Auto-Alignment Application SGALIGN

# Software User Manual





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# Introduction

This is the user manual for the SGALIGN control software shipped with the auto-alignment

system.



### 1. Overview

The SGALIGN software is used for operating the alignment system. By use of the auto run program (sequence program) based on various commends and indicators, the multi-axis motorized stages can be automatically operated, and the measurement can be automatically achieved.

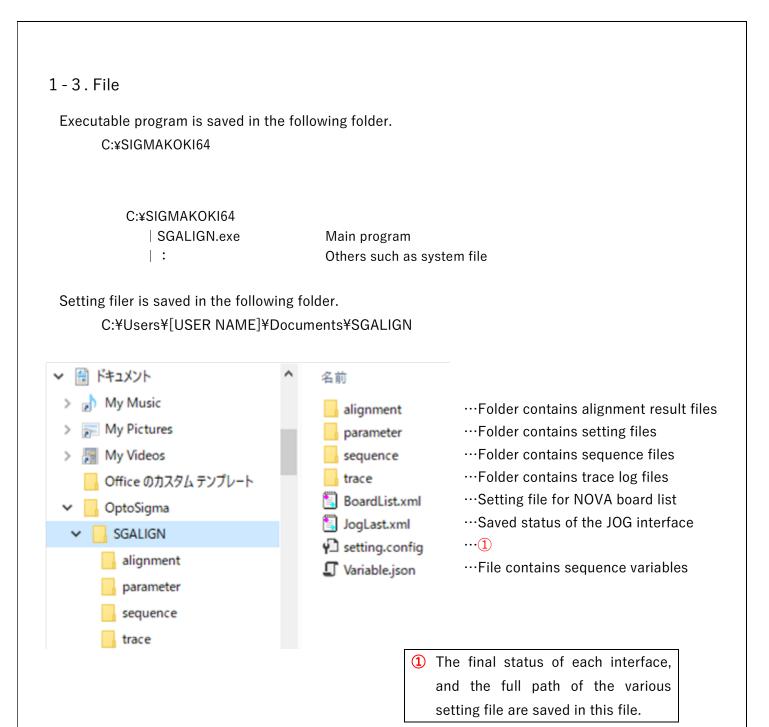
#### 1 - 1. Operating Environment

OS	:	Windows 10 64bit / Windows 11
CPU	:	8th Generation Intel <sup>®</sup> Core™ i7 Processor 2.0GHz or more (Recommended)
Memory	:	16GB or more (Recommended)
Storage	:	SSD or HDD, 500GB or more
Platform	:	.NET 6.0

#### 1 - 2. Compatible PCI Board

Motion Control Board	:	MC8082P (NOVA electronics, INC.)	2 pcs
		https://www.novaelec.co.jp/MC8082P.html	
A/D Board	:	PEX-321316 (Interface Corporation)	
		http://www.interface.co.jp/catalog/prdc.asp?name=pex-321316	
GPIB Board	:	PCI-4304 (Interface Corporation)	
		http://www.interface.co.jp/catalog/prdc.asp?name=pci-4304	

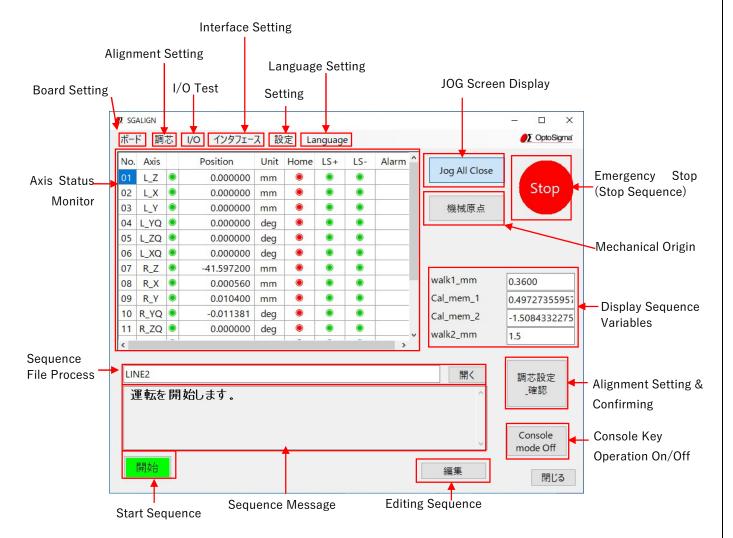






# 2. Main Screen

### 2 - 1. Menu and Buttons



 $\cdot$  <Board> Board setting menu

Display setting screen for NOVA electronics, INC. board

(See P.11 for details)

 $\cdot$  <Alignment> Alignment setting menu

Display setting screen for alignment (Same function as clicking <Alignment Setting & Confirming> button)

(See P.28 for details)

<I/O> I/O test menu
 Display I/O test screens
 (See P.16 for details)



- <Interface> Interface setting menu
   Display submenu of various interface setting.
   Set various interface.
  - <Serial> Display setting screen for serial communication (See P.20 for details)
     <TCP/IP> Display setting screen for LAN communication (See P.22 for details)
     <GPIB> Display setting screen for GP-IB communication (See P.24 for details)
     <A/D> Display setting screen for A/D
    - (See P.26 for details)
- <Setting> Various setting menu
   Display submenu of various setting
   [Motor] : Display setting screen for axis parameters
  - [Jog] : Display screen for JOG operation (See P.18 for details)

(See P.12 for details)

- [A/D] : Display screen for A/D setting (See P.26 for details)
- [Key Console] : Display screen for key console setting (See P.45 for details)
- <Language> Language setting menu
   Display submenu of language setting
   [default] : in default language
  - [English] : in English
  - [Japanese] : in Japanese
- <JOG> Display JOG screen
   Display screen for JOG operation
   (See P.18 for details)

Interface Setting Serial TCP/IP GPIB A/D

Setting Language Motor Jog A/D Key Console

Language default English Japanese



- <Mechanical Origin> Button for mechanical origin
   Run mechanical origin operation set in axis setting screen.
   \* WARNIN: Please be careful to prevent from possible mechanical interference!
- <Stop> Emergency stop button & sequence stop button Immediately stop absolute movement, relative movement, all axis motion in JOG operation. Immediately stop all axis motion and sequence itself in sequence operation.
   Please restart the software after emergency stop operation.
- <Display Sequence Variables>
   Up to 4 variables defined by sequence can be displayed.
   Double-click name of the variables to select.
   Variables can be specified from Type-Variables.



< Alignment Setting & Confirming> Button
 Display alignment setting screen (Same to <Alignment Setting> menu)
 (See P.28 for details)

- <Axis Status Monitor>
   Display status of all axis in real time.
   (See P.9 for details)
- <Sequence File Process>
   [Open] Button
   Select the sequence file (\*.json) to edit or run.
- <Start> Sequence start button
   Start sequence.
- <Edit> Button for sequence creation and edit Display the sequence creation and edit screen. (See P.36 for details)



#### 2 - 2 . Axis Status Monitor

		Axis	Ava	ilability	Ho	me Sign	al		Alarm Sig	nal
Axis N	lo. &	NAME		Coordinates	Unit ♦	L	_imit Se	ensor		
	No.	Axis		Position	Unit	Home	LS+	LS-	Alarm	^
	01	L_X1	۲	0	mm	۲	۲	۲		
	02	L_X2	۲	0	mm	۲	۲	۲	9 8	
	03	L_Z	۲	0	mm	۲	۲	۲		
	04	L_Y	۲	0	mm	۲	۲	۲		
	05	L_ZQ	۲	0	deg	۲	۲	۲		
	06	L_YQ	۲	0	deg	۲	۲	۲		
	07	R_X1	۲	0	mm	۲	۲	۲		
	08	R_X2	۲	0	mm	۲	۲	۲		
	09	R_Z	۲	0	mm	۲	۲	۲		
	10	R_Y	۲	0	mm	۲	۲	۲		
	11	R_YQ	۲	0	deg	۲	۲	۲		
	12	G_Z	۲	0	mm	۲	۲	۲		~

Display the current status of all axis in real time.

• <Axis No. & Name>

Display the axis number and the axis name set in the axis parameter setting screen (Section 4, Page 12).

#### <Axis Availability>

In red if the axis set in the axis parameter setting screen (Section 4, Page 12) does not exist or the axis cannot be recognized. In green when the axis is recognized.

 $\cdot$  <Coordinates>

Display the coordinates based on the information set in the axis parameter setting screen (Section 4, Page 12). The coordinate "0" expresses the position at software startup or the position after homing. When the motor is running, the coordinates are highlighted in green.

 $\cdot$  <Unit>

Display the unit (in mm or deg) of the coordinates set in the axis parameter setting screen (Section 4, Page 12)

 $\cdot$  <Home Signal>

Indicates whether home operation has been completed or not. When homing is performed by clicking HOME button or in the sequence program, the light turns green after finishing the home operation.



#### $\cdot$ <Limit Sensor>

Display the status of the limit sensor in the stages.

In red once the sensor detects the signal.

- [LM+] : Limit sensor at "+" side
- [LM-] : Limit sensor at "-" side

\*Both [LM+] and [LM-] light in red when driver is powered off.

#### $\cdot$ <Alarm Signal>

Display when alarm occurs. Display nothing if no alarm.



### 3. Board Setting Screen

Set the number of the NOVA electronics' board.

If the number of input line is not 2, input "M8082P" into the "BoardName" column of the last "\*" line. Input rotary switch number specified on the NOVA board into "SW1" column.

 $\ensuremath{\mathsf{`SW1"}}$  is the board number used by the program.

\*Example

BoardName	SW1
M8082P	0
M8082P	1

	BoardName	SW1
•	M8082P	0
	M8082P	1

 $\cdot$  <Save> button

Click the "Save" button to save the setting after the input.

The setting is always saved in the following folder.

C:¥Users¥[User Name]¥Documents¥OPTOSIGMA¥SGALIGN¥BoardList.xml

 $\cdot$  <Exit> button

Click to close the board setting screen.



## 4 . Axis Parameter Setting Screen

### [!] IMPORTANT SETTING FILE RELATED TO THE OPERATION OF THE STAGE. [!] [!] BASICALLY, PLEASE DO NOT EDIT. [!]

[	Axis setting	×	
Axis Setting File	C:¥SIGMAKOKI¥Par¥NoTitle2_原点復帰用修正.axi	v	
Axis No.	Axis: L_Z ~	Load Save	
Axis Name	Axis parameter Axis name : L_Z	Unit:  () mm () deg	Display Unit
Motor Direction	MoveDir:   +  - Motor	✓ Home	
Motor Setting 🗕	Resolution :         500 -         [pulse / rev]           Screw lead :         1.00000 -         [mm / rev]	Direction :         ○         CW         ●         CCW         ◄           Type :         Type1         ✓	Return-to-Origin
	Starting speed.	Order :         1         ✓           First speed :         5.0000 • [mm / sec]         Second speed :         0.5000 • [mm / sec]           Offset :         0.1000 • [mm]         [mm]         Second speed :         Second speed :	
Motor Driver — Setting	System : One pulse Two pulse Logic : Low High Direction : +L,-H +H,-L	Position : 0.00000 [mm] Sensor port : IN1 ~	
Stop Action Setting —	JOG or EMG: O Deceleration   Sudden	Limit + : 100.00000 (mm) Limit - : 0.00000 (mm)	⊢Software Limit Setting
Sensor Logic 🛶 Setting	Sensor logic Limit sensor + : O Low O High Limit sensor - : O Low High Home sensor : O Low High		
		OK キャンセル	

• [Axis Setting File]

Display the name of the file which contains axis setting values.

