**TEST SCHEDULER**

# K 2
# K2Sprint

# SCHEDULER
## Instruction Manual

IMV CORPORATION

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| 1.0.0 | 2004.03.23 | First edition |
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# Contents


Chapter 1 Specification . . . . . 1-1

1.1 Outline . . . . . 1-1

1.2 Specifications . . . . . 1-1

Chapter 2 Schedule Definition . . . . . 2-1

2.1 Outline . . . . . 2-1

2.2 Definition of schedule items . . . . . 2-3

2.2.1 Detailed definition . . . . . 2-4

2.2.1.1 SINE, RANDOM, MULTI-SWEEP SINE . . . . . 2-4

2.2.1.2 SHOCK, SRS, Multi-SHOCK . . . . . 2-8

2.2.1.3 NON-GAUSSIAN, Multi-RANDOM, Multi-SINE . . . . . 2-9

2.2.2 Repeat the whole schedule . . . . . 2-9

2.2.3 Shut down the power of excitation system after test completion . . . . . 2-10

2.2.4 Use START input contact signal . . . . . 2-10

2.3 Contact control operation . . . . . 2-11

2.3.1 Contact information definition . . . . . 2-12

2.4 Save the defined schedule . . . . . 2-14

Chapter 3 Schedule Operation . . . . . 3-1

3.1 Outline . . . . . 3-1

3.1.1 Procedure of schedule operation . . . . . 3-1

3.2 Schedule operation . . . . . 3-2

3.2.1 Specify schedule definition file . . . . . 3-2

3.2.2 Schedule operation . . . . . 3-4

3.2.3 Schedule operation completion . . . . . 3-5

3.3 Other commands . . . . . 3-6

Chapter 4 Message and Meaning . . . . . 4-1

# Chapter 1 Specification

## 1.1 Outline

This software is for defining an operation schedule of K2 Applications for vibration testing and for operating the defined schedule in order.

This software has the function that vibration testing is operated by using test file generated by each K2 Application.

When this software is to be executed, test files to be used in operation are needed to be generated by each K2 Application.

This software has the function of for controlling the contact I/O port of SPU. When this function of contact control operation is used, the multi vibration excitation system can exchange signals between the systems to switch the excitation axes.

## 1.2 Specifications

1. Applications to be operated in Schedule

Available applications to be operated by the Scheduler

K2/SINE

K2/RANDOM

K2/SINE (SWEEP, SPOT)

K2/RANDOM (RANDOM, SOR, ROR)

K2/SHOCK (SHOCK, SRS)

K2/MULTI-SWEEP SINE (Multiple frequency sweep, Time delayed sweep, Multi Spot)

K2／NON-GAUSSIAN

K2／Multi-RANDOM

K2／Multi-SINE (SWEEP, SPOT)

K2／Multi-SHOCK

2. Maximum number of Schedule Definition

Maximum number of Schedule Definition to be set is 1000.

3. Times for repetitive operation of all Schedules as a whole

Times for repetitive operation of all Schedules as a whole can be set to 1 ~ 10000.

4. Contact I/O signal available in contact control operation

(1) Input Signal

The maximum 8 channels of input signal among 1 ~ 8 CH.

(2) Output Signal

The maximum 8 channels of input signal among 1 ~ 8 CH.

# Chapter 2 Schedule Definition

## 2.1 Outline

This software is for executing the schedule with using the information (test) defined by K2 applications usable in K2/SCHEDULER.

When this software is to be executed, the information (test) file generated by K2 application usable in K2/SCHEDULER is necessary.

Schedule operation executed by this software is determined by Schedule Definition.

Defined information of schedule can be saved in a form of Schedule Definition File.

Schedule operation can be executed only by loading the defined information of schedule when it is saved in Schedule Definition File.

Contents of the saved Schedule Definition File can be corrected when it is loaded to be used for schedule operation. In this case, the Schedule Definition is called to 'Correction Definition'. Press [New] ((1) in Fig.2-1-1) to start to define a schedule in Fig.2-1-2.

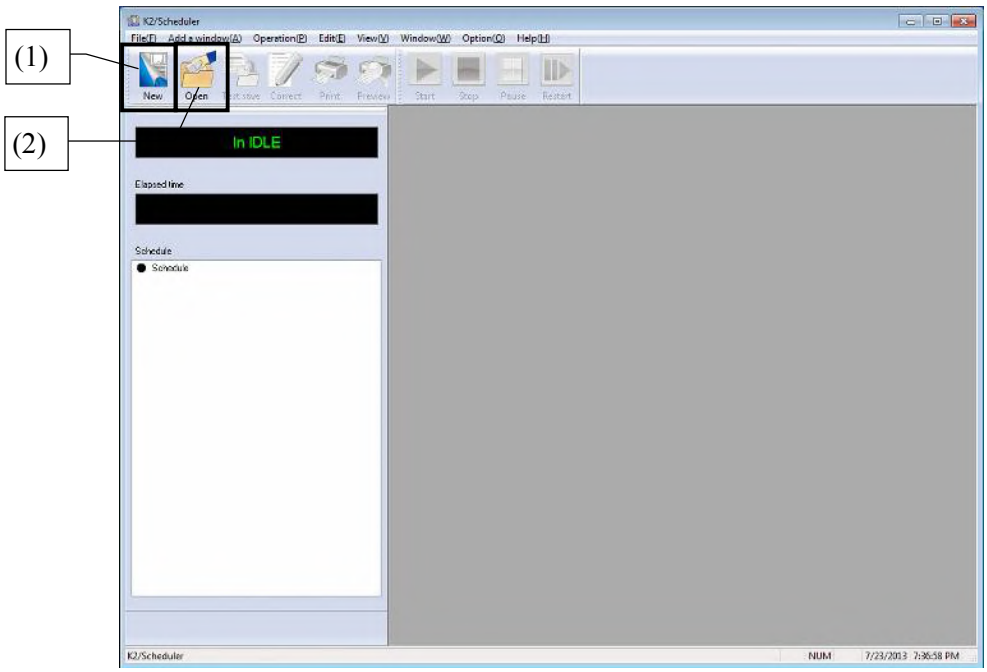



Fig.2-1-1 Initial display of Scheduler

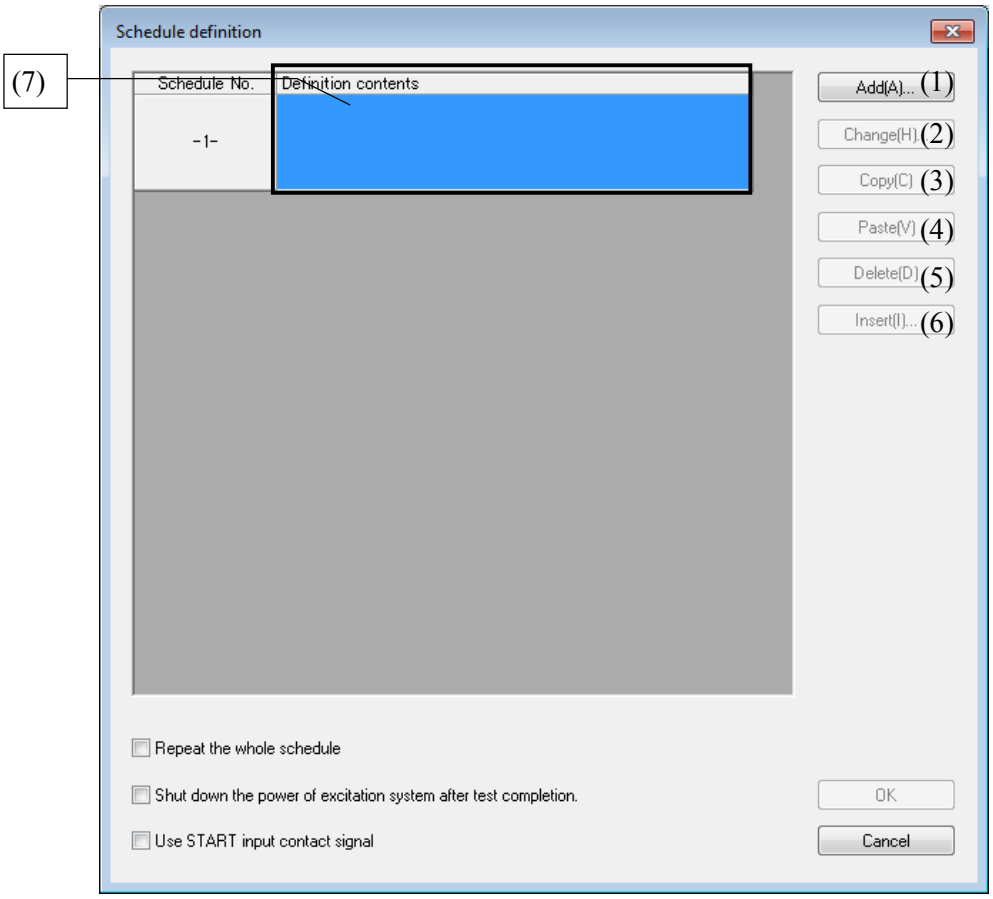



Fig.2-1-2 Schedule definition

Also, the same dialog box as Fig.2-1-2 appears when the button of [Open] ((2) in Fig.2-1-1) is pressed. In the case, the saved schedule information that have already defined are listed in (7) of Fig.2-1-2. These Schedule Definition Files are available to use in operation.

