HD-4223E-6

KWF-12F2 Maintenance Tool
USER'S GUIDE

KWF-12F2

Hirata
The Global Production Engineering Company

Warranty

All of Hirata's products which is passed our formal inspection test shall be guaranteed against faults due to the negligence of Hirata for either earlier period of one year or four thousand hours of operation from the day of shipment from Hirata Factory.

This warranty shall be applicable to the parts replacement and/or labor for repair in our factory and transportation cost shall not be applied.

We will charge the repair of faults caused by the following reasons:

* Wrong usage which are prohibited in the instruction manual.
* After the expiration of guarantee period.
* Earthquake, fire, riot, violence, war and other force majeure.
* Modification, repair or adjustment is performed by unauthorized person.

Contact your sales agent for individual warranty coverage.

KWF-12F2-TOOL
USER'S GUIDE (HD-4223E-6)

The 6th revised in December, 2017

Printed in Japan
Hirata Corporation

Kumamoto Head Quarters
111, Hitotsugi, Ueki, Kita, Kumamoto, 861-0198 JAPAN
Phone +81-96-272-0555
Facsimile +86-96-272-7901

Semiconductor Business Unit
1016-6 Kusuno, Kita, Kumamoto 861-5511 JAPAN
Phone +86-96-245-1333
Facsimile +86-96-245-0816

NOTATION

Notes, Cautions, and Warnings

There are four levels of special notations are used in this manual.

Notation	Description
 WARNING	If the actions indicated in a WARNING are not complied with, injury or major equipment damage could result.
 CAUTION	If the action specified in the CAUTION is not complied with, damage to your equipment could result.
 NOTE	A NOTE provides supplementary information, emphasize a point or procedure, or gives a tip for easier operation.

CHAPTER 1 Outline

1.1 Introduction

KWF-12F2 Maintenance Tool (The following, KWF-12F2 Tool) is the tool for adjusting, running up, and setting the parameter of KWF-12F2 Maintenance Tool, Hirata FOUP opener. KWF-12F2 Maintenance Tool has the following functions;

(1) Monitor the state

(2) Read and write each parameter

(3) Operate each actuator

WARNING

(1) Make sure to confirm no personnel or no dangerous situation exists around the KWF-12F2 prior to using the tool.
(2) In order to prevent other personnel from contacting the KWF-12F2 while using the tool, make sure to encircle it with fences, etc. or put a warning card on which " Under Maintenance " was written as safety measure.
(3) Make sure to thoroughly read this operation manual and the attached " KWF-12F2 FOUP Opener Operation Instructions Manual " prior to using the tool.
(4) Make sure to exist at the location where you can see the KWF-12F2 while using the tool.

1.2 System Requirements

Table 1.1 System Requirements

OS	Microsoft Windows Vista/7 (OS description of the Verified our company within) * Necessary application for movement ".NET Framework 2.0" or higher
HDD	10 MByte or more
Display	800×600 pixels or more
Others	Mouse, Communication port

1.2.1 How to Connect

The RS-232C cable with following pin assignment is necessary for connecting each port of the KWF-12F2 with the RS-232C port of the PC.

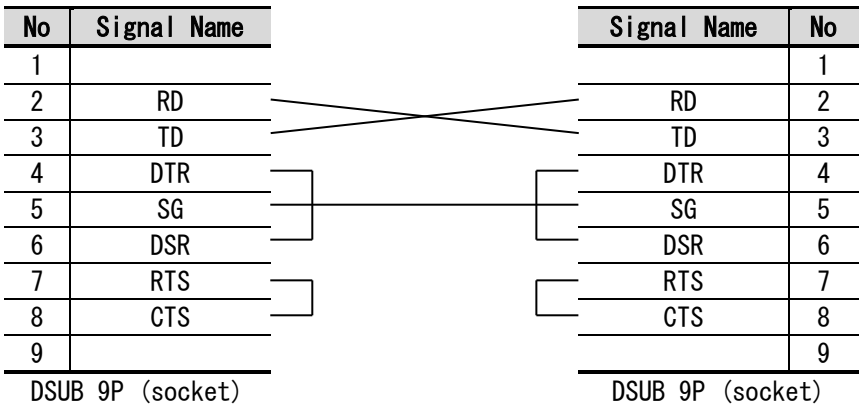


Fig 1.1 Cable Pin Assignment

NOTE

Short circuit occurs between No. 4 and No. 6, also between No. 7 and No. 8. Make sure that the pin assignment is the same as Fig. 1.1 prior to using the cable.

1.3 Installation and Uninstallation

1.3.1 How to install

By the following procedures, the installation of KWF-12F2 Maintenance Tool (hereafter called KWF-12F2 Tool) is started.

(1) If the set-up file (setup.exe) is executed by using a personal computer in which no KWF-12F2 Maintenance Tool has been installed, the screen of Fig 1.2 shown below appears.

By clicking " Next " button, proceed to the next screen.

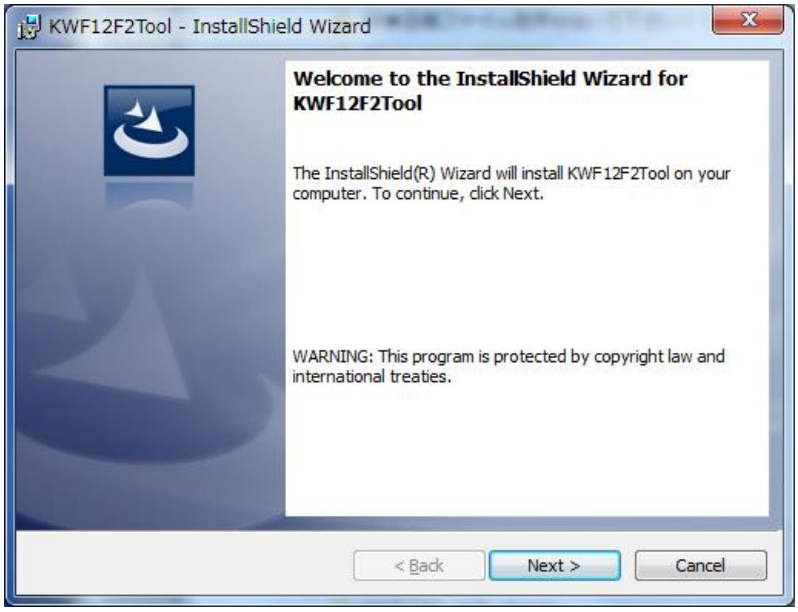


Fig 1.2 Welcome to the InstallShield Wizard

(2) The screen of "Customer information" shown below appears.

Enter "User name" and "Organization", and by clicking " Next " button, proceed to the next screen.

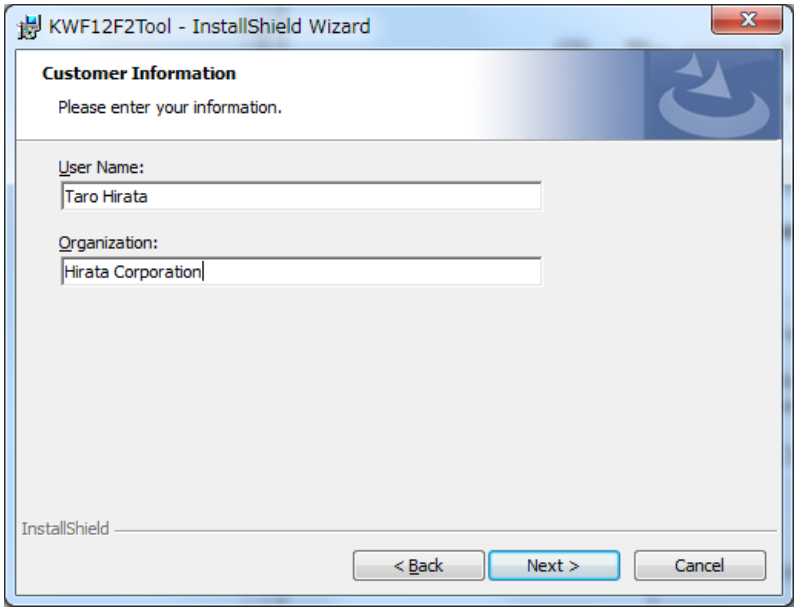


Fig 1.3 Customer Information

(3) The screen of "Ready to Install the Program" shown below appears.

By clicking “ Install ” button, the installation is started.

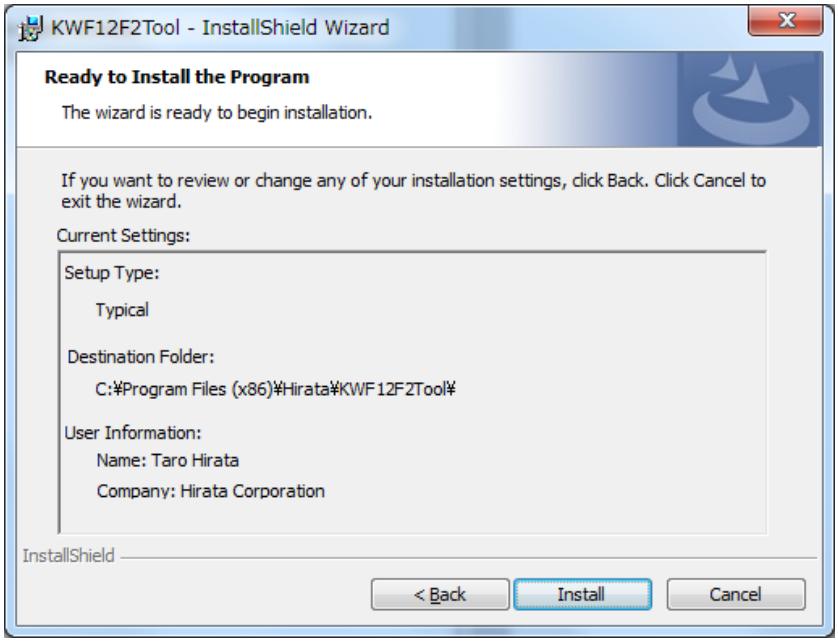


Fig 1.4 Ready to Install the Program

(4) When the installation has been completed, the screen of “InstallShield Wizard Completed” shown below appears.

Click “ Finish ” button to close the screen.

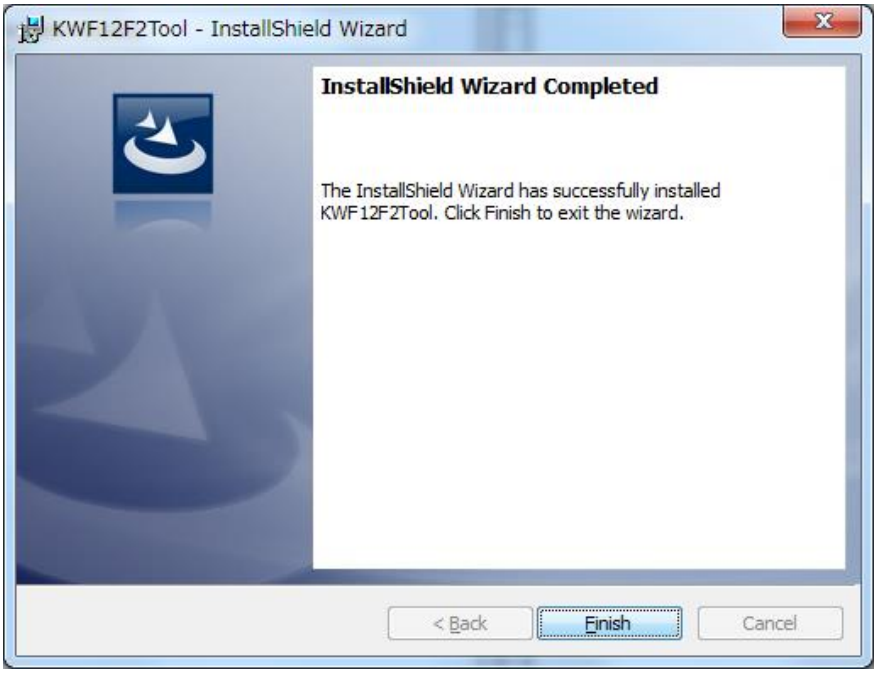


Fig 1.5 InstallShield Wizard Completed

(5) When the installation has been completed, a short cut is created in the start menu and on the desk top.

1.3.2 How to Uninstall

There are two un-installation methods and even if any one of them is executed, the same treatment can be done.

- Un-Installation by Using Setup File (setupENG.exe)
- Un-Installation by " Application Addition and Deletion " in " Control Panel "

1.3.2.1 Un-Installation by Using Set-Up File

(1) By executing the setup file (setupENG.exe) by using a personal computer in which KWF-12F2 Maintenance Tool has been installed, the screen of Fig. 1.6 appears.

By clicking " Next " button, proceed to the next screen.

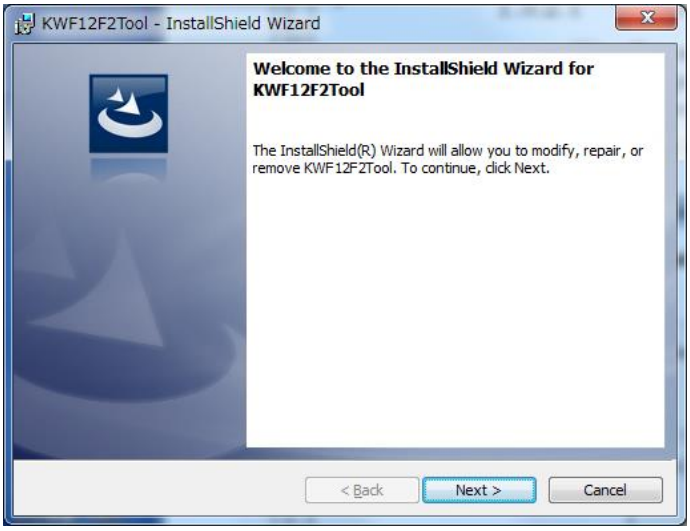


Fig 1.6 Welcome to the InstallShield Wizard

(2) The screen of "Program Maintenance" shown below appears.

Select " Remove ", and by clicking " Next " button, proceed to the next screen.

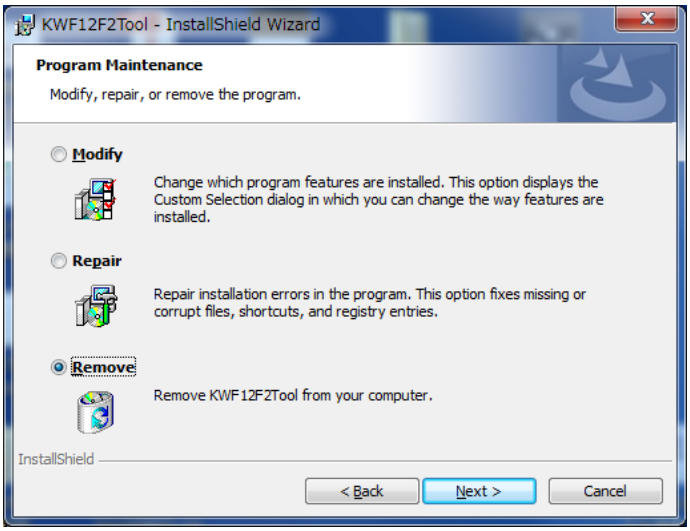


Fig 1.7 Program Maintenance

(3) The screen of "Remove the Program" shown below appears.

By clicking “ Remove ” button, the uninstallation is started.

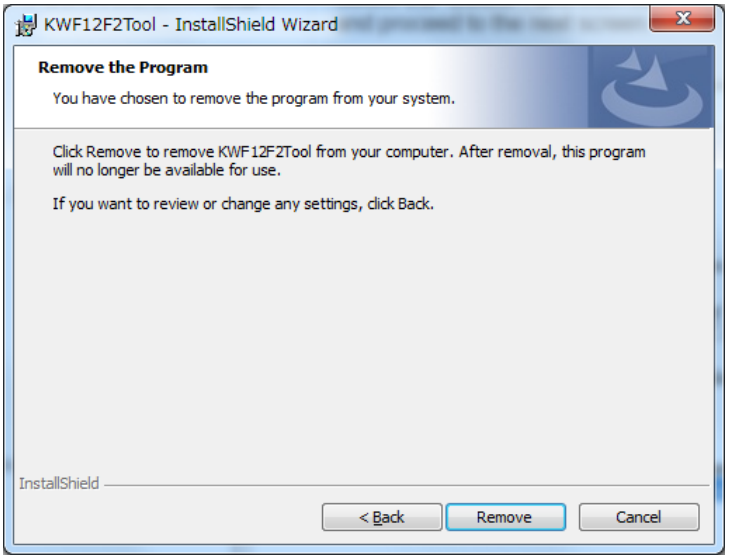


Fig 1.8 Remove the Program

(4) When the uninstallation has been completed, the screen of “InstallShield Wizard Completed” shown below appears.