- LOAD : Load the axis setting file.
- SAVE : Save the axis setting file.
- [Axis Number]

Select the axis number on the motion control board.

Axis 1 to 8 can be selected.

Display the axis name if the "Axis Name" is saved.



 $\cdot$  [Enabling Motor]

Enable or disable the selected axis.

Even the axis is disabled, some settings such as axis name and sensor signal are reflected in the axis variable monitor (Page. 8).

Check to enable the axis and setting changes.

• [Axis Name]

Set a name for the currently selected axis.

 $\cdot$  [Display Unit]

Select the type of the enabled stage.

- [mm] Select for linear stage
- [deg] Select for rotating or gonio stage
- [Motor Direction] "MoveDir"

Specify CW or CCW of the controller. Also reflected in the direction of the software limit.

Increasing/decreasing the scale in the same direction	: +
Increasing/decreasing the scale in the opposite direction	: -

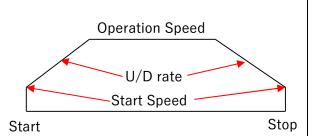
• [Motor Setting]

#### Set motor and stage

Resolution	: Set the required pulse numbers/revolution
Screw lead	: Set the travel/revolution
U/D rate	: Set the acceleration time for motor acceleration/deceleration
	(Unit: pulse (1 - 8000))
Start speed	: Set the motor starting speed

Operating speed : Set the motor operating speed

Resolution :	500 🜩 [pulse / rev]
Screw lead :	1.00000 🗧 [mm / rev]
U/D rate :	500 🗧 [pps / sec]
Starting speed :	1.00000 🜩 [mm / sec]
Operating speed :	50.00000 + [mm / sec]





• [Motor Driver Setting]

System : Select the mode of the command pulse that the driver can receive (one-pulse mode or two-pulse mode).

Logic : Select the command pulse logic.

Direction : Select the direction logic for the one-pulse mode.

Select the command pulse logic for two-pulse mode.

Divide : Set micro-step resolution (Must be linked to the driver settings)

Driver System :	One pulse	Two pulse
Logic :	Low	🔘 High
Direction :	● +L,-H	⊖ +H,-L
Divide :	80 🛓	

• [Stop Action Setting]

Hard Limit

: Select the mode for stopping due to hardware limit.

JOG or EMG : Select the mode for stopping when using JOG or emergency stop button.

Stop mode Hard Limit : O Deceleration	Sudden
JOG or EMG : O Deceleration	Sudden

Deceleration	: Deceleration stop
Sudden	: Immediate stop

[Sensor Logic Setting]

Select the logic of the sensor signal

Limit Sensor + : "+" side of the hardware limit

Limit Sensor - : "-" side of the hardware limit

Home Sensor : Home sensor (valid only for the stage equipped with such sensor)

\*Changes depending on the type of the used sensor.

O Low	le High	
O Low	🖲 High	
Low	🔘 High	
	O Low	



[Return-to-Or	igin Setting]
Home	: Check when performing return-to-origin operation.
	If checked, the following items can be edited.
Direction	: Set return-to-origin direction
Туре	: Set return-to-origin method (option for other than Type1)
	*Operation of Type1: moves until reaching the limit sensor at specified direction,
	and then moves to the specified offset position.
Order	: Set return-to-origin order (performed in the order of the small number)
First speed	: Set the first return-to-origin speed
Second spee	d: Set the second return-to-origin speed
Offset	: Set the offset position after homing
Position	: Se the initial position. This position is reflected in coordination after homing.
	*Value display only. The stage does not really move/
Sensor port	: Select the board with the return-to-origin sensor connected.

Home	
Direction :	⊖ cw
Type :	Type1 V
Order :	1 ~
First speed :	5.00000 🛖 [mm / sec]
Second speed :	0.50000 🛖 [mm / sec]
Offset :	0.10000 🜩 [mm]
Position :	0.00000 🜩 [mm]
Sensor port :	IN1 V

• [Software Limit Setting]

Software limit : Check to enable software limit and its setting

If checked, the following items can be edited.

- Limit+ : Set "+" side limit position in given unit
- Limit- : Set "-" side limit position in given unit

\*"+" and "-" directions reflect the direction specified in [Motor Direction] "MoveDir".

Software limit	
Limit + :	100.00000 🖨 [mm]
Limit - :	0.00000 🖨 [mm]



### 5. I/O Test Screen

Used to perform ON/OFF communication test for each PIN of I/O.

The digital I/O function of the motion control board "MC8082P" manufactured by Nova Electronics Corporation is used to control the 8-axis driver box "SDB-08" manufactured by us.

For details of each product, please refer to the following companies' websites and manuals.

MC8082P	: https://	www.novaelec.co.jp	/down/file/	/mc8000p.pdf
---------	------------	--------------------	-------------	--------------

SDB-08

: https://jp.optosigma.com/en\_jp/sdb-08.html

DIO		– 🗆 X
DIO Setting		
Model NOVA MC8082P 🗸 1		
NOVA MC8082P Setting	0	
Board No 2 0 🚖 Sp		Open(4) True
Use Port 🔘 Port 1,5,6 (6)	Port 2,3,5,6	Diose(5)
Connection port(IcNo) 2,3 (IcNo=0) ~(	D	
Input (8) 🔿 RR2 (6)	) RR4 🔘 RR5	
Digital Input	Digital Output Write	Digital Output Read
All Read 🧿	All Write 😰	All Read 15
Bit ON OFF read	Bit ON OFF write	Bit ON OFF read
1   0   0	1 AXOUT1 💿 🔿 🍱	1 0 0 16
2 AXSTOP2 🖲 🔘 📃	2 AXOUT2 🖲 🔿 📃	2 0 0 🗆
3 💿 🖸 🗖	3 AXOUT3 💿 🔿 📃	3 0 0 🗆
4	4 AYOUT0 💿 🔾 📃	4 0 0 🗆
5 💿 🗆	5 AYOUT1 💿 🔿 🔲	5 🔿 🔿 🔲
6 AXINPOS 🖲 🔘 📃	6 AYOUT2 🖲 🔿 📃	6 🔿 🔿 🔲
7 AXALARM 💿 🔘 📃	7 AYOUT3 💿 🔿 📃	7 0 0 🗆
8 🔘 🖲 🔲	8 AZOUTO 🔿 🖲 📃	8 🔿 🔿 🔲
9 • • •	9 AZOUT1 🔿 🖲 📃	9 0 0 🔲
10 AYSTOP2	10 AZOUT2 🔿 💽 📃	
	11 AZOUT3 🔿 💿 🔲	
	12 AUOUTI 🔾 🖲 🗌 13 AUOUTI 🔿 💿 🔲	
14 AYINPOS	14 AUOUT2 O O	
15 AYALARM	15 AUOUT3 O 💿 🗌	
Manual Pin Input	Manual Pin Output	
IcNo RR Pin 🕕	IcNo Pin 🚺 Value	
0 ~ 4 ~ 11 ~	0 ~ 2 AXOUT2 ~ ON ~	
Read	Write	Exit

 $\cdot$  ① [Model]

The model number of the board to be used is displayed. It is fixed to "NOVA MC8082P".

・② [Board No]

Specify the number of the board to be used. Specify the board number by counting up from "0".

When specifying the first board : 0

When specifying the second board : 1



 $\cdot$  (3) [Specified]

Selects the mode of I/O designation. Depending on the mode selected, the buttons, etc. displayed on the screen will change. Details are explained on P.29 5-1.

IcNo : This mode allows a list of all output ports to be displayed.

Port : This mode allows operation by specifying the I/O port of SDB-08.

#### $\cdot$ ④ [Dio Open]

Accesses the board and puts it into standby based on the specified configuration. When this button is pressed, each I/O button becomes active and operational.

• ⑤ [Dio Close]

Releases a board in standby mode.

If you need switch to a different configuration, use this function.

• 6 [Use Port] or [Port IcNo]

The display switches according to the status of [Specified].

Use Port	: Displayed when [Specified] is "IcNo".
	Specify the group of SDB-08 I/O ports to be used.
Port IcNo	: Displayed when [Specified] is "Port".
	Specify the I/O port and IC number of the SDB-08 to be $\mathfrak r$

• ⑦ [Connection port (IcNo)]

Displayed when [Specified] is "IcNo".

Specify the number of the IC to be used by "0" or "1".

· ⑧ [Input]

Specifies the group of input signals. In the "NOVA MC8082P," RR (read register) 2, 4, and 5 exist. For details, refer to the instruction manual of the "MC8082P" motion control board. The port displayed in the "Digital Input" frame switches according to the selected setting.

• 
9 [All Read]

Each signal of "Digital Input" is acquired at once and the result is reflected on the screen.

• 10 [ON/OFF/Bit read]

The signal status of the input port read immediately before "ON/OFF" is shown. By pressing "Bit read", the signal of the specified port is acquired and the result is reflected on the screen.

used.



```
\cdot (1) [Manual Pin Input]
```

Check the input signals specified manually without being bound by settings such as [Use Port] or [Port IcNo]. For details of the combination, refer to the instruction manual of the motion control board "MC8082P".

IcNo or Port : The display switches depending on the status of [Specified].

IcNo ... Displayed when [Specified] is "IcNo".

Specify the IC number of the board.

Port … Displayed when [Specified] is "Port". Specify the port.

RR : Specify the input signal group from "2", "4", or "5".

Pin : Specify the pin number.

Read : Indicates the signal status of the port.

When ON...Lit greenWhen OFF...Lit gray

• 12 [All Write]

Switches the signal state of each output port based on the ON/OFF state set in "Digital Output Write". <u>All ports are immediately reflected at the moment the button is pressed,</u> so please be careful of malfunctions.

#### • 13 [ON/OFF/Bit write]

After specifying the signal state of the output port with ON/OFF, press Bit write to switch the signal state of the specified port.

If only  $\mathsf{ON}/\mathsf{OFF}$  is changed, the signal state of the port does not change.

#### • \Lambda [Manual Pin Output]

It controls output signals specified manually without being bound by settings such as [Use Port] or [Port IcNo]. For details of the combination, please refer to the instruction manual of the motion control board "MC8082P".

IcNo or Port	:The display switches depending on the status of [Specified].
	IcNo … Displayed when [Specified] is "IcNo".
	Specify the IC number of the board.
	Port … Displayed when [Specified] is "Port". Specify the port.
Pin	: Specify the pin number.
Value	Specify the output status as "ON" or "OFF".
Write	: Switches the signal of the specified port based on the setting.

• 15 [All Read]

Displays the assumed current output signal status of each port with reference to the last output signal status.

· (16) [ON/OFF/Bit read]

ON/OFF is the signal status of the assumed output port.