No files are listed when there are no test information is saved.

## 2.2 Definition of schedule items

In the window of schedule definition (Fig.2-1-2), schedule to be operated is defined by pressing each push button as below.

Maximum 1000 items of schedule can be defined.

(1) [Add]

A new schedule item is to be defined.

(2) [Change]

Defined contents of schedule item is to be corrected.

Press this button by selecting the objective item to be corrected (with using the mouse).

(3) [Copy]

Defined contents of schedule item is to be copied.

Press this button by selecting the objective item to be copied (with using the mouse).

(4) [Paste]

The copied schedule item is to be pasted as you need.

Press this button by selecting the objective item to be pasted (with using the mouse).

This command is usable where there has already been defined a schedule item.

(5) [Delete]

Defined schedule item is to be deleted.

Press this button by selecting the objective item to be deleted (with using the mouse).

(6) [Insert]

A new schedule item is to be inserted before the defined schedule item.

Press this button by selecting the data to insert a new data before it (with using the mouse).

* Other buttons than (1) [Add] are set to valid when the schedule item is selected by the mouse.

## 2.2.1 Detailed definition

### 2.2.1.1 SINE, RANDOM, MULTI-SWEEP SINE

An example to define a schedule is described below. The detailed procedure and the function of each button are explained.

Here, the schedule is defined by using a defined test condition of SINE and RANDOM in new definition. The display of Fig.2-1-1 appears when Scheduler is booted up. Press [NEW] in the display.

The dialog box of Fig.2-1-2 for schedule definition appears. Press (1) [Add] button.

Next, the dialog box for selecting a defined file is shown as in Fig.2-2-1. Press (1) [Refer] to display the list of defined tests to be selected as Fig.2-2-2.

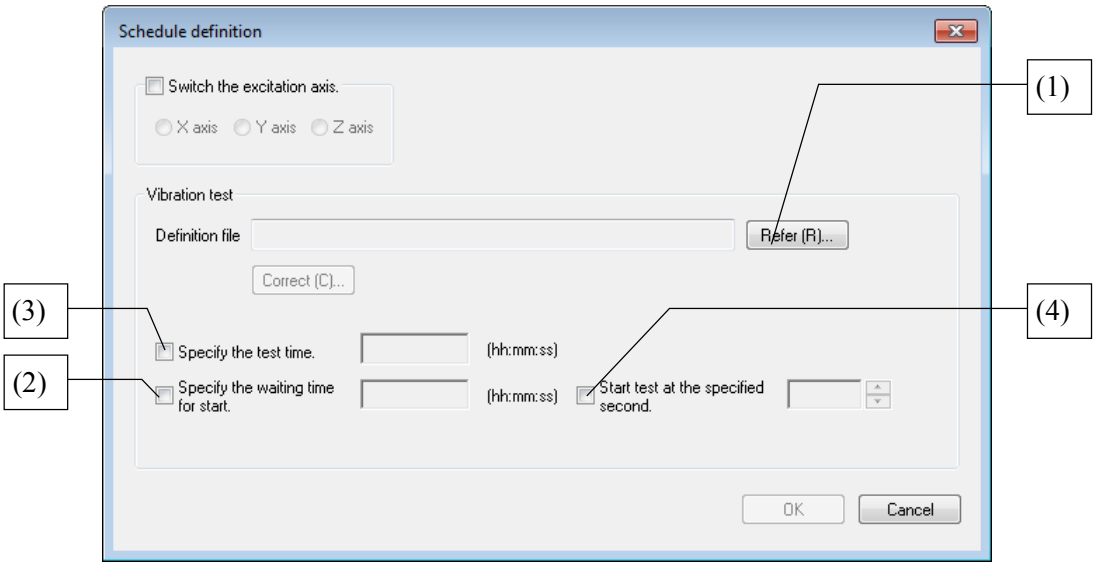



Fig.2-2-1 Definition file (not selected yet)

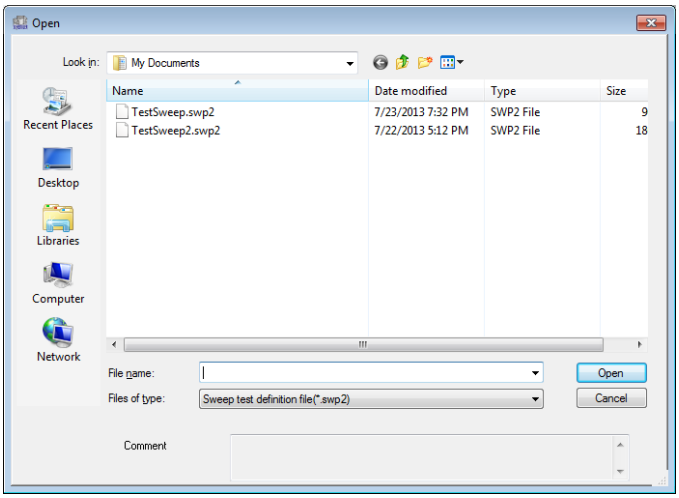



Fig.2-2-2 Open

In this dialog box, select a test definition file required to be used in schedule and press [Open] to refer to a test definition file to be displayed as a fill pass in Fig.2-2-3.

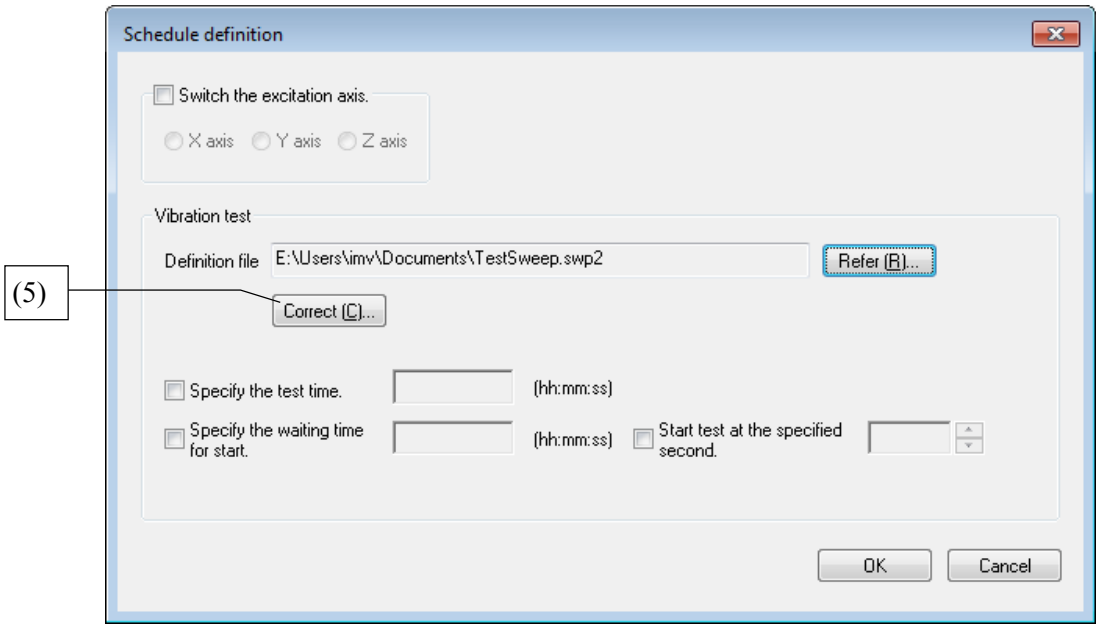



Fig.2-2-3 Definition file (already selected)

The items in the dialog box are explained below ;

**(2) Specify the waiting time for start :**

When this check box is checked, the test start time can be specified by inputting the time. The test operation is not started until the specified time is passed, though the Scheduler operates testing in order.

When this check box is not checked, the test operation is executed immediately in scheduled order.

**(3) Specify the test time :**

These two cases of test time specifying are thinkable by Scheduler.

・The specified time by Scheduler is longer than the test time defined for each test.

・The specified time by Scheduler is shorter than the test time defined for each test.

However, when Test Time is set longer than the time defined in the saved condition, the shorter test time in the saved condition is preferred. The test time needs to be set with concerning to the defined contents of test condition. For example, the test is stopped in the middle of sweeping operation when the test time is set shorter than the sweeping operation time in sweep test of SINE.

When this item is not checked, the test time defined in the applications like 'K2/SINE' is applied.

