Universal Probe

Software Users Manual

SPI Writer

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Universal Probe Software Users Manual – SPI Writer

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Operating Precautions

| ⚠️ | **Failure to observe the following precautions may lead to human death or severe injury.** |

Do	Avoid supplying voltage out of the range specified in the specifications of this product. Supplying the voltage out of the range may cause damage or fire.
Do	When using the target equipped with the ground terminal, ensure that the ground terminals of the target and peripheral equipment are connected. Failure to do so may cause an equipment failure or electric shock. Avoid connecting the ground terminal to the gas pipe. This causes a fire or explosion.
Don't	Do not transport this product with equipment connected. In particular, hold the plug when removing or inserting the cable. Failure to do so may damage the cable, causing a fire or electric shock.
Don't	Observe the following points when handling the cable. Do not damage, process, forcibly bend, twist, pull, putting any object on or heat the cable, moving the cable close to the heating device, or touch the cable with a wet hand. Failure to observe these precautions may cause a fire or electric shock. If the cable is damaged, stop using it.
Don't	When you hear thunders, do not touch the power plug. This causes an electric shock. If the product seems to be damaged by lightning strike, stop using it.
Don't	Do not let a staple, clip or other metal item enter into the product. This may cause a fire or failure.
Don't	Do not use or leave the product in direct sunlight, near heating devices, in an extremely hot or cold environment, under hard vibrations, in dusty area with a large amount of metal dust or oily dust, or noisy area full of spike noise. Do not apply a strong shock to the product.
Do not disassemble	Do not disassemble, alter or repair the product. This may cause a fire or electric shock.
No wetting	Do not use the product at a place where there is liquid or a humid place such as in the bathroom or in vicinity to glasses. This may cause an electric shock. If liquid enters into this product, immediately turn it off and stop using it.
Caution	Touching the energized product for a long time may cause low-temperature burns. Do not use this product covering with comforter or other cloth.
Pull out the plug.	Immediately turn the power off if unusual smell, noise, smoke or fire is detected or if the product is or may be damaged due to a fall or strong shock. Continuing to use it may lead to a serious accident. Stop using the product.

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Abbreviations, Terms and Conventions

This section describes the abbreviations, terms and conventions used in this document.

- About numeric values   ... All the numeric values are positive unless otherwise specified.
- K (capital letter)   ... Represents 2^{10}=1024. (Example: 16K=16384)
- k (small letter)   ... Represents 1000. (Example: 1kHz=1000Hz)
- [xxxxx]   ... Represents the window title.
- <xxxxx>   ... Represents the item in the window.

The annotations and notes used in this document are as shown in Figure 1.

→   Information reference.

ⓘ INFO   Supplementary information.

⚠   Caution. Be sure to read this.

Figure 1

Universal Probe Software Users Manual – SPI Writer
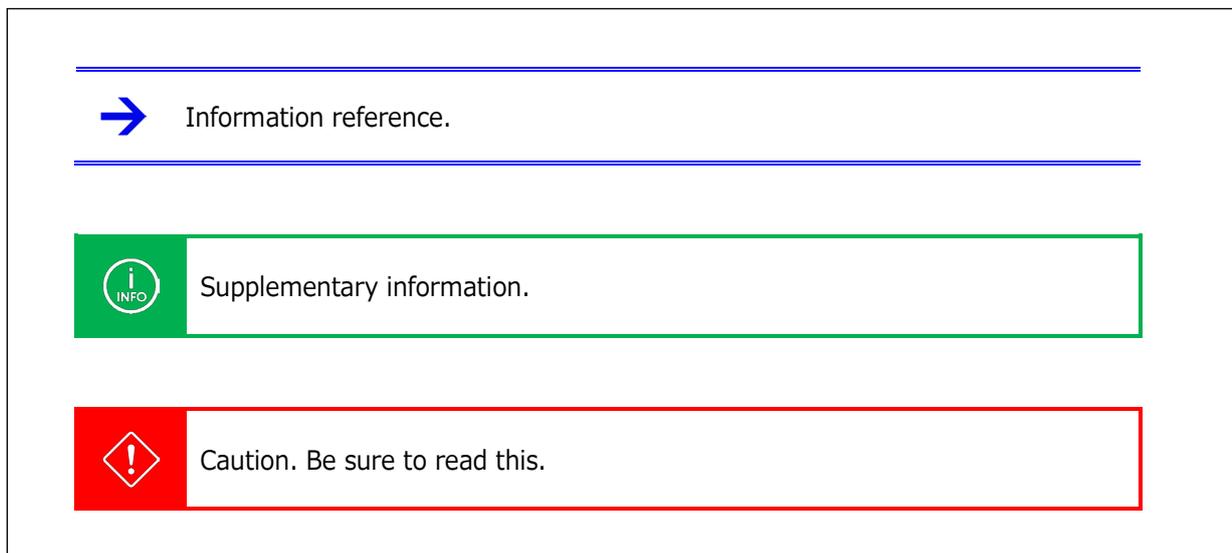
Abbreviations and terms are listed in Table 1.

Table 1

Abbreviations and terms	Description
This product	Universal Probe including accessories.
Probe	Universal Probe itself.
This software	SPI Writer.
Flash memory	Generic term for flash memory, EEPROM, and other memories.
Serial No.	Stands for the serial number. Means the Probe ID.
Software Code	License required to issue the License Code for each software. Not required for the free edition.
License Code	Code to add the functions that can be used in this device.
Module	Data to be written to the flash memory. This includes object data and symbol data.
Object data	Binary data to be actually written to the flash memory.
Symbol data	Data that expresses the correspondence relationship between the variable or function name (=symbol) and the address.
Host PC	PC where this software runs.
Target	Object to be controlled or measured with the Universal Probe.
Stand-alone function	Ability to operate without connecting to the host PC. (The power supply is required.)
(N/A)	Stands for Not Assigned. Indicates that no information is assigned.
PC	PC stands for the Program Counter.

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1. Overview of This Software

This chapter provides an overview of this software.
This software writes data in the "**SPI flash memory**".
Figure 2 shows differences in functionality and supported configuration from "ARM Writer," the software separately available.
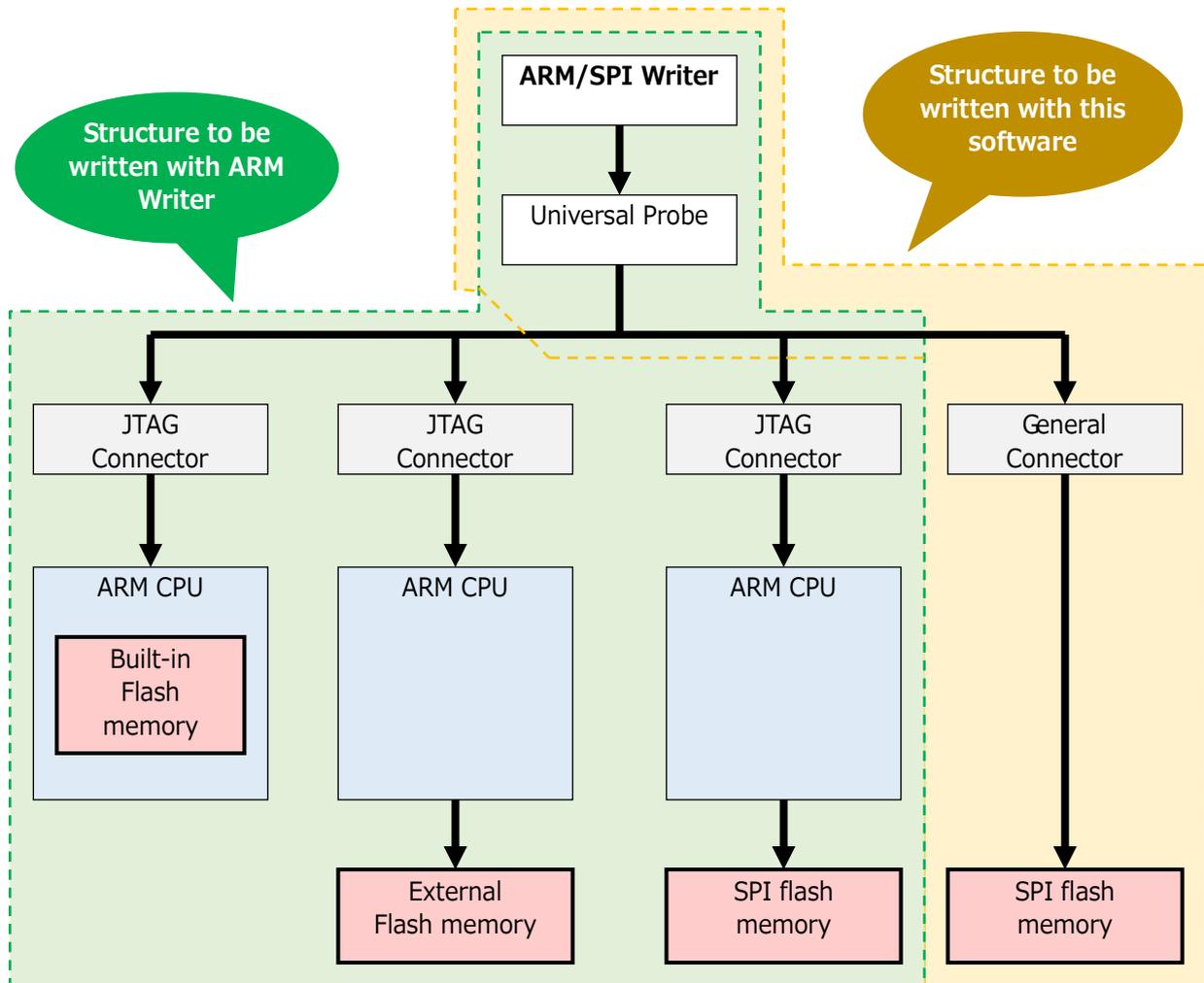
Figure 2

1.1. System Requirements

The following systems are required to run this software.

- PC running Microsoft Windows 7 or later
- CPU: 1GHz or faster (depending on the requirements of the used OS)
- Memory: 1GB or larger (depending on the requirements of the used OS)
- HDD: 500MB or larger free hard disk space
- OS: Windows 7 or later (32bit or 64bit versions are supported)
- One or more empty USB 2.0 ports

1.2. Characteristics

This software has the following characteristics.

- Saving and restoring the operating environment by using the project file
- Download function to automatically recognize the format of written data
- Support for multiple data writing operations
- Flexible write processing realized by the batch function

1.2.1. SPI Flash Memory Operation Functions

- Fill-up function to write specific data in the specified address range
- Search function to search the specified address range for a character string or data
- Functions to save memory data to a file

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1.3. Turning On or Off the Power

1.3.1. Connecting to the Target and Turning On the Power

Connect the probe and the target with the following procedure:

1) Confirm that the target is turned off.
2) Connect the USB cable of the probe.
3) Connect the target and the probe.
4) Turn on the target.
5) Start this software and perform functions such as writing data.

1.3.2. Turning Off the Power and Disconnecting from the Target

Disconnect the probe from the target with the following procedure:

1) Exit this software.
2) Turn off the target.
3) Remove the probe from the target.

➔ For details of the hardware specifications of probe, target restrictions, connection and other items, refer to the "Hardware Users Manual."

2. How to Operate

This chapter explains how to operate this software.

2.1. Workflow

The main processes from starting this software, writing the user module, through saving the project file are shown in Figure 3. For the operations not described here, refer to "2. How to Operate" or "4. Menu."

Starting This Software

↓

Selecting a Project File

↓

Selecting a Probe

↓

Setting the SPI Flash Memory

↓

Setting Probe Environment

↓

Clearing the SPI Flash Memory

↓

Writing Object Data

↓

Saving the Project File
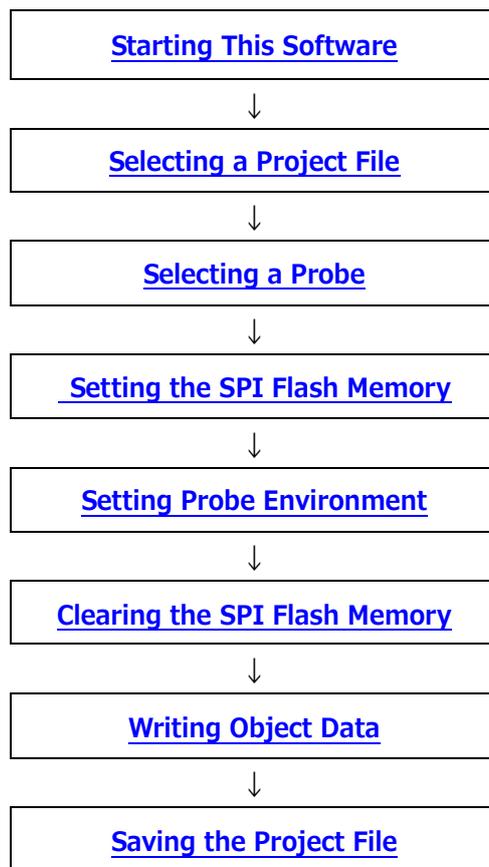
Figure 3

2.2. Starting This Software

Several methods are provided to start this software.

2.2.1. Starting Methods

● **Method 1**

Double-click the icon for this software on the desktop.

● **Method 2**

Click "Start" Button → "All Programs" → "Universal Probe" → "Universal Probe SPI Writer" in the "Start" menu.
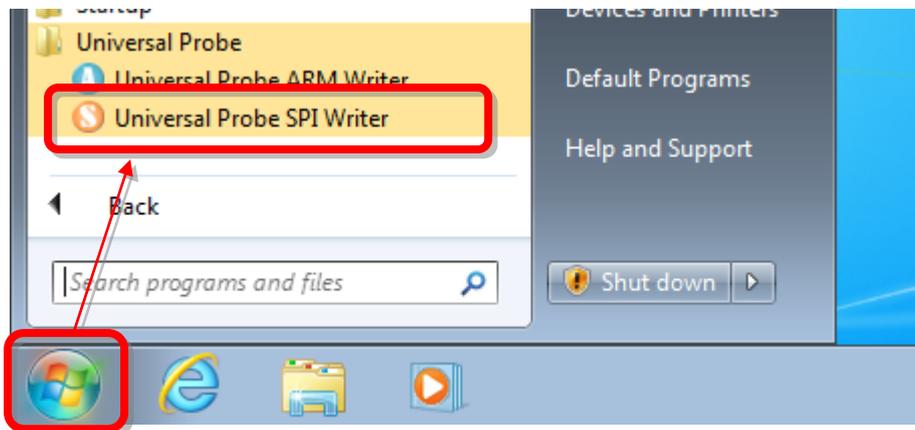
Figure 4

● Method 3

Double-click SPIWriter.exe or a project file (.spiwpj) in Explorer or other tools.
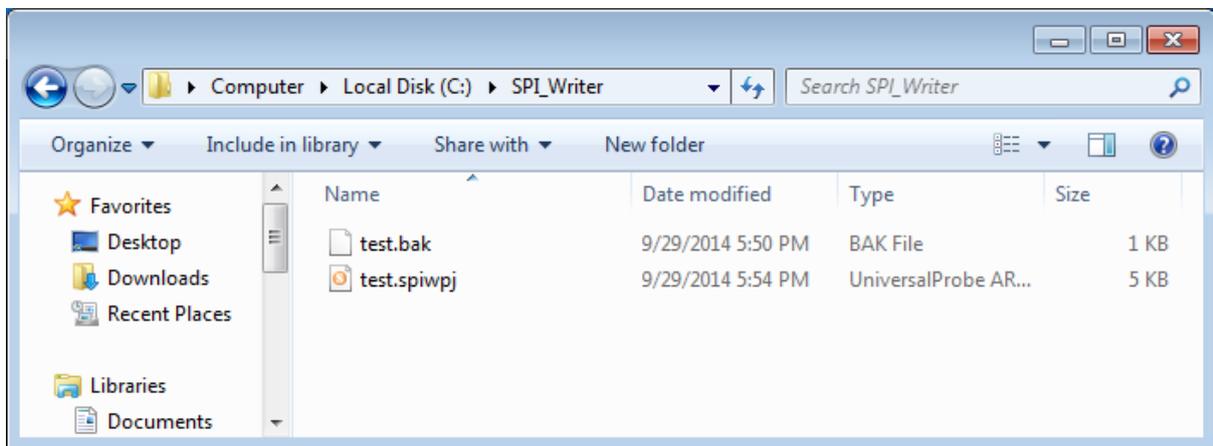
Figure 5

● Method 4

Click "Start" → specify "SPIWriter.exe" or a project file (.spiwpj).

Figure 6

Universal Probe Software Users Manual – SPI Writer
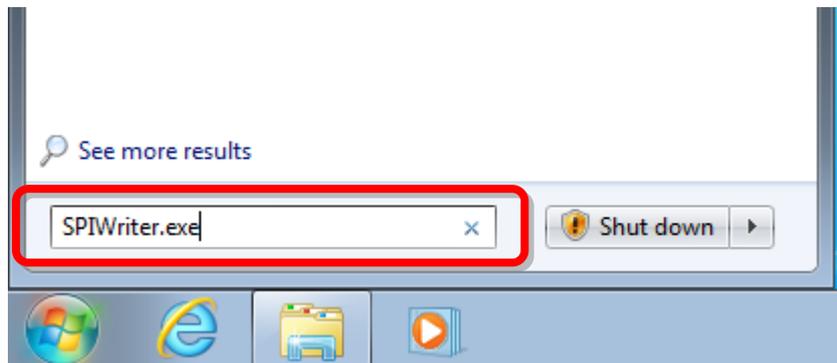
The above operations start this software as shown in the figure below.
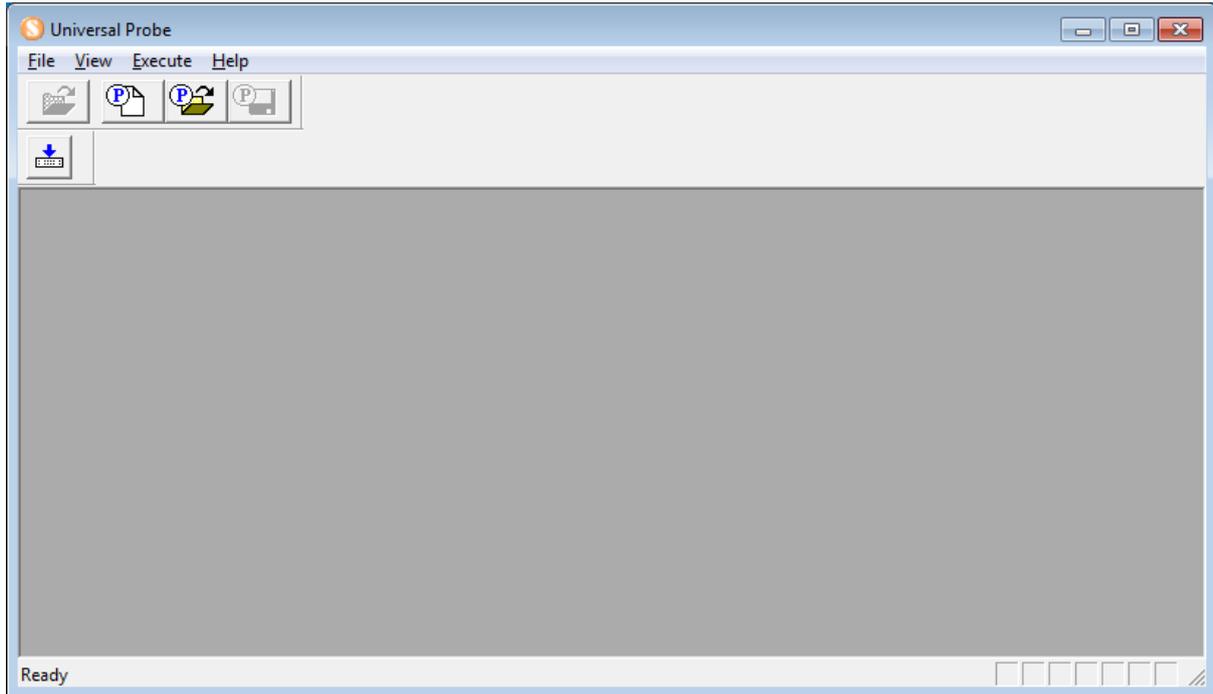
Figure 7

2.3. Selecting a Project File

This software always uses a project file (.spiwpj) to save the following settings.

- Information on the module to be written
- Settings of writing environment

Writing new data requires creation of a project file.
When the existing project file is opened, saved status can be restored.

2.3.1. Creating a New Project File

Let's create the TEST folder in the C:¥SPI_Writer folder and create a project file named test. spiwpj, as an example.
Click the following toolbar button or menu bar.   (**Details of [Create New Project] dialog box**)

Tool button	Operation on the menu bar	Shortcut key
	File → New Project	---

The [Create New Project] dialog box opens.
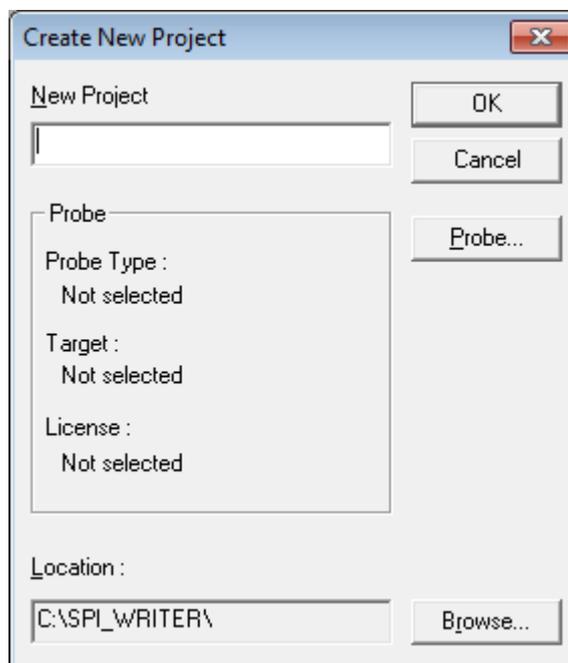
Figure 8

Create a folder to save the project file or select an existing folder.

(1) Creating a folder

Click the [Browse] button.

The [Select Folder] dialog box opens.
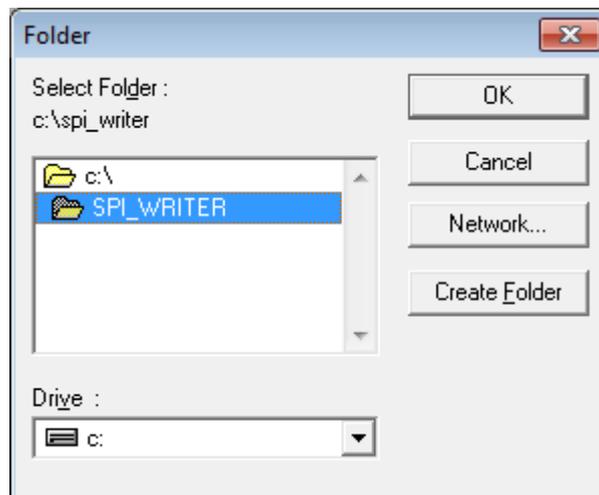
Figure 9

Select C:¥SPI_Writer and click the [Create Folder] button.

The [Create Folder] dialog box opens.
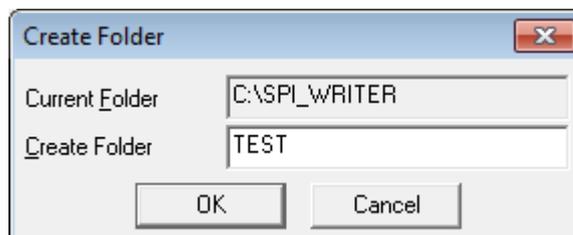
Figure 10

Enter "TEST" in <Folder to create> and click the [OK] button.

⚠ A space or slash cannot be included in the folder name.
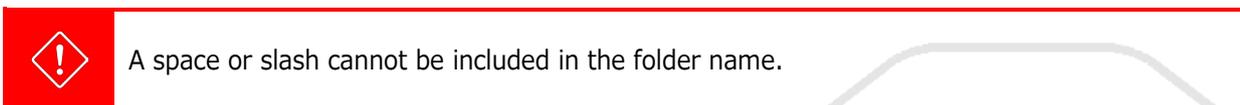
Return to the [Folder] dialog box.
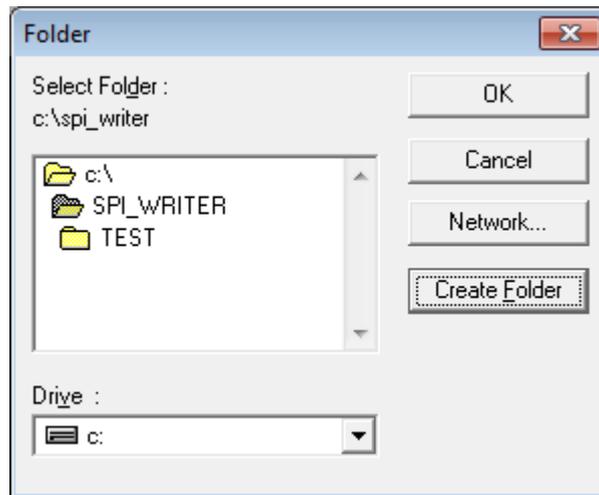
Figure 11

(2) Selecting a folder

Select the created TEST folder and click the [OK] button.
Return to the [Create New Project] dialog box.

(3) Specifying a project name

Specify a project name (test) in <New Project>.
This project name is used as the project file name and displayed in the <Location> box at the bottom of the dialog box.
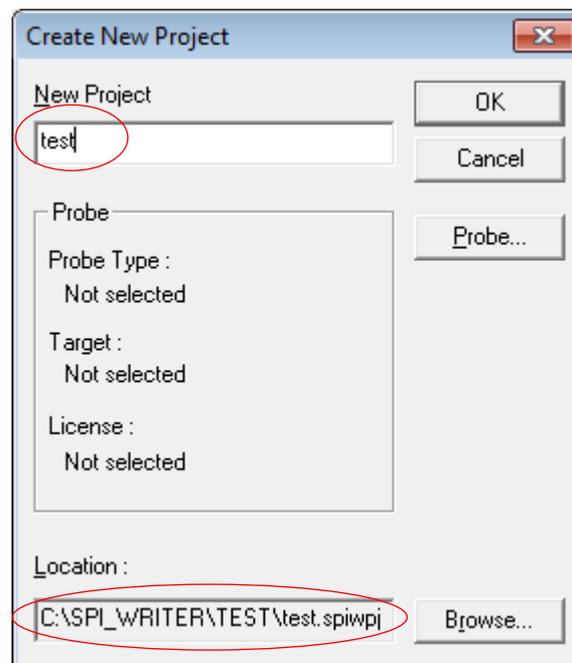
Figure 12

| ⚠ | A space or slash cannot be included in the folder name. |

2.3.2. Opening a Project File

To open a saved project file, select the project file (.spiwpj) with the following operation.