Click “ Finish ” button to close the screen.

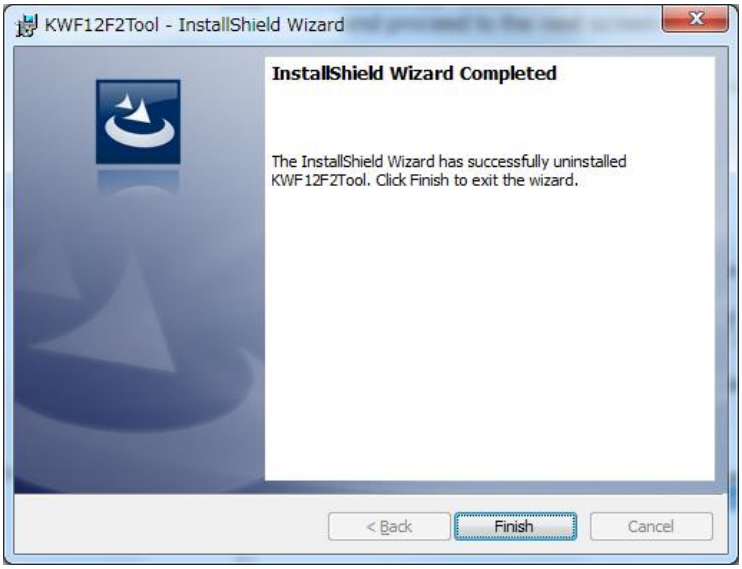


Fig 1.9 InstallShield Wizard Completed

1.3.2.2 Un-Installation by Using “Addition and deletion of the application ”

(1) Open “ Application Addition and Deletion ” in “ Control Panel ”, select “ KWF12F2Tool ” from the list, click the “ Remove ” button, then the following confirmation screen is displayed.

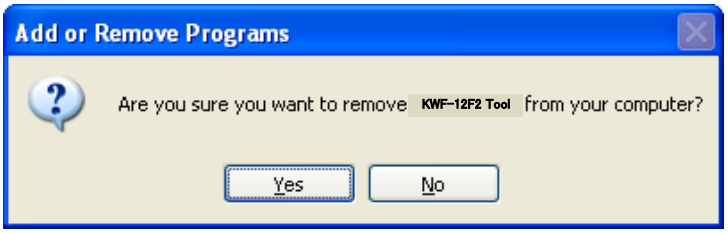


Fig 1.10 Uninstallation confirmation

(2) By clicking “Yes” button, uninstallation is started.

CHAPTER 2 Operation Screen

By executing " KWF-12F2 Maintenance Tool " in " Program " in the " Start " menu or the short-cut of " KWF-12F2 Maintenance Tool " on the desk top, the KWF-12F2 Maintenance Tool starts and the following main screen appears.

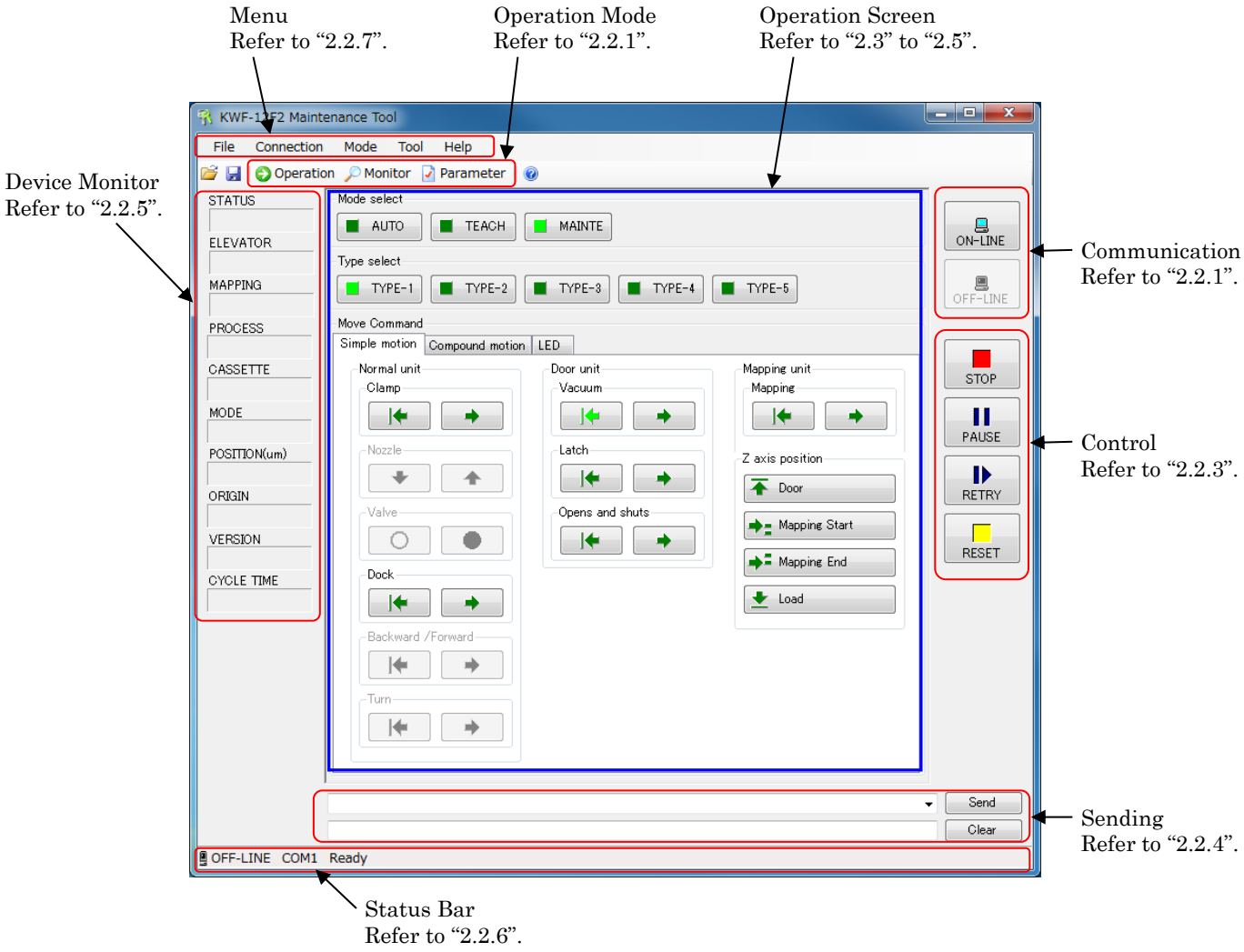


Fig 2.1 Main Screen

NOTE

When using the KWF-12F2 Maintenance Tool for the first time, make sure to perform the operation in the next section "2.1.1 Port Setting".

2.1 Connecting to Maintenance Port

2.1.1 Port Setting

(1) Select “Port Setting ” in the Connection menu. The “ Port Setting ” dialog appears.

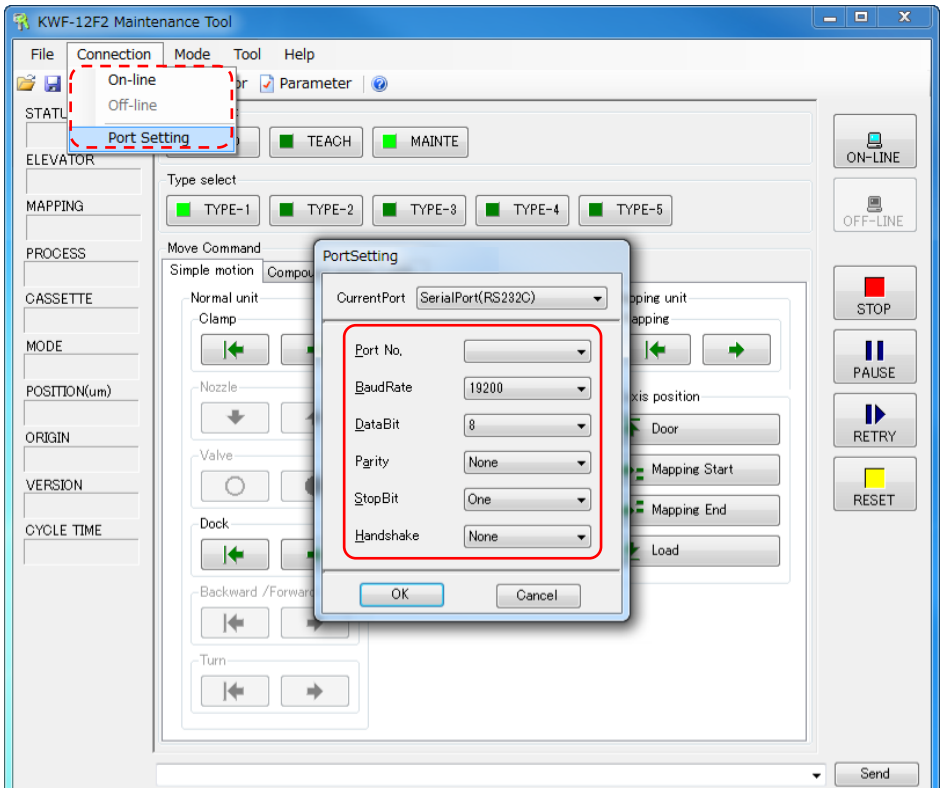


Fig 2.2 Communication Setting Dialog

(2) Set the communication parameters such as number of RS232C port of the personal computer which is connected with the maintenance port of the FOUP opener. Set the communication parameters below.

Item	Content	Setting value
BaudRate	Communication speed	19200
DataBits	Data bit length	8
Parity	Parity	None
StopBits	Stop bit	One
HandShake	Hand shake	None

(3) In case the setting is to be updated, click “ OK ” and in case it is not so, click “ Cancel ”.

NOTE

(1) The selection list of Port No. displays the port name currently identified. If identification fails at the tool startup, restart of the tool is necessary.
(2) In the case of a general personal computer, a modem port is allocated to COM3. If a modem port is specified, communication cannot be performed normally. Before setting it, check the communication port of your personal computer.

2.1.2 Connecting Procedures

(1) Connect the RS232C port of the personal computer to the maintenance port of the FOUP opener with an RS232C cable.

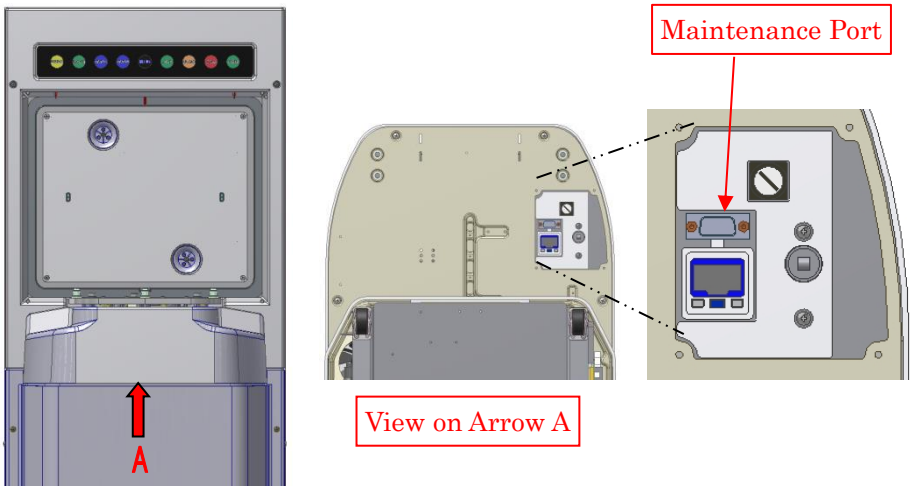


Fig 2.3 Maintenance Port Position

CAUTION

Upon connecting the RS232C cable, make sure to pay close attention so that your hands or gloves may not directly touch the connector pin.

(2) Click the " ON-LINE " button at the upper left of the tool

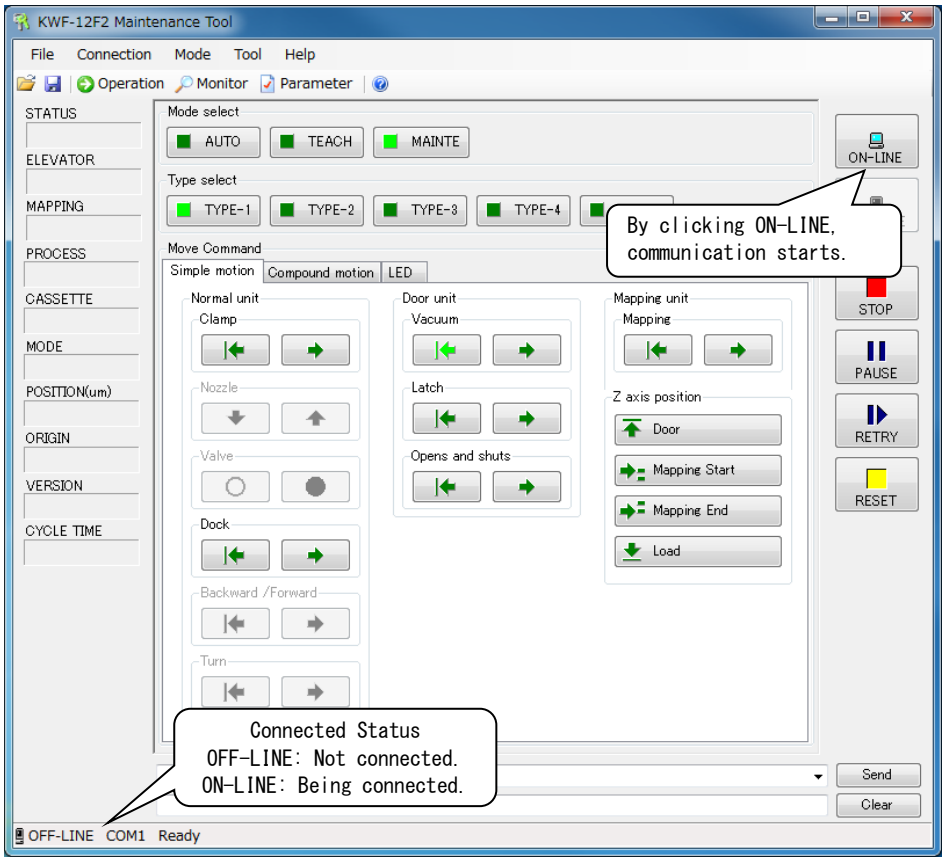
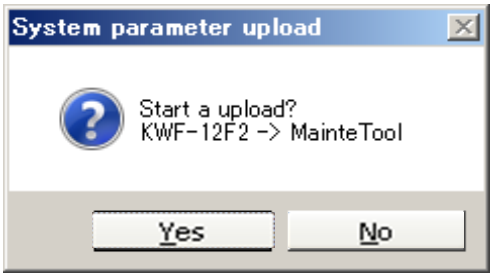
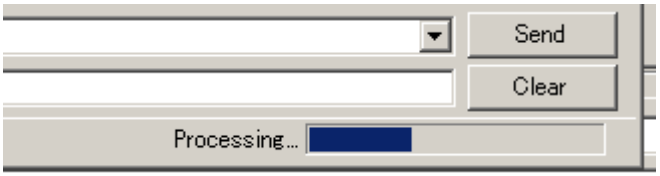


Fig 2.4 Connection to Maintenance Port

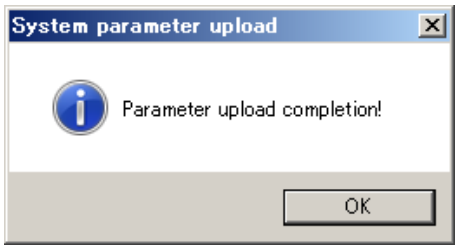
(3) On the upload dialog box that appears, click “Yes” to start uploading, or click “No” to cancel uploading.