(4) **Start test at the specified second:**

If this this checkbox was left unchecked, the test will be executed immediately when its turn arrives in the schedule. If the “second” was specified, an application such as “K2/SINE” will start and go into the standby mode, in which it waits for the start of test, but the test will not be executed immediately. The test will start when the “second” of current time matches the specified “second”. The hour and minute cannot be specified. For example, if the second was specified as “14”, the test will start at hh:mm:14. If the application could not go into the standby mode for the test before the 14th second was reached, the test will start at the 14th second one minute later.

The test definition display appears as Fig.2-2-4 by pressing (5) [Correct] button in Fig.2-2-3.

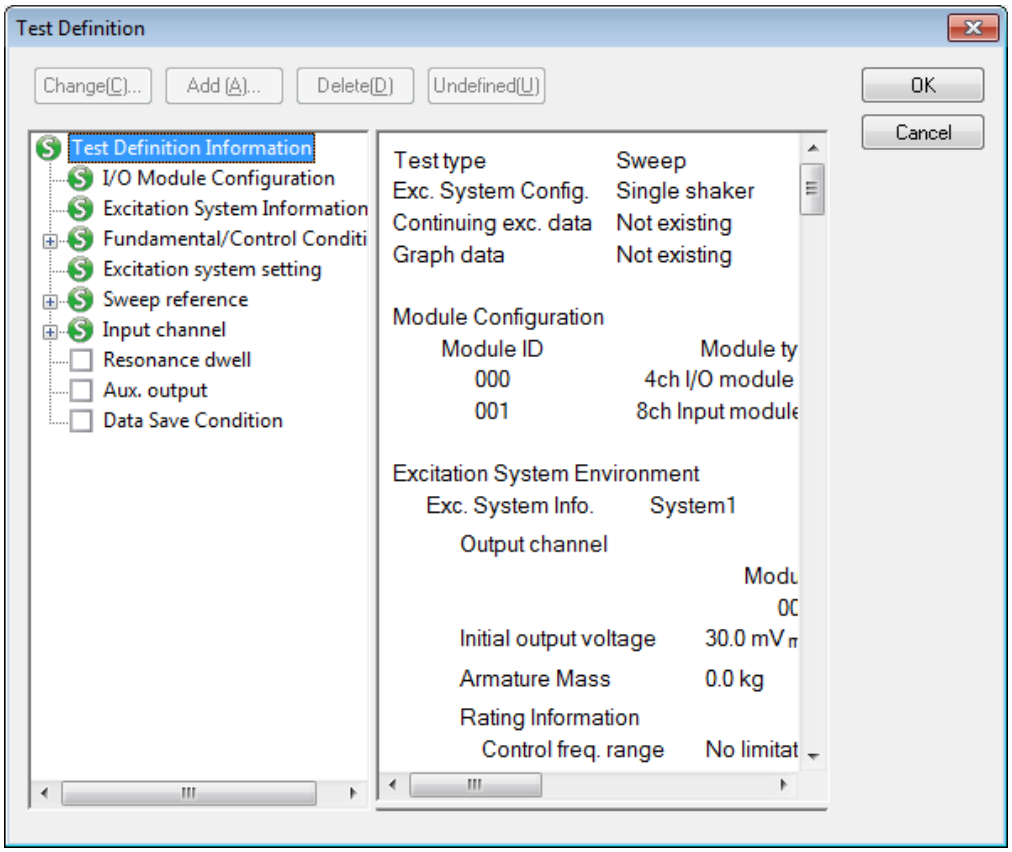



Fig.2-2-4

The defined condition can be corrected in this dialog box. The functions in this dialog box are equivalent to the condition definition of other applications like K2/SINE. Refer to the instruction manuals of each application about the details.

**(6) Switch the excitation axis** (See Fig.2-2-5)

This check box is available to set when the contact signal is valid (for multi axis vibration test system only).

This function is usable for controlling the multi axis vibration test system (X, Y, Z-direction) by the software.

According to the specifications, the scheduled test will be operated after switching the excitation axis first when the definition of Select Excitation Axis is set.

Then, the selected test definition is fitted in the schedule by pressing [OK] button in Fig.2-2-5. (See Fig.2-2-7.)

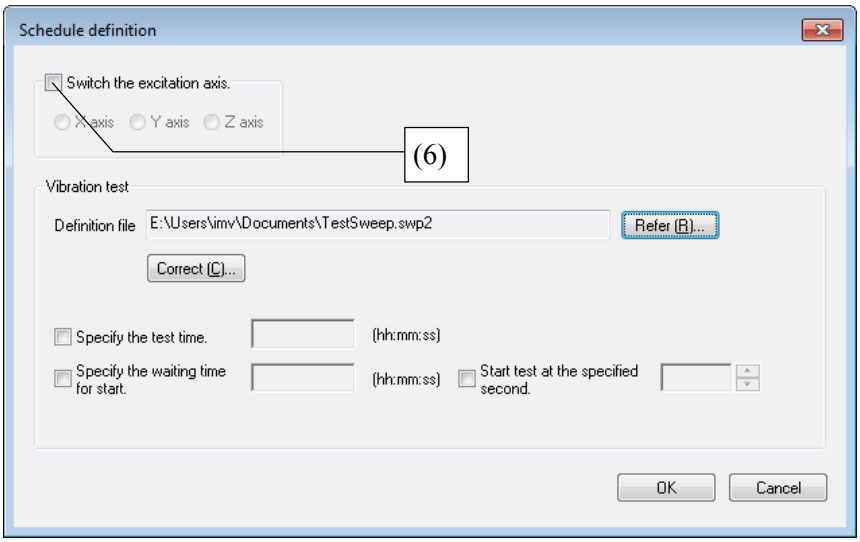



Fig.2-2-5

### 2.2.1.2 SHOCK, SRS, Multi-SHOCK

Although the operation procedures are similar to those of “SINE, RANDOM, MULTI-SWEEP SINE”, the contents defined after the definition file of test to be included into the schedule are partially differed.

Transfer function data and drive data must be added to the definition file of the test included in the schedule.

If the test file is selected, the display is as shown in Fig.2-2-6.

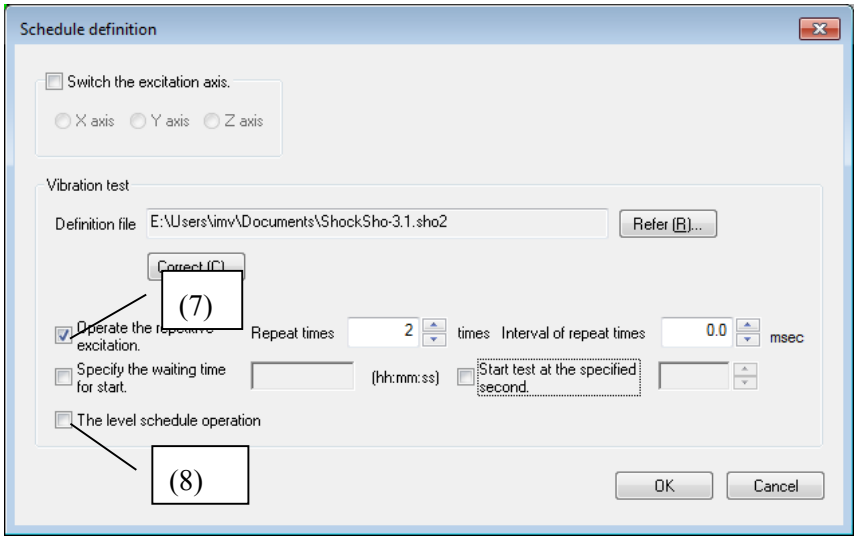



Fig.2-2-6 Definition file (already selected)

**(7) Operate the repetitive excitation：**

Operate the repetitive excitation.

If the checkbox is marked, setting of the repeat times and interval of repeat times is required. The range allowing setting is the same as that of SHOCK.

“Operate the repetitive excitation” and “Operate the level schedule” cannot be selected at a time.

**(8) Operate the level schedule：**

It can be made valid by only the definition file defining the level schedule.

The test is performed in accordance with the setting contents of the level schedule of the definition file.

“Operate the repetitive excitation” and “Operate the level schedule” cannot be selected at a time.

Remarks) If the function “(4) start test at the specified second” was used, the test will start from the zero second in the reference waveform when the [second] of current time matches the specified “second”.

#### 2.2.1.3 NON-GAUSSIAN, Multi-RANDOM, Multi-SINE

Although the operation procedures are similar to those of "SINE, RANDOM, MULTI-SWEEP SINE", transfer function data must be added to the definition file of the test included in the schedule.

### 2.2.2 Repeat the whole schedule

(1) Meaning

This function is for operating the defined schedule as a whole repetitively.

In this item, the setting of repetitive operation is done as below ;

1) 'Execute' or 'not execute' of repetitive operation

[Following item is specified only when this item is set to 'execute'.]

