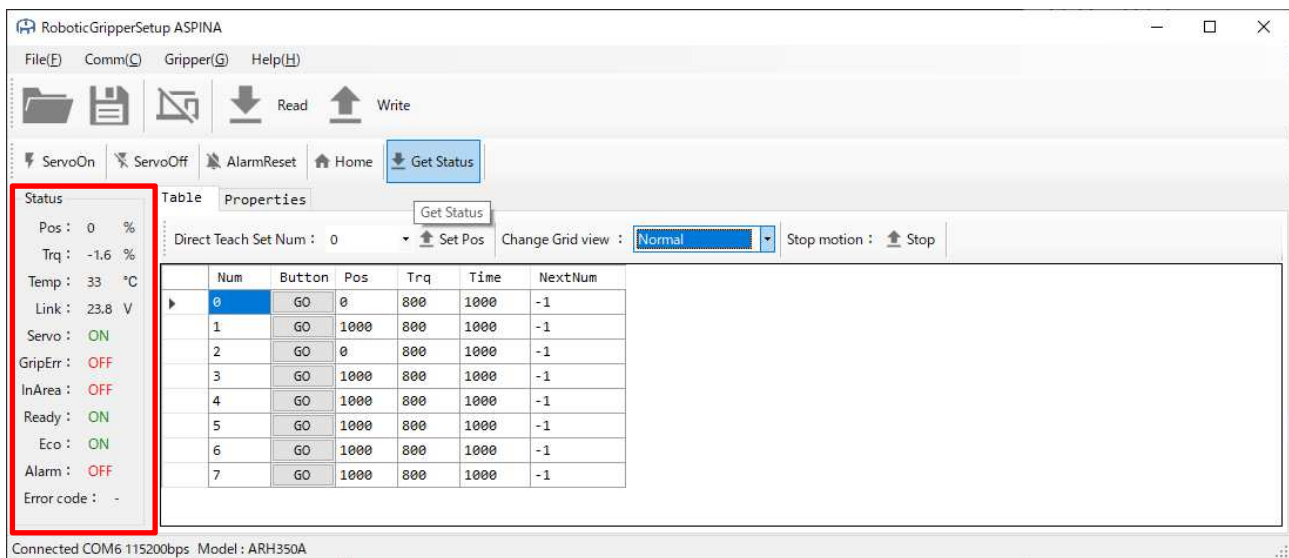
⚠️ **・The Get Status button gets the current value. It cannot be acquired at all times.**

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9. Modifying the grid view

1. The user can switch between standard and advanced settings by changing the Change Grid view at the top of the table parameters. Please select from the drop-down list. (See Chapter 16 for more information on parameters.)
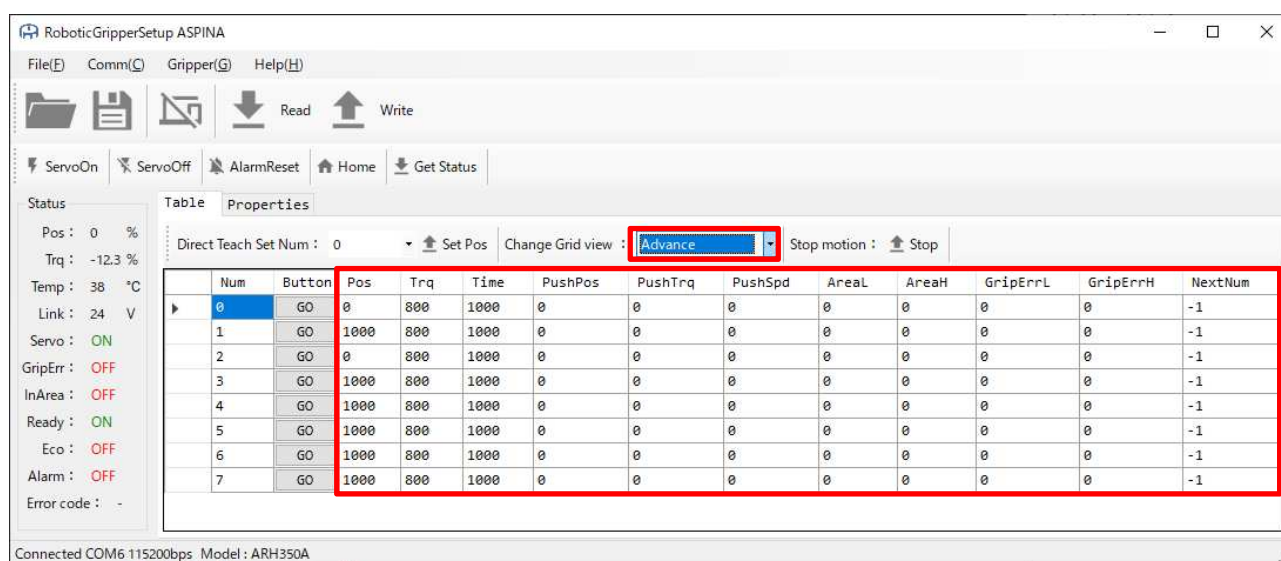
・Normal (default)

Pos (target position), Trq (torque), Time (time), NextNum (next operation number)
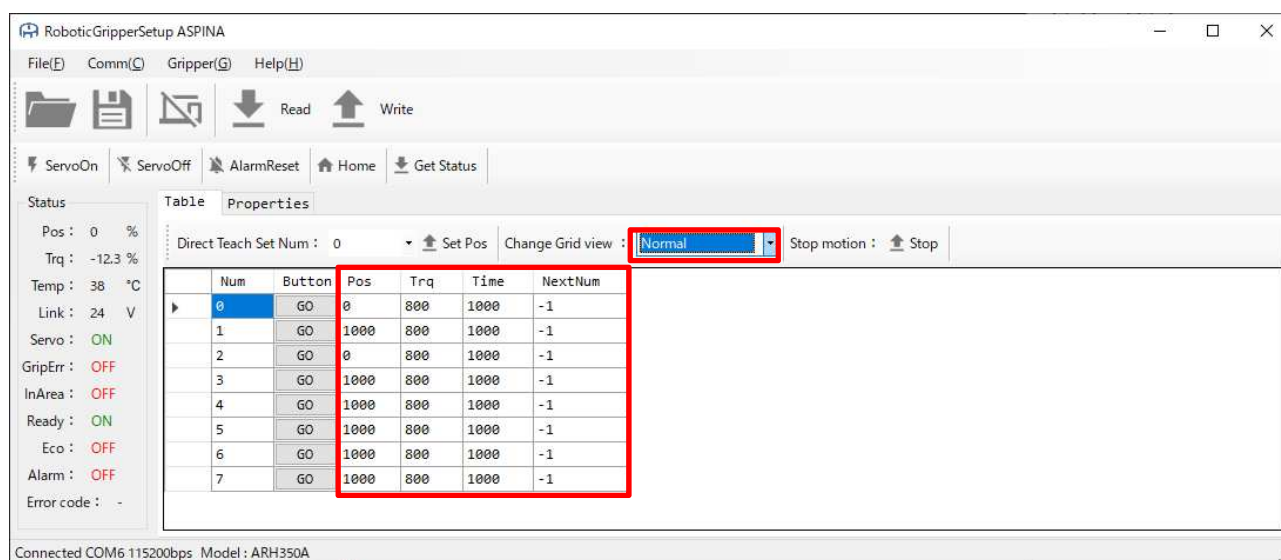
・Advance (Advanced)

Pos (Target Position), Trq (Torque), Time (Time), PushPos/PushTrq/PushSpd (Push Operation Setting), AreaL/AreaH (area range setting), GripErrL/GripErrH (grip error range setting), NextNum (next operation number)

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・When the GO button is clicked while the Change Grid view is Normal, all parameters except Pos, Trq, and Time are set to 0. The parameters other than Pos, Trq, and Time are set to 0. When setting parameters other than the above, switch the Change Grid view to Advance and click the Read button.