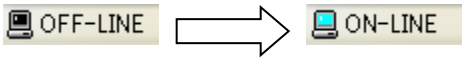
(4) When “Yes” is selected, the uploading starts and the present status indicator is displayed in the bottom right corner part of the screen.



(5) On the upload completion window that appears, click the “OK” button.



(6) In case of being normally connected, the connection status of the status bar is changed from “ OFF-LINE ” to “ ON-LINE ”.



2.2 Main Screen

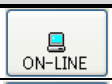
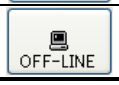
2.2.1 Operation Mode Select Button

Table 2.1 Operation Mode Select Button

Button	Name	Function
	OPERATION	Displays the screen for executing operation on the operation screen.
	MONITOR	Displays the device monitor screen on the operation screen.
	PARAMETER	Displays the parameter edit screen on the operation screen.

2.2.2 Communication Select Button

Table 2.2 Communication Button

Button	Name	Function
	ON-LINE	Starts the communication with the FOUP opener.
	OFF-LINE	Ends the communication with the FOUP opener.

2.2.3 Control Button

Table 2.3 Control Button

Button	Name	Function
	STOP	Stops operation.
	PAUSE	Pauses operation. / Resumes operation.
	RETRY	Retries.
	RESET	Resets errors.

CAUTION

In case the device is in " ON-LINE " mode, never operate the control button. Make sure to use it only in " MAINTE " mode.

NOTE

Control buttons are used in OPERATION mode to stop and pause the load port during operation.

2.2.4 Sending Button

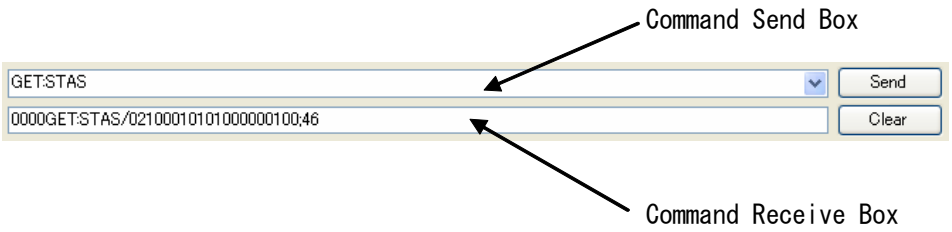
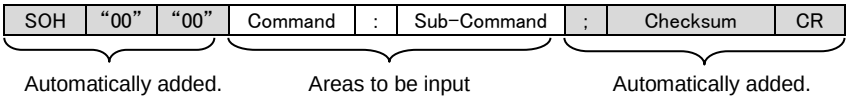


Fig 2.6 Send Command Input Box

Table 2.4 Sending Button

Button	Name	Function
Send	SEND	Sends contents in the Command Send Box.
Clear	CLEAR	Clears the Command Receive Box.

The range necessary to be input is from Command to Sub-Command in the Hirata command format. The area before Command and the area after Sub-Command are automatically added.



The sending example: GET:STAS

For further details of the Hirata command format, refer to the separate manual " Interface Specifications for H-TYPE FOUP Opener ".

NOTE

This is used when the command which cannot be operated with KWF-12F2 Maintenance Tool is sent. This is not used upon normal operation.

2.2.5 Device Monitor

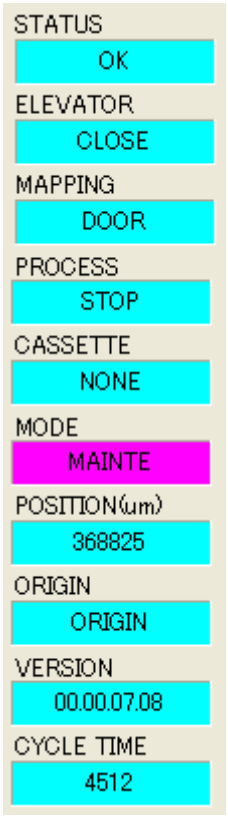


Table 2.5 Device Monitor Indication

Name	Display	Function
STATUS Device Status	OK	Normal
	XX	Error XX = Error Code
ELEVATOR Up/Down Axis Position	OPEN	Open Position
	CLOSE	Closed Position
	OTHER	N/A
MAPPING Mapping Position	DOOR	Door Closed Position
	Map START	Mapping Start Position
	Map END	Mapping End Position
	LOAD	Door Open Position
	OTHER	N/A
PROCESS Operation Status	STOP	During Stop
	BUSY	During Operation
CASSETTE Cassette	NONE	No Cassette
	OK	Cassette Normally Loaded Status
	ERROR	Cassette Abnormally Loaded Status
MODE Device Mode	ON-LINE	Online Mode
	MAINTE	Maintenance Mode
	TEACH	Teach Mode
POSITION Current Position	Ex) 4000	Indicates the position of the up/down axis. (um) * The up position shall be "0".
ORIGIN Origin Status	ORIGIN	Origin
	MOVEING	N/A
	LOAD	Open Position
VERSION Version	Ex) AA.BB.CC.DD	Indicates the program version of the FOUP opener.
CYCLE TIME Operation Time	0	Indicates the duration from the operation start to the end. (msec)

The indication of the program version data is executed only one time upon the connecting start. Details of the version indication are as follows:

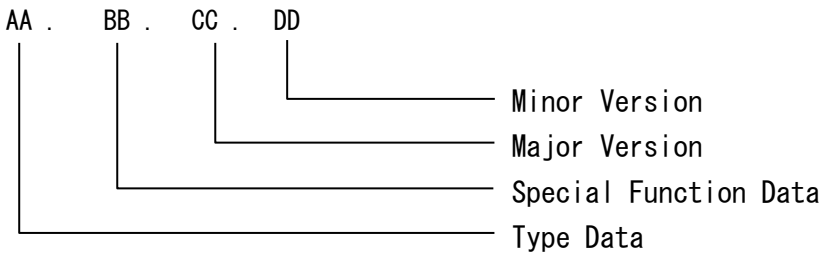


Fig 2.7 Indication of Program Version Data

2.2.6 Status Bar

The status is indicated.

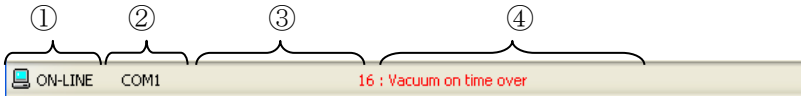


Fig 2.8 Status Bar

① Communication Status

Displays the communication status.

ON-LINE: Being connected.

OFF-LINE: Not connected.

② Communication Port

Displays the communication port currently set.

③ Operation Result

Displays the operation result.

OK.	Normally accepted.
Alarm.	Cannot be performed because of alarm in progress.
Busy.	Cannot be performed because of command processing in progress.
Interlock.	Cannot be performed because of interlock.
Mode error.	Cannot be performed because of AUTO mode.

④ Alarm Message

Displays the current alarm code and alarm message.

2.2.7 Menu

- File Menu

Table 2.6 File Menu

Menu	Name	Function
	Open	Opens a parameter file.
	Save	Saves by overwriting the opened parameter file.
	Save As	Saves a parameter file with a different name.
	Exit	Exits KWF-12F2 Maintenance Tool.

- Connection Menu

Table 2.7 Connection Menu

Menu	Name	Function
	On-Line	Connects KWF-12F2.
	Off-Line	Disconnects KWF-12F2.
	Port Setting	Performs serial communication settings.

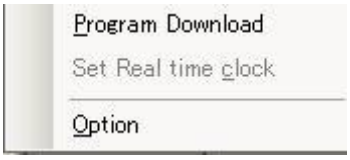
- Mode Menu

Table 2.8 Mode Select Menu

Menu	Name	Function
	Operation	Displays the screen for executing operation on the operation screen.
	Monitor	Displays the device monitor screen on the operation screen.
	Parameter	Displays the parameter edit screen on the operation screen.

- Tool Menu

Table 2.10 Tool Menu

Menu	Name	Function
	Program Download	Downloads the KWF-12F2 program.
	Set Real Time Clock	Sets the KWF-12F2 clock.
	Option	Refer to Fig. 2.8 and 2.9.

Communication Setting

The response waiting time and retry count at serial communication are set.

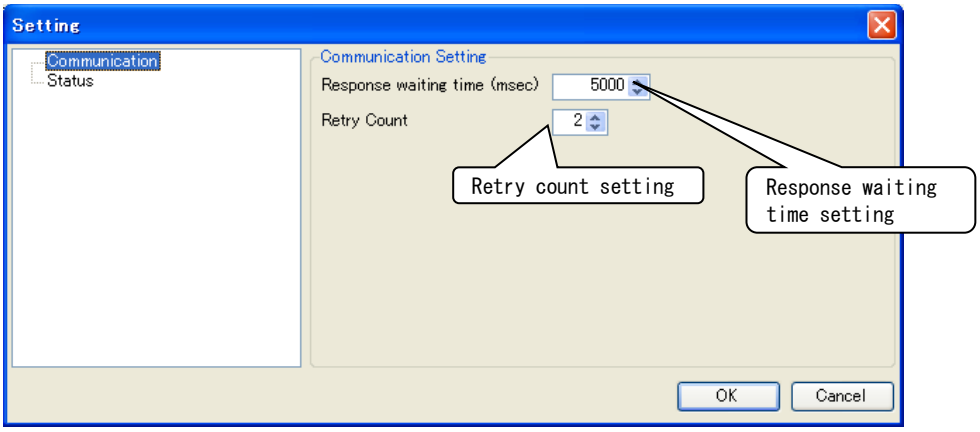


Fig 2.9 Serial Communication Setting

Status Setting

The KWF-12F2 status update timer is set.

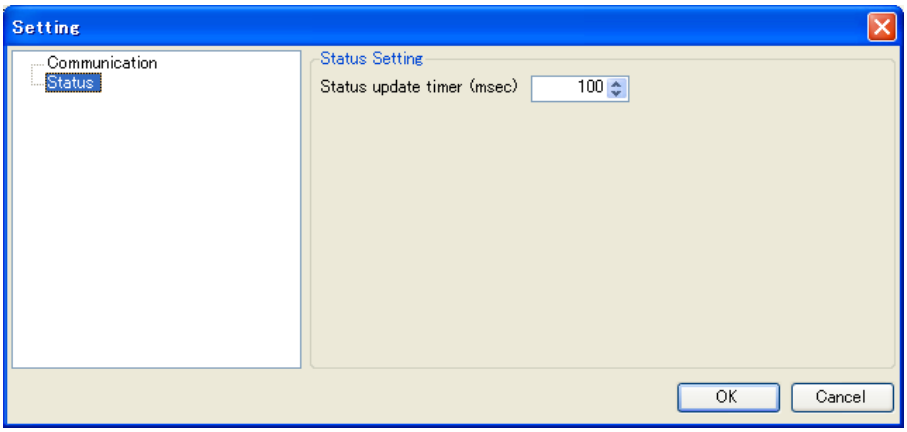


Fig 2.10 Status Update Timer Setting

2.3 OPERATION Mode

* The content in “” indicates each reference item.

Fig 2.11 Operation Mode Screen

By pressing the 

button on the main screen, this screen appears.
This screen is used to operate the KWF-12F2 and each motion can individually be operated.
Some buttons work only in “ MAINTE ” mode.

2.3.1 Mode Select Button

These buttons are to change the mode of KWF-12F2. The bright green button indicates the current mode. Pressing the button will change the mode.
(The change of "AUTO⇔TEACH" is possible when a main part mode changeover switch is "HOST PORT". In the case of "Maintenance", it becomes "MAINTE" always)

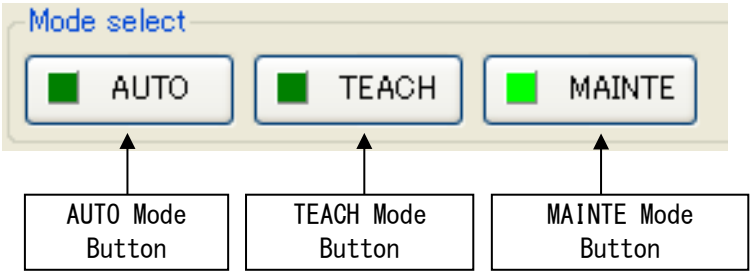


Fig 2.12 Mode Select Button

NOTE

Even if the mode change button has been clicked, the mode of the KWF-12F2 is not changed over. To change the mode to " Maintenance ", changeover it by using the mode change switch on the main body.

CAUTION

With the TEACH mode, the FOUP opener can move ignoring interlock, however, Do not select this mode in regular operation, because it may cause clash when losing operation.

2.3.2 TYPE Select Button

These buttons are to set/indicate the type of each FOUP opener. The bright green button indicates the current type. By pressing each type button, the type is changed over.

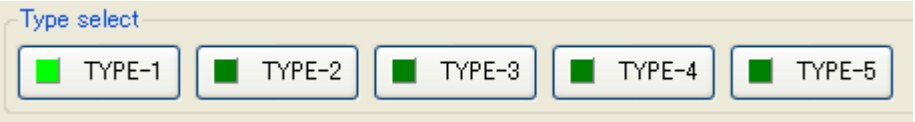


Fig 2.13 TYPE Select Button

NOTE

Standard setting is TYPE-1.
It is necessary to select a proper TYPE to receive expected results. Confirm the TYPE before moving the opener. (**Refer to** ⇨"**2.5.5** TYPE/TABLE Screen")

Switching is possible only in the origin position or the origin position and clamp state.

2.3.3 Operation Select Button

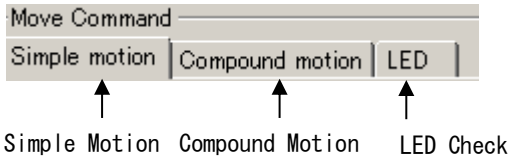


Fig 2.14 Operation Select Button

Depending on the motion type, operation for each function can be performed. The detailed contents of each motion type are explained in the next section (2.3.4).

2.3.4 Operation Content

- Simple Motion

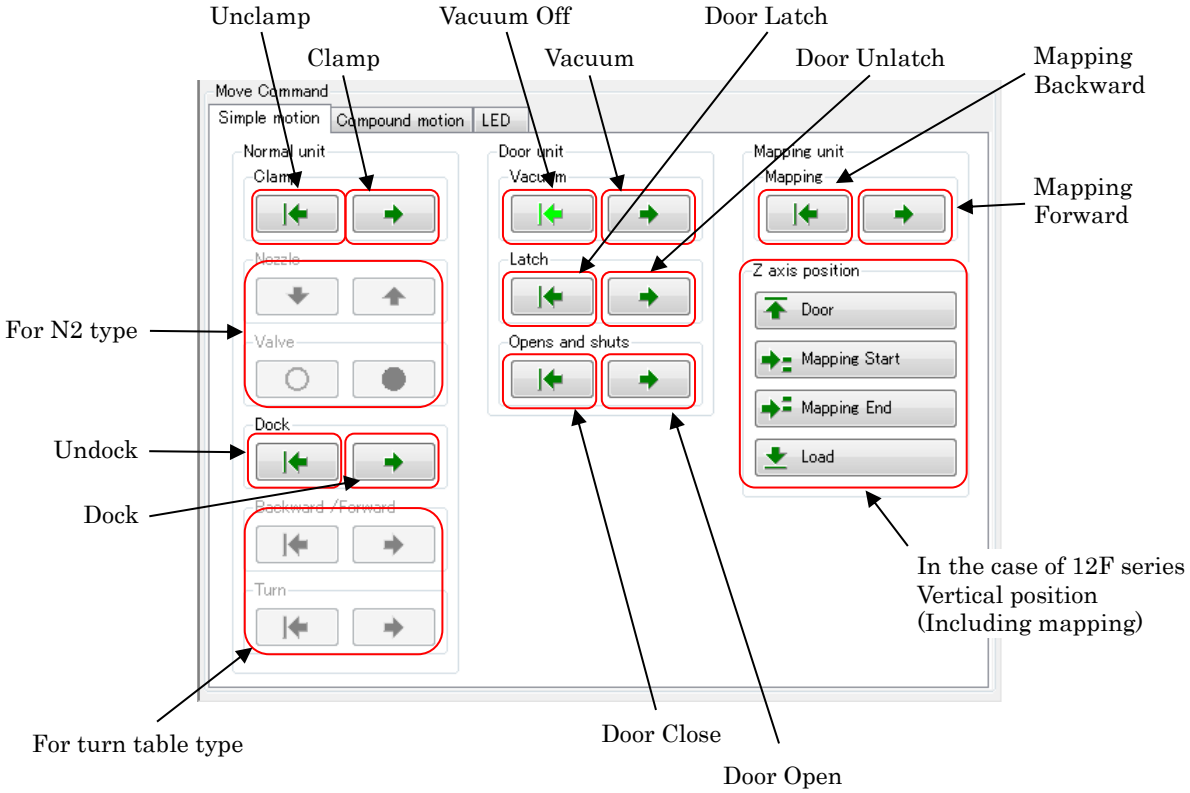
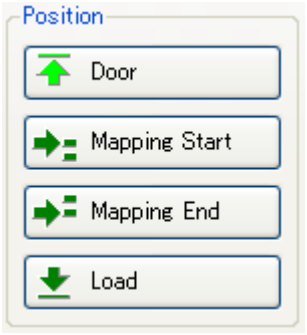


Fig 2.15 Simple Motion Operation Button

Only while a button is pressed and held, KWF-12F2 operates. The bright green arrow indicates the position of each operation axis. The dark green arrow indicates the position during operation.