2) Times of repetitive operation

Schedule is repeated for the specified times in this item.

This function is available when the check box of (1) in Fig.2-2-7 is checked. The repetitive times can be inputted in the dialog of Fig.2-2-8 by checking the check box ON. The maximum times to be inputted (the maximum number of repetitive times) is 10000 times.

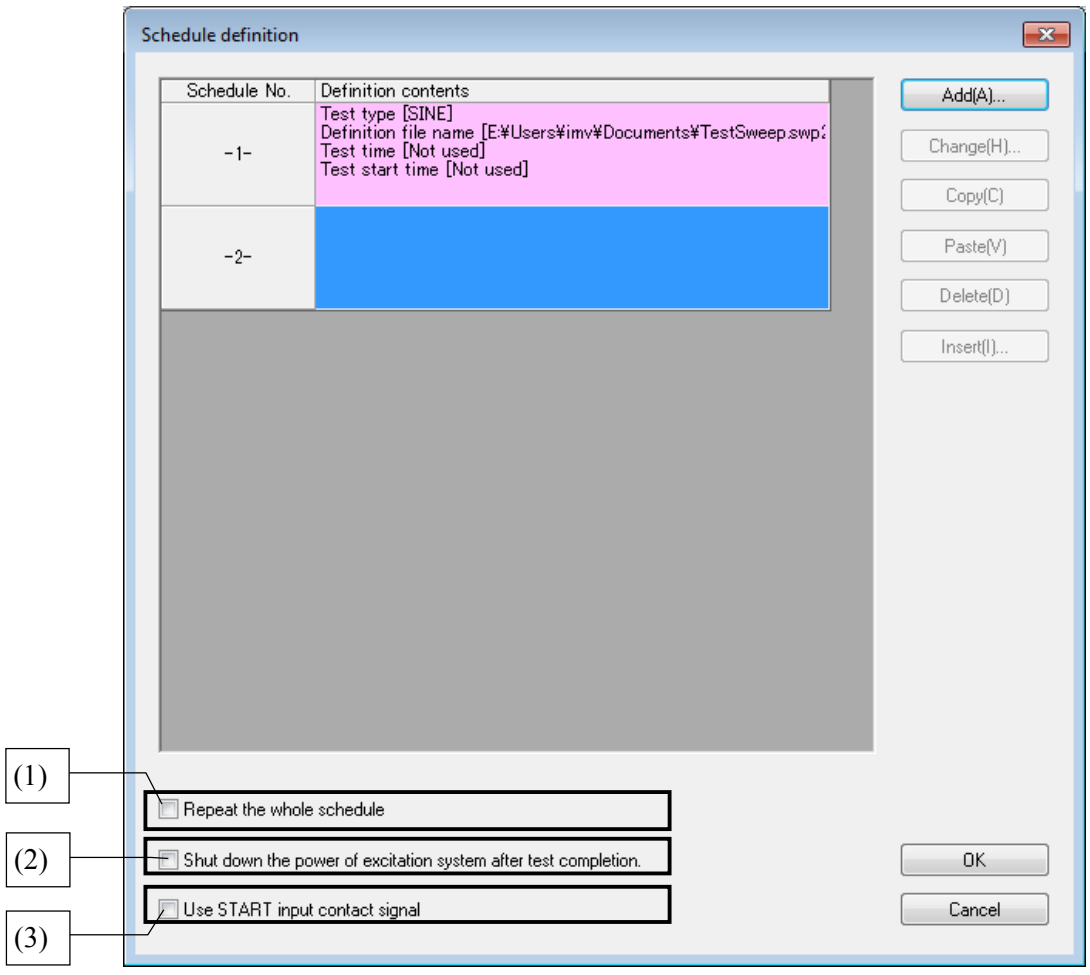



Fig.2-2-7

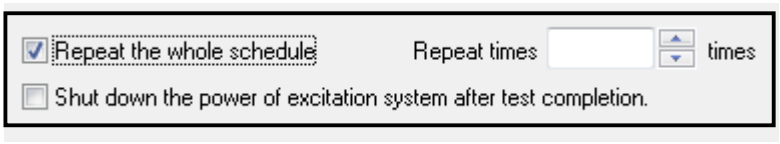



Fig.2-2-8

### 2.2.3 Shut down the power of excitation system after test completion

(1) Meaning

This function is for shutting down the power of excitation system (power amplifier after completing all the schedule operation. It is available to set only when the contact is valid. Check the check box (2) ON in Fig.2-2-7 to use this function.

### 2.2.4 Use START input contact signal

(1) Meaning

This is a function to start the execution of all tests in the schedule by an external command. It is available only if the START contact has been enabled.

To use this function, check the checkbox (3) shown in Fig.2-2-7.

Pressing the Start button on the Scheduler will put the program in the state “Waiting for START ON”. The execution of the schedule will start once the START contact signal was received.

The timeout for START input contact signal (for receiving the START contact signal) is specified in “Set up”.

## 2.3 Contact control operation

The dialog box (Fig.2-3-2) of contact signal setting appears by selecting [Set up] among the menus of 'Option' in Fig.2-3-1.

The check box "Not use the contact signal" is not checked as a default setting. The operation mode is set to use the contact signal initially.

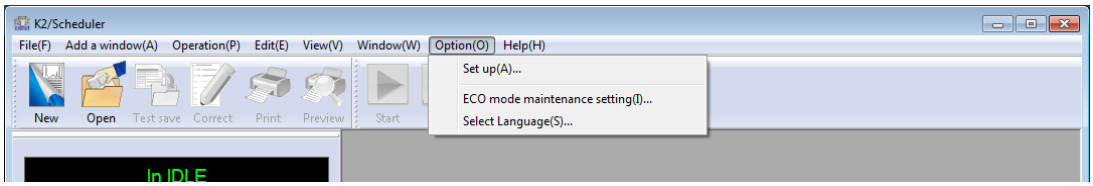



Fig.2-3-1 Select [Set up] among the menu in 'Option'

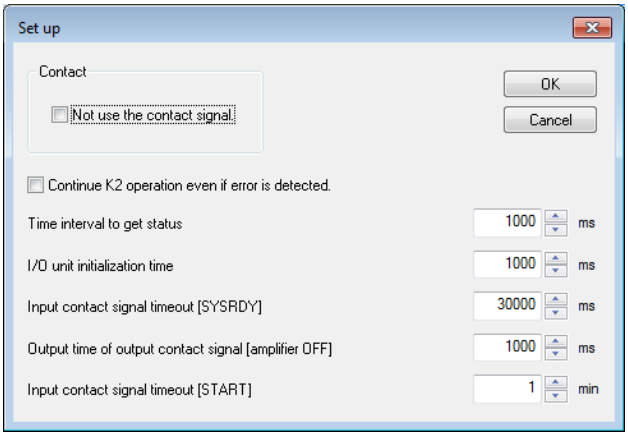



Fig.2-3-2 Setting of "Not use the contact signal"

Available menus when the contact signal is used ;

[Contact information definition] :

This item is usable by selecting it among the menus of 'File'. The contact definition to be assigned to each contact can be corrected in this dialog box.

[Contact assignment definition] :

This item is for displaying the definition contents assigned to the contact in a new window.

### 2.3.1 Contact information definition

(1) Meaning

This item is for assigning the definition to each I/O contact. The available definition available to assign to each I/O contact are as below as default.

[INPUT] : SYSRDY
START
Not used

[OUTPUT] : Amplifier ON
Amplifier OFF
X-axis
Y-axis
Z-axis
Not used

(2) Definition

The procedure of defining the contact I/O definition is described as below.

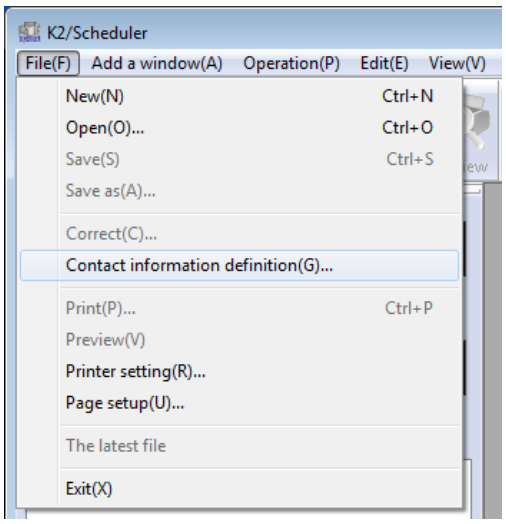



Fig.2-3-3 Contact information definition

The dialog box of Fig.2-3-4 appears when [Contact information definition] is selected in Fig.2-3-3. In Fig.2-3-4, the detailed definition contents of each contact (input 8, output 8) can be seen and correct.