By pressing Bit read, the signal of the specified port is acquired and the result is reflected on the screen.



### 5 - 1 . Differences due to the [Specified] setting

The I/O test screen switches between modes depending on the value of the [Specified] setting. The differences between the modes are described in detail below.

In case of "IcNo".

DIO			
DIO Setting			
Model NOVA M	C8082P 🧹		
NOVA MC8082	P Setting		
Board No	0 🖨 Sp	ecified: 💿 IcNo 🔿 Port	Dio Open True
			Dio Close
(1) Use Port	O Port 1,5,6 (	Port 2,3,5,6	Dio Ciose
Connection 2 port(IcNo)	2,3 (IcNo=0) 🗸		
		345 RR4 O RR5	
Input	○ RR2	RR4 ORR5	
Digital Input		Digital Output Write	Digital Output Read
All Read		All Write	All Read
	Bit		Bit Bit write ON OFF read
0	ON OFF read	ON OFF 0 AXOUTO	write ON OFF read
1		1 AXOUT1 () ()	
2 AXSTOP2	• •	2 AXOUT2 🖲 🔘	2 0 0 🗆
3	• • •	3 AXOUT3 💿 🔘	3 0 0 🗆
4	• • •	4 AYOUTO 💿 🔘	4 0 0 🗆
5	$\odot$ $\bigcirc$ $\square$	5 AYOUT1 🖲 🔘	5 0 0 🗆
6 AXINPOS	$\odot$ $\bigcirc$ $\square$	6 AYOUT2 🖲 🔘	6 0 0
7 AXALARM	0 0 1	7 AYOUT3 💿 🔘	□ 7 0 0 □
8	$\odot$ $\odot$ $\square$	8 AZOUTO 🔿 💽	8 0 0 🗖
9	$\odot$ $\bigcirc$ $\square$	9 AZOUTI 🔿 🖲	9 0 0
10 AYSTOP2	• • •	10 AZOUT2 🔿 🔘	10 0 0
11	0 🖲 🗌	11 AZOUT3 🔿 🔘	■ 11 O O ■
12		12 AUOUTO 🔿 🔘	12 0 0
13		13 AUOUT1 🔿 🔘	13 🔿 🖸 🗖
14 AYINPOS		14 AUOUT2 🔘 🔘	
15 AYALARM	$\odot$ $\bigcirc$ $\square$	15 AUOUT3 🔘 🔘	
-Manual Pin Input IcNo RR Pir		Manual Pin Output	lue
		0 v 2 AXOUT2 v ON	
	· ·		· ·
Read		W	/rite Exit

- 1 [Use Port] and [Connection port (IcNo)] are displayed, and [Port IcNo] is not displayed.
- The Port selected in [Use Port] is further divided and selected by IC number.
   When "Port 1,5,6" is selected, select either "1 (IcNo=0)" or "5,6 (IcNo=1)".
   When "Port 2,3,5,6" is selected, select either "2,3 (IcNo=0)" or "5,6 (IcNo=1)".
   When "1 (IcNo=0)" is selected, only 8Pin is displayed for Digital Output Write.
- ③ After selecting "Use Port," the pin names in "Digital Input" and "Digital Output Write" will change to the corresponding ones.

Simultaneous reading and writing of up to 16 pins for 2 ports (2 connectors) at a time becomes possible.



④ The following items read/write input and output signals to/from the port specified by [Connection Port].

Input

[All Read] and [Bit read]

Output

[All Write] and [Bit write]

⑤ For [Manual Pin Input] and [Manual Pin Output], specify "IcNo".

DIO		– 🗆 X
DIO Setting Model NOVA MC8082P V NOVA MC8082P Setting		
1 Port(IcNo) Port2 (IcNo=0)	Dio (	Open True Close
2 3 Input ORR2	(4) RR4 () RR5	
Digital Input All Read	Digital Output Write All Write	Digital Output Read All Read
Bit         0       ON         1       O         2       AXSTOP2         3       O         4       O         5       O         6       AXINPOS         7       AXALARM         9       O         10       AYSTOP2         11       O         12       O         13       O         14       AYINPOS         15       AYALARM	Bit ON       OFF       write         0       AXOUT0       Image: Constraint of the structure       Image: Constraint of the structure         1       AXOUT1       Image: Constraint of the structure       Image: Constraint of the structure         2       AXOUT2       Image: Constraint of the structure       Image: Constraint of the structure         2       AXOUT3       Image: Constraint of the structure       Image: Constraint of the structure         3       AYOUT1       Image: Constraint of the structure       Image: Constraint of the structure         4       AYOUT3       Image: Constraint of the structure       Image: Constraint of the structure         5       AYOUT3       Image: Constraint of the structure       Image: Constraint of the structure         6       AYOUT3       Image: Constraint of the structure       Image: Constraint of the structure         7       AYOUT3       Image: Constraint of the structure       Image: Constraint of the structure         8       Image: Constraint of the structure       Image: Constraint of the structure       Image: Constraint of the structure         9       Image: Constraint of the structure         10       Image: Constraint of the structure       Image: Constraint of t	Bit         ON       OFF         0       0         1       0         2       0         3       0         4       0         5       0         6       0         9       0         10       0         11       0         12       0         13       0         14       0         15       0
Manual Pin Input Port RR Pin 2 V 4 V 11 V	Manual Pin OutputPortPin22 AXOUT2ON	
Read	Write	Exit

- ① "Port IcNo" is displayed, and "Use Port" and "Connection port (IcNo)" are not displayed.
- ② After selecting [Port IcNo], the pin name in [Digital Input] and [Digital Output Write] will change to the corresponding one. Simultaneous reading and writing of up to 8 pins for 1 port (1 connector) at a time becomes possible.

③ The following items read/write input and output signals to/from the port specified by [Port IcNo].

Input

[All Read] and [Bit read]

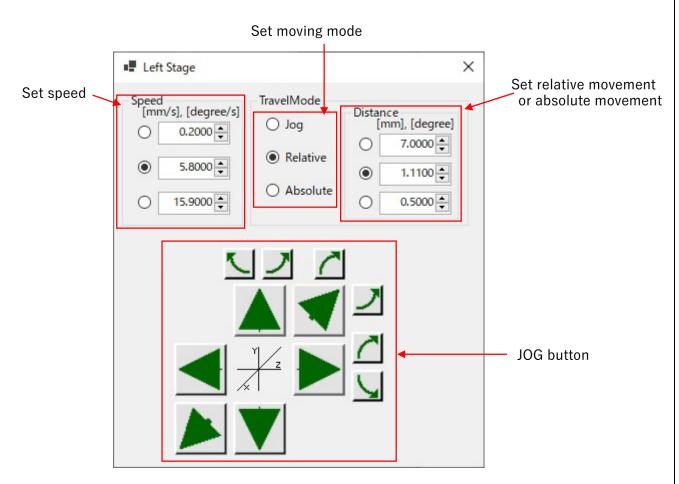
Output

[All Write] and [Bit write]

④ For [Manual Pin Input] and [Manual Pin Output], specify "Port".



## 6. JOG Operation Screen



· [Set Speed]

Set speed for JOG movement, relative movement and absolute movement. (Unit: mm/sec or deg/sec) The input value is the speed. Check left to enable the setting.

3 patterns of speed can be set.

\*Calculated by use of the value set in "Axis Parameter setting screen" (Page 12). Please note that If the parameter is not set correctly, the real speed might be different from the setting speed.

• [Set Moving Mode]

Set JOG movement, relative movement and absolute movement. Check left to enable the setting.



• [Set relative movement or absolute movement]

In the case of selecting "Relative" in [Set Moving Mode]:

Set relative movement. (Unit: mm or deg)

The input value is movement.

Clicking JOG button to move input distance/angle from the current position.

In the case of selecting "Absolute" in [Set Moving Mode]:

Set absolute movement. (Unit: mm or deg)

Clicking JOG button to move to input position.

#### $\cdot$ [JOG button]

In the case of selecting "JOG" in [Set Moving Mode]:

When push the JOG button continually, the corresponding axis moves continually (JOG operation). In the case of selecting "Relative" in [Set Moving Mode]:

When push the JOG button, the corresponding axis moves given distance/angle in given direction. In the case of selecting "Absolute" in [Set Moving Mode]:

When push the JOG button, the corresponding axis moves to given position independent of direction.



### 7. Serial Communication Setting Screen

This setting is necessary when serial communication such as RS-232C is used for alignment operation or sequence programs.

	Serial Port			– 🗆 X
Tab 🔶	No.1 No.2 No.3	No.4		
	Name	HDevViewer		DTR Enable
	COM Port Name	COM10	~	RTS Enable
	Character Encode	ASCII ~	Serial baud Rate	38,400bps ~
	Parity checking	None ~	Data bits per byte	8 ~
	Handshaking None		Stopbits per byte	1 ~
	Send delimiter	CR+LF ~	Receive delimiter	CR+LF ~
	Send time out [ms] Discard Send buffer	100÷ Enable ~	Receive time out [ms] Discard Receive buffer	1000 🛨 Enable 🗸
Send command 🔶				Send
Receive command box —>				Clear × OK
•[Tab]				
Up to 30 settings can be	saved.			
Right-clicking on the ind	ex of a tab ope	ns a conte	xtuai menu.	
Click "Add" to add a tab.				

Click "Add" to add a tab.

Click "Delete" to delete a tab.

Tips: Settings cannot be changed within the sequence program.

Make the subsequent settings while referring to the manual on how to connect the destination device.

• [Name]

Set the name of the device to be connected.

• [Port Name]

Click the combo box to display a list of recognized serial ports. Specify the serial port to connect to from the list.

• [Character Encoding]

Select character code from the combo box.

- [Baud Rate] Select baud rate from the combo box.
- [Data Bits]

Select bit length of the communication data from the combo box.



Delete

 $\cdot$  [Parity]

Select parity (communication data error monitoring) from the combo box.

- [Stop Bits] Select the bit length that indicates the end of data from the combo box.
- [Handshake] Select a handshake from the combo box.
- [Send Delimiter] Select send data delimiter from the combo box.
- [Receive Delimiter] Select receive data delimiter from the combo box.
- [Send Timeout Period [ms]] Input send timeout period in [ms].
- [Receive Timeout Period [ms]] Input receive timeout period in [ms].
- [Send Buffer Clear] Select enable/disable of send buffer clear from the combo box.
- [Clear Receive Buffer] Select enable/disable of receive buffer clear from the combo box.
- [DTR Enable] Check to enable DTR (Data Terminal Ready) signaling.
- [RTS Enable] Check to enable RTS (Request to Send) signaling.
- $\cdot$  [Send]

Enter text in the "Send command" section and click the "Send" button to send and receive commands according to the settings in the tab displayed. The sent content will be displayed in the

"Receive command box". If there is a reply from the device you are connecting to, the reply will be displayed in the "Receive command box".

· [Clear]

Deletes the contents of the "Receive command box".

\*Please refer the RS-232C communication standard for detail.



### 8. TCP/IP Setting Screen

This setting is necessary for TCP/IP communication such as Ethernet in the alignment operation and sequence program.

The sequence program refers to the settings in tab No. 1, but the "IPv4 address", "port number", and "Send data delimiter" settings are made in the sequence program.