The mapping position buttons are shown in Table 2.10 below.

Table 2.10 Mapping Position Button

Menu	Name	Function
	Door	Elevator unit (including mapping) is moves to the door up position.
	Mapping Start	Elevator unit (including mapping) is moves the mapping start position.
	Mapping End	Elevator unit (including mapping) is moves to the end position mapping.
	Load	Elevator unit (including mapping) is moves to the load position.

- Compound Motion

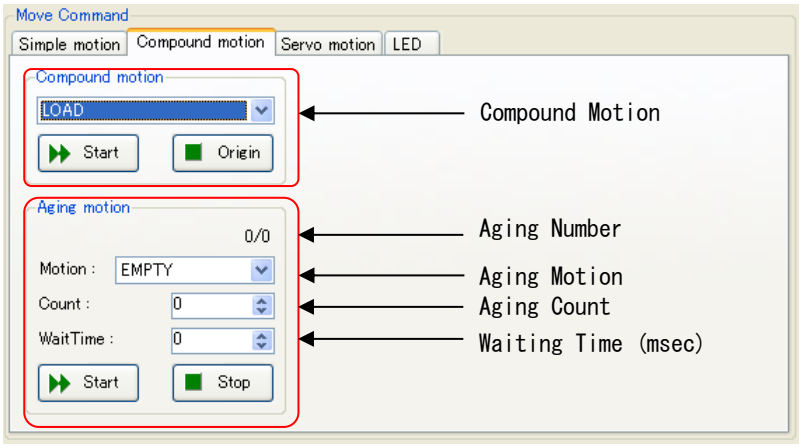


Fig 2.16 Compound Motion Button

In Compound Motion, pressing the Start button performs the operation shown in Table 2.11 below only once. Pressing the Origin button returns to the origin position.

Table 2.11 Compound Operation Pull-down Menu

Name	Function
Load	Moves to the Load position.
Unload	Moves from the Load position to the origin position.
Load (Map)	Executes mapping and moves to the Load position.
Unload (Map)	Executes mapping from the Load position and moves to the origin position.
Map ACal	Executes mapping auto calibration of the currently selected type.
Z AXIS Acal	Executes calibration of the up/down axis suspension timing.

In Aging Motion, the selected operation is performed for the number of set Aging Count. The aging motion type is shown in Table 2.13 below.

Table 2.12 Aging Motion Pull-down Menu

Name	Function
EMPTY	Operations from Load to Unload are repeated. Mapping operation is not done. * Moves without a FOUP.
NORMAL	Operations from Load to Unload are repeated. Mapping operation is not done. * Moves with a FOUP loaded.
MAPPING	Operations from Load to Unload are repeated. Upon both operations, mapping operation is done. * Moves with a FOUP loaded.
OPTION_4	Operations from Load to Unload are repeated. Only upon load operation, mapping operation is done. * Moves with a FOUP loaded.
OPTION_5	Operations from Load to Unload are repeated. Only upon unload operation, mapping operation is done. * Moves with a FOUP loaded.
EMPTY_MAPPING	Operations from Load to Unload are repeated. Upon both operations, mapping operation is done. * Moves without a FOUP.

The setting count range of aging is 0 to 65535. If 0 is set, operation is performed for the unlimited number of aging.
The waiting time range is 0 to 65535 (msec). If 0 is set, operation is performed every 2000 msec.
If the STOP button is pressed during aging, the KWF-12F2 returns to the origin position and stops.

- Conditions of aging motion
  In order to enable this button, the following conditions are necessary:
  - " Maintenance Mode " is selected.
  - KWF-12F2 is at origin.

- Aging procedure

(1) Set the mode of KWF-12F2 to maintenance mode.

(2) Return KWF-12F2 to the origin.

(3) Select the aging type from the Aging Type Setting Box.

(4) Set the number of aging in Aging Count Setting Box.
(Set 0 for the unlimited aging.)

(5) Press the aging start button.

(6) Input the password when the password dialog appears.

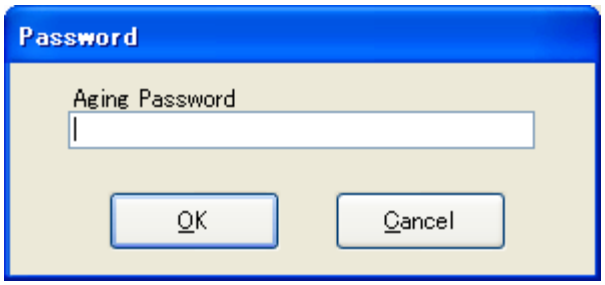


Fig 2.17 Password Input

(7) Pressing " OK " button starts aging motion.

(8) Pressing the aging stop button returns KWF-12F2 to the origin and stops aging.

CAUTION

Password for starting aging is " hirata ". (All lower-case)

- LED Check

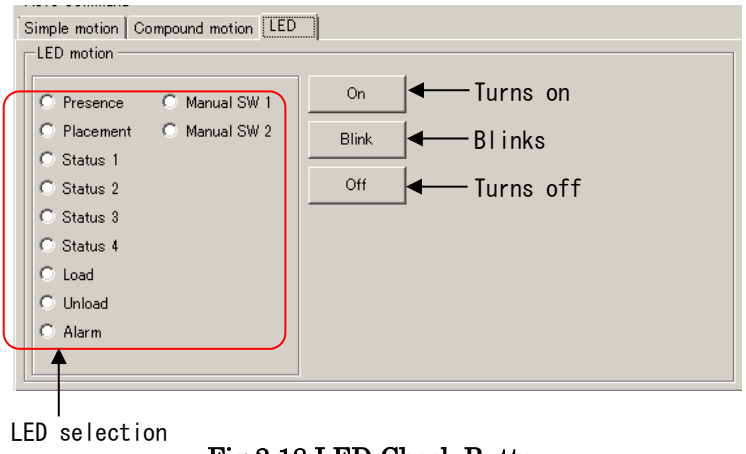


Fig 2.18 LED Check Button

LED on the indicator and manual switch is operated. After the selection of LED, pressing On turns on the LED, pressing Blink blinks it, and pressing Off turns it off.

NOTE

When the LED control setting (Control-LED) which is performed with parameters is command (Command) or internal control (Internal), check and operate LED. In the case of external control (PIO), the actual LED does not change even if operation is performed.

2.4 MONITOR Mode

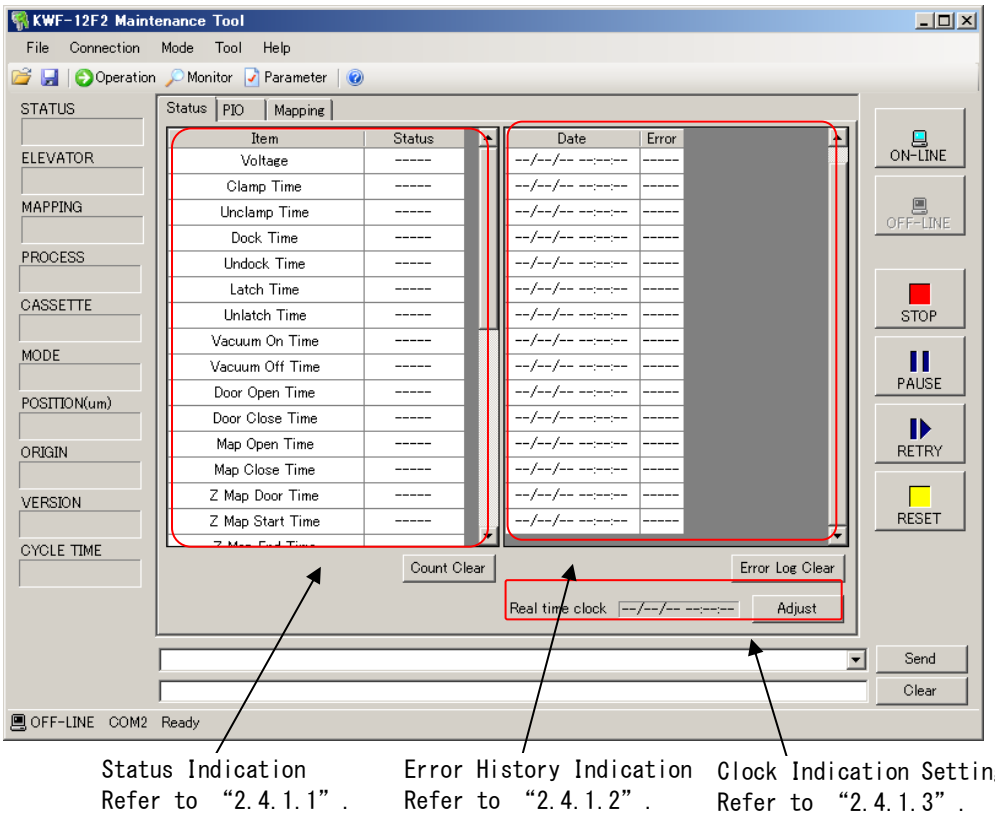
By pressing 

button, the KWF-12F2 status can be monitored. The monitor contents are as shown in Table 2.13 below.

Table 2.13 Monitor Display Content

Name	Function
Status (Refer to ⇨ "2.4.1")	Status indication Error history Clock setting
PIO (Refer to ⇨ "2.4.2")	Indicates I/O status in KWF-12F2.
MAPPING (Refer to ⇨ "2.4.3")	Mapping data indication Indication of mapping auto calibration completion

2.4.1 STATUS Screen



Status Indication
Refer to "2.4.1.1".

Error History Indication
Refer to "2.4.1.2".

Clock Indication Setting
Refer to "2.4.1.3".

Fig 2.19 Status Screen

There are following three functions by roughly classifying the status screens. The explanations for them are shown below.

- Status Display: Refer to ⇨ "2.4.1.1 Status Display"
- Error History Display: Refer to ⇨ "2.4.1.2 Error History Display"
- Clock Indication Setting Part: Refer to ⇨ "2.4.1.3 Time Indication Setting Part"

2.4.1.1 Status Display

This part indicates the current status of the KWF-12F2.
There are following items.

Table 2.15 Status List

Item	Function
Voltage	Indicates the current voltage of the DC 24 V power.
Clamp Time	Indicates the clamp operation time. (msec)
Unclamp Time	Indicates the unclamp operation time. (msec)
Dock Time	Indicates the dock operation time. (msec)
Undock Time	Indicates the undock operation time. (msec)
Latch Time	Indicates the latch operation time. (msec)
Unlatch Time	Indicates the unlatch operation time. (msec)
Vacuum On Time	Indicates the vacuum ON operation time. (msec)
Vacuum Off Time	Indicates the vacuum release operation time. (msec)
Door Open Time	Indicates the door open operation time. (msec)
Door Close Time	Indicates the door close operation time. (msec)
Map Open Time	Indicates the mapping forward operation time. (msec)
Map Close Time	Indicates the mapping backward operation time. (msec)
Z Map Door Time	Indicates the Z axis unload position operation time. (msec)
Z Map Start Time	Indicates the Z axis mapping start position operation time. (msec)
Z Map End Time	Indicates the Z axis mapping end position operation time. (msec)
Z Map Load Time	Indicates the Z axis load position operation time. (msec)
N2 Nozzle Up Time	Indicates N2 Nozzle Up operation time (msec)
N2 Nozzle Down Time	Indicates N2 Nozzle Down operation time (msec)
Load Time	Indicates the time from origin position to load position. (msec)
Load Mapping Time	Indicates the time from origin position to load position including mapping operation. (msec)
Unload Time	Indicates the time from load position to origin position. (msec)
Unload Mapping Time	Indicates the time from load position to origin position including mapping operation. (msec)
Power On count	Indicates the power supply times. (times)
Load count	Indicates the loading times. (times)
Unload count	Indicates the unloading times. (times)
Error count	Indicates the recoverable error times. (times)
Fatal Error count	Indicates the unrecoverable error times. (times)

By pressing " Clear Count " PB, the following contents are cleared.

- Power On count
- Load count
- Unload count
- Error count
- Fatal Error count

2.4.1.2 Error History Display

The KWF-12F2 memorizes the last 16 errors.

The error log is displayed here. The lower log is newer, and the bottom error is the newest. " Date " indicated beside the error column is the date of the internal watch in the KWF-12F2. It is necessary to previously adjust the date (time) of KWF-12F2. Concerning the date adjusting method, refer to the next item.

Date	Error
18:56:45 08/11/06	D0 : Eleveter interlock
18:56:56 08/11/06	D0 : Eleveter interlock
18:57:35 08/11/06	D0 : Eleveter interlock
18:58:42 08/11/06	D0 : Eleveter interlock
18:59:09 08/11/06	D0 : Eleveter interlock
18:59:35 08/11/06	D0 : Eleveter interlock
18:59:51 08/11/06	D0 : Eleveter interlock
19:01:14 08/11/06	D0 : Eleveter interlock
19:09:43 08/11/06	16 : Vacuum on time over
19:10:50 08/11/06	14 : Latch time over
19:13:10 08/11/06	14 : Latch time over
19:18:10 08/11/06	A0 : Work fall
13:58:20 08/11/07	FE : Hand pinch
15:15:50 08/11/07	A2 : Presence error
15:23:52 08/11/07	21 : Loading time over

Fig 2.20 Error History Screen

In order to clear the error log, press " Error Log Clear " button during communication.

2.4.1.3 Time Indication Setting Part

Indicates the time of the internal watch in the KWF-12F2.
By pressing " Adjust " button, the following screen appears

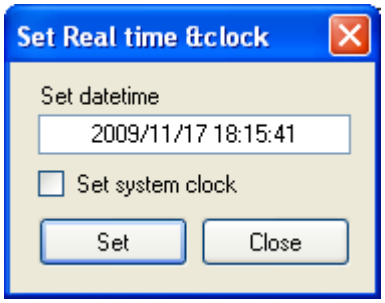


Fig 2.21 Adjust Clock Screen

By checking the " Set system clock " box, the indicated time is automatically updated to the current time. By pressing " Set " button, the internal watch time in the KWF-12F2 is set to the displayed time.
In order to cancel the setting, press " Close " button.