・The unit, step size, and upper and lower limit values are different depending on the parameter. See Chapter 16 for details on the parameters.

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10. Advanced features

10.1. Push-in operation ⋯ two steps of operation can be performed at one time.

10.1.1. Push-in operation in the closing direction

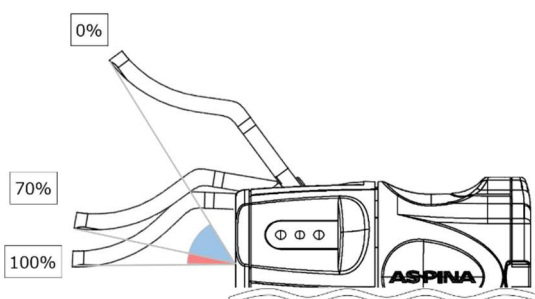1. Set Num = 1 as follows :

   Settings:

       Normal operation parameters : Pos = 700 (70%), Trq = 800 (80%), Time = 1000 ms

       Push operation parameters : PushPos (Push amount) = 300 (30%), PushTrq (Push Torque) = 400

                                       (40%), PushSpd (Push Speed) = 100 (10%)

2. When the gripper is in the fully open position (0%), press the GO button with Num = 1 and make sure that it behaves as shown in the operation image.

・Close-direction operation Image (Normal operation : blue, Push operation : red)

・**When either PushPos, PushTrq, or PushSpd is set to 0%, push-in operation is disabled and normal operation is performed.**

・**If Pos + PushPos > 100%, the values above 100% are ignored by the gripper.**

・**If the user write in Change Grid view : Normal, the set value will be cleared.**

10.1.2. Push-in operation in the open direction

1. Set Num = 1 as follows :

   Settings:

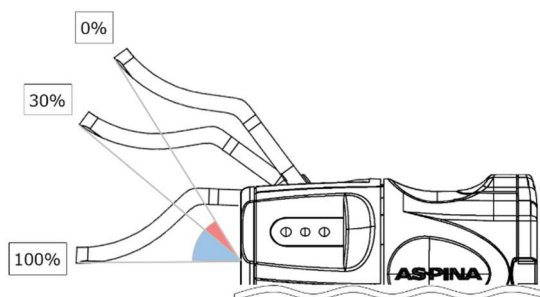   Normal operation parameters : Pos = 300 (30%), Trq = 800 (80%), Time = 1000 ms

   Push Operation Parameters : PushPos = -300 (-30%) (Push amount), PushTrq (Push Torque) = 400
   (40%), PushSpd (Push Speed) = 100 (10%)

2. When the gripper is in the fully closed position (100%), click the GO button with Num = 1 and make
   sure that it behaves as shown in the action image.

· Open-direction operation image (Normal operation : blue, Push operation : red)

⚠️ · **When either PushPos, PushTrq, or PushSpd is set to 0%, push-in operation is disabled and normal operation is performed.**
· **If Pos + PushPos < 0%, values below 0% are ignored by the gripper.**
· **If the user write in Change Grid view : Normal, the set value will be cleared.**

10.2. Grip error … success or failure of gripping the workpiece can be output by position setting.
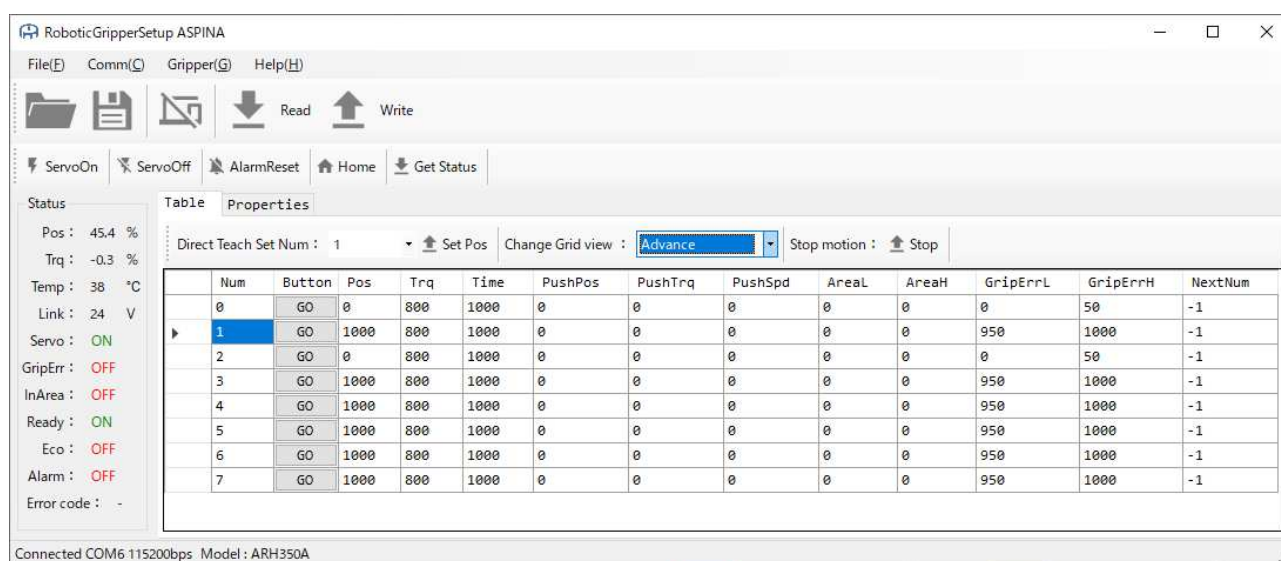
1. Change the Change Grid view to Advance and start communicating with the gripper.
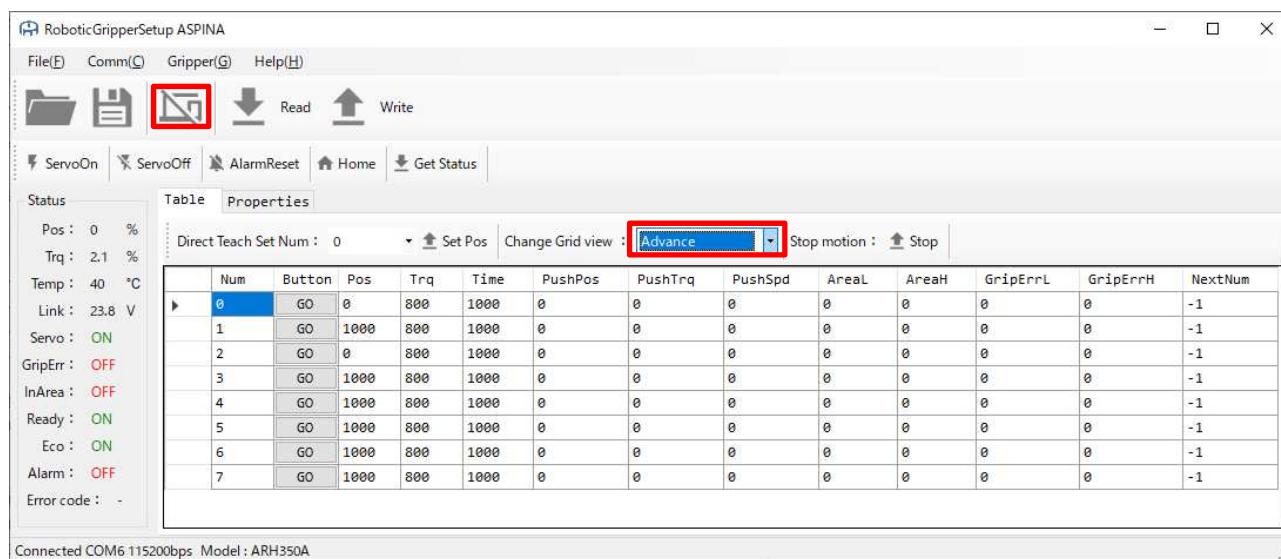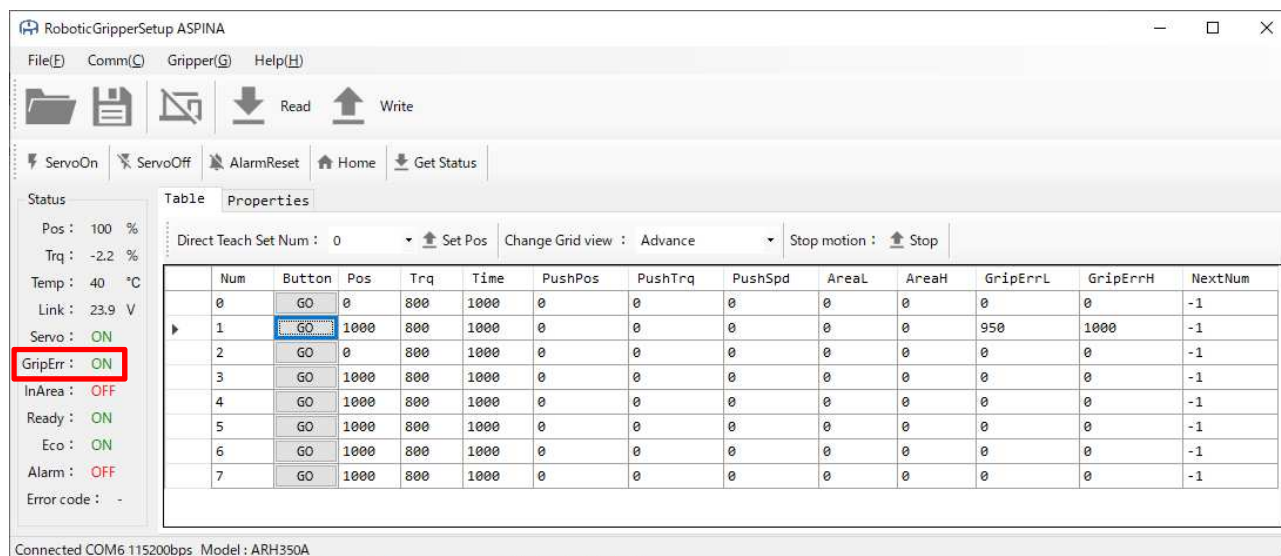