	TCP/IP			_23		×
Tab 🔶	No.1 No.2	No.3				
	Name	Sample				
	IPv4 Address	<b>1</b> 92 🗘 ·	168 -	0 -		1 🕂
	Port number	5000 🔶	Bytes Recei	ved	102	4 🐳
	Character Encod	e	ASCII	~		
	Send time out [n	ns]		100		
	Receive time out	: [ms]		100		
				_		_
Send command —					Sen	d
					Send Delimi	tor
Receive command box $\longrightarrow$				Г	Demm	~
				L		
				ſ	Clea	
					Clea	
				$\sim$	0	К

•[Tab]

Up to 30 settings can be saved.

Right-clicking on the index of a tab opens a contextual menu.

Click "Add" to add a tab.

Click "Delete" to delete a tab.

• [Name]

Set the name of the device to be connected.

• [IPv4 Address]

Set IP address of the connection device.

However, the IP address of the LAN adapter of the control PC should be fixed but not DHCP. The subnet mask and the IP address should be set properly.

• [Port Number] Set proper port number of the connected device.

Please refer device manual for detail.





· [Bytes Received]

Sets the maximum number of bytes of data to be received. If a value smaller than the number of bytes received is set, the system will not operate properly. Set as large a value as possible.

The recommended value is "1024".

- [Character Encoding] Select character code from the combo box.
- [Send Timeout [ms]] Input send timeout period in [ms].
- [Receive Timeout [ms]] Input receive timeout period in [ms].
- $\cdot$  [Send]

Enter text in the "Send command" section and click the "Send" button to send and receive commands according to the settings in the tab displayed. The sent content will be displayed in the

"Receive command box". If there is a reply from the device you are connecting to, the reply will be displayed in the "Receive command box".

• [Send Delimiter]

Select send data delimiter from the combo box.

· [Clear]

Deletes the contents of the "Receive command box".



# 9. GP-IB Setting Screen

[	GPIB Parameter an	d Test					×
	File Name:	C:¥Users¥Administrator¥Documer	nts¥OptoSigma¥SGALI	GN¥parameter¥NoTitle.g	pf	Û	1
File Management 🛶				Load	Sa	ve	
					_		
Setting Storage 🗕	SET NO:	1     2     3     4       11     12     13     14	5 6 7 15 16 17	8 9 10 18 19 20			GPIB Board
	Equipment Set:	11 12 13 14		10 19 20			Open/Close
Device/Process Name	Equipment Name:			取込艺-9単位記号:		~	Receive Data Unit
GPIB Board No.	GPIB Board No.	0 ~ 🗹 Open (	Close Test	<b></b>			TEST
Device Address	GPIB Address:	0 ~		Sent:			Sent String
Receive Str <del>ing</del>	Received Paramet	er Range:	Response:				<ul> <li>Formatted</li> </ul>
Parameter Range	CMD 1:	Command	SendChk	Comment	FcvChk	SEND	Receive Result
_	CMD 1:					SEND	
	CMD 3:					SEND	
Command Group —	CMD 4:					SEND	1
	CMD 5:					SEND	
	CMD 6:					SEND	Send Button
	CMD 7:					SEND	Send Bullon
	CMD 8:					SEND	
	CMD 9:					SEND	
	CMDIG	<b></b>		•		JEND	
	Cancel				0	K	
L							.d
	Sen	d Command	Co	omment			
Enable/Disable Send Command With/Without Return Value							
• [File Managemen	t]						
File Name : Full p		PIR cotting file					
		_					
Load : Load	GPIB settin	IS .					

Save : Save GPIB setting

• [Setting Storage]

Memorize 20 types of settings in "Device Setting" frame.

• [Device/Process Name]

Device or process name that the setting will be sent to.

• [Receive Data Unit] Set unit of the received data. The setting cannot be saved to the setting file.

• [GPIB Board No.] Select GPIB board.



• [Device Address]

Select GPIB device address.

• [GPIB Board Open/Close]

Click "Open" to open the GPIB board with the specified GPIB board number.

If the GPIB board is successfully opened, the "Send" button is enabled.

Click "Close" to close the GPIB board. The "Send" button is disabled.

• [Receive String Parameter Range]

The string at the specified position is extracted from the received string and displayed in the [Formatted Receive Result].

The start position of the string to be extracted is given before "To". The first character position is considered to be 0.

After "To" is the number of strings to be extracted from the start position of the string.

• [Command Group]

A group of send line, enable/disable send command, enable/disable receive data.

 $\cdot$  [Send Command]

Input the command which will be sent to the device specified by GPIB board number and device address.

• [Enable/Disable Send Command] Check or uncheck to enable or disable sending the input command to the device.

• [With/Without Return Value]

Check when there is returned value corresponding to the send command.

• [Comment]

Show the meaning of command. (The comment is not sent to the device)

• [Send Button]

Performing test for sending and receiving line by line.

• [Test]

Send and receive a group of all 10 lines at once. (It is performed in order from the top)

• [Sent String]

Display the most recently sent command string.

· [Formatted Receive Result]

Display the string extracted from the received string according to the conditions in [Receive String Parameter Range].



# 1 0. A/D Setting Screen

	A/D Setting
File Management	File Name: C:¥Users¥Administrator¥Documents¥OptoSigma¥SGALIGN ¥parameter¥NoTitle.adf
	Load Save
Setting Storage	SET No.:         1         2         3         4         5         6         7         8         9         10
	11 12 13 14 15 16 17 18 19 20 Board Bits
	Board
Board Number	→ 0 → 3155 16 -10 → Voltage Range
Board Model	Channel
	Ch 1         Ch 2         Ch 3         Ch 4         Ch 5         Ch 6
A/D Channel –	Ch 7 Ch 8 Ch 9 Ch10 Ch11 Ch12
	Ch13 Ch14 Ch15 Ch16
	Setting
Classe Catting	0.000000 = × (AD Data + ) +
Slope Setting	Average 1 Srart Test Button
	OK Cancel

• [File Management]

File Name : Full path of the A/D setting file

Load : Load A/D setting

Import : Load A/D setting using current file name

- Save : Save A/D setting
- [Setting Storage]

Memorize 20 types of settings in board frame.

[Board Number]

Select board number of the A/D board.

• [Board Model]

Display the A/D board name corresponding to the selected board number.

• [Board Bits]

Display the input and output bit numbers of the A/D board selected in [Board Number].

• [Voltage Range] Select the input voltage range of the A.D board.



#### $\cdot$ [A/D Channel]

Select the channel in A/D board.

• [Slope Setting]

The slope of the data input from the A/D board can be corrected.

Slope Correction Result = Slope  $\times$  (AD\_DATA + Digital Offset Value) + Offset Value The analog values are acquired and averaged over the number of runs specified in "Average".

#### • [Test Button]

Start or stop the analog value acquisition test.

Once the "Start" button is pressed, the analog value acquisition is started and the button name becomes "Stop".

Once the "Stop" button is pressed, the analog value acquisition is stopped and the button name becomes "Start".

The acquired values are displayed in real time on the left side of the slope expression.



# 1 1. Alignment Setting Screen

Set alignment motion.	Ор	eration
	Alignment ×	<
File Management →	C:¥Sawaki¥調芯アプリ64bit化¥Source¥MainMenu¥Main¥Par¥NoTitle446.amt Load Save	
Alignment Method	SPIRAL 1 LINE 2 LINE 3 LINE Nelder/Mead RASTER Align Start Stop	
Setting Storage 🛛 🗕	No. 1         No. 2         No. 3         No. 4         No. 5         No. 6         No. 7         No. 8         No. 9         No.10           No.11         No.12         No.13         No.14         No.15         No.16         No.17         No.18         No.19         No.20	
	1 Axis     2 Axis       Axis     L_X         Axis     L_Z	
	Speed 0.2100 mm/s Speed 0.2300 mm/s Speed 0.5000 mm/s	
Axis Setting 🔶	Pitch     0.0820     mm     Pitch     0.0840     mm     Pitch     0.0900     mm       4 Axis     5 Axis     6 Axis     6 Axis	
	Axis     LZ     Axis     LZ     Axis     LZ       Speed     2.0000 + mm/s     Speed     2.0000 + mm/s     Speed     2.0000 + mm/s	
	Pitch         1.0000 -         mm         Pitch         1.0000 -         mm	lanut
	Condition Input	Input Setting
Operation Setting	1Axis     2Axis       4 ÷     ×       4 ÷     ×       MAIT     50 ÷       MS     Input       A/D     ✓       Set No.     0 ÷       Averaging Count     50 ÷	
	$ \begin{array}{c c} -\text{DIRECTION} & (2Axis) & -\text{END METHOD} \\ \hline \textcircled{0} & 0 \Rightarrow - & & \\ \hline \hline \begin{array}{c} \text{LEVEL STOP} & \checkmark \\ \hline \hline \begin{array}{c} 0 & 0 & 0 \\ \hline \end{array} \\ \hline \end{array} \\ \hline \end{array} \\ \hline \end{array} \\ \begin{array}{c} \text{LEVEL 1} & \hline \begin{array}{c} 0 & 0 & 0 \\ \hline \end{array} \\ \hline \end{array} \\ \hline \end{array} $	
	$\bigcirc 0 \Rightarrow - \Rightarrow + $ LEVEL2 $\bigcirc 0.000 \bigcirc \bigcirc$	
	Exit	

• [File Management]

File Name : Full path of the alignment setting file

- Load : Load alignment setting
- Save : Save alignment setting
- [Alignment Method]

SPIRAL : Detect by moving in a spiral outward from the current position.

1LINE : Detect along one specified axis.

2LINE : Detect along specified 1st axis and then specified 2nd axis.

3LINE : Detect along specified 1st axis, 2nd axis and 3rd axis in turn.

NelderMead : Using the NelderMead method, detect by moving to the predicted next peak position.

RASTER : Detect in serpentine motion.

 $\cdot$  [Setting Storage] No.1 $\sim$ No.20

Memorize 20 types of settings for each alignment method.



• [Axis Setting] 1Axis, 2Axis, 3Axis Set axis for alignment.

[Axis]: Select the axis[Speed]: Set moving speed[Pitch]: Set moving interval

[Operation Setting] Condition

Set Detecting range, Detecting Method, Detecting WAIT and End position.

[RANGE] : Detecting range (Valid for SPIRAL, RASTER and LINE alignment only) Detecting points are (Range \* 2 + 1)<sup>2</sup> for SPIRAL.

For example: When inputting "5", detecting points are  $(5 * 2 + 1)^2 = 121$ .

Detecting points are input value for RASTER, 1LINE, 2LINE and 3LINE.

For example: When inputting "5 \* 3", detecting points are 5 \* 3 = 15.

[DIRECTION] : Detecting direction (With exception of SPIRAL and NelderMead)

- 0 -> Detect from starting position to minus direction.
- 0 -> + Detect from starting position to plus direction.
- 0 -> -> + Move to half of the detection range from staring position to minus direction, and then detect along plus direction. \*In case of RASTER, valid for 1st axis.