Tool button	Operation on the menu bar	Shortcut key
	File → Open Project	---

> The project file can be opened by double-clicking it in Explorer.
> Or, the project file can be opened by dragging and dropping it to the icon for this software on the desktop.

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2.4. Selecting a Probe

Select the probe to be used in this software.
Click the Probe button in the [Create New Project] dialog box.
The currently connected probes are listed in the [Selecting a Probe] dialog box.
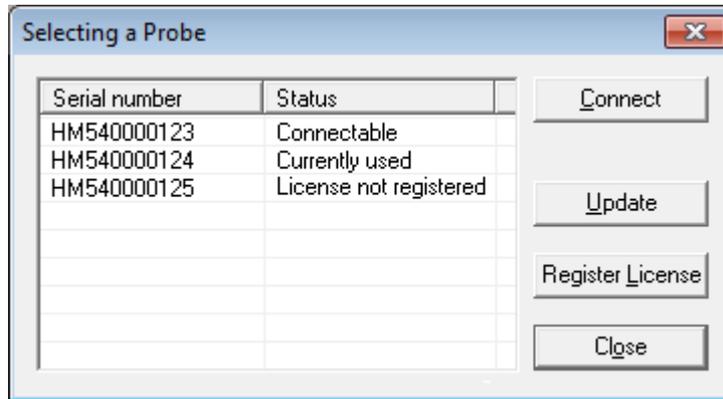
Figure 13

Click the probe to be used and click the Connect button.

Table 2

Serial number	Displays the serial number registered for the probe.		
Status	Displays the status of probe.		
	Connectable	:	The probe can be connected to this software and used.
	Currently used	:	The probe is already used in another application. This software cannot use this probe.
	License not registered	:	The license is not registered. To use this probe, click the Register License button to register the license.
Connect	Connects to the selected probe. This button is enabled only when the probe of which status is "Connectable" is selected. After connection is established, the dialog box closes and the [Create New Project] dialog box is displayed again.		
Update	Searches for the currently connected probes again and updates the probe list.		
Register License	Displays the dialog box to register the license. This button is enabled when the probe of which status is "Connectable" or "License not registered" is selected. ➔ For details, refer to "**2.5. Registering the License Code**."		
Close	Closes this dialog box.		

2.5. Registering the License Code

This software employs the license system.
A separate Software Code is required to obtain the License Code.
When a user notifies us the Software Code and probe Serial No., the License Code will be issued.

(1) Entering the License Code

When this software starts, select a probe for which [Select Probe] dialog box shows "License not registered" or "Connectable" and click [Register License] button. The License Code entry window is displayed.
Enter the License Code received from us. This software becomes usable at the target probe.
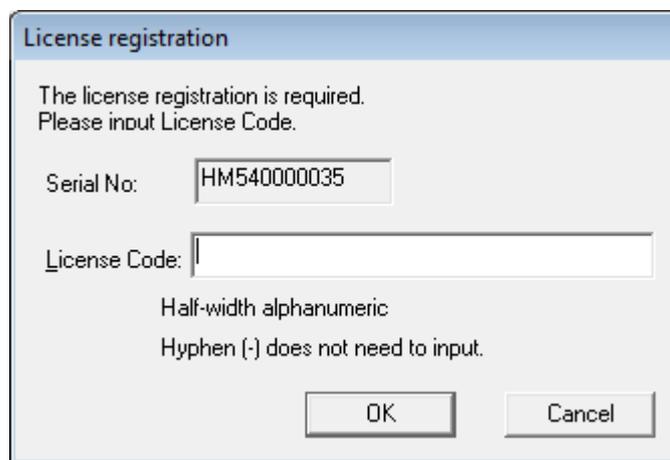
Figure 14

(2) Notes on entering the License Code

Enter exactly the same License Code as the received information.

> (i)INFO If the License Code is rejected even though it matches the code in the received email, please contact us.

(3) Error display list

Table 3

Displayed Error	Meaning	Action
The License Code is incorrect.	Displayed when the License Code cannot be analyzed due to invalid format of License Code or for other reasons.	Check the email that includes the License Code and enter it again.
The License Code does not match the serial number. Please check if the License Code is matching the Serial number of Probe.	Displayed when the Serial No. of the used probe does not match the Serial No. of the probe to which the License Code is applied.	Check the email that includes the License Code and enter it again.

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2.6. SPI Flash Memory Settings

Select the SPI device to be used by this software or load the configuration file (*.fsh) for the SPI flash memory.
This dialog box configures the settings necessary for accessing the SPI flash memory.
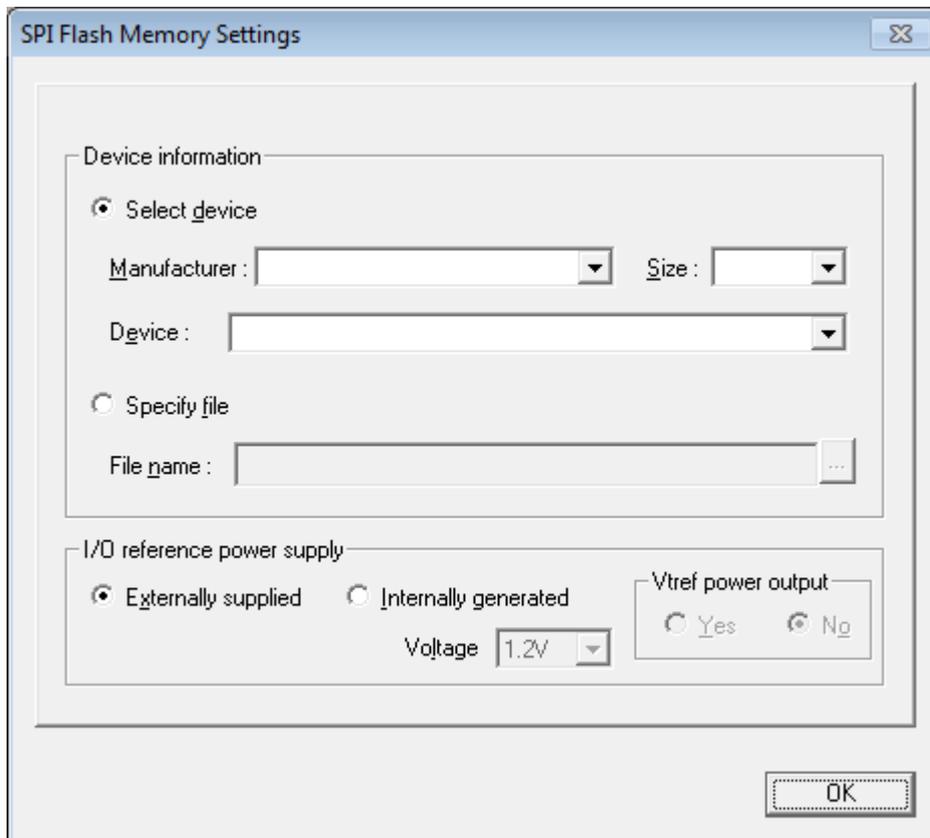
Figure 15

(1) Device information

Table 4

Select device	Select this when making the SPI flash memory registered in this software an operation target.
Manufacturer	Select the manufacturer of the SPI flash memory registered in this software from the pull-down list.
Size	Select the size of the SPI flash memory registered in this software from the pull-down list. If the manufacturer is already selected, only the size of the SPI flash memory of the selected manufacturer will be shown in the pull-down list. To cancel the selection, select the blank area at the top of the pull-down list.
Device	Select the SPI flash memory device registered in this software from the pull-down list. If the SPI flash memory device registered in this software can be determined uniquely by manufacturer and size, the device will be selected automatically. To cancel the selection, select the blank area at the top of the pull-down list.
Specify file	Select this when specifying the flash memory configuration file (*.fsh). The flash memory configuration file is a file that is created by the Memory command builder.
File name	Specify the configuration file (*.fsh) of the flash memory to be loaded.

(2) I/O reference power supply

Table 5

Externally supplied	Select this when the I/O power supply for the probe is supplied from the target through Vtref. It is set to ON by default.
Internally generated	Select this when the I/O power supply for the probe is not supplied from the target through Vtref. When this is selected, the I/O power supply uses the power generated within the probe.
Voltage	Use this to select the supply voltage to be generated within the probe from the pull-down list. This pull-down list becomes available only when [Internally generated] is selected. The default voltage is 1.2 V. Set this voltage in accordance with the interface voltage on the target side.
Vtref power output: yes	Power is supplied from the main unit to the target through Vtref. Select this when there is no power supply on the target side.
Vtref power output: no	Select when the I/O power supply to the probe is not supplied from the target through Vtref, despite there being a power supply on the target side.

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→ Refer to "Hardware Users Manual" for current values that can be supplied.

(3) SPI flash memory settings

When the ⬜OK⬜ button is clicked, the settings for accessing the SPI flash memory will be configured in the probe.

A message will be displayed when an error has occurred when registering a command script of the SPI flash memory.
Please select whether to cancel the activation process of this software or to continue.
SPI device settings can be changed after creating the project file, even if you select to continue.

ⓘ INFO	An error message appears if you manually edit the flash memory configuration file (* fsh) or when the versions of the flash memory configuration file and this software are different.

2.7. Setting Probe Environment

The [Probe Setup] dialog box can be used to set the clock settings according to the used SPI flash memory.
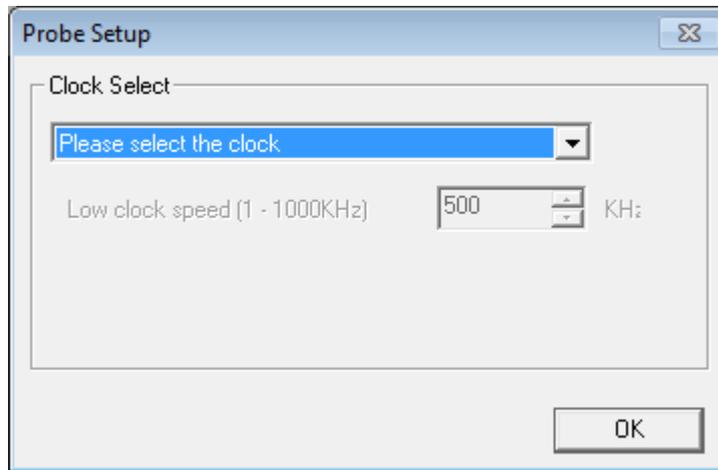
Figure 16

Specify a clock frequency and click the OK button.

Table 6

Clock Select	Specify the maximum clock frequency for the SPI flash memory. Selecting the Low-speed Clock allows specifying the frequency in the KHz. (up to 1000KHz)

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2.8. Clearing the SPI Flash Memory

When data is written to the SPI flash memory, the memory needs to be cleared before rewriting.
Select the following menu and display the SPI Flash Memory Settings dialog box.
When the SPI Flash Memory Settings dialog box is displayed already, select the "Clear" tab.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → SPI flash memory → Clear**	---
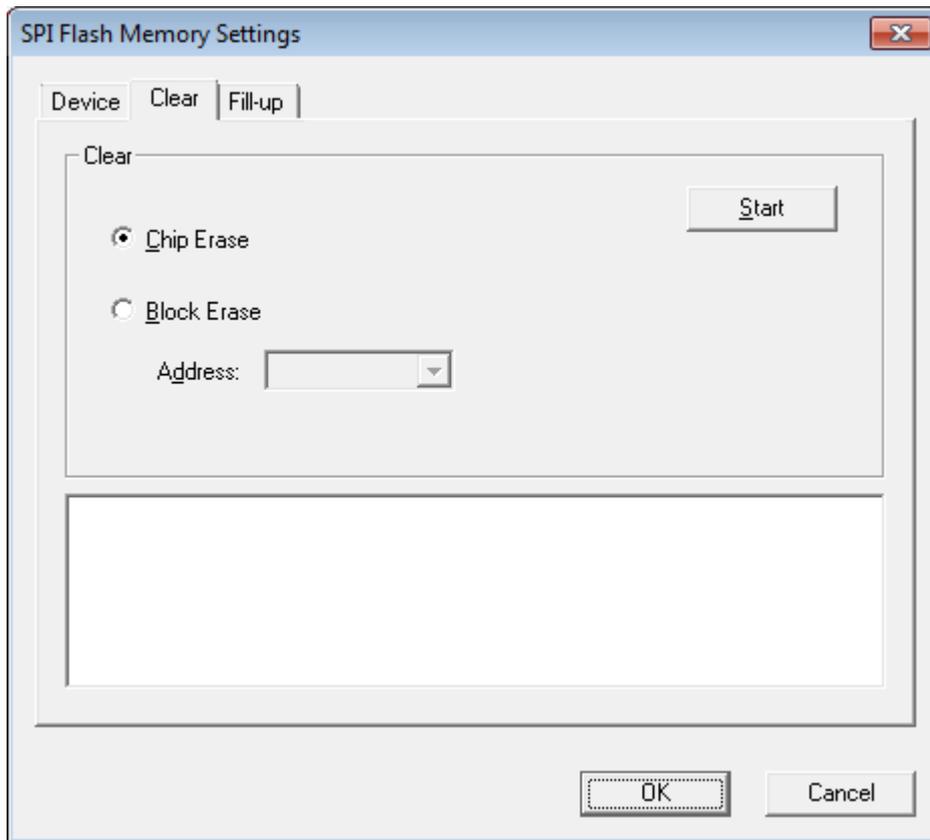
Figure 17

(1) Clear

Table 7

Chip Erase	Clears all of the SPI flash memory.
Block Erase	Clears one block of the SPI flash memory that includes the address entered in <Address>.

(2) Start button

When pressing the Start button, the clear processing will start.

The progress is displayed during the clearing process.
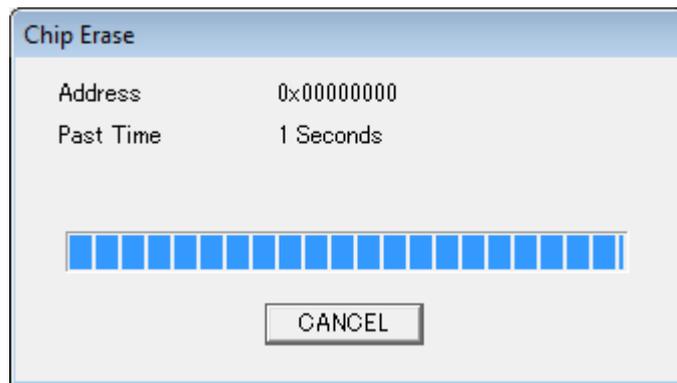
Figure 18

The operation result is displayed when the clearing process is complete.

Figure 19

Check whether the specified area has been cleared normally in the **Memory Dump Window**.
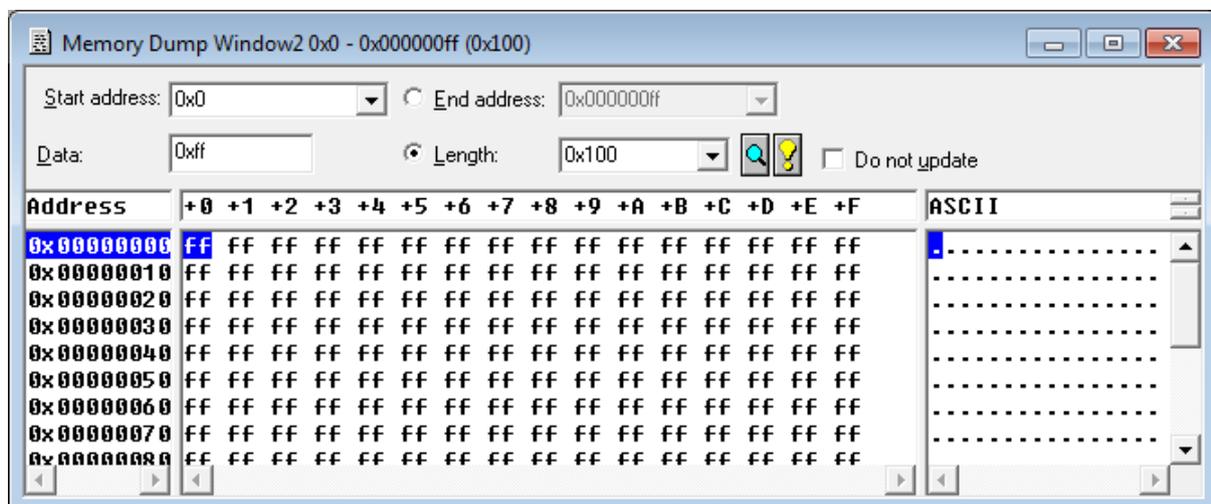
Figure 20

2.9. Writing Object Data

Download object data to the set flash memory.
Select the following menu item and display the [Download Settings] dialog box.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Download**	---

Set the information on the module to be written in the [**Download**] dialog box and click the `Download` button. The progress dialog box is displayed during the download process.
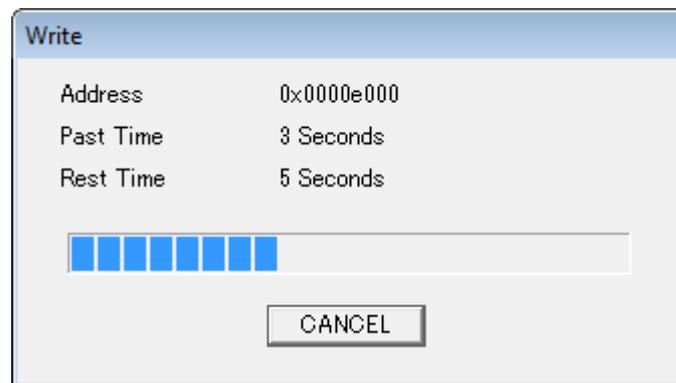
Figure 21

Display the **Memory Dump Window** and confirm that the object data was downloaded in the flash memory.
If the data was not downloaded, confirm the flash memory settings again.

> (i) INFO When writing fails, Confirm that **Clearing the Flash Memory** was completed.

> ⚠ Up to **1KByte** of object data can be downloaded in the size limited version.

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2.10. Filling up the SPI Flash Memory

Perform the fill-up processing for the SPI flash memory that has been set.
Select the following menu and display the SPI Flash Memory Settings dialog box.
If the SPI Flash Memory Settings dialog box is displayed already, select the [Fill-up] tab.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → SPI flash memory → Fill-up**	---

Figure 22

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(1) Fill-up

<div align="center">Table 8</div>

Range	Start address:
	Specify the address at which the fill-up to the SPI flash memory will start.
	End address:
	Specify the address at which the fill-up to the SPI flash memory will end.
	Range length:
	Specify the range from the start address.
Fill-up Data	Specify the data to be written to the SPI flash memory.
	Only byte-size data can be specified.
Automatically execute chip erase before fill-up	Execute chip erase automatically before performing the fill-up to the SPI flash memory.
	It is set to ON by default.

(2) Start button

When specifying the fill-up method and pressing the ⬚ Start ⬚ button, the fill-up processing will start. When "Automatically execute chip erase before fill-up" is checked, chip erase will be executed before the fill-up.

A dialog box showing the progress status will be displayed during the fill-up.
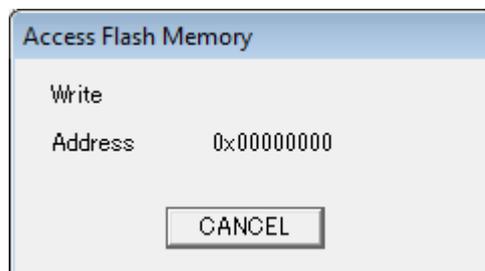
<div align="center">Figure 23</div>

When the fill-up process is complete, the processing result is displayed of the dialog box.

<div align="center">Figure 24</div>

Check whether the specified area has been cleared normally in the Memory Dump Window.

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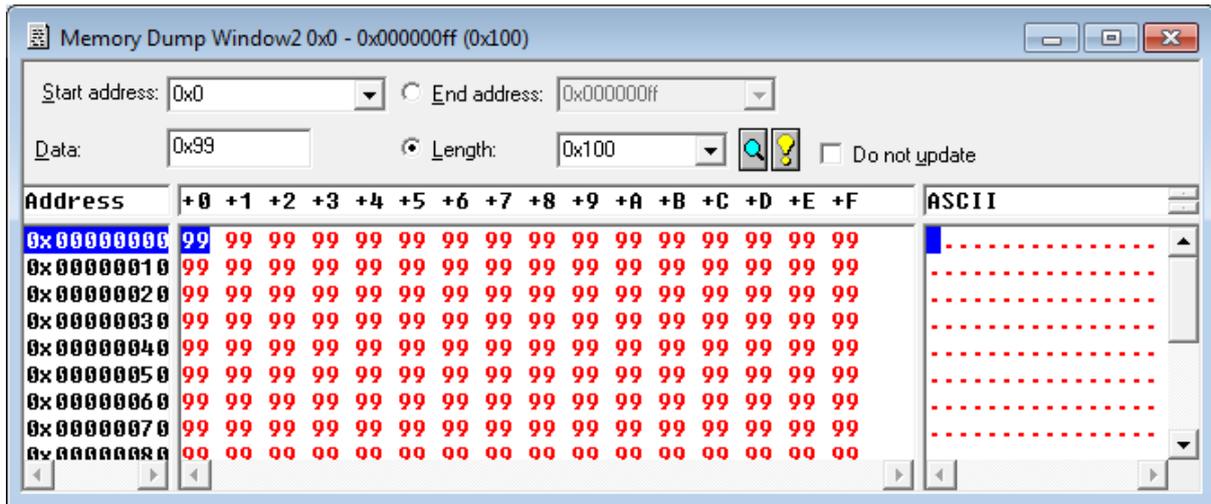
Figure 25

2.11. Saving the Project File

The project settings can be saved in the project file.
Refer to "**Save a Project**."

2.12. Exiting This Software

To exit this software, select the following menu item or click the X button at the right top of the window.

Tool button	Operation on the menu bar	Shortcut key
---	**File → Exit**	---

When the [Exit] dialog box is displayed, select whether to save the project before exiting the software.
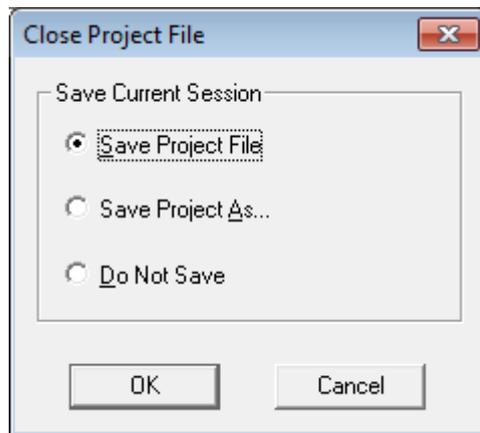
Figure 26

(1) Save Project File

Overwrites the created project file in the current project file and exits the software.

(2) Save Project As

Saves the created project file as a different project file and exits the software.

(3) Do Not Save

Exits the software without saving the current project settings.

3. Data Expression in This Software

This chapter describes how data is expressed in this software.

3.1. Numerical Expression

This software can handle numerical expressions in binary, decimal and hexadecimal.

Table 9

Format	Radix	Example
0x<numerical value>	Hexadecimal	0x12345678
H'<numerical value>	Hexadecimal	H'12345678
@<numerical value>	Binary	@01011101
<numerical value>	Decimal	12346578

3.2. Address Expression

This software expresses addresses by combining a format and operator shown in Table 9.

⚠ H'<numerical value> cannot be used.

3.3. Data Expression

This software expresses data by combining a format and operator shown in Table 9.

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3.4. Reading SPI flash memoy

To execute the ASSIGN or dot (.) command in the command window or read SPI flash memoy data with a conditional expression in the batch program, specify as follows:

Table 10

Expression	Meaning
[Address formula] or [Address formula].B	Byte data at the specified address
[Address formula].W	Word (two-byte) data at the specified address
[Address formula].L	Long word (four-byte) data at the specified address

● **Example**

```
For the normal memory space, just enter the address.

.[0x4000].B              // Refer to the byte data at address 0x4000.
.[0x4000].W              // Refer to the word data at address 0x4000.
.$A=[0x4000].L           // Assign four-byte data at address 0x4000 to work variable $A.
if([0x4000].W==0x1234)   // True when the word data at address 0x4000 is 0x1234.
```

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4. Menu

This chapter explains the menus of this software.

4.1. File

The "File" menu item is used to operate the files related to the project.

4.1.1. Close

Closes the currently focused child window.
This menu item cannot be selected if there is no child window.

4.1.2. Create a New Project

Creates a new project.
When using for the first time, select the following tool button or menu item to create a project.
The project is saved to a project file (.spiwpj).

Tool button	Operation on the menu bar	Shortcut key
	File → **New Project**	Ctrl + P
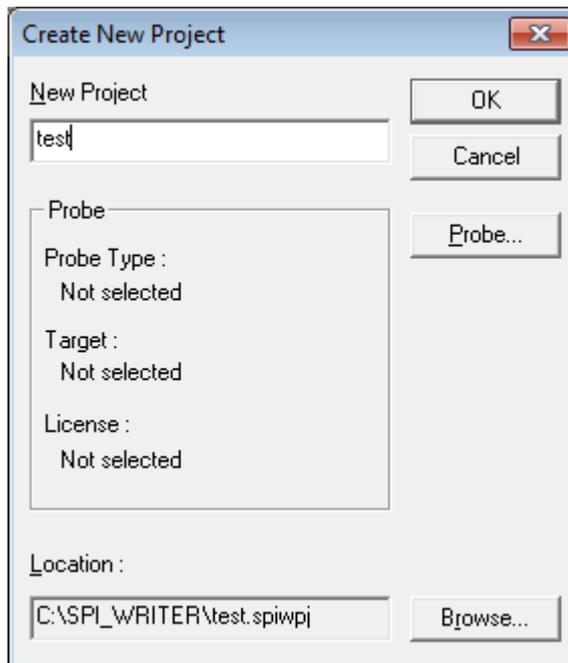
Figure 27

Table 11

New Project	Specifies a project name.
Probe	Probe type : Type of probe Target : "SPI" is displayed. License : License type is displayed. Size-limited → It is a license with 1KByte write size limit. Available → It is a license without write size limit.
Probe(P)...	Displays the [Select Probe] dialog box, and lists the currently connected probes. To select the probe to be used, click the probe name part and click the OK button.
Location	Displays the full path to the project file to save.
Browse	The [Select Folder] dialog box is displayed. Select the folder where the project file is saved.
OK	Creates a project file.
Cancel	Aborts creation of a project file.
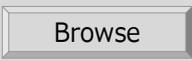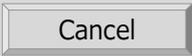
4.1.3. Open a Project

Opens the saved project file. Restores the settings when you finished the last work.

Tool button	Operation on the menu bar	Shortcut key
	File → Open Project	Ctrl + R

4.1.4. Save a Project

Saves a variety of information currently set in the existing project file.

Tool button	Operation on the menu bar	Shortcut key
	File → Save Project	Ctrl + S

4.1.5. Save as a Project

Variety of information currently set is saved in another project file.

ツールボタン	メニューバーの操作	ショートカットキー
---	**File → Save Project As**	Ctrl + A

4.1.6. Close a Project

Closes the currently open project.
The [Close Project File] dialog box is displayed before the project is closed.