2. Set Num = 1 as follows:

Settings:

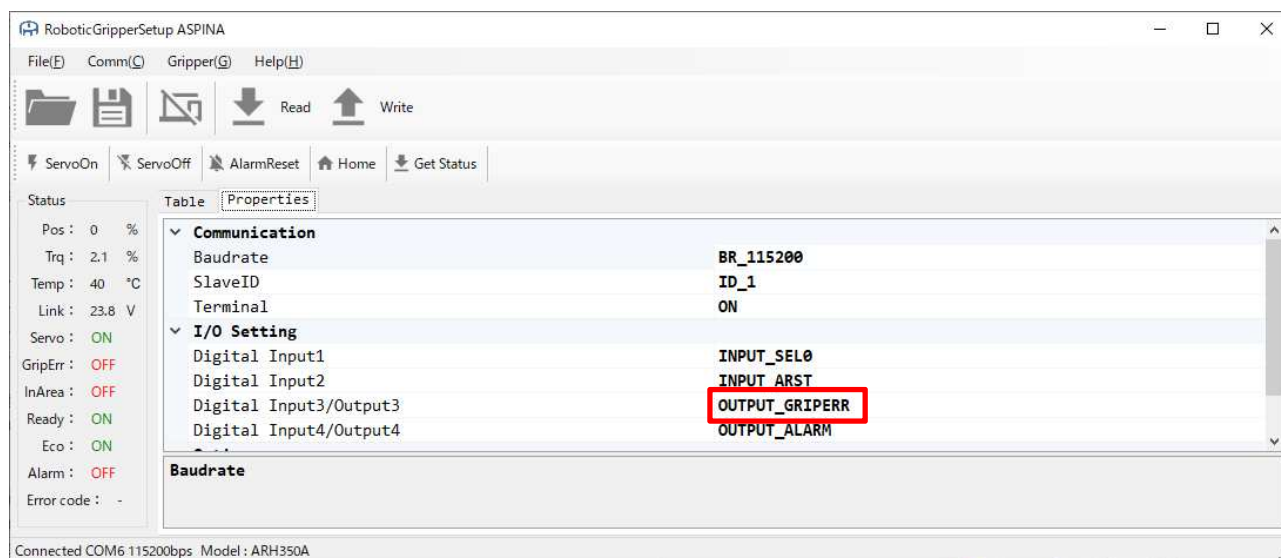Parameters GripErrL = 950 (95%), GripErrH = 1000 (100%)

3. Operate by pressing the GO button with Num = 1 at the fully open position (0%) of the gripper.
   Press the Get Status button to change Status to GripErr = ON.

Note:

The user can assign them as grip error outputs to Digital Input3/Output3 or Input4/Output4 of the properties tab.

Area output can also be set like grip error output.

⚠ ・**Set the gripper error with the condition GripErrL < GripErrH. Gripper Alarms Output.**
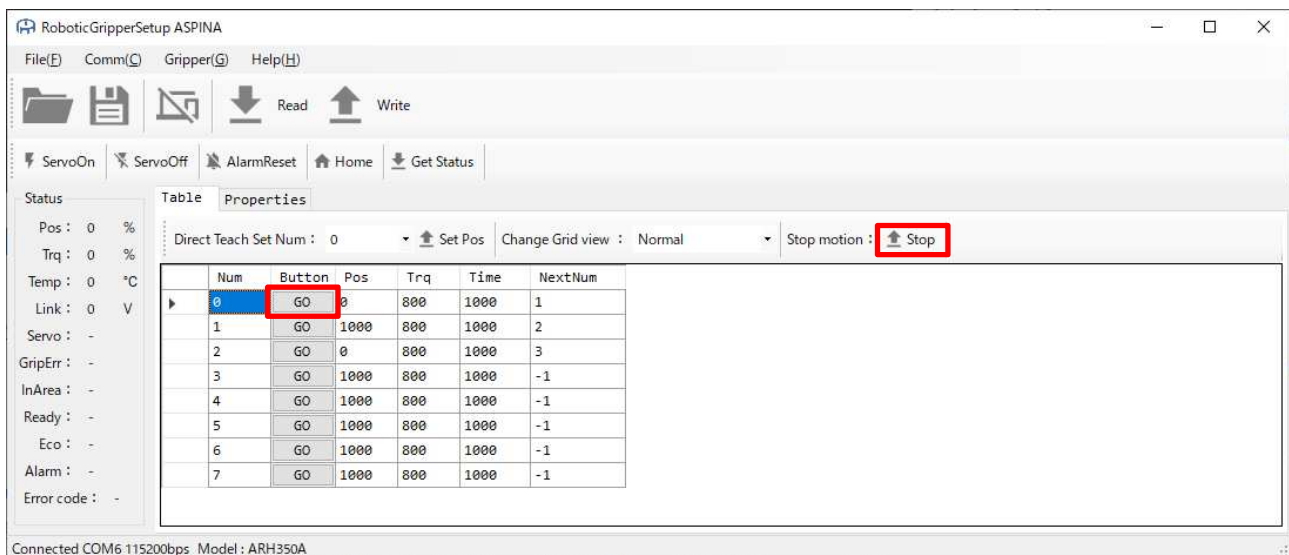
10.3. Continuous operation method

1. Continuous operation can be performed using this software.

   NextNum = -1 : Stop after operation

   NextNum = 0 ~ 7 : execute the number given after the operation

2. Rewrite NextNum as shown below. Then, Click the GO button to execute,

   Num = 0 → Num = 1 → Num = 2 → Num = 3 → Stop.