#### [WAIT] : Detecting WAIT

Set the waiting time for starting power measurement after moving to measurement point. (Unit: msec)

#### [END METHOD] : End condition

MAX POWER Move to peak position after detection

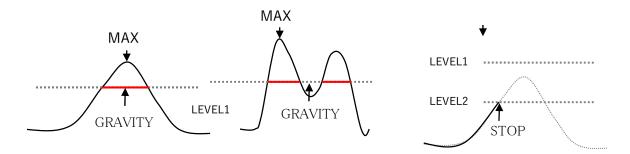
LEVEL STOP Stop once the detected data is within the range between LEVEL1 and LEVEL2.

PEAK SEARCH \*Optional function. Not available for standard product.

GRAVITY Set peak to be 100% after detection and move to the center of gravity cut off by the value (%) of LEVEL1.

CENTER

Return to the starting position after detection.



[LEVEL1] Comparison value for LEVEL STOP and GRAVITY.

[LEVEL2] Comparison value for LEVEL STOP.

\*Unit changes depending on the measurement data.

GRAVITY: %

LEVEL STOP: Analog voltage, or unit specified by connected device.



• [Operation Setting] Condition (For 1LINE , 2LINE and 3LINE)

The measurement range, measurement method, measurement WAIT, and end position can be set. [POSITION] mode can be selected as a method for specifying the operating range. For details on [RANGE] mode, see P. 32.

Condition		Condition	
RANGE 1Axis 2Axis 20 × 0 ×	× 0♀ WAIT × 0♀ mS	POSITION 1Axis Start 0.000000 Finish 0.000000	WAIT
DIRECTION (2Axis) $\bigcirc 0 \Rightarrow -$	END METHOD MAX POWER ~	2Axis Start 0.000000€	END METHOD MAX POWER ~
$\bigcirc 0 \Rightarrow +$ $\bigcirc 0 \Rightarrow - \Rightarrow +$		Finish 0.000000	
		Start 0.000000	
	POSITION	Finish 0.000000	

[POSITION] : Measuring range (mode that can be specified only in LINE alignment) Specifies the measurement range in terms of relative position from the current coordinates. START is the start position and Finish is the end position.

Example: If "Start" is "0.01", "Finish" is "-0.015", and "Pitch" is "0.002".

(-0.015 - 0.01) / 0.002 = -12 \*Decimal places are rounded down.

Measure in the minus direction from the start position.

The measurement points are 13 points, including 1 point at the start position.

Other items are the same as for Spiral and Raster alignment.



• [Operation Setting] Condition (For NelderMead only)

Set Detecting range, Detecting Method, Detecting WAIT and End position.

RANGE [mr 1Axis 0.000500 - 3Axis 0.000500 - 5Axis 0.000000 -	2Axis 0.000500 - 4Axis 0.000000 - 6Axis	Improvement Count 10
WAIT	00 📥 ms	END METHOD

#### [RANGE [mm, degree]]

Set the amplitude of each axis for NelderMead method.

#### [CONVERGENCE]

Sets the condition for termination of alignment.

NelderMead alignment ends the alignment operation in the following way.

- $\cdot$  When all axes used for alignment have been moved within 2 pulses of the previous movement value.
- When the non-improvement count by "Threshold" reaches the number of times set by "Improvement Count".
- $\cdot$  When the number of times set by "Iteration" has been reached.

Threshold	: Unit is %.				
The following formula is used to determine the increase or decrease					
	in the non-improvement count.				
	$\cdot$ Last measured power < Maximum power to date $st$ Threshold Value				
	⇒Increase non-improvement counts.				
	$\cdot$ Maximum power to date $st$ Threshold Value < Last	measured power			
	$\Rightarrow$ Clear the non-improvement count and restart from	0.			
Improvement Count: When the non-improvement count reaches the value set in this item,					
	the alignment stops.	END METHOD			
Iteration	: Specify the maximum number of alignment times.	MAX POWER V			
		MAX POWER MAX CENTER			
[END METHOD]		LOW POWER			
MAX POWER	Stop after measuring to be the maximum value.	LOW CENTER			
MAX CENTER	MAX CENTER After measuring to be the maximum value, it returns to the start position.				
LOW POWER	Stop after measuring to be the minimum value.				
LOW CENTER	After measuring to be the minimum value, it returns to	the start position.			

Other items are the same as for Spiral, Raster, and Line alignment.



• [Input Setting] input Set the interface for acquiring the measurement data.

Input items of [Input Setting] for Analog.

nput				
Input	A/D	~	Set No.	1
		Averagi	ng Count	10 🛓

Input items of [Input Setting] for GPIB, STR (serial), and TCP/IP.

Input	STR	~	Set No.	1
Send (	Command	ELLIPS	E	
Recei	ive <mark>d d</mark> ata a	cquisiti	on position	
Sta	rt Pos.	6 🜩	Length	<b>4 ↓</b>
		10 ^		

#### [input]

Select the interface (A/D, GPIB, STR (serial), TCP/IP) for acquiring the measurement data.

[Set No.]	Example: A/D set screen				
	uễ A/D 設定 X				
Select the setting number for each interface.	7Pr1%6: CVSGAlign649SourceMainMenu/Main/PartNoTrtle.adf				
Example: In the case of A/D	D=F         f/xff+F         th=7           SET No.:         1         2         3         4         5         6         7         8         9         10				
Subtract 1 from the "SET No." shown on the "A/D Set" screen	11 12 13 14 15 16 17 10 19 20 #-F				
to get the value of 1-20.	0 → ● 3155 16 -1 → 予約4				
	OH1         OH2         OH3         OH4         OH5         OH6         OH7         OH8           OH9         OH10         OH11         OH12         OH13         OH14         OH15         OH16				
Example: In the case of GPIB	砂友 SET1 SET2 SET3 SET4 SET5 STOP				
Subtract 1 from the "SET No." shown on the "GPIB Parameter" screen	0.01914425936612] = 1 x (AD_DATA + 0.23) + 0.21				
to get the value of 1-20.	AVE 10				
	キャンセル OK				

Example: In the case of STR (serial) Specify the "Tab No." set in the "Serial Communication Setup Screen".

Example: In the case of TCP/IP Specify the "Tab No." set in the "TCP/IP Setting Screen".

[Averaging Count] (\*Available for A/D only)Set the number of measurements for averaging.When the number is set to be 0, averaging is not performed.\*Depending on the device, it may not work due to the communication response.

HOURS

[Send Command] (\*GPIB, STR(Serial), TCP/IP only)

Command for acquiring the power.

The command is sent to the destination using the device setting specified in "Set No." on each communication device setting screen.

[Start Pos.] (\*GPIB, STR(Serial), TCP/IP only)

Sets the start position of the string, which is the received numeric data, in the received string. The position of the first character in the received string is 0.

[Length] (\*GPIB, STR(Serial), TCP/IP only) Sets the length of the received numerical data started from the [Start Pos.] in the received string.



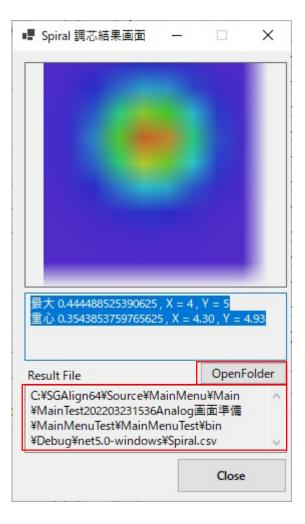
• [Operation]						
[Align Start]	Start the selecte	d alignment de	etection			
	At the same time	e, the measure	ment data i	is saved in	the following	folder.
	Folder		ser Name]	¥Documer	nts¥SGALIGN¥	fdata"
	Format	".csv"				
	* The file will be ov Please rename it		time when a	a new dete	ction is started.	
	• Saved Format					
	① In the case	of two dimensi	onal detect	tion (SPIR	AL, RASTER)	
	Save name:	Alignment det	ection nam	е		
	(e.g. Spiral.c	sv for SPIRAL	alignment	detection)	)	
	*Below shows w					
	The numerical da	ata is actually	separated l	by ",".		
1 <sup>st</sup> Axis Detection	Axis_1 0	.001 Axis_2	0.001	2 <sup>nd</sup> A:	xis Detection Pit	ch (mm)
Pitch (mm)	-37.4		-37.4612	-37.4602	-37.4592	2 <sup>nd</sup> Axis Coordinate (mm)
	-14.5019 157.6 -14.5029 168.0		167.9617 185.4151	179.1794 193.8938	191.0831 204.7416	· · · ·
1 <sup>st</sup> Axis Coordinate	-14.5039 178.5	884 194.1817	208.9962	211.1971	218.815	Detected Data
	-14.5049 189.0 -14.5059 198.9		218.9572 228.4801	231.4823 240.3424	233.2227	(Analog Value, etc.)
(mm)	-14.5059 196.8	<u>300 214.4277</u>	220.4001	240.3424	230.3620	
		¢ 11 1				
		of one dimensi		tion (1-3 L	ine)	
		"Axis_1.csv" fo			0 11 (Ond	
		"Axis_1.csv" (1	. <sup>st</sup> axis) and	for "Axis_	_2.csv" (2 <sup>nd</sup> axi	is) 2LINE
	*Below shows w	hen opening th	ne file in Fx	cel.		
	The numerical da					
			oopulatoa			
		0.00				
	Axis_1 -43.7	0.00 553 -0.0025		ection Pitch		
	-43.7		7.00	s_2 for 2 <sup>nd</sup> a	IXIS	
	-43.7					
Coordinate	(mm) -43.7 -43.7			ected Data	(Analog value, e	tc.)
[STOP]	Stop the detection	on.				
	*In the case of S	PIRAL or PAS	FER, the op	eration do	es not stop ur	ntil the detection
	along the curre	ntly operating s	side is com	pleted.		
	*The measureme	ent results fron	n the start	of the mea	asurement to t	he time when
	STOP is presse	d are saved.				
						HOURS

# 1 2. Alignment Result Screen

Display the alignment result for various alignment method.

- [Alignment Result for Spiral]
- [Result File]

Display the saved .csv file name.

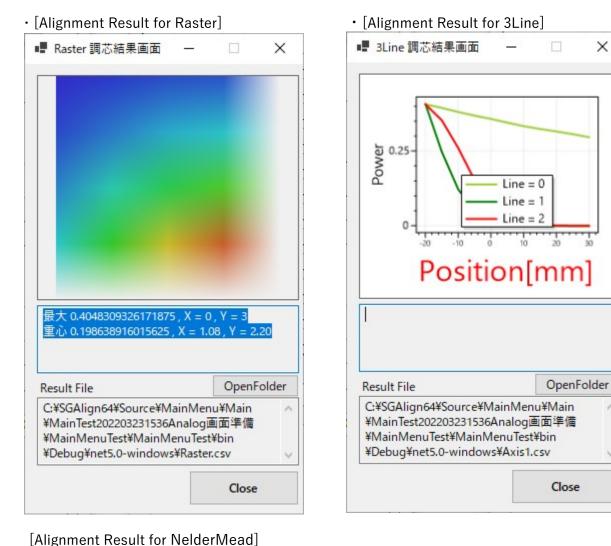


## • [OpenFolder]Button

Click [OpenFolder] button to explore the folder which contains .csv alignment result file.