Tool button	Operation on the menu bar	Shortcut key
---	**File → Close Project**	---

4.1.7. Exit

Exits this software.
For details, refer to "**Exiting This Software**."

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4.2. Resource

The "Resource" menu is used to read/write data from/to the SPI flash memory.

4.2.1. Download

The [Download Settings] dialog box is used to set the module to be written and give the actual writing instruction.
Multiple modules can be specified.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Download**	---

Figure 28

Table 12

Module list	List of modules to be downloaded. Multiple files can be selected by holding down the Ctrl or Shift key.
Format	Select the object format of the module to be downloaded. Auto selection is selected by default. This item must be specified for each module when multiple modules are selected.
Download object data	Checkmark this checkbox when downloading object data. This item must be specified for each module.
Download symbol information	Not usable in this software.
Download again at next start up.	Automatically downloads the module when the project file is opened.
Module information	Display the module path, file size, and timestamp.
Add	Adds a module to be downloaded. The [Open File] dialog box is displayed. Select the module to be added in it. The added module is displayed in the module list.
Delete	Deletes the module selected in the module list.
Download	Downloads the selected module. The <Download object data> checkbox must be checkmarked. If multiple modules are selected in the module list, all the selected modules are downloaded.
Automatically execute chip erase before download	When this checkbox is ON, all the data in the flash memory is cleared before download. The memory is cleared only once for a single download operation. Even when multiple modules are selected and downloaded, the clear operation is executed only once.
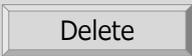
If memory access errors frequently occur when object data is downloaded, select the [**Set a Probe Environment**] and select <Enable verification>.
When <Enable verification> is set, whether the memory was correctly written can be confirmed from this software. Verification is disabled by default.

Up to **1KByte** of object data can be downloaded in the size limited version.

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4.2.2. Upload

The upload function reads data from the SPI flash memory, converts to a variety of format, and saves to a file.
Selecting the following menu item opens the [Upload] dialog box.
To upload data, display the [Upload] dialog box and specify the memory range and format to be saved to a file.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Upload**	---
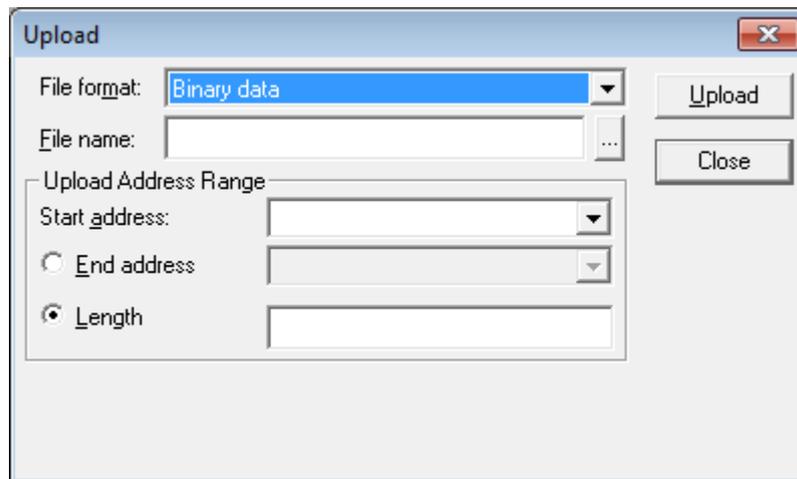
Figure 29

Table 13

File Format	Select one of the following file formats.

Format	Memory range	PC address specification	Automatic recognition	Remark
Intel standard HEX	0 to 64KB	Allowed	Allowed	
Intel extended HEX	0 to 1MB	Allowed	Allowed	Segment value is added.
Intel 32bit HEX	0 to 4GB	Allowed	Allowed	
Motorola S type HEX (S1 - S9)	0 to 64KB	Allowed	Allowed	
Motorola S type HEX (S2 - S8)	0 to 16MB	Allowed	Allowed	
Motorola S type HEX (S3 - S7)	0 to 4GB	Allowed	Allowed	
High-speed download (SHF)	0 to 4GB	Not allowed	Allowed	This is our proprietary format.
Binary	0 to 4GB	Not allowed	Not allowed	Uploads data as binary data.

> (i) INFO
> "Allowed" in the automatic recognition field indicates whether the format can be automatically recognized when this software downloads data.

File name	Specify the name of the file to save.
Upload Address range	Start address : Specify the start address. End address : Specify the end address. Length : Select and specify the end address or the range length.
Upload	Reads data from the SPI flash memory and saves to the specified file.

4.2.3. Set a Probe Environment

Set the probe environment.
Selecting the following menu item opens the [Probe Environment Setup] dialog box.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Probe Environment**	---
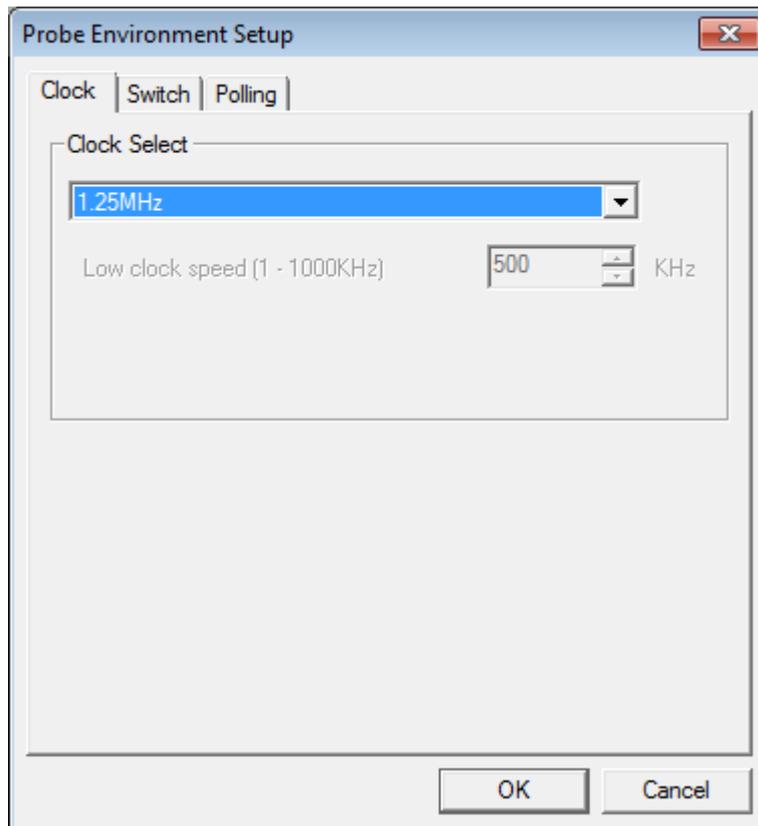
Figure 30

(1) Clock

Set the maximum clock frequency of a SPI flash memory.
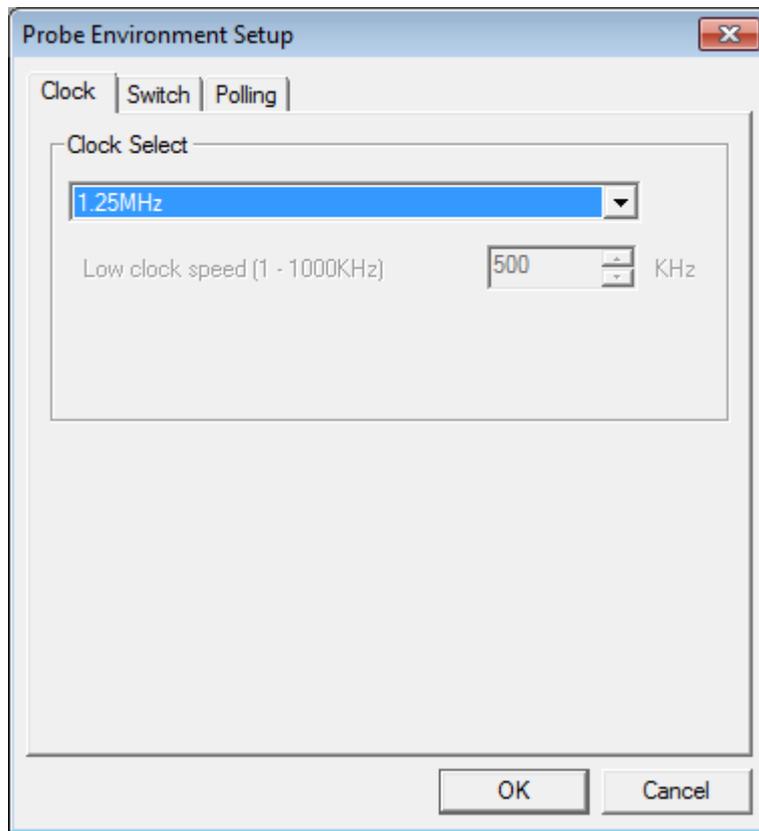
Figure 31

Table 14

Specify JTAG clock frequency	Select the maximum clock frequency of a SPI flash memory. * The low-speed clock frequency can be specified from 1 to 1000KHz.

(3) Switch

Set the Endian.
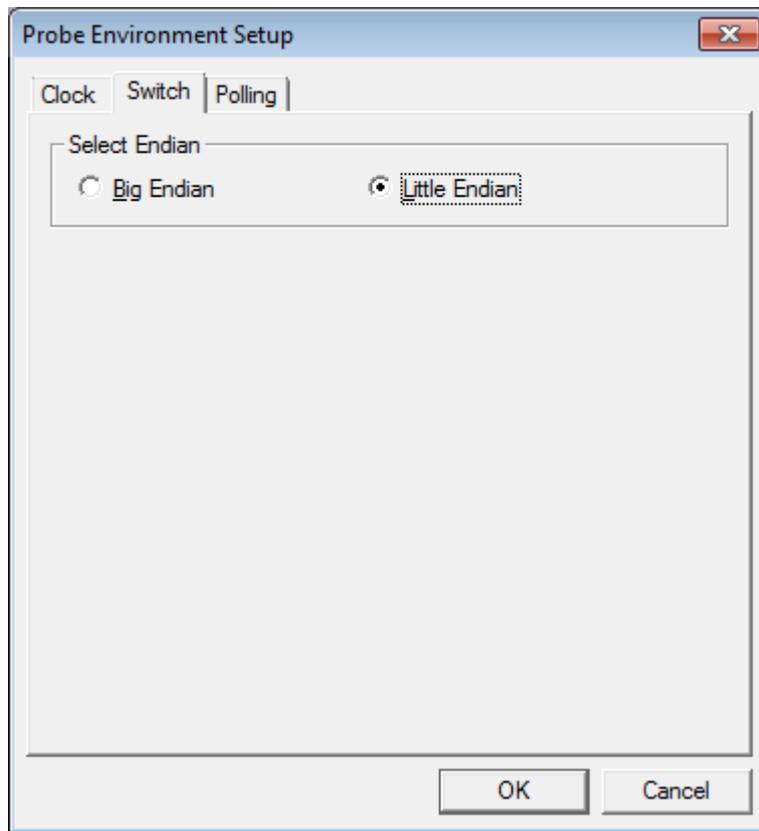
Figure 32

Table 15

Select Endian	Big endian: The display of a [Memory Dump Window] is a big endian.
	Little endian: The display of a [Memory Dump Window] is a litle endian.

> **INFO** The default is Little endian.

(4) Polling

Set the polling interval to monitor the SPI flash memory status.
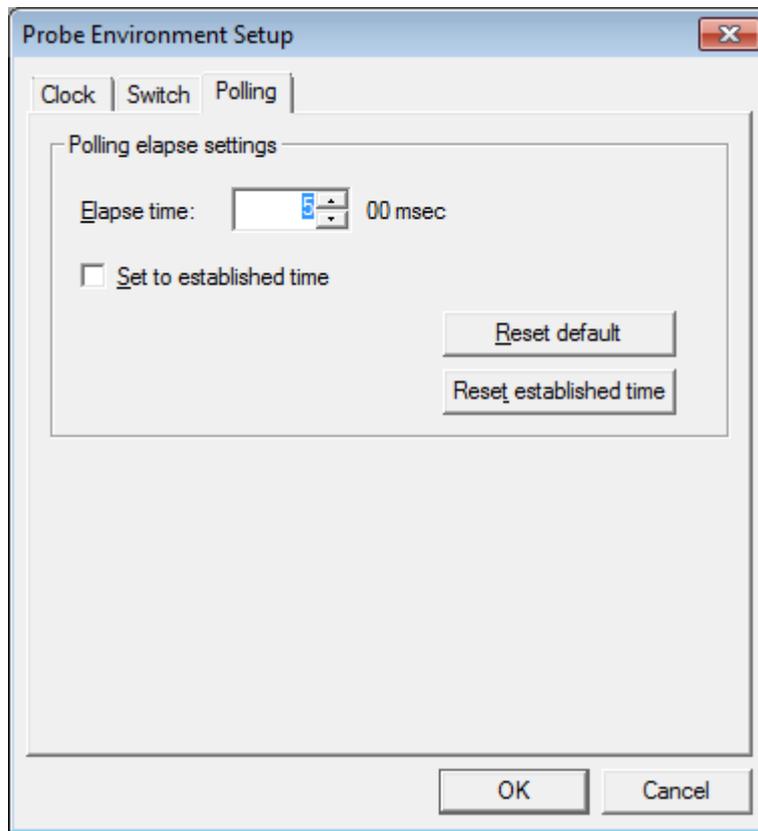
Figure 33

Table 16

Interval	Set the polling interval to 100ms.
	The valid range is from 100ms to 4,294,967,200ms.
Use as preset value	The set value becomes the preset value and used for subsequent projects.
Restore Default Value	Restores the default value (500ms).
Restore Preset Value	Restore the value set as a preset value.

4.2.4. Set Batch File Automatic Execution

Set the timing to automatically execute a batch program.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Auto Execute Batch Select**	---

Figure 34

Table 17

At startup (before loading the project)	Execute a batch file when starting this software (before loading the project). This makes it possible to execute necessary processing in batch before loading various settings, window information and other data to avoid accessing an invalid memory or other problems. Batch file name: {project name}.sta
At startup (after loading the project)	Execute a batch file when starting this software (after loading the project). Batch file name: {project name}.fst

Pressing the button on the toolbar executes a batch file named as follows:
Batch file name: {project name}.wrt

Tool button	Operation on the menu bar	Shortcut key
	---	---

⚠	Save batch files in the same folder as the project file.
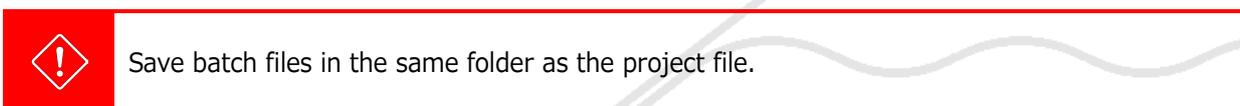
4.2.5. Memory Search

Searches the specified range of memory and shows the addresses containing data that matches or does not match the specified data.
Numerical values or ASCII character strings can be specified as the search data.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Memory Search**	---
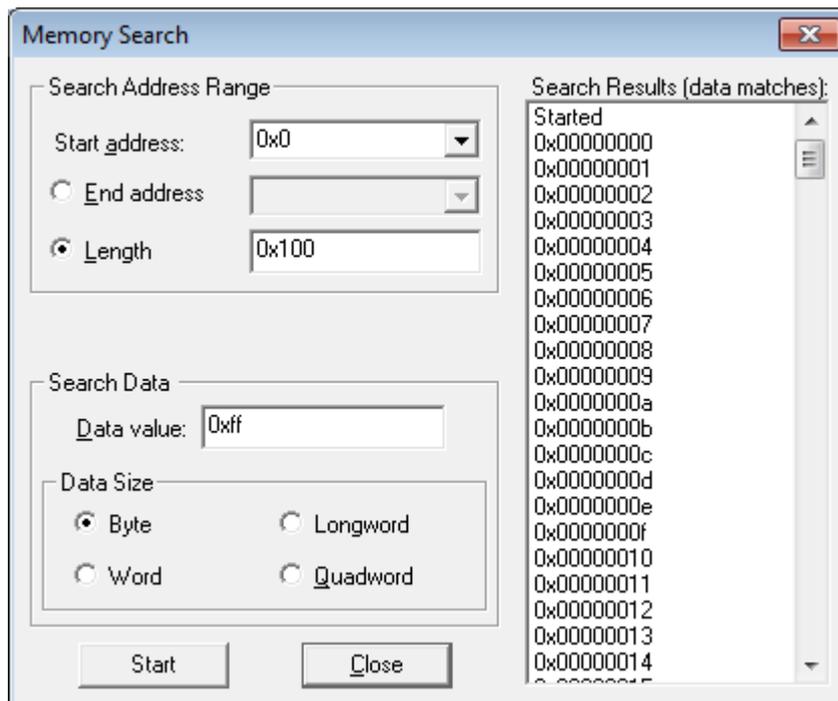
Figure 35

(1) Search Address Range

Set the address range over which a memory check is conducted.

Table 18

Start address	Specify the start address.
End address	Specify the end address.
Length	Specify the range length.

(2) Search Data

Table 19

Data value	Specify data to search for.
	To search for data that does not match the specified data, prefix the search
	data with an exclamation mark (!).
	You cannot search for data that does not match a character string.
	Numerical value: 0x34, 128, !0x56, etc.
	ASCII character string: "abcdef," "ghijk," etc.
Data Size	Specify the size of data to search for.

(3) Search Result

Shows the addresses retrieved by a memory search.
The result also appears in the Command window.
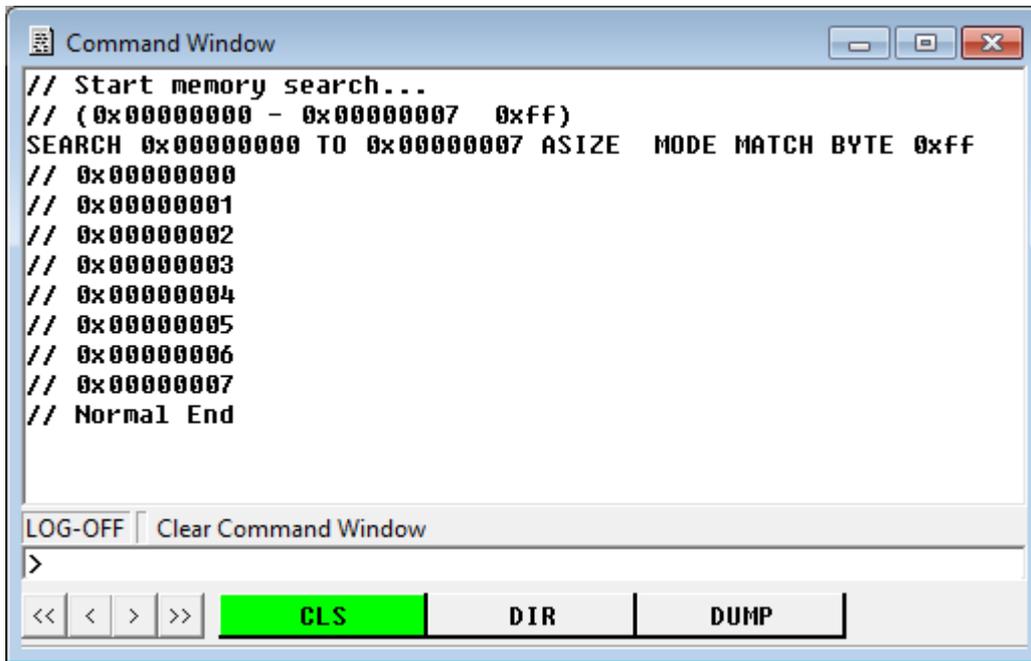
Figure 36

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4.2.6. SPI flash memory

➔ For details, refer to "**4.4. SPI Flash Memory**."

4.3. Go

There are the following commands in "Go" menu.

4.3.1. Cancel

Abnormal operation in the target, an attempt to access an area that cannot be accessed, or other unexpected or illegal operations may disable communication between the host PC (and the probe) and the target.
Executing this command may restore communication between them. However, even if communication could be restored, you should save the project file and restart all the systems since it is often the case that such a communication problem cannot be controlled properly.

Tool button	Operation on the menu bar	Shortcut key
---	**Go → Cancel**	---

4.3.2. Verify (Compare When Writing)

If writing is executed with this menu item checkmarked, verification is conducted after writing.

Tool button	Operation on the menu bar	Shortcut key
Vfy	**Go → Verify (Compare When Writing)**	---

4.3.3. Verify Only (Compare Without Writing)

If writing is executed with this menu item checkmarked, verification is conducted without writing.

Tool button	Operation on the menu bar	Shortcut key
Vfy only	**Go → Verify Only (Compare Without Writing)**	---

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4.3.4. Calculate Checksum Value

Whether a module could be written to the flash memory of the target or not can be checked by calculating and comparing the checksums of the module to be written and the data in the flash memory.
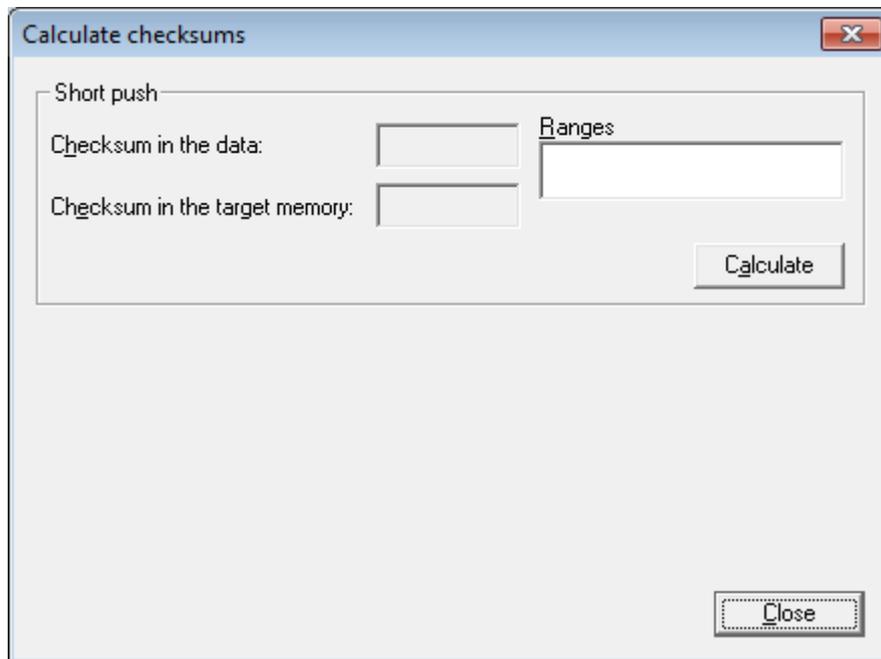
Figure 37

Table 20

Checksum in the Data	Show the checksum of the data to be written to the flash memory.
	If no writing procedure has been registered, nothing is displayed.
Checksum in the target memory	Show the checksum of the data written to the flash memory.
	If no writing procedure has been registered, nothing is displayed.
Ranges	Show the address range of the data to be written to the flash memory.
	If no writing procedure has been registered, "None" is displayed.
Calculate	Calculates the checksums of the data to be written to the flash memory and the data written to the flash memory. If no writing procedure has been registered, "None" is displayed.

⚠️ In order to use this function, a writing procedure must have been registered in the probe. For details about registration of a writing procedure, refer to "**9. Stand-alone Functions**."

4.4. SPI Flash Memory

4.4.1. SPI Flash Memory Settings dialog box

The SPI Flash Memory Settings dialog box performs operations related to the SPI flash memory.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → SPI flash memory → Device settings**	---

The following three operations can be performed by switching between tabs on the upper part of the dialog box.

1) Changing the SPI flash device
2) Clearing the SPI flash memory
3) Filling up the SPI flash memory

4.4.2. Device tab
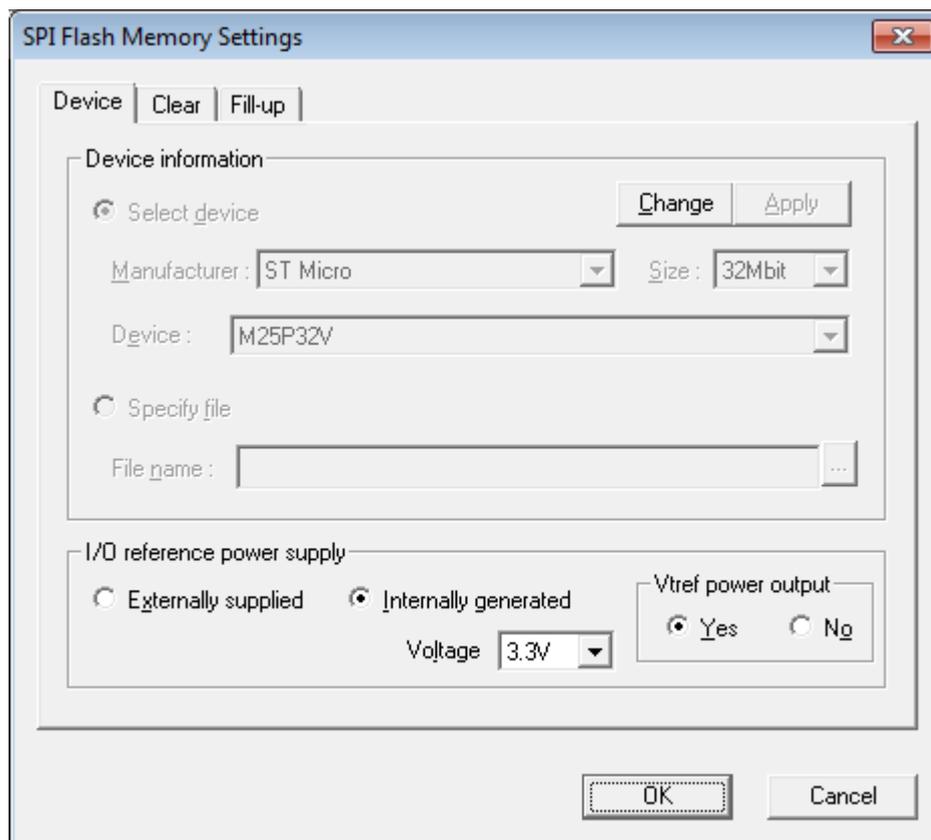
Figure 38

(1) Device information

The contents set at the time of activation of this software are displayed.
The device information cannot be changed immediately after this dialog box is activated.
When making changes to the device information, it is necessary to make changes after pressing the
| Change | button.

<div align="center">Table 21</div>

Change	Click this button to make changes to the SPI device information. The button turns into a Cancel button while changes are made.
Apply	This button becomes active while changes are made to the SPI device information. Click this button to change the probe settings for accessing the SPI flash memory.
Select device	Select when using the SPI flash memory registered in this software.
Manufacturer	Select the manufacturer of the SPI flash memory registered in this software from the pull-down list.
Size	Select the size of the SPI flash memory registered in this software from the pull-down list. If the manufacturer is already selected, only the size of the SPI flash memory of the selected manufacturer will be shown in the pull-down list. To cancel the selection, select the blank area at the top of the pull-down list.
Device	Select the SPI flash memory device registered in this software from the pull-down list. If the SPI flash memory device registered in this software can be determined uniquely by manufacturer and size, the device will be selected automatically. To cancel the selection, select the blank area at the top of the pull-down list.
Specify file	Select this when specifying the flash memory configuration file (*.fsh). The flash memory configuration file is a file that is created by the Memory Command Builder.
File name	Specify the configuration file (*.fsh) of the flash memory to be loaded.