2.4.2 PIO Indication Screen

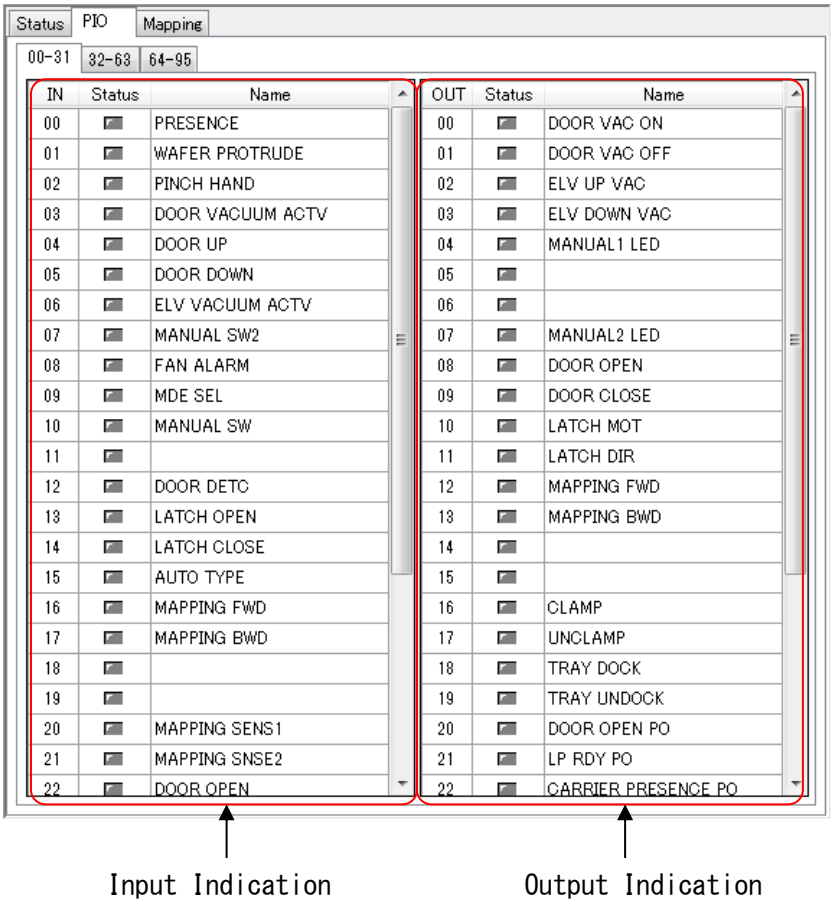


Fig 2.22 PIO Indication Screen

The PIO screen has two main functions. One is the indication of the I/O output status and another is the indication of the I/O input status. When input or output is " ON ", the " Status " indicator is bright green. When it is " OFF ", the " Status " indicator is gray.

For both " IN " and " OUT " areas, " I/O # ", " Status " and " Name " are indicated from the left to the right for each line.

2.4.3 MAPPING Indication Screen

* The content in " " shows each reference item.

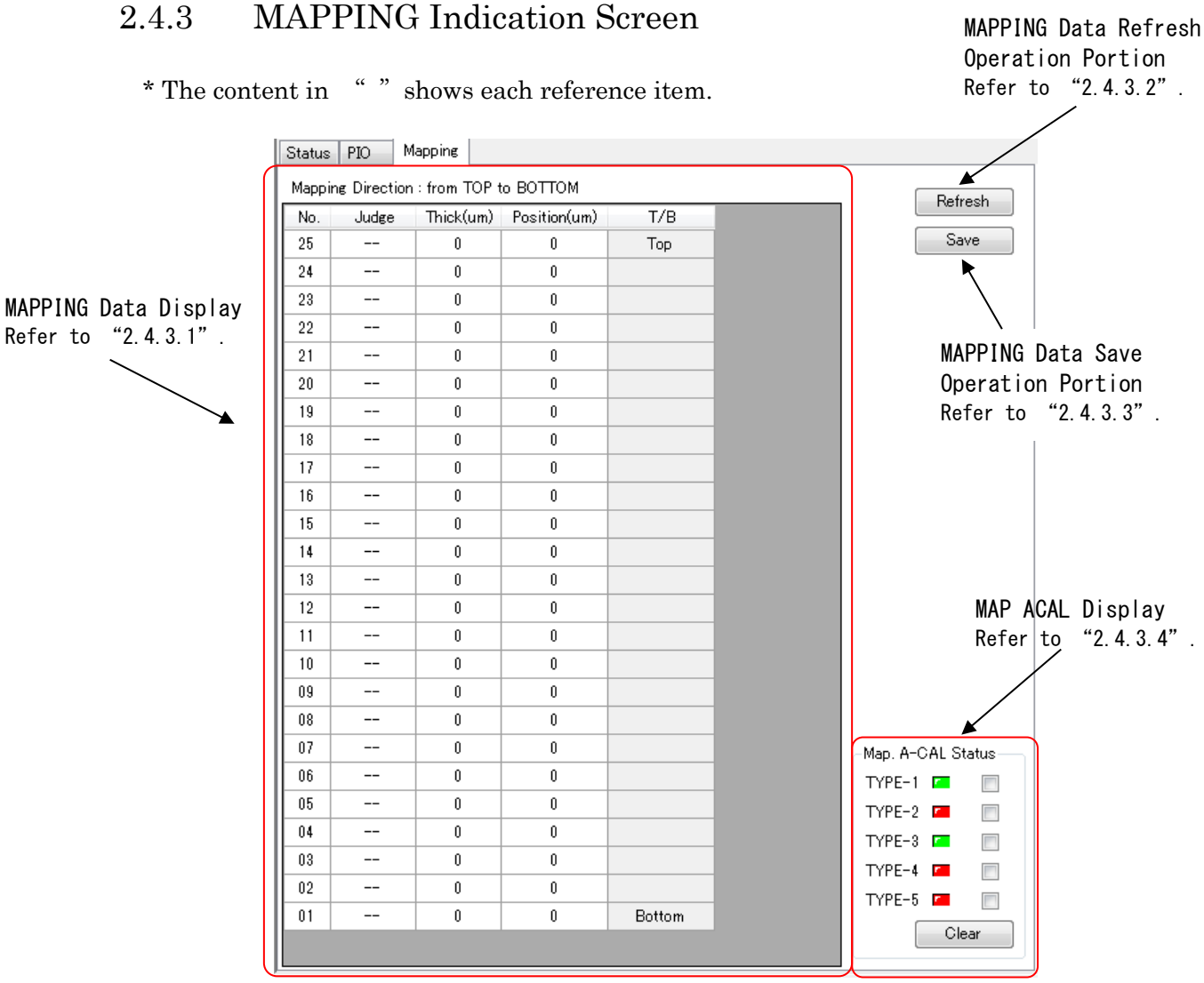


Fig 2.23 Mapping Indication Screen

On the mapping indication screen, the mapping data are indicated.
Also, there is a function to indicate whether or not the MAP ACAL[i] has been executed.

[i] MAP ACAL: Refer to ⇨ " 2.7 Mapping Auto Calibration "

2.4.3.1 Mapping Data Display

The mapping result for KWF-12F2 is indicated.

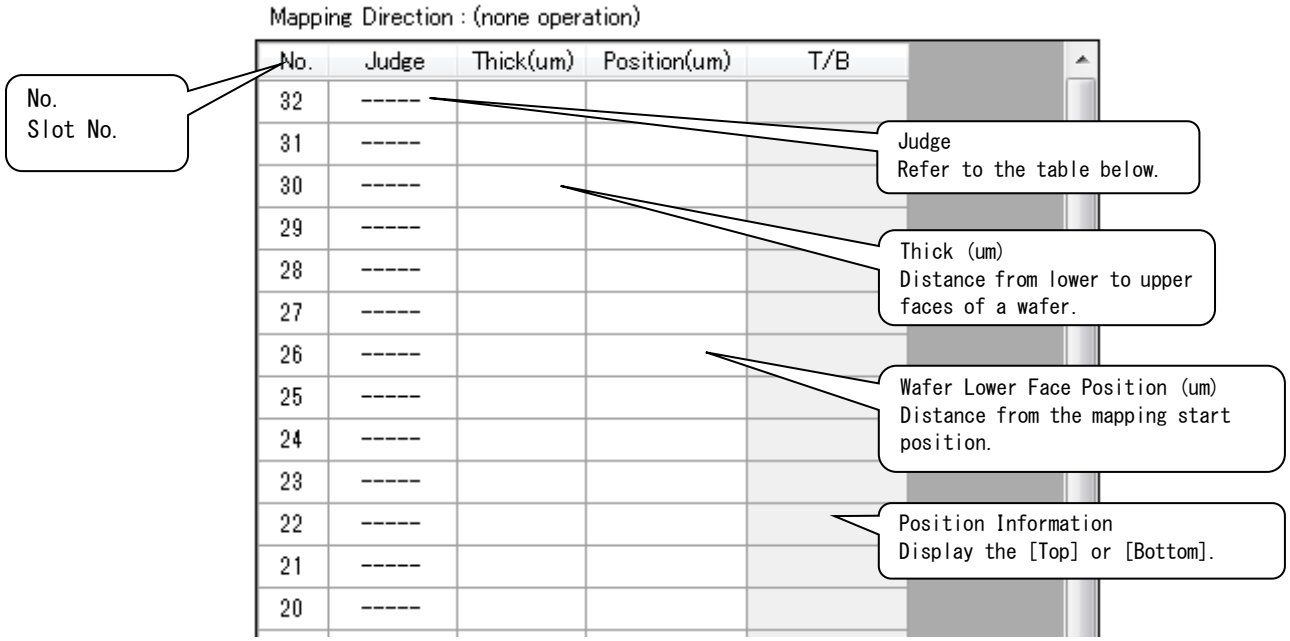


Fig 2.24 Mapping Result

With the standard specification, even if mapping operation is performed in the ascending or descending order, the bottom side of the container becomes No. 01

NOTE

Depending on the settings on the option screen, the order of the result report changes.
Ex.
SLOT1 ⇒ Top or SLOT1 ⇒ Bottom

Table 2.15 Mapping Result Judgment

Judge	Description
——	No wafer.
Ok	The thickness and the position of the wafer are as specified.
Cross	Cross Status
Thin	The wafer is thinner than specified.
Thick	The wafer is thicker than specified.
PosError	The wafer is at the wrong position.

NOTE

In case no proper mapping can be obtained, it is necessary to adjust the mapping parameters. For further details, refer to “ 2.8 Mapping Parameter Setting ”.

2.4.3.2 Mapping Data Refresh Operation Portion

The mapping results can be refresh.

Fig 2.25 Mapping Data Refresh Operation Portion Button

2.4.3.3 Mapping Data Save Operation Portion

The mapping results can be stored in a CSV file.

Fig 2.26 Mapping Data Save Operation Portion Button

2.4.3.4 MAP ACAL Display

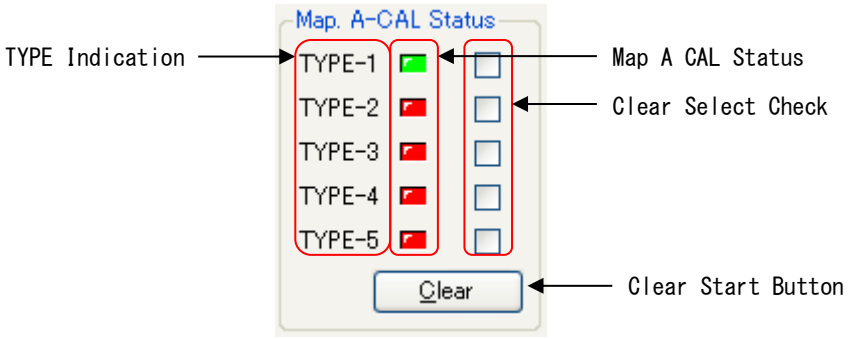


Fig 2.27 MAP ACAL Display

In this part, the MAP ACAL[i] status for each type is indicated.

- Red Indication・・・MAP ACAL has not been completed.
- Green Indication・・・MAP ACAL has been completed.

By giving a check mark into the check box on the right side of each type and pressing the " Clear " button under the check boxes, the system becomes " MAP ACAL " uncompleted status.

[i] MAP ACAL: Refer to ⇨ " 2.7 Mapping Auto Calibration "

2.5 PARAMETER Mode

By pressing 

button, KWF-12F2 setting parameters can be uploaded, downloaded, verified and modified here. Also, there is a screen to send the special command to KWF-12F2.

The setting parameter tabs are shown in Table 2.16 below.

Table 2.16 Setting Parameter Type

Name	Function
COMMON (Refer to ⇨ "2.5.4")	Basic parameters for KWF-12F2
TYPE/TABLE (Refer to ⇨ "2.5.2")	Wafer container type setting Mapping setting parameters for each type
E84 (Refer to ⇨ "2.5.3")	Parameters for E84 interface
Option (Refer to ⇨ "2.5.4")	Parameters for KWF-12F2 function setting
Ex Command (Refer to ⇨ "2.5.5")	Special parameters for various KWF-12F2

Each button in the parameter mode is shown in Table 2.17 below.

Table 2.17 Parameter Mode Button

Name	Function
Upload	Uploads parameters from KWF-12F2 to the personal computer.
Download	Downloads parameters from the personal computer to KWF-12F2.
Verify	Compares parameters indicated in KWF-12F2 Maintenance Tool with that in the KWF main body.

2.5.1 Data Upload

Data Upload is to transfer the KWF-12F2 setting data into the personal computer. (KWF-12F2 → MainteTool)

- Uploading Procedures

(1) By pressing the ON-LINE online button (Refer to ⇨ "2.2.2 Communication Select Button"), the communication with the device starts.

(2) As the following dialog appears, press " Yes " to upload or " No " to cancel.

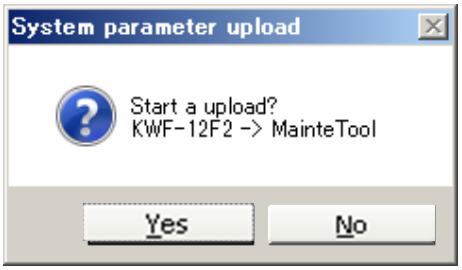
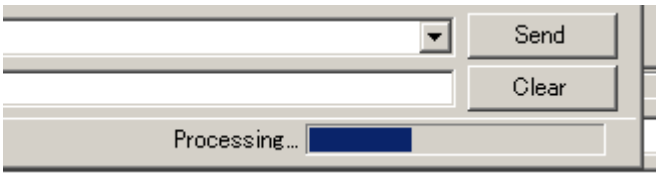
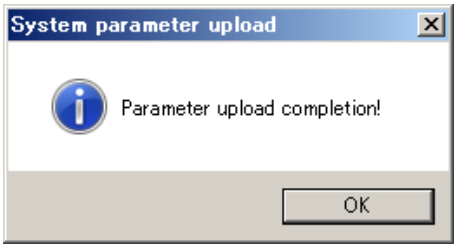


Fig 2.28 Upload Dialog

(3) If " Yes " is selected, upload starts, and the following data transfer indicator shows up at the lower right of the screen.



(4) When the upload completion screen appears, press the " OK " button.



(5) Alternatively, click the upload button to return to (2).

2.5.2 Data Download

Data Download is to transfer parameters from the personal computer into KWF-12F2. (MainteTool → KWF-12F2

⚠ CAUTION

(3) Do not download the data while KWF-12F2 is operating.
(4) If a wrong parameter has been downloaded or the setting is wrong, KWF-12F2 might not work. Upon downloading, make sure that the parameter is correct.
(5) During parameter downloading, do not turn OFF the power or do not disconnect the RS232C cable. This could spoil parameters and KWF-12F2 might not work.

● Download Procedure

(1) Check whether all parameters indicated in the Parameter Mode Screen on the personal computer have been filled and the setting is proper.

(2) Press the Download button.

(3) The following Download dialog appears. Press " Yes " to download or " No " to cancel.

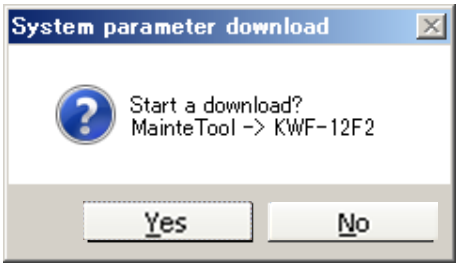
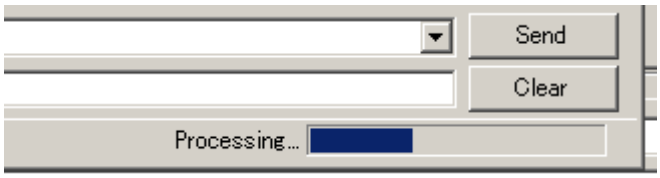
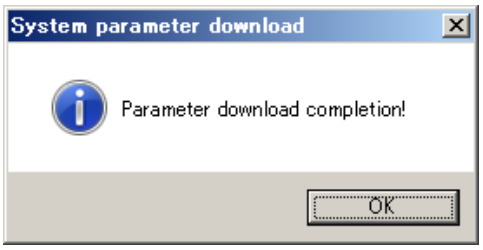


Fig 2.29 Download Dialog

(4) If " Yes " is selected, download starts, and the following data transfer indicator shows up at the lower right of the screen.



(5) When the download completion screen appears, press the " OK " button.



NOTE

During downloading, KWF-12F2 Maintenance Tool checks blanks but it does not check whether or not the parameter is proper for the current FOUP. Upon downloading, make sure to check if the parameter is proper.