→ 🗠 🛧 📙 « MainMenuTest → Mai	nMenuTest > bin > Debug > net5.0-window	. >	ٽ ×	, P net5.0-windowsの検索
	名前	種類	サイズ	更新日時
📙 MainTest202203151559画面	B Spiral.csv	Microsoft Excel CS	2 KB	2022/03/23 19:18
MainTest202203161812画面	🖞 UsingPara.xml	XML ファイル	1 KB	2022/03/23 19:17
MainTest202203171136画度	MainMenuTest.deps.json	JSON File	20 KB	2022/03/23 19:15
MainTest202203171742画面	MainMenuTest.dll	アプリケーション拡張	386 KB	2022/03/23 19:15
MainTest202203171750Ana	MainMenuTest.exe	アプリケーション	123 KB	2022/03/23 19:15
MainTest202203181700Ana	MainMenuTest.pdb	Program Debug D	90 KB	2022/03/23 19:15
	MainMenuTest.runtimeconfig.dev.json	JSON File	1 KB	2022/03/23 19:15
MainTest202203181843Ana	MainMenuTest.runtimeconfig.json	JSON File	1 KB	2022/03/23 19:15
MainTest202203221153Ana	AlignmentDII.dll	アプリケーション拡張	42 KB	2022/03/23 19:15
MainTest202203221455Ana	AlignmentDII.pdb	Program Debug D	30 KB	2022/03/23 19:15
MainTest202203221519Ana	DioDII.dll	アプリケーション拡張	11 KB	2022/03/23 19:15
MainTest202203231536Ana	DioDII.pdb	Program Debug D	14 KB	2022/03/23 19:15
Alignment202112081712	InterfacePro_DLL.deps.json	JSON File	11 KB	2022/03/23 19:15
AlignmentResource	InterfacePro_DLL.runtimeconfig.dev.json	JSON File	1 KB	2022/03/23 19:15
	InterfacePro_DLL.runtimeconfig.json	JSON File	1 KB	2022/03/23 19:15
Common	JOG_FormLibrary.dll	アプリケーション拡張	90 KB	2022/03/23 19:15
DioDII	JOG_FormLibrary.pdb	Program Debug D	22 KB	2022/03/23 19:15
Interface_dll_20220322152	InterfacePro_DLL.dll	アプリケーション拡張	115 KB	2022/03/23 19:15
JOG_FormLibrary	InterfacePro_DLL.exe	アプリケーション	123 KB	2022/03/23 19:15
MainMenuTest	InterfacePro_DLL.pdb	Program Debug D	49 KB	2022/03/23 19:15
.vs	Motion.dll	アプリケーション拡張	51 KB	2022/03/23 19:15
MainMenuTest	Motion.pdb	Program Debug D	30 KB	2022/03/23 19:15
	Common.dll	アプリケーション拡張	6 KB	2022/03/23 19:15
bin	Common.pdb	Program Debug D	12 KB	2022/03/23 19:15
Debug	NovaDLL.dll	アプリケーション拡張	27 KB	2022/03/23 19:15





# NelderMead 調芯.... \_ X 0.0075 Power 0.005 Line = 0..î. Align Num OpenFolder **Result File** C:¥SGAlign64¥Source¥MainMenu¥Main ¥MainTest202203240907Analog画面準備 ¥MainMenuTest¥MainMenuTest¥bin ¥Debug¥net5.0-windows¥NelderMead.csv Close



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~

# 1 3. Sequence

# 1 3 - 1. Sequence Editing Screen

Edit								-	×
New	Open Save Sa	ave A	As Variable						test
	Туре		Word1	Word2	Word3	Word4	Word5	Word6	^
▶ 001	Numeric	~ IN	NT1	=	1				
002	Control	~ if	F	C	INT1	==	1	)	
003	Comment	~ #	£						
004	Control	~ T	ES	C	)				
005	Comment	~ #							
006	Numeric	~ IN	NT1	=	1				
007	Control	~ e	lse						
800	Numeric	~ IN	NT1	=	0				
009	Comment	~ #							
010	Control	~ e	nd						
011	Comment	~ #							
012	Comment	~ #							
013	Control	~ d	ef	TES	(	)			
014	Comment	~ #							
015	Numeric	~ IN	NT1	=	1				
016	Comment	~ #							
017	Control	~ re	eturn						~
	stop		Search Search in Sequence		Ope	erand Box	Speel igh Normal Remov Break P		

File being Edited

•[New]

Completely clear the current sequence screen to create a new sequence. (File is not saved in this time)

 $\cdot$  [Open]

Open and display a sequence file.

• [Save]

Overwrite the selected sequence file with the contents shown in the current sequence screen.

• [Save as]

Save the contents shown in the current sequence screen to a new file.



- [Variable List]
   Display the variable editing screen
   -> 3-2
- [File being Edited] The file name of the currently edited/displayed sequence.
- [Calculation and Control Type] Select the process from the combo box.
- [Operand Box]

Enter commands, operators, variables, values, etc.

C# or Python syntax.

Right-click to display input candidates.

functions	٠
math	٠
Sign	•
Integer	•
Floating	٠

• [Start] Button

Start the sequence in the order from the top.

 $\cdot$  [Stop] Button

Stop the currently running sequence.

• [Search in Sequence]

Search the string entered into the search box in columns from Word1 to Word6 in the current sequence screen. Display the matched string or value in cell in red.

 $\cdot$  [Run Speed]

Change the execution speed of the sequence shown in the current screen.

- [High] : High speed
- [Normal] : Normal speed
- [Low] : Low speed
- [Very Low] : Very low speed

\*When executing the sequence by click [Start] button in main screen,

the execution speed is faster than the [High] speed in sequence screen.

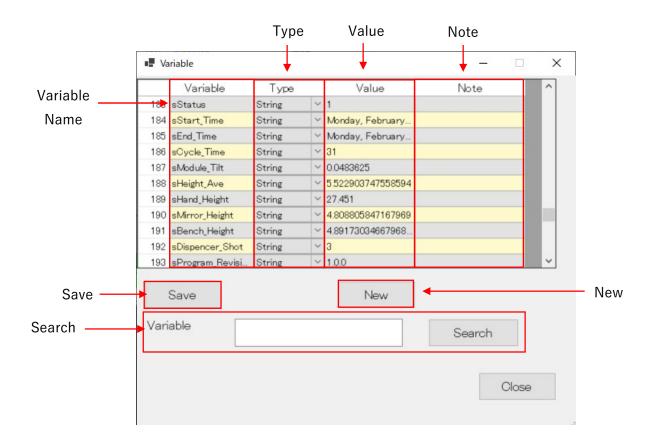
 $\cdot$  [Remove all Break Point] Button

Remove all break points in the sequence screen.



# 1 3 - 2. Variable List Screen

Input the variables used in the sequence.



• [Variable Name]

Input or modify the variable name. Input in the last line to add new variable.

•[Type]

Select the type of the variable from the combo box.

 $\cdot$  [Value]

Display the current value of the variable. Change the current value when editing.

• [Note]

Input note about the variable. This does not affect the sequence.

 $\cdot$  [Save] Button

Overwrite the variable list file with the current variable list.

Saved file path and name:

C:¥Users¥[User Name]¥Documents¥OptoSigma¥SGALIGN¥Variable.json



 $\cdot$  [New] Button

Clear the variable list for creating new one.

 $\cdot$  [Search]

Enter the variable name in the textbox and click [Search] button.

If the variable exists in the current variable list, the list is scrolled, and the searched variable becomes highlighted in blue.

The search is the exact match search.



# 14. Key Console

#### ●∑ SGALIGN × \_ ボード 調芯 I/O インタフェース ●∑ OptoSigma\* 設定 Language -6-3 No. Alarm ^ Axis Position U Jog All Close ジョグ L\_Z 🔍 0.000000 m A/D Stop 02 L\_X 🔍 0.000000 m Gel-Pak 03 L\_Y ۲ 0.000000 機械原点 m Key Console 04 L\_YQ 🔍 0.000000 de 05 L\_ZQ 🔍 0.000000 ۲ ۲ ۲ deg 06 L\_XQ 🔍 0.000000 ۲ ۲ • deg 07 -41.597200 ۲ ۲ ۲ R\_Z ۲ mm walk1\_mm 0.3600 ۲ ۲ 0 ۲ 08 R\_X 0.000560 mm 0 ۲ 0 ۲ 09 R\_Y 0.010400 Cal\_mem\_1 0.49727355957 mm 10 R\_YQ 🔍 ۲ ۲ ۲ -0.011381 deg Cal\_mem\_2 -1.5084332275 11 R\_ZQ 🔍 ۲ 0 0 0.000000 deg walk2\_mm 1.5 < LINE2 開く 調芯設定 確認 運転を開始します。 Console mode Off 開始 編集 閉じる

## 1 4 - 1. Display the key console setting screen

Click [Setting] - [Key Console] on main screen to display the key console screen.

C:¥Users¥ ¥Docur ¥KevConsoleTest1720.cnl	ents¥OptoSigma	a¥SGALIGN¥parameter	Load Rename Save	Alignment	Sequence
		•		Key Alignment1	Key Sequence1
xis				Logic SPIRAL V Set No 1 V	Sequence SampleProgram
Key Axis1 Axis X	~	Key Axis2 Axis Y	Key Axis3 Axis Z V	Key 🗌 Ctrl 🗌 Alt 🗹 Shift 🛛 🗸 🗸	Key Ctrl Alt Shift 4(NumPac
Key Modifiers Ctrl A	t 🗌 Shift	Key Modifiers Ctrl Alt Shift	Key Modifiers Ctrl Alt Shift	Key Alignment2	Key Sequence2
				Logic V Set No 1 V	Sequence Test_Def
Key CW Z 🗸 C	W E 🗸	Key CW W V CCW X V	Key CW A 🗸 CCW D 🗸	Key 🗌 Ctrl 🗌 Alt 🗌 Shift 🔍	Key Ctrl Alt Shift S(NumPac
Key Axis4		Key Axis5	Key Axis6	Key Alignment3	Key Sequence3
Axis	~	Axis 🗸	Axis 🗸	Logic $\checkmark$ Set No 1 $\checkmark$	Sequence AllOrgin
Key Modifiers Ctrl A	t 🗌 Shift	Key Modifiers Ctrl Alt Shift	Key Modifiers Ctrl Alt Shift	Key 🗌 Ctrl 🗌 Alt 🗌 Shift 🧹 🗸	Key 🗌 Ctrl 🗌 Alt 🗌 Shift
Key CW 🗸 🗸 Ci	w v	Key CW 🗸 CCW 🗸	Key CW 🗸 CCW 🗸	Key Alignment4	Key Sequence4
				Logic V Set No 1 V	Sequence
g Screen				Key 🗌 Ctrl 🗌 Alt 🗌 Shift 🧹 🗸	Key Ctrl Alt Shift
ogScreenName Nam	Ctrl	rl Alt Shif Key	^	Key Alignment5	Key Sequence5
ft Stage Speed	D 🗆	] 🗌 🗹 Q 🗸 🗸		Logic V Set No 1 V	Sequence
ft Stage Speed	ı 🗆	) 🗆 🗹 A 🗸 🗸		Key Ctrl Alt Shift ~	Key Ctrl Alt Shift
ft Stage Speed	2	] 🗆 🗹 в 🗸			
ft Stage Travel	node 🗌				Emergency Stop
ft Stage Distar	ce 🗌	] 🗆 🗹 🖻 🗸			Key Ctrl Alt Shift
ght Stage Speed					
			~	Save	Exit