(2) I/O reference power supply

Table 22

Externally supplied	Select this when the I/O power supply for the probe is supplied from the target through Vtref. It is set to ON by default.
Internally generated	Select this when the I/O power supply for the probe is not supplied from the target through Vtref. When this is selected, the I/O power supply uses the power generated within the probe.
Voltage	Use this to select the supply voltage to be generated within the probe from the pull-down list. This pull-down list becomes available only when [Internally generated] is selected. The default voltage is 1.2 V. Set this voltage in accordance with the interface voltage on the target side.
Vtref power output: yes	Power is supplied from the main unit to the target through Vtref. Select this when there is no power supply on the target side.
Vtref power output: no	Select when the I/O power supply to the probe is not supplied from the target through Vtref, despite there being a power supply on the target side.

➡ Refer to "Hardware Users Manual" for current values that can be supplied

ⓘ The settings of the I/O reference power supply will be configured in the main unit when clicking the OK button on the dialog box.

4.4.3. Clear tab

➡ For details, refer to "**2.8. Clearing the SPI Flash Memory.**"

4.4.4. Fill-up tab

➡ For details, refer to "**2.10. Filling up the SPI Flash Memory.**"

5. Windows

This chapter explains the windows of this software.

5.1. Docking of Windows

Child windows of this software can be docked at the top, bottom, right or left edge of the main window or placed outside the main window.
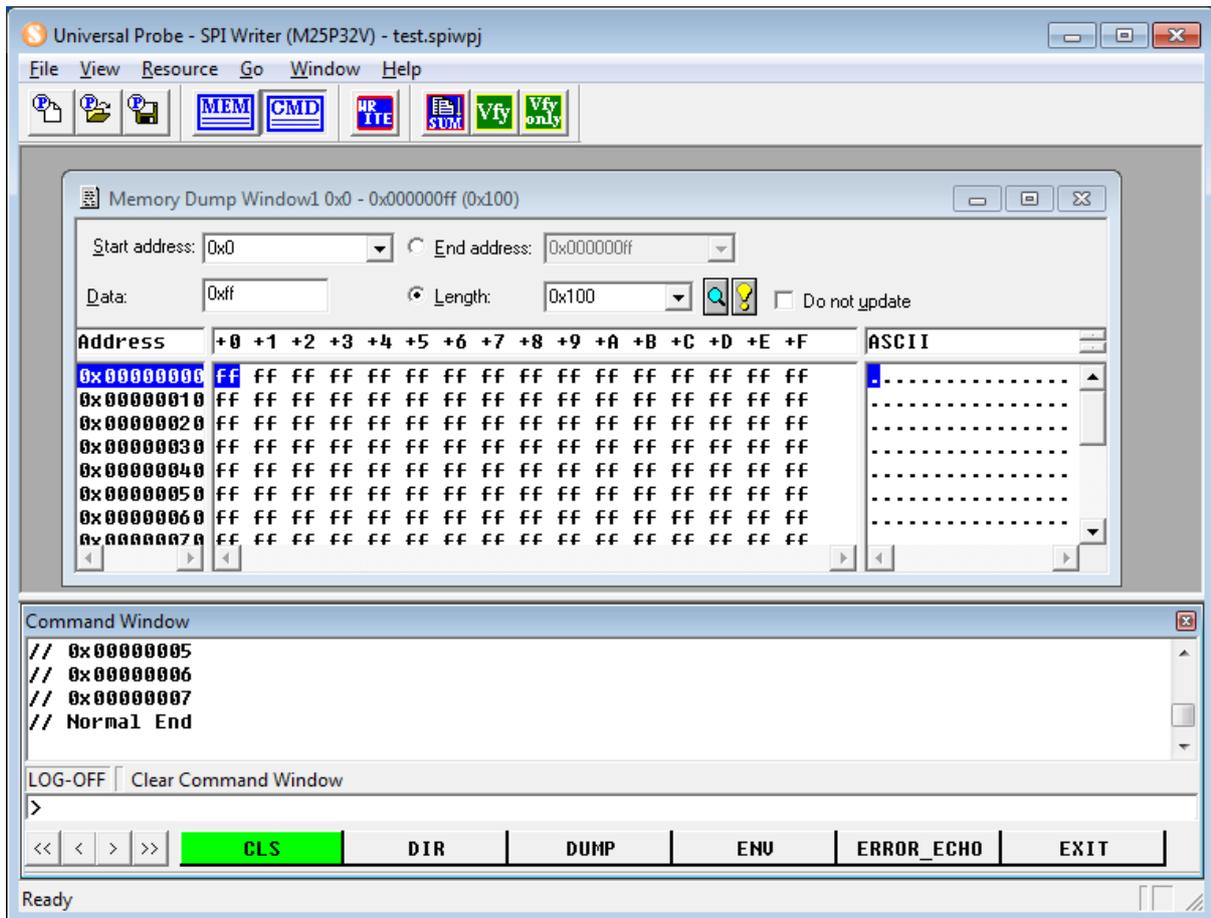
Figure 39

5.1.1. State of Windows

(1) MDI child windows (standard windows)

These are windows that can be moved or scaled freely within the main window of this software.
Each window of this software is opened in this state.
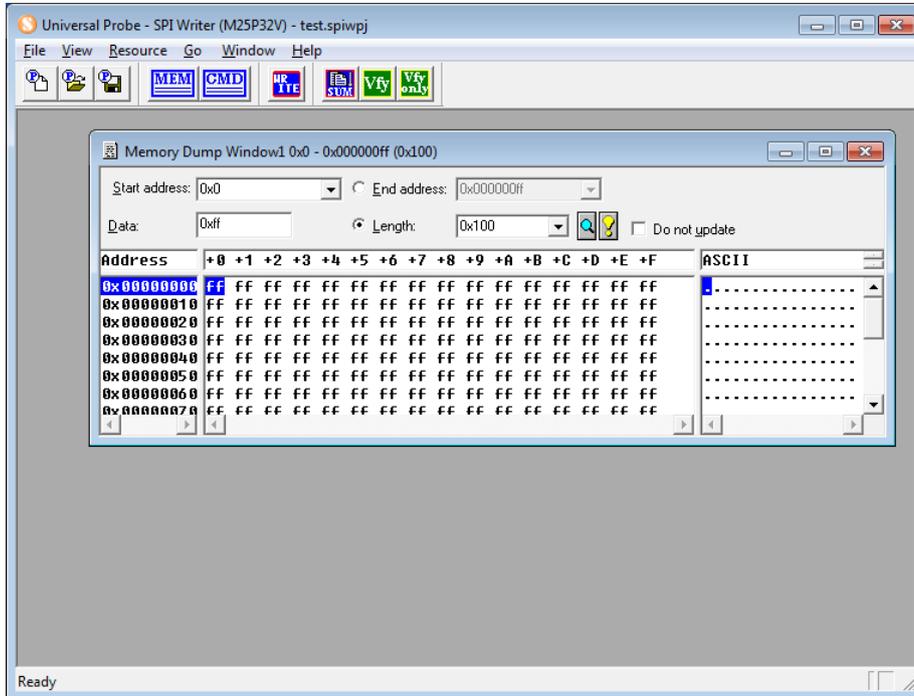
Figure 40

MDI child windows cannot be moved out of the main window.
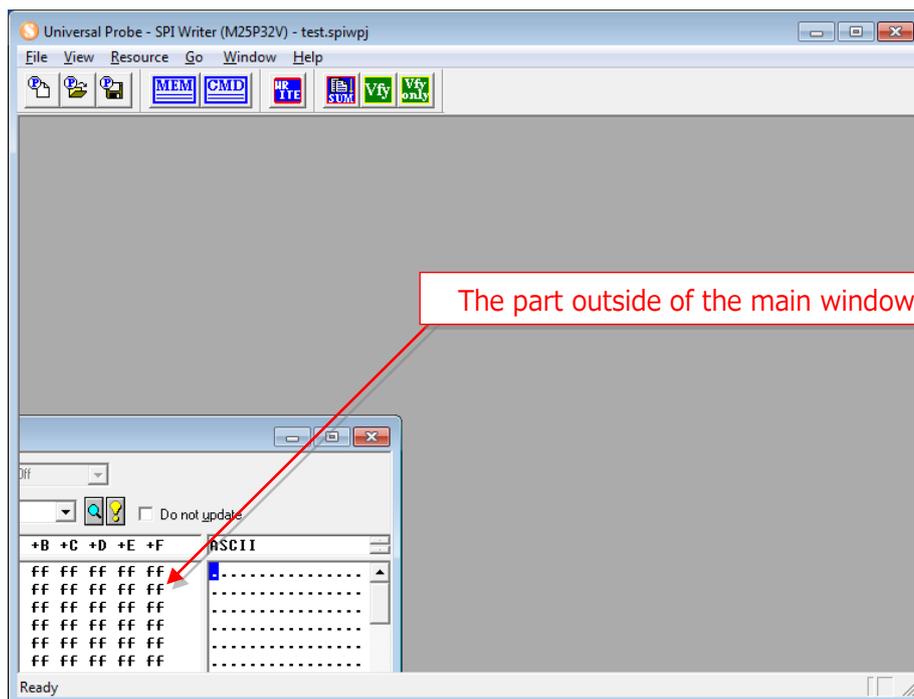
Figure 41

(2) Docked windows

These are windows that are docked at the top, bottom, right or left edge of the main window. (see the figure below).
Docked windows can also be scaled. A docked window can be moved and docked at another edge.
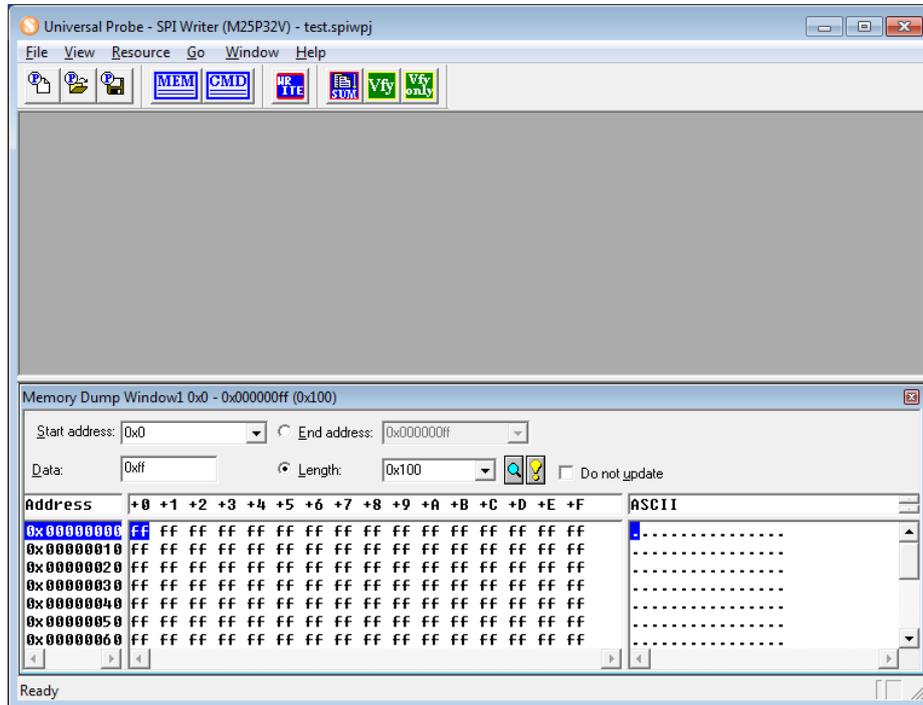
Figure 42

(3) Floating windows

Floating child windows can be moved out of the main window.
However, flowing windows are also closed automatically when this software is exited or the project is closed.
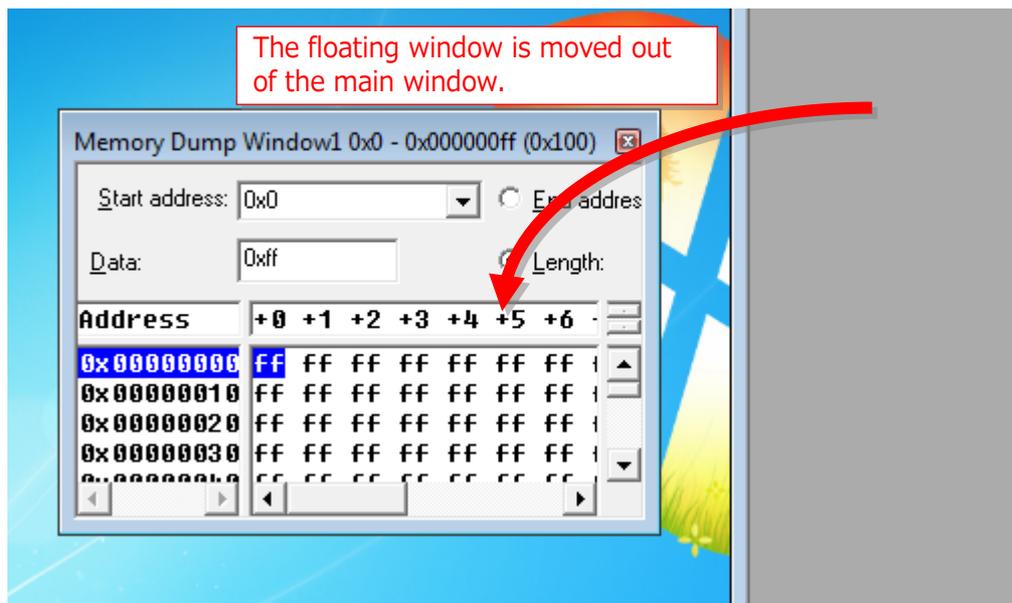
Figure 43

5.1.2. Changing the State of a Child Window

To change the state of a child window, right-click on the title bar of that window.
This will show the context menu as shown below. Then, specify the desired state or the position to which it is to be docked.
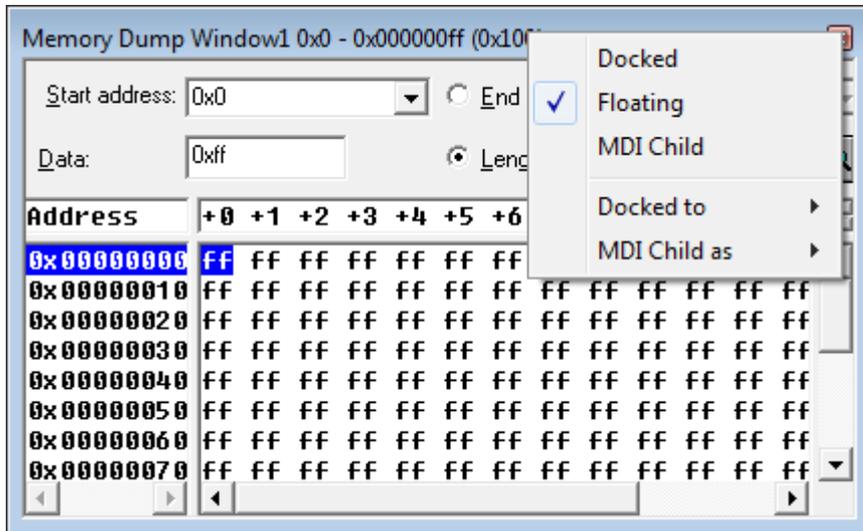
Figure 44

Figures of the menu and descriptions of the menu items are shown below.

Table 23

Menu shown by right-click	Menu shown by selecting "Docked to"	Menu shown by selecting "MDI Child as"

Table 24

Menu item		Description
Docked		Docks the child window. The edge at which the window is docked is switched among four edges in the order of top, left, bottom and right.
Floating		Makes the child window floating.
MDI Child		Makes the child window an MDI child window. If the child window is floating and placed outside the main window, it is automatically moved back inside the main window.
Docked to	Top	Docks the child window at the top edge of the main window.
	Left	Docks the child window at the left edge of the main window.
	Bottom	Docks the child window at the bottom edge of the main window.
	Right	Docks the child window at the right edge of the main window.
MDI Child as	Minimized	Makes the child window an MDI child window and minimizes it (into an icon).
	Maximized	Makes the child window an MDI child window and maximizes it.
	Restored	Makes the child window an MDI child window and displays it in the standard size.

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5.1.3. Changing the Docking State by Drag-and-Drop

(1) Changing the docking edge

A docked or floating child window can be docked at another edge by the method in "**5.1.2. Changing the State of a Child Window**" or by dragging and dropping the title bar of the child window.
Dragging the title bar of the child window to the desired edge of the main window changes the shape of the frame. Then, dropping it changes the location.
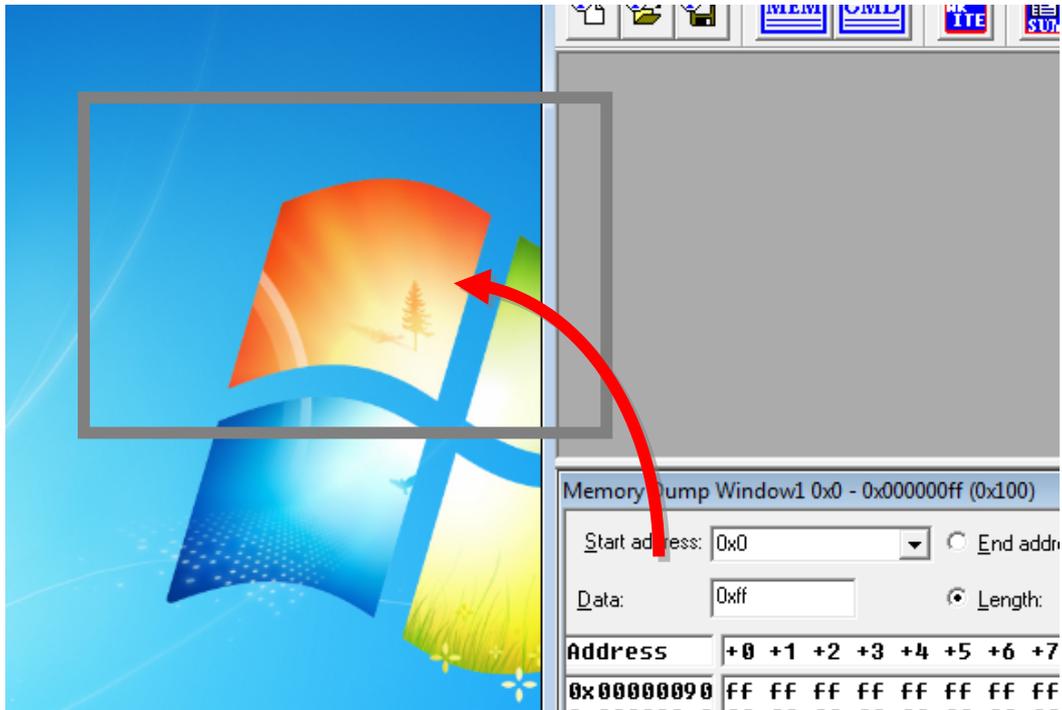
Figure 45
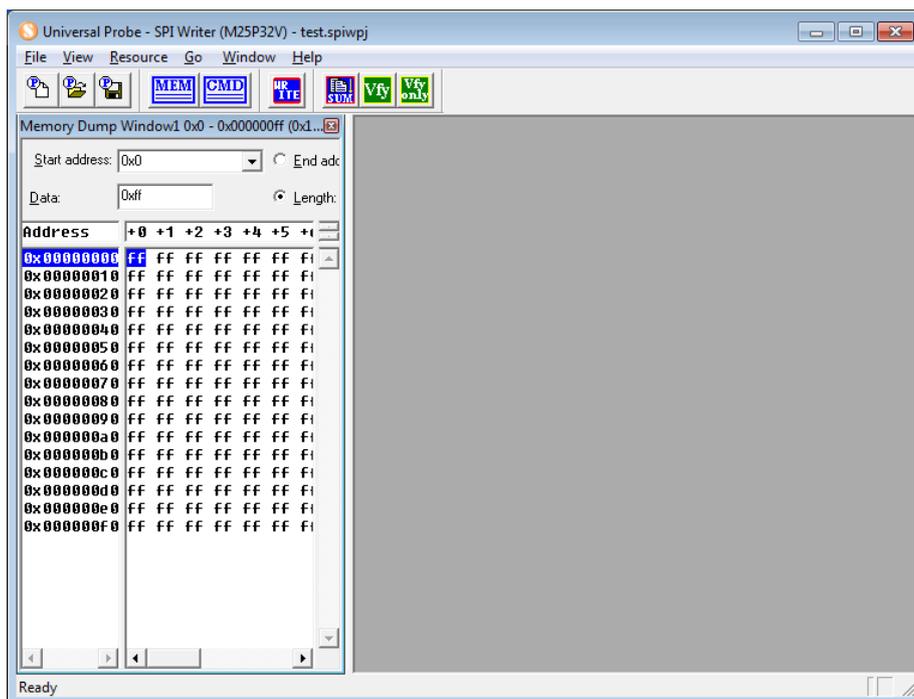
Figure 46

(2) Changing the state of window between docked and floating

Dragging a docked child window outside or near the center of the main window changes the state of child window to floating.
Dragging and dropping a floating child window near an edge of the main window changes the state of the child window to docked.
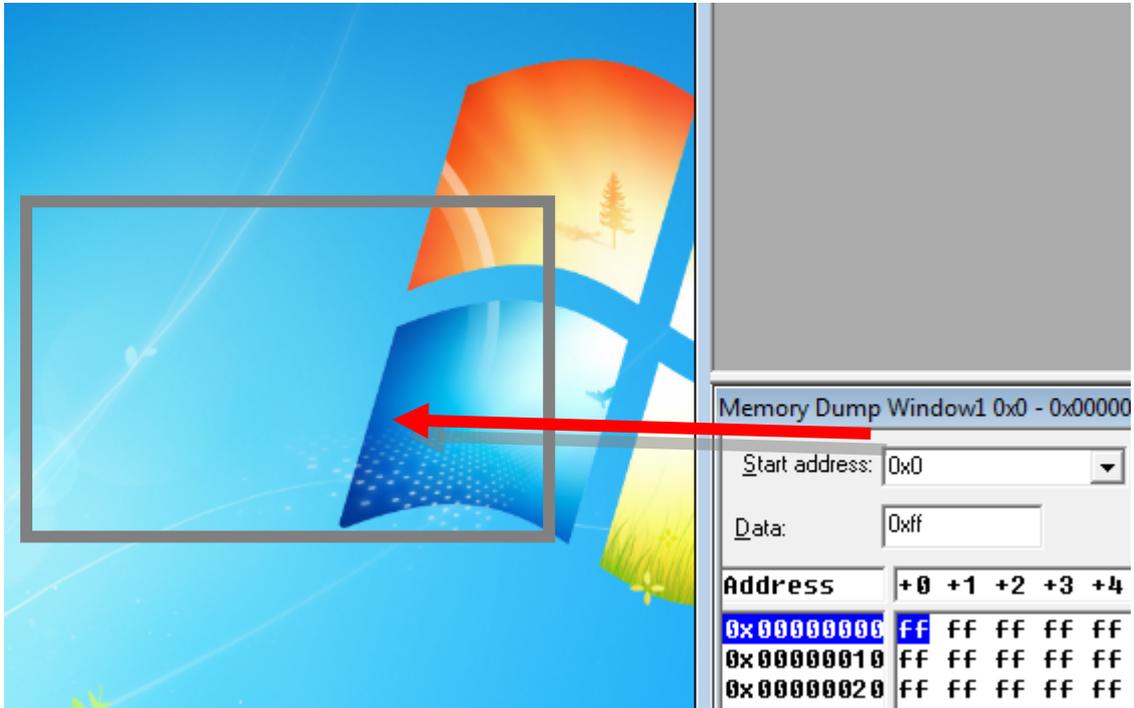
Figure 47

(3) Changing to an MDI child window

A docked or floating child window cannot be changed to an MDI child window by drag-and-drop. To change to an MDI child window state, right-click on the title bar of the child window and select "MDI Child" from the displayed context menu.