NOTE

Data peculiar to the mechanism are not changed even if being downloaded. There are following items as the data peculiar to the mechanism.

- MAP ACAL (MapAcalStatus)

2.5.3 Verifying

" Verify " means that the parameter for the personal computer is compared with that for KWF-12F2 and whether or not there is a difference between them is confirmed.

(1) Press the " Verify " button.

(2) The Verify dialog appears. Press " Yes " to verify or " No " to cancel.

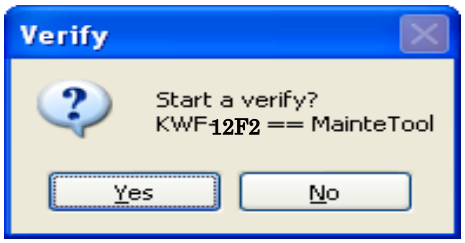


Fig 2.30 Verify Dialog

(3) If " Yes " is selected, verify starts, and the following data transfer indicator shows up at the lower right of the screen.

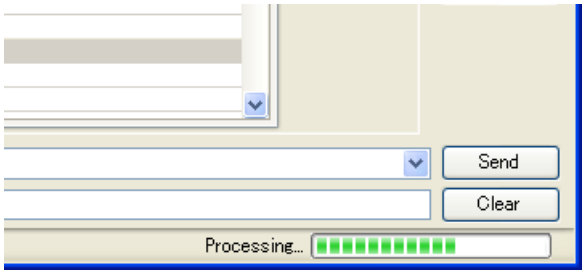


Fig 2.31 Verify Indicator

(4) When verify is completed, the dialog which indicates the result appears. When all the parameters match

In case there are different parameters, the following dialog which indicates those different parameter items appears.

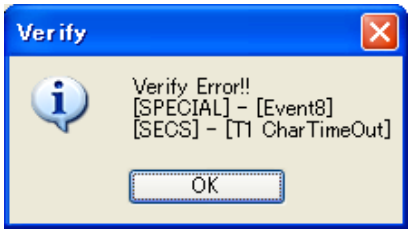


Fig 2.32 Verify Difference Result

2.5.4 COMMON Screen

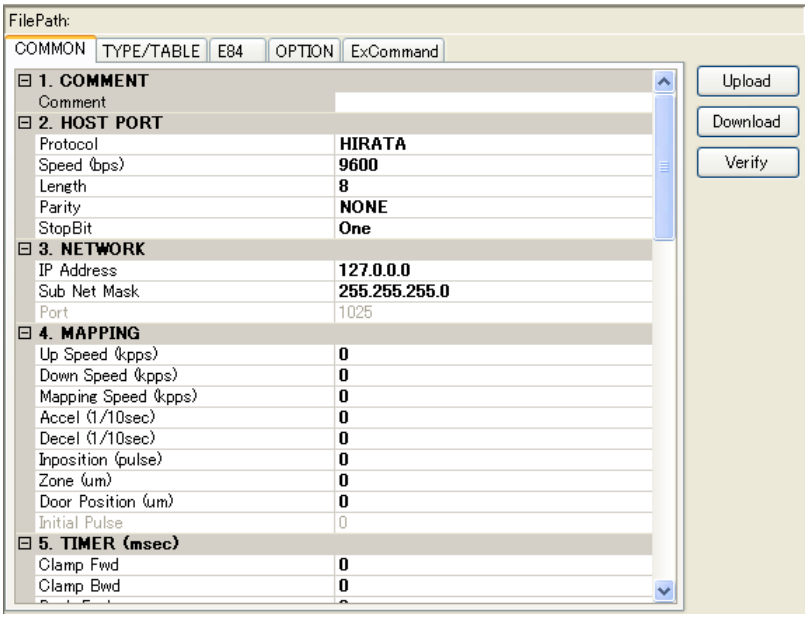


Fig 2.33 Basic Parameters

This is a common screen to display the basic setting.

NOTE

The parameters to be set on the page of " Common " are applied to all types from Type 1 to Type 5.

Table 2.18 Common Setting Contents

1. COMMENT

Parameter Name	Content	Set Range	Standard Value	Unit
Comment	Comment for Parameter	Half Size 80 Characters	—	—

2. HOST PORT

Parameter Name	Content	Set Range	Standard Value	Unit
Protocol	Host Port Communication Protocol	HIRATA T-TYPE (ETX) T-TYPE (CR/LF) T-TYPE (CR) B-TYPE A-TYPE (SECS) A-TYPE (ASCII) A-TYPE (ASCII_ECHO) A-TYPE (ASCII_SUM) S-TYPE ST-TYPE (ETX) ST-TYPE (CR/LF) ST-TYPE (CR) R-TYPE	HIRATA	—
Speed	Host Port Communication Speed	4800 9600 19200 38400 57600 115200	9600	Bps
Length	Host Port Data Length	7 8	8	Bit
Parity	Host Port Parity Setting	EVEN ODD NONE	NONE	—
Stop Bit	Host Port Stop Bit	One Two	One	Bit
IP Address	IP Address	0.0.0.0 to 255.255.255.255	127.0.0.0	—
Sub Net Mask	Sub-Net Mask	0.0.0.0 to 255.255.255.255	255.255.255.0	—
Port	Port	0 to 65535	1025	—

3. NETWORK

Parameter Name	Content	Set Range	Standard Value	Unit
IP Address	IP Address	0.0.0.0 to 255.255.255.255	192.168.11.10	—
Sub Net Mask	Sub-Net Mask	0.0.0.0 to 255.255.255.255	255.255.255.0	—
Port	Port	(Fixed)	10001	—

To change the Port setting, use the X-Port dedicated tool. (10001) is set as a default of X-Prot.

4. TIMER

Parameter Name	Content	Set Range	Standard Value	Unit
Clamp Fwd	Clamp Time	1 to 65535	3000	msec
Clamp Bwd	Unclamp Time	1 to 65535	3000	msec
Dock Fwd	Dock Time	1 to 65535	3000	msec
Dock Bwd	Undock Time	1 to 65535	3000	msec
Latch Fwd	Unlatch Time	1 to 65535	5000	msec
Latch Bwd	Latch Time	1 to 65535	5000	msec
Vacuum ON	Vacuum Time	1 to 65535	3000	msec
Vacuum OFF	Vacuum Release Time	1 to 65535	3000	msec
Door Fwd	Door Open Time	1 to 65535	5000	msec
Door Bwd	Door Close Time	1 to 65535	5000	msec
Map. Fwd	Map Forward Time	1 to 65535	3000	msec
Map. Bwd	Map Backward Time	1 to 65535	3000	msec
Open Z pos	Moving Time to Open Position	1 to 65535	10000	msec
Close Z pos	Moving Time to Close Position	1 to 65535	10000	msec
Map. Start	Moving Time to Mapping Start Position	1 to 65535	10000	msec
Map. End	Moving Time to Mapping End Position	1 to 65535	10000	msec
Load	Load Time	1 to 65535	0	msec
Unload	Unload Time	1 to 65535	0	msec
Placement	FOUP Loading Monitor Time	1 to 65535	65535	msec
Carrier Arrival Timer	FOUP Arrival Monitor Time (Upon SECS)	1 to 65535	500	msec
Carrier Removal Timer	FOUP Removal Monitor Time (Upon SECS)	1 to 65535	500	msec

6. Mechanical

Parameter Name	Content	Set Range	Standard Value	Unit
Door	Door Unit Presence/Absence	Used / Not Used	Used	—
Clamp	Clamp Unit Presence/Absence	Used / Not Used	Used	—
Dock	Dock Unit Presence/Absence	Used / Not Used	Used	—
Mapping	Mapping Unit Presence/Absence	Used / Not Used	Used	—
Expand5	*Special Mechanism (TURN)	Used / Not Used	Not Used	—
Expand6	*Special Mechanism (N2)	Used / Not Used	Not Used	—
Expand7	*Special Mechanism 3	Used / Not Use	Not Used	—
Expand8	*Special Mechanism 4	Used / Not Use	Not Used	—

7. Control

Parameter Name	Content	Set Range	Standard Value	Unit
Address	Address	0 to 255	0	—
LED	LED Control Method PIO: From CNA6[i], turn ON both signal and power (Common/DC 24 V) then execute the hardware control. Internal: PRESENCE and PLACEMENT are controlled by KWF and others are controlled by the upper level communication commands. Command: Without using CNA6[i], execute the control by using the upper level communication commands.	PIO Internal Command	PIO	—

NOTE

Except for special specifications, in case the LED control has been set to " PIO ", all dip switches on the I/O board are to be set to " OFF ". In case of Internal and Command, all dip switches are to be set to " ON ".

[i] CNA6: Operation panel I/F connector

8. Special

This parameter becomes valid only when either one of H-Type, T-Type and B-Type has been selected as the Host port communication protocol. This is not used for A-Type and R-Type.

- Upon H-TYPE Protocol Selection

Parameter Name	Content	Set Range	Standard Value	Unit
Event Enabled	Event Issue Valid/Invalid	Used / Not Used	Not Used	—
/PWON	Power Supply	Used / Not Used	Used	—
/ERRS	Error Event Report	Used / Not Used	Used	—
/MNSW	Manual Switch 1 Event Report	Used / Not Used	Used	—
/PDON	FOUP has made a transition from “Non Existence” to “Properly Loaded”.	Used / Not Used	Used	—
/PDOF	FOUP has made a transition from “Properly Loaded” to “Non Existence”.	Used / Not Used	Used	—
/PRES	FOUP has made a transition from “Non Existence” or “Properly Loaded” to “Only Presence Detection”.	Used / Not Used	Used	—
/PLAC	FOUP has made a transition from “Non Existence” or “Properly Loaded” to “Only Placement Detection”.	Used / Not Used	Used	—
/AIRD	Positive Pressure Drop Event Report	Used / Not Used	Not Used	—
/MESW	Manual Switch 2 Event Report	Used / Not Used	Not Used	—
Event11	Not Used	Used / Not Used	Not Used	—
Event12	Not Used	Used / Not Used	Not Used	—
Event13	Not Used	Used / Not Used	Not Used	—
Event14	Not Used	Used / Not Used	Not Used	—
Event15	Not Used	Used / Not Used	Not Used	—
Event16	Not Used	Used / Not Used	Not Used	—

- Upon T-TYPE Protocol Selection

Parameter Name	Content	Set Range	Standard Value	Unit
FIN Enabled	Waits the response of FIN command which corresponds to INF and ABS event commands.	Used / Not Used	Not Used	—
/POWON	Power Supply	Used / Not Used	Used	—
/FANST	Fan Stop	Used / Not Used	Used	—
/MANSW	Manual SW ON	Used / Not Used	Used	—
/PODON	FOUP has made a transition from “ Non Existence ” to “ Properly Loaded ”.	Used / Not Used	Used	—
/PODOF	FOUP has made a transition from “ Properly Loaded ” to “ Non Existence ”.	Used / Not Used	Used	—
/SMTON	FOUP has made a transition from “ Abnormal Existence ” or “ Non Existence ” to “ Existence ”.	Used / Not Used	Used	—
/ABNST	FOUP has made a transition from “ Properly Loaded ” or “ Existence ” to “ Abnormal Existence ”.	Used / Not Used	Used	—
Event9	Positive Pressure Drop Event Report	Used / Not Used	Not Used	—
Event10	Manual Switch 2 Event Report	Used / Not Used	Not Used	—
Event11	Not Used	Used / Not Used	Not Used	—
Event12	Not Used	Used / Not Used	Not Used	—
Event13	Not Used	Used / Not Used	Not Used	—
Event14	Not Used	Used / Not Used	Not Used	—
Event15	Not Used	Used / Not Used	Not Used	—
Event16	Not Used	Used / Not Used	Not Used	—

- Upon B-TYPE Protocol Selection

Parameter Name	Content	Set Range	Standard Value	Unit
FOUP placed	PLACEMENT ON Detection	Used / Not Used	Not Used	—
FOUP removed	PLACEMENT OFF Detection	Used / Not Used	Used	—
FOUP present	PRESENCE ON Detection	Used / Not Used	Used	—
FOUP not present	PRESENCE OFF Detection	Used / Not Used	Used	—
MANUAL SW ON	Manual SW ON	Used / Not Used	Used	—
MANUAL SW OFF	Manual SW OFF	Used / Not Used	Used	—
FAN stop	Fan Stop	Used / Not Used	Used	—
Event8	Not Used	Used / Not Used	Used	—
Event9	Not Used	Used / Not Used	Not Used	—
Event10	Not Used	Used / Not Used	Not Used	—
Event11	Not Used	Used / Not Used	Not Used	—
Event12	Not Used	Used / Not Used	Not Used	—
Event13	Not Used	Used / Not Used	Not Used	—
Event14	Not Used	Used / Not Used	Not Used	—
Event15	Not Used	Used / Not Used	Not Used	—
Event16	Not Used	Used / Not Used	Not Used	—

- Upon A-TYPE Protocol Selection

Parameter Name	Content	Set Range	Standard Value	Unit
Event1	Not Used	Used / Not Used	Not Used	—
Event2	Not Used	Used / Not Used	Not Used	—
Event3	Not Used	Used / Not Used	Not Used	—
Event4	Not Used	Used / Not Used	Not Used	—
Event5	Not Used	Used / Not Used	Not Used	—
Event6	Not Used	Used / Not Used	Not Used	—
Event7	Not Used	Used / Not Used	Not Used	—
Event8	Not Used	Used / Not Used	Not Used	—
Event9	Not Used	Used / Not Used	Not Used	—
Event10	Not Used	Used / Not Used	Not Used	—
Event11	Not Used	Used / Not Used	Not Used	—
Event12	Not Used	Used / Not Used	Not Used	—
Event13	Not Used	Used / Not Used	Not Used	—
Event14	Not Used	Used / Not Used	Not Used	—
Event15	Not Used	Used / Not Used	Not Used	—
Event16	Not Used	Used / Not Used	Not Used	—

- Upon R-TYPE Protocol Selection

Parameter Name	Content	Set Range	Standard Value	Unit
Event1	Not Used	Used / Not Used	Not Used	—
Event2	Not Used	Used / Not Used	Not Used	—
Event3	Not Used	Used / Not Used	Not Used	—
Event4	Not Used	Used / Not Used	Not Used	—
Event5	Not Used	Used / Not Used	Not Used	—
Event6	Not Used	Used / Not Used	Not Used	—
Event7	Not Used	Used / Not Used	Not Used	—
Event8	Not Used	Used / Not Used	Not Used	—
Event9	Not Used	Used / Not Used	Not Used	—
Event10	Not Used	Used / Not Used	Not Used	—
Event11	Not Used	Used / Not Used	Not Used	—
Event12	Not Used	Used / Not Used	Not Used	—
Event13	Not Used	Used / Not Used	Not Used	—
Event14	Not Used	Used / Not Used	Not Used	—
Event15	Not Used	Used / Not Used	Not Used	—
Event16	Not Used	Used / Not Used	Not Used	—

- SECS

Parameter Name	Content	Set Range	Standard Value	Unit
T1 CharTimeOut	T1 Timeout between Characters	0 to 65535	1000	msec
T2 ProtocolTimeOut	T2 Protocol Timeout	0 to 65535	3000	msec
T3 ResTimeOut	T3 Response Timeout	0 to 65535	3000	msec
T4 BlockTimeOut	T4 Timeout between Blocks	0 to 65535	3000	msec
DEVICE_ID	Device ID	0 to 255	251	—
Retry	Communication Retry Times	0 to 31	3	—
MASTER_SLAVE	Master/Slave Select (Resolve of Competition)	MASTER/SLAVE	MASTER	—
SystemByte	System Byte Operation	Copy/Increment	Copy	—

2.5.5 TYPE/TABLE Screen

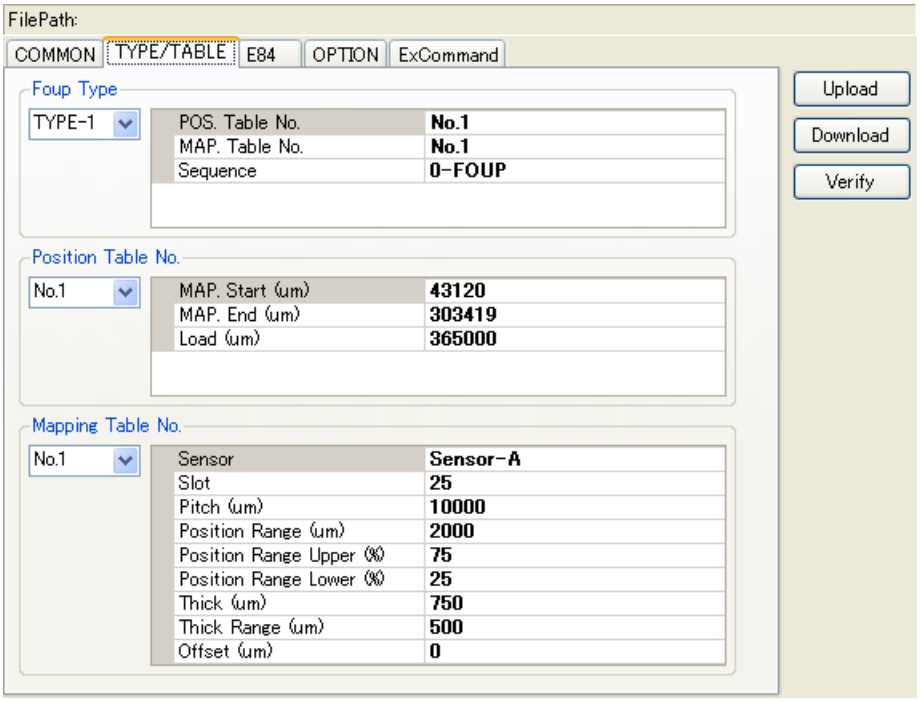


Fig 2.34 TYPE/TABLE Screen

Type/Table Screen has three setting screens. The explanations for them are stated below.