# 1 4 - 2 . Key Console Setting Screen

 $\cdot$  [Left side of the key console setting screen]

	ReyConsol Set	
File Management _	C:¥Users¥ #Documents¥OptoSigma¥SGALIGN¥parameter     KeyConsoleTest1720.cnl     Load     Rename Save	
Axis Operation Key Setting	Modifiers       Imodifiers       Imodifiers <td>Shift</td>	Shift
	Jog Screen JogScreenName   Name   Ctrl   Alt   Shif   Key	^
Set speed,	Left Stage Speed0  Q V	
operation mode, -	Left Stage Speed 1	
moving distance	Left Stage Speed2	
key in Jog Screen	Left Stage     Travelmode     □     □     ✓       Left Stage     Distance     □     □     ✓	
	Right Stage     Speed0     Image     Image     V	
$\cdot$ [Right side of	the key console setting screen]	
	Alignment Sequence	
Alignment	Key Alignment1     Key Sequence1       Logic     SPIRAL     Set No     1     Sequence	Sequence
-	Key □ Ctrl □ Alt ☑ Shift Q	- Key
Setting 🔶		Rey
Key	Key Alignment2     Key Sequence2       Logic     V     Set No       1     V   Sequence Test_Def	
	Key     Ctrl     Alt     Shift     V     Key     Ctrl     Alt     Shift     5(NumPac V)	
	Key Alignment3 Key Sequence3	
	Logic V Set No 1 V Sequence AllOrgin	
	Key         Ctrl         Alt         Shift         \vee           Key         Ctrl         Alt         Shift         \vee	
	Key Alignment4 Key Sequence4	
	Logic V Set No 1 V Sequence	
	Key         Ctrl         Alt         Shift         ~	
	Key Alignment5     Key Sequence5       Logic     V     Set No       1     V	
	Key  Ctrl    Alt    Shift	
	Emergency Stop Key 🗌 Ctrl 🔛 Alt 📃 Shift 🗸 🗸	Emergency
Save		Stop Key
Button	Save	Exit Button



HOURS

•	[File	Management]
---	-------	-------------

File name (.cnl) for saving the key console setting value.

Load : Load the key console setting file (.cnl file)

Rename Save : Save the key console setting to different file (.cnl file)

## • [Axis Operation Key Setting]

Specify the key for moving the axis in each direction. Up to 6 axes can be specified.

Axis	Х	~	
Key	s Ctrl	Alt	Shift
Modifier	5		

Axis : Select the axis which is operated by using the key. Only the existing axes are listed. Key Modifiers: Check to allow in combination with Control, Alt, and Shift.

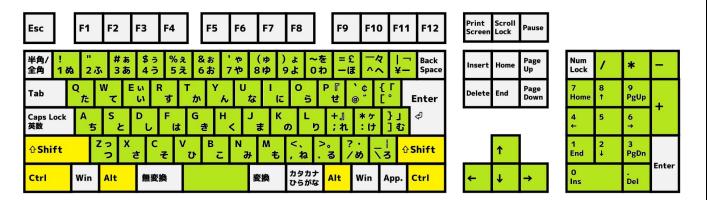
Key CW : Specify the CW direction key of the axis shown in [Axis]. Required for key operation.

Key CCW : Specify the CCW direction key of the axis shown in [Axis]. Required for key operation.

When pointing Key CW and Key CCW with mouse, tooltip appears.

Key CW	5(Nur ∨	CCV
	5(NumP	ad)

Keys in green can be specified for Key, Key CW, and Key CCW. Keys in yellow can be specified for Key Modifiers.



\*Please note that the keys in yellow can only be used in combination with that in green and cannot be used alone.



[Set speed, operation mode, moving distance key in Jog Screen]
 Using the 3-step speed and 3-step movement distance set in the JOG operation screen,
 to specify keys for 3-step speed, key for movement distance switching, and key for movement mode switching.

log Screen						
JogScreenName	Name	Ctrl	Alt	Shif	Key	
Left Stage	Speed0			$\checkmark$	Q	~
Left Stage	Speed1				A	~
Left Stage	Speed2				В	~
Left Stage	Travelmode( × 1)				т	~
Left Stage	Distance				D	~
Right Stage	Speed0					~
Right Stage	Speed1					~
Right Stage	Speed2					~

Items that can be assigned to keys in each JOG screen are Speed0, Speed1, Speed2,

 $\ensuremath{\mathsf{Travel}}\xspace{\mathsf{Mode switching}}$  , and  $\ensuremath{\mathsf{Distance switching}}$  .

(For example) Left Stage

	Left Stage	×
Speed0 Speed1 Speed2	Speed TravelMode (% 1) O.1000 C Jog Relative O.15.9000 C Absolute	[mm], [degree]

% 1: With key operation, Travelmode switches between Jog and Relative. Absolute cannot be switched to.



JogScreenName	Name	Ctrl	Alt	Shif	Key	
Left Stage	Speed0				Q	~
Left Stage	Speed1			$\checkmark$	A	~
Left Stage	Speed2			$\checkmark$	В	~
Left Stage	Travelmode				т	~
Left Stage	Distance				D	~
Right Stage	Speed0					~
Right Stage	Speed1					~
Right Stage	Speed2					~

JogScreenName

: Display the JOG screen name and it cannot be changed.

Name

Key

: Display the name of the key operation and it cannot be changed.

- Ctrl : Check to use "Control" key.
- Alt : Check to use "Alt" key.
- Shift : Check to use "Shift" key.

: Specify the key. It is necessary when using key operation.

When pointing the Key using mouse, the full key name appears in a tooltip.



## • [Alignment Setting Key]

[Alignment Method] and [Setting Storage] No.1~No.20 set on the [Alignment Setting Screen] can be specified as key operations. Up to 5 alignment settings can be specified.

Key Ali	gnment1
Logic	SPIRAL V Set No 1 V
Key	□ Ctrl 🗹 Alt □ Shift Q 🗸
Logic	: Select the [ Alignment type] for key operation
Set No	: Specify [Setting Storage] No.1~No.20 for selected [Logic]
Ctrl	: Check to use "Control" key.
Alt	: Check to use "Alt" key.
Shift	: Check to use "Shift" key.
Key	: Specify the key. It is necessary when using key operation.

When pointing the Key using mouse, the full key name appears in a tooltip.

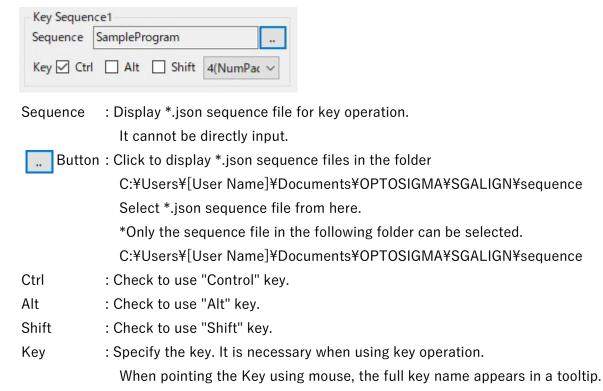
## (Example: Alignment Setting Screen)

	Alignment		×
	C:¥Sawaki¥調芯アプリ64bit化¥Source	éMainMenu¥Main¥Par¥NoTitle446.amt	Load Save
[Alignment Method] 🔶	SPIRAL 1 LINE 2 L	INE 3 LINE NelderMead	RASTER Align Start Stop
[Setting Storage] —	No. 1 No. 2 No. 3 No.		No. 9 No. 10 LINK
	No.11 No.12 No.13 No.1	14 No.15 No.16 No.17 No.18	No.19 No.20
	Axis L_X ~	Axis L_Y ~	Axis L_Z ~
	Speed 0.2100 mm/s	Speed 0.2300 mm/s	Speed 0.5000 mm/s
	Pitch 0.0820 🖨 mm	Pitch 0.0840 mm	Pitch 0.0900 🔹 mm
	4 Axis	5 Axis	6 Axis
	Axis L_Z ~	Axis L_Z ~	Axis L_Z ~
	Speed 2.0000 mm/s	Speed 2.0000 mm/s	Speed 2.0000 mm/s
	Pitch 1.0000 🜩 mm	Pitch 1.0000 🔹 mm	Pitch 1.0000 🜩 mm
	Condition	Input	
	RANGE 1Axis 2Axis 4 x 4 x	50 ms Input A/D	∽ Set No. 0 🛓
	DIRECTION (2Axis) END	METHOD	Averaging Count 50
		EL STOP ~	
	$\bigcirc 0 \Rightarrow - \Rightarrow + \qquad LEV$		
			Exit



## $\cdot$ [Sequence Key]

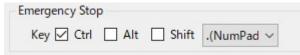
A sequence file that describes sequence actions can be specified as a key operation. Up to 5 can be specified.



• [Emergency Stop Key]

Set key for emergency stop.

Immediately stop all axis motion, all alignment and all sequence.



Ctrl : Check to use "Control" key.

Alt : Check to use "Alt" key.

Shift : Check to use "Shift" key.

Key : Specify the key. It is necessary when using key operation.

When pointing the Key using mouse, the full key name appears in a tooltip.

• [Save Button]

Click to save key console setting to the ".cnl" file shown in [File Management].

• [Exit Button]

Close the key console setting screen.



# 1 4 - 3. Switching to console key operation mode

●∑ SGALIGN X ボード 調芯 1/0 インタフェース 設定 OptoSigma' Language No. Axis Position Unit Home LS+ LS-Alarm Jog Open L\_Z 0.000000 mm Stop 02 L\_X 🔍 0.000000 ۲ ۲ mm 03 L\_Y 🔘 0.000000 ۲ 機械原点 mm 04 L\_YQ O 0.000000 deg ۲ 05 0.000000 deg ۲ L\_ZQ 🔍 06 0.000000 deg ۲ L\_XQ 🔍 07 ۲ R\_Z 🧕 0.000000 mm walk1\_mm 0.3600 08 ۲ R\_X 0.000000 mm ۲ 09 R\_Y 0 0.000000 Cal mem 1 0.49727355957 mm ۲ 10 R\_YQ 🔍 0.000000 deg Cal\_mem\_2 -1.5084332275 ۲ ۲ 11 R\_ZQ 🔍 0.000000 deg walk2\_mm 1.5 < Demonstration\_F\_1\_202212071129(実機PCファイル編集) 開く 調芯設定 確認 運転を開始します。 ON/OFF switching Console button for console key mode Off operation 開始 編集 閉じる

Key operations are possible only when the main screen is active.

Above shows status when console key operation mode is OFF.

Click [ON/OFF switching button for console key operation].