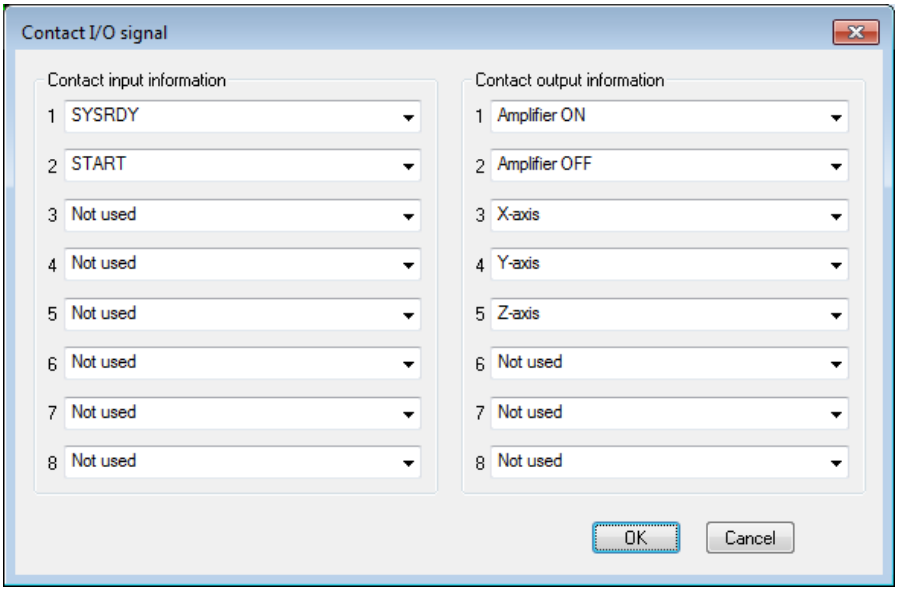



Fig.2-3-4 Contact I/O definition

The input contact is set by selecting function to be defined from the window of the required contact number as in Fig.2-3-5.

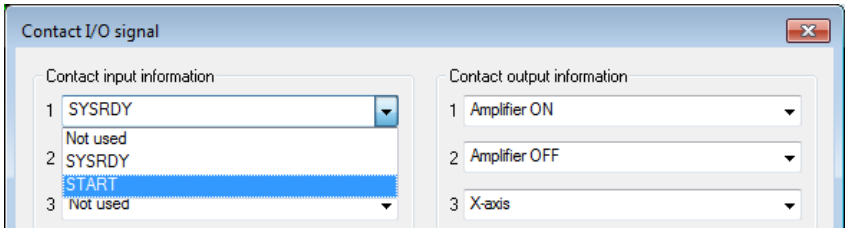



Fig.2-3-5 Contact input information

As in the same way, the output contact is set by selecting function to be defined from the window of the required contact number as in Fig.2-3-6.

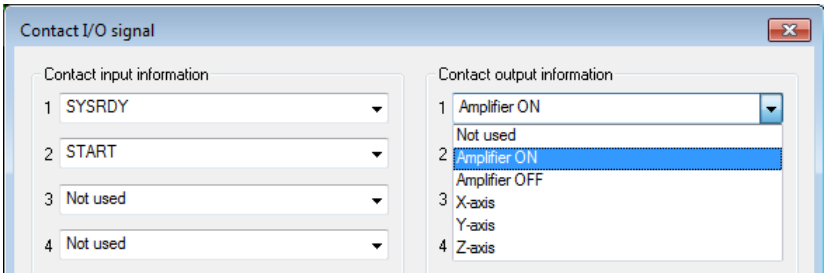



Fig.2-3-6 Contact output information

Note) Contact I/O definition is set properly by IMV before shipping. Improperly correction for set contents may cause the abnormal action of the system. Please do not change the set contents generally.

## 2.4 Save the defined schedule

The defined schedule is saved with a name by [Save as]. The definition of schedule is completed in the display as Fig.2-4-1. This defined schedule is saved by pressing the save button (1) from the tool bar or by pressing [Save], [Save as] among the menu of ‘File” (2) of Fig.2-4-1.

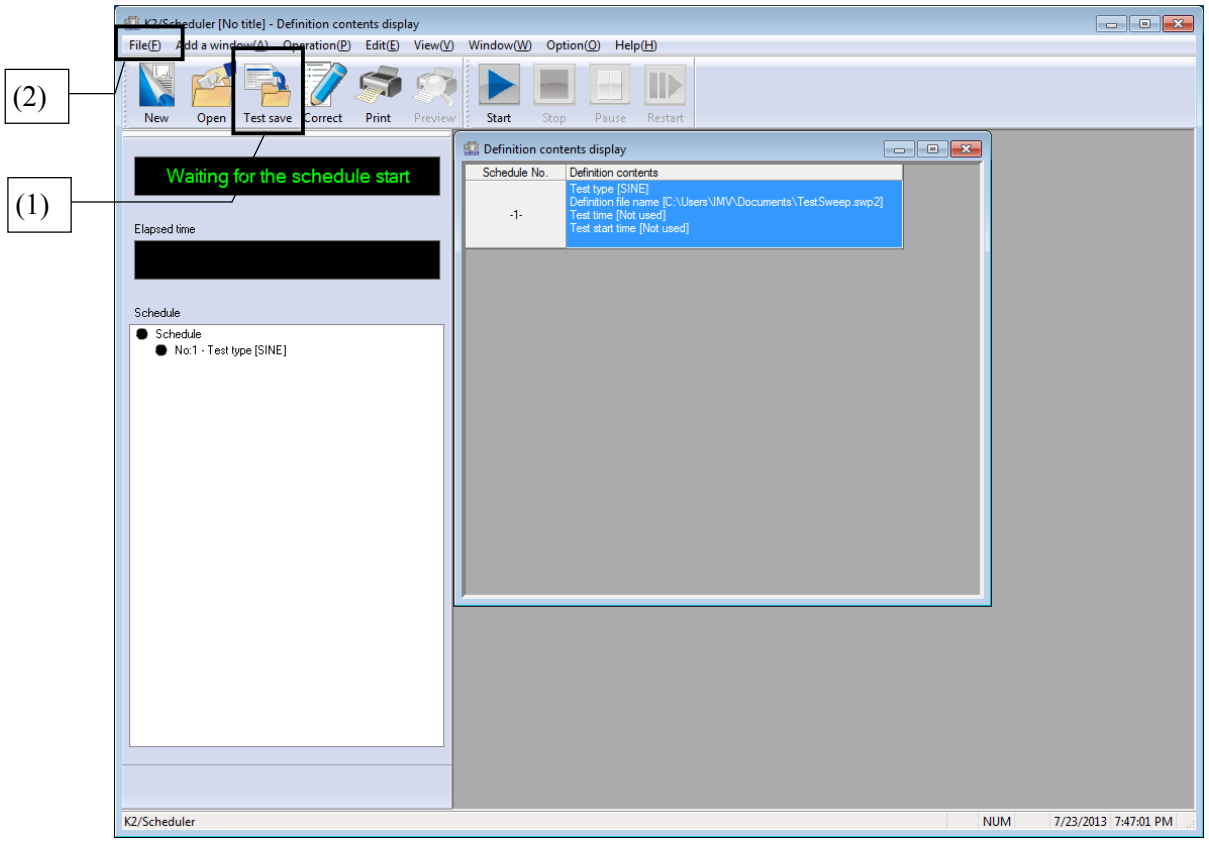



Fig.2-4-1 Schedule definition completion

When any saving function is selected, the dialog box of Fig.2-4-2 appears. Input the arbitrary name in the window and press “Save” button in this dialog box.

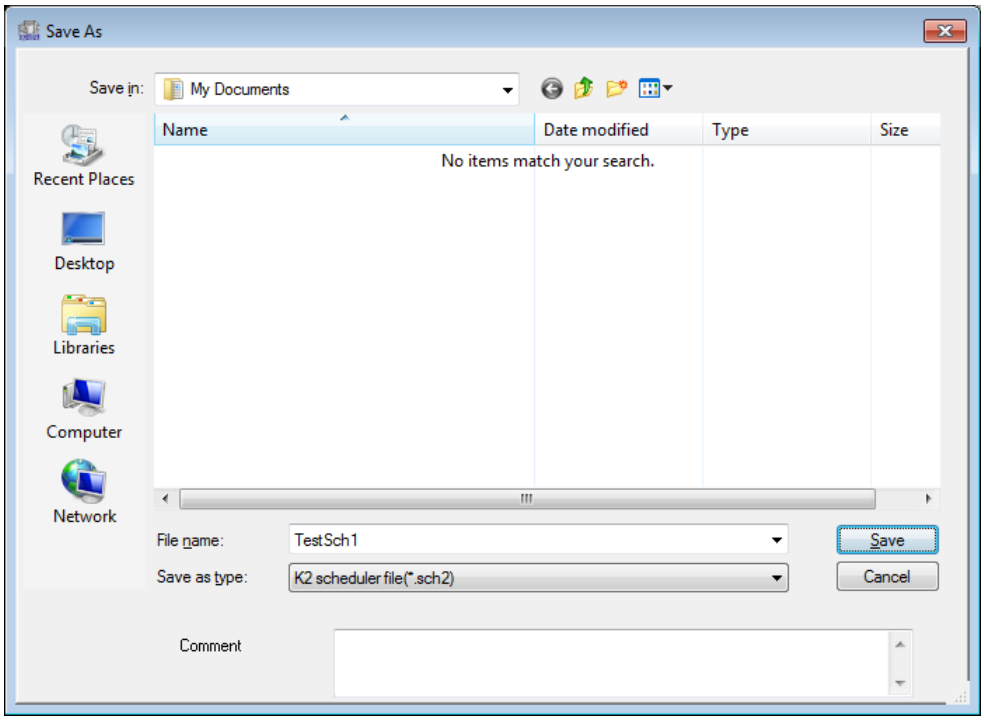



Fig.2-4-2　File name

On the other hand, the file is automatically overwritten by pressing [Save] among the menu of ‘File’ when the existing file has been opened to use.