5.1.4. Docking Two or More Child Windows at the Same Edge

When two or more child windows are docked at the same edge of the main window, they can be displayed in the following two states:

1) State when docked inside of the an already docked child window
2) State when two or more child windows docked on one edge (docked edge) of the main window

The figure below shows an example of (1).
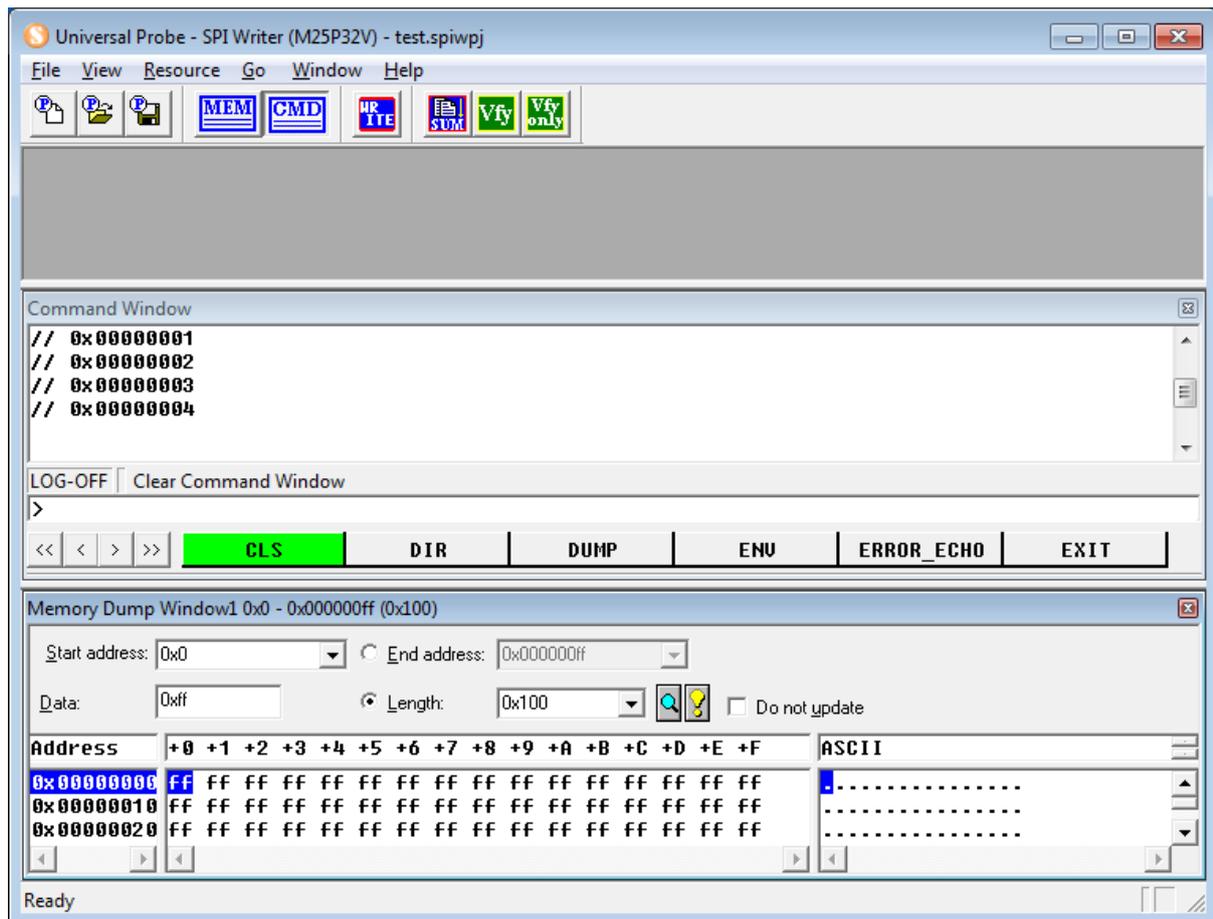
Figure 48

The figure below shows an example of (2).
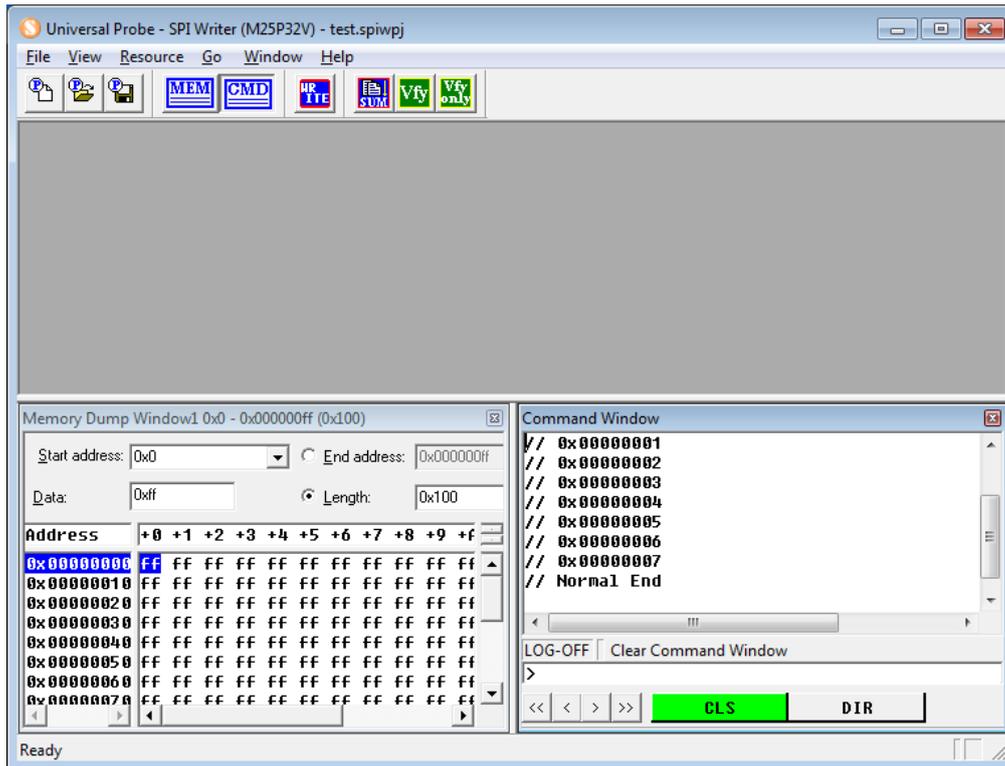
Figure 49

5.1.5. Changing the Size of a Docked Window

The size of a docked child window is changed by dragging the frame around the child window with the mouse cursor.
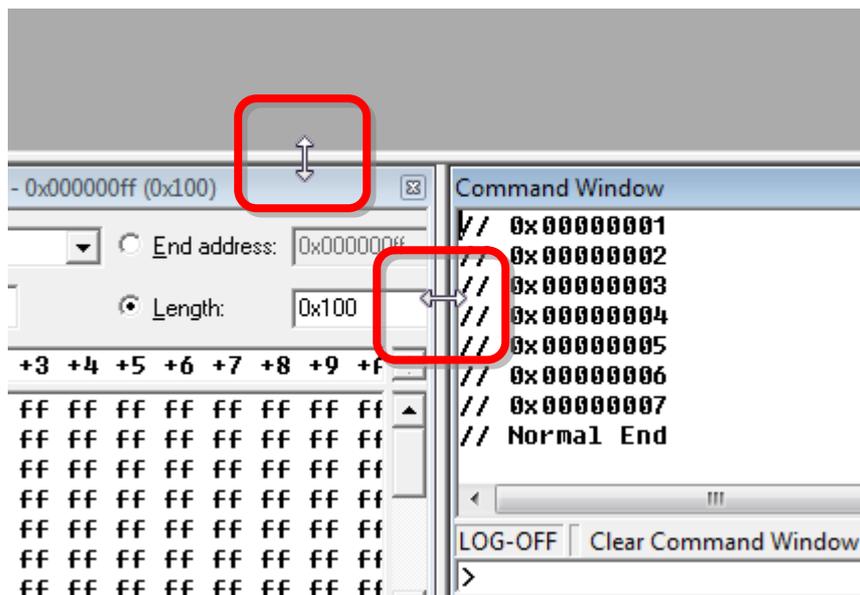
Figure 50

5.2. Memory Dump Window

This window is used to dump and display the contents of memory. Two or more Memory Dump Windows can be opened and they have the following characteristics:

- The data in the specified range of memory is displayed.
- Data can be displayed in various formats.
- Data can be displayed in 1-, 2- or 4-byte signed/unsigned integer format.
- Data can be displayed in 1-, 2- or 4-byte hexadecimal format.
- Data can be displayed in 4-, 8, 10- or 12-byte real number format.
- Read data containing changes from the previous values are displayed in red to make it easily identifiable.
- The displayed data can be output in CSV format or text format.

Tool button	Operation on the menu bar	Shortcut key
MEM	**View → Memory Dump Window**	---

The size of the address view, data view, and character string view display areas can be changed by dragging the border line with the mouse.
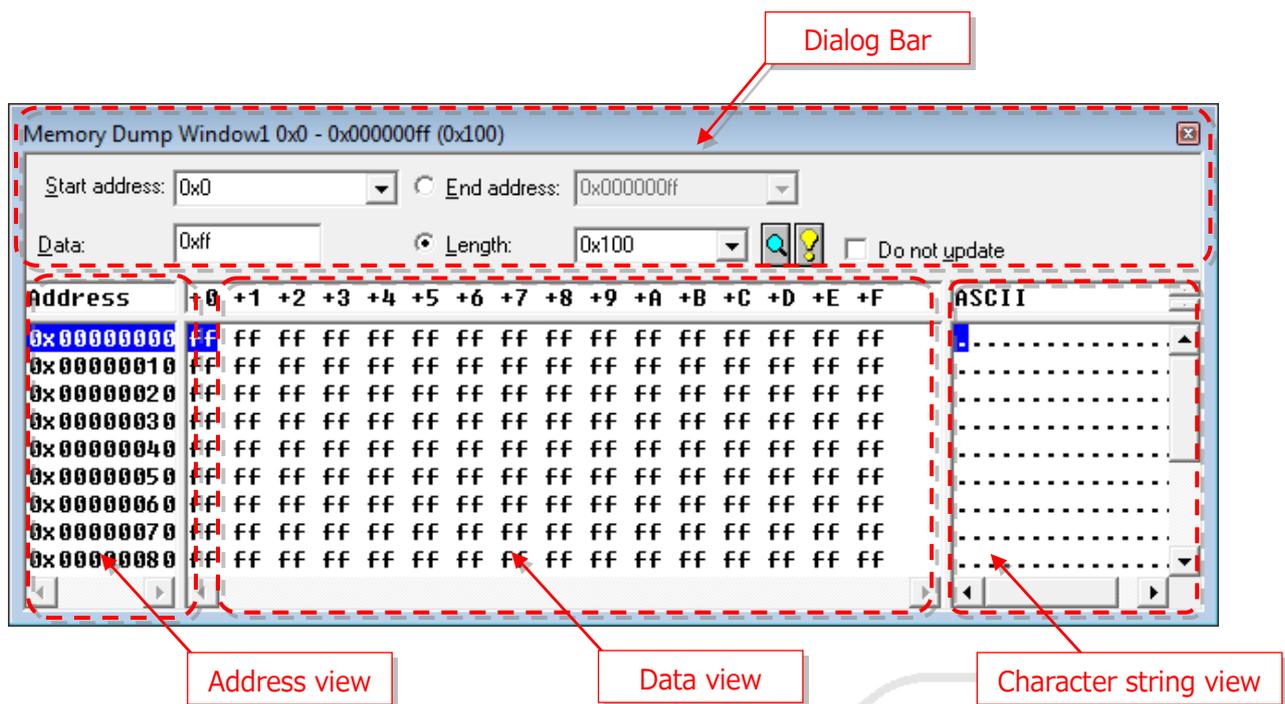
Figure 51

Table 25

Address	Indicates the address from which data is displayed.
End Address, Length	Indicates the end address or the range to be displayed. Pressing the Enter key after entering a value displays the contents in the specified memory range.
(Display button)	Reads the range specified by <Address> - <End Address> or <Range Length> again. If the data read again contains changes from the previous value, the value in the data view is displayed in red.
(Display of the context menu)	Shows the context menu from which [Address Format], [Data Format], and [Access Size] are changed.
Do not update	When this is checkmarked, the displayed content is not updated if read again with the display button.
Data	Shows the data at the cursor position.

5.2.1. Context Menu of the Memory Dump Window

Right-clicking on the area where data is displayed shows the context menu, from which the display format can be selected or data copied.

Figure 52

Table 26

Address Format	Change the format of the addresses displayed.
	Physical Address Display
Data Format	Change the display format of the memory data.
	Signed 1-byte integer
	Signed 2-byte integer
	Signed 4-byte integer
	Signed 8-byte integer
	Unsigned 1-byte integer
	Unsigned 2-byte integer
	Unsigned 4-byte integer
	Unsigned 8-byte integer
	1-byte hexadecimal number
	2-byte hexadecimal number
	4-byte hexadecimal number
	8-byte hexadecimal number
	4-byte real number
	8-byte real number
	10-byte real number
	12-byte real number
Save to File	The [Save to File] dialog box appears. The output formats are CSV and text. Options can be specified for CSV format.

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Copy Data	Copies the character strings in the selected range in the data view to the clipboard. * The character strings can also be copied by entering Ctrl + C from the keyboard.
Copy String	Copies the character strings in the selected range in the character string view to the clipboard. This item is enabled only when the character string view is displayed.
Copy Address and Data	Copies the character strings in the selected ranges in the address view and data view to the clipboard.
Copy Address, Data and String	Copies the character strings in the selected ranges in the address view, data view, and character string view to the clipboard. This item is enabled only when the character string view is displayed.
Copy Data and String	Copies the character strings in the selected ranges in the data view and character string view to the clipboard. This item is enabled only when the character string view is displayed.

(1) [Save to File] dialog box
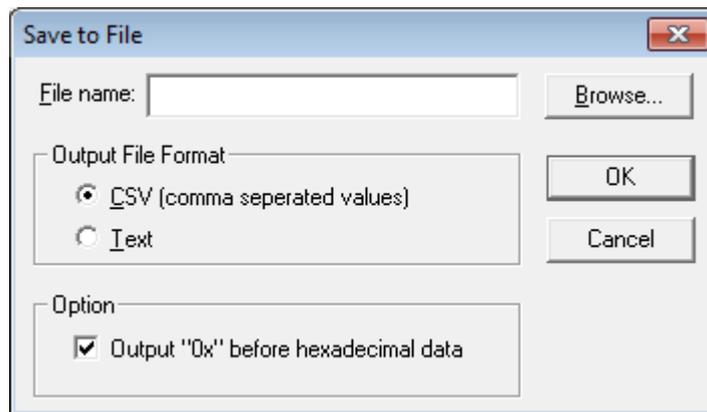
Figure 53

Table 27

File name	Saves the file having the specified name (If CSV Format is selected, add the extension ".CSV").
Output File Format	Either CSV Format or Text Format can be selected.
Option	Select the numeric number format.

(2) Selecting an area

Displayed value can be selected by using the mouse or keyboard.
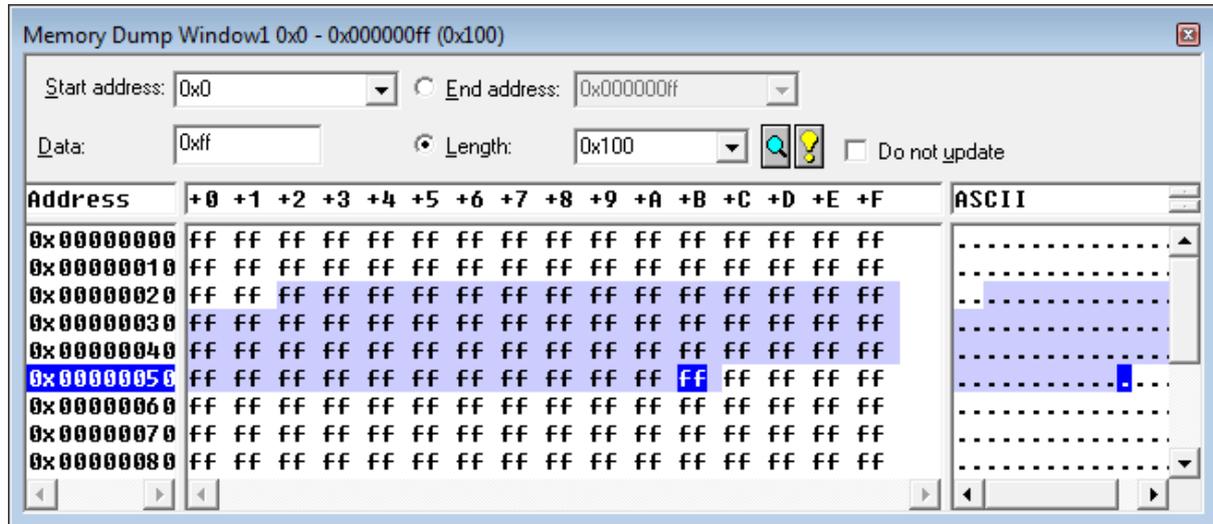
Figure 54

Table 28

Selecting an area by using the mouse	Dragging and dropping in the data view selects that range.
Selecting an area by using the keyboard	Holding the Shift key down and moving the cursor over a range in the data view selects the range.
Deselecting a range	A selected range is deselected by left-clicking the mouse or moving the cursor from the keyboard on the data view.

(3) Copying to the clipboard

Select a range and "Copy (item)" from the context menu, and the data in the selected range will be
copied to the clipboard.
Entering "Ctrl + C" from the keyboard functions as "Copy Data."

Table 29

Copy Data	6b f7 1b d6 71 cc 77 4c b1 35 71 46 c3 e2 31 28 b2 54 63 5c 12 ca d3 f3 03 f0 9f ad 36 9e 43 3f d0 2d 47 ef b1 1d f4 80 43 0e 83 64 47 c4 3c 0a b1 1e 11 4e
Copy String	k・∃ q ﾌ wL ｱ 5qF ﾃ・(ｲ Tc¥. ﾊﾓ・□ｺ 6 曚?ﾐ-G・. □C. ヅ G ﾄ〈. ｱ. . N
Copy Address and Data	R;0x00a205e0|　　　　　6b f7 1b d6 71 cc 77 4c b1 35 71 46 R;0x00a205f0|c3 e2 31 28 b2 54 63 5c 12 ca d3 f3 03 f0 9f ad R;0x00a20600|36 9e 43 3f d0 2d 47 ef b1 1d f4 80 43 0e 83 64 R;0x00a20610|47 c4 3c 0a b1 1e 11 4e
Copy Address, Data and String	R;0x00a205e0|　　　　　6b f7 1b d6 71 cc 77 4c b1 35 71 46 | k・∃ q ﾌ wL ｱ 5qF R;0x00a205f0|c3 e2 31 28 b2 54 63 5c 12 ca d3 f3 03 f0 9f ad |ﾃ・(ｲ Tc¥. ﾊﾓ・□ｺ R;0x00a20600|36 9e 43 3f d0 2d 47 ef b1 1d f4 80 43 0e 83 64 |6 曚?ﾐ- G・. □C. ヅ R;0x00a20610|47 c4 3c 0a b1 1e 11 4e　　　　　　　　　　|G ﾄ〈. ｱ. . N ＊The data lines are wrapped around at the right edge.
Copy Data and String	6b f7 1b d6 71 cc 77 4c b1 35 71 46 | k・∃ q ﾌ wL ｱ 5qF c3 e2 31 28 b2 54 63 5c 12 ca d3 f3 03 f0 9f ad |ﾃ・(ｲ Tc¥. ﾊﾓ・□ｺ 36 9e 43 3f d0 2d 47 ef b1 1d f4 80 43 0e 83 64 |6 曚?ﾐ-G・. □C. ヅ 47 c4 3c 0a b1 1e 11 4e　　　　　　　　　　|G ﾄ〈. ｱ. . N

5.2.2. Displaying Multiple Memory Dump Windows

Every time the following tool button is clicked, a new Memory Dump Window is opened.

Tool button	Operation on the menu bar	Shortcut key
MEM	View → **Memory Dump Window**	---
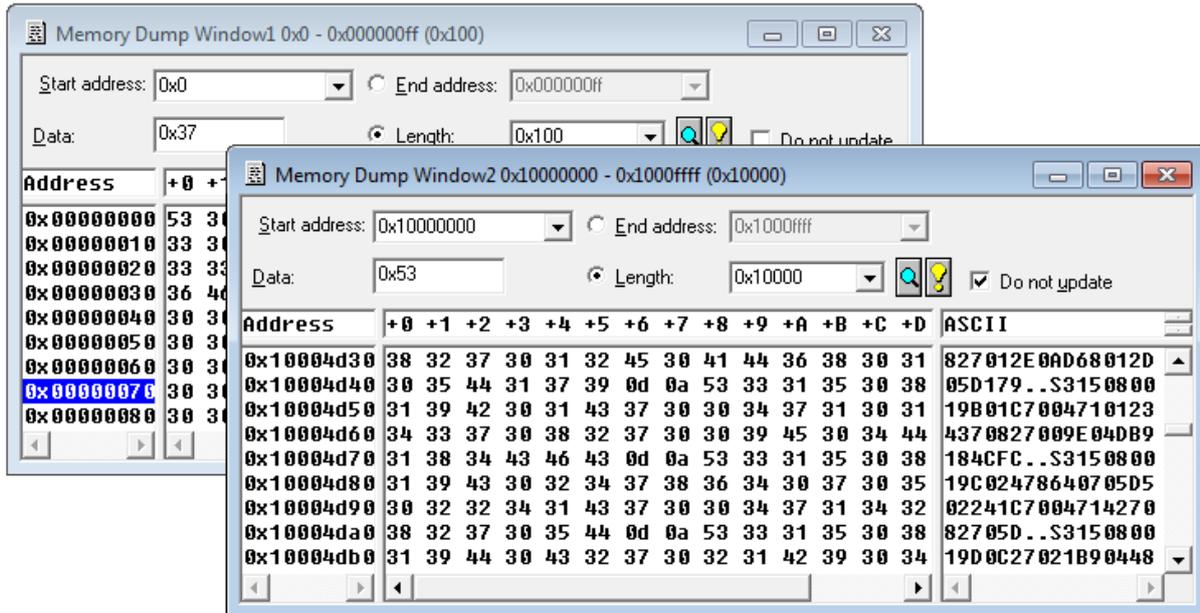
Figure 55

> By displaying two windows having the same address range and checkmarking the <Do Not Update> checkbox in one of them, you can compare the changes in the memory contents.

5.3. Command Window

This window is used to for command line entry. This window has the following characteristics.

- The keyboard- and mouse-based **associative selection method** allows quick command operations.
- This window has the ability to display command execution results and **log the commands**.
- **Automatic execution with a batch function** is supported.
- **The function to create a batch file** is supported.

The Command window can be opened by clicking the following tool button.

Tool button	Operation on the menu bar	Shortcut key
CMD	**View → Command Window**	---
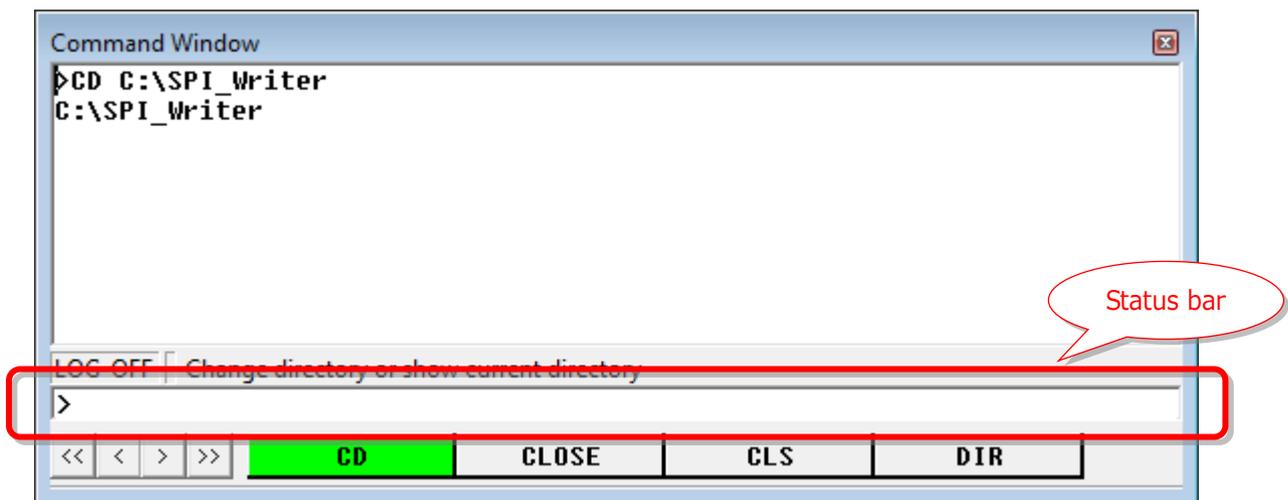
Figure 56

→ For details about how to enter commands, refer to "**7. Command Line Interface**."

The status bar shows the current CPU status, the status of different measurement functions, and guidance of the command line interface.

Character strings copied to the clipboard can be executed as a batch file. Right-click on the command input area to open the context menu and select "Paste Batch," or place the mouse cursor on the command input area and enter "Ctrl + B."

6. Keyboard

This section explains the keyboard operations that are non-standard on Windows keyboard.

6.1. Memory Dump Window

In the Memory Dump Window, the following keyboard operation is possible.

| ↑ | ↓ | ← | → | … Moves the cursor in Data view and Character String view.

6.2. Command Window

In the command window, the following keyboard operation is possible.

| ↑ | ↓ | ← | → | … Switches the display of command name and parameter name, and refers to parameters that were input in the past.

Space … Confirms command and parameter.

ESC … When a command is being input, cancels one command or parameter.
When a command is not input, performs forced break.

Return … Confirms and executes the command. For omitted parameters, previously input parameters are set.

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7. Command Line Interface

This section explains how to input and operate commands in the command window.
Commands are input on the command line shown in Figure 57.
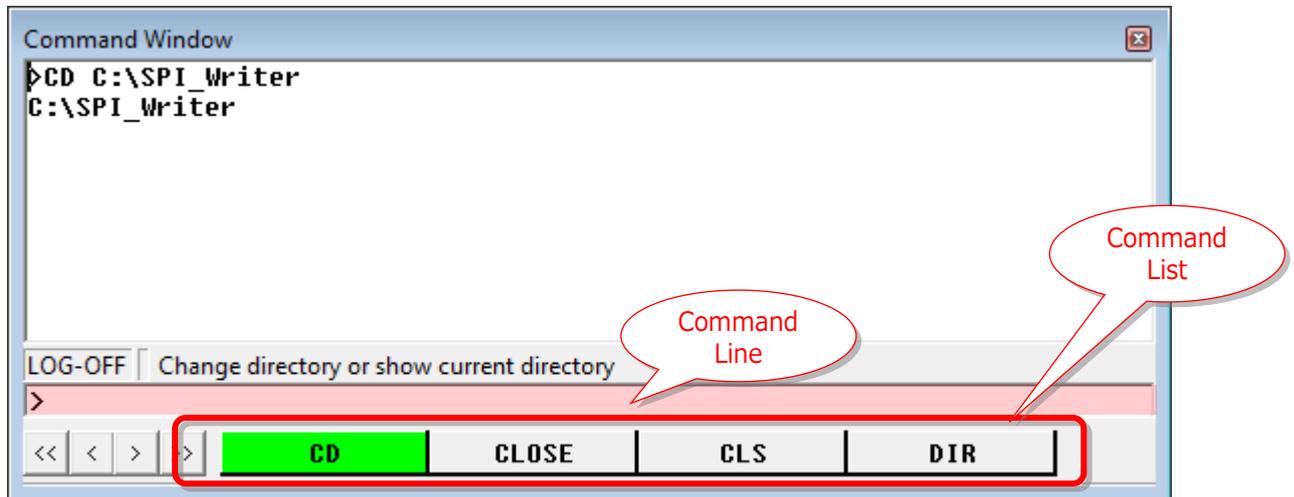
Figure 57

7.1 Operation on the Command Line

Even if you do not remember command names or parameter names, entering the first few characters of a command or parameter displays the corresponding command names and parameter names to choose from, allowing easy input of command and parameter names.

7.1.1. Command Input Method

Click the command line to move the focus.
By inputting a command and pressing the Return key, the command is executed.
Some parameters can be omitted. The previously entered contents are applied to omitted parameters.

7.1.2. Command Input by Associative Selection Method

As you proceed with entry of command, the commands that are displayed in the command list according to the entered characters are narrowed down.
By pressing the Space key, you can enter the command or parameter highlighted in green to the command line.
Also, you can enter a command by selecting it from the command list with the mouse.
The command list scrolls as you click the <<   <   >   >> buttons.
When placing the mouse cursor on the command list, a tool tip shows a brief explanation of the command.

7.1.3. Entering Command from History

By pressing the [↑] key on the command line you can display the command history.
By selecting the command you want to execute from the history and pressing the Return key, you can re-execute the past command.

> (i) INFO
> Double-byte characters cannot be entered on the command line.
> Entry of the space character is not accepted in file path specification. Therefore, folder names containing the space character cannot be used.

7.2. Explanation of Commands

7.2.1. ASSIGN and Dot (.) (Evaluation of Formula)

This command is used to evaluate formulas specified by parameters.
By using this command, you can refer to and change the memory, I/O data or register data.