   (the user can stop the action with the Stop button.)

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Note : by setting NextNum = 0 with Num = 3, the previous operation can be repeated. Stop during repeated operation, Click the Stop button to stop.
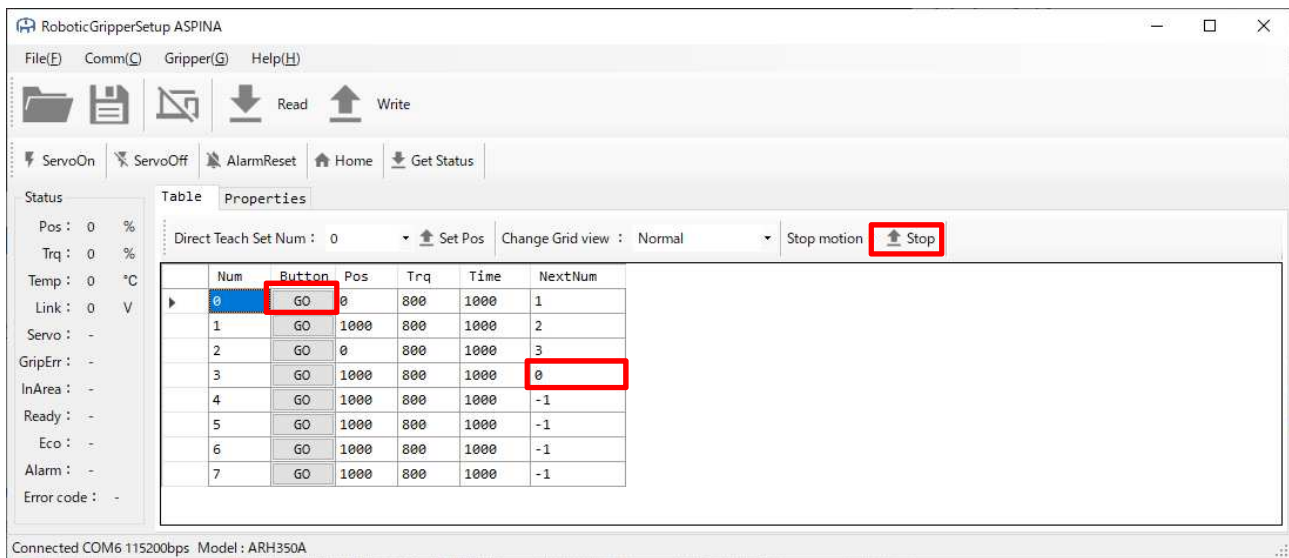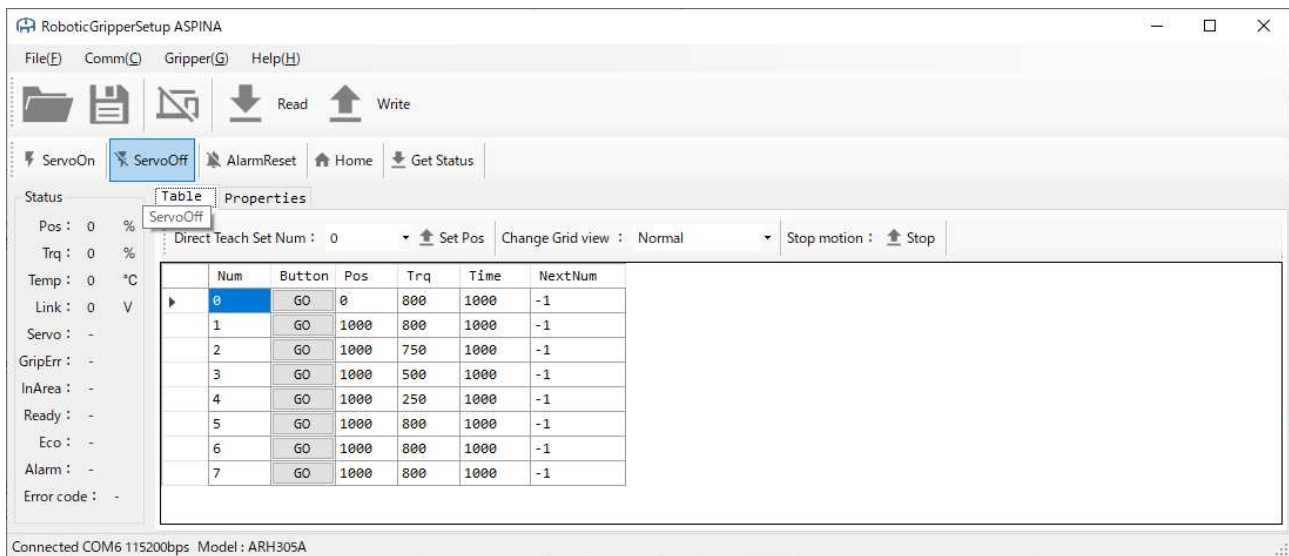

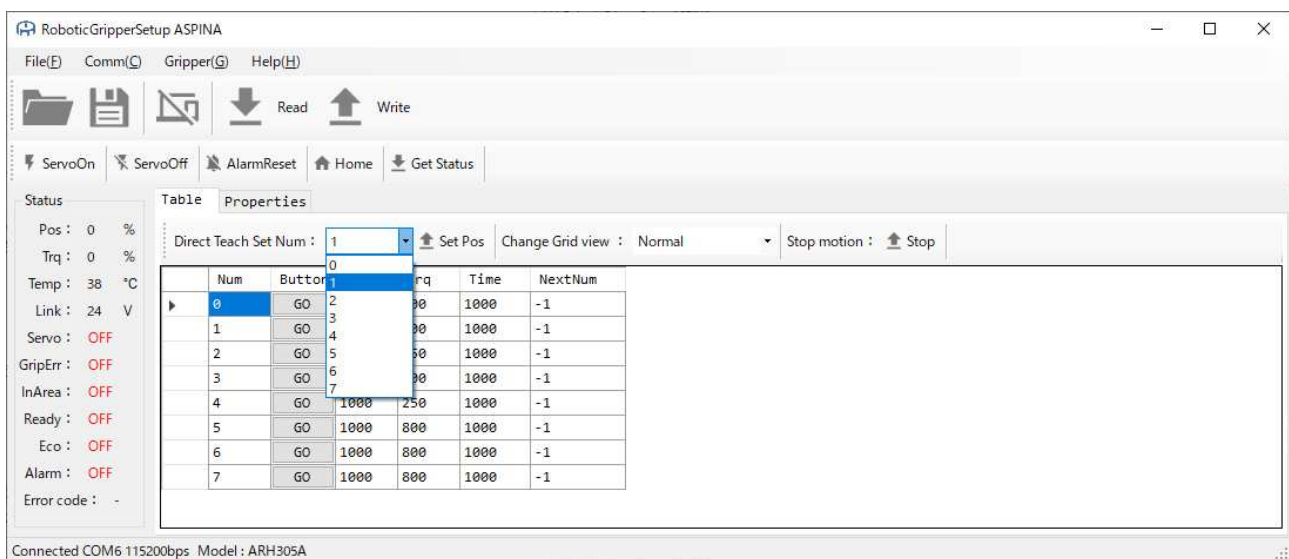⚠️ · **If Num = NextNum, perform only a single action.**