- Types: Refer to ⇨ "2.5.5.1 Types Indication"
- POS. Table: Refer to ⇨ "2.5.5.2 POS. Table Indication"
- MAP. Table: Refer to ⇨ "2.5.5.3 Map.Table Indication"

2.5.5.1 Types Indication

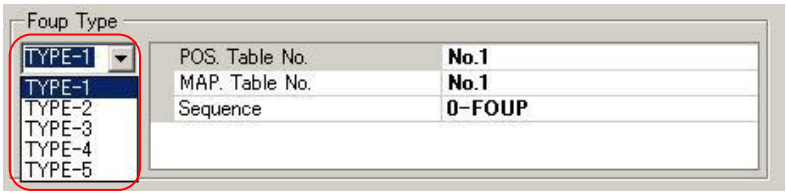


Fig 2.35 Type Setting

Different functions can be assigned to each Type. The setting contents are as follows:

Table 2.19 Type Setting Content

Name	Setting Capable Range	Description
POS. Table No.	No. 1 No. 2 No. 3 No. 4 No. 5	Select the position table # to use from the position table.
MAP. Table No.	No. 1 No. 2 No. 3 No. 4 No. 5	Select the map table to use from the map table.
Sequence	0-FOUP 1-Adapter 3-FOSB 5-N2 PURGE	Determine which type is used to operate KWF-12F2.

2.5.5.2 POS. Table Indication

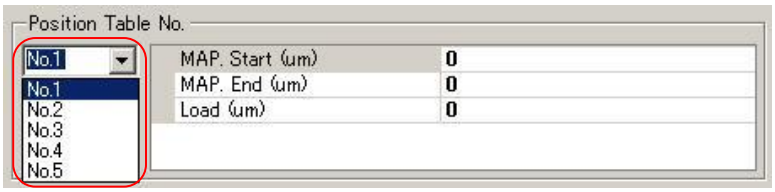


Fig 2.36 Position Setting

Values are assigned to each position table.

Table 2.20 Position Table Indication

Name	Setting Capable Range	Description
MAP. Start (um)	−214748364 to 2147483647	Mapping Start Position Specify the offset value from the door position (up position "0").
MAP. End (um)	−214748364 to 2147483647	Mapping End Position Specify the offset value from the door position (up position "0").

2.5.5.3 MAP. Table Indication

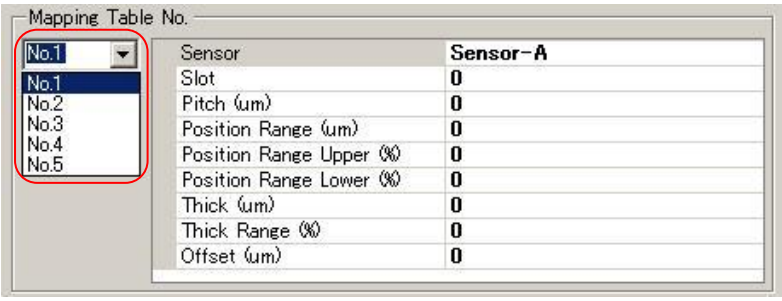


Fig 2.37 Mapping Table

Values are assigned to each mapping table.

Table 2.21 Mapping Table Setting Range

Name	Setting Capable Range	Description
Sensor	0: Sensor A (for 12 inch) 1: Sensor B (for 8 inch) 2: Sensor C (for special spec.)	Select the sensor for mapping.
Slot	0 to 32	Set the number of slots for the cassette.
Pitch	0 to 65535	Load Position Specify the offset value from the door position.
Position Range	0 to 65535	Wafer off-position allowable range
Position Range Upper	0～100	Wafer off-position upper limit
Position Range Lower	0～100	Wafer off-position lower limit
Thick	0 to 65535	Wafer thickness reference value
Thick Range	0 to 65535	Wafer thickness allowable range
Offset	−32768 to 32767	Wafer detection start position offset

NOTE

As for handling each range, whether the parameter value above indicates the range of a side or of both sides is determined by the parameter setting.

2.5.6 E84 Screen

Each kind of timer of E84 is set.

NOTE EE84 is an unsupported option and thus unavailable.

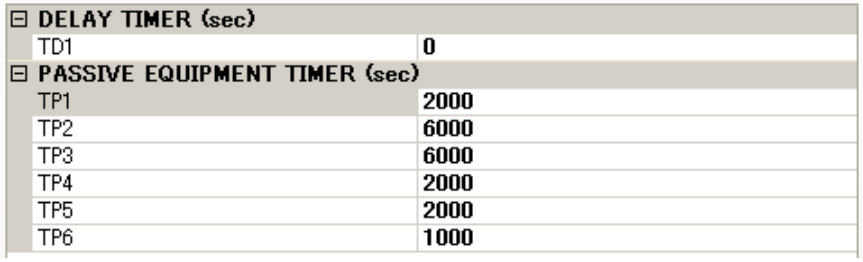


Fig 2.38 E84 Screen

Table 2.22 Setting for E84

Name		Setting Capable Range
PASSIVE EQUIPMENT TIMER (sec)	TP1	0 to 65535
	TP2	0 to 65535
	TP3	0 to 65535
	TP4	0 to 65535
	TP5	0 to 65535
	TP6	0 to 65535
DELAY TIMER (sec)	TD1	0 to 65535

2.5.7 Option Screen

KWF-12F2 Option is set.

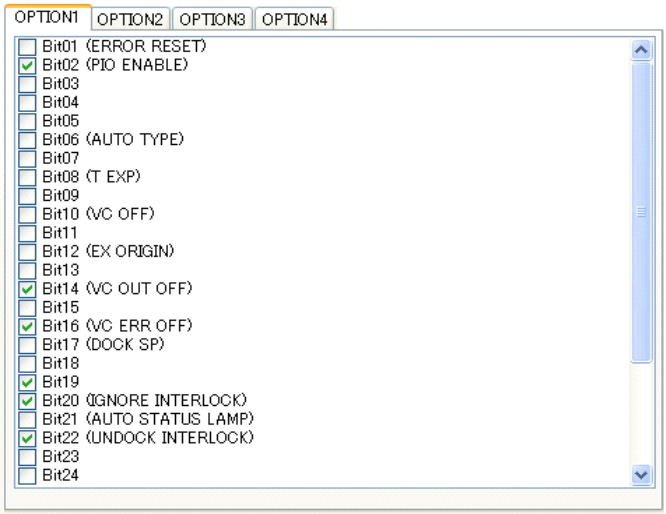


Fig 2.39 Option Screen

32 bits are assigned to each option, and there are 124 bits with 4 options in total.

As this parameter has been set upon shipping, unless otherwise specified, no change is necessary.

2.5.8 ExCommand Screen

This is used to perform the operation of the manufacture only.
This screen cannot be operated by a user for safety reasons.

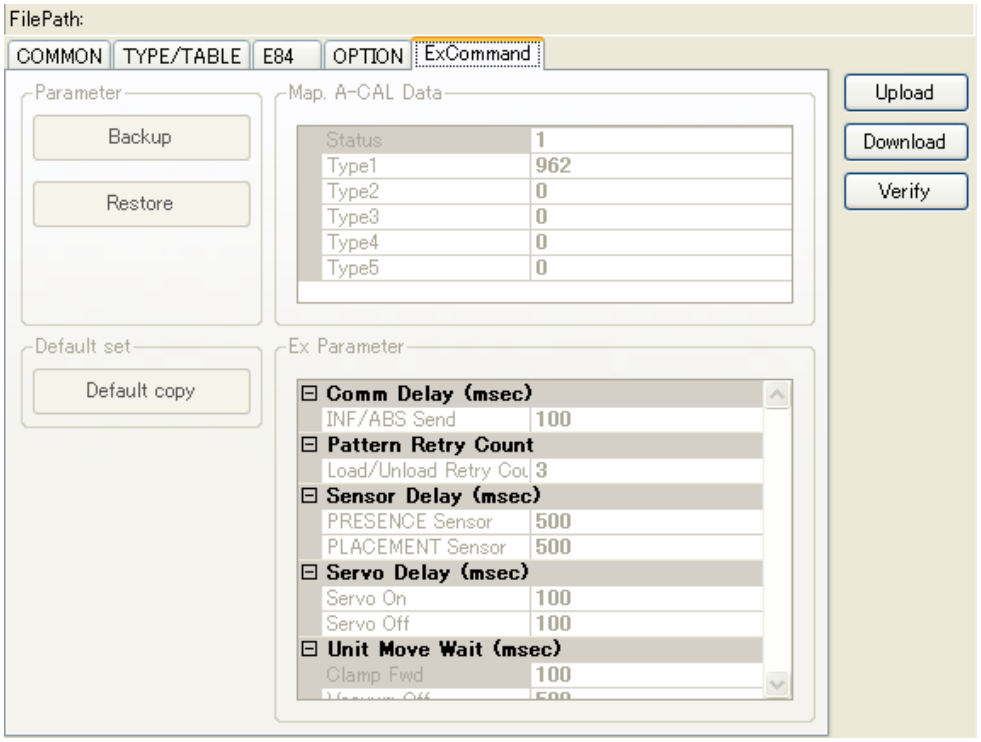


Fig 2.40 ExCommand Screen

- Map. A-CAL Data

  Internal data when mapping calibration is performed is displayed for each type.

- Ex Parameter

  Time of KWF-12F2 units is indicated.

- Position Offset Table

  Parameter for the up/down axis suspension timing of KWF-12F2 is indicated.

If the data displayed on this screen is changed carelessly, fatal malfunction may be caused, and therefore, the data cannot be operated by a user.

2.6 Up/down Axis Z Auto Calibration

Auto calibration of the KWF-12F2 up/down axis Z has completed before factory shipment. If positioning error occurs due to change of the supplied pressure or some other reason, it is necessary to execute the up/down axis Z calibration again.

2.6.1 Outline of Function

" Up/Down Axis Z Auto Calibration " is a function, by the suspending operation of the up/down axis Z, to calculate automatically a suitable position for the stop operation to the target position, and set the parameter.
Parameters to be set are the items of TYPE No. when " Position Offset Table " is implemented.
Parameters set by this function can be confirmed by " KWF-12F2 Maintenance Tool ".

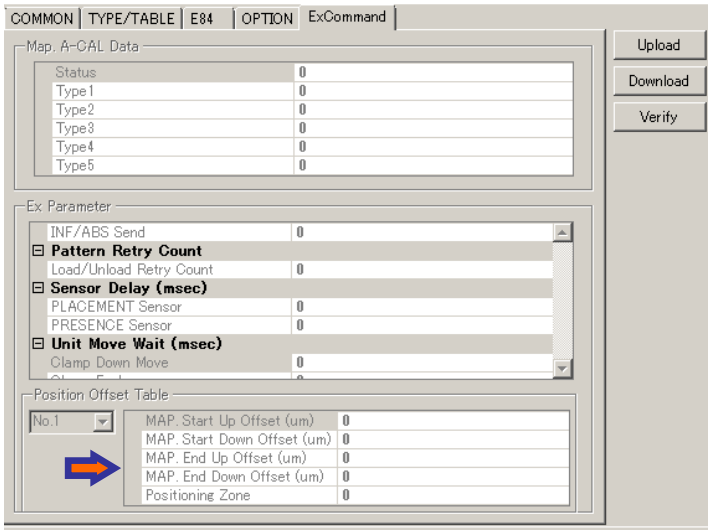


Fig. 2.41 Position Offset Table Parameter Screen

2.6.2 Operation Procedures

" Up/Down Axis Z Auto Calibration " is operated by the following procedures.

(1) Upload the parameter, and save it into the file. (Parameter Backup)

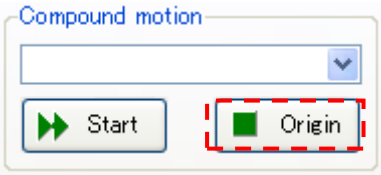
NOTE

Prior to the Z AXIS ACAL start-up, make sure to execute the back-up of the parameter.

(2) Set 2000 to Positioning Zone in the Position Offset Table, and start downloading.
※ In order to set Positioning Zone, press Ctrl+Alt+M.

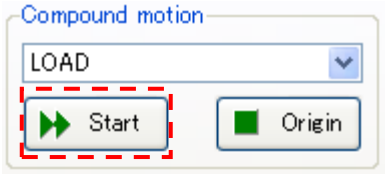
(3) Prepare the Cassette to use.

(4) Execute the unload operation " ORIGIN " for KWF-12F2.



(5) Execute the normal loading to KWF-12F2 for the cassette.

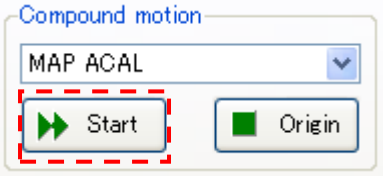
(6) Execute the load operation " LOAD " for KWF-12F2.



① Specify the operation.
② Click " START " .

(7) Execute " Z AXIS ACAL " for KWF-12F2.

* When completed normally, upload of the parameter starts automatically.



① Specify the operation.
② Click " START " .

NOTE

In case Z AXIS ACAL has not been able to be completed, download the saved parameter into KWF-12F2 prior to starting operation.
(Alternatively, adjustment of the hardware such as a speed controller is required.)

(8) Execute the unload operation " ORIGIN " for KWF-12F2.

(9) Remove cassette from KWF-12F2.

(10) Set the initial value into the Positioning Zone in Position Offset Table and start downloading.

NOTE

Z-Axis ACal for each operation Type is set. In case the operation Type or cassette type changed, it is necessary to set the each this type.

2.7 Mapping Auto Calibration

Mapping auto calibration of KWF-12F2 has completed before factory shipment. If a mapping data error occurs for use of nonconforming container or some other reason, execute the mapping auto calibration again.

2.7.1 Outline of Function

" Mapping Auto Calibration " is a function that for the FOUP which executes mapping and the cassette, automatically detects mapping start position and mapping end position and executes the parameter setting.
Upon executing " MAP ACAL " operation, this function can be used.
Parameters to be set are both " MAP.Start(um) " and " MAP.End(um) ".
Parameters set by this function can be confirmed by " KWF-12F2 Maintenance Tool ".