● **Format**
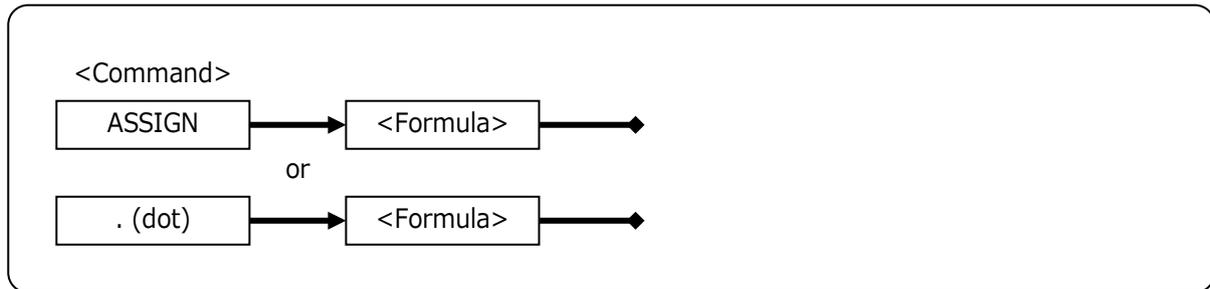
Figure 58

● **<Formula>**

Specify the formula to be evaluated.

● **Example**

Table 30

.[0x4000].B	Refer as 1-byte data to address 0x4000.
.[0x4000].W	Refer as 2-byte data to address 0x4000.
.[0x4000].L	Refer as 4-byte data to address 0x4000.

➡ For details, refer to "**3.2. Address Expression**" and "**3.4. Reading SPI flash memoy**."

⚠ If you use dot, the corresponding command is not recorded in the history in the command window.

7.2.2. BATCH (Execution of Batch Program)

This command is used to execute the specified batch program.
For details of batch program, refer to [Batch Function].

●**Format**
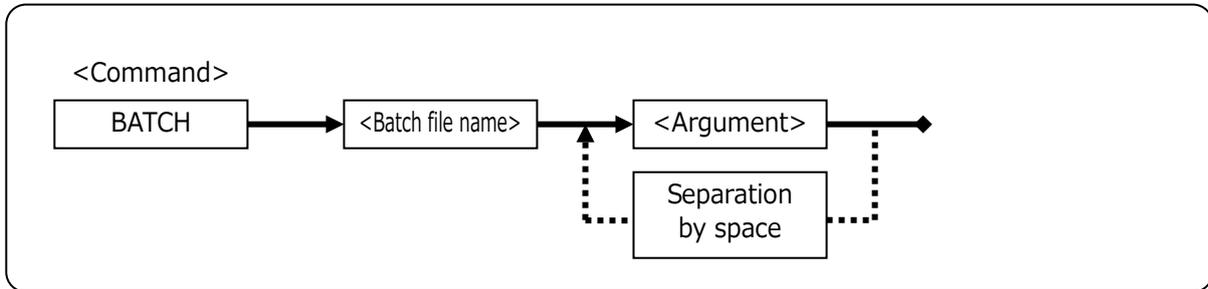
Figure 59

●**<Batch file name>**

Specify the batch program file name.

●**<Argument>**

Specify the argument to be passed to the batch program.
Separate each argument with the space character.
Arguments are set to $1 to $9 in the batch program.
$0 represents the whole command.
Tenth and further arguments are ignored.

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7.2.3. CD (Change of Folder, Change of Drive, Display of Current Path)

This command is used to move the work folder to the specified path.
If the folder is not specified, the current work folder is displayed.

●**Format**
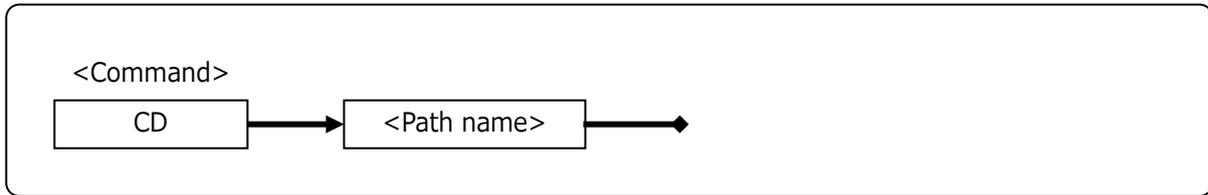
Figure 60

●**<Path name>**

Specify the path name to change.

● **Example**

[Display when the folder name is specified]
Displays the work folder after move.
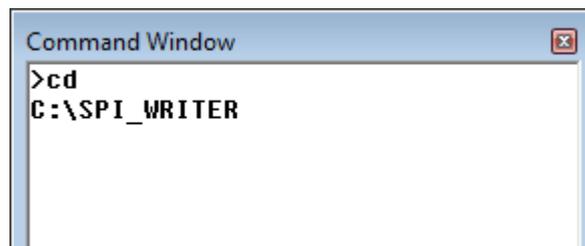
Figure 61

[Display when the folder name is omitted]
Displays the current work folder.
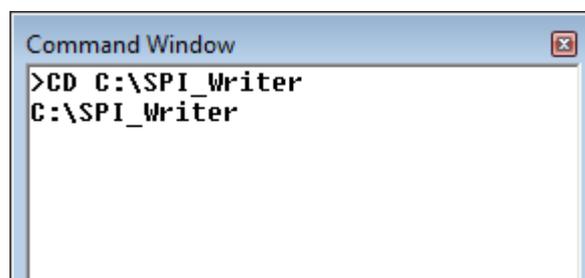
Figure 62

⚠ File names and folder names need to be specified in the "8 characters.3 characters" format of the former DOS specification.

7.2.4. CLOSE (Close the Project File)

This command is used to close the project file that is currently open.
When this command is executed, a confirmation dialog box is displayed.
To close without displaying the confirmation dialog box, use the **EXIT command**.

● **Format**

<Command>

```
CLOSE
```

Figure 63

7.2.5. CLS (Clear the Command Window)

This command is used to clear the command window that is currently open.

● **Format**

```
<Command>
   ┌──────────────┐
   │     CLS      │────────────►
   └──────────────┘
```

Figure 64

7.2.6. DIR (Refer to the Folder Contents)

This command is used to refer to the contents of the specified path.
If the path is not specified, the contents of all files in the current work folder are displayed.
This command has the same function as DIR command of DOS.

●**Format**

<Command>

```
DIR  ────►  <Path name>  ────►
```
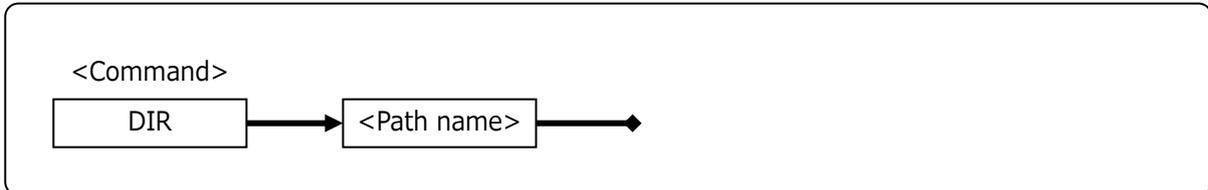
Figure 65

●**<Path name>**

Specify the path name to refer to.

● **Example**
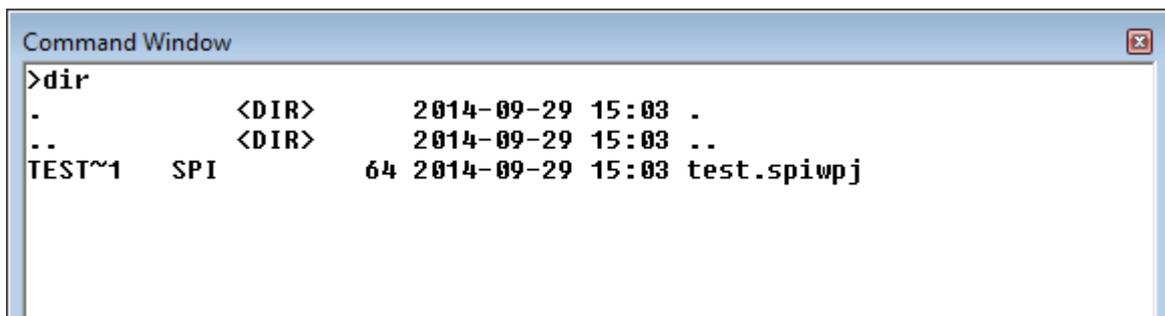
```
Command Window                                                    ⊠
>dir
.              <DIR>        2014-09-29 15:03 .
..             <DIR>        2014-09-29 15:03 ..
TEST~1   SPI           64 2014-09-29 15:03 test.spiwpj
```

Figure 66

7.2.7. DUMP (Dump Memory)

This command is used to display the memory data in the specified address range in the specified display format.
This command has the same function as operation in the Memory Dump Window.

● **Format**
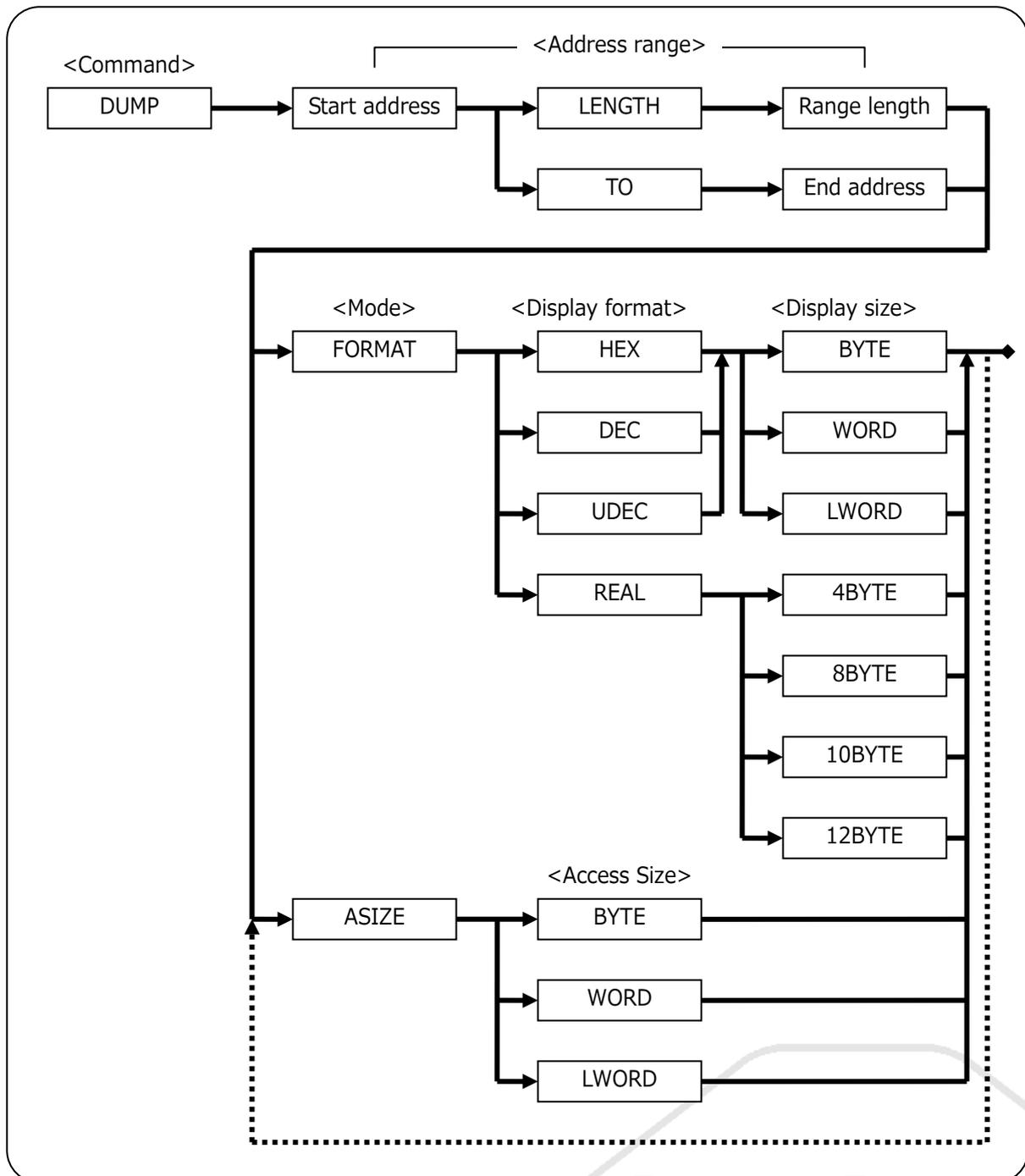
Figure 67

<Range of start address value>

Table 31

Start address	Specify the start address of memory to dump.
Range length	Specify the length from the start address in bytes.
End address	Specify the end address.

● **<Mode>**

Table 32

FORMAT	Specify the display format.
ASIZE	Specify the access size.

● **<Display format>**

Table 33

HEX	Displays in hexadecimal number.
DEC	Displays in decimal number.
UDEC	Displays in unsigned decimal number.
REAL	Displays in real number.

● **<Display size>**

Table 34

BYTE	Displays in byte size.	
WORD	Displays in word size.	
LWORD	Displays in long word size.	
4BYTE	Displays in 4-byte real number format.	Example) -1.073726E+008
8BYTE	Displays in 8-byte real number format.	Example) -9.255963134931E+061
10BYTE	Displays in 10-byte real number format.	Example) - 4.7798665708109333850E+0986
12BYTE	Displays in 12-byte real number format.	Example) - 4.761268151994454601E+0986

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7.2.8. ENV (Set the Probe Environment)

This command is used to specify various probe environment settings.
After the command is executed, the current setting status is displayed.
This command has the same function as the following menu.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Probe Environment**	---

● **Format**
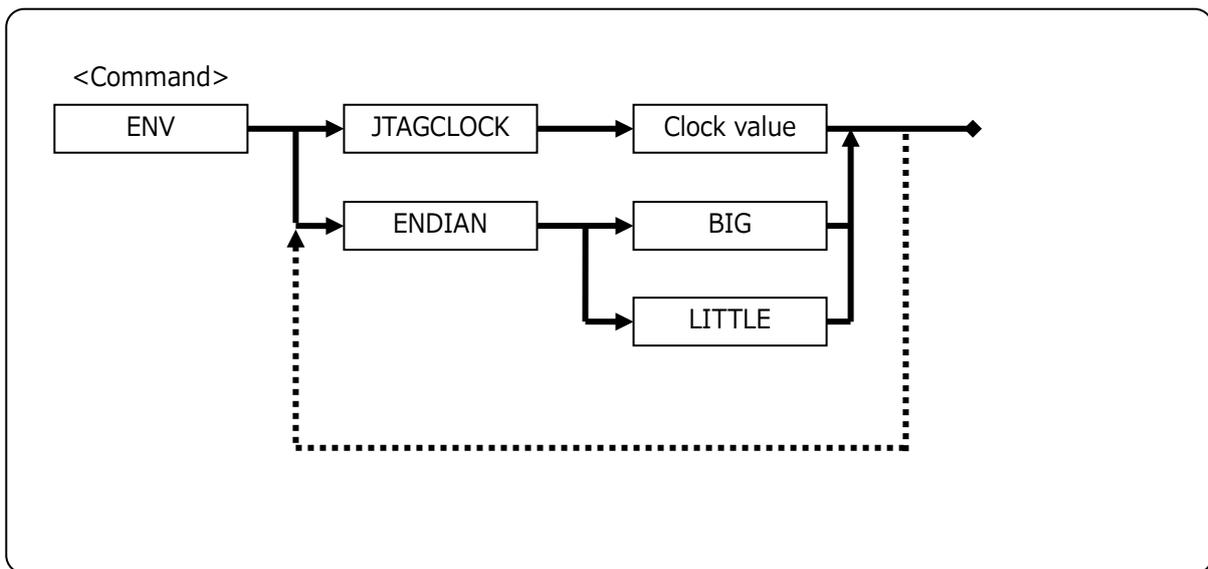
Figure 68

JTAGCLOCK
Specify the frequency of SPI flash memory clock.

Table 35

SLOWCLOCK	Set specific frequency by the following parameter. Enter numeric value only assuming the unit of KHz.
Frequency selection	Specify a value in the range between 1 and 1,000.

ENDIAN
Specify the endian.

Table 36

BIG	Set the big endian.
LITTLE	Set the little endian.

7.2.9. ERROR_ECHO (Set Error Message Display)

This command is used to specify the display method of error message.

● **Format**
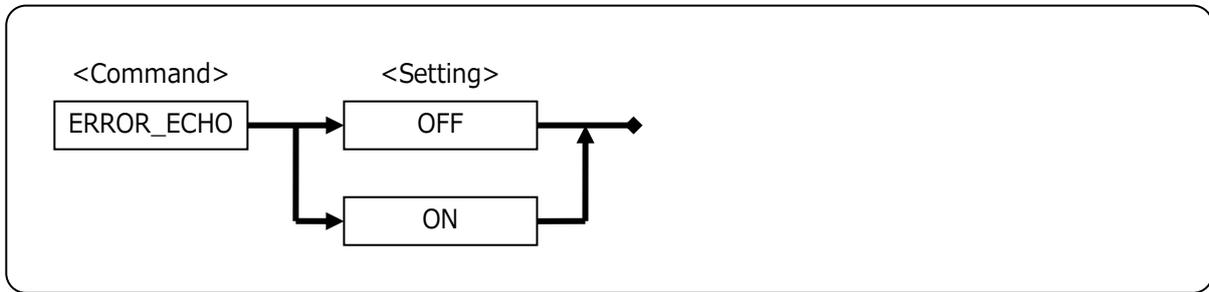
Figure 69

● **<Setting>**

Table 37

OFF	Displays error messages in the message box.
ON	Displays error messages in the command window.

7.2.10. EXIT (Exit This Application)

Exit this software.
This command has the same function as the following operation.

Tool button	Operation on the menu bar	Shortcut key
---	**File → Exit**	---

● **Format**
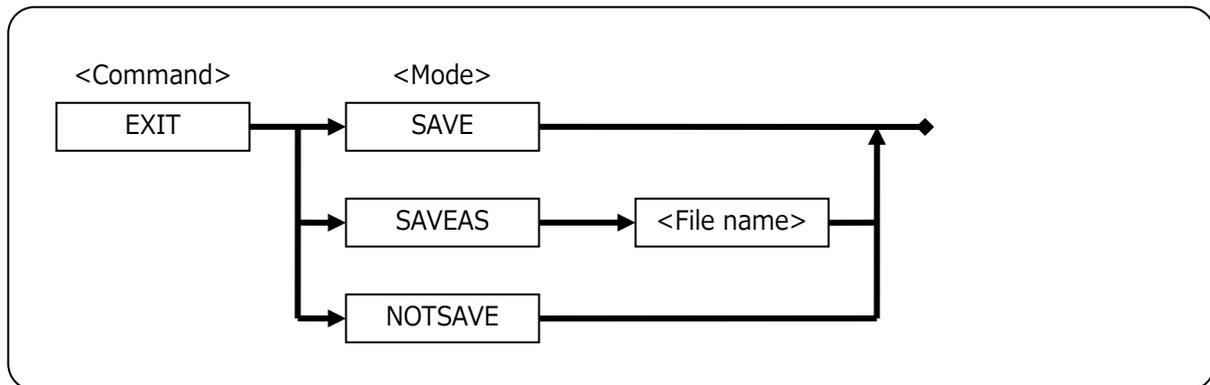
Figure 70

● **<Mode>**

Table 38

SAVE	Saves (overwrites) the contents of the project to the current project file and exits the software.
SAVEAS	Saves the contents of the project to a project file under a different name and exits the software.
NOTSAVE	Exits the software without saving the contents of the project to a project file.

● **<File name>**

Enter the name of the file to save. If a file name only is specified, the file is saved in the current work folder.

7.2.11. FM (Set the SPI Flash Memory)

This command is used to set the SPI flash memory.
This command has the same function as the following operation.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → SPI flash memory → Device settings**	---

● **Format**
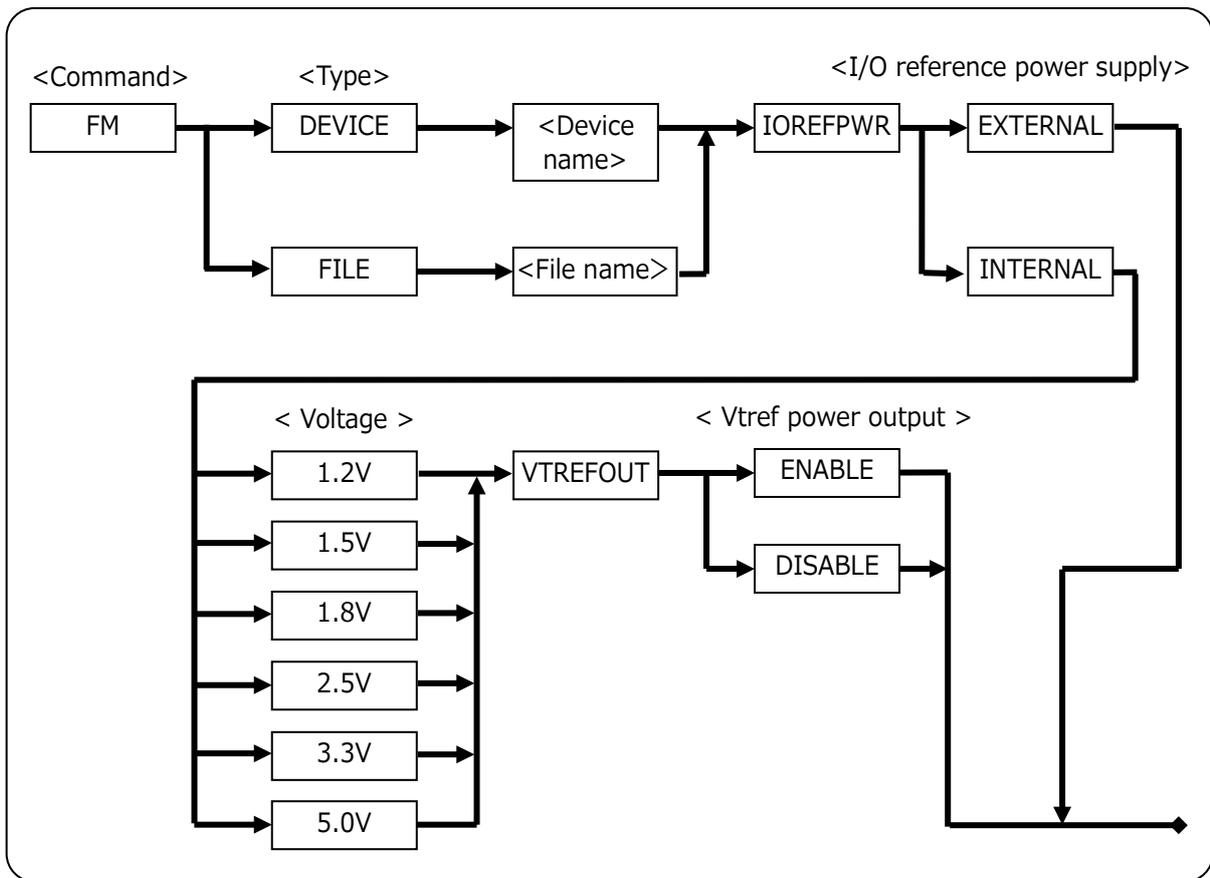
Figure 71

● **Type**

Table 39

DEVICE	Specify the SPI flash memory device registered in this software.
FILE	Specify the configuration file (*.fsh) of the flash memory.

● **<Device name>**

Specify the SPI flash memory device registered in this software.

● **<File name>**

Specify the configuration file (*.fsh) of the flash memory.
When a space is contained in a path, please enclose and input with a double quotation mark (").

● **<I/O reference power supply>**

Table 40

EXTERNAL	Select this when the I/O power supply for the probe is supplied from the target through Vtref.
INTERNAL	Select this when the I/O power supply for the probe is not supplied from the target through Vtref.

● **<Voltage>**

Use this to select the supply voltage to be generated within the probe.

● **<Vtref power output>**

Table 41

ENABLE	Power is supplied from the main unit to the target through Vtref.
DISABLE	Select when the I/O power supply to the probe is not supplied from the target through Vtref, despite there being a power supply on the target side.

7.2.12. FMCLEAR (Clear the SPI Flash Memory)

This tab is used to clear the contents of flash memory.
This command has the same function as the following operation.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → SPI flash memory → Clear**	---

● **Format**
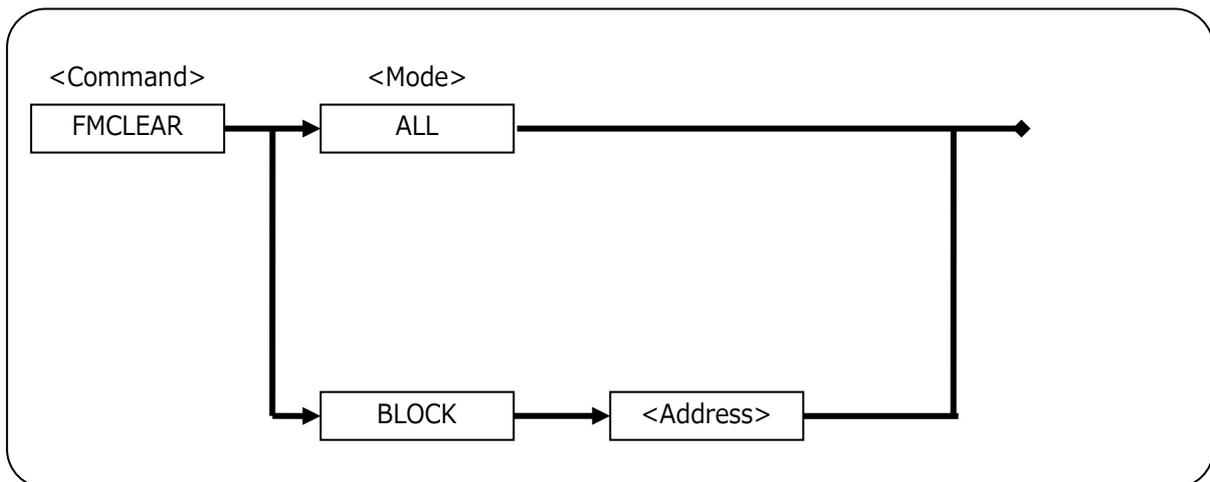
Figure 72

● **<Mode>**

Specify the clear mode.

Table 42

ALL	Clears all of the SPI flash memory.
BLOCK	Clears one block of the SPI flash memory that includes the address entered in <Address>.