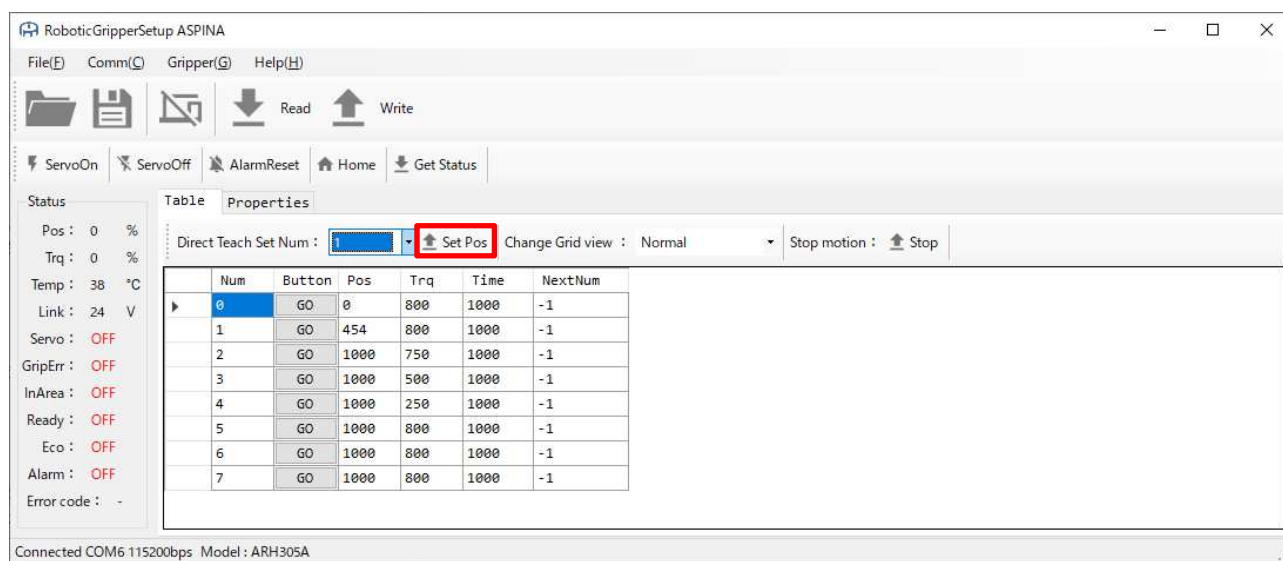## 11. Direct teach

11.1. Model ARH305 Series

1. Click the ServoOff button. (The gripper becomes servo off and can move to any position.)

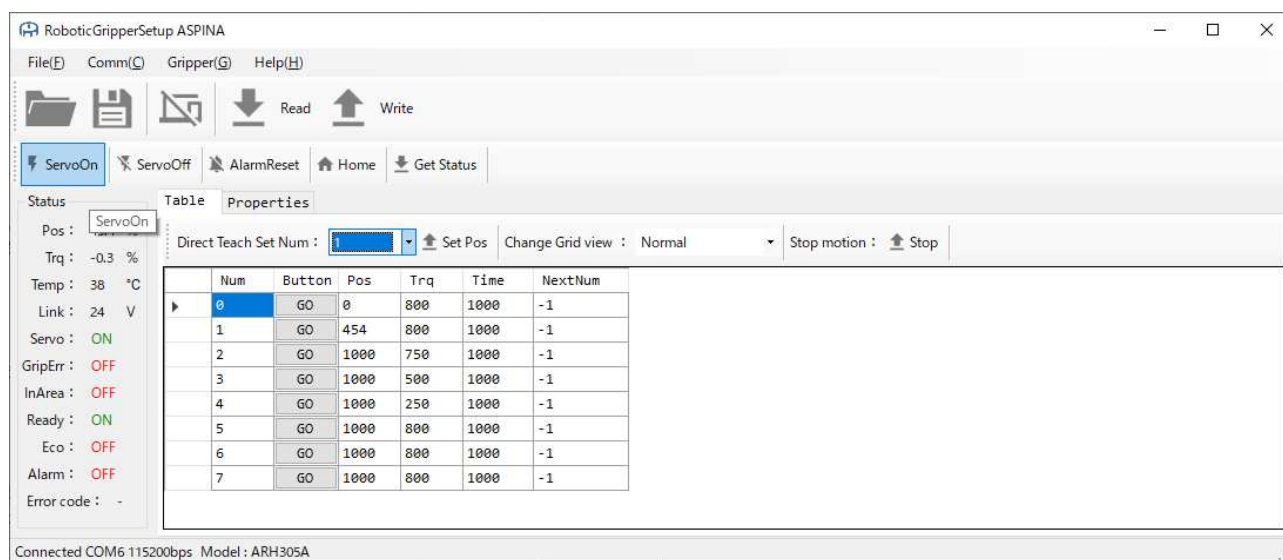2. Move the finger to the desired position and select Direct Teach Set Num = 1.

3. By clicking the Set Pos button, the specified position is inserted into the Pos with Num = 1.
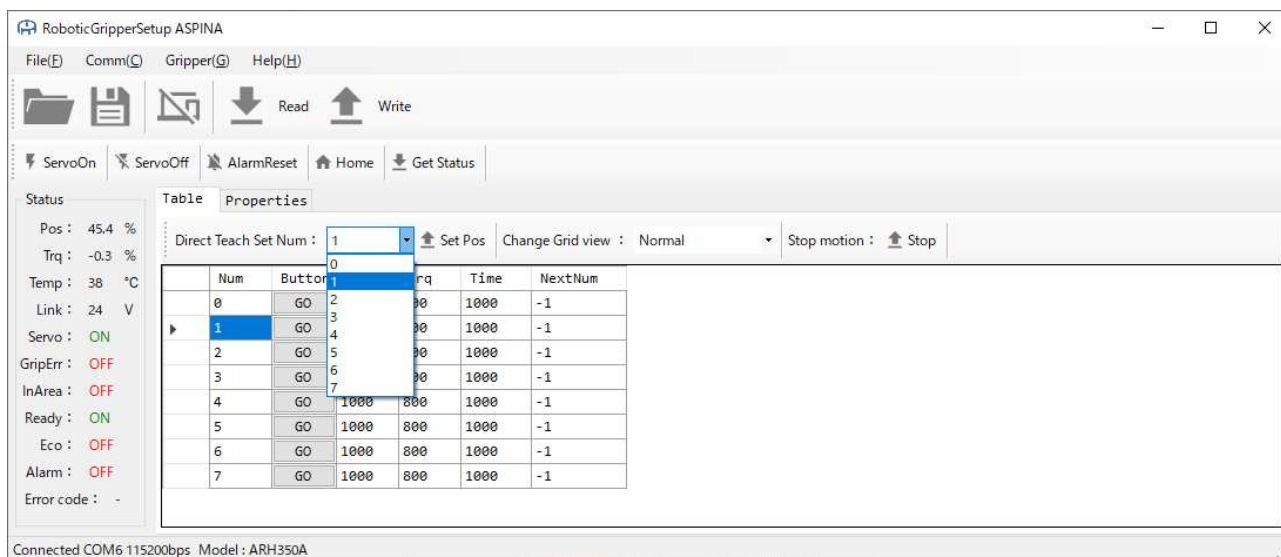

4. Click the ServoOn button and click the GO button with Num = 1 and check the operation.

⚠️ ・With the ARH305 series, the user can move the fingers from the outside in the servo off state.
・Turn the servo on when operating.