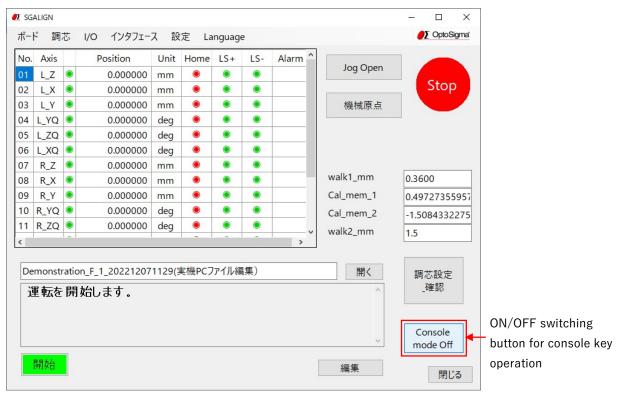
console key operation mode becomes ON.

When the console key operation mode is ON, screen in pink is for attention.

The text of [ON/OFF switching button for console key operation] becomes [Console mode On].



Click [ON/OFF switching button for console key operation] again to return to console key operation mode OFF status.





## 1 4 - 4 . Operation example using console keys

[Movement mode switching]

As an example, change movement mode of the Left Stage to relative movement.

- 1 Switch console mode to be On and display the pink screen.
- 2 The Travelmode of the Left Stage on the setting screen is confirmed to be [Shift + T].
- 3 Active the main screen in pink by clicking it or using other method, and press [Shift + T].

Main Screen			
🖉 SGALIGN		– 🗆 X	
ボード 調芯 I/O インタフェース 設定 Language		●∑ OptoSigmat	
No. Axis Position Unit Home LS+	S- Alarm Jog Open		
01 L_Z   0.000000 mm	• Jog Open		
02 L_X   2.007260 mm	•	Stop Console key setting screen	
03 L_Y   0.000000 mm	● 機械原点		
04 L_YQ   0.000000 deg		Jog Screen	
05 L_ZQ   0.000000 deg	•	JogScreenName         Name         Ctrl         Alt         Shif         Key           Left Stage         Speed0         □         □         ☑         Q	~
06 L_XQ   0.000000 deg	•	Left Stage Speed1	~
07 R_Z   0.000000 mm   0	walk1_mm		~
08 R_X   0.000000 mm		Left Stage Travelmode T T 2	~
09 R_Y   0.000000 mm	Cal_mem_1	0.49727355957	~
10 R_YQ • 0.000000 deg • •	Cal_mem_2	-1.5084332275	
11 R_ZQ      0.000000 deg	walk2_mm	1.5	
<	>		
Demonstration_F_1_202212071129(実機PCファイル編	) 開く	調芯設定	
		確認	
Left Stageの移動モードを相対移動に影	史しました。		
	จ	ON/OFF switching	
	3	(L)Console	
	×	button for console key	
<mark>。開始。</mark>	編集	operation	

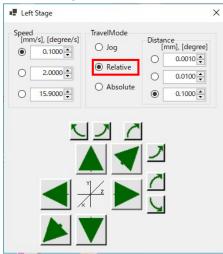
To confirm, press the Jog Open button to try to display the JOG screen.



The message box shows that to open the JOG screen, Console function must be disabled. Then click OK. (Explanation will be omitted from the next time)



#### Left Stage JOG Screen



Travelmode on the JOG screen of the Left Stage can be confirmed to be Relative.

With console key specification, each time after specified key is pressed, Travelmode changes from JOG  $\rightarrow$  Relative  $\rightarrow$  JOG  $\rightarrow$   $\cdots$  repeatedly.

It cannot be changed to Absolutemode.

[Relative moving distance switching]

- 1 Switch console mode to be On and display the pink screen.
- ② The Distance switching of the Left Stage on the setting screen is confirmed to be [Shift + D].
- ③ Active the main screen in pink by clicking it or using other method, and press [Shift + T].

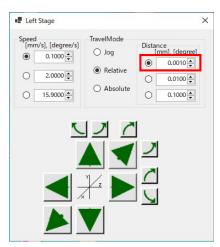
# Main Screen

Demonstration_F_1_202212071129(実機PCファイル編集)	開く	調芯設定
Left Stageの相対移動距離を0.001mmに変更しました。	^	_確認 (1)
3	~	Console mode On

#### Console key setting screen

JogScreenName	Name	Ctrl	Alt	Shif	Key	
Left Stage	Speed0			$\checkmark$	Q	~
Left Stage	Speed1				A	~
Left Stage	Speed2				В	~
Left Stage	Travelmode				т	~
Left Stage	Distance				D (2)	~

#### Left Stage JOG Screen



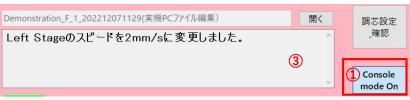
Relative distance on JOG screen of left stage can be confirmed to be 0.001mm.



[Speed Setting]

- ① Switch console mode to be On and display the pink screen.
- (2) The Speed1 specification of the Left Stage on the setting screen is confirmed to be [Shift + A].
- ③ Active the main screen in pink by clicking it or using other method, and press [Shift + A].

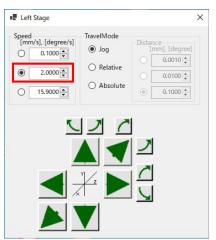
#### Main Screen



#### Console key setting screen

JogScreenName	Name	Ctrl	Alt	Shif	Key	
Left Stage	Speed0			$\checkmark$	Q	~
Left Stage	Speed1			$\checkmark$	A (2	)  ~
Left Stage	Speed2				В	~
Left Stage	Travelmode				т	~
Left Stage	Distance				D	~

#### Left Stage JOG Screen



Speed on left stage JOG screen can be confirmed to be 2mm/s.

Above the operation is also valid for Speed0 key and Speed2 key setting.



[Axis Movement]

- ① Switch console mode to be On and display the pink screen.
- ② Set Travelmode to the desired status (Relative or JOG). (See previous page)
- ③ On the setting screen, [Z] is used to move L\_X axis in the + direction.
- ④ Active the main screen in pink by clicking it or using other method, and press [Z].
- 5 Once the movement is completed, the message "Completed" will be displayed after "...".

#### Main screen when executing relative movement



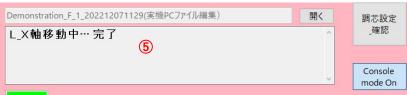
# Console key setting screen

Axis	L_X		~
Key Modifiers	Ctrl [	Alt	Shift
	Z (3)~		

#### Main screen when executing JOG movement



#### Main screen after completing relative movement



### Main screen after completing JOG movement



[Alignment Operation]

- ① Switch console mode to be On and display the pink screen.
- ② On the setting screen, Key Alignment1 is SPIRAL alignment No.1. The console key is [Alt + Q].
- 3 Active the main screen in pink by clicking it or using other method, and press [Alt + Q].
- ④ Executing the alignment. To stop during the alignment, click STOP button on the screen, or press Emergency Stop key specified on the console key setting screen.

Demonstration_F_1_202212071129(実機PCファイル編集)	開く	調芯設定	Alignment
SPIRAL 調芯実行中···	^	_確認	Key Alignment1 Logic SPIRAL V Set No 1 V
		(1) Console	Key Ctrl Alt Shift Q 2 V
	~	mode On	



[Sequence Operation]

- ① Switch console mode to be On and display the pink screen.
- On the setting screen, the sequence file of Key Sequence3 is "Demonstration\_F\_1202212071129~~
   ". The console key is [Ctrl + 1(NumPad)].
- ③ Active the main screen in pink by clicking it or using other method, and press [Ctrl + 1(NumPad)].
- ④ The sequence name is changed to the specified sequence file name and the sequence is executed. To stop during the execution, click STOP button on the screen, or press Emergency Stop key specified on the console key setting screen.

1	Demonstration_F_1_202212071129(実機PCファイル編集)	開く	調芯設定	
	開始	^	_確認	Key Sequence3 Sequence Demonstration_F_1_202212071
	3	~	Console mode On	Key 🗹 Ctrl 🗌 Alt 🗌 Shift 1(NumPac 🗸 2

[Emergency Stop]

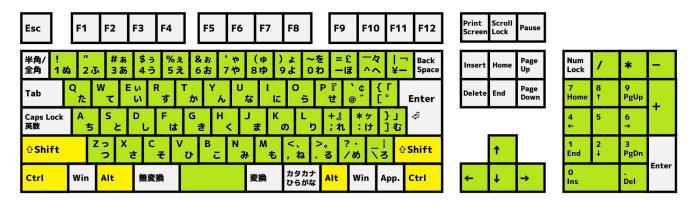
- 1 Switch console mode to be On and display the pink screen.
- ② On the setting screen, the console key of Emergency Stop is [Ctrl + 0(NumPad)].
- ③ Active the main screen in pink by clicking it or using other method, and press [Ctrl + 0(NumPad)].
- ④ "All axes are stopped" is displayed. Pressing stop key can stop axis, alignment and sequence.

Demonstration_F_1_202212071129(実機PC7ァイル編集) L_X軸JOG移動中···· 3	開く へ 、	調芯設定 確認 ①Console mode On	Emergency Stop Key 🗹 Ctrl 🗌 Alt 🗌 Shift 0(NumPac 🗸
Demonstration_F_1_202212071129(実機PCファイル編集) 全軸 動作停止完了	開く	調芯設定 _確認	
(4)	~	Console mode On	



## 1 4 - 5. Usable keys for console key operation

For console key operation, the keys in green can be used individually or in combination with keys in yellow.



\*Yhe key in yellow can only be used in combination with the keys in green. They cannot be used individually.

(NumPad) key is the numeric keypad on the right side of the keyboard shown in the above. When selecting a key, [Numeric key] is the main key on the left, and [Number(NumPad)] key is the numeric key on the right. They are different.

[Number(NumPad)] key cannot be used for some PCs such as laptops without the numeric keypad.

The recommended keyboard layout.

- Japanese 106 keyboard
- Japanese 108/109 keyboard
- Japanese 112 keyboard



# **1 5** . How to start (From power on to sequence start)

- 1 Power on the PC and then the 8-axis driver box.
- ② Double click the following icon to start the alignment software.



③ Once the main screen appeared, click [Machine Origin].

\*Please always do mechanical origin after restarting driver box and alignment software. Otherwise, repeatability cannot be achieved, and mechanical interference may happen to damage the setup.

SGALI	IGN								- 0
loard	Align	ment I/O II	nterfac	e Sett	ting	Langua	ige		●∑ OptoSign
lo. Axi	is	Position	Unit	Home	LS+	LS-	Alarm		
)1 X	۲	0.000000	mm	۲	۲	۲		Jog Open	
2 Y	۲	0.000000	mm	۲	۲	۲			Stop
3 Z	۲	0.000000	mm	۲	۲	۲			
								Machine origin	
									-
								INT1	1
									-
test1								 Open	Alignment
Оре	ratio	n is start.						^	Set & Test
									Console mode
			_		_			~	Off
St	art							5.0	
								Edit	Close

- 4 Once the machine origin is finished, please press [Start] button.
- ⑤ Once the operation is finished, please double check that the sequence program has been stopped. Then please click [Close] button.

\*It might take time until the end screen appears because the data needs to be saved.

6 One the software is finished, please power off all devices.It is recommended to power off the devices in the reverse sequence of startup.