7.2.13. FMFILL(Fill-up the SPI Flash Memory)

This command is used to fill the SPI flash memory data in the specified address range with the specified data.
After the command is executed, the execution result is displayed.
This command has the same function as the following menu.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → SPI flash memory → Fill-up**	---

● 書式
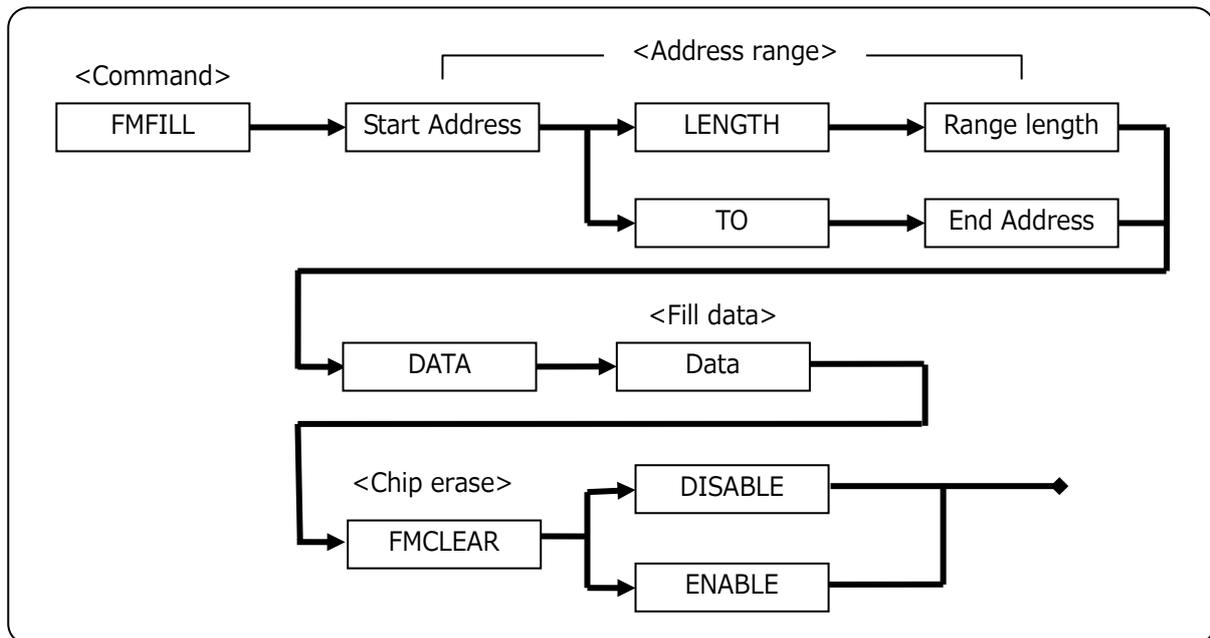
Figure 73

● **<Address range>**

Table 43

Start address	Specify the start address of memory to fill.
Range length	Specify the length from the start address in bytes.
End address	Specify the end address.

● **<Fill data>**

Fills up the memory with the data specified here.

● **<Chip erase>**

Table 44

ENABLE	Execute chip erase automatically before performing the fill-up.
DISABLE	Not Execute chip erase automatically before performing the fill-up.

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7.2.14. LOAD (Load the Object Data)

This command is used to download the object data of the specified file.
In the reload mode, files in the specified download list are downloaded again.
In the delete mode, the file having the specified list number is deleted from the download list.
This command has the same function as the following menu.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Download**	---

● **Format**
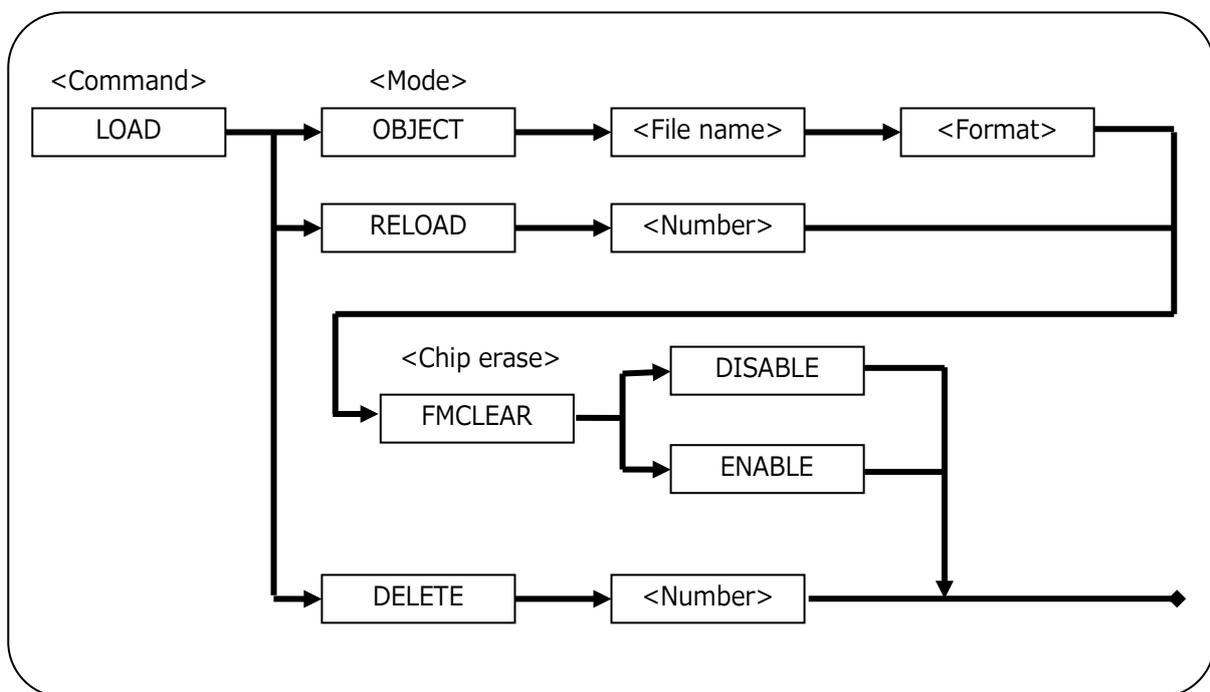
Figure 74

● **<Mode>**

Specify the download mode.

Table 45

OBJECT	Downloads the specified object data file.
RELOAD	Downloads again from the file of the specified number.
DELETE	Deletes the file having the specified number from the download list.

● **<File name>**

Specify the name of the object data file to download.

● **<Number>**

Specify the number starting from 1 that are registered in the module list.
You can check the number with the LOAD parameter of the **QUERY command**.

● **<Format>**

Specify the format name of the file to download.
Normally, specify AUTO.
The format names that can be specified are as follows:

Table 46

Format name	Summary
AUTO	Automatically recognizes the file format.
COFF	Specifies COFF format.
ELF	Specifies ELF format.
IHEX	Specifies Intel HEX format.
MHEX	Specifies Motorola HEX format.
SHF	Specifies the original high-speed download format.
SAUF	Specifies SAUF format.
BINARY <start address>	Downloads from <start address> as binary data.

● **<Chip erase>**

Table 47

ENABLE	Execute chip erase automatically before performing the download.
DISABLE	Not Execute chip erase automatically before performing the download.

> **INFO** The supported file formats differ depending on the target CPU, etc.
> This software can be used for those supporting OBJECT.

> ⚠ Up to **1KByte** of object data can be downloaded with the size limited version.

7.2.15. LOADPARAM (Supplement of LOAD Command Parameters)

This command is used to supplement the parameters of LOAD command.

● **Format**
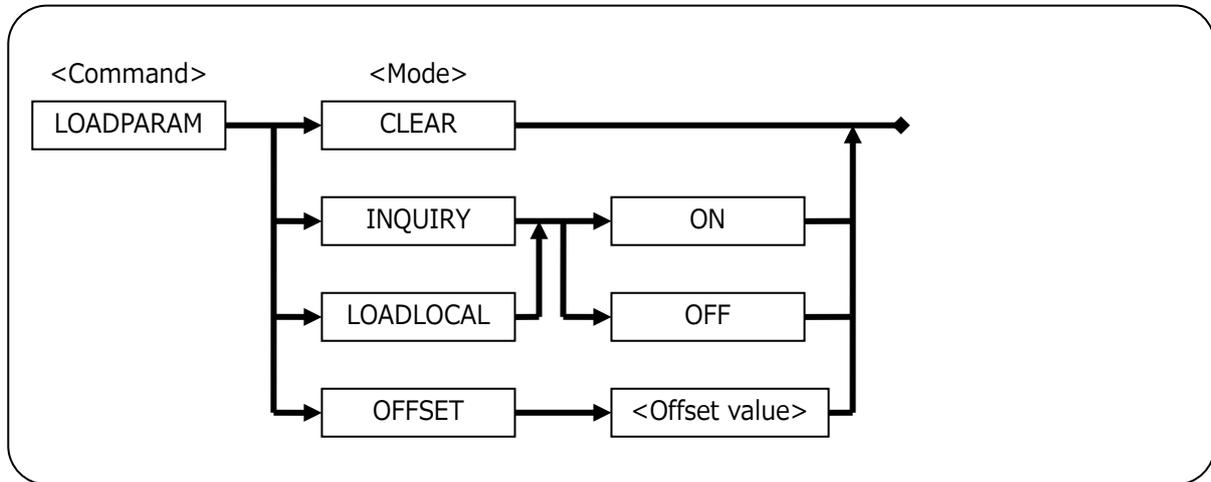
Figure 75

● **\<Mode\>**

Table 48

CLEAR	Initializes the parameter supplement data for the LOAD command.
INQUIRY	Not usable in this software.
LOADLOCAL	Not usable in this software.
OFFSET	Sets the offset value of the object data. If the module to be loaded is in binary format, the offset of LOAD command is used. The default \<offset value\> is 0.

7.2.16. LOG (Control the Logging of the Command Window)

This command is used to set whether to perform logging (saving to file) of the display contents in the Command window.
The logging function saves the display contents after inputting ON or ADD to a file.

● **Format**
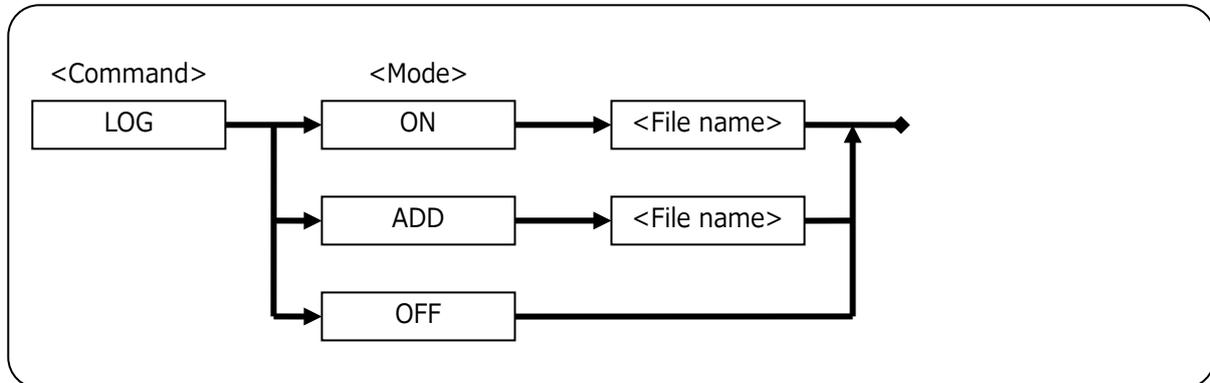
Figure 76

● **<Mode>**

Specify the recording mode.

Table 49

ON	Starts logging by creating a new file.
ADD	Starts logging by adding the display contents to an existing file.
OFF	Ends logging.

● **<File name>**

Specify the name of the file to which log is saved.

⚠	If you use the NEWBATCH command with this command, do not specify the same file for both commands.

7.2.17. MKDIR (Create a Folder)

This command is used to create a folder in the specified path.
This command has the same function as MKDIR command of DOS.

● **Format**

<Command>

| MKDIR | → | <Path name> | → |
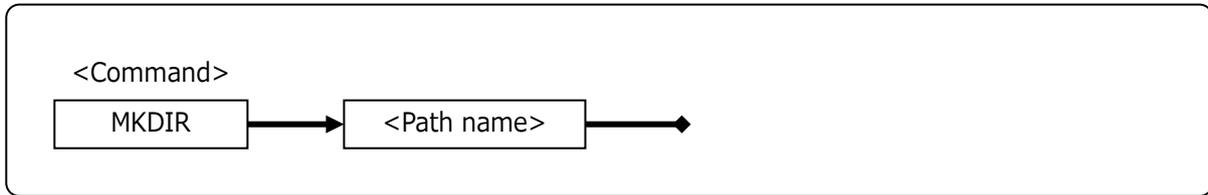
Figure 77

● **<Path name>**

Specify the path of a folder to create.

7.2.18. NEWBATCH (Create a Batch File)

This command is used to create a new batch file or add a batch file to the existing file.
Commands that are input after the start of creation of a batch file by this command will be checked for parameters, but will not be actually executed. The character string in the command line will be saved in the file.
Setting the OFF mode ends creation of batch file.

● **Format**
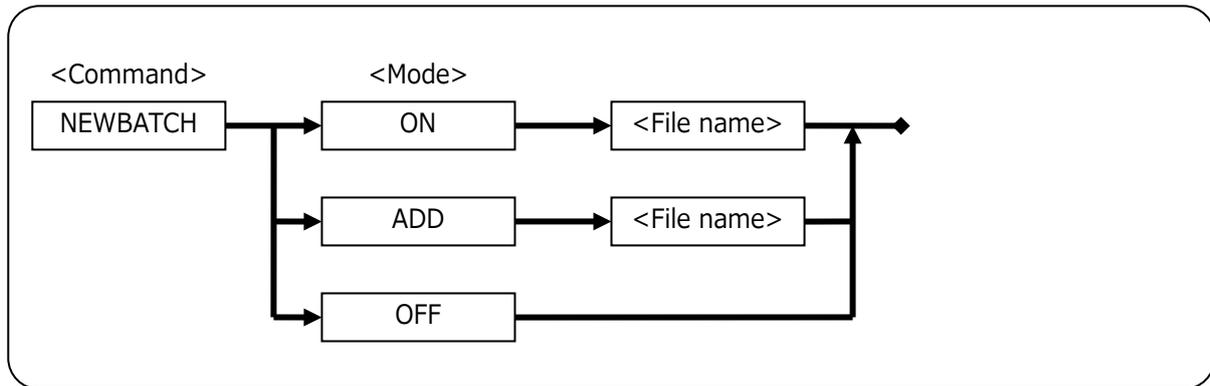
Figure 78

● **<Mode>**

Specify the recording mode.

Table 50

ON	Creates a new batch file and start recording of commands.
ADD	Adds commands to the existing batch file and starts recording of commands.
OFF	Ends creation of a batch file.

● **<File name>**

Specify the name of a batch file that is newly created or to which commands are added.

> ⚠ If you use the LOG command or the SAVEWIN command with this command, do not specify the same file for both commands.

7.2.19. OPTION (Set Options of the Command Window)

This command is used to set options of the Command window.
When MORE is turned on, display of the list of command execution results temporarily stops each time the list exceeds a single screen.
When MORE is turned off, all execution results are displayed without stopping.

●**Format**
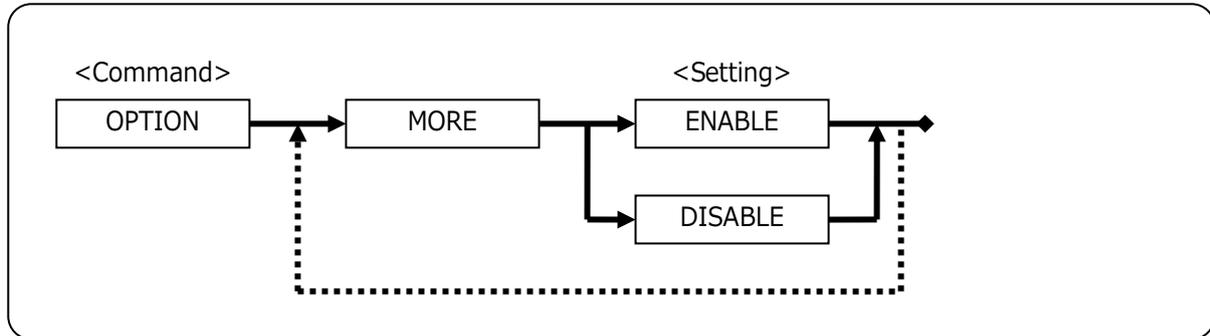
Table 51

●**<Mode>**

Specify the MORE function when executing the commands.

Table 52

ENABLE	Stops the result display temporarily when it exceeds a single screen.
DISABLE	Scrolls the result display without stopping when it exceeds a single screen.

● **Example**

```
>OPTION MORE DISABLE
[DISABLE]  MORE CONTROL
```

7.2.20. QUERY (Refer to Various Setting Status)

This command is used to refer to various status of settings.

● **Format**


```
<Command>
   QUERY  ────→  <Mode>  ────→◆
```
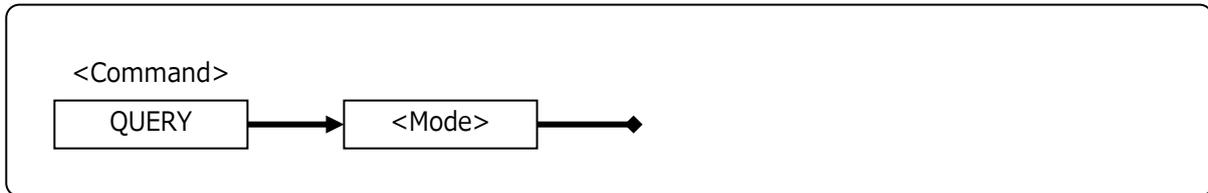
Table 53

● **<Mode>**
Specify the type of modes to refer to.

Table 54

各種モード	説明
ENV	Refers to the current status of probe environment setting. This command has the same function as the following menu. **Resource → Probe Environment**
FM	Refers to the device information of SPI flash memory.
LOAD	Refers to the download list currently registered. This command has the same function as the following menu. **Resource → Download**
LOADPARAM	Refers to the setting that set in LOADPARAM command.
RADIX	Refers to the setting of input radix.
OPTION	Refers to the setting status of options of the current command window.

7.2.21. RADIX (Set the Input Radix)

This command is used to set the input radix.
This setting does not affect the output radix.

● **Format**
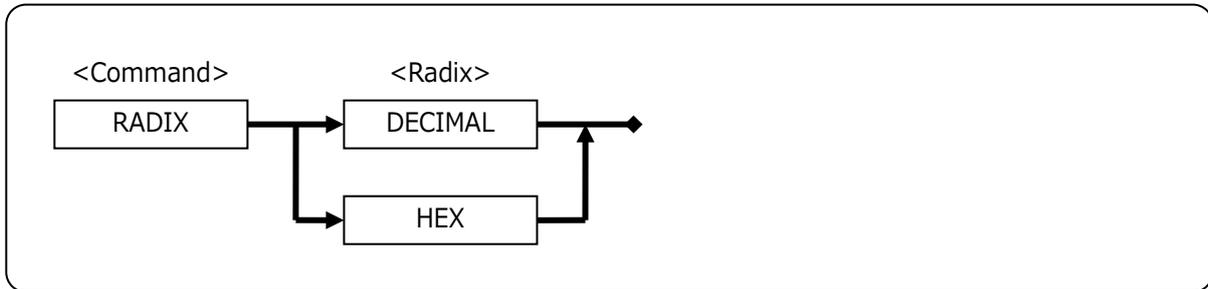
Figure 79

● **<Radix>**

Specify if radix is input in decimal or hexadecimal.

Table 55

DECIMAL	Input radix in decimal.
HEX	Input radix in hexadecimal.
	With this radix, it is not possible to input a decimal. To handle a decimal number, switch to decimal by the RADIX command. Also, when handling a hexadecimal number, be sure to append "0x" to the beginning of the numeric value.

7.2.22. SAVEWIN (Output the Command Window to File)

This command is used to output the history of the Command window currently open to a file.
Unlike LOG command, displayed contents of commands that have already been executed are saved.

● Format
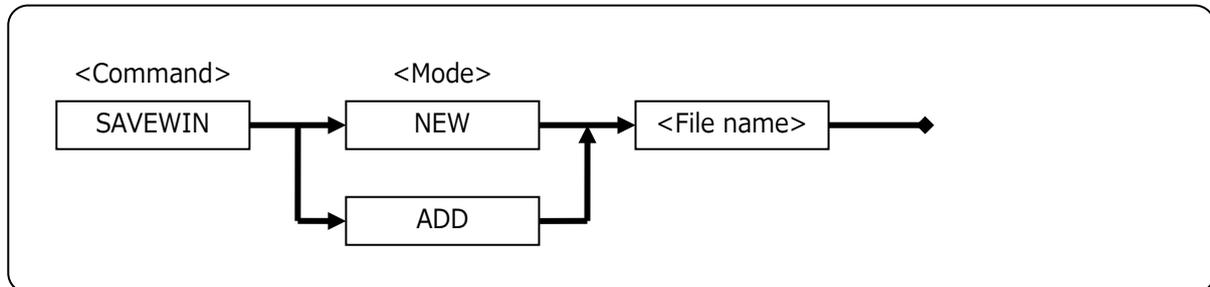
Figure 80

●**<Mode>**

Table 56

NEW	Saves the history by creating a new file.
ADD	Saves the history by adding to the existing file.

●**<File name>**

Specify the name of the file to save.

● **Example**

```
>SAVEWIN NEW C:\SPI_Writer\test.log
Log New <C:\SPI_Writer\test.log>

>SAVEWIN ADD C:\SPI_Writer\test.log
Log Add <C:\SPI_Writer\test.log>
```

> ⚠ If you use the NEWBATCH command with this command, do not specify the same file for both commands.

7.2.23. SEARCH (Search Memory)

This command is used to search the specified memory range for the specified data.
After the command is executed, the execution result is displayed.
This command has the same function as the following menu.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Memory Search**	---

● **Format**
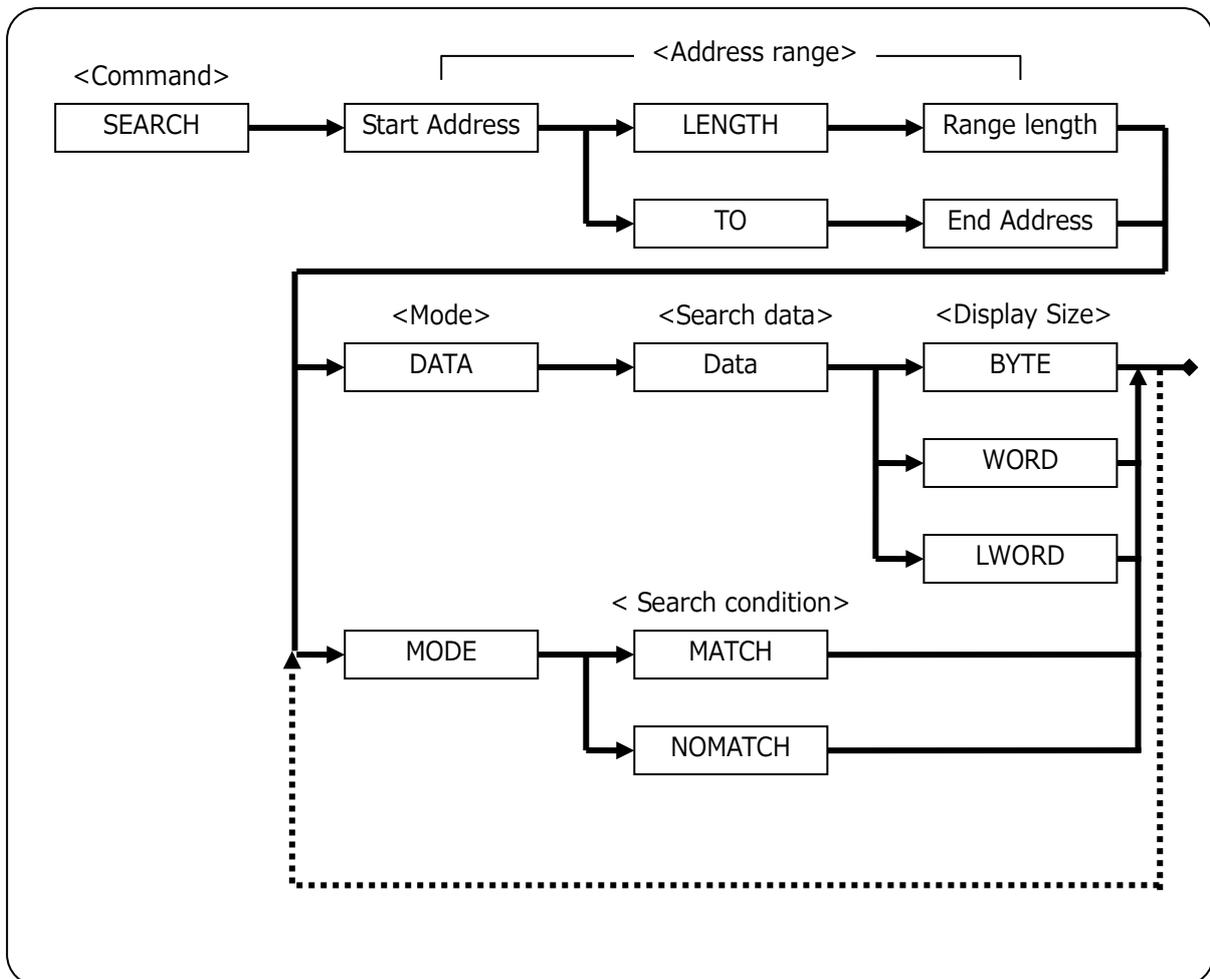
Figure 81

● **<Address range>**

Table 57

Start address	Specify the start address of the range where memory is searched.
Range length	Specify the length from the start address in bytes.
End address	Specify the end address.

●<Search data>

Specify the data to search memory for.
To search for a character, enclose it with single quotation marks (').
To search for a character string, enclose it with double quotation marks (").
It is not possible to directly insert such characters as space character and tab character in the character string, but they can be specified in formats such as (¥x20) and (¥x09).

●<Display size>

Specify the size of memory search.
When a character string is specified as a search data, the specified size becomes invalid and the search is conducted with the size of the character string.

Table 58

BYTE	Conducts memory search by byte data.
WORD	Conducts memory search by word data.
LWORD	Conducts memory search by long word data.

●<Search condition>

Specify the search condition.
MATCH search is performed by moving forward through addresses by one byte.
NOMATCH search is performed from the <start address> by the search data size.

Table 59

MATCH	Searches for data that match the search data.
NOMATCH	Searches for data that do not match the search data.
	It is not possible to specify a character string as search data. If a character string is specified, search is conducted assuming the data of the first single character of the character string is valid.

7.2.24. SHELLEXE (Execute a File)

This command is used to execute the specified file.

● **Format**

<Command>
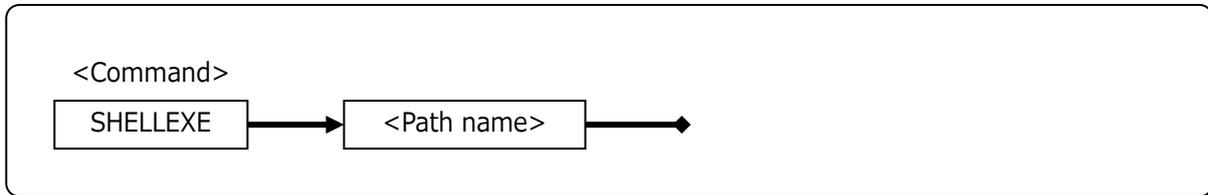
| SHELLEXE | → | <Path name> | → |

Figure 82

● **<Path name>**

Specify the path of the file to execute.