# Chapter 3 Schedule Operation

## 3.1 Outline

Schedule operation is to be executed by using the defined schedule definition file.

The description of this chapter is based on the defined schedule definition file.

Schedule definition file is needed to be generated in advance by referring to Chapter 2 Schedule Definition when it is not defined yet.

### 3.1.1 Procedure of schedule operation

Procedure of schedule operation is described as below ;

(1) Specify schedule definition file

Defined schedule definition file is selected or new definition of schedule is done.

(2) Schedule operation

Schedule is operated according to the specified schedule.

## 3.2 Schedule operation

### 3.2.1 Specify schedule definition file

Each information of schedule operation required to be executed is stored in a schedule definition file.

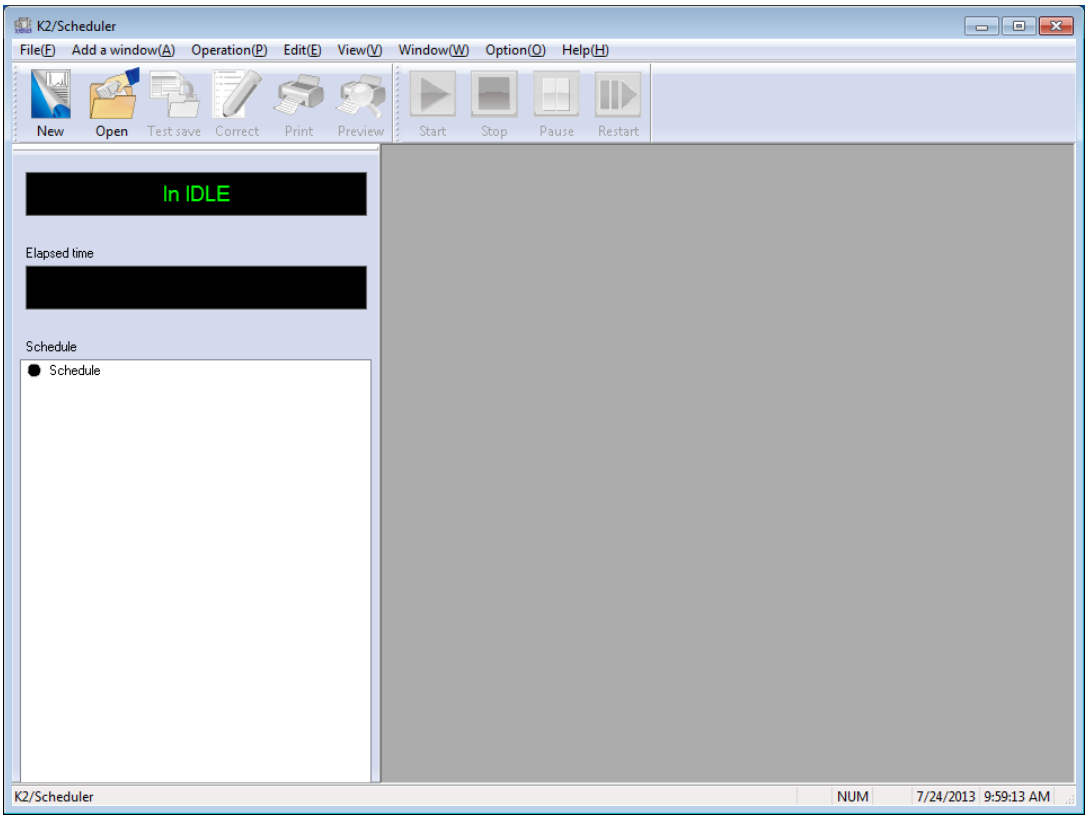



Fig.3-2-1 Initial display

When schedule is operated by using a defined schedule definition file, the command [Open] or the commands as [File] → [Open] are selected in the initial display (Fig.3-2-1).

The list of schedule definition files appears as in Fig.3-2-2 and a proper schedule definition file is selected.

Refer to **4.2.4 File operation/K2 Common Part Instruction Manual** about details of file selection.

The content of file is loaded when a schedule definition file is selected.

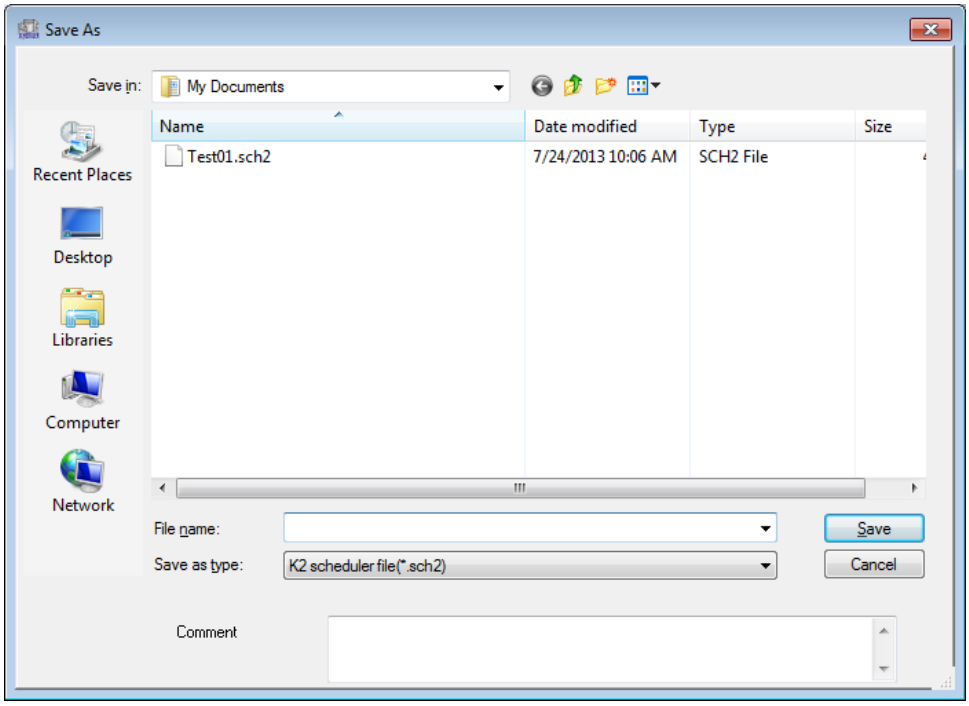



Fig.3-2-2 Specify schedule definition file

Following command buttons appears under the menu bar in the display of Fig.3-2-3 after selecting of schedule definition file ;