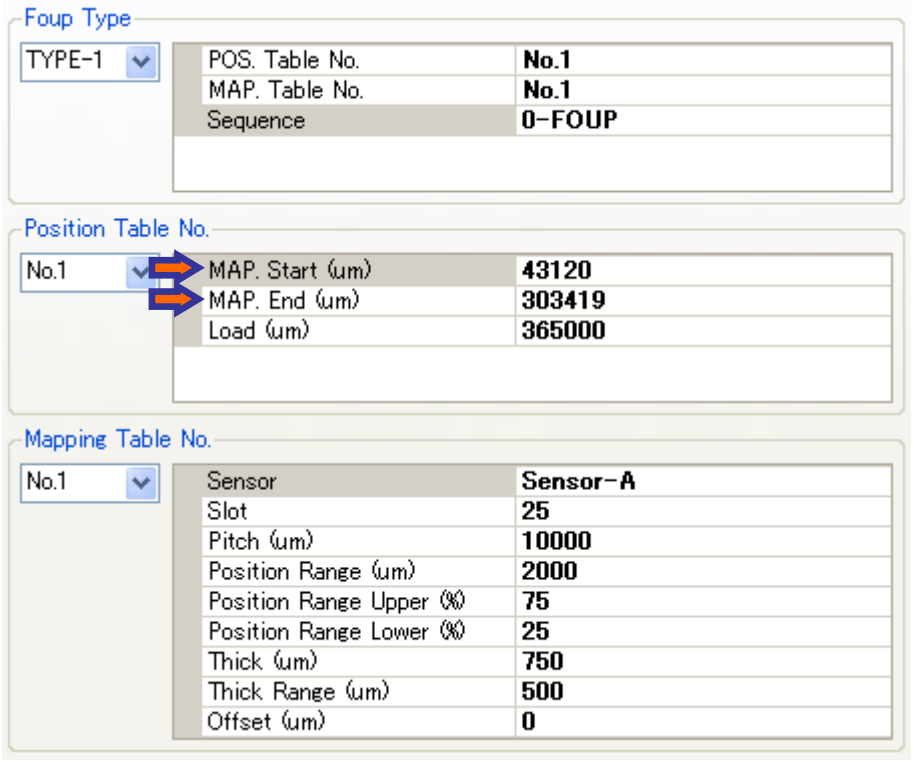


Fig 2.42 TYPE/TABLE Parameter Screen

NOTE

Previously check whether or not such parameters as quantity of slots (Slot), pitch (Pitch) and wafer thickness (Thick) have properly been set.

In case “ MAP ACAL ” has properly been completed, “ MAP ACAL Status ” is indicated in “ Green ” color. In case of being not so, it is indicated in “ Red ”. In the following case, it means that Type1 has properly completed “ MAP ACAL ”. It shows that Type2 to Type5 have not completed “ MAP-ACAL ”. When “ MAP ACAL ” has been completed, the wafer thickness detection is automatically corrected. The correction value is the difference between the mean wafer thickness detected during the MAP ACAL and the parameter “ Thick ” setting value.

“ Correction Value ” = “ Mean Wafer Thickness Detected ” / “ Thick ”

In case no correction is executed, give a check mark in the check box which corresponds to each Type in the “ MAP ACAL Status ” then press the “ Clear ” button. By executing this, although the thickness correction becomes invalid, it does not give any influence on both preset parameters of “ MAP.Start(um) ” and “ MAP.End(um) ”.

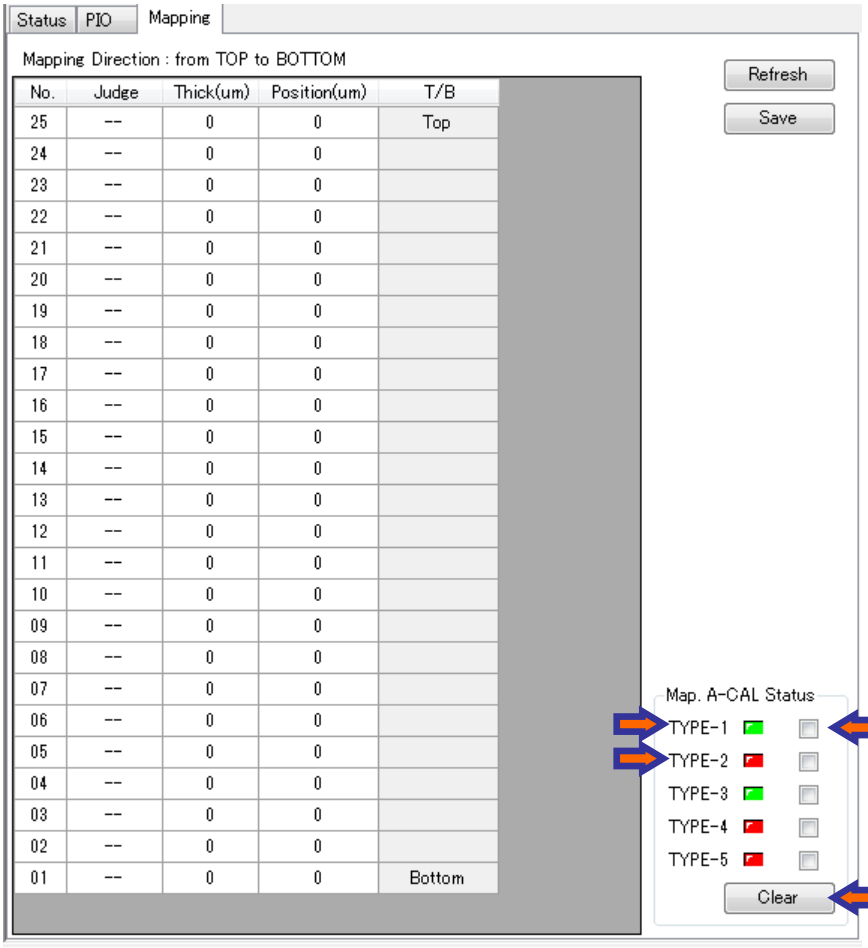


Fig 2.43 Mapping Calibration Status Screen

2.7.2 Operation Procedures

" Mapping Auto Calibration " is operated by the following procedures.

(1) Upload the parameter, and save it into the file.
(Parameter Backup)

NOTE

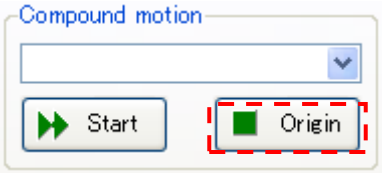
Prior to the MAP ACAL start-up, make sure to execute the back-up of the parameter.

(2) Prepare the cassette for which mapping is to be done.

(3) Prepare two pieces of wafers for which mapping is to be done.

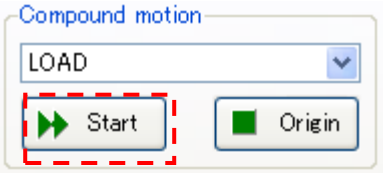
(4) Insert one wafer prepared in step (3) above into the cassette's uppermost stage prepared in step (2) above and insert another wafer into the cassette's lowermost stage.

(5) Execute the unload operation " ORIGIN " for KWF-12F2.



(6) Execute the normal loading to KWF-12F2 for the cassette stated in (4).

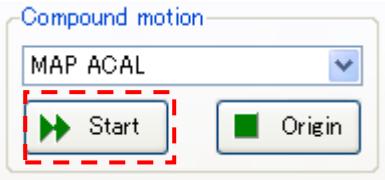
(7) Execute the load operation "LOAD" for KWF-12F2.



① Specify the operation.
② Click " START ".

(8) Execute " MAP ACAL " for KWF-12F2.

* When completed normally, upload of the parameter starts automatically.



① Specify the operation.
② Click " START ".

NOTE

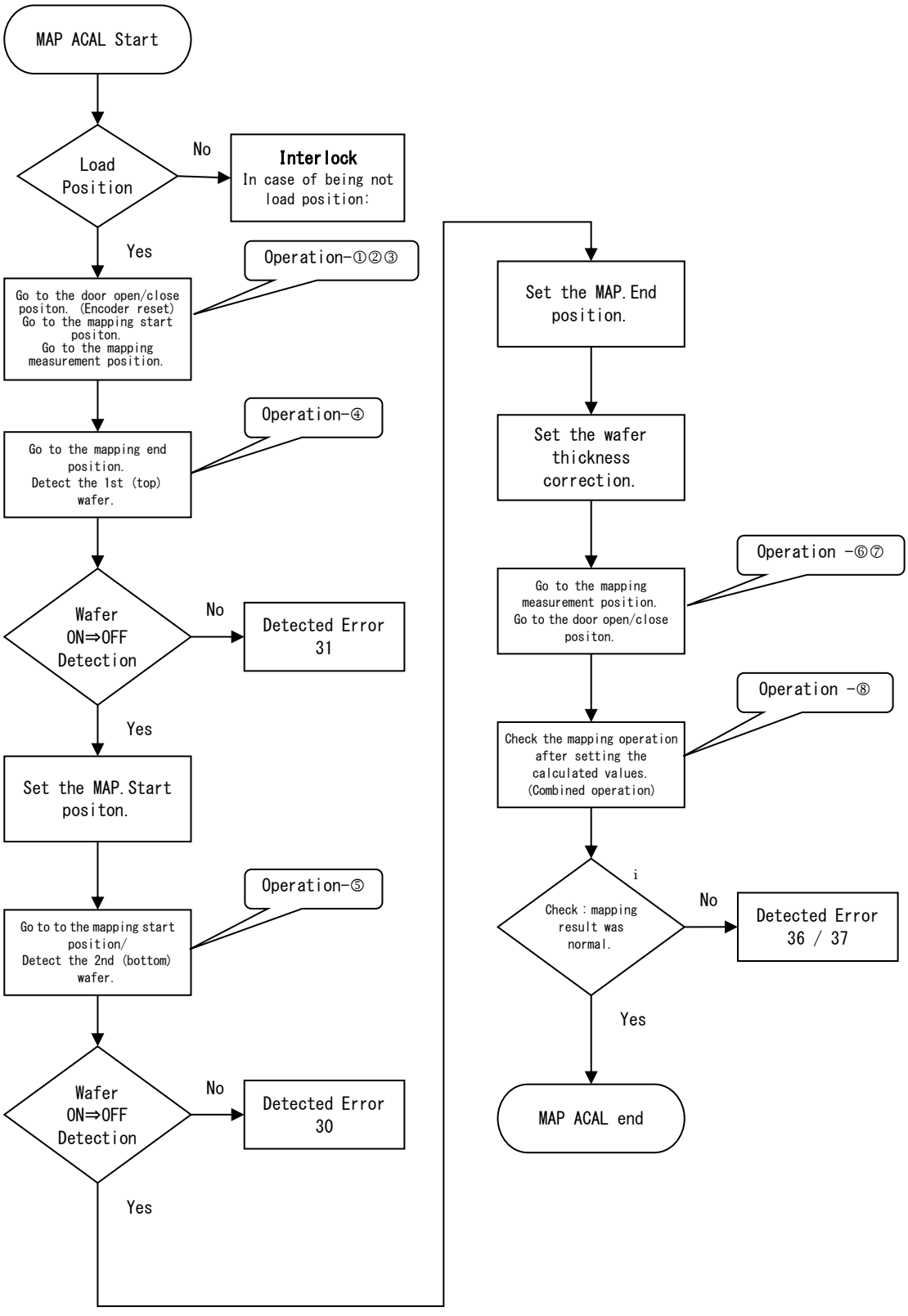
In case MAP ACAL has not been able to be completed, download the saved parameter into KWF-12F2 prior to starting operation.

(9) Execute the unload operation " ORIGIN " for KWF-12F2.

(10) Remove cassette from KWF-12F2.

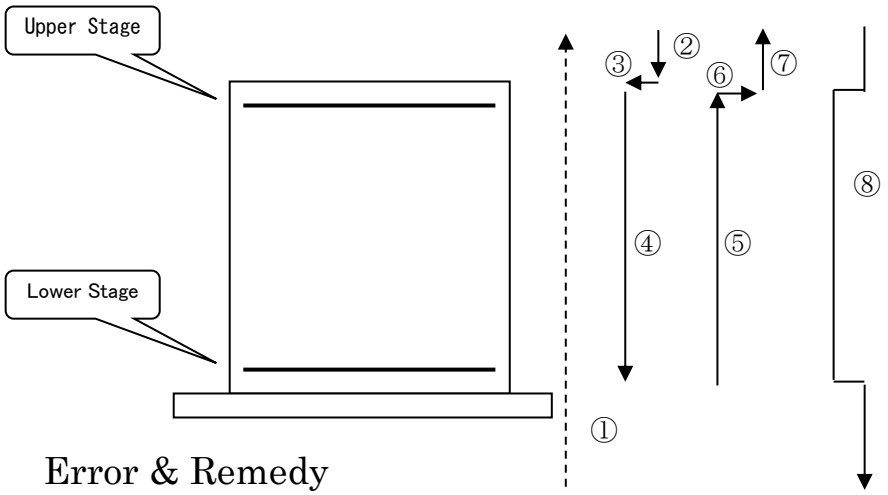
2.7.3 Operation Flow

" MAP ACAL " operation flow is as follows:



[i] Software after version 'xxxxxx2C'.

2.7.4 Operation Sequence



2.7.5 Error & Remedy

Table 2.25 Mapping Error Code

Error Code	Content	Remedy
30 No Wafer on Lower Stage	Lower stage wafer cannot be detected.	Check whether or not the wafer on the lowermost stage has been properly set. Check if parameters of Pitch and Slot have been properly set.
31 No Wafer on Upper Stage	Upper stage wafer cannot be detected.	Check whether or not the wafer on the uppermost stage has been properly set. Check if parameters of Pitch and Slot have been properly set.
36 / 37 Mapping Calibration Error	After having set each calculation values, it was detected an abnormal result by confirmation as a result of mapping operation check.	Check whether or not the wafer on the lowermost stage and the uppermost stage has been properly set. Check if parameters of Pitch and Slot have been properly set.[i]

[i] Software after version 'xxxxxx2C'.

2.8 Mapping Parameter Setting

Upon mapping, both position and thickness calculation and OK/NG judgment are executed on the basis of each preset mapping parameter.

For KWF-12F2, the following parameters have been preset upon shipping. In case they are not proper as using conditions, properly modify the setting contents.

There are following items as parameters used for mapping.

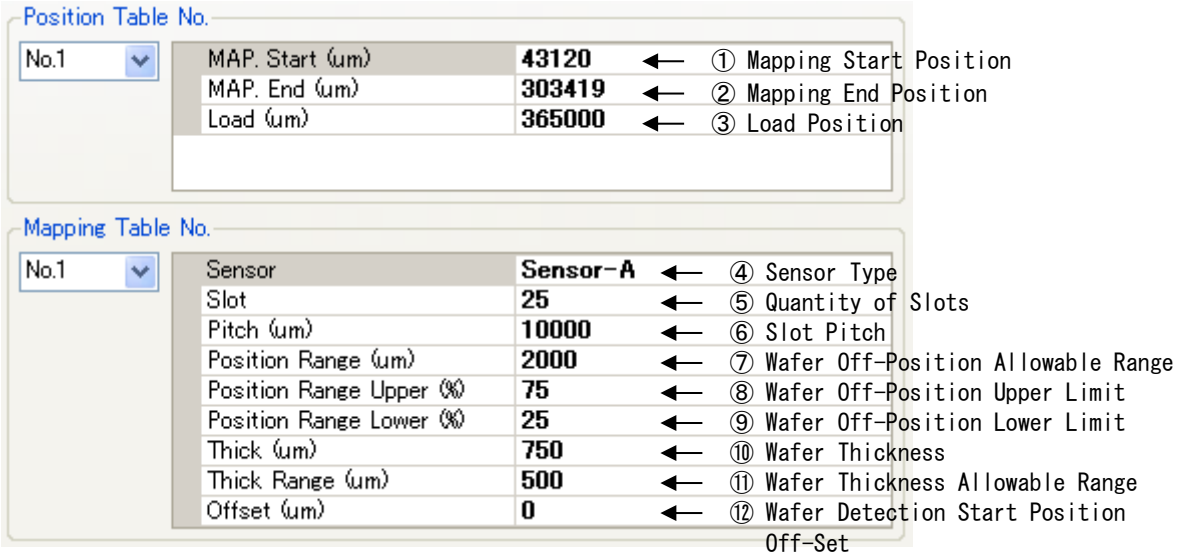


Fig 2.44 Mapping Setting Parameter

For " Parameter　Setting Contents ", refer to " 2.5.5 TYPE/TABLE Screen ".

NOTE

Both ① and ② have been adjusted upon shipping. Only when no proper mapping result is indicated, execute the setting.

After setting the mapping parameters, download the setting contents into KWF-12F2. For the procedures, refer to " 2.5.2 Data Download ".

NOTE

For further details of " Mapping Parameter Adjustment Procedures ", refer to " Chapter 8. Mapping " in " KWF-12F2 FOUP Opener Operation Manual ".