● **Example**

```
>SHELLEXE C:¥SPI_Writer¥test.exe
```

7.2.25. UPLOAD (Upload the Object Data)

This command is used to upload the specified object data.
This command has the same function as the following menu.

Tool button	Operation on the menu bar	Shortcut key
---	**Resource → Upload**	---

● **Format**
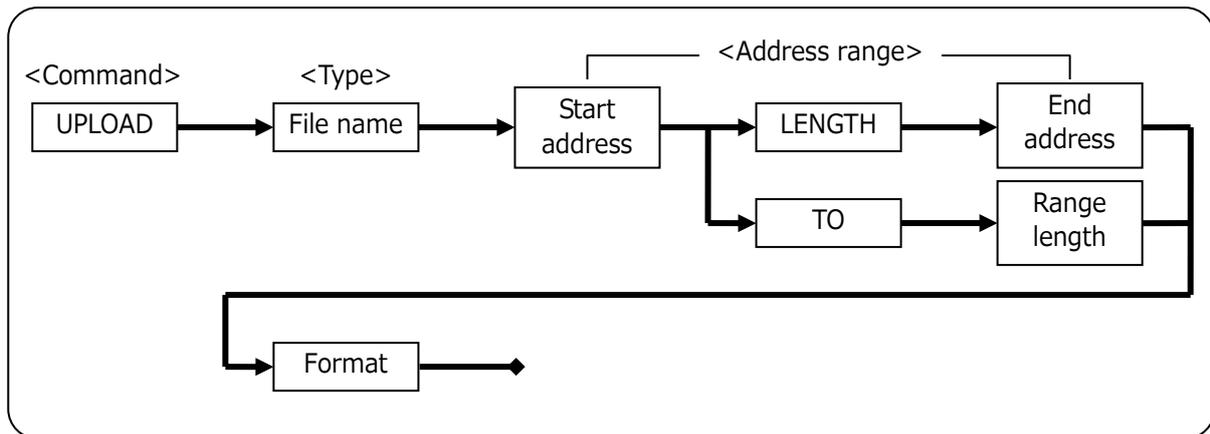
Figure 83

● **<File name>**

Specify the name of the file to upload.

● **<Address range>**

Table 60

Start address	Specify the start address of the data to upload.
Range length	Specify the length from the start address in bytes.
End address	Specify the end address.

● **<Output format>**

Specify the output format.

Table 61

IHEX64K	Outputs in Intel HEX 64K format.
IHEX1M	Outputs in Intel HEX 1M format.
IHEX4G	Outputs in Intel HEX 4G format.
MHEX64K	Outputs in Motorola HEX 64K format.
MHEX16M	Outputs in Motorola HEX 1M format.
MHEX4G	Outputs in Motorola HEX 4G format.
SHF	Outputs in Sophia high-speed download format.
BINARY	Outputs in binary format.

7.2.26. VERIFY (Set Verification)

This command is used to enable or disable verification.
This command has the same function as the following menu.

Tool button	Operation on the menu bar	Shortcut key
Vfy	**Go** → **Verify (Compare when writing)**	---
Vfy only	**Go** → **Verify Only (Compare without writing)**	---

● **Format**
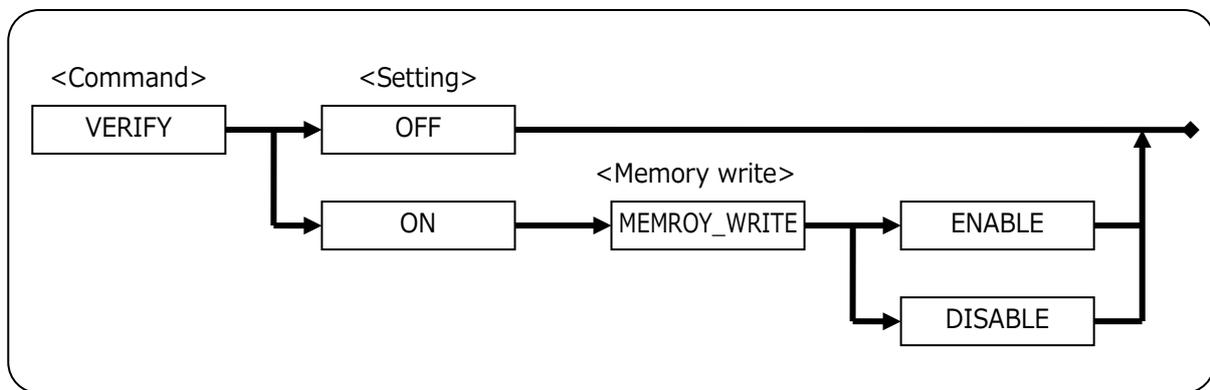
Figure 84

● **<Setting>**

Enable or disable verification.

Table 62

ON	Set the verification setting to "Verify (Compare after writing)" or "Verify Only (Compare without writing)."
OFF	Disable the verification setting.

● **<Memory write>**

Specify "Verify" or "Verify Only."

Table 63

MEMORY_WRITE ENABLE	Set "Verify (Compare after writing)."
MEMORY_WRITE DISABLE	Set "Verify Only (Compare without writing)."

● **Example**

```
>VERIFY ON MEMORY_WRITE DISABLE
[ON        ] VERIFY
[DISABLE   ] VERIFY WRITE

>VERIFY ON MEMORY_WRITE ENABLE
[ON        ] VERIFY
[ENABLE    ] VERIFY WRITE

>VERIFY OFF
[OFF       ] VERIFY
```

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8. Batch Functions

This software allows the batch program to batch process all commands that can be executed in the command line.
Also, it is possible to conduct execution control of batch program by using work variables, system variables, and the execution control functions.

The batch functions execute the commands (commands, definitions of variables, etc) described in the batch file line by line.
To execute a command, the new-line character needs to be inserted at the end of the line.

The batch program of this software executes the next command without waiting for the result of the executed command.

The Command window is equipped with the **NEWBATCH command** for facilitating creation of batch file as well as a function to save commands entered to the Command window in a batch file.

A batch programs can also call other batch programs. Though the upper limit of nest is not set, nesting is restricted to the range of the Windows resource.

i INFO	Parameters can be omitted as on the command line, but its method slightly differs from that of the command line.

i INFO	Commands are case insensitive.

8.1. Work Variables

As work variables to be used in batch program, "**batch argument**" that is passed as a parameter when a batch program starts up, "**local variable**" that is valid only for a single batch program, and "**global variable**" that is valid for all batch programs are available.
Figure 85 shows an image of the scope of variables.
Batch argument is a global variable that can be referred to only.

```
                          [Batch1]
$aa=5
$BB=10
                          [Batch2]
  $aa=30
  $BB=20


print $aa ← Displays "5"
print $BB ← Displays "20"

$0=100 ← Error (argument is for reference only)
```
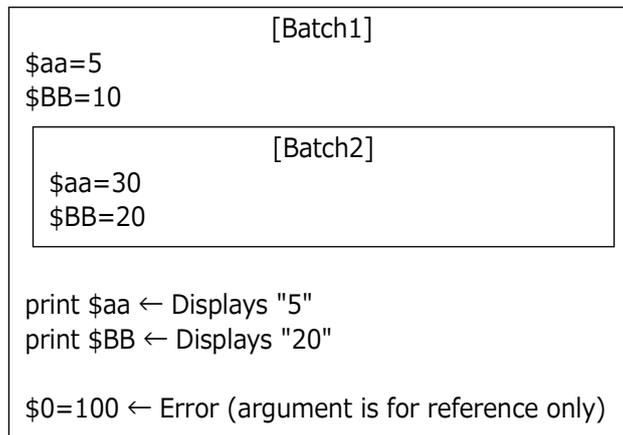
Figure 85

● **Usable work variables**

Table 64

Types of variable	Name and contents of variable	Example
Batch argument	$0: character string of the whole command line	$0
	$1 to $9: 1st to 9th batch arguments	
Global variable	$ (character string beginning with an upper case alpha letter)	$GLOBAL
Local variable	$ (character string beginning with a character other than upper case alpha letters)	$local

Valid characters that can be used for variable name are as follows:
A to Z, a to z, 0 to 9, _ (underscore)

● **Example**

```
.$a=0x10              // Assigns 0x10 to local variable $a.
.$abc=0x50            // Assigns 0x50 to local variable $abc.
.$B0=[0x40000].W      // Assigns the word data in address 0x4000 to global variable $B0.
if($001==0x1234)      // True when the value of local variable $001 is 0x1234.
```

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8.2. Labels

This function is used to define the labels that are used for branch destinations or the like in batch program.
The label starts with colon (:) at the beginning of the line.
Commands cannot be described on the label line.

● **Example**

```
:COME_HERE
```

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8.3. Comment

This is used to write comment lines in batch program.
Specify a comment by inserting two slashes (//) in succession at the beginning or middle of the line.
Characters after // are treated as a comment.
Comment lines do not affect the execution of batch program.

● **Example**

```
// This is Comment Line
if ($a==0x1234)    // if $a equals to 0x1234
```

> For the following commands, it is not possible to write a comment on the same line as the command (i.e., after the command).
> batch, dump, exit, mkdir, newbatch, option, search, upload
>
> For example, the following description causes an error.
> batch test.bat // comment

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8.4. Operators Usable in Numeric Operation

8.4.1. Operators

Operators that can be used in numeric operation including address formula are shown in Table 65.

Table 65

Type	Sign	Meaning
Algebraic operators	+	Addition
	−	Subtraction
	*	Multiplication
	/	Division
	%	Remainder
Comparative operators	==	Equal to
	!=	Not equal to
	<	Less than
	>	Greater than
	<=	Less than or equal to
	>=	Greater than or equal to
Shift operators	<<	Shift left
	>>	Shift right
Logical operators	&&	AND
	||	OR
	&	AND by bit
	|	OR by bit
	^	XOR by bit
	~	NOT
Assignment operators	=	Assign right side to left side. (* Following assignment operators may also be used.)
		+=, -=, *=, /=, %=, <<=, >>=, &=, |=
Others	()	Parenthesis

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8.4.2. Priority and Evaluation Order

The priority is almost the same as in C language, but assignment operators are unique.
* Commas (,) in the operator column are delimiters.

<div align="center">Table 66</div>

Operator	Connection rule
+ (sign), - (sign), ~, ! (same process as ~)	From left to right
*, *=, /, /=, %, %=	From left to right
+, +=, -, -=	From left to right
<<, <<=, >>, >>=	From left to right
<, <=, >, >=	From left to right
==, !=	From left to right
&, &=	From left to right
^, ^=	From left to right
|, |=	From left to right
&&	From left to right
||	From left to right

You can group formulas by using a parenthesis.
For example, when conducting a bit test, you can enclose formulas with parentheses such as if((x&mask)==0).

> **INFO** You cannot insert a space character between an operator and a variable (or value).

8.5. Reading to SPI Flash Memory

➔ For details, refer the "**3.4. Reading SPI flash memoy**."

8.6. Execution Control

8.6.1. FOR, FBREAK, NEXT (Repetitive Execution with Counter)

This is used to execute a series of commands from FOR line to NEXT line as long as the <conditional expression> is satisfied.
When FBREAK is executed between FOR and NEXT, the program immediately gets out of the FOR-NEXT loop.

● **Format**

```
FOR <work variable>=<initial value> TO <conditional expression> [STEP <step value>]
   Command....
[FBREAK]
   Command....
NEXT <work variable>
```

Table 67

Parameter	Description
<Work variable>	Specify a counter variable for repetitive processing. **Specify work variables from 52 work variables ranging from $A to $Z and from $a to $z.** The work variable specified for NEXT must be the same work variable as specified for FOR.
<Initial value>	Specify an initial value to be set to work variable in signed integer.
<Conditional expression>	Specify a conditional expression for controlling repetitive processing. For conditional expression, the following can be used: - Operator - Work variable - Memory data - Numerical value
<Step value>	Specify a value to increment a work variable when a single repetitive processing has finished in signed integer. When STEP is omitted, "1" is assumed.

● **Example**

```
FOR $A=10 TO $A<100 STEP 10
   IF $A==50
     FBREAK
   ENDIF
   DUMP 0 LENGTH $A
NEXT $A
```

8.6.2. WHILE, WBREAK, WEND (Repetitive Execution)

These are used to repetitively execute a series of commands between WHILE and WEND while the <conditional expression> is true (i.e., other than 0).
If <conditional expression> is false (0), loop is terminated.
When WBREAK is executed between WHILE and WEND, the program immediately gets out of the WHILE-WEND loop.

● **Format**

WHILE <conditional expression>
  Command....
[WBREAK]
  Command....
WEND

Table 68

Parameter	Description
<Conditional expression>	Specify a conditional expression for controlling repetitive processing.

● **Example**

```
.$A=0
WHILE $A<100
  IF $A==50
    WBREAK
  ENDIF
  DUMP 0 LENGTH $A
  .$A+=10
WEND
```

8.6.3. GOTO (Unconditional Branch)

This is used to branch the batch program to the <label> line.

● **Format**

GOTO <label>

Table 69

Parameter	Description
<Label>	Specify the label name at the destination of branch in the batch program.

● **Example**

```
:LOOP
  Command
GOTO LOOP
```

8.6.4. IF, ELSEIF, ELSE, ENDIF (Conditional Judgment)

These are used to execute commands up to ELSEIF, ELSE, or ENDIF line when <conditional expression> is true (i.e., other than 0). You can specify as many ELSEIFs as you like.

●**Format**

IF<conditional expression>
  Command....
[ELSEIF <conditional expression>]
  [Command....]
[ELSE]
  [Command....]
ENDIF

Table 70

Parameter	Description
<Conditional expression>	Specify a conditional expression for controlling execution.

● **Example**

```
IF $A>$B
  DUMP 0 LENGTH $A
ELSEIF $A==$B
  DUMP 0x10 LENGTH $A
ELSEIF $A<$B
  DUMP 0x20 LENGTH $B
ELSE
  DUMP 0x30 LENGTH $B
ENDIF
```

8.6.5. END (Exit All Batch Programs)

This is used to exit all batch programs including nested batch programs that are currently executed.

●**Format**

END

● **Example**

```
 IF $A>$B
   END
 ENDIF
```

8.6.6. QUIT (Exit Current Batch Program)

This is used to exit the batch program that is currently executed.
When the batch program is nested, only the current batch program is terminated and control returns to the calling source program.

●**Format**

QUIT

● **Example**

```
IF $A>$B
  QUIT
ENDIF
```

8.7. ECHO (Switch Show/Hide of Batch Commands)

This is used to switch between displaying and hiding commands in batch program.

●**Format**

ECHO {ON|OFF}

● **Example**

```
IF $A>$B
   ECHO ON
ELSE
   ECHO OFF
ENDIF
```

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8.8. KEYIN (Input from the Keyboard)

If <character string> is specified, <character string> is displayed in the status bar of the command window as a guide character string and the program waits for input from the keyboard. When a work variable is specified, this command assigns the character string input from the keyboard to a work variable.

Input of character string from the keyboard is terminated once the Return character (Enter) is input.

When both of <character string> and <work variable> are not specified, the input character string is evaluated as a formula and the evaluation result is displayed.
At this point, if an assignment formula or the like is specified, the result of the formula on the right side is assigned to the formula on the left side.

● **Format**

KEYIN [<character string> [<work variable>]]

Table 71

Parameter	Description
<Character string>	Specify the guide character string that is displayed in the status bar of the Command window.
<Work variable>	Specify the work variable to set a value that is input from the keyboard.

● **Example**

```
KEYIN "A=" $A              // Displays "A=" in the Command window and waits for key input.
```

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8.9. PRINT (Display the Character String)

This command is used to evaluate the specified <numeric expression> and display it in the Command window in the format specified by <format> .
When <character string> is specified, it is displayed in the Command window before <numeric expression> is displayed.
As many <character string> and <numeric expression> parameters as you like may be specified by separating them with a space character.

● **Format**

PRINT {[<character string>] [<numeric expression>][<Format>]} +

Table 72

Parameter	Description
<Character string>	Specify the guide character string that is displayed in the command window.
<Numeric expression>	Specify the work variable to set a value that is input from the keyboard.
<Format>	Specify the format in which numeric expression is displayed.

● **<Format>**

Table 73

Format	Description
None	Default display format. Displays a 4-byte hexadecimal value and a signed decimal value enclosed in parentheses.
.#B	Displays in 2-byte binary value.
.#LB	Displays in 4-byte binary value.
.#D	Displays in 2-byte signed decimal value.
.#LD	Displays in 4-byte signed decimal value.
.#U	Displays in 2-byte unsigned decimal value.
.#LU	Displays in 4-byte unsigned decimal value.
.#H	Displays in 2-byte hexadecimal value.
.#LH	Displays in 4-byte hexadecimal value.

● **Example**

```
PRINT "abcdefg"
    abcdefg                                      // Execution result
PRINT "$A=" 1+2+3 " $B=" 1*2*3
    $A=0x00000006 (6) $B=0x00000006 (6)          // Execution result
.$A=0xffffffff
PRINT "$A=" $A
    $A=0xffffffff (-1)                            // Execution result
PRINT "$A=" $A.#B
    $A=1111 1111 1111 1111                        // Execution result
PRINT "$A=" $A.#LB
    $A=1111 1111 1111 1111 1111 1111 1111 1111    // Execution result
```

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8.10. BEEP (Beep)

This is used to beep.

●**Format**

BEEP

● **Example**

```
IF $A > $B
  BEEP
ENDIF
```

> (i)INFO   To beep, you need to set "Normal Beep" in the Sound Scheme setting of Windows.

8.11. WAIT (Stop a Batch Program Temporarily)

This command is used to stop a batch program for the specified seconds.

●Format

WAIT <seconds>

Table 74

Parameter	Description
<seconds>	Specify the time in seconds for which the batch program is stopped.

● Example

```
IF $A > $B
  WAIT 10        // Waits for 10 seconds.
ENDIF
```

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9. Stand-alone Functions

The stand-alone action records written data and writing procedure in a probe and executes recorded procedure later by itself by pressing the RUN button of the probe while power is supplied, even not connected to a host PC.

1)   **Recording of written data and writing procedure**

Connect to the host PC and perform data write to the target in normal procedures. At this point, record the written data and the writing procedure in the probe.
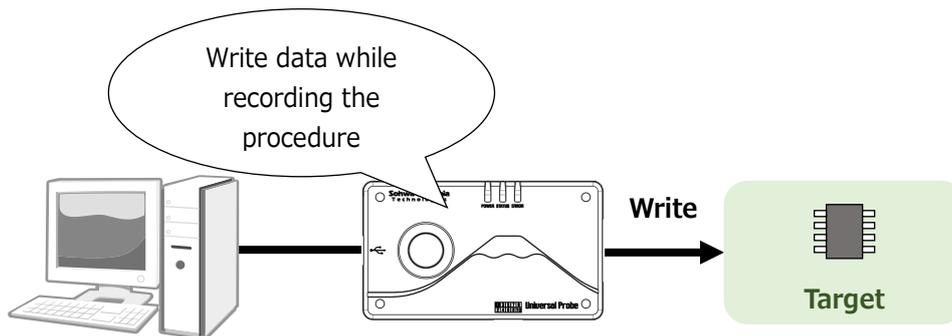

Figure 86

2)   **Disconnect the probe from the host PC**

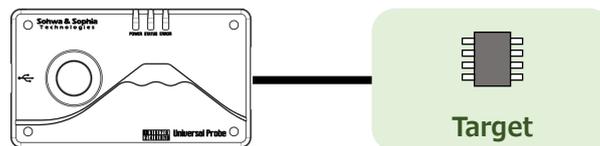Disconnect the probe from the host PC and connect with the target.

Figure 87

3)   **Connect with power supply and press RUN button**

Supply power from a rechargeable battery, for example, and after confirming that the POWER LED of the probe is lit, press the RUN button.
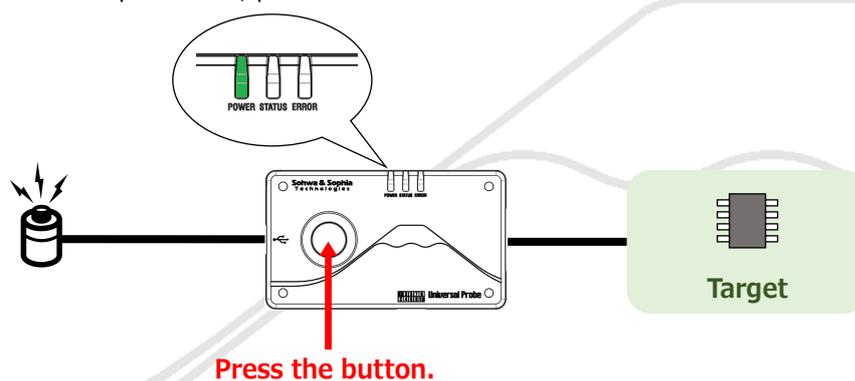

Press the button.

Figure 88

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4) **Perform writing**
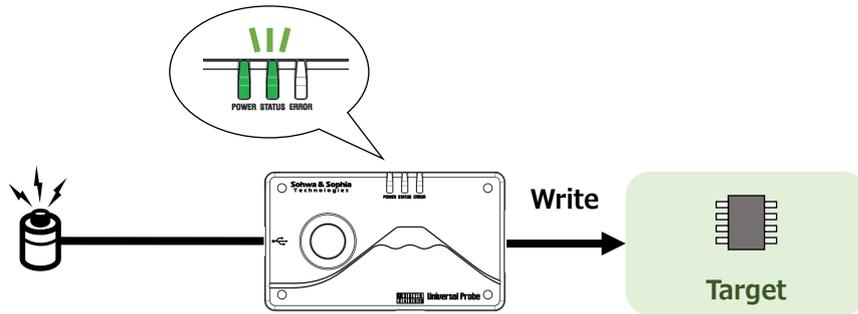
During writing, the STATUS LED blinks.

Figure 89

5) **When writing ends, the LED indicates the result of writing**

When writing finishes normally, the STATUS LED lights in green and when the writing failed, the ERROR LED lights in red.
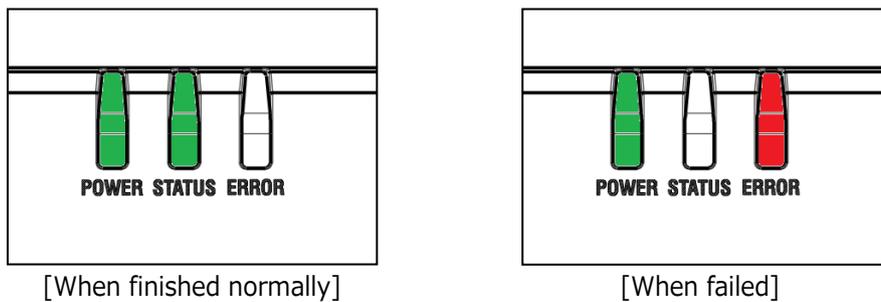

[When finished normally]   [When failed]

Figure 90

9.1. Recording of Procedure

When this software starts, the following screen is displayed.
If the button indicated by a red-line circle below is clicked, the mode changes to the mode for recording the operation procedure.
Open (or create) a project file in this condition and **execute writing to SPI flash memory once**.
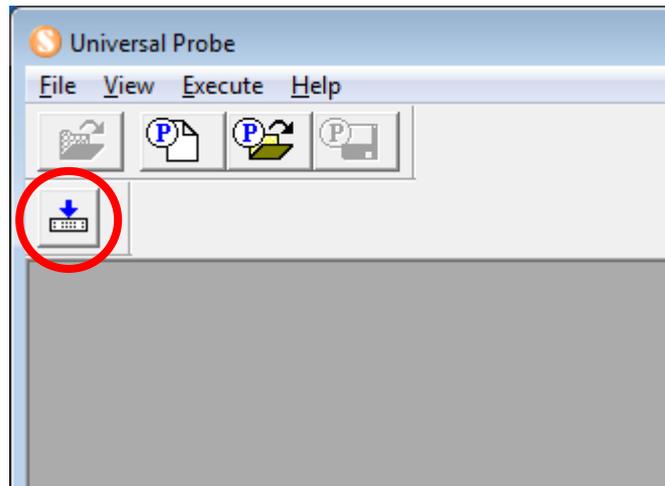

Figure 91

During recording, "Short-press recording" is displayed in the window title bar.
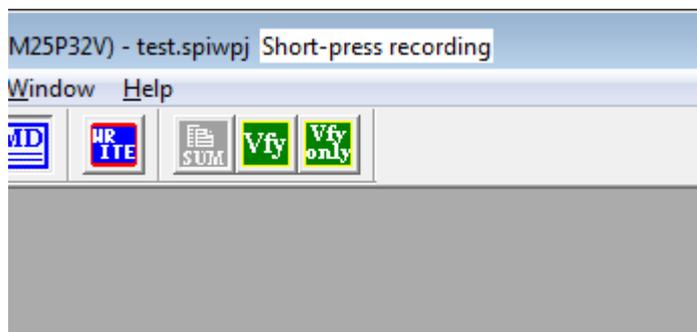

Figure 92

9.2. End of Recording

To end recording, exit this software or close the project.

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9.3. Backup and Restoration of Recorded Procedure

You can back up the recorded procedure in the host PC.
You can also restore the backed up procedure.
Procedure can be restored to other probes as well. However, if the License Code of this software is not registered in the restoring probe, pressing the RUN button causes an error.
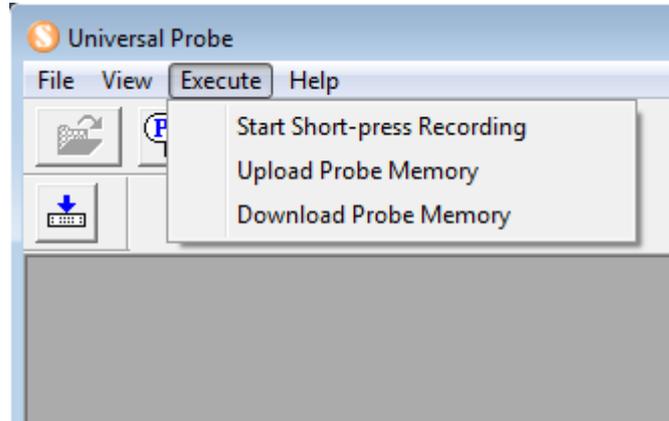

Figure 93

Table 75

Menu	Description
Start Short-press Recording	When this menu is selected, the mode changes to the step recording mode.
Upload Probe Memory	Uploads (backs up) the procedure recorded in the probe to the host PC.
Download Probe Memory	Downloads (restores) the procedure uploaded (backed up) in the host PC to the probe.

> The stand-alone function and the procedure backup/restoration function are convenient in the following cases:
> • Writing is performed in parallel in the factory.
> • The contents of memory are frequently restored due to maintenance and repair.

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Revision History

Ver. No.	Revision date	Content of revision
01	09/30/2014	Initial Release.
02	11/17/2014	Correction of typographical errors.

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