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11.2. Model ARH350 Series

1. Grasp the target workpiece.

2. Select Direct Teach Set Num = 1.

3. By clicking the Set Pos button, the specified position is inserted into the Pos with Num = 1.

4. Click the GO button with Num = 1 and check the operation.

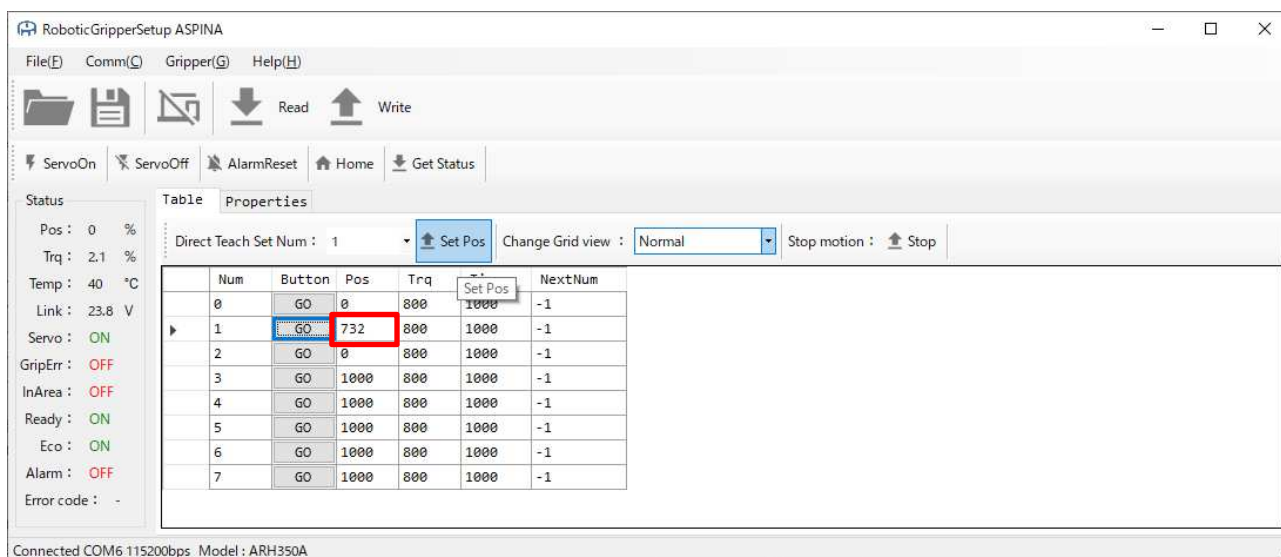⚠ ・With the ARH350 series, the user cannot move the fingers from outside even in the servo off state.

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12. Home return operation

1. Click the Home button.
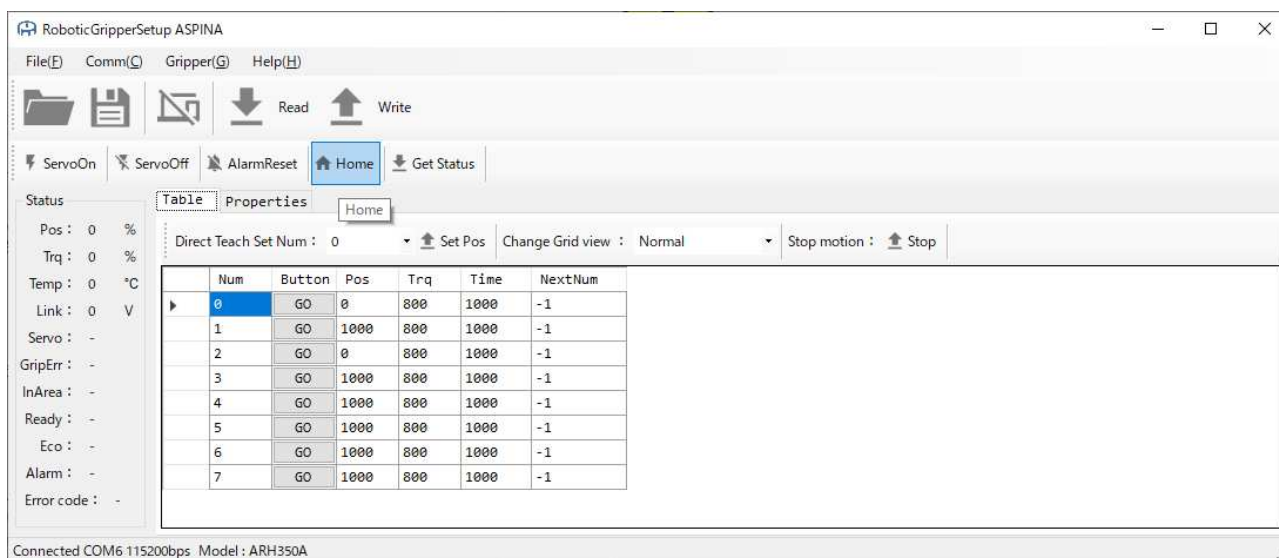
2. The execution of the home return operation will be displayed, click OK.
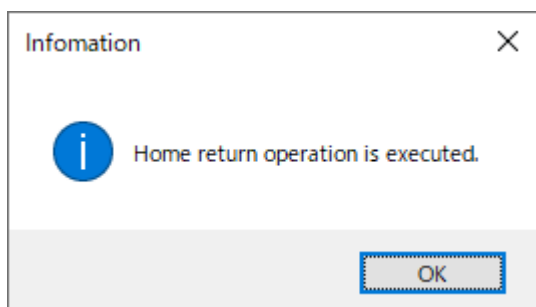
3. Wait for the home return movement to complete.

4. The completion of the home return operation is displayed. Click OK to complete.
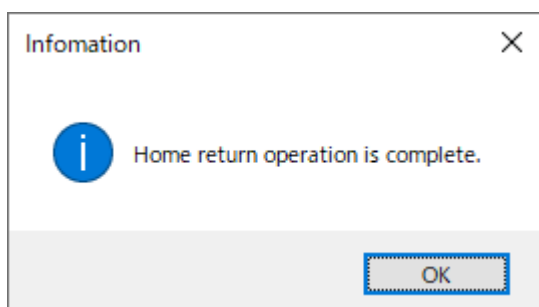
⚠ **・The fully open and fully closed positions are determined by the home return operation. If it comes in contact with something in the process of the operation, the position is set.**

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13. Alarm reset

1. When an alarm occurs, the user can check the error code on status by clicking the Get Status button. (For error codes, refer to the ARH series alarm list.)
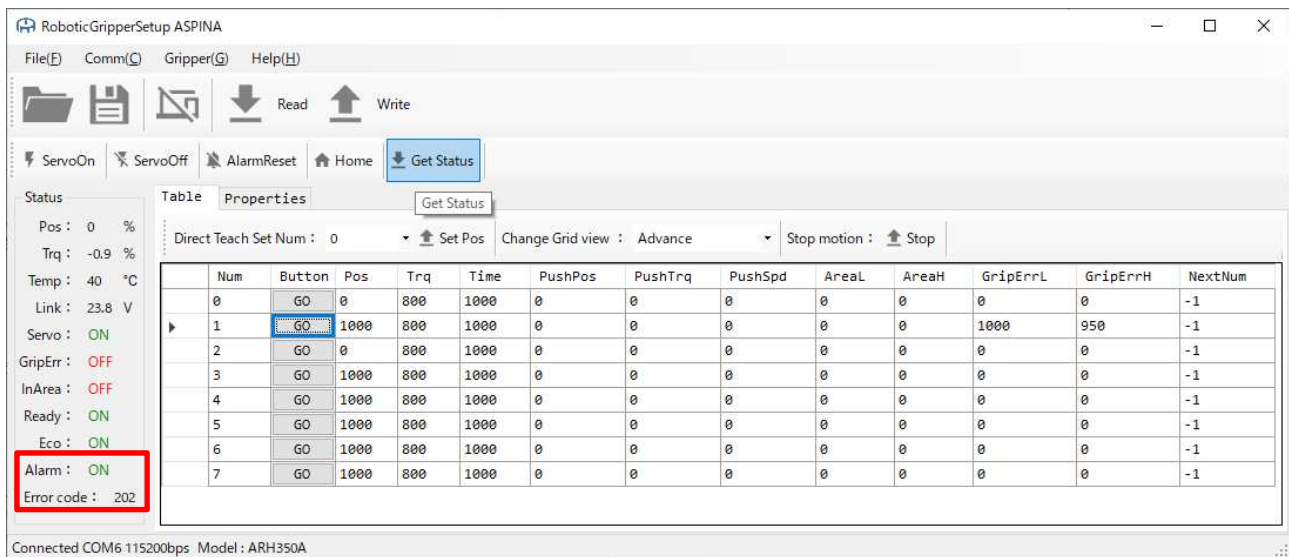
2. Click the Alarm Reset button to cancel the alarm.