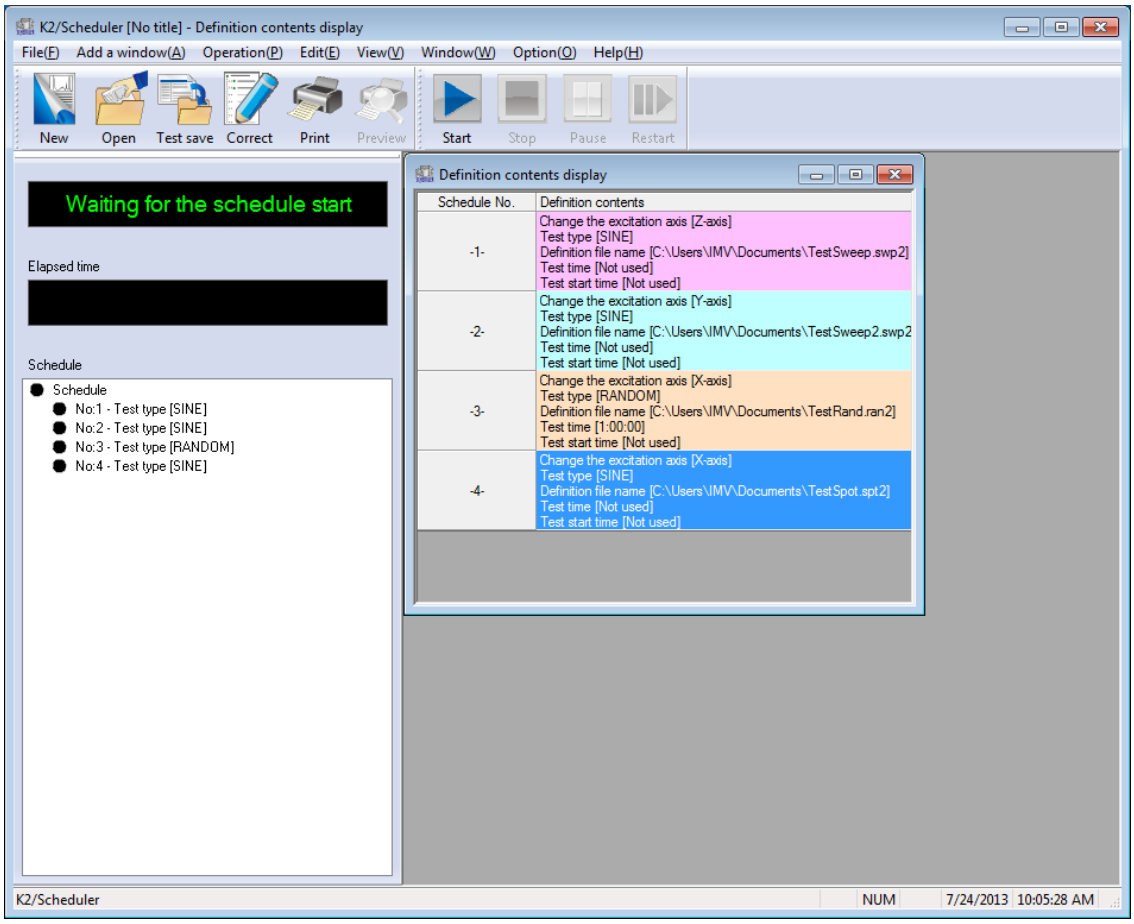



Fig.3-2-3 Example display of loaded schedule definition file

[New] : A new schedule definition file is created and the contents of loaded schedule definition is discarded.

[Open] : The display of schedule definition file to be selected appears (Fig.2-3-2).

[Correction] : The dialogue box for schedule definition as in Fig.2-1-2 appears. The contents of schedule definition can be corrected if it is necessary.

### 3.2.2 Schedule operation

Schedule operation is executed according to the contents of schedule definition.

In Fig.3-2-3, schedule operation is started when the [Operation start] button is pressed.
The commands appear during the operation are as below ;

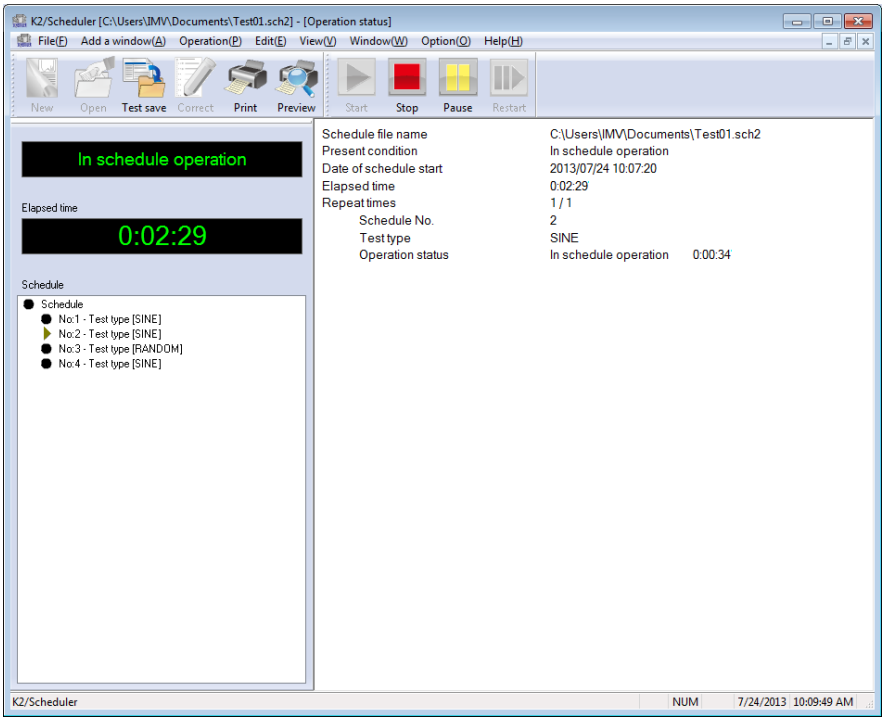



Fig.3-2-4 In schedule operation

[Stop] : Schedule operation is stopped.

[Pause] : Schedule operation is paused for a while.

[Continue] :This command appears when the schedule operation is paused.
Schedule operation is continued again when this command is selected.

### 3.2.3 Schedule operation completion

The system proceeds to the state of schedule operation completion when the defined schedule operation is completed (Fig.3-2-5).

Following command appears when the operation is completed ;

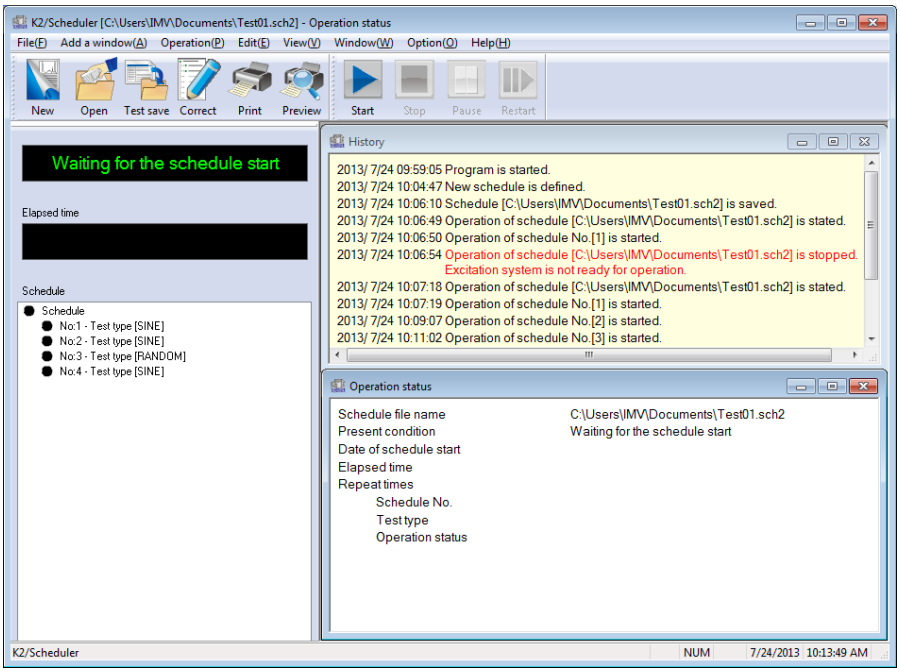



Fig.3-2-5 Display example of schedule operation completion

[END] : The system returns to the state before the schedule operation

## 3.3 Other commands

Following commands are available in addition to the commands which are used for operation of the Scheduler directly.

[File]

The commands belonging to [File] appear by selecting it as in Fig.3-3-1.

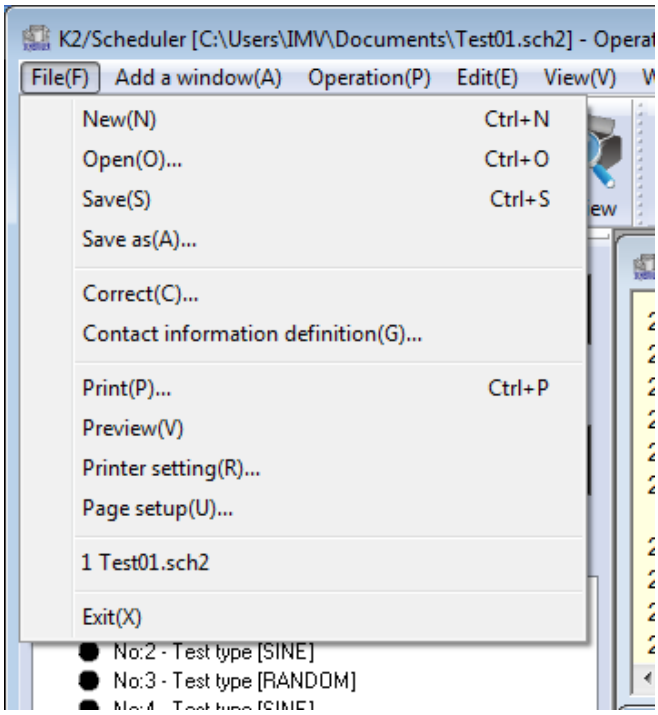



Fig.3-3-1 File menu

[Save]

The existing content of schedule definition is saved (overwritten).