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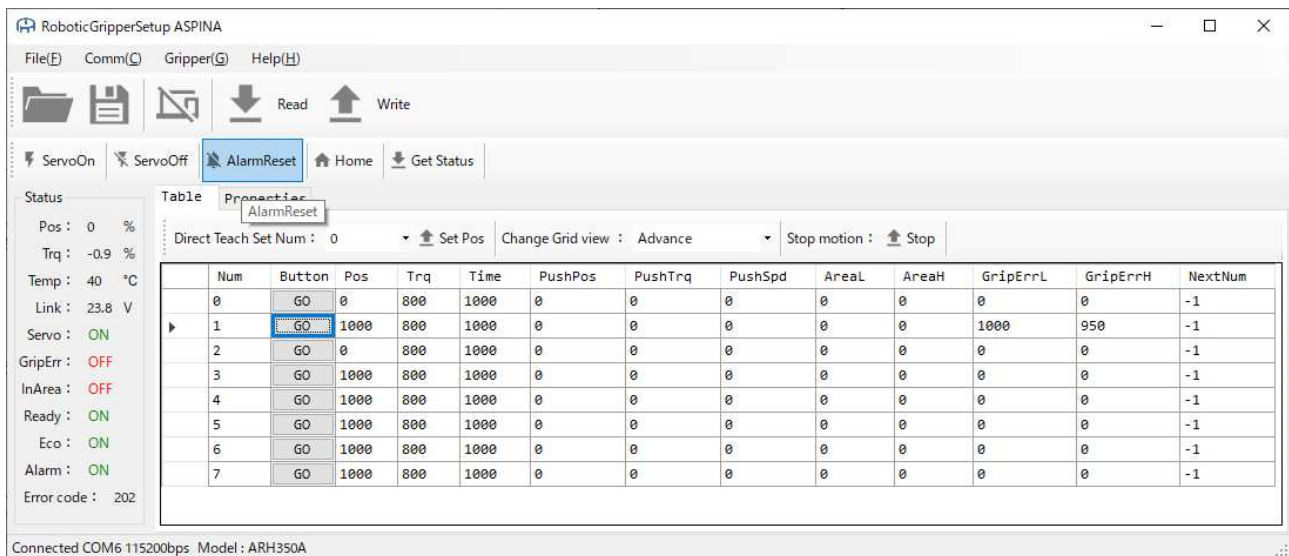
3. The user can confirm that the alarm has been canceled by clicking the Get Status button.

⚠	· If the user encounter an error that cannot be removed by using alarm reset, please contact us.
	· In addition to Status, the user can check the alarm status using the pilot lamp.

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14. Reset parameter

1. Click Parameter Reset in the menu Gripper.

2. A warning screen appears. Click Yes.
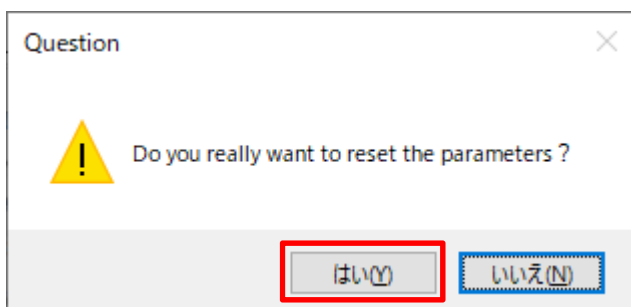
3. Turn on the power of the gripper again to reflect the setting.
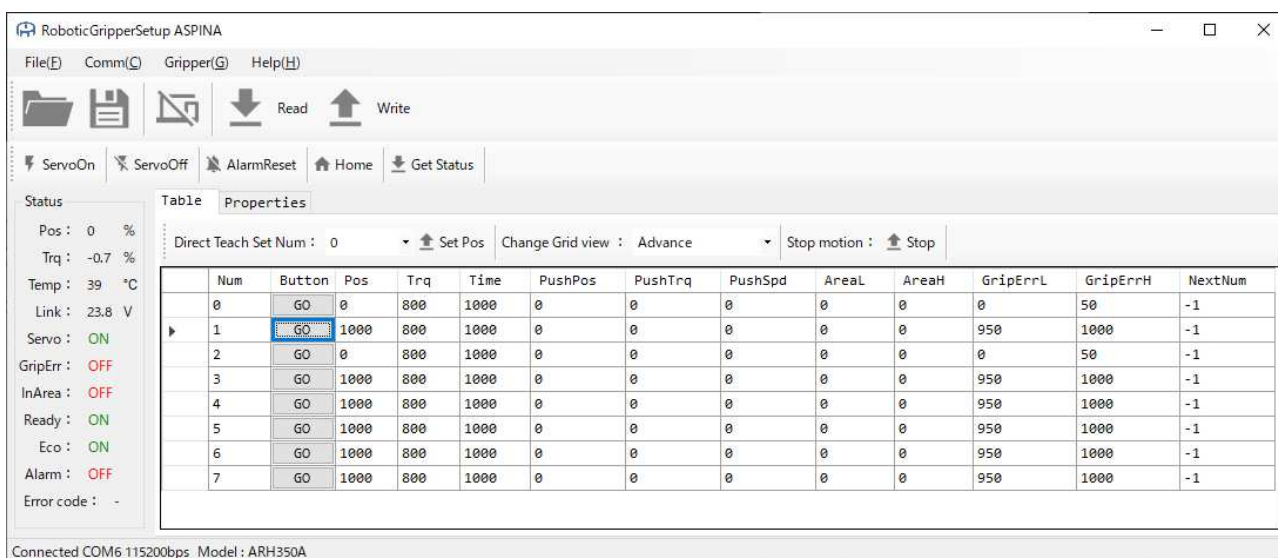
 ・**If the user does not turn on the power of the gripper again, no parameter reset occurs.**

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15. Open file / Save file

15.1. Save file

File Save button saves the following:

・Table

Pos, Trq, Time, PushPos, PushTrq, PushSpd, AreaL, AreaH, GripErrL, GripErrH

・Properties

Baudrate, SlaveID, Terminal, Digital Input 1, Digital Input 2, Digital Input 3/Output 3, Digital Input 4/Output 4, Eco Mode

⚠️　**・NextNum in the Table is not saved to a file.**

1. Click the Save button on the menu or click Save on File.

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2. The window opens. Enter a file name and click Save.
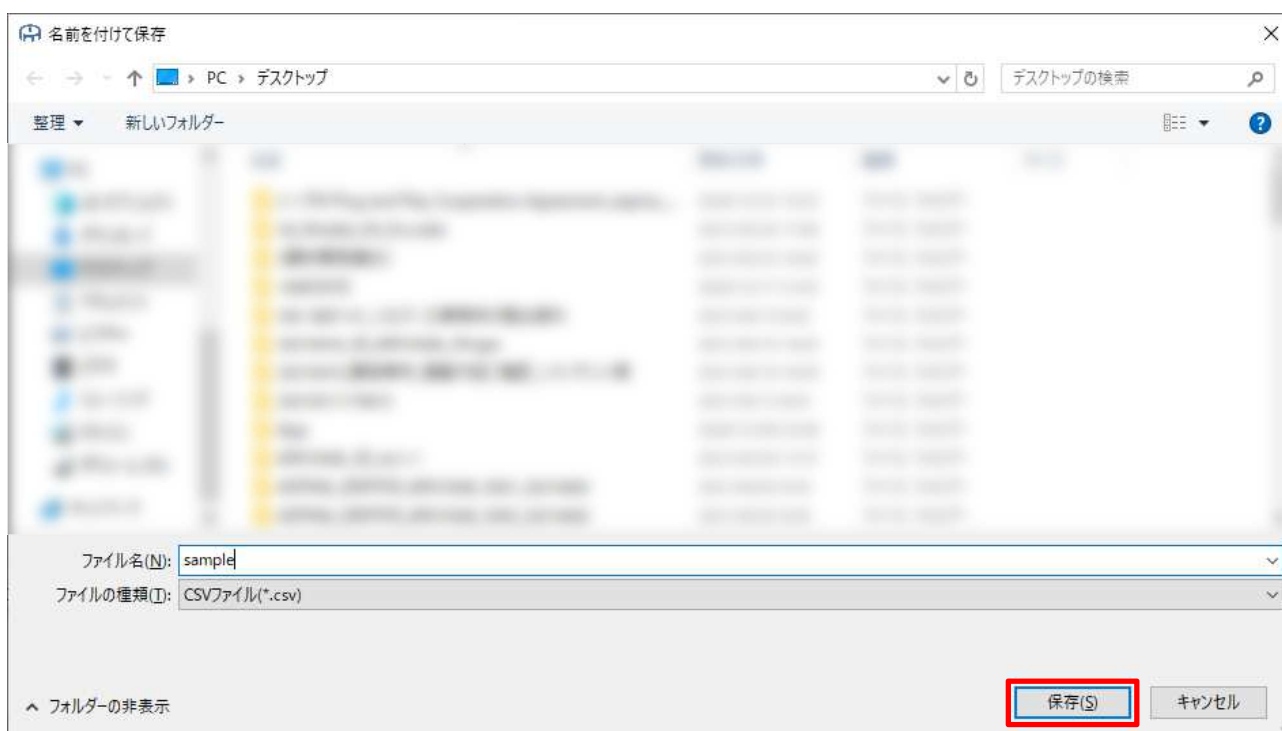
3. Make sure the file is saved to the specified location.

・**Never rewrite the CSV file. Abnormal parameter settings may cause the gripper to fail to recover.**

15.2. Open File

1. Click the Open button on the menu or click Open on File.

2. The window opens. Select the file name and click Open.
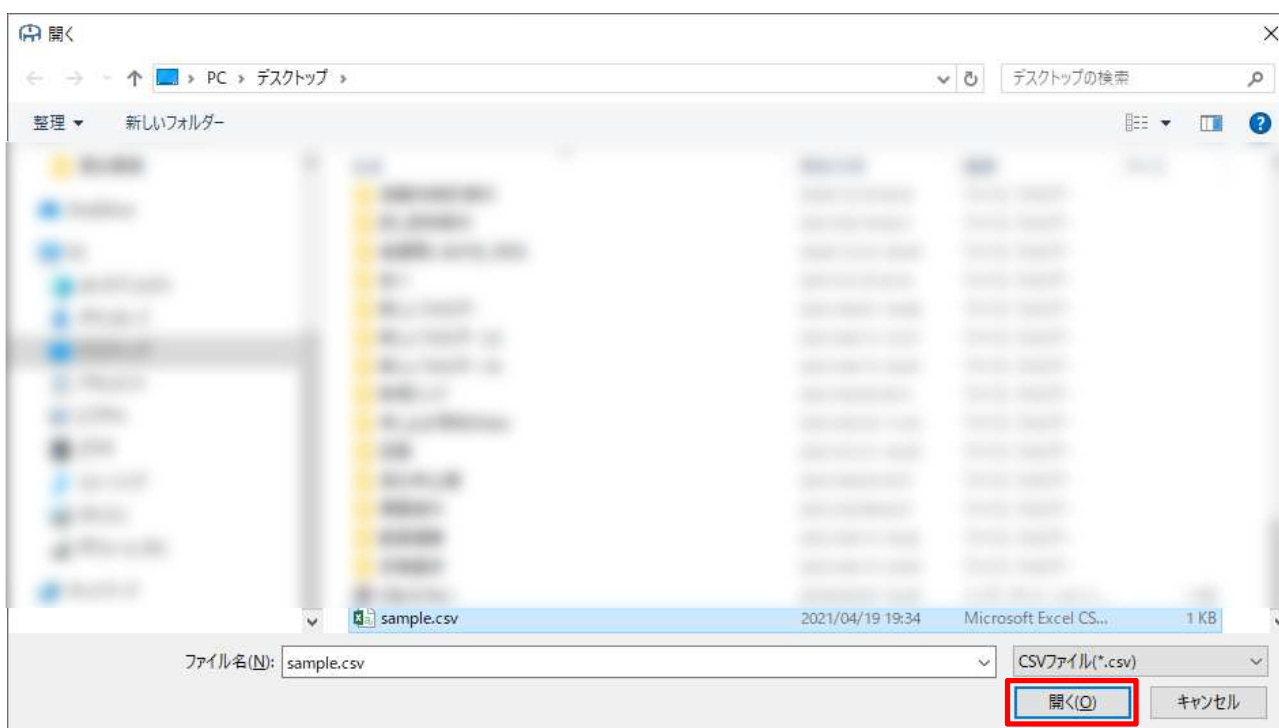
3. Check the table and properties to make sure the file was read.

> ⚠ **· Do not open a different file. If an abnormal parameter is set, it may not be possible to recover the gripper.**

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16. Parameters

1. The names, setting ranges, and contents of various parameters are as follows.

Parameter	parameter name	setting range	step size	Contents
Pos	Target position	ARH305 : 0 ~ 1000 (0.0 ~ 100.0%) ARH350 : 0 ~ 1100 (0.0 ~ 110.0%)	0.1%	Target stop position of the gripper
Trq	Positioning torque limit	0 ~ 1000 (0.0 ~ 100.0%)	0.5%	Torque limit during gripper operation
Time	Operating time	ARH305 : 250 ~ 10000 (0.25ms ~ 10000ms) ARH350 : 800 ~ 10000 (0.8ms ~ 10000ms)	1 ms	Opening and closing speed in full stroke
PushPos	Push Position	-1000 to 1000 (-100.0 to 100.0%)	0.1%	Amount of movement of the pushing operation (0 = push-in disabled)
PushTrq	Push torque limit	0 ~ 1000 (0.0 ~ 100.0%)	0.5%	Torque limit during pushing operation (0 = push-in disabled)
PushSpd	Push-in speed	0 ~ 1000 (0.0 ~ 100.0%)	0.1%	Operating speed during pushing operation (0 = push-in disabled)
AreaL	Area output range lower limit	0 ~ 1000 (0.0 ~ 100.0%)	0.1%	Minimum value of the AREA output range
AreaH	Area Output Range Upper Limit	0 ~ 1000 (0.0 ~ 100.0%)	0.1%	Minimum value of the AREA output range
GripErrL	Lower limit of grip error output range	0 ~ 1000 (0.0 ~ 100.0%)	0.1%	Minimum GripErr Output Range
GripErrH	Grip error output range upper limit	0 ~ 1000 (0.0 ~ 100.0%)	0.1%	Maximum value of GripErr output range

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・The torque setting is in units of 0.5%. 99.9% is applied as 99.5%.

・The torque setting is set in 0.5% increments. In the case that the fully closed and fully open positions of the gripper are extremely short, adjustment with 0.1% resolution is not possible.

・If the torque and push-in torque are less than 20%, the gripper may not operate due to insufficient torque to operate.

17. Operation verification environment

1. Supported OS

Windows 10 64 bit (.NET Frameworks 4.5)

Windows 8.1 64 bit (.NET Frameworks 4.5)

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18. User license agreement

Software Product Name : RoboticGripperSetup (the "Software") full download file and updater
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19. Revision history

Date	Edition	Contents
2021/08/10	01.00	Initial edition

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