When this command is used for a new definition condition, the operation executed by this command is the same as that of [Save As].

[Save As]

Content of schedule definition is saved as a new schedule definition file.

The dialog box for inputting the name of schedule definition file is displayed Then, the necessary information such as a file name is inputted.

The file is overwritten when the same file name as an existing file is inputted.

[Print]

Each data (history message, definition information, etc.) are outputted to the printer.

Only the data in the current active window is printed out.

[Printer setting]

The printer to putout the data is selectable among the available printers.

[Exit]

This system is finished and the main window is closed.

[Add a Window]

The commands belonging to [Add a window] appear by selecting it as in Fig.3-3-2.

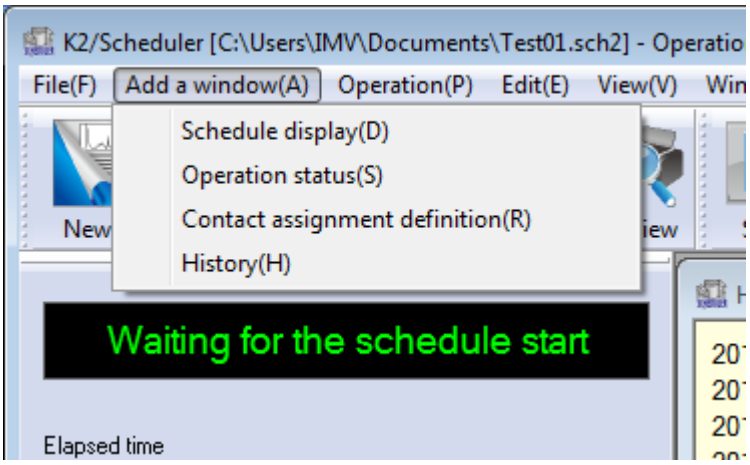



Fig.3-3-2 Add a window

[Schedule display]

The defined information of a schedule definition is displayed in a window.

[Operation status]

The current status of schedule in operation is displayed in a window.

[Contact assignment definition]

Information of a contact assignment definition is displayed in a window.

[History]

The operation history is displayed in a window.

[Window]

The commands belonging to [Window] appear by selecting it as in Fig.3-3-3.

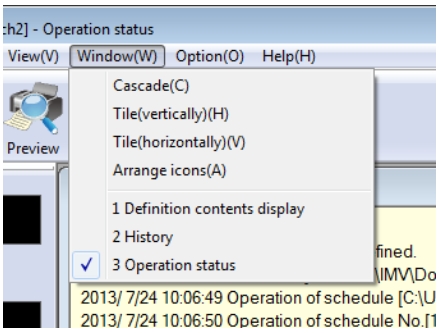



Fig.3-3-3 Window

[Cascade]

This command cascades the displayed windows so that the title bars do not overlap.

[Tile]

This command changes the size of windows and arranges them so that they do not overlap.

[Arrange icons]

This command arranges window icons at uniform intervals so that they do not overlap.

[Option]

The command belonging to [Option] appears by selecting it as in Fig.3-3-4.

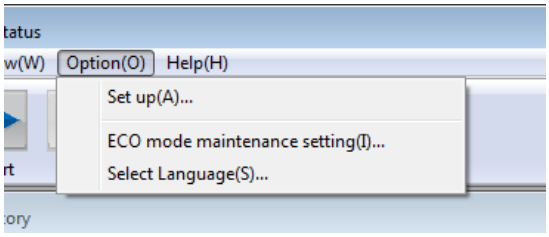



Fig.3-3-4 Option

[Set up]

The dialog box of contact signal setting appears by selecting this command as in Fig.2-3-5.

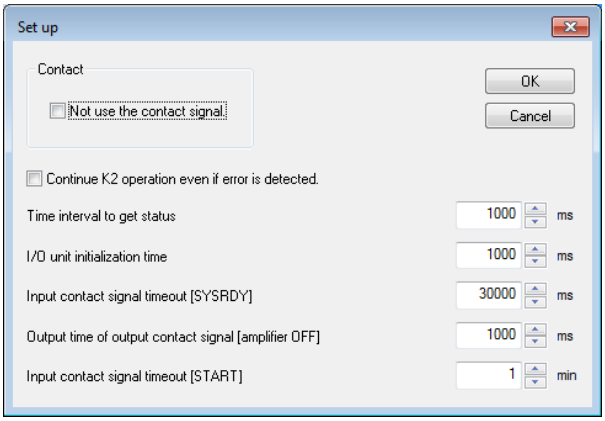



Fig.3-3-5 Set up

Refer to 2.3.1 Contact information definition about the details of ‘contact signal’.

[Help]

The command belonging to [Help] appears by selecting it as in Fig.3-3-6.

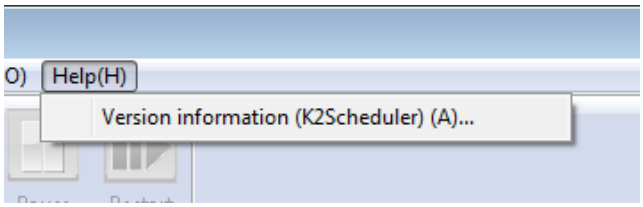
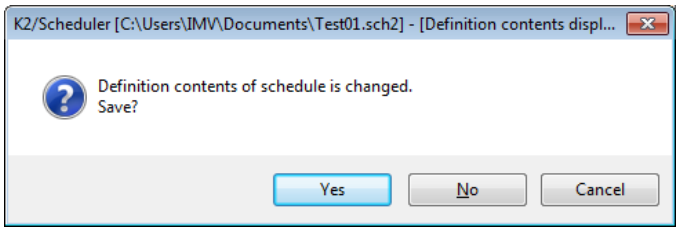
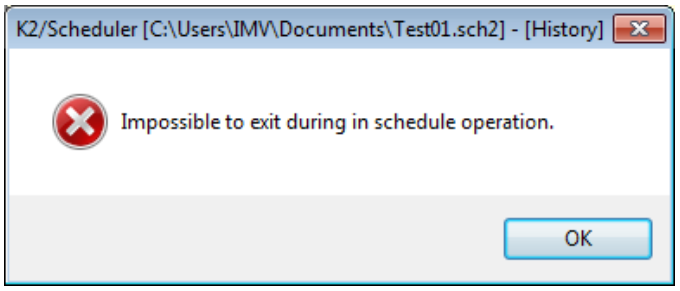
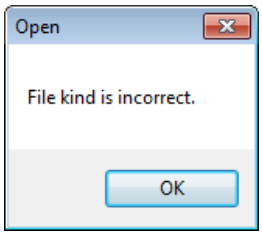



Fig.3-3-6 Help

[Version information]

The detailed version of this system is displayed.

# Chapter 4 Message and Meaning

| Message | Meaning |
|---|---|
|  | The changed schedule definition is going to be discarded without saving the data.<br>Press [Yes] to save it as a new definition. |
|  | The program is going to be ended during in schedule operation. |
|  | The selected file is not generated in an available format for K2 or broken.<br>The file needs to be checked and generated again. |

# INDEX


A

add . . . . . 2-3, 2-4

add a window . . . . . 3-7, 3-8

arrange icons . . . . . 3-7

C

cascade . . . . . 3-7

change . . . . . 2-3

contact assignment . . . . . 2-11

contact assignment definition . . . . . 3-7

contact control . . . . . 2-11

contact information . . . . . 2-11, 2-12

copy . . . . . 2-3

correct . . . . . 2-11, 2-12

correction . . . . . 3-4

correction definition . . . . . 2-1

D

definition file . . . . . 2-4, 2-5, 2-8

delete . . . . . 2-3

E

executing the schedule . . . . . 2-1

exit . . . . . 3-6

F

file . . . . . 2-11, 3-6

file menu . . . . . 3-6

H

help . . . . . 3-8

history . . . . . 3-7

I

insert . . . . . 2-3

M

message . . . . . 4-1

O

open . . . . . 2-4

operate the level schedule . . . . . 2-8

operate the repetitive excitation . . . . . 2-8

operation schedule . . . . . 1-1

operation status . . . . . 3-7

option . . . . . 2-11, 3-8
P
paste . . . . . 2-3
R
repeat the whole schedule . . . . . 2-9
S
save as . . . . . 2-14
schedule definition . . . . . 2-1, 2-3, 3-1
schedule definition file . . . . . 2-1, 3-1, 3-2, 3-3
schedule display . . . . . 3-7
schedule operation . . . . . 3-1, 3-2
shut down the power . . . . . 2-10
specify the test time . . . . . 2-5
specify the waiting time for start . . . . . 2-5
start test at specified second . . . . . 2-6
switch the excitation axis . . . . . 2-7
T
test file . . . . . 1-1
test time . . . . . 2-5
tile . . . . . 3-7
U
use START input contact signal . . . . . 2-10
W
window . . . . . 2-11, 2-13, 3-7